

**APPLICATION OF
LONE STAR TRANSMISSION, LLC
TO AMEND ITS CERTIFICATE OF CONVENIENCE
AND NECESSITY FOR THE
REATA STATION TO SEQUOIA II SOLAR
345-KV TRANSMISSION LINE
IN EASTLAND AND CALLAHAN COUNTIES**



DOCKET NO. 58632

Submit seven (7) copies of the application and all attachments supporting the application. If the application is being filed pursuant to 16 Tex. Admin. Code § 25.101(b)(3)(D) (TAC) or 16 TAC § 25.174, include in the application all direct testimony. The application and other necessary documents shall be submitted to:

**Public Utility Commission of Texas
Attn: Filing Clerk
1701 N. Congress Ave.
Austin, Texas 78711-3326**

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

1. **Applicant (Utility) Name:** Lone Star Transmission, LLC
- Certificate Number:** 30196
- Street Address:** 5920 W. William Cannon Dr., Bldg. 2
 Austin, TX 78749
- Mailing Address:** 5920 W. William Cannon Dr., Bldg. 2
 Austin, TX 78749

2. **Please identify all entities that will hold an ownership interest or an investment interest in the proposed project but which are not subject to the Commission's jurisdiction.**

Not applicable. Lone Star Transmission, LLC (Lone Star) will construct and hold the sole ownership interest in the facilities associated with the Reata Station to Sequoia II Solar 345-kilovolt (kV) Transmission Line in Eastland and Callahan counties (the Project).

3. **Person to Contact:**
- Primary Contact:** Robert Orr
 Title/Position: Director, Regulatory Affairs
 Phone Number: (512) 236-3135
 Mailing Address: 5920 W. William Cannon Dr., Bldg. 2
 Austin, TX 78749
 Email Address: robert.orr@lonestar-transmission.com
- Alternate Contact:** Tracy Wieczorek
 Title/Position: Director, Land Strategy & Community Relations
 Phone Number: (512) 236-3151
 Mailing Address: 5920 W. William Cannon Dr., Bldg. 2
 Austin, TX 78749
 Email Address: tracy.wieczorek@lonestar-transmission.com
- Legal Counsel:** Tracy Davis, Managing Attorney
 Phone Number: (512) 236-3141
 Mailing Address: 5920 W. William Cannon Dr., Bldg. 2
 Austin, TX 78749
 Email Address: tracy.davis@lonestar-transmission.com

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

4. Project Description:

Name or Designation of Project:

Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan counties (Project)

Provide a general description of the project, including the design voltage rating (kV), the operating voltage (kV), the CREZ Zone(s) (if any) where the project is located (all or in part), any substations and/or substation reactive compensation constructed as part of the project, and any series elements such as sectionalizing switching devices, series line compensation, etc. For HVDC transmission lines, the converter stations should be considered to be project components and should be addressed in the project description.

Design Voltage Rating (kV):	345-kV
Operating Voltage (kV):	345-kV
CREZ Zone(s):	Not applicable
Substation(s) Included:	None
Series Element(s) Included:	None

Lone Star is proposing to design and construct the Project, which will consist of a new, approximately 9.5-mile, 345-kV transmission line to interconnect Lone Star's existing 345-kV Reata Station, located in Eastland County, Texas, and the Sequoia II Solar Project, a new, approximately 415-megawatt (MW) solar generation facility being constructed by Enbridge Solar (Sequoia II), LLC (Enbridge Solar (Sequoia II)) in Callahan County, Texas.¹

Lone Star proposes to construct the Project as a single-circuit 345-kV transmission line. The initial 3.3 miles of the Project described in this Application will be a single-circuit 345-kV transmission line that will be installed on double-circuit-capable transmission structures that were constructed for a separate generator interconnection project, the Eldorado Solar Project (the "Reata Station-to-Dorado Solar Project"). The Reata Station-to-Dorado Solar Project was approved by the Commission in Docket No. 56599. The remaining 6.2 miles of the Project will be a single-circuit 345-kV transmission line that will be installed on single-circuit transmission structures. Together, the entire Project will extend from Lone Star's existing Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market Road (FM) 2945 in western Eastland County, to the Point of Interconnection at Sequoia II Solar's 345-kV collector station (the Sequoia II Collector Station), located along and east of FM 880 approximately 1.07 miles north of its intersection with CR 482 in eastern Callahan County. The proposed transmission line from the Reata Station to the Sequoia II Solar Collector Station Point of Interconnection will be approximately 9.5 miles in length and will require a 150- to 200-foot right of way (ROW).

Lone Star is proposing one route (Consensus Route) for the Project because all landowners directly affected by the Project have granted written consent to Lone Star for the construction of the new transmission line. In addition, the Consensus Route is a forward-progressing and relatively direct path from Lone Star's Reata Station to the Sequoia II Solar Collector Station and meets the applicable criteria of the Public Utility Regulatory Act (PURA)² and the Commission's rules. Therefore, this Application sets forth a single proposed route for the Project.

¹ The Sequoia II Solar Project was previously known as the Deville Solar Project. Certain documents included in various attachments reference the prior project name (Deville Solar Project).

² Public Utility Regulatory Act, Tex. Util. Code §§ 11.001–66.016 (PURA).

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

For a more detailed description of the proposed Project, please see the *Reata Station to Sequoia II Solar 345-kV Transmission Line Project Environmental Assessment* (EA), prepared by Lone Star's routing consultant, SWCA Environmental Consultants (SWCA), which is included as Attachment 1 to this Application and incorporated herein by reference.

If the project will be owned by more than one party, briefly explain the ownership arrangements between the parties and provide a description of the portion(s) that will be owned by each party. Provide a description of the responsibilities of each party for implementing the project (design, Right-of-Way acquisition, material procurement, construction, etc.).

Not applicable. Lone Star will own 100 percent of the Project described in this Application.

If applicable, identify and explain any deviation in transmission project components from the original transmission specifications as previously approved by the Commission or recommended by a PURA §39.151 organization.

Not applicable. The Commission has not previously approved, and ERCOT (a PURA § 39.151 organization) has not previously recommended, any transmission specifications applicable to this project. ERCOT Nodal Protocol Section 3.11 (relating to Transmission Planning) and the ERCOT RPG Charter and Procedures define a project that interconnects new generation as a "neutral project" that does not require ERCOT Regional Planning Group (RPG) review. Therefore, the proposed Project was not submitted for RPG review, and ERCOT did not provide any transmission specifications for the Project. Thus, there are no deviations from the original transmission specifications previously recommended by ERCOT.

5. Conductor and Structures:

Conductor Size and Type

The conductor used for the Project will be a twin-bundled 795 kcmil Drake ACSR conductor with a single 0.571 Optical Ground Wire and 7#7 overhead shield wire.

Number of Conductors Per Phase

The Project will be constructed with two conductors per phase.

Continuous Summer Static Current Rating (A)

The nominal Continuous Summer Static Current Rating for the Project is 3000 Amps (A).

Continuous Summer Static Line Capacity at Operating Value (MVA)

The nominal Continuous Summer Static Line Capacity at Operating Voltage for the Project is approximately 425 Megavolt Amps (MVA).

Continuous Summer Static Line Capacity at Design Voltage (MVA)

The nominal Continuous Summer Static Line Capacity at Design Voltage for the Project is approximately 425 MVA.

Type and Composition of Structures

Lone Star proposes to construct the Project primarily using existing self-supporting, double-circuit-capable concrete monopole structures as well as self-supporting, single-circuit concrete monopole structures; the

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

double-circuit capable structures were installed in support of the Reata Station-to-Dorado Solar Project, approved by the Commission in Docket No. 56599. Alternative structure types, such as guyed dead-end monopole structures or self-supporting, steel monopole structures, may be used due to engineering constraints, such as crossing obstructions, turning large angles, or other constraints.

Height of Typical Structures

The typical structure height for the Project will be approximately 105 to 125 feet. However, the height varies depending on the clearance requirements at particular locations due to the terrain, span lengths, overhead obstructions, existing infrastructure and various other constraints.

Estimated Maximum Height of Structures

The estimated maximum height of structures is expected to be approximately 160 feet above ground.

Explain why these structures were selected; include such factors as landowner preference, engineering considerations, and costs comparisons to alternate structures that were considered. Provide dimensional drawings of the typical structures to be used in the project.

Lone Star selected pre-stressed concrete monopoles as the typical structure type for the Project for a number of reasons. In Lone Star's experience, pre-stressed concrete monopoles have shorter fabrication lead times and will be manufactured at a facility located in Texas, which minimizes shipping times and costs. In addition, in Lone Star's experience, construction using concrete monopoles has been efficient and cost-effective. Also, Lone Star's spare inventory includes pre-stressed concrete monopoles.

Further, based on Lone Star's general experience, many landowners prefer monopoles because they have a reduced structure footprint, which generally results in fewer impacts to land and reduces interference with current land uses, e.g., ranching and farming. Consent was obtained from landowners based upon a design utilizing monopoles.

Dimensional drawings of the concrete monopole structures are included as Figures 2 and 3 of the EA included as Attachment 1 to this Application.

For joint applications, provide and separately identify the above-required information regarding structures for the portion(s) of the project owned by each applicant.

Not applicable. This is not a joint application.

6. Right-of-Way:

Miles of Right-of-Way

The total length of the ROW in miles for the Consensus Route is approximately 9.5 miles.

Miles of Circuit

The Project will be a single-circuit transmission line, and the number of circuit miles is approximately 9.5 miles.

Width of Right-of-Way

The typical ROW width for the Project will be 100 to 200 feet.

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

Percent of Right-of-Way Acquired

Lone Star has acquired consent agreements from all directly affected landowners or for 100% of the Project. Because the Project utilizes 3.3 miles of ROW obtained in support of the Reata Station-to-Dorado Solar Project, approved by the Commission in Docket No. 56599, Lone Star has formally acquired approximately 35% of the ROW at this time via easement agreements related to this shared ROW; Lone Star has formally acquired easement option agreements for the remaining 65% of the ROW. Lone Star will formally exercise the ROW easement options following CCN approval. Copies of the consent agreements are provided in Attachment 2 to the Application.

For joint applications, provide and separately identify the above-required information for each route for the portion(s) of the project owned by each applicant.

Not applicable. This is not a joint application.

Provide a brief description of the area traversed by the transmission line. Include a description of the general land uses in the area and the type of terrain crossed by the line.

The majority of the area traversed by the Project (the Study Area) is located within the Broken Red Plains Sub-province of the Central Great Plains Physiographic Province. A small portion of Study Area (<5 acres; < 0.2%) on the far northeastern edge lies within the Western Cross Timbers sub-province of the Cross Timbers Physiographic Province. Elevations within the Study Area range between approximately 1,500 to 1,600 feet above mean sea level (amsl) and generally increase southward and westward.

The Study Area is primarily rural with little development. The predominant land use within the Study Area is rangeland/pastureland and croplands.

Specific discussion regarding natural, human, and cultural resources in the Study Area is presented in Section 2 of the EA (Attachment 1 to this Application).

7. Substations or Switching Stations:

List the name of all existing HVDC converter stations, substations or switching stations that will be associated with the new transmission line. Provide documentation showing that the owner(s) of the existing HVDC converter stations, substations and/or switching stations have agreed to the installation of the required project facilities.

The proposed Project will connect to Lone Star's Reata Station.

List the name of all new HVDC converter stations, substations or switching stations that will be associated with the new transmission line. Provide documentation showing that the owner(s) of the new HVDC converter stations, substations and/or switching stations have agreed to the installation of the required project facilities.

The proposed transmission line will extend between Lone Star's Reata Station and the new Sequoia II Solar Collector Station. The generator, Enbridge Solar (Sequoia II), will own the Sequoia II Solar Collector Station. The point of interconnection for the Project will be located at a new Lone Star-owned dead-end structure located outside of the Sequoia II Solar Collector Station.

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

8. Estimated Schedule:

<u>Estimated Dates of:</u>	<u>Start</u>	<u>Completion*</u>
<i>Right-of-way and Land Acquisition</i>	August 2024	Following CCN Approval
<i>Engineering and Design</i>	January 2024	October 2026
<i>Material and Equipment Procurement</i>	March 2025	April 2026
<i>Construction of Facilities</i>	February 2026 or earlier, depending on date of PUCT approval	August 2026
<i>Energize Facilities</i>	August 2026	September 2026

*With the Consensus Route and necessary consents obtained for the Project, this estimated schedule is based upon administrative approval of this Application pursuant to 16 Texas Administrative Code (TAC) § 25.101(b)(3)(C).

9. Counties:

For each route, list all counties in which the route is to be constructed.

The Consensus Route for the Project is located within Eastland and Callahan Counties.

10. Municipalities:

For each route, list all municipalities in which the route is to be constructed.

The Consensus Route for the Project is not located within the incorporated boundaries of any municipality.

For each applicant, attach a copy of the franchise, permit or other evidence of the city's consent held by the utility, if necessary or applicable. If franchise, permit, or other evidence of the city's consent has been previously filed, provide only the docket number of the application in which the consent was filed. Each applicant should provide this information only for the portion(s) of the project which will be owned by the applicant.

Not applicable.

11. Affected Utilities:

Identify any other electric utility served by or connected to facilities in this application.

No other electric utility is served by or directly connected to this Project.

Describe how any other electric utility will be affected and the extent of the other utilities' involvement in the construction of this project. Include any other utilities whose existing facilities will be utilized for the project (vacant circuit positions, ROW, substation sites and/or equipment, etc.) and provide documentation showing that the owner(s) of the existing facilities have agreed to the installation of the required project facilities.

Not applicable.

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

12. Financing:

Describe the method of financing this project. For each applicant that is to be reimbursed for all or a portion of this project, identify the source and amount of the reimbursement (actual amount if known, estimated amount otherwise) and the portion(s) of the project for which the reimbursement will be made.

Funds for the Project will come from Lone Star's existing cash on hand, existing debt facility, and owner equity.

13. Estimated Costs:

Provide cost estimates for each route of the proposed project using the following table. Provide a breakdown of "Other" costs by major cost category and amount. Provide the information for each route in an attachment to this application.

The estimated costs for the Consensus Route for the transmission line facilities and for the termination costs at the Reata Station associated with this Project are provided in the table below. Because Lone Star is proposing only one Consensus Route, Lone Star is providing the required cost information in a table in this CCN Application. Lone Star also is providing a native version of this estimated cost table electronically with this Application package.

<u>Consensus Route Costs</u>	Transmission Facilities	Substation Facilities
<i>Right-of-way and Land Acquisition</i>	\$1,400,000	\$0
<i>Engineering and Design (Utility)</i>	\$0	\$0
<i>Engineering and Design (Contract)</i>	\$ 1,221,000	\$ 551,800
<i>Procurement of Material and Equipment (including stores)</i>	\$ 7,828,000	\$ 1,398,800
<i>Construction of Facilities (Utility)</i>	\$0	\$0
<i>Construction of Facilities (Contract)</i>	\$ 9,641,000	\$ 1,039,400
<i>Other (all costs not included in the above categories)</i>	\$1,070,000	\$270,000
Estimated Total Cost	\$21,160,000	\$3,260,000

For joint applications, provide and separately identify the above-required information for the portion(s) of the project owned by each applicant.

Not applicable. This is not a joint application.

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

14. Need for the Proposed Project:

For a standard application, describe the need for the construction and state how the proposed project will address the need. Describe the existing transmission system and conditions addressed by this application. For projects that are planned to accommodate load growth, provide historical load data and load projections for at least five years. For projects to accommodate load growth or to address reliability issues, provide a description of the steady state load flow analysis that justifies the project. For interconnection projects, provide any documentation from a transmission service customer, generator, transmission service provider, or other entity to establish that the proposed facilities are needed. For projects related to a Competitive Renewable Energy Zone, the foregoing requirements are not necessary; the applicant need only provide a specific reference to the pertinent portion(s) of an appropriate commission order specifying that the facilities are needed. For all projects, provide any documentation of the review and recommendation of a PURA §39.151 organization.

The proposed Project is necessary to interconnect and provide transmission service to a new transmission service customer, Enbridge Solar (Sequoia II). Pursuant to 16 TAC §§ 25.191(d)(3) and 25.198(b), a TSP is required to provide service to a transmission service customer when certain conditions are met, including execution of an interconnection agreement. Enbridge Solar (Sequoia II) requested interconnection to Lone Star's existing 345-kV transmission system at Lone Star's existing 345-kV Reata Station in Eastland County. As a power generation company, Enbridge Solar (Sequoia II), will be a transmission service customer under 16 TAC § 25.5(140). Lone Star and Enbridge Solar (Sequoia II) executed the ERCOT Standard Generation Interconnection Agreement on August 29, 2023, as amended September 19, 2025 (collectively, the Interconnection Agreement), with an agreed upon in-service date for the transmission facilities of September 21, 2026, and an agreed upon commercial operation date for the Sequoia II Solar Project of November 21, 2026. The Interconnection Agreement and the First Amendment were filed with the Commission in Project No. 35077 and are included in this Application as Attachment 3.

Additionally, 16 TAC § 25.195(c)(1) provides as follows: "When an eligible transmission service customer requests transmission service for a new generation source that is planned to be interconnected with a TSP's transmission network, the transmission service customer shall be responsible for the cost of installing step-up transformers to transform the output of the generator to a transmission voltage level and protective devices at the point of interconnection capable of electrically isolating the generation source owned by the transmission service customer. The TSP shall be responsible, pursuant to paragraph (2) of this subsection, for the cost of installing any other interconnection facilities that are designed to operate at a transmission voltage level and any other upgrades on its transmission system that may be necessary to accommodate the requested transmission service." The Interconnection Agreement provided as Attachment 3 specifies and assigns these responsibilities pursuant to 16 TAC § 25.195(c)(1).

The ERCOT Nodal Protocols and ERCOT RPG Charter and Procedures define a project that is directly associated with the interconnection of new generation as a "neutral project," which is not required to be submitted for RPG review. Therefore, the Project was not submitted for RPG review.

In accordance with the Nodal Protocols, ERCOT performed a Generation Interconnect Screening Study, which concluded that the proposed generation facility could be interconnected into Lone Star's Reata Station. Additionally, Lone Star completed the Full Interconnection Study process required by ERCOT for all generation interconnection requests, which included a Facility Study. The Facility Study describes the transmission facilities and associated costs required to interconnect the new generation project. The Facility Study was available to ERCOT and other TSPs for review and comment for ten days, and Lone Star received no comments

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

15. Alternatives to Project:

For a standard application, describe alternatives to the construction of this project (not routing options). Include an analysis of distribution alternatives, upgrading voltage or bundling of conductors of existing facilities, adding transformers, and for utilities that have not unbundled, distributed generation as alternatives to the project. Explain how the project overcomes the insufficiencies of the other options that were considered.

Lone Star is proposing this Project in order to provide service to a transmission service customer, Enbridge Solar (Sequoia II), which has requested to interconnect its approximately 415-MW solar generating facility to Lone Star's existing Reata Station in Eastland County. Other alternatives to the proposed Project would not provide a feasible or cost-effective solution to this identified project need.

First, using distribution facilities to transfer approximately 415-MW from the solar generation facility to the existing 345-kV transmission system is not practical from an engineering or cost perspective. ERCOT typically requires generators larger than 10 MW to interconnect at transmission-level voltages (i.e., above 60 kV). Second, there is no need for Lone Star to upgrade the voltage on its transmission facilities or add transformers. Enbridge Solar (Sequoia II), requested to interconnect at 345-kV, which is the voltage level of Lone Star's Reata Station. Third, there are no existing transmission lines that could be bundled to interconnect the Sequoia II Solar Project. Lone Star's transmission facilities already utilize bundled conductor. Finally, Lone Star is an unbundled, transmission-only utility, and therefore, distributed generation is not an alternative to the proposed Project.

16. Schematic or Diagram:

For a standard application, provide a schematic or diagram of the applicant's transmission system in the proximate area of the project. Show the location and voltage of existing transmission lines and substations, and the location of the construction. Locate any taps, ties, meter points, or other facilities involving other utilities on the system schematic.

A schematic of Lone Star's transmission system in the proximate area of the Project is included as Attachment 4 to this Application.

17. Routing Study:

Provide a brief summary of the routing study that includes a description of the process of selecting the study area, identifying routing constraints, selecting potential line segments, and the selection of the routes. Provide a copy of the complete routing study conducted by the utility or consultant. State which route the applicant believes best addresses the requirements of PURA and P.U.C. Substantive Rules.

Lone Star retained SWCA to prepare the EA for the proposed Project. A copy of the EA is included as Attachment 1 to this Application. The EA presents the analysis that was conducted by SWCA, as well as the land use and environmental data for the Consensus Route that was considered for this Project. The following summary is based on information provided in Section 2 of the EA.

The objective of the EA was to evaluate the proposed 345-kV transmission line location for compliance with PURA § 37.056(c)(4)(A)-(D), 16 TAC § 25.101(b)(3)(B), and 16 TAC § 22.52(a)(4), including the Commission's policy of prudent avoidance. SWCA used a comprehensive transmission line evaluation methodology to evaluate the proposed route of the transmission line location. Methods used were governed by factors set forth in PURA § 37.056(c)(4) and 16 TAC § 25.101(b)(3).

Process of Selecting the Study Area: The first step in the assessment of the Project was to delineate a Study Area. The Study Area needed to encompass the endpoints for the proposed Project (the Reata Station and the Sequoia II Solar Collector Station) and include an area large enough to adequately evaluate the proposed

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

transmission line Project in order to support Lone Star's Application. The purpose of delineating a Study Area for the Project was to establish boundaries and limits in which to identify environmental and land use constraints during the information gathering process to properly identify and map various items included within the Commission's CCN requirements and standard CCN application. The Study Area for the proposed Project was delineated as an irregularly shaped oval, directionally oriented along the proposed Project from east-northeast to west-northwest then shifting to the south and measuring approximately 5.3 miles by approximately 6.6 miles, encompassing a total area of approximately 8,301 acres in the northwestern portion of Eastland County and northeastern portion of Callahan County.

Identification of Routing Constraints: Data used in the evaluation of the Project were drawn from a variety of sources, including published literature, information from local, state, and federal agencies, recent aerial photography, and ground reconnaissance of the Study Area. In identifying constraints, SWCA considered numerous land use, ecological, and cultural resources within the Study Area.

To quantify potential impacts to sensitive environmental and land use features, a constraints mapping process was used in evaluating the Project. The geographic locations of environmentally sensitive and other restrictive areas within the Study Area were identified and considered during the evaluation process. These constraints were mapped onto an aerial base map (Appendix B, Figure B-1 to B-4 of the EA) created using 2023 ESRI hybrid imagery. Section 2 of the EA describes SWCA's process for identifying routing constraints in more detail.

Identification of the Consensus Route: The Consensus Route was developed by Enbridge Solar (Sequoia II), in coordination with landowners crossed by the transmission line and Lone Star's land, engineering, and environmental teams, including SWCA. Lone Star has determined that the Consensus Route complies with the requirements of PURA and the Commission's Substantive Rules.

18. Public Meeting or Public Open House:

Provide the date and location for each public meeting or public open house that was held in accordance with 16 TAC § 22.52. Provide a summary of each public meeting or public open house including the approximate number of attendants, and a copy of any survey provided to attendants and a summary of the responses received. For each public meeting or public open house provide a description of the method of notice, a copy of any notices, and the number of notices that were mailed and/or published.

Not applicable. Pursuant to 16 TAC § 22.52(a)(4), because fewer than 25 persons are entitled to receive direct mail notice of the Application, no public meeting was held prior to filing of this Application. Lone Star has discussed the proposed Consensus Route with the seventeen directly affected landowners, or their designated representatives, and answered questions regarding the location, transmission structure type, and ROW width. These landowners have agreed to the location of the Consensus Route on their property, as shown in the consent agreements provided in Attachment 2.

In addition, 16 TAC § 22.52(a)(4) requires a utility to notify the Department of Defense (DoD) Siting Clearinghouse of any public meeting to be held during the route evaluation process. Because a public meeting was not required for the proposed Project, on February 8, 2024, Lone Star provided notice to the DoD Siting Clearinghouse of the Project and that Lone Star was preparing an EA and CCN application. A copy of the written notice sent to the DoD Siting Clearinghouse notifying it of the Project is included in Appendix A of the EA (Attachment 1 to this Application). Lone Star will also provide notice of the filing of this Application to the DoD Siting Clearinghouse as required by 16 TAC § 22.52(a)(2).

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

19. Routing Maps:

Base maps should be a full scale (one inch = not more than one mile) highway map of the county or counties involved, or other maps of comparable scale denoting sufficient cultural and natural features to permit location of all routes in the field. Provide a map (or maps) showing the study area, routing constraints, and all routes or line segments that were considered prior to the selection of the routes. Identify the routes and any existing facilities to be interconnected or coordinated with the project. Identify any taps, ties, meter points, or other facilities involving other utilities on the routing map. Show all existing transmission facilities located in the study area. Include the locations of radio transmitters and other electronic installations, airstrips, irrigated pasture or cropland, parks and recreational areas, historical and archeological sites (subject to the instructions in Question 27), and any environmentally sensitive areas (subject to the instructions in Question 29).

Routing maps are provided in the EA (Attachment 1 to this Application). Appendix B, Figure B-1 to B-4 in the EA is an aerial-photograph-based map with a scale of 1 inch = 600 feet that shows the Study Area, the Consensus Route, existing transmission lines, and other environmental and land use features.

Provide aerial photographs of the study area displaying the date that the photographs were taken or maps that show (1) the location of each route with each route segment identified, (2) the locations of all major public roads including, as a minimum, all federal and state roadways, (3) the locations of all known habitable structures or groups of habitable structures (see Question 19 below) on properties directly affected by any route, and (4) the boundaries (approximate or estimated according to best available information if required) of all properties directly affected by any route.

An aerial-photograph-based property ownership map with a scale of 1 inch = 600 feet is included in this Application as Attachment 5. It shows the approximate boundaries of all properties that are directly affected by the proposed 345-kV transmission line (Consensus Route), according to the best information available from Eastland County and Callahan County tax appraisal district records.

For each route, cross-reference each habitable structure (or group of habitable structures) and directly affected property identified on the maps or photographs with a list of corresponding landowner names and addresses and indicate which route segment affects each structure/group or property.

Landowner names, directly affected property identification, and map locations are included in a cross-reference table provided as Attachment 6 to this Application. As indicated in Section 2.3.2.1 and Table 9 of the EA (Attachment 1 to this Application), there are no habitable structures within 500 feet of the centerline of the proposed Consensus Route.

20. Permits:

List any and all permits and/or approvals required by other governmental agencies for the construction of the proposed project. Indicate whether each permit has been obtained.

Lone Star will coordinate with appropriate local, state, and federal agencies with jurisdiction regarding the construction of the transmission facilities associated with the Project. Lone Star and/or SWCA have initiated contact with and provided information about the Project to various agencies. Input from these agencies has been incorporated in the Application and EA; however, requests for permits and/or approvals will not be submitted to the appropriate agencies until the alignment of the Consensus Route has been approved by the Commission. The following potential permits, approvals, requirements, easements, or clearances could be required, but have not been obtained at this time.

- The Federal Emergency Management Agency (FEMA) requested that Lone Star contact the community floodplain administrators for the review and possible permit requirements. The Eastland

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

County Judge and Floodplain Administrator provided a preliminary opinion that the proposed Project will not adversely affect flood plain management in Eastland County.

- Cultural resource clearance will be obtained from the Texas Historical Commission (THC) for the proposed Project ROW as necessary.
- Permits and approvals will be obtained from the Texas Department of Transportation (TxDOT) for any crossing of, or access from, a State-maintained roadway.
- A Storm Water Pollution Prevention Plan (SWPPP) may be required by the Texas Commission on Environmental Quality (TCEQ). Lone Star or its contractor will submit a Notice of Intent to the TCEQ at least 48 hours prior to the beginning of construction and will maintain the SWPPP on site at the initiation of clearing and construction activities.
- After alignments and structure locations/heights are adjusted and set, Lone Star will make a final determination of the need for Federal Aviation Administration (FAA) notification, based on structure locations and structure designs. In some areas, if necessary, Lone Star could use lower-than-typical structure heights or add marking and/or lighting to certain structures.
- Permits or other requirements associated with possible impacts to endangered/threatened species will be coordinated with the United States Fish and Wildlife Service (USFWS) as necessary.
- Coordination with Texas Parks & Wildlife Department (TPWD) may be necessary to determine the need for any surveys, and to avoid or minimize any potential adverse impacts to sensitive habitats, threatened or endangered species, and other fish and wildlife resources along the approved route.
- Permits or other requirements associated with possible impacts to waters of the U.S. under the jurisdiction of the U.S. Army Corps of Engineers (USACE) will be coordinated with the USACE as necessary.
- Lone Star will coordinate with Eastland and Callahan Counties and will obtain floodplain development permits and county road agreements as needed.

No permits for the Project have been obtained at this time. Further discussion of permits that may be required for the Project is included in Section 1.6 of the EA.

21. Habitable Structures:

For each route list all single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis within 300 feet of the centerline if the proposed project will be constructed for operation at 230kV or less, or within 500 feet of the centerline if the proposed project will be constructed for operation at greater than 230kV. Provide a general description of each habitable structure and its distance from the centerline of the route. In cities, towns or rural subdivisions, houses can be identified in groups. Provide the number of habitable structures in each group and list the distance from the centerline of the route to the closest and the farthest habitable structure in the group. Locate all listed habitable structures or groups of structures on the routing map.

There are no habitable structures within 500 feet of the centerline of the proposed Consensus Route. See Section 2.3.2.1 and Table 9 of the EA.

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

22. Electronic Installations:

For each route, list all commercial AM radio transmitters located within 10,000 feet of the center line of the route, and all FM radio transmitters, microwave relay stations, or other similar electronic installations located within 2,000 feet of the center line of the route. Provide a general description of each installation and its distance from the center line of the route. Locate all listed installations on a routing map.

As indicated in Table 9 of the EA, no AM radio transmitter was determined to be located within 10,000 feet of the Consensus Route. Two FM radio transmitter, microwave tower, or other electronic installations were determined to be located within 2,000 feet of the centerline of the Consensus Route.

23. Airstrips:

For each route, list all known private airstrips within 10,000 feet of the center line of the project. List all airports registered with the Federal Aviation Administration (FAA) with at least one runway more than 3,200 feet in length that are located within 20,000 feet of the center line of any route. For each such airport, indicate whether any transmission structures will exceed a 100:1 horizontal slope (one foot in height for each 100 feet in distance) from the closest point of the closest runway. List all listed airports registered with the FAA having no runway more than 3,200 feet in length that are located within 10,000 feet of the center line of any route. For each such airport, indicate whether any transmission structures will exceed a 50:1 horizontal slope from the closest point of the closest runway. List all heliports located within 5,000 feet of the center line of any route. For each such heliport, indicate whether any transmission structures will exceed a 25:1 horizontal slope from the closest point of the closest landing and takeoff area of the heliport. Provide a general description of each listed private airstrip, registered airport, and heliport; and state the distance of each from the center line of each route. Locate and identify all listed airstrips, airports, and heliports on a routing map.

As indicated in Table 9 of the EA:

- No known private airstrips are located within 10,000 feet of the centerline of the Consensus Route;
- No airports registered with the FAA with at least one runway more than 3,200 feet in length are located within 20,000 feet of the centerline of the Consensus Route;
- No airports registered with the FAA having no runway more than 3,200 feet in length are located within 10,000 feet of the centerline of the Consensus Route; and
- No heliports are located within 5,000 feet of the centerline of the Consensus Route.

24. Irrigation Systems:

For each route identify any pasture or cropland irrigated by traveling irrigation systems (rolling or pivot type) that will be traversed by the route. Provide a description of the irrigated land and state how it will be affected by each route (number and type of structures, etc.). Locate any such irrigated pasture or cropland on a routing map.

No pasture or cropland irrigated by traveling irrigation systems (rolling or pivot type) will be traversed by the Consensus Route.

25. Notice:

Notice is to be provided in accordance with 16 TAC § 22.52.

- A. Provide a copy of the written direct notice to owners of directly affected land. Attach a list of the names and addresses of the owners of directly affected land receiving notice.

Sample copies of the written direct notice and enclosures that were mailed to the owners of directly affected land are provided in Attachments 7A through 7F. The list of the names and addresses of the owners of directly affected land receiving notice is provided in Attachment 7G.

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

B. Provide a copy of the written notice to utilities that are located within five miles of the routes.

A sample copy of the written notice to utilities that are located within five miles of the proposed Project is provided in Attachment 8A. The list of the names and addresses of these utilities is provided in Attachment 8B.

C. Provide a copy of the written notice to county and municipal authorities, and the Department of Defense Siting Clearinghouse. Notice to the DoD Siting Clearinghouse should be provided at the email address found at <http://www.acq.osd.mil/dodsc/>.

A sample copy of the written notice sent to Eastland County and Callahan County officials and to the DoD Siting Clearinghouse is included in Attachment 9A.

In addition to the notices above, 16 TAC § 22.52 requires Lone Star to provide notice of this Application to the Office of Public Utility Counsel. The sample notice included in Attachment 9A was also sent to the Office of Public Utility Counsel.

The names of public officials to whom notice was sent is included in Attachment 9B.

D. Provide a copy of the notice that is to be published in newspapers of general circulation in the counties in which the facilities are to be constructed. Attach a list of the newspapers that will publish the notice for this application. After the notice is published, provide the publisher's affidavits and tear sheets.

A sample copy of the notice to be published in the newspaper of general circulation in the county in which the proposed facilities are to be constructed is provided in Attachment 10A. The notice for this Application will be published in *Eastland County Today* Cisco Press in Cisco, Texas, which is a newspaper of general circulation in Eastland County, and *The Baird Banner* in Clyde, Texas, which is a newspaper of general circulation in Callahan County. These newspapers in which notice will be published are listed in Attachment 10B.

For a CREZ application, in addition to the requirements of 16 TAC § 22.52, the applicant shall, not less than twenty-one (21) days before the filing of the application, submit to the Commission staff a "generic" copy of each type of alternative published and written notice for review. Staff's comments, if any, regarding the alternative notices will be provided to the applicant not later than seven days after receipt by Staff of the alternative notices. Applicant may take into consideration any comments made by Commission staff before the notices are published or sent by mail.

Not applicable. This is not a CREZ application.

26. Parks and Recreation Areas:

For each route, list all parks and recreational areas owned by a governmental body or an organized group, club, or church and located within 1,000 feet of the center line of the route. Provide a general description of each area and its distance from the center line. Identify the owner of the park or recreational area (public agency, church, club, etc.). List the sources used to identify the parks and recreational areas. Locate the listed sites on a routing map.

SWCA performed a review of federal and state databases, county, and local maps to identify parks and/or recreational areas within the Study Area. Reconnaissance surveys were also conducted to identify any additional park or recreational area located within the Study Area. No park or recreational area is crossed by the Consensus Route centerline. Additionally, no park or recreation area is located within 1,000 feet of the Consensus Route's centerline.

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

27. Historical and Archeological Sites:

For each route, list all historical and archeological sites known to be within 1,000 feet of the center line of the route. Include a description of each site and its distance from the center line. List the sources (national, state or local commission or societies) used to identify the sites. Locate all historical sites on a routing map. For the protection of the sites, archeological sites need not be shown on maps.

To identify the historical and archeological sites in the Study Area, SWCA researched the available records and literature at the Texas Archeological Research Laboratory, J.J. Pickle Research Campus, at the University of Texas at Austin. In addition, the Texas Historical Commission's Archeological Sites Atlas files were used to identify listed and eligible National Register of Historical Places (NRHP) properties and sites, NRHP districts, cemeteries, Official Texas Historical Markers, State Archeological Landmarks, and any other potential cultural resources such as National Historic Landmarks, National Monuments, National Memorials, National Historic Sites, and National Historical Parks, to ensure the completeness of the study. To identify areas with a high probability for the occurrence of cultural resources, SWCA used the Texas Department of Transportation's (TxDOT) Potential Archeological Liability Map (PALM) and aerial photography.

Table 9 of the EA indicates that no known cultural resource sites are crossed by the Consensus Route centerline. Two previously recorded cultural resource sites are located within 1,000 feet of the Consensus Route centerline. No NRHP-listed or determined-eligible site is crossed by or within 1,000 feet of the Consensus Route centerline, and there are no cemeteries located within 1,000 feet of the Consensus Route.

The length of right-of-way across high probability areas for potential archeological sites or other prehistoric cultural resources for the Consensus Route is 0.8 miles (4,473 feet).

General descriptions of the historical and archeological resources are provided in Section 2.4 of the EA.

28. Coastal Management Program:

For each route, indicate whether the route is located, either in whole or in part, within the coastal management program boundary as defined in 31 TAC §503.1. If any route is, either in whole or in part, within the coastal management program boundary, indicate whether any part of the route is seaward of the Coastal Facilities Designation Line as defined in 31 TAC §19.2(a)(21). Using the designations in 31 TAC §501.3(b), identify the type(s) of Coastal Natural Resource Area(s) impacted by any part of the route and/or facilities.

No part of the Consensus Route occurs within the coastal management program boundary as defined in 31 TAC § 503.1.

29. Environmental Impact:

Provide copies of any and all environmental impact studies and/or assessments of the project. If no formal study was conducted for this project, explain how the routing and construction of this project will impact the environment. List the sources used to identify the existence or absence of sensitive environmental areas. Locate any environmentally sensitive areas on a routing map. In some instances, the location of the environmentally sensitive areas or the location of protected or endangered species should not be included on maps to ensure preservation of the areas or species. Within seven days after filing the application for the project, provide a copy of each environmental impact study and/or assessment to the Texas Parks and Wildlife Department (TPWD) for its review at the address below. Include with this application a copy of the letter of transmittal with which the studies/assessments were or will be sent to the TPWD.

Wildlife Habitat Assessment Program
Wildlife Division
Texas Parks and Wildlife Department

**Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties**

4200 Smith School Road
Austin, Texas 78744

The EA is included with this Application as Attachment 1. Data used by SWCA in the evaluation of the proposed Consensus Route were drawn from a variety of sources, including, published literature (*e.g.*, documents, reports, maps, and aerial photography) and information from local, state, and federal agencies. An extensive list of resources is provided in Section 7 of the EA. Ground reconnaissance of the Study Area and computer-based evaluation of digital aerial imagery were used for the evaluation of the proposed Consensus Route. Environmentally sensitive areas are shown in Appendix B, Figure B-1 to B-4 of the EA.

The applicant shall file an affidavit confirming that the letter of transmittal and studies/assessments were sent to TPWD.

A copy of the letter of transmittal providing a copy of the EA for this Project to the TPWD is included in this Application as Attachment 11. An affidavit verifying that the EA was sent to TPWD will be filed with the Commission.

30. Affidavit

Attach a sworn affidavit from a qualified individual authorized by the applicant to verify and affirm that, to the best of their knowledge, all information provided, statements made, and matters set forth in this application and attachments are true and correct.

The sworn affidavit of Robert Orr is included with this Application as Attachment 12.

Lone Star Transmission, LLC
CCN Application – List of Attachments

Attachment Number	Attachment Description
Attachment 1	Environmental Assessment of the Reata to Sequoia II Solar 345-kV Transmission Line, prepared by SWCA Environmental Consultants
Attachment 2	Consent Agreements for Proposed Consensus Route
Attachment 3	Interconnection Agreement between Lone Star Transmission, LLC and Sequoia II, LLC for the Sequoia II Solar Project, dated August 29, 2023, as amended
Attachment 4	Schematic of the Lone Star Transmission, LLC System in the Proximate Area of the Proposed Project
Attachment 5	Aerial Photograph-Based Property Ownership Map
Attachment 6	Table Providing Landowner Names, Property Identification, and Map Locations
Attachment 7	Landowner Notice Materials: Attachment 7A Sample Notice Letter to Landowners Attachment 7B Map of Consensus Route Attachment 7C Consensus Route Description Attachment 7D Landowner Brochure Attachment 7E Comment/Protest Form Attachment 7F Intervenor Form Attachment 7G List of Landowners Receiving Notice
Attachment 8	Utility Notice Materials: Attachment 8A Sample Notice Letter to Utilities ¹ Attachment 8B List of Utilities Receiving Notice
Attachment 9	Public Agency Materials: Attachment 9A Sample Notice Letter to Public Officials ¹ Attachment 9B List of County Officials, the Department of Defense Siting Clearinghouse, and the Office of Public Utility Counsel Contacts Receiving Notice
Attachment 10	Newspaper Notice Materials:

¹ Excluding attachments provided in Attachment No. 7.

**Application of Lone Star Transmission, LLC to Amend
Its Certificate of Convenience and Necessity for the
Reata Station to Sequoia II Solar 345-kV Transmission Line in
Eastland and Callahan Counties**

**PUC Docket No. 58632
List of Attachments
Page 2 of 2**

Attachment Number	Attachment Description
	Attachment 10A Sample Newspaper Notice Attachment 10B List of Newspapers of General Circulation
Attachment 11	Letter of Transmittal to the Texas Parks & Wildlife Department
Attachment 12	Sworn Affidavit of Robert Orr

The logo for SWCA is positioned vertically on the left side of the page. It consists of the letters 'S', 'W', 'C', and 'A' stacked vertically in a large, light blue, serif font. The 'S' and 'W' are slightly larger than the 'C' and 'A'.

Environmental Assessment for the Reata Station to Sequoia II Solar 345-kV Transmission Line Project

PUCT DOCKET NO. 58632

SEPTEMBER 2025

PREPARED FOR

Lone Star Transmission, LLC

PREPARED BY

SWCA Environmental Consultants

ENVIRONMENTAL ASSESSMENT FOR THE REATA STATION TO SEQUOIA II SOLAR 345-KV TRANSMISSION LINE PROJECT

Prepared for

Lone Star Transmission, LLC
5920 West William Cannon Drive, Building 2
Austin, Texas 78749

Prepared by

SWCA Environmental Consultants
4407 Monterey Oaks Boulevard
Building 1, Suite 110
Austin, Texas 78749
(512) 476-0891
www.swca.com

SWCA Project No. 87368

September 2025

CONTENTS

1	Description of the Proposed Project	1
1.1	Scope of Project.....	1
1.2	Purpose and Need	1
1.3	Description of Proposed Project Design and Construction	3
1.3.1	Loading, Weather Data, and Design Criteria.....	3
1.3.2	Structural and Geotechnical.....	3
1.3.3	Right-of-Way Requirements.....	3
1.4	Construction Considerations.....	6
1.4.1	Surveying, Clearing, and Access	6
1.4.2	Installation	6
1.4.3	Cleanup	8
1.5	Maintenance Considerations.....	8
1.6	Regulatory Guidance	9
1.6.1	Public Utility Commission of Texas.....	9
1.6.2	U.S. Army Corps of Engineers	9
1.6.3	U.S. Fish and Wildlife Service	9
1.6.4	Federal Aviation Administration	10
1.6.5	Texas Parks and Wildlife Department	10
1.6.6	U.S. Department of Defense Siting Clearinghouse.....	11
1.6.7	Floodplain Management	11
1.6.8	Texas Commission on Environmental Quality	11
1.6.9	Texas Historical Commission	12
1.6.10	Texas Department of Transportation	13
1.6.11	Texas General Land Office	13
1.6.12	Callahan and Eastland Counties.....	13
2	Route Study Methodology and Description of the Study Area	13
2.1	Routing Study Methodology.....	13
2.1.1	Study Area Boundary Delineation	13
2.1.2	Constraints Mapping and Data Collection.....	16
2.1.3	Route Development	16
2.1.4	Evaluation Factors	16
2.2	Community Values, Land Use, and Socioeconomics.....	18
2.3	Description of Existing Environment	18
2.3.1	Land Jurisdiction.....	18
2.3.2	Land Use	19
2.3.3	Socioeconomics	22
2.3.4	Aesthetic Values	23
2.4	Historical (Cultural Resources) Values	24
2.4.1	Cultural Background of Study Area	24
2.4.2	Prehistoric Chronology	24
2.4.3	Historic Chronology	26
2.4.4	Records Review	28
2.5	Environmental Integrity.....	32
2.5.1	Physiography and Geology	32
2.5.2	Soils	34
2.5.3	Water Resources	37

2.5.4	Ecological Resources	38
2.5.5	Vegetation	38
2.5.6	Wildlife and Fisheries	41
2.5.7	Wildlife Species of Concern	50
3	Agency and Public Correspondence	62
3.1	Public Open-house Meetings	65
4	Potential Impacts of the Proposed Project	65
4.1	Impacts on Community Values	66
4.1.1	Impacts on Land Jurisdiction	66
4.1.2	Impacts on Land Use	67
4.1.3	Impacts on Socioeconomics	69
4.1.4	Impacts on Aesthetic Values	69
4.2	Impacts on Historical (Cultural Resources) Values	69
4.3	Environmental Impacts of the Project	70
4.3.1	Impacts on Physiography and Geology	70
4.3.2	Impacts on Soils	70
4.3.3	Impacts on Surface Water	71
4.3.4	Impacts on Groundwater	71
4.3.5	Impacts on Floodplains	71
4.3.6	Impacts on Wetlands	72
4.3.7	Impacts on Vegetation	72
4.3.8	Impacts on Species of Concern	74
5	Route Evaluation	74
6	List of Preparers	76
7	References Cited	77

Appendices

Appendix A. Records of Agency Correspondence

Appendix B. Constraint Maps

Figures

Figure 1.	Proposed Project location	2
Figure 2.	Typical monopole tangent structure.	4
Figure 3.	Typical monopole dead-end structure.	5
Figure 4.	Proposed Project Study Area	15
Figure 5.	Cultural resources background review results of Study Area	31
Figure 6.	Physiographic regions in relation to the Study Area counties	33
Figure 7.	Texas ecoregions (Griffith et al. 2007) in relation to the Study Area counties	40
Figure 8.	Whooping crane migration corridor.	55

Tables

Table 1. Land Use and Environmental Evaluation Criteria	16
Table 2. Mapped Soil Units within the Study Area	34
Table 3. Amphibian Species with Potential to Occur within the Study Area	41
Table 4. Reptile Species with Potential to Occur within the Study Area.....	42
Table 5. Avian Species with Potential to Occur within the Study Area	43
Table 6. Mammalian Species with Potential to Occur within the Study Area.....	49
Table 7. Federally and/or State-Protected Species.....	51
Table 8. Species of Greatest Conservation Need List.....	60
Table 9. Evaluation Criteria Results for Proposed Project	65
Table 10. List of Preparers.....	76

ACRONYMS AND ABBREVIATIONS

AD	After Death
ACS	American Community Survey
ACT	Antiquities Code of Texas
Aggregator	TxDOT Historic Resources Aggregator
AM	Amplitude Modulation Radio
APE	Area of Potential Effects
Atlas	Texas Archeological and Historic Sites Atlas
BCC	Birds of Conservation Concern
BEG	Bureau of Economic Geology
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
BP	Before Present
CCN	Certificate of Convenience and Necessity
CFR	Code of Federal Regulations
CR	County Road
CWA	Clean Water Act
DoD	U.S. Department of Defense
EA	Environmental Assessment and Route Analysis
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FM	Farm-to-Market Road
FM	Frequency Modulation Radio
FPPA	Farmland Protection Policy Act
GIS	Geographic Information System
HTC	Historic Texas Cemetery
IP	Individual Permit
IPaC	Information for Planning and Conservation
kV	Kilovolt
Lone Star	Lone Star Transmission, LLC
MBTA	Migratory Bird Treaty Act
ME	Miscellaneous Easement

NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NETR	National Environmental Title Research
NFHL	National Flood Hazard Layer
NHD	National Hydrography Dataset
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NLCD	National Land Cover Database
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
NWP	Nationwide Permit
O&M	Operations and Maintenance
OPGW	Optical Ground Wire
OTHM	Official Texas Historical Marker
PEM	Palustrine Emergent
Pf	Palustrine Farmed
PHS	Potential Historical Structure
Proposed Project	New 345-kV electric transmission line in Callahan and Eastland Counties, Texas
PSS	Palustrine Scrub/Shrub
PU	Palustrine Open Water Ponds with Unconsolidated Bottoms
PUC	Public Utility Commission of Texas
PURA	Public Utility Regulatory Act
ROW	Right-of-Way
RRC	Railroad Commission of Texas
RTHL	Recorded Texas Historic Landmark
SAL	State Antiquities Landmark
SGCN	Species of Greatest Conservation Need
spp.	Species (plural)
SWCA	SWCA Environmental Consultants
SWPPP	Stormwater Pollution Prevention Plan
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TDA	Texas Department of Agriculture

THC	Texas Historical Commission
TPWC	Texas Parks and Wildlife Code
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
TXNDD	Texas Natural Diversity Database
UPRR	Union Pacific Railroad Line
USC	United States Code
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WCTCOG	West Central Texas Council of Governments

1 DESCRIPTION OF THE PROPOSED PROJECT

1.1 Scope of Project

Lone Star Transmission, LLC (Lone Star), is proposing to construct and operate a 345 -kilovolt (kV) electric transmission line between the existing Reata Station located in Eastland County, Texas, and the Point of Interconnection for the new Sequoia II Solar Collection Substation located in Callahan County, Texas (Proposed Project). The new transmission line will be approximately 9.5 miles long. The initial 3.3 miles of the Proposed Project will be constructed on double-circuit, concrete monopole structures with the remaining 6.2 miles constructed on single-circuit, concrete monopole structures. The Proposed Project will be situated in a right-of-way (ROW) with a typical width of 150 feet. The Proposed Project location is shown in Figure 1.

Lone Star retained SWCA Environmental Consultants (SWCA) to prepare this Environmental Assessment (EA) to support Lone Star's application for a Certificate of Convenience and Necessity (CCN) to be submitted to the Public Utility Commission of Texas (PUC) for the Proposed Project. The EA has been prepared to provide information and address requirements of Section 37.056(c)(4)(A–D) of the Public Utility Regulatory Act (PURA), the PUC's CCN application form, the PUC's rules in 16 Texas Administrative Code (TAC) 25.101, and the PUC's policy of "prudent avoidance." This document is intended to provide information and address issues concerning the cultural, human, and natural environment within the Study Area. The Study Area is further described in Section 2.1. This document may also be used in support of any additional local, state, or federal permits that may be required for Lone Star's Proposed Project.

To assist SWCA in its evaluation of the Proposed Project, Lone Star provided a preliminary route and information regarding the purpose and need for the Proposed Project, proposed construction practices, design criteria, clearing methods, ROW requirements, and maintenance procedures for the Proposed Project.

1.2 Purpose and Need

The Proposed Project is necessary to directly interconnect a new transmission service customer, Sequoia II, LLC, to Lone Star's Reata Station. The Reata Station is connected to Lone Star's existing West Shackelford to Sam Switch 345-kV transmission line. Sequoia II Solar, LLC, requested that Lone Star interconnect its proposed 417-megawatt solar generation development. PUC Electric Substantive Rule 25.191(d) requires a transmission service provider to interconnect a generator once the other conditions are completed for transmission service as defined in 16 TAC 25.195(c).

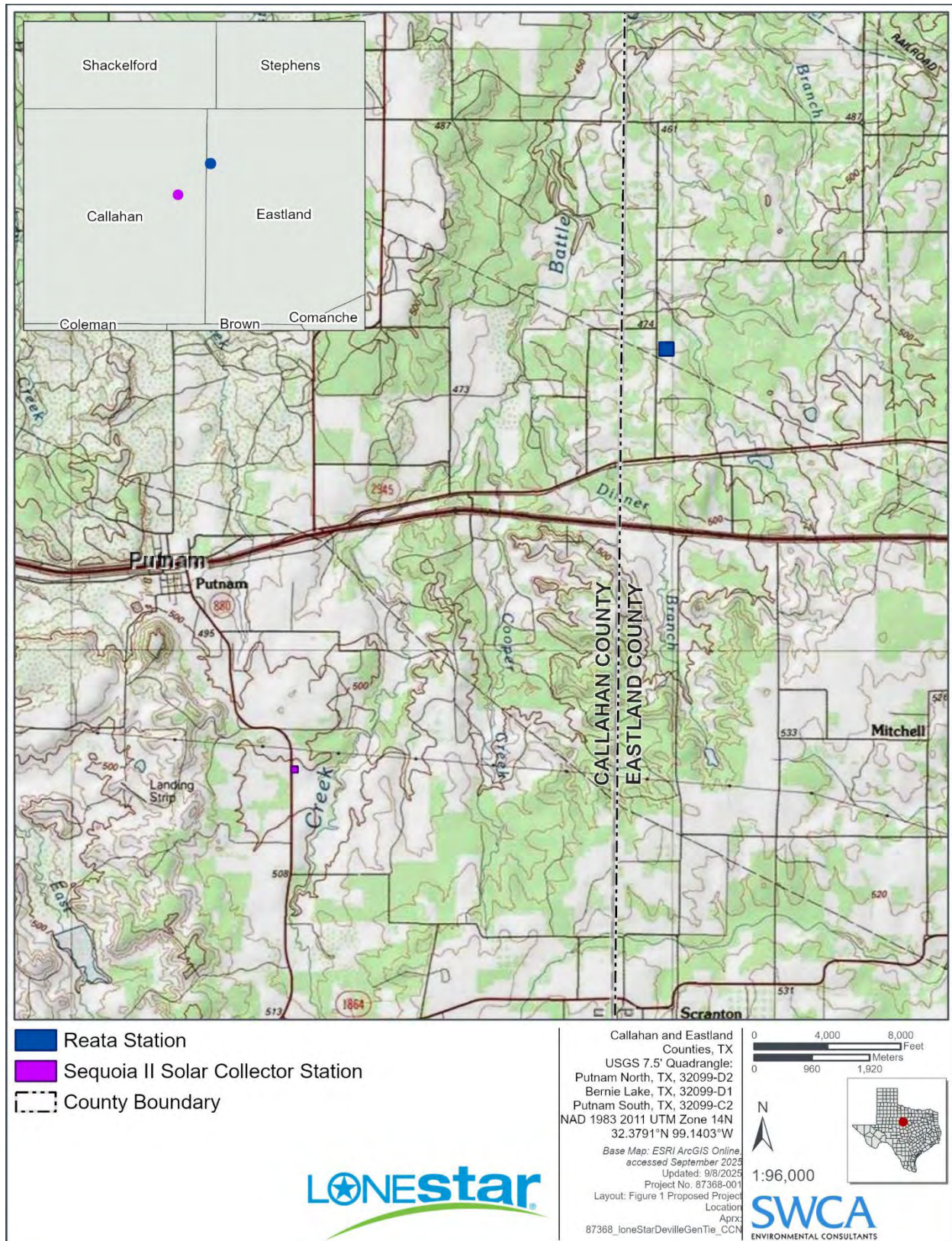


Figure 1. Proposed Project location.

1.3 Description of Proposed Project Design and Construction

The following information presents the design and construction of the Proposed Project.

1.3.1 Loading, Weather Data, and Design Criteria

Lone Star's proposed 345-kV single-circuit transmission line is in the American National Standards Institute National Electrical Safety Code (NESC) Medium Loading Zone and will be designed to meet or exceed NESC 2023 loading criteria (American National Standards Institute C2-2023). The new 345-kV transmission line will be capable of supporting bundled 795 kcmil aluminum conductor steel reinforced (ACSR) "Drake," two conductors per phase, one 96-count (0.571 inch) optical ground wire (OPGW), and one 7#7 Alumoweld shield wire.

All structure components, conductors, and overhead ground wires will be designed using the appropriate overload capacity factors, strength reduction factors, and tension limits as given in the NESC and the manufacturer's recommended strength ratings for hardware. In addition to the NESC requirements, additional loading cases that exceed the NESC will also be used per Lone Star standards. These load cases include an unbalanced loading case and a case to limit structure deflection under normal, everyday loads. The NESC Heavy Loading Zone design criteria, extreme wind, and concurrent wind and ice-loading conditions will be used to determine tension sags for all wires.

1.3.2 Structural and Geotechnical

The typical dead-end and tangent structures for the Proposed Project will be concrete monopole structures. Dead-end structures will be guyed to support loads as required. Several self-supporting structures fastened to concrete piers are employed in the Proposed Project; one is required for the point of interconnection (POI) structure and two are used in the crossing of Interstate Highway (IH) 20. Typical structure heights will be approximately 100 to 160 feet but will vary depending on the terrain and clearance requirements.

All structures will be designed to support conductors and shield wires as specified above. The configuration of the conductors and shield wires will provide adequate lightning protection and the appropriate clearances for operation of a 345-kV single-circuit transmission line. The geometries of a typical monopole single-circuit tangent structure and a typical monopole single-circuit dead-end structure are shown in Figure 2 and Figure 3, respectively. Geotechnical considerations will include soil borings and in-situ soil testing to inform the parameters for foundation design and embedment depths required for new structures.

1.3.3 Right-of-Way Requirements

Lone Star obtained consent for the Proposed Project ROW and its location. The ROW width for this Proposed Project will be approximately 150 feet (typical). The proposed transmission line will generally be located along the centerline of the ROW. In some areas, the line may be located slightly off-center but will remain within the 150-foot ROW. Temporary ROW may be required at line angles and dead-ends to facilitate construction.

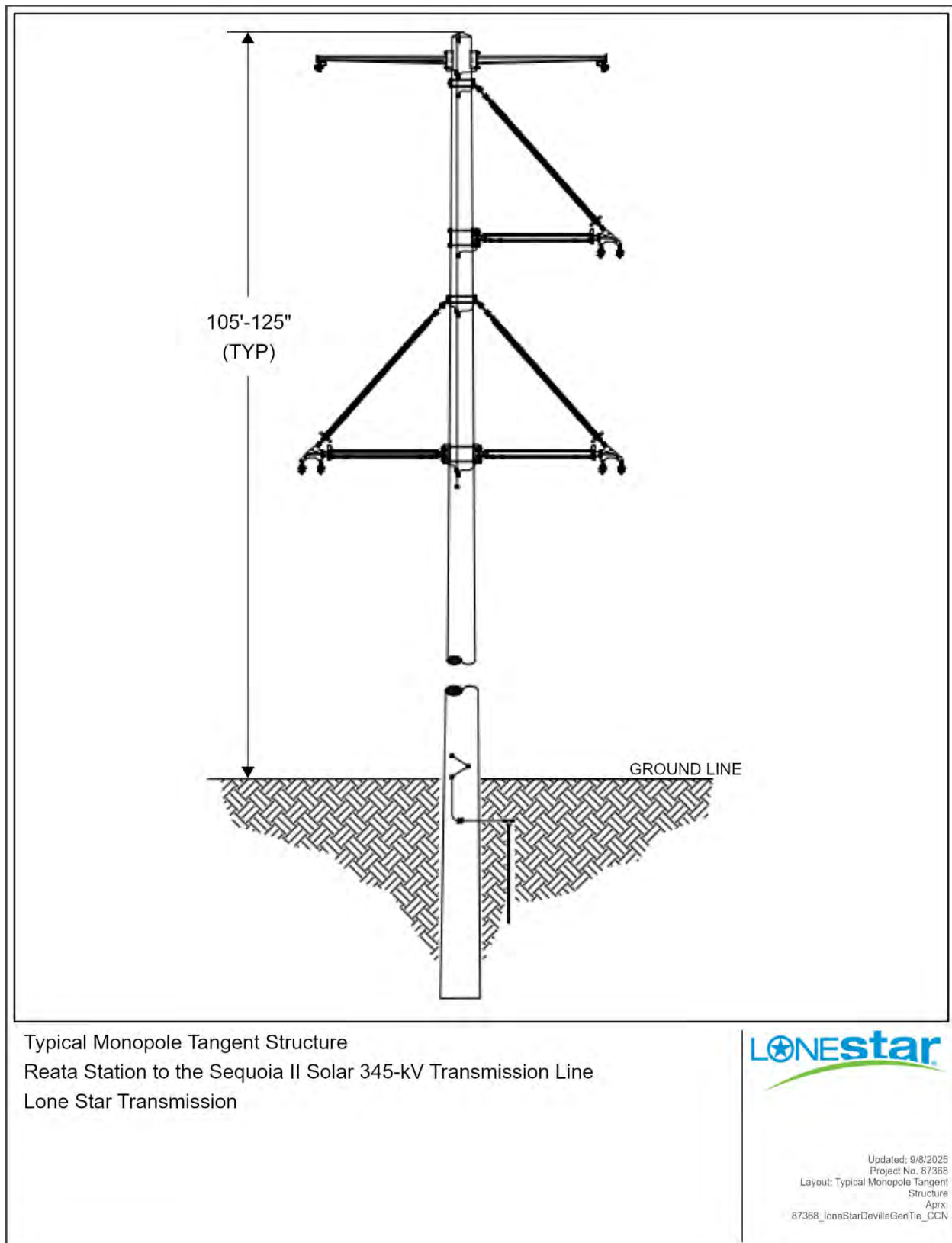


Figure 2. Typical monopole tangent structure.

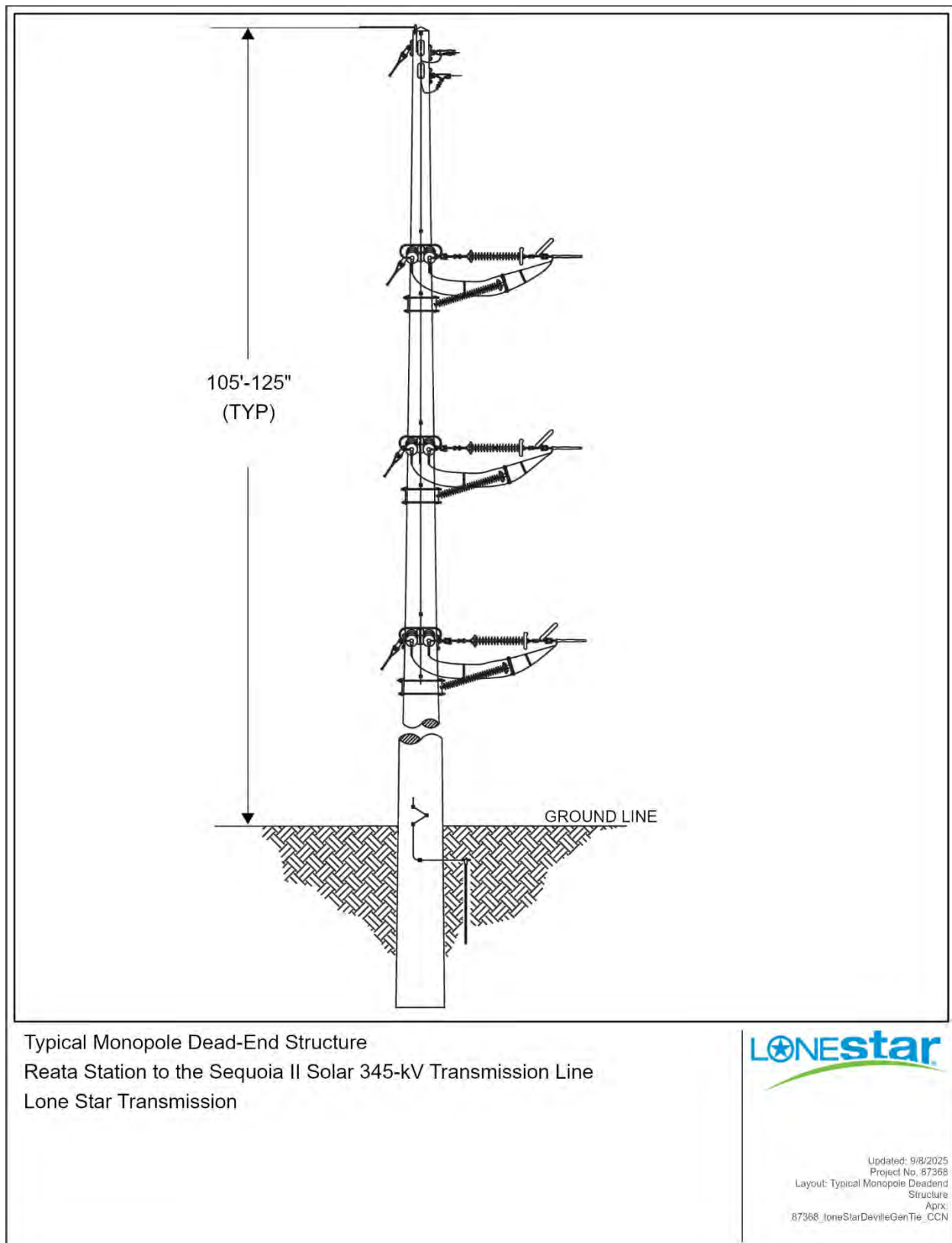


Figure 3. Typical monopole dead-end structure.

1.4 Construction Considerations

Construction of the Proposed Project will require surveying, ROW clearing and access improvements, foundation installation, structure assembly and erection, conductor and shield wire installation, and cleanup when construction is completed. The following information regarding these activities was provided to SWCA by Lone Star.

1.4.1 Surveying, Clearing, and Access

After regulatory approval and design of the transmission line are finalized, the ROW will be acquired and survey crews will stake the boundaries of the ROW. Then, the ROW will be cleared of vegetation and survey crews will mark structure locations. The construction contractor will perform any required vegetation clearing according to Lone Star clearing specifications and under the direction of Lone Star. Available methods of vegetation disposal include mulching, brush piling, and salvaging.

The ROW will be used for access during construction operations. To access the ROW, Lone Star may have to cross private property that adjoins the ROW. Lone Star will obtain permission from private landowners where needed. In general, however, Lone Star will access the ROW from public roads. Gates may be installed in existing fence lines to facilitate access, as required. Culverts may be installed to cross creeks and tributaries, where necessary, and to establish new driveway accesses from public roads in support of construction and future operations and maintenance purposes.

Clearing plans, methods, and practices are extremely important for success in any program designed to minimize the adverse effects of electric transmission lines on the natural environment. Lone Star will implement the following measures to meet this goal:

1. Clearing will be performed in a manner that will maximize the preservation of natural habitat and the conservation of natural resources.
2. Clearing will be performed in a manner that will minimize adverse effects to waters in the area of activity.
3. The time and method of clearing ROW will consider soil stability, the protection of natural vegetation, sensitive habitats, the protection of adjacent resources such as natural habitat for plants and wildlife, and the prevention of silt deposition in watercourses.
4. Lone Star will use the most effective methods to remove undesirable plant species. Hydro-axes and flail mowers may be used in clearing operations where such use will preserve the cover crop of grasses and similar vegetation. If deemed appropriate, herbicides approved by the U.S. Environmental Protection Agency (EPA) will be applied and handled in accordance with the product manufacturers' published recommendations and specifications and as directed by appropriately qualified staff.

1.4.2 Installation

The following is a description of typical construction methods for the installation of transmission line projects.

Structures will be delivered proximate to their installation location and temporarily stored on the ground atop cribbing. Then, while the structures are still on the cribbing, crews will assemble and outfit the structure with all required hardware. Thereafter, the structures will be hoisted by a crane from the cribbing and installed on their proposed foundation. Depending on soil type and engineering requirements, crews will typically direct-embed tangent and angle structures which may include guying

supports as required. Dead-end structures will typically be hoisted onto poured concrete foundations and secured with anchor bolts; the poured concrete foundations are installed by auguring circular holes, installing rebar cages, pouring concrete, and allowing sufficient cure time for the concrete. Where direct-embedded structures are used, crews will install them by boring appropriately sized holes, lifting and setting the structure into the hole, and backfilling with select fill, depending on soil conditions at the site (based on soil testing). Construction crews will take care to minimize damage to the ROW from vehicular traffic.

The conductors and shield wires are installed via a tensioning system. A rope is first threaded through the stringing blocks or dollies, using a bucket truck or a helicopter. The rope is clamped to a steel cable, so when the rope is pulled completely through all stringing blocks or dollies, the steel cable is pulled through. Conductors and shield wires are then clamped to the steel cable and pulled through the stringing blocks or dollies using pulling and tensioner equipment. Guard structures (temporary wood-framed structures) will be installed near crossings such as with distribution power lines, overhead telephone lines, roadways, railroads, and any other areas where additional protection is desired during wire installation; the guard structures are spaced and are of a sufficient height to keep the wires from touching the crossed objects to avoid damage to the wires and/or damage to the objects. When each wire is tensioned to the required sag, the wire is taken out of the blocks and placed in the suspension and dead-end clamps for permanent attachment.

Construction operations will be conducted with attention to the preservation of the natural habitat and the conservation of natural resources. The following criteria will be used to attain this goal. These criteria are subject to adjustment according to the rules and judgments of any public agencies whose lands may be crossed by the Proposed Project.

1. Clearing and grading of temporary construction areas, such as storage areas and setup sites, will be minimized. Any required grading will be done in a manner that will minimize erosion and conform to the natural topography.
2. Soil excavated during construction and not used for backfill or other construction purposes will be evenly spread onto an adjacent area, piled at a location to be used and maintained by the landowner, or removed from the site. Soils that are spread will conform to the terrain and the adjacent land and will be decompacted, if necessary, to promote natural growth of ground cover. If natural seeding does not provide ground cover in a reasonable length of time, appropriate reseeding will be performed.
3. Erosion control devices will be constructed and installed where necessary to reduce soil erosion in the ROW.
4. Clearing and construction activities near streambeds will be performed in a manner to minimize damage to the natural condition of the area. Streambanks will be restored as necessary to minimize erosion.
5. Efforts will be made to prevent accidental oil spills and other types of pollution, particularly while performing work near streams, lakes, and reservoirs.
6. Precautions will be taken to prevent the possibility of accidentally starting fires.
7. Precautions will be taken to protect natural features and cultural resources (identified by site-specific review of the Proposed Project) in and along the ROW.
8. If endangered or threatened species habitat is present, guidance from the U.S. Fish and Wildlife Service (USFWS) will be obtained prior to all clearing and construction activities.

9. Lone Star proposes to complete all ROW clearing and construction activities in compliance with the Migratory Bird Treaty Act (MBTA) and Texas Parks and Wildlife Department (TPWD) recommendations to avoid or minimize potential impacts.
10. Soil disturbance during construction will be kept to a minimum, and restorative measures will be taken in a reasonable length of time.
11. Lone Star will comply with any applicable permits or regulatory approvals.

1.4.3 Cleanup

The cleanup phase involves the decompaction and leveling of all disturbed areas, the removal of all construction debris and temporary construction erosion controls, and the restoration of, or compensation for, any items damaged by the construction of the Proposed Project. The ROW may be reseeded in consultation with landowners and soil stabilization needs. Lone Star will return each affected landowner's property to its original contours and grades unless otherwise directed by the landowner or required for the Proposed Project.

The following criteria generally apply to the cleanup of construction debris and the restoration of the area's natural setting:

1. If site factors prevent establishment of a protective vegetative cover, other restoration procedures will be used, including the installation of gravel, rocks, or concrete to stabilize areas disturbed during construction.
2. Sears, cuts, fill, or other aesthetically degraded areas will be allowed to seed naturally or may be reseeded with native species to reduce erosion, restore a natural appearance, and provide food and cover for wildlife.
3. If any temporary access roads are removed after construction, the original slopes will be restored where possible.
4. Construction equipment and supplies will be dismantled and removed from the ROW when construction is completed.
5. Clearing down to the mineral soil may be required for road access. In this case, water diversion berms, velocity dissipaters, or other erosion control devices may be installed to reduce erosion potential.
6. Construction waste will be removed prior to completion of the Proposed Project.
7. Replacement of soil for access roads adjacent to water crossings will be installed at slopes less than the normal angle of repose for the soil type involved and will be stabilized/revegetated to avoid erosion.
8. Lone Star will comply with any applicable permits or regulatory approvals.

1.5 Maintenance Considerations

Following construction of the transmission line, Lone Star will periodically access the ROW for aerial and ground inspections of the line, for repair of damaged structures due to equipment failures, accidents, or natural phenomena such as wind or lightning damage, and for maintenance of vegetation. The vegetation maintenance activity will consist of trimming, removing or proactively preventing growth of vegetation that poses a potential danger to the conductors or structures in order to promote safe and reliable power line operation. In areas where treatment of vegetation within the ROW is required, mowing, pruning, and application of EPA-approved herbicides will be conducted as required. The

application of herbicides will be conducted within federal, state, and local guidelines. In cropland areas and properly managed grazing lands, little or no vegetation control may be required due to existing land use practices.

1.6 Regulatory Guidance

Numerous federal, state, and local regulatory agencies and organizations have promulgated rules and regulations regarding the routing and potential impacts associated with the Proposed Project. As such, this section lists the major regulatory agencies that are involved in project planning and permitting of transmission lines in Texas, and describes the permits or approvals required. SWCA solicited comments from various regulatory agencies and officials during the development in support of preparing the EA document. A summary of agency responses is provided in Section 3, and copies of the responses received are included in Appendix A.

Construction documents and specifications will indicate special construction measures needed to comply with the regulatory requirements listed below.

1.6.1 Public Utility Commission of Texas

The PUC regulates the routing of transmission lines in Texas under PURA 37.056. The Proposed Project will require Lone Star to file a CCN application with the PUC. This EA has been prepared by SWCA in support of Lone Star's CCN application for this Proposed Project. The EA is intended to provide information on certain environmental and land use factors identified in PURA 37.056(c)(4) and 16 TAC 25.101(b)(3)(B), as well as to address relevant questions in the PUC's CCN application form. This report may also be used in support of any federal, state, or local permitting requirements, if necessary. Lone Star will obtain PUC approval of its CCN application prior to beginning construction of the Proposed Project.

1.6.2 U.S. Army Corps of Engineers

Under Section 10 of the Rivers and Harbors Act of 1899, 33 United States Code (USC) Section 403, the U.S. Army Corps of Engineers (USACE) regulates all work or structures in or affecting the course, condition, or capacity of navigable waters of the United States (WOTUS). Under Section 404 of the Clean Water Act of 1972 (CWA), the USACE also regulates WOTUS that include, but are not limited to, wetlands, streams, rivers, and impoundments.

The Proposed Project is located within the jurisdiction of the USACE Fort Worth District. No navigable waters were identified within the Study Area that, if crossed, would necessitate the need for a Section 10 Permit. If construction of the Proposed Project impacts WOTUS, or associated jurisdictional wetlands as defined in Section 404 of the CWA, based on current route design, the Proposed Project is anticipated to meet the criteria of the Nationwide Permit (NWP) 57 – Electric Utility Line and Telecommunications Activities. A USACE individual permit (IP) is not anticipated to be required for this Proposed Project.

1.6.3 U.S. Fish and Wildlife Service

The USFWS enforces federal wildlife laws and provides comments on proposed projects under the jurisdiction of the Endangered Species Act (ESA), MBTA, and Bald and Golden Eagle Protection Act (BGEP). Additionally, USFWS oversight includes review of projects with a federal nexus under the National Environmental Policy Act (NEPA).

Upon PUC approval of the Proposed Project, a survey may be necessary to identify any potential suitable habitat for federally protected species. If suitable habitat is noted, informal consultation with the USFWS may be conducted to determine whether permitting or other requirements associated with possible impacts to protected species under the ESA, MBTA, or BGEPA is necessary.

SWCA contacted USFWS on September 23, 2024, during the Proposed Project development, to solicit agency comments and recommendations. USFWS responded to this request via email on September 23, 2024 (see Section 3 and Appendix A)

1.6.4 Federal Aviation Administration

According to Federal Aviation Administration (FAA) regulations, Title 14 Code of Federal Regulations (CFR) 77.9, the construction of a transmission line requires FAA notification if 1) any constructed structure heights will exceed 200 feet above ground level, or 2) constructed structure heights will pierce any of the following slopes for public-use or military airports, airports operated by a federal agency or the U.S. Department of Defense (DoD), or airports or heliports with at least one of the following FAA-approved instrument approach procedures:

- A 100:1 slope for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport described in paragraph (d) of 14 CFR 77.9, having at least one runway longer than 3,200 feet, excluding heliports;
- A 50:1 slope for a horizontal distance of 10,000 feet from the nearest runway of a public or military airport described in paragraph (d) of 14 CFR 77.9, where its longest runway is no longer than 3,200 feet in length, excluding heliports; or
- A 25:1 slope for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area for a heliport described in paragraph (d) of 14 CFR 77.9.

The Proposed Project does not affect any public or private airports located within established FAA distances. However, following PUC approval of the route for the proposed transmission line, Lone Star will make a final determination of the need for FAA notification based on specific structure locations and design. If any of the FAA notification criteria are met for the approved route, a Notice of Proposed Construction or Alteration will be completed and submitted to the FAA Southwest Regional Office in Fort Worth, Texas, at least 45 days prior to construction. The result of this notification, and any subsequent coordination with the FAA, could include changes in line design and/or potential requirements to mark and/or light the structures.

1.6.5 Texas Parks and Wildlife Department

According to Section 68.015 of the Texas Parks and Wildlife Code (TPWC) provides that no person may capture, trap, take, kill, or attempt to capture, trap, take, or kill state-listed fish or wildlife. Similarly, 31 TAC 65.171 states that, except as otherwise provided in Subchapter G (Threatened and Endangered Nongame Species) or TPWC Chapters 67 or 68, no person may take, possess, propagate, transport, export, sell or offer for sale, or ship any species of fish or wildlife listed by the TPWD as endangered or threatened.

SWCA contacted TPWD on September 23, 2024, during the Proposed Project development, to solicit agency comments and recommendations. TPWD responded to this request via email on October 11, 2024 (see Section 3 and Appendix A).

PUC Procedural Rule 22.52 requires the Applicant to “provide a copy of each environmental impact study or assessment for the project to the Texas Parks and Wildlife Department (TPWD) for its review within seven days of filing the application.” Accordingly, Lone Star will submit a copy of this EA to the TPWD when the CCN application is filed with the PUC. As required by the PUC, Lone Star will file an affidavit with the PUC attesting to the notification to TPWD. Once the PUC approves the CCN, additional coordination with TPWD may be necessary to determine the need for additional surveys and to avoid or minimize any potential adverse impacts to sensitive habitats, threatened or endangered species, and other fish and wildlife resources.

1.6.6 U.S. Department of Defense Siting Clearinghouse

The DoD Siting Clearinghouse reviews and coordinates renewable energy development projects for impacts to and compatibility with military training, testing and operations. Renewable or alternative energy development facilities and transmission projects involving tall structures, such as electric transmission towers, or solar panels may degrade military testing and training operations. Tall structures can create obstructions in military airspace and solar panels can create glare for military aviators. Further, the electromagnetic interference from electric transmission lines can impact critical DoD testing activities. 16 TAC 22.52 states that upon filing of the application, the DoD and the PUC shall be notified, and an affidavit attesting to the DoD notification and date(s) of notification is required. Furthermore, the utility is required to provide written notice of the public meeting or, if no public meeting is held, to provide written notice to the DoD of the planned filing of an application prior to completion of the routing study. SWCA contacted the DoD regarding the Proposed Project to notify and solicit input on September 23, 2024. Lone Star will also provide notice of the filing of the application to the DoD Siting Clearinghouse when the CCN application is filed with the PUC.

1.6.7 Floodplain Management

SWCA reviewed the Flood Insurance Rate Maps (FIRMs) and the National Flood Hazard Layer (NFHL), published by the Federal Emergency Management Agency (FEMA), to determine the floodplain boundaries within the Study Area. According to FEMA’s NFHL, there is no modernized floodplain data for the Study Area. However, 1977 FIRM panel maps show some areas along unnamed drainages in the Eastland County portion of the Study Area as located in the 100-year floodplain. While a small portion of the Study Area is in the 100-year floodplain, no portion of Proposed Project crosses any mapped floodplains based on the review of FIRMs and NFHL data. Careful siting should minimize the possible impacts in any flood-prone areas. The structures should not significantly affect flooding. Lone Star will coordinate with the county floodplain administrator(s) as necessary.

1.6.8 Texas Commission on Environmental Quality

The Proposed Project may require a Texas Pollutant Discharge Elimination System General Construction Permit (TXR150000) as implemented by the Texas Commission on Environmental Quality (TCEQ) under the provisions of Section 402 of the CWA and Chapter 26 of the Texas Water Code. The TCEQ has developed a three-tiered approach for implementing this permit that is dependent on the acreage of land disturbance. No permitting is required for land disturbance of less than 1 acre (Tier I). Disturbance of 1 acre or more, but less than 5 acres, would require implementation of a Stormwater Pollution Prevention Plan (SWPPP) (Tier II). If 5 acres or more of land are disturbed, the requirements mentioned above for Tier II are necessary, and the submittal of a Notice of Intent and Notice of Termination to the TCEQ are also required (Tier III). Once the CCN is approved by the PUC, Lone Star will determine the amount of ground disturbance and the appropriate tier and conditions of the TXR150000 permit. Based on the current

design footprint, the transmission line ROW encompasses approximately 173.4 acres, which would require a SWPPP and the requisite notice activities for Tier III projects.

A Section 401 Water Quality Certificate from the TCEQ may also be required if the Proposed Project requires a USACE IP. States have the authority to review federally permitted or licensed activities that may result in a discharge of pollutants into WOTUS. As previously discussed, a USACE IP is not anticipated for the Proposed Project.

1.6.9 Texas Historical Commission

Projects in Texas can come under the purview of two primary cultural resources regulations, the National Historic Preservation Act of 1966 (NHPA) and the Antiquities Code of Texas (ACT). Both are administered by lead federal agencies and the State Historic Preservation Officer of Texas at the Texas Historical Commission (THC) in Austin, Texas.

If an undertaking is federally permitted, licensed, funded, or partially funded, the project must comply with Section 106 of the NHPA, as amended. Section 106 requires that every federal agency consider the undertaking's effects on historic properties, defined as any property listed in, or eligible for listing in, the National Register of Historic Places (NRHP). The NRHP is a cultural resources inventory maintained by the Secretary of the Interior. This list includes buildings, structures, objects, sites, districts, and archaeological resources. As stipulated in Section 106 implementing regulations defined in "Protection of Historic Properties," 36 CFR 800, this includes the identification and evaluation of historic properties.

Cultural resources, historic and prehistoric, located on lands owned or controlled by the State of Texas or one of its political subdivisions are protected by the ACT. The ACT requires state agencies and political subdivisions of the state, including cities, counties, river authorities, municipal utility districts, and school districts, to notify the THC of any action on public land involving 5 or more acres of ground disturbance, 5,000 or more cubic yards of earth moving, or those that have the potential to disturb recorded archaeological sites. The THC's Archeology Division manages compliance with the ACT, including the issuance of formal Texas Antiquities Permits, which stipulate the conditions under which scientific investigations will occur. Under the ACT, any historic or prehistoric property located on state lands may be determined eligible as a State Antiquities Landmark (SAL).

In addition, all human burials in the State of Texas are protected by law, i.e., the Texas Health and Safety Code Section 711 General Provisions Relating to Cemeteries (herein referred to as Section 711) and 13 TAC 22.1 through 22.6. If human burials are encountered in the Proposed Project area and the remains are determined to be Native American, they will be handled in accordance with procedures established through coordination with the THC, and work in the affected area could only resume per THC authorization.

Lone Star will obtain clearance as necessary from the THC regarding requirements concerning historic and prehistoric cultural resources, if present, prior to initiating any ground disturbance. On September 26, 2024, SWCA, on behalf of Lone Star, submitted a request for consultation to the THC. On October 25, 2024, the THC responded, stating that "the study area contains a plethora of recorded archeological sites and cemeteries, as well as an above ground resource (portion of Bankhead Highway) that has been determined eligible for listing in the NHRP." In their response, the THC also indicated that an archaeological survey meeting the Archeological Survey Standards for Texas would likely be required for the Proposed Project.

1.6.10 Texas Department of Transportation

The Proposed Project crosses state-maintained (on-system) roadways. As necessary, permits and approvals will be obtained from the Texas Department of Transportation (TxDOT) where the Proposed Project crosses TxDOT ROW and if new driveway access from an on-system roadway is required.

1.6.11 Texas General Land Office

The Texas General Land Office requires a Miscellaneous Easement (ME) for any ROW crossing a state-owned riverbed, navigable stream, tidally influenced water, or Permanent School Fund Lands. Following PUC approval of a route for this Proposed Project, if any such waters or lands are crossed, Lone Star will obtain the necessary ME. However, an ME is not expected to be required for this Proposed Project since it will likely not cross any state-owned riverbed, navigable stream, tidally influenced water, or Permanent School Fund Lands.

1.6.12 Callahan and Eastland Counties

On September 23, 2024, SWCA contacted Eastland County and Callahan County officials to solicit input regarding the Proposed Project. At the time of this report, SWCA has not received responses from Callahan County officials. Eastland County officials provided SWCA and Lone Star with ordinances and regulations that may apply to the Proposed Project. Lone Star will acquire county road crossing permits or approvals from Eastland County. In addition, Lone Star will acquire a road use agreement from Callahan County.

2 ROUTE STUDY METHODOLOGY AND DESCRIPTION OF THE STUDY AREA

2.1 Routing Study Methodology

The objective of this EA is to evaluate the potential impacts for Lone Star's proposed 345-kV transmission line project to ensure it complies with PURA 37.056(c)(4)(A)-(D), 16 TAC 22.52(a)(4), and 16 TAC 25.101(b)(3)(B), including the PUC's policy of prudent avoidance. SWCA's approach for this EA involved examining the Study Area, comprised of a 0.6-mile buffer around the Proposed Project alignment; characterizing existing land use and environmental constraints; and analyzing the route using evaluation criteria to determine potential impacts to identified constraints. Regulatory agency comments were also incorporated into the route evaluation process. In addition, Lone Star considered engineering and construction constraints, reliability issues, and estimated costs to evaluate the route as it relates to the requirements of PURA and PUC Substantive Rules. The following sections provide an overview of the process used in development and evaluation of the Proposed Project.

