From: Monica Downer
To: WHAB
Cc: Sean Martin
Subject: BT Kahla Data Center Project Request for TPWD Project Review
Date: Wednesday, January 7, 2026 1:31:50 PM

To Whom It May Concern,

Please find below the download link for the TPWD Project Review Request Package for the BT Kahla Data Center Project (including cover letter, the Protected Species Habitat Assessment dated December 2025, Wildlife Habitat Assessment (WHAB) Review Request Form, and KMZ of the project area).

Final Submittal
Password: df12kKd6tG3R
https://energyrenewalpartners.egnyte.com/fl/PVJgbFFHBbVQ

We are requesting TPWD's guidance as well as concurrence on the conclusions made in the December 2025 Protected Species Habitat Assessment. We are also requesting recommended best management practices for Project development, concurrence of the survey findings and the determination of effect and technical assistance to determine whether additional species-specific surveys are warranted. At this time, ERP is also consulting with the USFWS.

Please feel free to reach out to me or Mr. Sean Martin if you have any questions or if we can provide you with additional information to assist with the review of our request. Thank you.

Monica Downer, M.S., PWS, A.G.T.A.,
Energy Renewal Partners, LLC
Mobile: (813) 842-3416 | mdowner@energyrenewalpartners.com

January 7, 2026

Texas Parks and Wildlife Department
Wildlife Division, Environmental Review Team
4200 Smith School Road
Austin, Texas 78744

Delivered via email

Re: Request for Project Review
BT Kahla Data Center Project
Leon County, Texas
Approximate Center of Site: 31.317468 N°, -96.259970 W°

To Whom it May Concern,

On behalf of BT Kahla Data Center, LLC, Energy Renewal Partners, LLC (ERP) is providing the attached Protected Species Habitat Assessment in support of a project review and input request for the BT Kahla Data Center Project. This assessment consisted of a desktop review and an onsite investigation to characterize the habitat of the project area.

The Project consists of approximately 873 acres located in the western portion of Leon County, Texas, approximately 6.05 miles southwest of the City of Jewett and approximately 2.5 east of Lake Limestone. The final design and layout of the proposed data center facility has not been completed. For the purposes of this request, the Project will likely entail the installation of industrial campus featuring multiple buildings housing technology infrastructure, parking areas, internal access roads, and various supporting utilities. The facility is expected to include high-capacity power and cooling systems, such as electrical substations, backup generators, and HVAC equipment, to ensure uninterrupted operations. Additionally, fiber-optic network connectivity will be integrated to support high-speed data transmission. If required, clearing of onsite vegetation and grading will occur before the installation of project infrastructure.

ERP requests your input regarding the project's potential to affect important natural resources, such as protected species and their habitat. The enclosed report outlines the results of our Protected Species Habitat Assessment completed in December 2025 along with the WHAB Program Review Request Form. Your assistance in this matter is greatly appreciated and we would appreciate a response within 45 days. Please contact me if you have any questions at the information below or if we can provide additional information to assist with your review of our request. Thank you for your time and consideration.

Sincerely,

Monica Downer
Environmental Scientist
(813) 842-3416
mdowner@energyrenewalpartners.com

Sean Martin
Senior Project Manager
(980) 263-8819
smartin@energyrenewalpartners.com

Attachments: Protected Species Habitat Assessment
WHAB Program Review Request Form

Project Coordination and Review Requests

(Including Threatened and Endangered Species)

EARLY PROJECT COORDINATION

If you are in the information gathering phase of project coordination and assessment, ***in lieu of*** submitting a Project Review form or a letter request, you may obtain information from the following Texas Parks and Wildlife Department (TPWD) sources regarding sensitive resource information for use in your analyses. TPWD recommends you use at least the following two sources of information when analyzing for project impacts to sensitive resources, including before submitting a request for TPWD review and recommendations.

RARE, THREATENED, AND ENDANGERED SPECIES OF TEXAS BY COUNTY - This database includes lists of species known to occur and potentially occurring in Texas at the county level. It can be accessed online at: http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ or by contacting our administrative staff at (512) 389-4571. Appropriate use and interpretation of the county level lists are the responsibility of the recipient.

TEXAS NATURAL DIVERSITY DATABASE (TXNDD) – The TXNDD is publicly available location specific data on rare, threatened and endangered species, natural communities and other significant features of conservation concern to TPWD. This information can be obtained by submitting a data request to txndd@tpwd.state.tx.us. Response to a data request will include available TXNDD records, reports, and geographic information system compatible shapefiles of recorded locations for species and other rare resources on the U.S. Geological Survey (USGS) 7.5 minute topographic quadrangle of the project and surrounding area. Responses generally take a maximum of five business days from receipt of the request. Appropriate use and interpretation of TXNDD data are the responsibility of the recipient.

WILDLIFE HABITAT ASSESSMENT (WHAB) PROGRAM REVIEW

PROJECT REVIEW REQUESTS – The WHAB Program can provide a review of your assessment, after your analysis for impacts using the above two data sources. Please complete the WHAB Review Request form (attached; use Word format for fill-in version), or use the form as an outline of information to include with your letter request. The WHAB Program response will provide an evaluation of your environmental assessment for impacts to fish and wildlife and their habitats, including rare, threatened, and endangered species, other significant resources and concerns presently known or potentially occurring in the vicinity of your project. WHAB Program responses generally take 4 to 6 weeks on average from receipt, depending on the size of your request.

The request should include all the information listed on the next two pages and be sent to the address shown on the last page. The more pertinent information you provide, the more customized our review, and the faster our turnaround. Review requests submitted without adequate project detail may cause a delay in our response as we will need to contact you and wait for supplemental information. The potential for adverse impacts to natural resources from project activities varies based on the type of activity; location; season; vegetation; present physical features (both natural and man-made); degree of disturbance; planned avoidance, minimization, mitigation, enhancement, and restoration measures; species-specific tolerance levels; etc. Current color photographs and aerial photographs of the site greatly facilitate the review process. Complete information allows us to more accurately assess the potential for project impacts, as well as, assists us in narrowing the list of rare, threatened, and endangered species and other natural resources that may need to be addressed further.

WILDLIFE HABITAT ASSESSMENT PROGRAM
Review Requests
(Including Threatened and Endangered Species)

Name: **Monica Downer** Date: **01/06/2026**

Your Company: **Energy Renewal Partners, LLC (ERP)** Phone: (**813**) **842-3416**

Your Company Address: **4330 Gaines Ranch Loop, Suite 210** Fax: (**512**) **222-1132**

City, State, Zip: **Austin TX 78735** E-mail: **mdowner@energyrenewalpartners.com**

Project Title, Number and Site Location: **BT Kahla Data Center Project** County(ies): **Leon**

1. Scope of Project:

(a) What regulations will this review help you to comply with? OR, if not regulatory, why is the review being requested? Who is the project sponsor?

Chapters 67, 68, and 88 of the Texas Parks and Wildlife (TPW) Code and Sections 65.171-65.176 of Title 31 of the Texas Administrative Code (T.A.C.), as well as Sections 69.01-69.9 of the T.A.C. Project sponsor is BT Kahla Data Center, LLC

(b) What and where is the project site? What activities will be conducted at the site? (Especially activity types, extent, boundaries, length & width, waterways, vegetation disturbance, and total acreage of site and acreage of the site that will be disturbed)

Project entails a proposed data center facility on approximately 873 acres located in the western portion of Leon County, Texas, approximately 6.05 miles southwest of the City of Jewett and approximately 2.5 east of Lake Limestone. Project is composed primarily of pastureland and woodland utilized for cattle grazing. The Project will involve the installation of industrial campus featuring multiple buildings housing technology infrastructure, parking areas, internal access roads, and various supporting utilities. The facility is expected to include high-capacity power and cooling systems, such as electrical substations, backup generators, and HVAC equipment, to ensure uninterrupted operations. Additionally, fiber-optic network connectivity will be integrated to support high-speed data transmission. If necessary, clearing of onsite vegetation and grading will occur before installation. Site design and engineering has not begun, and the overall project footprint and acreage to be disturbed have not been finalized at this time.

(c) If this request is for a site investigation or risk assessment, why is the site being investigated? If applicable, what contaminant pathways are being evaluated?

The Site is being investigated for potential project-related impacts to protected species and their supporting habitats from proposed site development and operational activities. No contaminant pathways are anticipated to occur and BMPs (petroleum containment, Spill Prevention, Control, and Countermeasure (SPCC) plans) will be employed during construction.

(d) Schedule of activities – Approximately when (which calendar months, how many years) will the project be active on the site?

Project will be located onsite for a minimum of 25 years.

2. Vegetation: Species, dominant plants, structure and composition, vegetation layers, height of layers, natural vegetation community types.

The USGS National Land Cover Database indicates the Project consists mostly of hay/pasture landcover (59.1 percent) and mixed forest (27.6 percent) with minor coverage of woody wetlands (8.6 percent) and barren land (1.4 percent). The Project is located in the Southern Post Oak Savanna level IV ecoregion.

3. Other Natural Resources/Physical Features:

(a) Soils, geology, watercourses, aquifers, flood zones, etc.

The project area is underlain by Carrizo Sand, the Calvert Bluff formation, and the Reklaw formation. Carrizo Sand is comprised of very fine-grained sand with partings of light to dark grey silty clay and black carbonaceous clay, and Alluvium deposits, comprised of floodplain deposits of clay, silt, sand, gravel, and organic matter. The Calvert Bluff formation is mostly mudstone with varying amounts of sandstone, lignite, and ironstone. The Reklaw formation is sandstone and clay, hematite, muscovite, and glauconite. Birch Creek bisects the project area in an east to west orientation. Additionally, several unnamed stream features, ponds, wetland features, streams, and drainage features were also observed throughout the project area. Based on a review of the FEMA website, approximately 198.6 acres of 100-year floodplain occur within the Project area.

(b) Habitat, animals, animal assemblages, other sensitive features, etc.

No sensitive or unique features were identified within the project area. The habitat has largely been converted into cropland and recreational hunting within the limited mixed woodlands in the northern portion and along the Project boundaries. The acreage onsite consists of species common to the area, and both desktop analysis and field reconnaissance indicate that animal assemblages would be characteristic of the ecoregion.

4. **Existing Site Development:** Extent of pavement, gravel, shell, or other cover; buildings, landscaped, xeriscaped, drainage system, etc.

Farm to Market Road (FM) 1146 borders a portion of the western project boundary and County Road (CR) 381 enters the southern portion of the project area in a north to south orientation. Several unpaved, private roads meander throughout the project area. One private residence is located within the southern portion of the project area off CR 381 alongside multiple barns and agricultural buildings.

5. **Historic Use/Function of Site:** Pasture, forest, urban, row crops, rangeland, wetland, etc. If the request is for a risk assessment, when was, or for how long, has the site been active, inactive? Are cultural resources present on the site or will the project cross or impact state or federal lands, local parklands?

The historic use and function of the Project is low-density rangeland utilized for cattle grazing purposes. There are no public areas or protected areas located on the Site. Because the Project occurs on private land, no formal cultural resource consultation or review has been conducted. If a federal nexus is triggered, a Section 106 cultural resource review would be carried out as appropriate.

6. **Has a threatened and endangered species survey or assessment,** wetland delineation, or other biological assessment already been performed? (In general, TPWD recommends an on-site habitat assessment be performed.) [X] Yes [ ] No

(a) If yes, provide surveyor name, qualifications, methods or protocols, acreage surveyed, level of effort, weather conditions, time of day, and dates the survey was performed.

A Protected Species Habitat Assessment was conducted by an ERP scientist on December 8-11, 2025. Weather conditions at the time of the field assessment included temperatures of approximately 31-66° F with mostly sunny to partly cloudy skies, winds of approximately zero to 17 miles per hour, and zero precipitation. The results of the Habitat Assessment are attached.

TEXAS PARKS & WILDLIFE

WILDLIFE HABITAT ASSESSMENT PROGRAM
Review Requests (Continued)
(Including Threatened and Endangered Species)

6. (b) If yes, please provide results and copy of survey/assessment report.

7. **Could current on-site or adjacent habitat support rare species?** ☒ Yes ☐ No
Specifically, explain why or why not.

See accompanying report.

8. **Provide a description of potential negative direct and indirect impacts** from proposed project activities or former and current site activities, such as types of habitat and acreage to be degraded or lost, temporarily and permanently. Also, describe cumulative effects that could be anticipated from the project on the natural environment.

See accompanying report.

9. **Provide a description of planned beneficial mitigation and enhancements** or restoration efforts. Be sure to note the avoidance, minimization, and compensatory mitigation measures planned to address the threat of negative impacts (e.g. which erosion control measures will be used, what will site restoration activities encompass, etc.).

Training for construction staff and protocols can be developed if federally and state endangered and threatened species are encountered during construction or operation activities. If trenching is to take place, it is recommended trenches not be left open overnight, escape ramps be placed in all trenches, and trenches be inspected for trapped animals and reptiles before they are filled. Additional BMPs for sediment and erosion control should be implemented during construction to avoid sedimentation into onsite and offsite aquatic features, which may provide habitat for protected species. The Site also has the potential to provide habitat for avian species protected under the MBTA. BMPs to protect these species include clearing vegetation outside of their primary nesting season, which occurs approximately March through August. If tree or brush clearing during the primary nesting season cannot be avoided, ERP recommends completing a survey for active nests prior to clearing.

10. **Include copies of coordination with other agencies** relevant to impacts or enhancements of natural resources for this project, or agency & contact name.

11. **Clearly delineate exact location of site and its boundaries** using an applicable USGS quad (most preferable) as the base layer or best map available. The topographic map citation should include the USGS quad name. The map must contain identifiable features and a scale that allows us to find your site **and** accurately pinpoint your site boundaries. When using internet maps, provide both a location map (zoomed out for highway reference) and a layout map (zoomed in for site features, boundaries, and neighboring street reference)

12. **Originals or color-copy photographs** of site and surrounding area with captions or narratives.

13. **Aerial photographs with pertinent features labeled**. Aerials should show the year photograph was taken.

Send completed form to:

Texas Parks and Wildlife Department
Wildlife Division
Wildlife Habitat Assessment Program
4200 Smith School Road
Austin, Texas 78744-3291
(512) 389-4571 (Phone) (512) 389-4599 (Fax)

Texas Parks and Wildlife Department maintains the information collected through this form. With few exceptions, you are entitled to be informed about the information we collect. Under Sections 552.021 and 552.023 of the Texas Government Code, you are also entitled to receive and review the information. Under Section 559.004, you are also entitled to have this information corrected.

ENERGY RENEWAL PARTNERS, LLC

Protected Species Habitat Assessment

BT Kahla Data Center Project

Leon County, Texas

December 2025

Prepared for:
BT Kahla Data Center, LLC
Prepared by:
Energy Renewal Partners, LLC
4330 Gaines Ranch Loop, Ste 210
Austin, Texas 78735

January 6, 2026

Monica Downer
Environmental Scientist

Sean Martin
Senior Project Manager

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1.0 Executive Summary

On behalf of BT Kahla Data Center, LLC, Energy Renewal Partners, LLC (ERP) was retained to complete a protected species habitat assessment for the proposed Kahla Data Center Project (the "Project") which consists of approximately 873 acres. The Project is located in the western portion of Leon County, approximately 3.89 miles north of the City of Marquez, Texas (the "project area"). Additionally, the project area is approximately 6.05 miles southwest of the City of Jewett and approximately 2.5 miles east of Lake Limestone.

ERP performed this assessment to determine whether the project area supports habitat for state or federally listed species and to evaluate the likelihood of protected species occurrence. The objectives included identifying and assessing potential impacts to species protected under state and federal law by reviewing preferred habitat requirements and conducting a field assessment.

ERP completed a review of desktop resources and a field investigation as part of this assessment. ERP confirmed during the site reconnaissance that onsite habitat primarily consists of pastureland and woodland utilized for cattle grazing, with cattle livestock observed onsite and two livestock ponds located within the project area. Woodland areas scattered across the project area consist of mostly deciduous tree cover, with scattered evergreen trees. Multiple drainage features, ponds, and wetlands were observed within the project area.

Results of the field assessment conducted December 8-11, 2025, indicate habitats within the project area consist of undeveloped pastureland and grasslands, post oak woodlands, forested wetlands, emergent wetlands, and streams of various flow regimes.

Review of habitat requirements for state and federal protected species and results of the field assessment determined the project area contains suitable habitat for the proposed federally endangered tricolored bat (*Perimyotis subflavus*), the federally listed endangered Houston toad (*Bufo houstonensis*), the proposed federally threatened Texas fawnsfoot (*Truncilla macrodon*), the federal proposed threatened monarch butterfly (*Danaus plexippus*), the federally listed endangered large-fruited sand-verbena (*Abronia macrocarpa*), and the federally listed endangered Navasota ladies'-tresses (*Spiranthes parksii*). ERP identified marginally suitable habitat for the state listed threatened Bachman's sparrow (*Peucaea aestivalis*), foraging habitat for the state threatened white-faced ibis (*Plegadis chihi)* as well as suitable habitat for the Texas horned lizard (*Phrynosoma cornutum*). Species identified during the assessment designated as federal proposed are therefore not subject to the take prohibitions of Section 9 of the Endangered Species Act. The Texas fawnsfoot is under review by the USFWS as a federal proposed threatened species but is not currently protected by the take prohibitions of section 9 of the ESA until the rule to list is finalized. As there is no federal nexus currently, the Project is not required to comply with Section 7 of the ESA, and no consultation with the USFWS is required at this time.

However, these species may be listed in the future, and project planning should account for potential regulatory changes. If the Project requires federal permitting under section 7(a)(4) of the ESA, the lead federal agency must confer with the USFWS if the action will jeopardize the continued existence of a proposed species.

Given the presence of suitable upland and breeding habitat for the federally listed endangered Houston toad, ERP recommends conducting a presence/absence survey in accordance with survey protocols if project design cannot avoid suitable habitat or if ground-disturbing activities are proposed during the species' breeding season. Survey results would refine the effects determination and inform appropriate avoidance, minimization, or mitigation measures, as applicable. ERP also recommends implementation of best management practices throughout project design, construction, and operation to minimize impacts to protected species. Recommended measures include construction personnel training and wildlife encounter protocols, erosion and sediment controls to prevent sedimentation of aquatic habitats, incorporation of pollinator supportive species in revegetation seed mixes where feasible, and adherence to Migratory Bird Treaty Act protections by scheduling vegetation clearing outside the primary nesting season or conducting pre-construction nesting bird surveys when seasonal avoidance is not feasible.

2.0 Introduction

2.1 Purpose

This report describes the results of the Protected Species Habitat Assessment completed for the BT Kahla Data Center Project located within northwestern Leon County, Texas (the "Project"). (Figure 1). Assessment objectives included identifying, evaluating, and addressing potential impacts to state listed species and federally protected species listed as threatened or endangered under the Endangered Species Act (ESA) 16 U.S.C. §1531, et seq., as well as species proposed for federal listing and candidate species, by determining the likely presence of habitat suitable for these species and their potential presence within habitat observed onsite.

Although the final design of the data center facility has not yet been completed, ERP anticipates that the Project will consist of an industrial campus featuring multiple buildings housing technology infrastructure, parking areas, internal access roads, and various supporting utilities. If required, clearing of onsite vegetation and grading will occur before the installation of project infrastructure.

2.2 Project Area Description

The project area consists of approximately 873 acres in northwestern Leon County, Texas, located in a rural, unincorporated area approximately 6.5 miles southwest of the city of Jewett, 4.75 miles north of the town of Marquez, and 2.5 miles east of Lake Limestone (Figure 1). Farm to Market Road (FM) 1146 borders a portion of the western project boundary and County Road (CR) 381 enters the southern portion of the project area in a north to south orientation. Several unpaved, private roads meander throughout the project area. One private residence is located within the southern portion of the project area off CR 381 alongside multiple barns and agricultural buildings. Pasture and hay vegetation covers much of the project area followed by mixed forest and woody wetland land coverage. Aerial imagery depicts one named creek, Birch Creek, within the project area (Google Earth 2024). Properties adjacent to the project area consist of similar land cover (Figure 2).

2.3 Regulatory Considerations

The ESA is a federal regulation that provides protection for threatened and endangered species throughout all or a significant portion of their range and the conservation of the ecosystems on which they depend. The ESA is administered by the U.S. Fish and Wildlife Service (USFWS) for terrestrial and freshwater species and serves several functions, including authorizing the determination and listing of species as endangered or threatened and prohibiting unauthorized take, possession, sale, and transport of these species. The ESA also authorizes the assessment of civil and criminal penalties for violations of the Act. Under the ESA, taking a listed species without a permit is unlawful (USFWS 2023c). The definition of "take" under the ESA is "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Within this regulation, the definition of the term "harm" includes significant modification or degradation of habitat. Additionally, federally listed plant species are not protected from "take" on private lands if there is no federal nexus.

More than 1,100 native bird species are protected under the Migratory Bird Treaty Act (MBTA). The Act prohibits the "take" of any migratory bird, nest, or egg without a permit from USFWS. The definition of

take includes pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting such activities. Under current federal policy initiated by Secretarial Order No. 3418 and formalized by the April 2025 Solicitor's Opinion, the Department of Interior has rescinded the interpretation that prohibited incidental take under the MBTA. Consequently, incidental take is not currently enforceable, though intentional take of migratory birds and active nests remains prohibited and requires a USFWS permit.

The Bald and Golden Eagle Protection Act (BGEPA) prohibits the unauthorized take of bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*), including their parts, nests, or eggs. The definition of “take” under the BGEPA varies slightly from the ESA and MBTA. The BGEPA defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Regulations further define "disturb" as “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior". The BGEPA also protects occupied and unoccupied eagle nests from disturbance, alteration, and destruction which interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment (USFWS 2018a). Permits are available from the Department of the Interior authorizing eagle take, including nest take or nest disturbance, under specific circumstances.

The Lacey Act (1900) protects bald eagles by enforcing a federal offense for the taking, possessing, transporting, selling, importation, or exporting of bald eagle nests, eggs, and parts that are taken in violation of any state, tribal, or U.S. law. It also prohibits false records, labels, or identification of the wildlife shipped, prohibits importation of injurious species, and prohibits shipment of fish or wildlife in an inhumane manner.

The Texas legislature has authorized regulations pertaining to the management, regulation, and protection of native animals and plants listed as state threatened or endangered. As outlined in Chapters 67 and 68 of the Texas Parks and Wildlife (TPW) Code and Sections 65.171-65.176 of Title 31 of the Texas Administrative Code (T.A.C), Texas law prohibits the taking, possession, transportation, or sale of any of the animal species designated by the Texas Parks and Wildlife Department (TPWD) as endangered or threatened without issuance of a permit. The State also prohibits commerce in threatened and endangered plants and the collection of listed plant species from public land without a permit issued by TPWD, as detailed in Chapter 88 of the TPW Code and Sections 69.01-69.9 of the T.A.C. Some state-listed species are also protected by federal regulations.

With respect to the federal and state laws and regulations described above, ERP conducted a Protected Species Habitat Assessment for the proposed BT Kahla Data Center. The following is a discussion of the methodology, findings, and implications of ERP’s assessment.

3.0 Methodology

3.1 Site-Specific Habitat Characterization

To adequately evaluate whether protected species may occur onsite, ERP scientists conducted a literature and database review alongside an onsite field assessment to characterize the land cover, land use, and habitats within the project area.

Prior to conducting the field assessment, ERP reviewed literature sources and publicly accessible databases of the project area to assess habitats that may occur onsite. The desktop review was completed through utilization of the following publicly accessible databases:

- U.S. Geological Survey (USGS) Protected Areas of the U.S. (PADUS) Viewer (USGS 2025c);
- USFWS Critical Habitat Viewer (USFWS 2025d);
- 2022 *Round Prairie, Texas* and *Jewett, Texas* 1:24,000 U.S. Geological Survey (USGS) Topographic Quadrangle maps (USGS 2022b; 2022c);
- USGS (2022a) National Map (Figure 1);
- USGS National Land Cover Database (NLCD) (Dewitz and USGS 2021) (Figure 2);
- USGS (2025) 3D National Hydrography Program (3DHP);
- USFWS (2025c) National Wetlands Inventory (NWI);
- Texas Natural Diversity Database (TXNDD) (TPWD 2024a) (Figure 4); and
- Google Earth aerial imagery (Google Earth 2024).

ERP analyzed these resources to assist in the characterization of landcover, land use, and habitat conditions present within the project area prior to the completion of the field assessment.

Subsequent to the literature and database review, ERP completed a pedestrian field assessment to characterize existing habitat features within the project area on December 8-11, 2025. Specific areas detailed by the desktop analysis were targeted to ground-truth aerial interpretations and to confirm the presence or absence of mapped resources. During the field assessment, existing habitats within the project area were classified by vegetation species, soil characteristics, current land uses, topographic conditions, aquatic resources, and habitat quality for listed species.

Where significant habitat resources were identified, ERP recorded representative digital data points using the Juniper Systems® Geode global positioning system (GPS) units capable of sub-meter accuracy and ArcGIS Field Maps™ application paired with Apple iPad® field tablets.

3.2 Species Accounts

ERP obtained protected species account information for Leon County and the project area from the USFWS Information for Planning and Consultation (IPaC) Resource List (USFWS 2025c) (Appendix A) and the TPWD Annotated County List of Rare Species for Leon County (TPWD 2025) (Appendix B). Additionally, ERP reviewed available element occurrence (EO) record data from the Texas Natural Diversity Database (TXNDD) for the project vicinity (TPWD 2025; Figure 4; Appendix D). These sources were used to identify federally and state-listed species with potential to occur within or near the project area and to determine which species should be included in the effects analysis for the proposed Project (Table 1).

4.0 Site-Specific Habitat Characterization

4.1 Literature and Database Review

Based on a review of the USGS PADUS Viewer (USGS 2025c), ERP determined that no protected areas occur within the project area. The nearest protected areas are Lake Limestone Public Access Facilities, including the Limestone County Park #5, located approximately 2.29 miles west of the project area and the BRA Park, located approximately 3.55 miles west of the project area. The next closest PADUS-listed unit is the Dragon Creek Mitigation Bank, located approximately 5.34 miles southwest of the project area. Additional parks including Limestone County Parks #2 and #3, Harriman Park, Fort Boggy State Park, and Booker T. Washington Park occur between five and 20 miles east of the project area.

The 2022 *Round Prairie, TX* and *Jewett, TX* USGS topographic maps depict elevations throughout the project area ranging from approximately 350 feet to 500 feet above mean sea level (AMSL), with an average ground elevation of 398 feet AMSL. Topography within the project area is generally flat to gently rolling with lower elevations of the project area aligning with Birch Creek. A review of the USGS 3D Hydrography Program (3DHP) Flowlines dataset (USGS 2025a) depicts 4.14 miles of channel lines across the project area and 7.23 acres of lakes. The USFWS NWI (2025c) depicts approximately 1.12 acres of freshwater forested/shrub wetlands, approximately 17.4 acres of freshwater emergent wetlands, approximately 34.7 acres of freshwater forested/shrub wetlands, approximately 6.2 acres of ponds, and approximately 5.6 acres of riverine wetlands (Figure 1).

Review of the USGS NLCD (Dewitz and USGS 2021) indicates that the project area consists primarily of hay/pasture landcover (approximately 59.1 percent) and mixed forest (approximately 27.6 percent), with minor coverage of woody wetlands (approximately 8.6 percent) and barren land (approximately 1.4 percent) (Figure 2). These classifications are consistent with Google Earth aerial imagery (2024) and National Agricultural Imagery Program (U.S. Department of Agriculture [USDA] 2020), which depict the project area as predominantly hay/pasture and mixed woodlands (Figure 3).

According to the U.S. Environmental Protection Agency (USEPA 2013), the project area lies within the East Central Texas Plains Level III Ecoregion, Southern Post Oak Savanna Level IV Ecoregion, and within the Texas Claypan Area, Southern Part Major Land Resource Area. As described by the Texas Parks & Wildlife Department (TPWD 2025; Appendix B), the Southern Post Oak Savanna has a naturally park-like structure of tallgrass prairie herbaceous vegetation, like little bluestem (*Schizachyrium scoparium*), Indiangrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*), punctuated by scattered trees, primarily post oak (*Quercus stellata*) and blackjack oak (*Quercus marilandica*), as well as cedar elm (*Ulmus crassifolia*), sugarberry (*Celtis laevigata*), eastern red cedar (*Juniperus virginiana*), and Texas persimmon (*Dispyros texana*).

Annual precipitation for the Southern Post Oak Savanna is estimated to be between 35 and 45 inches, with an average annual precipitation of 39 inches recorded in nearby Jewett, five miles east (U.S. Climate Data 2025).

ERP reviewed EO data from the TXNDD to identify documented occurrences of state or federally protected species and sensitive natural communities within the project area and its vicinity. The TXNDD EO shows

occurrences of the large-fruited sand-verbena (*Abronia macrocarpa*) within the southwestern portion of the project area. Additional element occurrences of the bald eagle, blackspot shiner (*Notropis atrocaudalis*), and Texas sandmint (*Rhododon ciliates*) are documented within two miles of the project area (Figure 4; Appendix D).

4.2 Field Assessment

Following the desktop review, two ERP scientists conducted a field assessment within the project area on December 8-11, 2025. Weather conditions at the time of the field assessment included temperatures of approximately 31-66° F with mostly sunny to partly cloudy skies, winds of approximately zero to 17 miles per hour, and zero precipitation (Weather Underground 2025). Photographs taken during the field assessment are included in Appendix C.

Dominant habitat within the project area consists of undeveloped pastureland. Deciduous hardwoods and occasional evergreens were observed throughout portions of the project area, principally along aquatic features. Several livestock ponds and streams, including a segment of Birch Creek, as well as forested wetlands and herbaceous emergent wetlands are present within the project area.

An electrical transmission line traverses the eastern project area, generally oriented north-south. The surrounding areas vary in their composition and use. To the north, the area is largely undeveloped, featuring forested land, pastureland, and observed drainage features. The eastern side also shares similarities, with open pastureland, undeveloped forested areas, and drainage features marking the landscape. The southern land area is predominantly made up of undeveloped forested land, indicating a continuation of the natural, undeveloped character in that direction. Conversely, the western boundary is defined by FM 1146, beyond which lies a mix of fenced pastureland, forested areas, and includes a rural residential homestead.

Herbaceous vegetation observed within the project area included annual bluegrass (*Poa annua*), arrow-feather three-awn (*Aristida purpurascens*), Texas geranium (*Geranium texanum*), common sheep sorrel (*Rumex acetosella*), common velvet grass (*Holcus lanatus*), crowpoison (*Nothoscordum bivalve*), eastern poison ivy (*Toxicodendron radicans*), pale-seed plantain (*Plantago virginica*), sticky mouse-ear chickweed (*Cerastium glomeratum*), giant goldenrod (*Solidago gigantea*), Texas ragwort (*Senecio ampullaceus*), henbit deadnettle (*Lamium amplexicaule*), mugwort (*Artemisia sp.*), cutleaf evening primrose (*Oenothera laciniata*), woolly croton (*Croton capitatus*), and white clover (*Trifolium repens*). Vine species observed within the project area included fringed greenbrier (*Smilax bona-nox*) and sawbrier (*Smilax glauca*). The mixed woodlands included cedar elm (*Ulmus crassifolia*), common hackberry (*Celtis occidentalis*), common persimmon (*Diospyros virginiana*), eastern redcedar (*Juniperus virginiana*), post oak (*Quercus stellata*), sugarberry (*Celtis laevigata*), and winged elm (*Ulmus alata*).

During the field assessment, ERP observed, by either sight or call, several species of wildlife within the project area, including nine-banded armadillo (*Dasypus novemcinctus*), carpenter ants (*Camponotus spp.*), box turtle (*Terrapene carolina*), and monarch butterflies (Appendix C, Photos 2 & 4). Several unidentified fish species and aquatic invertebrates were observed within Birch Creek. Several small animal dens were observed with unknown occupants. ERP identified several tree snags and multiple trees with sloughing bark in several locations within the project area that would support roosting for bats. While ERP did

observe monarch butterflies during the field assessment, ERP did not identify active raptor nests or federally or state listed threatened or endangered species within the project area during the field assessment.

5.0 Species Accounts

The following are brief descriptions of protected species and their preferred habitats listed within the USFWS IPaC Resource List for the project area (Appendix A) and TPWD Annotated County List of Rare Species for Leon County (Appendix B). Table 1 summarizes each species described below and includes the species' state and/or federal listing, preferred habitat description, whether preferred habitat was observed onsite, and an effects determination for federally listed species under the ESA (Table 1).

5.1 IPaC Federally Listed Species

5.1.1 Tricolored Bat (*Perimyotis subflavus*)

The tricolored bat is a federally proposed endangered mammal species proposed for ESA listing. The USFWS IPaC species list included the tricolored bat within the resource list of species which may appear within the project area. Additionally, TPWD lists this species as having occurrences within Leon County despite not being state protected (Appendix B). The tricolored bat has a wide range including southeastern Canada, most of the eastern and central United States west to Wyoming and New Mexico, and parts of Mexico and Central America south to Nicaragua, where it overwinters.

This bat species prefers forest edge habitats near areas of mixed agriculture where they forage primarily on insects. During the spring, summer, and fall (non-hibernating season), tri-colored bats preferably roost within live and dead leaf clusters of live or recently dead hardwood trees. Although not preferred, tricolored bats are also known to roost among pine needles, eastern red cedar needles, and they may be found within artificial roosts such as barns, underneath porches, roofs, bridges, concrete bunkers, and, rarely, within caves (USFWS 2021b). In the southern and northern portions of the range, tricolored bats will also roost in Spanish moss (*Tillandsia usneoides*) and *Usnea trichodea* lichen, respectively. In the late summer and early fall, tricolored bats swarm at cave and mine entrances and mate prior to hibernation in caves and mines. In the southern U.S., tricolored bats often hibernate in road-associated culverts, tree cavities, and abandoned water wells where caves are sparse. Pups are born in the late spring or early summer in maternity colonies in trees or occasionally barns. Following mating and hibernation season, female tricolored bats exhibit high site fidelity, returning year after year to the same summer roosting locations (USFWS 2021b).

The TXNDD revealed multiple confirmed specific records of proposed federally endangered tricolored bat occurring within a two-mile radius of the project area (Appendix B and Appendix D). Furthermore, TXNDD identified four bat roosts within a two-mile radius of the project area. Within two of the four bat roosts, both box cement culverts, observations of tricolored bats were recorded in 2016 and 2017. In December 2016, 1,131 tricolored bats were observed in a culvert winter roost. In September 2017, six tricolored bats were observed in the same culvert winter roost, and in December 2017, a total of 741 tricolored bats were observed at the same culvert winter roost. When reviewing publicly available data, the closest observation of the tricolored bat occurred approximately 3.50 miles southeast of the project area within a manmade structure in June 2021 (iNaturalist 2025). Tricolored bats have the potential to utilize post oak Savannah vegetation communities for summer roosting where adjacent riparian foraging resources are available.

Due to the listed occurrences within range of the project area and observation of supporting habitat onsite, the tricolored bat has the potential to occur onsite for winter roosting in large culverts and summer roosting in hardwood trees with sloughing bark or evergreen trees (Appendix C, Photo 20). Although this species is currently proposed for listing under the ESA, if it is listed in the future, the Project May Affect the tricolored bat.

5.1.2 Piping Plover (*Charadrius melodus*)

The piping plover is a federally threatened and endangered species with its Atlantic coast and Northern great plains populations listed as threatened while the bird's Great lakes population is listed as endangered. The bird is also a Texas state threatened bird species and is known to migrate route through Leon County. The piping plover migrates between its breeding range in the Great Plains, Great Lakes, and Atlantic Coast, and its wintering range along the Gulf of Mexico and southern Atlantic Coast of the U.S. Within the Great Plains, its breeding habitat consists of wide, sparsely vegetated sand or gravel beaches adjacent to vast alkali lakes and wetlands, as well as sparsely vegetated shores along inland lakes, reservoirs, and rivers. Interior stopover records are predominantly at mudflats, reservoirs, and other isolated habitats that tend to attract migrating shorebirds. Pastures or rangelands of mid- to short-grass prairie adjacent to breeding areas are used for cover. On rivers, piping plovers utilize beaches, sand flats, dredge islands, and drained river floodplains. Approximately 35 percent of the bird's population is known to winter in Texas from late July and mainly return to mid-May when they return to their breeding grounds (TPWD 2020). Within Texas, the piping plover winters along the Gulf Coast beaches and barrier islands at preferred wintering habitats including coastal and intertidal habitats including sandy mudflats, ephemeral pools, seasonally emergent seagrass beds, mud/sand flats with scattered oysters, and overwash fans (USFWS 2024d). The USFWS stated that final critical habitat exists for this species, but that the project area does not overlap the final critical habitat (Appendix A). Critical habitat for the piping plover exists in segmented habitats along the Gulf of Mexico from Texas to Florida, the Atlantic Coast from Florida to North Carolina, and within the Missouri River Valley of the Great Plains ranging from Nebraska to eastern Montana (USFWS 2024d).

The TXNDD did not reveal records of the piping plover occurring within the project area or an additional two-mile radius (Figure 4). The nearest record of publicly available data revealed the closest sighting of the piping plover occurred approximately 42 miles south of the project area within Lake Bryan near Bryan, Texas (eBird 2025). The project area does not coincide with the breeding range nor the wintering range of this species. In Texas, the wintering range for the piping plover occurs along the shoreline of the Gulf of Mexico (Cornell University 2025). The potential for the piping plover to utilize the project area is unlikely as potential occurrences onsite would only take place during their migration, and this species is more likely to utilize more suitable stopover habitat near Lake Limestone located approximately 2.5 miles west of the project area. Additionally, the USFWS indicated that presence of the piping plover only needs to be considered during an effects analysis regarding wind energy development (Appendix A). Therefore, it's anticipated the Project would have No Effect on the piping plover.