2.1.1 Study Area Boundary Delineation

The first step in the evaluation process was to delineate a Study Area that encompassed the Proposed Project endpoints (Lone Star's Reata Station and the Sequoia II Solar Collector Substation Point of Interconnection) and allowed for adequate evaluation of the proposed transmission line in support of Lone Star's CCN application. The purpose of delineating the Study Area for the Proposed Project was to set boundaries and limits in which to identify environmental and land use constraints during the information gathering phase to properly identify and map various items included within PUC's CCN application. The

Study Area encompasses an area of approximately 8,300.8 acres and is centered along the Proposed Project in Callahan and Eastland Counties (Figure 4).

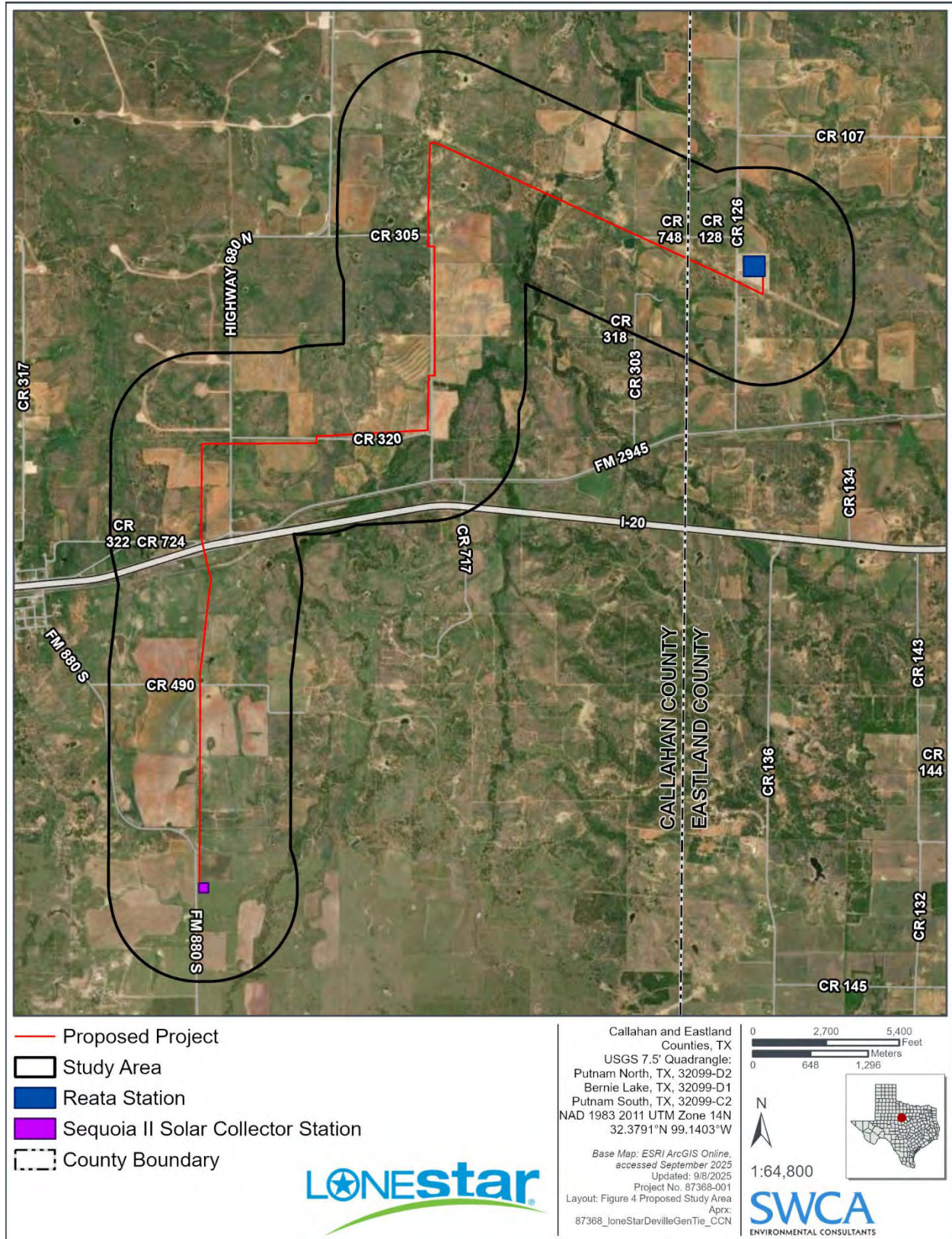


Figure 4. Proposed Project Study Area.

2.1.2 Constraints Mapping and Data Collection

To quantify potential impacts to sensitive environmental and land use features, a constraints mapping process was used in evaluating the Proposed Project. The geographic locations of environmentally sensitive and other restrictive areas within the Study Area were identified and considered during the evaluation process. These constraints were mapped onto aerial base maps. Constraints maps associated with the proposed 345-kV transmission line are located within Appendix B.

Data used by SWCA in the evaluation of the Proposed Project were drawn from a variety of sources, including published literature (e.g., documents, reports, maps, aerial photography); information from local, state, and federal agencies; and site-specific studies or investigations performed by others. Recent aerial imagery (Google Earth, Google Maps, Bernie and Lake Putnam North 7.5-minute U.S. Geological Service [USGS] topographic maps from 2022); USFWS National Wetlands Inventory (NWI) maps; USFWS's Information, Planning, and Conservation (IPaC) system; TPWD's Texas Natural Diversity Database (TXNDD); TPWD's Ecological Mapping Systems of Texas; and ground reconnaissance were used throughout the development and evaluation of the Proposed Project. Ground reconnaissance of the Study Area and computer-based evaluation of digital aerial imagery were used throughout the evaluation of the Proposed Project.

2.1.3 Route Development

The Proposed Project was developed between its endpoints based on mapped constraints; landowner interest; PURA 37.056(c)(4)(A–D), the PUC's standard CCN application, and 16 TAC 25.101, including the PUC's policy of prudent avoidance; and consistency with Lone Star's transmission line routing guidelines. A single route was selected by Lone Star because all landowners directly affected by the proposed transmission line provided written agreement to the proposed route. The route represents a forward progressing and relatively direct path from the Reata Station through to the Sequoia II Solar Collection Substation Point of Interconnection, and the route meets the applicable criteria of PURA 37.056 and 16 TAC 25.101.

2.1.4 Evaluation Factors

This EA evaluates the proposed route using criteria in PURA 37.056(c)(4)(A–D) and 16 TAC 25.101 for the granting of a CCN, as well as relevant questions in the PUC's CCN application form. These criteria are presented in Table 1, and a figure summarizing these factors is located in Appendix B. In conjunction with evaluation of the Study Area information obtained during constraints mapping and data collection, information obtained from field reconnaissance of the Study Area performed on the Dorado and Deville Solar Projects in 2022 and field surveys of the Proposed Project centerline in 2025 was also evaluated. The field investigation within the Study Area was conducted from publicly accessible areas and the field surveys for the Proposed Project were conducted along the entire proposed ROW. Potential environmental impacts are disclosed in Section 4 of this document.

Table 1. Land Use and Environmental Evaluation Criteria

Evaluation Factors	
Land Use	
1.	Length of route
2.	Number of habitable structures* within 500 feet of right-of-way (ROW) centerline
3.	Length of ROW using existing transmission line ROW

Evaluation Factors

4. Length of ROW parallel to existing transmission line ROW
5. Length of ROW parallel to other compatible existing ROW (e.g., highways, public roadways, railways), excluding pipelines
6. Length of ROW parallel to property lines (not following existing ROW)[†]
7. Length of ROW across parks/recreational areas[‡]
8. Number of additional parks/recreational areas within 1,000 feet of ROW centerline
9. Length of ROW across cropland
10. Length of ROW across rangeland/pastureland
11. Length of ROW across cropland or pastureland with mobile irrigation systems
12. Number of pipeline crossings
13. Number of oil/gas wells within ROW
14. Number of transmission line crossings
15. Number of U.S. and State highway crossings
16. Number of Farm-to-Market (FM) and Ranch-to-Market (RM) road crossings
17. Number of Federal Aviation Administration (FAA)–registered airports with at least one runway more than 3,200 feet in length located within 20,000 feet of the ROW centerline
18. Number of FAA-registered airports having no runway more than 3,200 feet in length located within 10,000 feet of the ROW centerline
19. Number of private airstrips within 10,000 feet of ROW centerline
20. Number of heliports within 5,000 feet of ROW centerline
21. Number of commercial AM radio transmitters within 10,000 feet of ROW centerline
22. Number of FM radio transmitters, microwave relay stations, or other electronic installations, within 2,000 feet of ROW centerline

Aesthetics

23. Estimated length of ROW within foreground visual zone^d of U.S. and State highways
24. Estimated length of ROW within the foreground visual zones^s of FM and/or RM roads
25. Estimated length of ROW within foreground visual zone^d of parks/recreational areas[‡]

Ecology

26. Length of ROW through upland woodland/brushland
27. Length of ROW across bottomland/riparian woodland/brushland
28. Length of ROW across National Wetlands Inventory mapped wetlands
29. Length of ROW across known occupied habitat of endangered or threatened species
30. Length of ROW across open water (e.g., lakes/ponds)
31. Number of stream crossings
32. Length of ROW parallel (within 100 feet) to streams
33. Length of ROW across 100-year floodplains

Cultural Resources

34. Number of cemeteries within 1,000 feet of ROW centerline
35. Number of recorded cultural resource sites crossed by ROW
36. Number of additional recorded cultural resource sites within 1,000 feet of ROW centerline
37. Number of NRHP-listed or eligible sites crossed by ROW
38. Number of additional NRHP-listed or eligible sites within 1,000 feet of ROW centerline
39. Length of ROW crossing areas of high archaeological/historical site potential

[†] Single-family and multifamily dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis.

[†] Apparent property boundaries created by existing roads, highways, or railroad ROWs are not “double-counted” in the length of ROW parallel calculation.

[‡] Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

[§] 0.5 mile, unobstructed.

2.2 Community Values, Land Use, and Socioeconomics

Under PURA 37.056(c)(4)(A–D), “community values” is a factor for consideration in siting a transmission line route; however, the statute does not specifically define the term. The PUC’s CCN application form requires information concerning the following items related to community values:

- Public open-house meeting, if applicable;
- Approval or permits required from other governmental agencies;
- Counties and municipalities in which the route will be constructed;
- Habitable structures within 500 feet of the centerline for transmission lines of 345 kV or less;
- FAA-registered public-use airstrips, private airstrips, and heliports;
- Amplitude modulation (AM) and frequency modulation (FM) radio, microwave, and other electronic installations;
- Irrigated pasture or croplands utilizing center-pivot or other traveling irrigation systems;
- Parks and recreation areas; and
- Historical and archaeological sites.

Public and landowner involvement, as well as agency coordination, is addressed in Section 3. A discussion of cultural resources in the Study Area is provided in Section 2.4. Remaining topics, as well as general socioeconomic and aesthetic conditions, are briefly summarized below.

2.3 Description of Existing Environment

2.3.1 Land Jurisdiction

The Study Area is located on private lands within the jurisdictional boundaries of both Eastland and Callahan Counties. The Proposed Project will cross state-owned ROWs but will not place any structures in these ROWs. The proposed route begins at the existing Reata Station, located along and east of CR 126 approximately 1.10 miles north of its intersection with FM 2945 in Eastland County. Here the proposed route extends from Reata Station to the south approximately 0.1 miles and then turns northwest for approximately 2.6 miles, crossing CR 126, the Eastland/Callahan County line and Battle Creek and paralleling an existing utility corridor. The proposed route then angles southwest for approximately 0.04 miles and then turns south for approximately 0.74 miles, paralleling property lines and crossing CR 305. Here the proposed route angles southeast and extends approximately 0.05 miles, crossing CR 305 again, then turns south and runs approximately 0.89 miles, paralleling property lines. Here the proposed route turns west and extends approximately 0.05 miles, crossing CR 305 again. Then the proposed route turns south for approximately 0.38 miles, paralleling property lines, and, then, northwest of the CR 305 and CR 320 intersection, turns west for approximately 0.59 miles. Here the proposed route turns south and extends approximately 0.07 miles, crossing CR 320. Then the proposed route turns west and extends approximately 1.02 miles, paralleling property lines and an existing transmission line and crossing FM 880. Here the proposed route turns south for approximately 0.65 miles, then, angles southeast and extends approximately 0.31 miles, crossing IH 20 20, IH 20 frontage roads, and a railroad track. The proposed

route then angles southwest for approximately 0.65 miles. Here the proposed route shifts south and extends approximately 1.53 miles, crossing CR 490 and several private access roads and paralleling an existing transmission line and existing property lines. The proposed route then turns east, extends approximately 0.03 miles and terminates at the Sequoia II Solar Collector Substation Point of Interconnection, located along and east of FM 880 approximately 1.07 miles north of the FM 880 and CR 482 intersection in Callahan County.

Although the Proposed Project is within the jurisdictional boundaries of Eastland and Callahan Counties, it does not cross any city limits and is not within the extra-territorial jurisdiction of any municipality in either county. The two closest municipalities to the Study Area are the city of Cisco in Eastland County and the city of Baird in Callahan County (Eastland County Appraisal District 2025; Callahan County Appraisal District 2025). Cisco is located 5.8 miles east of the Study Area, and Baird is located approximately 11.2 miles west of the Study Area. The Texas Association of Regional Councils (2025) lists Eastland and Callahan Counties as part of Region 7: West Central Texas Council of Governments (WCTCOG). This region consists of approximately 18,000 square miles across 19 north-central Texas counties and supports a population of approximately 330,000 people across several municipalities. The WCTCOG serves various functions in the economic, political, and social climate of the region (Texas Association of Regional Councils 2025).

2.3.2 Land Use

Existing land uses within the Study Area were identified through interpretation of aerial imagery, geographic information system (GIS) data, reconnaissance surveys, and publicly available data. The lands within the Study Area are predominately rural, featuring residences, farms, and energy infrastructure distributed throughout (Google Earth 2025).

Land cover, discussed in more detail in Sections 2.5.4.1 and 2.5.5.1, is mostly mesquite scrub/shrub rangeland, riparian woodland, and oak woodland with interspersed cropland and heavily grazed grassland (Dewitz 2023; SWCA 2022a, 2022b, 2025a, and 2025b). Additionally, a review of the Protected Areas Database of the United States (USGS 2025a) revealed no conservation easements within the Study Area.

2.3.2.1 Habitable Structures

Habitable structures are defined in 16 TAC 25.101(a)(3) as:

Structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis. Habitable structures include, but are not limited to, single-family and multi-family dwellings, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, and schools. (PUC 2015)

Review of aerial imagery and field reconnaissance of the Study Area and the Proposed Project determined that nine habitable structures are located within the Study Area (Google Earth 2025). The evaluation criteria by which habitable structures are considered for the purposes of this EA are those within 500 feet of the ROW centerline (see Section 2.1.4; see Table 1). Based on the review of aerial imagery and site reconnaissance, none of the nine habitable structures are within 500 feet of the ROW centerline.

2.3.2.2 Agriculture

Agriculture is a significant segment of the economy throughout Texas, and the Study Area has active agricultural sectors. Based on data provided by the U.S. Department of Agriculture's (USDA) National Agricultural Statistics Service (2022), Eastland County had 519,189 acres of farmland across 1,210 farms with 87,490 of these acres identified as cropland (USDA 2025). Callahan County had 468,449 acres of

farmland across 1,050 farms with 73,592 acres of farmland identified as cropland. Livestock and poultry production account for the larger portion of the economic basis and farmland use within both counties. The market value of agricultural products sold in Eastland County increased from approximately \$23,500,000 to \$37,000,00 between 2017 and 2022; however, in Callahan County, the market value of agricultural products decreased from approximately \$31,200,000 to \$22,700,000 in the same time frame (USDA 2025). The commodity group with the highest value in sales in both Eastland and Callahan Counties was grains, oilseeds, dry beans, and dry peas (USDA 2025).

According to the USDA Farm Service Agency (see Appendix A), there are no Conservation Reserve Program lands within the Study Area. The Conservation Reserve Program is a voluntary program administered by the FSA, which pays landowners/ farmers to conserve environmentally sensitive land (FSA 2025).

2.3.2.3 Parks and Recreation Areas

The PUC recognizes parks and recreational areas as those owned by a governmental body or an organized group, club, or church. SWCA reviewed federal and state databases and county/local maps to identify any parks and/or recreational areas within the Study Area. The USGS Protected Areas Database of the United States (USGS 2025a) does not identify any special status or protected areas within the Study Area. The USGS Protected Areas Database is the official inventory of protected areas in America. Recreational activities, such as hunting and fishing, might occur on private properties throughout the Study Area but are not considered to be open to the general public.

2.3.2.4 Utility Features

2.3.2.5 Transmission and Distribution Features

Data sources used to identify existing electrical transmission and distribution lines included utility company and regional system maps, aerial imagery, and additional available planning documents. The U.S. Electric Power Transmission Lines (2022) identifies six transmission lines within the Study Area: one 345-kV transmission line, three 138-kV transmission lines, and two 69-kV transmission lines. However, according to the data provided to SWCA by Lone Star and information available from the U.S. Electric Power Transmission Lines (2022), there are seven transmission lines within the Study Area; Present transmission lines are owned and operated by Comanche Electric Cooperative, Inc., AEP North Texas Co., Lone Star Transmission, and/or Electric Transmission Texas.. The Study Area is served by the Electric Reliability Council of Texas, whose mission is to *“maintain the reliability of the electric grid of Texas and help Market Participants fulfill customers’ electric service needs by maintaining balance between load and generation.”* There does not appear to be a public-facing central repository or web map viewer that includes all electrical transmission and distribution lines in order to protect the safety and integrity of the electricity supply chain, according to the PUC (2025). Service lines are also present in the Study Area; these features are not inventoried but are associated with residences and/or farm or ranch operational infrastructure within the Study Area (Google Earth 2025).

2.3.2.6 Communication Towers

Review of Cell Tower Maps (2025) indicated there is one FM radio transmitter with the following attachments: extended GSM transmit antenna and 5G Sub-6GHz transmit antenna (northeastern antenna) located within the Study Area, northeast of the town of Putnam and approximately 0.2 mile west from the ROW centerline. Additionally, there is one 5G mmWave transmit antenna (eastern antenna) in the Study Area, east of the town of Putnam and approximately 0.2 mile west from the ROW centerline. Cell Tower

Maps did not identify any additional electronic installations within the Study Area (e.g., AM radio transmitters, microwave relay stations, and/or cell towers) (Cell Tower Maps 2025).

The northeastern antenna is owned by AT&T Services Inc.; Verizon Wireless; Sprint Corporation; Conterra Ultra Broadband, LLC; FiberLight, LLC; Cleartalk; and T-Mobile USA Inc. (AntennaSearch 2025). The eastern antenna is owned by AMG Technology Investment Group, LLC (AntennaSearch 2025).

One unidentified tower was identified on the aerial photograph northwest of the intersection of FM 880 and CR 320. The tower is approximately 0.4 mile north of the ROW centerline.

2.3.2.7 Oil and Gas Facilities

Oil and gas facilities within the Study Area include 667 well facilities and seven pipelines. Eight wells are located within the Proposed Project ROW, and another 16 are located within 200 feet of the ROW. Pipeline facilities within the Study Area include six natural gas pipelines and one crude oil pipeline, with the Proposed Project ROW crossing four pipelines and paralleling segments of three of the four pipelines.

2.3.2.8 Aviation and Transportation Features

2.3.2.9 Aviation Features

SWCA reviewed the AirNav website (AirNav 2025), the FAA-registered airports GIS viewer (FAA 2025), USGS topographic maps (USGS 2022a–2022c), and recent aerial photography (Google Earth 2025) to identify FAA-registered facilities within the Study Area subject to notification requirements listed in 14 CFR 77.9. No public-use or military FAA-registered airports were identified within 20,000 feet of the ROW centerline (AirNav 2025). Additionally, no heliports or private-use airstrips were identified within 5,000 to 10,000 feet of the ROW centerline (Google Earth 2025; AirNav 2025). The closest FAA-registered airports with runways over 3,200 feet in length are the Cisco Municipal Airport and Gregory M. Simmons Memorial Airstrip, located approximately 6.5 miles east-northeast and 5.3 miles southeast of the Study Area, respectively; both are more than 20,000 feet from the ROW centerline) (FAA 2025; Google Earth 2025).

2.3.2.10 Transportation Features

State and local transportation features within the Study Area were identified using aerial imagery and TxDOT GIS data. Roadways include seven county roadways (off-system) and three TxDOT roadways (on-system). In addition, a Union Pacific railroad line (UPRR) traverses the Study Area.

The Proposed Project ROW crosses the following four CRs, two TxDOT roadways, and one railroad:

- CR 126 (Eastland County) – One crossing
- CR 305/McKinney Road (Callahan County) – Three crossings
- CR 320 (Callahan County) – One crossing
- CR 490 (Callahan County) – One crossing
- FM 880 (TxDOT) – One crossing
- IH 20 (TxDOT) – One crossing
- UPRR – One crossing

The Proposed Project crosses CR 305 three times and parallels the roadway for approximately 1.4 miles. Similarly, the Proposed Project parallels CR 320 for approximately 1.4 miles and crosses it one time. The Proposed Project crosses FM 880 once north of IH 20, then parallels FM 880 south of IH 20 for approximately 0.25 mile before terminating at the Sequoia II Collector Substation Point of Interconnection.

TxDOT's *Project Tracker*, which provides detailed information pertaining to current or pending TxDOT projects, was reviewed to identify any on-system roadway projects planned within the Study Area. According to *Project Tracker*, both FM 880 and IH 20 are planned to receive new seal coats within the next 4 years (TxDOT 2025a).

The Proposed Project will cross the UPRR between milepost 372 and 373 in the Baird subdivision just east of the town of Putnam, Texas (USDOT 2025). Utilities crossing a railroad require permission from the railroad.

2.3.3 Socioeconomics

The following section provides an overview of the socioeconomic setting in both Eastland and Callahan Counties and provides some comparison to the socioeconomic setting of the State of Texas. Metrics discussed include population, demographic, business, and economic characteristics for both counties. Data sources used for obtaining the information presented below include the U.S. Census Bureau (2025a, 2025b), the U.S. Bureau of Labor Statistics (2025), and the Texas Demographic Center (2025).

2.3.3.1 Population Statistics

According to the 2020 Decennial Census, the population of Eastland County was 17,725 and the population of Callahan County was 13,708 (U.S. Census Bureau 2025a, 2025b). The American Community Survey (ACS) 5-year estimates from the year 2010 shows that Eastland County's population declined by approximately 4.5% between 2010 and 2020, but the population of Callahan County increased by approximately 1.8% across the same time period (U.S. Census Bureau 2025a, 2025b).

According to the Texas Demographic Center (2025), 152 of the 254 Texas counties experienced a natural decline in population between 2010 and 2020, mostly due in part to an aging population and reduced fertility rates, particularly in rural Texas.

2.3.3.2 Demographics

According to the ACS, the median age in Eastland and Callahan Counties is 42.6 years and 43.8 years, respectively; while the median age for the State of Texas is 35.9 years (U.S. Census Bureau 2025a, 2025b). The ACS 2022 5-year estimate indicates that approximately 20% of the population in both counties are at least 65 years old (U.S. Census Bureau 2025a, 2025b). Gender structure in Eastland and Callahan Counties can be represented as a ratio (i.e., males per 100 females). In Eastland County, the ratio value is 100.5, and in Callahan County, the ratio value is 97.7 (U.S. Census Bureau 2025a, 2025b).

Both Eastland and Callahan Counties have lower median household incomes (\$51,741 in Eastland County and \$68,455 in Callahan County) as compared to the average in Texas (\$75,780). Further, Eastland County has a higher percentage of the population living in poverty (14.6%) as compared to Callahan County (10.1%), while 13.7% marks the average for all of Texas. While 33.9% of the population in the State of Texas hold a bachelor's degree or higher, Eastland County has a rate of 22.2%, and Callahan County has a rate of 23.9% (U.S. Census Bureau 2025a, 2025b).

2.3.3.3 Economic Sectors

The U.S. Census Bureau (2025a, 2025b) states that 54.0% of the population in Eastland County and 54.4% of the population in Callahan County are employed, compared to 62.6% in the State of Texas, while the unemployment rate was 4.9% in Eastland County and 5.2% in Callahan County. The Texas State unemployment rate in July 2025 was 4.0% (U.S. Bureau of Labor Statistics 2025). According to the Texas Workforce Commission *Texas Quarterly Census of Employment of Wages* (2023), the following industries are the five leading employment sectors in each county:

- **Eastland County**
 - Local Government (22.1%)
 - Trade, Transportation, and Utilities (21.5%)
 - Manufacturing (11.1%)
 - Leisure and Hospitality (10.6%)
 - Education and Health Services (9.4%)

The remaining 25.3% of the workforce in Eastland County are employed in the following industry groups: Natural Resources and Mining, Construction, Information, Financial Activities, Professional and Business Services, Federal Government, and State Government (Texas Workforce Commission 2023).

- **Callahan County**
 - Trade, Transportation, and Utilities (24.8%)
 - Local Government (22.4%)
 - Leisure and Hospitality (13.3%)
 - Construction (11.4%)
 - Education and Health Services (6.4%)

The remaining 21.7% of the workforce in Callahan County are employed in the following industry groups: Natural Resources and Mining, Manufacturing, Information, Financial Activities, Professional and Business Services, Federal Government, and State Government (Texas Workforce Commission 2023).

2.3.4 Aesthetic Values

PURA 37.056(c)(4)(C) incorporates aesthetics as a consideration when evaluating proposed electric transmission facilities. Currently, there are no formal guidelines provided for managing visual resources on private, state, or county-owned lands. For the purposes of this study, SWCA defined the term “aesthetics” to represent the subjective perception of natural beauty in a landscape. SWCA used the following aesthetic criteria to determine an area’s aesthetic identity:

- Topographical variation (e.g., hills, valleys)
- Prominence of water in the landscape (e.g., rivers, lakes)
- Vegetation variety (e.g., forest, grasslands)
- Diversity of scenic elements
- Degree of human development or alteration
- Overall uniqueness of the scenic environment compared with the larger region

No known designated views or designated scenic roads or highways were identified within the Study Area. There are no public parks, wildlife management areas, state parks or forests, national parks or forests, wild and scenic rivers, national trails, or other recreation or special designation areas within the Study Area. The Study Area's landscape consists of low topographical variation with no major rivers or lakes. The vegetation communities within the Study Area are consistent with those of the surrounding environment, with most of the area being mesquite scrub-shrub rangelands, riparian woodland with larger trees surrounding watercourses, and some oak woodland. Large portions of the Study Area have seen moderate to intense levels of human alteration and development (i.e., transmission infrastructure, wind infrastructure, cropland).

All in all, the Study Area does not provide a measurable difference in aesthetic quality as compared to the larger region; thus, designating the Study Area as a landscape of low aesthetic value.

2.4 Historical (Cultural Resources) Values

PURA 37.056(c)(4)(A–D) incorporates historical values as a consideration when evaluating proposed electric transmission facilities. A brief summary of the Study Area's cultural background, known cultural resources, and previous investigations is provided below.

2.4.1 Cultural Background of Study Area

The Study Area is located in Eastland and Callahan Counties, within the West-Central Texas archaeological region, though it is proximal to the nearby north-central region as well (Pertulla 2004:7). Although Pertulla's archaeological regions are not absolute, they generally reflect not only recognized biotic communities and physiographic areas, but areas of some prehistoric and ethnographic cultural continuity in Texas (Pertulla 2004:6). As the boundaries are blurry for mobile prehistoric forager communities, background information from neighboring regions is relevant. All prehistoric period ages are provided as years Before Present (BP) and calibrated using the IntCal2020 calibration curve (Reimer et al. 2020). Historic period ages are provided in calendar years After Death (AD).

2.4.2 Prehistoric Chronology

The following prehistoric cultural history derives its information from West-Central, North-Central, and Central Texas regional chronologies (Collins 2004; Hofman 1989; Lohse, Madsen, et al. 2014; Peter and McGregor 1988; Prikryl 1987, 1990; Yates and Ferring 1986). Additional details are provided for the Central Texas subregion, as the Proposed Project runs immediately adjacent to its northern boundary, and it is considered to have a strong cultural connection with the West-Central Texas regions (Collins 2004).

The West-Central Texas archaeological region is generally divided into three periods based on the Central Texas chronology that include the Paleoindian (pre-8800 BP), the Archaic (8800–1250 BP), and the Late Prehistoric (1250–350 BP). The Paleoindian period is further subdivided into Early (pre-12,000 BP) and Late (12,000–8800 BP). The Archaic period is further subdivided into Early (8800–5700 BP), Middle (5700–4200 BP), Late (4200–2150 BP), and Transitional (2150–1250 BP). The Late Prehistoric is further subdivided into Late Prehistoric I (1250–650 BP) and Late Prehistoric II (650–350 BP) (Lohse, Madsen, et al. 2014; Pertulla 2004:9). The Late Prehistoric overlaps with the Woodland period (2000–1200 BP) (Collins 2004), though Woodland culture is minimally represented in this region.

2.4.2.1 Paleoindian Period (ca. 16,000–8,800 BP)

Genetic and archaeological evidence supports the current understanding that North and South America were first populated by humans between 17,500 and 14,500 years ago (Waters 2019; Willerslev and Meltzer 2021). The Paleoindian period of occupation in the West-Central and North-Central Texas regions is known through the presence of diagnostic lithic projectile points including Clovis, Folsom, Dalton, Scottsbluff, and Plainview types, mainly from surface collections (Bousman et al. 2004). These are conservatively recognized to have begun 13,000 years ago and lasted until 9800 BP (8800 cal BP) (Collins 2004; Perttula 2004), with potential archaeological evidence as early as 15,500 years ago in the neighboring Central Texas region at the Gault and Friedkin sites (Waters et al. 2018; Williams et al. 2018). This period spans the terminal-Pleistocene/Holocene transition (ca. 11,700 BP), a time of relatively rapid climatic, floral, and faunal changes. These early population are traditionally characterized by small, highly mobile bands of foragers who were specialized hunters and who likely traveled vast distances across the plains in pursuit of herds of Pleistocene megafauna. However, to supplement large game, Paleoindians probably used a much wider array of resources including small fauna and plant foods (Bever and Meltzer 2007; Bousman et al. 2002; Bousman et al. 2004; Dering and Bryant 2007; McDonough et al. 2022; Meltzer 2020; Meltzer and Bever 1995). As the presence of megafauna diminished and the climate warmed following the end of the Pleistocene, emphasis on these small game and plant sources likely increased (e.g., smaller game species, turtles, and snakes).

2.4.2.2 Archaic Period (8,800–1,250 BP)

The Archaic period in the West-Central and Central Texas regions is subdivided into Early (8800–5700 BP), Middle (5700–4200 BP), Late (4200–2150 BP), and Transitional (2150–1250 BP) based on perceived (though not fully agreed upon by all scholars) technological, environmental, and adaptive changes (Lohse, Madsen, et al. 2014; Perttula 2004:9; Peter and McGregor 1988; Prikryl 1990:48). The Archaic period is generally believed to represent a shift toward hunting and gathering of a wider array of animal and plant resources, and a general decrease in group mobility related to warmer and drier climate (Willey and Phillips 1958:107–108). This is demonstrated by increasingly local ranges for diagnostic point styles (Turner et al. 2011). However, periodic shifts to drier climate and movement of bison herds into Central Texas occasionally correlate with an increase in mobility and greater reliance on hunting at times. Bison migrated from the Southern Plains into Central Texas four times during the Holocene: ca. 5955 to 5815 BP, 3290 to 3130 BP, 2700 to 2150 BP, and 650 to 530 BP (Lohse, Black, et al. 2014; Lohse, Cullerton, et al. 2014; Waters et al. 2021). Specific projectile point styles, designed for hunting bison, including Andice/Bell, Pedernales, Castroville series, and Perdiz points, are associated with each of the time periods (Toyah).

2.4.2.3 Woodland Period (2,000–1,200 BP)

The Woodland period overlaps chronologically with the Late Prehistoric but is not strongly represented in West-Central Texas, as local communities maintained a largely foraging based lifestyle. That being said, there is some peripheral influence from Woodland culture in eastern Texas, including the Savanna and Prairie archaeological region. The Woodland period is defined as dating from ca. 2,000 to 1,200 years ago and marked by the presence of ceramic technology and increased sedentism, as well as maize horticulture, and more permanent domestic structures (Black and McGraw 1985; Collins 2004; Lang 2019; Perttula 2004:20; Todd 2014; Turner et al. 2011). Compared to the Archaic, sites are more numerous, and the preservation is generally better. Occupations appear to have been longer and more intensive, likely indicating a decrease in residential mobility. A wider range of activities are being undertaken at sites, but the groups are not thought to be fully sedentary. The Finley Fan, Tick, Lambs Creek Knoll, Charles Cox, and Spike sites are representative of the Woodland period in the Post Oak Savanna (Fields 2004). In the Middle Trinity River Basin, Woodland sites are relatively common. Early Woodland (ca. 2250–1250 BP)

sites are marked by plain sandy paste pottery and a dominance of dart points, while later Woodland sites (ca. 1250–700 BP) include Goose Creek sandy paste ceramics, including decorated types, and sandy paste ceramics that also include small amounts of bone or grog temper with affinities to the early Caddo cultures to the northeast. Arrow points appear in the later Woodland, indicative of a shift in hunting technologies (Perttula 2004). In the Blackland Prairie, the xeric conditions seem to have obviated development of a robust Woodland tradition.

2.4.2.4 Late Prehistoric (1,250–350 BP)

This period encompasses 1250 to 350 BP and is divided into two subperiods: Late Prehistoric I (1250–650 BP) and Late Prehistoric II (650–350 BP) (Lohse, Black, et al. 2014; Turner et al. 2011). In Central Texas, these divisions are known as the Austin phase and the Toyah phase, respectively, originally recognized by Suhm (1960) and Jelks (1962) and remaining an accepted separation of the period. This period is technologically defined by the widespread shift from dart points and atlatls to arrow points and bows, as well as specialized stone tools such as end scrapers, small drills, beveled knives, and bifaces. Subsistence strategies did not differ greatly from the preceding period, although bison again became an important economic resource during the latter part of the Late Prehistoric period (Prewitt 1981:74). In West-Central Texas, earth ovens and their associated burned rock middens continued to be made and used (Black et al. 1997). Despite the development of Woodland-style horticulture and farming in nearby regions, a wide variety of hunted and gathered resources is found at sites in Central, West-Central, and North-Central Texas, with evidence supporting an interpretation of a broad-spectrum subsistence strategy supplemented with limited horticulture (Fields 2004).

2.4.2.5 Protohistoric Period

In several Texas archaeological regions, an additional period, the Protohistoric period, has been identified (Hester 2004). While not necessarily a formal period, the Protohistoric period is generally recognized as the time spanning the end of the Late Prehistoric and beginning of the Historic periods when contact with Europeans occurred, but not in sufficient amounts to directly affect the economy of Late Prehistoric groups (Hester 2004). The impacts of European exploration and colonization on the Indigenous groups of Texas are discussed as part of the Historic chronology, as their history is part of Texas history.

2.4.3 Historic Chronology

The Historic period begins when Europeans first entered the region. The first Spanish expeditions through the greater region were in the sixteenth through eighteenth centuries by explorers such as Antonio de Espejo and Gaspar de Sosa in the 1580s (Bolton 1916; Chipman 1992). However, the first known recorded appearance of Anglo explorers or settlers in what is now Eastland and Callahan Counties did not occur until the early nineteenth century (Leffler 2020; Long 2020).

2.4.3.1 Mexico and the Republic of Texas (AD 1821–1845)

The beginning of the nineteenth century proved difficult for Spain. The Napoleonic wars left the country in an economic and political crisis, which was greatly felt in the territories of New Spain. After years of struggle, threats from the United States to the north and east, and the breakdown of government organization, Mexico finally gained its independence in 1821 (de la Teja 2018). Under Mexican rule (1821–1836), South Texas was made part of the State of Coahuila y Texas in 1824, and later subdivided among the Department of Bexar, and the States of Tamaulipas and Coahuila. Under Spanish law, Anglo Americans and European migrants were initially forbidden to settle in Spanish lands; however, the government made allowances due to the dangers of the remote northern areas. During this period, the

West-Central and North-Central Texas regions were still almost solely occupied by Indigenous groups, primarily the Comanche who had largely pushed the Apache to the south and west (Lipscomb 2020).

2.4.3.2 Antebellum Texas and the United States (AD 1845–1861)

In December 1845, Texas became part of the United States. The offer was considered generous; Texas would become a state which permitted slavery, instead of a territory, and would retain the ability to keep public lands and debts. Texas would also have the capability to divide into four additional states, if needed, and the U.S. Navy would offer protection along the Gulf Coast (Campbell 2021a; Nance 2021). By 1858, Eastland and Callahan Counties were established (Leffler 2020; Long 2020). By the onset of the Civil War, Texas had more than 3.5 million head of cattle, outnumbering all other states (Freeman 1994), with farming being a far lesser focus. During this period, Eastland and Callahan Counties remained very sparsely populated due to frequent conflict with Kiowa and Comanche groups. As a result, according to the 1860 census of Eastland County, following its establishment in 1858, only 650 acres were considered “improved,” with a handful of settlers raising sheep and cattle, with limited corn, bean, and sweet potato crops (Leffler 2020). Similarly, in Callahan County, the first settler (James Dulan) did not arrive until 1859, raising a small herd of cattle.

2.4.3.3 Civil War, Reconstruction, and the Late Nineteenth Century (AD 1861–1899)

In 1861, Texas seceded from the Union and joined the Confederacy to protect its institution of slavery (Campbell 2021a, 2021b). As a western state in the Confederacy, Texas did not experience any significant battles, and the Study Area was far from any conflict activity. Following the Civil War, the North-Central and West-Central Texas region recovered in large part due to strong agricultural industries, particularly the sheep boom of the late nineteenth century. Key factors influencing the success of sheep ranching included the influx of both northern and southern ranchers to the area, the slaughter of the buffalo herds and displacement of the Indigenous populations and their forced settlement on reservations in the Indian Territories (allowing for new, open pastureland), and higher wool prices (Freeman 1994).

The development of ranching infrastructure also helped establish the sheep, goat, and cattle industries in the area. Systems of markets and warehouses were created with specific architectural features designed to package, store, and sell wool and mohair. Cattle were driven to more established markets, particularly in Fort Worth. Several trails crossed through this region in the late nineteenth century, including one within Callahan County: the Western Trail or Great Western Trail for cattle drives (Skaggs 2020). In addition to the cattle trails, the growth of railway systems further aided ranching activities farther west, creating access to the Edwards Plateau, as well as livestock markets in major Texas towns and in the northern United States (Freeman 1994).

2.4.3.4 Modern Period (1900–Present)

By 1900, smaller, adept, diversified farms and ranches dominated the landscape of the region. The “ranching triumvirate” of cattle, sheep, and Angora goats set Texas at the national forefront of ranching production (Freeman 1994:18). Agricultural crops, such as cotton, corn, wheat, oats, and various grasses for hay production further diversified output, strengthening independent farms and ranches (Freeman 1994). As railways continued to be built well into the twentieth century, new roads followed, creating a linked network. Rails functioned as the “main arteries of travel” and roads as “the veins” (Pratt 1910:106). Railroad companies soon realized that a good road system could greatly aid their business, and they became one of the most ardent supporters of the good roads movement (Wallace 2008). The fate of road improvement and system expansion was sealed with the introduction of the automobile and the

Federal Highway Acts of 1916 and 1917. The new acts provided matching funding to states and a regulatory partnership to assist with building plans (location, design, and cost estimates).

The discovery of oil across many parts of Texas led to significant population growth and economic booms in the early twentieth century. The first economically significant discovery was in 1896, at the Corsicana oilfield in Navarro County, in east Texas outside of the Study Area; this find and the subsequent construction at the field of the first modern refinery in Texas established the potential for commercial oil production in the state (Olien 2022). In local context, the first oil discovery was made in Eastland County near Ranger in 1917, and near Desdemona in 1918, leading to a brief but major boom until production tapered off after 1922 (Leffler 2020). In Callahan County, oil was discovered in 1923, with major production by the late 1920s (Long 2020).

Despite developmental and economic advances, the Great Depression (hereafter Depression) impacted the towns, farms, and ranches of the region. Overall, the counties with significant oil production fared better during this time. Because the area was primarily rural, the effects of the Depression were not felt in these areas initially. By the early 1930s, changes began to occur in local economies. American-focused industrial acts passed by the Texas Legislature and the suite of New Deal programs lessened the impacts of the Depression in Texas. Agricultural properties were required to adapt to the changing conditions brought by the Depression and critical environmental conditions. Though Eastland County actually saw an increase in the number of farms during this period, the overall population declined (Leffler 2020), a pattern seen in many smaller towns and less populated counties. This dramatic population decrease occurred as people moved to larger towns in the area to look for work (Procter 2021a). Despite the difficulties of the Depression, many ranches and farms survived with lands and livestock intact, because of smaller, more diversified practices which began in the early years of the twentieth century.

Following World War II, the Texas oil and gas industry experienced massive growth as markets expanded rapidly along with an end to federal regulation of production (Procter 2021b). By the end of the 1940s, the Permian Basin became the largest oil producer in the United States. Demand for natural gas also grew, leading to thousands of miles of pipelines and increased regulation on the flaring of gas. While the Texas oil and gas industry would undergo a series of major boom and bust periods across the middle and late twentieth century, it continues to be a major employer and revenue source across the state and western and central parts of the Study Area. However, ranching continues to be a mainstay of the Texas economy and of the Study Area counties (Richardson and Hinton 2019).

2.4.4 Records Review

SWCA performed a cultural resources background review of the Study Area to determine whether the area has been previously surveyed for cultural resources or if any cultural resources have been recorded within the Study Area. To conduct the background review, a SWCA archaeologist reviewed the *Putnam North, Putnam South, Baird, and Bernie Lake, Texas*, USGS 7.5-minute quadrangles on the Texas Archeological and Historic Sites Atlas (Atlas) (THC 2025). This source provided information on the nature and location of previously conducted cultural resources surveys, previously recorded archaeological sites, locations of NRHP districts and properties, SALs, Recorded Texas Historic Landmarks (RTHLs), Official Texas Historical Markers (OTHMs), cemeteries, and local neighborhood surveys. However, the Atlas does not necessarily list all previous work conducted within a specific area. Previous cultural resources investigations listed on the Atlas are typically limited to projects under the purview of the ACT or the NHPA. In addition, projects under these regulations may not be posted on the Atlas due to a delay between the completion of fieldwork and the completion of reports.

A SWCA architectural historian examined the TxDOT Historic Resources Aggregator (Aggregator), which maps National Historic Landmarks (NHLs), properties and districts determined eligible for the

NRHP, and local historic districts (TxDOT 2025b). The Aggregator also has a data set for the 1936 Texas Centennial Markers, which are eligible for the NRHP under Criterion A for Social History in the *Monuments and Buildings of the Texas Centennial Multiple Property Submission Documentation Form* (TxDOT 2025b; Wilson and Smith 2018). Additional review of historical properties included examination of the Texas Freedom Colonies Project and the Texas Department of Agriculture (TDA) Family Land Heritage Centennial Farms (TDA 2025; Texas Freedom Colonies Project 2025).

SWCA also performed a historical map review within the Study Area to determine if any historic-age resources or potential historical aboveground resources (PHRs) are located within the Study Area. To conduct the historical map review, a SWCA archaeologist examined the TxDOT Historic Overlay, a mapping/GIS data set with historical maps and resource information covering most portions of the state (Foster et al. 2006) as well as historical topographic maps available on the USGS TopoView website (USGS 2022a–2022c), and historical aerial photography contained on the Nationwide Environmental Title Research (NETR) Historic Aerials website (NETR 2025). SWCA reviewed historical maps and aerial imagery dated from 1769 through 1987.

2.4.4.1 Previous Investigations

The background review revealed that three previous cultural resources investigations have occurred within the Study Area (THC 2025). Horizon Environmental Services (Horizon) conducted a survey in 2012 as part of the Competitive Renewable Energy Zone (CREZ) Lone Star Transmission Line project which runs parallel to the northern boundary of the Proposed Project area (Figure 5) (Whittaker 2011). The project documented one archaeological site (i.e., 41CA21) that is discussed in detail below.

SWCA conducted three surveys between 2023 and 2024. The first survey was in November 2023 as part of the El Dorado Solar project, which intersects the Proposed Project area near the center of the project (Chavez and Clark 2023). SWCA conducted another survey in November and December of 2023 as part of the Deville Solar project, located above CR 490 (Salazar et al. 2024). Another linear survey was conducted by SWCA that intersects the Study Area in April 2024 for the Reata Station to Dorado Solar 345-kV Transmission Line Project (Hollingshead et al. 2024).

2.4.4.2 Previously Identified Cultural Resources

A total of 254 cultural resources are recorded within the Study Area. Three archaeological sites (i.e., 41CA21, 41CA79, and 41CA91), 248 PHRs, one historical marker/RTHL, and one historical highway are in the Study Area (see Figure 5) (THC 2025; TxDOT 2025a). No National Historic Landmarks (NHLs), SALs, or known freedom colonies were identified within the Study Area (Texas Freedom Colonies Project 2025) (see Figure 5).

2.4.4.2.1 ARCHAEOLOGICAL SITES

Site 41CA21 is an early twentieth century farmstead originally recorded in 2012 by Horizon for the CREZ Lone Star Transmission Line project. The site consists of one standalone, wood-framed building dating to the 1930s with an associated surficial artifact scatter that includes glass, whiteware ceramic sherds, round-headed nails, horseshoes, miscellaneous metal fragments, and one possible gin (Cochran et al. 2012). Site 41CA21 was determined to be INELIGIBLE for the NRHP in 2012 (THC 2025).

Site 41CA79 is defined as a historic-age artifact scatter and was originally recorded in 2023 by SWCA for the Century Oak Wind project. The investigators recorded a historic-age, low-density historic artifact scatter with associated oil field features and an artifact scatter on the surface that included more than 100 indeterminate metal fragments, more than 100 brick fragments, 25 to 50 pipe sections, and a single

fragmentary brown ceramic insulator. Additionally, eight historic-age features (i.e., an indeterminate metal vehicle truck bed segment, a concrete foundation with metal pylons, a section of metal pipe, a concentration of bricks, a metal oil tank with a staircase, a riveted metal oil tank, an open bore hole, and a 55-gallon oil drum) were documented (Mendoza et al. 2023). Site 41CA79 has not been evaluated by the THC and is currently considered UNDETERMINED for the NRHP as of 2023 (THC 2025).

Site 41CA91 is defined as a historic-age artifact scatter and was originally recorded in 2023 by SWCA for the Century Oak Wind project (Maier et al. 2023). The investigators recorded a historic-age, low-density historic artifact scatter. Site archaeologists recorded one feature that included a partially standing wood frame and sheet metal-clad structure with a concrete foundation observed 140 feet (47 m) east of the site and outside of the project workspace that was said to be in association with the site. The surficial artifact assemblage included metal cables, a wooden power pole, metal pipes, and scrap metal (Maier et al. 2023). Site 41CA91 has not had a determination yet and is therefore UNDETERMINED for the NRHP in 2023 (THC 2025).

2.4.4.3 Historical Marker/RTHL

One historical marker/RTHL, the Burkett Pecan Tree, was identified within the Study Area. The Burkett Pecan Tree was the first tree of its kind discovered by two sons of J. H. Burkett while squirrel hunting and stumbling across pecans in a squirrel's nest. John Burkett tried to graft buds from the tree each spring with one finally taking in 1903. John Burkett later went on to propagate the tree, proliferating the Burkett Pecan Tree variety known today, one of the first papershell pecan trees (Texas A&M Forest Service 2012).

2.4.4.4 Historical Highways

One historical highway, the Bankhead Highway, is located within the center of the Study Area and can be seen on four historical maps (i.e., the 1921 Dunn Tourist Guide – Bankhead, 1930–1934 US67 and US80 – Bankhead, 1936–1940 Texas Highways Maps – Bankhead, and 1960-SH1 Texas Highways Maps – Bankhead) from 1921 through 1960 (see Figure 5) (THC 2025).

2.4.4.5 Potential Historical Aboveground Structures and Linear Features

Additional historical resources within the Study Area include a historic-age linear feature, a segment of the Texas and Pacific Railroad dating to at least 1965, and 247 PHRs. The Texas and Pacific Railroad can be seen on the 1966 *Putnam North* and *Putnam South, Texas*, USGS 7.5-minute topographic quadrangle maps the THC's online-restricted cultural resources database (see Figure 5) (THC 2025; USGS 2025b). The railroad is no longer extant on historical aerials or historical topographic maps dating to 1965 (NETR 2025; USGS 2025b); however, associated subsurface materials could still be present along the former railroad location. The 247 identified PHRs include 105 historical oil or gas wells, 103 stock ponds, and two gravel pits. The PHRs likely relate to rural and oil/gas development within Callahan and Eastland Counties from the early to mid-twentieth century.

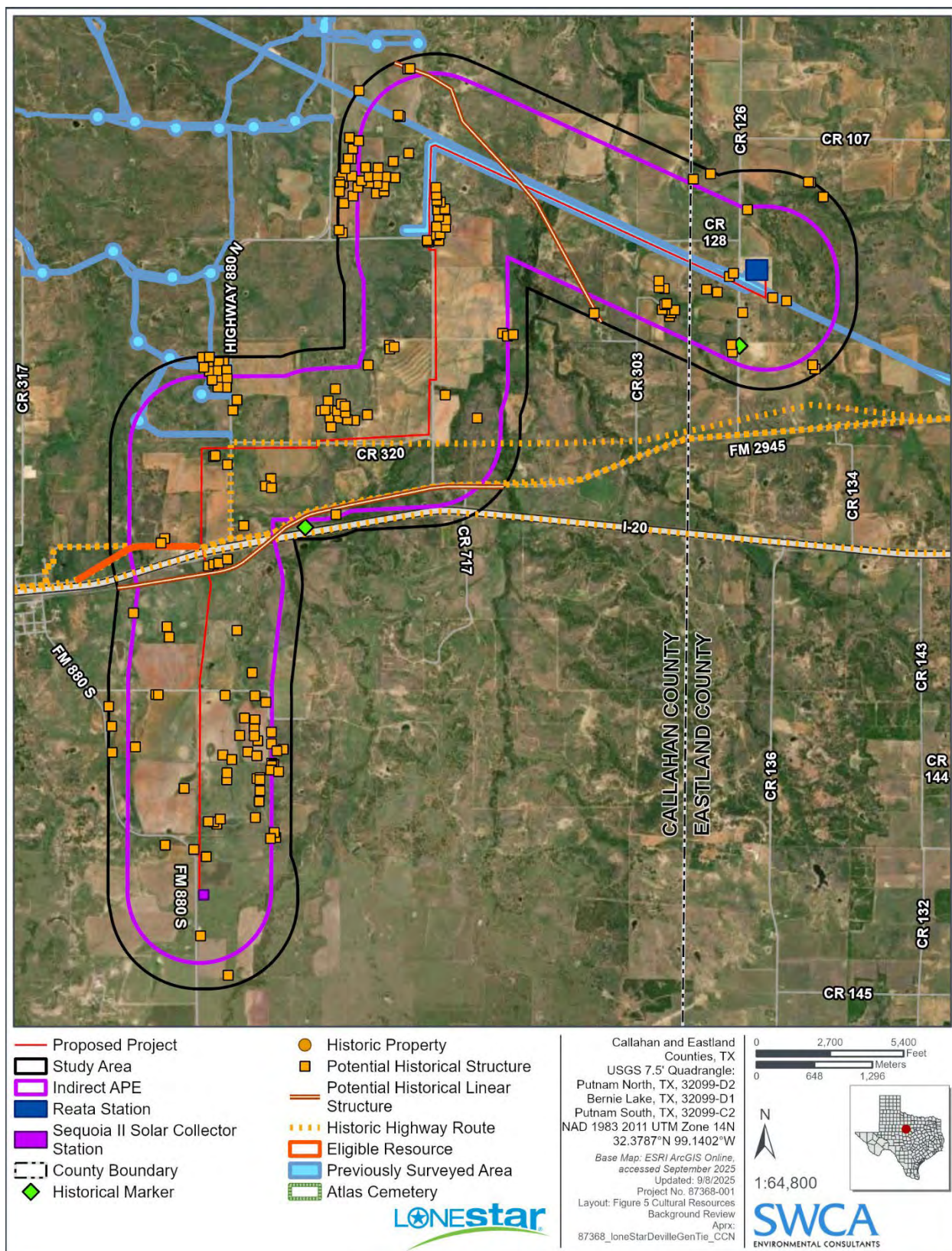


Figure 5. Cultural resources background review results of Study Area.

2.5 Environmental Integrity

Resource inventory data were collected for physiography, geology, soils, surface waters, wetlands, and ecological resources. This data was mapped within the Study Area using GIS layers. Additional data collection activities consisted of file and record reviews conducted with the various state and federal regulatory agencies, a review of published literature, and review of various maps and aerial photographs. Maps and data layers reviewed include USGS 7.5-minute topographic maps (USGS 2022a–2022c), Google Earth aerial imagery (Google Earth 2025), Geologic Atlas maps (USGS 2025b; Bureau of Economic Geology [BEG] 1992), and NWI maps (USFWS 2025a), as well as data from the USGS National Hydrography Dataset (NHD) (USGS 2025d), FEMA NFHL (FEMA 2025a), NRCS soil survey (NRCS 2019), USFWS/TPWD protected species county lists (USFWS 2025b; TPWD 2025a), and the TXNDD (2025).

2.5.1 Physiography and Geology

The Study Area is located within the North-Central Plains Province. This province is bounded by the Grand Prairie and Edwards Plateau Provinces to the east-southeast, the Central Texas Uplift and Edwards Plateau Provinces to the south-southwest, and the High Plains Province to the west-northwest (Figure 6) (BEG 1992, 1996).

The North-Central Plains Province was developed on upper Paleozoic formations and has characteristics of hills, plains, and meandering rivers. Areas of hard limestones and sandstones are steeply sloped and heavily dissected by rivers. Red and gray soils in the western areas of this province are largely comprised of gypsum (BEG 1996). Elevations within the Study Area range between $\pm 1,499$ and $\pm 1,669$ feet above mean sea level (USGS 2022a–2022c).

The Study Area is underlain with five geologic units. The Moran Formation underlies the majority of the Study Area (49.7%). The Permian-aged Moran Formation is composed of mudstone, sandstone, and limestone. Several layers of each constituent give each minor unit a distinction based on position in the geologic profile (USGS 2025b). The Sedwick Formation underlies approximately 23.5% of the Study Area, is composed of Permian-aged mudstone, limestone, sandstone, siltstone, and conglomerate, and is between 1 and 19 feet in thickness depending on its position relative to the Cretaceous divide. Also dependent on location, each of the described components are layered in several matrix configurations that allow for distinction between these different regions (USGS 2025b). The Permian-aged Santa Ana Branch Shale Formation underlies approximately 21.8% of the Study Area and is composed of mudstone, shale, sandstone, and limestone with a thickness between 80 and 120 feet. Some green channel sandstone bodies form locally prominent benches, contributing to the irregular topography of the region (USGS 2025b). The remaining 5.0% of the Study Area is underlain by Holocene-age Alluvium and Pleistocene-age Fluvial terrace deposits (USGS 2025b).

2.5.1.1 Geological Hazards

Hazardous areas that could affect the construction and operation of the Proposed Project include potential karst areas, faults, coal mining locations, gravel quarries, and potential subsurface contamination. However, no known caves, coal mining activities, gravel quarries, or quaternary faults were identified within the Study Area (Texas Speleological Society 1994; RRC 2025).

Review of the TCEQ State Superfund Site database (TCEQ 2025) and EPA Superfund Site database (EPA 2025) did not indicate any current or previous surface or subsurface hazardous waste sites within the Study Area.

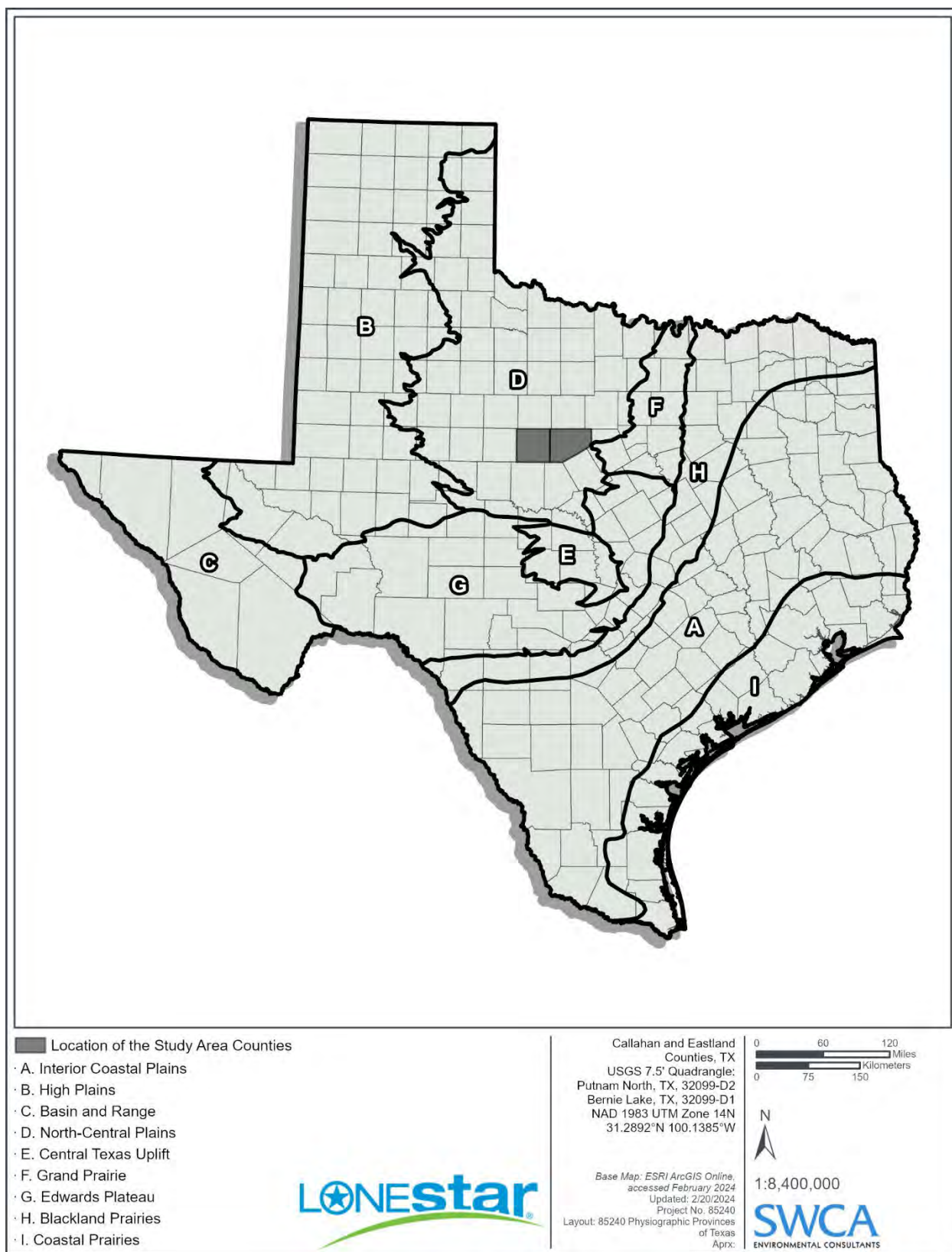


Figure 6. Physiographic regions in relation to the Study Area counties.

2.5.2 Soils

2.5.2.1 Soil Units

NRCS Web Soil Survey data were used to identify and characterize mapped soil units that are within the Study Area, including hydric and important farmland soil series designations (NRCS 2019). Soil map units represent an area dominated by one or more major kinds of soil or miscellaneous areas. Table 2 summarizes each soil association within the Study Area and indicates if any mapped units of the soil series within the association are considered hydric and/or prime farmlands (NRCS 2019).

Table 2. Mapped Soil Units within the Study Area

Soil Map Unit	Description	Hydric Soil (Yes/No*)	Prime Farmland Soil (Yes [†] /No ^{‡, §})	Percentage of Study Area
Leeray clay, 1 to 3 percent slopes	Clayey slope alluvium occurring on ridges	No*	Yes	20.8%
Throck-Speck association, undulating	Throck: Residuum weathered from claystone, limestone, and/or siltstone occurring on hillslopes Speck: Clayey residuum weathered from limestone occurring on plains	No	No	12.6%
Throck-Callahan-Owens association, undulating	Residuum weathered from claystone, limestone, and/or siltstone occurring on hillslopes or plains	No	No	8.8%
Rowden clay loam, 0 to 3 percent slopes	Loamy and clayey residuum and/or slope alluvium derived from limestone occurring on hillslopes on plains	No	Yes	6.4%
Gageby loam, moist, 0 to 2 percent slopes, occasionally flooded	Loamy alluvium occurring in draws or floodplains	No*	Yes	6.1%
Sagerton loam, 1 to 3 percent slopes	Mixed clayey alluvium occurring on plains	No	Yes	6.1%
Frio-Gageby association, frequently flooded	Frio: Loamy alluvium occurring in floodplains occurring on draws Gageby: Loamy alluvium occurring in floodplain steps occurring on draws	No*	No	4.2%
Bonti fine sandy loam, 1 to 3 percent slopes	Loamy and/or clayey residuum weathered from sandstone and/or claystone over sandstone occurring on structural benches and ridges	No	No [§]	3.3%
Nukrum clay, 1 to 3 percent slopes	Calcareous clayey slope alluvium derived from claystone occurring on hillslopes	No	Yes	3.2%
Speck clay loam, 1 to 3 percent slopes	Clayey residuum weathered from limestone occurring on plains	No	No	3.0%
Callahan loam, 2 to 5 percent slopes, moderately eroded	Clayey residuum weathered from claystone occurring on ridges	No	No	2.2%
Hensley loam, 1 to 3 percent slopes	Clayey residuum weathered from limestone occurring on ridges	No	No	2.2%
Speck-Throck association, gently undulating	Speck: Clayey residuum weathered from limestone occurring on plains Throck: Residuum weathered from claystone and/or residuum weathered from limestone and/or residuum weathered from siltstone occurring on hillslopes	No	No	2.2%

Soil Map Unit	Description	Hydric Soil (Yes/No*)	Prime Farmland Soil (Yes [†] /No ^{†, §})	Percentage of Study Area
Throck clay loam, 2 to 5 percent slopes	Residuum weathered from claystone, limestone, and/or siltstone occurring on hillslopes	No	No	2.2%
Abilene loam, 0 to 1 percent slopes	Calcareous alluvium occurring on terraces	No	Yes	1.6%
Throck-Owens-Lueders association, hilly	Throck: Residuum weathered from claystone, limestone, and/or siltstone occurring on hillslopes Owens: Clayey residuum weathered from claystone occurring on hillslopes Lueders: Gravelly residuum weathered from limestone occurring on hillslopes on ridges	No	No	1.6%
Lindy loam, 1 to 3 percent slopes	Clayey residuum weathered from limestone occurring on ridges	No	Yes [†]	1.5%
Bonti-Exray complex, 1 to 8 percent slopes, extremely stony	Loamy and/or clayey residuum weathered from sandstone and/or claystone over sandstone occurring on ridges	No	No	1.4%
Palopinto very stony clay loam, 1 to 8 percent slopes, rubbly	Stony loamy residuum weathered from limestone occurring on ridges	No	No	1.4%
Callahan loam, 1 to 3 percent slopes	Clayey residuum weathered from claystone occurring on ridges	No	No	1.1%
Elandco silty clay loam, frequently flooded	Loamy alluvium occurring in floodplains	No*	No	1.1%
Sagerton loam, 0 to 1 percent slopes	Mixed clayey alluvium occurring on plains	No	Yes	1.0%
Leeray clay, 0 to 1 percent slopes	Clayey slope alluvium occurring on ridges	No*	Yes	0.9%
Frio clay loam, occasionally flooded	Loamy alluvium over floodplains occurring on draws	No*	No	0.8%
Owens-Throck association, hilly	Owens: Clayey residuum weathered from claystone occurring on hillslopes Throck: Residuum weathered from claystone and/or residuum weathered from limestone and/or residuum weathered from siltstone occurring on hillslopes	No	No	0.8%
Mereta clay loam, cool, 1 to 3 percent slopes	Calcareous clayey alluvium derived from limestone occurring on stream terraces	No	No	0.7%
Nukrum clay, 3 to 5 percent slopes	Calcareous clayey slope alluvium derived from claystone occurring on hillslopes	No	Yes	0.6%
Pedernales fine sandy loam, 1 to 3 percent slopes	Loamy residuum weathered from sandstone and siltstone occurring on ridges	No	Yes	0.4%
Rowena clay loam, 1 to 3 percent slopes	Calcareous loamy and/or clayey alluvium occurring on terraces	No*	Yes	0.4%
Owens clay, 1 to 5 percent slopes	Clayey residuum weathered from claystone occurring on ridges	No	No	0.3%
Thurber clay loam, 1 to 3 percent slopes	Clayey slope alluvium derived from claystone occurring on ridges	No	No [†]	0.3%
Water	N/A	N/A	N/A	0.3%
Oplin-Speck association, undulating	Residuum weathered from limestone occurring on ridges and plains	No	No	0.2%

Soil Map Unit	Description	Hydric Soil (Yes/No*)	Prime Farmland Soil (Yes [†] /No ^{‡, §})	Percentage of Study Area
Bolar clay loam, 1 to 3 percent slopes	Loamy residuum weathered from limestone occurring on ridges	No	No [§]	0.1%
Bonti-Callahan association, 1 to 8 percent slopes, extremely stony	Bonti: Loamy and/or clayey residuum weathered from sandstone and/or claystone over sandstone occurring on ridges Callahan: Clayey residuum weathered from claystone occurring on ridges	No	No	0.1%
Truce fine sandy loam, 1 to 3 percent slopes	Loamy colluvium and/or slope alluvium over clayey residuum weathered from claystone and/or sandstone occurring on ridges	No	No [‡]	0.1%
Thurber clay loam, 0 to 1 percent slopes	Clayey slope alluvium derived from claystone occurring on ridges	No	No [‡]	<0.1%
Truce fine sandy loam, 1 to 5 percent slopes, eroded	Loamy colluvium and/or slope alluvium over clayey residuum weathered from claystone and/or sandstone occurring on ridges	No	No	<0.1%

Source: NRCS (2019)

* Contains minor soil components that could be classified as hydric

[†] Indicates prime farmland soils only if irrigated

[‡] Indicates farmland of statewide importance

[§] Indicates farmland of statewide importance only if irrigated

2.5.2.2 Hydric Soils

The National Technical Committee for Hydric Soils defines hydric soils as soils that were formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation (NRCS 2019).

According to the NRCS (2019) Web Soil Survey data for the Study Area, none of the soil map units mapped within in Study Area are classified as hydric; however, seven of the soil map units have minor components that could meet hydric criteria.

2.5.2.3 Prime Farmland Soils

The Secretary of Agriculture, within 7 USC 4201(c)(1)(A), defines “prime farmlands” as lands that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. These areas have the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. Additional potential prime farmlands are those with soils that meet most of the requirements of prime farmland but fail because they lack the installation of water management facilities, or they lack sufficient natural moisture. These areas would be considered prime farmland if such practices were installed. The NRCS (2019) Web Soil Survey lists several soil associations within the Study Area as prime farmlands (see Table 2). Additionally, some soil units mapped within the Study Area are classified as prime farmland if irrigated, farmlands of statewide importance, and farmlands of statewide importance if irrigated (see Table 2).

2.5.3 Water Resources

2.5.3.1 Surface Waters

Most of the Study Area is located within the Big Sandy Creek watershed, with a small western portion of the Study Area located within the Deep Creek watershed, both of which are in the Brazos River Basin (TPWD 2025b). The USGS (2025d) NHD identifies 138 intermittent waterway segments, one pipeline for underground water, and approximately 84.6 acres of intermittent and perennial lakes/ponds within the Study Area. The USGS (2025d) NHD identifies Battle Creek, Cooper Creek, and Live Oak Creek as the only named aquatic resources within the Study Area. The segments of Battle Creek, Cooper Creek, and Live Oak Creek identified by the USGS (2025d) NHD are classified as intermittent, which is a waterway that carries water at least seasonally. The mapped pipeline for underground water crosses approximately 75.8 feet (0.01 mile) of the Study Area. The USGS (2025d) identifies Putnam Lake as the only named lake/pond within the Study Area. Putnam Lake is perennial, meaning it contains water year-round. Additional unnamed surface waters identified within the Study Area include freshwater ponds, wetlands, streams, connectors (known connection between existing waterbodies), and artificial paths (surrogates for surface water connectivity) (USFWS 2025a). No major reservoirs or rivers were identified within the Study Area. The surface waters and their associated wetlands located within the Study Area are potentially subject to USACE regulations as WOTUS under Section 404 of the CWA.

SWCA completed an aquatic resources delineation within the proposed 150-foot ROW from April 9 to 10, 2024, and June 23 to 26, 2025. During the aquatic resources delineation SWCA determined that the proposed ROW contains eight ephemeral waterway segments, four intermittent waterway segments, three impoundments of tributaries, and four upland constructed ponds (SWCA 2025a).

2.5.3.1.1 SPECIAL STATUS WATERS

Under 31 TAC 357.43, Regional Water Planning Groups may recommend Ecologically Significant Stream Segments based on habitat value, threatened and endangered species, species diversity, and aesthetic value criteria. Review of water planning data for Region G (Brazos) did not indicate any designated Ecologically Significant Stream Segments within the Study Area (TPWD 2025c).

In accordance with Section 303(d) and 304(a) of the CWA, the TCEQ identifies surface waters for which effluent limitations are not stringent enough to meet water quality standards and for which the associated pollutants are suitable for measurement by maximum daily load. Review of the most recently published TCEQ CWA 303(d) lists (TCEQ 2025) did not indicate any surface waters within the Study Area that failed to meet water quality standards.

2.5.3.2 Groundwater

The Study Area is atop the Antlers Formation of the Trinity Aquifer (Texas Department of Water Resources 1983). Portions of the Trinity Aquifer present in Eastland and Callahan Counties are considered outcrops and consist of early cretaceous formations of the Trinity Group. The major constituents of the Antlers Formation are sand and gravel, bisected with clay beds, up to 900 feet deep (Texas Water Development Board [TWDB] 1995). Water drawn from the Antlers Formation is used mostly for irrigation of the aquifer's outcrop areas in North and Central Texas (TWDB 1995). The TWDB's Groundwater Data Viewer holds records of two water wells within the Study Area, a plugged well and a plugged test well (TWDB 2025b). No major or historical springs were identified within the Study Area (TWDB 1975).

2.5.3.3 Floodplains

FEMA's NFHL does not hold mapped data for floodplains within the Study Area (FEMA 2025a). However, FIRM panel 4807930005B (effective November 17, 1977) shows areas along the easternmost nexus of the Study Area within Zone A, areas within the 100-year floodplain (FEMA 2025a). FEMA's Base Flood Elevation Viewer does not hold data for base flood elevation within the Study Area (FEMA 2025b). While a small portion of the Study Area is designated as Zone A, the Proposed Project does not cross any mapped floodplains (FEMA 2025a).

2.5.3.4 Future Surface Water Developments

The Study Area is within Water Planning Region G (Brazos). SWCA reviewed the latest TWDB State Water Plan (TWDB 2022) and the 2021 Brazos G Regional Water Plan (TWDB 2025a) for potential surface water development projects within the Study Area. No planned water development projects were identified within the Study Area (TWDB 2025a).

2.5.4 Ecological Resources

2.5.4.1 Ecological Region

The majority of the Study Area is located within the Broken Red Plains (ecoregion 27i) Level IV subdivision of the Central Great Plains Level III ecoregion (Figure 7) (Griffith et al. 2007). The Broken Red Plains is characterized by red and tan clay and sandy soils atop irregular, dissected plains with cuesta topography that is less pronounced than that of the Western Cross Timbers to the east (Griffith et al. 2007). Historical and current plant assemblages within the ecoregion are of a transitional type between tallgrass and shortgrass prairie and includes species such as honey mesquite (*Prosopis glandulosa*), lotebush (*Ziziphus obtusifolia*), wolfberry (*Lycium berlandieri*), sand sagebrush (*Artemisia filifolia*), yucca (*Yucca* spp.), and prickly pear cacti (*Opuntia* spp.). In low-lying riparian areas, species such as cottonwood (*Populus* spp.), hackberry (*Celtis* spp.), cedar elm (*Ulmus crassifolia*), pecan (*Carya illinoensis*), and little walnut (*Juglans microcarpa*) are common (Griffith et al. 2007). Lands within this ecoregion are used primarily for livestock grazing and production, with some crop and oil/gas production (Griffith et al. 2007).

2.5.5 Vegetation

2.5.5.1 Vegetation Communities

The National Land Cover Database (NLCD) (Dewitz 2023) categorizes land cover types within the Study Area as predominantly shrub/scrub (37.2%), cultivated crops (34%), grassland/herbaceous (14.7%), and developed open space (10.6%), with the remaining 3.5% categorized as evergreen forest, developed landscape, and open water. The TPWD's Ecological Systems Classification Project (TPWD 2025d) similarly maps the majority of the Study Area as mesquite shrubland (24.6%), row crops (23.7%), mixed grass prairie (23.6%), and savanna grassland (8.2%), with the remaining 19.9% mapped as a mix of woodland types, forest types, and shrubland types; riparian and floodplain forest or shrubland; urbanized environments; swamps and open water; and barren land.

SWCA performed a field reconnaissance in April 2022 as part of field assessments for a solar energy development that covers much of the Study Area (SWCA 2022a, 2022b). Vegetation assessed in the Study Area region was documented as follows:

- **Mesquite scrub-shrub rangelands:** Dominant vegetation in this vegetation community includes honey mesquite, Texas live oak, prickly pear cacti, Christmas cactus (*Cylindropuntia leptocaulis*), lotebush, whitebrush (*Aloysia gratissima*), prairie broomweed (*Amphiachyris dracunculoides*), silverleaf nightshade (*Solanum elaeagnifolium*), sideoats grama (*Bouteloua curtipendula*), and buffalograss (*Bouteloua dactyloides*).
- **Riparian woodland:** Riparian habitats in the region include cedar elm, Texas live oak, honey mesquite, gum bully (*Sideroxylon lanuginosum*), Texas red oak (*Quercus buckleyi*), sugarberry (*Celtis laevigata*), blackhaw (*Viburnum* sp.), greenbrier (*Smilax* spp.), and eastern poison ivy (*Toxicodendron radicans*).
- **Oak woodland:** Oak woodlands within the Study Area corresponded with higher elevations. Dominant species present include blackjack oak, Texas live oak, honey mesquite, gum bully, Texas red oak, sugarberry, fragrant sumac (*Rhus aromatica*), Texas Hercules' club (*Zanthoxylum hirsutum*), prickly pear cacti, and sideoats grama. A small amount of immature Ashe juniper is also present.

2.5.5.2 Wetland Communities and Waters of the United States

The NWI (USFWS 2025a) mapper includes wetland and open waterbody data from within the Study Area. NWI maps are based on topography and interpretation of infrared satellite data and color aerial photographs and are classified under the Cowardin System (Cowardin et al. 1979). Mapped wetland types identified within the Study Area include approximately 34.5 acres of palustrine open unconsolidated bottoms and unconsolidated shores (PUB/PUS) ponds, 6.5 acres of palustrine emergent (PEM) wetlands, and approximately 94.2 acres of riverine features with defined streambeds. The NWI-mapped riverine features generally coincide with the NHD-mapped intermittent stream features (USFWS 2025c; USGS 2024d).

Emergent wetlands are typically located along the edges and shallows of ponds or other depression areas and are composed of such species as cattails (*Typha* spp.), rushes (*Scirpus* spp.), sedges (*Carex* spp.), flatsedges (*Cyperus* spp.), millet (*Setaria* spp.), spikerushes (*Eleocharis* spp.), smartweeds (*Polygonum* spp.), cocklebur (*Xanthium* spp.), ragweed (*Ambrosia* spp.), and occasionally woody species such as cottonwood (*P. deltoides*) and willows (Chadde 2012a, 2012b).

SWCA completed an aquatic resources delineation within the proposed 150-foot ROW from April 9 to 10, 2024, and June 23 to 26, 2025. During the aquatic resources delineation SWCA determined that the proposed ROW contains three emergent wetlands (SWCA 2025a).

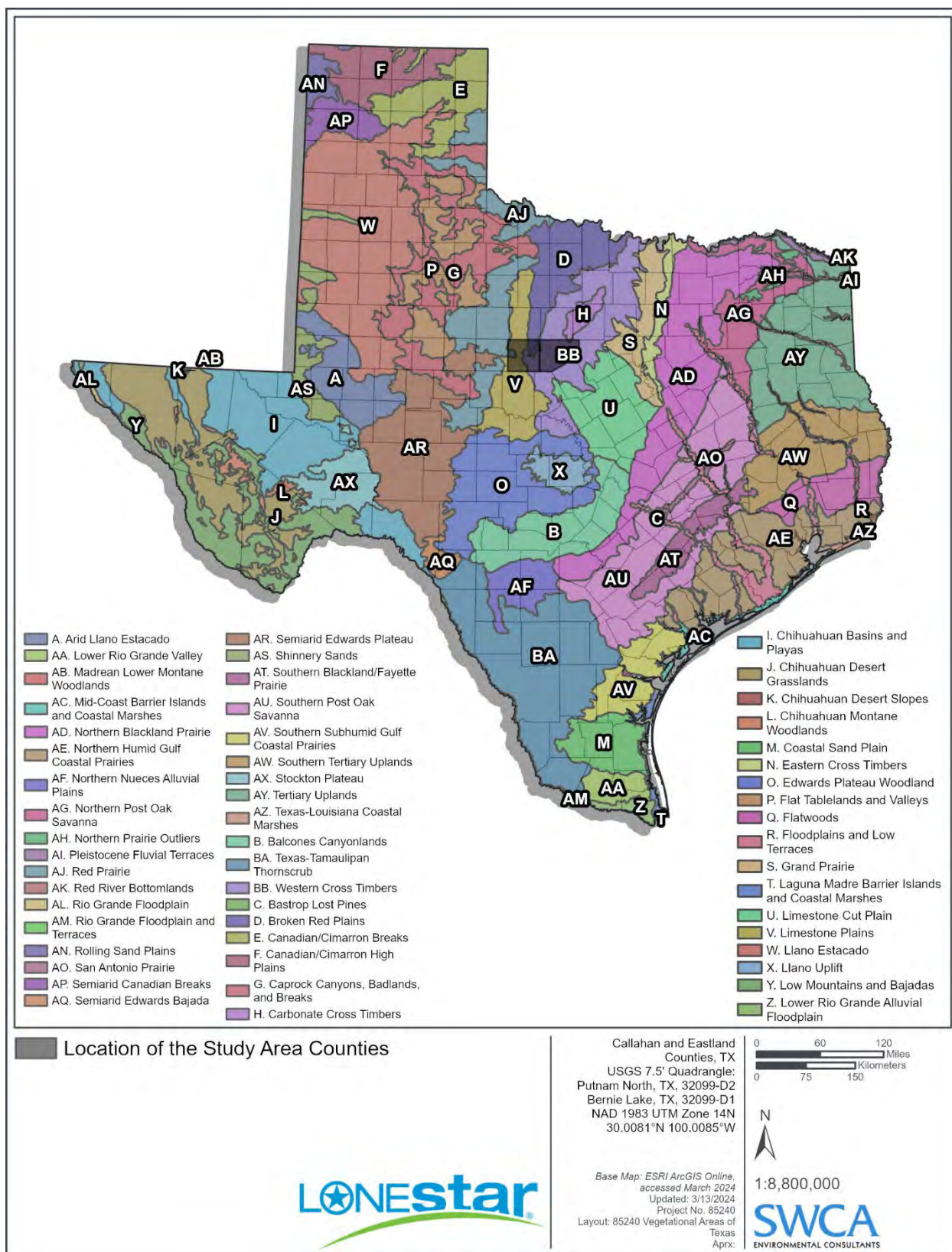


Figure 7. Texas ecoregions (Griffith et al. 2007) in relation to the Study Area counties.

2.5.6 Wildlife and Fisheries

The Study Area is located mostly within the Kansan Biotic Province, as described by Blair (1950). The historical terrestrial wildlife community assemblage within this ecoregion was an interdependent web with dominant species including the bison (*Bison bison*), black-tailed prairie dog (*Cynomys ludovicianus*), black-footed ferret (*Mustela nigripes*), burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis*), Swainson's hawk (*B. swainsoni*), badger (*Taxidea taxus*), rattlesnakes (*Crotalus* spp.), kit fox (*Vulpes velox macrotis*), mountain plover (*Charadrius montanus*), and horned lizard (*Phrynosoma cornutum*) (Griffith et al. 2007). In the early to mid-1900s, farmers poisoned up to 98% of the prairie dog populations in this region, incidentally poisoning associated species and creating a trophic cascade effect on the species that depended on the prairie dog as prey. Furthermore, many species are no longer common throughout the province due to overharvesting, eradication, or loss or degradation of habitat due to conversion to croplands or grazing pastures and natural fire suppression (Griffith et al. 2007). Generalist species able to adapt to the conversion in habitat and land use conditions will be more commonly observed within the Study Area. According to Blair (1950), species diversity within the Kansan Biotic Province includes 14 amphibian species, 46 reptilian species, and 59 mammalian species.

2.5.6.1 Amphibians

Amphibian species (i.e., frogs, toads, salamanders, and newts) with potential to occur within the Study Area are listed in Table 3. Species considered to have potential to occur within the Study Area were evaluated using distribution maps from Dixon's (2013) *Amphibians and Reptiles of Texas*. Frogs and toads might occur in all vegetation types, whereas salamanders and newts are typically restricted to moist or hydric habitats.

Table 3. Amphibian Species with Potential to Occur within the Study Area

Common Name	Scientific Name
Salamanders	
Barred tiger salamander	<i>Ambystoma mavortium</i>
Frogs and Toads	
Blanchard's cricket frog	<i>Acris blanchardi</i>
Bullfrog	<i>Lithobates catesbeiana</i>
Cope's gray treefrog	<i>Hyla chrysoscelis</i>
Couch's spadefoot	<i>Scaphiopus couchii</i>
Gray treefrog	<i>Hyla versicolor</i>
Green toad	<i>Anaxyrus debilis</i>
Mexican spadefoot	<i>Spea multiplicata</i>
Plains leopard frog	<i>Lithobates blairi</i>
Plains spadefoot	<i>Spea bombifrons</i>
Red-spotted toad	<i>Anaxyrus punctatus</i>
Rio Grande leopard frog	<i>Lithobates berlandieri</i>
Spotted chorus frog	<i>Pseudacris clarkii</i>
Strecker's chorus frog	<i>Pseudacris streckeri</i>
Texas toad	<i>Anaxyrus speciosus</i>
Western narrow-mouthed toad	<i>Gastrophryne olivacea</i>
Woodhouse's toad	<i>Anaxyrus woodhousii</i>

2.5.6.2 Reptiles

Reptiles (i.e., turtles, lizards, and snakes) that might occur in the Study Area are listed in Table 4. Reptile species considered to have potential to occur within the Study Area were evaluated using distribution maps from Dixon's (2013) *Amphibians and Reptiles of Texas*. The list includes those species that are more commonly observed near water (e.g., aquatic turtles) and those that are common in terrestrial habitats.

Table 4. Reptile Species with Potential to Occur within the Study Area

Common Name	Scientific Name
Turtles	
Eastern snapping turtle	<i>Chelydra serpentina</i>
Ornate box turtle	<i>Terrapene ornata</i>
Pond slider	<i>Trachemys scripta</i>
Spiny softshell	<i>Apalone spinifera pallida</i>
Yellow mud turtle	<i>Kinosternon flavescens</i>
Lizards	
Common spotted whiptail	<i>Aspidoscelis gularis</i>
Eastern collared lizard	<i>Crotaphytus collaris</i>
Eastern six-lined racerunner	<i>Aspidoscelis sexlineatus sexlineatus</i>
Great plains skink	<i>Plestiodon obsoletus</i>
Prairie lizard	<i>Sceloporus consobrinus</i>
Prairie skink	<i>Plestiodon septentrionalis</i>
Slender glass lizard	<i>Ophisaurus attenuatus</i>
Short-lined skink	<i>Plestiodon tetragrammus brevilineatus</i>
Texas greater earless lizard	<i>Cophosaurus texanus</i>
Texas horned lizard	<i>Phrynosoma cornutum</i>
Texas spiny lizard	<i>Sceloporus olivaceus</i>
Snakes	
Bullsnake	<i>Pituophis catenifer sayi</i>
Blotched watersnake	<i>Nerodia erythrogaster transversa</i>
Broad-banded copperhead	<i>Agkistrodon contortrix laticinctus</i>
Checkered gartersnake	<i>Thamnophis marcianus</i>
Chihuahuan nightsnake	<i>Hypsiglena jani</i>
Desert kingsnake	<i>Lampropeltis getula splendida</i>
Diamond-backed watersnake	<i>Nerodia rhombifer</i>
Eastern hog-nosed snake	<i>Heterodon platirhinos</i>
Eastern yellow-bellied racer	<i>Coluber constrictor flaviventris</i>
Flat-headed snake	<i>Tantilla gracilis</i>
Great plains ratsnake	<i>Pantherophis emoryi emoryi</i>
Kansas glossy snake	<i>Arizona elegans elegans</i>
Long-nosed snake	<i>Rhinocheilus lecontei</i>
Plain-bellied watersnake	<i>Nerodia erythrogaster</i>
Plains black-headed snake	<i>Tantilla nigriceps</i>

Common Name	Scientific Name
Plains hog-nosed snake	<i>Heterodon nasicus</i>
Prairie kingsnake	<i>Lampropeltis calligaster</i>
Prairie rattlesnake	<i>Crotalus viridis</i>
Prairie ring-necked snake	<i>Diadophis punctatus arnyi</i>
Red-striped ribbonsnake	<i>Thamnophis proximus rubrilineatus</i>
Rough earthsnake	<i>Virginia striatula</i>
Rough greensnake	<i>Opheodrys aestivus</i>
Texas brownsnake	<i>Storeria dekayi texana</i>
Texas patch-nosed snake	<i>Salvadora grahamiae lineata</i>
Texas ratsnake	<i>Pantherophis obsoleta</i>
Texas threadsnake	<i>Rena dulcis</i>
Western coachwhip	<i>Coluber flagellum testaceus</i>
Western diamond-backed rattlesnake	<i>Crotalus atrox</i>
Western massasauga	<i>Sistrurus catenatus tergeminus</i>
Variable groundsnake	<i>Sonora semiannulata semiannulata</i>

2.5.6.3 Birds

Numerous avian species have potential to occur within the Study Area across different spatial and temporal scales. These occurrences may include year-round resident species, species that migrate within or through the Study Area in the spring and fall, use the Study Area for nesting (spring/summer), or use the Study Area for overwintering (Lockwood and Freeman 2014). The likelihood for occurrence of each species will depend upon the availability of suitable habitat and the season. Table 5 provides a list of representative avian species with potential to occur in the Study Area.

Table 5. Avian Species with Potential to Occur within the Study Area

Common Name	Scientific Name
Waterfowl	
American Wigeon	<i>Anas americana</i>
Black-bellied Whistling-duck	<i>Dendrocygna autumnalis</i>
Bufflehead	<i>Bucephala albeola</i>
Cackling Goose	<i>Branta hutchinsii</i>
Canada Goose	<i>Branta canadensis</i>
Canvasback	<i>Aythya valisineria</i>
Common Goldeneye	<i>Bucephala clangula</i>
Common Merganser	<i>Mergus merganser</i>
Gadwall	<i>Anas strepera</i>
Greater Scaup	<i>Aythya marila</i>
Green-winged Teal	<i>Anas carolinensis</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Lesser Scaup	<i>Aythya affinis</i>
Mallard	<i>Anas platyrhynchos</i>
Northern Shoveler	<i>Anas clypeata</i>
Northern Pintail	<i>Anas acuta</i>

Common Name	Scientific Name
Redhead	<i>Aythya americana</i>
Ring-necked Duck	<i>Aythya collaris</i>
Ruddy Duck	<i>Oxyura jamaicensis</i>
Wood Duck	<i>Aix sponsa</i>
Landfowl	
Northern Bobwhite	<i>Colinus virginianus</i>
Wild Turkey	<i>Meleagris gallopavo</i>
Water Birds	
American white Pelican	<i>Pelecanus erythrorhynchos</i>
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>
Common Loon	<i>Gavia immer</i>
Cattle Egret	<i>Bubulcus ibis</i>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>
Eared Grebe	<i>Podiceps nigricollis</i>
Great Egret	<i>Ardea alba</i>
Pied-billed Grebe	<i>Podilymbus podiceps</i>
Great Blue Heron	<i>Ardea herodias</i>
Green Heron	<i>Butorides virescens</i>
Western Grebe	<i>Aechmophorus occidentalis</i>
Yellow-crowned Night-heron	<i>Nyctanassa violacea</i>
Hawks, Falcons, and Eagles	
American Kestrel	<i>Falco sparverius</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Black Vulture	<i>Coragyps atratus</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Ferruginous Hawk	<i>Buteo regalis</i>
Golden Eagle	<i>Aquila chrysaetos</i>
Merlin	<i>Falco columbarius</i>
Mississippi Kite	<i>Ictinia mississippiensis</i>
Northern Harrier	<i>Circus cyaneus</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Prairie Falcon	<i>Falco mexicanus</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Rough-legged Hawk	<i>Buteo lagopus</i>
Sharp-shin Hawk	<i>Accipiter striatus</i>
Swainson's Hawk	<i>Buteo swainsoni</i>
Turkey Vulture	<i>Cathartes aura</i>
Cranes and Rails	
American Coot	<i>Fulica americana</i>
Common Gallinule	<i>Gallinula galeata</i>
Eastern Black Rail	<i>Laterallus jamaicensis jamaicensis</i>
Sandhill Crane	<i>Grus canadensis</i>
Sora	<i>Porzana carolina</i>

Common Name	Scientific Name
Virginia Rail	<i>Rallus limicola</i>
Whooping Crane	<i>Grus americana</i>
Shorebirds	
American Avocet	<i>Recurvirostra americana</i>
American Woodcock	<i>Scolopax minor</i>
Baird's Sandpiper	<i>Calidris bairdii</i>
Black-bellied Plover	<i>Pluvialis squatarola</i>
Black-necked Stilt	<i>Himantopus mexicanus</i>
Black Tern	<i>Chlidonias niger</i>
Bonaparte's Gull	<i>Chroicocephalus philadelphia</i>
Dunlin	<i>Calidris alpina</i>
Forster's Tern	<i>Sterna forsteri</i>
Franklin's Gull	<i>Leucophaeus pipixcan</i>
Greater yellowlegs	<i>Tringa melanoleuca</i>
Herring Gull	<i>Larus argentatus</i>
Killdeer	<i>Charadrius vociferus</i>
Least Sandpiper	<i>Calidris minutilla</i>
Lesser yellowlegs	<i>Tringa flavipes</i>
Long-billed Curlew	<i>Numenius americanus</i>
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
Marbled Godwit	<i>Limosa fedoa</i>
Mountain Plover	<i>Charadrius montanus</i>
Pectoral Sandpiper	<i>Calidris melanotos</i>
Ring-billed Gull	<i>Larus delawarensis</i>
Sanderling	<i>Calidris alba</i>
Semipalmated Plover	<i>Charadrius semipalmatus</i>
Semipalmated Sandpiper	<i>Calidris pusilla</i>
Snowy Plover	<i>Charadrius nivosus</i>
Solitary Sandpiper	<i>Tringa solitaria</i>
Spotted Sandpiper	<i>Actitis macularius</i>
Stilt Sandpiper	<i>Calidris himantopus</i>
Upland Sandpiper	<i>Bartramia longicauda</i>
Western Sandpiper	<i>Calidris mauri</i>
White-rumped Sandpiper	<i>Calidris fuscicollis</i>
Willet	<i>Tringa semipalmata</i>
Wilson's Phalarope	<i>Phalaropus tricolor</i>
Wilson's Snipe	<i>Gallinago delicata</i>
Pigeons and Doves	
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>
Inca Dove	<i>Columbina inca</i>
Mourning Dove	<i>Zenaida macroura</i>
Rock Pigeon	<i>Columba livia</i>
White-winged Dove	<i>Zenaida asiatica</i>

Common Name	Scientific Name
Cuckoos and Roadrunners	
Yellow-billed cuckoo	<i>Coccyzus americanus</i>
Greater Roadrunner	<i>Geococcyx californianus</i>
Owls	
Barn Owl	<i>Tyto alba</i>
Burrowing Owl	<i>Athene cunicularia</i>
Eastern Screech-Owl	<i>Megascops asio</i>
Great Horned Owl	<i>Bubo virginianus</i>
Short-eared Owl	<i>Asio flammeus</i>
Nighthawks and Nightjars	
Common Nighthawk	<i>Chordeiles minor</i>
Common Poorwill	<i>Phalaenoptilus nuttallii</i>
Chuck-Will's-Widow	<i>Antrostomus carolinensis</i>
Woodpeckers	
Downy Woodpecker	<i>Picoides pubescens</i>
Golden-fronted Woodpecker	<i>Melanerpes aurifrons</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Ladder-backed Woodpecker	<i>Dryobates scalaris</i>
Northern Flicker	<i>Colaptes auratus</i>
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
Large and Small Passerines, Songbirds, and Other Small Birds	
American Crow	<i>Corvus brachyrhynchos</i>
American Goldfinch	<i>Spinus tristis</i>
American Pipit	<i>Anthus rubescens</i>
American Redstart	<i>Setophaga ruticilla</i>
American Robin	<i>Turdus migratorius</i>
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>
Baltimore Oriole	<i>Icterus galbula</i>
Bank Swallow	<i>Riparia riparia</i>
Barn Swallow	<i>Hirundo rustica</i>
Bell's Vireo	<i>Vireo bellii</i>
Belted Kingfisher	<i>Megaceryle torquata</i>
Bewick's Wren	<i>Thryomanes bewickii</i>
Black-and-white Warbler	<i>Mniotilta varia</i>
Black-capped Vireo	<i>Vireo atricapilla</i>
Black-chinned Hummingbird	<i>Archilochus alexandri</i>
Black-crested Titmouse	<i>Baeolophus atricristatus</i>
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>
Blue-headed Vireo	<i>Vireo solitarius</i>
Black-throated Sparrow	<i>Amphispiza bilineata</i>
Blue Grosbeak	<i>Passerina caerulea</i>

Common Name	Scientific Name
Blue Jay	<i>Cyanocitta cristata</i>
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Bronzed Cowbird	<i>Molothrus aeneus</i>
Brown Creeper	<i>Certhia americana</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Brown Thrasher	<i>Toxostoma rufum</i>
Bullock's Oriole	<i>Icterus bullockii</i>
Bushtit	<i>Psaltiriparus minimus</i>
Cactus Wren	<i>Campylorhynchus brunneicapillus</i>
Canyon Towhee	<i>Melospiza fusca</i>
Carolina Wren	<i>Thryothorus ludovicianus</i>
Cassin's Sparrow	<i>Peucaea cassinii</i>
Cave Swallow	<i>Petrochelidon fulva</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Chestnut-collared Longspur	<i>Calcarius ornatus</i>
Chihuahuan Raven	<i>Corvus cryptoleucus</i>
Chimney Swift	<i>Chaetura pelagica</i>
Chipping Sparrow	<i>Spizella passerina</i>
Clay-colored Sparrow	<i>Spizella pallida</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Common Grackle	<i>Quiscalus quiscula</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Curve-billed Thrasher	<i>Toxostoma curvirostre</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Dickcissel	<i>Spiza americana</i>
Eastern Bluebird	<i>Sialia sialis</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>
Eastern Meadowlark	<i>Sturnella magna</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Eastern Wood-Pewee	<i>Contopus virens</i>
European Starling	<i>Sturnus vulgaris</i>
Field Sparrow	<i>Spizella pusilla</i>
Fox Sparrow	<i>Passerella iliaca</i>
Golden-crowned Kinglet	<i>Regulus satrapa</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Great-tailed Grackle	<i>Quiscalus mexicanus</i>
Harris's Sparrow	<i>Zonotrichia querula</i>
Hermit Thrush	<i>Catharus guttatus</i>
Horned Lark	<i>Eremophila alpestris</i>
House Finch	<i>Haemorhous mexicanus</i>
House Sparrow	<i>Passer domesticus</i>
House Wren	<i>Troglodytes aedon</i>
Indigo Bunting	<i>Passerina cyanea</i>
Lark Bunting	<i>Calamospiza melanocorys</i>

Common Name	Scientific Name
Lark Sparrow	<i>Chondestes grammacus</i>
Least Flycatcher	<i>Empidonax minimus</i>
Lesser Goldfinch	<i>Spinus psaltria</i>
Lincoln's Sparrow	<i>Melospiza lincolni</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Louisiana Waterthrush	<i>Parkesia motacilla</i>
Marsh Wren	<i>Cistothorus palustris</i>
McCown's Longspur	<i>Rhynchophanes mccownii</i>
Nashville Warbler	<i>Oreothlypis luciae</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Norther Parula	<i>Setophaga pitiayumi</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Northern Waterthrush	<i>Parkesia noveboracensis</i>
Olive-sided Flycatcher	<i>Contopus cooperi</i>
Orange-crowned Warbler	<i>Oreothlypis celata</i>
Orchard Oriole	<i>Icterus spurius</i>
Ovenbird	<i>Seurus aurocapilla</i>
Painted Bunting	<i>Passerina ciris</i>
Palm Warbler	<i>Setophaga palmarum</i>
Pine Siskin	<i>Spinus pinus</i>
Purple Martin	<i>Progne subis</i>
Pyrrhuloxia	<i>Cardinalis sinuatus</i>
Red-breasted Nuthatch	<i>Sitta canadensis</i>
Red Crossbill	<i>Loxia curvirostra</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Rock Wren	<i>Salpinctes obsoletus</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
Ruby-throated Hummingbird	<i>Archilochus colubris</i>
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Scissor-tailed Flycatcher	<i>Tyrannus forficatus</i>
Song Sparrow	<i>Melospiza melodia</i>
Spotted Towhee	<i>Pipilo maculatus</i>
Sprague's Pipit	<i>Anthus spragueii</i>
Summer Tanager	<i>Piranga rubra</i>
Swainson's Thrush	<i>Catharus ustulatus</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
Tennessee Warbler	<i>Oreothlypis peregrina</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Verdin	<i>Auriparus flaviceps</i>
Vesper Sparrow	<i>Pooecetes gramineus</i>
Warbling Vireo	<i>Vireo gilvus</i>
Willow Flycatcher	<i>Empidonax traillii</i>

Common Name	Scientific Name
Western Scrub-Jay	<i>Aphelocoma californica</i>
Western Kingbird	<i>Tyrannus verticalis</i>
White-breasted Nuthatch	<i>Sitta carolinensis</i>
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>
White-eyed Vireo	<i>Vireo griseus</i>
White-throated Sparrow	<i>Zonotrichia albicollis</i>
Wilson's Warbler	<i>Cardellina pusilla</i>
Winter Wren	<i>Troglodytes hiemalis</i>
Yellow-breasted Chat	<i>Icteria virens</i>
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>
Yellow-rumped Warbler	<i>Setophaga coronata</i>
Yellow-throated Vireo	<i>Vireo flavifrons</i>
Yellow Warbler	<i>Setophaga petechia</i>

2.5.6.4 Mammals

Mammals with potential to occur in the Study Area are listed in Table 6 (Schmidly and Bradley 2016). The potential occurrence of each species within the Study Area is variable and dependent upon availability of suitable habitat.

Table 6. Mammalian Species with Potential to Occur within the Study Area

Common Name	Scientific Name
American badger	<i>Taxidea taxus</i>
American beaver	<i>Castor canadensis</i>
American mink	<i>Vison vison</i>
Black-tailed jackrabbit	<i>Lepus californicus</i>
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>
Bobcat	<i>Lynx rufus</i>
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>
Common gray fox	<i>Urocyon cinereoargenteus</i>
Coyote	<i>Canis latrans</i>
Crawford's desert shrew	<i>Notiosorex crawfordi</i>
Eastern cottontail rabbit	<i>Sylvilagus floridanus</i>
Eastern fox squirrel	<i>Sciurus niger</i>
Eastern mole	<i>Scalopus aquaticus</i>
Eastern red bat	<i>Lasiurus borealis</i>
Eastern spotted skunk	<i>Spilogale putorius</i>
Evening bat	<i>Nycticeius humeralis</i>
Fulvous harvest mouse	<i>Reithrodontomys fulvescens</i>
Hispid cotton rat	<i>Sigmodon hispidus</i>
Hispid pocket mouse	<i>Chaetodipus hispidus</i>
Hog-nosed skunk	<i>Conepatus leuconotus</i>
Hoary bat	<i>Lasiurus cinereus</i>
Lacey's white-ankled deermouse	<i>Peromyscus laceianus</i>

Common Name	Scientific Name
Least shrew	<i>Cryptotis parva</i>
Long-tailed weasel	<i>Mustela frenata</i>
Merriam's pocket mouse	<i>Perognathus merriami</i>
Mountain lion	<i>Puma concolor</i>
Nine-banded armadillo	<i>Dasypus novemcinctus</i>
North American porcupine	<i>Erethizon dorsatum</i>
Northern American deer mouse	<i>Peromyscus maniculatus</i>
Northern grasshopper mouse	<i>Onychomys leucogaster</i>
Northern pygmy mouse	<i>Baiomys taylori</i>
Northern racoon	<i>Procyon lotor</i>
Nutria	<i>Myocastor coypus</i>
Plains harvest mouse	<i>Reithrodontomys montanus</i>
Red fox	<i>Vulpes vulpes</i>
Rio Grande ground squirrel	<i>Ictidomys parvidens</i>
Ringtail	<i>Bassariscus astutus</i>
Rock squirrel	<i>Otospermophilus variegatus</i>
Silver-haired bat	<i>Lasionycteris noctivagans</i>
Southern plains woodrat	<i>Neotoma micropus</i>
Striped skunk	<i>Mephitis mephitis</i>
Swamp rabbit	<i>Sylvilagus aquaticus</i>
Texas deer mouse	<i>Peromyscus attwateri</i>
Tricolored bat	<i>Perimyotis subflavus</i>
Virginia opossum	<i>Didelphis virginiana</i>
White-footed deer mouse	<i>Peromyscus leucopus</i>
White-tailed deer	<i>Odocoileus virginianus</i>
Woodland vole	<i>Microtus pinetorum</i>

2.5.7 Wildlife Species of Concern

The following section examines wildlife with special status distinctions that have some potential for occurrence within Eastland and Callahan Counties, with particular emphasis on potential for occurrence within the Study Area. These species are collectively referred to as wildlife species of concern. Wildlife species of concern include federally listed threatened and endangered species and species the USFWS has proposed or designated as candidates for listing as threatened or endangered (USFWS 2025b); state-listed threatened and endangered species (TPWD 2025a); bird species protected under BGEPA (USFWS 2013); birds of conservation concern (BCC) species (USFWS 2021); and Texas species of greatest conservation need (SGCN) categorized as S1 (i.e., critically imperiled), S2 (i.e., imperiled), or S3 (i.e., Vulnerable) (TPWD 2011, 2025e). Sensitive plant communities are also included in the assessment for this EA. Table 7 lists federally and state-listed species with potential to occur within the Study Area; Table 8 lists SGCN species with potential to occur within the Study Area.

The USFWS (2025b) was consulted using IPaC (Project Code: 2025-0135188) to obtain a list of threatened and endangered species and/or designated critical habitat that may occur in the Study Area. The TPWD (2025a) similarly regulates plants and animals designated as endangered or threatened. Under Chapters 67 and 68 of the TPWC, and 31 TAC 65.171 through 65.176, the State of Texas authorizes the TPWD to prohibit the taking, possession, transportation, or sale of any of the animal species designated by state law as endangered or threatened without the issuance of a permit. The TPWD maintains, by

county, a list of special status species pursuant to federal and state law. SWCA reviewed this list for Eastland and Callahan Counties as part of this EA and requested natural resources information from TPWD's Wildlife Habitat Assessment Program.

The ESA directs the USFWS to identify and protect endangered and threatened species and their critical habitat, and to provide a means to conserve their ecosystems. Among its other provisions, Section 9 of the ESA makes it unlawful to knowingly violate the "take" provisions of the ESA. "Take" is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct" (16 USC 1532). The term "harm" includes significant modification or degradation of habitat that kills or injures fish or wildlife by significantly impairing essential behavioral patterns (50 CFR 17.3).

The USFWS (2025b) and TPWD (2025a) list 15 protected (i.e., threatened, endangered, proposed endangered, candidate, or BGEPA) species that have potential to occur in Eastland and Callahan Counties. Table 7 lists these species and their respective protective distinction.

2.5.7.1 Animals

Federally and/or state-protected animal species with potential for occurrence in the Study Area are summarized in Table 7. Note that some species are afforded both federal and state protections. SWCA defines potential occurrence as follows:

- No potential: No habitat and no recent documentation of species in or near the Study Area.
- Low potential: Limited habitat in or near the Study Area and no recent documentation in or near the Study Area.
- Moderate potential: Potential habitat is or may be present, but no recent documentation in or near the Study Area.
- High potential: Known observations of the species in or near the Study Area or high-quality habitat characterizations in the Study Area.

Table 7. Federally and/or State-Protected Species

Species	Status	Potential for occurrence within the Study Area
Federally Listed		
Birds		
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Not Listed*	Moderate
Eastern black rail (<i>Laterallus jamaicensis</i> ssp. <i>jamaicensis</i>) ^{† §}	Threatened	Low
Golden-cheeked warbler (<i>Setophaga chrysoparia</i>)	Endangered	Low
Golden eagle (<i>Aquila chrysaetos</i>)	Not Listed*	Low
Piping plover (<i>Charadrius melodus</i>)	Threatened	Low
Rufa red knot (<i>Calidris canutus rufa</i>)	Threatened	Low
Whooping crane (<i>Grus americana</i>) ^{† §}	Endangered	Low

Species	Status	Potential for occurrence within the Study Area
Fishes		
Sharpnose shiner (<i>Notropis oxyrhynchus</i>)	Endangered	None
Smalleye shiner (<i>Notropis buccula</i>)	Endangered	None
Insects		
Monarch butterfly (<i>Danaus plexippus</i>)	Proposed Threatened	High
Mammals		
Tricolored bat (<i>Perimyotis subflavus</i>) [§]	Proposed Endangered	Low
State-listed		
Birds		
Interior least tern (<i>Sternula antillarum athalassos</i>)	Endangered	None
White-faced ibis (<i>Plegadis chihi</i>)	Threatened	Moderate
Reptiles		
Texas horned lizard (<i>Phrynosoma cornutum</i>)	Threatened	Moderate

Sources: TPWD (2025a); USFWS (2025b)

* Species not listed under the ESA but protected under the BGEPA

[†] Species is both federally and state-listed

[§] The species was not included in the USFWS' IPaC list for the Project, but was included in the Rare, Threatened, and Endangered Species of Texas for Eastland and Callahan County list (TPWD 2025a)

2.5.7.2 Federally Threatened, Endangered, Proposed, and Candidate Species

The **eastern black rail** (*Laterallus jamaicensis jamaicensis*) is a federally and state-listed threatened species that occurs in coastal marshes and in freshwater grassy marshes and wet meadows at inland locations, typically containing dense wetland vegetation such as spartina (*Spartina* sp.), rushes, sedges, and other grasses (Eddleman et al. 2020). In Texas, black rails are known to nest only on the upper and central Gulf Coast, where the species is a rare to locally uncommon resident. The species is also a rare migrant across Eastland and Callahan Counties, with coastal populations augmented during the winter by migratory birds that nest out of state. Typical spring migration occurs from April through early May, with fall migration typically occurring from August through early October (Lockwood and Freeman 2014).

No observations of black rail have been reported to TXNDD (2025) or eBird (2025) from within or adjacent to the Study Area. It is unlikely that this species would be present in the region during the breeding season or winter (Lockwood and Freeman 2014). The ponds and wetlands within the Study Area may provide suitable stopover habitat for black rails, but due to the lack of recent verifiable documentation in the Study Area region, it is unlikely that this species will occur within the Study Area as more than a mere stopover or vagrant during migration.

The **golden-cheeked warbler** (*Setophaga chrysoparia*) is a migratory songbird that is present in Texas during its breeding season, typically from March through July or early August (Lockwood and Freeman 2014). The breeding range for this species is restricted to the Hill Country of central and north-central

Texas (Lockwood and Freeman 2014). Breeding habitat for this species consists of mature Ashe juniper/hardwood forest with a closed or nearly closed canopy (Campbell 2003). Hardwood trees present in golden-cheeked warbler habitat often include Texas red oak and Texas live oak. Depending on geographic locale, other hardwood tree species occurring in golden-cheeked warbler breeding habitat can include shin oak (*Quercus sinuata* var. *breviloba*), Lacey oak (*Q. glaucoides*), post oak (*Q. stellata*), blackjack oak, escarpment black cherry (*Prunus serotina* var. *eximia*), Arizona black walnut (*Juglans major*), Texas ash (*Fraxinus texensis*), and cedar elm, among others (Campbell 2003).

The TXNDD (2025) does not report observations of this species from within or near the Study Area. A review of eBird (2025) indicates that the closest documented observations of this species are from Palo Pinto Mountains State Park, approximately 37.8 miles northeast of the Study Area's far eastern extent. Vegetation communities within the Study Area as mapped and/or characterized by the TPWD (2025d), the NLCD (Dewitz 2023), and SWCA (2022a, 2022b, and 2025b) include vegetation composition characteristics known to be used by this species; mixed and deciduous forest types, oak mottes and woodlands, and Ashe juniper/live oak shrubland are preferred by the golden-cheeked warbler and may provide suitable habitat (Campbell 2003). However, the Study Area falls outside a model produced by Morrison et al. (2010) that indicates likelihood of occupancy for the species. For these reasons, it is unlikely that golden-cheeked warbler will use habitats within the Study Area.

The **pipin plover** (*Charadrius melodus*) is a small, migratory shorebird that occurs seasonally along both inland freshwater and Atlantic coastal saltwater habitats. Inland piping plovers nest primarily in the Great Lakes watershed and on the Great Plains of the United States and Canada, primarily from Nebraska northward (Sibley 2000). Piping plovers are not known to breed in Texas, but they have bred along major rivers in nearby Oklahoma (Seyffert 2001). Piping plovers winter primarily on the Atlantic and Gulf coasts of the United States and on the Gulf Coast of Mexico, and rarely on the Pacific Coast of Mexico (Sibley 2000; Howell and Webb 1995). Most piping plovers that breed in the Great Lakes and Great Plains regions winter on the Gulf Coast (Campbell 2003). Piping plovers primarily use the shorelines of reservoirs and natural lakes during migration, but also will occur along rivers, on mudflats in marshy wetlands, and at industrial ponds and fish farms (Elliott-Smith and Haig 2004). Elliott-Smith and Haig (2004) report that comparatively few piping plovers have been recorded during migration at seemingly suitable inland stopover sites and suggest this is likely because individual piping plovers usually fly non-stop between their breeding and wintering grounds.

The TXNDD (2025) does not report observations of this species from within or near the Study Area. The closest observation of piping plover to the Study Area is from Kirby Lake, approximately 32.5 miles west-southwest near Abilene (eBird 2025). A migrant piping plover could occur along the margins of a pond or Putnam Lake within the Study Area, but such an occurrence is expected to be extremely rare.

The **rufa red knot** (*Calidris canutus rufa*) prefers coastal marine and estuarine habitats with large areas of exposed intertidal sediments. This species migrates between nesting grounds in the Arctic and wintering grounds in the southeastern United States and along the coasts south to Chile and Argentina (USFWS 2025c). The red knot is considered a casual migrant in northwest Texas (Lockwood and Freeman 2014). The rufa red knot is among the largest (about 9 inches) of the sandpipers within the genus *Calidris*. With a wingspan of 20 inches, some red knots fly up to 15,000 kilometers, sometimes without a single stop, twice a year during migration, making it one of the longest-distance migrants in the animal kingdom (Baker et al. 2020).

Neither the TXNDD (2025) nor eBird (2025) report observations of this species from within or near the Study Area. The Study Area contains some ponds and wetlands that may provide marginally suitable stopover habitat during migration for this species. However, as with the piping plover, such an occurrence is expected to be extremely rare, if it occurred at all.

The **whooping crane** (*Grus americana*) is a federally and state-listed endangered species that occurs in open, mostly wetland habitats. Members of this species' only wild population nest within and directly adjacent to Wood Buffalo National Park in the Northwest Territories and Alberta Provinces of Canada, and winter mainly in and adjacent to Aransas National Wildlife Refuge along the central Texas coast (Canadian Wildlife Service and USFWS 2007). The birds typically migrate through an approximately 200-mile-wide corridor (USFWS 2009) and begin to arrive at their wintering grounds in October (Campbell 2003). Spring migration generally begins in late March, with some birds remaining on the wintering grounds into early May. During migration, whooping cranes utilize cropland, shallow freshwater wetlands, and wide shallow rivers as stopover habitat. The species sometimes joins sandhill cranes (*Antigone canadensis*), a common migrant and wintering species in the region, for portions of migration and at foraging areas (Urbanek and Lewis 2020). Whooping cranes may also stop over on the marshy edges of large reservoirs or sandbars of major rivers (Armbruster 1990). The Study Area is located approximately 61 miles west of the core migration corridor used by this species (Figure 8) (USFWS 2022a).

The TXNDD (2025) and eBird (2025) do not report observations of this species from within or near the Study Area. The USFWS (2025d) tracks records of whooping cranes observed in the United States away from their traditional wintering grounds.¹ There are no sightings of whooping cranes within or near the Study Area. The closest whooping crane sighting was approximately 19 miles west-southwest of the Project Area (USFWS 2025d).

A portion of the Study Area is within the whooping crane's migration corridor, and there are various ponds, lakes, and wetlands exceeding 0.25 acre present in the Study Area and within 1,000 feet of the Study Area (USFWS 2019); these features provide potential stopover sites for migrant whooping cranes. Additionally, the Study Area contains crop fields which might offer foraging habitat for migrant whooping cranes, depending on the type of crop previously or currently being grown; should the crop fields be ephemerally flooded due to localized seasonal rains, the possibility for stopovers may be slightly increased. Given the location of the Study Area in the migration corridor, there is at least some potential for migrant whooping cranes to use lands for foraging and/or roosting during migration. However, while a portion of the Study Area is within the whooping crane's migration corridor, the Proposed Project itself is located outside of the migration corridor and there is a low potential for whooping crane occurrence within the Project Area.

¹ Per SWCA's agreement with USFWS, SWCA is obligated to note in this document that the interpretation of data and conclusions described herein are SWCA's, and that the USFWS has neither reviewed nor endorsed information contained in this document.

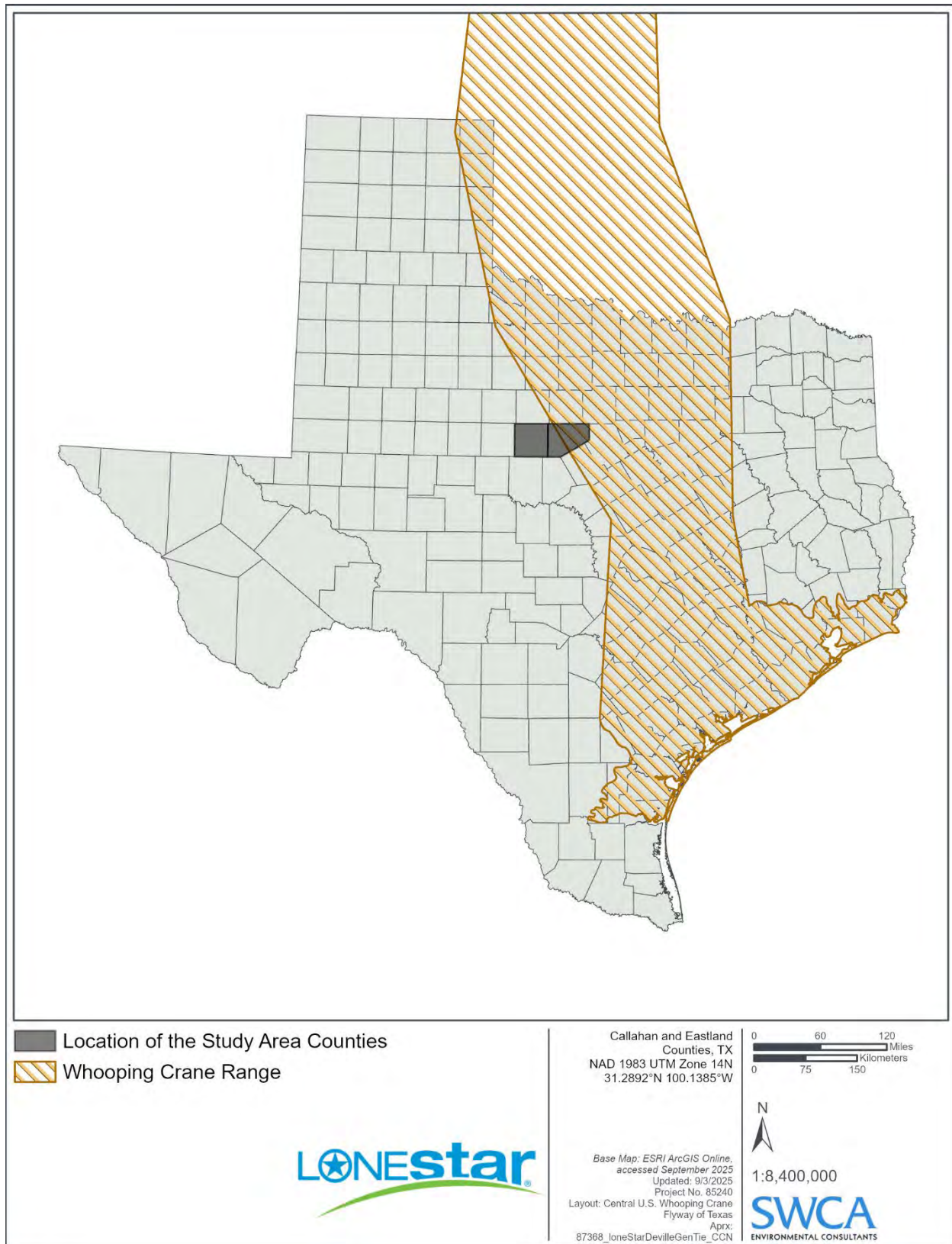


Figure 8. Whooping crane migration corridor.

The **sharpnose shiner** (*Notropis oxyrhynchus*) and **smalleye shiner** (*Notropis buccula*) are small minnows in the Cyprinidae family (USFWS 2018). The sharpnose shiner historically occurred in the Brazos, Red, and Colorado River Basins, while the smalleye shiner is only historically known from the Brazos River Basin (USFWS 2022b). Both species are associated with shallow, flowing waters, with sandy substrates (USFWS 2018). Both species' ranges have been significantly reduced due to the habitat fragmentation via the creation of impoundments (USFWS 2022b). Both species are only known from the mainstem and major tributaries of the Upper Brazos River north of Possum Kingdom Lake in North-Central Texas (USFWS 2022b).

The TXNDD (2025) does not report any records of either the sharpnose or smalleye shiner from within or near the Study Area. According to the USFWS (2018), the Study Area is within the upper division of the Brazos River Basin; however, the only major tributaries that cross the Study Area are Battle Creek, Cooper Creek, and Live Oak Creek. A review of aerial imagery (Google Earth 2025) does not indicate that these creeks provide tributary flow to the Brazos: Cooper Creek and Battle Creek are tributaries to Big Sandy Creek, and Live Oak Creek is a tributary to Hubbard Creek, all of which flow confluence with Hubbard Creek Reservoir approximately 32.6 river-miles north of the Study Area (USGS 2025c). A review of iNaturalist (2025a) and Fishes of Texas Project Database (Hendrickson and Cohen 2022) indicates that there are no observations of this species reported to the database.

Due to the restricted range of these species to the Upper Brazos River Basin and the lack of recent verifiable documentation of either species within the Study Area, neither species is expected to occur within waterways of the Study Area.

The **monarch butterfly** (*Danaus plexippus*) was designated as a candidate for federal listing in December 2020 (USFWS 2020a). On December 12, 2024, the USFWS proposed listing the monarch butterfly under the ESA as a threatened species in all 50 states, with special rules for "take" exemptions (USFWS 2024a). The proposed exemptions include the following:

- Activities that maintain, establish, enhance, or remove milkweed (plants where monarch butterflies lay eggs and grow into caterpillars) and nectar plants. This includes removal of noxious weeds, livestock grazing, routine agricultural activities, fire management, silvicultural practices, maintenance of residential and commercial gardens, and vegetation management (mowing, ground disturbance) when conducted outside the time when monarchs are present.
- Implementation of conservation plans and programs.
- Maintenance or improvement of overwintering habitat.
- Vehicle strikes.

At the same time as their proposed listing, the USFWS also proposed to designate critical habitat on the western populations' wintering grounds in southern California, totaling approximately 4,395 acres across seven counties. None of the proposed critical habitat is within the Proposed Project area.

North America forms the core of the monarch butterfly's distribution, but there are 27 extant populations globally and four populations that are either presumed extant or of unknown status across 90 countries, islands, and island groups (USFWS 2020b). Monarch butterflies occur throughout Texas primarily from March through November, where they occur as a breeding species and as a pass-through migrant in the spring (March–early July) and fall (September–early November) (Monarch Joint Venture 2023; USFWS 2020b). Adult monarchs occur in a variety of habitats with abundant nectar-producing plants, including native prairies, pastures, open woodlands and savannas, desert scrub, roadsides, and other habitats, including urbanized areas. The species requires milkweed (primarily *Asclepias* spp.) as an obligate host plant for egg deposition, which is an essential component of habitat required for reproduction and survival of the species (USFWS 2020c).

The TXNDD (2025) does not currently track records of monarch butterfly. A review of iNaturalist (2025a) indicates several observations of both milkweed and monarch butterflies from Eastland and Callahan Counties, but no such observations from within the Study Area. The closest record of monarch butterfly to the Study Area is approximately 5.9 miles to the east near FM 145 and concerns an adult from March 2021 (iNaturalist 2025a). The closest record of milkweed submitted to iNaturalist (2025a) is of a green comet milkweed (*Asclepias viridiflora*) from May 2023 along IH 20, approximately 0.7 mile southeast of the Study Area.

There is a moderate probability that this species' obligate host plant occurs within the Study Area, and since there are documented occurrences of both milkweed and monarch butterflies in both Eastland and Callahan Counties, there is high potential for this species to occur within the Study Area. The species is most likely to occur within the Study Area during the spring and fall migration periods.

The **tricolored bat** (*Perimyotis subflavus*) was proposed for listing as a federally endangered species in September 2022 (USFWS 2022c). Although a decision was anticipated by September 2024, no decision has been made (Office of Information and Regulatory Affairs 2023).

The range of the tricolored bat spans most of Texas, excluding the far western portions of the state (Texas Tech University Natural Science Research Laboratory 2023). This species prefers summer habitats that include wooded areas, water sources, and pastures where they roost, forage, and travel. Tricolored bats will roost in caves, cliff crevices, mines, buildings, and human-made structures (Texas Tech University Natural Science Research Laboratory 2023). During winter, tricolored bats will hibernate singly or in small groups in caves.

Neither the TXNDD (2025) nor iNaturalist (2025a) report observations of the tricolored bat in or near the Study Area. Additionally, the Texas Tech University Natural Science Research Laboratory (2023) does not show any known occurrences within Eastland or Callahan Counties. While the Study Area is within the range of the tricolored bat, it is outside of the USFWS' consultation range and was therefore not included in the USFWS IPaC list (USFWS 2025b) for this Project. This indicates the Study Area is in an area with less than a 50% likelihood of this species occurring and that it is not within a buffered known occurrence (USFWS 2024b). Although wooded areas, agricultural lands, wetlands, and riparian zones occur within the Study Area, based on the information provided above, it is unlikely that the tricolored bat will use habitats present within the Study Area.

2.5.7.3 Species Protected Under the Bald and Golden Eagle Protection Act

The **bald eagle** (*Haliaeetus leucocephalus*) is no longer protected by the ESA or state-listed as threatened. Eastland and Callahan Counties are within this species' wintering range (Lockwood and Freeman 2014). The bald eagle is increasing in number as a nesting species in Texas and is primarily found near rivers and large lakes and usually nests in tall trees or on cliffs near water (USFWS 2007). Bald eagles may breed in Texas from late October through early May (Sauer et al. 2014). The species occurs more numerous across the state in winter, although most breeding bald eagle pairs occur in the eastern third of the state (Campbell 2003; Lockwood and Freeman 2014). In winter, this species often occurs near concentrations of abundant food sources such as waterfowl concentration areas, prairie dog (*Cynomys ludovicianus*) colonies, or permanent water sources for fish. Roosting habitat includes deciduous or coniferous trees that are open and accessible above the canopy (Buehler 2022).

The TXNDD (2025) does not hold report observations of this species from within or near the Study Area. Ortego et al. (2009) reported no bald eagle nests in either Eastland or Callahan County in a study conducted between 1970 and 2009. The TPWD has established a page on iNaturalist (2025b) to track the locations of bald and golden eagle (*Aquila chrysaetos*) nests as submitted by members of the public. One

bald eagle nest has been submitted to iNaturalist (2025b) from approximately 26.2 miles east of the Study Area in Callahan County, just east of Lake Leon. A review eBird (2025) shows a handful of bald eagle sightings in Eastland and Callahan Counties, with the closest and most recent reported just northeast of Lake Cisco, approximately 7.4 miles northeast of the Study Area, in April 2023.

Since the Study Area is within the wintering range of this species, bald eagles are not expected to nest within the Study Area. However, the recent documented occurrences of this species in both Eastland and Callahan Counties suggests that this species may use lands within the Study Area for roosting and hunting in the winter months. The bald eagle has a moderate likelihood of occurring within the vicinity of the Study Area, particularly around wooded watercourses and waterbodies on a regular basis in any given year, at least for roosting and hunting purposes.

The **golden eagle** is much more of an open-country bird than the bald eagle. Golden eagles typically nest on cliffs in rugged, remote areas; in Texas, nesting is largely restricted to the Panhandle and Trans-Pecos regions. Nesting is not known to occur in Eastland or Callahan County (Lockwood and Freeman 2014). The regular wintering range of the golden eagle in Texas is limited to the western third of the state, where the species can be expected to occur from fall through spring (Lockwood and Freeman 2014). In winter and during migration, golden eagles may occur in canyonlands, rangelands, shrublands, and grasslands, mostly of areas with high topographic relief (Katzner et al. 2020).

The TXNDD (2025) does not report observations of this species from within or near the Study Area. Reviews of both eBird (2025) and iNaturalist (2025b) reveal no recorded observations within or near the Study Area. Given the location of the Study Area within the general wintering range of the golden eagle, it is likely that a small number of golden eagles traverse the Study Area during spring and fall migration periods, but only on rare occasions.

2.5.7.4 State-listed Species

The **interior least tern** (*Sternula antillarum athalassos*) is a small tern that prefers oceans, bays, estuaries, rivers, streams, marshes, and ponds for foraging and sandy and shelly beaches or islands along coastlines and rivers where they nest in colonies (Cornell Lab of Ornithology 2019). This species migrates between its nesting grounds in the United States and its wintering grounds along the Central American coast and the northern coast of South America (TPWD 2025g). Historically, the breeding range of the interior least tern included the Canadian, Red, and Rio Grande River systems in Texas (TPWD 2025g). Currently, it still uses these major river systems but is restricted to less altered and more natural river segments (TPWD 2025g).

Neither the TXNDD (2025) nor eBird (2025) report any observations of this species within or near the Study Area. While the Study Area contains some ponds and wetlands that may provide marginally suitable foraging habitat for this species, there are no rivers with islands present for breeding. Therefore, this species is not expected to occur within the Study Area.

The **white-faced ibis** (*Plegadis chihi*) is a medium-sized wading bird. The white-faced ibis is a casual to rare wintering species at inland locations throughout the state and a spring and fall migrant throughout the entire state (Lockwood and Freeman 2014). The TPWD (2025a) and Lockwood and Freeman (2014) indicate that this species currently nests in Texas only on the Gulf Coastal plain. The white-faced ibis feeds on a variety of aquatic prey and may occur in marshes, irrigated or flooded cropland, herbaceous wetlands, and freshwater or saline wetland habitats during migration (National Audubon Society 2025; TPWD 2025h). This species nests in marshes, low trees, or on the ground in bulrushes (*Scirpus* spp.), cattails (*Typha* spp.), or floating mats (TPWD 2025h).

The TXNDD (2025) does not report observations of the white-faced ibis from within or near the Study Area. A review of eBird (2025) reveals several records of white-faced ibis in both Eastland and Callahan Counties, mostly concentrated near the city of Abilene, approximately 31.3 miles west of the Study Area. Most observations are associated with large bodies of water such as Kirby Lake, Clyde Lake, and Lake Fort Phantom Hill. The closest documented occurrence to the Study Area is from approximately 17.7 miles to the southeast near Clyde Lake (eBird 2025). The waterbodies and/or cropland (if flooded) within the Study Area may provide suitable stopover habitat for white-faced ibis during the spring and fall migration periods. Since this species has been documented regularly in both counties of the Study Area, there is at least some potential for white-faced ibis to appear on the ground within the Study Area. However, as evident in recorded occurrences as submitted to eBird (2025), this species may opt for areas with larger bodies of water.

The **Texas horned lizard** (*Phrynosoma cornutum*), previously abundant throughout the state, more recently occurs throughout much of the central and western portions of Texas, where it is typically found within open, arid, and semi-arid regions with sparse vegetation of grasses, cacti, scattered brush, or scrubby trees (Henke and Fair 1998). The species feeds primarily on harvester ants (*Pogonomyrmex barbatus*). Texas horned lizards dig for hibernation, nesting, and insulation; therefore, they are more common within areas of loose sand or loamy soils (Henke and Fair 1998). This species is most active during the warmer months of the year, likely April through October (Wolf et al. 2013). The remainder of the year this species often hibernates just below the ground's surface (Henke and Fair 1998).

The species' range extends throughout most of Texas, including Eastland and Callahan Counties (Dixon 2013; Hibbitts and Hibbitts 2015). The TXNDD (2025) does not report observations of the Texas horned lizard within or near the Study Area. Many records of Texas horned lizard are reported to iNaturalist in Texas, with much higher concentrations of observations occurring west of IH 35 (iNaturalist 2025a). There are records of this species in both Eastland and Callahan Counties, with the closest being approximately 4 miles east of the Study Area, near Cisco, from June 2019 (iNaturalist 2025a). It is important to note that records of the Texas horned lizard from iNaturalist are obscured due to the sensitive nature of the species, so exact location of these records are unknown. Due to suitable habitat for the Texas horned lizard within and around the Study Area, including scrub/shrub dominated habitat, and scattered brush and shrublands, the species has a moderate likelihood of occurring within the Study Area, particularly if an abundant food source and friable soils are locally available.

2.5.7.5 TPWD Species of Conservation Concern and USFWS Birds of Conservation Concern

In addition to species that are afforded either federal or state protections, there are other wildlife species that are given a special designation by the TPWD or USFWS. TPWD SGCN and USFWS BCC are considered in this EA to be wildlife species of concern. As a result, BCC and SGCN species that might occur in the Study Area are addressed in this EA.

Although BCC species are not formally protected under any regulatory laws beyond the MBTA, these species are closely monitored by USFWS due to population declines and/or rare occurrences in a specific region. As mapped, the Study Area is located in the northwestern portion of the Oaks and Prairies Bird Conservation Region 21 (U.S. North American Bird Conservation Initiative 2021; USFWS 2021). Although the Bird Conservation Regions are mapped as ecologically distinct regions based on bird communities and habitats, they are still large, ecologically diverse regions resulting in broad lists of species. For these reasons, the BCC species listed for this region were further refined for this EA by evaluating USFWS migratory bird species lists for the Study Area (USFWS 2025b). The USFWS IPaC list states that there are no migratory BCC species expected to occur within the Study Area.

TPWD has identified SGCN by county to aid in managing these species and prioritizing their conservation. SGCN include federally and state-listed species, as well as non-listed species, and are categorized into the following five ranked levels according to conservation need (TPWD 2011):

- S1 – Critically Imperiled; At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.
- S2 – Imperiled; At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
- S3 – Vulnerable; At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
- S4 – Apparently Secure; At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
- S5 – Secure; At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations, or occurrences, with little to no concern from declines or threats.

For the purposes of this EA, only SGCN species with S1, S2, and S3 distinctions are discussed herein. The following SGCN species have some potential for occurrence or were historically known to occur in Eastland and/or Callahan County and are listed and briefly described in Table 8. SGCN species with other protective distinctions that are listed above are not included in Table 8.

Table 8. Species of Greatest Conservation Need List

Species	Status*	Habitat and Requirements
Amphibians		
Strecker's chorus frog (<i>Pseudacris streckeri</i>)	S3	Wooded floodplains and flats, cultivated fields, and marshes. Prefers sandy substrates.
Birds		
Bank swallow (<i>Riparia riparia</i>)	S2B, S4N	Low areas along rivers, streams, ocean coasts, and reservoirs provide suitable habitats for this species. They nest colonially by building nest chambers in vertical banks, bluffs, and human-made sites such as sand and gravel pits. Foraging occurs over open areas and water, where they feed on flying and jumping insects.
Black-capped vireo (<i>Vireo atricapilla</i>)	S3B	Mature oak-juniper woodlands with an open, grassy understory and broad-leaved shrubs for feeding on insects that use them. The TXNDD (2025) holds a record of black-capped vireo from June 2003, approximately 8.3 miles southwest of the Study Area.
Chestnut-collared longspur (<i>Calcarius ornatus</i>)	S3	Open shortgrass habitats with some bare ground. Also found in grain sorghum fields and on Conservation Reserve Program lands.
Franklin's gull (<i>Leucophaeus pipixcan</i>)	S2N	Spring and fall migrant throughout Texas. Utilize wetlands, lake shores, or islands for stopover during migration.
Least tern (<i>Sternula antillarum</i>)	S2B	Habitats for this species include sand beaches, flats, bays, inlets, lagoons, islands, river sandbars and flat gravel rooftops in urban areas, where they feed on small fish. This species nests colonially, scraping out nests in sandy or shelly beaches, islands along coastlines and rivers, gravel pits, mudflats, and gravel rooftops.
Mountain plover (<i>Charadrius montanus</i>)	S2	Ground nester on high plains or shortgrass prairie. During migration, may utilize shortgrass plains and bare (plowed) fields.

Species	Status*	Habitat and Requirements
Snowy plover (<i>Charadrius nivosus</i>)	S3B	This species prefers open sandy areas near water, including ocean beaches, wastewater ponds, reservoir margins, and gravel and sand bars in rivers, where they forage on insects and crustaceans. They use a depression in the ground as a nest in open sandy areas. Formerly, they were an uncommon breeder in the Panhandle and are uncommon along the coast in the winter.
Sprague's pipit (<i>Anthus spragueii</i>)	S3N	Habitat during migration and the winter consists of pasture and weedy fields, including dense herbaceous covered grasslands and grassy agricultural fields.
Western burrowing owl (<i>Athene cunicularia hypugaea</i>)	S2	Habitat includes a variety of open, dry areas with low vegetation and presence of fresh small mammal burrows. Known to occur in open grasslands, especially prairie, plains, and savannas.
Yellow rail (<i>Coturnicops noveboracensis</i>)	S3N	This species constructs nests on the ground in emergent wetlands, grass or sedge marshes, and wet meadows in freshwater situations with short vegetation. During migration, they use wet meadows, agricultural fields, and various open habitats, ranging from rice paddies to dry hayfields. Wintering habitats include both freshwater and brackish marshes, as well as in dense, deep grass.
Mammals		
Black-tailed prairie dog (<i>Cynomys ludovicianus</i>)	S3	Shortgrass prairie with sparse vegetation. Live in large family groups.
Cave myotis bat (<i>Myotis velifer</i>)	S2S3	Roosts in canes, rock crevices, old buildings, carports, under bridges, and abandoned cliff swallow nests. Roosts in clusters of up to thousands and hibernates in limestone caves of the Edwards Plateau and gypsum caves of north and north-central Texas.
Eastern spotted skunk (<i>Spilogale putorius</i>)	S1S3	Habitat generalist that may use open fields, prairies, croplands, fence rows, farmyards, forests, and woodlands. Prefers brushy areas and ample tallgrass prairies.
Hoary bat (<i>Lasiurus cinereus</i>)	S3	Migratory bat that prefers forests for roosting in foliage but can also be found in other habitats such as lowland deserts. Usually captured over water and large, open flyways during mist-netting surveys.
Mountain lion (<i>Puma concolor</i>)	S2S3	Habitat generalist but most frequently found in rugged mountains and riparian zones.
Plains spotted skunk (<i>Spilogale interrupta</i>)	S1S3	Habitats for this species include wooded areas, tallgrass prairies, and farmyards where they feed on small mammals, birds, insects, and fruits. They den in cracks and crevices of rocky areas, hollow trees, attics of buildings, and underground burrows.
Southeastern myotis bat (<i>Myotis austroriparius</i>)	S3?	Buildings and hollow trees are important for this species in Texas since caves are rare in the Texas portion of its range. Historically used lowland pine and hardwood forests with mature, hollow trees. Also known from riparian forests, bottomland hardwoods, concrete culverts, and abandoned human-made structures.
Western pipistrelle (<i>Parastrellus hesperus</i>)	S3S4	This species' preferred habitats include rocky areas near water where it roosts along canyon walls or cliffs, under rocks, or in caves and forages on swarming insects. They hibernate in mines and caves.
Mollusks		
Mapleleaf (<i>Quadrula quadrula</i>)	S3	This species occurs in streams, rivers, lakes, and reservoirs where they filter feed.
Reptiles		
Prairie skink (<i>Plestiodon septentrionalis</i>)	S2	Occurs in native grassland habitats of the Rolling Plains, Blackland Prairie, Post Oak Savanna, and Pineywoods ecoregions of Texas.
Slender glass lizard (<i>Ophisaurus attenuatus</i>)	S3	Open grassland, prairie, woodland edge, open woodland, oak savannas, long leaf pine flatwoods, scrubby areas, fallow fields, and areas near streams and ponds. Prefers sandy soils.
Western box turtle (<i>Terrapene oranata</i>)	S3	Occurs in prairie grassland, pasture, fields, sandhills, and open woodland. Built burrows or use burrows made by other species for shelter. The TXNDD (2025) holds a record of western box turtle from August 2015, approximately 12.7 miles north of the Study Area.

Species	Status*	Habitat and Requirements
Western massasauga (<i>Sistrurus tergeminus</i>)	S3	Shortgrass or mixed grass prairie with gravelly or sandy soils. Often found near draws, floodplains, and mesic habitats in arid landscapes. Frequently found in shrub encroached grasslands.
Plants		
Cory's evening primrose (<i>Oenothera coryi</i>)	S3	Calcareous prairies in the plains country of north Texas up to the panhandle. Perennial plant that flowers April-May. The TXNDD (2025) holds one historical record of cory's evening primrose from April 1882, approximately 13.8 miles west of the Study Area.
Llano butterweed (<i>Packera texensis</i>)	S2	Endemic to Llano uplift of Edwards Plateau. Prefers granite sands. Evergreen; flowers February through March.
Prairie butterfly-weed (<i>Gaura triangulate</i>)	S3	Found in open sandy areas. Flowers March through June.

Sources: TPWD (2025a); Texas A&M Agrilife Research (2025); Cornell Lab of Ornithology (2019)

2.5.7.6 Plants and Sensitive Plant Communities

There are 41 species of plants in Texas that are afforded either federal or state protection under their respective regulatory regimes (TPWD 2025f). No federal or state authorities list any of these plant species as threatened or endangered for Eastland or Callahan Counties (TPWD 2025a; USFWS 2025b).

Review of the TXNDD (2025) data did not indicate any sensitive plant communities within the Study Area. However, the TXNDD data does not indicate the presence or absence of a species or suitable habitat within an area, but merely provides documentation of historical occurrences. No other rare natural plant communities were identified within the Study Area.

3 AGENCY AND PUBLIC CORRESPONDENCE

SWCA contacted federal, state, and local agencies to solicit comments, concerns, and information regarding the proposed 345-kV transmission line within the Study Area. An example of the letter emailed to the agencies and officials and copies of the responses are provided in Appendix A.

Federal Agencies:

- Department of Defense (DoD), Siting Clearinghouse
- Environmental Protection Agency (EPA)
- Federal Aviation Administration (FAA)
- Federal Emergency Management Agency (FEMA)
- Natural Resource Conservation Service (NRCS)
- U.S. Army Corps of Engineers (USACE)
- U.S. Fish and Wildlife Service (USFWS)

State Agencies:

- Railroad Commission of Texas (RRC)
- Texas General Land Office (GLO)
- Texas Historical Commission (THC)

- Texas Commission on Environmental Quality (TCEQ)
- Texas Parks and Wildlife Department (TPWD)
- Texas Water Development Board (TWDB)
- Texas Department of Transportation (TxDOT) – Aviation Division, Environmental Affairs Division, Brownwood District, and Abilene District
- West Central Texas Council of Governments (WCTCOG)

County Agencies:

- Callahan County Judge
- Callahan County Precinct 1 Commissioner
- Callahan County Precinct 2 Commissioner
- Callahan County Precinct 3 Commissioner
- Callahan County Precinct 4 Commissioner
- Callahan Divide Soil and Water Conservation District (SWCD) #552
- Callahan-Shackelford County Farm Bureau
- Callahan County Farm Service Agency
- Eastland County Judge
- Eastland County Precinct 1 Commissioner
- Eastland County Precinct 2 Commissioner
- Eastland County Precinct 3 Commissioner
- Eastland County Precinct 4 Commissioner
- Eastland County Water Supply District
- Eastland County Farm Bureau
- Eastland County Farm Service Agency

Local Agencies:

- Superintendent, Cisco Independent School District
- Superintendent, Baird Independent School District

As of the date of this document, written or verbal responses to emails or letters sent in relation to the Study Area are listed and summarized below:

- The DoD responded via email on September 23, 2024, with a request for additional information to aid in their review as it pertains to the Proposed Project.
- The FAA responded via email on September 23, 2024, stating that if any construction or alterations may affect navigable airspace and meet FAA notice filing criteria, the agency requested that Form 7460-1 (Notice of Proposed Construction or Alteration) be filled out electronically.

- The Callahan County Farm Service Agency (FSA) responded via email on September 24, 2024. The email states that the Callahan County FSA does not have any issues of concern within the Study Area.
- The Eastland County FSA responded via email on September 23, 2024. The email states that the Eastland County FSA does not have any major proposed development or construction within the Study Area. In addition, they do not have any Conservation Reserve Program or wetland reserve contracts within the Study Area.
- The NRCS responded with an emailed letter dated September 23, 2024. The NRCS stated that the Study Area does not contain any USDA-NRCS easements. The letter further states that the Study Area soils have been reviewed and recommended an on-site investigation to determine whether wetlands are present.
- The TCEQ responded via email on September 24, 2024. In TCEQ's response they provided information pertaining to their construction stormwater general permits and determination criteria for determining which stormwater permit may be applicable to the Proposed Project.
- The THC responded via email on October 25, 2024, stating that an archaeological survey is required. The THC determined that the Study Area contains a plethora of recorded archaeological sites and cemeteries, as well as an aboveground resource that has been determined eligible for the NHRP. The agency recommended consulting with a professional archaeologist.
- The TPWD responded with an emailed letter on October 11, 2024, providing a list of species that could be impacted by the Proposed Project activities if suitable habitat is present. The agency also provided a list of regulations pertaining to the Proposed Project and recommendations on how to comply with the regulations provided.
- The TxDOT Brownwood District Engineer responded via an emailed letter on September 25, 2024, and stated that LST utility installation requests are required for facilities located within state highway ROW, LST should coordinate with TxDOT to determine impacts to planned TxDOT projects, and that LST shall design installations within TxDOT ROW per the Utility Accommodation Rules found in TAC 43, Part 1, Chapter 21, Subchapter C, Rules 21.31 through 21.56. In addition, TxDOT notes that driveway/access permits are required for access connections to the state highway system.
- The USACE Fort Worth District responded with an email dated September 27, 2024, stating that the Proposed Project had been assigned a regulatory project manager and Project Number SWF-2024-00470. Following assignment, the regulatory project manager followed up with an emailed letter, stating that USACE are unable to determine from the information provided whether Department of the Army authorization will be required, and if so, in what form. The proposed construction activities may be authorized by general permit, such as NWP 57 for Electric Utility Line and Telecommunications Activities or NWP 51 for Land-Based Renewable Energy Generation Facilities. If the project does not meet the terms and conditions of a general permit, an individual permit would be required for authorization.
- The USFWS (Arlington office) responded via email on September 23, 2024, advising that the majority of the Proposed Project is in Callahan County, which falls under the USFWS Austin Field Office's area of responsibility. Additionally, a list of threatened and endangered species, as well as other sensitive resources, can be retrieved from IPaC. The USFWS (Austin office) did not respond to request for comment or concern. Therefore, SWCA requested an official species list through the IPaC on September 23, 2024 and requested an additional official species list on August 13 2025 to account for any changes to listed species within the study area during the life of the project.

- The Callahan Divide SWCD responded via email on September 24, 2024, stating that they do not have any authority or flood prevention sites within the portion of Callahan County in which the Study Area is located.
- The Eastland County Judge responded via an emailed letter on September 23, 2024. The letter provided by the Eastland County Judge provides Eastland County development ordinances and regulations that may apply to the Proposed Project.

3.1 Public Open-house Meetings

Because the proposed 345-kV transmission line project impacts less than 25 landowners, Lone Star did not hold a public open-house meeting prior to filing the CCN application, consistent with PUC Procedural Rule 22.52(a)(4). Instead, Lone Star contacted the affected landowners directly and on an individual basis.

4 POTENTIAL IMPACTS OF THE PROPOSED PROJECT

Table 9 provides a summary of potential resource impacts from the Proposed Project, which is the route that Lone Star believes best addresses the requirements of PURA and PUC Substantive Rules from the perspective of ecology, community values, land use, and cultural resources. A discussion of potential impacts associated with the Proposed Project is provided by resources in subsequent subsections.

Table 9. Evaluation Criteria Results for Proposed Project

Potential Resource Impacts	Route Data
Land Use	
1. Length of route	51,151 feet
2. Number of habitable structures* within 500 feet of ROW centerline	0
3. Length of ROW using existing transmission line ROW	15,504 feet
4. Length of ROW parallel to existing electric transmission line ROW	29,359 feet
5. Length of ROW parallel to other compatible existing ROW (e.g., highways, public roadways, railways) excluding pipelines	8,510 feet
6. Length of ROW parallel to property lines (not following existing ROW) [†]	9,116 feet
7. Length of ROW across parks/recreational areas [‡]	0
8. Number of additional parks/recreational areas within 1,000 feet of ROW centerline	0
9. Length of ROW across cropland	20,303 feet
10. Length of ROW across rangeland/pastureland	13,250 feet
11. Length of ROW across cropland or pastureland with mobile irrigation systems	0
12. Number of pipeline crossings	4
13. Number of oil/gas wells within ROW	8
14. Number of transmission line crossings	3
15. Number of U.S. and State highway crossings	1
16. Number of farm-to-market (FM) and ranch-to-market (RM) road crossings	1
17. Number of FAA-registered airports with at least one runway more than 3,200 feet in length located within 20,000 feet of the ROW centerline	0
18. Number of FAA-registered airports having no runway more than 3,200 feet in length located within 10,000 feet of the ROW centerline	0

Potential Resource Impacts	Route Data
19. Number of private airstrips within 10,000 feet of ROW centerline	0
20. Number of heliports within 5,000 feet of ROW centerline	0
21. Number of commercial AM radio transmitters within 10,000 feet of ROW centerline	0
22. Number of FM radio transmitters, microwave relay stations, or other electronic installations, within 2,000 feet of ROW centerline	2 (cell towers)
Aesthetics	
23. Estimated length of ROW within foreground visual zone ^d of U.S. and State highways	984 feet
24. Estimated length of ROW within the foreground visual zones ^s of FM and/or RM roads	2,366 feet
25. Estimated length of ROW within foreground visual zone ^d of parks/recreational areas	0
Ecology	
26. Length of ROW across upland woodland/brushland	11,410 feet
27. Length of ROW across bottomland/riparian woodland	884 feet
28. Length of ROW across mapped National Wetlands Inventory wetlands	669 feet
29. Length of ROW across known occupied habitat of federally endangered or threatened species	0
30. Length of ROW across open water (e.g., lakes/ponds)	315 feet
31. Number of stream crossings	6
32. Length of ROW parallel (within 100 feet) to streams or rivers	0
33. Length of ROW across 100-year floodplains	0
Cultural Resources	
34. Number of cemeteries within 1,000 feet of ROW centerline	0
35. Number of recorded cultural resource sites crossed by ROW	0
36. Number of additional recorded cultural resource sites within 1,000 feet of ROW centerline	2
37. Number of NRHP-listed or eligible sites/historic resources crossed by ROW	0
38. Number of additional NRHP-listed or eligible sites/historic resources within 1,000 feet of ROW centerline	0
39. Length of ROW crossing areas of high archaeological/historical site potential	4,473 feet

Note: All length measurements are in feet unless otherwise noted. Values rounded to nearest whole number.

* Single-family and multifamily dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis.

[†] Apparent property boundaries created by existing roads, highways, or railroad ROWs are not "double-counted" in the length of ROW parallel calculation.

[‡] Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

[§] 0.5 mile, unobstructed.

4.1 Impacts on Community Values

4.1.1 Impacts on Land Jurisdiction

The Proposed Project is not located within any municipality, and neither Eastland nor Callahan Counties have implemented a comprehensive management plan. Therefore, the Proposed Project would not be subject to compliance with any municipal codes or ordinances or local zoning requirements.

4.1.2 Impacts on Land Use

The PUC's Substantive Rules, specifically 16 TAC 25.101(b)(3)(B), require consideration of whether new transmission line routes are within existing compatible ROWs, whether the routes parallel existing compatible ROWs, whether the routes parallel property lines or other natural or cultural features, and whether the routes conform with the policy of prudent avoidance. The Proposed Project is approximately 9.5 miles (50,326 feet) in length. During route development, all reasonable efforts were made to provide the most direct route between the Proposed Project endpoints while avoiding or minimizing impacts to environmental, social, and cultural resources.

The Proposed Project uses approximately 2.9 miles (15,504 feet) of existing transmission line ROW and runs parallel to approximately 5.6 miles (29,359 feet) of existing transmission line ROW. Additionally, the route parallels other existing linear ROWs, such as highways, and public roadways (excluding pipelines), for 1.6 miles (8,510 feet). During route development, efforts were made to site the transmission line along existing property boundaries to minimize impacts to existing or planned land uses. As a result, the route parallels existing property boundaries (not within existing ROW) for 1.7 miles (9,116 feet). Overall, 100% of the route parallels existing property boundaries and/or other compatible corridors.

During construction, temporary impacts to land uses within or adjacent to the ROW could occur due to equipment use, vehicular traffic, and human activity. These impacts could include construction noise and dust, temporary constraints on landowner access, and/or disruptions to typical access patterns, but these impacts would be localized and cease when construction ends. Coordination between Lone Star, its contractors, and landowners regarding ROW access and construction scheduling would also help minimize these disruptions.

4.1.2.1 Impacts on Habitable Structures

SWCA determined that no habitable structures are located within 500 feet of the Proposed Project's centerline. The distance from the centerline was determined through the use of GIS software and interpretation of aerial imagery.

4.1.2.2 Impacts on Aviation, Utility, and Transportation Features

No public or private airports or heliports are located within the Study Area. The closest FAA-registered airports with runways over 3,200 feet in length are the Cisco Municipal Airport and Gregory M. Simmons Memorial Airstrip, located approximately 6.5 miles east-northeast and 5.3 miles southeast of the Study Area, respectively.

Within the Study Area, there is one FM radio transmitter which consists of an extended GSM transmit and 5G Sub-6GHz transmit antenna (northeastern antenna), and one 5G mmWave transmit antenna (eastern antenna). Both are located approximately 0.2 mile from the Proposed Project ROW and are not anticipated to be impacted by the Proposed Project.

Data sources used to identify existing electrical transmission and distribution lines include utility company and regional system maps, aerial imagery, and additional available planning documents. The U.S. Electric Power Transmission Lines (2022) identified six transmission lines within the Study Area: one 345-kV transmission line, three 138-kV transmission lines, and two 69-kV transmission lines. However, according to the data provided to SWCA by Lone Star and information available from the U.S. Electric Power Transmission Lines (2022), there are seven transmission lines within the Study Area; Three 345-kV transmission lines owned and operated by Lone Star. Two 138-kV transmission lines and

Two 69-kV transmission lines. Present transmission lines are owned and operated by Comanche Electric Cooperative, Inc., AEP North Texas Co., Lone Star Transmission, and/or Electric Transmission Texas. The Study Area is served by the Electric Reliability Council of Texas, whose mission is to “*maintain the reliability of the electric grid of Texas and help Market Participants fulfill customers’ electric service needs by maintaining balance between load and generation.*” There does not appear to be a public-facing central repository or web map viewer that includes all electrical transmission and distribution lines in order to protect the safety and integrity of the electricity supply chain, according to the PUC (2025). Service lines are also present in the Study Area; these features are not inventoried but are associated with residences and/or farm or ranch operational infrastructure within the Study Area (Google Earth 2025).

The Proposed Project ROW will cross five county roadways, two TxDOT roadways, and one railroad line. Utility crossings at these facilities will require coordination and approval from Eastland and Callahan Counties, TxDOT, and the UPRR, as applicable. Potential project impacts on these transportation facilities could include localized periodic congestion or temporary traffic disruptions resulting from the movement of construction equipment and materials during the construction phase of the Proposed Project. Lone Star would coordinate with each potential affected entity to minimize these types of disruptions or impacts.

Based on the findings discussed above, adverse impacts to aviation, utility, or transportation features occurring as a result of the Proposed Project are not anticipated.

4.1.2.3 Impacts on Agriculture

The Proposed Project will cross approximately 3.8 miles (20,303 feet) of cropland (none of which are irrigated by means of mobile irrigation systems) and approximately 2.5 miles (13,250 feet) of rangeland/pastureland. Clearing, grading, and transmission line construction could result in temporary loss or modification to these lands, but construction effects would be localized and temporary in nature. Depending on landowner planting and harvesting schedules, any impacts to cropland and/or rangeland/pastureland would be minor and temporary in nature. Cleared and/or graded areas would be limited to new pole locations and would remain permanently cleared of vegetation for access and maintenance purposes. All other disturbances would be reseeded or otherwise restored, as needed, or as requested by the landowner. The Proposed Project would not be fenced or otherwise separated from adjacent lands. In addition, portions of existing cropland and rangeland/pasture is being converted to a solar generation facility. For these reasons, it is anticipated that existing agricultural land uses could resume within the ROW following construction and impacts would be temporary and localized.

The Proposed Project is not subject to the requirements of the Farmland Protection Policy Act (FPPA), because the Proposed Project will not be completed by, or receive assistance from, any federal agency.

4.1.2.4 Impacts on Oil and Gas Facilities

Oil and gas facilities within the Study Area include 667 well facilities and seven pipelines. Fourteen wells are located within the Proposed Project ROW, with another 16 located within 200 feet of the ROW. Of the eight wells located within the Proposed Project ROW, one is a permitted location, five are dry holes, and two are canceled locations.

Pipeline facilities within the Study Area include six natural gas pipelines and one crude oil pipeline. The Proposed Project ROW crosses one crude oil pipeline immediately south of the Reata Station, then turns northwest and parallels the pipeline for approximately 2.6 miles before turning south. At CR 320, the Proposed Project ROW parallels two natural gas pipelines running west for approximately 1.6 miles, ultimately crossing both facilities where the Proposed Project ROW crosses CR 320. South of IH 20, the

Proposed Project ROW crosses one more natural gas pipeline before terminating at the Sequoia II Collector Substation Point of Interconnection.

To avoid potential conflicts with existing oil and gas facilities, Lone Star will notify and coordinate with pipeline and well owners prior to construction.

4.1.2.5 Impacts on Parks and Recreation Areas

No parks or recreation areas were identified in the Study Area or located within 1,000 feet of the Proposed Project. Therefore, the Proposed Project would have no impact on this resource.

4.1.3 Impacts on Socioeconomics

Lone Star will use and rely on its employees to oversee and manage the clearing, construction, operation, and maintenance phases of the Proposed Project; however, Lone Star will contract with external parties to physically perform the clearing and construction efforts associated with the Proposed Project.

Accordingly, the Proposed Project could result in slight temporary increases in county employment if local residents are contracted to support the clearing and construction phases of the Proposed Project. Construction workers not sourced from the local population for the clearing and/or construction of the Proposed Project would likely commute to the work site instead of permanently relocating to the area, so no change to the population in Eastland or Callahan County is expected as a result of the Proposed Project.

Any temporary workforce increase could cause an increase to county revenues for both Eastland and Callahan Counties from purchases of lodging, food, fuel, and other merchandise during the construction activities. However, this economic benefit would cease when construction is complete. No additional staff are expected to be required for line operations and maintenance (O&M).

4.1.4 Impacts on Aesthetic Values

Construction of the Proposed Project would result in temporary and permanent aesthetic effects. Temporary impacts to views by residents in the vicinity of the Study Area or by vehicle drivers traveling along adjacent or nearby roads would occur from clearing and construction activity, including erection of the tower structures. Permanent impacts from the Proposed Project would be caused by the cleared ROW, tower structures, and lines from these same viewpoints.

The Proposed Project is within the foreground visual zone (0.5 mile, unobstructed) of features of aesthetic value, including approximately 1.1 miles (5,903 feet) of U.S. and State Highways and 8.4 miles (44,346 feet) of FM and Ranch-to-Market roads. Many portions of these highways and roads have existing transmission ROW along them. The Study Area does not contain any protected landscapes such as public parks, state parks or forests, national parks or forests, wild and scenic rivers, or national trails. The views in the Study Area are rural, functionally developed, and consistent with other adjoining areas within the region. The Proposed Project will adhere to all regulatory compliance requirements; consider and, as practicable, incorporate local feedback; and, when necessary, implement mitigation measures. Regular maintenance will ensure the aesthetic value of the features in the ROW will generally remain unchanged over time. Therefore, the Proposed Project would not adversely impact aesthetic values.

4.2 Impacts on Historical (Cultural Resources) Values

Based on the background review, the Study Area has a moderate potential for cultural resources. A total of 254 cultural resources are recorded within the Study Area. Three archaeological sites (i.e., 41CA21,

41CA79, and 41CA91), 248 PHRs, one historical marker/RTHL, and one historical highway are in the Study Area. Of these, one historical highway and six PHRs intersect the Proposed Project. No National Historic Landmarks (NHLs), SALs, or known freedom colonies were identified within the Study Area (Texas Freedom Colonies Project 2025).

Three previous cultural resources investigation occurred within the Study Area, including a linear survey conducted by Horizon from 2011 to 2012. The project associated with this previous investigation received concurrence from the THC in 2013 (THC 2025).

SWCA also conducted a cultural resources investigation in 2024 and revisited sites 41CA22 and 41EA26, expanded the site boundaries, and newly recorded archaeological site 41CA111, all of which are outside of the Proposed Project and Study Area. Newly extended portions of sites 41CA22, 41EA26, and 41CA111 were recommended ineligible. The THC concurred with this information on February 26, 2025. Additionally, review of the underlying soils, geology, and physiographic landforms suggest the Study Area has low to moderate potential for deeply buried archaeological resources. At this time, Lone Star has committed to avoiding potentially jurisdictional WOTUS, which would preclude a federal nexus. However, the THC is requiring an archaeological survey of the Proposed Project meeting the Archeological Survey Standards for Texas given the potential for buried cultural resources and proximity of previously recorded archaeological sites, cemeteries, and NRHP-eligible resources.

There is high potential for historic (aboveground) resources within the Study Area. According to the THC, a historic resources survey is not required for the Proposed Project as there is no federal nexus, which would necessitate compliance with Section 106 of the NHPA. Although the Proposed Project is not subject to Section 106 of the NHPA at this time, if the Proposed Project was determined to have a federal nexus at a later date, the PHRs within the Proposed Project viewshed, and measuring 0.5 mile from the Proposed Project corridor, would need to be considered for impact evaluation.

4.3 Environmental Impacts of the Project

The potential and anticipated impacts to natural resources resulting from the Proposed Project are discussed below by subject area. Measurements of the environmental criteria were primarily taken from recent aerial photography and from available digital resource layers using GIS.

4.3.1 *Impacts on Physiography and Geology*

Construction of the Proposed Project will have no significant effect on the physiographic or geologic features and resources of the area. Erection of the structures would require the removal and minor disturbance of small amounts of near-surface materials but would have no measurable impact on the geologic resources or features along the Proposed Project. The Proposed Project will have no significant impact on mineral resources in the Study Area. Lone Star will also return each affected property to its original contours and grades unless otherwise agreed to by the landowner/landowners' representatives or where a different contour or grade is necessary to ensure the safety or stability of structures or the safe operation and maintenance of the transmission line.

4.3.2 *Impacts on Soils*

Potential impacts to soils from the Proposed Project construction would include erosion and compaction from clearing, grading, and excavation activities. In accordance with Lone Star's standard construction practices, clearing of woody vegetation, including trees, brush, and undergrowth, would be conducted within the approved ROW area (approximately 150 feet). Prior to construction, Lone Star would develop

a SWPPP to minimize potential impacts associated with soil erosion, compaction, and sedimentation off the ROW. Implementation of this plan would incorporate best management practices (BMPs) to minimize soil erosion on the ROW during significant rainfall events. The SWPPP would also establish the criteria for re-vegetation and mitigating soil compaction to ensure adequate soil stabilization during the construction and post-construction phases. The ROW would be inspected prior to and during construction at SWPPP-specified intervals to ensure that potential high-erosion areas are identified and appropriate BMPs are implemented and maintained to prevent erosion. Lone Star will take special precautions to minimize vehicular traffic over areas with very shallow soils. The ROW would also be inspected post-construction to identify the progress of any revegetated areas and where any additional erosion control measures would need to be installed to assist in soil stabilization. Therefore, the Proposed Project would only result in short-term, minimal impacts to soil resources.

Although the Study Area at large contains 4,382 acres (53%) of soils classified as prime farmland soils, prime farmland soils only if irrigated, farmlands of statewide importance, and farmlands of statewide importance only if irrigated, the Proposed Project's footprint contains only 106.5 acres (1%) of soils classified as prime farmland. Impacts to soils would be predominately short-term in nature; long-term or permanent impacts would be limited to small areas at the pole locations. Therefore, no significant impacts are anticipated to soils.

4.3.3 *Impacts on Surface Water*

The Proposed Project route does not parallel any streams for any length, and there are no surface water development projects planned in the Study Area. However, the ROW would cross six waterways and six waterbodies mapped by SWCA (2025a). Three of the mapped waterways are ephemeral in nature, with Battle Creek and two tributaries being classified as intermittent due to its likelihood to carry water beyond a direct response to rain events. There is an existing low-water crossing south of the Proposed Project ROW that will be used for access for maintenance activities; for construction activities, however, access will be limited to either side of Battle Creek and the low-water crossing will not be used, ensuring this stretch of an important water feature would not be altered beyond vegetation clearing. A SWPPP for the Proposed Project would be implemented during construction, and BMPs would be implemented in accordance with the SWPPP to reduce the potential for sedimentation into these open waters. Lone Star will exercise care when clearing near waterways and when using chemical herbicides to control vegetation within the ROW. Therefore, no significant impacts are anticipated to surface water integrity or water quality.

4.3.4 *Impacts on Groundwater*

No adverse impacts to groundwater are expected to occur from the construction and operation of the Proposed Project. The amount of recharge area for the aquifer system that would be disturbed by construction is minimal when compared to the total amount of recharge area available in the region. Additionally, if an accidental spillage of fuel, lubricants, or other petroleum products occurred from normal operation of heavy equipment during construction activities, it would be unlikely to result in any groundwater contamination. This is because any accidental spills would be promptly handled in accordance with state and federal regulations. Further, contractors will take necessary precautions to avoid and minimize the occurrence of such spills.

4.3.5 *Impacts on Floodplains*

At the time of this report, Callahan County does not participate in the FEMA program, and there is no modernized floodplain data; therefore, floodplain information for that portion of the Proposed Project is not available. Eastland County has floodplain data from 1977 showing floodplain areas along unnamed

drainages, but these areas occur outside the Proposed Project ROW. If transmission line foundation installation occurs in areas that contain currently unmapped floodplains, there is potential for floodplain impacts. The Proposed Project should have no significant impact on the function of floodplains and, as a result, should not adversely affect adjacent property or downstream property.

4.3.6 *Impacts on Wetlands*

Wetlands serve as habitat to a number of species and are often used as migration corridors for wildlife. Removal of vegetation within wetlands increases the potential for erosion and sedimentation, which can be detrimental to downstream plant communities and aquatic life. Mapped wetland types identified within the Study Area include Palustrine Unconsolidated Bottom (PU), Palustrine Emergent (PEM), and Riverine. The PU, PEM, and Riverine wetlands are the dominant wetland types within the Study Area. The NWI-mapped wetlands crossed by the proposed ROW are 13 riverine segments which correlate to the 12 NHD waterway segments and one NHD waterbody. Additionally, four PU ponds and one PEM are crossed by the proposed ROW. The two PU ponds and one PEM wetland correlate to the three NHD waterbodies mentioned above.

The Proposed Project has been designed to avoid wetlands to the extent feasible. Temporary and/or permanent placement of fill material within jurisdictional surface waters and associated wetlands requires a permit from the USACE under Section 404 of the CWA. Because Lone Star does not expect to place fill material in jurisdictional surface waters or associated wetlands on either a temporary or permanent basis, a Section 404 permit is not anticipated for the Proposed Project. If construction of the Proposed Project impacts WOTUS, or associated jurisdictional wetlands as defined in Section 404 of the CWA, the Proposed Project is anticipated to meet the criteria of the NWP 57 – Electric Utility Line and Telecommunications Activities based on current route design.

4.3.7 *Impacts on Vegetation*

The transmission route primarily crosses mesquite scrub-shrub rangelands in addition to a mix of cropland, riparian woodland, and pastureland. The primary direct impact on vegetation associated with the Proposed Project would be the removal or modification of existing vegetation. Clearing would occur only where necessary to provide temporary and permanent access to, and workspace within, the ROW. When clearing vegetation, Lone Star will make efforts to retain native ground cover, where possible, to minimize impacts to local vegetation and will reseed as required. Once construction is completed, the ROW would be revegetated in consultation with landowners and soil stabilization needs.

Herbicide applications may be required to maintain the herbaceous vegetation layer within the ROW. Therefore, O&M activities would maintain, but not further alter, vegetation community composition, abundance, or diversity within the Study Area.

Potential indirect impacts to vegetation adjacent to construction and O&M areas could include the accumulation of fugitive dust on vegetation, thereby temporarily reducing growth of vegetation; sedimentation of downstream plant communities as a result of soil erosion; and off-site pollution of adjacent plant communities as a result of transitory oil and grease from heavy equipment. However, Lone Star would minimize these impacts through use of a SWPPP and associated BMP measures.

Lone Star will exercise care to avoid affecting non-targeted vegetation or animal life when using chemical herbicides to control vegetation within the ROW, and such herbicide use shall comply with the rules and guidelines established in the Federal Insecticide, Fungicide and Rodenticide Act and with the Texas Department of Agriculture Regulations.

4.3.7.1 Impacts on Wildlife, Fisheries, TPWD Species of Conservation Concern, and USFWS Birds of Conservation Concern

The Proposed Project could result in removal or modification of habitat used by TPWD species of conservation concern, USFWS birds of conservation concern, and other wildlife within the ROW. Increased noise and equipment movement during construction could temporarily displace mobile wildlife species from the immediate workspace area. General wildlife in the immediate area could experience temporary habitat fragmentation due to a slight loss of cover, nesting, or forage material during construction; however, the prevalence of similar habitats in the Study Area and regrowth of herbaceous vegetation in the ROW following construction would minimize the long-term effects of this loss. Further, by designing the Proposed Project to parallel existing linear features and span all surface waters where practical, the potential for habitat fragmentation was minimized during route development.

Because the Proposed Project activities could also displace individuals in the vicinity of the activity, displacement would potentially force these affected individuals into competition with residents of adjacent habitat for available resources. This displacement could produce short-term changes in localized species composition (Adams and Geis 1981) or lead to reduced physical condition and health for affected individuals. However, adjacent habitat would likely be available for use for any displaced individuals. Scrub-shrub, pastureland, and agricultural-dependent wildlife species would be expected to re-populate the ROW once activities are complete and herbaceous vegetation has recovered.

It is possible that some small, low-mobility or underground species (e.g., some amphibians, reptiles, mammals) could be killed by heavy machinery or vehicle activity during construction and O&M activities. However, the use of vehicles and machinery would generally be confined to the ROW that is accessed and traversed by vehicles and equipment using low travel speeds. The low speed of travel could help minimize collision-related deaths or injuries. In addition, any holes dug for foundations will be covered until structures are set and the holes backfilled, minimizing the opportunity for small species to get trapped or inadvertently buried. Larger, more-mobile terrestrial species, such as birds, deer, foxes, and squirrels, would likely be able to avoid such direct impacts. The clearing of vegetation within the ROW would also not be expected to create a barrier to movement for highly mobile animals such as birds (Fahrig and Rytwinski 2009).

If ROW clearing occurs during bird nesting season, potential impacts could occur within the ROW area related to migratory bird eggs and/or nestlings. Increases in noise and equipment activity levels during construction could also potentially disturb breeding or other activities of bird species nesting in areas adjacent to the ROW. Lone Star proposes to complete all ROW clearing and construction activities in compliance with the MBTA and TPWD recommendations to avoid or minimize potential impacts to migratory birds.

Aquatic systems could be adversely affected by erosion, siltation, and sedimentation from construction activities. Increases in suspended solids might adversely affect aquatic organisms that require relatively clear water for foraging and/or reproduction. Physical aquatic habitat loss or alteration could also result wherever riparian vegetation is removed. To avoid or minimize these impacts, Lone Star proposes implementation of a SWPPP and BMPs.

O&M activities would predominantly consist of herbicide applications, when needed, to maintain herbaceous habitats within the ROW. Similar to construction activities, more-mobile wildlife species would be expected to move out of the area during O&M activities to avoid human contact, whereas less-mobile species could be more susceptible to harm or mortality from maintenance activities. In general, O&M activities would be of short duration, and are unlikely to result in changes to wildlife species composition and community dynamics.

Once operational, transmission lines can also present additional hazards to birds due to the possibility of electrocution and/or collisions. However, Lone Star's design to Avian Powerline Interaction Committee (APLIC) standards would reduce this risk. BMPs, such as installing bird flight diverters or other marking devices on the line within potential high bird use areas, would also minimize the potential for avian collision.