5.1.3 Rufa Red Knot (*Calidris canutus rufa*)

The rufa red knot is a federally threatened bird and subspecies of the red knot (*Calidris canutus*). The rufa red knot breeding range extends into the tundra of the central Canadian Arctic and typically lies between northern Hudson Bay to the southern Queen Elizabeth Islands. Wintering in South America, the rufa red knot migrates approximately 9,300 miles each year. Along its migratory pathway between their wintering and breeding grounds, the rufa red knot typically stopovers in Argentina, Chile, the gulf coast, Georgia, South Carolina, Virginia, and New Jersey. Within these stopover habitats, data suggests that the rufa red knot prefers saline inundated or coastal habitats such as meadows and lakeshores, sandy beaches, saltmarshes, lagoons, mudflats of estuaries and bays, and mangrove swamps (Cornell University 2025). Currently, little data exists on the use of freshwater habitats; however, some suggest that the rufa red knot might utilize these habitats during migration (USFWS 2023f).

The TXNDD did not reveal records of the rufa red knot occurring within the project area or an additional two-mile radius (Figure 4). The USFWS stated that critical habitat has been proposed for this species (Appendix A), and the project area does not overlap the proposed habitat (USFWS 2023a). Due to the sensitivity of this species, publicly available data for the subspecies rufa red knot is not available, however, data for the red knot is available to the public. Review of publicly available data revealed the nearest sighting of the red knot occurred approximately 45 miles north-northeast of the project area near Richland-Chambers reservoir (eBird 2025). The rufa red knot and suitable habitat for the species were not observed onsite. The USFWS indicated that presence of the rufa red knot only needs to be considered during an effects analysis regarding wind energy development (Appendix A). Therefore, it's anticipated the Project would have No Effect on the rufa red knot.

5.1.4 Houston Toad (*Bufo houstonensis*)

The Houston toad is a federal and state-listed endangered amphibian species which IPaC resource listed as potentially occurring within the project area. Additionally, TPWD lists this species as having occurrences within Leon County (Appendix B). This species is endemic to Texas and is considered terrestrial and aquatic. This species utilizes terrestrial habitat that consists of dense pine or oak woodlands containing herbaceous understories which are underlain by deep sandy soils combined with the presence of moist soil and water features. Breeding habitat ranges from small ephemeral pools of water to permanent water bodies (USFWS 2021a). After the tadpole phase of their life cycle, the toad remains within a three to five proximity of the pond for approximately 3 weeks. During this period, the Houston toad is especially vulnerable to red-imported fire ants (*Solenopsis invicta*), a known large threat to the Houston toad population (USFWS 2017). Preferred habitat for the Houston toad correlates with a narrow band of geologic formations in southcentral Texas. According to the USFWS, current Houston toad population primarily occurs along geologic formations dominated by sandy soils: the Carrizo, Queen City, Reklaw, Sparta, Weches, Willis, and Goliad Formations (USFWS 2020b).

The TXNDD did not reveal records of the Houston toad occurring within the project area or an additional two-mile radius (Figure 4). The USFWS stated that critical habitat has been proposed for this species (Appendix A), and the project area does not overlap the proposed habitat (USFWS 2023a). Review of

publicly available data revealed the nearest sighting of the Houston toad occurred approximately 17.5 miles south of the project area in Hilltop lakes, Texas, near Lake Tonkawa (iNaturalist 2025).

The project area is primarily comprised of geology consisting of Carrizo and Reklaw Formation, which the Houston toad population prefers. Furthermore, ERP observed post oak savanna, wetland complexes and ponds that could provide breeding habitat (Appendix C, Photos 15, 16, 17, 18, and 19). Presence of this species in the project area is possible since its range coincides with the project area and due to the suitable habitat features that were observed onsite. Therefore, this species has the potential to occur onsite and the Project May Effect the Houston toad.

5.1.5 Monarch Butterfly (*Danaus plexippus*)

The monarch butterfly is a federally proposed threatened species under the ESA effective December 12, 2024 (USFWS 2024b). The proposed rule does not immediately list this species under ESA protections. After the public comment period ended on March 12, 2025, the USFWS has approximately 12 months to publish a final rule listing the monarch butterfly as threatened, with the final rule taking effect within 60 to 90 days of the publish date. With the proposed rule, the USFWS is considering a 4(d) rule and critical habitat (USFWS 2024b). The purpose of the 4(d) rule for the monarch butterfly is to incentivize proactive conservation efforts and allow actions which will be beneficial or have minimal impacts and not threaten the species' overall populations, with a list of activity prohibitions and exceptions (USFWS 2024b).

The monarch butterfly is a large butterfly with characteristic orange and black markings. In North America, the species is divided into an eastern and western migratory population. Both populations conduct a multi-generational annual migration, with the spring migration representing a massive annual range expansion as they leave their overwintering sites and disperse across the country. Some non-migratory individuals remain year-round in the southern portions of North America including Florida, the Gulf Coast, southern Atlantic Coast, and southern Pacific Coast (USFWS 2024b).

Monarch butterfly breeding and migratory habitat covers much of the contiguous United States (USFWS 2024b). Adult monarch butterflies require habitat with a diversity of blooming nectar resources for breeding and migration, including early blooming milkweeds (*Asclepias spp*.), tickseed (*Coreopsis* spp.), *Viburnum* spp., and *Phlox* spp. Important nectar sources during fall migration through the U.S. include goldenrods (*Solidago* spp.), asters (*Symphyotrichum* spp. and *Eurybia* spp.), gayfeathers (*Liatris* spp.), frostweed (*Verbesina virginica*), willow (*Salix* spp.), and thistle (*Cirsium* spp.). Cultivated crops such as alfalfa (*Medicago sativa L*.), clover (*Trifolium*), and sunflower (*Helianthus*) also serve as important nectar sources (Xerces 2024). For egg laying and larval stages, habitats with sufficient milkweed (*Asclepias spp*.) are required, which serve as this butterfly's larval host plant in North America (Xerces 2024).

The TXNDD did not reveal records of the monarch butterfly occurring within the project area or an additional two-mile radius (Figure 4). The USFWS stated that proposed critical habitat exists for this species, but that the project area does not overlap the proposed critical habitat (Appendix A). Proposed critical habitat is under consideration at overwintering sites for the species' western population in coastal California (4,395 aces) in seven counties (USFWS 2024b). Review of publicly available data revealed the nearest sighting of the monarch butterfly occurred approximately 2.4 miles west of the project area near Lake Limestone (iNaturalist 2025).

ERP scientists observed monarch butterflies during the December 2025 site visit. Multiple nectar sources were observed during the field assessment, which may be used by the monarch butterfly during their fall migration. Therefore, this species is likely to occur within the project area. If the monarch butterfly is federally listed as threatened or endangered in the future, it is anticipated the Project May Affect the monarch butterfly.

5.1.6 Texas Fawnsfoot (*Truncilla macrodon*)

The Texas fawnsfoot is a federally proposed threatened and state listed threatened mussel species that occurs within Leon County. The Texas fawnsfoot is currently endemic to the Brazos, Colorado, and Trinity River Basins of central Texas and appears to prefer medium to large rivers for breeding and foraging habitat. The Texas fawnsfoot is reported to prefer bank habitats, however, occasional occurrences have been noted in backwater, riffle, and point bar habitats (USFWS 2024e). Living specimens have not been documented within reservoirs, and it appears to be intolerant of impoundments. The Texas fawnsfoot has been observed within sand, gravel, and sandy mud substrates of moderately flowing rivers (USFWS 2024e). Critical habitat has been finalized within portions of the Brazos River, Clear Rork, and Llano River, all of which do not appear to overlap with the project area (USFWS 2024a).

The TXNDD did not reveal records of the Texas fawnsfoot occurring within the project area or an additional two-mile radius (Figure 4). The USFWS stated that critical habitat has been proposed for this species (Appendix A), and the project area does not overlap the proposed habitat (USFWS 2024e). Review of publicly available data revealed the nearest sighting of the mollusk occurred approximately 32.5 miles east-southeast of the project area near the Brazos River (iNaturalist 2025).

Birch Creek located within the project area was observed to be a medium-sized stream with a sandy mud substrate that could potentially support the Texas fawnsfoot. If the Texas fawnsfoot is federally listed as threatened or endangered in the future, it is anticipated that if project-related development activities result in impacts to Birch Creek, then the Project May Affect the Texas fawnsfoot.

5.1.7 Large-fruited Sand-verbena (*Abronia macrocarpa*)

The large-fruited sand-verbena is a federal and state endangered plant species that is known to occur within Leon County. Within its geographic range, the large-fruited sand verbena is limited to open sandy soil regions directly associated with deep sand deposits (Sparta and Queens City geologic formations) in open post oak woods/forest (Poole 2007). This small perennial herb blooms from late spring through early summer and can be identified by the sticky hairs on their leaves and the twenty to seventy-five pinkish to purple, funnel-shaped flowers that cluster together. During the hotter drier months of the year, vegetative growth associated with the plant may die off, which makes its presence/absence difficult to determine (TPWD 2023c).

The TXNDD has four records of the large-fruited sand-verbena occurring within the project area and within a two-mile radius of the project area (Figure 4). Review of publicly available datasets identified an occurrence of the large-fruited sand-verbena approximately 1.38 miles east-northeast of the project area on the edge of a developed area in April 2015 (iNaturalist 2025). The project area overlies Carrizo sandy soils and contains post oak savanna vegetative communities that are consistent with the preferred habitat

of the large-fruited sand-verbena. Furthermore, there are confirmed TXNDD element of occurrences of this species occurring within the project area and within a two-mile radius of the project area. Therefore, the Project May Effect the large-fruited sand-verbena.

5.1.8 Navasota Ladies-tresses (*Spiranthes parksii*)

The Navasota ladies'-tresses is a federal and state endangered species that is known to occur within Leon County. Like the large-fruited sand-verbena, the Navasota ladies'-tresses grows within openings of post oak woodlands in sandy loam soils. This flowering perennial is tall and can erect up to 33 centimeters high. This plant can be identified by the single row of creamy white flowers that spiral up the floral stalk (USFWS 2022c).

The TXNDD confirmed TXNDD element of occurrences of the Navasota ladies'-tresses occurring within the project area and within a two-mile radius of the project area (Figure 4). The project area overlies sandy/sandy loam soils and contains post oak savanna vegetative communities with ephemeral wetlands that are consistent with the preferred habitat of the Navasota ladies'-tresses (Appendix C). Therefore, the Project is anticipated to May Effect the Navasota ladies'-tresses.

5.2 State-listed Species

The Texas legislature has authorized regulations pertaining to the management, regulation, and protection of native animals and plants listed as state threatened or endangered (Texas Parks and Wildlife Code, Chapter 68). Texas state law prohibits the taking, possession, transportation, or sale of any animal species designated by the TPWD as endangered or threatened without the issuance of a permit. The TPWD maintains a list of state threatened and endangered species for the state of Texas, organized by county. Species identified within Leon County as state threatened or endangered are detailed in the sections below (Appendix B). There are 21 species identified within Leon County as state threatened or endangered. Of these, three are also listed in the USFWS IPaC Resources List, including the piping plover, rufa red knot, Texas fawnsfoot, large-fruited sand-verbena, Navasota ladies'-tresses, and the Houston toad described in Section 5.1. The remaining nine species are detailed below. Refer to Appendix B for more information on the species listing.

5.2.1 Red-cockaded woodpecker (*Dryobates borealis*)

The red-cockaded woodpecker is a federally listed threatened and state listed endangered avian species known to occur within Leon County. However, the red-cockaded woodpecker was not identified as a federally listed threatened species by the USFWS IPaC Resource List for the project area. Typically, when a species is included on the TPWD county list but omitted from the USFWS IPaC Resource List, it suggests known occurrences or historical presence of that species within the broader county area rather than within the project area or immediate vicinity. Because the IPaC database is maintained by USFWS and is specific to the project area, the IPaC data is generally considered more accurate for determining the likelihood of occurrence of federally listed species within the project area or immediate vicinity. As such, the red-cockaded woodpecker is discussed as a state listed endangered species in this report.

This species was downlisted from federally endangered to federally threatened in October 2024. Furthermore, the USFWS includes a statement accepting the reclassification of the red-cockaded

woodpecker from *Picoides borealis* to *Dryobates borealis* in accordance with currently accepted nomenclature (USFWS 2024f). The red-cockaded woodpecker is a non-migratory, territorial resident of fire-dependent, mature southern pine forests of the southeastern U.S., including eastern Texas. This species primarily occurs within open pine woodlands and savannas which are actively managed by use of prescribed burning to reduce and control understory and midstory hardwood encroachment (USFWS 2022a).

The red-cockaded woodpecker prefers to nest and roost in cavities excavated from living longleaf pine; however, this species may also use loblolly pine, shortleaf pine (*P. echinata*), slash pine (*P. elliottii*), pond pine (*P. serotina*), pitch pine (*P. rigida*), and bald cypress (*Taxodium distichum*) for foraging habitat. Large, mature growth trees are required for building nests within the heartwood due to the larger diameter of tree heartwood. Selected cavity trees are generally at least 65-80 years old, depending on tree and site factors, and typically much older (ODWC 2023). The red-cockaded woodpecker is a primary cavity nester, meaning they are responsible for the construction of cavities that many other species may benefit from. This species can excavate cavities into undecayed heartwood, but most cavity trees are infected with red heart fungus (*Porodaelalea pini*, formerly *Phellinus pini*) which causes heartwood to become soft, brittle, and easier to excavate (Hooper et al. 1991). Cavity trees, with rare exceptions, are found in open stands with little to no hardwood midstory and few to no overstory hardwoods (USFWS 2022a).

The TXNDD did not identify occurrences of the red-cockaded woodpecker within the project area (Figure $). The publicly available data identified the closest sighting of the red-cockaded woodpecker occurred approximately 43.8 miles southeast of the project area in March 2016 (eBird 2025). Most of the project area was observed to be a hardwood forest, with oak, elm, and birch tree species (Appendix C, Photos 5, 11, and 12). Furthermore, the project area contains pasture and hay land use, which does not provide foraging or nesting habitat for this species. These observances are not consistent with the mature pine, grassy understory habitat preferred by this species. Due to a lack of suitable habitat and the absence of localized observations, the likelihood of RCW occurrence within the project area is anticipated to be none.

5.2.2 Whooping Crane (*Grus americana*)

The whooping crane is a state endangered species that occurs in Leon County and is also identified as a federally endangered species by TPWD. However, the whooping crane was not identified as a federally listed endangered species by the USFWS IPaC Resource List for the project area. Typically, when a species is included on the TPWD county list but omitted from the USFWS IPaC Resource List, it suggests known occurrences or historical presence of that species within the broader county area rather than within the project area or immediate vicinity. Because the IPaC database is maintained by USFWS and is specific to the project area, the IPaC data is generally considered more accurate for determining the likelihood of occurrence of federally listed species within the project area or immediate vicinity. As such, the whooping crane is discussed as a state listed threatened species in this report.

Whooping crane nesting occurs in the Wood Buffalo National Park and adjacent areas in Canada; wintering occurs in the coastal marshes in Aransas National Wildlife Refuge along the Gulf Coast of Texas (USFWS 2023b). The Site is located outside of the whooping crane migration corridor (Pearse et al. 2018). Review of the Audubon Society's Bird Migration Explorer identifies tracked whooping cranes migrating

approximately 80 miles west of the project area over the vicinity of Waco (Smith et al. 2022). Primary whooping crane migration stopover habitat includes palustrine or lacustrine wetlands with permanent, artificially flooded, intermittently exposed, and semi-permanently flooded water regimes (Johns et al. 1997; Armbruster 1990). Wetlands which contain shallow water depths are generally considered more favorable. Man-made livestock ponds with steep embankments which generally contain deep surface waters throughout the year do not provide suitable habitats (Stahlecker 1997). In addition, whooping cranes generally prefer large wetlands (>2.5 acres) which provide greater distance from onshore disturbances or visual obstructions (Armbruster 1990).

The TXNDD did not identify occurrence records of the whooping crane within the project area or an additional two-mile radius (Appendix B). The publicly available data identified the closest sighting of the whooping crane occurred approximately 32.8 miles southwest of the project area in December 2013 (eBird 2025). During the field assessment, ERP identified a palustrine emergent wetland within the project area; however, the identified wetland is less than one acre in extent, which would not provide adequate stopover habitat for migrating whooping cranes. Due to a lack of suitable migration stopover or foraging habitat within the project area and an absence of localized observations, the whooping crane is unlikely to occur within the project area.

5.2.3 Interior Least Tern (*Sternula antillarum athalassos*)

The state endangered interior least tern is listed by TPWD but no longer listed by the USFWS as of 2021 (86 FR 2564; TPWD 2025, USFWS 2021e). This subspecies is an interior population of the least tern, as opposed to the coastal populations, which also breed along the extent of the Texas Gulf Coast, as well as the Gulf and Atlantic Coasts north to southern Maine, and the Pacific Coast north to San Francisco Bay. The interior subspecies breeds along rivers from the Rio Grande north to the upper Missouri in eastern Montana, and east along the Mississippi tributaries to the Ohio River in Indiana and south to New Orleans. The interior least tern can be found along sand and gravel bars of river channels, nesting on bare ground with gravel or sandy substrates in open areas away from trees. In Texas, they occupy appropriate breeding habitat on the Canadian, Red, and Rio Grande Rivers, and sparingly on the Brazos and Trinity Rivers. Where appropriate, they may also be found at reservoirs, sand and gravel mines, coal mines, and industrial sites near bodies of water, where they feed on small fish. These sites may be visited for foraging if they are located adjacent to suitable nesting habitat or as migratory stopovers between the breeding grounds and wintering areas off the coast of South America. Arrival in North America begins in March and breeding commences in southern areas by late April. By July and August, the southbound migration is underway, predominantly along river systems although records from Central Texas also indicate “overland” migration (TPWD 2023b; Thompson et al. 2020).

The TXNDD did not reveal records of the interior least tern occurring within the project area or a two-mile radius (Figure 4). A review of publicly available data reveals the nearest sighting of the interior least tern occurred approximately 3.7 miles west of the project area near Lake Limestone at Sterling Robertson Park (eBird 2025). The streams onsite lack the sandbars and channels where this species is commonly observed, as well as open waters where the least tern can feed on small fish. Therefore, it is unlikely that this species will occur onsite.

5.2.4 Bachman's sparrow (*Peucaea aestivalis*)

The Bachman's sparrow is a Texas state-listed threatened avian species which occurs year-round within the state of Texas. As of October 2025, the Bachman's sparrow is listed as endangered in the states of Missouri and Tennessee and threatened in the states of Texas and Virginia. Currently, in Texas, the Bachman's sparrow is primarily observed east of the Trinity River where they generally prefer open piney woodlands. The sparrow is an omnivorous ground forager, and they primarily sustain themselves off grass seeds and insects (Cornell University 2025). As ground foragers, the sparrow requires dense ground vegetation with a relatively open midstory. Due to this, the species requires a relatively frequent disturbance regime to maintain dense ground coverage with little shrub coverage. Some research suggests that the sparrow's preferred habitat are clear cut pine plantations with scattered areas of regrowth (Meyer 2006). Furthermore, the Bachman's sparrow relies on the historical fire regime of burning every three to five years as research indicates prescribed burning every three years increases the number of Bachman's sparrows. Due to a similar reliance on historical native pine disturbance regimes, research has shown conservation efforts towards the federally threatened red-cockaded woodpecker additionally aids the conservation efforts of the Bachman's sparrow (USFWS 2014a).

The TXNDD did not reveal records of the Bachman's sparrow occurring within the project area or an additional two-mile radius (Figure 4). A review of publicly available avian observations depicts the closest Bachman's sparrow sighting located approximately 5.3 miles northeast of the project area in May 1979 (eBird 2025). The project area was observed to consist of oak savanna and mixed hardwood forest with woody wetlands and riparian corridors. Although the project area provides marginal suitable habitat characteristics, due to a lack of recent observation data for the species in the immediate vicinity and the Project's location on the outer periphery of the species' observed occurrence records, suggests that the likelihood of Bachman's sparrow occurrence within the project area to be unlikely.

5.2.5 Swallow-tailed kite (*Elanoides forficatus*)

The swallow-tailed kite is a state-listed threatened bird species in Texas with an observed presence in Leon County (TPWD 2025). This bird species prefers swampy, lowland forested areas that can range into open woodland, as well as marshes located along rivers, lakes and ponds. Nesting occurs in the canopies of tall trees within clearings or located along forest edges, particularly in pine, cypress or deciduous trees (TPWD 2025). Breeding habitat in Texas occurs in bottomland forests with nearby open areas, freshwater marshes skirting large lakes, and pine glades adjoining cypress swamps. Most breeding activity in Texas currently occurs along the lower Trinity, lower Neches, and lower Sabine rivers (Tweit 2009). However, historically the swallow-tailed kite also nested further north and west into central Texas, as well as up the Mississippi Valley as far north as Minnesota, and up the Atlantic Coastal Plain to North Carolina including all of peninsular Florida. Today the species is restricted as a breeder to the Gulf and Atlantic Coastal Plains, with the interior breeding population considered extirpated. Other breeding populations also exist in Central and South America. The North American population of swallow-tailed kites returns to breeding grounds in the U.S. in February and March. Breeding season commences in March, with both sexes building a nest in a tall tree, often a pine (*Pinus sp*.) or cypress (*Taxodium sp*.) in appropriate habitat. Nesting materials include small sticks and epiphytes such as Spanish moss (*Tillandsia usneoides*). By the

end of June most of the young have fledged and during the month of July swallow-tailed kites begin congregating in large communal roosts in preparation for the southbound migration (Meyer 2020).

The TXNDD did not reveal records of the swallow-tailed kite occurring within the project area or an additional two-mile radius (Figure 4). A review of publicly available avian observations depicts the closest swallow-tailed kite sighting located approximately 13.4 miles east of the project area in August 2024 (eBird 2025). Although the project area contains the swampy, lowland forested areas preferred by this species, Swallow-tailed kites also require large continuous forested landscapes for nesting. Most of the project area consists of pastureland and grassland with sporadic post oak woodlands. No pine or cypress trees were observed within the project area. The open fields and wetlands may be used for aerial foraging during migration, but this use would be transient. Therefore, the swallow-tailed kite is not anticipated to occur within the project area.

5.2.6 White-faced Ibis (*Plegadis chihi*)

The white-faced ibis is a state listed threatened avian species which occurs year-round along the Texas Gulf Coast and uncommonly breeds throughout Texas. The white-faced ibis inhabits primarily freshwater emergent vegetation wetlands, especially within cattail (*Typha spp*.) and bulrush (*Scirpus spp*.) marshes. Foraging habitats include flooded hay fields, cultivated crop fields, shallow roadside ditches, and palustrine and estuarine wetlands. The white-faced ibis nests within colonies primarily on islands along the central and upper Gulf Coast; however, individuals may occasionally build their nests within inland marshes and swamps. Nests are usually placed within herbaceous emergent vegetation, shrubs, or low trees with canopies over shallow water. Breeding occurs from early April to late July (Telfair 2007a).

The TXNDD did not reveal records of the white-faced ibis occurring within the project area or an additional two-mile radius (Figure 4). A review of publicly available data reveals the nearest sighting of the white-faced ibis occurred approximately 3.7 miles west of the project area near Lake Limestone at Sterling Robertson Park (eBird 2025). Nesting habitat for this species does not exist onsite. Preferred foraging habitat used by the white-faced ibis was observed onsite (i.e., aquatic resources and proximity of aquatic resources). Therefore, this species has the potential to occur onsite for foraging purposes.

5.2.7 Wood stork (*Mycteria americana*)

The wood stork is a state listed threatened avian species which occurs throughout the southeastern U.S. and Texas during the late summer season and early fall. Wood storks are primarily observed within eastern Texas; however, wood storks may migrate throughout the central and upper coastline. Observations of seasonal occurrences of the wood stork concluded this species is observed late May to mid-October in the eastern portions of Texas. Wood storks primarily use shallow freshwater and estuarine wetlands for foraging habitat, but may also use dry marshes, livestock ponds, shallow roadside or agricultural ditches, narrow tidal creeks, or shallow tidal pools for foraging small fish or other aquatic species. Specifically, wood storks primarily feed on small fish where water is between two and 15 inches deep. Good foraging conditions usually occur where surface waters are relatively calm and uncluttered by dense vegetation (Ogden n.d.) According to Ogden, wood storks are sensitive to manipulation of wetland habitats which could result in either reduced amounts or changes in timing of prey availability (Ogden n.d.; Cornell University 2025). Wood stork nesting occurs within colony swamps or on islands surrounded by large

expanses of open waterbodies. Nests are primarily constructed in red mangroves (*Rhizophora mangle*), bald cypress (*Taxodium distichum*), and willow tree (*Salix* spp.) species among nesting rookery colonies; however, nesting by wood storks in Texas has not been reported since 1960 (Telfair 2007b). Roosting habitat typically includes habitats like nesting habitats. Frequently used roosting locations are bald cypress swamps, mangrove islands, expansive willow islands in large marshes (Ogden n.d.).

The TXNDD did not reveal records of the wood stork occurring within the project area or an additional two-mile radius (Figure 4). A review of publicly available data reveals the nearest sighting of the wood stork occurred approximately 5.8 miles east-southeast of the project area in July 2014 (eBird 2025). ERP did not identify shallow freshwater or estuarine wetlands with adequate populations of fish or aquatic species used for foraging habitat located within the project area. Due to a lack of suitable foraging habitat and an absence of localized observations, the wood stork is unlikely to occur within the project area.

5.2.8 Black Rail (*Laterallus jamaicensis*)

The black rail is a state-listed threatened avian species, which was also identified as a federally listed threatened species by the TPWD. The black rail is not identified on the USFWS IPaC Resource List for the project area. However, the USFWS lists the eastern black rail (*Laterallus jamaicensis jamaicensis*) as a federally threatened species, which is a subspecies of the black rail.

The black rail is a year-round resident of the Texas upper and central Gulf Coast areas and may breed locally on the lower coast (Butler et al. 2015). Habitats typically used by the black rail include marshes, wet meadows, riparian corridors, coastal prairies, salt marshes, and impounded wetlands. Shallow standing waters, usually one to two inches deep, appear to be the preferred primary habitat for the black rail. Near Gulf coastal habitats, black rails typically nest in higher elevation areas of tidal marshes. Key plant species typically found near black rail nests include sand cordgrass (*Spartina bakeri*), chairmaker's bulrush (*Schoenoplectus americanus*), saltgrass (*Distichlis spicata*), lamp rush (*Juncus effusus*), and pickleweed (*Salicornia spp.*); however, plant structure is considered more important for black rail habitat than species composition in predicting habitat suitability (USFWS 2018b). Migrating black rails select habits which are like nesting habitats but may also use flooded rice fields for stopover and foraging habitat (Cornell University 2025). Black rail residency habitats on the Texas Gulf Coast include intermediate-brackish marsh cover and open water cover. Dense cordgrass (Spartina spp.) appears to be the most-preferred herbaceous cover for the black rail (Tolliver et al. 2018).

The TXNDD did not reveal records of the black rail occurring within the project area or an additional two-mile radius (Figure 4). A review of publicly available occurrence data was limited due to species sensitivity; exact recorded locations of the black rail are hidden from public view. ERP identified palustrine emergent wetlands in various locations within the stream system across the project area; however, the wetlands observed onsite lacked the typical tall herbaceous species used by black rails for nesting, foraging, or migration habitat. Furthermore, the undeveloped pastureland and cropland habitat adjacent to the emergent wetlands are frequently disturbed due to agricultural activities and cattle grazing. Due to a lack of suitable habitat and the absence of localized observations, the likelihood of black rail occurrence within the project area is anticipated to be none.

5.2.9 Yellow-billed Cuckoo (*Coccyzus americanus*)

The yellow-billed cuckoo is a federally threatened species. This species is not state protected and while not listed in the USFWS IPaC Resource List for the project area, this species was listed by TWPD as a federally threatened species known to occur within Leon County (Appendix B). Currently, the western population of this species is considered federally threatened. The range of the western yellow-billed cuckoo includes the area west of the Continental Divide, south into Montana, Wyoming, Colorado, and along the watershed divide between upper and middle Rio Grande and Pecos Rivers in New Mexico and Texas, south to Big Bend in southwestern Texas, and extending to the west coast (USFWS 2024c).

This species uses wooded habitat with dense overgrowth and water nearby, including woodlands with low, scrubby vegetation, overgrown orchards, abandoned farmland and dense thickets along streams and marshes. In the central and eastern portions of the United States, yellow-billed cuckoos nest in oaks, beech, hawthorn, and ash. The main contributor to the yellow-billed cuckoos' diet is caterpillars. Additionally, this species will also consume fall webworms, larvae, beetles, ants, spiders, cicadas, katydids, crickets, berries, grapes, and seeds (USFWS 2024c).

The TXNDD did not reveal records of the yellow-billed cuckoo occurring within the project area or an additional two-mile radius (Figure 4). Although woodland habitat and dense understory conditions that could support yellow-billed cuckoo is present within the project area, the populations of regulatory concern in Texas are restricted to the western distinct population segment which breeds in the riparian areas of the Trans-Pecos region (Appendix B). This western population is documented only from Texas counties of Brewster, Culberson, El Paso, Hudspeth, Jeff Davis, and Presidio. Because the project area is located outside this region the occurrence of the western distinct population segment is unlikely and any potential observations in the vicinity are presumed to represent the eastern population which is not listed. Therefore, the western population of yellow-billed cuckoo is unlikely to occur within the project area.

5.2.10 Alligator snapping turtle (*Macrochelys temminckii*)

The alligator snapping turtle is a federally proposed threatened and state listed threatened reptile species. As published in 86 FR 62434 dated November 2021, the USFWS found listing the alligator snapping turtle as threatened or endangered under the federal ESA is warranted; however, it remains a federally proposed threatened species as of May 2025 (USFWS 2021c). While not currently listed as threatened or endangered under the ESA, the alligator snapping turtle has been identified by the USFWS as likely to become listed within the near future throughout all or a significant portion of its range, and the USFWS has proposed a draft to list it as threatened. The alligator snapping turtle is currently not protected by the take prohibitions defined in Section 9, consistent with any protective regulations finalized under Section 4(d) of the ESA, until the rule to list the alligator snapping turtle is finalized.

The alligator snapping turtle occurs throughout the southeastern and midwestern U.S. Its range extends along the Gulf Coast from eastern Texas east to southwestern Georgia and the Florida panhandle (Boundy & Kennedy 2006). The alligator snapping turtle's habitat consists of slowly flowing, deep waters of rivers, sloughs, oxbows, canals, or lakes associated with rivers such as impoundments and reservoirs. It may also inhabit swamps, bayous, ponds near rivers, and shallow tributary mouths to rivers, including upland streams. The alligator snapping turtle usually occurs in waters with mud substrates and aquatic

vegetation, or in streams under or within logjams, beneath undercut banks, under rock shelters, or in deep holes. The nesting habitat for the alligator snapping turtle includes sand mounds along riverbanks and sand bars within stream banks (USFWS 2021d).

The TXNDD identified no recorded observations of alligator snapping turtles within the Project vicinity. According to publicly available datasets, the most recent and nearest observation of the alligator snapping turtle was approximately 32.3 miles northeast of the project area in pine woodland adjacent to Buffalo Creek in June 2013 (iNaturalist 2025). The project area does not contain deep waters of rivers, sloughs, oxbows, canals, or lakes associated with rivers such as impoundments and reservoirs. Therefore, this species is unlikely to occur within the project area.

5.2.11 Texas Horned Lizard (*Phrynosoma cornutum*)

The Texas horned lizard is a state-listed threatened reptile species that occurs within Leon County. Historically, this species occurred throughout most of Texas; however, more recent studies show it currently occurs primarily within the High Plains, Trans-Pecos, south-central, and south Texas regions. The Texas horned lizard prefers arid to semi-arid environments with open habitat consisting of sparse vegetation including grass, cactus, scattered brush, and scrub/shrub woody vegetation (TPWD 2025). The Texas horned lizards prefer sandy to rocky soil textures for burrowing into the soil or underneath rocks. The Texas horned lizard primarily feeds on the red harvester ant but is also known to subsist on other small insects (Walker 2018). According to a study conducted by TPWD, the Texas horned lizard prefers the High Plains, Trans-Pecos, Rolling Plains, and South Texas regions of Texas (TPWD 2008).

The TXNDD did not reveal records of the Texas horned lizard occurring within the project area or an additional two-mile radius (Figure 4). A review of publicly available occurrence data revealed a sighting of the Texas horned lizard at a location within shrub-scrub approximately 64.9 miles southwest of the project area in August 2011 (iNaturalist 2025). ERP observed red harvester ants within the project area (Appendix C, Photo 13). While fine sand and sandy soils were prevalent within the project area, some loamy sands were also present. The presence of open grassland habitat with patches of brush and small trees, and the presence of a preferred food source for the Texas horned lizard, this species has the potential to occur onsite.

5.2.12 Trinity Pigtoe (*Fusconaia chunii*)

The Trinity pigtoe is a state listed threatened mussel species which is regionally endemic to the Trinity River basin. This mussel species is found within a variety of habitats, but most commonly found in riffles. It inhabits streams with various substrates, but usually occurs over substrates of sand, gravel and cobble. Studies have concluded the Trinity pigtoe inhabits medium- to large-sized rivers with slow to moderately flowing currents (Randklev et al. 2013).

The TXNDD did not identify occurrences of the Trinity pigtoe within the Project two-mile radius (Figure 4). Review of the publicly available datasets depict the closest occurrence of the Trinity pigtoe approximately 27.3 miles southeast of the project area in October 2010 (iNaturalist 2025). This species has a restricted distribution, occurring in the mainstem of the Trinity River near Dallas-Fort Worth to just above Lake Livingston and adjacent tributaries including the Clear, East, Elm and West forks (NatureServe Explorer

2025). The Trinity River comprises the eastern boundary of Leon County, and therefore eastern portions of the county overlap the range of this species and it is included in TPWD's Annotated County List of Rare Species for Leon County. Although Lake Limestone is near the project area, the lake is a reservoir that connects to the Navasota River, as the Trinity River is located further east. Therefore, the project area is located outside of the range of the Trinity pigtoe, and it is not anticipated to occur within the project area.

5.2.13 Louisiana pigtoe (*Pleurobema riddellii*)

The Louisiana pigtoe is a state threatened mollusk species known to occur within Leon County (Appendix B) and also identified as a federally proposed threatened species by TPWD. However, the Louisiana pigtoe was not identified as a federally listed proposed threatened species by the USFWS IPaC Resource List for the project area (USFWS 2023g). Typically, when a species is included on the TPWD county list but omitted from the USFWS IPaC Resource List, it suggests known occurrences or historical presence of that species within the broader county area rather than within the project area or immediate vicinity. Because the IPaC database is maintained by USFWS and is specific to the project area, the IPaC data is generally considered more accurate for determining the likelihood of occurrence of federally listed species within the project area or immediate vicinity. As such, the Louisiana pigtoe is discussed as a state listed threatened species in this report.

Louisiana pigtoe is a state listed threatened mussel species which occurs within the Trinity, Neches, Sabine, Big Cypress/Sulphur, Red, and Calcasieu-Mermentau River Basins of eastern Texas and western Louisiana (USFWS 2019). The Louisiana pigtoe occurs in medium- to large-sized streams and rivers in swiftly flowing waters (4.5 feet per second) over substrates of cobble, rock, sand, gravel, and woody debris. This mussel species is most often observed near riffles, runs, or larger backwater tributary habitats. Recent studies have identified specimens within waters approximately ten feet deep in the lower Neches River. Other studies have identified the Louisiana pigtoe in the Neches River within gravel substrates at depths between 1.9 feet and 3.7 feet and waters flowing at approximately 2.2 feet per second (USFWS 2023h).

The TXNDD did not identify occurrences of the Louisiana pigtoe within the Project two-mile radius (Figure 4). Review of the publicly available datasets depict the closest occurrence of the Louisiana pigtoe approximately 66 miles east of the project area in October 2024 (iNaturalist 2025). The project area lacks free-flowing riverine habitat that this species prefers. Therefore, Louisiana pigtoe is not anticipated to occur within the project area.

5.2.14 Sandbank pocketbook (*Lampsilis satura*)

The sandbank pocketbook is a state listed threatened mollusk species known to occur within Leon County, TX (Appendix B). The mollusk inhabits small to large rivers with moderate flows on gravel, gravel-sand, and sand substrates. This mussel is a deep chestnut brown, suboval, and moderately thick with a broadly rounded posterior ridge and sigmoid shaped hinge margin (Howells 1996). Historically, the sandbank pocketbook occurred from the San Jacinto east into the Neches-Angelina and Sabine rivers; however, habitat degradation in the San Jacinto, Trinity, and lower Neches rivers has reduced or eliminated this species from many areas (Wolverton 2016).

The TXNDD did not identify occurrences of the sandbank pocketbook within the Project two-mile radius (Figure 4). Review of the publicly available datasets depict the closest occurrence of the sandbank pocketbook approximately 60.7 miles east of the project area in September 2022 (iNaturalist 2025). ERP did not identify suitable habitat such as large rivers within the project area. Therefore, sandbank pocketbook is not anticipated to occur within the project area.

5.2.15 Texas Heelsplitter (*Potamilus amphichaemus*)

The Texas heelsplitter is a state threatened mollusk species known to occur within Leon County (Appendix B) and recognized by TPWD as a federally proposed endangered species. However, the USFWS IPaC Resource List for the project area does not identify the Texas heelsplitter for the project area. When a species appears on the TPWD county list but is absent from the IPaC Resource List, it typically reflects known or historical occurrences within the broader county rather than within the project area or its immediate vicinity. Because the IPaC database is maintained by USFWS and is specific to project-level review, IPaC data are generally considered the more reliable source for evaluating the likelihood of federally listed species presence at a given site. Accordingly, this report addresses the Texas heelsplitter as a state-listed threatened species.

Primarily observed in moderately flowing water among mud or sand in small-to medium-sized rivers; however, it may also be observed in reservoirs (Howells 1997; USFWS 2023i). Currently, it is only known to occur in small populations upstream of Sam Rayburn Reservoir, within the Neches and Sabine Rivers, and below Town Bluff Dam (Karatayev & Burlakova 2007).