4.3.8 Impacts on Species of Concern

A description of species of concern known or previously known to occur in the Study Area is presented in Sections 2.5.7.2 through 2.5.7.6.

No USFWS-designated critical habitat areas were identified in the Study Area. No plant species are listed by either the federal or state authorities as threatened or endangered within the Study Area. Review of the TXNDD database did not indicate any recent occurrences of federal or state-listed species within the Proposed Project ROW.

Of the state and federally listed species, only the **Texas horned lizard** is anticipated to occur regularly within the Proposed Project ROW where suitable habitat exists. If present, the Texas horned lizard could be subject to minor temporary disturbance during construction activities. If this species is observed during construction activities, it should be left unmolested and allowed to leave the vicinity of the Proposed Project. Therefore, "take" of state-listed species as defined in Section 1.101(5) of the TPWC is not anticipated as a result of this Proposed Project.

The **monarch butterfly**, a candidate for federal listing, as well as the **bald eagle**, which is protected under the BGEPA, are the only other wildlife species of concern that may occur within the Proposed Project ROW on a regular basis. Should Lone Star adhere to all of the previously mentioned minimization efforts, the level of effect on these species should not rise to the level of "take" as defined in 16 USC 1532.

Other listed species, such as the **eastern black rail**, **piping plover**, **rufa red knot**, and **whooping crane**, are only anticipated to occur within the Study Area as pass-through migrants. Therefore, construction activities are not anticipated to have negative impacts on these federally listed species. As previously noted, installation of bird flight diverters or other marking devices on the line, as well as Lone Star's implemented transmission line engineering design, would help minimize collision or electrocution impacts to avian species during the operation phase of the Proposed Project.

5 ROUTE EVALUATION

The purpose of this EA was to evaluate Lone Star's proposed single-circuit, 345-kV electric transmission line between the Reata Station and the Sequoia II Solar Collector Substation Point of Interconnection located in Eastland and Callahan Counties. A proposed route was developed between the Proposed Project endpoints based on mapped constraints, landowner interest, and in accordance with PURA 37.056 I(4)(A–D), the PUC's standard CCN application, 16 TAC 25.101, including the PUC's policy of prudent avoidance, and consistency with Lone Star's transmission line routing guidelines.

Once this route was identified and refined, SWCA completed an environmental analysis of the single proposed route, the results of which are shown in Table 9. The environmental analysis considered the proposed route strictly from an environmental and land use impact viewpoint (i.e., land use, aesthetics, ecology, and cultural resources) based upon measurement of the environmental criteria (see Table 1).

Lone Star and SWCA believe this proposed route addresses and reasonably balances the requirements of PURA, the PUC's Substantive Rules, and the Commission CCN application form.

The Proposed Project is in rural Eastland and Callahan Counties, outside of the jurisdictional boundaries of any municipality. The results of the criteria evaluated include the following:

- The Proposed Project ROW is 9.5 miles (51,151 feet) in length.
- There are no habitable structures within 500 feet of the Proposed Project.
- The Proposed Project runs parallel with existing compatible corridors and apparent property boundaries (excluding pipelines) for 100% of its length.
- The Proposed Project has no cemeteries within 1,000 feet of the ROW centerline.
- The Proposed Project has no public or private airstrips within 10,000 feet or heliports within 5,000 feet of the ROW centerline.
- The Proposed Project has no commercial AM radio transmitters within 10,000 feet of the ROW centerline, and two FM transmitter within 2,000 feet of the ROW centerline.
- The Proposed Project crosses 20,303 feet of cropland, 13,250 feet of pastureland/rangeland, and 11,410 feet of upland woodland/brushland (mesquite scrub-shrub rangeland).
- The Proposed Project has only 884 feet of ROW through bottomland/riparian woodlands (which may be spanned to avoid impact).
- The Proposed Project has no ROW across known occupied habitat of federally listed endangered or threatened species. The monarch butterfly, a federal candidate species, may occur in the Study Area during migration, and the Texas horned lizard, a state-listed threatened species, may also occur in the Study Area in small numbers in suitable habitat.
- The Proposed Project crosses 6 streams mapped by SWCA.
- The Proposed Project does not cross any parks/recreational areas or have any length of ROW within 1,000 feet of such resources.
- The Proposed Project does not parallel any streams or rivers within 100 feet.
- The Proposed Project does cross a potentially historic-age, former expedition trail route segment.
- The Proposed Project has two previously recorded archaeological sites within 1,000 feet of ROW centerline.
- The Proposed Project crosses no NRHP-listed properties and has no NRHP-listed properties within 1,000 feet of the ROW centerline.
- The Proposed Project should have no significant impact on the function of floodplains and, as a result, should not adversely affect adjacent or downstream properties.
- The Proposed Project is not in the foreground visual zone (0.5 mile, unobstructed) of any feature of aesthetic value.

6 LIST OF PREPARERS

The individuals that assisted in the preparation of this EA are presented in Table 10.

Table 10. List of Preparers

Name	Project Responsibility
Marcus Hope, Lead Wetland Scientist	Project Manager, EA Preparer
Veda Allen, Assistant Staff Biologist	EA Preparer
Analise Hollingshead, Lead Archaeologist	EA Preparer
Hanna Moore, Staff Archaeologist	EA Preparer
Daniel Norwid, Architectural Historian	EA Preparer
David Najvar, Senior Environmental Planner	EA Preparer
Kelsey Condell, Senior Project Manager	EA Preparer
Kirsten Super, Assistant Staff Geospatial Scientist	GIS
Brian Jonescu, Assistant Project Geospatial Scientist	GIS
Sue Wilmot, Senior Environmental Planner	EA Reviewer
Bridgitte Root, Associate Project Technical Editor	EA Technical Editor

7 REFERENCES CITED

- Adams, L.W., and A.D. Geis. 1981. *Effects of highways on wildlife*. Report No. FHWA/RD-81/067, U.S. Department of Transportation Federal Highway Administration, Washington, D.C.
- AirNav. 2025. Airports. Available at: <https://www.airnav.com/airports/>. Accessed August 2025.
- AntennaSearch. 2025. Towers and Antennas in the U.S. Available at: <https://www.antennasearch.com/>. Accessed August 2025.
- Armbruster, M.J. 1990. *Characterization of Habitat Used by Whooping Cranes During Migration*. U.S. Fish and Wildlife Service Biological Report 90(40).
- Baker, A., P. Gonzalez, R.I.G. Morrison, and B.A. Harrington. 2020. Red Knot (*Calidris canutus*), version 1.0. In *Birds of the World* (S.M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, New York. Available at: <https://doi.org/10.2173/bow.redkno.01>. Accessed July 2025.
- Bever, Michael R., and David J. Meltzer. 2007. Exploring Variation in Paleoindian Live Ways: The Third Revised Edition of the Texas Clovis Fluted Point Survey. *Bulletin of the Texas Archeological Society* 78:65–99.
- Black, S. L., and A. J. McGraw. 1985. *The Panther Springs Creek Site: Cultural Change and Continuity within the Upper Salado Creek Watershed, South-Central Texas*. Archeological Survey Report No. 100. Center for Archaeological Research, The University of Texas at San Antonio.
- Blair, Frank W. 1950. The Biotic Provinces of Texas. *Tex. J. Sci.* 2:97-117
- Bolton, Herbert Eugene (editor). 1916. *Spanish Exploration in the Southwest, 1542–1706*. Charles Scribner's Sons, New York. Available at: <https://americanjourneys.org/aj-008/summary/>. Accessed August 2025.
- Bousman, C. Britt, Barry W. Baker, and Anne C. Kerr. 2004. Paleoindian Archaeology in Texas. In *The Prehistory of Texas*, edited by T.K. Pertulla, pp. 15–97. Texas A&M University Anthropology Series No. 9. Texas A&M University Press, College Station.
- Bousman, C. Britt, Michael B. Collins, Paul Goldberg, Thomas Stafford, Jan Guy, Barry W. Baker, D. Gentry Steele, Marvin Kay, Anne Kerr, Glen Fredlund, Phil Dering, Vance Holliday, Diane Wilson, Wulf Gose, Susan Dial, Paul Takac, Robin Balinsky, Marilyn Masson, and Joseph F. Powell. 2002. The Paleoindian-Archaic Transition in North America: New Evidence from Texas. *Antiquity* 76:980–990.
- Buehler, D.A. 2022. Bald Eagle (*Haliaeetus leucocephalus*), version 2.0. In *Birds of the World* (P.G. Rodewald and S G. Mlodinow, Editors). Cornell Lab of Ornithology, Ithaca, New York. Available at: <https://doi.org/10.2173/bow.baleag.02>. Accessed August 2025.
- Bureau of Economic Geology (BEG). 1992. Geologic Atlas of Texas, Abilene Sheet. Bureau of Economic Geology, University of Texas at Austin. Austin, Texas.
- . 1996. Physiographic map of Texas. Bureau of Economic Geology, University of Texas at Austin. Austin, Texas.

- Callahan County Appraisal District. 2025. Interactive Map. Available at: <https://gis.bisclient.com/callahancad/>. Accessed August 2025.
- Campbell, L. 2003. *Endangered and Threatened Animals of Texas: Their Life History and Management*. Austin, Texas: Texas Parks and Wildlife Press. Revised and approved by USFWS, 2003.
- Campbell, R.B. 2021a. Antebellum Texas. *Handbook of Texas Online*. Texas State Historical Association. Last updated in April 2021. Available at: <https://www.tshaonline.org/handbook/entries/antebellum-texas>. Accessed August 2025.
- . 2021b. Slavery. *Handbook of Texas Online*. Texas State Historical Association. Last updated in June 2021. Available at: <https://www.tshaonline.org/handbook/entries/slavery>. Accessed August 2025.
- Canadian Wildlife Service and U.S. Fish and Wildlife Service. 2007. *International Recovery Plan for the Whooping Crane*. Ottawa: Recovery of Nationally Endangered Wildlife. Albuquerque, New Mexico: USFWS.
- Cell Tower Maps. 2025. Cell Tower Map and Locations. Available at: <https://www.celltowermaps.com/>. Accessed August 2025.
- Chadde, S.W. 2012a. Wetland Plants of Texas, Volume One Monocots. A Bogman Guide.
- . 2012b. Wetland Plants of Texas, Volume Two Dicots. A Bogman Guide.
- Chavez, Victor E., and Laura Clark. 2023. *Cultural Resources Survey of the El Dorado Solar Project, Callahan County, Texas*. SWCA Cultural Resources Report No. 23-841. Austin, Texas.
- Chipman, Donald E. 1992. *Spanish Texas, 1519–1821*. Austin: The University of Texas Press.
- Collins, Michael B. 2004. Archeology in Central Texas. In *The Prehistory of Texas*, edited by T.K. Pertulla, pp. 101–126. Texas A&M University Anthropology Series No. 9. College Station: Texas A&M University Press.
- Cornell Lab of Ornithology. 2019. All About Birds. Cornell Lab of Ornithology, Ithaca, New York. Available at: <https://www.allaboutbirds.org>. Accessed August 2025.
- Cowardin, L.M, V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service, Office of Biological Services, Washington, D.C.
- de la Teja, Jesus F. 2018. Mexican War of Independence. *Handbook of Texas Online*. Texas State Historical Association. Last updated in August 2018. Available at <https://www.tshaonline.org/handbook/entries/mexican-war-of-independence>. Accessed August 2025.
- Dering, Phil, and Vaughn M. Bryant, Jr. 2007. Plant Remains. In *Archaeological and Paleoecological Investigations at the Richard Beene Site, South-Central Texas, Vol. 2*, edited by A. V. Thoms and R. D. Mandel. Reports of Investigations 8. Texas Antiquities Permit No. 1589. College Station: Center for Ecological Archaeology, Texas A&M University.

- Dewitz, J. 2023. National Land Cover Database (NLCD) (ver. 3.0 November 2023). Available at: <https://www.usgs.gov/media/images/annual-nlcd-2023-conterminous-united-states>. Accessed August 2025.
- Dixon, J.R. 2013. Amphibians and Reptiles of Texas: With Keys, Taxonomic Synopses, Bibliography, and Distribution Maps. 3rd Edition. College Station: Texas A&M University.
- Eastland County Appraisal District. 2025. Eastland CAD Web App. Available at: <https://eastlandcad.org/home/map>. Accessed August 2025.
- eBird. 2025. An online database of bird distribution and abundance. eBird, Ithaca, New York. Available at: <https://ebird.org/explore>. Accessed August 2025.
- Eddleman, W.R., R.E. Flores, and M. Legare. 2020. Black Rail (*Laterallus jamaicensis*), version 1.0. In *Birds of the World* (A.F. Poole and F.B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, New York. Available at: <https://birdsoftheworld.org/bow/species/blkrai/cur/introduction>. Accessed August 2025.
- Elliott-Smith, E., and S.M. Haig. 2004. Piping Plover (*Charadrius melodus*), The Birds of North America Online (A. Poole, Editor). Cornell Lab of Ornithology, Ithaca, New York. Available at: <https://birdsoftheworld.org/bow/species/pipplo/1.0/introduction>. Accessed August 2025.
- Fahrig, L., and T. Rytwinski. 2009. Effects of roads on animal abundance: an empirical review and synthesis. *Ecology and Society* 14(1):21. Available at: <http://www.ecologyandsociety.org/vol14/iss1/art21/>. Accessed August 2025.
- Farm Service Agency (FSA). 2025. Conservation Reserve Program. Available at: <https://www.fsa.usda.gov/resources/programs/conservation-reserve-program>. Accessed September 2025.
- Federal Aviation Administration (FAA). 2025. Airports of the United States, Puerto Rico, and Virgin Islands. FAA-Airports. Available at: <https://hub.arcgis.com/documents/f74df2ed82ba4440a2059e8dc2ec9a5d/explore>. Accessed August 2025.
- Federal Emergency Management Agency (FEMA). 2025a. National Flood Hazard Layer. Available at: <https://www.fema.gov/national-flood-hazard-layer-nfhl>. Accessed August 2025.
- . 2025b. Estimated Base Flood Elevation Viewer. Available at: <https://webapps.usgs.gov/infrm/estBFE/>. Accessed August 2025.
- Fields, Ross C. 2004. The Archeology of the Post Oak Savanna of East-Central Texas. In *The Prehistory of Texas*, edited by T.K. Pertulla, pp. 347–407. Texas A&M University Anthropology Series No. 9. Texas A&M University Press, College Station.
- Find A Grave. 2025. Dothan Cemetery. Memorial ID: 3270. Available at: <https://www.findagrave.com/cemetery/3270/dothan-cemetery>. Accessed August 2025.
- Foster, T.R., T. Summerville, and T. Brown. 2006. The Texas Historic Overlay: A Geographic Information System of Historic Map Images for Planning Transportation Projects in Texas. Prepared for the Texas Department of Transportation by PBS&J, Austin.

- Freeman, Martha Doty. 1994. *Agriculture in Texas: Ranching and Stock Farming on the Eastern Edwards Plateau, 1845–1941*. Komatsu/Rangel, Inc., Architects and Planners, Fort Worth, Texas.
- Google Earth. 2025. Historical satellite imagery. Available at: <https://www.google.com/earth/>. Accessed August 2025.
- Griffith, G.E., S.B. Bryce, J.M. Omernik, and A. Rogers. 2007. Ecoregions of Texas. Texas Commission on Environmental Quality. Austin, Texas.
- Hendrickson, D.A., and A.E. Cohen. 2022. Fishes of Texas Project Database, Version 3.0. Available at: <https://www.fishesoftexas.org/home/>. Accessed August 2025.
- Henke, S.E., and W.S. Fair. 1998. Management of Texas Horned Lizards. Wildlife Management Bulletin of the Caesar Kleberg Wildlife Research Institute. Texas A&M University-Kingsville. No.2.
- Hester, Thomas R. 2004. The Prehistory of South Texas. In *The Prehistory of Texas*, edited by T.K. Pertulla, pp. 127–151. Texas A&M University Anthropology Series No. 9. College Station: Texas A&M University Press.
- Hibbitts, T.D., and T.J. Hibbitts. 2015. Texas Lizards: A Field Guide. Austin: University of Texas Press.
- Hofman, Jack L. 1989. Prehistoric Culture History—Hunters and Gatherers in the Southern Great Plains. In *From Clovis to Comanchero: Archeological Overview of the Southern Great Plains*, edited by J.L. Hofman, R.L. Brooks, J.S. Hays, D.W. Owsley, R.L. Jantz, M.K. Marks, and M.H. Manhein, pp. 25–60. Research Series No. 35. Arkansas Archeological Survey, Fayetteville.
- Hollingshead, Analise, and Mitch Ford, Joshua Keene, and Jay King. 2024. *Intensive Archaeological Survey of the Reata Station to Dorado Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas*. SWCA Cultural Resources Report No. 24-331. Austin, Texas.
- Howell, S.N.G., and S. Webb. 1995. *A Guide to the Birds of Mexico and Northern Central America*. New York: Oxford University Press Inc.
- iNaturalist. 2025a. Available at: <https://www.inaturalist.org/>. Accessed August 2025.
- . 2025b. Texas Eagle Nests. Available at: <https://www.inaturalist.org/projects/texas-eagle-nests>. Accessed August 2025.
- Jelks, Edward B. 1962. *The Kyle Site: A Stratified Central Texas Aspect Site in Hill County, Texas*. Archaeology Series No. 5. Austin: Department of Anthropology, University of Texas.
- Katzner, T.E., M.N. Kochert, K. Steenhof, C.L. McIntyre, E.H. Craig, and T.A. Miller. 2020. Golden Eagle (*Aquila chrysaetos*), version 2.0. In *Birds of the World* (P.G. Rodewald and B.K. Keeney, Editors). Cornell Lab of Ornithology, Ithaca, New York. Available at: <https://doi.org/10.2173/bow.goleag.02>. Accessed August 2025.
- Lang, Brett. 2019. *Intensive Archeological Survey of the Proposed FM 407 From Gulf Avenue to West of Sage Drive, Justin, Denton County, Texas*. Texas Antiquities Permit No. 8568. Cox McClain Technical Report No. 206 (CMEC-AR-206).

- Leffler, John. 2020. Eastland County. *Handbook of Texas Online*. Texas State Historical Association. Last updated in October 2020. Available at: <https://www.tshaonline.org/handbook/entries/eastland-county>. Accessed August 2025.
- Lipscomb, Carol A. 2020. Comanche Indians. *Handbook of Texas Online*. Texas State Historical Association. Last updated in October 2020. Available at: <https://www.tshaonline.org/handbook/entries/comanche-indians>. Accessed August 2025.
- Lockwood, M.W., and B. Freeman. 2014. *The TOS handbook of Texas birds*. Second ed. College Station: Texas A&M University Press.
- Lohse, Jon C., David B. Madsen, Brendan J. Culleton, and Douglas J. Kennett. 2014. Toward an Improved Archaic Radiocarbon Chronology for Central Texas. *Bulletin of Texas Archeological Society* 85:259–287.
- Lohse, Jon C., Stephen L. Black, and Laly M. Cholak. 2014. Isotope Paleoecology of Episodic Mid-to-Late Holocene Bison Population Expansions in the Southern Plains, U.S.A. *Quaternary Science Reviews* 101:1–13.
- Lohse, Jon C., Brendan Culleton, Stephen L. Black, and Douglas J. Kennett. 2014. A Precise Chronology of Middle and Late Holocene Bison Exploitation in the Far Southern Great Plains. *Journal of Texas Archeology and History* 1, 94e126.
- Long, Christopher. 2020. Callahan County. *Handbook of Texas Online*. Texas State Historical Association. Last updated in October 2020. Available at: <https://www.tshaonline.org/handbook/entries/callahan-county>. Accessed August 2025.
- Maier, Hannah, Alex Townsend, Delfin Weis, and Liane Linehan. Details for Site 41CA91. Archeological Site Form – Atlas Number 9059009101. Prepared by SWCA Environmental Consultants. On file, Texas Historical Commission Texas Archeological Sites Atlas, Austin, Texas.
- McDonough, Katelyn N., Jaime L. Kennedy, Richard L. Rosencrance, Justin A. Holcomb, Dennis L. Jenkins, and Kathryn Puseman. 2022. Expanding Paleoindian Diet Breadth: Paleoethnobotany of Connley Cave 5, Oregon, USA. *American Antiquity* 87(2):303–332.
- Meltzer, David J. 2020. Overkill, Glacial History, and the Extinction of North America's Ice Age Megafauna. *PNAS* 117:28555–28563.
- Meltzer, David J., and Michael R. Bever. 1995. Paleoindians of Texas: An Update on the Texas Clovis Fluted Point Survey. *Bulletin of the Texas Archeological Society* 66:47–81.
- Mendoza, Jacob, Liane Linehan, Heather Backo, Hannah Maier, and Delfin Weis. 2023. Details for Site 41CA79. Archeological Site Form – Atlas Number 9059007901. Prepared by SWCA Environmental Consultants. On file, Texas Historical Commission Texas Archeological Sites Atlas, Austin, Texas.
- Morrison, M.L., R.N. Wilkins, B.A. Collier, J. Groce, H. Mathewson, T. McFarland, A. Snelgrove, T. Snelgrove, and K. Skow. 2010. Golden-cheeked Warbler Population Distribution and Abundance. Texas A&M Institute of Renewable Natural Resources, College Station, Texas.

- Nance, Joseph M. 2021. Republic of Texas. *Handbook of Texas Online*. Texas State Historical Association. Last updated in January 2021. Available at: <https://www.tshaonline.org/handbook/entries/republic-of-texas>. Accessed August 2025.
- National Audubon Society. 2025. Audubon Field Guide: white-faced ibis. Available at: <https://www.audubon.org/field-guide/bird/white-faced-ibis>. Accessed August 2025.
- National Conservation Easement Database (NCED). 2025. NCED Interactive Map. Available at: <https://site.tplgis.org/NCED/planningapp/>. Accessed August 2025.
- Nationwide Environmental Title Research (NETR). 2024. Historic Aerials by NETR online. Available at: <https://www.historicaerials.com/viewer>. Accessed August 2025.
- Natural Resources Conservation Service (NRCS). 2019. Web Soil Survey. U.S. Department of Agriculture. Available at: <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. Accessed August 2025.
- Office of Information and Regulatory Affairs. 2023. Department of the Interior/USFWS; Endangered and Threatened Wildlife and Plants; Endangered Species Status for the Tricolored Bat. Available at: <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202310&RIN=1018-BG15>. Accessed July 2025.
- Olien, Roger M. 2022. Oil and Gas Industry. *Handbook of Texas Online*. Texas State Historical Association. Last updated in January 2022. Available at: <https://www.tshaonline.org/handbook/entries/oil-and-gas-industry>. Accessed August 2025.
- Ortego, B., C. Gregory, D. Mabie, M. Mitchell, and D. Schmidt. 2009. Special Bald Eagle and Osprey Section: Texas Bald Eagles. *Bulletin of Ornithological Society* 42(1–2):2009.
- Pertulla, Timothy K. 2004. An Introduction to Texas Prehistoric Archaeology. In *The Prehistory of Texas*, edited by T. K. Pertulla, pp. 5–14. Texas A&M University Anthropology Series No. 9. College Station: Texas A&M University Press.
- Peter, Duane E., and Daniel E. McGregor (editors). 1988. *Late Holocene Prehistory of the Mountain Creek Drainage*. Joe Pool Lake Archaeological Project, Vol. I. Dallas: Archaeology Research Program, Southern Methodist University.
- Pratt, Joseph Hyde. 1910. Good Roads Movement in the South. *Annals of the American Academy of Political Science* 35(January):106.
- Prewitt, Elton. R. 1981. Cultural Chronology in Central Texas. *Bulletin of the Texas Archeological Society* 52:65–89.
- Prikryl, Daniel J. 1987. A Synthesis of Prehistory of the Lower Elm Fork of the Trinity River. Unpublished M.A. thesis. Austin: Department of Anthropology, University of Texas.
- . 1990. *Lower Elm Fork Prehistory: A Redefinition of Cultural Concepts and Chronologies along the Trinity River, North-Central Texas*. Office of the State Archeologist Report 37. Austin: Texas Historical Commission.
- Procter, Ben H. 2021a. Great Depression. *Handbook of Texas Online*. Texas State Historical Association. Last updated in June 2021. Available at: <https://www.tshaonline.org/handbook/entries/great-depression>. Accessed August 2025.

- . 2021b. World War II. *Handbook of Texas Online*. Texas State Historical Association. Last updated in April 2021. Available at: <https://www.tshaonline.org/handbook/entries/world-war-ii>. Accessed August 2025.
- Public Utility Commission of Texas (PUC). 2015. Rulemaking to amend substantive rule 25.101, relating to certification criteria. Available at: <https://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.101/42740adt.pdf>. Accessed August 2025.
- . 2025. Texas Electricity Supply Chain Map. Available at: <https://www.puc.texas.gov/industry/maps/supplychain/>. Accessed August 2025.
- Railroad Commission of Texas (RRC). 2025. Public GIS viewer. Available at: <https://gis.rrc.texas.gov/gisviewer/>. Accessed August 2025.
- Reimer, Paula J., William EN Austin, Edouard Bard, Alex Bayliss, Paul G. Blackwell, Christopher Bronk Ramsey, Martin Butzin et al. 2020. The IntCal20 Northern Hemisphere radiocarbon age calibration curve (0–55 cal kBP). *Radiocarbon* 62, no. 4 (2020):725–757.
- Richardson, T.C., and Harwood P. Hinton. 2019. Ranching. *Handbook of Texas Online*. Texas State Historical Association. Last updated in April 2019. Available at: <https://www.tshaonline.org/handbook/entries/ranching>. Accessed August 2025.
- Salazar, Victor E., Laura Clark, and Tatiana Hargrove. 2024. *Cultural Resources Survey of the Deville Solar Project, Callahan County, Texas*. SWCA Cultural Resources Report No. 23-910. Austin, Texas.
- Sauer, J.R., J.E. Hines, J.E. Fallon, K.L. Pardieck, D.J. Ziolkowski, and W.A. Link. 2014. The North American Breeding Bird Survey, Results and Analysis 1966–2013. Version 01.30.2015. Laurel, Maryland: USGS Patuxent Wildlife Research Center.
- Schmidly, D.J., and R.D. Bradley. 2016. *The Mammals of Texas*. University of Texas Press.
- Seyffert, K.D. 2001. *Birds of the Texas Panhandle*. College Station: Texas A&M University Press.
- Sibley, D.A. 2000. *National Audubon Society -- The Sibley Guide to the Birds*. Chanticleer Press, Inc.
- Skaggs, Jimmy M. 2020. Western Trail. *Handbook of Texas Online*. Texas State Historical Association. Last updated in February 2020. Available at: <https://www.tshaonline.org/handbook/entries/western-trail>. Accessed August 2025.
- Suhm, Dee Ann. 1960. A Review of Central Texas Archeology. *Bulletin of the Texas Archeological Society* 29:63–107.
- SWCA Environmental Consultants (SWCA). 2022a. Critical Issues Analysis for the El Dorado Solar Project, Callahan and Eastland Counties, Texas. May 2022.
- . 2022b. Critical Issues Analysis for the Deville Solar Project, Callahan County, Texas. May 2022.
- . 2025a. Aquatic Resources Delineation Report for the Reata Station to Sequoia II Transmission Line Project, Callahan and Eastland Counties, Texas. September 2025.

- . 2025b. Threatened and Endangered Species Habitat Assessment for the Reata Station to Sequoia II Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas. August 2025.
- Texas A&M Agrilife Research. 2025. The Texas Breeding Bird Atlas. Available at: <https://txtbba.tamu.edu>. Accessed August 2025.
- Texas A&M Forest Service. 2012. Famous Trees of Texas: Original Burkett Pecan. Available at <https://tfsdev.tamu.edu/websites/FamousTreesOfTexas/TreeLayout.aspx?pageid=16104>. Accessed August 2025.
- Texas Association of Regional Councils. 2025. West Central Texas Council of Governments. Available at: <https://txregionalcouncil.org/counties/callahan/>. Accessed August 2025.
- Texas Commission on Environmental Quality (TCEQ). 2022. 2022 Texas Integrated Report – Texas 303(d) List. Available at: <https://www.tceq.texas.gov/downloads/water-quality/assessment/integrated-report-2022/2022-303d.pdf>. Accessed August 2025.
- . 2025. Superfund Sites in Eastland County. Available at: <https://www.tceq.texas.gov/remediation/superfund/sites/county/eastland.html>. Accessed August 2025.
- Texas Demographic Center. 2025. Natural Change for Texas Counties, 2020-2022. Available at: <https://demographics.texas.gov/Visualizations/2023/NaturalChange/>. Accessed August 2025.
- Texas Department of Agriculture (TDA). 2025. 1974–2019. *Texas Family Land Heritage Registry*. TDA. Austin, Texas. Accessed August 2025.
- Texas Department of Transportation (TxDOT). 2025a. Project Tracker – Interactive Map. Available at: <https://www.txdot.gov/inside-txdot/projects/project-tracker.html>. Accessed August 2025.
- . 2025b. TxDOT Historic Resources Aggregator, TxDOT Environmental Affairs Division. Austin, Texas. Available at: <https://txdot.maps.arcgis.com/apps/webappviewer/index.html?id=e13ba0aa78bf4548a8e98758177a8dd5>. Accessed August 2025.
- Texas Department of Water Resources. 1983. Occurrence, Quality, and Availability of Ground Water in Callahan County, Texas. Available at: https://www.twdb.texas.gov/publications/reports/numbered_reports/doc/R278/R278.pdf. Accessed August 2025.
- Texas Freedom Colonies Project, The. 2025. Texas Freedom Colonies Atlas 2.1. Available at: <https://www.thetexasfreedomcoloniesproject.com/atlas>. Accessed August 2025.
- Texas Historical Commission (THC). 2025. Texas Archeological and Historic Site Atlas [Atlas], restricted database. A joint venture of Texas Historical Commission and Texas Archeological Research Laboratory. Available at: <http://pedernales.thc.State.tx.us>. Accessed August 2025.
- Texas Land Trust Council. 2025. Texas Land Trusts – Prairies and Lakes. Available at: <https://texaslandtrustcouncil.org/landtrusts/>. Accessed August 2025.
- Texas Natural Diversity Database (TXNDD). 2025. Element Occurrence data export. Wildlife Diversity Program of Texas Parks and Wildlife Department. Available at: https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/txndd/. Accessed August 2025.

- Texas Parks and Wildlife Department (TPWD). 2011. Texas Conservation Action Plan 2011: Status and Rank Key for use with SGCN and Rare Communities List. Available at: https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/nongame/tcap/documents/species_key_tcap_2011.pdf. Accessed August 2025.
- . 2025a. Annotated County lists of rare species for Callahan and Eastland Counties. Available at: <http://tpwd.texas.gov/gis/rtest/>. Accessed August 2025.
- . 2025b. Texas Watershed Viewer. Available at: <https://tpwd.maps.arcgis.com/apps/Viewer/index.html?appid=2b3604bf9ced441a98c500763b8b1048>. Accessed August 2025.
- . 2025c. Water Planning Data for Region G (Brazos). Available at: https://tpwd.texas.gov/landwater/water/conservation/water_resources/water_quantity/sigsegs/regiong.phtml. Accessed August 2025.
- . 2025d. Ecological Mapping Systems. Landscape Ecology Program. Available at: <https://tpwd.texas.gov/landwater/land/programs/landscape-ecology/ems/>. Accessed August 2025.
- . 2025e. Species of Greatest Conservation Need in Texas: Species of Greatest Conservation Need (SGCN): All Taxa and Ecoregions. Updated: June 2025. Available at: https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/nongame/tcap/sgcn.phtml. Accessed August 2025.
- . 2025f. Federal and State Listed Plants of Texas. Available at: https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/nongame/listed-species/plants/. Accessed August 2025.
- . 2025g. Interior Least Tern (*Sterna antillarum athalassos*). Available at: <https://tpwd.texas.gov/huntwild/wild/species/leastern/#:~:text=In%20Texas%2C%20Interior%20Least%20Terns,%2FOklahoma%20boundary%20into%20Arkansas>. Accessed August 2025.
- . 2025h. White-faced Ibis (*Plegadis chihi*). Available at: <https://tpwd.texas.gov/huntwild/wild/species/ibis/>. Accessed August 2025.
- Texas Speleological Society. 1994. The Caves and Karst of Texas. G. Veni and W.R. Elliot, editors. National Speleological Society, Huntsville, Alabama.
- Texas Tech University Natural Science Research Laboratory. 2023. Mammals of Texas: American Perimyotis *Perimyotis subflavus* (F. Cuvier 1832). Available at: https://www.depts.ttu.edu/nsrl/mammals-of-texas-online-edition/Accounts_Chiroptera/Perimyotis_subflavus.php. Accessed August 2025.
- Texas Water Development Board (TWDB). 1975. Major and Historical Springs of Texas. Available at: https://www.twdb.texas.gov/publications/reports/numbered_reports/doc/R189/R189.pdf. Accessed August 2025.
- . 1995. Aquifers of Texas. Ashworth, John B. and Hopkins, Janie. Available at: https://www.twdb.texas.gov/publications/reports/numbered_reports/doc/R345/R345Complete.pdf. Accessed August 2025.

- . 2022. 2022 State Water Plan. Water for Texas. Available at: <https://www.twdb.texas.gov/waterplanning/swp/2022/index.asp>. Accessed August 2025.
- . 2025a. Draft 2026 Brazos G Regional Water Plan. Volume 1: Main Report. Available at: <https://www.twdb.texas.gov/waterplanning/rwp/plans/2026/index.asp>. Accessed August 2025.
- . 2025b. Groundwater Data Viewer. Available at: <https://www3.twdb.texas.gov/apps/WaterDataInteractive/GroundwaterDataViewer/?map=sdr>. Accessed August 2025.
- Texas Workforce Commission. 2023. Texas Quarterly Census of Employment and Wages. Available at: <https://texaslmi.com/Home/PopularDownloads>. Accessed August 2025.
- Todd, Jesse. 2014. The Prehistoric Archeology of the Upper Trinity River Basin, Eastern North Central Texas. *Archaeological Journal of the Texas-Prairie Savannah* 4.
- Turner, E.S., T.R. Hester, and R.L. McReynolds. 2011. *Stone Artifacts of Texas Indians*. Completely Revised Third edition: Taylor Trade Publishing. Lanham, Maryland.
- Urbanek, R.P., and J.C. Lewis. 2020. Whooping Crane (*Grus americana*), version 1.0. In *Birds of the World* (A.F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, New York. Available at: <https://doi.org/10.2173/bow.whocra.01>. Accessed August 2025.
- U.S. Bureau of Labor Statistics. 2025. BLS Data Viewer. Available at: <https://www.bls.gov/web/laus/laumstrk.htm>. Accessed August 2025.
- U.S. Census Bureau. 2025a. Census Data Profile- Eastland County, Texas. Available at: https://data.census.gov/profile/Eastland_County,_Texas?g=050XX00US48133. Accessed August 2025.
- . 2025b. Census Data Profile- Callahan County, Texas. Available at: https://data.census.gov/profile/Callahan_County,_Texas?g=050XX00US48059#populations-and-people. Accessed August 2025.
- U.S. Department of Agriculture (USDA). 2025. National Agricultural Statistics Service (NASS). *The 2022 Census of Agriculture*. Available at: https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Texas/index.php. Released: March 2024. Accessed August 2025.
- U.S. Department of Transportation (USDOT). 2025. Federal Railroad Administration (FRA). *The FRA Rail Network*. Available at: <https://experience.arcgis.com/experience/b6c12fd0a4774f38a303e3d034775854/page/Page?view=s=Legend>. Accessed September 2025.
- U.S. Electric Power Transmission Lines. 2022. U.S. Electric Power Transmission Lines. Available at: <https://hub.arcgis.com/datasets/fedmaps::u-s-electric-power-transmission-lines/explore>. Accessed August 2025.
- U.S. Environmental Protection Agency (EPA). 2025. Search for Superfund Sites Where You Live. Available at: <https://www.epa.gov/superfund/search-superfund-sites-where-you-live>. Accessed August 2025.

- U.S. Fish and Wildlife Service (USFWS). 2007. National Bald Eagle Management Guidelines. Available at: https://www.fws.gov/sites/default/files/documents/national-bald-eagle-management-guidelines_0.pdf. Accessed August 2025.
- . 2009. Whooping cranes and wind developments: an issue paper. U.S. Fish and Wildlife Service, Region 2 and 6.
- . 2013. Eagle Conservation Plan Guidance. Module 1- Land-based Wind Energy, Version 2. Available at: <https://www.fws.gov/sites/default/files/documents/eagle-conservation-plan-guidance.pdf>. Accessed August 2025.
- . 2018. Species Status Assessment Report for the Sharpnose Shiner (*Notropis oxyrhynchus*) and Smalleye Shiner (*N. buccula*). Available at: <https://ecos.fws.gov/ServCat/DownloadFile/188804>. Accessed www.fws.gov/sites/default/files/documents/eagle-conservation-plan-guidance.pdf .
- . 2019. Biological Opinion for consultation 02ETAU-2019-F-0402 [Lower Colorado River Authority's Transmission Services Corporation's Habitat Conservation Plan – Permit TW-42299D]. Albuquerque, New Mexico.
- . 2020a. Endangered and Threatened Wildlife and Plants; 12-Month Finding for the Monarch Butterfly. Available at: <https://www.federalregister.gov/documents/2020/12/17/2020-27523/endangered-and-threatened-wildlife-and-plants-12-month-finding-for-the-monarch-butterfly>. Accessed August 2025.
- . 2020b. Monarch (*Danaus plexippus*) Species Status Assessment Report, version 2.1. Available at: <https://ecos.fws.gov/ServCat/DownloadFile/191345>. Accessed August 2025.
- . 2021. Birds of Conservation Concern 2021. United States Department of Interior, U.S. Fish and Wildlife Service, Migratory Birds. Available at: <https://www.fws.gov/media/birds-conservation-concern-2021pdf>. Accessed August 2025
- . 2022a. Confirmed United States Whooping Crane Sightings Through Fall 2022. GIS shapefile dataset provided via email to SWCA Environmental Consultants by the U.S. Fish and Wildlife Service, Grand Island, Nebraska.
- . 2022b. Recovery plan for sharpnose (*Notropis oxyrhynchus*) and smalleye (*N. buccula*) shiners. U.S. Fish and Wildlife Service Arlington, Texas. Available at: https://ecos.fws.gov/docs/recovery_plan/Final%20Recovery%20Plan_Brazos%20Shiners_rd%20signed.pdf. Accessed August 2025.
- . 2022c. Endangered Species Status for Tricolored Bat. Available at: <https://www.govinfo.gov/content/pkg/FR-2022-09-14/pdf/2022-18852.pdf#page=1>. Accessed August 2025.
- . 2024a. Endangered and Threatened Wildlife and Plants; Threatened Species Status with Section 4(d) Rule for Monarch Butterfly and Designation of Critical Habitat. Available at: <https://www.federalregister.gov/documents/2024/12/12/2024-28855/endangered-and-threatened-wildlife-and-plants-threatened-species-status-with-section-4d-rule-for1>. Accessed August 2025.
- . 2024b. Northern Long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects. Available at: https://www.fws.gov/sites/default/files/documents/2024-10/nleb_tcb_consultation_guidance_version-1.0_final_0.pdf. Accessed August 2025.

- . 2025a. NWI Wetlands Mapper. Available at: <https://www.fws.gov/wetlands/data/Mapper.html>. Accessed August 2025.
- . 2025b. *List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project*- Reata Station to Deville Solar 345-kV Transmission Line Project. Project Code: 2025-0135188. Austin Ecological Services Field Office. Received: August 13, 2025.
- . 2025c. Rufa red knot FWS focus. Available at: <https://www.fws.gov/species/rufa-red-knot-calidris-canutus-rufa>. Accessed: August 2025
- . 2025d. Whooping Crane Tracking Project Database. Nebraska Ecological Services Office.
- U.S. Geological Survey (USGS). 2022a. *Bernie Lake, Texas* (map). 1:24,000 7.5-minute series topographic quadrangle. TopoView. Available at: <https://ngmdb.usgs.gov/topoview/viewer/#12/32.3138/-99.1858>. Accessed August 2025.
- . 2022b. *Putnam North, Texas* (map). 1:24,000 7.5-minute series topographic quadrangle. TopoView. Available at: <https://ngmdb.usgs.gov/topoview/viewer/#12/32.3138/-99.1858>. Accessed August 2025.
- . 2022c. *Putnam South, Texas* (map). 1:24,000 7.5-minute series topographic quadrangle. TopoView. Available at: <https://ngmdb.usgs.gov/topoview/viewer/#12/32.3138/-99.1858>. Accessed August 2025.
- . 2025a. USGS Protected Areas Database of the United States. Available at: <https://maps.usgs.gov/padus/>. Accessed August 2025.
- . 2025b. Texas Geology Web Map. Bureau of Economic Geology. Available at: <https://txpub.usgs.gov/txgeology>. Accessed August 2025.
- . 2025c. The National Map. Available at: <https://apps.nationalmap.gov/viewer/>. Accessed August 2025.
- . 2025d. USGS National Hydrography Dataset (NHD) Downloadable Data Collection—National Geospatial Data Asset (NGDA) National Hydrography Dataset (NHD): USGS - National Geospatial Technical Operations Center (NGTOC). Available at: <https://www.usgs.gov/national-hydrography/national-hydrography-dataset>. Accessed August 2025.
- U.S. North American Bird Conservation Initiative. 2021. Bird Conservation Regions Map. Available at: <https://nabci-us.org/resources/bird-conservation-regions-map/#bcr19>. Accessed August 2025.
- Wallace III, Karl Edward. 2008. Texas and the Good Roads Movement: 1895 to 1948. Unpublished M.A. thesis. Arlington: Department of History, University of Texas.
- Waters, Michael R. 2019. Late Pleistocene exploration and settlement of the Americas by modern humans. *Science* 365(6449):eaat5447.
- Waters, Michael R., Joshua L. Keene, Elton R. Prewitt, Mark E. Everett, Tyler Laughlin, and Thomas W. Stafford Jr. 2021. Late Quaternary geology, archaeology, and geoarchaeology of Hall's Cave, Texas. *Quaternary Science Reviews* 274:107276.

- Waters, Michael R., Joshua L. Keene, Steven L. Forman, Elton R. Prewitt, David L. Carlson, and James E. Wiederhold. 2018. Pre-Clovis Projectile Points at the Debra L. Friedkin site, Texas—Implications for the Late Pleistocene Peopling of the Americas. *Science Advances* 4(10):eaat4505.
- Whittaker, Jason. 2011. Details for Site 41CA21. Archeological Site Form – Atlas Number 9059002101. Prepared by Horizon Environmental Services. On file, Texas Historical Commission Texas Archeological Sites Atlas, Austin, Texas.
- Willerslev, E., and D.J. Meltzer. 2021. Peopling of the Americas as Inferred from Ancient Genomics. *Nature* 594:356–364. Available at: <https://doi.org/10.1038/s41586-021-03499-y>. Accessed August 2025.
- Willey, Gordon R., and Philip Phillips. 1958. *Method and Theory in American Archaeology*. Illinois: University of Chicago Press.
- Williams, Thomas J., Michael B. Collins, Kathleen Rodrigues, William Jack Rink, Nancy Velchoff, Amanda Keen-Zebert, Anastasia Gilmer, Charles D. Frederick, Sergio J. Ayala, and Elton R. Prewitt. 2018. Evidence of an Early Projectile Point Technology in North America at the Gault Site, Texas, USA. *Science Advances* 4(7):eaar5954.
- Wilson, Bonnie Tipton, and Gregory Smith. 2018. *Monuments and Buildings of the Texas Centennial National Register of Historic Places Multiple Property Documentation Form*. Texas Historical Commission. Austin, Texas.
- Wolf, A.J., E.C. Hellgren, V. Bogosian III, and R.W. Moody. 2013. Effects of habitat disturbance on Texas horned lizards: an urban case study. *Herpetologica* 36(3):265–281.
- Yates, Bonnie C., and C. Reid Ferring (editors). 1986. *Assessment of the Cultural Resources in the Trinity River Basin, Dallas, Tarrant, and Denton Counties, Texas*. Institute of Applied Sciences, North Texas State University, Denton. Submitted to the U.S. Army Corps of Engineers, Fort Worth District.

APPENDIX A

Records of Agency Correspondence

AGENCIES AND OFFICIALS CONTACT LIST
Reata Station to Sequoia II Solar 345 kV Transmission Line Project

FEDERAL

Tony Robinson

Regional Administrator - Region VI

Federal Emergency Management Agency

FRC 800 North Loop 288

Denton, TX 76209-3698

Christina Williams

Field Supervisor

Austin Ecological Services Field Office

U.S. Fish and Wildlife Service

10711 Burnet Rd., Suite 200

Austin, TX 78758

Kristy Oates

State Conservationist

Natural Resources Conservation Service

101 South Main St.

Temple, TX 76501

Brandon W. Mobley

Chief, Regulatory Branch

Fort Worth District

U.S. Army Corps of Engineers

819 Taylor Street

Fort Worth, TX 76102

Laura Broyles

Assistant State Conservationist

Administrative Zone 5 – Weatherford Office

Natural Resources Conservation Service

532 Santa Fe Drive

Weatherford, TX 76086

Earthea Nance

Regional Administrator

Region 6 – South Central

U.S. Environmental Protection Agency

1201 Elm Street, Suite 500

Dallas, TX 75270

Catherine Yeargan

Field Supervisor

Arlington Ecological Services Field Office

U.S. Fish and Wildlife Service

2005 Northeast Green Oaks Boulevard

Suite 140

Arlington, TX 76006

Obstruction Evaluation Group

Federal Aviation Administration

Southwest Region

10101 Hillwood Parkway

Fort Worth, TX 76117-1524

AGENCIES AND OFFICIALS CONTACT LIST
Reata Station to Sequoia II Solar 345 kV Transmission Line Project

Department of Defense Siting Clearinghouse

3400 Defense Pentagon, Room 5C646

Washington, DC 20301-3400

osd.pentagon.ousd-a-s.mbx.asd-eie-rp-sc@mail.mil

STATE

David Yoskowitz, Ph.D.

Executive Director

Texas Parks and Wildlife Department

(512) 389-4802

4200 Smith School Rd., Austin, TX 78744

Laura Zebehazy

Program Leader

Wildlife Habitat Assessment Program

Texas Parks and Wildlife Department

laura.zebehazy@tpwd.texas.gov

4200 Smith School Road, Austin, TX 78744

Dawn Buckingham

Texas Land Commissioner

Texas General Land Office

1700 North Congress Avenue

Suite 935

Austin, TX 78701-1495

Michael Taylor, P.G

Regional Director, Region 3

Texas Commission on Environmental Quality

Main Line: 325-698-9674

1977 Industrial Blvd.

Abilene, TX 79602-7833

Mark Wolfe

Executive Director

Texas Historical Commission

(512) 463-6383

P.O. Box 12276

Austin, TX 78711

Jessica Pena

Deputy Executive Administrator

Water Supply and Infrastructure

Texas Water Development Board

jessica.zuba@twdb.texas.gov

P.O. Box 13231

Austin, TX 78711-3231

Greg Cedillo, P.E.

District Engineer

Brownwood District

Texas Department of Transportation

tel:325-646-2591

2495 Highway 183 North

Brownwood, TX 76802

AGENCIES AND OFFICIALS CONTACT LIST
Reata Station to Sequoia II Solar 345 kV Transmission Line Project

Glenn Allbritton, P.E.

District Engineer

Abilene District

Texas Department of Transportation

tel:325-676-6800

4250 N. Clack St.

Abilene, TX 79601

Joe Rodgers

Executive Director – Region 7

West Central Texas Council of Governments

jrogers@westcentraltexas.org

3702 Loop 322

Abilene, TX 79602-7300

CALLAHAN COUNTY

Dan Harmon

Director

Aviation Division

Texas Department of Transportation

tel:512-416-4500

125 East 11th Street

Austin, TX 78701

Nicke Harle

Callahan County Judge

nicki.harle@callahancounty.org

100 West Fourth Street, Suite 200

Baird, TX 79504

Doug Booher

Director

Environmental Affairs Division

Texas Department of Transportation

tel:512-416-2734

6230 E Stassney Lane

Austin, TX 78744

Ashley McGowen

Callahan County Precinct 1 Commissioner

ashley.mcgowen@callahancounty.org

1521 FM 2700

Clyde, Texas 79510

Wei Wang

Executive Director

Railroad Commission of Texas

P.O. Box 12967

Austin, TX 78711-2967

Bryan Farmer

Callahan County Precinct 2 Commissioner

bryan.farmer@callahancounty.org

19314 FM 604 South

Clyde, TX 79510

AGENCIES AND OFFICIALS CONTACT LIST
Reata Station to Sequoia II Solar 345 kV Transmission Line Project

Tom Windham

Callahan County Precinct 3 Commissioner

tom.windham@callahancounty.org

1100 West 3rd

Baird, TX 79504

Robert Frost

County Executive Director

Callahan County Farm Service Agency

robert.frost@usda.gov

141 W. 4th Street

Baird, TX 79504-5313

Erwin Clark

Callahan County Precinct 4 Commissioner

erwin.clark@callahancounty.org

300 South Chestnut

Cross Plains, TX 76443

EASTLAND COUNTY

David Hullum

Eastland County Judge

ecjudge@eastlandcountytexas.com

100 W. Main, Suite 203

Eastland, TX 76448

James C. Stapleton

Chairman

Callahan Divide SWCD #552

callahandivide@swcd.texas.gov

141 W. 4th Street, Ste B

Baird, TX 79504-5313

Andy Maxwell

Eastland County Precinct 1 Commissioner

Commissioners Court

(254) 629-1303

100 W. Main, Suite 203

Eastland, TX 76448

Kelly Leight

Agency Manager

Callahan-Shackelford County Farm Bureau

P. O. Box 1175

Baird, TX 79504

kleight@txfb-ins.com

James Crenshaw

Eastland County Precinct 2 Commissioner

Commissioners Court

(254) 647-1463

100 W. Main, Suite 203

Eastland, TX 76448

AGENCIES AND OFFICIALS CONTACT LIST
Reata Station to Sequoia II Solar 345 kV Transmission Line Project

Ronnie Wilson

Eastland County Precinct 3 Commissioner

Commissioners Court

(254) 643-2532

100 W. Main, Suite 203

Eastland, TX 76448

Remington Neffendorf

County Executive Director

Eastland County Farm Service Agency

remington.neffendorf@usda.gov

403 Pogue Avenue

Eastland, TX 76448

Robert Rains

Eastland County Precinct 4 Commissioner

Commissioners Court

(254) 442-2160

100 W. Main, Suite 203

Eastland, TX 76448

LOCAL

Dr. Tim Little

Baird ISD Superintendent

Baird Independent School District

tlittle@bairdisd.org

600 West 7th

Baird, TX 79504

Steve Gerdes

President

Eastland County Water Supply District

P.O. Box 16

Ranger, TX 76470

Dr. Ryan Steele

Cisco ISD Superintendent

Cisco Independent School District

rsteale@cisco.esc14.net

P.O. Box 1645

Cisco, TX 76437

Andrew Schneider

Agency Manager

Eastland County Farm Bureau

aschneider@txfb-ins.com

P.O. Box 195

Stephenville, TX 76401-0003



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Building 1, Suite 110
Austin, Texas 78749
Tel 512.476.0891 Fax 512.476.0893
www.swca.com



DATE

Attn:

Title:

Agency:

Street Address:

City, State, Zip Code:

Re: Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas

Dear _____:

Lone Star Transmission, LLC (Lone Star), is proposing to design and construct a new 345-kilovolt (kV) transmission line in portions of Callahan and Eastland Counties, Texas, to provide interconnection to a proposed solar generation development. The proposed transmission line would be constructed between the existing the Lone Star Reata Station, located north of Lone Star's existing West Shackelford to Sam Switch 345-kV transmission line, and east of County Road 126 in Eastland County, Texas and the proposed Deville Solar collector substation, located east of Farm to Market 880 and approximately 1.1 miles north of the intersection of County Road 482 and Farm to Market 880 in Callahan County, Texas. Please reference the proposed substation locations within the study area depicted on the attached map. The proposed transmission line will be approximately 9.5 miles in length and will require a right-of-way of 150 feet in width.

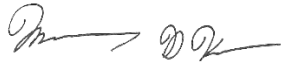
SWCA Environmental Consultants (SWCA) is preparing an environmental assessment for the proposed project that will support Lone Star's application for Certificate of Convenience and Necessity from the Public Utility Commission of Texas. SWCA is in the process of collecting and evaluating environmental data for the study area. As part of this effort, we are asking that your agency/office relate any environmental effects from the construction of the proposed transmission line in the designated study area.

In addition, if any permits, easements, or other approvals are required by your agency / office, or if you are aware of any major proposed development or construction within the study area, we would gratefully appreciate receiving this information as well.

Your input on any of the following resources as they relate to your agency / office will assist the project team in evaluating the proposed transmission project: land use (current or proposed land development projects, park / recreation areas, etc.); aesthetics; water quality and wetlands; soils and geology; wildlife, vegetation, and fisheries (including threatened and endangered species and / or species proposed for such designation); socioeconomics (population, employment, growth, current / future development); cultural resources (historical and archeological); and transportation and roads (airport and roadway expansions, construction, operations, and maintenance).

Lone Star and SWCA would like to thank you in advance for your comments, which will be an important consideration in our assessment of potential environmental and land use impacts of the proposed transmission line. If you have questions regarding this project or our request for information, please contact me at marcus.hope@swca.com or 910-990-0540. Your earliest reply will be gratefully appreciated.

Sincerely,

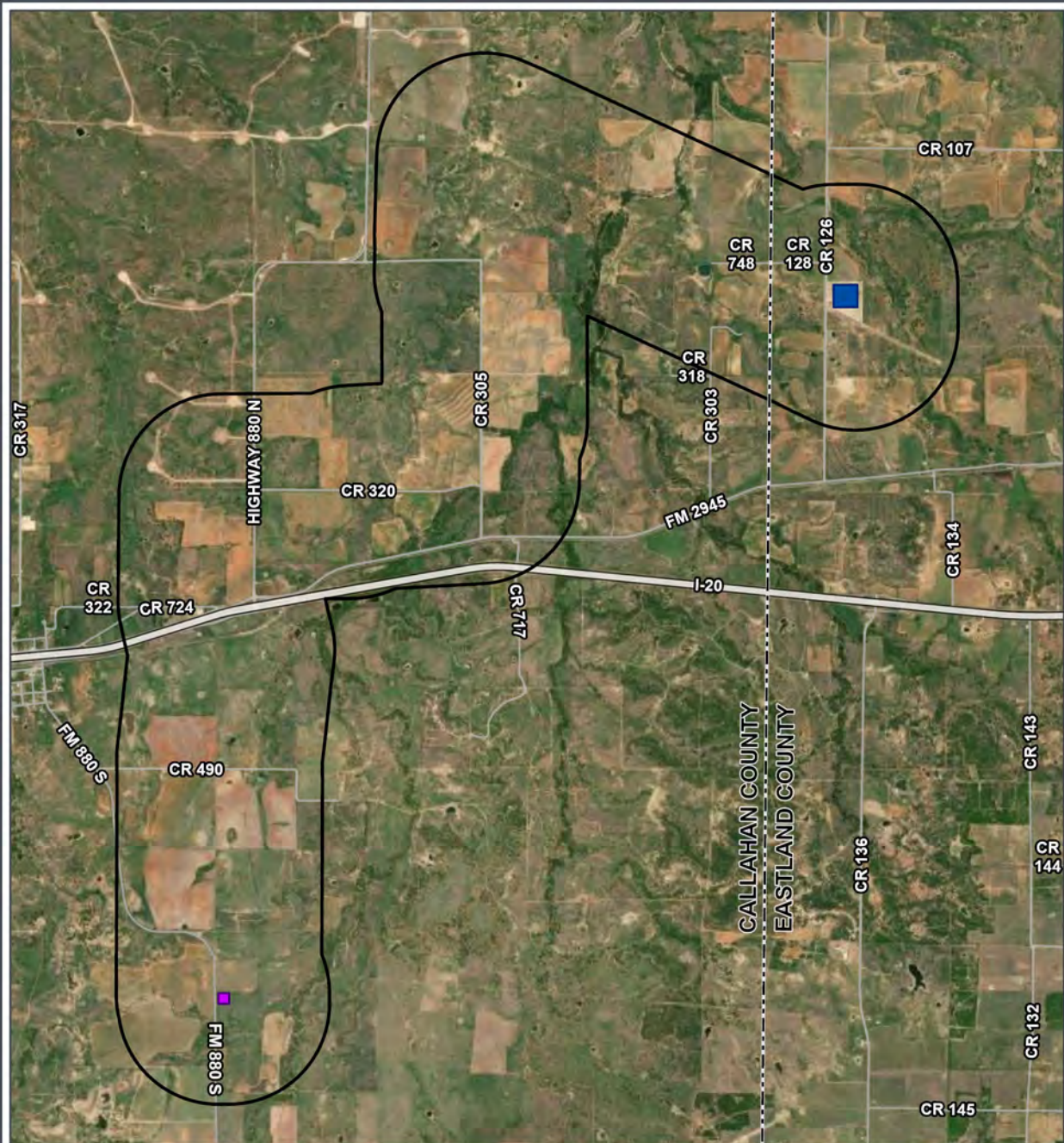


Marcus D. Hope, PWS
Lead Wetland Scientist

Attachment

cc: Ray Loving, NextEra Energy – Environmental Services

Jonelle McKinnon, Lone Star Transmission, LLC.



- Study Area
- Deville Collector Substation
- Reata Station
- County Boundary



Callahan and Eastland
Counties, TX
USGS 7.5' Quadrangle:
Putnam North, TX, 32099-D2
Bernie Lake, TX, 32099-D1
Putnam South, TX, 32099-C2
NAD 1983 2011 UTM Zone 14N
32.3787°N 99.1402°W

Base Map: ESRI ArcGIS Online,
accessed September 2024
Updated: 9/20/2024
Project No. 87368-001
Layout: Agency Coordination Figure
Aprx:
villeSolar345kVTransmissionLineProject



1:64,800



SWCA
ENVIRONMENTAL CONSULTANTS

From: [Frost, Robert - FPAC-FSA, TX](#)
To: [Marcus Hope](#)
Cc: [Loving, Raymond](#); [White, Georgina](#); [Mckinnon, Jonelle](#)
Subject: RE: [External Email]Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas
Date: Monday, September 23, 2024 4:34:00 PM
Attachments: [image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[image006.png](#)
[image007.png](#)
[image008.png](#)
[image009.png](#)

There are no known issues our office in that area.

Robert Frost
County Executive Director
Taylor/Callahan County



Farm Service Agency
U.S. DEPARTMENT OF AGRICULTURE

Taylor County FSA Office
4400 Buffalo Gap Rd, Ste 4300 Abilene, TX 79606
Phone (325) 695-0140 ext 2
Fax (844) 496-7049

Callahan County FSA Office
141 W 4th St, Ste A Baird, TX 79504
Phone (325) 854-1049 ext 2
Fax (844) 496-7074

Email: robert.frost@usda.gov

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Text TXTAYLOR to 372669 to receive text message updates for Taylor County
Text TXCALLAHAN to 372669 to receive text message updates for Callahan County

From: Marcus Hope <marcus.hope@swca.com>
Sent: Monday, September 23, 2024 9:03 AM
To: Frost, Robert - FPAC-FSA, TX <robert.frost@usda.gov>
Cc: Loving, Raymond <raymond.loving@nexteraenergy.com>; White, Georgina <Georgina.White@nexteraenergy.com>; Mckinnon, Jonelle <Jonelle.Mckinnon@nexteraenergy.com>
Subject: [External Email]Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas

[External Email]

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Good Morning,

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Best Regards,

Marcus D. Hope, PWS | he, him, his
Lead Wetland Scientist

SWCA Environmental Consultants

4407 Monterey Oaks Boulevard
Building 1, Suite 110
Austin, Texas 78749
P 512.476.0891 | C 910.990.0540
marcus.hope@swca.com



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From: [Callahan Divide SWCD](#)
To: [Marcus Hope](#)
Subject: Re: Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas
Date: Tuesday, September 24, 2024 9:50:29 AM
Attachments: [image001.png](#)

Marcus,

In response to your request from the Callahan Divide SWCD we do not have any authority in this part of the county. Our organization monitors the flood prevention sites throughout the county and there are none in the proposed area.

Sincerely,

Genea Williams
District Clerk

On Mon, Sep 23, 2024 at 9:01 AM Marcus Hope <marcus.hope@swca.com> wrote:

Good Morning,

SWCA Environmental Consultants (SWCA) is preparing an environmental assessment for the proposed project that will support Lone Star's application for Certificate of Convenience and Necessity from the Public Utility Commission of Texas. SWCA is in the process of collecting and evaluating environmental data for the study area. As part of this effort, we are asking that your agency/office relate any environmental effects from the construction of the proposed transmission line in the designated study area.

Best Regards,

Marcus D. Hope, PWS | he, him, his

Lead Wetland Scientist

SWCA Environmental Consultants
4407 Monterey Oaks Boulevard

Building 1, Suite 110
Austin, Texas 78749
P 512.476.0891 | C 910.990.0540

marcus.hope@swca.com

From: [OSD Pentagon OUSD A-S Mailbox ASD EIE-RP-SC](#)
To: [Marcus Hope](#)
Cc: [White, Georgina](#); [Loving, Raymond](#); [Mckinnon, Jonelle](#); [OSD Pentagon OUSD A-S Mailbox ASD EIE-RP-SC](#)
Subject: RE: Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas
Date: Monday, September 23, 2024 12:50:36 PM
Attachments: [image001.png](#)

Good afternoon Mr. Hope,

Your Informal Review request for the Reata Station to Deville Solar 345-kV Transmission Line Project has been received. We will begin processing the request shortly. To aid in our review, can you please provide the following:

- A shapefile and/or KMZ file for mapping the project
- Type of Structures (wood, concrete, steel):
- Structure Heights (or maximum height):

The Army, Air Force, National Guard and other emergency responders that fly low-level missions often request this information.

Thank you for the opportunity to review the project.

Very Respectfully,

The Clearinghouse
Military Aviation and Installation Assurance Siting Clearinghouse
Office of the Assistant Secretary of Defense (Energy Resilience and Optimization)
Email: osd.pentagon.ousd-a-s.mbx.asd-eie-rp-sc@mail.mil

From: Marcus Hope <marcus.hope@swca.com>
Sent: Monday, September 23, 2024 9:39 AM
To: OSD Pentagon OUSD A-S Mailbox ASD EIE-RP-SC <osd.pentagon.ousd-a-s.mbx.asd-eie-rp-sc@mail.mil>
Cc: White, Georgina <Georgina.White@nexteraenergy.com>; Loving, Raymond <raymond.loving@nexteraenergy.com>; Mckinnon, Jonelle <Jonelle.Mckinnon@nexteraenergy.com>
Subject: Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas

Good Morning,

SWCA Environmental Consultants (SWCA) is preparing an environmental assessment for the proposed project that will support Lone Star's application for Certificate of Convenience and Necessity from the Public Utility Commission of Texas. SWCA is in the process of collecting and evaluating environmental data for the study area. As part of this effort, we are asking that your agency/office relate any environmental effects from the construction of the proposed transmission

line in the designated study area.

Best Regards,

Marcus D. Hope, PWS | he, him, his
Lead Wetland Scientist

SWCA Environmental Consultants

4407 Monterey Oaks Boulevard
Building 1, Suite 110
Austin, Texas 78749
P 512.476.0891 | C 910.990.0540
marcus.hope@swca.com



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From: [Neffendorf, Remington - FPAC-FSA, TX](#)
To: [Marcus Hope](#)
Cc: [Loving, Raymond](#); [White, Georgina](#); [Mckinnon, Jonelle](#); [Woods, Sidney - FPAC-FSA, TX](#)
Subject: RE: [External Email]Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas
Date: Monday, September 23, 2024 10:15:22 AM
Attachments: [image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[image006.png](#)
[image007.png](#)
[image008.png](#)
[image009.png](#)

Good morning,

Currently, to the best of our knowledge there is no major proposed development or construction within the studied area. We also do not have any current contracts in the area.

Thanks for your time,

Best regards,

Remington Neffendorf

County Executive Director



Eastland County FSA office

403 Pogue Ave

Eastland, TX 76448

Phone: (254) 629 1636 Ext 2

Fax: (844) 496-7911

e: Remington.Neffendorf@usda.gov

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From: Marcus Hope <marcus.hope@swca.com>

Sent: Monday, September 23, 2024 9:11 AM

To: Neffendorf, Remington - FPAC-FSA, TX <Remington.Neffendorf@usda.gov>

Cc: Loving, Raymond <raymond.lovings@nexteraenergy.com>; White, Georgina <Georgina.White@nexteraenergy.com>; Mckinnon, Jonelle <Jonelle.Mckinnon@nexteraenergy.com>

Subject: [External Email]Request for Information for the Lone Star Transmission, LLC, Reata Station

to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas

[External Email]

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Best Regards,

Marcus D. Hope, PWS | he, him, his
Lead Wetland Scientist

SWCA Environmental Consultants

4407 Monterey Oaks Boulevard
Building 1, Suite 110
Austin, Texas 78749
P 512.476.0891 | C 910.990.0540
marcus.hope@swca.com



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To Whom It May Concern

Re: Information for Eastland County Texas Ordinances and Regulations

I have received your inquiry concerning proposed construction projects located within Eastland County Texas. Eastland County has adopted several ordinances and regulations that require compliance for different types of projects: a flood damage prevention ordinance, an airport zoning ordinance, a fence-building regulation, Order prohibiting dangerous wild animals, and a closed-range stock law. If you need to review these ordinances and regulations, I will email a copy of them to you. You may also find the information on the Eastland County Texas website at <https://www.eastlandcountytexas.com/>

To comply with Eastland County ordinances and regulations: You will need to send to my office the location of each project with lat/long data and/or complete 911 addresses along with the scope/scale of work for each individual project by location. I will review the scope and location of the project to determine compliance with the County ordinances and will draft a letter of determination which will outline my findings. The letter will serve as the County permit for each location and will be sent to your email address.

Important issues to understand:

- 1) Eastland County flood plain management from my office pertains to locations in the unincorporated areas of the county. If your project is located within the municipal boundaries of an incorporated city, you will need to contact that city for compliance guidelines. Also know that cities have some authority over the extra territorial jurisdiction (ETJ) for a certain distance outside of their municipal boundaries. If your proposed project location is close to a city within Eastland County, you may have to comply with County as well as City ordinances.
- 2) There is not a formal permit process for construction of a driveway that attaches to an Eastland County Road (CR). If your project requires attaching a driveway to one of our CRs, you have to contact the County Commissioner for the precinct where the CR is located. They will advise you how that project should be done. My office can give you the contact info for the correct commissioner when you have the location identified.
- 3) The Eastland County airport zoning ordinance relates to an area southwest of the ETJ of the City of Cisco, Texas. A large private airport has been built at this location.
- 4) New subdivisions created in Eastland County must comply with regulations granted to Texas Counties by the statutory authority from Texas Local

Government Code 232. Subdivision projects will need the legal services of a competent Texas attorney to ensure compliance with LGC 232, et al.

- 5) New subdivision plats have to be accepted into the official County records by a formal filing process in Eastland County Commissioners' Court. The filing process begins with the plat and associated documents being sent for review to the office of Eastland County Clerk, Cathy Jentho. Her number is 254-629-1583. Her email is ecco@eastlandcountytexas.com
- 6) Subdivision plats that are presented to the Eastland County Commissioners' Court for approval are typically **accepted for filing ONLY**. **Acceptance for filing DOES NOT convert the private roadways of a subdivision into public County Roads.**
- 7) The private roads do need to be named or numbered to enable accurate 911 addressing for each parcel or lot in the subdivision. 911 addressing is very important for emergency service response to a location. Responders from Fire, Law, and EMS use the 911 address to quickly establish the response location in an emergency situation. To establish a new 911 address, contact the West Central Texas Council of Governments (WESTCOG) in Abilene TX. The main number for the WESTCOG is 325-672-8544. The COG can also give you information on existing 911 addresses.
- 8) My review and letter of determination for your project is only applicable for the ordinances adopted by Eastland County Commissioners' Court. In addition to these County rules, you must comply with any applicable federal, state, and city regulations. The Abilene Texas office of the Texas Commission on Environmental Quality (TCEQ) is the agency to contact about the permitting process for On-Site Sewage Facilities in the unincorporated areas of Eastland County.

David Hullum
Eastland County Judge
Eastland Texas
ecjudge@eastlandcountytexas.com
254-629-1263



From: [Wray, Luke W \(FAA\)](#)
To: [Marcus Hope](#); [Cardenas, Debbie \(FAA\)](#)
Cc: [Loving, Raymond](#); [White, Georgina](#); [Mckinnon, Jonelle](#)
Subject: RE: Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas
Date: Monday, September 23, 2024 8:49:11 AM
Attachments: [image002.png](#)
[image003.png](#)

Howdy Marcus,

The FAA requests you electronically file (E-file) your project at <https://oeaaa.faa.gov>. E-filing is the preferred method of submitting an aeronautical study as it is the fastest and most accurate method of submission. E-filing immediately assigns an Aeronautical Study Number (ASN) to your project and establishes an electronic communications link with the FAA that allows you to obtain project status and notifications directly from the website.

Respectfully,

Luke W. Wray
Federal Aviation Administration
Obstruction Evaluation Group <<AJV-A520>>
10101 Hillwood Parkway
Fort Worth, TX 76177
Office #: 817-222-4559
luke.w.wray@faa.gov



Please visit our website:

<https://oeaaa.faa.gov> * All filing guidance can be found at:
<https://oeaaa.faa.gov/oeaaa/external/content/instructions.jsp>

From: Marcus Hope <marcus.hope@swca.com>
Sent: Monday, September 23, 2024 8:37 AM
To: Wray, Luke W (FAA) <Luke.W.Wray@faa.gov>; Cardenas, Debbie (FAA) <Debbie.Cardenas@faa.gov>
Cc: Loving, Raymond <raymond.loving@nexteraenergy.com>; White, Georgina <Georgina.White@nexteraenergy.com>; Mckinnon, Jonelle <Jonelle.Mckinnon@nexteraenergy.com>
Subject: Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas

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Good Morning,

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Best Regards,

Marcus D. Hope, PWS | he, him, his
Lead Wetland Scientist

SWCA Environmental Consultants

4407 Monterey Oaks Boulevard
Building 1, Suite 110
Austin, Texas 78749
P 512.476.0891 | C 910.990.0540
marcus.hope@swca.com



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Texas State Office

101 S. Main Street
Temple, TX, 76501

9/23/2024

SWCA Environmental Consultants
4407 Monterey Oaks Boulevard
Building 1, Suite 110
Austin, Texas 78749

Attention: Marcus D. Hope, PWS, Lead Wetland Scientist

Subject: Proposed Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project in Callahan and Eastland Counties, Texas

Thank you for the opportunity to provide input on the potential environmental effects of the Proposed Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project in Callahan and Eastland Counties, Texas. The proposed site has been evaluated and does not involve any USDA-NRCS easements. The soils in the proposed project area have been reviewed. There are a few soil limitations in the project area that should be taken into consideration while planning for the project. As with any project, soil erosion is a main concern and erosion prevention practices are recommended. There is some low to moderate potential for concrete corrosion and a moderate to high potential for steel corrosion for the area. There are few hydric soils, which can be indicators of wetlands. The project area contains some prime farmland. The water erosion potential ranges from low to moderate, while the wind erosion potential ranges from low to high.

Enclosed is a Web Soil Survey map and reports illustrating the location of the soils as well as the ratings for related interpretations that are described above. We encourage you to consider this information during the Proposed Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project in Callahan and Eastland Counties, Texas and take measures to protect the soils and water quality.

If you have further questions, please contact me at (254) 742-9951 or by email at chris.holle@usda.gov.

Sincerely,



Chris Holle
USDA/NRCS

Attachment: Lone Star Reata Station to Deville Solar Transmission Line Project_Soil_Report



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Callahan County, Texas, and Eastland County, Texas

Lone Star Reata Station to
Dewille Solar Transmission Line



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface	2
How Soil Surveys Are Made	6
Soil Map	9
Soil Map.....	10
Legend.....	11
Map Unit Legend.....	13
Map Unit Descriptions.....	15
Callahan County, Texas.....	17
1—Abilene loam, 0 to 1 percent slopes.....	17
3—Bonti fine sandy loam, 1 to 3 percent slopes.....	18
4—Bonti-Callahan association, 1 to 8 percent slopes, extremely stony.....	20
5—Callahan loam, 1 to 3 percent slopes.....	22
6—Callahan loam, 2 to 5 percent slopes, moderately eroded.....	24
17—Frio clay loam, occasionally flooded.....	25
18—Frio-Gageby association, frequently flooded.....	26
19—Gageby loam, moist, 0 to 2 percent slopes, occasionally flooded.....	28
21—Leeray clay, 0 to 1 percent slopes.....	30
22—Leeray clay, 1 to 3 percent slopes.....	32
24—Mereta clay loam, cool, 1 to 3 percent slopes.....	33
25—Nukrum clay, 1 to 3 percent slopes.....	35
26—Nukrum clay, 3 to 5 percent slopes.....	37
28—Oplin-Speck association, undulating.....	38
29—Owens-Throck association, hilly.....	40
31—Pedernales fine sandy loam, 1 to 3 percent slopes.....	42
34—Rowden clay loam, 0 to 3 percent slopes.....	44
36—Rowena clay loam, 1 to 3 percent slopes.....	45
37—Sagerton loam, 0 to 1 percent slopes.....	47
38—Sagerton loam, 1 to 3 percent slopes.....	48
39—Speck clay loam, 1 to 3 percent slopes.....	49
40—Speck-Throck association, gently undulating.....	50
41—Throck clay loam, 2 to 5 percent slopes.....	52
42—Throck-Callahan-Owens association, undulating.....	53
43—Throck-Owens-Lueders association, hilly.....	56
44—Throck-Speck association, undulating.....	58
W—Water.....	60
Eastland County, Texas.....	61
BcB—Bolar clay loam, 1 to 3 percent slopes.....	61
BnB—Bonti fine sandy loam, 1 to 3 percent slopes.....	62
En—Elandco silty clay loam, frequently flooded.....	64
ErD—Bonti-Exray complex, 1 to 8 percent slopes, extremely stony.....	65
HeB—Hensley loam, 1 to 3 percent slopes.....	68
LeB—Leeray clay, 1 to 3 percent slopes.....	69
LnB—Lindy loam, 1 to 3 percent slopes.....	70
OcB—Owens clay, 1 to 5 percent slopes.....	71

Custom Soil Resource Report

TaD—Palopinto very stony clay loam, 1 to 8 percent slopes, rubbly.....	73
TrA—Thurber clay loam, 0 to 1 percent slopes.....	75
TrB—Thurber clay loam, 1 to 3 percent slopes.....	76
TuB—Truce fine sandy loam, 1 to 3 percent slopes.....	78
TuC2—Truce fine sandy loam, 1 to 5 percent slopes, eroded.....	80
W—Water.....	81
Soil Information for All Uses.....	82
Suitabilities and Limitations for Use.....	82
Building Site Development.....	82
Corrosion of Concrete.....	82
Corrosion of Steel.....	89
Land Classifications.....	95
Farmland Classification.....	95
Hydric Rating by Map Unit.....	102
Land Management.....	109
Water Erosion Potential (TX).....	109
Wind Erosion Potential (TX).....	120
Soil Reports.....	136
Soil Qualities and Features.....	136
Soil Features.....	136
Water Features.....	146
Water Features.....	146
References.....	154

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



MAP LEGEND**Area of Interest (AOI)**
 Area of Interest (AOI)
Soils
 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points
Special Point Features
 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features
Water Features
 Streams and Canals
Transportation
 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads
Background
 Aerial Photography
MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Callahan County, Texas

Survey Area Data: Version 20, Aug 31, 2023

Soil Survey Area: Eastland County, Texas

Survey Area Data: Version 20, Sep 5, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 17, 2022—Jan 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND**MAP INFORMATION**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Abilene loam, 0 to 1 percent slopes	130.9	1.6%
3	Bonti fine sandy loam, 1 to 3 percent slopes	265.2	3.2%
4	Bonti-Callahan association, 1 to 8 percent slopes, extremely stony	9.0	0.1%
5	Callahan loam, 1 to 3 percent slopes	70.9	0.9%
6	Callahan loam, 2 to 5 percent slopes, moderately eroded	183.6	2.2%
17	Frio clay loam, occasionally flooded	59.3	0.7%
18	Frio-Gageby association, frequently flooded	335.9	4.1%
19	Gageby loam, moist, 0 to 2 percent slopes, occasionally flooded	503.7	6.1%
21	Leeray clay, 0 to 1 percent slopes	81.8	1.0%
22	Leeray clay, 1 to 3 percent slopes	1,442.8	17.6%
24	Mereta clay loam, cool, 1 to 3 percent slopes	61.6	0.7%
25	Nukrum clay, 1 to 3 percent slopes	253.8	3.1%
26	Nukrum clay, 3 to 5 percent slopes	50.7	0.6%
28	Oplin-Speck association, undulating	19.4	0.2%
29	Owens-Throck association, hilly	64.7	0.8%
31	Pedernales fine sandy loam, 1 to 3 percent slopes	36.0	0.4%
34	Rowden clay loam, 0 to 3 percent slopes	537.7	6.5%
36	Rowena clay loam, 1 to 3 percent slopes	35.2	0.4%
37	Sagerton loam, 0 to 1 percent slopes	74.8	0.9%
38	Sagerton loam, 1 to 3 percent slopes	510.4	6.2%
39	Speck clay loam, 1 to 3 percent slopes	241.4	2.9%
40	Speck-Throck association, gently undulating	183.8	2.2%

Custom Soil Resource Report

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
41	Throck clay loam, 2 to 5 percent slopes	186.6	2.3%
42	Throck-Callahan-Owens association, undulating	717.3	8.7%
43	Throck-Owens-Lueders association, hilly	130.0	1.6%
44	Throck-Speck association, undulating	1,007.9	12.3%
W	Water	23.3	0.3%
Subtotals for Soil Survey Area		7,218.0	87.8%
Totals for Area of Interest		8,220.6	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BcB	Bolar clay loam, 1 to 3 percent slopes	7.4	0.1%
BnB	Bonti fine sandy loam, 1 to 3 percent slopes	11.5	0.1%
En	Elandco silty clay loam, frequently flooded	87.4	1.1%
ErD	Bonti-Exray complex, 1 to 8 percent slopes, extremely stony	117.0	1.4%
HeB	Hensley loam, 1 to 3 percent slopes	185.2	2.3%
LeB	Leeray clay, 1 to 3 percent slopes	287.6	3.5%
LnB	Lindy loam, 1 to 3 percent slopes	122.7	1.5%
OcB	Owens clay, 1 to 5 percent slopes	24.8	0.3%
TaD	Palopinto very stony clay loam, 1 to 8 percent slopes, rubbly	120.3	1.5%
TrA	Thurber clay loam, 0 to 1 percent slopes	1.0	0.0%
TrB	Thurber clay loam, 1 to 3 percent slopes	22.6	0.3%
TuB	Truce fine sandy loam, 1 to 3 percent slopes	9.3	0.1%
TuC2	Truce fine sandy loam, 1 to 5 percent slopes, eroded	2.8	0.0%
W	Water	3.0	0.0%
Subtotals for Soil Survey Area		1,002.6	12.2%
Totals for Area of Interest		8,220.6	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas

shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Callahan County, Texas

1—Abilene loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2vt82
Elevation: 1,250 to 2,070 feet
Mean annual precipitation: 25 to 29 inches
Mean annual air temperature: 62 to 65 degrees F
Frost-free period: 200 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Abilene and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Abilene

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous alluvium

Typical profile

Ap - 0 to 9 inches: loam
Bt - 9 to 28 inches: clay
Btk - 28 to 37 inches: clay
BCK - 37 to 80 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: C
Ecological site: R078CY096TX - Clay Loam 23-30" PZ
Hydric soil rating: No

Minor Components

Sagerton

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R078CY096TX - Clay Loam 23-30" PZ
Hydric soil rating: No

Tipton

Percent of map unit: 3 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R078CY056OK - Loamy Upland
Hydric soil rating: No

Roscoe

Percent of map unit: 2 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R078CY102TX - Lakebed 23-30" PZ
Hydric soil rating: No

3—Bonti fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2skwz
Elevation: 750 to 1,750 feet
Mean annual precipitation: 27 to 34 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 215 to 245 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition

Bonti and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bonti

Setting

Landform: Structural benches, ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve

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Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loamy and/or clayey residuum weathered from sandstone and/or claystone over sandstone

Typical profile

A - 0 to 8 inches: fine sandy loam

Bt - 8 to 34 inches: clay

Cr - 34 to 80 inches: bedrock

Properties and qualities

Slope: 1 to 3 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: C

Ecological site: R080BY159TX - Sandy Loam 26-33" PZ

Hydric soil rating: No

Minor Components

Exray

Percent of map unit: 8 percent

Landform: Ridges

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Linear

Ecological site: R080BY157TX - Sandstone Hill 26-33" PZ

Hydric soil rating: No

Truce

Percent of map unit: 5 percent

Landform: Ridges

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R080BY164TX - Tight Sandy Loam 26-33" PZ

Hydric soil rating: No

Thurber

Percent of map unit: 5 percent

Landform: Ridges

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R080BY147TX - Claypan 26-33" PZ
Hydric soil rating: No

Owens

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R080BY161TX - Shallow Clay 26-33" PZ
Hydric soil rating: No

4—Bonti-Callahan association, 1 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2tc38
Elevation: 1,100 to 1,900 feet
Mean annual precipitation: 27 to 31 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 215 to 245 days
Farmland classification: Not prime farmland

Map Unit Composition

Bonti and similar soils: 60 percent
Callahan and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bonti

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy and/or clayey residuum weathered from sandstone and/or claystone over sandstone

Typical profile

A - 0 to 8 inches: fine sandy loam
E - 8 to 11 inches: fine sandy loam
Bt - 11 to 38 inches: clay loam
Cr - 38 to 80 inches: bedrock

Properties and qualities

Slope: 1 to 8 percent
Surface area covered with cobbles, stones or boulders: 11.0 percent

Custom Soil Resource Report

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R080BY159TX - Sandy Loam 26-33" PZ
Hydric soil rating: No

Description of Callahan

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Clayey residuum weathered from claystone

Typical profile

Ap - 0 to 7 inches: loam
Bt - 7 to 18 inches: clay
Btk - 18 to 36 inches: clay
Cdk - 36 to 70 inches: clay

Properties and qualities

Slope: 1 to 8 percent
Surface area covered with cobbles, stones or boulders: 11.0 percent
Depth to restrictive feature: 20 to 40 inches to densic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R080BY147TX - Claypan 26-33" PZ
Hydric soil rating: No

Minor Components

Exray

Percent of map unit: 8 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R080BY157TX - Sandstone Hill 26-33" PZ
Hydric soil rating: No

Truce

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R080BY164TX - Tight Sandy Loam 26-33" PZ
Hydric soil rating: No

Owens

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R080BY161TX - Shallow Clay 26-33" PZ
Hydric soil rating: No

5—Callahan loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2s19z
Elevation: 1,060 to 2,000 feet
Mean annual precipitation: 27 to 29 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 210 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Callahan and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Callahan

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Clayey residuum weathered from claystone

Typical profile

Ap - 0 to 7 inches: loam
Bt - 7 to 18 inches: clay
Btk - 18 to 36 inches: clay
Cdk - 36 to 70 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to densic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R080BY147TX - Claypan 26-33" PZ
Hydric soil rating: No

Minor Components

Bonti

Percent of map unit: 10 percent
Landform: Structural benches, ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R080BY159TX - Sandy Loam 26-33" PZ
Hydric soil rating: No

Throck

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

Custom Soil Resource Report

Ecological site: R080BY604TX - Clay Slopes 26-33" PZ

Hydric soil rating: No

6—Callahan loam, 2 to 5 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 2sqcs

Elevation: 850 to 1,650 feet

Mean annual precipitation: 27 to 31 inches

Mean annual air temperature: 63 to 66 degrees F

Frost-free period: 210 to 250 days

Farmland classification: Not prime farmland

Map Unit Composition

Callahan, moderately eroded, and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Callahan, Moderately Eroded

Setting

Landform: Ridges

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear, concave

Across-slope shape: Convex

Parent material: Clayey residuum weathered from claystone

Typical profile

A - 0 to 5 inches: loam

Bt - 5 to 34 inches: clay

Cd - 34 to 60 inches: clay

Properties and qualities

Slope: 2 to 5 percent

Depth to restrictive feature: 20 to 40 inches to densic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D

Custom Soil Resource Report

Ecological site: R080BY147TX - Claypan 26-33" PZ

Hydric soil rating: No

Minor Components

Throck

Percent of map unit: 5 percent

Landform: Ridges

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R080BY604TX - Clay Slopes 26-33" PZ

Hydric soil rating: No

Bonti, eroded

Percent of map unit: 5 percent

Landform: Structural benches, ridges

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R080BY159TX - Sandy Loam 26-33" PZ

Hydric soil rating: No

17—Frio clay loam, occasionally flooded

Map Unit Setting

National map unit symbol: d6bq

Elevation: 400 to 1,700 feet

Mean annual precipitation: 25 to 36 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 220 to 260 days

Farmland classification: Not prime farmland

Map Unit Composition

Frio and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Frio

Setting

Landform: Flood plains on draws

Down-slope shape: Linear

Across-slope shape: Concave

Parent material: Loamy alluvium

Typical profile

H1 - 0 to 27 inches: clay loam

H2 - 27 to 70 inches: silty clay loam

Custom Soil Resource Report

H3 - 70 to 80 inches: silty clay loam

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: Occasional

Frequency of ponding: None

Calcium carbonate, maximum content: 40 percent

Sodium adsorption ratio, maximum: 2.0

Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: C

Ecological site: R078AY121TX - Loamy Bottomland 25-28" PZ

Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 19 percent

Hydric soil rating: No

Unnamed, hydric

Percent of map unit: 1 percent

Landform: Depressions

Hydric soil rating: Yes

18—Frio-Gageby association, frequently flooded

Map Unit Setting

National map unit symbol: d6br

Elevation: 400 to 2,150 feet

Mean annual precipitation: 22 to 36 inches

Mean annual air temperature: 61 to 68 degrees F

Frost-free period: 210 to 260 days

Farmland classification: Not prime farmland

Map Unit Composition

Frio and similar soils: 50 percent

Gageby and similar soils: 35 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Frio

Setting

Landform: Flood plains on draws

Down-slope shape: Linear

Across-slope shape: Concave

Parent material: Loamy alluvium

Typical profile

H1 - 0 to 27 inches: clay loam

H2 - 27 to 70 inches: silty clay loam

H3 - 70 to 80 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: Frequent

Frequency of ponding: None

Calcium carbonate, maximum content: 40 percent

Sodium adsorption ratio, maximum: 2.0

Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: C

Ecological site: R078AY121TX - Loamy Bottomland 25-28" PZ

Hydric soil rating: No

Description of Gageby

Setting

Landform: Flood-plain steps on draws

Down-slope shape: Linear

Across-slope shape: Concave

Parent material: Loamy alluvium

Typical profile

H1 - 0 to 29 inches: loam

H2 - 29 to 41 inches: loam

H3 - 41 to 60 inches: sandy clay loam

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: Frequent

Frequency of ponding: None

Custom Soil Resource Report

Calcium carbonate, maximum content: 20 percent

Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: B

Ecological site: R078AY121TX - Loamy Bottomland 25-28" PZ

Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 14 percent

Hydric soil rating: No

Unnamed, hydric

Percent of map unit: 1 percent

Landform: Depressions

Hydric soil rating: Yes

19—Gageby loam, moist, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2wrn9

Elevation: 1,000 to 2,050 feet

Mean annual precipitation: 27 to 30 inches

Mean annual air temperature: 64 to 65 degrees F

Frost-free period: 210 to 230 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Gageby, moist, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gageby, Moist

Setting

Landform: Draws, flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Concave, linear

Parent material: Loamy alluvium

Typical profile

Ap - 0 to 22 inches: loam

Bk - 22 to 58 inches: loam

BCK - 58 to 80 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: R078AY121TX - Loamy Bottomland 25-28" PZ
Hydric soil rating: No

Minor Components

Clearfork

Percent of map unit: 8 percent
Landform: Draws, flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: R078AY121TX - Loamy Bottomland 25-28" PZ
Hydric soil rating: No

Wheatwood

Percent of map unit: 3 percent
Landform: Draws, flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave, convex
Ecological site: R078AY121TX - Loamy Bottomland 25-28" PZ
Hydric soil rating: No

Nukrum

Percent of map unit: 3 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R078AY119TX - Clay Loam 25-28" PZ
Hydric soil rating: No

Unnamed, hydric

Percent of map unit: 1 percent
Landform: Sloughs on flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear

Custom Soil Resource Report

Across-slope shape: Concave, linear
Ecological site: R078CY102TX - Lakebed 23-30" PZ
Hydric soil rating: Yes

21—Leeray clay, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tc1l
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 26 to 34 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 220 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Leeray and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leeray

Setting

Landform: Ridges
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey slope alluvium

Typical profile

A - 0 to 21 inches: clay
Bss - 21 to 42 inches: clay
Bkss - 42 to 52 inches: silty clay
Bk - 52 to 80 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Very slightly saline to strongly saline (2.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: R080BY607TX - Clayey Upland 26-33" PZ
Hydric soil rating: No

Minor Components

Thurber

Percent of map unit: 7 percent
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R080BY147TX - Claypan 26-33" PZ
Hydric soil rating: No

Rowden

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Footslope, shoulder
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: R080BY146TX - Clay Loam 26-33" PZ
Hydric soil rating: No

Salga

Percent of map unit: 2 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R080BY146TX - Clay Loam 26-33" PZ
Hydric soil rating: No

Unnamed, hydric

Percent of map unit: 1 percent
Landform: Depressions on ridges
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

22—Leeray clay, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tc1m
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 26 to 34 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 220 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Leeray and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leeray

Setting

Landform: Ridges
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey slope alluvium

Typical profile

A - 0 to 11 inches: clay
Bss - 11 to 32 inches: clay
Bkss - 32 to 55 inches: silty clay
Bk - 55 to 80 inches: silty clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Very slightly saline to strongly saline (2.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Custom Soil Resource Report

Hydrologic Soil Group: D

Ecological site: R080BY607TX - Clayey Upland 26-33" PZ

Hydric soil rating: No

Minor Components

Thurber

Percent of map unit: 7 percent

Landform: Ridges

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R080BY147TX - Claypan 26-33" PZ

Hydric soil rating: No

Rowden

Percent of map unit: 5 percent

Landform: Ridges

Landform position (two-dimensional): Footslope, shoulder

Landform position (three-dimensional): Base slope, side slope

Down-slope shape: Linear, convex

Across-slope shape: Linear

Ecological site: R080BY146TX - Clay Loam 26-33" PZ

Hydric soil rating: No

Salga

Percent of map unit: 2 percent

Landform: Stream terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R080BY146TX - Clay Loam 26-33" PZ

Hydric soil rating: No

Unnamed, hydric

Percent of map unit: 1 percent

Landform: Depressions on ridges

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear, concave

Across-slope shape: Linear, concave

Hydric soil rating: Yes

24—Mereta clay loam, cool, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2wt7b

Elevation: 1,300 to 2,200 feet

Mean annual precipitation: 24 to 28 inches

Mean annual air temperature: 63 to 65 degrees F

Custom Soil Resource Report

Frost-free period: 210 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Mereta, cool, and similar soils: 88 percent

Minor components: 12 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mereta, Cool

Setting

Landform: Stream terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Calcareous clayey alluvium derived from limestone

Typical profile

A - 0 to 10 inches: clay loam

Bw - 10 to 18 inches: clay loam

Bkkm - 18 to 22 inches: cemented material

BCkk - 22 to 80 inches: clay loam

Properties and qualities

Slope: 1 to 3 percent

Depth to restrictive feature: 14 to 20 inches to petrocalcic

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 80 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): 4s

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: D

Ecological site: R078AY125TX - Shallow 25-28" PZ

Hydric soil rating: No

Minor Components

Cho

Percent of map unit: 5 percent

Landform: Stream terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: R078AY125TX - Shallow 25-28" PZ

Hydric soil rating: No

Nuvalde

Percent of map unit: 4 percent

Custom Soil Resource Report

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R078AY119TX - Clay Loam 25-28" PZ
Hydric soil rating: No

Rowena

Percent of map unit: 3 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R078AY119TX - Clay Loam 25-28" PZ
Hydric soil rating: No

25—Nukrum clay, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2wrnh
Elevation: 1,150 to 2,100 feet
Mean annual precipitation: 25 to 29 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 220 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Nukrum and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nukrum

Setting

Landform: Hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous clayey slope alluvium derived from claystone

Typical profile

Ap - 0 to 24 inches: clay
Bk - 24 to 48 inches: clay
BCK - 48 to 80 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 3.0

Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: R078AY119TX - Clay Loam 25-28" PZ

Hydric soil rating: No

Minor Components

Leeray

Percent of map unit: 7 percent

Landform: Hillslopes

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: R078AY117TX - Clayey Upland 25-28" PZ

Hydric soil rating: No

Nuvalde

Percent of map unit: 6 percent

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R078AY119TX - Clay Loam 25-28" PZ

Hydric soil rating: No

Purves

Percent of map unit: 2 percent

Landform: Hillslopes

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: R078AY126TX - Shallow Clay 25-28" PZ

Hydric soil rating: No

26—Nukrum clay, 3 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2wrnj
Elevation: 1,150 to 2,100 feet
Mean annual precipitation: 25 to 29 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 220 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Nukrum and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nukrum

Setting

Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous clayey slope alluvium derived from claystone

Typical profile

Ap - 0 to 39 inches: clay
Bk - 39 to 65 inches: clay
BCK - 65 to 80 inches: clay

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0
Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R078AY119TX - Clay Loam 25-28" PZ

Hydric soil rating: No

Minor Components

Throck

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R078AY120TX - Clay Slopes 25-28" PZ
Hydric soil rating: No

Callahan

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R078AY120TX - Clay Slopes 25-28" PZ
Hydric soil rating: No

Leeray

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R078AY117TX - Clayey Upland 25-28" PZ
Hydric soil rating: No

28—Oplin-Speck association, undulating

Map Unit Setting

National map unit symbol: d6c3
Elevation: 1,200 to 2,400 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 210 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Oplin and similar soils: 60 percent
Speck and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oplin

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluvium, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from limestone

Typical profile

H1 - 0 to 9 inches: flaggy clay loam
H2 - 9 to 30 inches: bedrock

Properties and qualities

Slope: 1 to 8 percent
Depth to restrictive feature: 7 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R081BY337TX - Low Stony Hill 23-31 PZ
Hydric soil rating: No

Description of Speck

Setting

Landform: Plains
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from limestone

Typical profile

H1 - 0 to 7 inches: cobbly clay loam
H2 - 7 to 18 inches: clay
H3 - 18 to 22 inches: bedrock

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: 14 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Custom Soil Resource Report

Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: R081BY340TX - Redland 23-31 PZ

Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 20 percent

Hydric soil rating: No

29—Owens-Throck association, hilly

Map Unit Setting

National map unit symbol: d6c4

Elevation: 1,000 to 2,350 feet

Mean annual precipitation: 22 to 30 inches

Mean annual air temperature: 63 to 66 degrees F

Frost-free period: 210 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Owens and similar soils: 50 percent

Throck and similar soils: 35 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Owens

Setting

Landform: Hillslopes

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Clayey residuum weathered from claystone

Typical profile

H1 - 0 to 3 inches: stony clay

H2 - 3 to 17 inches: clay

H3 - 17 to 30 inches: clay

Properties and qualities

Slope: 10 to 30 percent

Depth to restrictive feature: 14 to 30 inches to densic bedrock

Drainage class: Well drained

Runoff class: Very high

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 4 percent

Maximum salinity: Nonsaline to moderately saline (1.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 10.0

Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: R078AY123TX - Rocky Hill 25-28" PZ

Hydric soil rating: No

Description of Throck

Setting

Landform: Hillslopes

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from claystone and/or residuum weathered from limestone and/or residuum weathered from siltstone

Typical profile

H1 - 0 to 4 inches: stony clay loam

H2 - 4 to 30 inches: clay

H3 - 30 to 42 inches: silty clay

H4 - 42 to 60 inches: clay

Properties and qualities

Slope: 10 to 30 percent

Depth to restrictive feature: 30 to 60 inches to densic bedrock

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 40 percent

Gypsum, maximum content: 6 percent

Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 20.0

Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: R078AY123TX - Rocky Hill 25-28" PZ

Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 15 percent

Hydric soil rating: No

31—Pedernales fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tc4j

Elevation: 600 to 2,100 feet

Mean annual precipitation: 26 to 32 inches

Mean annual air temperature: 63 to 65 degrees F

Frost-free period: 215 to 240 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Pedernales and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pedernales

Setting

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Interfluve, side slope, crest

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loamy residuum weathered from sandstone and siltstone

Typical profile

A - 0 to 7 inches: fine sandy loam

Bt1 - 7 to 21 inches: sandy clay

Bt2 - 21 to 40 inches: sandy clay

BCK - 40 to 53 inches: sandy clay loam

CBk - 53 to 79 inches: sandy clay loam

Properties and qualities

Slope: 1 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 35 percent

Custom Soil Resource Report

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 2.0

Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: R084BY175TX - Tight Sandy Loam 29-33" PZ

Hydric soil rating: No

Minor Components

Chaney

Percent of map unit: 3 percent

Landform: Ridges

Landform position (two-dimensional): Footslope, summit, backslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: R084BY171TX - Loamy Sand 29-33" PZ

Hydric soil rating: No

Cisco

Percent of map unit: 3 percent

Landform: Ridges

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Ecological site: R084BY174TX - Sandy Loam 29-33" PZ

Hydric soil rating: No

Wise

Percent of map unit: 2 percent

Landform: Ridges

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Nose slope

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: R084BY179TX - Limy Slope 30-38

Hydric soil rating: No

Blanket

Percent of map unit: 2 percent

Landform: Ridges

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R085AY279TX - Clayey Swale 30-38

Hydric soil rating: No

34—Rowden clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2wt6t
Elevation: 950 to 2,050 feet
Mean annual precipitation: 26 to 31 inches
Mean annual air temperature: 63 to 65 degrees F
Frost-free period: 210 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Rowden and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rowden

Setting

Landform: Hillslopes on plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy and clayey residuum and/or slope alluvium derived from limestone

Typical profile

A - 0 to 8 inches: clay loam
Bt - 8 to 27 inches: clay
R - 27 to 80 inches: bedrock

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: R078AY119TX - Clay Loam 25-28" PZ

Hydric soil rating: No

Minor Components

Springcreek

Percent of map unit: 4 percent

Landform: Hillslopes on plains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R078AY119TX - Clay Loam 25-28" PZ

Hydric soil rating: No

Palopinto

Percent of map unit: 4 percent

Landform: Hillslopes on plains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: R080BY160TX - Shallow 26-33" PZ

Hydric soil rating: No

Leeray

Percent of map unit: 1 percent

Landform: Hillslopes on plains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R078AY117TX - Clayey Upland 25-28" PZ

Hydric soil rating: No

Mereta

Percent of map unit: 1 percent

Landform: Hillslopes on plains

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R078AY125TX - Shallow 25-28" PZ

Hydric soil rating: No

36—Rowena clay loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2t01h

Elevation: 1,100 to 2,300 feet

Mean annual precipitation: 25 to 29 inches

Mean annual air temperature: 63 to 66 degrees F

Custom Soil Resource Report

Frost-free period: 210 to 240 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Rowena and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rowena

Setting

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Calcareous loamy and/or clayey alluvium

Typical profile

A - 0 to 6 inches: clay loam

Bw - 6 to 31 inches: clay

Bk - 31 to 36 inches: clay loam

BCK - 36 to 80 inches: silty clay loam

Properties and qualities

Slope: 1 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 60 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 3.0

Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): 2e

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Ecological site: R078AY119TX - Clay Loam 25-28" PZ

Hydric soil rating: No

Minor Components

Abilene

Percent of map unit: 4 percent

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Convex

Ecological site: R078AY119TX - Clay Loam 25-28" PZ

Hydric soil rating: No

Leeray

Percent of map unit: 2 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R078AY117TX - Clayey Upland 25-28" PZ
Hydric soil rating: No

Nuvalde

Percent of map unit: 2 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R078AY119TX - Clay Loam 25-28" PZ
Hydric soil rating: No

Mereta

Percent of map unit: 1 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R078AY125TX - Shallow 25-28" PZ
Hydric soil rating: No

Unnamed, hydric

Percent of map unit: 1 percent
Landform: Depressions on terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Ecological site: R078CY102TX - Lakebed 23-30" PZ
Hydric soil rating: Yes

37—Sagerton loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: d6cf
Elevation: 1,150 to 2,150 feet
Mean annual precipitation: 21 to 28 inches
Mean annual air temperature: 61 to 66 degrees F
Frost-free period: 210 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sagerton and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sagerton

Setting

Landform: Plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed clayey alluvium

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 40 inches: clay
H3 - 40 to 65 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 2c
Hydrologic Soil Group: C
Ecological site: R078AY119TX - Clay Loam 25-28" PZ
Hydric soil rating: No

38—Sagerton loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: d6cg
Elevation: 1,150 to 2,150 feet
Mean annual precipitation: 21 to 28 inches
Mean annual air temperature: 61 to 66 degrees F
Frost-free period: 210 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sagerton and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sagerton

Setting

Landform: Plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed clayey alluvium

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 40 inches: clay
H3 - 40 to 65 inches: clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: R078AY119TX - Clay Loam 25-28" PZ
Hydric soil rating: No

39—Speck clay loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: d6ch
Elevation: 1,250 to 2,250 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 63 to 68 degrees F
Frost-free period: 210 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Speck and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Speck

Setting

Landform: Plains

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 7 inches: clay loam

H2 - 7 to 18 inches: clay

H3 - 18 to 22 inches: bedrock

Properties and qualities

Slope: 1 to 3 percent

Depth to restrictive feature: 14 to 20 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: D

Ecological site: R080BY155TX - Redland 26-33" PZ

Hydric soil rating: No

40—Speck-Throck association, gently undulating

Map Unit Setting

National map unit symbol: d6ck

Elevation: 1,250 to 2,250 feet

Mean annual precipitation: 20 to 30 inches

Mean annual air temperature: 63 to 68 degrees F

Frost-free period: 210 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Speck and similar soils: 60 percent

Throck and similar soils: 20 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Speck

Setting

Landform: Plains

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 7 inches: stony clay loam

H2 - 7 to 18 inches: clay

H3 - 18 to 22 inches: bedrock

Properties and qualities

Slope: 1 to 5 percent

Depth to restrictive feature: 14 to 20 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: R080BY155TX - Redland 26-33" PZ

Hydric soil rating: No

Description of Throck

Setting

Landform: Hillslopes

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from claystone and/or residuum weathered from limestone and/or residuum weathered from siltstone

Typical profile

H1 - 0 to 7 inches: stony clay loam

H2 - 7 to 29 inches: clay

H3 - 29 to 45 inches: clay

H4 - 45 to 60 inches: shaly clay

Properties and qualities

Slope: 1 to 5 percent

Depth to restrictive feature: 29 to 60 inches to densic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Custom Soil Resource Report

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 6 percent
Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: R078AY120TX - Clay Slopes 25-28" PZ
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 20 percent
Hydric soil rating: No

41—Throck clay loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: d6cl
Elevation: 1,250 to 2,250 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 210 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Throck and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Throck

Setting

Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from claystone and/or residuum weathered from limestone and/or residuum weathered from siltstone

Typical profile

H1 - 0 to 6 inches: clay loam
H2 - 6 to 30 inches: silty clay loam

Custom Soil Resource Report

H3 - 30 to 42 inches: silty clay

H4 - 42 to 60 inches: shaly clay

Properties and qualities

Slope: 2 to 5 percent

Depth to restrictive feature: 30 to 60 inches to densic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 40 percent

Gypsum, maximum content: 6 percent

Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 20.0

Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D

Ecological site: R078AY120TX - Clay Slopes 25-28" PZ

Hydric soil rating: No

42—Throck-Callahan-Owens association, undulating

Map Unit Setting

National map unit symbol: d6cm

Elevation: 850 to 2,350 feet

Mean annual precipitation: 22 to 30 inches

Mean annual air temperature: 63 to 66 degrees F

Frost-free period: 210 to 250 days

Farmland classification: Not prime farmland

Map Unit Composition

Throck and similar soils: 45 percent

Callahan and similar soils: 25 percent

Owens and similar soils: 11 percent

Minor components: 19 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Throck

Setting

Landform: Hillslopes

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Convex

Across-slope shape: Linear

Custom Soil Resource Report

Parent material: Residuum weathered from claystone and/or residuum weathered from limestone and/or residuum weathered from siltstone

Typical profile

H1 - 0 to 6 inches: clay loam
H2 - 6 to 30 inches: clay
H3 - 30 to 42 inches: clay
H4 - 42 to 60 inches: clay

Properties and qualities

Slope: 1 to 8 percent
Depth to restrictive feature: 30 to 60 inches to densic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 6 percent
Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R078AY120TX - Clay Slopes 25-28" PZ
Hydric soil rating: No

Description of Callahan

Setting

Landform: Plains
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey residuum weathered from claystone

Typical profile

H1 - 0 to 4 inches: clay loam
H2 - 4 to 38 inches: clay
H3 - 38 to 45 inches: bedrock

Properties and qualities

Slope: 1 to 8 percent
Depth to restrictive feature: 20 to 40 inches to densic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D

Ecological site: R080BY147TX - Claypan 26-33" PZ

Hydric soil rating: No

Description of Owens

Setting

Landform: Hillslopes

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Clayey residuum weathered from claystone

Typical profile

H1 - 0 to 3 inches: clay

H2 - 3 to 17 inches: clay

H3 - 17 to 30 inches: clay

Properties and qualities

Slope: 1 to 8 percent

Depth to restrictive feature: 14 to 30 inches to densic bedrock

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 4 percent

Maximum salinity: Nonsaline to moderately saline (1.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 10.0

Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D

Ecological site: R078AY126TX - Shallow Clay 25-28" PZ

Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 19 percent

Hydric soil rating: No

43—Throck-Owens-Lueders association, hilly

Map Unit Setting

National map unit symbol: d6cn

Elevation: 1,000 to 2,400 feet

Mean annual precipitation: 20 to 30 inches

Mean annual air temperature: 61 to 66 degrees F

Frost-free period: 210 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Throck and similar soils: 50 percent

Owens and similar soils: 20 percent

Lueders and similar soils: 15 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Throck

Setting

Landform: Hillslopes

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from claystone and/or residuum weathered from limestone and/or residuum weathered from siltstone

Typical profile

H1 - 0 to 6 inches: stony clay loam

H2 - 6 to 30 inches: clay

H3 - 30 to 42 inches: clay

H4 - 42 to 60 inches: shaly clay

Properties and qualities

Slope: 8 to 30 percent

Depth to restrictive feature: 30 to 60 inches to densic bedrock

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 40 percent

Gypsum, maximum content: 6 percent

Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Custom Soil Resource Report

Sodium adsorption ratio, maximum: 20.0

Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: R078AY123TX - Rocky Hill 25-28" PZ

Hydric soil rating: No

Description of Owens

Setting

Landform: Hillslopes

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Clayey residuum weathered from claystone

Typical profile

H1 - 0 to 3 inches: stony clay

H2 - 3 to 17 inches: clay

H3 - 17 to 30 inches: clay

Properties and qualities

Slope: 5 to 30 percent

Depth to restrictive feature: 14 to 30 inches to densic bedrock

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 4 percent

Maximum salinity: Nonsaline to moderately saline (1.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 10.0

Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: R078AY123TX - Rocky Hill 25-28" PZ

Hydric soil rating: No

Description of Lueders

Setting

Landform: Hillslopes on ridges

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Gravelly residuum weathered from limestone

Typical profile

H1 - 0 to 5 inches: very cobbly clay loam

H2 - 5 to 10 inches: very cobbly clay loam

H3 - 10 to 13 inches: extremely cobbly clay loam

Custom Soil Resource Report

H4 - 13 to 48 inches: bedrock

Properties and qualities

Slope: 5 to 30 percent

Depth to restrictive feature: 7 to 20 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Medium

*Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 1.98 in/hr)*

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 70 percent

Gypsum, maximum content: 2 percent

Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: R078AY128TX - Very Shallow 25-28" PZ

Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 15 percent

Hydric soil rating: No

44—Throck-Speck association, undulating

Map Unit Setting

National map unit symbol: d6cp

Elevation: 1,250 to 2,250 feet

Mean annual precipitation: 20 to 30 inches

Mean annual air temperature: 63 to 68 degrees F

Frost-free period: 210 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Throck and similar soils: 60 percent

Speck and similar soils: 20 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Throck

Setting

Landform: Hillslopes

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from claystone and/or residuum weathered from limestone and/or residuum weathered from siltstone

Typical profile

H1 - 0 to 6 inches: stony clay loam

H2 - 6 to 30 inches: clay

H3 - 30 to 42 inches: clay

H4 - 42 to 60 inches: shaly clay

Properties and qualities

Slope: 1 to 8 percent

Depth to restrictive feature: 30 to 60 inches to densic bedrock

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 40 percent

Gypsum, maximum content: 6 percent

Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 20.0

Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: R078AY120TX - Clay Slopes 25-28" PZ

Hydric soil rating: No

Description of Speck

Setting

Landform: Plains

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 7 inches: stony clay loam

H2 - 7 to 18 inches: clay

H3 - 18 to 22 inches: bedrock

Properties and qualities

Slope: 1 to 5 percent

Depth to restrictive feature: 14 to 20 inches to lithic bedrock

Drainage class: Well drained

Custom Soil Resource Report

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: R080BY155TX - Redland 26-33" PZ

Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 20 percent

Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydrologic Soil Group: D

Hydric soil rating: No

Eastland County, Texas

BcB—Bolar clay loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tc2f

Elevation: 500 to 1,800 feet

Mean annual precipitation: 29 to 38 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 220 to 245 days

Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition

Bolar and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bolar

Setting

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy residuum weathered from limestone

Typical profile

A - 0 to 11 inches: clay loam

Bk1 - 11 to 23 inches: clay loam

Bk2 - 23 to 30 inches: clay loam

R - 30 to 80 inches: bedrock

Properties and qualities

Slope: 1 to 3 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 80 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: C

Ecological site: R085AY379TX - Loamy Slope 30-38

Hydric soil rating: No

Minor Components

Purves

Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R085AY185TX - Shallow 30-38" PZ
Hydric soil rating: No

Aledo

Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R085AY185TX - Shallow 30-38" PZ
Hydric soil rating: No

Krum

Percent of map unit: 2 percent
Landform: Drainageways
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: R085AY279TX - Clayey Swale 30-38
Hydric soil rating: No

BnB—Bonti fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2skwz
Elevation: 750 to 1,750 feet
Mean annual precipitation: 27 to 34 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 215 to 245 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition

Bonti and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bonti

Setting

Landform: Structural benches, ridges

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loamy and/or clayey residuum weathered from sandstone and/or claystone over sandstone

Typical profile

A - 0 to 8 inches: fine sandy loam

Bt - 8 to 34 inches: clay

Cr - 34 to 80 inches: bedrock

Properties and qualities

Slope: 1 to 3 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: C

Ecological site: R080BY159TX - Sandy Loam 26-33" PZ

Hydric soil rating: No

Minor Components

Exray

Percent of map unit: 8 percent

Landform: Ridges

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Linear

Ecological site: R080BY157TX - Sandstone Hill 26-33" PZ

Hydric soil rating: No

Truce

Percent of map unit: 5 percent

Landform: Ridges

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R080BY164TX - Tight Sandy Loam 26-33" PZ

Custom Soil Resource Report

Hydric soil rating: No

Thurber

Percent of map unit: 5 percent

Landform: Ridges

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R080BY147TX - Claypan 26-33" PZ

Hydric soil rating: No

Owens

Percent of map unit: 2 percent

Landform: Ridges

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R080BY161TX - Shallow Clay 26-33" PZ

Hydric soil rating: No

En—Elandco silty clay loam, frequently flooded

Map Unit Setting

National map unit symbol: d820

Elevation: 970 to 1,500 feet

Mean annual precipitation: 25 to 35 inches

Mean annual air temperature: 57 to 70 degrees F

Frost-free period: 225 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Elandco and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elandco

Setting

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loamy alluvium

Typical profile

H1 - 0 to 40 inches: silty clay loam

H2 - 40 to 62 inches: silty clay loam

Properties and qualities

Slope: 0 to 1 percent

Custom Soil Resource Report

Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B
Ecological site: R084BY170TX - Loamy Bottomland 29-33" PZ
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 18 percent
Hydric soil rating: No

Unnamed, hydric

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

ErD—Bonti-Exray complex, 1 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2sz2f
Elevation: 850 to 1,670 feet
Mean annual precipitation: 27 to 34 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 220 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Bonti, extremely stony, and similar soils: 45 percent
Exray, extremely stony, and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bonti, Extremely Stony

Setting

Landform: Ridges
Landform position (two-dimensional): Summit

Custom Soil Resource Report

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loamy and/or clayey residuum weathered from sandstone and/or claystone over sandstone

Typical profile

A - 0 to 4 inches: very fine sandy loam

E - 4 to 8 inches: very fine sandy loam

Bt - 8 to 30 inches: clay

Cr - 30 to 80 inches: bedrock

Properties and qualities

Slope: 1 to 8 percent

Surface area covered with cobbles, stones or boulders: 11.0 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: R080BY159TX - Sandy Loam 26-33" PZ

Hydric soil rating: No

Description of Exray, Extremely Stony

Setting

Landform: Ridges

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy and/or clayey residuum weathered from sandstone and/or claystone over sandstone

Typical profile

A - 0 to 3 inches: fine sandy loam

E - 3 to 8 inches: very fine sandy loam

Bt - 8 to 16 inches: clay

Cr - 16 to 80 inches: bedrock

Properties and qualities

Slope: 1 to 8 percent

Surface area covered with cobbles, stones or boulders: 14.0 percent

Depth to restrictive feature: 10 to 20 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: High

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

Ecological site: R080BY157TX - Sandstone Hill 26-33" PZ

Hydric soil rating: No

Minor Components

Loving

Percent of map unit: 8 percent

Landform: Ridges

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Linear

Ecological site: R080BY157TX - Sandstone Hill 26-33" PZ

Hydric soil rating: No

Shatruce

Percent of map unit: 8 percent

Landform: Ridges

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R080BY143TX - Bouldery Hill 26-33

Hydric soil rating: No

Owens

Percent of map unit: 4 percent

Landform: Ridges

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R080BY161TX - Shallow Clay 26-33" PZ

Hydric soil rating: No

HeB—Hensley loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: d824
Elevation: 350 to 2,250 feet
Mean annual precipitation: 24 to 40 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 210 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Hensley and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hensley

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 16 inches: clay loam
H3 - 16 to 20 inches: bedrock

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: D
Ecological site: R080BY155TX - Redland 26-33" PZ
Hydric soil rating: No

LeB—Leeray clay, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tc1m
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 26 to 34 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 220 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Leeray and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leeray

Setting

Landform: Ridges
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey slope alluvium

Typical profile

A - 0 to 11 inches: clay
Bss - 11 to 32 inches: clay
Bkss - 32 to 55 inches: silty clay
Bk - 55 to 80 inches: silty clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Very slightly saline to strongly saline (2.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D

Custom Soil Resource Report

Ecological site: R080BY607TX - Clayey Upland 26-33" PZ
Hydric soil rating: No

Minor Components

Thurber

Percent of map unit: 7 percent
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R080BY147TX - Claypan 26-33" PZ
Hydric soil rating: No

Rowden

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Footslope, shoulder
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: R080BY146TX - Clay Loam 26-33" PZ
Hydric soil rating: No

Salga

Percent of map unit: 2 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R080BY146TX - Clay Loam 26-33" PZ
Hydric soil rating: No

Unnamed, hydric

Percent of map unit: 1 percent
Landform: Depressions on ridges
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

LnB—Lindy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: d82b
Elevation: 750 to 2,250 feet
Mean annual precipitation: 24 to 34 inches
Mean annual air temperature: 64 degrees F
Frost-free period: 210 to 260 days

Custom Soil Resource Report

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Lindy and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lindy

Setting

Landform: Ridges

Landform position (two-dimensional): Summit

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 6 inches: loam

H2 - 6 to 28 inches: clay

H3 - 28 to 30 inches: bedrock

Properties and qualities

Slope: 1 to 3 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 5 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D

Ecological site: R080BY148TX - Deep Redland 26-33" PZ

Hydric soil rating: No

OcB—Owens clay, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2szq1

Elevation: 1,000 to 2,400 feet

Mean annual precipitation: 26 to 34 inches

Mean annual air temperature: 63 to 66 degrees F

Frost-free period: 210 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Owens and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Owens

Setting

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder, footslope, backslope

Landform position (three-dimensional): Interfluvium, side slope

Down-slope shape: Convex, concave

Across-slope shape: Linear

Parent material: Clayey residuum weathered from claystone

Typical profile

A - 0 to 5 inches: clay

Bk - 5 to 18 inches: clay

Cd - 18 to 80 inches: silty clay

Properties and qualities

Slope: 1 to 5 percent

Depth to restrictive feature: 14 to 30 inches to densic bedrock

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 4 percent

Maximum salinity: Nonsaline to moderately saline (1.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 10.0

Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: R080BY161TX - Shallow Clay 26-33" PZ

Hydric soil rating: No

Minor Components

Truce

Percent of map unit: 10 percent

Landform: Ridges

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Ecological site: R080BY164TX - Tight Sandy Loam 26-33" PZ

Hydric soil rating: No

Tarrant, pe >44

Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R080BY154TX - Low Stony Hill 26-33" PZ
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: No

TaD—Palopinto very stony clay loam, 1 to 8 percent slopes, rubbly

Map Unit Setting

National map unit symbol: 2wn9s
Elevation: 800 to 1,600 feet
Mean annual precipitation: 27 to 34 inches
Mean annual air temperature: 63 to 65 degrees F
Frost-free period: 210 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Palopinto and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Palopinto

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Stony loamy residuum weathered from limestone

Typical profile

A1 - 0 to 4 inches: very stony clay loam
A2 - 4 to 12 inches: extremely stony clay loam
R - 12 to 40 inches: bedrock

Properties and qualities

Slope: 1 to 8 percent
Surface area covered with cobbles, stones or boulders: 26.0 percent
Depth to restrictive feature: 6 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 5 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 0.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: R080BY154TX - Low Stony Hill 26-33" PZ

Hydric soil rating: No

Minor Components

Set

Percent of map unit: 6 percent

Landform: Ridges

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Ecological site: R080BY604TX - Clay Slopes 26-33" PZ

Hydric soil rating: No

Hensley

Percent of map unit: 4 percent

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: R080BY155TX - Redland 26-33" PZ

Hydric soil rating: No

Rowden

Percent of map unit: 3 percent

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: R080BY146TX - Clay Loam 26-33" PZ

Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

TrA—Thurber clay loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tc1f

Elevation: 700 to 1,800 feet

Mean annual precipitation: 26 to 31 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 210 to 240 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Thurber and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Thurber

Setting

Landform: Ridges

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Clayey slope alluvium derived from claystone

Typical profile

A - 0 to 5 inches: clay loam

Bt - 5 to 36 inches: clay

Btk - 36 to 50 inches: clay

BC - 50 to 80 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Gypsum, maximum content: 1 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 5.0 mmhos/cm)

Sodium adsorption ratio, maximum: 10.0

Available water supply, 0 to 60 inches: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s

Custom Soil Resource Report

Hydrologic Soil Group: D

Ecological site: R080BY147TX - Claypan 26-33" PZ

Hydric soil rating: No

Minor Components

Leeray

Percent of map unit: 7 percent

Landform: Valley floors

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R080BY607TX - Clayey Upland 26-33" PZ

Hydric soil rating: No

Truce

Percent of map unit: 5 percent

Landform: Ridges

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Convex

Across-slope shape: Linear

Ecological site: R080BY164TX - Tight Sandy Loam 26-33" PZ

Hydric soil rating: No

Hassee

Percent of map unit: 3 percent

Landform: Depressions

Down-slope shape: Concave

Across-slope shape: Concave

Ecological site: R080BY147TX - Claypan 26-33" PZ

Hydric soil rating: No

TrB—Thurber clay loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tc1d

Elevation: 700 to 2,100 feet

Mean annual precipitation: 27 to 35 inches

Mean annual air temperature: 63 to 66 degrees F

Frost-free period: 210 to 240 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Thurber and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Thurber

Setting

Landform: Ridges
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey slope alluvium derived from claystone

Typical profile

A - 0 to 4 inches: clay loam
Bt - 4 to 38 inches: clay
Btk - 38 to 50 inches: clay
BC - 50 to 80 inches: clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 5.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: R080BY147TX - Claypan 26-33" PZ
Hydric soil rating: No

Minor Components

Leeray

Percent of map unit: 6 percent
Landform: Valley floors
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R080BY607TX - Clayey Upland 26-33" PZ
Hydric soil rating: No

Truce

Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex

Custom Soil Resource Report

Across-slope shape: Linear
Ecological site: R080BY164TX - Tight Sandy Loam 26-33" PZ
Hydric soil rating: No

Hassee

Percent of map unit: 3 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R080BY147TX - Claypan 26-33" PZ
Hydric soil rating: No

Bluegrove

Percent of map unit: 2 percent
Landform: Structural benches, ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R080BY164TX - Tight Sandy Loam 26-33" PZ
Hydric soil rating: No

TuB—Truce fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2s19w
Elevation: 820 to 1,650 feet
Mean annual precipitation: 27 to 35 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 210 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Truce and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Truce

Setting

Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy colluvium and/or slope alluvium over clayey residuum weathered from claystone and/or sandstone

Typical profile

A - 0 to 5 inches: fine sandy loam
Bt - 5 to 56 inches: clay

Custom Soil Resource Report

Cd - 56 to 80 inches: clay

Properties and qualities

Slope: 1 to 3 percent

Depth to restrictive feature: 40 to 60 inches to densic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: C

Ecological site: R080BY164TX - Tight Sandy Loam 26-33" PZ

Hydric soil rating: No

Minor Components

Owens

Percent of map unit: 5 percent

Landform: Ridges

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Nose slope, side slope

Down-slope shape: Linear, convex

Across-slope shape: Convex

Ecological site: R080BY156TX - Rocky Hill 26-33" PZ

Hydric soil rating: No

Thurber

Percent of map unit: 5 percent

Landform: Ridges

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R080BY147TX - Claypan 26-33" PZ

Hydric soil rating: No

Bonti

Percent of map unit: 5 percent

Landform: Structural benches, ridges

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Ecological site: R080BY159TX - Sandy Loam 26-33" PZ

Hydric soil rating: No

TuC2—Truce fine sandy loam, 1 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2s1b0

Elevation: 730 to 1,800 feet

Mean annual precipitation: 27 to 35 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 210 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Truce, moderately eroded, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Truce, Moderately Eroded

Setting

Landform: Ridges

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Side slope, base slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Loamy colluvium and/or loamy slope alluvium over clayey residuum weathered from claystone and/or sandstone

Typical profile

A - 0 to 3 inches: fine sandy loam

Bt - 3 to 42 inches: clay

Cd - 42 to 80 inches: clay

Properties and qualities

Slope: 1 to 5 percent

Depth to restrictive feature: 40 to 60 inches to densic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: R080BY164TX - Tight Sandy Loam 26-33" PZ

Custom Soil Resource Report

Hydric soil rating: No

Minor Components

Bonti

Percent of map unit: 8 percent

Landform: Structural benches, ridges

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Ecological site: R080BY159TX - Sandy Loam 26-33" PZ

Hydric soil rating: No

Owens

Percent of map unit: 7 percent

Landform: Ridges

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Nose slope, side slope

Down-slope shape: Linear, convex

Across-slope shape: Convex

Ecological site: R080BY156TX - Rocky Hill 26-33" PZ

Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: 2xslv

Elevation: 300 to 2,350 feet

Mean annual precipitation: 1 to 2 inches

Mean annual air temperature: 61 to 67 degrees F

Frost-free period: 181 to 270 days

Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydrologic Soil Group: D

Hydric soil rating: No

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Building Site Development

Building site development interpretations are designed to be used as tools for evaluating soil suitability and identifying soil limitations for various construction purposes. As part of the interpretation process, the rating applies to each soil in its described condition and does not consider present land use. Example interpretations can include corrosion of concrete and steel, shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping.

Corrosion of Concrete

ENG

Engineering

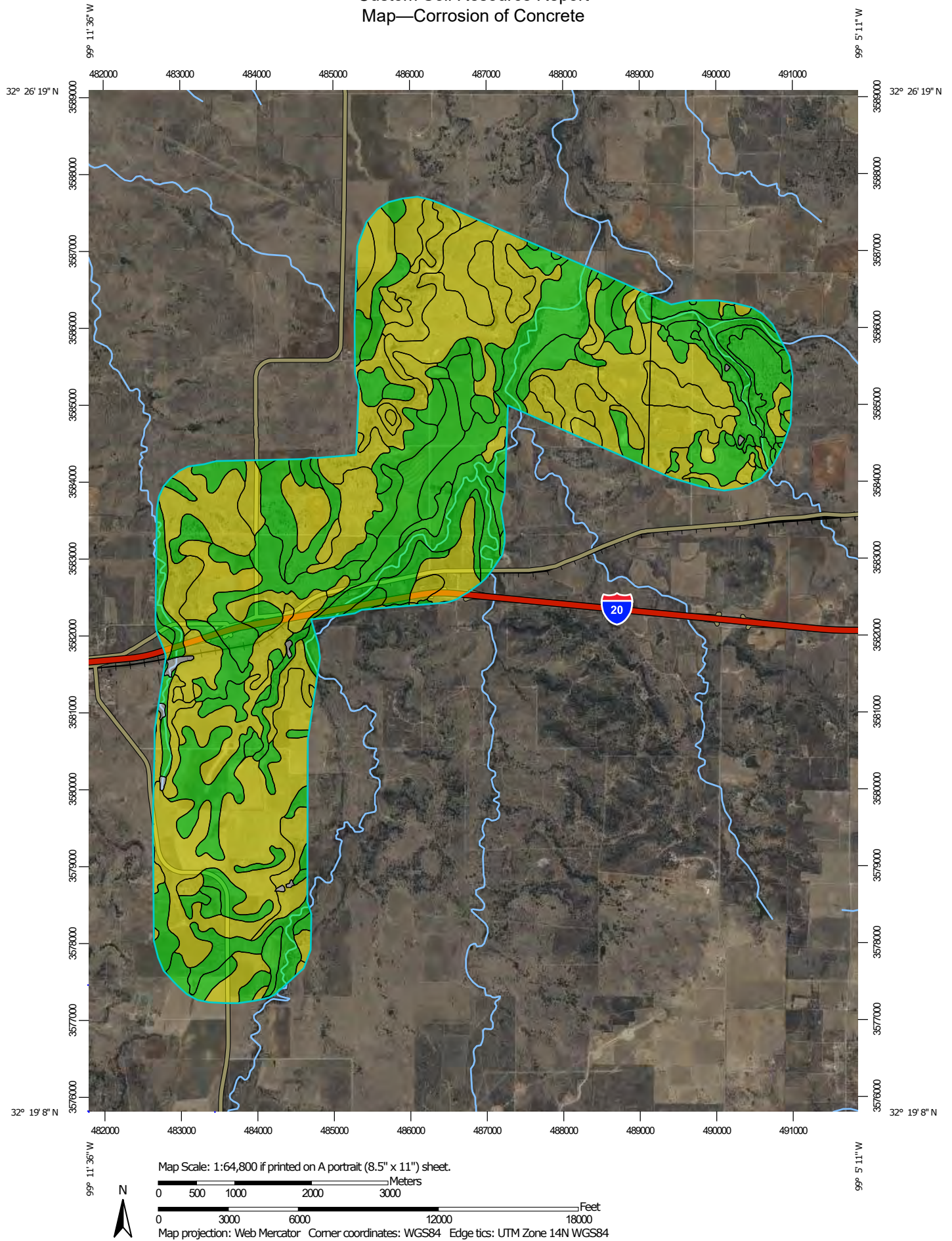
AGR

Agronomy

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

Custom Soil Resource Report Map—Corrosion of Concrete



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Background

 Aerial Photography

Soils

Soil Rating Polygons

 High
 Moderate
 Low
 Not rated or not available

Soil Rating Lines

 High
 Moderate
 Low
 Not rated or not available

Soil Rating Points

 High
 Moderate
 Low
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

MAP LEGEND

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Callahan County, Texas

Survey Area Data: Version 20, Aug 31, 2023

Soil Survey Area: Eastland County, Texas

Survey Area Data: Version 20, Sep 5, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 17, 2022—Jan 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Corrosion of Concrete

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Abilene loam, 0 to 1 percent slopes	Low	130.9	1.6%
3	Bonti fine sandy loam, 1 to 3 percent slopes	Moderate	265.2	3.2%
4	Bonti-Callahan association, 1 to 8 percent slopes, extremely stony	Moderate	9.0	0.1%
5	Callahan loam, 1 to 3 percent slopes	Low	70.9	0.9%
6	Callahan loam, 2 to 5 percent slopes, moderately eroded	Low	183.6	2.2%
17	Frio clay loam, occasionally flooded	Low	59.3	0.7%
18	Frio-Gageby association, frequently flooded	Low	335.9	4.1%
19	Gageby loam, moist, 0 to 2 percent slopes, occasionally flooded	Low	503.7	6.1%
21	Leeray clay, 0 to 1 percent slopes	Moderate	81.8	1.0%
22	Leeray clay, 1 to 3 percent slopes	Moderate	1,442.8	17.6%
24	Mereta clay loam, cool, 1 to 3 percent slopes	Low	61.6	0.7%
25	Nukrum clay, 1 to 3 percent slopes	Low	253.8	3.1%
26	Nukrum clay, 3 to 5 percent slopes	Low	50.7	0.6%
28	Oplin-Speck association, undulating	Low	19.4	0.2%
29	Owens-Throck association, hilly	Moderate	64.7	0.8%
31	Pedernales fine sandy loam, 1 to 3 percent slopes	Low	36.0	0.4%
34	Rowden clay loam, 0 to 3 percent slopes	Low	537.7	6.5%
36	Rowena clay loam, 1 to 3 percent slopes	Moderate	35.2	0.4%
37	Sagerton loam, 0 to 1 percent slopes	Low	74.8	0.9%
38	Sagerton loam, 1 to 3 percent slopes	Low	510.4	6.2%
39	Speck clay loam, 1 to 3 percent slopes	Low	241.4	2.9%

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
40	Speck-Throck association, gently undulating	Low	183.8	2.2%
41	Throck clay loam, 2 to 5 percent slopes	Moderate	186.6	2.3%
42	Throck-Callahan-Owens association, undulating	Moderate	717.3	8.7%
43	Throck-Owens-Lueders association, hilly	Moderate	130.0	1.6%
44	Throck-Speck association, undulating	Moderate	1,007.9	12.3%
W	Water		23.3	0.3%
Subtotals for Soil Survey Area			7,218.0	87.8%
Totals for Area of Interest			8,220.6	100.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BcB	Bolar clay loam, 1 to 3 percent slopes	Low	7.4	0.1%
BnB	Bonti fine sandy loam, 1 to 3 percent slopes	Moderate	11.5	0.1%
En	Elandco silty clay loam, frequently flooded	Low	87.4	1.1%
ErD	Bonti-Exray complex, 1 to 8 percent slopes, extremely stony	Moderate	117.0	1.4%
HeB	Hensley loam, 1 to 3 percent slopes	Low	185.2	2.3%
LeB	Leeray clay, 1 to 3 percent slopes	Moderate	287.6	3.5%
LnB	Lindy loam, 1 to 3 percent slopes	Low	122.7	1.5%
OcB	Owens clay, 1 to 5 percent slopes	Moderate	24.8	0.3%
TaD	Palopinto very stony clay loam, 1 to 8 percent slopes, rubbly	Low	120.3	1.5%
TrA	Thurber clay loam, 0 to 1 percent slopes	Low	1.0	0.0%
TrB	Thurber clay loam, 1 to 3 percent slopes	Low	22.6	0.3%
TuB	Truce fine sandy loam, 1 to 3 percent slopes	Low	9.3	0.1%
TuC2	Truce fine sandy loam, 1 to 5 percent slopes, eroded	Low	2.8	0.0%
W	Water		3.0	0.0%
Subtotals for Soil Survey Area			1,002.6	12.2%
Totals for Area of Interest			8,220.6	100.0%

Rating Options—Corrosion of Concrete

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Corrosion of Steel

ENG

Engineering

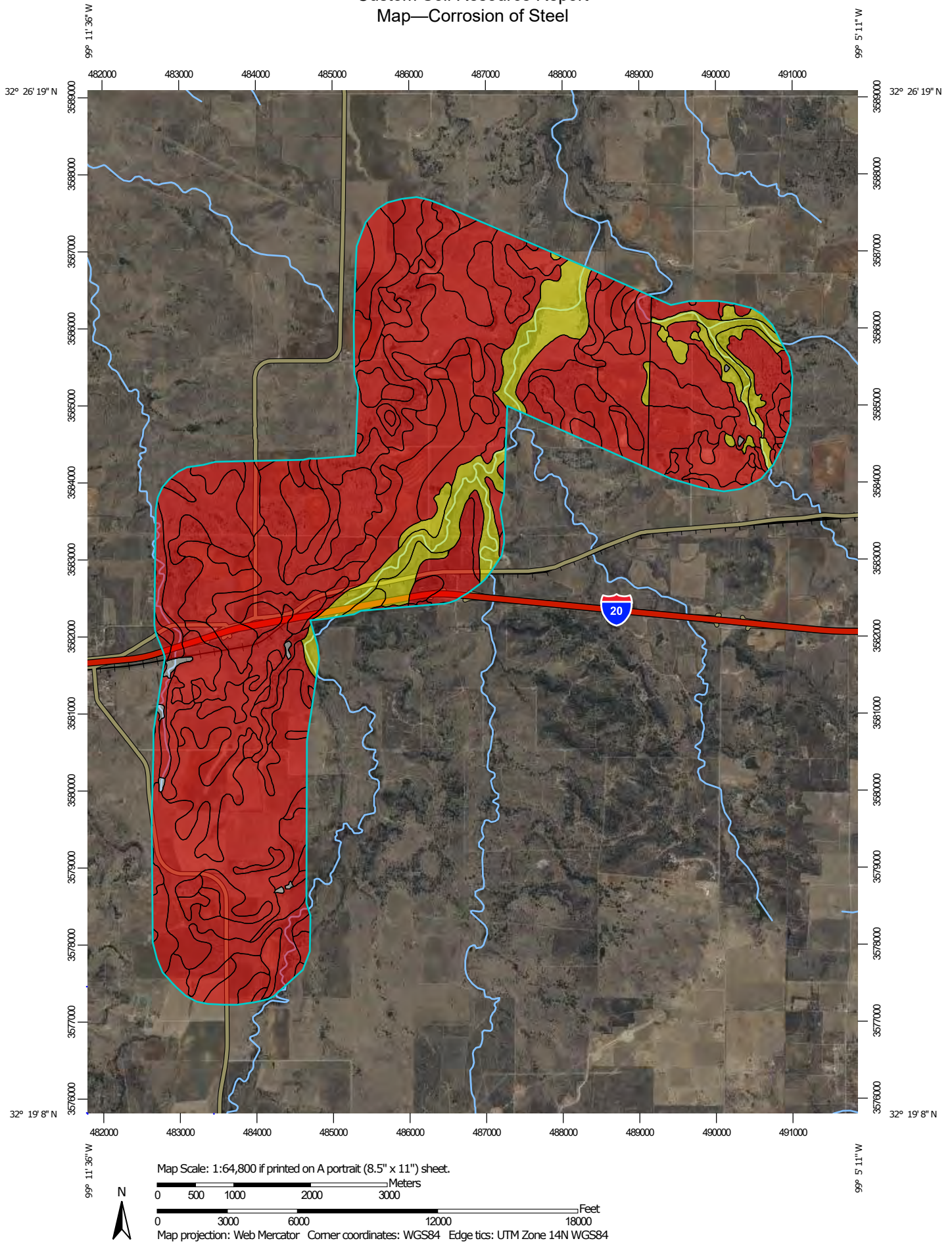
AGR

Agronomy

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

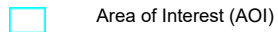
Custom Soil Resource Report Map—Corrosion of Steel



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)



Area of Interest (AOI)

Background



Aerial Photography

Soils

Soil Rating Polygons



High



Moderate



Low



Not rated or not available

Soil Rating Lines



High



Moderate



Low



Not rated or not available

Soil Rating Points



High



Moderate



Low



Not rated or not available

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Callahan County, Texas

Survey Area Data: Version 20, Aug 31, 2023

Soil Survey Area: Eastland County, Texas

Survey Area Data: Version 20, Sep 5, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 17, 2022—Jan 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

Table—Corrosion of Steel

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Abilene loam, 0 to 1 percent slopes	High	130.9	1.6%
3	Bonti fine sandy loam, 1 to 3 percent slopes	High	265.2	3.2%
4	Bonti-Callahan association, 1 to 8 percent slopes, extremely stony	Moderate	9.0	0.1%
5	Callahan loam, 1 to 3 percent slopes	High	70.9	0.9%
6	Callahan loam, 2 to 5 percent slopes, moderately eroded	High	183.6	2.2%
17	Frio clay loam, occasionally flooded	High	59.3	0.7%
18	Frio-Gageby association, frequently flooded	High	335.9	4.1%
19	Gageby loam, moist, 0 to 2 percent slopes, occasionally flooded	Moderate	503.7	6.1%
21	Leeray clay, 0 to 1 percent slopes	High	81.8	1.0%
22	Leeray clay, 1 to 3 percent slopes	High	1,442.8	17.6%
24	Mereta clay loam, cool, 1 to 3 percent slopes	Moderate	61.6	0.7%
25	Nukrum clay, 1 to 3 percent slopes	High	253.8	3.1%
26	Nukrum clay, 3 to 5 percent slopes	High	50.7	0.6%
28	Oplin-Speck association, undulating	Moderate	19.4	0.2%
29	Owens-Throck association, hilly	High	64.7	0.8%
31	Pedernales fine sandy loam, 1 to 3 percent slopes	Moderate	36.0	0.4%
34	Rowden clay loam, 0 to 3 percent slopes	High	537.7	6.5%
36	Rowena clay loam, 1 to 3 percent slopes	High	35.2	0.4%
37	Sagerton loam, 0 to 1 percent slopes	High	74.8	0.9%
38	Sagerton loam, 1 to 3 percent slopes	High	510.4	6.2%
39	Speck clay loam, 1 to 3 percent slopes	High	241.4	2.9%

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
40	Speck-Throck association, gently undulating	High	183.8	2.2%
41	Throck clay loam, 2 to 5 percent slopes	High	186.6	2.3%
42	Throck-Callahan-Owens association, undulating	High	717.3	8.7%
43	Throck-Owens-Lueders association, hilly	High	130.0	1.6%
44	Throck-Speck association, undulating	High	1,007.9	12.3%
W	Water		23.3	0.3%
Subtotals for Soil Survey Area			7,218.0	87.8%
Totals for Area of Interest			8,220.6	100.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BcB	Bolar clay loam, 1 to 3 percent slopes	Moderate	7.4	0.1%
BnB	Bonti fine sandy loam, 1 to 3 percent slopes	High	11.5	0.1%
En	Elandco silty clay loam, frequently flooded	Moderate	87.4	1.1%
ErD	Bonti-Exray complex, 1 to 8 percent slopes, extremely stony	High	117.0	1.4%
HeB	Hensley loam, 1 to 3 percent slopes	High	185.2	2.3%
LeB	Leeray clay, 1 to 3 percent slopes	High	287.6	3.5%
LnB	Lindy loam, 1 to 3 percent slopes	High	122.7	1.5%
OcB	Owens clay, 1 to 5 percent slopes	High	24.8	0.3%
TaD	Palopinto very stony clay loam, 1 to 8 percent slopes, rubbly	Moderate	120.3	1.5%
TrA	Thurber clay loam, 0 to 1 percent slopes	High	1.0	0.0%
TrB	Thurber clay loam, 1 to 3 percent slopes	High	22.6	0.3%
TuB	Truce fine sandy loam, 1 to 3 percent slopes	High	9.3	0.1%
TuC2	Truce fine sandy loam, 1 to 5 percent slopes, eroded	High	2.8	0.0%
W	Water		3.0	0.0%
Subtotals for Soil Survey Area			1,002.6	12.2%
Totals for Area of Interest			8,220.6	100.0%

Rating Options—Corrosion of Steel

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

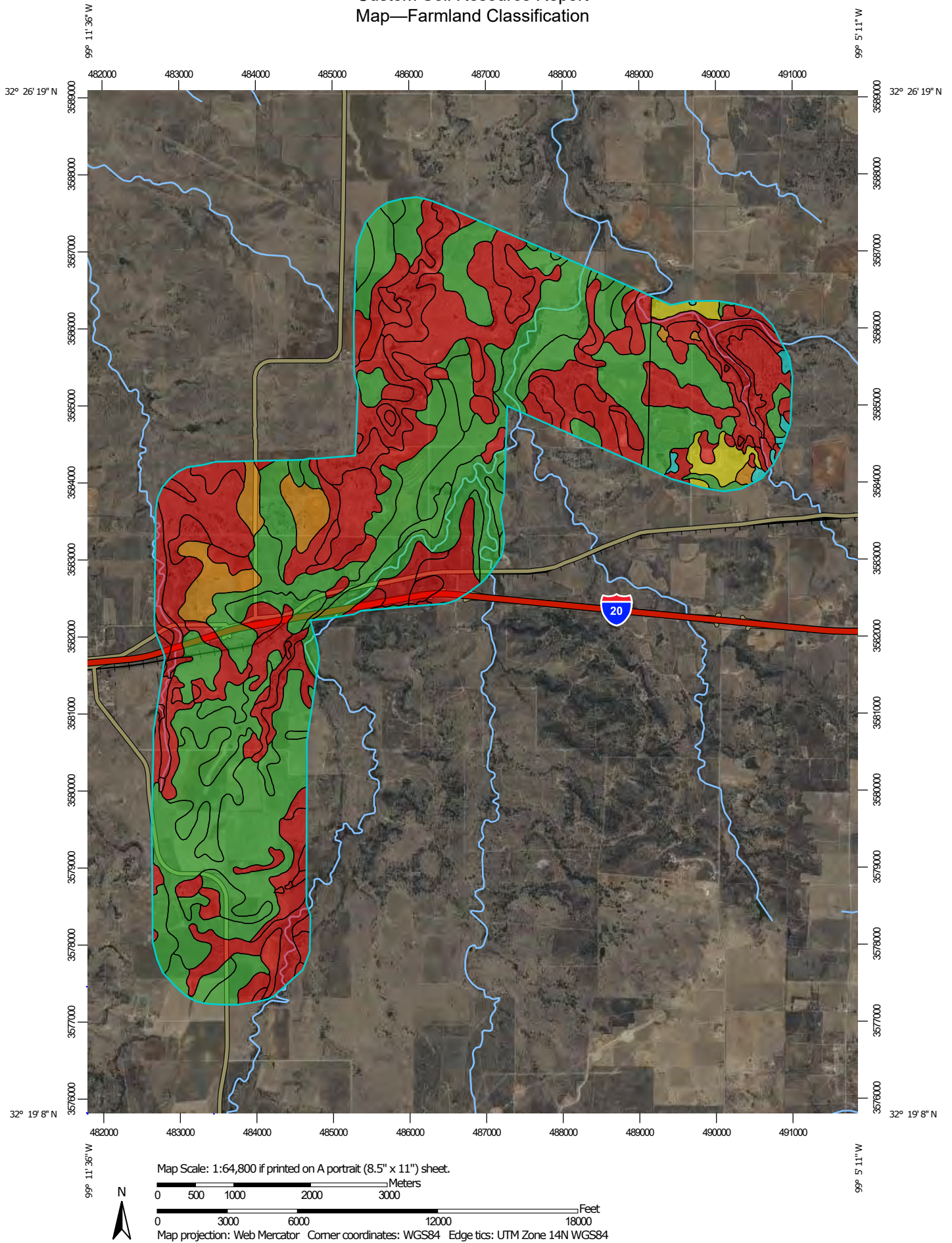
Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Custom Soil Resource Report Map—Farmland Classification



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

-  Not prime farmland
-  All areas are prime farmland
-  Prime farmland if drained
-  Prime farmland if protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated
-  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated and drained
-  Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

-  Prime farmland if subsoiled, completely removing the root inhibiting soil layer
-  Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
-  Prime farmland if irrigated and reclaimed of excess salts and sodium
-  Farmland of statewide importance
-  Farmland of statewide importance, if drained
-  Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if irrigated

-  Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if irrigated and drained
-  Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
-  Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60

-  Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
-  Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if warm enough
-  Farmland of statewide importance, if thawed
-  Farmland of local importance
-  Farmland of local importance, if irrigated

-  Farmland of unique importance
-  Not rated or not available

Soil Rating Lines

-  Not prime farmland
-  All areas are prime farmland
-  Prime farmland if drained
-  Prime farmland if protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated
-  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated and drained
-  Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

Custom Soil Resource Report

	Prime farmland if subsoiled, completely removing the root inhibiting soil layer		Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium		Farmland of unique importance		Prime farmland if subsoiled, completely removing the root inhibiting soil layer
	Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60		Farmland of statewide importance, if irrigated and drained		Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season	Soil Rating Points			Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
	Prime farmland if irrigated and reclaimed of excess salts and sodium		Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season		Not prime farmland		Prime farmland if irrigated and reclaimed of excess salts and sodium
	Farmland of statewide importance		Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer		Farmland of statewide importance, if thawed		Prime farmland if drained		Farmland of statewide importance
	Farmland of statewide importance, if drained		Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60		Farmland of local importance		Prime farmland if protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if drained
	Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season				Farmland of local importance, if irrigated		Prime farmland if irrigated		Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
	Farmland of statewide importance, if irrigated						Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if irrigated

Custom Soil Resource Report

 Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season  Farmland of statewide importance, if irrigated and drained  Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season  Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer  Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60	 Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium  Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season  Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season  Farmland of statewide importance, if warm enough  Farmland of statewide importance, if thawed  Farmland of local importance  Farmland of local importance, if irrigated	 Farmland of unique importance  Not rated or not available Water Features  Streams and Canals Transportation  Rails  Interstate Highways  US Routes  Major Roads  Local Roads Background  Aerial Photography	The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000. Please rely on the bar scale on each map sheet for map measurements. Source of Map: Natural Resources Conservation Service Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857) Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required. This product is generated from the USDA-NRCS certified data as of the version date(s) listed below. Soil Survey Area: Callahan County, Texas Survey Area Data: Version 20, Aug 31, 2023 Soil Survey Area: Eastland County, Texas Survey Area Data: Version 20, Sep 5, 2023 Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries. Soil map units are labeled (as space allows) for map scales 1:50,000 or larger. Date(s) aerial images were photographed: Jan 17, 2022—Jan 22, 2022 The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Abilene loam, 0 to 1 percent slopes	All areas are prime farmland	130.9	1.6%
3	Bonti fine sandy loam, 1 to 3 percent slopes	Farmland of statewide importance, if irrigated	265.2	3.2%
4	Bonti-Callahan association, 1 to 8 percent slopes, extremely stony	Not prime farmland	9.0	0.1%
5	Callahan loam, 1 to 3 percent slopes	Not prime farmland	70.9	0.9%
6	Callahan loam, 2 to 5 percent slopes, moderately eroded	Not prime farmland	183.6	2.2%
17	Frio clay loam, occasionally flooded	Not prime farmland	59.3	0.7%
18	Frio-Gageby association, frequently flooded	Not prime farmland	335.9	4.1%
19	Gageby loam, moist, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	503.7	6.1%
21	Leeray clay, 0 to 1 percent slopes	All areas are prime farmland	81.8	1.0%
22	Leeray clay, 1 to 3 percent slopes	All areas are prime farmland	1,442.8	17.6%
24	Mereta clay loam, cool, 1 to 3 percent slopes	Not prime farmland	61.6	0.7%
25	Nukrum clay, 1 to 3 percent slopes	All areas are prime farmland	253.8	3.1%
26	Nukrum clay, 3 to 5 percent slopes	All areas are prime farmland	50.7	0.6%
28	Oplin-Speck association, undulating	Not prime farmland	19.4	0.2%
29	Owens-Throck association, hilly	Not prime farmland	64.7	0.8%
31	Pedernales fine sandy loam, 1 to 3 percent slopes	All areas are prime farmland	36.0	0.4%
34	Rowden clay loam, 0 to 3 percent slopes	All areas are prime farmland	537.7	6.5%
36	Rowena clay loam, 1 to 3 percent slopes	All areas are prime farmland	35.2	0.4%
37	Sagerton loam, 0 to 1 percent slopes	All areas are prime farmland	74.8	0.9%
38	Sagerton loam, 1 to 3 percent slopes	All areas are prime farmland	510.4	6.2%
39	Speck clay loam, 1 to 3 percent slopes	Not prime farmland	241.4	2.9%

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
40	Speck-Throck association, gently undulating	Not prime farmland	183.8	2.2%
41	Throck clay loam, 2 to 5 percent slopes	Not prime farmland	186.6	2.3%
42	Throck-Callahan-Owens association, undulating	Not prime farmland	717.3	8.7%
43	Throck-Owens-Lueders association, hilly	Not prime farmland	130.0	1.6%
44	Throck-Speck association, undulating	Not prime farmland	1,007.9	12.3%
W	Water	Not prime farmland	23.3	0.3%
Subtotals for Soil Survey Area			7,218.0	87.8%
Totals for Area of Interest			8,220.6	100.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BcB	Bolar clay loam, 1 to 3 percent slopes	Farmland of statewide importance, if irrigated	7.4	0.1%
BnB	Bonti fine sandy loam, 1 to 3 percent slopes	Farmland of statewide importance, if irrigated	11.5	0.1%
En	Elandco silty clay loam, frequently flooded	Not prime farmland	87.4	1.1%
ErD	Bonti-Exray complex, 1 to 8 percent slopes, extremely stony	Not prime farmland	117.0	1.4%
HeB	Hensley loam, 1 to 3 percent slopes	Not prime farmland	185.2	2.3%
LeB	Leeray clay, 1 to 3 percent slopes	All areas are prime farmland	287.6	3.5%
LnB	Lindy loam, 1 to 3 percent slopes	Prime farmland if irrigated	122.7	1.5%
OcB	Owens clay, 1 to 5 percent slopes	Not prime farmland	24.8	0.3%
TaD	Palopinto very stony clay loam, 1 to 8 percent slopes, rubbly	Not prime farmland	120.3	1.5%
TrA	Thurber clay loam, 0 to 1 percent slopes	Farmland of statewide importance	1.0	0.0%
TrB	Thurber clay loam, 1 to 3 percent slopes	Farmland of statewide importance	22.6	0.3%
TuB	Truce fine sandy loam, 1 to 3 percent slopes	Farmland of statewide importance	9.3	0.1%
TuC2	Truce fine sandy loam, 1 to 5 percent slopes, eroded	Not prime farmland	2.8	0.0%
W	Water	Not prime farmland	3.0	0.0%
Subtotals for Soil Survey Area			1,002.6	12.2%
Totals for Area of Interest			8,220.6	100.0%

Rating Options—Farmland Classification

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Hydric Rating by Map Unit

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Custom Soil Resource Report

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

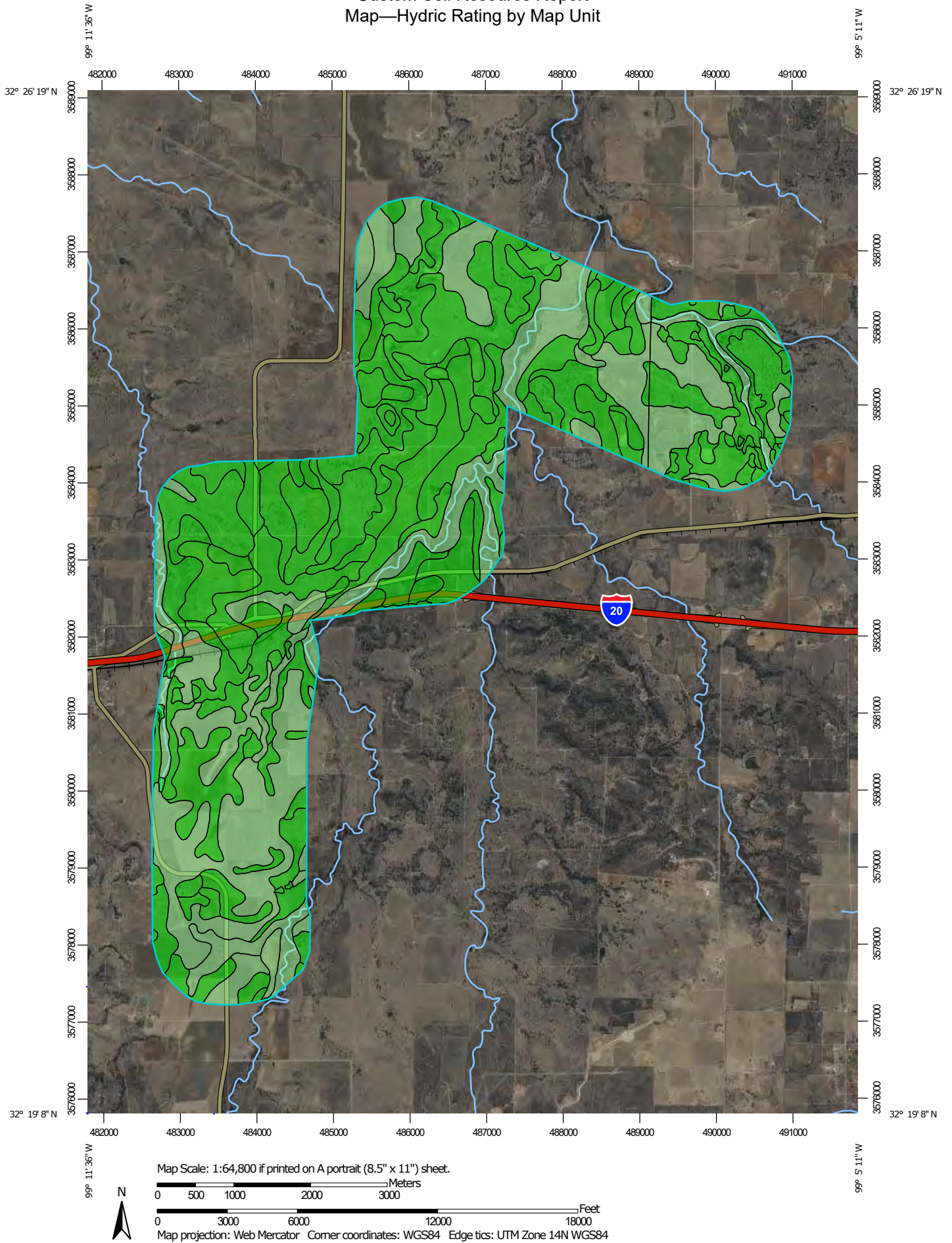
Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Custom Soil Resource Report Map—Hydric Rating by Map Unit



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 Hydric (100%)
 Hydric (66 to 99%)
 Hydric (33 to 65%)
 Hydric (1 to 32%)
 Not Hydric (0%)
 Not rated or not available

Soil Rating Lines

 Hydric (100%)
 Hydric (66 to 99%)
 Hydric (33 to 65%)
 Hydric (1 to 32%)
 Not Hydric (0%)
 Not rated or not available

Soil Rating Points

 Hydric (100%)
 Hydric (66 to 99%)
 Hydric (33 to 65%)
 Hydric (1 to 32%)
 Not Hydric (0%)
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Callahan County, Texas
 Survey Area Data: Version 20, Aug 31, 2023

Soil Survey Area: Eastland County, Texas
 Survey Area Data: Version 20, Sep 5, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 17, 2022—Jan 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Abilene loam, 0 to 1 percent slopes	0	130.9	1.6%
3	Bonti fine sandy loam, 1 to 3 percent slopes	0	265.2	3.2%
4	Bonti-Callahan association, 1 to 8 percent slopes, extremely stony	0	9.0	0.1%
5	Callahan loam, 1 to 3 percent slopes	0	70.9	0.9%
6	Callahan loam, 2 to 5 percent slopes, moderately eroded	0	183.6	2.2%
17	Frio clay loam, occasionally flooded	1	59.3	0.7%
18	Frio-Gageby association, frequently flooded	1	335.9	4.1%
19	Gageby loam, moist, 0 to 2 percent slopes, occasionally flooded	1	503.7	6.1%
21	Leeray clay, 0 to 1 percent slopes	1	81.8	1.0%
22	Leeray clay, 1 to 3 percent slopes	1	1,442.8	17.6%
24	Mereta clay loam, cool, 1 to 3 percent slopes	0	61.6	0.7%
25	Nukrum clay, 1 to 3 percent slopes	0	253.8	3.1%
26	Nukrum clay, 3 to 5 percent slopes	0	50.7	0.6%
28	Oplin-Speck association, undulating	0	19.4	0.2%
29	Owens-Throck association, hilly	0	64.7	0.8%
31	Pedernales fine sandy loam, 1 to 3 percent slopes	0	36.0	0.4%
34	Rowden clay loam, 0 to 3 percent slopes	0	537.7	6.5%
36	Rowena clay loam, 1 to 3 percent slopes	1	35.2	0.4%
37	Sagerton loam, 0 to 1 percent slopes	0	74.8	0.9%
38	Sagerton loam, 1 to 3 percent slopes	0	510.4	6.2%
39	Speck clay loam, 1 to 3 percent slopes	0	241.4	2.9%

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
40	Speck-Throck association, gently undulating	0	183.8	2.2%
41	Throck clay loam, 2 to 5 percent slopes	0	186.6	2.3%
42	Throck-Callahan-Owens association, undulating	0	717.3	8.7%
43	Throck-Owens-Lueders association, hilly	0	130.0	1.6%
44	Throck-Speck association, undulating	0	1,007.9	12.3%
W	Water	0	23.3	0.3%
Subtotals for Soil Survey Area			7,218.0	87.8%
Totals for Area of Interest			8,220.6	100.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BcB	Bolar clay loam, 1 to 3 percent slopes	0	7.4	0.1%
BnB	Bonti fine sandy loam, 1 to 3 percent slopes	0	11.5	0.1%
En	Elandco silty clay loam, frequently flooded	2	87.4	1.1%
ErD	Bonti-Exray complex, 1 to 8 percent slopes, extremely stony	0	117.0	1.4%
HeB	Hensley loam, 1 to 3 percent slopes	0	185.2	2.3%
LeB	Leeray clay, 1 to 3 percent slopes	1	287.6	3.5%
LnB	Lindy loam, 1 to 3 percent slopes	0	122.7	1.5%
OcB	Owens clay, 1 to 5 percent slopes	0	24.8	0.3%
TaD	Palopinto very stony clay loam, 1 to 8 percent slopes, rubbly	0	120.3	1.5%
TrA	Thurber clay loam, 0 to 1 percent slopes	0	1.0	0.0%
TrB	Thurber clay loam, 1 to 3 percent slopes	0	22.6	0.3%
TuB	Truce fine sandy loam, 1 to 3 percent slopes	0	9.3	0.1%
TuC2	Truce fine sandy loam, 1 to 5 percent slopes, eroded	0	2.8	0.0%
W	Water	0	3.0	0.0%
Subtotals for Soil Survey Area			1,002.6	12.2%
Totals for Area of Interest			8,220.6	100.0%

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Land Management

Land management interpretations are tools designed to guide the user in evaluating existing conditions in planning and predicting the soil response to various land management practices, for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture, and rangeland. Example interpretations include suitability for a variety of irrigation practices, log landings, haul roads and major skid trails, equipment operability, site preparation, suitability for hand and mechanical planting, potential erosion hazard associated with various practices, and ratings for fencing and waterline installation.

Water Erosion Potential (TX)

"Water Erosion Potential (TX)" is a qualitative interpretation that evaluates a soil's potential to erode through the action of water. The potential assumes that the area being affected is bare, smooth, and exposed to the water erosion processes. The interpretation provides the user with a qualitative rating of the vulnerability of the soil to the action of water; it is not a measure of actual soil loss from erosion.

The water erosion potential of the soil is based on those soil properties or a combination of soil properties and landscape characteristics that contribute to runoff and have low resistance to water erosion processes. Soil features that contribute to water erosivity are surface-layer particle size, saturated hydraulic conductivity, and high runoff landscapes. Conversely, soil features that resist the erosive effect of water are high organic matter content in the surface layer and low runoff landscapes. The water erosion potential is a function of the interaction between those soil features that make the soil susceptible to water erosion and those that resist the water erosion process.

The ratings are both verbal and numerical. Numerical ratings indicate the soil's relative water erosion potential. They are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil has the greatest water erosion potential (1.00) and the point at which a soil has very low water erosion potential (0.00).

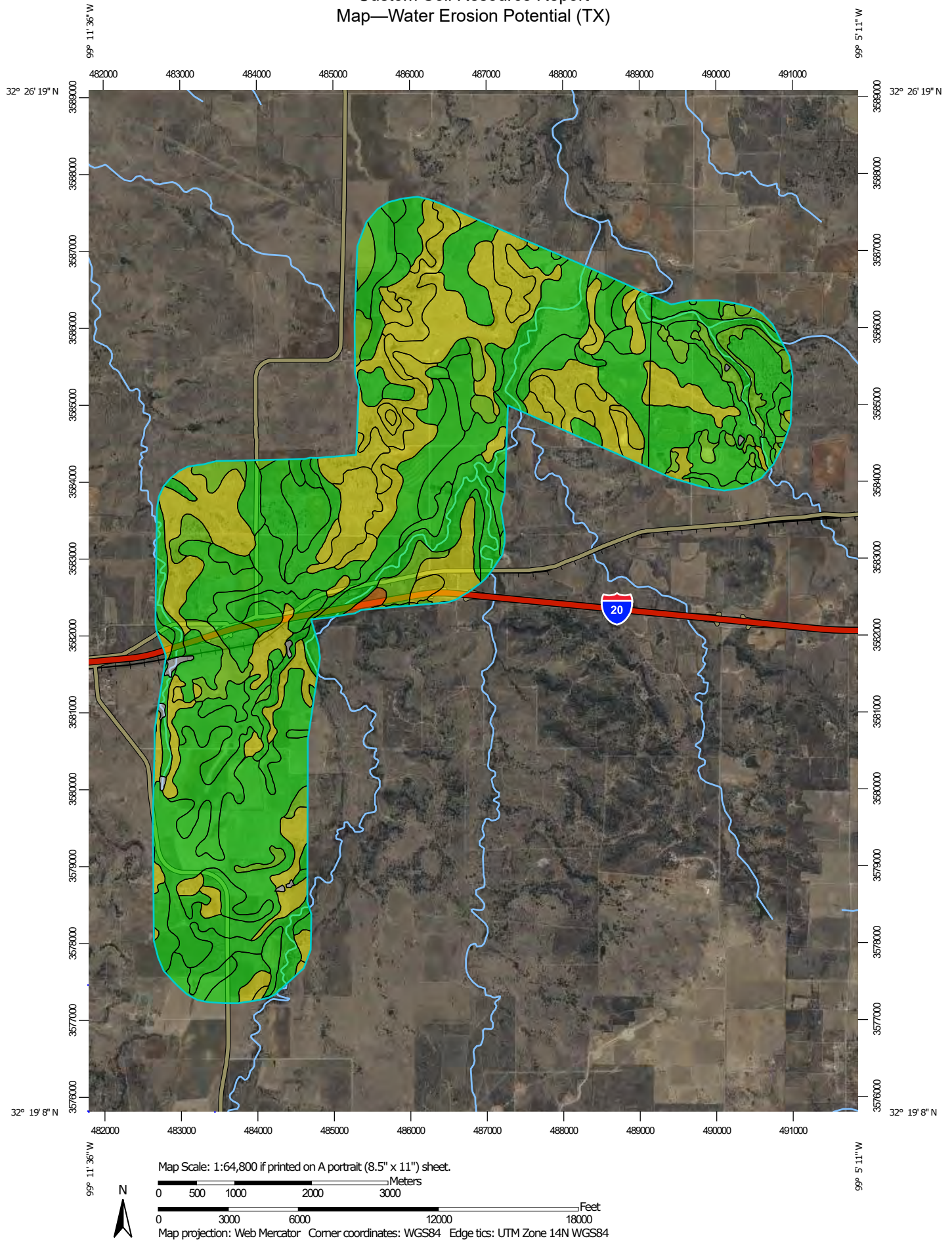
Verbal soil rating classes are based on the highest numerical rating for the most limiting soil feature(s) considered in the rating process. "Very high" (numerical values less than or equal to 1.0 to greater than 0.9) indicates that the soil has the greatest relative water erosion vulnerability. "High" (numerical value less than or equal to 0.9 to greater than 0.65) indicates that the soil has large relative water erosion vulnerability. "Moderate" (numerical value less than or equal to 0.65 to

greater than 0.35) indicates that the soil has medium relative water erosion vulnerability. "Low" (numerical value less than or equal to 0.35 to greater than 0.1) indicates that the soil has small relative water erosion vulnerability. "Very low" (numerical value less than or equal to 0.10) indicates that the soil has little or no relative water erosion vulnerability.