The TXNDD did not reveal records of the Texas heelsplitter occurring within the Project two-mile radius (Figure 4). Review of publicly available datasets identified an occurrence of the Texas heelsplitter approximately 49 miles northeast of the project area in a field in September 2024 (iNaturalist 2025). ERP did not identify moderately flowing small- to medium-sized rivers providing appropriate habitat within the project area. Therefore, the Texas heelsplitter is not anticipated to occur within the project area.

5.2.16 Small-headed Pipewort (*Eriocaulon koerickianum*)

The small-headed pipewort is a state threatened plant species occurring in Texas, Oklahoma, Arkansas, and a disparate population in Georgia, with particular abundance in the Interior Highlands of Arkansas and Oklahoma. Within Texas, it occurs within four East Texas counties, including Henderson County, with one population in Gillespie County, in Central Texas. A shade intolerant species, the small-headed pipewort grows in acidic bog and herbaceous wetland environments. This species can also be found in sandy, hillside seepages and wet prairies in the western part of its range, which includes Texas (NatureServe Explorer 2025).

The TXNDD did not reveal records of the small-headed pipewort occurring within the Project area; however, records did show one element of occurrence within a two-mile radius of the project area (Figure 4). Review of publicly available datasets identified an occurrence of the small-headed pipewort approximately 44.9 miles northeast of the project area in a field in April 2024 (iNaturalist 2025). ERP observed a palustrine emergent wetland adjacent to an intermittent stream, but no seepage areas or wet prairies. The wetland appeared to be open to livestock grazing and there was evidence of recent livestock

presence. Due to no evidence for recent natural or prescribed fire use and likely disturbances by cattle, the small-headed pipewort is unlikely to occur within the project area.

5.3 Additional Federally Protected Species

5.3.1 Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle is listed as a species with known occurrences in Collin County by the TPWD (Appendix B). Bald eagles are not state protected but are federally protected under the BGEPA, MBTA, and Lacey Act. The bald eagle is distributed throughout Texas, with most occurrences located within the coastal prairies, southeastern pinewoods, and northern coastal sand plain regions (Tweit 2007a).

Bald eagle breeding habitat includes large, super-canopy trees located within proximity to rivers, lakes, marshes, or other large waterbodies where fish are abundant. According to TPWD, bald eagles usually nest and roost within one mile of open water. The bald eagle is an opportunistic forager and will consume carrion of fish, birds, and mammals. Bald eagle nesting occurs from October to July within Texas, with peak egg laying occurring during December (TPWD 2023a). By April or May the young have fledged and many southern eagles migrate north to the Great Lakes area during the summer. In fall, southern bald eagles return to their breeding areas, supplemented by populations of northern eagles migrating south to ice-free areas to feed through the early winter. Bald eagles will commonly reuse nests in cases where young are successfully fledged, and prey density is static (USFWS 2007). Based on a review of range maps, the project area is located within the year-round range of the bald eagle (Cornell University 2025).

A review of publicly available data depicts that the bald eagle was most recently observed approximately 2.4 miles west-northwest of the project area in December 2025 at Lake Limestone (eBird 2025). ERP Identified a large swamp/wetland complex within and adjacent to the project area. While these habitats may provide potential foraging opportunities for bald eagles, the absence of suitable nesting features indicates the project area is unsuitable for nesting. The likelihood of bald eagle presence within the project area is low and the bald eagle is not anticipated to utilize the project area for nesting or foraging.

5.3.2 Golden Eagle (*Aquila chrysaetos*)

The golden eagle is not listed in either the TPWD Leon County list of rare species nor the USFWS IPaC Resource List for the project area, but this species is protected under the BGEPA, MBTA, and Lacey Act. The golden eagle is primarily distributed throughout western North America, which includes portions of Canada, the U.S., and Mexico. Within Texas, the golden eagle is primarily observed inhabiting cliffs throughout the Panhandle and Trans-Pecos ecoregions, and recent studies by the Texas Breeding Bird Atlas identified few if any individuals in the Panhandle (Tweit 2007b).

This species can be found in habitats consisting of grassland, forests, brushlands, and arid deserts; however, it most notably inhabits mountainous regions with elevations up to 12,000 feet above mean sea level (Cornell University 2025). The golden eagle prefers to forage in open grassland habitat where it can easily hunt for small- to mid-sized animals including reptiles, birds, and mammals (USFWS 2011a). This species has been observed frequenting prairie dog towns of west Texas (Lockwood and Freeman 2005). Breeding habitat within Texas is primarily observed in mountains and canyons up to 8,700 feet above mean sea level. Nests are placed in remote area cliffs, open canopy trees, or abandoned structures (Tweit

2007b). The project area occurs within the golden eagle's scarce, non-breeding range (Cornell University 2025).

A review of publicly available data depicts the nearest sighting of the golden eagle occurred approximately 33 miles east-northeast of the project area in November 2014 (eBird 2025). The project area consists of flat active cropland. Due to a lack of foraging habitat and an absence of localized observations, the likelihood of golden eagle presence within the project area is low, and the golden eagle is not anticipated to utilize the project area for nesting or foraging.

Table 1: State and Federally Protected Species Habitat Requirements and Investigation Findings

Common Name (*Scientific Name*)	Federal Status	State Status	Listing Source	Preferred Habitat Description	Preferred Habitat Observed in Project Area	Effects Determination[1] (IPaC Listed Species Only)
Alligator Snapping Turtle (*Macrochelys temminckii*)	Proposed Threatened[2] [3]	Threatened	TPWD	Slowly flowing waters of deep rivers, sloughs, oxbows, canals, or lakes; may also be observed in swamps, bayous, and ponds near rivers, and shallow tributary mouths to rivers among muddy substates and aquatic vegetation.	No	-
Houston Toad (*Anaxyrus houstonensis*)	Endangered	Endangered	IPaC / TPWD	Pine or oak woodlands with a moderate to dense understory underlain by deep sandy soils. Preferred breeding and juvenile habitat consist of permanent or ephemeral bodies of standing water.	Yes	May Effect
Texas Horned Lizard (Phrynosoma cornutum)	-	Threatened	TPWD	Open, arid, and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush, or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive.	Yes	-
Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered[2]	-	IPaC / TWPD	Summer roosting habitat including leaf litter, deciduous hardwood trees, Spanish moss, lichen, pine needles, eastern redcedar. Foraging habitat includes waterways, forest edges, and tree-lined riparian corridors.	Yes	May Effect
Bachman's Sparrow (*Peucaea aestivalis*)	-	Threatened	TPWD	Open, mature pine forests with a dense herbaceous understory for foraging. Preferred habitat requires an open midstory generated by a relatively frequent disturbance regime. Foraging habitat may also include regenerating clear cut areas, or open grasslands.	Yes	-

Common Name (*Scientific Name*)	Federal Status	State Status	Listing Source	Preferred Habitat Description	Preferred Habitat Observed in Project Area	Effects Determination[1] (IPaC Listed Species Only)
Black Rail (*Laterallus jamaicensis*)	Threatened[3]	Threatened	TPWD	Salt, brackish, freshwater marshes, pond borders, wet meadows, grassy swamps.	No	-
Interior Least Tern (*Sternula antillarum athalassos*)	-	Endangered	TPWD	Sand and gravel bars of river channels, nesting on bare ground with gravel or sandy substrates in open areas away from trees.	No	-
Piping Plover (*Charadrius melodus*)	Threatened	Threatened	IPaC / TPWD	Wide, sparsely vegetated sand or gravel beaches, wetlands, inland lakes, reservoirs, and rivers, as well as short- to mid-grass prairie adjacent to breeding grounds. *Species is only to be considered in the analysis of wind energy projects.*	No	No Effect
Red-cockaded Woodpecker (*Picoides borealis*)	Endangered[3]	Endangered	TPWD	Mature, typically 50-year-old or greater, pine savannas with a relatively open midstory. Ideal habitat is principally those dominated by longleaf, although in some areas they will accept slash pine, shortleaf pine, and loblolly pine forests.	No	-
Rufa Red Knot (*Calidris canutus rufa*)	Threatened	Threatened	IPaC / TPWD	Meadows, lakeshores, sandy beaches, salt marshes, lagoons, mudflats or bays and estuaries, and mangrove swamps. *Species is only to be considered in the analysis of wind energy projects.*	No	No Effect

Common Name (*Scientific Name*)	Federal Status	State Status	Listing Source	Preferred Habitat Description	Preferred Habitat Observed in Project Area	Effects Determination[1] (IPaC Listed Species Only)
Swallow-tailed Kite (*Elanoides forficatus*)	-	Threatened	TPWD	Preferred habitat includes swamps, lowland forested areas, marshes near rivers, lakes, and large open waterbodies. Nesting occurs within canopies of large trees near swamps or open waterbodies. Foraging habitat includes slash pine forests, edges of pine forest, bald cypress swamps, wet prairies, freshwater and brackish marshes, hardwood hummocks, and red mangrove forests.	No	-
White-Faced Ibis (*Plegadis chihi*)	-	Threatened	TPWD	Freshwater emergent wetlands near cattail and bulrush marshes; foraging habitat includes flooded hay fields, shallow roadside ditches, cultivated crop fields, and estuarine wetlands.	Yes	-
Whooping Crane (*Grus americana*)	Endangered[3]	Endangered	TPWD	Winter habitat includes salt flats, salt marshes, and wetlands along Texas coastal prairie. Migration stopover habitat includes rivers, grain fields, shallow wetlands with low vegetative cover and high visibility.	No	-
Wood Stork (*Mycteria americana*)	-	Threatened	TPWD	Forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including saltwater; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e., active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands. Migrates through Texas however no observed nests in Texas since 1960.	No	-

Common Name (*Scientific Name*)	Federal Status	State Status	Listing Source	Preferred Habitat Description	Preferred Habitat Observed in Project Area	Effects Determination[1] (IPaC Listed Species Only)
Yellow-billed Cuckoo (*Coccyzus americanus*)	Threatened[3]	-	TPWD	Wooded habitats with dense overgrow and adjacent riparian zones or water. Includes woodlands with low, scrubby vegetation, overgrown orchards, abandoned farmland and dense thickets along streams and marshes.	No	-
Louisiana pigtoe (*Pleurobema riddellii*)	Proposed Threatened[2] [3]	Threatened	TPWD	Medium- to-large sized rivers in swiftly flowing water over substrates of cobble, rock, sand, gravel, or woody debris.	No	-
Sandbank Pocketbook (*Lampsilis satura*)	-	Threatened	TPWD	Regionally endemic to the Trinity River basin, in variety of habitats, most commonly riffles of medium- to large-sized rivers with slow to moderately flowing currents, with various substrates but most commonly sand, gravel and cobble	No	-
Texas Fawnsfoot (*Truncilla macrodon*)	Proposed Threatened[2]	Threatened	IPaC / TPWD	Medium-sized streams to large rivers, banks, backwaters, riffles and point bars, substrates of mud, sandy mud, gravel and cobble. Intolerant of reservoirs.	Yes	May Effect
Texas Heelsplitter (*Potamilus amphichaemus*)	Proposed Endangered[2] [3]	Threatened	TPWD	Small- to large-sized rivers with standing to slow-flowing waters over substrates of mud, silt, or sand. Generally found in banks, backwaters, and quiet pools	No	-
Large-fruited Sand-verbena (*Abronia macrocarpa*)	Endangered	Endangered	IPaC / TPWD	Deep sandy soils with sparse vegetation in openings of post oak woodlands	Yes	May Effect
Navasota Ladies'-tresses (*Spiranthes parksii*)	Endangered	Endangered	IPaC / TPWD	Openings of post oak woodlands in sandy loam soils	Yes	May Effect

Common Name (*Scientific Name*)	Federal Status	State Status	Listing Source	Preferred Habitat Description	Preferred Habitat Observed in Project Area	Effects Determination[1] (IPaC Listed Species Only)
Small-headed Pipewort (*Eriocaulon koernickianum*)	-	Threatened	TPWD	Shade-intolerant species that grows in acidic bog and herbaceous wetland environments. Sandy, hillside seepages and wet prairies in western part of its range.	No	-
Monarch Butterfly (*Danaus plexippus*)	Proposed Threatened[2]	-	IPaC / TPWD	Breeding habitat includes milkweed plant species; important nectar sources during spring and fall migrations include most other flowering plant species.	Yes	May Effect
Bald Eagle *(Haliaeetus leucocephalus)*	BGEPA	-	-	Large, super-canopy trees located near rivers, lakes, marshes, or other large waterbodies.	No	-
Golden Eagle *(Aquila chrysaetos)*	BGEPA	-	-	Open country, especially around mountains, hills, and cliffs; and a wide variety of habitats ranging from arctic to desert, including tundra, shrublands, grasslands, coniferous forests, farmland, and areas along rivers and streams.	No	-

1. In an effects analysis of the Project, the following terms, used by the USFWS, were employed for species listed under the ESA:
- "No Effect"- no impacts, positive or negative, to listed or proposed resources
- "May Affect" – Project design evaluation and/or USFWS coordination should be conducted in order to determine if the Project 'May affect but is not likely to adversely affect' or 'May affect and is likely to adversely affect' this species.

2. Federally proposed threatened species are not protected under Section 7 of the ESA. Therefore, it is recommended Project design infrastructure avoids jeopardizing the federally proposed threatened species and their respective habitats by use of construction BMPs.

3. These species were included as a federally-listed species on the TWPD Annotated List of Rare Species for Leon County; however, these species were not included on the USFWS IPaC Resource List for the project area.

6.0 Conclusion and Recommendations

ERP completed a desktop review and field-based habitat assessment to characterize biological resources within the BT Kahla Data Center Project area. Field investigations were conducted from December 8 through December 11, 2025. Habitats within the project area include undeveloped pastureland and grasslands, post oak woodlands, forested wetlands, emergent wetlands, and streams exhibiting a range of flow regimes. Evaluation of these habitats against state and federal protected species requirements indicates the presence of suitable habitat for several protected species, including the proposed federally endangered tricolored bat, federally listed endangered Houston toad, proposed federally threatened Texas fawnsfoot, proposed federally threatened monarch butterfly, federally listed endangered large-fruited sand-verbena, and federally listed endangered Navasota ladies'-tresses. Marginally suitable habitat was identified for the state-listed threatened Bachman's sparrow, and foraging habitat was identified for the state-listed threatened white-faced ibis. Suitable habitat for the Texas horned lizard.

Given the presence of suitable upland and breeding habitat for the federally listed endangered Houston toad, ERP recommends conducting a presence/absence survey in accordance with current USFWS survey protocols if project design cannot avoid suitable habitat or if ground disturbing activities are proposed during the species' breeding season. Survey results would refine the effects determination and inform appropriate avoidance, minimization, or mitigation measures, as applicable.

Several species identified during the assessment are currently designated as federal proposed species and are therefore not subject to the take prohibitions of Section 9 of the ESA. However, these species may be listed in the future, and project planning should account for potential regulatory changes. With respect to federally listed plant species, in the absence of a federal permit nexus or other federal action, take of federally listed plants occurring on private property is not prohibited under Section 9 of the ESA. "Take" prohibitions for listed plants generally apply to actions occurring on federal lands, actions involving federal authorization or funding, or actions that violate applicable state laws. Impacts to federally listed plant species may warrant voluntary conservation measures and avoidance and minimization where practicable.

If impacts to federally listed wildlife species or their habitats cannot be avoided, or if the Project requires federal authorization, funding, or permitting, coordination with the USFWS pursuant to Section 7 of the ESA may be required. The USFWS can provide guidance regarding species survey requirements and appropriate conservation measures. In the absence of anticipated effects to federally listed species or a federal nexus, the USFWS may elect not to provide comments.

ERP recommends implementation of BMPs throughout project design, construction, and operation to minimize impacts to protected species and sensitive habitats. Recommended measures include construction personnel training and wildlife encounter protocols, erosion and sediment controls to prevent sedimentation of aquatic habitats, incorporation of pollinator supportive species in revegetation seed mixes where feasible, and scheduling vegetation clearing outside the primary nesting season of MBTA protected avian species or conducting pre-construction nesting bird surveys when seasonal avoidance is not feasible.

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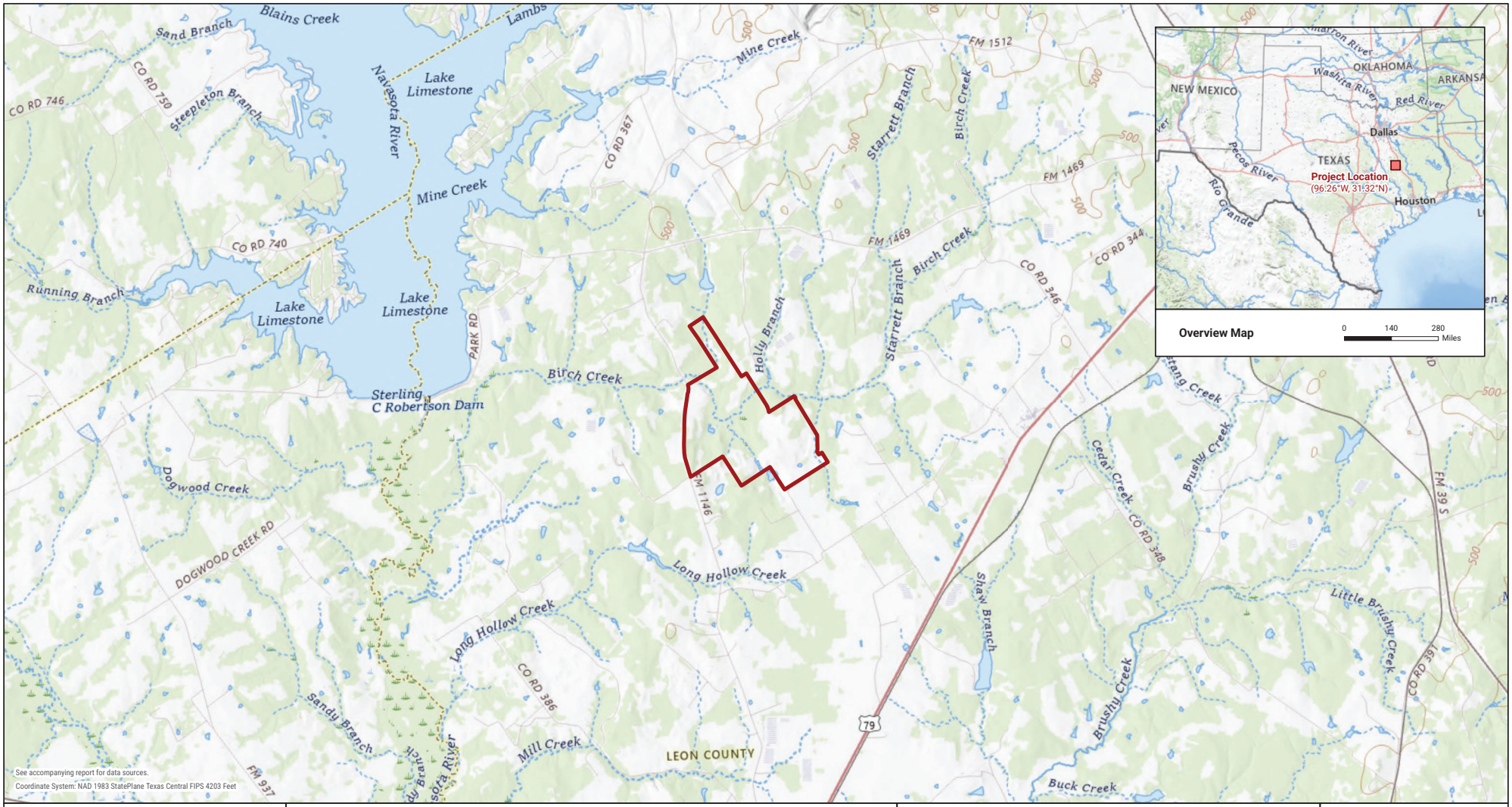
FIGURES



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ENERGY RENEWAL PARTNERS, LLC

LEGEND

Project Area (~873 acres)

BT Kahla Storage, LLC

Kahla Data Center Project

Regional Topography

Project Location: Leon County, Texas

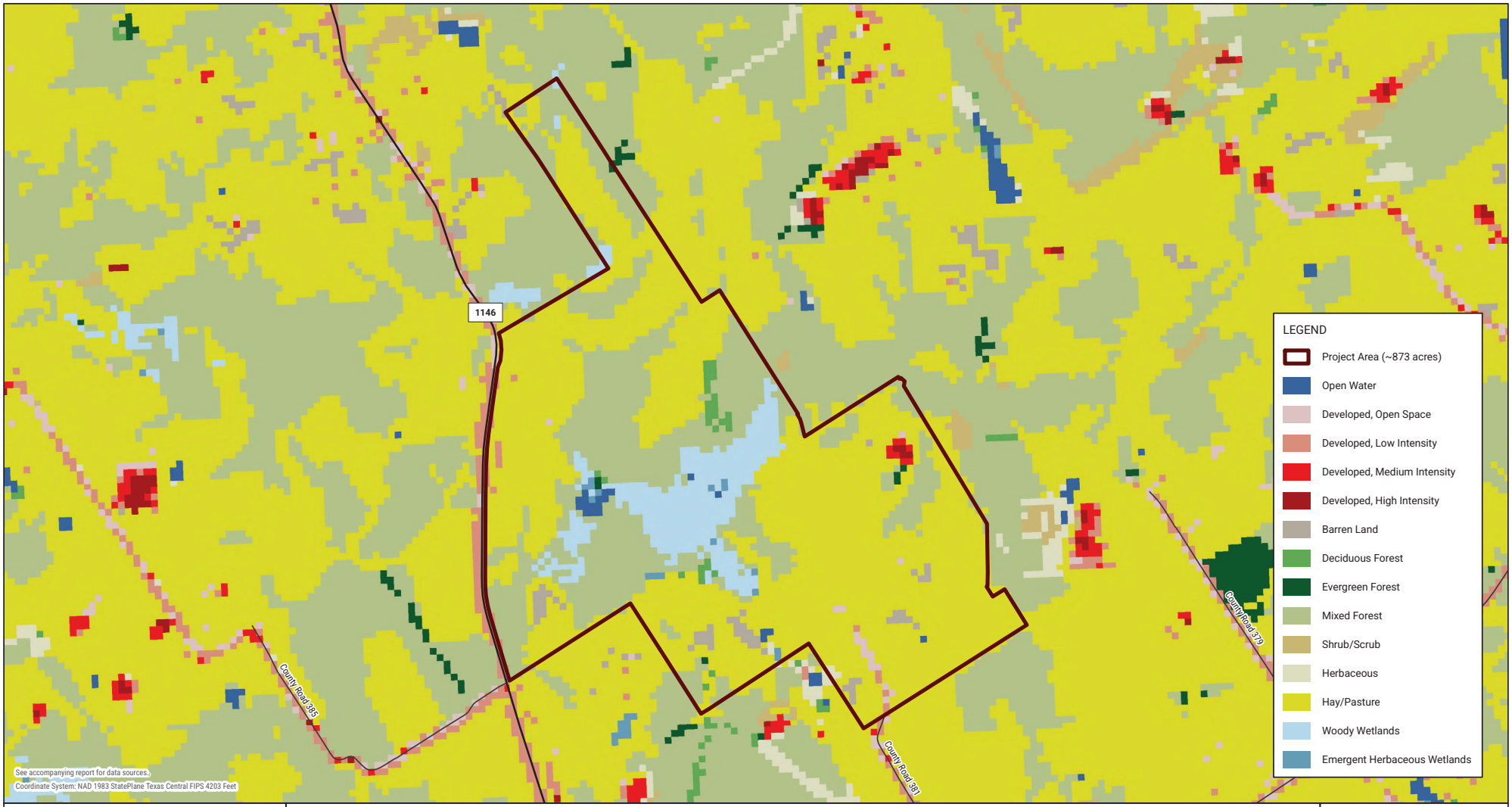
N

0 0.5 1 Mile

FIGURE 1

Prepared by: J. Weiss

Date: 2025-12-09



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ERP
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BT Kahla Storage, LLC

Kahla Data Center Project

Land Cover

Project Location: Leon County, Texas

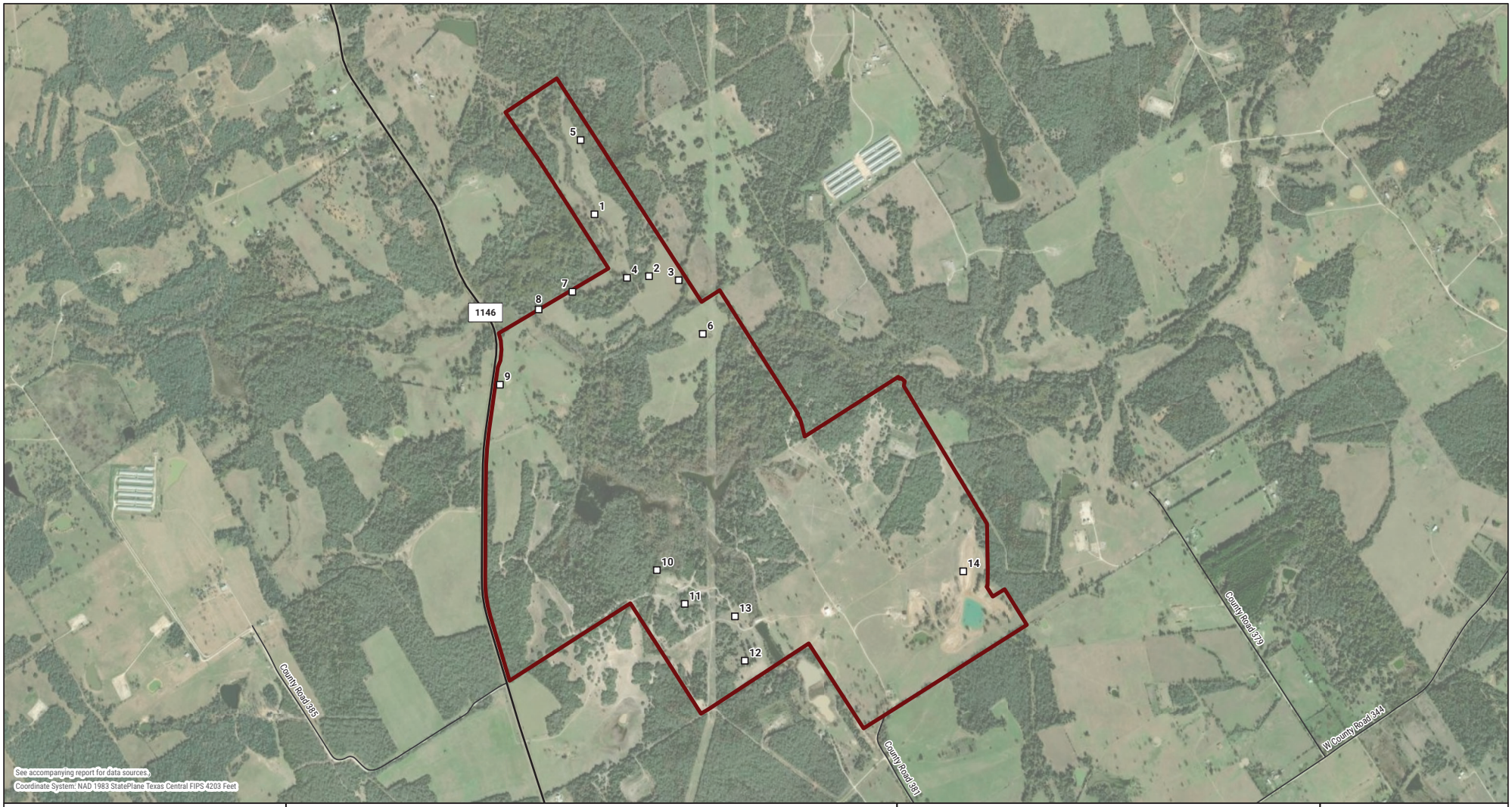
N

0 700 1,400 Feet

FIGURE 2

Prepared by: J. Weiss

Date: 2025-12-09



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LEGEND

Project Area (~873 acres)

Photo Point

BT Kahla Storage, LLC

Kahla Data Center Project

Site Findings

Project Location: Leon County, Texas

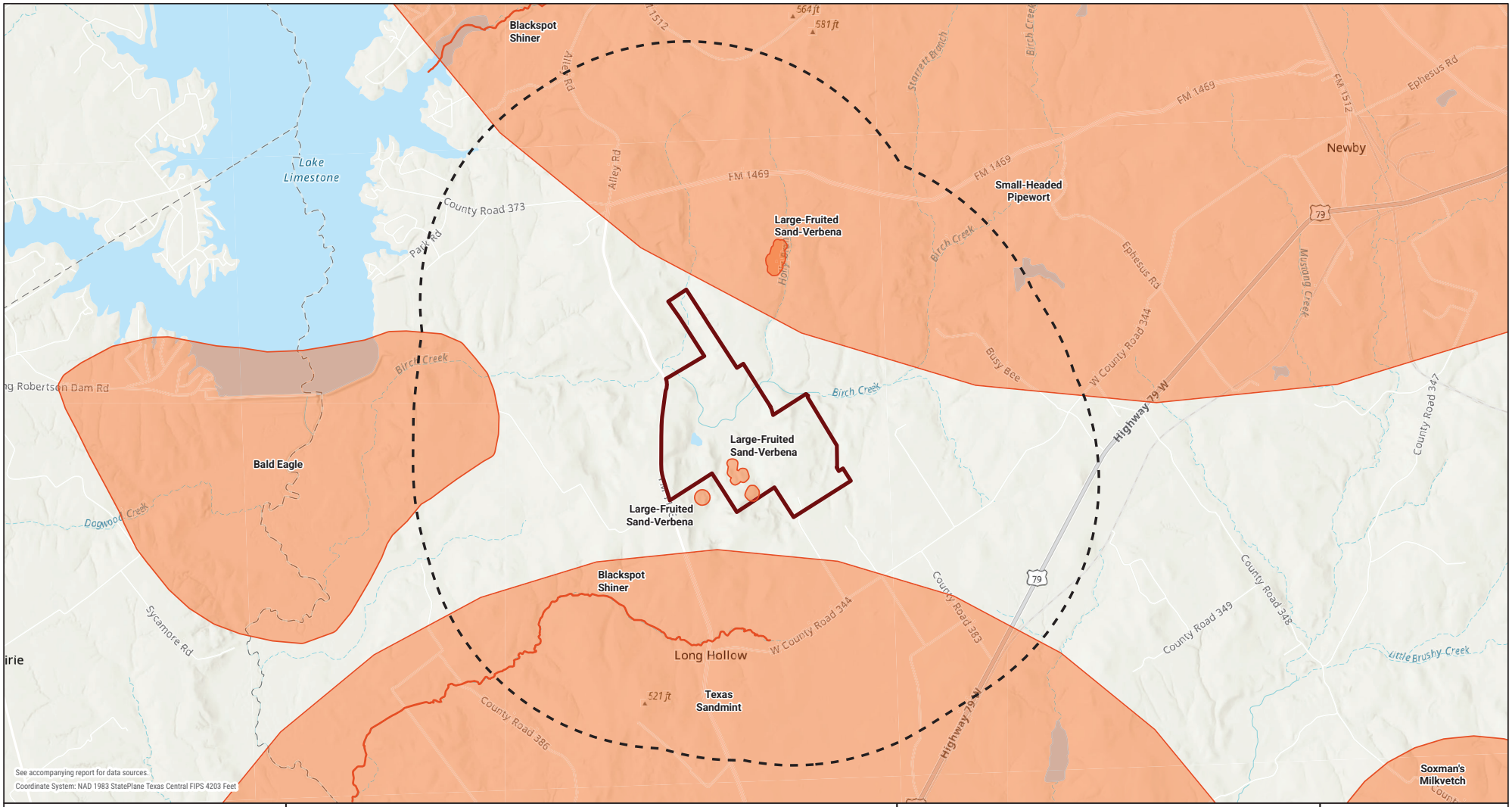
N

0 700 1,400 Feet

FIGURE 3

Prepared by: J. Weiss

Date: 2025-12-17



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LEGEND

- Project Area (~873 acres)
- Project Area 2-mile buffer
- Element Occurrence Area

BT Kahla Storage, LLC

Kahla Data Center Project

Element Occurrences

Project Location: Leon County, Texas

N

0 2,000 4,000 Feet

FIGURE 4

Prepared by: J. Weiss

Date: 2025-12-17

Appendix A

USFWS Information for Planning and Consultation Resource List

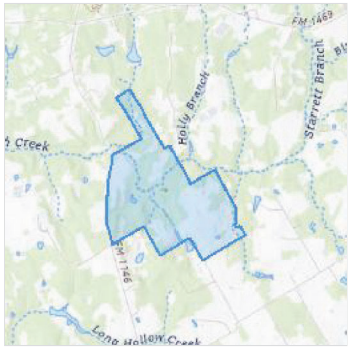
IPaC resource list

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

Leon County, Texas



Local office

Texas Coastal & Central Plains Esfo

(281) 286-8282
(281) 488-5882

MAILING ADDRESS
17629 El Camino Real, Suite 211
Houston, TX 77058-3051

PHYSICAL ADDRESS
17629 El Camino Real
Houston, TX 77058-3051

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. IPaC only shows species that are regulated by USFWS (see FAQ).
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:

Mammals

NAME	STATUS
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Birds

NAME	STATUS
Piping Plover Charadrius melodus This species only needs to be considered if the following condition applies: • Wind related projects within migratory route. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Rufa Red Knot Calidris canutus rufa Wherever found This species only needs to be considered if the following condition applies: • Wind related projects within migratory route. There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/1864	Threatened

Amphibians

NAME	STATUS
Houston Toad Bufo houstonensis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2206	Endangered

Clams

NAME	STATUS
Texas Fawnsfoot Truncilla macrodon Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8965	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Flowering Plants

NAME	STATUS
Large-fruited Sand-verbena Abronia macrocarpa Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1882	Endangered
Navasota Ladies-tresses Spiranthes parksii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1570	Endangered

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.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs
The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
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 Sep 1 to Jul 31

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 "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "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.

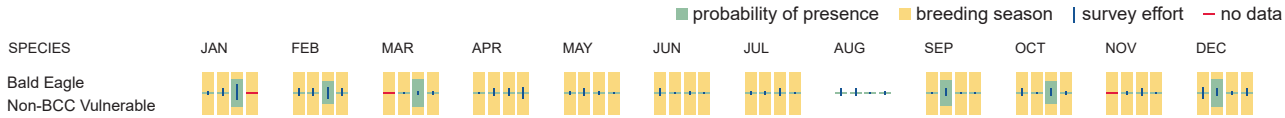
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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.



Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence 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 an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report
On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). 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 line or no data line (red horizontal) 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 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 and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are 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 resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), 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.

Interpreting the Probability of Presence Graphs

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 taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

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

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.

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.

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.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

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:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs
The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
American Golden-plover Pluvialis dominica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
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 Sep 1 to Jul 31
Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Least Tern Sternula antillarum antillarum This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 25 to Sep 5
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Little Blue Heron Egretta caerulea This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 10 to Oct 15

Prairie Loggerhead Shrike Lanius ludovicianus excubitorides — Breeds Feb 1 to Jul 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/8833

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10

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 "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "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.

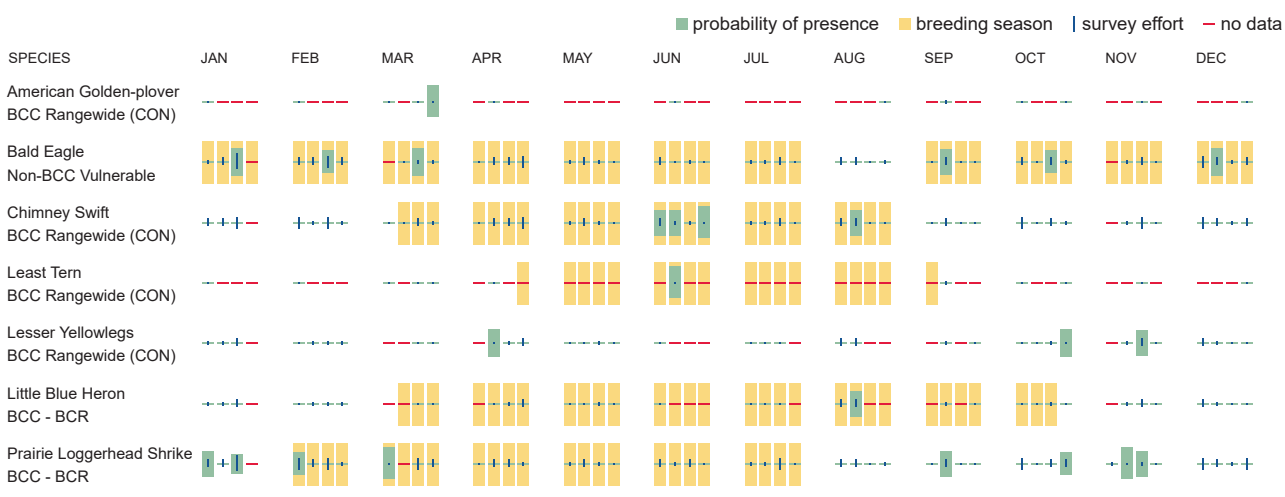
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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.



Red-headed Woodpecker
BCC Rangewide (CON)

Migratory Bird FAQs

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

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed 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 Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as “Vulnerable”. See the FAQ “What are the levels of concern for migratory birds?” for more information on the levels of concern covered in the IPaC migratory bird species list.

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) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection 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, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

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 to 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 resident), you may query your location using the RAIL Tool and view 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 IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), 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 Bald and Golden Eagle Protection 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 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 BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

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.

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 look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). 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 does not represent all birds present in your project area. 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 and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
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 taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

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

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.

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.

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.