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen, which is displayed on the report. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the Selected Soil Interpretations report with this interpretation included from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report Map—Water Erosion Potential (TX)



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 Very high water erosion potential
 High water erosion potential
 Moderate water erosion potential
 Low water erosion potential
 Very low water erosion potential
 Not rated or not available

Soil Rating Lines

 Very high water erosion potential
 High water erosion potential
 Moderate water erosion potential
 Low water erosion potential
 Very low water erosion potential
 Not rated or not available

Soil Rating Points

 Very high water erosion potential
 High water erosion potential
 Moderate water erosion potential
 Low water erosion potential
 Very low water erosion potential
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Callahan County, Texas
 Survey Area Data: Version 20, Aug 31, 2023

Soil Survey Area: Eastland County, Texas
 Survey Area Data: Version 20, Sep 5, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 17, 2022—Jan 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Custom Soil Resource Report

Tables—Water Erosion Potential (TX)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
1	Abilene loam, 0 to 1 percent slopes	Very low water erosion potential	Abilene (90%)	Percs slowly (0.99)	130.9	1.6%
				Organic matter (0.96)		
				Silt content (0.79)		
3	Bonti fine sandy loam, 1 to 3 percent slopes	Very low water erosion potential	Bonti (80%)	Percs slowly (0.99)	265.2	3.2%
				Organic matter (0.96)		
				Silt content (0.46)		
				LS factor (0.15)		
4	Bonti-Callahan association, 1 to 8 percent slopes, extremely stony	Moderate water erosion potential	Bonti (60%)	Percs slowly (0.99)	9.0	0.1%
				Organic matter (0.96)		
				LS factor (0.93)		
				Silt content (0.38)		
5	Callahan loam, 1 to 3 percent slopes	Low water erosion potential	Callahan (80%)	Percs slowly (1.00)	70.9	0.9%
				Organic matter (0.93)		
				Silt content (0.63)		
				LS factor (0.15)		
6	Callahan loam, 2 to 5 percent slopes, moderately eroded	Moderate water erosion potential	Callahan, moderately eroded (90%)	Percs slowly (1.00)	183.6	2.2%
				Organic matter (0.93)		
				LS factor (0.70)		
				Silt content (0.59)		
17	Frio clay loam, occasionally flooded	Very low water erosion potential	Frio (80%)	Percs slowly (0.99)	59.3	0.7%
				Organic matter (0.98)		
				Silt content (0.46)		
18	Frio-Gageby association, frequently flooded	Very low water erosion potential	Frio (50%)	Percs slowly (0.99)	335.9	4.1%
				Organic matter (0.98)		
				Silt content (0.46)		
			Gageby (35%)	Organic matter (0.97)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Percs slowly (0.92)		
				Silt content (0.77)		
19	Gageby loam, moist, 0 to 2 percent slopes, occasionally flooded	Very low water erosion potential	Gageby, moist (85%)	Organic matter (0.97)	503.7	6.1%
				Percs slowly (0.92)		
				Silt content (0.73)		
21	Leeray clay, 0 to 1 percent slopes	Very low water erosion potential	Leeray (85%)	Percs slowly (1.00)	81.8	1.0%
				Organic matter (0.99)		
				Silt content (0.73)		
22	Leeray clay, 1 to 3 percent slopes	Very low water erosion potential	Leeray (85%)	Percs slowly (1.00)	1,442.8	17.6%
				Organic matter (0.98)		
				Silt content (0.73)		
				LS factor (0.06)		
24	Mereta clay loam, cool, 1 to 3 percent slopes	Low water erosion potential	Mereta, cool (88%)	Organic matter (1.00)	61.6	0.7%
				Percs slowly (0.99)		
				Silt content (0.54)		
				LS factor (0.15)		
25	Nukrum clay, 1 to 3 percent slopes	Very low water erosion potential	Nukrum (85%)	Percs slowly (1.00)	253.8	3.1%
				Organic matter (0.97)		
				Silt content (0.55)		
				LS factor (0.10)		
26	Nukrum clay, 3 to 5 percent slopes	Moderate water erosion potential	Nukrum (90%)	Percs slowly (1.00)	50.7	0.6%
				Organic matter (0.97)		
				LS factor (0.70)		
				Silt content (0.55)		
28	Oplin-Speck association, undulating	High water erosion potential	Oplin (60%)	Organic matter (1.00)	19.4	0.2%
				Percs slowly (0.94)		
				LS factor (0.93)		
				Silt content (0.73)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
29	Owens-Throck association, hilly	Moderate water erosion potential	Owens (50%)	LS factor (1.00)	64.7	0.8%
				Percs slowly (1.00)		
				Organic matter (0.95)		
				Silt content (0.31)		
			Throck (35%)	LS factor (1.00)		
				Percs slowly (1.00)		
				Organic matter (0.94)		
				Silt content (0.41)		
31	Pedernales fine sandy loam, 1 to 3 percent slopes	Very low water erosion potential	Pedernales (90%)	Percs slowly (0.99)	36.0	0.4%
				Organic matter (0.93)		
				Silt content (0.16)		
				LS factor (0.10)		
34	Rowden clay loam, 0 to 3 percent slopes	Very low water erosion potential	Rowden (90%)	Percs slowly (1.00)	537.7	6.5%
				Organic matter (0.99)		
				Silt content (0.69)		
				LS factor (0.01)		
36	Rowena clay loam, 1 to 3 percent slopes	Low water erosion potential	Rowena (90%)	Percs slowly (0.99)	35.2	0.4%
				Organic matter (0.97)		
				Silt content (0.60)		
				LS factor (0.15)		
37	Sagerton loam, 0 to 1 percent slopes	Very low water erosion potential	Sagerton (100%)	Percs slowly (0.99)	74.8	0.9%
				Organic matter (0.95)		
				Silt content (0.68)		
38	Sagerton loam, 1 to 3 percent slopes	Very low water erosion potential	Sagerton (100%)	Percs slowly (0.99)	510.4	6.2%
				Organic matter (0.95)		
				Silt content (0.68)		
				LS factor (0.10)		
39	Speck clay loam, 1 to 3 percent slopes	Very low water erosion potential	Speck (100%)	Percs slowly (1.00)	241.4	2.9%

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Organic matter (0.96)		
				Silt content (0.57)		
				LS factor (0.10)		
40	Speck-Throck association, gently undulating	Low water erosion potential	Speck (60%)	Percs slowly (1.00)	183.8	2.2%
				Organic matter (0.96)		
				Silt content (0.57)		
				LS factor (0.35)		
			Throck (20%)	Percs slowly (1.00)		
				Organic matter (0.94)		
				Silt content (0.47)		
				LS factor (0.35)		
41	Throck clay loam, 2 to 5 percent slopes	Moderate water erosion potential	Throck (100%)	Percs slowly (1.00)	186.6	2.3%
				Organic matter (0.94)		
				LS factor (0.70)		
				Silt content (0.57)		
42	Throck-Callahan-Owens association, undulating	Moderate water erosion potential	Throck (45%)	Percs slowly (1.00)	717.3	8.7%
				Organic matter (0.94)		
				LS factor (0.93)		
				Silt content (0.45)		
			Callahan (25%)	Percs slowly (1.00)		
				Organic matter (0.93)		
				LS factor (0.93)		
				Silt content (0.53)		
			Owens (11%)	Percs slowly (1.00)		
				Organic matter (0.95)		
				LS factor (0.93)		
				Silt content (0.31)		
43	Throck-Owens-Lueders association, hilly	Moderate water erosion potential	Throck (50%)	LS factor (1.00)	130.0	1.6%
				Percs slowly (1.00)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Organic matter (0.94)		
				Silt content (0.45)		
			Owens (20%)	LS factor (1.00)		
				Percs slowly (1.00)		
				Organic matter (0.95)		
				Silt content (0.31)		
44	Throck-Speck association, undulating	Moderate water erosion potential	Throck (60%)	Percs slowly (1.00)	1,007.9	12.3%
				Organic matter (0.94)		
				LS factor (0.93)		
				Silt content (0.45)		
W	Water	Not rated	Water (100%)		23.3	0.3%
Subtotals for Soil Survey Area					7,218.0	87.8%
Totals for Area of Interest					8,220.6	100.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BcB	Bolar clay loam, 1 to 3 percent slopes	Low water erosion potential	Bolar (90%)	Organic matter (0.98)	7.4	0.1%
				Percs slowly (0.92)		
				Silt content (0.64)		
				LS factor (0.15)		
BnB	Bonti fine sandy loam, 1 to 3 percent slopes	Very low water erosion potential	Bonti (80%)	Percs slowly (0.99)	11.5	0.1%
				Organic matter (0.96)		
				Silt content (0.46)		
				LS factor (0.15)		
En	Elandco silty clay loam, frequently flooded	Very low water erosion potential	Elandco (80%)	Silt content (0.99)	87.4	1.1%
				Organic matter (0.97)		
				Percs slowly (0.92)		
ErD	Bonti-Exray complex, 1 to 8 percent slopes, extremely stony	Moderate water erosion potential	Bonti, extremely stony (45%)	Percs slowly (0.99)	117.0	1.4%
				Organic matter (0.95)		
				Silt content (0.90)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				LS factor (0.53)		
HeB	Hensley loam, 1 to 3 percent slopes	Very low water erosion potential	Hensley (100%)	Percs slowly (1.00)	185.2	2.3%
				Organic matter (0.93)		
				Silt content (0.54)		
				LS factor (0.10)		
LeB	Leeray clay, 1 to 3 percent slopes	Very low water erosion potential	Leeray (85%)	Percs slowly (1.00)	287.6	3.5%
				Organic matter (0.98)		
				Silt content (0.73)		
				LS factor (0.06)		
LnB	Lindy loam, 1 to 3 percent slopes	Very low water erosion potential	Lindy (100%)	Percs slowly (1.00)	122.7	1.5%
				Organic matter (0.93)		
				Silt content (0.52)		
				LS factor (0.10)		
OcB	Owens clay, 1 to 5 percent slopes	Low water erosion potential	Owens (85%)	Percs slowly (1.00)	24.8	0.3%
				Organic matter (0.96)		
				Silt content (0.54)		
				LS factor (0.34)		
TaD	Palopinto very stony clay loam, 1 to 8 percent slopes, rubbly	Low water erosion potential	Palopinto (85%)	Organic matter (1.00)	120.3	1.5%
				Percs slowly (1.00)		
				Silt content (0.68)		
				LS factor (0.35)		
TrA	Thurber clay loam, 0 to 1 percent slopes	Very low water erosion potential	Thurber (85%)	Percs slowly (1.00)	1.0	0.0%
				Organic matter (0.95)		
				Silt content (0.85)		
TrB	Thurber clay loam, 1 to 3 percent slopes	Low water erosion potential	Thurber (85%)	Percs slowly (1.00)	22.6	0.3%
				Organic matter (0.95)		
				Silt content (0.82)		
				LS factor (0.15)		
TuB	Truce fine sandy loam, 1 to 3 percent slopes	Very low water erosion potential	Truce (85%)	Percs slowly (1.00)	9.3	0.1%

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Organic matter (0.95)		
				Silt content (0.39)		
				LS factor (0.15)		
TuC2	Truce fine sandy loam, 1 to 5 percent slopes, eroded	Low water erosion potential	Truce, moderately eroded (85%)	Percs slowly (1.00)	2.8	0.0%
				Organic matter (0.93)		
				Silt content (0.50)		
				LS factor (0.35)		
W	Water	Not rated	Water (100%)		3.0	0.0%
Subtotals for Soil Survey Area					1,002.6	12.2%
Totals for Area of Interest					8,220.6	100.0%

Rating	Acres in AOI	Percent of AOI
Very low water erosion potential	5,178.4	63.0%
Moderate water erosion potential	2,467.0	30.0%
Low water erosion potential	529.5	6.4%
High water erosion potential	19.4	0.2%
Null or Not Rated	26.3	0.3%
Totals for Area of Interest	8,220.6	100.0%

Rating Options—Water Erosion Potential (TX)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Wind Erosion Potential (TX)

The higher the numerical rating the greater the vulnerability rating class. The "very high" potential class (numerical values less than or equal to 1.0 to greater than 0.9) indicates that the soil has the greatest relative wind erosion vulnerability. The "high" class (numerical value less than or equal to 0.9 to greater than 0.65) indicates that the soil has large relative wind erosion vulnerability. The "moderate" class (numerical value less than or equal to 0.65 to greater than 0.4) indicates that the soil has medium relative wind erosion vulnerability. The "low" class (numerical value less than or equal to 0.4 to greater than 0.2) indicates that the soil has small relative wind erosion vulnerability. The "very low" class (numerical value less than or equal to 0.20) indicates that the soil has little or no relative wind erosion vulnerability.

Custom Soil Resource Report

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen, which is displayed on the report. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the Selected Soil Interpretations report with this interpretation included from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site. The Wind Erosion Potential (TX) is a qualitative interpretation which evaluates a soil's potential to erode through the action of wind. The potential assumes that the area being affected is bare, smooth, and has a long distance exposed to the wind. The soil wind erosion potential provides the user with a qualitative rating of the vulnerability of the soil to the action of the wind and is not a measure of actual soil loss from erosion.

The wind erosion potential of the soil is based on those surface soil properties that by themselves or in combination with others contribute to the soil's potential wind erosivity. Those surface soil features that contribute to wind erosivity are particle size and carbonate content. Conversely, surface features that resist the erosive effect of wind are organic matter content and coarse fragments. The soil wind erosion potential is a function of the interaction between surface soil features that make the soil susceptible to wind erosion and those that resist the wind erosion process.

Numerical ratings or values indicate the soil's relative wind erosion potential. Ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil has the greatest wind erosion potential (1.00), and the point at which a soil has very low wind erosion potential (0.00).

The ratings are both verbal and numerical. The potential degree to which a soil is susceptible to wind erosion will range from "very high" to "very low" (from 1.0 to 0.0). Soils that have favorable surface particle size, high organic matter content, or protective coarse fragments will have "very low" wind erosion potential. Soils that have "very high" wind erosion potential are those with a surface layer that has a sandy particle size, high carbonate content, low organic matter content, or no coarse fragment protection.

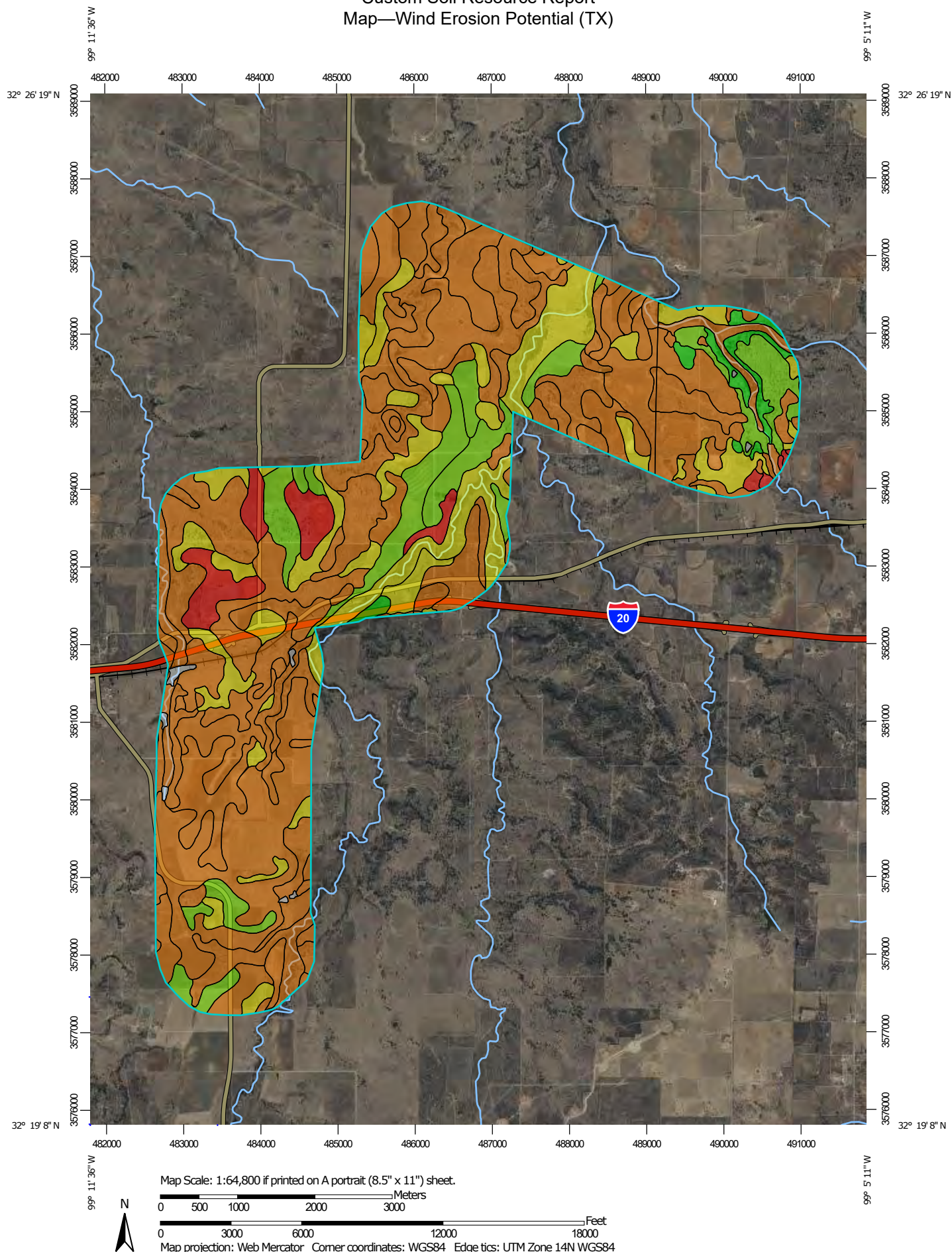
The higher the numerical rating the greater the vulnerability rating class. The "very high" potential class (numerical values less than or equal to 1.0 to greater than 0.9) indicates that the soil has the greatest relative wind erosion vulnerability. The "high" class (numerical value less than or equal to 0.9 to greater than 0.65) indicates that the soil has large relative wind erosion vulnerability. The "moderate" class (numerical value less than or equal to 0.65 to greater than 0.4) indicates that the soil has medium relative wind erosion vulnerability. The "low" class (numerical value less than or equal to 0.4 to greater than 0.2) indicates that the soil has small relative

Custom Soil Resource Report

wind erosion vulnerability. The "very low" class (numerical value less than or equal to 0.20) indicates that the soil has little or no relative wind erosion vulnerability.

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation

Custom Soil Resource Report
Map—Wind Erosion Potential (TX)



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 Very high
 High
 Moderate
 Low
 Very low
 Not rated or not available

Soil Rating Lines

 Very high
 High
 Moderate
 Low
 Very low
 Not rated or not available

Soil Rating Points

 Very high
 High
 Moderate
 Low
 Very low
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Callahan County, Texas

Survey Area Data: Version 20, Aug 31, 2023

Soil Survey Area: Eastland County, Texas

Survey Area Data: Version 20, Sep 5, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 17, 2022—Jan 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

Tables—Wind Erosion Potential (TX)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
1	Abilene loam, 0 to 1 percent slopes	Low wind erosion potential	Abilene (90%)	Sand content of surface (0.39)	130.9	1.6%
				Clay content of surface (0.26)		
				Silt content of surface (0.08)		
				Rock fragment content of surface (0.01)		
3	Bonti fine sandy loam, 1 to 3 percent slopes	Very high wind erosion potential	Bonti (80%)	Sand content of surface (0.93)	265.2	3.2%
				Clay content of surface (0.02)		
				Organic matter content of surface (0.01)		
				Rock fragment content of surface (0.00)		
4	Bonti-Callahan association, 1 to 8 percent slopes, extremely stony	High wind erosion potential	Bonti (60%)	Sand content of surface (0.92)	9.0	0.1%
				Rock fragment content of surface (0.02)		
				Clay content of surface (0.02)		
				Organic matter content of surface (0.01)		
5	Callahan loam, 1 to 3 percent slopes	Moderate wind erosion potential	Callahan (80%)	Sand content of surface (0.44)	70.9	0.9%
				Clay content of surface (0.18)		
				Silt content of surface (0.08)		
				Rock fragment content of surface (0.00)		
6	Callahan loam, 2 to 5 percent slopes, moderately eroded	Moderate wind erosion potential	Callahan, moderately eroded (90%)	Sand content of surface (0.43)	183.6	2.2%
				Clay content of surface (0.18)		
				Silt content of surface (0.08)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Rock fragment content of surface (0.02)		
17	Frio clay loam, occasionally flooded	High wind erosion potential	Frio (80%)	Carbonate content of surface (0.86)	59.3	0.7%
				Clay content of surface (0.85)		
				Sand content of surface (0.12)		
				Silt content of surface (0.03)		
				Rock fragment content of surface (0.02)		
18	Frio-Gageby association, frequently flooded	High wind erosion potential	Frio (50%)	Carbonate content of surface (0.86)	335.9	4.1%
				Clay content of surface (0.85)		
				Sand content of surface (0.12)		
				Silt content of surface (0.03)		
				Rock fragment content of surface (0.02)		
19	Gageby loam, moist, 0 to 2 percent slopes, occasionally flooded	Moderate wind erosion potential	Gageby, moist (85%)	Sand content of surface (0.41)	503.7	6.1%
				Clay content of surface (0.26)		
				Silt content of surface (0.07)		
21	Leeray clay, 0 to 1 percent slopes	High wind erosion potential	Leeray (85%)	Clay content of surface (0.85)	81.8	1.0%
				Silt content of surface (0.10)		
				Organic matter content of surface (0.05)		
				Rock fragment content of surface (0.00)		
22	Leeray clay, 1 to 3 percent slopes	High wind erosion potential	Leeray (85%)	Clay content of surface (0.85)	1,442.8	17.6%
				Silt content of surface (0.10)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Organic matter content of surface (0.05)		
				Rock fragment content of surface (0.00)		
24	Mereta clay loam, cool, 1 to 3 percent slopes	Moderate wind erosion potential	Mereta, cool (88%)	Clay content of surface (0.84)	61.6	0.7%
				Carbonate content of surface (0.43)		
				Organic matter content of surface (0.29)		
				Sand content of surface (0.13)		
				Silt content of surface (0.04)		
25	Nukrum clay, 1 to 3 percent slopes	High wind erosion potential	Nukrum (85%)	Clay content of surface (0.85)	253.8	3.1%
				Silt content of surface (0.06)		
26	Nukrum clay, 3 to 5 percent slopes	High wind erosion potential	Nukrum (90%)	Clay content of surface (0.85)	50.7	0.6%
				Silt content of surface (0.06)		
28	Oplin-Speck association, undulating	Very low wind erosion potential	Oplin (60%)	Carbonate content of surface (0.86)	19.4	0.2%
				Clay content of surface (0.51)		
				Organic matter content of surface (0.40)		
				Rock fragment content of surface (0.33)		
				Sand content of surface (0.25)		
29	Owens-Throck association, hilly	High wind erosion potential	Owens (50%)	Clay content of surface (0.85)	64.7	0.8%
				Carbonate content of surface (0.43)		
				Silt content of surface (0.04)		
				Organic matter content of surface (0.03)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Rock fragment content of surface (0.03)		
			Throck (35%)	Clay content of surface (0.80)		
				Sand content of surface (0.21)		
				Rock fragment content of surface (0.08)		
				Silt content of surface (0.04)		
				Carbonate content of surface (0.02)		
31	Pedernales fine sandy loam, 1 to 3 percent slopes	Very high wind erosion potential	Pedernales (90%)	Sand content of surface (0.97)	36.0	0.4%
34	Rowden clay loam, 0 to 3 percent slopes	High wind erosion potential	Rowden (90%)	Clay content of surface (0.77)	537.7	6.5%
				Silt content of surface (0.12)		
				Organic matter content of surface (0.11)		
				Rock fragment content of surface (0.01)		
36	Rowena clay loam, 1 to 3 percent slopes	High wind erosion potential	Rowena (90%)	Clay content of surface (0.84)	35.2	0.4%
				Sand content of surface (0.13)		
				Organic matter content of surface (0.05)		
				Silt content of surface (0.04)		
37	Sagerton loam, 0 to 1 percent slopes	Low wind erosion potential	Sagerton (100%)	Sand content of surface (0.31)	74.8	0.9%
				Clay content of surface (0.22)		
				Silt content of surface (0.12)		
				Rock fragment content of surface (0.00)		
38	Sagerton loam, 1 to 3 percent slopes	Low wind erosion potential	Sagerton (100%)	Sand content of surface (0.31)	510.4	6.2%

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Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Clay content of surface (0.22)		
				Silt content of surface (0.12)		
				Rock fragment content of surface (0.00)		
39	Speck clay loam, 1 to 3 percent slopes	Moderate wind erosion potential	Speck (100%)	Clay content of surface (0.61)	241.4	2.9%
				Sand content of surface (0.22)		
				Silt content of surface (0.08)		
				Rock fragment content of surface (0.01)		
40	Speck-Throck association, gently undulating	Moderate wind erosion potential	Speck (60%)	Clay content of surface (0.61)	183.8	2.2%
				Sand content of surface (0.22)		
				Silt content of surface (0.08)		
				Rock fragment content of surface (0.04)		
41	Throck clay loam, 2 to 5 percent slopes	High wind erosion potential	Throck (100%)	Clay content of surface (0.80)	186.6	2.3%
				Sand content of surface (0.21)		
				Silt content of surface (0.04)		
				Rock fragment content of surface (0.03)		
				Carbonate content of surface (0.02)		
42	Throck-Callahan-Owens association, undulating	High wind erosion potential	Throck (45%)	Clay content of surface (0.80)	717.3	8.7%
				Sand content of surface (0.21)		
				Silt content of surface (0.04)		
				Rock fragment content of surface (0.03)		
				Carbonate content of surface (0.02)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Owens (11%)	Clay content of surface (0.85)		
				Carbonate content of surface (0.43)		
				Silt content of surface (0.05)		
				Organic matter content of surface (0.03)		
				Rock fragment content of surface (0.00)		
43	Throck-Owens-Lueders association, hilly	High wind erosion potential	Throck (50%)	Clay content of surface (0.80)	130.0	1.6%
				Sand content of surface (0.21)		
				Rock fragment content of surface (0.08)		
				Silt content of surface (0.04)		
				Carbonate content of surface (0.02)		
			Owens (20%)	Clay content of surface (0.85)		
				Carbonate content of surface (0.43)		
				Silt content of surface (0.04)		
				Organic matter content of surface (0.03)		
				Rock fragment content of surface (0.03)		
44	Throck-Speck association, undulating	High wind erosion potential	Throck (60%)	Clay content of surface (0.80)	1,007.9	12.3%
				Sand content of surface (0.21)		
				Rock fragment content of surface (0.08)		
				Silt content of surface (0.04)		
				Carbonate content of surface (0.02)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
W	Water	Not rated	Water (100%)		23.3	0.3%
Subtotals for Soil Survey Area					7,218.0	87.8%
Totals for Area of Interest					8,220.6	100.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BcB	Bolar clay loam, 1 to 3 percent slopes	High wind erosion potential	Bolar (90%)	Carbonate content of surface (0.86)	7.4	0.1%
				Clay content of surface (0.63)		
				Sand content of surface (0.23)		
				Silt content of surface (0.07)		
				Organic matter content of surface (0.01)		
BnB	Bonti fine sandy loam, 1 to 3 percent slopes	Very high wind erosion potential	Bonti (80%)	Sand content of surface (0.93)	11.5	0.1%
				Clay content of surface (0.02)		
				Organic matter content of surface (0.01)		
				Rock fragment content of surface (0.00)		
En	Elandco silty clay loam, frequently flooded	High wind erosion potential	Elandco (80%)	Clay content of surface (0.67)	87.4	1.1%
				Silt content of surface (0.41)		
				Carbonate content of surface (0.16)		
ErD	Bonti-Exray complex, 1 to 8 percent slopes, extremely stony	High wind erosion potential	Bonti, extremely stony (45%)	Sand content of surface (0.87)	117.0	1.4%
				Silt content of surface (0.03)		
				Organic matter content of surface (0.01)		
				Rock fragment content of surface (0.01)		
HeB	Hensley loam, 1 to 3 percent slopes	Low wind erosion potential	Hensley (100%)	Sand content of surface (0.38)	185.2	2.3%

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Clay content of surface (0.24)		
				Silt content of surface (0.09)		
				Rock fragment content of surface (0.05)		
LeB	Leeray clay, 1 to 3 percent slopes	High wind erosion potential	Leeray (85%)	Clay content of surface (0.85)	287.6	3.5%
				Silt content of surface (0.10)		
				Organic matter content of surface (0.05)		
				Rock fragment content of surface (0.00)		
LnB	Lindy loam, 1 to 3 percent slopes	Moderate wind erosion potential	Lindy (100%)	Clay content of surface (0.51)	122.7	1.5%
				Sand content of surface (0.31)		
				Silt content of surface (0.07)		
				Rock fragment content of surface (0.01)		
OcB	Owens clay, 1 to 5 percent slopes	High wind erosion potential	Owens (85%)	Clay content of surface (0.85)	24.8	0.3%
				Carbonate content of surface (0.43)		
				Silt content of surface (0.07)		
				Organic matter content of surface (0.03)		
				Rock fragment content of surface (0.01)		
TaD	Palopinto very stony clay loam, 1 to 8 percent slopes, rubbly	Very low wind erosion potential	Palopinto (85%)	Clay content of surface (0.54)	120.3	1.5%
				Organic matter content of surface (0.37)		
				Sand content of surface (0.18)		
				Silt content of surface (0.11)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Rock fragment content of surface (0.01)		
TrA	Thurber clay loam, 0 to 1 percent slopes	Moderate wind erosion potential	Thurber (85%)	Clay content of surface (0.59)	1.0	0.0%
				Silt content of surface (0.19)		
				Rock fragment content of surface (0.00)		
				Organic matter content of surface (0.00)		
TrB	Thurber clay loam, 1 to 3 percent slopes	Moderate wind erosion potential	Thurber (85%)	Clay content of surface (0.59)	22.6	0.3%
				Silt content of surface (0.19)		
				Rock fragment content of surface (0.00)		
				Organic matter content of surface (0.00)		
TuB	Truce fine sandy loam, 1 to 3 percent slopes	Very high wind erosion potential	Truce (85%)	Sand content of surface (0.93)	9.3	0.1%
				Clay content of surface (0.01)		
				Rock fragment content of surface (0.01)		
TuC2	Truce fine sandy loam, 1 to 5 percent slopes, eroded	Very high wind erosion potential	Truce, moderately eroded (85%)	Sand content of surface (0.93)	2.8	0.0%
				Clay content of surface (0.01)		
				Rock fragment content of surface (0.01)		
W	Water	Not rated	Water (100%)		3.0	0.0%
Subtotals for Soil Survey Area					1,002.6	12.2%
Totals for Area of Interest					8,220.6	100.0%

Rating	Acres in AOI	Percent of AOI
High wind erosion potential	5,437.1	66.1%
Moderate wind erosion potential	1,391.4	16.9%
Low wind erosion potential	901.2	11.0%
Very high wind erosion potential	324.8	4.0%
Very low wind erosion potential	139.7	1.7%

Custom Soil Resource Report

Rating	Acres in AOI	Percent of AOI
Null or Not Rated	26.3	0.3%
Totals for Area of Interest	8,220.6	100.0%

Rating Options—Wind Erosion Potential (TX)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Qualities and Features

This folder contains tabular reports that present various soil qualities and features. The reports (tables) include all selected map units and components for each map unit. Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Soil Features

This table gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage, or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, saturated hydraulic conductivity (Ksat), content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly,

or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Custom Soil Resource Report

Soil Features—Callahan County, Texas									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		<i>Low-RV-High</i>	<i>Range</i>		<i>Low-High</i>	<i>Low-High</i>			
		<i>In</i>	<i>In</i>		<i>In</i>	<i>In</i>			
1—Abilene loam, 0 to 1 percent slopes									
Abilene		—	—		0	0	None	High	Low
3—Bonti fine sandy loam, 1 to 3 percent slopes									
Bonti	Paralithic bedrock	20-34-40	40-60	Moderately coherent	0	0	None	High	Moderate
4—Bonti-Callahan association, 1 to 8 percent slopes, extremely stony									
Bonti	Paralithic bedrock	20-38-40	—	Moderately coherent	0	0	None	Moderate	Moderate
Callahan	Densic bedrock	20-36-40	—	noncoherent	0	0	None	High	Low
5—Callahan loam, 1 to 3 percent slopes									
Callahan	Densic bedrock	20-36-40	—	noncoherent	0	0	None	High	Low
6—Callahan loam, 2 to 5 percent slopes, moderately eroded									
Callahan, moderately eroded	Densic bedrock	20-34-40	—	noncoherent	0	0	None	High	Low

Custom Soil Resource Report

Soil Features—Callahan County, Texas									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		<i>Low-RV-High</i>	<i>Range</i>		<i>Low-High</i>	<i>Low-High</i>			
17—Frio clay loam, occasionally flooded									
Frio		—	—		0	—	None	High	Low
18—Frio-Gageby association, frequently flooded									
Frio		—	—		0	—	None	High	Low
Gageby		—	—		0	—	None	Low	Low
19—Gageby loam, moist, 0 to 2 percent slopes, occasionally flooded									
Gageby, moist		—	—		0	0	None	Moderate	Low
21—Leeray clay, 0 to 1 percent slopes									
Leeray		—	—		0	0	None	High	Moderate
22—Leeray clay, 1 to 3 percent slopes									
Leeray		—	—		0	—	None	High	Moderate
24—Mereta clay loam, cool, 1 to 3 percent slopes									
Mereta, cool	Petrocalcic	14-18-20	4-18	Strongly coherent	0	0	None	Moderate	Low

Custom Soil Resource Report

Soil Features—Callahan County, Texas									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		<i>Low-RV-High</i>	<i>Range</i>		<i>Low-High</i>	<i>Low-High</i>			
25—Nukrum clay, 1 to 3 percent slopes									
Nukrum		—	—		0	0	None	High	Low
26—Nukrum clay, 3 to 5 percent slopes									
Nukrum		—	—		0	0	None	High	Low
28—Oplin-Speck association, undulating									
Oplin	Lithic bedrock	7- 9-20	—	Indurated	0	—	None	Moderate	Low
Speck	Lithic bedrock	14- 18-20	—	Indurated	0	—	None	High	Low
29—Owens-Throck association, hilly									
Owens	Densic bedrock	14- 17-30	—	noncoherent	0	—	None	High	Moderate
Throck	Densic bedrock	30- 30-60	—	noncoherent	0	—	None	High	Moderate
31—Pedernales fine sandy loam, 1 to 3 percent slopes									
Pedernales		—	—		0	0	None	Moderate	Low
34—Rowden clay loam, 0 to 3 percent slopes									
Rowden	Lithic bedrock	20- 27-40	—	Indurated	0	0	None	High	Low

Custom Soil Resource Report

Soil Features—Callahan County, Texas									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		<i>Low-RV-High</i>	<i>Range</i>		<i>Low-High</i>	<i>Low-High</i>			
36—Rowena clay loam, 1 to 3 percent slopes									
Rowena		—	—		0	0	None	High	Moderate
37—Sagerton loam, 0 to 1 percent slopes									
Sagerton		—	—		0	—	None	High	Low
38—Sagerton loam, 1 to 3 percent slopes									
Sagerton		—	—		0	—	None	High	Low
39—Speck clay loam, 1 to 3 percent slopes									
Speck	Lithic bedrock	14-18-20	—	Indurated	0	—	None	High	Low
40—Speck-Throck association, gently undulating									
Speck	Lithic bedrock	14-18-20	—	Indurated	0	—	None	High	Low
Throck	Densic bedrock	29-29-60	—	noncoherent	0	—	None	High	Moderate
41—Throck clay loam, 2 to 5 percent slopes									
Throck	Densic bedrock	30-30-60	—	noncoherent	0	—	None	High	Moderate

Custom Soil Resource Report

Soil Features—Callahan County, Texas									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		<i>Low-RV-High</i>	<i>Range</i>		<i>Low-High</i>	<i>Low-High</i>			
42—Throck-Callahan-Owens association, undulating									
Throck	Densic bedrock	30-30-60	—	noncoherent	0	—	None	High	Moderate
Callahan	Densic bedrock	20-38-40	—	noncoherent	0	—	None	High	Low
Owens	Densic bedrock	14-17-30	—	noncoherent	0	—	None	High	Moderate
43—Throck-Owens-Lueders association, hilly									
Throck	Densic bedrock	30-30-60	—	noncoherent	0	—	None	High	Moderate
Owens	Densic bedrock	14-17-30	—	noncoherent	0	—	None	High	Moderate
Lueders	Lithic bedrock	7- 13-20	—	Indurated	0	—	None	Moderate	Low
44—Throck-Speck association, undulating									
Throck	Densic bedrock	30-30-60	—	noncoherent	0	—	None	High	Moderate
Speck	Lithic bedrock	14-18-20	—	Indurated	0	—	None	High	Low
W—Water									
Water		—	—		—	—			

Custom Soil Resource Report

Soil Features—Eastland County, Texas									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		<i>Low-RV-High</i>	<i>Range</i>		<i>Low-High</i>	<i>Low-High</i>			
		<i>In</i>	<i>In</i>		<i>In</i>	<i>In</i>			
BcB—Bolar clay loam, 1 to 3 percent slopes									
Bolar	Lithic bedrock	20-30-40	—	Indurated	0	0	None	Moderate	Low
BnB—Bonti fine sandy loam, 1 to 3 percent slopes									
Bonti	Paralithic bedrock	20-34-40	40-60	Moderately coherent	0	0	None	High	Moderate
En—Elandco silty clay loam, frequently flooded									
Elandco		—	—		0	—	None	Moderate	Low
ErD—Bonti-Exray complex, 1 to 8 percent slopes, extremely stony									
Bonti, extremely stony	Paralithic bedrock	20-30-40	40-60	Moderately coherent	0	0	None	High	Moderate
Exray, extremely stony	Paralithic bedrock	10-16-20	60-70	Moderately coherent	0	0	None	Moderate	Moderate
HeB—Hensley loam, 1 to 3 percent slopes									
Hensley	Lithic bedrock	10-16-20	—	Indurated	0	—	None	High	Low

Custom Soil Resource Report

Soil Features—Eastland County, Texas									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		<i>Low-RV-High</i>	<i>Range</i>		<i>Low-High</i>	<i>Low-High</i>			
LeB—Leeray clay, 1 to 3 percent slopes									
Leeray		—	—		0	—	None	High	Moderate
LnB—Lindy loam, 1 to 3 percent slopes									
Lindy	Lithic bedrock	20-28-40	—	Strongly coherent	0	—	None	High	Low
OcB—Owens clay, 1 to 5 percent slopes									
Owens	Densic bedrock	14-18-30	—	noncoherent	0	0	None	High	Moderate
TaD—Palopinto very stony clay loam, 1 to 8 percent slopes, rubbly									
Palopinto	Lithic bedrock	6- 12-20	—	Indurated	0	0	None	Moderate	Low
TrA—Thurber clay loam, 0 to 1 percent slopes									
Thurber		—	—		0	0	None	High	Low
TrB—Thurber clay loam, 1 to 3 percent slopes									
Thurber		—	—		0	0	None	High	Low

Custom Soil Resource Report

Soil Features—Eastland County, Texas									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		<i>Low-RV-High</i>	<i>Range</i>		<i>Low-High</i>	<i>Low-High</i>			
TuB—Truce fine sandy loam, 1 to 3 percent slopes									
Truce	Densic bedrock	40-56-60	20-40	noncoherent	0	0	None	High	Low
TuC2—Truce fine sandy loam, 1 to 5 percent slopes, eroded									
Truce, moderately eroded	Densic bedrock	40-42-60	—	noncoherent	0	0	None	High	Low
W—Water									
Water		—	—		—	—			

Water Features

This folder contains tabular reports that present soil hydrology information. The reports (tables) include all selected map units and components for each map unit. Water Features include ponding frequency, flooding frequency, and depth to water table.

Water Features

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

The *months* in the table indicate the portion of the year in which a water table, ponding, and/or flooding is most likely to be a concern.

Water table refers to a saturated zone in the soil. The water features table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on

observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table. The kind of water table, apparent or perched, is given if a seasonal high water table exists in the soil. A water table is perched if free water is restricted from moving downward in the soil by a restrictive feature, in most cases a hardpan; there is a dry layer of soil underneath a wet layer. A water table is apparent if free water is present in all horizons from its upper boundary to below 2 meters or to the depth of observation. The water table kind listed is for the first major component in the map unit.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Custom Soil Resource Report

Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				<i>Ft</i>	<i>Ft</i>		<i>Ft</i>				
1—Abilene loam, 0 to 1 percent slopes											
Abilene	C	Low	Jan-Dec	—	—	—	—	—	None	—	None
3—Bonti fine sandy loam, 1 to 3 percent slopes											
Bonti	C	Medium	Jan-Dec	—	—	—	—	—	None	—	None
4—Bonti-Callahan association, 1 to 8 percent slopes, extremely stony											
Bonti	C	High	Jan-Dec	—	—	—	—	—	None	—	None
Callahan	D	High	Jan-Dec	—	—	—	—	—	None	—	None
5—Callahan loam, 1 to 3 percent slopes											
Callahan	D	High	Jan-Dec	—	—	—	—	—	None	—	None
6—Callahan loam, 2 to 5 percent slopes, moderately eroded											
Callahan, moderately eroded	D	High	Jan-Dec	—	—	—	—	—	None	—	None
17—Frio clay loam, occasionally flooded											
Frio	C	Low	Jan-May	—	—	—	—	—	None	Brief (2 to 7 days)	Occasional
			Jun-Sep	—	—	—	—	—	None	—	
			Oct-Dec	—	—	—	—	—	None	Brief (2 to 7 days)	Occasional

Custom Soil Resource Report

Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				<i>Ft</i>	<i>Ft</i>		<i>Ft</i>				
18—Frio-Gageby association, frequently flooded											
Frio	C	Low	Jan-May	—	—	—	—	—	None	Brief (2 to 7 days)	Frequent
			Jun-Sep	—	—	—	—	—	None	—	
			Oct-Dec	—	—	—	—	—	None	Brief (2 to 7 days)	Frequent
Gageby	B	Negligible	Jan-Mar	—	—	—	—	—	None	—	
			Apr-Oct	—	—	—	—	—	None	Very brief (4 to 48 hours)	Frequent
			Nov-Dec	—	—	—	—	—	None	—	
19—Gageby loam, moist, 0 to 2 percent slopes, occasionally flooded											
Gageby, moist	B	Negligible	Jan-Mar	—	—	—	—	—	None	—	
			Apr-Oct	—	—	—	—	—	None	Very brief (4 to 48 hours)	Occasional
			Nov-Dec	—	—	—	—	—	None	—	
21—Leeray clay, 0 to 1 percent slopes											
Leeray	D	High	Jan-Dec	—	—	—	—	—	None	—	None
22—Leeray clay, 1 to 3 percent slopes											
Leeray	D	Very high	Jan-Dec	—	—	—	—	—	None	—	None
24—Mereta clay loam, cool, 1 to 3 percent slopes											
Mereta, cool	D	Medium	Jan-Dec	—	—	—	—	—	None	—	None
25—Nukrum clay, 1 to 3 percent slopes											
Nukrum	C	High	Jan-Dec	—	—	—	—	—	None	—	None
26—Nukrum clay, 3 to 5 percent slopes											
Nukrum	C	High	Jan-Dec	—	—	—	—	—	None	—	None

Custom Soil Resource Report

Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				<i>Ft</i>	<i>Ft</i>		<i>Ft</i>				
28—Oplin-Speck association, undulating											
Oplin	D	Medium	Jan-Dec	—	—	—	—	—	None	—	None
Speck	D	High	Jan-Dec	—	—	—	—	—	None	—	None
29—Owens-Throck association, hilly											
Owens	D	Very high	Jan-Dec	—	—	—	—	—	None	—	None
Throck	D	Very high	Jan-Dec	—	—	—	—	—	None	—	None
31—Pedernales fine sandy loam, 1 to 3 percent slopes											
Pedernales	C	Medium	Jan-Dec	—	—	—	—	—	None	—	None
34—Rowden clay loam, 0 to 3 percent slopes											
Rowden	D	High	Jan-Dec	—	—	—	—	—	None	—	None
36—Rowena clay loam, 1 to 3 percent slopes											
Rowena	C	Medium	Jan-Dec	—	—	—	—	—	None	—	None
37—Sagerton loam, 0 to 1 percent slopes											
Sagerton	C	Low	Jan-Dec	—	—	—	—	—	None	—	None
38—Sagerton loam, 1 to 3 percent slopes											
Sagerton	C	Medium	Jan-Dec	—	—	—	—	—	None	—	None
39—Speck clay loam, 1 to 3 percent slopes											
Speck	D	High	Jan-Dec	—	—	—	—	—	None	—	None
40—Speck-Throck association, gently undulating											
Speck	D	High	Jan-Dec	—	—	—	—	—	None	—	None
Throck	D	High	Jan-Dec	—	—	—	—	—	None	—	None
41—Throck clay loam, 2 to 5 percent slopes											
Throck	D	High	Jan-Dec	—	—	—	—	—	None	—	None

Custom Soil Resource Report

Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				<i>Ft</i>	<i>Ft</i>		<i>Ft</i>				
42—Throck-Callahan-Owens association, undulating											
Throck	D	Very high	Jan-Dec	—	—	—	—	—	None	—	None
Callahan	D	High	Jan-Dec	—	—	—	—	—	None	—	None
Owens	D	Very high	Jan-Dec	—	—	—	—	—	None	—	None
43—Throck-Owens-Lueders association, hilly											
Throck	D	Very high	Jan-Dec	—	—	—	—	—	None	—	None
Owens	D	Very high	Jan-Dec	—	—	—	—	—	None	—	None
Lueders	D	Medium	Jan-Dec	—	—	—	—	—	None	—	None
44—Throck-Speck association, undulating											
Throck	D	Very high	Jan-Dec	—	—	—	—	—	None	—	None
Speck	D	High	Jan-Dec	—	—	—	—	—	None	—	None
W—Water											
Water	D		Jan-Dec	—	—	—	—	—	—	—	
Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				<i>Ft</i>	<i>Ft</i>		<i>Ft</i>				
BcB—Bolar clay loam, 1 to 3 percent slopes											
Bolar	C	Low	Jan-Dec	—	—	—	—	—	None	—	None
BnB—Bonti fine sandy loam, 1 to 3 percent slopes											
Bonti	C	Medium	Jan-Dec	—	—	—	—	—	None	—	None

Custom Soil Resource Report

Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				<i>Ft</i>	<i>Ft</i>		<i>Ft</i>				
En—Elandco silty clay loam, frequently flooded											
Elandco	B	Negligible	Jan-May	—	—	—	—	—	None	Brief (2 to 7 days)	Frequent
			Jun-Sep	—	—	—	—	—	None	—	
			Oct-Dec	—	—	—	—	—	None	Brief (2 to 7 days)	Frequent
ErD—Bonti-Exray complex, 1 to 8 percent slopes, extremely stony											
Bonti, extremely stony	C	Medium	Jan-Dec	—	—	—	—	—	None	—	None
Exray, extremely stony	D	High	Jan-Dec	—	—	—	—	—	None	—	None
HeB—Hensley loam, 1 to 3 percent slopes											
Hensley	D	High	Jan-Dec	—	—	—	—	—	None	—	None
LeB—Leeray clay, 1 to 3 percent slopes											
Leeray	D	Very high	Jan-Dec	—	—	—	—	—	None	—	None
LnB—Lindy loam, 1 to 3 percent slopes											
Lindy	D	High	Jan-Dec	—	—	—	—	—	None	—	None
OcB—Owens clay, 1 to 5 percent slopes											
Owens	D	Very high	Jan-Dec	—	—	—	—	—	None	—	None
TaD—Palopinto very stony clay loam, 1 to 8 percent slopes, rubbly											
Palopinto	D	Medium	Jan-Dec	—	—	—	—	—	None	—	None
TrA—Thurber clay loam, 0 to 1 percent slopes											
Thurber	D	High	Jan-Dec	—	—	—	—	—	None	—	None
TrB—Thurber clay loam, 1 to 3 percent slopes											
Thurber	D	Very high	Jan-Dec	—	—	—	—	—	None	—	None
TuB—Truce fine sandy loam, 1 to 3 percent slopes											
Truce	C	High	Jan-Dec	—	—	—	—	—	None	—	None

Custom Soil Resource Report

Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				<i>Ft</i>	<i>Ft</i>		<i>Ft</i>				
TuC2—Truce fine sandy loam, 1 to 5 percent slopes, eroded											
Truce, moderately eroded	C	High	Jan-Dec	—	—	—	—	—	None	—	None
W—Water											
Water	D			—	—	—	—	—	—	—	

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelpdb1043084>

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United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

From: [Kristen Fenati](#)
To: [Marcus Hope](#)
Cc: [Loving, Raymond](#); [White, Georgina](#); [Mckinnon, Jonelle](#)
Subject: FW: Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas
Date: Tuesday, September 24, 2024 11:21:30 AM
Attachments: [image001.png](#)
[image002.png](#)
[TCEQ_Agency_Information_Request_Letter_09.23.2024.pdf](#)

Hi,

The TCEQ construction stormwater general permit is for construction sites that disturb more than 1 acre of land or are part of a [common plan of development](#) that disturbs more than one acre of land.

- Small construction sites are sites which disturb at least 1 but less than 5 acres, or are part of a larger [common plan of development](#) that will disturb at least 1 but less than 5 acres. These sites have to develop a Stormwater Pollution Prevention plan (SWP3 [template here](#)) and post a [Site Notice](#).
- Large construction sites are sites which disturb 5 or more acres, or are part of a larger [common plan of development](#) that will disturb 5 or more acres. These sites have to submit a Notice of Intent application in [STEERS](#) and pay the \$225 application fee. You can find instructions on creating a STEERS account in [this guide](#) and [this video](#). The only difference is you will select “Stormwater General Permits” as your program area. Large sites also have to develop a [SWP3](#), and post a [Site Notice](#).

There is specific information on transmission line construction and how that applies to the construction stormwater program in the permit which can be found [here](#). Those projects are referred to as linear projects. Additional construction stormwater permit info can be found [here](#).

Thanks,

Kristen Fenati (she/her)

TCEQ | Small Business and Local Government Assistance

Dallas/Fort Worth Region Office

Phone: (817) 588-5827

Hotline: (800) 447-2827

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From: Marcus Hope <marcus.hope@swca.com>

Sent: Monday, September 23, 2024 9:20 AM

To: Michael Taylor <michael.taylor@tceq.texas.gov>

Cc: Loving, Raymond <raymond.loving@nexteraenergy.com>; White, Georgina <Georgina.White@nexteraenergy.com>; Mckinnon, Jonelle <Jonelle.Mckinnon@nexteraenergy.com>

Subject: Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas

Good Morning,

SWCA Environmental Consultants (SWCA) is preparing an environmental assessment for the proposed project that will support Lone Star's application for Certificate of Convenience and Necessity from the Public Utility Commission of Texas. SWCA is in the process of collecting and evaluating environmental data for the study area. As part of this effort, we are asking that your agency/office relate any environmental effects from the construction of the proposed transmission line in the designated study area.

Best Regards,

Marcus D. Hope, PWS | he, him, his
Lead Wetland Scientist

SWCA Environmental Consultants

4407 Monterey Oaks Boulevard
Building 1, Suite 110
Austin, Texas 78749
P 512.476.0891 | C 910.990.0540
marcus.hope@swca.com



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P.O. Box 12276
Austin, Texas 78711-2276
512-463-6100
thc.texas.gov

October 25, 2024

Marcus Hope
SWCA Environmental Consultants
4470 Monterey Oaks Boulevard
Building 1, Suite 110
Austin, Texas 78749

Re: Project Review under the Antiquities Code of Texas, Lone Star Transmission 345-kV Transmission Line Project, Callahan and Eastland, Texas (THC Tracking No.202501854)

Dear Mr. Hope,

Thank you for your submittal regarding the above-referenced project. This response represents the comments of the Executive Director of the Texas Historical Commission (THC), pursuant to review under the Antiquities Code of Texas.

The review staff, led by Danielle Julien and Justin Kockritz, has completed its review. Per our records, there is a plethora of recorded archeological sites and cemeteries within the study area. In addition, much of the study area has not undergone previous archeological investigation, and because of these reasons, it is likely an archeological survey of the proposed project area will be required. Regarding the above ground resources, a portion of the Bankhead Highway, from just east of the City of Putnam to just west of FM 880, has previously been determined eligible for listing in the National Register of Historic Places. However, because it is not formally listed in the National Register, it is not eligible to be designated as a State Antiquities Landmark at this time.

We recommend consulting with a professional archeologist early in the project process to perform a comprehensive records search for previously recorded historic properties to be avoided and to identify high-probability areas for archeological survey. Federal regulations require consultation with USACE and other appropriate agencies to determine if there are any jurisdictional lands along the route. If the project ultimately involves a federal undertaking, compliance with Section 106 of the National Historic Preservation Act will be required. If any portion of the project should cross lands or waters owned by the State of Texas or any political subdivision thereof or have the potential to affect a State Antiquities Landmark, those areas will be subject to the Antiquities Code of Texas, and a Texas Antiquities Permit will be required before conducting survey across those lands. Once the route has been finalized and all regulatory jurisdictions have been established, a qualified archeologist should submit a scope or work meeting all applicable state and federal requirements for review. We welcome submissions through our online eTRAC system. Links to the eTRAC portal and user guide can be found on our website at <http://www.thc.texas.gov/etrac-system>.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If you have any questions concerning our review or if we can

be of further assistance, please email the following reviewers: Danielle.julien@thc.texas.gov and Justin.Kockritz@thc.texas.gov.

Sincerely,

Danielle Julien

For Joseph Bell
Executive Director
Texas Historical Commission

JB | dj



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Fort Worth

T. Dan Friedkin
Chairman-Emeritus
Houston

David Yoskowitz, Ph.D.
Executive Director

October 11, 2024

Mr. Marcus D. Hope
SWCA Environmental Consultants
4407 Monterey Oaks Boulevard
Building 1, Suite 110
Austin, TX 78749

RE: Lone Star Transmission, LLC Reata Station to Deville Solar 345-kilovolt
Transmission Line Project, Callahan and Eastland Counties, Texas

Dear Mr. Hope:

Texas Parks and Wildlife Department (TPWD) has received the preliminary information request regarding the proposed transmission line project referenced above. TPWD staff has reviewed the information provided and offers the following comments concerning this project.

Please be aware that a written response to a TPWD recommendation or informational comment received by a state governmental agency may be required by state law. For further guidance, see the Texas Parks and Wildlife Code (PWC) section 12.0011. We are providing input on this proposed project to facilitate incorporation of voluntary measures during construction, operation, and maintenance that may assist the project proponent in minimizing impacts to the state's natural resources. For tracking purposes, please refer to TPWD project number 52920 in any return correspondence regarding this project.

Project Description

Lone Star Transmission, LLC (Lone Star), is proposing to design and construct a new 345-kilovolt transmission line in portions of Callahan and Eastland Counties, Texas, to provide interconnection to a proposed solar generation development. The proposed transmission line would be constructed between the existing the Lone Star Reata Station and the proposed Deville Solar collector substation. The proposed transmission line will be approximately 9.5 miles in length and will require a right-of-way (ROW) of 150 feet in width.

Federal Laws

Clean Water Act

Section 404 of the Clean Water Act establishes a federal program to regulate the discharge of dredged and fill material into the waters of the U.S., including wetlands. The U.S. Army Corps of Engineers (USACE) and the Environmental Protection Agency are responsible for regulating water resources under this act.

Both isolated and jurisdictional wetlands provide habitat for wildlife and help protect water quality.

Recommendation: If the proposed project would impact waterways or associated wetlands, TPWD recommends consulting with the USACE for potential impacts to waters of the U.S. including jurisdictional determinations, delineations, and mitigation. All waterways and associated floodplains, riparian corridors, playa lakes, springs, and wetlands provide valuable wildlife habitat and should be protected to the maximum extent possible. Natural buffers contiguous to any wetlands or aquatic systems should remain undisturbed to preserve wildlife cover, food sources, and travel corridors. Erosion control and sediment runoff control measures should be installed prior to construction and maintained until disturbed areas are permanently revegetated using site specific native vegetation. Measures should be properly installed to effectively minimize the amount of sediment and other debris from entering the waterway.

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. Any take of a federally listed species or its habitat without the required take permit (or allowance) from the U.S Fish and Wildlife Service (USFWS) is a violation of the ESA.

Based on review of data from the Golden-cheeked Warbler Predictive Habitat Model, suitable habitat for the federal and state listed endangered species golden-cheeked warbler (*Setophaga chrysoparia*) may occur in the study area.

TPWD notes that even if habitat for the golden-cheeked warbler would not be directly impacted by the proposed project, the definition of take in the ESA includes harming or harassing a listed species. If nesting pairs are present in the surrounding vegetation they could be disrupted by noise and activity during construction, this disturbance could constitute a violation of the ESA.

Recommendation: TPWD recommends surveying the study area for suitable habitat for the golden-cheeked warbler. If suitable habitat for this species would be impacted by the proposed project, TPWD recommends contacting the USFWS Austin Ecological Services Field Office for guidance, permitting, survey protocols, and mitigation for this federally listed species. For USFWS

threatened and endangered species lists, please see the USFWS Information for Planning and Consultation website.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits taking, attempting to take, capturing, killing, selling, purchasing, possessing, transporting, and importing of migratory birds, their eggs, parts, or nests, except when specifically authorized by the Department of the Interior. This protection applies to most native bird species, including ground nesting species. The USFWS Southwest Region Migratory Bird Office can be contacted for more information on potential impacts to migratory birds.

Potential impacts to migratory birds may occur during site preparation and grading activities through the disturbance of existing vegetation (grass, trees, and shrubs) and bare ground that may be occupied by active bird nests.

Recommendation: TPWD recommends excluding vegetation clearing activities during the general bird nesting season, March 15 through September 15, to avoid adverse impacts to birds. If clearing vegetation during the migratory bird nesting season is unavoidable, TPWD recommends surveying the area proposed for disturbance 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. TPWD generally recommends a 100-foot radius buffer of vegetation remain around active nests until the eggs have hatched and the young have fledged; however, the size of the buffer zone depends on various factors and can be coordinated with the local or regional USFWS office.

The potential exists for birds to collide with power lines and associated guy wires and static lines. Bird fatalities can also occur due to electrocution if perching birds simultaneously contact energized and grounded structures.

Recommendation: TPWD recommends routing transmission lines to avoid crossing riparian areas, wetlands, and open water habitat, to the extent feasible. TPWD recommends crossing streams in a perpendicular manner and avoiding placement of lines parallel to streams and their associated wooded corridors. Where lines cross or are located near creeks, drainages, wetlands, and lakes, TPWD recommends line markers be installed at the crossings or closest points to the drainages to reduce potential bird collisions. TPWD recommends bird collision and electrocution risks be considered during project routing and

design and recommends incorporating design features that will minimize those risks.

State Laws

Parks and Wildlife Code – Chapter 64, Birds

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. 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.

Recommendation: Please review the *Federal Law: Migratory Bird Treaty Act* section above for recommendations as they are also applicable for PWC Chapter 64 compliance.

Parks and Wildlife Code, Section 68.015

PWC Section 68.015 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. A copy of *TPWD Guidelines for Protection of State Listed Species*, which includes a list of penalties for take of species, can be found on the TPWD website. State listed species may only be handled by individuals with appropriate authorization from the TPWD Wildlife Diversity Permits Office. For more information, please visit the TPWD Wildlife Diversity Permits website.

*Texas horned lizard (*Phrynosoma cornutum*)*

The state listed threatened Texas horned lizard can be found in open, arid, and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush, or scrubby trees. If present in the project area, the Texas horned lizard could be impacted by ground disturbing construction activities. Horned lizards may hibernate on site in the loose soils a few inches below ground during the cool months from September/October to March/April. Construction in these areas could harm hibernating lizards. Horned lizards are active above ground when temperatures exceed 75 degrees Fahrenheit. If horned lizards (nesting, gravid females, newborn young, lethargic from cool temperatures or hibernation) cannot

move away from noise and approaching construction equipment in time, they could be affected by construction activities.

Recommendation: TPWD recommends surveying the study area for suitable habitat for this species. During construction TPWD recommends avoiding disturbance of the Texas horned lizard, its burrows, and colonies of its primary food source, the harvester ant (*Pogonomyrmex* sp.). TPWD recommends a permitted biological monitor be present during construction to relocate Texas horned lizards, if found. If the presence of a biological monitor during construction is not feasible, Texas horned lizards observed during construction should be allowed to safely leave the site.

A mixture of cover, food sources, and open ground is important to the Texas horned lizard and harvester ant. Disturbed areas within suitable habitat for the Texas horned lizard should be re-vegetated with site-specific native, patchy vegetation rather than sod-forming grasses.

Species of Concern/Special Features

In addition to state and federally protected species, TPWD tracks species considered to be Species of Greatest Conservation Need (SGCN) that, due to limited distributions or declining populations, face threat of extirpation or extinction but currently lack the legal protections given to threatened or endangered species. Special landscape features, natural plant communities, and SGCN are rare resources for which TPWD actively promotes conservation, and TPWD considers it important to minimize impacts to such resources to reduce the likelihood of endangerment and preclude the need to list SGCN as threatened or endangered in the future.

These species and communities are tracked in the Texas Natural Diversity Database (TXNDD). The most current and accurate TXNDD data can be requested from the TXNDD website. To aid in the scientific knowledge of a species' status and current range, TPWD encourages reporting encounters of protected and rare species using the submit data instructions found on the TXNDD website.

Recommendation: TPWD recommends requesting and reviewing data records from the TXNDD during project planning.

Please note that the absence of TXNDD information in the proximity does not imply that a species is absent from the study area. Given the small proportion of

public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Although it is based on the best data available to TPWD regarding rare and protected species, data from the TXNDD does not provide a definitive statement as to the presence, absence or condition of special species, natural communities, or other significant features within your project area. This data is not inclusive and cannot be used as presence/absence or substituted for on-the-ground surveys.

Recommendation: Please review the TPWD county lists for Callahan and Eastland Counties, as rare and protected species could be present, depending upon habitat availability. These lists are available on the Rare, Threatened, and Endangered Species of Texas website. TPWD recommends including a discussion and evaluation of potential impacts to SGCN (in addition to state listed and federally listed species) in the EA for this project.

Determining the actual presence of a species in an area depends on many variables including daily and seasonal activity cycles, environmental activity cues, preferred habitat, transiency, and population density (both wildlife and human). The absence of a species can only be established with repeated negative observations and consideration of all factors contributing to the lack of detectable presence.

Recommendation: TPWD recommends providing information prior to construction to educate personnel of the potential occurrence of federally and state listed species and SGCN within the project area, and the relevant rules and regulations that protect plants, fish, and wildlife. If encountered during construction, measures should be taken to avoid impacting wildlife.

Monarch Conservation Plan

Significant declines in the population of migrating monarch butterflies (*Danaus plexippus*) have led to widespread concern about this species and the long-term persistence of the North American monarch migration. Augmenting larval feeding and adult nectaring opportunities is part of an international conservation effort for the monarch.

Recommendation: For disturbed sites within the monarch migration corridor, TPWD recommends revegetation efforts include planting or seeding native milkweed (*Asclepias* spp) and nectar plants as funding and seed availability allow.

Vegetation

The TPWD Landscape Ecology Program has developed an interactive mapping application, the Texas Ecosystem Analytical Mapper (TEAM), to assist wildlife biologists, land managers, naturalists, planners, and conservationists in understanding Texas habitats and to integrate vegetation data with land management and resource planning of all types. For more information on TEAM please visit the TPWD Landscape Ecology Program website.

Recommendation: TPWD recommends that the removal of native vegetation during construction be minimized to the extent feasible. Unavoidable removal of vegetation should be mitigated by revegetating disturbed areas with site specific plant species where feasible. The replacement of native plants will help control erosion, provide habitat for wildlife, and provide native species an opportunity to compete with undesirable, non-native, invasive plant species.

General Construction Recommendations

TPWD would like to provide the following general construction recommendations to assist in project planning.

Recommendation: Where new construction is the only feasible option, TPWD recommends routing new transmission and distribution lines along existing roads, pipelines, transmission lines, or ROWs and easements to reduce habitat fragmentation. By utilizing previously disturbed, existing utility corridors, county roads and highway ROWs, adverse impacts to fish and wildlife resources would be reduced by avoiding and minimizing the impacts to undisturbed habitats.

During construction, TPWD recommends observing slow (25 miles per hour, or less) speed limits within the project area. Reduced speed limits would allow personnel to see wildlife in the vehicle path and avoid wildlife injury or death.

TPWD recommends the judicious use and placement of sediment control fence to exclude wildlife from the construction area. In many cases sediment control fence placement for the purposes of controlling erosion and protecting water quality can be modified minimally to also provide the benefit of excluding wildlife access to active construction areas. The exclusion fence should be buried at least six inches and be at least 24 inches high. The exclusion fence should be maintained during active construction and only be removed after the construction is completed. Construction personnel should be encouraged to

examine the inside of the exclusion area daily to determine if any wildlife species have been trapped inside the active construction area and provide safe egress opportunities prior to initiation of daily construction activities.

Where trenching or other excavation is involved in construction, TPWD recommends that contractors keep trenching and excavation, and backfilling crews close together to minimize the number of trenches or excavation areas left open at any given time during construction. TPWD recommends that any open trenches or excavation areas be covered overnight and inspected every morning to ensure no wildlife species have been trapped. Trenches left open for more than two daylight hours 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, 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).

For soil stabilization and revegetation of disturbed areas within the proposed project area, TPWD recommends erosion and seed and mulch stabilization materials that avoid entanglement hazards to snakes and other wildlife species. Because the mesh found in many erosion control blankets or mats pose an entanglement hazard to wildlife, TPWD recommends the use of no-till drilling, hydromulching, or hydroseeding rather than erosion control blankets or mats 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.

Conservation Easements

A conservation easement is a legal agreement between a landowner and a land trust or governmental agency that permanently limits uses of the land (including future fragmentation) to protect and conserve the land's natural values such as fertile soils, mature trees, and wildlife habitat. Lands with conservation easements protect existing wildlife habitat from future fragmentation and therefore have greater environmental integrity than comparable lands without conservation easements. Potential fragmentation of wildlife habitat from transmission line construction on properties where conservation agreements serve to protect the state's natural resources now and in the future is of concern to TPWD.

Mr. Marcus D. Hope
Page 9
October 10, 2024

Recommendation: TPWD recommends properties protected by conservation easements be identified in the constraints analysis and avoided during development of alternative routes. Data sources for the location of these properties include, but are not limited to, online databases such as the Protected Areas Database and the National Conservation Easement Database, as well as available county records. If properties protected by conservation easements would be affected, TPWD recommends the length of routes through these properties be included in any accounting of alternative route impacts.

TPWD strives to respond to requests for project review within a 45-day comment period. Responses may be delayed due to workload and lack of staff. Failure to meet the 45-day review timeframe does not constitute a concurrence from TPWD that the proposed project will not adversely impact fish and wildlife resources.

I appreciate the opportunity to provide preliminary input on potential impacts related to this project and I look forward to reviewing the EA. Please contact me at Richard.Hanson@tpwd.texas.gov or (806) 761-4930 ext. 4936 if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads "Rick Hanson".

Rick Hanson
Ecological and Environmental Planning Program
Wildlife Division

RH: 52920



2495 US HWY 183 North | Brownwood, Texas 76802
325.646.2591
txdot.gov

September 25, 2024

SWCA Environmental Consultants
4407 Monterey Oaks Boulevard
Building 1, Suite 110
Austin, Texas 78749

Re: Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas

To Whom It May Concern:

The Brownwood District of the Texas Department of Transportation (TxDOT) has completed its review of the proposed project information received on September 23, 2024, concerning the above transmission line project.

Due to lack of specific project information, the Brownwood District can only speculate as to the additional potential environmental and land use issues and impacts within the broad corridor shown and, as such, no additional comments are offered. However, Lone Star Transmission, LLC should be advised of potential required coordination with other state, federal and local entities.

- Lone Star Transmission, LLC should also be made aware that utility installation requests are required for accommodation of utility facilities on the state highway right of way. All requests must be submitted through the Right of Way Utility and Leasing Information System (RULIS) found at <https://www.txdot.gov/business/right-of-way/rulis.html>.
- The Utility should coordinate with TxDOT as final alignment alternatives are developed to determine impacts to planned TxDOT projects prior to any ROW being obtained for proposed utility.
- The Utility shall design installations within TxDOT right of way (ROW) per the Utility Accommodation Rules (UAR) found in TAC 43, Part 1, Chapter 21, Subchapter C, Rules 21.31 through 21.56.

Additionally, driveway/access permits are required for access connections to the state highway system. TxDOT Form 1058 - Permit to Construct Access Driveway Facilities on Highway Right of Way, coupled with the Commercial and Industrial Driveway Access Request Form shall be completed and submitted to TxDOT for consideration of each proposed access/driveway location.

Thank you for affording TxDOT the opportunity to comment on this proposed project. If you have any questions or require further assistance, please contact me at (325) 643-0415 or jason.scantling@txdot.gov.

Sincerely,

DocuSigned by:

A handwritten signature in blue ink that reads "JH Scantling, P.E." is written over a blue rectangular box.

Jason H. Scantling, P.E.
Director of Transportation
Planning and Development
Brownwood District



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

September 27, 2024

Regulatory Division

SUBJECT: Project Number SWF-2024-00470, Reata Station to Deville Solar 345-kV
Transmission Line

Mr. Marcus Hope
SWCA Environmental Consultants
4407 Monterey Oaks Boulevard
Building 1, Suite 110
Austin, Texas 78749
Marcus.hope@swca.com

Mr. Hope:

This letter is in regard to information received September 23, 2024, concerning a proposal to design and construct a new 345-kilovolt (kV) transmission line (9.5 miles) for a solar generation development in portions of Callahan and Eastland Counties, Texas. This project has been assigned Project Number SWF-2024-00470. Please include this number in all future correspondence concerning this project.

We have reviewed this project in accordance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. Under Section 404, the U. S. Army Corps of Engineers (USACE) regulates the discharge of dredged and fill material into waters of the United States, including wetlands. Our responsibility under Section 10 is to regulate any work in, or affecting, navigable waters of the United States. Any such discharge or work requires Department of the Army authorization in the form of a permit. For more information on the USACE Regulatory Program, please reference the Fort Worth District Regulatory Branch homepage at www.swf.usace.army.mil/regulatory.

We are unable to determine from the information that you provided in your letter whether Department of the Army authorization will be required, and if so, in what form. The proposed construction activities may be authorized by general permit, such as nationwide permit 57 for Electric Utility Line and Telecommunications Activities or NWP51 for Land-Based Renewable Energy Generation Facilities. I have enclosed a copy of these general permits for your reference. If the project does not meet the terms and conditions of a general permit, an individual permit would be required for authorization.

So that USACE may continue our evaluation of your proposed project, we request that you provide the following information:

1. A detailed project description.
2. A map (or maps) showing the entire route of the project.
3. The proposed route of the project on 8 ½ by 11-inch copies of 7.5-minute United States Geological Survey (USGS) quadrangle maps, national wetland inventory maps, published soil survey maps, scaled aerial photographs, and/or other suitable maps. Identify all base maps, (e.g. "Fort Worth, Texas" 7.5-minute USGS quadrangle, Natural Resources Conservation Service Tarrant County Soil Survey sheet 10). Clearly mark (such as by circling) and number the location of each proposed utility line crossing of a water of the United States and any appurtenant structure(s) in waters of the United States on the map. Waters of the United States include streams and rivers and most lakes, ponds, mudflats, sandflats, wetlands, sloughs, wet meadows, abandoned sand and gravel mining and construction pits, and similar areas.
4. For each potential utility line crossing or appurtenant structure in a water of the United States, the following site-specific information when applicable is needed:
 - a. 7.5-minute USGS quadrangle map name, Universal Transverse Mercator (UTM) coordinates, county or parish, waterway name,
 - b. a brief characterization of the crossing area (stream, forested wetland, non-forested wetland, etc.) including the National Wetland Inventory classification and soil series,
 - c. distance between ordinary high-water marks (OHWM),
 - d. proposed method of crossing (trench, bore, aerial),
 - e. length of proposed crossing,
 - f. width of temporary and permanent rights-of-way,
 - g. type and amount of dredged or fill material proposed to be discharged,
 - h. acreage of proposed temporary and permanent adverse impacts to waters of the United States, including wetlands, and
 - i. a typical cross-section.

Please refer to the enclosed guidance for Department of the Army submittals for additional details about what you should submit for this and future linear projects. Additional information, including more detailed jurisdictional determination data, may be needed to complete our evaluation of your project in some cases. We encourage you to consult with a qualified specialist (biologist, ecologist or other specialist qualified in preliminary jurisdictional determinations) who is familiar with the Great Plains Regional Supplement to the 1987 Corps of

Engineers Wetlands Delineation Manual and the USACE Regulatory Program (33 CFR Parts 320-331).

Important cultural resources are known to occur in in the vicinity of Callahan and Eastland Counties. Several endangered and threatened species may occur in these counties. Please consider the potential effects of your proposed action on cultural resources and endangered species in your planning efforts. For additional information about endangered and threatened species, please contact the U. S. Fish and Wildlife Service.

We encourage you to avoid and minimize adverse impacts to streams, wetlands, and other waters of the United States in planning this project. Please forward your response to us as soon as possible so that we may continue our evaluation of your request. If we do not receive the requested information within 30 days of the date of this letter, we will consider your application administratively withdrawn. If withdrawn, you may re-open your application at a later date by submitting the requested information.

Please note that it is unlawful to start work without a Department of the Army permit when one is required.

You may be contacted for additional information about your request. For your information, please refer to the Fort Worth District Regulatory Division homepage at <http://www.swf.usace.army.mil/Missions/regulatory> and particularly guidance on submittals at <http://media.swf.usace.army.mil/pubdata/envIRON/Regulatory/introduction/submital.pdf>, and mitigation at <http://www.swf.usace.army.mil/Missions/Regulatory/Permitting/Mitigation> that may help you supplement your current request or prepare future requests.

If you have any questions about the evaluation of your submittal or would like to request a copy of one of the documents referenced above, please contact Ms. Valerie Sewell at the address above, by telephone (817) 886-1782, or by email valerie.sewell@usace.army.mil, and refer to your assigned project number.

Sincerely,

Valerie Sewell

For: Brandon W. Mobley
Chief, Regulatory Division

From: [Arlington ES, FW2](#)
To: [Marcus Hope](#)
Cc: [Loving, Raymond](#); [White, Georgina](#); [Mckinnon, Jonelle](#); [Williams, Christina](#)
Subject: Re: [EXTERNAL] Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas
Date: Monday, September 23, 2024 9:45:22 AM
Attachments: [image001.png](#)

Hello Mr. Hope -

Thank you for your inquiry regarding the proposed project. Please note that Chuck Ardizzone has retired from the USFWS; his replacement is Catherine Yeargan. The majority of the proposed project occurs in Callahan County, which falls under our Austin Field Office's area of responsibility; I've copied Christina Williams of that office. Additionally, you can receive a list of threatened and endangered species, as well as other sensitive resources, from our Information for Planning and Consultation Website to begin your evaluation (<https://ipac.ecosphere.fws.gov/>).

Thank you

U.S. Fish and Wildlife Service
Texas Coastal and Central Plains Ecological Services Field Office
Fort Worth Sub-office
3233 Curtis Drive
Fort Worth, Texas 76116
817-277-1100

<https://www.fws.gov/office/arlington-ecological-services>

From: Marcus Hope <marcus.hope@swca.com>
Sent: Monday, September 23, 2024 9:21 AM
To: Arlington ES, FW2 <arles@fws.gov>; Ardizzone, Chuck CA <Chuck_Ardizzone@fws.gov>
Cc: Loving, Raymond <raymond.loving@nexteraenergy.com>; White, Georgina <Georgina.White@nexteraenergy.com>; Mckinnon, Jonelle <Jonelle.Mckinnon@nexteraenergy.com>
Subject: [EXTERNAL] Request for Information for the Lone Star Transmission, LLC, Reata Station to Deville Solar 345-kV Transmission Line Project, Callahan and Eastland Counties, Texas

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Good Morning,

SWCA Environmental Consultants (SWCA) is preparing an environmental assessment for the proposed project that will support Lone Star's application for Certificate of Convenience and Necessity from the Public Utility Commission of Texas. SWCA is in the process of collecting and evaluating environmental data for the study area. As part of this effort, we are asking that your agency/office relate any environmental effects from the construction of the proposed transmission line in the designated study area.

Best Regards,

Marcus D. Hope, PWS | he, him, his
Lead Wetland Scientist

SWCA Environmental Consultants

4407 Monterey Oaks Boulevard
Building 1, Suite 110
Austin, Texas 78749
P 512.476.0891 | C 910.990.0540
marcus.hope@swca.com



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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Austin Ecological Services Field Office

1505 Ferguson Lane

Austin, TX 78754-4501

Phone: (512) 937-7371



In Reply Refer To:

08/13/2025 17:33:20 UTC

Project Code: 2025-0135188

Project Name: Reata Station to Deville Transmission Line Project

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

To Whom It May Concern:

Note: IPaC has provided all available attachments because this project is in multiple field office jurisdictions.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

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

This species list is provided by:

Austin Ecological Services Field Office

1505 Ferguson Lane

Austin, TX 78754-4501

(512) 937-7371

This project's location is within the jurisdiction of multiple offices. However, only one species list document will be provided for all offices. The species and critical habitats in this document

reflect the aggregation of those that fall in each of the affiliated office's jurisdiction. Other offices affiliated with the project:

Arlington Ecological Services Field Office

17629 El Camino Real, Suite 211

Houston, TX 77058-3051

(817) 277-1100

PROJECT SUMMARY

Project Code: 2025-0135188
Project Name: Reata Station to Deville Transmission Line Project
Project Type: Transmission Line - New Constr - Above Ground
Project Description: SWCA Environmental Consultants (SWCA) is preparing an environmental assessment for the proposed project that will support Lone Star's application for Certificate of Convenience and Necessity from the Public Utility Commission of Texas. SWCA is in the process of collecting and evaluating environmental data for the study area. As part of this effort, we are asking that your agency/office relate any environmental effects from the construction of the proposed transmission line in the designated study area.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@32.3812238,-99.17364796041348,14z>



Counties: Callahan and Eastland counties, Texas

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 4 of these species should be considered only under certain conditions.

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

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

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

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

FISHES

NAME	STATUS
Sharpnose Shiner <i>Notropis oxyrhynchus</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. This species only needs to be considered under the following conditions: ▪ All reservoir projects; in-channel projects such as interbasin transfers, water diversions, small impoundments, etc. that may reduce flows of major tributaries eventually flowing into occupied habitat; commercial/industrial well field projects. ▪ All reservoir projects; in-channel projects such as interbasin transfers, water diversions, small impoundments, etc. that may reduce flows of major tributaries eventually flowing into occupied habitat; commercial/industrial well field projects. Species profile: https://ecos.fws.gov/ecp/species/6492	Endangered
Smalleye Shiner <i>Notropis buccula</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. This species only needs to be considered under the following conditions: ▪ All reservoir projects; in-channel projects such as interbasin transfers, water diversions, small impoundments, etc. that may reduce flows of major tributaries eventually flowing into occupied habitat; commercial/industrial well field projects. ▪ All reservoir projects; in-channel projects such as interbasin transfers, water diversions, small impoundments, etc. that may reduce flows of major tributaries eventually flowing into occupied habitat; commercial/industrial well field projects. Species profile: https://ecos.fws.gov/ecp/species/1774	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> There is proposed critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

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

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

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

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

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

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.

-
1. The [Bald and Golden Eagle Protection Act](#) of 1940.
 2. The [Migratory Birds Treaty Act](#) of 1918.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

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

The data in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the Supplemental Information on Migratory Birds and Eagles document to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

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 conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

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

THERE ARE NO FWS MIGRATORY BIRDS OF CONCERN WITHIN THE VICINITY OF YOUR PROJECT AREA.

WETLANDS

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

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

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

RIVERINE

- R4SBA
- R5UBH
- R4SBC

FRESHWATER EMERGENT WETLAND

- PEM1Ah

FRESHWATER POND

- PUBFh
- PUSC_x
- PUBF_x

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Kelsey Condell
Address: 4407 Monterey Oaks Blvd
City: Austin
State: TX
Zip: 78749
Email: kelsey.condell@swca.com
Phone: 3109415393

APPENDIX B

Constraint Maps

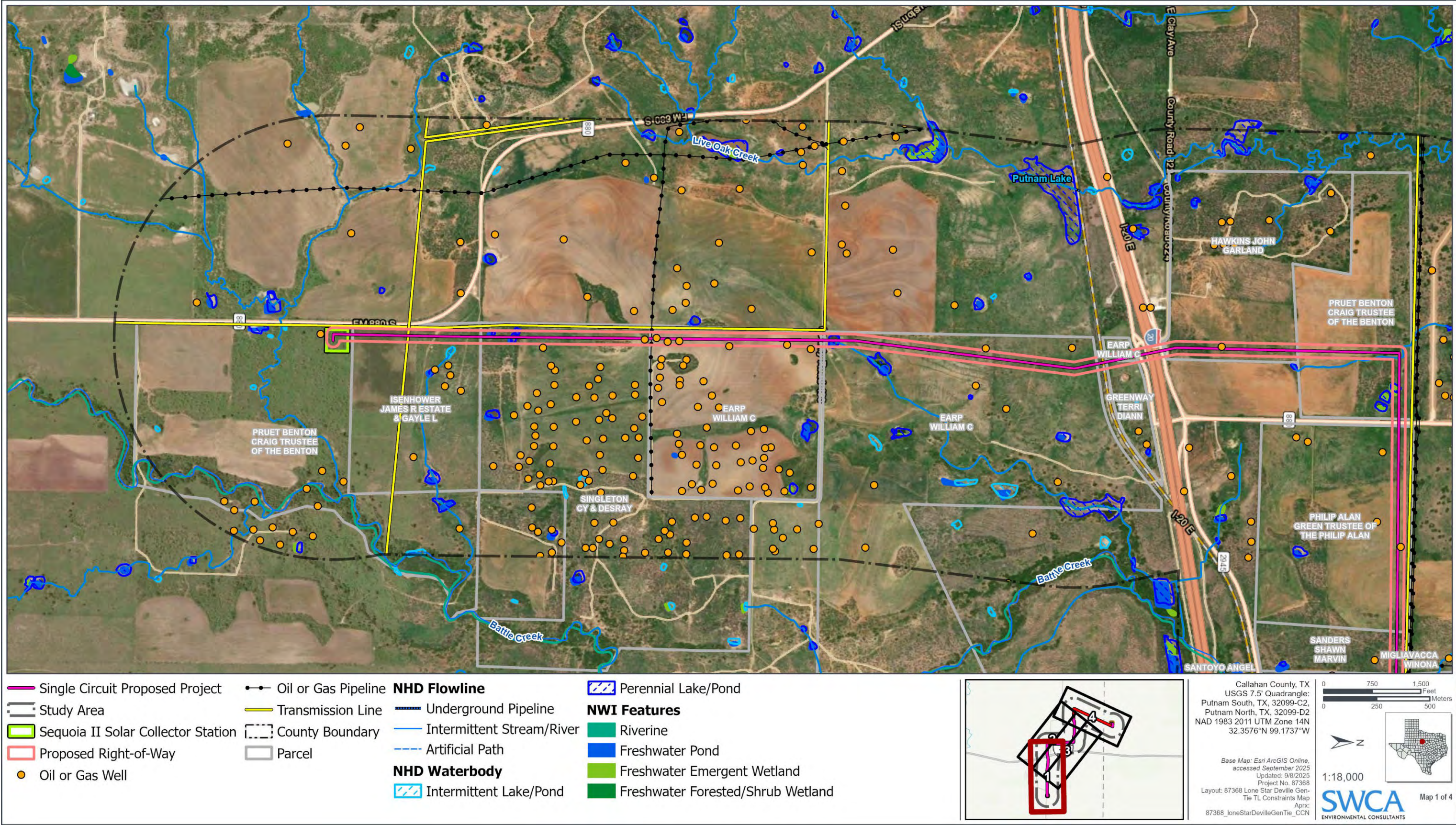


Figure B-1. Evaluation factor constraints map.

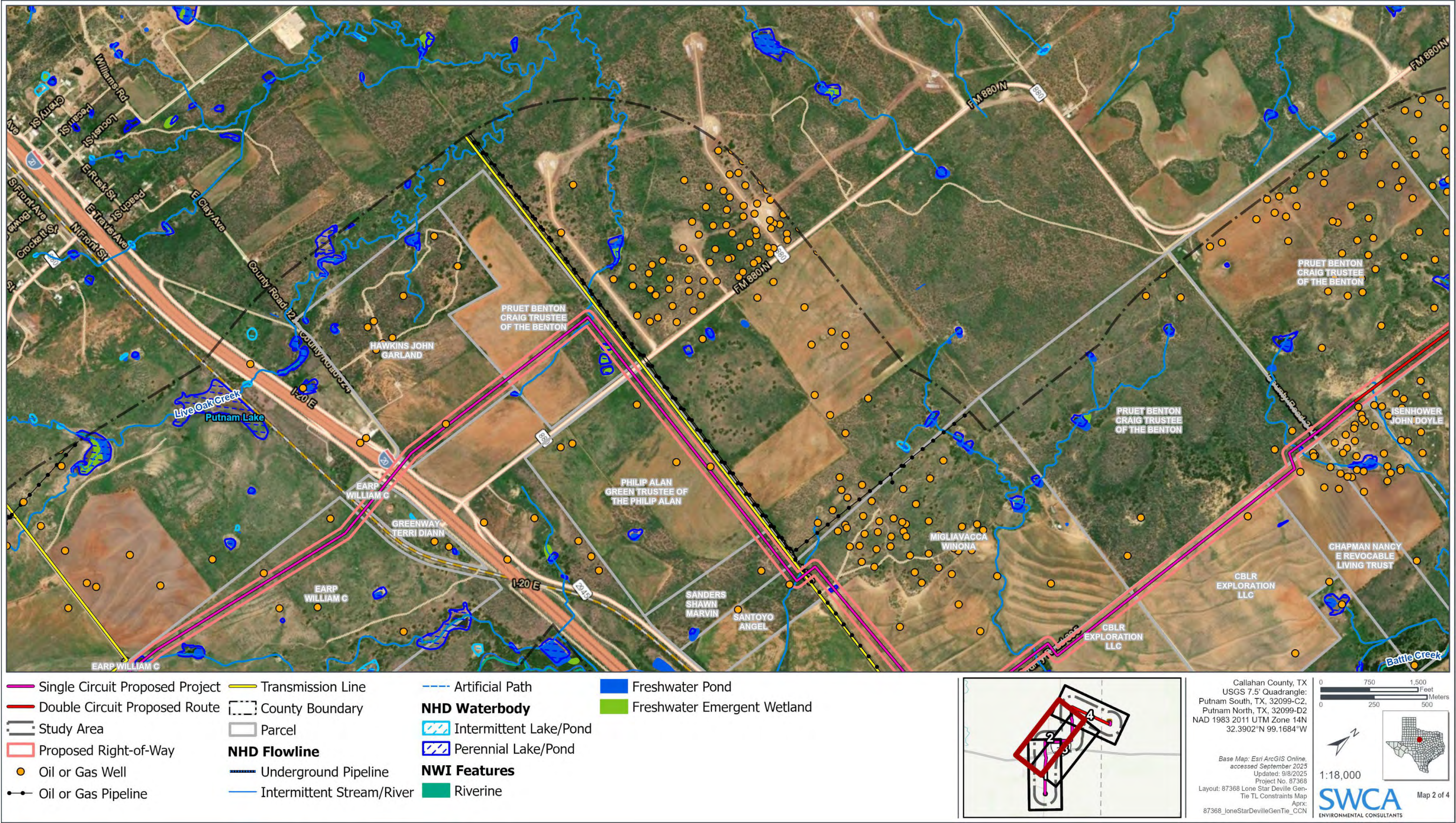


Figure B-2. Evaluation factor constraints map.

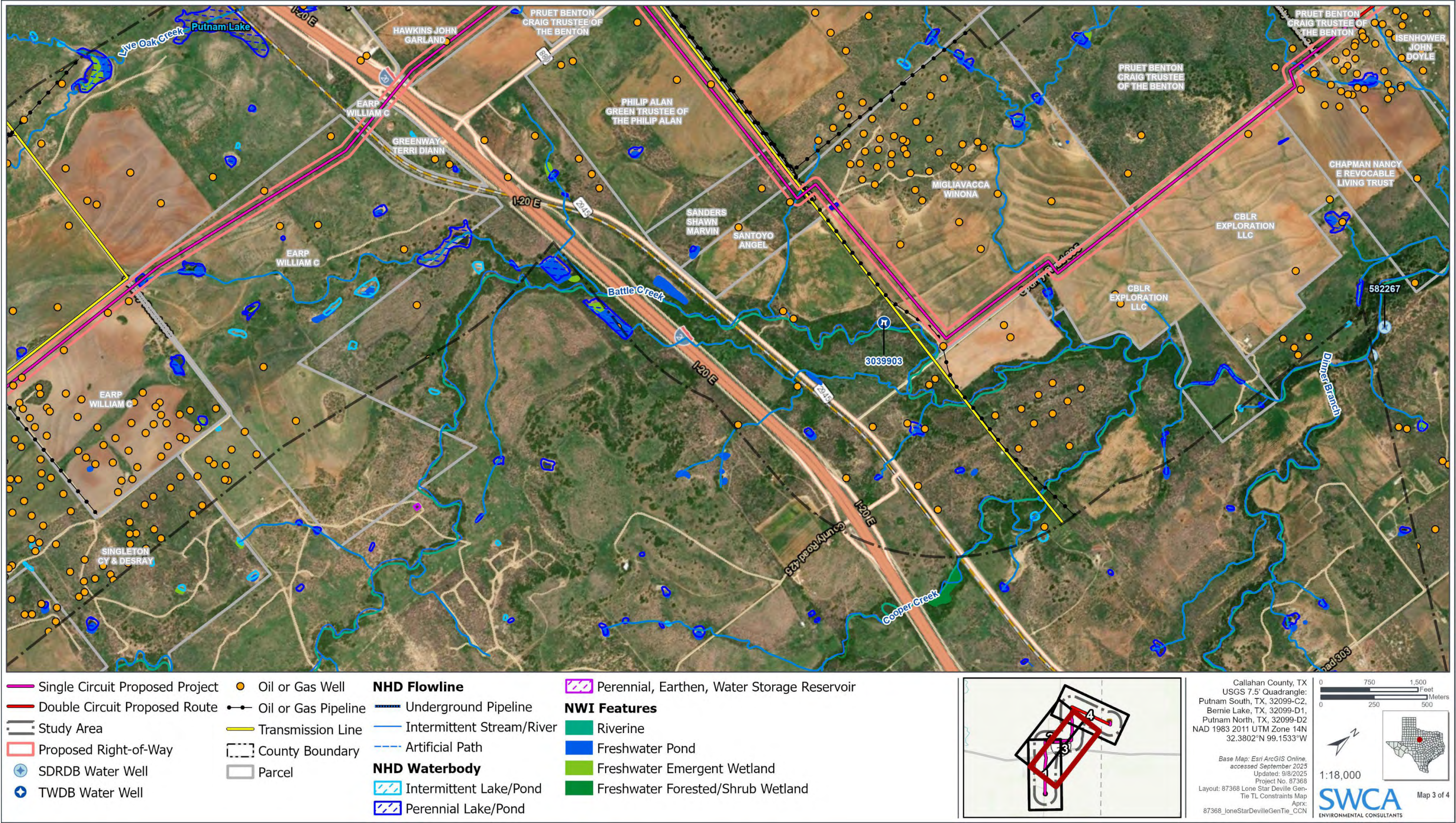


Figure B-3. Evaluation factor constraints map.

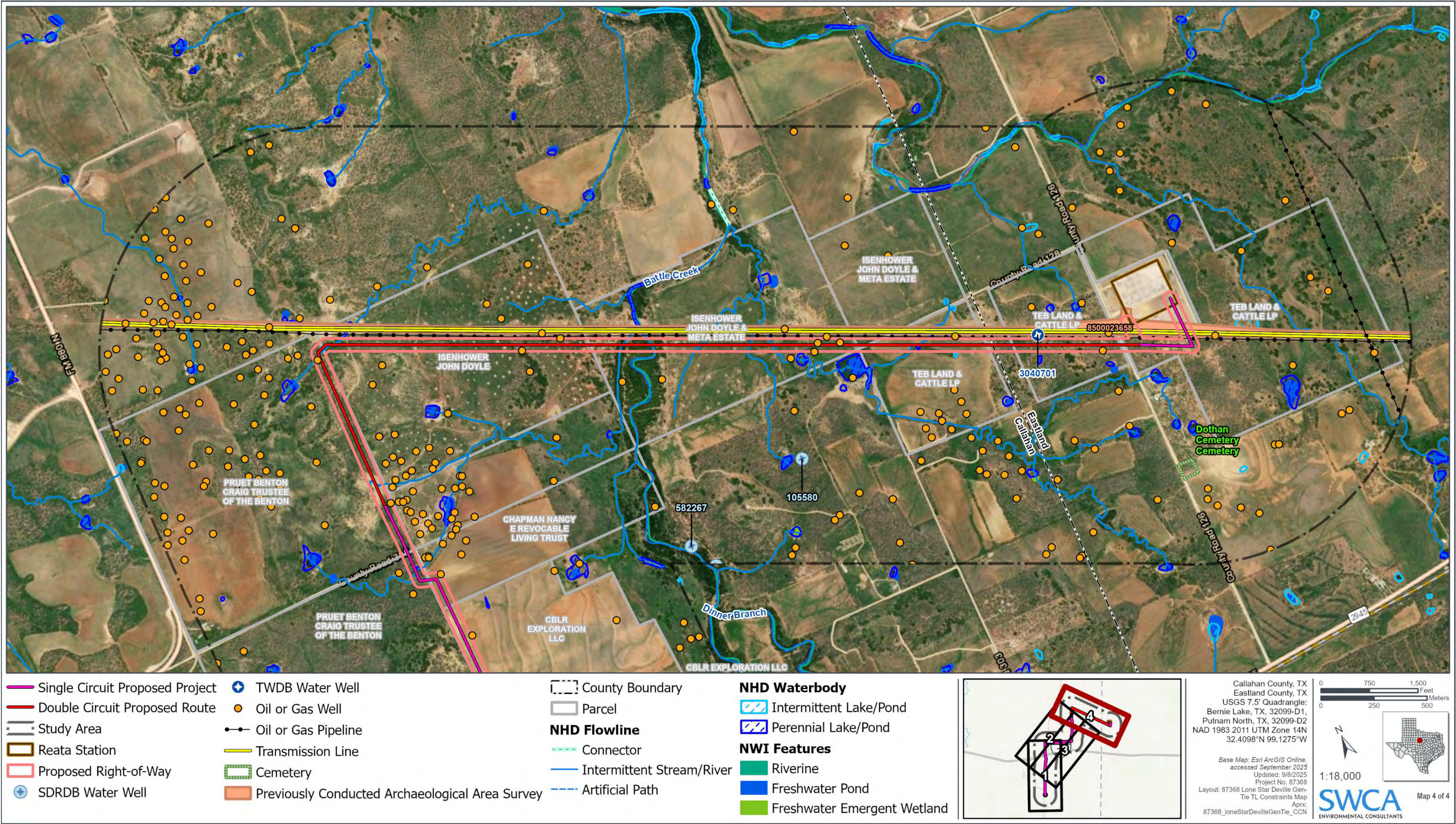


Figure B-4. Evaluation factor constraints map.

LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF EASTLAND §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 11 day of Feb. 2025, ~~2024~~ by TEB Land & Cattle, LP, a Texas limited partnership, with an address of P.O. Box 588, Cisco, TX 76437 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Warranty Deed dated June 10, 2014 and recorded July 8, 2014 as Instrument No. 2014-002056, Official Public Records, Eastland County, Texas:

Tract 1

224.50 acres, more or less, situated in the North 1/2 of the NW 1/4 and the South 3/4 of TE&L Co. Survey 3170, Abstract 508, Eastland County.

Tract 2

75 acres, more or less, situated in the North 1/2 of TE&L Co. Survey 3167, Abstract 1092, Eastland County.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star

will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.

TEB Land & Cattle, LP,
a Texas limited partnership

By: Truman Bacon Cattle, LLC,
a Texas limited liability company,
Its General Partner

By: Nancy A. Bacon
Nancy A. Bacon, Managing Member

EXHIBIT A

Facilities Location



EXHIBIT A

Facilities Location (continued)



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
§
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 11 day of Feb. 2025 ~~2024~~ by TEB Land & Cattle, LP, a Texas limited partnership, with an address of P.O. Box 588, Cisco, TX 76437 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Warranty Deed dated June 10, 2014 and recorded June 13, 2014 as Instrument No. 141120, Official Public Records, Callahan County, Texas:

Tract 1

85 acres, more or less, situated in the North 1/2 of TE&L Co. Survey 3167, Abstract 492, Callahan County.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.

TEB Land & Cattle, LP,
a Texas limited partnership

By: Truman Bacon Cattle, LLC,
a Texas limited liability company,
Its General Partner

By: Nancy A. Bacon
Nancy A. Bacon, Managing Member

EXHIBIT A

Facilities Location



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 7th day of March, 2025 by John Doyle Isenhower, an unmarried widower, with an address of 650 College Drive, Abilene, TX 79601 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Warranty Deed dated 1-31-1997 and recorded 2-3-1997 as Instrument No. 97-260, Official Public Records, Callahan County, Texas; and Cause No. 6216, Probate Records of Callahan County, Texas:

Parcel 1

Being the South one half of Section No. 3166, T. E. & L. Co. Land, situated in Callahan and Eastland Counties, Texas, being Abstract No. 491 in Callahan County, Texas and Abstract No. 1091, in Eastland County, Texas.

Parcel 2

BEING two hundred acres of Survey No. 3158 of the T E & L Survey in Callahan County, Texas, described as follows:

BEGINNING at the SW corner of a 200 acre tract in the name of C. E. Pippin, stake for corner; from which a mesquite 14" brs. S 84° W 18-1/4 vrs;

THENCE East 312 vrs. a creek; 672 vrs. crossing creek to stone for corner; from which a mesquite brs. North 64° S 4 1/2 vrs. do brs. S 77° W 17 vrs.;

THENCE N 68 vrs. to a stone for corner from which a mesquite brs. S 16° E 25 vrs.;

THENCE East crossing a creek 672 vrs. to stone for the SE corner of C. E. Pippin 200 acre tract for the NE corner of this survey;

THENCE S 874 vrs. to SE corner of Survey NO. 3158, no bearings;

THENCE West 1344 vrs. to the SW corner of said Survey No. 3158 from which a pecan brs. S 38-1/2° W 21 vrs., elm brs. S 74° E 16 vrs;

THENCE North 806 vrs. to the place of beginning; being the same land conveyed by J. A. Pippin and wife to J. N. Goodwin January 1, 1907 by deed of that date recorded in Vol. 39, Page 172, of the Deed Records of Callahan County, Texas.

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Deed of Partition dated 1-18-1990 and recorded 1-24-1990 as Instrument No. 90-252, Official Public Records, Callahan County, Texas; and Cause No. 6216, Probate Records of Callahan County, Texas:

Being the South 280 acres of the following described tracts:

TRACT ONE:

BEING 355 acres, more or less, and being all of T. E. & L. Co. Survey No. 3152, ABstr. 477, less the N. 120 acres thereof and the N. three-fourths (3/4) of T. E. & L. Co. Survey #3153, Abstr. #478, containing a total acreage of 440 acres, and SAVE AND EXCEPT 84.54 acres out of and a part of T. E. & L. Co. Survey #3152 and T. E. & L. Co. Survey #3153

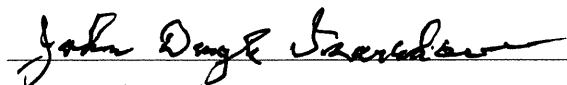
TRACT TWO:

BEING an 84.54 acre tract of land in Callahan County, Texas, 38.94 acres of which is in T. E. & L. Co. Survey #3152, ABstr. #477, and 45.60 acres of which is in T. E. & L. Co. Survey #3153, Abstr. #478. Said tract is a part of that land that N. M. Clifford, Jr., deed to Benton Pruet on June 25, 1968, by deed recorded in Vol. 358, page 908, Callahan County Deed Records

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

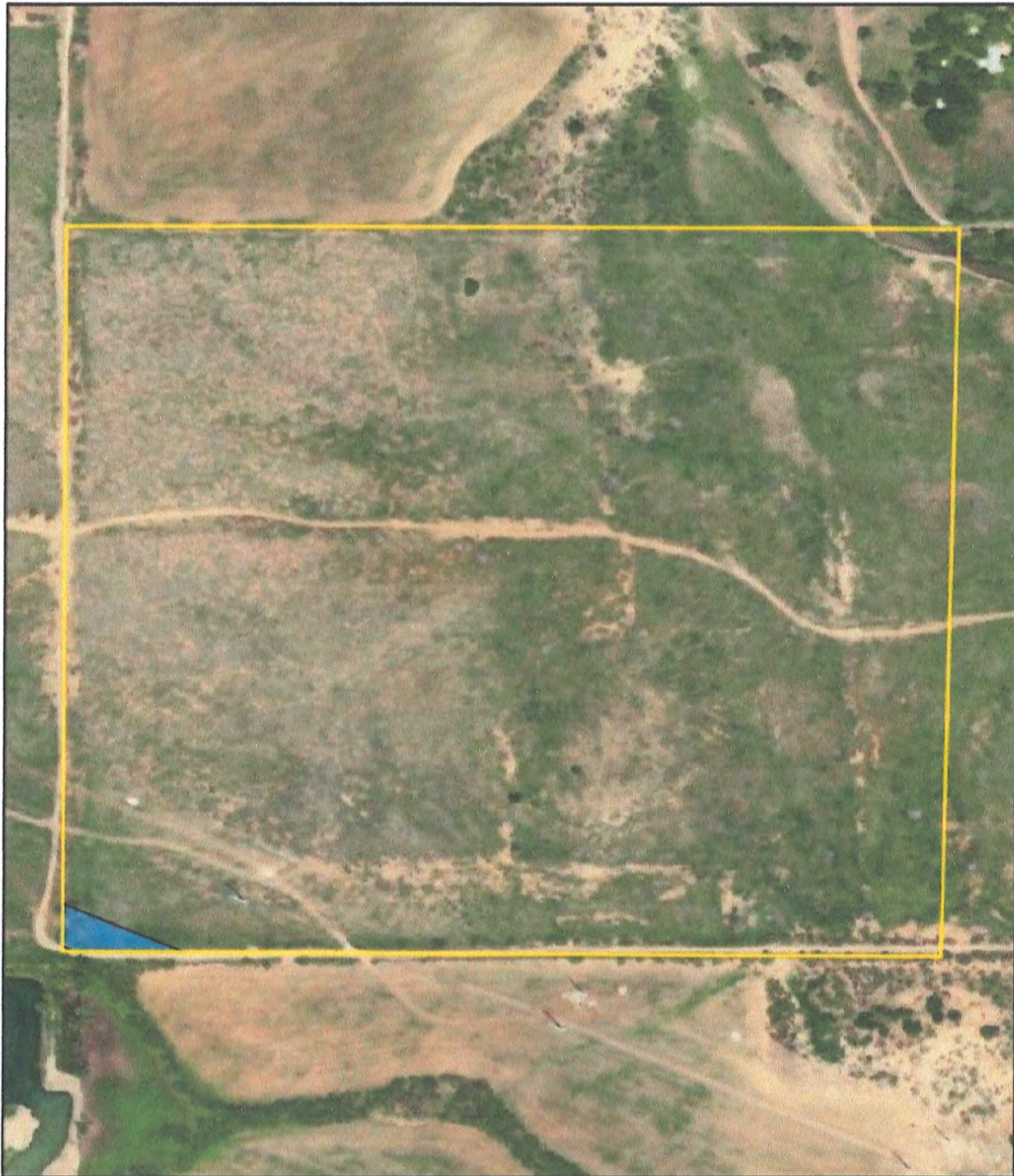
For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.



John Doyle Isenhower

EXHIBIT A

Facilities Location



-  Parcel Boundary
-  Proposed Facility Location

LONESTAR

November 5, 2024

Proposed Facilities Location Reata to Deville Solar

Landowner: ISENHOWER JOHN DOYLE & META ESTATE
County: CALLAHAN ROW Acreage: 0.37

0 225 450 900
Feet



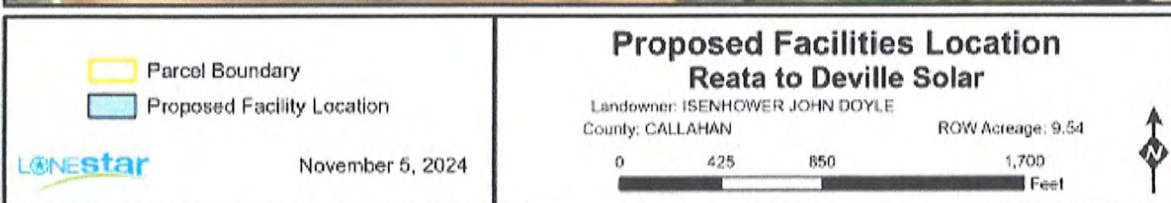
EXHIBIT A

Facilities Location (continued)



EXHIBIT A

Facilities Location (continued)



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 27 day of MARCH, 2025 by Benton Craig Pruet, Trustee of The Benton Jones Pruet Estate Trust, with an address of P.O. Box 697, Baird, TX 79504 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Warranty Deed with Vendor's Lien dated 9-27-2023 and recorded 11-22-2023 as Instrument No. 232126, Official Public Records, Callahan County, Texas and Corrected Warranty Deed with Vendor's Lien dated 11-15-2023 and recorded 11-22-2023 as Instrument No. 232489, Official Public Records, Callahan County, Texas:

Parcel 1

All of the T E & L Company Survey No. 2286, Abstract No. 437 in Callahan County, Texas.

Parcel 2

All of Texas Immigration & Land Company Survey No. 2285, Abstract No. 436 being situated in Callahan County, Texas and containing 320 acres of land, more or less.

Parcel 3

All of the Texas Immigration & Land Company Survey No. 2276, Abstract No. 427 being situated in Callahan County, Texas and containing 320 acres of land, more or less.

Parcel 4

Tract 1:

Being the North 80 acres of the T E & L Company Survey No. 2267 and being the same tract of land conveyed by J. B. Brandon and wife to Adolph Brandon by deed, dated February 5, 1919, and recorded in Volume 59, Page 471 of the Deed Records of Callahan County, Texas.

Tract 2:

Being out of and a part of the T. E. & L. Co. Survey No. 2267, and described as follows, to-wit:

Beginning at the SE corner of an 80 acre tract of land owned by the said Adolph Brandon for the place of beginning;

Thence South along the East boundary line of said Survey No. 2267, a distance of 308.39 vrs. to stake for corner;

Thence West 881.28 vrs. to stake for corner;

Thence North a distance of 308.39 vrs. intersecting the South boundary line of said Adolph Brandon 80 acre tract;

Thence East 881.28 vrs. to the place of beginning, containing 48.14 acres of land, more or less.

Parcel 5

Being out of and a part of the B.O.H. Survey No. 11, Abstract No. 961, situated in Callahan County, Texas, and being described as the SW 1/4, and the W 1/2 of the SE 1/4, and the S 1/2 of the S 1/2 of the NW 1/4 of said B.O.H. Survey No. 11, and containing in all 280 acres of land, more or less.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single

circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.

The Benton Jones Pruet Estate Trust

By: Benton Craig Pruet
Benton Craig Pruet, Trustee

EXHIBIT A

Facilities Location



EXHIBIT A

Facilities Location (cont'd)



EXHIBIT A

Facilities Location (cont'd)



EXHIBIT A

Facilities Location (cont'd)



EXHIBIT A

Facilities Location (cont'd)



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 8 day of November, 2024 by Kenneth L. Chapman, a married man dealing in his sole and separate property, joined by consenting spouse Delores Chapman, with an address of 514 East Pershing Street, Eastland, TX 76448 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Special Warranty Deed dated 5-21-2024 and recorded 6-17-2024 as Instrument No. 241323, Official Public Records, Callahan County, Texas:

North 90 acres of T. E. & L. Co. Survey Number 3154, Abstract Number 479, Callahan County, Texas, described by metes and bounds as follows:

BEGINNING at the NW corner of said Survey 3154, which is also the SW corner of T E & L Co. Survey 3153;

THENCE East along the NB line of said Survey 3154, and the SB line of Survey 3153, T E & L Co. lands, 1344 vrs. to the NE corner of said Survey Number 3154;

THENCE South with the EB line of said Survey 3154, a distance of 378.1 vrs. to a stake for corner, the SE corner of this tract;

THENCE West at right angles and parallel with the north line of this tract 1344 vrs. to stk. in the WB line of said Survey Number 3154;

THENCE North with the WB line of said survey 378.1 vrs. to the place of beginning.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and

east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.


Kenneth L. Chapman

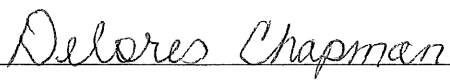
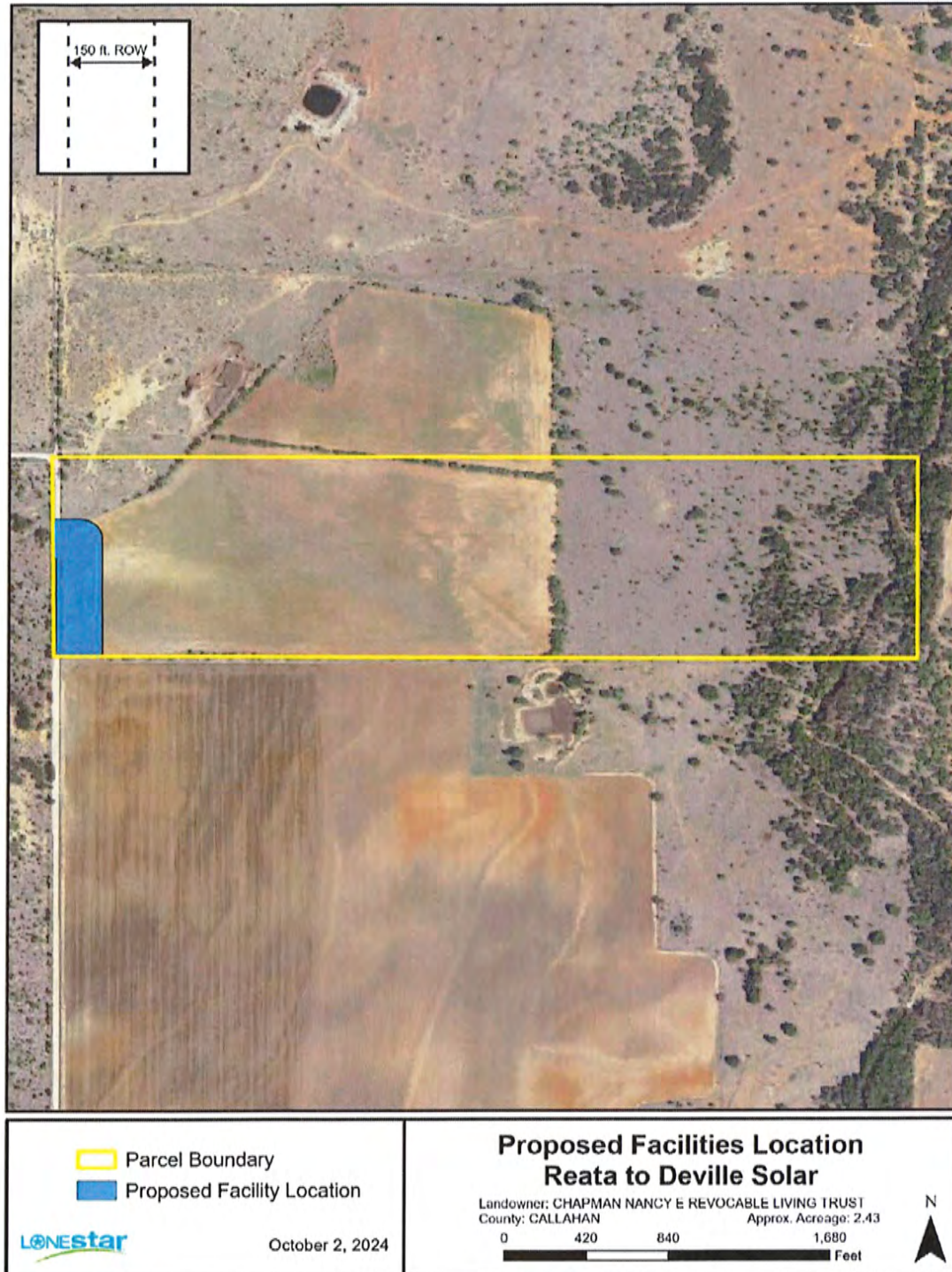

Delores Chapman

EXHIBIT A

Facilities Location



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 25 day of February, 2025 by CBLR Exploration, LLC, a Texas limited liability company, with an address of 932 Highway 2807, Cisco, TX 76437 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Warranty Deed with Vendor's Lien dated 4-29-2021 and recorded 5-6-2021 as Instrument No. 211047, Official Public Records, Callahan County, Texas:

That portion of the following tract of land lying within the boundaries of T.E. & L. 3155 A-480 and T.E. & L. 3154 A-479, Callahan County, Texas, SAVE AND EXCEPT 142.649 acres out of T.E. & L. 3155 A-480 conveyed to Gregory Hugdahl, Jr. and Amanda Hugdahl, husband and wife, by Deed dated October 16, 2023, recorded as Instrument Number 232341, Official Public Records, Callahan County, Texas, reference to which instrument is here made for a complete description of said 142.649 acre tract:

945.29 acres of land out of T.E. & L. 2275 A-426, 2283 A-434, 3155 A-480, 3154 A-479 and Survey 3 G. C. & S. F. RR. Co. Lands, A-823, Callahan County, Texas and being part of the land as described in Volume 238 Page 960 Official Public Records, Callahan County, Texas.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted

by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.

CBLR Exploration, LLC,
a Texas limited liability company

By: _____

Micheal Cody Foster, Managing Manager

EXHIBIT A

Facilities Location

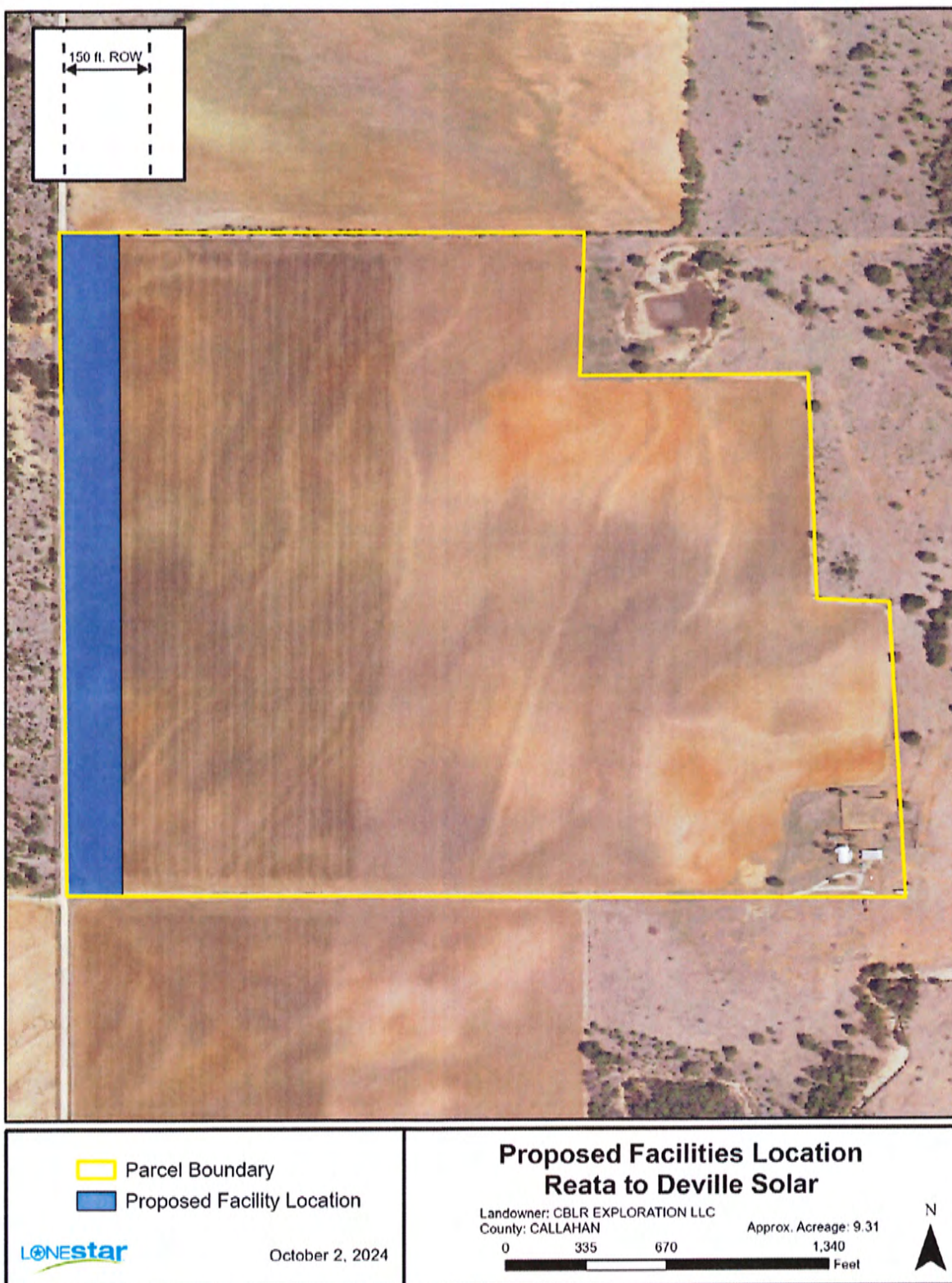
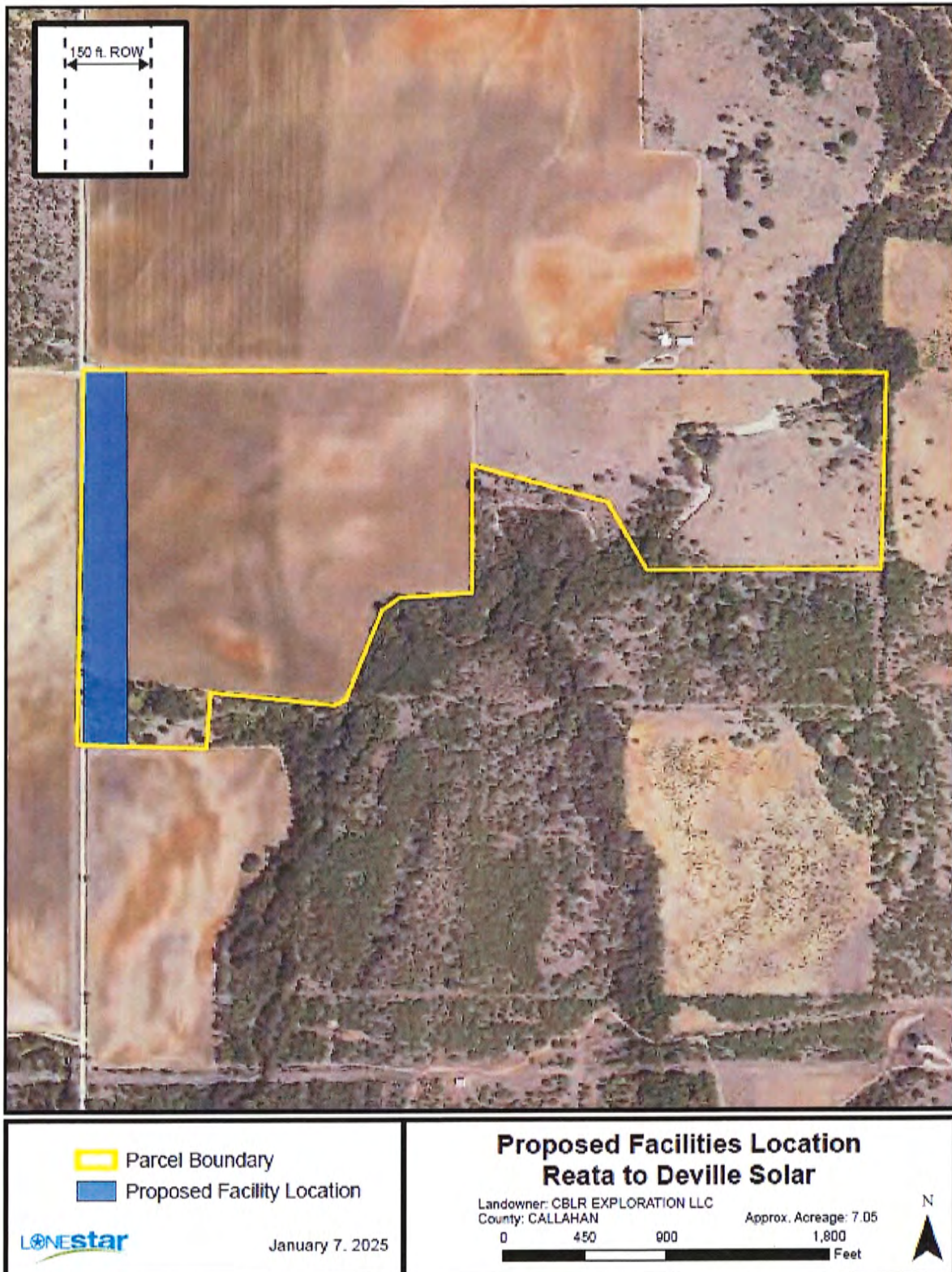


EXHIBIT A

Facilities Location (cont'd)



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 6 day of June, 2025 by Winona Jeanette Migliavacca, also known as Winona Ricker, as a single woman, with an address of 609 Gill Drive, Abilene, TX 79601 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Warranty Deed dated 8-6-1965 and recorded 8-24-1965 as Volume 343, Page 73, Official Public Records, Callahan County, Texas; and Order Approving Account for Final Settlement and Authorizing Distribution dated 9-30-1992 and recorded 9-30-1992 as Volume 65, Page 102, Official Public Records, Callahan County, Texas:

T. E. & L. Survey No. 2284, Abstract No. 435, situated in Callahan County, Texas, and containing 320 acres of land, more or less.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

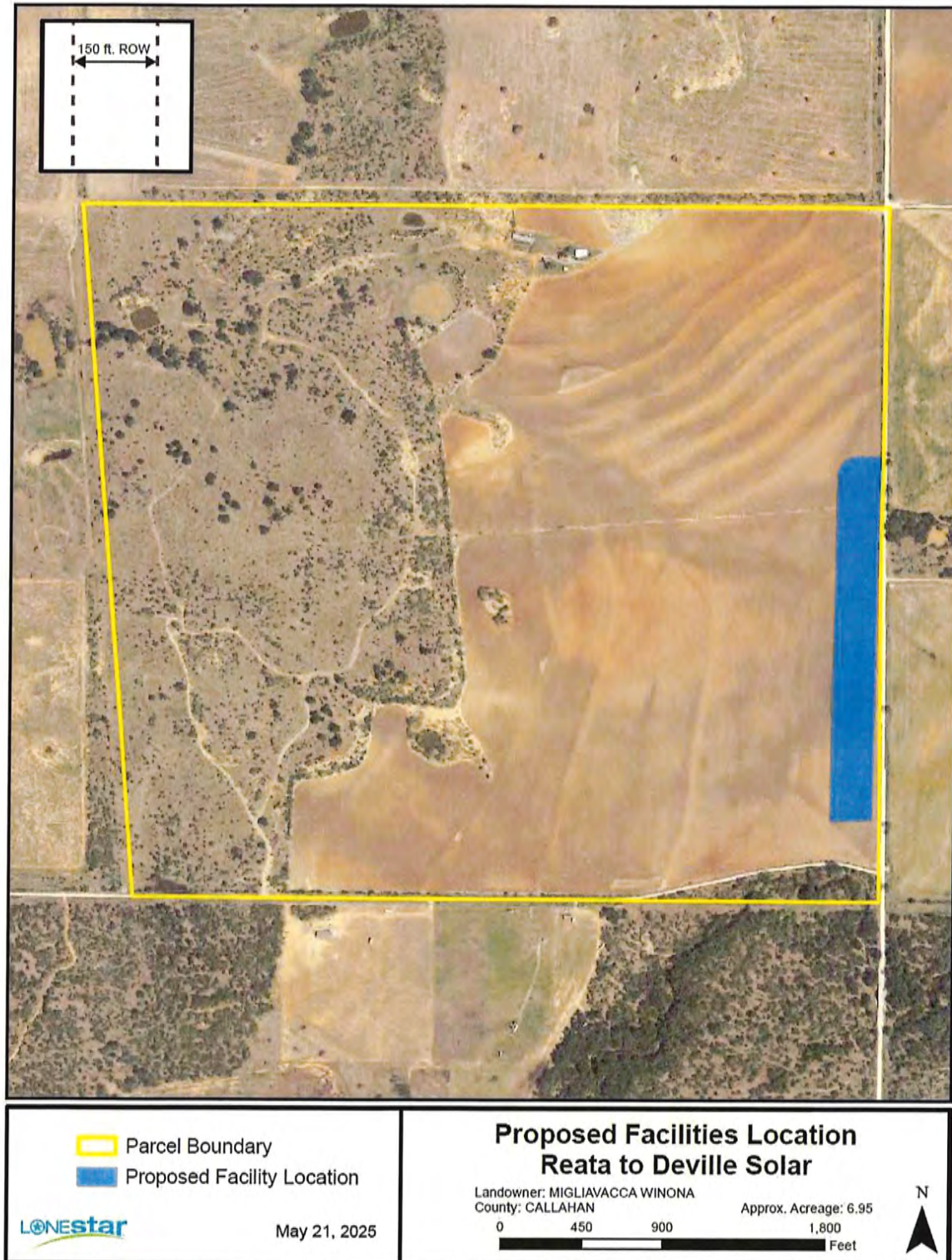
Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.


Winona Jeanette Migliavacca

EXHIBIT A

Facilities Location



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 9th day of April, 2025 by Winona Jeanette Migliavacca, also known as Winona Ricker, as a single woman, with an address of 609 Gill Drive, Abilene, TX 79601 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Warranty Deed dated 8-6-1965 and recorded 8-24-1965 as Volume 343, Page 73, Official Public Records, Callahan County, Texas; and Order Approving Account for Final Settlement and Authorizing Distribution dated 9-30-1992 and recorded 9-30-1992 as Volume 65, Page 102, Official Public Records, Callahan County, Texas:

T. E. & L. Survey No. 2284, Abstract No. 435, situated in Callahan County, Texas,
and containing 320 acres of land, more or less.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.



Winona Jeanette Migliavacca

EXHIBIT A

Facilities Location



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 24 day of May, 2025 by Angel Santoyo, a married man dealing in his sole and separate non-homestead property, joined by consenting spouse Enedina Santoyo, with an address of 6916 Chisholm Trail, North Richland Hills, TX 76437 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Warranty Deed dated 8-9-2022 and recorded 8-15-2022 as Instrument No. 222121, Official Public Records, Callahan County, Texas:

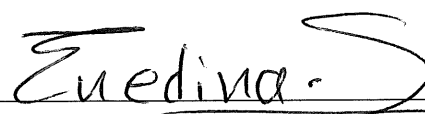
35.00 acres of land out of T. E. & L. 2283, Callahan County, Texas, and being part of a tract of land described in deed recorded in Instrument #211047, Official Public Records, Callahan County, Texas.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.



Angel Santoyo

Eunedina Santoyo

EXHIBIT A
Facilities Location



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 23rd day of May, 2025 by Shawn Marvin Sanders, a married man dealing in his sole and separate property, joined by consenting spouse Valeri Sanders, with an address of 7462 Lakeridge Parkway, Abilene, TX 79602 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Warranty Deed With Vendor's Lien dated 9-14-2022 and recorded 9-15-2022 as Instrument No. 222394, Official Public Records, Callahan County, Texas:

38.32 acres of land out of T. E. & L. 2275 and 2283, Callahan County, Texas, and being part of a tract of land described in deed recorded in Instrument #211047, Official Public Records, Callahan County, Texas.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.

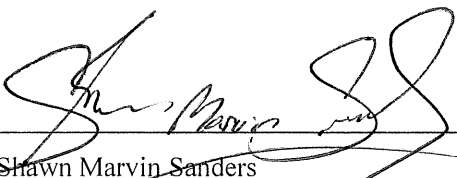
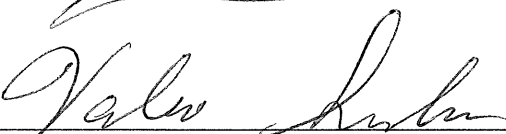

Shawn Marvin Sanders
Valeri Sanders

EXHIBIT A
Facilities Location



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 19th day of March, 2025 by Philip Alan Green, Trustee of the Philip Alan Green Investment Trust, UTA December 5, 2012, with an address of 117 Golden Kinglet Lane, Cisco, TX 76437 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to General Warranty Deed dated 3-7-2022 and recorded 4-20-2022 as Instrument No. 221013, Official Public Records, Callahan County, Texas:

169.24 acres of land out of T. E. & L 2275, Abstract 426, Callahan County, Texas and being part of a tract of land described in deed recorded in Volume 238, Page 960 Official Public Records of Real Property of Callahan County, Texas.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.

Philip Alan Green Investment Trust, UTA December 5, 2012

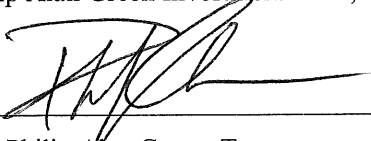
By: 
Philip Alan Green, Trustee

EXHIBIT A

Facilities Location



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("Agreement") is made and entered into this 21 day of January, 2025 by Amy Michelle Hawkins Evans, Attorney-in-Fact for Garland Hawkins, also known as John Garland Hawkins, an unmarried widower, with an address of 258 Hlavek Road, Decatur, TX 76234 ("Landowner").

Landowner hereby acknowledges and confirms ownership of the following described property ("Landowner's Property"), pursuant to Warranty Deed dated 5-10-1993 and recorded 5-19-1993 as Volume 15, Page 425, Official Public Records, Callahan County, Texas:

The same being a part of Section No. 2267 T.E. & L. Co. Lands in Callahan County, Texas, and described by metes and bounds as follows:

BEGINNING at a 2 x 4 Pine Stake, said stake being the 106th. mile Stake in the South Line of Peters Colony, also the North East corner of Section 1, Baylands Orphans Home Survey;

THENCE North 2851.7 feet to the South West corner of a tract of land owned by Adolph Brandon;

THENCE East along the South line of a tract of land owned by Adolph Brandon 1475-1/10 feet to corner;

THENCE South 856-6/10 feet to a South West corner of a tract of land owned by Adolph Brandon;

THENCE East 1555 feet to Iron Pipe for North East corner of this tract, said corner also being the North West corner of a tract owned by Hal Pruett;

THENCE South along the West line of a tract of land owned by H. A. Pruett 2002 feet to an Iron pipe 30 feet North of the Center line of the Bankhead Highway (State Highway No. 1) said Iron Pipe also being the South West corner of a tract of land owned by H. A. Pruett;

THENCE West 30 feet North of and parallel to the Center line of the Bankhead Highway 2999-1/10 feet to the point of beginning, containing 166-6/10 acres of land;

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("Lone Star") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("Application") with the Public Utility Commission of Texas ("PUCT") to construct and operate

a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.

Amy Michelle Hawkins Evans
attorney-in-fact for Garland Hawkins

Amy Michelle Hawkins Evans,
Attorney-in-Fact for Garland Hawkins

EXHIBIT A

Facilities Location



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 27 day of MARCH, 2025 by B. J. Pruet, Inc., a Texas corporation, with an address of 1001 Highway 283 N, Baird, TX 79504 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Warranty Deed dated 7-20-1989, but effective 10-1-1988, and recorded 7-27-1989 as Volume 589, Page 581, Official Public Records, Callahan County, Texas:

38-1/2 acres, more or less, out of Survey 2 and 3, B.O.H. Land, Abstract Nos. 956 and 957, respectively, Callahan County, Texas, described as follows:

Beginning at a point on the north side of the T & P RR Co. on the south boundary line of Section No. 2275, TE&L Co., same being the north boundary line of Section No. 3, B.O.H. lands;

Thence West 960 varas to corner;

Thence South 387 varas to right of way of T&P RR Co.;

Thence East along the line of the T&P RR right of way to the place of beginning, containing 38-1/2 acres, more or less, in Callahan County, Texas, SAVE AND EXCEPT the following 3 tracts of land:

1. 23.98 acres conveyed to Humble Pipe Line Company by Deed dated 1/15/1927, recorded in Volume 114, Page 385, Deed Records, Callahan County, Texas, reference to which deed is here made for a complete description of said 23.98 acres.
2. 2.264 acres conveyed to the State of Texas by Deed dated 10/17/1963, recorded in Volume 329, Page 124, Deed Records, Callahan County, Texas, reference to which deed is here made for a complete description of said 2.264 acre tract.
3. 2.407 acres conveyed to the State of Texas by Deed dated 10/17/1963, recorded in Volume 329, Page 128, Deed Records, Callahan County, Texas, reference to which deed is here made for a complete description of said 2.407 acre tract.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM)

2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.

B. J. Pruet, Inc.,
a Texas corporation

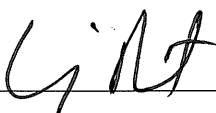
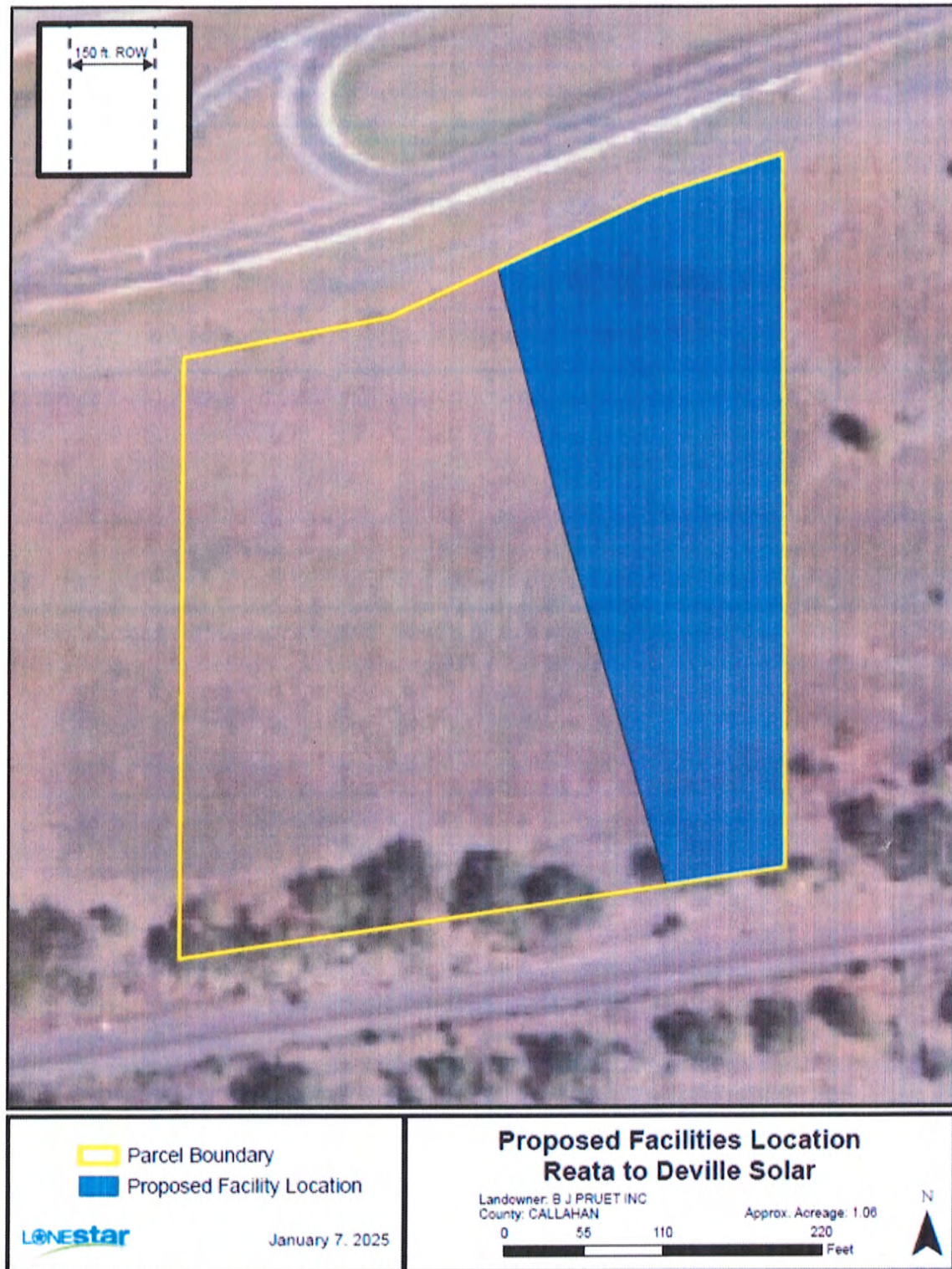
By:  _____
Craig Pruet, Director

EXHIBIT A

Facilities Location



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 26 day of March, 2025 by Terri Diann Greenway, an individual dealing in her sole and separate property, with an address of 17338 E. Highway 6, Dublin, TX 76446 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Distribution Deed dated 2-20-2020, and recorded 4-27-2020 as Instrument No. 200872, Official Public Records, Callahan County, Texas:

Being 23.98 acres of land, more or less, out of Section 3, Bayland Orphan Asylum Lands, in Callahan County, Texas, described as follows, to-wit;

Beginning at a point 37.7 feet West and 30 feet South of the intersection of the North line of Section 3, Bayland Orphans Asylum Lands and the North Right of Way Line of Texas and Pacific Railroad Company;

Thence West 1952.6 feet along South line of State Highway No. 1, to iron stake;

Thence South 867 feet to the North right of way line of the Texas and Pacific Railroad Company;

Thence East along said North Right of Way line to the point of beginning, SAVE AND EXCEPT the following tracts of land:

1. A 4.12 acre tract conveyed to the State of Texas by Deed dated 11/25/1947, recorded in Volume 193, Page 510, Deed Records, Callahan County, Texas, reference to which deed is here made for a complete description of said 4.12 acre tract.
2. A 0.984 acre tract and a 0.446 acre tract conveyed to the State of Texas by Deed dated 3/23/1953, recorded in Volume 234, Page 188, Deed Records, Callahan County, Texas, reference to which deed is here made for a complete description of said 0.984 and 0.446 acre tracts.
3. A 3.444 acre tract conveyed to the State of Texas by Deed dated 11/29/1963, recorded in Volume 329, Page 425, Deed Records, Callahan County, Texas, reference to which instrument is here made for a complete description of said 3.444 acre tract.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of CR 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western

Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.


Terri Diann Greenway

EXHIBIT B

Depiction of Easements



LIFE ESTATE AND LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LIFE ESTATE AND LANDOWNER CONSENSUS ROUTE AGREEMENT ("Agreement") is made and entered into this 10th day of April, 2025 by John David Isenhower, as Independent Executor for the Estate of Gayle Lavois (Burnam) Isenhower, pursuant to the probate of the Estate of Gayle Lavois (Burnam) Isenhower, Deceased, in Cause No. 6609, County Court of Callahan County, Texas, and as a married man dealing in his sole and separate property, joined by consenting spouse Chancy Isenhower, with an address of P.O. Box 847, Putnam, TX 76469; and Steven Dale Isenhower, a single man, with an address of P.O. Box 911, Putnam, TX 76469 ("**Landowner**"); the interest of John David Isenhower and Steven Isenhower subject to a 1/3rd life estate vested in Cristy Lyn Isenhower, a married woman dealing in her sole and separate property, joined by consenting spouse Jessica Isenhower, with an address of P.O. Box 847, Putnam, TX 76469 ("**Life Tenant**").

Landowner hereby acknowledges and confirms ownership of and Life Tenant hereby acknowledges and confirms a life estate in the following described property ("**Property**"), pursuant to Warranty Deed with Vendor's Lien dated 1-21-1966 and recorded 2-28-1966 as Volume 346, Page 708, Official Public Records, Callahan County, Texas; and Cause No. 6609, Probate Records, Callahan County, Texas:

Being the North 120 acres of the Northwest Quarter (NW/4) of B. O. H. Survey No. 11, Abstract Number 961, Callahan County, Texas, divided into two tracts, as follows:

TRACT NUMBER ONE: The North one-half of the Northwest Quarter (N/2 of the NW/4) of B. O. H. Survey Number 11, containing 80 acres of land, and

TRACT NUMBER TWO: The North One-half of the South One-half of the Northwest Quarter (N/2 of S/2 of NW/4) of Survey No. 11, B. O. H., containing 40 acres of land.

Landowner hereby acknowledges and confirms ownership of and Life Tenant hereby acknowledges and confirms a life estate in the following described property ("**Property**"), pursuant to Executor's Deed

of Distribution dated 2-27-2025 and recorded 3-5-2025 as Instrument No. 250471, Official Public Records,
Callahan County, Texas:

Tract No. 9: Being approximately 95.3 acres of land, more or less, in the Northwest one-fourth of Bayland Orphan Home Land Survey No. 3, Abstract 957, in Callahan County, Texas, and being more particularly described as follows:
BEGINNING at the Southwest corner of the North one-half of said Survey No. 3;
THENCE North 546 varas to the South line of the T&P Ry. Co. Right-of-Way;
THENCE Northeasterly with the South line of said Right-of-Way to a point which is 831.6 varas East from the West boundary line of said Survey No. 3;
THENCE South 887.4 varas to the South line of the North one-half of said Survey No. 3;
THENCE West 831.6 varas to the place of beginning.

Tract No. 10: Being approximately 160 acres of land, more or less, being all of the Southwest one-fourth of Bayland Orphan Home Land Survey No. 3, Abstract No. 957, in Callahan County, Texas.

Landowner and Life Tenant acknowledge that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner, Life Tenant and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and Life Tenant represents it is the legal and beneficial possessor of an estate in the property described above and collectively have the right, without joinder of any other party, to enter into the Agreement. Landowner and Life Tenant acknowledge that the new 345-kilovolt single circuit transmission line, if approved, will be installed on the

Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner, Life Tenant and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner and Life Tenant hereby accepts and provides consent for Lone Star's Application and Facilities Location.



John David Isenhower



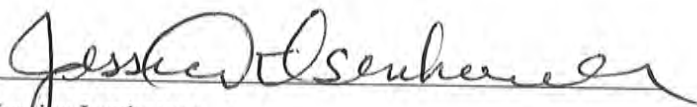
Chancy Isenhower



Steven Dale Isenhower



Cristy Lyn Isenhower



Jessica Isenhower

EXHIBIT A

Facilities Location

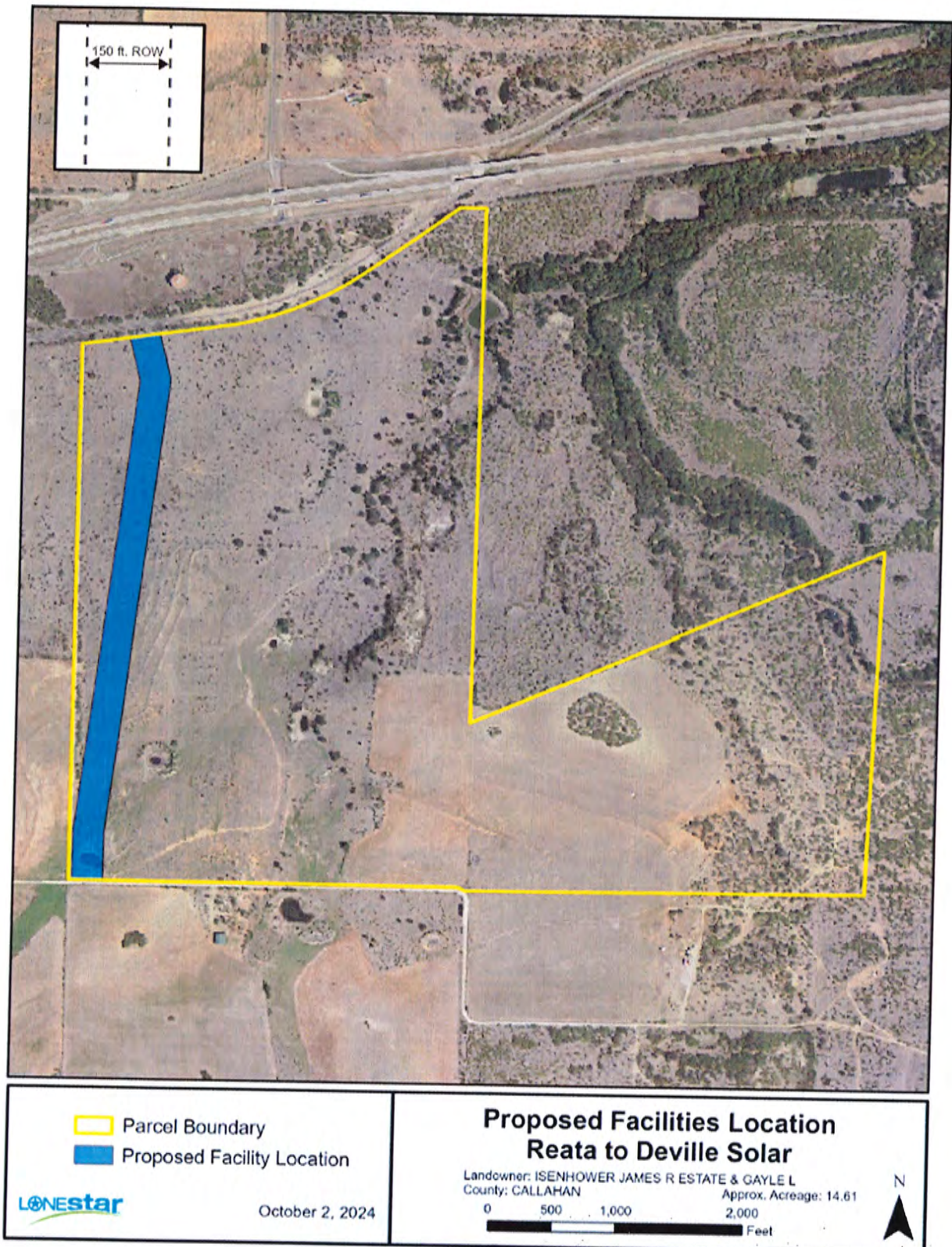


EXHIBIT A

Facilities Location (cont'd)



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 15th day of November, 2024 by William C. Earp, a married man dealing in his sole and separate property, joined by consenting spouse Dynwanda M. Earp, with an address of 3289 County Road (CR) 268, Baird, TX 79504 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Executors' Deed of Distribution dated 6-6-2023, and recorded 6-6-2023 as Instrument No. 231199, Official Public Records, Callahan County, Texas:

All of the NW ¼ of BOH Survey No. 8 Abstract 966, Callahan County, Texas, and containing 160 acres, more or less.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of CR 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.



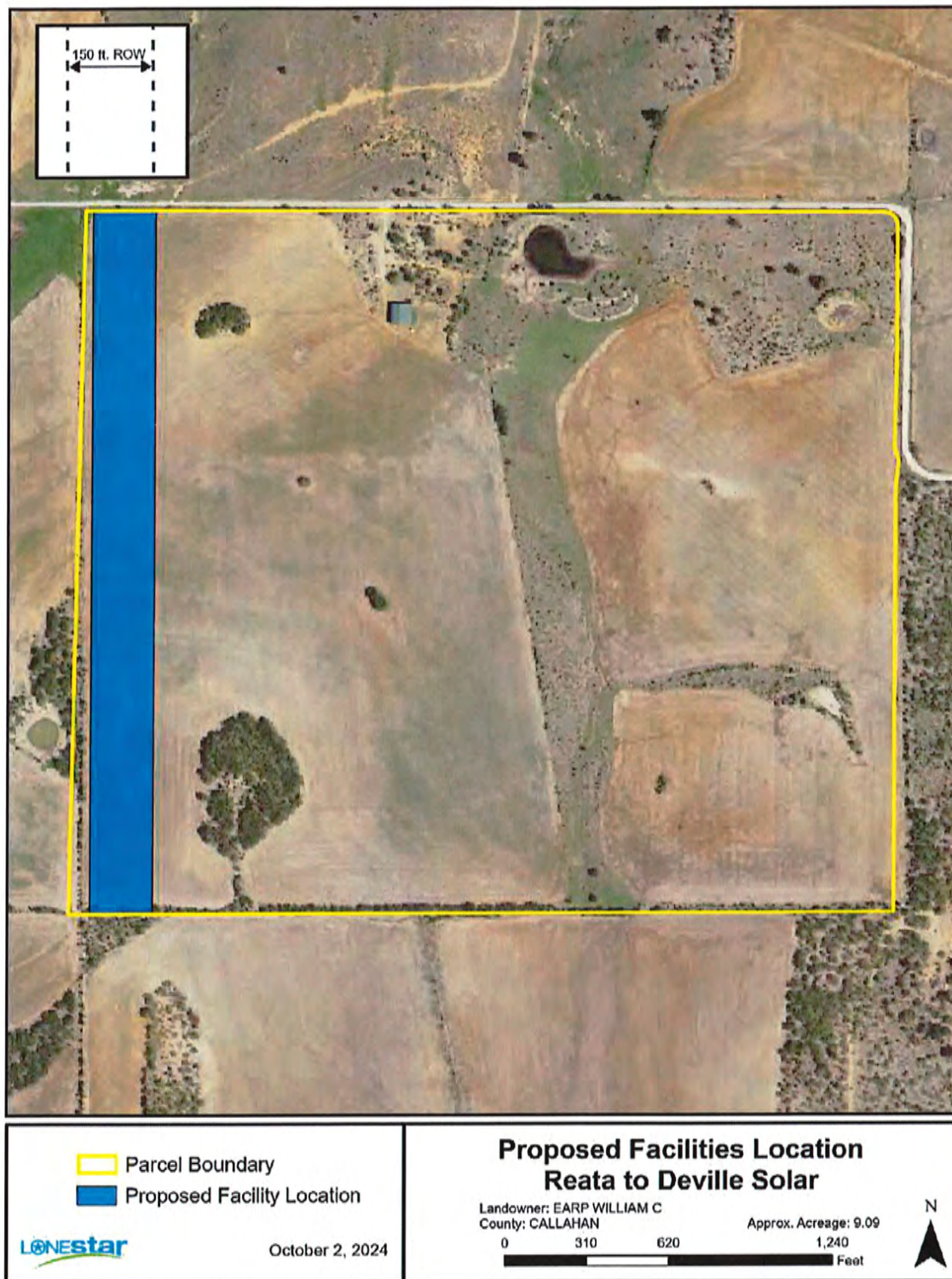
William C. Earp



Dynwanda M. Earp

EXHIBIT A

Facilities Location



LANDOWNER CONSENSUS ROUTE AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF CALLAHAN §

THIS LANDOWNER CONSENSUS ROUTE AGREEMENT ("**Agreement**") is made and entered into this 26th day of November, 2024 by Cy Singleton and Desray Singleton, a married couple, with an address of 107 East Enon Avenue, Everman, TX 76140 ("**Landowner**").

Landowner hereby acknowledges and confirms ownership of the following described property ("**Landowner's Property**"), pursuant to Warranty Deed with Vendor's Lien dated 7-25-2020, but effective 7-27-2020, and recorded 7-30-2020 as Instrument No. 201694, Official Public Records, Callahan County, Texas:

395.41 acres of land being 54.19 acres out of Section 7 Bayland Orphan Asylum Lands, A-965 and 341.22 acres of land out of Section 8 Bayland Orphan Asylum Lands, A-966, Callahan County, Texas, and being all of the land as described in Volume 71 Page 628, Volume 91 Page 602 and Volume 157 Page 768 Official Public Records, Callahan County, Texas.

BEGINNING at a set stone found for the southwest corner of Section 7 and the southeast corner of Section 8 Bayland Orphan Asylum Lands;

THENCE S 89°57'01" W with the south line of Section 8 a distance of 659.58' to a ½" iron pin set for the southeast corner of the tract described in Instrument #14-1838;

THENCE N 00°43'42" E a distance of 1322.84' to a ½" iron pin set for the northeast corner of the tract described in Instrument #14-1838;

THENCE N 89°47'15" W a distance of 1977.34' to a ½" iron pin set for the northwest corner of the tract described in Instrument #14-1838;

THENCE S 00°43'43" W a distance of 1331.90' to a ½" iron pin set in the south line of Section 8 for the southwest corner of the tract described in Instrument #14-1838;

THENCE S 89°57'01" W with the south line of Section 8 a distance of 2637.02' to a ½" iron pin set for the southwest corner of Section 8 and being the southwest corner of Tract 2B in Volume 157 Page 768 O.P.R. and being the southwest corner of the tract;

THENCE N 00°15'27" E with the west line of Section 8 a distance of 2646.44' to a ½" iron pin set for the northwest corner of the tract described in Tract 2B of Volume 157 Page 768 O.P.R. for the western most northwest corner of this tract;

THENCE S 89°46'46" E a distance of 2646.83' to a ½" iron in set for the northeast corner of Tract 2B of Volume 157 Page 768 and being an interior corner of this tract;

THENCE N 00°28'18" E a distance of 1596.99' to a 5/8" iron pin found in the south line of County Road 490 for the northwest corner of Tract 1 of Volume 71 Page 628 and being the northern most northwest corner of this tract;

THENCE S 89°40'38" E with the south line of the county road a distance of 2353.24' to a ½" iron pin set for the northeast corner of Tract 1 of Volume 71 Page 628 O.P.R. and being the northeast corner of this tract;

THENCE S 00°41'08" W a distance of 1983.55' to a ½" iron pin set for a corner of the tract described in Tract 2 of Volume 71 Page 628;

THENCE with the northeast line of the Tract 2 of Volume 71 Page 628 as follows:

S 61°40'54" E a distance of 56.70' to a fence corner;

S 58°05'35" E a distance of 328.97' to a fence corner;

S 64°23'04" E a distance of 397.95' to a fence corner;

S 49°43'57" E a distance of 192.38' to a fence corner;

S 79°04'41" E a distance of 791.76' to a 4" pipe fence corner found for the northeast corner of Tract 2 of Volume 71 Page 628;

THENCE S 00°42'02" W a distance of 1583.72' to a ½" iron pin set in the south line of Section 7 for the southeast corner of Tract 2 of Volume 91 Page 602 and being the southeast corner of this tract;

THENCE S 89°57'01" W with the south line of Section 7 a distance of 1320.14' to the place of beginning and containing 395.41 acres of land.

Landowner acknowledges that Lone Star Transmission, LLC, a Delaware limited liability company, ("**Lone Star**") proposes to file an Application to Amend Its Certificate of Convenience and Necessity ("**Application**") with the Public Utility Commission of Texas ("**PUCT**") to construct and operate a 345-kilovolt single circuit transmission line that will connect Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market (FM) 2945 in western Eastland County to the Deville Solar collector substation, located east of FM 880 approximately 1.10 miles north of its intersection with CR 482 in eastern Callahan County (the "**Electrical Facilities**"). Lone Star will propose the PUCT approve a route for the Electrical Facilities that is accepted by each property owner directly affected by the Electrical Facilities (the "**Consensus Route**"). Lone Star will include this Agreement with its Application to demonstrate agreement on the Consensus Route by all directly affected landowners.

Landowner and Lone Star agree the PUCT should approve the Consensus Route that will be presented for PUCT consideration in Lone Star's Application. Landowner represents it is the legal and

beneficial owner of fee simple title to the property as described above and has the right, without joinder of any other party, to enter into the Agreement. Landowner acknowledges that the new 345-kilovolt single circuit transmission line, if approved, will be installed on Landowner's Property in the corridor depicted on **Exhibit A**, attached hereto and made a part hereof (the "**Facilities Location**"). Landowner and Lone Star further acknowledge this Agreement does not convey the land rights needed by Lone Star to construct or operate the transmission line.

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Landowner hereby accepts and provides consent for Lone Star's Application and Facilities Location.



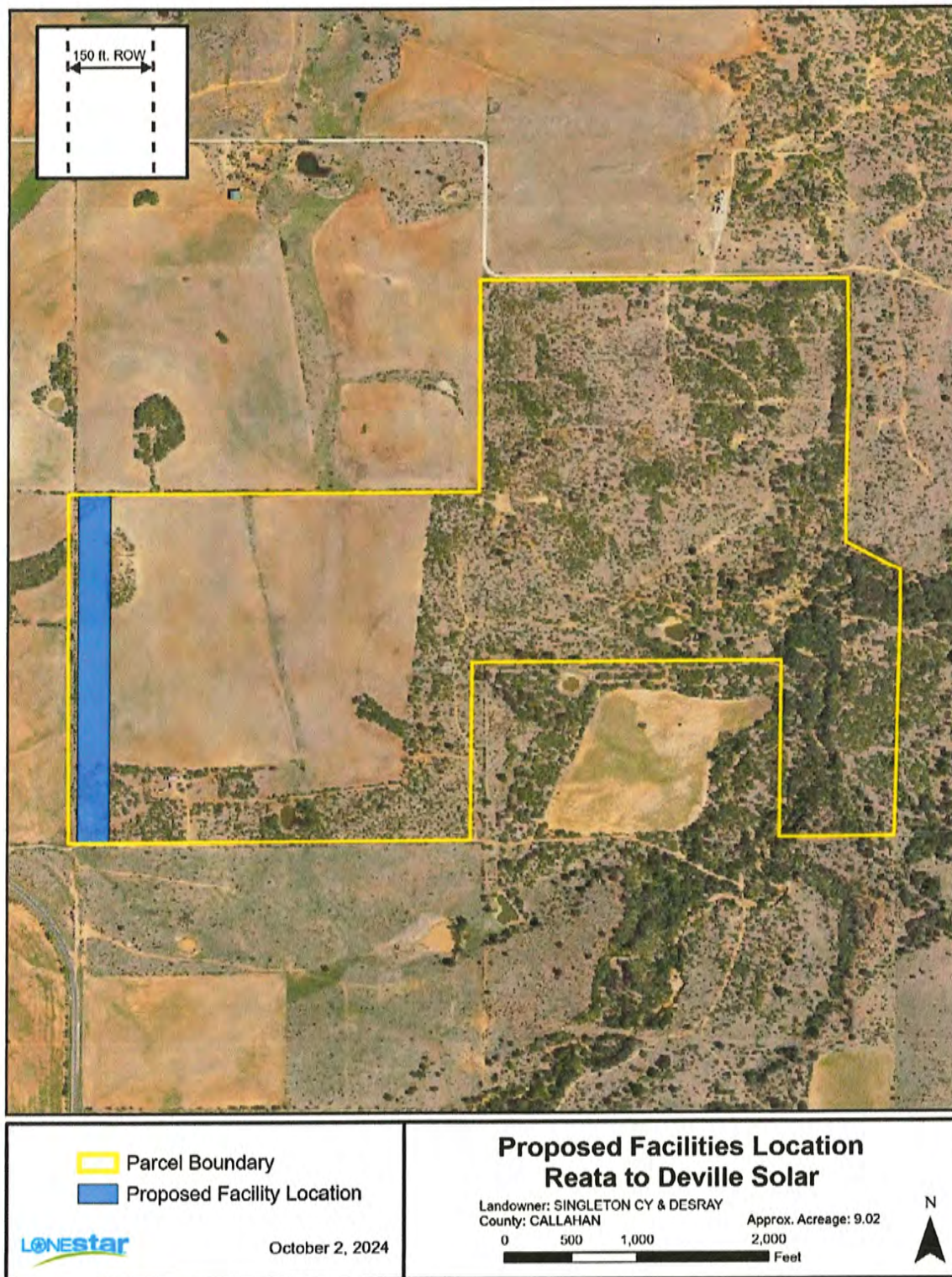
Cy Singleton



Desray Singleton

EXHIBIT A

Facilities Location



**ERCOT STANDARD GENERATION
INTERCONNECTION AGREEMENT**

Between

Deville Solar, LLC

and

Lone Star Transmission, LLC

for

Deville Solar Project

(22INR0262)

Date: August 29, 2023

TABLE OF CONTENTS

ERCOT STANDARD GENERATION INTERCONNECTION AGREEMENT.....	3
EXHIBIT ‘A’ - TERMS AND CONDITIONS OF THE ERCOT STANDARD GENERATION INTERCONNECTION AGREEMENT	5
<i>ARTICLE 1. DEFINITIONS.....</i>	<i>5</i>
<i>ARTICLE 2. TERMINATION</i>	<i>6</i>
<i>ARTICLE 3. REGULATORY FILINGS</i>	<i>7</i>
<i>ARTICLE 4. INTERCONNECTION FACILITIES ENGINEERING, PROCUREMENT, AND CONSTRUCTION</i>	<i>7</i>
<i>ARTICLE 5. FACILITIES AND EQUIPMENT</i>	<i>10</i>
<i>ARTICLE 6. OPERATION AND MAINTENANCE</i>	<i>12</i>
<i>ARTICLE 7. DATA REQUIREMENTS</i>	<i>14</i>
<i>ARTICLE 8. PERFORMANCE OBLIGATION</i>	<i>15</i>
<i>ARTICLE 9. INSURANCE</i>	<i>15</i>
<i>ARTICLE 10. MISCELLANEOUS</i>	<i>17</i>
EXHIBIT ‘B’ - TIME SCHEDULE.....	23
EXHIBIT ‘C’ - INTERCONNECTION DETAILS	25
<i>Plant Name</i>	<i>25</i>
<i>Point of Interconnection Location</i>	<i>25</i>
<i>Delivery Voltage</i>	<i>25</i>
<i>Number and Size of Generating Units</i>	<i>25</i>
<i>Type of Generating Unit</i>	<i>25</i>
<i>Metering and Telemetry Equipment.....</i>	<i>25</i>
<i>Generator Interconnection Facilities.....</i>	<i>26</i>
<i>TSP Interconnection Facilities.....</i>	<i>27</i>
<i>Communications Facilities</i>	<i>30</i>
<i>System Protection Equipment</i>	<i>30</i>
<i>Inputs to Telemetry Equipment</i>	<i>32</i>
<i>Supplemental Terms and Conditions</i>	<i>32</i>
<i>Special Operating Conditions</i>	<i>37</i>
<i>Cost Estimate Differences.....</i>	<i>37</i>
EXHIBIT ‘D’ - NOTICE AND EFT INFORMATION.....	41
EXHIBIT ‘E’ - SECURITY ARRANGEMENT DETAILS	43

ERCOT STANDARD GENERATION INTERCONNECTION AGREEMENT

This Standard Generation Interconnection Agreement is made and entered into this 29th day of August, 2023 (“Effective Date”), between **Lone Star Transmission, LLC** (“Transmission Service Provider”) and **Denville Solar Power, LLC** (“Generator”), hereinafter individually referred to as “Party,” and collectively referred to as “Parties.” In consideration of the mutual covenants and agreements herein contained, the Parties hereto agree as follows:

Transmission Service Provider is a public utility that owns and operates facilities for the transmission and distribution of electricity. Generator will own, operate, and maintain the Plant (as defined in Exhibit “A”). Pursuant to the terms and conditions of this Agreement, Transmission Service Provider shall interconnect Generator’s Plant with Transmission Service Provider’s System consistent with the Interconnection Study Agreement executed between the Parties on October 19, 2020 and pursuant to the ERCOT generation interconnection request #22INR0262.

This Agreement applies only to the Plant and the Parties’ interconnection facilities as identified in Exhibit “C”.

This Agreement shall become effective as of the Effective Date, subject to Governmental Authority approval, if required, and shall continue in full force and effect until terminated in accordance with Exhibit “A”.

This Agreement will be subject to the following, all of which are incorporated herein:

- A. The “Terms and Conditions of the ERCOT Standard Generation Interconnection Agreement” attached hereto as Exhibit “A”;
- B. The ERCOT Requirements (unless expressly stated herein, where the ERCOT Requirements are in conflict with this Agreement, the ERCOT Requirements shall prevail);
- C. The PUCT Rules (where the PUCT Rules are in conflict with this Agreement, the PUCT Rules shall prevail);
- D. The Time Schedule attached hereto as Exhibit “B”;
- E. The Interconnection Details attached hereto as Exhibit “C”;
- F. The notice requirements attached hereto as Exhibit “D”; and
- G. The Security Arrangement Details attached hereto as Exhibit “E”.

IN WITNESS WHEREOF, the Parties have executed this Agreement in duplicate originals, each of which shall constitute and be an original effective Agreement between the Parties.

Lone Star Transmission, LLC

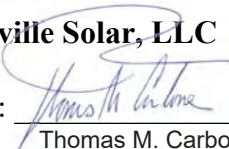
By: Daniel Madru

Title: President

Date: **Daniel
Madru**

Digitally signed by Daniel Madru
DN: cn=Daniel Madru, o=Lone
Star Transmission, ou,
email=daniel.madru@lonestar-
transmission.com, c=US
Date: 2023.08.29 15:33:37 -05'00'

Deville Solar, LLC

By: 
Thomas M. Carbone

Title: President & Assistant Treasurer

Date: August 29, 2023

Exhibit “A”
Terms and Conditions of the ERCOT Standard Generation Interconnection Agreement

ARTICLE 1. DEFINITIONS

Capitalized terms shall have the meanings as set forth below, except as otherwise specified in the Agreement:

1.1 “CCN” shall mean a Certificate of Convenience and Necessity issued by the PUCT.

1.2 “Commercial Operation” shall mean the date on which Generator declares that the construction of the Plant has been substantially completed, Trial Operation of the Plant has been completed, and the Plant is ready for dispatch.

1.3 “Control Area” shall have the meaning ascribed thereto in PUCT Rule 25.5 or its successor.

1.4 “ERCOT” shall mean the Electric Reliability Council of Texas, Inc.

1.5 “ERCOT Requirements” means the ERCOT Nodal Operating Guides, ERCOT Generation Interconnection Procedures, and ERCOT Nodal Protocols, as well as any other documents adopted by ERCOT relating to the interconnection and operation of generators and transmission systems in ERCOT as amended from time to time, and any successors thereto. Any requirement in the foregoing documents imposed upon generation entities or generation facilities shall become the responsibility of the Generator, and any requirements imposed on transmission providers or transmission facilities shall become the responsibility of the TSP.

1.6 “Facilities Study” shall have the meaning as described in PUCT Rule 25.198(d) or its successor.

1.7 “GIF” shall mean Generator’s interconnection facilities as described in Exhibit “C.”

1.8 “Good Utility Practice” shall have the meaning described in PUCT Rule 25.5 or its successor.

1.9 “Governmental Authority(ies)” shall mean any federal, state, local or municipal body having jurisdiction over a Party.

1.10 “In-Service Date” shall be the date, as reflected in Exhibit “B,” that the TIF will be ready to connect to the GIF.

1.11 “Interconnection Study Agreement” shall mean an agreement executed by the Parties relating to the performance of interconnection studies.

1.12 “Plant” shall mean the electric generation facility owned and operated by the Generator, as specified in Exhibit “C.”

1.13 “Point of Interconnection” shall mean the location(s) where the GIF connects to the TIF as negotiated and defined by the Parties and as shown on Exhibit “C” of this Agreement.

1.14 “PUCT” shall mean the Public Utility Commission of Texas.

1.15 “PUCT Rules” shall mean the Substantive Rules of the PUCT.

1.16 “Reasonable Efforts” shall mean the use of Good Utility Practice and the exercise of due diligence pursuant to PUCT Rule 25.198(e) or its successor.

1.17 “System Protection Equipment” shall mean those facilities located within the TIF and the GIF as described in Section 5.6 and Exhibit “C.”

1.18 “System Security Study” shall have the meaning as described in PUCT Rule 25.198(c) or its successor.

1.19 “TCOS” shall mean the TSP’s transmission cost of service as allowed by the applicable Governmental Authority.

1.20 “TIF” shall mean the TSP’s interconnection facilities as described in Exhibit “C” to this Agreement.

1.21 “Trial Operation” shall mean the process by which the Generator is engaged in on-site test operations and commissioning of the Plant prior to Commercial Operation.

1.22 “TSP” shall mean the Transmission Service Provider.

1.23 “TSP System” shall mean the electric transmission facilities, including the TIF, and all associated equipment and facilities owned and/or operated by the TSP.

ARTICLE 2. TERMINATION

2.1 Termination Procedures. This Agreement may be terminated as follows:

A. the Generator may terminate this Agreement after giving the TSP thirty (30) days’ advance written notice; or

B. the TSP may terminate this Agreement (subject to Governmental Authority approval, if required) on written notice to the Generator if the Generator’s Plant has not achieved Commercial Operation within one (1) year after the scheduled Commercial Operation date reflected in Exhibit “B”; or

C. either Party may terminate this Agreement in accordance with Section 10.6.

2.2 Termination Costs. If a Party elects to terminate the Agreement pursuant to Section 2.1 above, then Generator shall promptly pay, or reimburse TSP for, all costs that are the responsibility of the Generator under this Agreement and incurred, or committed to be incurred, by TSP as of the date of the notice of termination. In the event of termination by a Party, each Party shall use Reasonable Efforts to mitigate the damages and charges that it may incur as a consequence of such termination.

2.3 Disconnection. Upon termination of this Agreement, the Parties will disconnect the GIF from the TIF. The provisions of Section 2.2 and Section 2.3 shall survive termination of the Agreement.

ARTICLE 3. REGULATORY FILINGS

3.1 Filing. The TSP shall file this executed Agreement with the PUCT. Each Party will cooperate reasonably with each other in connection with such filings. Any portion of this Agreement asserted by Generator to contain competitively sensitive commercial or financial information shall be filed by the TSP identified as “confidential” under seal stating, for the TSP’s showing of good cause, that Generator asserts such information is confidential information and has requested such filing under seal. If requested by the TSP, Generator shall provide the TSP, in writing, with the Generator’s basis for asserting that the information referred to in this Section 3.1 is competitively sensitive information, and the TSP may disclose such writing to the appropriate Governmental Authority.

3.2 Regulatory Approvals. Unless exempt, the TSP shall timely request from ERCOT and any other Governmental Authority all regulatory approvals necessary for it to carry out its responsibilities under this Agreement. Such approvals shall include any CCN required for the construction of the TIF.

ARTICLE 4. INTERCONNECTION FACILITIES ENGINEERING, PROCUREMENT, AND CONSTRUCTION

4.1 Options. The Generator shall select one of the following options (subsection A or subsection B) and include the selected option in Exhibit “B” for completion of the TIF:

A. The TSP shall design, procure, and construct the TIF, using Reasonable Efforts to complete the TIF by the In-Service Date reflected in Exhibit “B.” The TSP will utilize its own resources and will contract for additional resources, as reasonably necessary, to meet the In-Service Date. Such resources shall include, as the TSP believes is reasonable, use of other contractors, other equipment suppliers, other material suppliers, additional contract personnel, additional payments to contractors for expedited work, and premiums paid to equipment and material suppliers for expedited delivery. The TSP shall not be required to undertake any initiative which is inconsistent with its standard safety practices, its material and equipment specifications, its design criteria and construction procedures, its labor agreements, applicable laws and regulations, and ERCOT Requirements. In the event the TSP reasonably expects that it will not be able to

complete the TIF by the In-Service Date, the TSP will promptly provide written notice to the Generator and will undertake Reasonable Efforts to meet the earliest date thereafter.

B. (i) The TSP shall design, procure, and construct the TIF by the In-Service Date reflected in Exhibit “B”. The Parties acknowledge that the In-Service Date was either agreed upon through good faith negotiations or designated by the Generator upon failure of the Parties to agree. In the process of negotiating the In-Service Date, Generator will request a date upon which it reasonably expects it will be ready to begin use of the TIF and upon which it reasonably expects to begin doing so. Any date designated by the Generator shall in no event be less than fifteen months from the date that all conditions of Sections 4.2 and 4.3 have been satisfied. The designated In-Service Date will be extended day for day for each day that ERCOT refuses to grant clearances to install equipment. If the TSP fails to complete the TIF by the In-Service Date reflected in Exhibit “B”, the TSP shall pay the Generator liquidated damages in accordance with this Section 4.1.B.

(ii) The Parties agree that actual damages to the Generator, in the event the TIF are not completed by the In-Service Date, may include Generator’s fixed operation and maintenance costs and lost opportunity costs. Such actual damages are uncertain and impossible to determine at this time. The Parties agree that, because of such uncertainty, any liquidated damages paid by the TSP to the Generator shall be an amount equal to $\frac{1}{2}$ of 1% of the actual cost of the TIF, per day. However, in no event shall the total liquidated damages exceed 20% of the actual cost of the TIF. The Parties agree that such liquidated damages are less than the Generator’s actual damages. The Parties agree that the foregoing payments will be made by the TSP to the Generator as just compensation for the damages caused to the Generator, which actual damages are uncertain and impossible to determine at this time, and as reasonable liquidated damages, but not as a penalty or a method to secure performance of this Agreement.

(iii) The TSP shall apply to have the full costs of the TIF included in TCOS. If the PUCT issues a final, appealable order excluding from TCOS any portion of the TIF costs, including higher contractor and vendor costs due to liquidated damage provisions in those contracts and insurance costs to cover liquidated damages, which costs may have been reasonably incurred but which the PUCT finds should not be recovered through TCOS, the Generator shall reimburse the TSP for such costs in an amount not to exceed the difference between the TSP’s estimate of the cost of the TIF under section 4.1.A and the TSP’s estimate of the cost of the TIF under Section 4.1.B as reflected in Exhibit “C”. Such costs shall be estimated using Good Utility Practice.

(iv) No liquidated damages shall be paid to Generator if the Generator is not ready to commence use of the TIF for the delivery of power to the Plant for Trial Operation or export of power from the Plant on the In-Service Date, unless the Generator would have been able to commence use of the TIF for the delivery of power to the Plant for Trial Operation or export of power from the Plant but for TSP’s delay.

(v) If the In-Service Date has been designated by the Generator upon a failure of the Parties to agree on the In-Service Date, the TSP may, at its option, require the Generator to subcontract with the TSP for all or part of the design, procurement and

construction of the TIF in accordance with the TSP's standard subcontractor agreements. In such event, the TSP shall be subject to the payment of liquidated damages to the Generator only if the In-Service Date is not met solely due to the TSP's failure to complete the portion of the TIF for which the TSP has retained responsibility. It is the intent of this subsection to give the TSP full control of the contents and quality of the TIF. To the extent the Generator acts as a subcontractor to the TSP, the following will apply: 1) The Generator shall engineer, procure equipment, and construct the TIF (or portions thereof) using Good Utility Practice and using standards and specifications provided in advance by the TSP; 2) In its engineering, procurement and construction of the TIF, the Generator shall comply with all requirements of law to which the TSP would be subject in the engineering, procurement or construction of the TIF; 3) The TSP shall review and approve the engineering design, acceptance tests of equipment, and the construction of the TIF; 4) The TSP shall have the right to approve, and accept for operation, the TIF in accordance with the standards and specifications provided in advance by the TSP, such approval and acceptance shall not be unreasonably withheld, conditioned, or delayed; 5) Should any phase of the engineering, equipment procurement, or construction of the TIF, including selection of subcontractors, not meet the standards and specifications provided by the TSP, and therefore be deemed unacceptable, then the Generator shall be obligated to remedy that portion of the TIF or selection of subcontractors that is deemed unacceptable, the TSP's approval of the Generator's selection of subcontractors will not be unreasonably withheld, conditioned or delayed; and 6) Once the TIF is accepted for operation by the TSP, then the TSP shall reimburse the Generator for the reasonable and necessary costs incurred by the Generator to complete the TIF, not to exceed the amount specified in the subcontract. Such reimbursement shall be made within thirty (30) days after receipt of the invoice, unless otherwise agreed to by the Parties.