Facilities

Wildlife refuges and fish hatcheries

Refuge and fish hatchery information is not available at this time

Wetlands in the National Wetlands Inventory (NWI)

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:

FRESHWATER EMERGENT
WETLAND
- PEM1A
- PEM1C
- PEM1Ah

FRESHWATER
FORESTED/SHRUB WETLAND
- PFO1A

PFO1C
PSS3A

FRESHWATER POND
PUBHh

RIVERINE
R4SBC
R5UBH

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

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

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.

Appendix B

TPWD Annotated County List of Rare Species - Leon County

Last Update: 1/15/2025

LEON COUNTY

AMPHIBIANS

Houston toad *Anaxyrus houstonensis*

Terrestrial and aquatic: Primary terrestrial habitat is forests with deep sandy soils. Juveniles and adults are presumed to move through areas of less suitable soils using riparian corridors. Aquatic habitats can include any water body from a tire rut to a large lake.

Federal Status: E	State Status: E	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S1

southern crawfish frog *Lithobates areolatus areolatus*

Terrestrial and aquatic: The terrestial habitat is primarily grassland and can vary from pasture to intact prairie; it can also include small prairies in the middle of large forested areas. Aquatic habitat is any body of water but preferred habitat is ephemeral wetlands.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S3

Strecker's chorus frog *Pseudacris streckeri*

Terrestrial and aquatic: Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes sandy substrates.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

Woodhouse's toad *Anaxyrus woodhousii*

Terrestrial and aquatic: A wide variety of terrestrial habitats are used by this species, including forests, grasslands, and barrier island sand dunes. Aquatic habitats are equally varied.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

BIRDS

Bachman's sparrow *Peucaea aestivalis*

Open pine woods with scattered bushes and grassy understory in Pineywoods region, brushy or overgrown grassy hillsides, overgrown fields with thickets and brambles, grassy orchards; remnant grasslands in Post Oak Savannah region; nests on ground against grass tuft or under low shrub

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S1B

bald eagle *Haliaeetus leucocephalus*

Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Federal Status:	State Status:	SGCN: N
Endemic: N	Global Rank: G5	State Rank: S3B,S3N

LEON COUNTY

BIRDS

Bank Swallow *Riparia riparia*

Bank Swallows live in low areas along rivers, streams, ocean coasts, and reservoirs. Their territories usually include vertical cliffs or banks where they nest in colonies of 10 to 2,000 nests. Though in the past Bank Swallows were most commonly found around natural bluffs or eroding streamside banks, they now often nest in human-made sites, such as sand and gravel quarries or road cuts. They forage in open areas and avoid places with tree cover.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2B,S4N

black rail *Laterallus jamaicensis*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous years dead grasses; nest usually hidden in marsh grass or at base of Salicornia

Federal Status: T	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

Brewer's Blackbird *Euphagus cyanocephalus*

Shrubby and bushy areas (especially near water), riparian woodland, aspen parklands, cultivated lands, marshes, and around human habitation; in migration and winter also in pastures and fields (AOU 1983).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

Brown Pelican *Pelecanus occidentalis*

Largely coastal and near shore areas, where it roosts and nests on islands and spoil banks. Feeds in lagunas and shallow seaward waters.

Federal Status:	State Status:	SGCN: N
Endemic: N	Global Rank: G4	State Rank: S3B

chestnut-collared longspur *Calcarius ornatus*

Occurs in open shortgrass settings especially in patches with some bare ground. Also occurs in grain sorghum fields and Conservation Reserve Program lands

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

Common Grackle *Quiscalus quiscula*

Common Grackles do well in human landscapes, using scattered trees for nesting and open ground for foraging. Typical natural habitats include open woodland, forest edge, grassland, meadows, swamps, marshes, and palmetto hammocks. They are also very common near agricultural fields and feedlots, suburbs, city parks, cemeteries, pine plantations, and hedgerows. Unbroken tracts of forest are the only places where you are unlikely to find Common Grackles.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5B

Common Nighthawk *Chordeiles minor*

LEON COUNTY

BIRDS

Common Nighthawks nest in both rural and urban habitats including coastal sand dunes and beaches, logged forest, recently burned forest, woodland clearings, prairies, plains, sagebrush, grasslands, open forests, and rock outcrops. They also nest on flat gravel rooftops, though less often as gravel roofs are being replaced by smooth, rubberized roofs that provide an unsuitable surface.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4B

Franklin's gull *Leucophaeus pipixcan*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. This species is only a spring and fall migrant throughout Texas. It does not breed in or near Texas. Winter records are unusual consisting of one or a few individuals at a given site (especially along the Gulf coastline). During migration, these gulls fly during daylight hours but often come down to wetlands, lake shore, or islands to roost for the night.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2N

Henslow's Sparrow *Centronyx henslowii*

Wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S2S3N,SXB

interior least tern *Sternula antillarum athalassos*

Sand beaches, flats, bays, inlets, lagoons, islands. Subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony

Federal Status:	State Status: E	SGCN: N
Endemic: N	Global Rank: G4T3Q	State Rank: S1B

Least Tern *Sternula antillarum*

Sand beaches, flats, bays, inlets, lagoons, islands, river sandbars and flat gravel rooftops in urban areas.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S2B

Loggerhead Shrike *Lanius ludovicianus*

Loggerhead Shrikes inhabit open country with short vegetation and well-spaced shrubs or low trees, particularly those with spines or thorns. They frequent agricultural fields, pastures, old orchards, riparian areas, desert scrublands, savannas, prairies, golf courses, and cemeteries. Loggerhead Shrikes are often seen along mowed roadsides with access to fence lines and utility poles.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4B

LEON COUNTY

BIRDS

Mottled Duck *Anas fulvigula*

Estuaries, ponds, lakes, secondary bays.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4B

Northern Bobwhite *Colinus virginianus*

Inhabits a wide variety of vegetation types, particularly early successional stages. Occurs in croplands, grasslands, pastures, fallow fields, grass-brush rangelands, open pinelands, open mixed pine-hardwood forests, and habitat mosaics (Brennan 1999).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S4B

piping plover *Charadrius melodus*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Beaches, sandflats, and dunes along Gulf Coast beaches and adjacent offshore islands. Also spoil islands in the Intracoastal Waterway. Based on the November 30, 1992 Section 6 Job No. 9.1, Piping Plover and Snowy Plover Winter Habitat Status Survey, algal flats appear to be the highest quality habitat. Some of the most important aspects of algal flats are their relative inaccessibility and their continuous availability throughout all tidal conditions. Sand flats often appear to be preferred over algal flats when both are available, but large portions of sand flats along the Texas coast are available only during low-very low tides and are often completely unavailable during extreme high tides or strong north winds. Beaches appear to serve as a secondary habitat to the flats associated with the primary bays, lagoons, and inter-island passes. Beaches are rarely used on the southern Texas coast, where bayside habitat is always available, and are abandoned as bayside habitats become available on the central and northern coast. However, beaches are probably a vital habitat along the central and northern coast (i.e. north of Padre Island) during periods of extreme high tides that cover the flats. Optimal site characteristics appear to be large in area, sparsely vegetated, continuously available or in close proximity to secondary habitat, and with limited human disturbance.

Federal Status: T	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2N

red-cockaded woodpecker *Dryobates borealis*

Cavity nests in older pine (60+ years); forages in younger pine (30+ years); prefers longleaf, shortleaf, and loblolly

Federal Status: E, PT	State Status: E	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

rufa red knot *Calidris canutus rufa*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore. Bolivar Flats in Galveston County, sandy beaches Mustang Island, few on outer coastal and barrier beaches, tidal mudflats and salt marshes.

Federal Status: T	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4T2	State Rank: S2N

LEON COUNTY

BIRDS

Sanderling *Calidris alba*

Nonbreeding: primarily sandy beaches, less frequently on mud flats and shores of lakes or rivers (AOU 1983) also on exposed reefs (Pratt et al. 1987). Sleeps/loafs on upper beach or on salt pond dike.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S5

Snowy Plover *Charadrius nivosus*

Algal flats appear to be the highest quality habitat. Some of the most important aspects of algal flats are their relative inaccessibility and their continuous availability throughout all tidal conditions. An optimal site characteristic would be large in size. The size of populations appear to be roughly proportional to the total area of suitable habitat used. Formerly an uncommon breeder in the Panhandle; potential migrant; winter along coast.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G3 State Rank: S3B

Sprague's pipit *Anthus spragueii*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Habitat during migration and in winter consists of pastures and weedy fields (AOU 1983), including grasslands with dense herbaceous vegetation or grassy agricultural fields.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G3G4 State Rank: S3N

swallow-tailed kite *Elanoides forficatus*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Lowland forested regions, especially swampy areas, ranging into open woodland; marshes, along rivers, lakes, and ponds; nests high in tall tree in clearing or on forest woodland edge, usually in pine, cypress, or various deciduous trees.

Federal Status: State Status: T SGCN: Y
Endemic: N Global Rank: G5 State Rank: S2B

western burrowing owl *Athene cunicularia hypugaea*

Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows

Federal Status: State Status: SGCN: N
Endemic: N Global Rank: G4T4 State Rank: S2

white-faced ibis *Plegadis chihi*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; currently confined to near-coastal rookeries in so-called hog-wallow prairies. Nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.

Federal Status: State Status: T SGCN: N
Endemic: N Global Rank: G5 State Rank: S4B

LEON COUNTY

BIRDS

whooping crane *Grus americana*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Small ponds, marshes, and flooded grain fields for both roosting and foraging. Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.

Federal Status: E | State Status: E | SGCN: Y
Endemic: N | Global Rank: G1 | State Rank: S1S2N

Willet *Tringa semipalmata*

Marshes, tidal mudflats, beaches, lake margins, mangroves, tidal channels, river mouths, coastal lagoons, sandy or rocky shores, and, less frequently, open grassland (AOU 1983, Stiles and Skutch 1989).

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G5 | State Rank: S5B

Wilson's Warbler *Cardellina pusilla*

Wilson’s warblers key in on forests and scrubby areas along streams to fatten up during migration. During the nonbreeding season they use many types of habitats from lowland thickets near streams to high-elevation cloud forests in Mexico and Central America.

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G5 | State Rank: S4

wood stork *Mycteria americana*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Prefers to nest in large tracts of baldcypress (Taxodium distichum) or red mangrove (Rhizophora mangle); forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960.

Federal Status: | State Status: T | SGCN: Y
Endemic: N | Global Rank: G4 | State Rank: SHB,S3N

Yellow Rail *Coturnicops noveboracensis*

BREEDING: Emergent wetlands, grass or sedge marshes and wet meadows in freshwater situations. Some breeding territories in these wet meadows contain firm footing and only a few remnant pools of water (Berkey 1991). These areas can range from damp to 38 cm (15 inches) of water but the average depth used for nesting is 8 to 15 cm (3 to 6 inches) (Savaloja 1981). NON-BREEDING: Grain fields in winter and when migrating. Winters in both freshwater and brackish marshes, as well as in dense, deep grass. During fall migration, will use many open habitats, from rice paddies to dry hayfields.

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G4 | State Rank: S3N

yellow-billed cuckoo *Coccyzus americanus*

LEON COUNTY

BIRDS

In Texas, the populations of concern are found breeding in riparian areas in the Trans Pecos (know as part of the Western Distinct Population Segment). It is the Western DPS that is on the U.S. ESA threatened list and includes the Texas counties Brewster, Culberson, El Paso, Hudspeth, Jeff Davis, and Presidio. Riparian woodlands below 6,000' in elevation consisting of cottonwoods and willows are prime habitat. This species is a long-distant migrant that summers in Texas, but winters mainly in South America. Breeding birds of the Trans Pecos populations typically arrive on their breeding grounds possibly in late April but the peak arrival time is in May. Threats to preferred habitat include hydrologic changes that don't promote the regeneration of cottonwoods and willows, plus livestock browsing and trampling of sapling trees in sensitive riparian areas.

Federal Status: T	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4S5B

FISH

blackspot shiner *Notropis atrocaudalis*

Occurs from the lower Brazos River to the Sabine River drainage; Red River drainage. Small to moderate size tributary streams in runs and pools over all types of substrates.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S3

Mississippi silvery minnow *Hybognathus nuchalis*

Found in eastern Texas streams, from the Brazos River eastward and northward to the Red River; found in moderate current; silty, muddy, or rocky substrate. In Texas, adults likely to inhabit smaller tributary streams.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G5	State Rank: S4

spotted sucker *Minytrema melanops*

Found primarily in east Texas streams from the Red to the Brazos river basins. An isolated, disjunct population occurs in the Llano River near Junction downstream to about Mason; this may be an introduced population. Typically in clear creeks with firm substrates.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

INSECTS

Comanche harvester ant *Pogonomyrmex comanche*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2

migratory monarch butterfly *Danaus plexippus plexippus*

Habitat description is not available at this time.

Federal Status: C	State Status:	SGCN: Y
Endemic:	Global Rank: G4T3	State Rank: SNR

LEON COUNTY

MAMMALS

eastern spotted skunk *Spilogale putorius*

Generalist; open fields prairies, croplands, fence rows, farmyards, forest edges & woodlands. Prefer wooded, brushy areas & tallgrass prairies. S.p. ssp. interrupta found in wooded areas and tallgrass prairies, preferring rocky canyons and outcrops when such sites are available.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S1S3

hoary bat *Lasiurus cinereus*

Hoary bats are highly migratory, high-flying bats that have been noted throughout the state. Females are known to migrate to Mexico in the winter, males tend to remain further north and may stay in Texas year-round. Commonly associated with forests (foliage roosting species) but are found in unforested parts of the state and lowland deserts. Tend to be captured over water and large, open flyways.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S3

mountain lion *Puma concolor*

Generalist; found in a wide range of habitats statewide. Found most frequently in rugged mountains & riparian zones.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2S3

plains spotted skunk *Spilogale interrupta*

Generalist; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S1S3

southeastern myotis bat *Myotis austroriparius*

Caves are rare in Texas portion of range; buildings, hollow trees are probably important. Historically, lowland pine and hardwood forests with large hollow trees; associated with ecological communities near water. Roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S3?

tricolored bat *Perimyotis subflavus*

Forest, woodland and riparian areas are important. Caves are very important to this species.

Federal Status: PE	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S2

MOLLUSKS

Deertoe *Truncilla truncata*

Reported from streams, rivers, lakes, and reservoirs. In riverine habitats primarily occurs in mainchannel habitats such as riffles or runs with moderate to swift current but may occasionally occur in areas with no current. Typically found in sand, gravel, cobble substrates, but sometimes may occur in firm mud or in crevices among large rocks and boulders (Parmalee and Bogan 1998; Williams et al. 2008).

LEON COUNTY

MOLLUSKS

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G5 | State Rank: S3

Gulf Mapleleaf *Tritogonia nobilis*

Reported from streams to rivers, lakes, and reservoirs. In riverine habitats it is often found in nearshore, backwaters, or riffles in still to moderate currents in mud, sand, gravel, or cobble substrates (Howells et al. 1996; Williams et al. 2008).

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G4 | State Rank: SU

Louisiana Fatmucket *Lampsilis hydiana*

Reported from streams to rivers, may penetrate into headwaters, oxbows, lakes, canals, and reservoirs. Reported to occur in still to moderate currents in sand, mud, and gravel substrates. In riverine systems it is found primarily in nearshore habitats such as banks, backwaters and oxbows (Howells et al. 1996; Randklev et al. 2013a; Randklev et al. 2014a; Tsakiris and Randklev 2016). It adapts readily to reservoirs and can cope with flow modification stemming from river impoundment (Randklev et al. 2016).

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G4 | State Rank: S4

Louisiana pigtoe *Pleurobema riddellii*

Occurs in small streams to large rivers in slow to moderate currents in substrates of clay, mud, sand, and gravel. Not known from impoundments (Howells 2010f; Randklev et al. 2013b; Troia et al. 2015). [Mussels of Texas 2019]

Federal Status: PT | State Status: T | SGCN: Y
Endemic: N | Global Rank: G1G2 | State Rank: S1

Pimpleback *Cyclonaias pustulosa*

Occurs in small streams to large rivers in habitats including riffles and runs with flowing water, also found in nearshore habitats such as banks and backwaters or pools. Can occur in reservoirs but varies based by population. Is often found in substrates comprising of sand, gravel, and cobble but also mud and silt (Howells et al. 1996; Williams et al. 2008; Watters et al. 2009).

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G5 | State Rank: SNR

Pistolgrip *Tritogonia verrucosa*

Reported from streams to rivers, lakes, and reservoirs, but considered less tolerant of impoundment (Haag and Cicerello 2016). Can occur in a variety of habitat types but most often found in main channel habitats such as riffles and runs with moderate current and sand, gravel, or cobble substrates (Howells et al. 1996; Williams et al. 2008).

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G4G5 | State Rank: S3S4

sandbank pocketbook *Lampsilis satura*

Occurs in small streams to large rivers in slow to moderate current in sandy mud to sand and gravel substrate. Can occur in a variety of habitats but most common in littoral habitats such as banks or backwaters or in protected areas along point bars (Randklev et al. 2013b; Randklev et al. 2014a; Troia et al. 2015). [Mussels of Texas 2019]

Federal Status: | State Status: T | SGCN: Y

LEON COUNTY

MOLLUSKS

Endemic: N | Global Rank: G2? | State Rank: S1

Texas fawnsfoot *Truncilla macrodon*

Occurs in large rivers but may also be found in medium-sized streams. Is found in protected near shore areas such as banks and backwaters but also riffles and point bar habitats with low to moderate water velocities. Typically occurs in substrates of mud, sandy mud, gravel and cobble. Considered intolerant of reservoirs (Randklev et al. 2010; Howells 2010o; Randklev et al. 2014b,c; Randklev et al. 2017a,b). [Mussels of Texas 2019]

Federal Status: T | State Status: T | SGCN: Y

Endemic: Y | Global Rank: G1 | State Rank: S2

Texas heelsplitter *Potamilus amphichaenus*

Occurs in small streams to large rivers in standing to slow-flowing water; most common in banks, backwaters and quiet pools; adapts to some reservoirs. Often found in soft substrates such as mud, silt or sand (Howells et al. 1996; Randklev et al. 2017a). [Mussels of Texas 2019]

Federal Status: PE | State Status: T | SGCN: Y

Endemic: N | Global Rank: G1G3 | State Rank: S1

Trinity pigtoe *Fusconaia chunii*

Found in a variety of habitats but most common in riffles. Inhabits various substrates though most often sand, gravel, and cobble (species was recently split from Texas Pigtoe and occurs in similar habitats; Howells 2010a; Randklev et al. 2013b; Randklev et al. 2014a; Troia et al 2015). [Mussels of Texas 2020]

Federal Status: | State Status: T | SGCN: Y

Endemic: Y | Global Rank: GNR | State Rank: S1

REPTILES

alligator snapping turtle *Macrochelys temminckii*

Aquatic: Perennial water bodies; rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near running water; sometimes enters brackish coastal waters. Females emerge to lay eggs close to the waters edge.

Federal Status: PT | State Status: T | SGCN: Y

Endemic: N | Global Rank: G3 | State Rank: S2

American alligator *Alligator mississippiensis*

Aquatic: Coastal marshes; inland natural rivers, swamps and marshes; manmade impoundments.

Federal Status: SAT | State Status: | SGCN: N

Endemic: N | Global Rank: G5 | State Rank: S4

common garter snake *Thamnophis sirtalis*

Terrestrial and aquatic: Habitats used include the grasslands and modified open areas in the vicinity of aquatic features, such as ponds, streams or marshes. Damp soils and debris for cover are thought to be critical.

Federal Status: | State Status: | SGCN: Y

Endemic: N | Global Rank: G5 | State Rank: S2

LEON COUNTY

REPTILES

eastern box turtle *Terrapene carolina*

Terrestrial: Eastern box turtles inhabit forests, fields, forest-brush, and forest-field ecotones. In some areas they move seasonally from fields in spring to forest in summer. They commonly enters pools of shallow water in summer. For shelter, they burrow into loose soil, debris, mud, old stump holes, or under leaf litter. They can successfully hibernate in sites that may experience subfreezing temperatures.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

prairie skink *Plestiodon septentrionalis*

The prairie skink can occur in any native grassland habitat across the Rolling Plains, Blackland Prairie, Post Oak Savanna and Pineywoods ecoregions.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2

pygmy rattlesnake *Sistrurus miliarius*

The pygmy rattlesnake occurs in a variety of wooded habitats from bottomland coastal hardwood forests to upland savannas. The species is frequently found in association with standing water.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2S3

slender glass lizard *Ophisaurus attenuatus*

Terrestrial: Habitats include open grassland, prairie, woodland edge, open woodland, oak savannas, longleaf pine flatwoods, scrubby areas, fallow fields, and areas near streams and ponds, often in habitats with sandy soil.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

Texas horned lizard *Phrynosoma cornutum*

Terrestrial: Open habitats with sparse vegetation, including grass, prairie, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive. Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S3

western box turtle *Terrapene ornata*

Terrestrial: Ornate or western box trutles inhabit prairie grassland, pasture, fields, sandhills, and open woodland. They are essentially terrestrial but sometimes enter slow, shallow streams and creek pools. For shelter, they burrow into soil (e.g., under plants such as yucca) (Converse et al. 2002) or enter burrows made by other species.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S3

LEON COUNTY

REPTILES

western chicken turtle *Deirochelys reticularia miaria*

Aquatic and terrestrial: This species uses aquatic habitats in the late winter, spring and early summer and then terrestrial habitats the remainder of the year. Preferred aquatic habitats seem to be highly vegetated shallow wetlands with gentle slopes. Specific terrestrial habitats are not well known.

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G5T5 | State Rank: S2S3

PLANTS

Centerville Brazos-mint *Brazoria truncata var. pulcherrima*

Open areas on deep loose sands in the post oak belt; Annual; Flowering Apr-May; Fruiting May-June

Federal Status: | State Status: | SGCN: Y
Endemic: Y | Global Rank: G4T3 | State Rank: S3

Chapman's yellow-eyed grass *Xyris chapmanii*

Mostly in soft, spongy, peaty substrates in deep muck seepage bogs; mostly in muckiest parts of hillside seepage bogs; flowering August-September, with seed maturing September-October

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G3 | State Rank: S3

goldenwave tickseed *Coreopsis intermedia*

In deep sandy soils of sandhills in openings in or along margins of post oak woodlands and pine-oak forests of east Texas; Perennial; Flowering/Fruiting May-Aug

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G3 | State Rank: S3

large beakrush *Rhynchospora macra*

Found in ombotropic quaking peat bogs; Perennial; Flowering/Fruiting Aug-Oct

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G3G4 | State Rank: S2

large-fruited sand-verbena *Abronia macrocarpa*

Restricted to sparse herbaceous vegetation in deep, somewhat excessively drained sands in openings in Post oak woodlands, sometimes in active blowouts; all known sites underlain by sandy Eocene strata; Perennial; Flowering late February-May (-June; also in the fall following periods of high rainfall)

Federal Status: E | State Status: E | SGCN: Y
Endemic: Y | Global Rank: G2? | State Rank: S2?

LEON COUNTY

PLANTS

Mohlenbrock's sedge *Cyperus grayoides*

Deep sand and sandy loam in dry, almost barren openings in upland longleaf pine savannas, mixed pine-oak forests, and post oak woodlands; Occurs primarily in deep, periodically disturbed sandy soils in open areas maintained by factors such as wind, erosion, or fire. This species does not occur in shaded areas or in areas of high competition with other herbaceous species. Habitats include remnant sand prairies, sandy fields, sand blow outs, sandhill woodlands, pine barrens, and open barrens in which the slope is sufficient to produce sand erosion. May also occur in areas where the soils have been disturbed by logging or road construction; Perennial

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S3S4

Navasota ladies'-tresses *Spiranthes parksii*

Openings in post oak woodlands in sandy loams along upland drainages or intermittent streams, often in areas with suitable hydrologic factors, such as a perched water table associated with the underlying claypan; flowering populations fluctuate widely from year to year, an individual plant does not flower every year; flowering late October-early November (-early December)

Federal Status: E	State Status: E	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Oklahoma grass pink *Calopogon oklahomensis*

Mesic, acidic, sandy to loamy prairies, pine savannas, oak woodlands, edges of bogs, and frequently mowed meadows (Goldman, Magrath & Catling 2002). Flowering March-July.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2	State Rank: S1S2

panicled indigobush *Amorpha paniculata*

A stout shrub, 3 m (9 ft) tall that grows in acid seep forests, peat bogs, wet floodplain forests, and seasonal wetlands on the edge of Saline Prairies in East Texas. It is distinguished from other Amorpha species by its fuzzy leaflets with prominent raised veins underneath, and the flower panicles, which are 8 to 16 inches long and slender, held above the foliage. Perennial; Flowering May-August.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

Parks' jointweed *Polygonella parksii*

Mostly found on deep, loose, whitish sand blowouts (unstable, deep, xeric, sandhill barrens) in Post Oak Savanna landscapes over the Carrizo and Sparta formations; also occurs in early successional grasslands, along right-of-ways, and on mechanically disturbed areas; flowering June-late October or September-November

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S2

sandhill woolywhite *Hymenopappus carrizoanus*

Disturbed or open areas in grasslands and post oak woodlands on deep sands derived from the Carrizo Sand and similar Eocene formations; flowering April-June

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S2

LEON COUNTY

PLANTS

small-headed pipewort *Eriocaulon koernickianum*

In East Texas, post-oak woodlands and xeric sandhill openings on permanently wet acid sands of upland seeps and hillside seepage bogs, usually in patches of bare sand rather than among dense vegetation or on muck; in Gillespie County, on permanently wet or moist hillside seep on decomposing granite gravel and sand among granite outcrops; flowering/fruiting late May-late June

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G2	State Rank: S1S2

Soxman's milkvetch *Astragalus soxmaniorum*

Primarily in deep sandy soils of sandhills, fallow fields, and open scrub oak-pine woodlands; Perennial; Flowering March-June; Fruiting April-June

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

Texas sandmint *Rhododon ciliatus*

Open sandy areas in the Post Oak Belt of east-central Texas; Annual; Flowering April-Aug; Fruiting May-Aug

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Appendix C
Photo Log

Photo 1: Representative view of herbaceous landcover with forested area in background. Photo taken facing west.

Photo 2: Representative view of herbaceous habitat within the northern portion of the project area. Potential monarch butterfly habitat.

ERP ENERGY RENEWAL PARTNERS, LLC	BT Kahla Storage, LLC **BT Kahla Data Center Project** Protected Species Habitat Assessment Photo Log	Location: Leon County, Texas Photos Taken By: H. Neblett, J. Gallander Date Taken: December 8-11, 2025

Photo 3: Representative view of pastureland and wooded areas, facing east.

Photo 4: View of herbaceous, grassy habitat within the northern portion of the project area. Potential monarch butterfly habitat.

Photo 5: View of open grassy habitat with surrounding post oak, and red cedar, yaupon, facing south.

Photo 6: View of the pastureland within the project area, facing west.

Photo 7: General view of deciduous trees along riparian corridor within the northwestern portion of the project area.

Photo 8: General view of riparian corridor with hackberry and yaupon trees within the northwestern portion of the project area.

Photo 9: General view of rangeland along the western edge of the project area.

Photo 10: General view of mixed forest including yaupon, river birch, and American elm, facing west.

Photo 11: General view of herbaceous habitat with surrounding forested area including post oak, eastern red cedar, blackjack oak, and yaupon trees, facing east.

Photo 12: General view of the herbaceous oak savanna within southern portion of the project area, facing east.

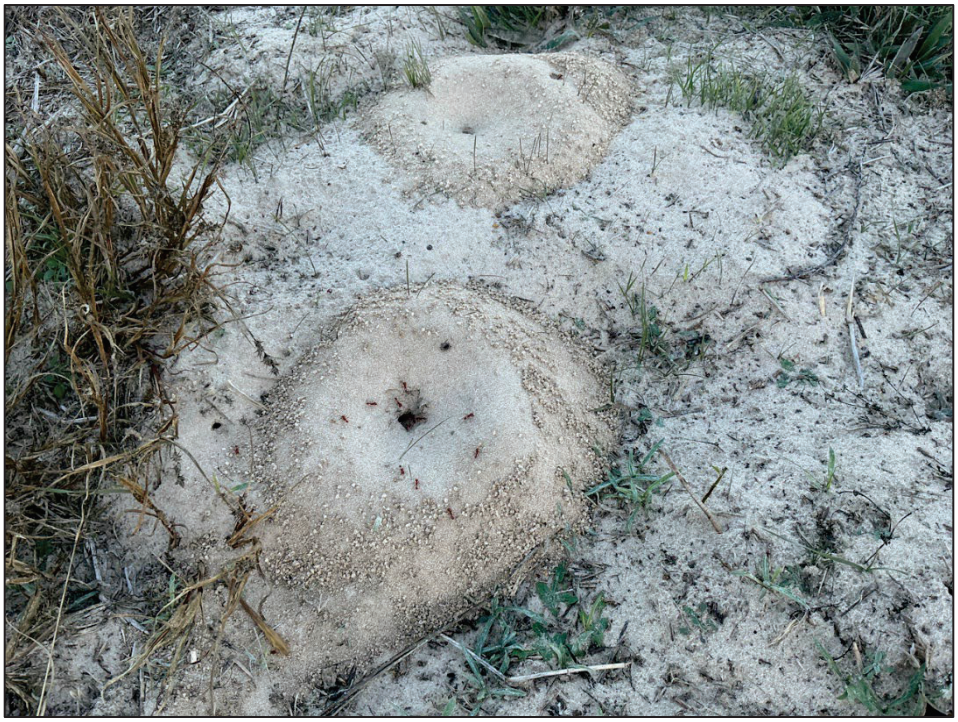


Photo 13: Carpenter ants, a potential food source for the state threatened Texas horned lizard.

Photo 14: General view of open pastureland within the southern portion of the project area, facing west.

Photo 15: Representative view of Pond 03, facing east.

Photo 16: Representative view of Pond 06, looking northeast.

Photo 17: Representative view of Wetland 01, facing south.

Photo 18: Representative view of Wetland 03, facing west.

Photo 19: Representative view of Birch Creek, looking upstream.

Photo 20: Representative view a tree snag within the project area, potential tricolored bat habitat.

Appendix D

TXNDD Elemental Occurrence Record

Occurrence List for Quads Surrounding Request Area

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Amorpha roemeriana	Texas amorpha	13			2482
Amorpha roemeriana	Texas amorpha	22			6852
Amorpha roemeriana	Texas amorpha	29			7117
Amorpha roemeriana	Texas amorpha	33			5146
Amorpha roemeriana	Texas amorpha	39			55
Amorpha roemeriana	Texas amorpha	40			56
Amorpha roemeriana	Texas amorpha	57			4244
Anaxyrus woodhousii	Woodhouse's toad	71			15999
Astragalus reflexus	Texas milk vetch	19			10298
Bat Roost		88			16597
Bat Roost		103			16614
Bat Roost		104			16615
Bat Roost		110			16623
Berberis swaseyi	Texas barberry	7			11312
Berberis swaseyi	Texas barberry	11			11296
Berberis swaseyi	Texas barberry	18			11306

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Berberis swaseyi	Texas barberry	19			11337
Berberis swaseyi	Texas barberry	21			11301
Berberis swaseyi	Texas barberry	29			11352
Brickellia dentata	gravelbar brickellbush	7			8712
Brickellia dentata	gravelbar brickellbush	9			8740
Brickellia eupatorioides var. gracillima	narrowleaf brickellbush	20			11111
Clematis texensis	scarlet leather-flower	48			14556
Cuscuta exaltata	tree dodder	14			11206
Desmanthus reticulatus	net-leaf bundleflower	9			10096
Desmanthus reticulatus	net-leaf bundleflower	13			10159
Euphorbia peplidion	low spurge	17			10219
Eurycea pterophila	Blanco River Springs salamander	25			9343
Eurycea pterophila	Blanco River Springs salamander	26			9344
Eurycea pterophila	Blanco River Springs salamander	27			9345
Eurycea pterophila	Blanco River Springs salamander	28			9346
Eurycea sosorum	Barton Springs salamander	1	E	E	2464
Eurycea sosorum	Barton Springs salamander	2	E	E	8968

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Eurycea sosorum	Barton Springs salamander	4	E	E	12589
Eurycea tonkawae	Jollyville Plateau salamander	1	T	T	29
Eurycea tonkawae	Jollyville Plateau salamander	39	T	T	9370
Eurycea tonkawae	Jollyville Plateau salamander	50	T	T	9381
Eurycea waterlooensis	Austin blind salamander	1	E	E	4046
Festuca versuta	Texas fescue	8			10999
Festuca versuta	Texas fescue	15			11065
Festuca versuta	Texas fescue	17			11013
Festuca versuta	Texas fescue	18			11025
Festuca versuta	Texas fescue	22			11017
Graptemys caglei	Cagle's map turtle	5	T		7833
Graptemys versa	Texas map turtle	2			16208
Graptemys versa	Texas map turtle	20			16284
Hexalectris nitida	Glass Mountains coral-root	16			7629
Hexalectris nitida	Glass Mountains coral-root	20			4486
Hexalectris nitida	Glass Mountains coral-root	21			2162
Hexalectris nitida	Glass Mountains coral-root	22			8192

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Hexalectris nitida	Glass Mountains coral-root	28			3946
Hexalectris nitida	Glass Mountains coral-root	32			1083
Hexalectris warnockii	Warnock's coral-root	15			8065
Holbrookia lacerata	plateau spot-tailed earless lizard	29			9481
Holbrookia lacerata	plateau spot-tailed earless lizard	31			9483
Holbrookia lacerata	plateau spot-tailed earless lizard	92			9575
Holbrookia lacerata	plateau spot-tailed earless lizard	93			9576
Holbrookia lacerata	plateau spot-tailed earless lizard	135			9739
Invertebrate Cave		1			1502
Invertebrate Cave		2			7993
Invertebrate Cave		3			3001
Invertebrate Cave		4			7626
Invertebrate Cave		5			5141
Lasiurus ega	southern yellow bat	9			14509
Lirceolus bisetus		1			12805
Lythrum ovalifolium	Plateau loosestrife	48			10578
Lythrum ovalifolium	Plateau loosestrife	50			10580

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Lythrum ovalifolium	Plateau loosestrife	59			10736
Lythrum ovalifolium	Plateau loosestrife	63			10741
Lythrum ovalifolium	Plateau loosestrife	69			10752
Lythrum ovalifolium	Plateau loosestrife	70			10753
Lythrum ovalifolium	Plateau loosestrife	72			10754
Matelea edwardsensis	plateau milkvine	22			10413
Matelea edwardsensis	plateau milkvine	23			10257
Matelea edwardsensis	plateau milkvine	24			10136
Matelea edwardsensis	plateau milkvine	25			10342
Matelea edwardsensis	plateau milkvine	27			10446
Matelea sagittifolia	arrowleaf milkvine	8			10652
Micropterus treculii	Guadalupe bass	17			4680
Micropterus treculii	Guadalupe bass	63			13927
Notropis amabilis	Texas shiner	98			13567
Notropis amabilis	Texas shiner	116			13591
Notropis oxyrhynchus	sharpnose shiner	41	E	E	14125
Notropis shumardi	silverband shiner	15			13997

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Notropis shumardi	silverband shiner	51			14128
Onosmodium helleri	Heller's marbleseed	2			2811
Onosmodium helleri	Heller's marbleseed	3			5655
Onosmodium helleri	Heller's marbleseed	6			3192
Onosmodium helleri	Heller's marbleseed	7			6646
Onosmodium helleri	Heller's marbleseed	11			5946
Onosmodium helleri	Heller's marbleseed	15			3682
Onosmodium helleri	Heller's marbleseed	25			3150
Onosmodium helleri	Heller's marbleseed	26			6485
Onosmodium helleri	Heller's marbleseed	33			531
Onosmodium helleri	Heller's marbleseed	34			1822
Onosmodium helleri	Heller's marbleseed	35			5409
Onosmodium helleri	Heller's marbleseed	36			3095
Onosmodium helleri	Heller's marbleseed	38			2
Onosmodium helleri	Heller's marbleseed	41			5572
Onosmodium helleri	Heller's marbleseed	45			6173
Onosmodium helleri	Heller's marbleseed	47			1261

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Onosmodium helleri	Heller's marbleseed	55			12475
Onosmodium helleri	Heller's marbleseed	57			12474
Philadelphus texensis var. ernestii	canyon mock-orange	7			221
Philadelphus texensis var. ernestii	canyon mock-orange	11			6840
Philadelphus texensis var. ernestii	canyon mock-orange	15			3465
Phreatodrobia punctata		2			12784
Prunus minutiflora	Texas almond	47			10496
Prunus minutiflora	Texas almond	58			10546
Prunus minutiflora	Texas almond	59			10547
Pseudacris streckeri	Strecker's chorus frog	25			16370
Quercus fusiformis / Schizachyrium scoparium Woodland	Plateau Live Oak / Little Bluestem Woodland	2			11399
Quercus fusiformis / Schizachyrium scoparium Woodland	Plateau Live Oak / Little Bluestem Woodland	4			11401
Quercus fusiformis / Schizachyrium scoparium Woodland	Plateau Live Oak / Little Bluestem Woodland	5			11489
Quercus fusiformis / Schizachyrium scoparium Woodland	Plateau Live Oak / Little Bluestem Woodland	6			11490
Quercus fusiformis / Schizachyrium scoparium Woodland	Plateau Live Oak / Little Bluestem Woodland	7			11491
Quercus fusiformis / Schizachyrium scoparium Woodland	Plateau Live Oak / Little Bluestem Woodland	9			11493
Quercus fusiformis / Schizachyrium scoparium Woodland	Plateau Live Oak / Little Bluestem Woodland	10			11494

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Schizachyrium scoparium - Sorghastrum nutans - Andropogon gerardii - Bifora americana Vertisol Grassland	Vertisol Blackland Prairie	92			11982
Schizachyrium scoparium - Sorghastrum nutans - Andropogon gerardii - Bifora americana Vertisol Grassland	Vertisol Blackland Prairie	93			11983
Setophaga chrysoparia	golden-cheeked warbler	12	E	E	4412
Setophaga chrysoparia	golden-cheeked warbler	16	E	E	7976
Setophaga chrysoparia	golden-cheeked warbler	28	E	E	2819
Setophaga chrysoparia	golden-cheeked warbler	29	E	E	7577
Setophaga chrysoparia	golden-cheeked warbler	30	E	E	7576
Setophaga chrysoparia	golden-cheeked warbler	34	E	E	2486
Setophaga chrysoparia	golden-cheeked warbler	35	E	E	8195
Setophaga chrysoparia	golden-cheeked warbler	38	E	E	4976
Setophaga chrysoparia	golden-cheeked warbler	39	E	E	1054
Setophaga chrysoparia	golden-cheeked warbler	40	E	E	1056
Setophaga chrysoparia	golden-cheeked warbler	41	E	E	7222
Setophaga chrysoparia	golden-cheeked warbler	95	E	E	6312
Setophaga chrysoparia	golden-cheeked warbler	96	E	E	1499
Setophaga chrysoparia	golden-cheeked warbler	97	E	E	6274
Setophaga chrysoparia	golden-cheeked warbler	98	E	E	2711

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Setophaga chrysoparia	golden-cheeked warbler	99	E	E	6702
Setophaga chrysoparia	golden-cheeked warbler	100	E	E	5617
Setophaga chrysoparia	golden-cheeked warbler	101	E	E	639
Setophaga chrysoparia	golden-cheeked warbler	102	E	E	7989
Setophaga chrysoparia	golden-cheeked warbler	103	E	E	2235
Setophaga chrysoparia	golden-cheeked warbler	104	E	E	907
Setophaga chrysoparia	golden-cheeked warbler	105	E	E	6313
Setophaga chrysoparia	golden-cheeked warbler	106	E	E	1500
Setophaga chrysoparia	golden-cheeked warbler	107	E	E	6273
Setophaga chrysoparia	golden-cheeked warbler	108	E	E	2712
Setophaga chrysoparia	golden-cheeked warbler	109	E	E	6701
Setophaga chrysoparia	golden-cheeked warbler	110	E	E	6700
Setophaga chrysoparia	golden-cheeked warbler	111	E	E	4540
Setophaga chrysoparia	golden-cheeked warbler	112	E	E	4103
Setophaga chrysoparia	golden-cheeked warbler	113	E	E	4979
Setophaga chrysoparia	golden-cheeked warbler	114	E	E	222
Setophaga chrysoparia	golden-cheeked warbler	115	E	E	7437

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Setophaga chrysoparia	golden-cheeked warbler	116	E	E	5055
Setophaga chrysoparia	golden-cheeked warbler	117	E	E	3733
Setophaga chrysoparia	golden-cheeked warbler	118	E	E	4713
Setophaga chrysoparia	golden-cheeked warbler	119	E	E	423
Setophaga chrysoparia	golden-cheeked warbler	120	E	E	424
Setophaga chrysoparia	golden-cheeked warbler	121	E	E	8185
Setophaga chrysoparia	golden-cheeked warbler	122	E	E	3247
Setophaga chrysoparia	golden-cheeked warbler	126	E	E	6983
Setophaga chrysoparia	golden-cheeked warbler	131	E	E	1760
Setophaga chrysoparia	golden-cheeked warbler	132	E	E	5726
Setophaga chrysoparia	golden-cheeked warbler	133	E	E	2617
Setophaga chrysoparia	golden-cheeked warbler	134	E	E	7711
Setophaga chrysoparia	golden-cheeked warbler	135	E	E	571
Setophaga chrysoparia	golden-cheeked warbler	136	E	E	1882
Setophaga chrysoparia	golden-cheeked warbler	137	E	E	5510
Setophaga chrysoparia	golden-cheeked warbler	138	E	E	3093
Setophaga chrysoparia	golden-cheeked warbler	139	E	E	7959

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Setophaga chrysoparia	golden-cheeked warbler	174	E	E	1936
Setophaga chrysoparia	golden-cheeked warbler	175	E	E	5329
Setophaga chrysoparia	golden-cheeked warbler	176	E	E	3272
Setophaga chrysoparia	golden-cheeked warbler	188	E	E	4934
Setophaga chrysoparia	golden-cheeked warbler	222	E	E	4007
Setophaga chrysoparia	golden-cheeked warbler	224	E	E	871
Seymeria texana	Texas seymeria	32			10699
Seymeria texana	Texas seymeria	33			10700
Seymeria texana	Texas seymeria	35			10702
Streptanthus bracteatus	bracted twistflower	2		T	6457
Streptanthus bracteatus	bracted twistflower	7		T	5603
Streptanthus bracteatus	bracted twistflower	9		T	8016
Streptanthus bracteatus	bracted twistflower	17		T	6843
Streptanthus bracteatus	bracted twistflower	21		T	6928
Streptanthus bracteatus	bracted twistflower	26		T	4354
Streptanthus bracteatus	bracted twistflower	33		T	9015
Streptanthus bracteatus	bracted twistflower	35		T	12689

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Streptanthus bracteatus	bracted twistflower	36		T	12690
Streptanthus bracteatus	bracted twistflower	37		T	14557
Stygopyrgus bartonensis		1			12765
Styrax platanifolius ssp. platanifolius	sycamore-leaf snowbell	27			11278
Terrapene carolina	eastern box turtle	123			15988
Texella reddelli	Reddell harvestman	2		E	354
Texella reddelli	Reddell harvestman	4		E	3686
Texella reddelli	Reddell harvestman	5		E	6408
Texella reddelli	Reddell harvestman	6		E	67
Texella reyesi	Bone Cave harvestman	17		E	3010
Texella reyesi	Bone Cave harvestman	18		E	5883
Thamnophis sirtalis	common garter snake	10			6994
Thamnophis sirtalis	common garter snake	24			4519
Tridens buckleyanus	Buckley tridens	4			65
Tridens buckleyanus	Buckley tridens	5			8197
Tridens buckleyanus	Buckley tridens	6			3700
Tridens buckleyanus	Buckley tridens	10			987

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Tridens buckleyanus	Buckley tridens	12			2412
Tridens buckleyanus	Buckley tridens	13			6630
Tridens buckleyanus	Buckley tridens	14			5064
Tridens buckleyanus	Buckley tridens	15			1132
Tridens buckleyanus	Buckley tridens	18			7566
Tridens buckleyanus	Buckley tridens	20			405
Tridens buckleyanus	Buckley tridens	21			4037
Tridens buckleyanus	Buckley tridens	24			8155
Tridens buckleyanus	Buckley tridens	25			3503
Tridens buckleyanus	Buckley tridens	26			6334
Tridens buckleyanus	Buckley tridens	33			8711
Tridens buckleyanus	Buckley tridens	34			8725
Tridens buckleyanus	Buckley tridens	51			12469
Vireo atricapilla	black-capped vireo	13		DL	6986
Vireo atricapilla	black-capped vireo	17		DL	1782
Vireo atricapilla	black-capped vireo	37		DL	5625
Vireo atricapilla	black-capped vireo	108		DL	3543

Scientific Name:	Common Name:	Occurrence Number:	State Status:	Federal Status:	Eo Id:
Vireo atricapilla	black-capped vireo	171		DL	6769
Vireo atricapilla	black-capped vireo	172		DL	5125
Vireo atricapilla	black-capped vireo	264		DL	6937
Vireo atricapilla	black-capped vireo	267		DL	6045

Element Occurrence Record

Scientific Name: *Abronia macrocarpa* **EO Number:** 15 **EO ID:** 14649

Common Name: large-fruited sand-verbena

Global Rank: G2? **State Rank:** S2? **Identification Confirmed:** Y - Yes

TX Protection Status: E **Federal Protection Status:** E

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 2000-PRE **Survey Date:** 2000-PRE **Last Observation:** 2000-PRE

EO Data:

Comments:

Habitat Description:

References:

Texas Parks and Wildlife Department and others. 2003. Texas Plant Conservation Conference, September 17-19, 2003, Austin, TX. Sponsored by Lady Bird Johnson Wildflower Center, U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department, and Texas Department of Transportation.

Singhurst, J. 2019. Emails of 11 January 2019 to Anna Strong, Texas Parks and Wildlife botanist, and 4 December 2000 to Jackie Pool, Texas Parks and Wildlife botanist, regarding information from Walter Holmes, Baylor University, on a Hibiscus dasycalyx specimen collected in Houston County and an Abronia macrocarpa observation in Leon County.

Specimens:

Source Feature Data:

EO ID: 14649

Source Feature ID: **41104**

Observation Date: 2000-PRE

Observer: Walter Holmes

Observation Data: Plants were observed in deep sands along a railroad track.

Element Occurrence Record

Scientific Name: *Astragalus soxmaniorum* **EO Number:** 19 **EO ID:** 11209

Common Name: Soxman's milkvetch

Global Rank: G3 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: **Survey Date:** **Last Observation:** 1962-03-29

EO Data:

Comments: Complete specimen citation: Near Concord, sandy bank, 29 Mar 1962, D. S. Correll & H. B. Correll 24850 (TEX-LL).

Habitat Description: Sandy bank.

References:

Correll, D.S. and H.B. Correll (24850). 1962. Specimen # none TEX-LL.

Specimens:

Correll, D. S. and H. B. Correll (24850). 1962. Specimen # none TEX-LL. (S62CORTXTXUS)

Source Feature Data:

EO ID: **11209**

Source Feature ID: **25404**

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Scientific Name: *Bat Roost* **EO Number:** 18 **EO ID:** 2700

Common Name:

Global Rank: GNR **State Rank:** SNR **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1995-01-27 **Survey Date:** 1998-06-27 **Last Observation:** 1998-06-27

EO Data: 27 January 1995: An unknown number of Myotis austroriparius, Perimyotis subflavus, and Eptesicus fuscus were observed; 21 March 1998: Nine Pipistrellus subflavus, and no Myotis austroriparius were observed; 13 May 1998: One male Pipistrellus subflavus, and no Myotis austroriparius were observed; 27 June 1998: One Pipistrellus subflavus, and no Myotis austroriparius were observed.

Comments: This is Roost #21 in the East Texas bat surveys.

Habitat Description: 27 January 1995: This winter roost is a 5 foot cement box culvert under IH-45, and a 4 foot box culvert under the access road.

References:

Horner, Peggy. 1998. Field data sheets for roost #s 19-22, 24-26 (culvert roosts) East Texas Bat Surveys. March-June 1998.

Horner, P., and R. Maxey. 1998. Report on East Texas Rare Bat Survey: 1997. Texas Parks and Wildlife Department, Austin, TX. 29 May. 15 pp.

Linam, L. A. 2002. Final Report. Project WER 09 (72): Implementation of candidate species monitoring. Section 6 Grant No. E-9 Endangered and Threatened Species Conservation. Submitted to Texas Parks and Wildlife Department, Austin, TX. 1 November 2002. (Includes field data sheets for monitoring activities of some species after 2002 .)

Walker, Christopher W., J. K. Sandel, R. L. Honeycutt, and C. Adams. 1996. Winter utilization of box culverts by vespertilionid bats in southeast Texas. The Texas Journal of Science 48(2):166-168.

Keeley, Annika. 2000. Report on east Texas bat roost monitoring: 1998-1999 of 14 March 2000.

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 2700

Source Feature ID:	**2700**
Observation Date:	1995-01-27
Observer:	Christopher W. Walker, et al.
Observation Data:	An unknown number of Myotis austroriparius, Pipistrellus subflavus, and Eptesicus fuscus were observed.
Observation Date:	1998-03-21
Observer:	Annika Keeley, et al.
Observation Data:	Nine Pipistrellus subflavus, and no Myotis austroriparius were observed.
Observation Date:	1998-05-13
Observer:	Annika Keeley, et al.
Observation Data:	One male Pipistrellus subflavus, and no Myotis austroriparius were observed.
Observation Date:	1998-06-27
Observer:	Annika Keeley, et al.
Observation Data:	One Pipistrellus subflavus, and no Myotis austroriparius were observed.
Observation Date:	2017-12-19
Observer:	Melissa Meierhofer, Lilianna Wolf, Silken Goree, John Carey
Observation Data:	A total of 22 Perimyotis subflavus were observed in a culvert winter roost.
Observation Date:	2016-12-15
Observer:	Melissa Meierhofer, Krysta Demere
Observation Data:	A total of 29 Perimyotis subflavus were observed in a culvert winter roost.

Element Occurrence Record

Scientific Name: *Bat Roost* **EO Number:** 30 **EO ID:** 8721

Common Name:

Global Rank: GNR **State Rank:** SNR **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1998-03 **Survey Date:** **Last Observation:** 1998-03

EO Data: MARCH 1998 - ONE PIPISTRELLUS SUBFLAVUS OBSERVED; SOLITARY AND WINTER ROOST

Comments: ROOST #24 EAST TEXAS BAT SURVEYS

Habitat Description: CEMENT BOX CULVERT

References:

Keeley, Annika. 2000. Report on east Texas bat roost monitoring: 1998-1999 of 14 March 2000.

Specimens:

Source Feature Data:

EO ID: **8721**

Source Feature ID: **12120**

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Scientific Name: *Bat Roost* **EO Number:** 31 **EO ID:** 8722

Common Name:

Global Rank: GNR **State Rank:** SNR **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1998-03 **Survey Date:** 1998-05 **Last Observation:** 1998-05

EO Data: March, and May 1998: One Pipistrellus subflavus was observed.

Comments: This is Roost #26 in the East Texas bat surveys.

Habitat Description: March, and May 1998: This is a cement box culvert that serves as a winter roost.

References:

Keeley, Annika. 2000. Report on east Texas bat roost monitoring: 1998-1999 of 14 March 2000.

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 8722

Source Feature ID: **12121**

Observation Date: 1998-05

Observer: Annika Keeley, et al.

Observation Data: One banded (hot pink #4) male Pipistrellus subflavus was observed. This is a cement box culvert that serves as a winter roost.

Observation Date: 1998-03

Observer: Annika Keeley, et al.

Observation Data: One banded (hot pink #4) male Pipistrellus subflavus was observed. This is a cement box culvert that serves as a winter roost.

Observation Date: 2016-12-15

Observer: Melissa Meierhofer, Krysta Demere

Observation Data: A total of 1,132 bats (one Myotis austroriparius, and 1,131 Perimyotis subflavus) were observed in a culvert winter roost.

Observation Date: 2017-05-10

Observer: Krysta Demere, Brittany Stamps

Observation Data: No bats were visible.

Observation Date: 2017-09-29

Observer: Lilianna Wolf, Brittany Stamps, Kimberly Wright

Observation Data: Six Perimyotis subflavus were observed in a culvert winter roost.

Observation Date: 2017-12-19

Observer: Melissa Meierhofer, Lilianna Wolf, Silken Goree, John Carey

Observation Data: A total of 741 Perimyotis subflavus were observed in a culvert winter roost.

Element Occurrence Record

Scientific Name: *Bat Roost* **EO Number:** 32 **EO ID:** 8723

Common Name:

Global Rank: GNR **State Rank:** SNR **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1995-01-27 **Survey Date:** **Last Observation:** 1999-07

EO Data: 27 JANUARY 1995 MYOTIS AUSTRORIPARIUS WINTER ROOST; 18 MARCH 1998 21 PIPISTRELLUS SUBFLAVUS; 13 MAY AND 27 JUNE 1998 ONE PIPISTRELLUS SUBFLAVUS; JUNE, JULY 1999 ONE PIPISTRELLUS SUBFLAVUS

Comments: ROOST #20 EAST TEXAS BAT SURVEYS; SEE MYOTIS AUSTRORIPARIUS .018

Habitat Description: BEGINS AS ONE 4 FOOT BOX CULVERT AND TURNS INTO TWO 4 FOOT BOX CULVERTS UNDER IH-45

References:

Horner, Peggy. 1998. Field data sheets for roost #s 19-22, 24-26 (culvert roosts) East Texas Bat Surveys. March-June 1998.

Horner, P., and R. Maxey. 1998. Report on East Texas Rare Bat Survey: 1997. Texas Parks and Wildlife Department, Austin, TX. 29 May. 15 pp.

Keeley, Annika. 2000. Report on east Texas bat roost monitoring: 1998-1999 of 14 March 2000.

Linam, L. A. 2002. Final Report. Project WER 09 (72): Implementation of candidate species monitoring. Section 6 Grant No. E-9 Endangered and Threatened Species Conservation. Submitted to Texas Parks and Wildlife Department, Austin, TX. 1 November 2002. (Includes field data sheets for monitoring activities of some species after 2002 .)

Walker, Christopher W., J. K. Sandel, R. L. Honeycutt, and C. Adams. 1996. Winter utilization of box culverts by vespertilionid bats in southeast Texas. The Texas Journal of Science 48(2):166-168.

Specimens:

Source Feature Data:

EO ID: **8723**

Source Feature ID: **12122**

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Element Occurrence Record

Scientific Name: *Calopogon oklahomensis* **EO Number:** 10 **EO ID:** 14597

Common Name: Oklahoma grass pink

Global Rank: G2 **State Rank:** S1S2 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1941-04-28 **Survey Date:** 1941-04-28 **Last Observation:** 1941-04-28

EO Data:

Comments:

Habitat Description:

References:

Goldman, D. H. 2019. Email to Aspen Manning, Texas Parks & Wildlife Dept. volunteer, regarding locations of Calopogon oklahomensis in Texas by county.

Specimens:

Orchid Herbarium of Oakes Ames, Harvard University Herbaria, Cambridge, MA; C. L. Lundell and A. A. Lundell (# 10338), Catalog # 02031458, 28 April 1941, AMES.

University of Michigan Herbarium, Ann Arbor, MI; C.L. Lundell and A.A. Lundell (#10338), Catalog # unknown, MICH.

Source Feature Data:

EO ID: 14597

Source Feature ID: **40657**

Observation Date: 1941-04-28

Observer: C. L. Lundell, A. A. Lundell

Observation Data: Observed in a sandy woodland. A specimen was collected (GUID 525476e5-dee4-4f11-a498-ccf15bbeb7ab).

Element Occurrence Record

Scientific Name: *Coreopsis intermedia* **EO Number:** 30 **EO ID:** 4889

Common Name: goldenwave tickseed

Global Rank: G3 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: **Survey Date:** **Last Observation:** 1989-06-08

EO Data:

Comments:

Habitat Description: XERIC BLUEJACK OAK-POST OAK SANDHILL WOODLANDS/SAND BARRENS; GEOLOGY - CARRIZO SAND (EOCENE)

References:

ORZELL, S.L. AND E.L. BRIDGES (10502). 1989. SPECIMEN # NONE TEX-LL.

Specimens:

ORZELL, S.L. AND E.L. BRIDGES (10502). 1989. SPECIMEN # NONE TEX-LL. (S89ORZTXTXUS)

UNIVERSITY OF TEXAS AT AUSTIN HERBARIUM. 1989. S.L. ORZELL #10502 AND E.L. BRIDGES, SPECIMEN # NONE TEX. 8 JUNE 1989.

Source Feature Data:

EO ID: 4889

Source Feature ID: **4889**

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Scientific Name: *Coreopsis intermedia* **EO Number:** 36 **EO ID:** 1970

Common Name: goldenwave tickseed

Global Rank: G3 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1995-08-19 **Survey Date:** 1995-08-19 **Last Observation:** 1995-08-19

EO Data: <100 PLANTS IN FLOWER AND FRUIT ON 19 AUGUST 1995

Comments:

Habitat Description: ROADSIDE FLAT SANDHILL; BLUEJACK OAK-POSTOAK-BLACKJACK OAK; RIGHT-OF-WAY AND ADJACENT LAND

References:

Singhurst, J. R. 1996. The status of nine endangered plants of East Texas: historical, ecological, and phytogeographical notes. M.S. thesis. Stephen F. Austin State University, Nacogdoches, TX. August 1996. 278 pp.

Specimens:

Source Feature Data:

EO ID: **1970**

Source Feature ID: **12126**

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Scientific Name: *Coreopsis intermedia* **EO Number:** 37 **EO ID:** 5140

Common Name: goldenwave tickseed

Global Rank: G3 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1995-08-19 **Survey Date:** 1995-08-19 **Last Observation:** 1995-08-19

EO Data: <100 PLANTS IN FLOWER AND FRUIT ON 19 AUGUST 1995

Comments:

Habitat Description: ROADSIDE FLAT SANDHILL; BLUEJACK OAK-POSTOAK-BLACKJACK OAK; RIGHT-OF-WAY AND ADJACENT LAND

References:

Singhurst, J. R. 1996. The status of nine endangered plants of East Texas: historical, ecological, and phytogeographical notes. M.S. thesis. Stephen F. Austin State University, Nacogdoches, TX. August 1996. 278 pp.

Specimens:

Source Feature Data:

EO ID: **5140**

Source Feature ID: **12149**

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Scientific Name: *Cyclonaias pustulosa* **EO Number:** 62 **EO ID:** 9827

Common Name: pimpleback

Global Rank: G5 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 2000-03-17 **Survey Date:** 2000-03-17 **Last Observation:** 2000-03-17

EO Data: 17 March 2000: Three valves of relatively-recently dead condition were observed.

Comments: Data were originally reported as Quadrula houstonensis. Based on Johnson, et al., 2018, this is not a valid species. Cyclonaias (Quadrula) houstonensis is a synonym of Cyclonaias pustulosa.

Habitat Description:

References:

Howells, Robert G. 2001. Distributional surveys of freshwater bivalves in Texas: progress report for 2000. Management Data Series No. 187. Texas Parks and Wildlife Dept., Inland Fisheries Division. 43 pp.

U.S. Fish and Wildlife Service. 2011. 50 CFR Part 17 Endangered and threatened wildlife and plants; 12-month finding on a petition to list Texas fatmucket, golden orb, smooth pimpleback, Texas pimpleback, and Texas fawnsfoot as threatened or endangered. Federal Register 76(194):62166-62212. 6 October 2011.

Morton, J., J. Dudding, E. Tsakiris, K. Inoue, R. Lopez, and C. Randklev. 2016. Survey results and habitat use for Quadrula houstonensis (smooth pimpleback) in the Brazos and Colorado River drainages of Texas. Prepared for the Interagency Task Force on Economic Growth and Endangered Species, Texas Comptroller of Public Accounts. November 2016.

Randklev, C. R., N. A. Johnson, T. Miller, J. M. Morton, J. Dudding, K. Skow, B. Boseman, M. Hart, E. T. Tsakiris, K. Inoue, and R. R. Lopez. 2017. Freshwater mussels (Unionidae): central and west Texas final report. Prepared for the Interagency Task Force on Economic Growth and Endangered Species, Texas Comptroller of Public Accounts. 321 pp. 28 April 2017.

Johnson, N. A., C. H. Smith, J. M. Pfeiffer, C. R. Randklev, J. D. Williams, and J. D. Austin. 2018. Integrative taxonomy resolves taxonomic uncertainty for freshwater mussels being considered for protection under the U.S. Endangered Species Act. Scientific Reports, DOI:10.1038/s41598-018-33806-z. Published online: www.nature.com/scientificreports.

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: **9827**

Source Feature ID: **21242**

Observation Date: 2000-03-17

Observer: Brazos River Authority volunteers

Observation Data: Three unpaired valves of relatively-recently dead condition were observed at this site.

Element Occurrence Record

Scientific Name: *Cyclonaias pustulosa* **EO Number:** 138 **EO ID:** 14307

Common Name: pimpleback

Global Rank: G5 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 2016-10-20 **Survey Date:** 2016-10-20 **Last Observation:** 2016-10-20

EO Data: 20 Oct 2016: Two live individuals were observed and collected as voucher specimens.

Comments: Data were originally reported as Quadrula houstonensis. Based on Johnson, et al., 2018, this is not a valid species. Cyclonaias (Quadrula) houstonensis is a synonym of Cyclonaias pustulosa. 1 Nov 2016: Per communication from Railroad Commission of Texas representative this location is approx. 1,900 feet from direct disturbance of the Kosse Mine which has been approved for the next five years.

Habitat Description:

References:

Johnson, N. A., C. H. Smith, J. M. Pfeiffer, C. R. Randklev, J. D. Williams, and J. D. Austin. 2018. Integrative taxonomy resolves taxonomic uncertainty for freshwater mussels being considered for protection under the U.S. Endangered Species Act. Scientific Reports, DOI:10.1038/s41598-018-33806-z. Published online: www.nature.com/scientificreports.

Okonski, P. 2017. Email of 12 July to the Texas Natural Diversity Database regarding an observation of smooth pimpleback (Quadrula houstonensis) in Steele Creek at the Kosse Mine, Limestone County.

Specimens:

Source Feature Data:

EO ID: 14307

Source Feature ID: **36955**

Observation Date: 2016-10-20

Observer: Blanton and Associates personnel

Observation Data: Two live individuals were observed and collected as voucher specimens. Per communication of 1 Nov 2016 from Railroad Commission of Texas representative this location is approx. 1,900 feet from direct disturbance of the Kosse Mine which has been approved for the next five years.

Element Occurrence Record

Scientific Name: *Cyperus grayoides* **EO Number:** 11 **EO ID:** 5536

Common Name: Mohlenbrock's sedge

Global Rank: G3G4 **State Rank:** S3S4 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: **Survey Date:** 1988-07-11 **Last Observation:** 1988-07-11

EO Data:

Comments: ORZELL #7347 (ILL, NCU, SMU, TEX)

Habitat Description: SANDHILL WOODLAND-BARRENS

References:

Bridges, E. L., and S. L. Orzell. 1989. Additions and noteworthy vascular plant collections from Texas and Louisiana, with historical, ecological and geographical notes. Phytologia 66(1):12-69. April 1989.

Specimens:

Source Feature Data:

EO ID: **5536**

Source Feature ID: **5536**

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Scientific Name: *Cyperus grayoides* **EO Number:** 36 **EO ID:** 2977

Common Name: Mohlenbrock's sedge

Global Rank: G3G4 **State Rank:** S3S4 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: **Survey Date:** **Last Observation:** 1989-06-05

EO Data:

Comments: VOUCHER: ORZELL AND BRIDGES #10324 (TEX-LL)

Habitat Description: SANDHILL; GEOLOGY - SPARTA SAND/WECHES FORMATION CONTACT (EOCENE)

References:

Specimens:

UNIVERSITY OF TEXAS AT AUSTIN HERBARIUM. 1989. S.L. ORZELL #10324 AND E.L. BRIDGES, SPECIMEN # NONE TEX. 5 JUNE 1989.

Source Feature Data:

EO ID: **2977**

Source Feature ID: **12577**

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Scientific Name: *Cyperus grayoides* **EO Number:** 37 **EO ID:** 5604

Common Name: Mohlenbrock's sedge

Global Rank: G3G4 **State Rank:** S3S4 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: **Survey Date:** **Last Observation:** 1989-06-05

EO Data:

Comments: VOUCHER: ORZELL AND BRIDGES #10309 (TEX-LL)

Habitat Description: SANDHILL WOODLAND/BARRENS; GEOLOGY - SPARTA SAND (EOCENE)

References:

Specimens:

UNIVERSITY OF TEXAS AT AUSTIN HERBARIUM. 1989. S.L. ORZELL #10309 AND E.L. BRIDGES, SPECIMEN # NONE TEX. 5 JUNE 1989.

Source Feature Data:

EO ID: 5604

Source Feature ID: **5604**

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Scientific Name: *Cyperus grayoides* **EO Number:** 38 **EO ID:** 849

Common Name: Mohlenbrock's sedge

Global Rank: G3G4 **State Rank:** S3S4 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: **Survey Date:** **Last Observation:** 1989-06-05

EO Data:

Comments: VOUCHER: ORZELL AND BRIDGES #10291

Habitat Description: SANDHILL WOODLAND/BARRENS; GEOLOGY - SPARTA SAND (EOCENE), REDDISH TINGED

References:

Specimens:

UNIVERSITY OF TEXAS AT AUSTIN HERBARIUM. 1989. S.L. ORZELL #10291 AND E.L. BRIDGES, SPECIMEN # NONE TEX. 5 JUNE 1989.

Source Feature Data:

EO ID: **849**

Source Feature ID: **849**

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Scientific Name: *Cyperus grayoides* **EO Number:** 39 **EO ID:** 8001

Common Name: Mohlenbrock's sedge

Global Rank: G3G4 **State Rank:** S3S4 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: **Survey Date:** **Last Observation:** 1989-06-05

EO Data:

Comments: VOUCHER: ORZELL AND BRIDGES #10279

Habitat Description: SANDHILL WOODLAND/BARRENS; GEOLOGY - SPARTA SAND (EOCENE)

References:

Specimens:

UNIVERSITY OF TEXAS AT AUSTIN HERBARIUM. 1989. S.L. ORZELL #10279 AND E.L. BRIDGES, SPECIMEN # NONE TEX. 5 JUNE 1989.

Source Feature Data:

EO ID: 8001

Source Feature ID: **8001**

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Scientific Name: *Eriocaulon koernickianum* **EO Number:** 4 **EO ID:** 5169

Common Name: small-headed pipewort

Global Rank: G2 **State Rank:** S1S2 **Identification Confirmed:** Y - Yes

TX Protection Status: T **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: **Survey Date:** **Last Observation:**

EO Data: Apr 1992: All known seeps and bogs were surveyed, but Eriocaulon koernickianum was not found. Unknown date: Two populations were found in Leon County. Site was likely destroyed by strip mining.

Comments: According to Steve Orzell, Charles Perino collected a specimen in 1979 in Freestone County near Buffalo. In addition, Geyata Ajilvsgi collected a specimen in Leon County. Orzell visited the site in Leon County and found E. texense, but no E. koernickianum. MacRoberts and MacRoberts report that Perino did not collect in Freestone County, his "Freestone" specimens actually come from Limestone County (See EO 1, EOID 7421). In addition, it is possible that the observation in Leon County was a misidentification.

Habitat Description: Hillside bogs - seepage slopes with partially open post oak canopy

References:

Ajilvsgl, G. 1984. Notes of 25 July with Tina Allday-Bondy, Texas Natural Heritage Program, regarding locations for Trillium texanum and Eriocaulon koernickianum.

MacRoberts, M. H. and B. H. MacRoberts. 1999. Status report on Eriocaulon kornickianum (dwarf pipewort) in Texas. Report prepared for the U.S. Fish and Wildlife Service, Albuquerque. 19 pp. 30 June 1999.

Mariah Associates, Inc. 1992. Fish and wildlife resources information Jewett Lignite Mine. Wildlife volume: Appendix 133a and 133b. Prepared for Northwestern Resources Company, Jewett, TX. August 1992.

Watson, L. E. 1991. Memorandum of 19 August to Jackie Poole, Texas Parks and Wildlife botanist, concerning herbarium records for Eriocaulon kornickianum.

Perino, C. No date. Notes from a conversation with Charlie Perino, Austin, TX, regarding Eriocaulon kornickianum.

MacRoberts, M. H., and B. R. MacRoberts. 2005. Status and management of Eriocaulon koernickianum (Eriocaulaceae) in Texas. Phytologia 87(3):179-203

MacRoberts, M. H., and B. R. MacRoberts. 2002. Final Report. Project WER64: Status survey of Eriocaulon koernickianum (dwarf pipewort) in Texas. Section 6 Grant No. E-16 Endangered and Threatened Species Conseration. Submitted to Texas Parks & Wildlife Dept. Austin, TX. 41 pp. 1 November 2002.

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 5169

Source Feature ID:	**5169**
Observation Date:	Unknown
Observer:	Charles Perino
Observation Data:	Two populations were found in Leon County. Site was likely destroyed by strip mining.
Observation Date:	1992-04-21
Observer:	Mariah biologists
Observation Data:	Between April 21 and 30, 1992, Mariah biologists surveyed all known seeps and bogs within the Jewett Mine permit area for E. kornickianum while performing general floristic surveys of these areas. Two congeners of the small-head pipewort (E. texense and E. decangulare) were located at some of these sites. No E. kornickianum individuals or populations were found.

Element Occurrence Record

Scientific Name: *Haliaeetus leucocephalus* **EO Number:** 26 **EO ID:** 2469

Common Name: bald eagle

Global Rank: G5 **State Rank:** S3B,S3N **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:** DL

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1981 **Survey Date:** 2005 **Last Observation:** 2005

EO Data: NEST # 147-1A: 1982-1983 - NEST WAS INACTIVE; 1984 - THE NEST FELL. NEST # 147-1B: 1986-1988 - NEST WAS INACTIVE; 1989 - THE NEST FELL. NEST # 147-3A: 2001 - NEST WAS ACTIVE BUT PRODUCED 0 YOUNG; 2002 - NEST PRODUCED 1 YOUNG; 2003 - NEST WAS ACTIVE BUT PRODUCED 0 YOUNG; 2004-2005 - NEST PRODUCED 2 YOUNG.

Comments: TPWD NEST #147-1A/B AND #147-3A

Habitat Description: LAKE SHORE, FORESTED

References:

Ortego, Brent. 2001. Performance Report Project No. 10: Bald eagle nest survey and management. Federal Aid Grant No. W-125-R-12. 30 September 2001.

MITCHELL, MARK. 1997. MEMO TO SHANNON BRESLIN OF 30 JULY 1997 PROVIDING BALD EAGLE NESTING DATA, INCLUDING COUNTY MAPS WITH ESTIMATED TERRITORIES.

Ortego, Brent. 2003. Chronological outcome of bald eagle nest surveys in Texas, 1982-2003.

Gregory, Chris. 2004. Chronological outcome of bald eagle nest surveys in East Texas, 1982-2004.

Ortego, Brent. 2005. Performance report Project No. 10: Bald eagle nest survey and management. Federal Aid Grant No. W-125-R-16. 30 September 2005.

Specimens:

Source Feature Data:

EO ID: 2469

Source Feature ID: **12128**

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Element Occurrence Record

Scientific Name: *Haliaeetus leucocephalus* **EO Number:** 62 **EO ID:** 698

Common Name: bald eagle

Global Rank: G5 **State Rank:** S3B,S3N **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:** DL

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1992 **Survey Date:** 2002 **Last Observation:** 2001

EO Data: NEST # 147-2B: 1992 - NEST PRODUCED 2 YOUNG; 1993-1995 - NEST WAS INACTIVE. NEST # 147-2C: 1993-1994 - NEST PRODUCED 2 YOUNG; 1995 - THE NEST FELL. NEST # 147-2D: 1995 - NEST WAS ACTIVE BUT PRODUCED 0 YOUNG; 1996 - NEST PRODUCED 2 YOUNG; 1997 - NEST PRODUCED 1 YOUNG; 1998-2001 - NEST PRODUCED 2 YOUNG; 2002 - THE NEST FELL.

Comments: TPWD NEST #147-2B/C/D

Habitat Description:

References:

MITCHELL, MARK. 1999. PROJECT NO. 30: BALD EAGLE NEST SURVEY AND MANAGEMENT. PERFORMANCE REPORT. AUGUST 31, 1999.

MITCHELL, MARK. 1997. MEMO TO SHANNON BRESLIN OF 30 JULY 1997 PROVIDING BALD EAGLE NESTING DATA, INCLUDING COUNTY MAPS WITH ESTIMATED TERRITORIES.

Polasek, Len G. 2000. Performance report Project No. 10: Bald eagle nest survey and management. Federal Aid Grant No. W-125-R-11. 31 August 2000.

Ortego, Brent. 2001. Performance Report Project No. 10: Bald eagle nest survey and management. Federal Aid Grant No. W-125-R-12. 30 September 2001.

Mariah Associates, Inc. 1992. Fish and wildlife resources information Jewett Lignite Mine. Wildlife volume: Appendix 133a and 133b. Prepared for Northwestern Resources Company, Jewett, TX. August 1992.

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 698

Source Feature ID: 12150

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Scientific Name: *Haliaeetus leucocephalus* **EO Number:** 67 **EO ID:** 1072

Common Name: bald eagle

Global Rank: G5 **State Rank:** S3B,S3N **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:** DL

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1988 **Survey Date:** 2005 **Last Observation:** 2000

EO Data: 18 FEBRUARY 1992 THREE NESTS SIGHTED, ONE WITH ADULT IN BROODING POSITION, NO EGGS, YOUNG, OR IMMATURE BIRDS SEEN; NEST # 198-2A: 1988-1994 - NEST WAS INACTIVE. NEST # 198-2B: 1989 - NEST PRODUCED 2 YOUNG; 1990 - THE NEST FELL. NEST # 198-2C: 1990 - NEST WAS ACTIVE BUT PRODUCED 0 YOUNG; 1991-1994 - NEST WAS INACTIVE. NEST # 198-2D: 1991-1992 - NEST PRODUCED 2 YOUNG; 1993-1996 - NEST WAS INACTIVE; 1997 - NO DATA; 1998 - NEST WAS INACTIVE; 1999-2000 - NEST WAS ACTIVE BUT PRODUCED 0 YOUNG; 2001-2003 - NEST WAS INACTIVE; 2005 - NEST WAS INACTIVE.

Comments: TPWD NEST #198-2A/B/C/D

Habitat Description:

References:

MITCHELL, MARK. 1999. PROJECT NO. 30: BALD EAGLE NEST SURVEY AND MANAGEMENT. PERFORMANCE REPORT. AUGUST 31, 1999.

MITCHELL, MARK. 1997. MEMO TO SHANNON BRESLIN OF 30 JULY 1997 PROVIDING BALD EAGLE NESTING DATA, INCLUDING COUNTY MAPS WITH ESTIMATED TERRITORIES.

Polasek, Len. 1999. Chronological outcome of bald eagle nest surveys in Texas 1982-1999.

Polasek, Len G. 2000. Performance report Project No. 10: Bald eagle nest survey and management. Federal Aid Grant No. W-125-R-11. 31 August 2000.

Ortego, Brent. 2001. Performance Report Project No. 10: Bald eagle nest survey and management. Federal Aid Grant No. W-125-R-12. 30 September 2001.

Mariah Associates, Inc. 1992. Fish and wildlife resources information Jewett Lignite Mine. Wildlife volume: Appendix 133a and 133b. Prepared for Northwestern Resources Company, Jewett, TX. August 1992.

Ortego, Brent. 2003. Chronological outcome of bald eagle nest surveys in Texas, 1982-2003.

Gregory, Chris. 2004. Chronological outcome of bald eagle nest surveys in East Texas, 1982-2004.

Ortego, Brent. 2005. Performance report Project No. 10: Bald eagle nest survey and management. Federal Aid Grant No. W-125-R-16. 30 September 2005.

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 1072

Source Feature ID: 12119

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Scientific Name: *Macrochelys temminckii* **EO Number:** 63 **EO ID:** 14702

Common Name: alligator snapping turtle

Global Rank: G3 **State Rank:** S2 **Identification Confirmed:** Y - Yes

TX Protection Status: T **Federal Protection Status:** PT

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 2019-11-08 **Survey Date:** 2019-11-08 **Last Observation:** 2019-11-08

EO Data:

Comments:

Habitat Description:

References:

Norrid, K. 2023. Alligator snapping turtle observations reported to Kelly Norrid, Texas Parks and Wildlife Department urban wildlife biologist.

Specimens:

Source Feature Data:

EO ID: **14702**

Source Feature ID: **41451**

Observation Date: 2019-11-08

Observer: Unknown

Observation Data: A turtle was observed and a photograph was taken.

Element Occurrence Record

Scientific Name: *Myotis austroriparius* **EO Number:** 20 **EO ID:** 8724

Common Name: southeastern myotis bat

Global Rank: G4 **State Rank:** S3? **Identification Confirmed:**

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1995-01-27 **Survey Date:** 1999-07 **Last Observation:** 1995-01-27

EO Data: Jan 27 1995: At least one M. austroriparius observed, found in association with Pipistrellus subflavus subflavus. Bat was active and not in torpor. Further surveys indicate that this location is used as a day roost throughout the year. Feb 1997: No M. austroriparius found. Mar 18 1998: No M. austroriparius found. May 5 1998: No M. austroriparius found. May 27 1998: No M. austroriparius found. Jul 24 1998: No M. austroriparius found. Oct 16 1998: No M. austroriparius found. Jun 1999: No M. austroriparius found. Jul 1999: No M. austroriparius found.

Comments:

Habitat Description: Concrete box culvert in good condition. Single entrance on the west that branches into two tunnels and exits on the east end. East side is heavily vegetated.

References:

Horner, P., and R. Maxey. 1998. Report on East Texas Rare Bat Survey: 1997. Texas Parks and Wildlife Department, Austin, TX. 29 May. 15 pp.

Walker, Christopher W., J. K. Sandel, R. L. Honeycutt, and C. Adams. 1996. Winter utilization of box culverts by vespertilionid bats in southeast Texas. The Texas Journal of Science 48(2):166-168.

Horner, Peggy. 1998. Field data sheets for roost #s 19-22, 24-26 (culvert roosts) East Texas Bat Surveys. March-June 1998.

Keeley, Annika. 2000. Report on east Texas bat roost monitoring: 1998-1999 of 14 March 2000.

Linam, L. A. 2002. Final Report. Project WER 09 (72): Implementation of candidate species monitoring. Section 6 Grant No. E-9 Endangered and Threatened Species Conservation. Submitted to Texas Parks and Wildlife Department, Austin, TX. 1 November 2002. (Includes field data sheets for monitoring activities of some species after 2002 .)

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 8724

Source Feature ID: **14358**

Observation Date: 1995-01-27

Observer: Christopher Walker, Jody Sandel, Rodney Honeycutt, Clark Adams

Observation Data: At least one M. austroriparius observed, did not appear to be in torpor, as they were alert and flew when approached. Found in association with Pipistrellus subflavus subflavus. Further surveys through October suggest that this species uses the culverts as day roosts throughout the year.

Observation Date: 1997-02

Observer:

Observation Data: No M. austroriparius found.

Observation Date: 1998-03-18

Observer: Peggy Horner

Observation Data: No M. austroriparius found.

Observation Date: 1998-05-13

Observer: Peggy Horner, Tony Strohmeyer

Observation Data: No M. austroriparius found.

Observation Date: 1998-05-27

Observer: Tony Strohmeyer, Mark Pond

Observation Data: No M. austroriparius found.

Observation Date: 1998-07-24

Observer: Tony Strohmeyer

Observation Data: No M. austroriparius found.

Observation Date: 1998-10-16

Observer: Tony Strohmeyer

Observation Data: No M. austroriparius found.

Observation Date: 1999-06

Observer:

Observation Data: No M. austroriparius found.

Observation Date: 1999-07

Observer:

Observation Data: No M. austroriparius found.

Element Occurrence Record

Scientific Name: *Notropis atrocaudalis* **EO Number:** 95 **EO ID:** 13373

Common Name: blackspot shiner

Global Rank: G4 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1979-05-15 **Survey Date:** 1979-05-15 **Last Observation:** 1979-05-15

EO Data: 15 May 1979: 10 specimens collected.

Comments:

Habitat Description:

References:

Fishes of Texas. 2015. Database download from the Fishes of Texas online database (http://www.fishesoftexas.org/home/) of SGCN species on 11 May 2015. University of Texas, Texas Natural History Collections, Excel spreadsheet.

Specimens:

Texas Natural History Collections, University of Texas at Austin, Austin, TX; Espey Huston and Associates (#unknown), Catalog # 11437, 15 May 1979, TNHC.

Source Feature Data:

EO ID: 13373

Source Feature ID: **34490**

Observation Date: 1979-05-15

Observer: Espey Huston and Associates

Observation Data: 10 specimens were collected (TNHC 11437).

Element Occurrence Record

Scientific Name: *Notropis atrocaudalis* **EO Number:** 117 **EO ID:** 13421

Common Name: blackspot shiner

Global Rank: G4 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1979-05-15 **Survey Date:** 1979-05-15 **Last Observation:** 1979-05-15

EO Data: 15 May 1979: 3 specimens collected.

Comments:

Habitat Description:

References:

Fishes of Texas. 2015. Database download from the Fishes of Texas online database (http://www.fishesoftexas.org/home/) of SGCN species on 11 May 2015. University of Texas, Texas Natural History Collections, Excel spreadsheet.

Specimens:

Texas Natural History Collections, University of Texas at Austin, Austin, TX; Espey Huston and Associates (#unknown), Catalog # 11486, 15 May 1979, TNHC.

Source Feature Data:

EO ID: 13421

Source Feature ID: **34492**

Observation Date: 1979-05-15

Observer: Espey Huston and Associates

Observation Data: 3 specimens were collected (TNHC 11486).

Element Occurrence Record

Scientific Name: *Rhododon ciliatus* **EO Number:** 15 **EO ID:** 10115

Common Name: Texas sandmint

Global Rank: G3 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1954-06-03 **Survey Date:** **Last Observation:** 1954-06-03

EO Data:

Comments: Complete label citation: Small seep in reddish sand along road on eastern flank of Marquez salt dome, water oak, post oak, blackjack woods, 3 Jun 1954, B. C. Tharp, B. L. Turner & M. C. Johnston 541013 (BRIT/SMU, TEX-LL).

Habitat Description: Small seep in reddish sand along road through water oak - post oak - blackjack woods on slope of salt dome.

References:

Tharp, B.C., B.L. Turner, and M.C. Johnston (541013). 1954. BRIT/SMU, TEX-LL.

Specimens:

Tharp, B.C., B.L. Turner, and M.C. Johnston (541013). 1954. BRIT/SMU, TEX-LL. (S54THATXTXUS) (S54THASMTXUS)

Source Feature Data:

EO ID: 10115

Source Feature ID: **24083**

Observation Date:

Observer:

Observation Data:

Element Occurrence Record

Scientific Name: *Spiranthes parksii* **EO Number:** 2 **EO ID:** 713

Common Name: Navasota ladies'-tresses

Global Rank: G3 **State Rank:** S3 **Identification Confirmed:** ? - Questionable

TX Protection Status: E **Federal Protection Status:** E

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1972-11-04 **Survey Date:** 1986-10-26 **Last Observation:** 1972-11-04

EO Data:

Comments:

Habitat Description:

References:

Orzell, S. L. 1986. Field survey of east and southeast Texas, 24-31 October 1986.

Catling, P. M. 1980. Two letters of 18 July and 30 July to John Spinks, Chief, Office of Endangered Species, U.S. Fish and Wildlife Service, regarding the proposal to list Spiranthes parksii published in the Federal Register.

U.S. Fish and Wildlife Service. 2009. Navasota ladies'-tresses (Spiranthes parksii) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Austin Ecological Services Field Office, Austin, TX. 65 pp.

U.S. Fish and Wildlife Service. 1993. Navasota ladies'-tresses (Spiranthes parksii) draft recovery plan. Submitted to U.S. Fish and Wildlife Service, Region 2, Albuquerque, New Mexico.

Andersen, M.D. and G.P. Beauvais. 2013. Predictive distribution modeling of Species of Greatest Conservation Need in Texas. Prepared by the Wyoming Natural Diversity Database for the Texas Natural Diversity Database, Texas Parks and Wildlife Department, Austin, TX. 31 pp. 31 Aug 2013.

Poole, J. M. 1985. Navasota ladies'-tresses (Spiranthes parksii) Endangered Species Information System species workbook. Part I. Species distribution. Part II. Species biology. Prepared for U.S. Dept. of the Interior Fish and Wildlife Service, Region 2.

Poole, J. M., D. M. Price, and K. L. Kennedy. 2000. Minimum viable population estimates and population viability for 27 listed plant species in Texas. Notes and calculations dated 23, 24 October, 6-8 November, and 4 December 2000.

Diamond, D. D., and C. D. True. 2000. Houston toad and Navasota ladies'-tresses habitat assessment via use of remotely sensed satellite data and geographic inforatioin system analysis. Final report for cooperative agreement # 1448-20181-99-J829. Submitted to U.S. Fish and Wildlife Service, Austin Texas, 20 April. 17 pp.

Specimens:

S. M. Tracy Herbarium, Texas A & M University, College Station, TX; C. A. Clark (# 799), Accession # 138841, 4 Nov 1972, TAES.

Element Occurrence Record

Source Feature Data:

EO ID: 713

Source Feature ID:	**15868**
Observation Date:	1972-11-04
Observer:	C. A. Clark
Observation Data:	A specimen was collected. Soils described as Lakeland-Cuthbert soils. Specimen label contained a description of infrequent and growing on slope in creek bottom. Directions stated 1.6 miles from FM 39 on the county road to Marquez.
Observation Date:	1986-10-26
Observer:	S.L. Orzell
Observation Data:	No Spiranthes parksii were observed. The habitat appeared unsuitable and had deep sandy soil. Only closed form of Spiranthes cernua was noted at the site.

Element Occurrence Record

Scientific Name: *Spiranthes parksii* **EO Number:** 97 **EO ID:** 6080

Common Name: Navasota ladies'-tresses

Global Rank: G3 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: E **Federal Protection Status:** E

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1991-10 **Survey Date:** 1991-10 **Last Observation:** 1991-10

EO Data:

Comments:

Habitat Description:

References:

Mariah Associates, Inc. 1992. Fish and wildlife resources information Jewett Lignite Mine. Wildlife volume: Appendix 133a and 133b. Prepared for Northwestern Resources Company, Jewett, TX. August 1992.

Tejas Ecological Services. 2001. A compendium on Spiranthes parksii, Correll (Navasota ladies'-tresses). 23 pp.

U.S. Fish and Wildlife Service. 2009. Navasota ladies'-tresses (Spiranthes parksii) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Austin Ecological Services Field Office, Austin, TX. 65 pp.

U.S. Fish and Wildlife Service. 1993. Navasota ladies'-tresses (Spiranthes parksii) draft recovery plan. Submitted to U.S. Fish and Wildlife Service, Region 2, Albuquerque, New Mexico.

Andersen, M.D. and G.P. Beauvais. 2013. Predictive distribution modeling of Species of Greatest Conservation Need in Texas. Prepared by the Wyoming Natural Diversity Database for the Texas Natural Diversity Database, Texas Parks and Wildlife Department, Austin, TX. 31 pp. 31 Aug 2013.

Diamond, D. D., and C. D. True. 2000. Houston toad and Navasota ladies'-tresses habitat assessment via use of remotely sensed satellite data and geographic inforatioin system analysis. Final report for cooperative agreement # 1448-20181-99-J829. Submitted to U.S. Fish and Wildlife Service, Austin Texas, 20 April. 17 pp.

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 6080

Source Feature ID: **6080**

Observation Date: 1991-10

Observer: David Severinson, Geyata Ajilvsgi, Stanley Jones

Observation Data: Two general groupings of Spiranthes parksii were found at this site. One grouping consisted of three groups of three individuals (total of 9 plants) on a wooded slope associated with a deeply dissected drainage (on NW side of drainage). This site has a mixture of post oak woodland, a hydric hillside seep area, and mixed-grass oldfields along a creek leading into an impoundment. Slopes are mostly less than 10% with slopes approaching 15% along the creek. Post oak represents the dominant arboreal component of the woodland with yaupon being dominant in the understory. The other more extensive grouping was found on an open, hydric hillside seep area, on a slight slope (approx. 6%) above a small stock tank (SW of tank). Soils in this area are sandy loams to fine sandy loams with some mottling present due to the saturated nature of the seep area. 19 S. parksii individuals were found scattered throughout the area along with 30-40 S. cernua.

Element Occurrence Record

Scientific Name: *Spiranthes parksii* **EO Number:** 140 **EO ID:** 8804

Common Name: Navasota ladies'-tresses

Global Rank: G3 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: E **Federal Protection Status:** E

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 2004-10-18 **Survey Date:** 2021-11-05 **Last Observation:** 2021-11-05

EO Data:

Comments: Cathy Walters, graduate student at Texas A&M, collected DNA from 19 Spiranthes parksii at this site in Fall 2004 and deposited with Dr. Manhart of Texas A&M University. This would have been after the site was discovered on 18 October 2004 but before the Navasota Ladies'-Tresses Recovery Team met on 8 November 2004. This site is used as a reference population for Spiranthes parksii surveys in the area, especially surveys done at Kosse and Bremond mines. In the 2019 Transplant Report from Blanton & Associates, it states that Luminant's protection measures for Spiranthes parksii include protection of this site by deed recording the property to ensure that it is preserved and maintained in the existing condition and as a potential research/learning site and as a potential relocation area for transplanting Spiranthes parksii that are encountered within proposed disturbance areas for the mine.

Habitat Description:

References:

Element Occurrence Record

Thomas, J. A. 2005. Texas Natural Diversity Database reporting form concerning observations of Spiranthes parksii northeast of Kosse, TX and west of Cox Creek in Limestone County, Texas.

Tanner, M. 2006. Evaluation of Navasota ladies'-tresses (Spiranthes parksii) in northern Robertson and southern Limestone counties (Revised November 2006).

HDR Engineering, Inc. 2007. Limestone County Navasota ladies'-tresses population. 7 and 8 January 2007.

Unknown author. 2004. Spiranthes parksii recovery team meeting notes for 13 August 2003 and 13 July and 8 November 2004.

HDR Engineering, Inc. 2004. Polygon shapefile of the Spiranthes parksii location in Limestone County north of Steele Creek, east of Davis Creek, and west of Cox Creek.

Wang, H.-H., C. L. Wonkka, M. L. Treglia, W. E. Grant, F. E. Smeins, and W. E. Rogers. 2015. Species distribution modeling for conservation of an endangered endemic orchid. AoB PLANTS (www.aobplants.oxfordjournals.org).

Wang, H.-H., C. L. Wonkka, M. L. Treglia, W. E. Grant, F. E. Smeins, and W. E. Rogers. 2019. Incorporating local-scale variables into distribution models enhances predictability for rare plant species with biological dependencies. Biodiversity and Conservation 28(1):171-182.

U.S. Fish and Wildlife Service. 2009. Navasota ladies'-tresses (Spiranthes parksii) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Austin Ecological Services Field Office, Austin, TX. 65 pp.

Andersen, M.D. and G.P. Beauvais. 2013. Predictive distribution modeling of Species of Greatest Conservation Need in Texas. Prepared by the Wyoming Natural Diversity Database for the Texas Natural Diversity Database, Texas Parks and Wildlife Department, Austin, TX. 31 pp. 31 Aug 2013.

Multiple authors. 2015. Appendices relating to Navasota ladies'-tresses (Spiranthes parksii) at the Kosse Mine in Limestone and Roberston counties, included with the renewal/revision of Railroad Commission of Texas Mine Permit No. 50A - Area D, USACE # SWF-2012-00349.

Best, C. 2006. E-mail chain of 13 October intended to link interested parties with regard to surveys for Spiranthes parksii during the fall of 2006.

Blanton & Associates, Inc. 2022. Reports from the 2016, 2017, 2018, 2019, 2020, and 2021 Navasota Ladies'-Tresses presence/absence surveys at Kosse Mine, Limestone and Robertson Counties, TX. Prepared for Luminant Mining Company, Irving, TX.

Blanton & Associates, Inc. 2022. Navasota Ladies'-Tresses 2021 presence/absence survey report for the Bremond Mine, Robertson County, TX. Prepared for Luminant Mining Company, Irving, TX. 61 pp. June 2022.

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 8804

Source Feature ID:	**13209**
Observation Date:	2004-10-18
Observer:	James Thomas, Tom Trimble, Dr. Jim Manhart
Observation Data:	85 flowering plants, including 80 on W side of ROW and 5 on E side were observed. Photographs were taken. The health of the plants appeared good. Size of the W side population was 0.2 ac. The E population measured 6 meters by 3 meters. The E population was on a gentle slope in a small opening in post oak/yaupon and approx. 300 ft. south of the nearest stream. The W population had two subpopulations (groups) and was described as follows: 1.Westernmost group of 75 plants was in a grassy opening which is slightly concave area slopes to the N. Most plants were within 50 ft. of transition from low hill (2 to 5% slopes) to nearly level (0-2% slope). 2.Eastern group (of W population) was within 100 ft. of the transmission line ROW on slightly convex surface but nearly level. Herbaceous associates sparse and some recent soil disturbance (possibly hog) was observed. No stream channel within immediate vicinity (i.e. 300-400 feet). Site was visited two weeks later and the majority of the plants had been eaten. The overall habitat for the entire area was described as openings in post oak woodlands with no stream channel within 1,000 ft. of the W population. The area has gentle slopes and no streams or obvious surface hydrology. The soil map unit is Padina loamy fine sand, 1 to 5%.
Observation Date:	2005-11
Observer:	James Thomas, Tom Trimble, Dr. Jim Manhart, Matt Tanner
Observation Data:	16 flowering plants were observed in area west of the transmission line. Inflorescence size and health were somewhat reduced compared to 2004 conditions, presumably due to dry conditions. Photographs of flowering individuals were taken by Matt Tanner (copyrighted). The landscape was described as mixed woodlands and pasture with grazing. Shrub layer in woodlands appears to be increasing (thicketization) due to lack of fire and inconsistent grazing pressure.
Observation Date:	2006-10-23
Observer:	Tom Trimble
Observation Data:	During the weeks of 9 and 23 Oct, area west of the transmission line was surveyed, but no S. parksii were observed.
Observation Date:	2006-11-03
Observer:	HDR Engineering, Inc. personnel
Observation Data:	8 or 9 S. parksii were observed. The area with the largest count in 2004 now has dense coverage of grasses and a peat-like moss, which observer is trying to identify. (Received conflicting data from HDR regarding number of S. parksii observed.)
Observation Date:	2006-11-07
Observer:	Tom Trimble, Ricky Wilson
Observation Data:	15 or 23 additional S. parksii were noted this morning. Several of the plants were early in flowering. Several of these were in locations that had no flowering S. parksii in 2004 or 2005. The plants were observed in areas both higher and lower in elevation than those recorded in 2004. (Received conflicting data from HDR regarding number of S. parksii observed.)
Observation Date:	2014-10-20
Observer:	James Thomas, Ricky Wilson, Dustin McBride, Brandon Tate, Erin Hatchett, Peggy Jones, and John Wooten

Element Occurrence Record

Observation Data:	15 Spiranthes parskii were observed and appeared to be in the early stages of flowering . Additionally, 7 Spiranthes cernua were found in full flowering condition. The survey was performed by two, 2-person teams that included the people listed above. The plants were all found on the west side of the road.
Observation Date:	2014-11-13
Observer:	James Thomas, Ricky Wilson, Dustin McBride, Brandon Tate, Erin Hatchett, Peggy Jones, and John Wooten
Observation Data:	73 Spiranthes parksii were observed and all appeared to be in full flowering condition during surveys of 10-13 November. 6 Spiranthes cernua were also found and appeared to be entering into the latter stages of flowering. The surveys were performed by two, 2-person teams that included the people listed above. The plants were all found on the west side of the road.
Observation Date:	2015-FA
Observer:	Blanton & Associates
Observation Data:	No Spiranthes parksii were observed most likely due to preceding dry weather conditions.
Observation Date:	2016-10-19
Observer:	John Williamson
Observation Data:	112 Spiranthes parksii individuals in flower were observed as well as 8 nodding ladies'-tresses. The community is characterized as patchy post oak woodland, with patches predominantly vegetated by herbaceous cover. The Spiranthes parksii plants are concentrated around the periphery of a natural canopy gap that exhibits microdepressional topography with evidence of inundation at times and higher soil water availability than the surrounding areas. Within the wooded areas, post oak was the dominant overstory species with yaupon prevalent in the understory. Herbaceous cover was uncharacteristically high for Spiranthes parksii and consisted of rosette grasses and variable panicgrass, yelloweyed grass, roundhead rush, tiny bluet, umbrella-sedge, boxseed, narrowleaf silkgrass, beaksedge, and hogwort.
Observation Date:	2016-10-26
Observer:	John Williamson
Observation Data:	189 Spiranthes parksii and 50 nodding ladies'-tresses were observed on surveys of 24 and 26 October. Photographs were taken. Many of the Spiranthes spp flagged on October 19 were missing or had been browsed, and due to the density of individuals, distinguishing unique individuals between the 19 October and 24, 26 October visits was not possible.
Observation Date:	2016-10-28
Observer:	John Williamson, Dr. Fred Smeins, and Luminant and Railroad Commission staff
Observation Data:	No additional Spiranthes parksii plants other than those flagged during 19 October and 24, 26 October visits were observed.
Observation Date:	2017-11-02
Observer:	John Williamson
Observation Data:	10 Spiranthes parksii and 5 nodding ladies'-tresses were observed. Photographs were taken. It appeared to be early in the flowering period, with some individuals not yet blooming and many ladies'-tresses exhibiting unopened flowers lower on the scape.
Observation Date:	2017-11-06
Observer:	John Williamson
Observation Data:	15 Spiranthes parksii, 7 nodding ladies'-tresses, 1 slender ladies'-tresses and 1 ladies'-tresses that was unidentifiable to species were observed. Photographs were taken.
Observation Date:	2017-11-15
Observer:	John Williamson
Observation Data:	1 additional Spiranthes parksii besides those seen on 2 and 6 November was observed.

Element Occurrence Record

Observation Date:	2018-10-17
Observer:	John Williamson and Karen Perez
Observation Data:	Approximately 20 Spiranthes parksii were observed along with approximately 8 Spiranthes cernua and approximately 29 specimens of Spiranthes sp. that were unidentifiable at the time. Photographs were taken.
Observation Date:	2018-11-15
Observer:	John Williamson and Karen Perez
Observation Data:	Additional Spiranthes parksii were observed during visits made on 29 October, and 1 and 15 November. There were a total of 40 Spiranthes parksii and 31 Spiranthes cernua observed during the 2018 survey period. Photographs were taken.
Observation Date:	2019-05-10
Observer:	John Williamson and Karen Perez
Observation Data:	Rosettes of Spiranthes spp were observed on visits of 29 March, 2 May, and 10 May. Photographs were taken. Some soil disturbance, likely due to animal digging/rotting was noted in low prevalence was noted on 29 March visit. On 10 May visit, soil water content was saturated with pooling in areas and some previously aboveground rosettes were absent and several exhibited signs of stress.
Observation Date:	2019-06-21
Observer:	John Williamson, Karen Perez, and Dr. Fred Smeins
Observation Data:	One potential Spiranthes parksii individual found in 2018 and the rosettes in the immediate vicinity were transplanted from the mine permit area (from SF ID 41237) to this site using the soil-intact method. Photographs were taken.
Observation Date:	2019-10-25
Observer:	Luminant staff
Observation Data:	Spiranthes spp flowering scapes were above ground during cursory search efforts of 10 and 25 October.
Observation Date:	2019-10-30
Observer:	Karen Perez
Observation Data:	41 Spiranthes parksii and 28 Spiranthes spp unidentifiable to species were observed. It was still early in the flowering season and peak anthesis had not been reached. Later on, no date provided, of the 28 Spiranthes spp, 17 were identified to Spiranthes parksii, 10 to Spiranthes cernua, and 1 was still unidentifiable.
Observation Date:	2019-11-13
Observer:	Karen Perez
Observation Data:	56 additional Spiranthes parksii and 11 additional Spiranthes cernua were observed.
Observation Date:	2019-11-20
Observer:	Karen Perez
Observation Data:	26 additional Spiranthes parksii and 9 additional Spiranthes cernua were observed. The cumulative count of Spiranthes parksii for the 2019 flowering season was 140. In general most flowering scapes appeared diminutive and less robust than 2016, which was a year representing excellent flowering conditions. None of the Spiranthes parksii transplants were observed flowering.
Observation Date:	2020-02-28
Observer:	Unknown
Observation Data:	3 basal rosettes were seen within the Spiranthes parksii transplant cores. Photographs were taken.
Observation Date:	2020-10-29

Element Occurrence Record

Observer:	Karen Perez
Observation Data:	101 Spiranthes parksii and 36 Spiranthes cernua were observed. Inflorescences ranged from peak anthesis to initial senescence of the basal flowers of the inflorescence. Photographs were taken.
Observation Date:	2020-11-19
Observer:	Karen Perez
Observation Data:	178 additional Spiranthes parksii and 68 additional Spiranthes cernua were observed during surveys of 3, 4, and 19 November. The cumulative total of Spiranthes parksii for the 2020 flowering season was 279 with 2 Spiranthes spp. that were unidentifiable to species. Flowering abundance of Spiranthes parksii observed within the reference population in 2020 represented the highest count since annual inventory by Blanton & Associates began in 2015. In general, most Spiranthes parksii scapes appeared more robust than observed in previous years, including 2016, which was a year representing excellent flowering conditions. No Spiranthes spp were observed flowering at the four transplant locations. Photographs were taken.
Observation Date:	2021-03-11
Observer:	Unknown
Observation Data:	No Spiranthes spp. basal rosettes were observed at the transplant locations.
Observation Date:	2021-10-20
Observer:	Karen Perez
Observation Data:	23 Spiranthes parksii and 1 Spiranthes cernua were observed. Inflorescences ranged from peak anthesis to initial senescence of the basal flowers of the inflorescence. Photographs were taken.
Observation Date:	2021-11-05
Observer:	Karen Perez
Observation Data:	115 additional Spiranthes parksii and 50 additional Spiranthes cernua were observed during surveys of 3-5 November. Photographs were taken. Cumulatively for the 2021 flowering season, 138 Spiranthes parksii were observed within the reference population. No Spiranthes spp were observed flowering in the four transplant locations within the reference population.

Element Occurrence Record

Scientific Name: *Spiranthes parksii* **EO Number:** 143 **EO ID:** 8840

Common Name: Navasota ladies'-tresses

Global Rank: G3 **State Rank:** S3 **Identification Confirmed:** ? - Questionable

TX Protection Status: E **Federal Protection Status:** E

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 2004-FA **Survey Date:** 2004-FA **Last Observation:** 2004-FA

EO Data:

Comments: On page 8 of the report, it states that 12 Spiranthes parksii were found. However, Table 1 of the report states that numerous Spiranthes were found, some likely Spiranthes parksii.

Habitat Description:

References:

Texas Dept. of Transportation. 2005. Environmental assessment of FM 2096 from US 79 to Duck Creek in Robertson County. CSJ: 1954-01-010. Submitted to Texas Parks & Wildlife Dept. Habitat Assessment Program.

Wang, H.-H., C. L. Wonkka, M. L. Treglia, W. E. Grant, F. E. Smeins, and W. E. Rogers. 2015. Species distribution modeling for conservation of an endangered endemic orchid. AoB PLANTS (www.aobplants.oxfordjournals.org).

Wang, H.-H., C. L. Wonkka, M. L. Treglia, W. E. Grant, F. E. Smeins, and W. E. Rogers. 2019. Incorporating local-scale variables into distribution models enhances predictability for rare plant species with biological dependencies. Biodiversity and Conservation 28(1):171-182.

U.S. Fish and Wildlife Service. 2009. Navasota ladies'-tresses (Spiranthes parksii) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Austin Ecological Services Field Office, Austin, TX. 65 pp.

Andersen, M.D. and G.P. Beauvais. 2013. Predictive distribution modeling of Species of Greatest Conservation Need in Texas. Prepared by the Wyoming Natural Diversity Database for the Texas Natural Diversity Database, Texas Parks and Wildlife Department, Austin, TX. 31 pp. 31 Aug 2013.

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 8840

Source Feature ID: **13167**

Observation Date: 2004-FA

Observer: TxDOT personnel

Observation Data: 12 Spiranthes parksii, 78 S. cernua, and 21 S. gracilis were observed. The habitat was described as margins of and openings within post oak woodlands in shallow sandy loams with clay subsoil along intermittent tributaries. The 2005 report stated that the area of this occurrence was going to be fenced and no construction activity was to occur in the area.

Element Occurrence Record

Scientific Name: *Spiranthes parksii* **EO Number:** 155 **EO ID:** 14661

Common Name: Navasota ladies'-tresses

Global Rank: G3 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: E **Federal Protection Status:** E

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 2014-11-13 **Survey Date:** 2021-11-05 **Last Observation:** 2016-10-28

EO Data: 2004; 28 October and 1-2 November 2005; 2-3 and 7 November 2006: No Spiranthes parksii were observed.

Comments: 2004: PBS&J surveyed approximately 1,866 acres of potential habitat at Kosse Mine Phase 1 (Deposit 243) and identified 10 sites (approximately 56 acres) that were determined to be the best potential habitat. 28 October and 1-2 November 2005; and 2-3 and 7 November 2006: HDR surveyed 144 acres of potential habitat within Kosse Mine Phase II (Deposit 241). October-November 2014: 628 acres of potentially suitable habitat within Kosse Mine Area D were surveyed thoroughly by HDR personnel. Blanton & Associates conducted presence/absence surveys at Kosse Mine from 2016-2021 within unmined portions that are within the limits of distrubance for the permit (50B and 50C). The study area totaled 10,153 acres in 2016-2017 and 12,170 acres in 2018. In 2019, 2020, and 2021 potentially suitable habitat within the study area that was surveyed totaled approximately 169 acres, 157 acres, and 154 acres, respectively.

Habitat Description:

References:

Multiple authors. 2015. Appendices relating to Navasota ladies'-tresses (Spiranthes parksii) at the Kosse Mine in Limestone and Roberston counties, included with the renewal/revision of Railroad Commission of Texas Mine Permit No. 50A - Area D, USACE # SWF-2012-00349.

Blanton & Associates, Inc. 2022. Reports from the 2016, 2017, 2018, 2019, 2020, and 2021 Navasota Ladies'-Tresses presence/absence surveys at Kosse Mine, Limestone and Robertson Counties, TX. Prepared for Luminant Mining Company, Irving, TX.

Tanner, M. 2006. Evaluation of Navasota ladies'-tresses (Spiranthes parksii) in northern Robertson and southern Limestone counties (Revised November 2006).

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 14661

Source Feature ID:	**41237**
Observation Date:	2014-11-13
Observer:	James Thomas, Ricky Wilson, Dustin McBride, Brandon Tate, Erin Hatchett, Peggy Jones, and John Wooten
Observation Data:	2 Spiranthes parksii were found during surveys of 10-13 November. Photographs were taken. The habitat is characterized by woodland openings with limited herbaceous cover and soils of sandy loam texture. Two upland drainages run from south to north within approximately 500-900 feet of either side of this site. Associated vegetation at this location included post oak, yaupon, and scattered native grasses such as little bluestem. The surveys were performed by two, 2-person teams that included the HDR personnel listed above. A full list of plant species observed during the surveys at Kosse Mine is provided in the reference.
Observation Date:	2015-FA
Observer:	Blanton & Associates
Observation Data:	No Spiranthes parksii were observed most likely due to preceding dry weather conditions.
Observation Date:	2016-10-25
Observer:	John Williamson
Observation Data:	2 Spiranthes parksii individuals were observed within very close proximity to those observed in 2014 (within the same canopy gap). Photographs were taken. The habitat is characterized as patchy post oak woodland, positioned on a dry upland hillslope. The hillslope exhibits a general northerly aspect and slight east and west slopes towards the bordering stream and on-channel pond that are approximately 860-feet and 460-feet, respectively, from the plants. Post oak was dominant in the overstory, with water oak occasional. In the understory, eastern red cedar and yaupon were common, and dense yaupon formed thickets in many areas. Openings were sparsely vegetated by native grasses. Soils consist of dry Tabor fine sandy loam, 0 to 2 percent lopes (TaA). Although the two individuals observed in 2014 were not permanently marked, the two Spiranthes parksii observed in 2016 were thought to be different individuals.
Observation Date:	2016-10-28
Observer:	John Williamson, Dr. Fred Smeins, and Luminant and Railroad Commission staff
Observation Data:	No additional Spiranthes parksii besides those from 25 October were observed. Dr. Smeins confirmed the species identification of the Spiranthes parksii plants.
Observation Date:	2017-11-15
Observer:	John Williamson
Observation Data:	No Spiranthes parksii were observed at Population 6 during surveys of 2, 6, and 15 November. 5 nodding ladies'-tresses were observed flowering.
Observation Date:	2018-10-30
Observer:	John Williamson and Karen Perez
Observation Data:	One potential Spiranthes parksii was observed during surveys of 17 and 30 October. The individual was first observed on 17 October and a photograph was taken. At the time the flowering scape was not mature and positive identification was not possible. Subsequent visitation on 30 October revealed the flowering scape had been browsed. Therefore conclusive identification to species was not possible, however the location of the plant corresponded with the previously recorded 2016 location for one of the Spiranthes parksii plants. A total of 26 nodding ladies'-tresses and two Spiranthes sp. individuals missing inflorescence were also observed.
Observation Date:	2019-05-10

Element Occurrence Record

Observer:	John Williamson and Karen Perez
Observation Data:	Rosettes of Spiranthes spp were observed on visits of 29 March, 2 May, and 10 May. Photographs were taken. On 10 May visit, soil water content was saturated with pooling in areas and some previously aboveground rosettes were absent and several exhibited signs of stress.
Observation Date:	2019-06-21
Observer:	John Williamson, Karen Perez, and Dr. Fred Smeins
Observation Data:	One potential Spiranthes parksii individual found in 2018 and the rosettes in the immediate vicinity were transplanted from the mine permit area to an off-site population (to SF ID 13209) using the soil-intact method. Photographs were taken.
Observation Date:	2019-11-20
Observer:	Karen Perez
Observation Data:	No Spiranthes parksii were observed during presence/absence surveys between 13-15 and 20 November 2019.
Observation Date:	2020-11-06
Observer:	Karen Perez
Observation Data:	No Spiranthes parksii were observed during presence/absence surveys between 29 October and 3-6 November 2020.
Observation Date:	2021-11-05
Observer:	Karen Perez
Observation Data:	No Spiranthes parksii were observed during presence/absence surveys between 3-5 November 2021.

Element Occurrence Record

Scientific Name: *Spiranthes parksii* **EO Number:** 156 **EO ID:** 14662

Common Name: Navasota ladies'-tresses

Global Rank: G3 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: E **Federal Protection Status:** E

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 2016-11-09 **Survey Date:** 2019-11-18 **Last Observation:** 2019-11-18

EO Data:

Comments: October and November 2016: For Jewett Mine Permits 32G and 47A, approximately 586.3 acres and 511 acres, respectively, of land proposed for disturbance were surveyed for the presence of Spiranthes parksii. October and November 2017: For Permits 32G and 47A, seven and four sites, respectively, with suitable habitat were surveyed for the presence of Spiranthes parksii. October and November 2018: For Permit 32G, two sites with suitable habitat, and for Permit 47A two sites with suitable habitat and an area cleared for a stockpile were surveyed for presence of Spiranthes parksii. September- November 2019: For Permit 47A, the stockpile area, approximately 16 acres, was surveyed for presence of Spiranthes parksii.

Habitat Description:

References:

Blackland Environmental, LLC. 2019. Two reports and shapefiles for Jewett Mine Permit No. 32G and 47A 2018 Navasota ladies' tresses (Spiranthes parksii) surveys. Prepared for Texas Westmoreland Coal Co., Jewett, TX. March 2019.

Blackland Environmental, LLC. 2018. 2017 Navasota ladies tresses (Sprianthes parksii) survey. Department of the Army permit no. SWF-2012-00079 (32G action area). Prepared for Texas Westmoreland Coal Company, Jewett, Texas. pp 22. May 2018.

Altavilla, M. G. 2019. Two letters of 9 December to Alex Schoch, Railroad Commission of Texas, regarding 2019 surveys for Navasota ladies'-tresses (Spiranthes parksii) on the Westmoreland Jewett Mining, LLC Jewett Mine, Permit 32G and Jewett E/F Mine, Permit 47A.

Blackland Environmental, LLC. 2018. 2017 Navasota ladies tresses (Sprianthes parksii) survey. Department of the Army permit no. SWF-2012-00080 (47A action area). Prepared for Texas Westmoreland Coal Company, Jewett, Texas. pp 22. May 2018.

Liggio, J. 2022. Email 16 June to Jason Singhurst, Texas Parks and Wildlife community ecologist, confirming the identification of Spiranthes parksii in Leon and Bastrop counties.

Wootton, T. L. 2017. Letter and comments to Michael G. Altavilla at Texas Westmoreland Coal Company about the Jewett Mine, Permit Numbers 32G and 47A, 2016 Navasota Ladies'-Tresses (NLT) Survey Reports.

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 14662

Source Feature ID: **41236**

Observation Date: 2016-11-09

Observer: Blackland Environmental, LLC

Observation Data: Approximately 60 Spiranthes parksii were found in one population at survey site BL1 during surveys of 17-19 and 26-28 October, and 7-9 November of mine permit area 32G. The surrounding habitat is a post oak / yaupon woodland with a large powerline right-of-way to the northeast. The site occurs along a hillside within two man-made pits at the upper reaches of Cottonwood Springs Branch Creek. The vegetation within the pits was moderate to sparse. Soils of the area are mapped as Padina yet the microhabitat where the plants occur is highly disturbed and deeply-excavated (at least 10 feet).

Observation Date: 2017-11-16

Observer: Blackland Environmental, LLC

Observation Data: 77 Spiranthes parksii and 37 Spiranthes cernua were observed in bloom at site BL1 during surveys of 20, 24 October and 3, 16 November. Photos were taken.

Observation Date: 2018-11-13

Observer: Blackland Environmental, LLC

Observation Data: A total of 41 Spiranthes parksii were observed in bloom in BL1 during surveys of 18, 26, 31 October and 13 November. Photos were taken. 22 of the plants were found in the southern pit and 19 in the northern pit. 25 nodding laddies'-tresses and 3 slender ladies'-tresses were also found. Conditions within the southern pit of BL1 appeared ideal for Spiranthes parksii, while heavy rainfall in October resulted in highly saturated conditions in the northern pit. Standing water was observed throughout the survey event which created unsuitable bloom conditions. Numerous salt marsh caterpillar (Estigmene acrea) were observed foraging on Spiranthes parksii and the other Spiranthes spp. In some cases the entire inflorescence and partial stem were consumed. Following the 2017 survey, signage was installed to prevent access from mine equipment around BL1. Since that time, no mine related activities have occurred in the general area.

Observation Date: 2019-11-18

Observer: Blackland Environmental, LLC

Observation Data: 9 Spiranthes parksii were found within the southern pit of BL1 during surveys of 21 September; 19 and 27 October; and 4, 11 and 18 November. 1 Spiranthes cernua was also observed within the same pit. No Spiranthes parksii were observed in the northern pit of the site.

Element Occurrence Record

Scientific Name: *Sternula antillarum* **EO Number:** 41 **EO ID:** 2862

Common Name: Least Tern

Global Rank: G4 **State Rank:** S2B **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:** DL

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 2000-06-15 **Survey Date:** 2008 **Last Observation:** 2006-08-03

EO Data: June-Aug 2000: 3 nests observed, one nest had 2 fledglings, one nest abandoned and one nest was presumed destroyed by predators. June-Aug 2001: 18 nests observed producing 12 chicks. On 1 July, 10 of the nests were destroyed and one of the chicks was killed in a heavy rain. 2002: This area was surveyed weekly from 02 April until 12 August 2009. No nesting activity was observed in Area B. 12 nests were observed in area C, but 8 of them were washed away by heavy rains in August. It appears that 11 chicks successfully fledged from Area C. 2003: The site was surveyed weekly from early April until at least 12 June 2003. No terns were observed in Area B. A few terns were observed, but no nesting activity was documented in Area C. The survey results for the remaining part of the summer are not known. 2004: Surveys were conducted weekly starting in early April, and one tern was spotted on 6 May. As of 1 June, no nesting activity was observed. The results of the surveys for the rest of 2004 are not known. 22 June 2006: 6 birds had created a nesting site between the C-1 and C_2 ramps. Employees were duly notified to cease reclamation activity, and the area was fenced off and signs were posted. 11 July 2006: Employees noted that terns had created another nesting site in Area B at the edge of the SPGM placement. No nests were actually sighted. 1 Aug 2006: Terns were behaving territorially near the nesting site in area B and one tern chick was spotted. Summer 2008: Terns were observed foraging, but not nesting.

Comments: This EO (EO_ID: 2862) and the attached source features (with SF_ID(s): 12124, 14315, 14316, 14326, 14327, 14532)) were all originally identified as interior least tern (Sternula antillarum athalassos). As part of the 2023 State Wildlife Action Plan update it was determined that all least tern would be tracked as the full species and on 1 May 2024 this EO and associated source features were reparented to Sternula antillarum. If that decision is ever reversed this statement can be used to identify records originally identified as interior least tern.

Habitat Description: Active lignite mine

References:

Element Occurrence Record

Mariah Associates, Inc. 1992. Fish and wildlife resources information Jewett Lignite Mine. Wildlife volume: Appendix 133a and 133b. Prepared for Northwestern Resources Company, Jewett, TX. August 1992.

Frisbee, Nellie. 2006. Letter of 19 May to David Frederick of the United States Fish and Wildlife and Melvin Hodgkiss of the Railroad Commission of Texas concerning the activities of interior least terns on the Jewett Mine at the start of the 2006 breeding season.

Kingsley, J. Denny. 2006. Letter of 04 October to David Frederick of the United States Fish and Wildlife and Melvin Hodgkiss of the Railroad Commission of Texas concerning the nesting activities of interior least terns on the Jewett Mine in 2006.

Mason, Lauren. 2002. Copies of letters from 1999 and 2000 containing final survey data for interior least terns on the Northwestern Resources Company's Jewett Mine. May 22, 2002.

Altavilla, Michael G. 2008. Letter of 28 August to David Frederick of the United States Fish and Wildlife and Melvin Hodgkiss of the Railroad Commission of Texas concerning the nesting activities of interior least terns on the Jewett Mine in 2008.

Mason, Lauren. 2002. Letter to David Frederick of the U. S. Fish and Wildlife Service and Melvin Hodgkiss of the Railroad Commission of Texas pertaining to surveys of breeding Least Terns (Sterna antillarum athalassos) at the Jewett Mine; sent on 7 October, 2002.

Mason, Lauren and Nellie Frisbee. 2003. 3 letters to David Frederick of the United States Fish and Wildlife and Melvin Hodgkiss of the Railroad Commission of Texas concerning the activities of interior least terns on the Jewett Mine at the start of the 2003 breeding season.

Corbell, Cody. 2004. Letter of 1 June to David Frederick of the United States Fish and Wildlife and Melvin Hodgkiss of the Railroad Commission of Texas concerning the activities of interior least terns on the Jewett Mine at the start of the 2004 breeding season.

Mason, Lauren. 2001. Final report: 2001 interior least tern monitoring Northwestern Resources Company's Jewett Mine. October 18, 2001.

Mason, Lauren. 2002. Topographic quadrangle (DRG) with the Jewett Mine boundary and interior least tern nesting areas for 1996, 1998-2001. May 10, 2002.

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 2862

Source Feature ID: **12124**

Observation Date: 2001-06-12

Observer: Northwestern Resources Company

Observation Data: Northwestern Resources Company confirmed 6 nests.

Observation Date: 2001-06-26

Observer: PBS&J

Observation Data: PBS&J, a consulting company, found 4 nests (three with 2 eggs one with 3 eggs) and suspected one other. It is likely that at least one of the nests was a new nest because the nest was incomplete on 26 June.

Observation Date: 2001-07-06

Observer: PBS&J

Observation Data: Two of the nests documented on 26 June had been washed away during a heavy rain (3.69 inches at this site) on 1 July. The other two nests had 3 eggs each. Two new nests were found, one with 2 eggs and the other with 1 egg.

Observation Date: 2001-07-12

Observer: PBS&J

Observation Data: Three nests located. The two nests that had 3 eggs on 6 July each had chicks (one had two chicks, the other had one). The third nest had 2 eggs, same as on 6 July.

Observation Date: 2001-07-20

Observer: PBS&J

Observation Data: Two new nests were located. One had 2 eggs, the other had 2 eggs and a single chick.

Observation Date: 2001-07-26

Observer: PBS&J

Observation Data: The nest with two eggs on 20 July was relocated, still with two eggs. A new nest was located with a single chick.

Observation Date: 2001-08-02

Observer: PBS&J

Observation Data: One new nest was found with 2 chicks.

Source Feature ID: **14315**

Observation Date: 2006-06-22

Observer: Jewett Mine employees

Observation Data: 6 birds had created a nesting site between the C-1 and C-2 ramps. Employees were duly notified to cease reclamation activity, and the area was fenced off and signs were posted.

Source Feature ID: **14316**

Observation Date: 2006-07-11

Observer: Jewett Mine employees

Element Occurrence Record

Observation Data:	Employees noted that terns had created another nesting site in Area B at the edge of the SPGM placement. No nests were actually sighted, but this area was fenced and signs were posted, and employees notified to cease reclaim operations and stay out of the area.
Observation Date:	2006-08-01
Observer:	Jewett Mine employees
Observation Data:	Terns were behaving territorially near the nesting site in area B and one tern chick was spotted.

Source Feature ID:	**14326**
Observation Date:	2000-06-15
Observer:	Railroad Commission of Texas
Observation Data:	Approx. 6 pairs of birds were observed exhibiting territorial behavior.
Observation Date:	2000-06-16
Observer:	Shannon Dorsey
Observation Data:	5 pairs of terns were observed being territorial. Courting behavior was observed in two of the pairs.
Observation Date:	2000-06-23
Observer:	A Horizon Environmental Services Biologist
Observation Data:	5 pairs were observed in the area and three active nests were discovered. One nest had 3 eggs, and the other two nests had 2 eggs each.
Observation Date:	2000-07-03
Observer:	Horizon Environmental Services
Observation Data:	On 03 July, 12 July and 09 Aug monitoring efforts documented the destruction of one nest, the abandonment of a second nest and the successful hatch and fledging of two chicks from a third nest.

Source Feature ID:	**14327**
Observation Date:	2001-06-01
Observer:	Northwestern Resources Company
Observation Data:	3 nests were confirmed. One nest had 1 egg, two nests had two eggs.
Observation Date:	2001-06-04
Observer:	Northwestern Resources Company
Observation Data:	A total of 8 nests were confirmed.
Observation Date:	2001-06-12
Observer:	Northwestern Resources Company
Observation Data:	A total of 11 nests were confirmed.
Observation Date:	2001-06-26
Observer:	PBS&J
Observation Data:	8 nests were found. One nest had 2 eggs and a chick, 3 nests had 2 eggs each, 2 nests had 1 egg each and the contents of the last two nests were not documented.
Observation Date:	2001-07-05
Observer:	PBS&J
Observation Data:	All nests, eggs and the single chick had been destroyed by a heavy rain on 01 July. On 1 July, 2.16 inches of rain fell at this site. One pair was observed starting a new nest.

Element Occurrence Record

Observation Date:	2001-07-12
Observer:	PBS&J
Observation Data:	The one renest attempt had been abandoned.
Observation Date:	2002-04
Observer:	Lauren Mason
Observation Data:	This area was surveyed weekly from 02 April until 12 August 2002. No nesting activity was observed.
Observation Date:	2003-04
Observer:	Lauren Mason and Nellie Frisbee
Observation Data:	The site was surveyed weekly from early April until at least 12 June 2003. No terns were observed in the area. The survey results for the remaining part of the summer are not known.

Source Feature ID:	**14523**
Observation Date:	2002-05-08
Observer:	Lauren Mason
Observation Data:	Three pairs of terns were spotted fishing and displaying courtship activities in area C.
Observation Date:	2002-05-14
Observer:	Lauren Mason
Observation Data:	Two pair of terns were present, but no nesting behavior was observed.
Observation Date:	2002-06-05
Observer:	Lauren Mason
Observation Data:	The two pairs of terns previously sighted had nests (nests c1 and c2) on a narrow strip of barren topsoil, just at the edge of the reclaim. The two nests were relatively close together, an out of the mining activities way. Stakes were posted with keep out signs at the edge of the vegetation line.
Observation Date:	2002-06-12
Observer:	Lauren Mason
Observation Data:	Nest C1 had 3 eggs, and nest C2 had 2 eggs. In addition, there was a new flock of birds in the area; 17 adults were counted.
Observation Date:	2002-07-05
Observer:	Lauren Mason
Observation Data:	Nest C1 had three tiny chicks. C2 had two chicks. Two new nests were found (nests C3 and C4); both nests had 3 eggs each. Terns were also nesting below the topsoil ridge, on regraded spoil material closer to the pit in area C. The entire nesting area was fenced off for their protection. Nest C5 had 2 eggs. Nest C12 had 3 eggs. The remaining nests were not inspected due to agitation of the terns. It had recently rained 2.5 inches of rain.
Observation Date:	2002-07-14
Observer:	Lauren Mason
Observation Data:	Between 14-16 July, this area received 2.6 inches of rain.
Observation Date:	2002-08-05
Observer:	Lauren Mason
Observation Data:	Nests C1-C4 were intact but empty. The rest of the nests had apparently washed away. No nestlings or juveniles were observed, but 5 adults were observed fishing nearby. It appears that 11 chicks may have fledged from the area.
Observation Date:	2002-08-12

Element Occurrence Record

Observer:	Lauren Mason
Observation Data:	The area was surveyed, but no terns were observed.
Observation Date:	2003-04
Observer:	Lauren Mason and Nellie Frisbee
Observation Data:	The site was surveyed weekly from early April until at least 12 June 2003. A few terns were observed, but no nesting activity was observed in the area. The survey results for the remaining part of the summer are not known.
Observation Date:	2004-04
Observer:	Cody Corbell
Observation Data:	Surveys were conducted weekly starting in early April, and one tern were spotted on 6 May. As of 1 June, no nesting activity was observed. The results of the surveys for the rest of 2004 are not known.

Element Occurrence Record

Scientific Name: *Sternula antillarum* **EO Number:** 43 **EO ID:** 1097

Common Name: Least Tern

Global Rank: G4 **State Rank:** S2B **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:** DL

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 1994-07-07 **Survey Date:** 2008 **Last Observation:** 2006-08-09

EO Data: 1994: 5 pairs with eggs and hatchlings; 19 June - 14 Aug 1995: 10 breeding pairs with 26-28 fledglings. 16 May - 12 Aug 1996: Approx.10 breeding pair. Summer 1997: Approx: 8-10 breeding pairs. 1998: no terns observed. June - Aug 1999: 5 breeding pairs producing 3 fledglings, heavy rain in mid-June destroyed nests and eggs. May 2000: 12 pairs produced at least 4 fledglings, heavy rain in early 1 June washed out two nests. 8 May - 9 Aug 2001: 19 nests producing approx. 12 chicks, one chick died, heavy rains 1 July washed away 8 nests. 14 May - 12 Aug 2002: 23 nests were observed in this area. 6 of the nests were washed away in a heavy rain in early May. The other nests appeared to be successful. In August at least 12 juveniles were observed. 2003: The site was surveyed weekly from early April until at least 12 June 2003. Nesting activity was observed, but it is not known how many pairs, or what was observed. 2004: Surveys were conducted weekly starting in early April, and terns were spotted on 21 May. As of 1 June, no nesting activity was observed. The results of the surveys for the rest of 2004 are not known. 26 May - 8 Aug 2006: At least 20 terns observed in a nesting area, some were observed behaving strongly territorial. No nests were actually found. Summer 2008: Terns were observed foraging, but not nesting.
1994: 5 pairs with eggs and hatchlings; 19 June - 14 Aug 1995: 10 breeding pairs with 26-28 fledglings. 16 May - 12 Aug 1996: Approx.10 breeding pair. Summer 1997: Approx: 8-10 breeding pairs. 1998: no terns observed. June - Aug 1999: 5 breeding pairs producing 3 fledglings, heavy rain in mid-June destroyed nests and eggs. May 2000: 12 pairs produced at least 4 fledglings, heavy rain in early 1 June washed out two nests. 8 May - 9 Aug 2001: 19 nests producing approx. 12 chicks, one chick died, heavy rains 1 July washed away 8 nests. 14 May - 12 Aug 2002: 23 nests were observed in this area. 6 of the nests were washed away in a heavy rain in early May. The other nests appeared to be successful. In August at least 12 juveniles were observed. 2003: The site was surveyed weekly from early April until at least 12 June 2003. Nesting activity was observed, but it is not known how many pairs, or what was observed. 2004: Surveys were conducted weekly starting in early April, and terns were spotted on 21 May. As of 1 June, no nesting activity was observed. The results of the surveys for the rest of 2004 are not known. 26 May - 8 Aug 2006: At least 20 terns observed in a nesting area, some were observed behaving strongly territorial. No nests were actually found. Summer 2008: Terns were observed foraging, but not nesting.

Comments: This EO (EO_ID: 1097) and the attached source features (with SF_ID(s): 14313, 14314, 14317, 14319-14325, 14524)) were all originally identified as interior least tern (Sternula antillarum athalassos). As part of the 2023 State Wildlife Action Plan update it was determined that all least tern would be tracked as the full species and on 1 May 2024 this EO and associated source features were reparented to Sternula antillarum. If that decision is ever reversed this statement can be used to identify records originally identified as interior least tern.

Habitat Description: Active Lignite Mine

References:

Element Occurrence Record

Mariah Associates, Inc. 1992. Fish and wildlife resources information Jewett Lignite Mine. Wildlife volume: Appendix 133a and 133b. Prepared for Northwestern Resources Company, Jewett, TX. August 1992.

Frisbee, Nellie. 2006. Letter of 19 May to David Frederick of the United States Fish and Wildlife and Melvin Hodgkiss of the Railroad Commission of Texas concerning the activities of interior least terns on the Jewett Mine at the start of the 2006 breeding season.

Kingsley, J. Denny. 2006. Letter of 04 October to David Frederick of the United States Fish and Wildlife and Melvin Hodgkiss of the Railroad Commission of Texas concerning the nesting activities of interior least terns on the Jewett Mine in 2006.

Altavilla, Michael G. 2008. Letter of 28 August to David Frederick of the United States Fish and Wildlife and Melvin Hodgkiss of the Railroad Commission of Texas concerning the nesting activities of interior least terns on the Jewett Mine in 2008.

Mason, Lauren. 2001. Final report: 2001 interior least tern monitoring Northwestern Resources Company's Jewett Mine. October 18, 2001.

Mason, Lauren. 2002. Topographic quadrangle (DRG) with the Jewett Mine boundary and interior least tern nesting areas for 1996, 1998-2001. May 10, 2002.

Mason, Lauren. 2002. Copies of letters from 1999 and 2000 containing final survey data for interior least terns on the Northwestern Resources Company's Jewett Mine. May 22, 2002.

Stewart, Glenn. 1995. Three letters pertaining to interior least terns on Northwestern Resources Company's Jewett Mine during the 1995 breeding season. June-September 1995.

Stewart, Glenn. 1994. Several letters pertaining to the interior least terns at Northwestern Resources Company's Jewett Mine. July-November 1994.

Stewart, Glenn. 1996. Three letters pertaining to interior least terns on Northwestern Resources Company's Jewett Mine during the 1996 breeding season. May-August 1996.

Mason, Lauren. 2002. Letter to David Frederick of the U. S. Fish and Wildlife Service and Melvin Hodgkiss of the Railroad Commission of Texas pertaining to surveys of breeding Least Terns (Sterna antillarum athalassos) at the Jewett Mine; sent on 7 October, 2002.

Mason, Lauren and Nellie Frisbee. 2003. 3 letters to David Frederick of the United States Fish and Wildlife and Melvin Hodgkiss of the Railroad Commission of Texas concerning the activities of interior least terns on the Jewett Mine at the start of the 2003 breeding season.

Corbell, Cody. 2004. Letter of 1 June to David Frederick of the United States Fish and Wildlife and Melvin Hodgkiss of the Railroad Commission of Texas concerning the activities of interior least terns on the Jewett Mine at the start of the 2004 breeding season.

Stewart, Glenn. 1997. Two letters pertaining to interior least terns on Nortwestern Resources Company's Jewett Mine during the 1997 breeding season. June-July 1997.

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 1097

Source Feature ID: 14313

Observation Date: 2006-05-26

Observer: Texas Westmoreland Coal Co.

Observation Data: The nesting site was observed and was cordoned off with fencing and signs.

Observation Date: 2006-07-07

Observer: Texas Westmoreland Coal Co.

Observation Data: Terns were strongly territorial, but no nests were found.

Observation Date: 2006-08-03

Observer: Texas Westmoreland Coal Co.

Observation Data: In the DE area there were a total of 15 adult birds, with 9 fishing and 6 over land exhibiting aggressive behavior. No nests or chicks were found, but it is not clear how hard the observers looked for them. It is not clear if this was in this nesting area or nearby.

Source Feature ID: 14314

Observation Date: 2006-05-26

Observer: Texas Westmoreland Coal Co.

Observation Data: The nesting site was observed and was cordoned off with fencing and signs.

Observation Date: 2006-07-07

Observer: Texas Westmoreland Coal Co.

Observation Data: Terns were strongly territorial, but no nests were found.

Observation Date: 2006-08-03

Observer: Texas Westmoreland Coal Co.

Observation Data: In the DE area there were a total of 15 adult birds, with 9 fishing and 6 over land exhibiting aggressive behavior. No nests or chicks were found, but it is not clear how hard the observers looked for them. It is not clear if this was in this nesting area or nearby.

Source Feature ID: 14317

Observation Date: 1994-07-07

Observer: Glenn Stewart

Observation Data: Five pairs, with eggs and hatchlings, were found nesting on the pre-stripped bench that had been prepared by the bucketwheel excavator.

Source Feature ID: 14319

Observation Date: 1996-05-16

Observer: Glenn J Stewart

Observation Data: May to August 1996: Approx. 10 pairs of terns bred, and at least 3 young were observed. The nesting area had been seeded but at the start of the breeding season none of the plants had germinated. Mid summer rains caused the germination and growth of the seeded plants, which made it difficult to monitor nests.

Element Occurrence Record

Source Feature ID: **14320**

Observation Date: 1997-08

Observer: Glenn J Stewart

Observation Data: June-August 1997: 8 - 10 pairs of birds nested, the number of fledglings is unknown.

Source Feature ID: **14321**

Observation Date: 1995-08-14

Observer: Glenn J Stewart

Observation Data: Between 19 June and 14 August 1995, Terns nested on two areas in Area D. This source feature is one of those areas, although it is not clear which one it was. One location was occupied by four pairs and approx. 12 young fledged. The other location contained 6 breeding pairs. The young were harder to locate at this location due to the distance between nests and the varied substrate. Stewart estimated that 14-16 young were fledged from the second site.

Source Feature ID: **14322**

Observation Date: 1995-08-14

Observer: Glenn J Stewart

Observation Data: Between 19 June and 14 August 1995, Terns nested on two areas in Area D. This source feature is one of those areas, although it is not clear which one it was. One location was occupied by four pairs and approx. 12 young fledged. The other location contained 6 breeding pairs. The young were harder to locate at this location due to the distance between nests and the varied substrate. Stewart estimated that 14-16 young were fledged from the second site.

Source Feature ID: **14323**

Observation Date: 1999

Observer: Unknown

Observation Data: During the summer of 1999 there were 5 nesting pair and at least 3 fledglings.

Source Feature ID: **14324**

Observation Date: 2000-05-30

Observer: Lauren Mason

Observation Data: 9 tern nests were observed.

Observation Date: 2000-06-07

Observer: Lauren Mason

Observation Data: Chicks were observed in the nesting area.

Observation Date: 2000-06

Observer: Lauren Mason and Shannon Dorsey

Observation Data: From June to August 2000, 12 pairs nested, producing at least 4 fledglings.

Source Feature ID: **14325**

Observation Date: 2001-06-05

Observer: Lauren Mason / Northwestern Resources Company

Observation Data: 3 nests were confirmed, and approx. 10 pairs were present.

Element Occurrence Record

Observation Date:	2001-06-13
Observer:	Lauren Mason / Northwestern Resources Company
Observation Data:	18 nests confirmed, three of which had 3 eggs, and a fourth with 2 eggs.
Observation Date:	2001-06-26
Observer:	PBS&J
Observation Data:	Confirmed 10 nests and suspected 4 more.
Observation Date:	2001-07-05
Observer:	PBS&J
Observation Data:	8 of the 10 nests encountered had been washed away by a heavy rain (3.6 inches) on 1 July 2001. The two remaining nests had chicks, one with 1 chick, the second with 2 chicks. 5 new nests were found, two with 1 chick, two with 1 egg (one of which was piping), and one nest with 2 chicks.
Observation Date:	2001-07-12
Observer:	PBS&J
Observation Data:	Four empty nests were found and one nest was ounfd with one egg that appeared to be abandoned.
Observation Date:	2001-07-26
Observer:	PBS&J
Observation Data:	Three nests found, two with 2 eggs each, and a third with one egg that appeared to be abandoned.
Observation Date:	2001-08-02
Observer:	PBS&J
Observation Data:	4 nests: One had 2 eggs, one nest had 1 chick, one was empty with a dead chick nearby and the last nest had 1 egg and appeared to be abandoned.
Observation Date:	2001-08-09
Observer:	PBS&J
Observation Data:	One nest with with 2 eggs, apparently abandoned.

Source Feature ID:	**14524**
Observation Date:	2002-05-14
Observer:	Lauren Mason
Observation Data:	Six nests (D1-D6) were discovered on partially regraded spoil material directly to the N of Spring Seat Cemetery. Nest D1 had 3 eggs, D2 had 3 eggs and D3 had 2 eggs. The remaining three nests were not inspected to limit tern agitation. Fencing and Keep Out signs were erected.
Observation Date:	2002-07-14
Observer:	Lauren Mason
Observation Data:	Between 14-16 July, this area received 2.6 inches of rain.
Observation Date:	2004-04
Observer:	Cody Corbell
Observation Data:	Surveys were conducted weekly starting in early April, and terns were spotted on 21 May. As of 1 June, no nesting activity was observed. The results of the surveys for the rest of 2004 are not known.
Observation Date:	2003-04
Observer:	Lauren Mason and Nellie Frisbee

Element Occurrence Record

Observation Data:	The site was surveyed weekly from early April until at least 12 June 2003. Nesting activity was observed, but it is not known how many pairs, or what was observed. The survey results for the remaining part of the summer are not known.
Observation Date:	2002-05-17
Observer:	Lauren Mason
Observation Data:	This area received 2 inches of rain and nests D1-D6 were obliterated by the runoff.
Observation Date:	2002-05-28
Observer:	Lauren Mason
Observation Data:	Four new nests were discovered: D7-D10. D7 had 2 eggs, D8 had 3 eggs, D9 had 3 eggs and D10 had 2 eggs. The four pair of nesting terns were the only terns observed in the area.
Observation Date:	2002-06-12
Observer:	Lauren Mason
Observation Data:	The four nests, D7-D10, were all empty, but there was plenty of adult activity. Three chicks were observed, which the adults were feeding. There may have been more chicks in the area.
Observation Date:	2002-07-05
Observer:	Lauren Mason
Observation Data:	13 new nests were discovered (nests D11-D23). D16 had 2 eggs. D17 had 3 eggs. The remaining nests were not inspected. Area was surveyed from a distance because the ternw were very agitated.
Observation Date:	2002-07-24
Observer:	Lauren Mason
Observation Data:	Survey was abandoned because the terns were too agitated. Terns seemed unaffected by the previous rain.
Observation Date:	2002-08-05
Observer:	Lauren Mason
Observation Data:	19 adults and 12 juveniles were observed, but no nesting behaviors were observed.
Observation Date:	2002-08-12
Observer:	Lauren Mason
Observation Data:	The area was surveyed, but no terns were observed.

Element Occurrence Record

Scientific Name: *Terrapene carolina* **EO Number:** 30 **EO ID:** 15411

Common Name: eastern box turtle

Global Rank: G5 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 2022-05-02 **Survey Date:** 2023-06-27 **Last Observation:** 2023-06-27

EO Data:

Comments:

Habitat Description:

References:

iNaturalist. 2024. Herps of Texas project collected by Texas Nature Trackers. https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/texas_nature_trackers/amphibian_watch/index.phtml

Specimens:

Element Occurrence Record

Source Feature Data:

EO ID: 15411

Source Feature ID: **44037**
Observation Date: 2023-06-27
Observer: Greg Page
Observation Data: At least one Terrapene carolina triunguis(s) observed. iNaturalist ID: 169826355. https://www.inaturalist.org/observations/169826355

Source Feature ID: **44060**
Observation Date: 2023-05-12
Observer: Greg Page
Observation Data: At least one Terrapene carolina triunguis(s) observed. iNaturalist ID: 166771178. https://www.inaturalist.org/observations/166771178 Saw 1.

Source Feature ID: **44228**
Observation Date: 2022-09-07
Observer: Greg Page
Observation Data: At least one Terrapene carolina triunguis(s) observed. iNaturalist ID: 135151930. https://www.inaturalist.org/observations/135151930

Source Feature ID: **44351**
Observation Date: 2022-06-06
Observer: Greg Page
Observation Data: At least one Terrapene carolina triunguis(s) observed. iNaturalist ID: 120970631. https://www.inaturalist.org/observations/120970631

Source Feature ID: **44352**
Observation Date: 2022-06-06
Observer: Greg Page
Observation Data: At least one Terrapene carolina triunguis(s) observed. iNaturalist ID: 120970380. https://www.inaturalist.org/observations/120970380

Source Feature ID: **44353**
Observation Date: 2022-05-02
Observer: Greg Page
Observation Data: At least one Terrapene carolina triunguis(s) observed. iNaturalist ID: 120836024. https://www.inaturalist.org/observations/120836024 Saw 1.

Source Feature ID: **44401**
Observation Date: 2022-05-09
Observer: Greg Page
Observation Data: At least one Terrapene carolina triunguis(s) observed. iNaturalist ID: 116636626. https://www.inaturalist.org/observations/116636626

Element Occurrence Record

Source Feature ID:	**45029**
Observation Date:	2023-05-17
Observer:	Greg Page
Observation Data:	At least one Terrapene carolina triunguis(s) observed. iNaturalist ID: 167381000. https://www.inaturalist.org/observations/167381000 Saw 1.
Observation Date:	2022-08-27
Observer:	Greg Page
Observation Data:	At least one Terrapene carolina triunguis(s) observed. iNaturalist ID: 133080488. https://www.inaturalist.org/observations/133080488

Element Occurrence Record

Scientific Name: *Terrapene carolina* **EO Number:** 70 **EO ID:** 15623

Common Name: eastern box turtle

Global Rank: G5 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 2022-01-11 **Survey Date:** 2022-01-11 **Last Observation:** 2022-01-11

EO Data:

Comments:

Habitat Description:

References:

iNaturalist. 2024. Herps of Texas project collected by Texas Nature Trackers. https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/texas_nature_trackers/amphibian_watch/index.phtml

Specimens:

Source Feature Data:

EO ID: 15623

Source Feature ID: 44459

Observation Date: 2022-01-11

Observer: Unknown

Observation Data: At least one Terrapene carolina triunguis(s) observed. iNaturalist ID: 104797227. https://www.inaturalist.org/observations/104797227

Element Occurrence Record

Scientific Name: *Terrapene carolina* **EO Number:** 116 **EO ID:** 15964

Common Name: eastern box turtle

Global Rank: G5 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 2020-05-02 **Survey Date:** 2020-05-02 **Last Observation:** 2020-05-02

EO Data:

Comments:

Habitat Description:

References:

iNaturalist. 2024. Herps of Texas project collected by Texas Nature Trackers. https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/texas_nature_trackers/amphibian_watch/index.phtml

Specimens:

Source Feature Data:

EO ID: 15964

Source Feature ID: **45396**

Observation Date: 2020-05-02

Observer: Jeff McIntyre

Observation Data: At least one Terrapene carolina triunguis(s) observed. iNaturalist ID: 44835241. https://www.inaturalist.org/observations/44835241

Source Feature ID: **45397**

Observation Date: 2020-05-02

Observer: Jeff McIntyre

Observation Data: At least one Terrapene carolina triunguis(s) observed. iNaturalist ID: 44835239. https://www.inaturalist.org/observations/44835239

Element Occurrence Record

Scientific Name: *Terrapene carolina* **EO Number:** 145 **EO ID:** 16093

Common Name: eastern box turtle

Global Rank: G5 **State Rank:** S3 **Identification Confirmed:** Y - Yes

TX Protection Status: **Federal Protection Status:**

Survey Information:

All fields in this report must be reviewed to understand this record. Some data may be duplicated across multiple fields.

First Observation: 2018-05-05 **Survey Date:** 2018-05-05 **Last Observation:** 2018-05-05

EO Data:

Comments:

Habitat Description:

References:

iNaturalist. 2024. Herps of Texas project collected by Texas Nature Trackers. https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/texas_nature_trackers/amphibian_watch/index.phtml

Specimens:

Source Feature Data:

EO ID: 16093

Source Feature ID: **45579**

Observation Date: 2018-05-05

Observer: Jeff McIntyre

Observation Data: At least one Terrapene carolina triunguis(s) observed. iNaturalist ID: 12314739. https://www.inaturalist.org/observations/12314739 AOR

From: Karen Hardin
To: "Monica Downer"
Cc: Sean Martin
Subject: RE: BT Kahla Data Center Project Request for TPWD Project Review; TPWD Project 57949
Date: Thursday, February 5, 2026 12:11:00 PM
Attachments: WL57949-BT-KahlaDataCenter-LeonCo-C02-05-2026.pdf
HCA-Lighting-Done-Right-06162025.pdf

Dear Monica Downer,

Please see the attached Texas Parks and Wildlife Department Technical Guidance regarding the BT Kahla Data Center Project in Leon County. I have also included a flyer regarding outdoor lighting.

A primary concern is the occurrence of the very rare large-fruited sand verbena at the site of the proposed project. Survey season is approaching for this species. Surveys for this species are not difficult when they are blooming. I feel that impacts can be avoided if the population is surveyed and then protected from development using micrositing during design of the project.

Please review my input and reach out if you have any questions.

Sincerely,

Karen Hardin
Environmental Review Biologist
Ecological & Environmental Planning Program
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744
903-644-6155 cell
Karen.Hardin@tpwd.texas.gov

From: Monica Downer <mdowner@energyrenewalpartners.com>
Sent: Wednesday, January 7, 2026 1:32 PM
To: WHAB <WHAB@tpwd.texas.gov>
Cc: Sean Martin <smartin@energyrenewalpartners.com>
Subject: BT Kahla Data Center Project Request for TPWD Project Review

To Whom It May Concern,

Please find below the download link for the TPWD Project Review Request Package for the BT Kahla Data Center Project (including cover letter, the Protected Species Habitat Assessment dated December 2025, Wildlife Habitat Assessment (WHAB) Review Request Form, and KMZ of the project area).

Final Submittal
Password: df12kKd6tG3R
https://energyrenewalpartners.egnyte.com/fl/PVJgbFFHBbVQ

We are requesting TPWD's guidance as well as concurrence on the conclusions made in the December 2025 Protected Species Habitat Assessment. We are also requesting recommended best management practices for Project development, concurrence of the survey findings and the determination of effect and technical assistance to determine whether additional species-specific surveys are warranted. At this time, ERP is also consulting with the USFWS.

Please feel free to reach out to me or Mr. Sean Martin if you have any questions or if we can provide you with additional information to assist with the review of our request. Thank you.

Monica Downer, M.S., PWS, A.G.T.A.,
Energy Renewal Partners, LLC
Mobile: (813) 842-3416 | mdowner@energyrenewalpartners.com

TPWD Technical Guidance
BT Kahla Data Center, LLC – BT Kahla Data Center Project
Leon County
TPWD Project 57949

The Texas Parks and Wildlife Department (TPWD) received a review request dated January 7, 2025, regarding the proposed data center project referenced above. TPWD appreciates the opportunity to provide comments and recommendations for this project. Please contact me at Karen.Hardin@tpwd.texas.gov or (903) 644-6155 if you have any questions.

Project Description

BT Kahla Data Center, LLC proposes the BT Kahla Data Center Project (Project) on approximately 873 acres located in the western portion of Leon County, Texas, approximately 6.05 miles southwest of the City of Jewett and approximately 2.5 miles east of Lake Limestone. The Project will involve the installation of an industrial campus featuring multiple buildings housing technology infrastructure, parking areas, internal access roads, and various supporting utilities. The facility is expected to include high-capacity power and cooling systems, such as electrical substations, backup generators, and HVAC equipment, to ensure uninterrupted operations. Additionally, fiber-optic network connectivity will be integrated to support high-speed data transmission. If necessary, clearing of onsite vegetation and grading will occur before installation. Site design and engineering have not begun, and the overall Project footprint and acreage to be disturbed have not been finalized at the time of coordination with TPWD. On behalf of BT Kahla Data Center, LLC, Energy Renewal Partners, LLC (ERP) provided a Protected Species Habitat Assessment, a TPWD Wildlife Habitat Assessment Review Request Form, and a Google Earth .kmz of the Project boundary.

TPWD is providing the following input to encourage incorporation of beneficial management practices (BMP) during design, construction, operation, and maintenance that may assist the Project proponent in minimizing impacts to fish and wildlife resources.

Vegetation Removal and Revegetation

Construction of large-scale facilities often involves soil disturbance associated with site clearing and a large amount of vegetation removal. The following BMP are provided to assist in Project planning.

- Reduce the amount of vegetation proposed for clearing if possible and minimize clearing of native vegetation to the greatest extent practicable.
- The developer should document pre-disturbance vegetation characteristics and soil conditions and develop a Revegetation Plan that uses only site-specific native species that resemble the pre-disturbance plant community composition.
- Focus the Revegetation Plan on native plant species and communities that provide wildlife cover, food (e.g., fruit, mast, nectar, pollen), and breeding habitat (vegetation structure), as opposed to keeping the site cleared and covering it with gravel or non-native grass.
- Colonization by invasive species should be actively prevented.
- Refer to the Lady Bird Johnson Wildflower Center Native Plant Database for regionally adapted native species that would be appropriate for landscaping and revegetation.

Lighting

Artificial light at night can have negative impacts on wildlife and ecosystems by disrupting natural diurnal and nocturnal behaviors such as migration, reproduction, nourishment, rest, and cover from predators.

- The use of permanent outdoor nighttime lighting should be avoided. Careful selection of lighting technologies can reduce the Project's contribution to light pollution. If outdoor lighting is required for the proposed Project, lighting should be selected and installed so that it minimizes skyglow or trespass. Lighting should be focused downward with shields or cutoff luminaires and utilize dark-sky friendly lighting that is illuminated only when needed, as bright as needed, and minimizes blue light emissions. Light sources should have a maximum Correlated Color Temperature of 3,000-Kelvin (i.e., warm-toned light). Appropriate lighting technologies, BMP, and other dark sky resources can be found at the International Dark-Sky Association and McDonald Observatory websites.

Fencing

TPWD encourages the thoughtful placement and design of site fencing to minimize wildlife impacts. Fencing creates a barrier to wildlife movement especially when fencing is placed in an area of undisturbed wildlife habitat. Wildlife connectivity and movement may be of greatest concern where there is adjacent habitat disrupted by the presence of the Project.

- Wildlife-friendly fencing or unfenced wildlife passageways should be considered for the proposed Project. Utilizing fencing that allows small-to-medium sized animals (e.g., turtles, racoons, birds) to pass through as opposed to the standard chain-link fence is encouraged. For example, the developer should consider using larger aperture mesh fence at ground level (i.e., "wildlife-permeable fencing") or facilitate wildlife passage via ground-level openings or pipes (approximately 8-inch diameter) through fencing. With large properties or where stream corridors cross a project, the developer should consider dividing the facility into smaller blocks which are fenced individually; this allows for movement corridors to remain through the overall facility, such as along streams.

Water Resources

The Project occurs within the Brazos River Basin. Project materials indicate that Birch Creek bisects the site in an east to west orientation, the Project area contains approximately 198.6 acres of 100-year floodplain, and the Project area contains 1.12 acres freshwater forested/shrub wetlands, 17.4 acres freshwater emergent wetlands, 34.7 acres freshwater forested/shrub wetlands, 6.2 acres of ponds, and 5.6 acres of riverine wetlands.

Project materials did not present information on whether aquatic features on-site would be excluded from development and did not present information regarding proposed water consumption needed to operate the facility.

- Because there is ever increasing competition for water including environmental and wildlife uses, the water consumption at the proposed site should be minimized by using optimized

cooling technologies (such as adiabatic cooling, hybrid systems, direct-to-chip and immersion liquid cooling), sourcing recycled, rain catchment, or gray water for reuse, using efficient water treatment that minimizes chemical usage, and auditing and monitoring water usage.

- All waterways and associated floodplains, riparian corridors, springs and seeps, and wetlands, regardless of their jurisdictional status, provide valuable wildlife habitat and should be avoided when designing the proposed data center campus to the maximum extent possible.
- Disturbance-free buffers contiguous to wetlands or aquatic systems should be retained to preserve wildlife cover, food sources, and travel corridors and to protect water quality.
    - Floodplains, riparian areas, and stream size should be considered when establishing disturbance-free buffers. Existing herbaceous and wooded riparian corridors should be retained at the current widths established by past agricultural practices or by the presence of floodplains at the site. Minimum buffers of 25 feet from each ephemeral stream, 50 feet from each intermittent stream and 100 feet from each perennial stream may be used when existing natural riparian buffers and floodplains are not present. If natural buffers greater than the minimum buffer distances have already been established by past land use practices, then the larger existing buffers should be used to retain the ecological functions they currently provide.
- Developers are discouraged from siting on land with steep slopes that require extensive grading in order to reduce the potential for erosion, sedimentation, and runoff, and thus minimize impacts on water quality.
- During construction, trucks and equipment should use existing bridges to cross creeks while avoiding unnecessary temporary or permanent access roads across creeks. If stream crossings are required, riparian and stream bank vegetation should be retained, streams should be crossed when they are dry, and disturbance to inert microhabitats should be avoided in waterways such as snags, brush piles, fallen logs, creek banks, pools, and gravel stream bottoms, as these provide habitat for a variety of fish and wildlife species and their food sources.
- Placement of culverts in areas containing native mussels should be avoided.
- Erosion control measures should be installed prior to construction and maintained until disturbed areas are permanently revegetated.

State Law: Aquatic Resources

The PWC section 1.011 grants TPWD authority to regulate and conserve aquatic animal life of public waters. Texas Administrative Code (TAC) section 57.157 regulates take of mussels, including mussels that are not state listed. TPWD regulates the introduction and stocking of fish, shellfish, and aquatic plants into public waters of the state under PWC 12.015, 12.019, and 66.015 and TAC 52.101-52.105, 52.202, and 57.251-57.259.

Dewatering activities can impact aquatic resources through stranding fish and mussels. Other harmful construction activities can trample, dredge, or fill areas with stationary aquatic resources such as plants and mussels. Relocating aquatic life to an area of suitable habitat outside the Project footprint avoids or reduces impacts to aquatic life. Relocation activities are done under the authority of a TPWD *Permit to Introduce Fish, Shellfish or Aquatic Plants into Public Waters* with an approved Aquatic Resource Relocation Plans (ARRP). The permit allows for the movement (i.e., introduction, stocking, transplant, relocation) of aquatic species in waters of the state. The ARRP is used to plan resource handling

activities and assist in the permitting process. If dewatering activities and other Project related activities cause mortality to fish and wildlife species, then the party responsible would be subject to investigation by the TPWD Kills and Spills Team (KAST) and will be liable for the value of lost resources under the authority of PWC sections 12.0011 (b) (1) and 12.301. The development of an ARRP is intended to avoid or minimize loss or damage to aquatic species from disturbance and alleviate damage/restitution concerns.

- Impact avoidance measures should be practiced for all native fish and freshwater mussel species, regardless of state listing status.
- The Project should utilize trenchless crossing methodology for proposed utility lines across streams, such as spanning with overhead utilities or boring under streams.
- If the construction occurs below the ordinary high-water mark in streams during times when water is present, then native aquatic resources, including fish and mussels regardless of state threatened listing status, should be relocated in conjunction with a *Permit to Introduce Fish, Shellfish or Aquatic Plants into Public Waters* and an ARRP. The ARRP should be approved by the department 30 days prior to activity within Project waters or resource relocation and submitted with an application for a no-cost permit. The ARRP can be submitted to Bregan Brown TPWD Region 2 KAST available at Kirian.Brown@tpwd.texas.gov and 903-520-3821.

Mussels in Association with Streams

The April 2024 Texas Freshwater Mussel Survey Protocol was designed by TPWD and USFWS to determine the presence or probable absence of freshwater mussels in waters of Texas and to initiate standardized procedures for projects affecting streams and impoundments that may be occupied by native freshwater mussels in Texas. The Texas Freshwater Mussel Sampling Protocol Stream Grouping dataset can be found at https://www.fws.gov/library/collections/texas-freshwater-mussels.

No streams or waters within the Project boundary have been assigned a stream grouping number within the Texas Freshwater Mussel Sampling Protocol Stream Grouping dataset found at https://www.fws.gov/library/collections/texas-freshwater-mussels.

Please note that the groupings were based on TCEQ designated stream segments that were identified as perennial streams. However, the dataset is not perfect. There may be suitable mussel habitat within intermittent streams in areas that retain water indefinitely that were not assigned a stream grouping or there may be segments of classified perennial waters that are not suitable habitat. Therefore, the need to conduct a mussel survey is based on the presence of suitable mussel habitat. A desktop or land-based assessment can be used to determine whether a water-based survey is warranted for a proposed Project, as described in the guidelines, and TPWD must provide written concurrence with the findings presented on a reconnaissance survey form. If a site is found to have suitable mussel habitat and is not currently identified by a stream group, then the site should be treated as a Group 5 stream. Group 5 is defined as: streams where no federal or state listed freshwater mussels occur, but mussels are known to occur; or perennial streams where it is anticipated that live freshwater mussels may occur, but presence or diversity have not been confirmed.

Project materials indicate there is potential suitable habitat onsite for freshwater mussels including the federal and state threatened Texas fawnsfoot.

- To ensure protection of all native freshwater mussels, including state listed mussels, if disturbance below the ordinary high water mark of a stream is proposed (grading, trenching, placement of fill, culverts, equipment crossing), the Project proponent should follow the mussel survey protocol for a Group 5 stream prior to working in the stream. For information and a decision flowchart please refer to the 2024 Texas Freshwater Mussel Survey Protocol found at https://www.fws.gov/library/collections/texas-freshwater-mussels or Attachment 4 to the Aquatic Resources Relocation Plan Guidance Document at https://tpwd.texas.gov/publications/pwdpubs/media/pwd_lf_t3200_1958_arrp_guidelines_packet.pdf. A Group 5 survey includes an initial assessment using a Desktop and/or Land-based Mussel Reconnaissance Survey, submitting the results to TPWD for approval, and potential water-based surveys based on the findings of the initial assessment.

State Law: Invasive Species

Per TAC chapter 57, it is an offense for any person to possess, transport, or release into the water of this state any species, hybrid of a species, subspecies, eggs, seeds, or any part of any species defined as a harmful or potentially harmful exotic fish, shellfish, or aquatic plant. This rule applies not only to zebra mussels (*Dreissena polymorpha*) (live or dead) and their larvae but also to any species or fragments thereof designated as harmful or potentially harmful under this subchapter (e.g., giant salvinia, hydrilla, Eurasian watermilfoil). The full list of prohibited species can be found on the TPWD webpage regarding prohibited aquatic species.

Equipment coming in contact with surface waters could transport invasive species where mud, plant debris, or water accumulate.

- If equipment will come in contact with inland streams or waterbodies, such as during construction or demolition of temporary and permanent stream crossings, the Project proponent should prepare and follow an aquatic invasive species (AIS) transfer prevention plan which outlines BMP for preventing inadvertent transfer of aquatic invasive plants and animals on Project equipment and materials. To minimize the risk of transporting aquatic invasive species, the Project proponent and its contractors should review and adhere to the AIS BMP identified in the ARRP guidelines packet and *TPWD Clean/Drain/Dry Procedures and Zebra Mussel Decontamination Procedures for Contractors Working in Inland Public Waters*.

Migratory Birds

Federal Law: Migratory Bird Treaty Act and State Law: Chapter 64, Birds

The Migratory Bird Treaty Act (MBTA) prohibits direct and affirmative purposeful actions that reduce migratory birds, their eggs, or their nests, by killing or capturing, to human control, except when specifically authorized by the Department of the Interior. This protection applies to most native bird species, including ground nesting species. The USFWS Migratory Bird Office can be contacted at (505) 248-7882 for more information.

The Texas Parks and Wildlife Code (PWC) section 64.002, regarding protection of nongame birds, provides that no person may catch, kill, injure, pursue, or possess a bird that is not a game bird. The PWC section 64.003, regarding destroying nests or eggs, provides that no person may destroy or take the nests, eggs, or young and any wild game bird, wild bird, or wild fowl.

Within the Project area, potential impacts to migratory birds may occur during disturbance of existing vegetation and bare ground that may be occupied by active bird nests, including nests that may occur in grass, shrubs, trees and on bare ground.

- To minimize Project impacts on nesting birds, vegetation clearing should be scheduled outside of the general bird nesting season of March 15th to September 15th. If disturbing vegetation during the bird nesting season is unavoidable, the area proposed for disturbance should be surveyed to ensure that no nests with eggs or young will be disturbed by construction. Nest surveys should be conducted not more than five days prior to clearing activities to maximize detection of active nests. Generally, a 100-foot radius buffer of vegetation is recommended around active nests until the eggs have hatched and the young have fledged. Raptor nesting occurs in late winter through early spring, so construction activities should be excluded from a minimum zone of 100 meters (approximately 328 feet) surrounding any raptor nest during February 1st through July 15th.

Bald Eagles

Federal Law: Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles *(Haliaeetus leucocephalus)* and golden eagles *(Aquila chrysaetos)*, including their parts, nests, or eggs. The BGEPA provides criminal penalties for persons who take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof. The BGEPA defines take to include pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb.

Project materials indicate that public data depicts the nearest observation of a bald eagle approximately 2.4 miles from the Project area at Lake Limestone and that the Project area is absent of suitable nesting features for the bald eagle.

Because of the proximity to Lake Limestone, eagle observations near the Project area, and forested habitat within the Project area, the Project proponent should be aware that eagles could nest on-site.

- If an eagle nest is detected onsite, the developer should follow the *2007 USFWS National Bald Eagle Management Guidelines* to avoid disturbance. If Project activities cannot abide by USFWS buffer distances, and disturbance of eagles is anticipated, refer to the USFWS Eagle Management webpages to initiate obtaining an eagle disturbance take or nest take permit from the USFWS, depending on the situation. The *Southwest Region-Bald Eagle Disturbance Permit Determination Key* can be used as the initial step in identifying the need for a permit.

Rare and Protected Species

Federal Law: Endangered Species Act

Federally listed animal species and their habitat are protected from take on any property by the Endangered Species Act (ESA). Take of a federally listed species can be allowed if it is incidental to

an otherwise lawful activity and must be permitted in accordance with Section 7 or 10 of the ESA. Federally listed plants are not protected from take except on lands under federal/state jurisdiction or for which a federal/state nexus (i.e., permits or funding) exists. Take of a federally listed species or its habitat without the required take permit (or allowance) from USFWS is a violation of the ESA.

Project materials indicate that the Project consists primarily of hay/pasture land cover (59.1 percent), mixed forest (27.6 percent), woody wetlands (8.6 percent), and barren land (1.4 percent).

Project materials presented field investigation findings at the Project site and concluded that the site contains preferred habitat for the federal and state endangered Houston toad (*Anaxyrus houstonensis*), the federal proposed endangered tricolored bat (*Perimyotis subflavus*), the federal and state threatened Texas fawnsfoot (*Truncilla macrodon*), the federal and state endangered large-fruited sand verbena (*Abronia macrocarpa*), the federal and state endangered Navasota ladies'-tresses (*Spiranthes parksii*) and the federal proposed threatened monarch butterfly (*Danaus Plexippus*).

- If impact to a federally listed species is anticipated, the Project proponent should consult with USFWS Texas Coastal and Central Plains Ecological Services Clear Lake Sub-office at houstonesfo@fws.gov or (281) 286-8282 pursuant to the ESA.

Houston Toad: Project materials state that suitable upland and breeding habitat occurs within the Project area, provides a May Affect determination for the species, and recommends the Project proponent conduct a presence/absence survey in accordance with USFWS survey protocols if the Project design cannot avoid suitable habitat or if ground-disturbing activities are proposed during the species' breeding season.

- TPWD supports the recommendation by ERP to conduct a presence/absence survey in accordance with USFWS survey protocols to ensure avoidance of take. The USFWS should be contacted for species occurrence data, guidance, permitting, survey protocols, and mitigation for this federally listed species, if coordination has not been initiated to date. To assist in your evaluation of risk associated with take for this species, information regarding modeling for the species' distribution and habitat suitability can be found at *Bowers, B.C., D.K. Walkup, T.J. Hibbitts, P.S. Crump, A.M. Lawing, W.A. Ryberg. 2024. Habitat Suitability Modeling for the Houston Toad. Texas A&M Natural Resources Institute, College Station, Texas.* [https://nri.tamu.edu/publications/research-reports/2024/habitat-suitability-modeling-for-the-houston-toad/]

Tricolored bat: The tricolored bat is proposed endangered wherever found. During the winter, tricolored bats are found in subterranean features such as caves and abandoned mines, although in the southern portion of their range (including Texas), where caves are sparse, tricolored bats also roost in trees, road-associated culverts, and bridges. During the spring, summer, and fall, tricolored bats are active and found foraging and roosting in a wide variety of forested or wooded habitats, including isolated trees. Active season roosting occurs in trees, primarily among clusters of leaves of live or recently dead deciduous hardwood trees but may also be found in Spanish moss (*Tillandsia usneoides*) and clusters of dead pine needles. The sexes live separately during the summer, with males often solitary and females forming small maternity colonies primarily in foliage, but sometimes in buildings and rock crevices. The central latitudes of Texas (including Leon County) are considered a year-round Zone 1 active range for tricolored bats. Pupping occurs May 1st through July 15th and winter torpor may occur between December 15th through February 15th, when mean winter temperatures fall below

40 degrees Fahrenheit. During pupping, hibernation, and at temperatures below 40 degrees Fahrenheit, the bats are nonvolant, less able to escape from tree clearing, and more susceptible to mortality. Protection of hibernacula, avoiding tree removal during pupping, avoiding tree removal during winter torpor in central Texas latitudes, and minimizing overall tree removal are conservation practices for the species.

Project materials indicate the Project may affect the tricolored bat and that the species is proposed for listing thus not subject to take prohibitions of the ESA. No species-specific BMPs are presented in the Project materials to avoid or minimize impacts on the tricolored bat.

- Project materials state that the tricolored bat has the potential to occur onsite for winter roosting in large culverts and summer roosting in hardwood trees with sloughing bark or evergreen trees. Please note that the tricolored bat summer roosting habitat, including pupping habitat, is more closely tied to tree foliage and not necessarily trees with sloughing bark. TPWD review indicates that treed areas in the Project area represent year-round active season roosting habitat for tricolored bats including during pupping season and winter torpor season.
- Because the Project occurs in central latitudes of Texas where tricolored bats are active year-round, tree clearing should be avoiding during the pupping season May 1st through July 15th, and avoided during winter torpor period from December 15th through February 15th. If tricolored bats become federally listed prior to construction, then the Project will need to conduct additional coordination with the USFWS– Texas Coastal and Central Plains Ecological Services – Clear Lake Sub-Office to ensure compliance with the ESA.
- The tricolored bat is identified in the Texas State Wildlife Action Plan (SWAP) with a need for research focused on identifying proven and successful conservation measures. To contribute to conservation of this species due to loss of woodland habitat as a result of the development of the Project, the Project proponent should consider contributing towards research that helps identify successful conservation measures for the tricolored bat.

Texas fawnsfoot: Texas fawnsfoot are found in medium- to large-sized streams and rivers with flowing waters and mud, sand, and gravel substrates. Adults often found in bank habitats and occasionally in backwater, riffle, and point bar habitats, with low to moderate velocities that appear to function as flow refuges during high flow events.

- Project materials indicate that the Texas fawnsfoot is under review by the USFWS as a federal proposed species but is not currently protected by the take prohibitions of Section 9 of ESA until the rule to list is finalized. Please note that the rule to list was finalized June 4, 2024, which became effective July 5, 2024. The species is listed threatened with a rule under 4(d) of that provides measures necessary and advisable to provide for the conservation of the species.
- To avoid take the Project proponent should avoid disturbance or habitat loss to streams that provide suitable habitat for the federal and state listed threatened Texas fawnsfoot.
- To ensure avoidance of impacts to the Texas fawsnfoot for any work within suitable perennial waters, a mussel survey should be conducted according to the USFWS and TPWD mussel survey protocols discussed in the section below, *Mussels in Association with Streams.*

Large-fruited sand verbena (LFSV): This perennial herb occurs only in Freestone, Leon, and Robertson Counties on deep, well-drained sands, sometimes on actively blowing sand dunes, within a post oak-grassland mosaic vegetation type. The species, along with other herbaceous species, temporarily

dominate the bare sands during spring. Pink-purple, showy flower clusters bloom in spring, peaking mid-March. Threats include introduction of pasture grasses, development, fire suppression, and off-road vehicles.

Project materials state that the Project may affect the LFSV, and that there is a Texas Natural Diversity Database (TXNDD) record for the LFSV located within the southwestern portion of the Project area. Project materials also note that in the absence of a federal nexus or other federal action, the take of federally listed plants occurring on private property is not prohibited under the ESA. However, ERP indicates that impacts to federally listed plants may warrant voluntary conservation measures and avoidance and minimization where practicable.

- Because the LFSV is a highly rare plant that occurs in very few locations with an estimated nine unprotected wild populations, TPWD strongly encourages the Project proponent to avoid impacts to the species. Because the species likely occurs within the Project area, a survey of suitable sparsely vegetated sandy sites and existing known occurrence sites should be conducted early to mid-March, which is the season of highest detection when showy flowers are present. Please contact me for assistance with species identification during surveys or to identify reference sites to know when the plants are blooming elsewhere in the county.
- LFSV usually occupy a small area and if the data center Project proceeds, a design of the campus is encouraged to protect the occupied sites from grading, disturbance, or landscaping. Very little vegetation grows in their habitat, thus easy to maintain an open, non-landscaped space where they would remain on the campus, such as strategically located in open space between buildings or parking areas.
- Alternatively, as a last resort, if LFSV occupied habitat will not be protected from disturbance, then the Project proponent is encouraged to cooperate with our partners in plant conservation, such as the Botanical Research Institute of Texas, for seed harvest prior to destruction.
- If a federal nexus is triggered by the Project, then coordination with the USFWS will be needed for take of LFSV.

Navasota ladies'-tresses (NLT): NLT is known only from Texas, within the Post Oak Savannah in Bastrop, Brazos, Burleson, Fayette, Freestone, Grimes, Jasper, Leon, Limestone, Madison, Milam, Robertson, and Washington counties. NLT is a perennial herb producing a solitary spike of bracts with white flowers in a loose braid-like spiral up the stem late October –early November. This species occurs along margins of post oak woodlands in sandy loam soils, often over an impermeable clay layer, adjacent to drainages and seasonal streams.

Project materials state that there is suitable habitat for the NLT within the Project area and that the Project may affect the species.

- Suitable habitat within areas of the Project that are proposed for disturbance should be surveyed by a qualified biologist familiar with the identification of this species. This is a cryptic orchid, with low detection probability for much of the year. Surveys are best conducted during flowering October through December, although flowering varies greatly across years based on weather conditions. If any NLT are detected, please coordinate with this office and the USFWS Ecological Field Services Office-Clear Lake Sub-office concerning the appropriate conservation measures, such as possible salvage and transplant of plants. Plants not in the direct path of construction should be protected by markers or fencing and by instructing construction

crews to avoid any harm.

Monarch butterfly: The monarch butterfly is a proposed threatened with an expected range of the entire continental United States, with migration through Texas between the principal breeding grounds in the north and the overwintering areas in Mexico. Habitat during migration includes open fields and meadows containing nectar plants (for both spring and fall migration) and milkweed (essential in spring migration).

Potential impacts to the monarch butterfly may occur during vegetation disturbance, herbicide treatment, or grading of the Project's grasslands and forest openings during the active monarch season in Texas (approximately March 1 – October 31).

- Reductions in native floral resources have led to widespread concern about significant declines in the population of migrating monarch butterflies and other native insect pollinator species. To support pollinators and migrating monarchs, TPWD encourages the conservation of prairie habitats and establishment of native wildflower habitats on private and public lands across the state, including the proposed Project.
- The Project proponent should consider development strategies that avoid or minimize loss to habitat for the monarch butterfly within the Project area, namely areas of the Project site that contain the greatest amounts of floral resources.
- To supplement pollinator habitat that is impacted due to construction of the proposed Project, monarch and other pollinator habitat conservation or restoration should be incorporated into the Project plan either on-site at the periphery, along roads, within power line areas, and in landscaping, or at a nearby off-site location. These areas can provide for a diverse community of pollinators, providing food, breeding, or nesting opportunities. Resources to help with establishing habitat and plant lists include the Lady Bird Johnson Wildflower Center Plant Lists, Pollinator.org planting guides by zip code, Monarch Watch.org, the Xerces Society pollinator resource center, and TPWD Native Pollinators and Monarch Butterfly webpages.

State Law: State Listed Species

PWC regulates state listed threatened and endangered animal species. The capture, trap, take, or killing of state listed threatened and endangered animal species is unlawful unless expressly authorized under a permit issued by USFWS or TPWD. Project materials included a review of the TPWD *Rare, Threatened, and Endangered Species of Texas by County* (RTEST) list for Leon County. In addition to the federal and state listed and federal proposed species already addressed above, Project materials also concluded that there is marginally suitable habitat on site for the state listed threatened Bachman's sparrow, foraging habitat for the state listed threatened white-faced ibis (*Plegadis chihi*), and suitable habitat for the state listed threatened Texas horned lizard (*Phrynosoma cornutum*).

TPWD review indicates that the site also contains suitable foraging habitat for the state listed threatened wood stork (*Mycteria americana*), as it uses similar habitat to the white-faced ibis, and the site contains an abundance of aquatic resources including large ponds, woody wetlands, and 198 acres of floodplain that were not depicted by photo representation.

Although Project materials indicate suitable habitat is present for the Texas horned lizard, TPWD review indicates that the likelihood of an occurrence of the Texas horned lizard is low due to a significant loss of range for this species in this area of Texas. If unknown populations occur in the

Project area, the Texas horned lizard would be susceptible to loss by earth moving equipment and compaction in areas of suitable habitat such as native pastures and savanna grasslands.

- The white-faced ibis and wood stork may occur in the area during migration or post-breeding dispersal but are not known to nest in Leon County. To minimize impacts to the white-faced ibis and wood stork, the Project proponent should avoid disturbance or alternation of areas providing shallow standing water such as herbaceous wetlands and areas that temporarily hold floodwater such as ditches, ponds, and pastures in floodplains, as these provide foraging areas.
- Please review the *Migratory Birds* section above for recommendations to avoid or minimize potential impacts on state listed birds, such as the Bachman's sparrow.
- Please review the *General Beneficial Management Practices* section below for recommendations to avoid or minimize potential impacts on state listed species, such as the Texas horned lizard.

Species of Greatest Conservation Need

In addition to state and federally listed species, TPWD tracks other species of greatest conservation need (SGCN) and rare plant communities and actively promotes their conservation. TPWD considers it important to evaluate and, if feasible, minimize impacts on SGCN and their habitat to reduce the likelihood of endangerment and preclude the need to list as threatened or endangered in the future. Several SGCN and their general habitat descriptions are included in the RTEST application.

Recommendations: Please review the *General Beneficial Management Practices* section below for recommendations to avoid or minimize impacts on SGCN and natural plant communities.

General Beneficial Management Practices

TPWD recommends implementing the following BMP to avoid or minimize impacts to wildlife and SGCN, including state listed SGCN, potentially occurring in Leon County:

- An existing electric transmission line crosses the Project area. To avoid additional habitat fragmentation associated with constructing electric transmission lines, the Project should connect to the grid using the existing transmission line within the Project boundary.

- The Project should be designed to minimize removal of vegetation and retain native habitats and natural ground cover. Precautions should be taken to avoid impact on SGCN flora and fauna, natural plant communities, and priority habitats such as large-fruited sand verbena occupied site, riparian areas, bottomland forest, native prairies, and wetlands.

- Small vertebrates including snakes, lizards, toads, and mice can fall into trenches or holes, become trapped, and would be susceptible to loss from backfilling activities, trench inundation, starvation, dehydration, predation, and exposure to elements. Any open trenches or excavation areas should be covered overnight and inspected every morning to ensure no wildlife species have been trapped. Trenches should be inspected for the presence of trapped wildlife prior to backfilling. If trenches and excavation areas cannot be backfilled the day of initial excavation or cannot be covered overnight, then escape ramps should be installed at least every 90 meters

(approximately 295 feet). Escape ramps can be short lateral trenches or wooden planks sloping to the surface at an angle less than 45 degrees (1:1).

- Erosion and seed and mulch stabilization materials that avoid entanglement hazards to snakes and other wildlife species should be used. Because the mesh found in many erosion control blankets or mats pose an entanglement hazard to wildlife, the use of no-till drilling, hydromulching, or hydroseeding rather than erosion control blankets or mats should be used due to a reduced risk to wildlife. If erosion control blankets or mats are used, the product should contain no netting or contain loosely woven, natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic mesh matting and hydromulch containing microplastics should be avoided.

- Employees and contractors should be informed of the potential for SGCN to occur in the Project area and to avoid impacts to all wildlife that are encountered. Wildlife in danger from Project activities that will not readily leave the site, can be translocated to a nearby area with similar habitat that will not be disturbed by Project activities. Any translocations of reptiles should be the minimum distance possible no greater than one mile, preferably within 100-200 yards of the initial encounter location. For purposes of relocation, surveys, monitoring, and research, terrestrial state listed species may only be handled by persons with the appropriate authorization obtained through the TPWD Wildlife Permits Program. For more information on obtaining this authorization, please contact Wildlife Permits at (512) 389-4647.

- During construction, operation, and maintenance of the proposed Project, slow (25 miles per hour, or less) speed limits should be observed within the Project site. Reduced speed limits would allow personnel to see wildlife in the vehicle path and avoid wildlife injury or death.

- Grading and site design should be used to preserve the existing topography of the site to not disrupt natural drainage patterns.

- If rodent populations become an issue at facility buildings during the construction or operations phases, the following is recommended: 1) Avoid the use of anticoagulant rodenticides at the facility, as these can cause widespread mortality to Texas Species of Greatest Conservation Need (SGCN) such as eastern spotted skunks and birds of prey. 2) Avoid the use of glue traps. Glue traps can cause direct mortality or fatal injury to non-target SGCN wildlife such as Woodhouse's toad, eastern box turtle, slender glass lizard, and many other small species. 3) Incorporate the use of salt-based baits such as RatX, Vitamin D/Cholecalciferol baits that are lower-risk for harming non-target species. If Vitamin D/Cholecalciferol baits are used, we recommend placing it indoors only or in tamper-resistant bait boxes that are commercially available, as they can have toxic effects on canids at high levels. 4) Manual traps can also be effective and pose a lower risk of harming non-target species. These trap designs include snap traps and commercially available or homemade bucket/dowel/bait traps. 5) Use avoidance measures such as tightly securing all food or waste and patching any poorly sealed foundations or other holes in buildings. 6) Avoid control of snakes and other small- to medium-sized rodent predators at the site, as they are effective at keeping rodent populations low.

Data Reporting and the Texas Natural Diversity Database

TPWD maintains records of occurrence for protected and rare species, or SGCN, within the TXNDD and these data are publicly available by request. The TXNDD is intended to assist users in avoiding harm to rare species or significant ecological features. The TXNDD is updated continuously, and relies partially on information submitted by private parties, such as developers or their consultants. Given the small proportion of public versus private land in Texas, the TXNDD does not include a comprehensive inventory of rare resources in the state. These data are not inclusive and cannot be used as presence/absence data. They represent species that could potentially be in your Project area. This information cannot be substituted for field surveys.

- Project materials indicate that the TXNDD did not reveal records near the Project area for several bird species being evaluated in Protected Species Habitat Assessment. Note that the TXNDD tracks records for birds observed nesting and does not provide occurrence data for observations related to foraging or migration stopover behavior, with few exceptions such as wintering grounds for certain species. Therefore, observations for species that migrate through the Project area or may occur foraging or roosting during post breeding dispersal would not be found in the TXNDD, such as the piping plover, red knot, whooping crane, swallow-tailed kite, white-faced ibis, and wood stork. Please keep this in mind when utilizing the TXNDD data.

- The TXNDD is updated continuously based on new, updated and undigitized records; therefore, the most recent TXNDD data should be requested on a regular basis. For questions regarding a record or to request the most recent data, please contact TexasNatural.DiversityDatabase@tpwd.texas.gov.

- To aid in the scientific knowledge of a species' status and current range, TPWD encourages reporting encounters of protected and rare species to the TXNDD according to the data submittal instructions found at the TPWD Texas Natural Diversity Database: Submit Data website. An additional method for reporting observations of species is through the iNaturalist community application where plant and animal observations are uploaded from a smartphone. The observer then selects to add the observation to specific TPWD Texas Nature Tracker Projects appropriate for the taxa observed, including Birds of Texas, Herps of Texas, Mammals of Texas, Rare Plants of Texas, Texas Eagle Nests, and Texas Whooper Watch.

hill country alliance

NIGHT SKY PROGRAM

Hill Country Lighting Done Right

Keys to Night Sky Friendly Lighting

Fully Shielded
A fully shielded fixture is angled so people and wildlife cannot see the light source. Choose fully shielded lighting with a barrier at the top of the fixture, extending beyond and surrounding the light source. Ensure that all lighting points downward and does not shine above the horizon.

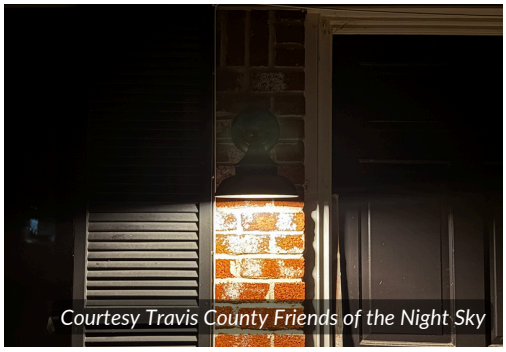
No Brighter Than Necessary
Over-lighting creates detrimental skyglow and glare, reducing our ability to see at night. Use lights only as bright as necessary to serve their function.

Color Temperature
A light's color is measured in degrees Kelvin (K), from 1000K (orange/red) to 10,000K (blue). Choosing warm color bulbs at or under 3000K - preferably 2200K - reduces disruption of nocturnal habitats and circadian rhythms.

Only On When Needed
The friendliest night sky lighting is no lighting at all. If lighting is desired, consider using a motion sensor or timer. Turning off outdoor lighting is especially important during peak bird migration in the spring and fall, when birds use starry skies to navigate. #LightsOutTexas

Private Residence - Austin, Texas

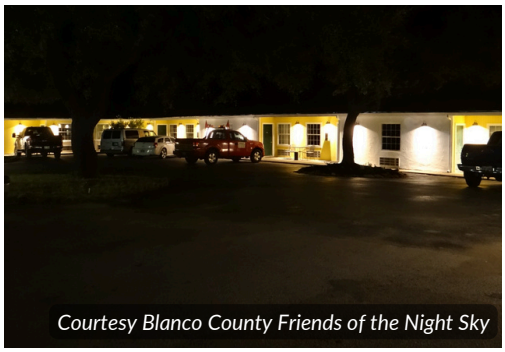
☒ Fully Shielded ☒ Brightness
☒ Color Temperature



☑ Fully Shielded ☑ Brightness
☑ Color Temperature

Swiss Lodge - Blanco, Texas

☒ Fully Shielded ☒ Brightness
☒ Color Temperature



☑ Fully Shielded ☑ Brightness
☑ Color Temperature

Texas Regional Bank - Blanco, Texas

☒ Fully Shielded ☒ Brightness
☒ Color Temperature

☑ Fully Shielded ☑ Brightness
☑ Color Temperature

Created in partnership with TEXAN by NATURE

Find DarkSky approved lighting fixtures and companies at https://darksky.org/what-we-do/darksky-approved/

Night Sky Champions Deserve Recognition!

LOCAL

Night Sky Friendly Business Program - Hill Country Alliance
The Hill Country Night Sky Team and the Hill Country Alliance work in partnership with chambers of commerce to recognize businesses and organizations that have night sky friendly outdoor lighting

Night Sky Friendly Neighborhood Program - Hill Country Alliance
Subdivisions and neighborhoods can receive recognition through this program by adopting the County Subdivision and Night Sky Friendly Neighborhood outdoor lighting policy into their homeowners agreements or deed restrictions.

STATEWIDE

Be A Star - Dark Sky Texas
This self-assessment program encourages landowners to evaluate their outdoor lighting, awarding recognition to those who eliminate things like glare, light trespass, and excess lighting on their properties.

BOLD Initiative: Better Outdoor Lighting Decisions (BOLD) - Dark Sky Texas
This initiative connects conservation-minded organizations, businesses, large landholders, and governmental entities with resources to minimize their contribution to regional light pollution.

Texan by Nature Certification
Project Certification provides recognition to Texas employers, organizations, and individuals that can quantify their impacts on people, prosperity, and natural resources.

INTERNATIONAL

International Dark Sky Places - Dark Sky International
This program certifies communities, parks, and protected areas around the world that preserve and protect dark sites through responsible lighting policies and public education.

Home Outdoor Lighting Assessment - Dark Sky International
This self-guided, four-step program helps homeowners and renters evaluate and improve their outdoor lighting to reduce light pollution.

DIY: Conduct Your Own Night Sky Lighting Assessment

Here are some great questions you should always ask when considering new outdoor lighting, adapted from Dark Sky International's *Five Lighting Principles for Responsible Outdoor Lighting*:

- Is the light necessary?
- Is the light fully shielded and only illuminating where needed?
- Is the light off when not in use or activated by a motion sensor or timing system?
- How bright is the light? Does it allow you to see beyond the lit area?
- What color temperature is the light?

hill country alliance

From: Karen Hardin
To: "byron.ryder@co.leon.tx.us"
Cc: Keagan Hathorn
Subject: Development Lighting Practices and Data Center Information
Date: Tuesday, January 6, 2026 1:48:00 PM
Attachments: HCA-Lighting-Done-Right-06162025.pdf
Data-Centers-and-Water-Usage_Updated-12.4.2025.pdf

Hi Judge Ryder,

I live in the county and have seen some social media regarding a proposed data center and wanted to share resources with you to help you and your constituents with decision making. I also work in reviewing site specific development projects for potential fish and wildlife impacts when submitted by developers, but the local data center project has not been submitted for review. Though TPWD can provide information and recommendations when requested, developers and permitting agencies are not required to seek TPWD input, and we do not provide unsolicited recommendations. I feel I can share with you the attached documents related to lighting practices and a general data center information report to shore up your knowledge, if needed.

For the lighting practices, I would also add for the lights to be downward facing. I have seen shielded lights that are on a swivel that don't face downward, thus causing light trespass.

Best Regards,

Karen Hardin
Environmental Review Biologist
Ecological & Environmental Planning Program
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744
903-644-6155 cell
Karen.Hardin@tpwd.texas.gov

From: Karen Hardin
To: "byron.ryder@co.leon.tx.us"
Cc: Keagan Hathorn
Subject: RE: Development Lighting Practices and Data Center Information
Date: Thursday, January 8, 2026 12:49:00 PM

FYI,

To clarify the email below, TPWD just received the Kahla Project for review and comment from Energy Renewal Partners. We have a 45-day response window.

Karen Hardin
Environmental Review Biologist
TPWD – Ecological & Environmental Planning Program
903-644-6155 cell

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Sent: Tuesday, January 6, 2026 1:49 PM
To: 'byron.ryder@co.leon.tx.us' <byron.ryder@co.leon.tx.us>
Cc: Keagan Hathorn <Keagan.Hathorn@tpwd.texas.gov>
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