4.2 Equipment Procurement. If responsibility for construction of the TIF is borne by the TSP, then the TSP shall commence design of the TIF and procure necessary equipment within a reasonable time after all of the following conditions are satisfied:

A. The TSP has completed and ERCOT has approved the Facilities Study pursuant to the Interconnection Study Agreement;

B. The TSP has received written authorization to proceed with design and procurement from the Generator by the date specified in Exhibit "B"; and

C. The Generator has provided security to the TSP in accordance with Section 8.3 by the dates specified in Exhibit "B".

4.3 Construction Commencement. The TSP shall commence construction of the TIF as soon as practicable after the following additional conditions are satisfied:

A. Approval of the appropriate Governmental Authority has been obtained for any facilities requiring regulatory approval;

B. Necessary real property rights, if any, have been obtained;

C. The TSP has received written authorization to proceed with construction from the Generator by the date specified in Exhibit “B”; and

D. The Generator has provided security to the TSP in accordance with Section 8.3 by the dates specified in Exhibit “B.”

4.4 Work Progress. The Parties will keep each other advised periodically as to the progress of their respective design, procurement, and construction efforts. If, at any time, the Generator becomes aware that the completion of the TIF will not be required until after the specified In-Service Date, the Generator will promptly provide written notice to the TSP of a new, later In-Service Date.

4.5 Conditions Precedent Delay. To the extent this Agreement incorporates a specified In-Service Date and the Generator fails to satisfy conditions precedent under Sections 4.2 and 4.3, the Parties agree to negotiate in good faith to establish a new schedule for completion of the TIF, and the In-Service Date shall be extended accordingly.

ARTICLE 5. FACILITIES AND EQUIPMENT

5.1 Information Exchange. The Parties shall exchange information and mutually agree upon the design and compatibility of the Parties’ interconnection facilities. The Parties shall work diligently and in good faith to make any necessary design changes to ensure compatibility of the GIF to the TSP System.

5.2 GIF Construction. Generator agrees to cause the GIF to be designed and constructed in accordance with Good Utility Practice, ERCOT Requirements, and the National Electrical Safety Code in effect at the time of construction. Within one-hundred and twenty (120) days after Commercial Operation, unless the Parties agree on another mutually acceptable deadline, the Generator shall deliver to the TSP the following “as-built” drawings, information, and documents for the GIF: a one-line diagram, a site plan showing the Plant and the GIF, plan and elevation drawings showing the layout of the GIF, a relay functional diagram, relaying AC and DC schematic wiring diagrams, and relay settings for all facilities associated with the Generator’s main-power transformers, the facilities connecting the Generator to the main power transformers and the GIF, and the impedances (determined by factory tests) for the associated main power transformers and the generators and, if applicable, the impedance of any transmission voltage lines that are part of the GIF.

5.3 TIF Construction. The TSP agrees to cause the TIF to be designed and constructed in accordance with Good Utility Practice, ERCOT Requirements, and the National Electrical Safety Code in effect at the time of construction.

5.4 Equipment Changes. For facilities not described in Exhibit “C,” if either Party makes equipment changes to the Plant, the GIF, the TIF, or the TSP System which it reasonably believes will affect the operation or performance of the other Party’s interconnection facilities, such Party agrees to notify the other Party, in writing, of such

changes. Such changes shall be made in accordance with ERCOT Requirements and coordinated between the Parties.

5.5 Metering, Telemetry and Communications Requirements.

A. Metering and telemetry of data will be accomplished in accordance with ERCOT Requirements. The specific metering, telemetry and communications equipment to be installed and data to be telemetered are described in Exhibit “C.”

B. At the Point of Interconnection, the metering and telemetry equipment shall be owned by the TSP. The TSP to provide the Generator with metering and/or telemetry values via RTU to RTU or direct link communication over OPGW fiber.

C. A minimum set of inputs to the telemetry equipment are specified in Exhibit “C.” Additional sets of inputs may be subsequently mutually agreed upon.

D. The TSP will notify the Generator at least five (5) business days in advance of any planned maintenance, inspection, testing, or calibration of the metering equipment, unless otherwise agreed to in writing. The Generator, or its designated representative, shall have the right to be present for these activities and to receive copies of any documents related to the procedures and results.

E. Prior to the connection of the GIF to the TIF, acceptance tests will be performed by the owning Party to ensure the proper functioning of all metering, telemetry, and communications equipment associated with the Point of Interconnection and both Parties’ interconnection facilities, and to verify the accuracy of data being received by the TSP, ERCOT, and the Generator. All acceptance tests will be performed consistent with ERCOT Requirements.

F. The TSP shall, in accordance with Good Utility Practice and ERCOT Requirements, specify communications facilities, including those necessary to transmit data from the metering equipment to the TSP, that are necessary for the effective operation of the Plant and the GIF with the TSP System. Such communication facilities shall be included in Exhibit “C.” The Generator shall make arrangements to procure and shall be responsible for the costs of such facilities.

G. Any changes to the meters, telemetry equipment, voltage transformers, current transformers, and associated panels, hardware, conduit, and cable, that will affect the data being received by a Party must be mutually agreed to by the Parties.

H. Each Party will promptly advise the other Party if it detects or is otherwise aware of any metering, telemetry, or communications equipment errors or malfunctions that require the attention and/or correction by the other Party. The Party owning such equipment shall correct such error or malfunction as soon as reasonably practical in accordance with ERCOT Requirements.

5.6 System Protection and Other Controls Requirements.

A. Each Party's facilities shall be designed to isolate any fault, or to correct or isolate any abnormality, that would negatively affect the other Party's system or other entities connected to the TSP System.

B. The Generator shall be responsible for protection of its facilities and the Plant consistent with ERCOT Requirements.

C. Each Party's protective relay design shall incorporate the necessary test switches to perform the tests required in Section 5.6.F. The required test switches will be placed such that they allow operation of lockout relays while preventing breaker failure schemes from operating and causing unnecessary breaker operations and tripping the Generator's units.

D. Recording equipment shall be installed to analyze all system disturbances in accordance with ERCOT Requirements.

E. Each Party will test, operate, and maintain System Protection Equipment in accordance with ERCOT Requirements. Each Party will provide reasonable notice to the other Party of any testing of its System Protection Equipment allowing such other Party the opportunity to have representatives present during testing of its System Protection Equipment.

F. Prior to the In-Service Date, and again prior to Commercial Operation, each Party or its agent shall perform a complete calibration test and functional trip test of the System Protection Equipment. At intervals suggested by Good Utility Practice or at intervals described in the ERCOT Requirements (if so defined therein), and following any apparent malfunction of the System Protection Equipment, each Party shall perform both calibration and functional trip tests of its System Protection Equipment. These tests do not require the tripping of any in-service generation unit. These tests do, however, require that all protective relays and lockout contacts be activated.

5.7 No Annexation. Any and all equipment placed on the premises of a Party shall be and remain the property of the Party providing such equipment regardless of the mode and manner of annexation or attachment to real property, unless otherwise mutually agreed by the Parties.

ARTICLE 6. OPERATION AND MAINTENANCE

6.1 Operation and Maintenance of Interconnection Facilities. The Parties agree to operate and maintain their systems in accordance with Good Utility Practice, National Electrical Safety Code, the ERCOT Requirements, PUCT Rules, and all applicable laws and regulations. In addition, Generator agrees to operate and maintain its system in accordance with the National Electrical Safety Code. Subject to any necessary ERCOT approval, each Party shall provide necessary equipment outages to allow the other Party to perform periodic maintenance, repair, or replacement of its facilities. Such outages shall be scheduled at mutually agreeable times, unless conditions exist which a Party believes, in accordance with Good Utility Practice, may endanger persons or property. No changes will be made in the normal operation of the Point of Interconnection without

the mutual agreement of the Parties, except as otherwise provided herein. All testing of the Plant that affects the operation of the Point of Interconnection shall be coordinated between the TSP, ERCOT, and the Generator and will be conducted in accordance with ERCOT Requirements.

6.2 Control Area. The Point of Interconnection shall be located within the ERCOT Control Area. The Control Area within ERCOT is a single Control Area, with ERCOT assuming authority as the Control Area operator in accordance with ERCOT Requirements.

6.3 Land Rights and Easements. Terms and conditions addressing the rights of the TSP and the Generator regarding any facilities located on the other Party's property shall be addressed in a separate, duly executed, and recorded easement agreement between the Parties. Prior to Commercial Operation, the Parties will mutually agree upon procedures to govern access to each other's property as necessary for the Parties to fulfill their obligations hereunder.

6.4 Service Interruption. The Parties recognize that the interruption of service provisions of the PUCT Rules give TSP the right to disconnect the TSP System from the Plant under the conditions specified therein. The Generator will promptly disconnect the Plant from the TSP System when required by and in accordance with the PUCT Rules and ERCOT Requirements.

6.5 Switching and Clearance.

A. Any switching or clearances needed on the TIF or the GIF will be done in accordance with ERCOT Requirements.

B. Any switching and clearance procedure necessary to comply with Good Utility Practice or ERCOT Requirements that may have specific application to the Plant shall be addressed in Exhibit "C."

6.6 Start-Up and Synchronization. Consistent with ERCOT Requirements and the Parties' mutually acceptable procedure, the Generator is responsible for the proper synchronization of the Plant to the TSP System.

6.7 Routine Operational Communications. On a timely basis, the Parties shall exchange all information necessary to comply with ERCOT Requirements.

6.8 Blackstart Operations. If the Plant is capable of blackstart operations, Generator will coordinate individual Plant start-up procedures consistent with ERCOT Requirements. Any blackstart operations shall be conducted in accordance with the blackstart criteria included in the ERCOT Requirements and the TSP blackstart plan on file with ERCOT. Notwithstanding this section, the Generator is not required to have blackstart capability by virtue of this Agreement. If the Generator will have blackstart capability, then Generator shall provide and maintain an emergency communication system that will interface with the TSP during a blackstart condition.

6.9 Power System Stabilizers. The Generator shall procure, install, maintain, and operate power system stabilizers if required to meet ERCOT Requirements and as described in Exhibit “C.”

ARTICLE 7. DATA REQUIREMENTS

7.1 Data Acquisition. The acquisition of data to realistically simulate the electrical behavior of system components is a fundamental requirement for the development of a reliable interconnected transmission system. Therefore, the TSP and the Generator shall be required to submit specific information regarding the electrical characteristics of their respective facilities to each other as described below in accordance with ERCOT Requirements.

7.2 Initial Data Submission by TSP. The initial data submission by the TSP shall occur prior to Trial Operation and shall include transmission system data necessary to allow the Generator to select equipment and meet any system protection and stability requirements.

7.3 Initial Data Submission by Generator. The initial data submission by the Generator, including manufacturer data, shall occur no later than ninety (90) days prior to the Trial Operation and shall include a completed copy of the following forms contained in the ERCOT Generation Interconnection Procedure: (1) Plant Description/Data; and (2) Generation Stability Data. It shall also include any additional data provided to ERCOT for the System Security Study. Data in the initial submissions shall be the most current Plant design or expected performance data. Data submitted for stability models shall be compatible with ERCOT standard models. If there is no compatible model, the Generator will work with an ERCOT-designated consultant to develop and supply a standard model and associated data.

7.4 Data Supplementation. Prior to Commercial Operation, the Parties shall supplement their initial data submissions with any and all “as-built” Plant data or “as-tested” performance data which differs from the initial submissions or, alternatively, written confirmation that no such differences exist. Subsequent to Commercial Operation, the Generator shall provide the TSP any data changes due to equipment replacement, repair, or adjustment. The TSP shall provide the Generator any data changes due to equipment replacement, repair, or adjustment in the directly connected substation or any adjacent TSP-owned substation that may affect the GIF equipment ratings, protection or operating requirements. The Parties shall provide such data no later than thirty (30) days after the date of the actual change in equipment characteristics. Also, the Parties shall provide to each other a copy of any additional data later required by ERCOT concerning these facilities.

7.5 Data Exchange. Each Party shall furnish to the other Party real-time and forecasted data as required by ERCOT Requirements. The Parties will cooperate with one another in the analysis of disturbances to either the Plant or the TSP’s System by gathering and providing access to any information relating to any disturbance, including

information from oscillography, protective relay targets, breaker operations, and sequence of events records.

ARTICLE 8. PERFORMANCE OBLIGATION

8.1 Generator's Cost Responsibility. The Generator will acquire, construct, operate, test, maintain, and own the Plant and the GIF at its sole expense. In addition, the Generator may be required to make a contribution in aid of construction in the amount set out in and for the facilities described in Exhibit "C," if any, in accordance with PUCT Rules.

8.2 TSP's Cost Responsibility. The TSP will acquire, own, operate, test, and maintain the TIF at its sole expense, subject to the provisions of Section 4.1.B and the contribution in aid of construction provisions of Section 8.1 of this Agreement.

8.3 Financial Security Arrangements. The TSP may require the Generator to pay a reasonable deposit or provide another means of security, to cover the costs of planning, licensing, procuring equipment and materials, and constructing the TIF. The required security arrangements are specified in Exhibit "E." Within five (5) business days after TSP has received notice from the Generator that the Plant has achieved Commercial Operation, and TSP has verified the same, the TSP shall return the deposit(s) or security to the Generator. However, the TSP may retain an amount to cover the incremental difference between the TSP's actual out of pocket costs associated with the choice of Section 4.1.B over Section 4.1.A, pending a final PUCT Order as contemplated in Section 4.1.B(iii). If the Plant has not achieved Commercial Operation within one (1) year after the scheduled Commercial Operation date identified in Exhibit "B" or if the Generator terminates this Agreement in accordance with Section 2.1 and the TIF are not required, the TSP may, subject to the provisions of Section 2.2, retain as much of the deposit or security as is required to cover the costs it incurred in planning, licensing, procuring equipment and materials, and constructing the TIF. If a cash deposit is made pursuant to Exhibit "E," any repayment of such cash deposit shall include interest at a rate applicable to customer deposits as established from time to time by the PUCT or other Governmental Authority.

ARTICLE 9. INSURANCE

9.1 Each Party shall, at its own expense, maintain in force throughout the period of this Agreement, and until released by the other Party the following minimum insurance coverages, with insurers authorized to do business in Texas:

A. Employers Liability and Worker's Compensation Insurance providing statutory benefits in accordance with the laws and regulations of the State of Texas. The minimum limits for the Employer's Liability insurance shall be One Million Dollars (\$1,000,000) each accident bodily injury by accident, One Million Dollars (\$1,000,000) each employee bodily injury by disease, and One Million Dollars (\$1,000,000) policy limit bodily injury by disease.

B. Commercial General Liability Insurance including premises and operations, personal injury, broad form property damage, broad form blanket contractual liability coverage (including coverage for the contractual indemnification) products and completed operations coverage, coverage for explosion, collapse and underground hazards, independent contractors coverage, coverage for pollution to the extent normally available and punitive damages to the extent normally available and a cross liability endorsement, with minimum limits of One Million Dollars (\$1,000,000) per occurrence/One Million Dollars (\$1,000,000) aggregate combined single limit for personal injury, bodily injury, including death and property damage.

C. Comprehensive Automobile Liability Insurance for coverage of owned, non-owned, and hired vehicles, trailers, or semi-trailers designed for travel on public roads, with a minimum combined single limit of One Million Dollars (\$1,000,000) per occurrence for bodily injury, including death, and property damage.

D. Excess Public Liability Insurance over and above the Employer's Liability, Commercial General Liability, and Comprehensive Automobile Liability Insurance coverage, with a minimum combined single limit of Twenty Million Dollars (\$20,000,000) per occurrence/Twenty Million Dollars (\$20,000,000) aggregate.

E. The Commercial General Liability Insurance, Comprehensive Automobile Liability Insurance, and Excess Public Liability Insurance policies shall name the other Party, its parent, associated and affiliated companies, and their respective directors, officers, agents, servants, and employees ("Other Party Group") as additional insured. All policies shall contain provisions whereby the insurers waive all rights of subrogation in accordance with the provisions of this Agreement against the Other Party Group. Each Party shall provide thirty (30) days' advance written notice to Other Party Group prior to cancellation or any material change in coverage or condition.

F. The Commercial General Liability Insurance, Comprehensive Automobile Liability Insurance, and Excess Public Liability Insurance policies shall contain provisions that specify that the policies are primary and shall apply to such extent without consideration for other policies separately carried and shall state that each insured is provided coverage as though a separate policy had been issued to each, except the insurer's liability shall not be increased beyond the amount for which the insurer would have been liable had only one insured been covered. Each Party shall be responsible for its respective deductibles or retentions.

G. The Commercial General Liability Insurance, Comprehensive Automobile Liability Insurance, and Excess Public Liability Insurance policies, if written on a Claims First Made basis, shall be maintained in full force and effect for two (2) years after termination of this Agreement, which coverage may be in the form of tail coverage or extended reporting period coverage if agreed by the Parties.

H. The requirements contained herein as to the types and limits of all insurance to be maintained by the Parties are not intended to and shall not in any manner,

limit or qualify the liabilities and obligations assumed by the Parties under this Agreement.

I. Within ten (10) days following execution of this Agreement, and as soon as practicable after the end of each fiscal year or at the renewal of the insurance policy and in any event within ninety (90) days thereafter, each Party shall provide certification of all insurance required in this Agreement, executed by each insurer or by an authorized representative of each insurer.

J. Notwithstanding the foregoing, each Party may self-insure to the extent it maintains a self-insurance program; provided that, such Party's senior secured debt is rated at investment grade, or better, by Standard & Poor's. For any period of time that a Party's senior secured debt is unrated by Standard & Poor's or is rated at less than investment grade by Standard & Poor's, such Party shall comply with the insurance requirements applicable to it under Sections 9.1.A through 9.1.I. In the event that a Party is permitted to self-insure pursuant to this Section 9.1.J, it shall not be required to comply with the insurance requirements applicable to it under Sections 9.1.A through 9.1.I.

K. The Parties agree to report to each other in writing as soon as practical all accidents or occurrences resulting in injuries to any person, including death, and any property damage arising out of this Agreement.

ARTICLE 10. MISCELLANEOUS

10.1 Governing Law and Applicable Tariffs.

A. This Agreement for all purposes shall be construed in accordance with and governed by the laws of the State of Texas, excluding conflicts of law principles that would refer to the laws of another jurisdiction. The Parties submit to the jurisdiction of the federal and state courts in the State of Texas.

B. This Agreement is subject to all valid, applicable rules, regulations and orders of, and tariffs approved by, duly constituted Governmental Authorities.

C. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, rules, or regulations of a Governmental Authority.

D. Representations and Restrictions on Certain Foreign Ownership and Affiliation. Generator represents and warrants that during the Term (1) Generator shall comply with the prohibitions pursuant to, including the ownership, control, or headquarters criteria set forth in, the Lone Star Infrastructure Protection Act, Chapter 113 of the Texas Business & Commerce Code, as added by the Act of June 18, 2021, 87th Leg., R.S., Ch. 975 (S.B. 2116) (as may be amended from time to time, the "LSIPA"), and (2) by entering into this Agreement (and any other agreement by and between TSP and Generator related to the interconnection service that is the subject matter of this Agreement), TSP will not be in violation of the LSIPA as a result of ownership, control, or headquarter locations of Generator or any of its Affiliates. By entering into this Agreement, Generator acknowledges that TSP is relying on the foregoing representations

and warranties in order to ensure TSP's compliance with the LSIPA, Generator agrees to fully defend, indemnify, and hold harmless TSP from and against any and all demands, claims, actions, causes of action, proceedings, fines and penalties, costs and expenses (including reasonable attorney's fees and expenses) arising from or relating to any breach of the foregoing representations and warranties.

10.2 No Other Services. This Agreement is applicable only to the interconnection of the Plant to the TSP System at the Point of Interconnection and does not obligate either Party to provide, or entitle either Party to receive, any service not expressly provided for herein. Each Party is responsible for making the arrangements necessary for it to receive any other service that it may desire from the other Party or any third party. This Agreement does not address the sale or purchase of any electric energy, transmission service, or ancillary services by either Party, either before or after Commercial Operation.

10.3 Entire Agreement. This Agreement, including all Exhibits, Attachments, and Schedules attached hereto, constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement. Notwithstanding the other provisions of this Section, the Interconnection Study Agreement, if any, is unaffected by this Agreement.

10.4 Notices. Except as otherwise provided in Exhibit "D," any formal notice, demand or request provided for in this Agreement shall be in writing and shall be deemed properly served, given or made if delivered in person, or sent by either registered or certified mail, postage prepaid, overnight mail or fax to the address or number identified on Exhibit "D" attached to this Agreement. Either Party may change the notice information on Exhibit "D" by giving five (5) business days' written notice prior to the effective date of the change.

10.5 Force Majeure.

A. The term "Force Majeure" as used herein shall mean any cause beyond the reasonable control of the Party claiming Force Majeure, and without the fault or negligence of such Party, which materially prevents or impairs the performance of such Party's obligations hereunder, including but not limited to, storm, flood, lightning, earthquake, fire, explosion, failure or imminent threat of failure of facilities, civil disturbance, strike or other labor disturbance, sabotage, war, national emergency, or restraint by any Governmental Authority.

B. Neither Party shall be considered to be in Default (as hereinafter defined) with respect to any obligation hereunder (including obligations under Article 4), other than the obligation to pay money when due, if prevented from fulfilling such obligation by Force Majeure. A Party unable to fulfill any obligation hereunder (other than an obligation to pay money when due) by reason of Force Majeure shall give notice and the

full particulars of such Force Majeure to the other Party in writing or by telephone as soon as reasonably possible after the occurrence of the cause relied upon. Telephone notices given pursuant to this Section shall be confirmed in writing as soon as reasonably possible and shall specifically state full particulars of the Force Majeure, the time and date when the Force Majeure occurred, and when the Force Majeure is reasonably expected to cease. The Party affected shall exercise due diligence to remove such disability with reasonable dispatch, but shall not be required to accede or agree to any provision not satisfactory to it in order to settle and terminate a strike or other labor disturbance.

10.6 Default

A. The term “Default” shall mean the failure of either Party to perform any obligation in the time or manner provided in this Agreement. No Default shall exist where such failure to discharge an obligation (other than the payment of money) is the result of Force Majeure as defined in this Agreement or the result of an act or omission of the other Party. Upon a Default, the non-defaulting Party shall give written notice of such Default to the defaulting Party. Except as provided in Section 10.6.B, the defaulting Party shall have thirty (30) days from receipt of the Default notice within which to cure such Default; provided however, if such Default is not capable of cure within thirty (30) days, the defaulting Party shall commence such cure within thirty (30) days after notice and continuously and diligently complete such cure within ninety (90) days from receipt of the Default notice; and, if cured within such time, the Default specified in such notice shall cease to exist.

B. If a Default is not cured as provided in this Section, or if a Default is not capable of being cured within the period provided for herein, the non-defaulting Party shall have the right to terminate this Agreement by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due hereunder, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this Section will survive termination of this Agreement.

10.7 Intrastate Operation. The operation of the Plant by Generator shall not cause there to be a synchronous or an asynchronous interconnection between ERCOT and any other transmission facilities operated outside of ERCOT unless ordered by the Federal Energy Regulatory Commission under Section 210 of the Federal Power Act. The Parties recognize and agree that any such interconnection will constitute an adverse condition giving the TSP the right to immediately disconnect the TIF from the GIF, until such interconnection has been disconnected. The Generator will not be prohibited by this Section from interconnecting the Plant with facilities operated by the Comisión Federal de Electricidad of Mexico, unless such interconnection would cause ERCOT utilities that are not “public utilities” under the Federal Power Act to become subject to the plenary jurisdiction of the Federal Energy Regulatory Commission.

10.8 No Third Party Beneficiaries. This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons,

corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and, where permitted, their assigns.

10.9 No Waiver. The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of obligations, rights, or duties imposed upon the Parties. Termination or Default of this Agreement for any reason by the Generator shall not constitute a waiver of the Generator's legal rights to obtain an interconnection from the TSP under a new interconnection agreement.

10.10 Headings. The descriptive headings of the various articles and sections of this Agreement have been inserted for convenience of reference only and are of no significance in the interpretation or construction of this Agreement.

10.11 Multiple Counterparts. This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

10.12 Amendment. This Agreement may be amended only upon mutual agreement of the Parties, which amendment will not be effective until reduced to writing and executed by the Parties.

10.13 No Partnership. This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or liability upon either Party. Neither Party shall have any right, power, or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

10.14 Further Assurances. The Parties agree to (i) furnish upon request to each other such further information, (ii) execute and deliver to each other such other documents, and (iii) do such other acts and things, all as the other Party may reasonably request for the purpose of carrying out the intent of this Agreement and the documents referred to in this Agreement. Without limiting the generality of the foregoing, the TSP shall, at the Generator's expense, when reasonably requested to do so by the Generator at any time after the execution of this Agreement, prepare and provide such information in connection with this Agreement (including, if available, resolutions, certificates, opinions of counsel, or other documents relating to the TSP's corporate authorization to enter into this Agreement and to undertake the obligations set out herein) as may be reasonably required by any potential lender to the Generator under a proposed loan agreement. The TSP will use commercially reasonable efforts to obtain any opinion of counsel reasonably requested by Generator, but the TSP shall not be in Default of any obligation under this Agreement if the TSP is unable to provide an opinion of counsel that will satisfy any potential lender to the Generator. Specifically, upon the written request of one Party, the other Party shall provide the requesting Party with a letter stating whether or not, up to

the date of the letter, that Party is satisfied with the performance of the requesting Party under this Agreement.

10.15 Indemnification and Liability. The indemnification and liability provisions of the PUCT Rule 25.202(b)(2) or its successor shall govern this Agreement.

10.16 Consequential Damages. OTHER THAN THE LIQUIDATED DAMAGES HERETOFORE DESCRIBED, IN NO EVENT SHALL EITHER PARTY BE LIABLE UNDER ANY PROVISION OF THIS AGREEMENT FOR ANY LOSSES, DAMAGES, COSTS OR EXPENSES FOR ANY SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR PUNITIVE DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF PROFIT OR REVENUE, LOSS OF THE USE OF EQUIPMENT, COST OF CAPITAL, COST OF TEMPORARY EQUIPMENT OR SERVICES, WHETHER BASED IN WHOLE OR IN PART IN CONTRACT, IN TORT, INCLUDING NEGLIGENCE, STRICT LIABILITY, OR ANY OTHER THEORY OF LIABILITY; PROVIDED, HOWEVER, THAT DAMAGES FOR WHICH A PARTY MAY BE LIABLE TO THE OTHER PARTY UNDER ANOTHER AGREEMENT WILL NOT BE CONSIDERED TO BE SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES HEREUNDER.

10.17 Assignment. This Agreement may be assigned by either Party only with the written consent of the other; provided, that either Party may assign this Agreement without the consent of the other Party to any affiliate of the assigning Party with an equal or greater credit quality and with the legal authority and operational ability to satisfy the obligations of the assigning Party under this Agreement; and provided further that the Generator shall have the right to assign this Agreement, without the consent of the TSP, for collateral security purposes to aid in providing financing for the Plant; provided, that the Generator will require any secured party, trustee, or mortgagee to notify the TSP of any such assignment. Any financing arrangement entered into by the Generator pursuant to this Section will provide that prior to or upon the exercise of the secured party's, trustee's, or mortgagee's assignment rights pursuant to said arrangement, the secured creditor, the trustee, or mortgagee will notify the TSP of the date and particulars of any such exercise of assignment right(s). Any attempted assignment that violates this Section is void and ineffective. Any assignment under this Agreement shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof. Where required, consent to assignment will not be unreasonably withheld, conditioned, or delayed.

10.18 Severability. If any provision in this Agreement is finally determined to be invalid, void, or unenforceable by any court having jurisdiction, such determination shall not invalidate, void, or make unenforceable any other provision, agreement, or covenant of this Agreement; provided that if the Generator (or any third party, but only if such third party is not acting at the direction of the TSP) seeks and obtains such a final determination with respect to any provision of Section 4.1.B, then none of the provisions of Section 4.1.B. shall thereafter have any force or effect and the Parties' rights and obligations shall be governed solely by Section 4.1.A.

10.19 Comparability. The Parties will comply with all applicable comparability and code of conduct laws, rules, and regulations, as amended from time to time.

10.20 Invoicing and Payment. Unless the Parties otherwise agree (in a manner permitted by applicable PUCT Rules and as specified in writing in an Exhibit “E” attached hereto), invoicing and payment rights and obligations under this Agreement shall be governed by PUCT Rules or applicable Governmental Authority. Invoices shall be rendered to the paying Party at the address specified on, and payments shall be made in accordance with the requirements of, Exhibit “D.”

10.21 Confidentiality.

A. Subject to the exception in Section 10.21.B, any information that a Party claims is competitively sensitive, commercial, or financial information under this Agreement (“Confidential Information”) shall not be disclosed by the other Party to any person not employed or retained by the other Party, except to the extent disclosure is: (i) required by law; (ii) reasonably deemed by the disclosing Party to be required to be disclosed in connection with a dispute between or among the Parties, or the defense of litigation or dispute; (iii) otherwise permitted by consent of the other Party, such consent not to be unreasonably withheld; or (iv) necessary to fulfill its obligations under this Agreement or as a transmission service provider or a Control Area operator including disclosing the Confidential Information to ERCOT. The Party asserting confidentiality shall notify the other Party in writing of the information it claims is confidential. Prior to any disclosures of the other Party’s Confidential Information under this subsection, or if any third party or Governmental Authority makes any request or demand for any of the information described in this subsection, the disclosing Party agrees to promptly notify the other Party in writing and agrees to assert confidentiality and cooperate with the other Party in seeking to protect the Confidential Information from public disclosure by confidentiality agreement, protective order or other reasonable measures.

B. This provision shall not apply to any information that was or is hereafter in the public domain (except as a result of a breach of this provision).

**Exhibit “B”
Time Schedule**

- 1) Interconnection Option chosen by Generator (check one):
X Section 4.1.A. or ____ Section 4.1.B

A. If Section 4.1.B is chosen by Generator, the In-Service Date(s) was determined by (check one): (1) ____ good faith negotiations, or (2) ____ designated by Generator upon failure to agree.

- 2) August 31, 2023 is the date (“NTP Need Date”) by which Generator must provide a written Notice to Proceed with design, procurement, and construction of the TIF and provide security, as specified in Exhibit “A”, Section 4.2 and 4.3, so that TSP may maintain schedule to meet the In-Service Date identified below. The NTP date shall be the date Generator provides written Notice to Proceed to TSP:

A. If Generator does not provide a written Notice to Proceed to TSP by the above NTP Need Date, the designated TIF In-Service Date, Scheduled Generation Trial Operation Date, and Scheduled Generation Commercial Operation Date, identified below, will each be extended day for each day after the NTP Need Date that the Notice to Proceed is delayed.

B. If Generator does not provide a written Notice to Proceed and provide security in accordance with Exhibit “E” to TSP by eighteen (18) months after the NTP Need Date (“NTP Deadline”), such non-provision of the Notice to Proceed shall constitute a Default, in accordance with Section 10.6.A of Exhibit “A”, by the Generator and written notice of Default shall be deemed to have been given by TSP to Generator on the NTP Deadline. If such Default is not cured in accordance with Section 10.6 of Exhibit “A”, then TSP may terminate this Agreement in accordance with the provisions of Section 10.6.B of Exhibit “A”.

Generator Main Transformer Tap Position Communication to TSP Date: (If Generator Main Transformer(s) is equipped with a no-load tap changer)
August 15, 2025

TIF In-Service Date (Backfeed): The later of:

- a) October 31, 2025; or
- b) Twenty-four (24) months after the NTP Date.

Scheduled Generation Trial Operation Date (Synchronization): The later of:

- a) November 15, 2025; or
- b) Two (2) weeks after the TIF In-Service Date.

Scheduled Generation Commercial Operation Date (COD): The later of:

- a) February 28, 2026; or
- b) Two (2) months after the TIF In-Service Date.

Nothing in the definitions of the dates above shall preclude either Party from taking measures or actions that allow the actual Generation Trial Operation Date or the actual Generation Commercial Operation Date to be earlier than the scheduled dates above.

- 3) Due to the nature of the subject of this Agreement, the Parties may mutually agree to change the dates and times of this Exhibit B.

Exhibit “C” Interconnection Details

1. Name: Deville Solar
2. Point of Interconnection (POI) Location: The POI between the GIF and TIF will be located at a new Generator-owned dead-end structure at the end of the Generator’s new 345 kV line located adjacent to TSP’s Reata Station (shown on Attachment “C-1” and “C-2”). The POI shall be the physical point where the TSP TIF connects to the GIF. This point is more specifically defined as being located at the 4-hole pad terminals on the insulator hardware at the dead-end structure where the Generator’s 345 kV line connects to Generator owned dead-end interconnect structure.
3. Delivery Voltage: 345 kV
4. Number and Size of Generating Units: The total capacity of Deville Solar (22INR0262) is 425 MW composed of 866,683 Runergy HY-DH144N8-565 Wp panels.
5. Type of Generating Unit: Runergy HY-DH144N8-565 Runergy Wp panel; Sungrow SG4400UD 4400 kWac inverter
6. The Parties will amend this Exhibit “C” as necessary to reflect any changes Generator makes to the manufacturer, model, or type of generating units.
7. Metering and Telemetry Equipment: Metering (voltage, location, losses adjustment due to metering location and other), telemetry, and communications requirements shall be as follows:
 - 7.1 TSP shall, in accordance with ERCOT Requirements and Good Utility Practice, install, own, operate, inspect, test, calibrate, and maintain 345 kV metering accuracy potential and current transformer and associated metering and telemetry equipment (including communications and an RTU) located in the TIF. A one-line diagram showing TSP’s ERCOT-polled settlement (“EPS”) metering location is attached to this Exhibit “C” as **Attachment C-2**. If requested by Generator, and if available from the TSP RTU equipment, TSP will make Primary EPS metering data available to Generator via a communication link at Generator’s expense. If such metering data are not available from TSP RTU equipment, they may be available by alternate means at Generator’s expense. Such data, if provided to Generator, will be for Generator’s informational purposes only. Generator shall not rely on such data, as the primary source, for the metering data addressed in Section 6.2 of this Exhibit “C” below, or for any other scheduling or operational purposes. TSP makes no guarantee of

the quality or availability of such data. The provision of Section 5.5(G) of Exhibit “A” shall not apply to TSP’s RTU.

- 7.2 Generator shall, in accordance with Good Utility Practice, install, own, operate, inspect, test, calibrate, and maintain the necessary metering potential and current transformers and associated metering and telemetry equipment in the GIF and/or Plant to satisfy the ERCOT Requirements for the provision of metering data by Generator's “Qualified Scheduling Entity”.
- 7.3 Generator shall, in accordance with ERCOT Requirements and Good Utility Practice, install, own, operate, inspect, test, calibrate, and maintain the metering and telemetry equipment (including an RTU or other equipment acceptable to TSP) to supply all electrical parameters of the Plant and GIF, as specified in Section 11 to this Exhibit “C”, to TSP at a location designated by TSP.
- 7.4 Prior to the In-Service Date, acceptance tests will be performed by TSP and Generator to ensure the proper functioning of all metering, telemetry, and communications equipment, and to verify the accuracy of data being received by TSP.
- 7.5 Following the Commercial Operation date, each Party shall test its metering, telemetry, and communications equipment in accordance with ERCOT Requirements and Good Utility Practice. Each Party shall give the other Party reasonable advance notice of such testing. Each Party shall have the right to observe testing performed by the other Party.
- 7.6 Any changes to Generator’s metering, telemetry, and communication equipment, including meters, voltage transformers, current transformers, and associated RTU, panels, hardware, conduit and cable, that will affect the data being received by TSP hereunder must be mutually agreed to by the Parties.
- 7.7 Each Party will promptly advise the other Party if it detects or otherwise learns of any metering, telemetry, or communications equipment or related situation that requires attention and/or correction by the other Party.

8. Generator Interconnection Facilities:

Generator will be responsible for the construction and ownership of the below:

- 8.1 Generator will be responsible for the construction and ownership of a 345 kV station and all facilities within it. Specifically, Generator's interconnection station(s) including control building(s), 345 kV step-up transformer(s), transformer protection package(s), 345 kV circuit breaker(s), 345 kV line disconnect switch(es), and protective relaying

- panels for the Generator's 345 kV line(s) that will coordinate with the TSP's line panels at the TSP facility for the Generator line protection
- 8.2 345 kV line(s) with all necessary material to interconnect to Generator's dead-end structure(s) located right adjacent to the TIF, and the crossing of the existing TSP Transmission Line which is required to accommodate the Generator 345 kV line(s) in accordance to Exhibit "C" Section 8.1
 - 8.3 Full tension, dead-end, 345 kV line structure(s) located adjacent to the TIF (Generator shall coordinate the height of this structure(s), the arrangement of the phases, and the exact location of the structure(s) with TSP) NOTE: Generator shall provide any necessary jumper post insulators for this structure(s)
 - 8.4 Fiber optic cable (Suzhou Furukawa or equivalent 96 fiber, single-mode, fiber optic OPGW) from GIF's control building to TSP's OPGW cable splice box on the Generator's interconnecting structure(s) at the Point of Interconnection
 - 8.5 Multi-ported RTU(s) and panels to provide breaker status, telemetry and energy data from the GIF to the Plant, the TSP, Generator and ERCOT
 - 8.6 Associated structures, buswork, conductor, connectors, grounding, conduit, control cable, foundation work, perimeter fencing, grading/dirt work and any appurtenances necessary for construction and operation of GIF

The GIF also includes the communication facilities described in Section 9.1 below.

9. Transmission Service Provider Interconnection Facilities:

- 9.1 In order for TSP to provide an interconnect the Generator at the 345 kV Reata Station, the following new equipment will be required to be in place prior to energization. The following TSP Interconnection Facilities assume that the cut-in of the TSP's Southern Circuit (circuit 1) is covered under the Dorado Solar (GINR 22INR0261) interconnection scope, for which TSP and Dorado Solar have executed an SGIA effective June 19, 2023. In the event the Dorado Solar Interconnection does not occur first, the Deville and Dorado Scope and Cost Estimates shall be adjusted accordingly.

Station Physical:

- (1) – 345 kV, 5000 A, 63kA Gas Circuit Breaker (GCB)
- (1) – 345 kV, Manually Operated GCB Isolation Disconnect Switch
- (1) – 345 kV, Motor Operated Line Isolation Disconnect Switch

- (1) – 345 kV, Motor Operated Grounding Switch
- (3) – 345 kV, Surge Arresters
- (3) – 345 kV, Capacitive Coupling Voltage Transformers
- (2) – 345 kV, Capacitive Coupling Voltage Transformers with Carrier
- (3) – 345 kV, Extended Range Metering Current Transformer
- (3) – 345 kV, Metering Combo Voltage/Current Transformers.
- (1 Lot) – Relaying Modification including
 - o Add Breaker Control & Metering, Breaker Failure, and Relays to Existing Panels
 - o Add New Line Relaying Panel
 - o Add Revenue Metering to existing Panel
 - o Re-zone Bus Differential Relaying in Existing Panel
- (1 Lot) – Conduit and Grounding
- (1 Lot) – Aluminum Bus, Stranded Jumpers, and Connectors

Station Civil & Structural:

- (1 Lot) – Lot Final Surfacing (0'-6" Crushed Limestone)
- (1 Lot) – Foundations & Steel for Equipment
 - A-frames
 - Bus supports
 - Equipment supports

Relay & Control:

The study assumes that the Reata Station control house will have room to install the additional metering and relaying panels, and any other equipment as needed:

- ERCOT Polled Settlement Metering Panel including:
 - o Primary ERCOT Polled Settlement Meters
 - o Backup ERCOT Polled Settlement Meters
- 345 kV Breaker Control and Metering Panels
- 345 kV Breaker Failure Panels
- 345kV Bus Differential Panel additions
- 345 kV Line Protection Panels
- 345kV Gen Tie Line Protection Relay Panel
- (1 Lot) – Connection of new relaying and control devices and equipment to new and existing communications hardware
- (1 Lot) – Control Cable Installation and Termination

LST Transmission Line:

TSP's scope for the Deville Interconnection involves a 345 kV transmission line of approximately 9.45 miles to interconnect the Generator. The scope of the transmission line assumes that the cut-in of 345 kV LST Southern Circuit (Circuit 1) is covered under scope of the Dorado Solar Interconnection (GINR INR0261) project, for which

TSP and Dorado Solar have executed an SGIA effective June 19, 2023.

- The new transmission line will route to a POI structure approximately 9.45 miles away from the existing switchyard. LST will provide the POI structure. The generator will provide the installation of the last span into the new collection substation. Scope and cost estimates are contingent upon Dorado Solar Interconnection being completed prior to the Deville Solar Interconnection. The Structures included in Dorado Solar Interconnection Estimate from Dorado Solar POI to Reata Switchyard are Double-Circuit Capable. The Deville Interconnection includes Single Circuit Construction from the Deville Solar POI to the Dorado POI. Conductor & Transmission Line Hardware will be added to previously installed Double-Circuit Capable Dorado Interconnection Structures from Dorado POI to Deville Terminal at Reata Switchyard to complete the Deville Gen-Tie Line. In the event Dorado Solar Interconnect is not complete, Deville and Dorado Solar Interconnection Scope and Cost Estimates shall be adjusted accordingly.

Line protection transfer trip requirements and control system requirements are as follows:

Line Protection Requirements at TSP's Station:

- a) 345 kV Transmission Lines
 - a. Compatible (SEL421) Line Distance protection
 - b. Compatible (SEL311L) Line Current Differential protection
 - c. Compatible Pulsar ULPC
 - d. Compatible Multifunction Recorder (DFR – APP)
- b) Customer 345 kV Generator Tie Lines
 - a. Compatible (SEL 411L) Primary Line Current Differential Protection
 - b. Compatible (SEL 411L) Backup Line Current Differential Protection
- c) Compatible (SEL451) breaker failure protection with direct transfer trip via fiber optic communications to trip Customer 345 kV breaker
- d) In the case where both line terminal breakers are open, an anti-islanding transfer trip via fiber optic communications to trip Customer breaker(s) or Generator Step Up 345 kV breaker (should open at the synchronizing breaker)
- e) No automatic reclosing; use dead line, hot bus permissive controls for closing line breakers

- f) Hardwire protection relays to Current Transformers and Power Transformers (CT's and PT's)

Line Protection Requirements at Generator Facilities:

- a) Customer 345 kV breaker failure protection to send direct transfer trip via fiber optic communications to trip TSP's Station 345 kV breakers

Data Requirements by TSP Operations:

- a) Breaker status: Customer Main 345 kV breaker, low side breakers, capacitor bank breakers
- b) If multiple Customer Step Up transformers; individual MW, MVAR, Voltage readings
- c) Customer to coordinate equipment needed to acquire data directly over fiber optic communication

Data Requirements by Generator Operations:

Unless requested and coordinated with LST, Customer shall obtain all EPS meter data from ERCOT directly

10. Communications Facilities:

10.1 Generator shall, in accordance with ERCOT Requirements and Good Utility Practice, provide communications facilities that are, or may in the future be, necessary for effective interconnected operation of the Generator's Plant with the transmission system.

10.2 TSP will bear the costs of its communications facilities at the new Station.

11. System Protection Equipment:

Protection of each Party's system shall meet the following TSP requirements in addition to ERCOT Requirements. If there is a conflict between the TSP requirements below and ERCOT Requirements, the ERCOT Requirements shall prevail.

11.1 Generator and TSP shall design, install, operate, maintain and test system protection equipment consistent with the applicable criteria as described in the ERCOT Requirements and any applicable requirements of Governmental Authorities, including NERC Reliability Standards. Generator shall, at its expense, provide modifications or additions to its control and protective equipment required to comply with changes in ERCOT Requirements or requirements of Governmental Authorities, including NERC Reliability Standards.

- 11.2 Generator, using Good Utility Practice, shall install sufficient digital fault recording equipment to thoroughly analyze all system disturbances occurring on the Plant and GIF to thoroughly analyze the Plant and GIF performance during system disturbances on the ERCOT system. This equipment shall monitor the voltages at major nodes, current at major branches, breaker and switch positions, and dc logic in the relay control scheme.
- 11.3 TSP assumes no responsibility for the protection of the Plant and GIF for any or all operating conditions. Generator is solely responsible for protecting its equipment in such a manner that faults, Sub-Synchronous Oscillations (“SSO”), or other disturbances on the TSP System or other interconnected system do no cause damage to the Plant and GIF.
- 11.4 It is the sole responsibility of the Generator to protect its Plant and GIF from excessive negative sequence currents.
- 11.5 The GIF shall be designed to isolate any fault, or to disconnect from or isolate any abnormality that would negatively affect the TSP’s system. The Generator shall be responsible for protection of its facilities. TSP reserves the right to isolate the Plant and GIF consistent with ERCOT Requirements and NERC Reliability Standards for any of the following reasons:
- i.) The Plant or GIF, upon TSP’s determination, cause objectionable interference with other customers’ service or with the secure operation of the TSP System.
 - ii.) The Plant output as determined by TSP exceeds the operating boundaries outlined above.
 - iii.) Generator’s control and protective equipment causes or contributes to a hazardous condition. TSP reserves the right to verify all protective equipment including, but not limited to including relays, circuit breakers, at the inter-tie location. Verification by TSP may include the tripping of the tiebreaker by the protective relays.
 - iv.) In TSP’s opinion, continued parallel operation is hazardous to Generator, the TSP System or to the general public.
 - v.) To provide TSP or TSP personnel the clearances for dead line or live line maintenance.

TSP shall notify Generator before disconnection, except for an emergency situation requiring immediate action. TSP will attempt to notify Generator before upon disconnection, but notification may not be possible in emergency situations that require immediate action.

- 11.6 Prior to In-Service Date, Generator shall specify whether automatic reclosing should be applied to the Generator’s transmission facilities in the GIF. Automatic reclosing is normally applied to transmission circuits.

When TSP's source breakers trip and isolate the Plant and GIF, Generator shall insure the Plant and GIF are disconnected from the TSP circuit prior to automatic reclosure by TSP. Automatic reclosing out-of-phase with the Plant may cause damage to Generator's equipment. Generator is solely responsible for the protection of his equipment from automatic reclosing by TSP.

- 11.7 TSP shall specify system protection and control schemes for the Point of Interconnection. Generator shall have the right to review and comment on such schemes and TSP shall consider Generator's comments when determining such schemes. Generator will install and maintain System Protection Equipment that is compatible with TSP's System Protection Equipment. TSP will work with the Generator to coordinate the establishment of the relay settings for System Protection Equipment owned by both Generator and TSP associated with the Point of Interconnection.
 - 11.8 Documentation of all protective device settings shall be provided to TSP. The setting documentation shall also include relay type, model/catalog number, and setting range. If automatic transfer schemes or unique or special protective schemes are used, a description of their operation should be included. TSP must review and approve the settings of all protective devices and automatic control equipment which: i) serve to protect the TSP System from hazardous currents and voltages originating from the Plant; or ii) must coordinate with System Protection Equipment or control equipment located on the TSP System.
12. Inputs to Telemetry Equipment:
 - 12.1 Generator shall comply with ERCOT Requirements for telemetry and will coordinate with TSP for additional points if telemetry is deemed necessary by TSP.
13. Supplemental Terms and Conditions:
 - 13.1 Additional Studies – If it is necessary for TSP to perform any additional generation interconnection studies associated with the Plant in accordance with ERCOT Requirements, the Parties will enter an agreement, in form and substance reasonably acceptable to the Parties, to perform those studies and Generator shall pay TSP for the studies pursuant to that agreement.
 - 13.2 Switching Procedures – Each Party will adopt formal switching procedures that govern safety related issues concerning the operation of its switches connected to these Points of Interconnection and will provide a copy of those procedures to the other Party prior to In-Service Date. Each Party will agree to comply with the aforementioned switching procedures

of the other Party applicable to the Point of Interconnection and will notify the other Party in writing of any changes to its procedures relating to the Point of Interconnection.

- 13.3 Facility Connection Requirements – Generator will construct its facilities in accordance with the version of LST-FAC-001-PRO-Facility_Connection_Requirements that is in effect at the time the Generator gives its notice to proceed with design and procurement, as referenced in Exhibit “B”.
- 13.4 Generator shall submit drawings of the GIF to TSP for review. TSP will review only those portions of the drawings that affect the TSP System. Any changes required by TSP shall be made prior to final issue of drawings and TSP shall be provided with final copies of the revised drawings. TSP will review only those portions of the drawings which apply to protection, metering and monitoring of the TSP System. To aid Generator, TSP may make suggestions on other areas. TSP’s review of Generator’s drawings shall not be construed as confirming or endorsing the design or as any warranty of safety, durability, or reliability of the facility or equipment. Generator shall provide copies of the following:
- i.) one-line and three-line diagrams indicating the following:
 - 1. equipment names and/or numerical designations for all circuit breakers, contactors, air switches, transformers, generators, etc., associated with the generation as required by TSP to facilitate switching
 - 2. power transformers – nameplate or designation, nominal kVA, nominal primary, secondary, tertiary voltages, vector diagram showing winding connections, tap setting and transformer impedances (transformer test report showing the positive sequence, zero sequence, test voltages and MVA base for each winding)
 - 3. station service transformers – phase(s) connected and estimated kVA load
 - 4. instrument transformers – voltage and current, phase connections
 - 5. surge arresters/gas tubes/metal oxide varistors/avalanche diode/spill gaps/surge capacitors, etc. – type and ratings
 - 6. capacitor banks – kVAR rating and reactive (static and dynamic) device operation capability
 - 7. reactive device capability (required for wind generation only) – kVAR rating and reactive device operation capability for static and dynamic devices for each generation collection feeder
 - 8. disconnect switches – status if normally open (N.O.), manual or motor operated including switch voltage, continuous and interrupting ratings

9. circuit breakers and/or contactors – interrupting rating, continuous rating, operating times
 10. generator(s) – nameplate, test report, type, connection, kVA, voltage, current, rpm, power factor, impedances, time constants, etc.
 11. Point of Interconnection and phase identification
 12. fuses – manufacturer, type, size, speed, and location
 13. transmission structure geometry (phase-to-phase, phase-to-ground, and shield-to-phase), phase conductor data, shield wire data, transmission line ratings, positive and zero sequence impedances and mileage
 - 14.
- ii.) potential and current elementary drawings associated with the protection and control schemes for the Plant and GIF and control elementary drawings of the Plant and interconnection circuit breaker indicating the following:
1. terminal designation of all devices – relay coils and contacts, switches, transducers, etc.
 2. relay functional designation – per latest ANSI Standard where the same functional designation shall be used on all drawings showing the relay
 3. complete relay type (such as CV-2, SEL321-1, REL-301, IJS51A, etc.)
 4. switch contact as referenced to the switch development if development is shown on a separate drawing
 5. switch developments and escutcheons where the majority of contacts are used. Where contacts of a switch are used on a separate drawing, that drawing should be referenced adjacent to the contacts in the switch development. Any contacts not used should be referenced as spare.
 6. all switch contacts shown open with each labeled to indicate the positions in which the contact will be closed with explanatory notes defining switch coordination and adjustment where misadjustment could result in equipment failure or safety hazard
 7. auxiliary relay contacts as referenced to the coil location drawing if coil is shown on a separate drawing where all contacts of auxiliary relays should be shown and the appropriate device auxiliary switches (circuit breakers, contactor) as referenced to the drawing where they are used.
 8. any interlocks – electromechanical, key, etc., associated with the generation or interconnection Substation
 9. ranges of all timers and setting if dictated by control logic
 10. all target ratings; on dual ratings note the appropriate target tap setting

11. complete internal for electromechanical protective relays where microprocessor type relays may be shown as a “black box”, with manufacturer’s instruction book number referenced and terminal connections shown
 12. isolation points (states links, PK-2 and FT-1 blocks), etc. including terminal identification
 13. all circuit elements and components, with device designation, rating and setting where applicable and where coil voltage is shown only if different from nominal control voltage
 14. size, type, rating and designation of all fuses
 15. phase sequence designation as ABC or CBA
 16. potential transformers – nameplate ratio, polarity marks, rating, primary and secondary connections
 17. current transformers (including auxiliary CT’s) – polarity marks, rating, tap ratio and connection
- 13.5 Generator may not commence parallel operation of the Plant until consent has been given by TSP. TSP reserves the right to inspect the GIF and witness testing of any equipment or devices associated with the Point of Interconnection.
- 13.6 The Plant and GIF shall not cause objectionable interference with the electric service provided to other customers of TSP nor jeopardize the security of the ERCOT power system. In order to minimize objectionable interference of the Plant and GIF, the Plant and GIF shall meet the following criteria as described in TSP’s LST-FAC-001-PRO-Facility_Connection_Requirements for the below:
- Voltage,
 - Flicker,
 - Frequency,
 - Harmonics, telephone interference, carrier interference,
 - Fault and line clearing,
 - Excitation system and Automatic Voltage Regulation, and
 - Governor system.
- 13.7 The dynamic MVAR capability at the current MW generation amount shall be provided in real time. If this dynamic MVAR capability is not available in real time, a dynamic capability curve plotted as a function of MW output shall be provided. The shunt static reactive available, but not in service, shall be provided in sufficient detail to determine the amount of dynamic and static reactive reserve available.

- 13.8 Generator shall provide Voltage Support Service and Reactive Power Requirements as required by ERCOT Nodal Protocols Section 3.15.
- 13.9 Certain generators are susceptible to SSO when interconnected within electrical proximity of series capacitor banks on the transmission system. Prior to the In-Service Date, the Generator will provide complete and accurate studies which analyze the potential of SSO and will coordinate with TSP and ERCOT regarding the scope of such studies. Generator is responsible for mitigation to protect itself from SSO risks. TSP will work with Generator and their selected turbine-generator manufacturer on any system data required for such studies.
- 13.10 TSP considers the energy and power that the Plant and GIF may from time to time consume from the transmission grid through the Point of Interconnection to be a retail transaction and as such, TSP does not intend to be the provider of this retail service. Generator shall make necessary arrangements with the appropriate retail supplier for the energy and power that the Plant and GIF may consume from the transmission grid through the Point of Interconnection.
- 13.11 Generator shall notify TSP in writing as to which initial ERCOT Qualified Scheduling Entity the Plant will be scheduling through and any changes made thereafter.
- 13.12 Upon written request from TSP, Generator shall supply notification to TSP identifying their retail service provider.
- 13.13 Generator shall use commercially reasonable efforts to change the GIF as may be reasonably required by TSP to meet future changes in the TSP System. Generator shall be given reasonable notice by TSP prior to the date that any such required change in the GIF must be made.
- 13.14 Each Party will comply with NERC Reliability Standards applicable to its facilities identified in this Exhibit "C". Each Party shall provide to the other Party all information related to its interconnection facilities that may reasonably be required by the other Party to comply with NERC Reliability Standards applicable to its interconnection facilities, if any. "NERC Reliability Standards" means the mandatory electric reliability standards established and enforced by the North American Electric Reliability Corporation or its successor electric reliability organization.
- 13.15 Encroachment – Generator must submit a written request to TSP (using a form of request acceptable to TSP) and obtain prior written authorization from TSP prior to conducting any activities within any portion of TSP's transmission line right of way and/or substation property. Such Generator activities shall include, but are not limited to: i) constructing transmission lines, communication facilities, roads, water lines, sewer lines, gas pipelines, or any other facilities; ii) storing any equipment or materials; or iii) changing the grade, elevation, or contour of the land, for such encroachment prior to Generator installing such facilities or conducting

such activities. TSP RESERVES THE RIGHT TO DELAY THE ENERGIZATION FOR THE POINT OF INTERCONNECTION UNTIL GENERATOR OBTAINS ALL REQUIRED WRITTEN AUTHORIZATIONS FROM TSP FOR SUCH ENCROACHMENTS, IF ANY. The Generator will be responsible for the cost of all modifications necessary on property or facilities owned by TSP that are affected by such encroachment. The provision of overall site plans by Generator shall not relieve Generator from the obligation to submit all encroachment requests in accordance with this subsection.

14. Special Operating Conditions, if any, attached:

- 14.1 If Generator's main power transformer(s) is equipped with a no-load tap changer, in accordance with ERCOT Requirements, Generator will work with TSP to select the tap position on the no-load tap changer of the Generator's main power transformer(s). Generator will initiate contact with TSP to select such tap position no later than the date specified in Exhibit B. notwithstanding TSP's obligations in the remainder of this Agreement, TSP shall have no obligation to establish an electrical interconnection with the GIF until Generator and TSP have selected the tap position.

Generator shall design, construct, operate and maintain GIF with accordance with all applicable ERCOT Requirements and NERC Reliability Standards.

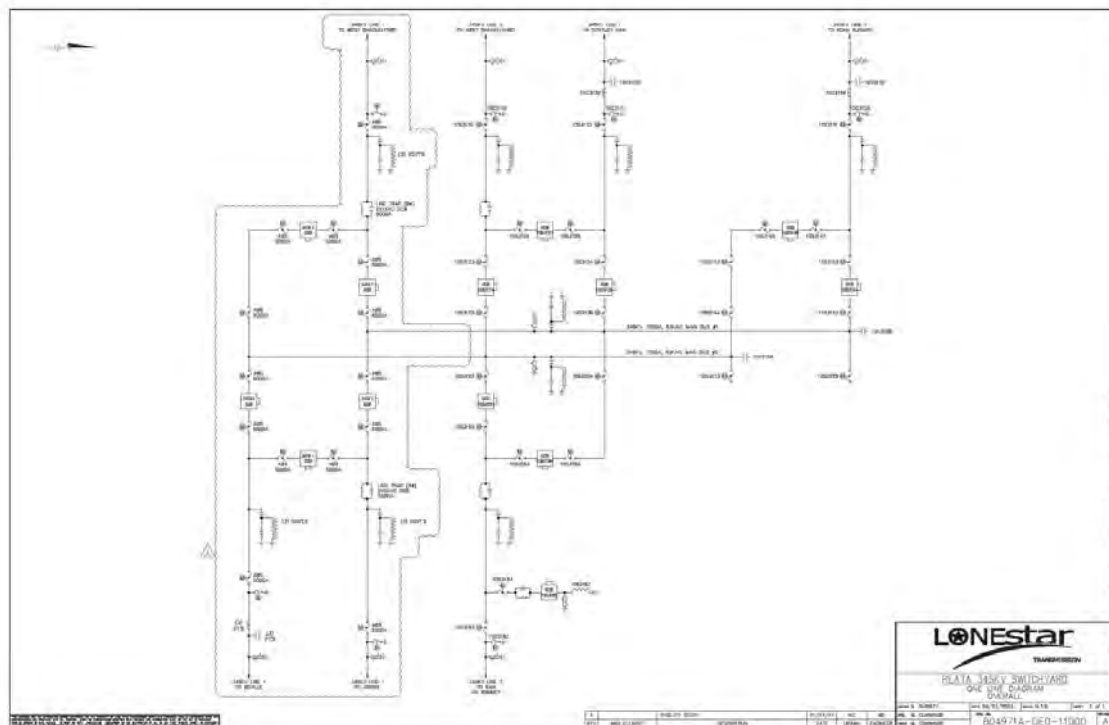
For thermal powered generation, Generator will provide TSP at least thirty (30) minutes' prior notice before coming on-line or off-line so TSP can adjust reactive resources.

15. The difference between the estimated cost of the TIF under 4.1.A (N/A) and the estimated cost of the TIF under 4.1.B (N/A) is: N/A, if applicable.

Conceptual One-Line Drawing of Point of Interconnection

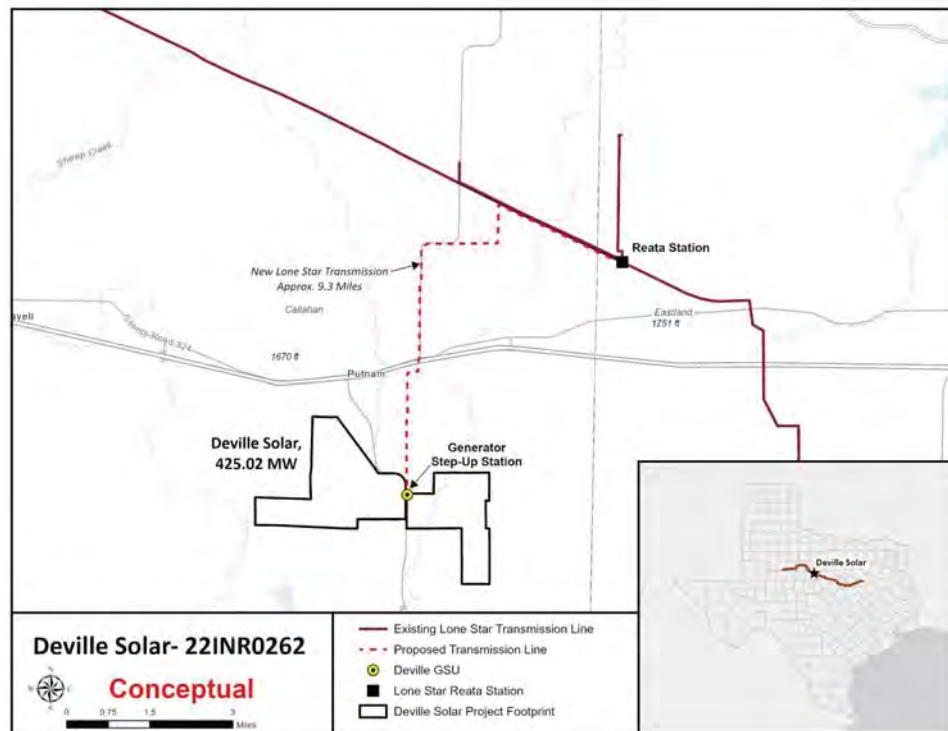


Detailed One-Line Drawing of Point of Interconnection



Attachment C-3

Project Overview Map



DATE: 19 June 2023

Exhibit “D”

Notice and EFT Information of the ERCOT Standard Generation Interconnection Agreement

(a) All notices of an operational nature shall be in writing and/or may be sent between the Parties via electronic means including facsimile as follows:	
If to Generator: Company Name: Deville Solar LLC Attn: Sr. Advisor Address: 17300 Dallas Parkway, Ste. 2020 Dallas, TX 75248 Tel: (972) 280-0825 Email: taylor.snow@enbridge.com	If to Transmission Service Provider: Jerry Willms, Sr Manager of Lone Star Operations Company Name: Lone Star Transmission, LLC Address: 5920 W. William Cannon Dr., Bldg. 2, Austin, TX 78749 24 Hour Telephone: (512) 699-6106 Email: jerry.willms@lonestar-transmission.com
(b) Notices of an administrative nature:	
If to Generator: Company Name: Deville Solar LLC Attn: President Address: 17300 Dallas Parkway, Ste. 2020 Dallas, TX 75248 Tel: (972) 280-0825 Email: thomas.carbone@enbridge.com	If to Transmission Service Provider: Leo Fajardo, Project Director, Development Company Name: Lone Star Transmission, LLC Address: 5920 W. William Cannon Dr., Bldg. 2, Austin, TX 78749 24 Hour Telephone: (561) 329-3578 Email: leonardo.fajardo@nee.com
(c) Notice for statement and billing purposes:	
If to Generator: Company Name: Deville Solar LLC Attn: Accounting Address: 17300 Dallas Parkway, Ste. 2020 Dallas, TX 75248 Tel: (972) 280-0825 Email: David.Leerssen@enbridge.com	If to Transmission Service Provider: Company Name: Lone Star Transmission, LLC c/o NextEra Energy Transmission, LLC Address: 700 Universe Blvd. (UST/JB), Juno Beach, FL 33408 Email: customerservice@lonestar-transmission.com

(d) Information concerning electronic funds transfers:

If to Generator:

ACH Instructions

Bank Name: Centennial Bank

City, State: Dallas, TX

ABA/Routing No: 082902757

Swift: CNTEUS44

For credit to: Eldorado Solar Project, LLC

Account No.: 8037001560

Wire Instructions

Bank Name: Centennial Bank

City, State: Dallas, TX

ABA/Routing No: 082902757

Swift: CNTEUS44

For credit to: Eldorado Solar Project, LLC

Account No.: 8037001560

If to Transmission Service Provider:

ACH Instructions

Bank Name: Bank of America Global Finance

City, State: Dallas, TX

ABA No: 111-000-012

Swift: BOFAUS3N

For credit to: Lone Star Transmission, LLC

Account No.: 4426849087

Wire Instructions

Bank Name: Bank of America

City, State: New York, NY

ABA No.: 0260-0959-3

Swift: BOFAUS3N

For credit to: Lone Star Transmission, LLC

Account No.: 4426849087

Exhibit “E” Security Arrangement Details

On or before the date that Generator issues the written Notice to Proceed, Generator shall cause to be established (the date of such establishment shall be the “Security Effective Date”), and shall at all times through the earlier of (i) five (5) business days after the date upon which TSP receives written notification from Generator that Commercial Operation has been achieved or (ii) ninety (90) days after the termination of the Agreement in accordance with its terms (the earlier of which shall be the “Final Expiration Date”), cause to be maintained in full force and effect a form of Security for the benefit of TSP in a commercially acceptable form consistent with this Exhibit E and otherwise acceptable to TSP and Generator, which acceptance shall not be unreasonably withheld, in the amount set forth in the Table 1 below.

Table 1:		
Financial Security Milestones	Dollars	Date Due
Milestone I: Initial Security	\$ 5,421,000	8/31/2023
Milestone II: Remaining Security	\$ 12,649,000	3/31/2024
Total	\$ 18,070,000	

Depending on the creditworthiness of the proposed guarantor, Generator may propose a Corporate Guaranty, which may or may not be acceptable Security. TSP requires that a guarantor providing any Corporate Guaranty on behalf of Generator shall maintain a senior unsecured credit rating of BBB- or the equivalent by Standard & Poor’s, Moody’s Investor Service, or Fitch reports requested by TSP upon execution of this Agreement and agrees to provide financial information concerning the guarantor as may be requested from time to time by TSP. If the creditworthiness of the proposed guarantor is acceptable to TSP, the Corporate Guaranty shall be in a form acceptable to TSP. If rated by one or more rating agencies and the ratings are split, the lowest rating should be the applicable standard.

Generator alternatively may provide Security through an “Irrevocable Standby Letter of Credit, which” shall mean an irrevocable, transferable letter of credit, issued by a Generator-selected and TSP-approved (which approval shall not be unreasonably withheld), major U.S. commercial bank, or a U.S. branch office of a major foreign commercial bank, with a credit rating of at least “A-“ by Standard & Poor’s or “A3” by Moody’s Investor Services (“Bank”). The Irrevocable Standby Letter of Credit shall be transferable, more than one time, in whole but not in part, in favor of any party whom TSP certifies has succeeded to TSP’s right, title, and interest in and to this Agreement. Should TSP transfer such Irrevocable Standby Letter of Credit as stated above, Generator shall reimburse TSP for any costs it incurs from the Bank associated with such transfers.

If, at any time during the Term of this Agreement, the Bank suffers a credit rating reduction to less than “A-“ by Standard & Poor’s or “A3” by Moody’s Investor Service, Generator shall replace that Irrevocable Standby Letter of Credit with another Irrevocable Standby Letter of Credit of the same amount and with the same beneficiary from another TSP-approved bank of

Generator's choice within fifteen (15) business days of the date of such event. In the event of a failure to provide a substitute Irrevocable Standby Letter of Credit within the time period specified above, TSP may draw upon the Irrevocable Standby Letter of Credit to secure a cash deposit as security under this Agreement.

The Irrevocable Standby Letter of Credit may consist of one or more consecutive terms (each, a "Term"), the first of which shall be effective on or before the Security Effective Date and the last of which shall expire no earlier than the Final Expiration Date; provided, that, the Irrevocable Standby Letter of Credit shall automatically renew from Term to Term without amendment such that there shall be no interruption of surety provided by the Irrevocable Standby Letter of Credit from the Security Effective Date through the Final Expiration Date.

To the extent that the Bank has the unilateral right not to renew the Irrevocable Standby Letter of Credit for a successive Term, the Bank shall give notice to TSP and Generator in writing by certified mail, return receipt requested, or via a courier service, of the exercise of its right not to renew the Irrevocable Standby Letter of Credit for a successive term (an "Expiring Term") not less than ninety (90) days prior to the expiration date of any Expiring Term. Generator hereby agrees that in the event that the Bank gives such notice and Generator does not provide TSP with a substitute Irrevocable Standby Letter of Credit in substantially the same form as the expiring Irrevocable Standby Letter of Credit at least forty-five (45) days prior to the expiration date of any Expiring Term, TSP shall have the right to retain as security the full amount (as specified in the Irrevocable Standby Letter of Credit) of the expiring Irrevocable Standby Letter of Credit. The substitute Irrevocable Standby Letter of Credit shall meet the requirements of this Exhibit E and be otherwise acceptable to TSP and Generator, which acceptance shall not be unreasonably withheld. In the event of a failure to provide a substitute Irrevocable Standby Letter of Credit within the time period specified above, TSP may draw upon the Irrevocable Standby Letter of Credit to secure a cash deposit as security under this Agreement.

In the event that an Irrevocable Standby Letter of Credit is set to expire on a date prior to the Final Expiration Date and Generator has not provided to TSP a substitute Irrevocable Standby Letter of Credit at least forty-five (45) days in advance of such expiration, TSP shall have the right to retain as security the full amount (as specified in the Irrevocable Standby Letter of Credit) of the expiring Irrevocable Standby Letter of Credit. The substitute Irrevocable Standby Letter of Credit shall meet the requirements of this Exhibit E and be otherwise acceptable to TSP and Generator, which acceptance shall not be unreasonably withheld. In the event of a failure to provide a substitute Irrevocable Standby Letter of Credit within the time period specified above, TSP may draw upon the Irrevocable Standby Letter of Credit to secure a cash deposit as security under this Agreement.

Except to the extent that the Bank has the unilateral right not to renew the Irrevocable Standby Letter of Credit for a successive Term, the Irrevocable Standby Letter of Credit to be issued in connection herewith shall have no provision for termination by the Bank or Generator.

Per Exhibit "A" Section 8.3, TSP shall release the portion of the Security, and any renewed Security thereafter, for the TIF within five (5) business days after TSP has received notice from the Generator and the Plant has achieved Commercial Operation, and TSP has verified the same.

Within five (5) business day after the Final Expiration Date, TSP shall (i) mark the Irrevocable Standby Letter of Credit, if any, then held by TSP as “CANCELLED” and shall return the cancelled Irrevocable Standby Letter of Credit to the Bank with instructions to cancel the Irrevocable Standby Letter of Credit, and shall send to Generator a copy of such cancelled Irrevocable Standby Letter of Credit and instructions for cancellation, and (ii) return all cash deposit(s), if any, then held by TSP to Generator.

**FIRST AMENDMENT
TO
ERCOT STANDARD GENERATION INTERCONNECTION AGREEMENT**

This First Amendment to ERCOT Standard Generation Interconnection Agreement (this “First Amendment”), effective as of the last date signed below (“Effective Date”), is between Lone Star Transmission, LLC (“Transmission Service Provider”), and Enbridge Solar (Sequoia II), LLC f/k/a/ Deville Solar LLC (“Generator”), hereinafter individually referred to as “Party,” and collectively referred to as “Parties.”

WHEREAS, the Transmission Service Provider and the Generator entered into that certain ERCOT Standard Generation Interconnection Agreement executed on August 29, 2023, pursuant to the ERCOT generation interconnection request # 22INR0262 for the Deville Solar Project (the “Agreement”); and

WHEREAS, the Parties agree to make certain modifications to Exhibits “A”, “B”, “C”, “D”, and “E” of the Agreement;

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained, the Parties hereto agree as follows:

1. Section 10.4 of Exhibit “A” of the Agreement is deleted in its entirety and revised Section 10.4 attached to this First Amendment is hereby added to the Agreement in lieu thereof.
2. Section 4 of Exhibit “C” of the Agreement is deleted in its entirety and revised Section 4 attached to this First Amendment is hereby added to the Agreement in lieu thereof.
3. Exhibits “B”, “D”, and “E” of the Agreement are deleted in their entirety, and Exhibits “B”, “D”, and “E” attached to this First Amendment are hereby added to the Agreement in lieu thereof.
4. Exhibit “A”, Section 10.4, Exhibit “C”, Section 4 and Exhibits “B”, “D”, and “E” attached to this First Amendment will become effective upon execution of this First Amendment by the Parties.

Except as otherwise expressly provided for herein, the Agreement will continue in full force and effect in accordance with its terms.

--Signature page to follow.--

--The remainder of this page is intentionally left blank.--

IN WITNESS WHEREOF, the Parties have executed this First Amendment in duplicate originals,
each of which shall constitute and be an original effective Agreement between the Parties.

LONE STAR TRANSMISSION, LLC

ENBRIDGE SOLAR (SEQUOIA II), LLC

Signature:  _____

By:  _____

Name: Daniel Madru

Name: Thomas M. Carbone

Title: President

Title: President and Assistant Treasurer

Date: September 19, 2025 14:15 ET

Date: September 19, 2025 14:12 ET

Exhibit “A”

Terms and Conditions of the ERCOT Standard Generation Interconnection Agreement

ARTICLE 10. MISCELLANEOUS

10.4 Notices. Except as otherwise provided in Exhibit “D,” any formal notice, demand or request provided for in this Agreement shall be in writing and shall be deemed properly served, given or made if delivered in person, or sent by either registered or certified mail, postage prepaid, overnight mail, fax or electronic mail to the physical address, email address or number identified on Exhibit “D” attached to this Agreement. Either Party may change the notice information on Exhibit “D” by giving five (5) business days’ written notice prior to the effective date of the change.

**Exhibit “B”
Time Schedule**

- 1) Interconnection Option chosen by Generator (check one):
X Section 4.1.A. or ____ Section 4.1.B

A. If Section 4.1.B is chosen by Generator, the In-Service Date(s) was determined by (check one): (1) X good faith negotiations, or (2) ____ designated by Generator upon failure to agree.

- 2) August 30, 2023, was the date (“NTP Need Date”) by which Generator provided a written Notice to Proceed with design, procurement, and construction of the TIF and will provide security, as specified in Exhibit “A”, Section 4.2 and 4.3, so that TSP may maintain schedule to meet the In-Service Date identified below. The NTP date is the date Generator provided written Notice to Proceed to TSP:

A. If Generator does not provide a written Notice to Proceed to TSP by the above NTP Need Date, the designated TIF In-Service Date, Scheduled Generation Trial Operation Date, and Scheduled Generation Commercial Operation Date, identified below, will each be extended day for each day after the NTP Need Date that the Notice to Proceed is delayed.

B. If Generator does not provide a written Notice to Proceed and provide security in accordance with Exhibit “E” to TSP by eighteen (18) months after the NTP Need Date (“NTP Deadline”), such non-provision of the Notice to Proceed shall constitute a Default, in accordance with Section 10.6.A of Exhibit “A”, by the Generator and written notice of Default shall be deemed to have been given by TSP to Generator on the NTP Deadline. If such Default is not cured in accordance with Section 10.6 of Exhibit “A”, then TSP may terminate this Agreement in accordance with the provisions of Section 10.6.B of Exhibit “A”.

TIF In-Service Date (Backfeed): The later of:

- a) September 21, 2026; or
- b) Twenty-Four months (24) and Twenty-Three days (23) after the NTP Date.

Scheduled Generation Trial Operation Date (Synchronization): The later of:

- a) October 06, 2026; or
- b) Two (2) weeks after the TIF In-Service Date.

Scheduled Generation Commercial Operation Date (COD): The later of:

- a) November 21, 2026; or
- b) One month (1) and Sixteen days (16) after the TIF In-Service Date.

Nothing in the definitions of the dates above shall preclude either Party from taking measures or actions that allow the actual Generation Trial Operation Date or the actual Generation Commercial Operation Date to be earlier than the scheduled dates above.

- 3) Due to the nature of the subject of this Agreement, the Parties may mutually agree to change the dates and times of this Exhibit B.

**Exhibit “C”
Interconnection Details**

1. Name: Deville Solar Project
2. Point of Interconnection (POI) Location: The POI between the GIF and TIF will be located at a new Generator-owned dead-end structure at the end of the Generator’s new 345 kV line located adjacent to TSP’s Reata Station (shown on Attachment “C-1” and “C-2”). The POI shall be the physical point where the TSP TIF connects to the GIF. This point is more specifically defined as being located at the 4-hole pad terminals on the insulator hardware at the dead-end structure where the Generator’s 345 kV line connects to Generator owned dead-end interconnect structure.
3. Delivery Voltage: 345 kV
4. Number and Size of Generating Units: The total capacity of Deville Solar (22INR0262) is 415 MW composed of 373,030 Runergy HY-DH144N8-585 Wp panels, 465,535 Runergy HY-DH144N8-590 Wp panels and 99,276 Runergy HY-DH144N8-595 Wp panels.
5. Type of Generating Unit: Runergy HY-DH144N8-565 Runergy Wp panel; Sungrow SG4400UD 4400 kWac inverter.
6. The Parties will amend this Exhibit “C” as necessary to reflect any changes Generator makes to the manufacturer, model, or type of generating units.

DATE: 19 September 2025

Exhibit “D”

Notice and EFT Information of the ERCOT Standard Generation Interconnection Agreement

(a) All notices of an operational nature shall be in writing and/or may be sent between the Parties via electronic means including facsimile as follows:	
If to Generator: Company Name: Enbridge Solar (Sequoia II), LLC Attn: Francisco Aranguren, Manager, Power Projects Address: 15725 Dallas Parkway, Suite 550 Addison, Texas 75001 Tel: Email: francisco.aranguren@enbridge.com	If to Transmission Service Provider: Lone Star Transmission Control Center 24 Hour Telephone: 512-949-2600 Email: DL-System-Operations@LONESTAR-TRANSMISSION.COM
(b) Notices of an administrative nature:	
If to Generator: Company Name: Enbridge Solar (Sequoia II), LLC Attn: Enbridge Legal Department Address: Energy Center Five 915 N. Eldridge Parkway, Suite 1100 Houston, Texas 77079 Tel: (972) 280-0825 Email: LegalNotices@enbridge.com	If to Transmission Service Provider: Jonelle Mckinnon, Senior Project Manager, Development Company Name: Lone Star Transmission, LLC Address: 5920 W. William Cannon Dr., Bldg. 2, Austin, TX 78749 24 Hour Telephone: (728) 900-7042 Email: jonelle.mckinnon@nexteraenergy.com
(c) Notice for statement and billing purposes:	
If to Generator: Company Name: Enbridge Solar (Sequoia II), LLC Attn: Francisco Aranguren, Manager, Power Projects Address: 15725 Dallas Parkway, Suite 550 Addison, Texas 75001 Tel:	If to Transmission Service Provider: Company Name: Lone Star Transmission, LLC c/o NextEra Energy Transmission, LLC Address: 700 Universe Blvd. (UST/JB), Juno Beach, FL 33408 Email: customerservice@lonestar-transmission.com

First Amendment
to
ERCOT Standard Generation Interconnection Agreement

Email: francisco.aranguren@enbridge.com	
(d) Information concerning electronic funds transfers:	
If to Generator: <u>ACH Instructions</u> Bank Name: Bank of America City, State: New York, NY ABA/Routing No: 071000039 Swift: BOFAUS3NXXX For credit to: Enbridge Holdings (Green Energy) L.L.C. Account No.: 8188391064 <u>Wire Instructions</u> Bank Name: Bank of America City, State: New York, NY ABA/Routing No: 026009593 Swift: BOFAUS3NXXX For credit to: Enbridge Holdings (Green Energy) L.L.C. Account No.: 8188391064	If to Transmission Service Provider: <u>ACH Instructions</u> Bank Name: Bank of America Global Finance City, State: Dallas, TX ABA No: 111-000-012 Swift: BOFAUS3N For credit to: Lone Star Transmission, LLC Account No.: 4426849087 <u>Wire Instructions</u> Bank Name: Bank of America City, State: New York, NY ABA No.: 0260-0959-3 Swift: BOFAUS3N For credit to: Lone Star Transmission, LLC Account No.: 4426849087

Exhibit “E” Security Arrangement Details

On or before the date that Generator issues the written Notice to Proceed, Generator shall cause to be established (the date of such establishment shall be the “Security Effective Date”), and shall at all times through the earlier of (i) five (5) business days after the date upon which TSP receives written notification from Generator that Commercial Operation has been achieved or (ii) ninety (90) days after the termination of the Agreement in accordance with its terms (the earlier of which shall be the “Final Expiration Date”), cause to be maintained in full force and effect a form of Security for the benefit of TSP in a commercially acceptable form consistent with this Exhibit E and otherwise acceptable to TSP and Generator, which acceptance shall not be unreasonably withheld, in the amount set forth in the Table 1 below.

Table 1:			
Financial Security Milestones		Dollars	Date Due
Milestone I: Initial Security	\$	5,421,000	8/31/2023
Milestone II: Remaining Security	\$	18,999,000	10/01/2025
Total	\$	24,420,000	

Depending on the creditworthiness of the proposed guarantor, Generator may propose a Corporate Guaranty, which may or may not be acceptable Security. TSP requires that a guarantor providing any Corporate Guaranty on behalf of Generator shall maintain a senior unsecured credit rating of BBB- or the equivalent by Standard & Poor’s, Moody’s Investor Service, or Fitch reports requested by TSP upon execution of this Agreement and agrees to provide financial information concerning the guarantor as may be requested from time to time by TSP. If the creditworthiness of the proposed guarantor is acceptable to TSP, the Corporate Guaranty shall be in a form acceptable to TSP. If rated by one or more rating agencies and the ratings are split, the lowest rating should be the applicable standard.

Generator alternatively may provide Security through an “Irrevocable Standby Letter of Credit, which” shall mean an irrevocable, transferable letter of credit, issued by a Generator-selected and TSP-approved (which approval shall not be unreasonably withheld), major U.S. commercial bank, or a U.S. branch office of a major foreign commercial bank, with a credit rating of at least “A-“ by Standard & Poor’s or “A3” by Moody’s Investor Services (“Bank”). The Irrevocable Standby Letter of Credit shall be transferable, more than one time, in whole but not in part, in favor of any party whom TSP certifies has succeeded to TSP’s right, title, and interest in and to this Agreement. Should TSP transfer such Irrevocable Standby Letter of Credit as stated above, Generator shall reimburse TSP for any costs it incurs from the Bank associated with such transfers.

If, at any time during the Term of this Agreement, the Bank suffers a credit rating reduction to less than “A-“ by Standard & Poor’s or “A3” by Moody’s Investor Service, Generator shall replace that Irrevocable Standby Letter of Credit with another Irrevocable Standby Letter of Credit of the same amount and with the same beneficiary from another TSP-approved bank of Generator’s choice within fifteen (15) business days of the date of such event. In the event of a failure to

First Amendment

to

ERCOT Standard Generation Interconnection Agreement

provide a substitute Irrevocable Standby Letter of Credit within the time period specified above, TSP may draw upon the Irrevocable Standby Letter of Credit to secure a cash deposit as security under this Agreement.

The Irrevocable Standby Letter of Credit may consist of one or more consecutive terms (each, a “Term”), the first of which shall be effective on or before the Security Effective Date and the last of which shall expire no earlier than the Final Expiration Date; provided, that, the Irrevocable Standby Letter of Credit shall automatically renew from Term to Term without amendment such that there shall be no interruption of surety provided by the Irrevocable Standby Letter of Credit from the Security Effective Date through the Final Expiration Date.

To the extent that the Bank has the unilateral right not to renew the Irrevocable Standby Letter of Credit for a successive Term, the Bank shall give notice to TSP and Generator in writing by certified mail, return receipt requested, or via a courier service, of the exercise of its right not to renew the Irrevocable Standby Letter of Credit for a successive term (an “Expiring Term”) not less than ninety (90) days prior to the expiration date of any Expiring Term. Generator hereby agrees that in the event that the Bank gives such notice and Generator does not provide TSP with a substitute Irrevocable Standby Letter of Credit in substantially the same form as the expiring Irrevocable Standby Letter of Credit at least forty-five (45) days prior to the expiration date of any Expiring Term, TSP shall have the right to retain as security the full amount (as specified in the Irrevocable Standby Letter of Credit) of the expiring Irrevocable Standby Letter of Credit. The substitute Irrevocable Standby Letter of Credit shall meet the requirements of this Exhibit E and be otherwise acceptable to TSP and Generator, which acceptance shall not be unreasonably withheld. In the event of a failure to provide a substitute Irrevocable Standby Letter of Credit within the time period specified above, TSP may draw upon the Irrevocable Standby Letter of Credit to secure a cash deposit as security under this Agreement.

In the event that an Irrevocable Standby Letter of Credit is set to expire on a date prior to the Final Expiration Date and Generator has not provided to TSP a substitute Irrevocable Standby Letter of Credit at least forty-five (45) days in advance of such expiration, TSP shall have the right to retain as security the full amount (as specified in the Irrevocable Standby Letter of Credit) of the expiring Irrevocable Standby Letter of Credit. The substitute Irrevocable Standby Letter of Credit shall meet the requirements of this Exhibit E and be otherwise acceptable to TSP and Generator, which acceptance shall not be unreasonably withheld. In the event of a failure to provide a substitute Irrevocable Standby Letter of Credit within the time period specified above, TSP may draw upon the Irrevocable Standby Letter of Credit to secure a cash deposit as security under this Agreement.

Except to the extent that the Bank has the unilateral right not to renew the Irrevocable Standby Letter of Credit for a successive Term, the Irrevocable Standby Letter of Credit to be issued in connection herewith shall have no provision for termination by the Bank or Generator.

Per Exhibit “A” Section 8.3, TSP shall release the portion of the Security, and any renewed Security thereafter, for the TIF within five (5) business days after TSP has received notice from the Generator and the Plant has achieved Commercial Operation, and TSP has verified the same. Within five (5) business day after the Final Expiration Date, TSP shall (i) mark the Irrevocable Standby Letter of Credit, if any, then held by TSP as “CANCELLED” and shall return the

First Amendment

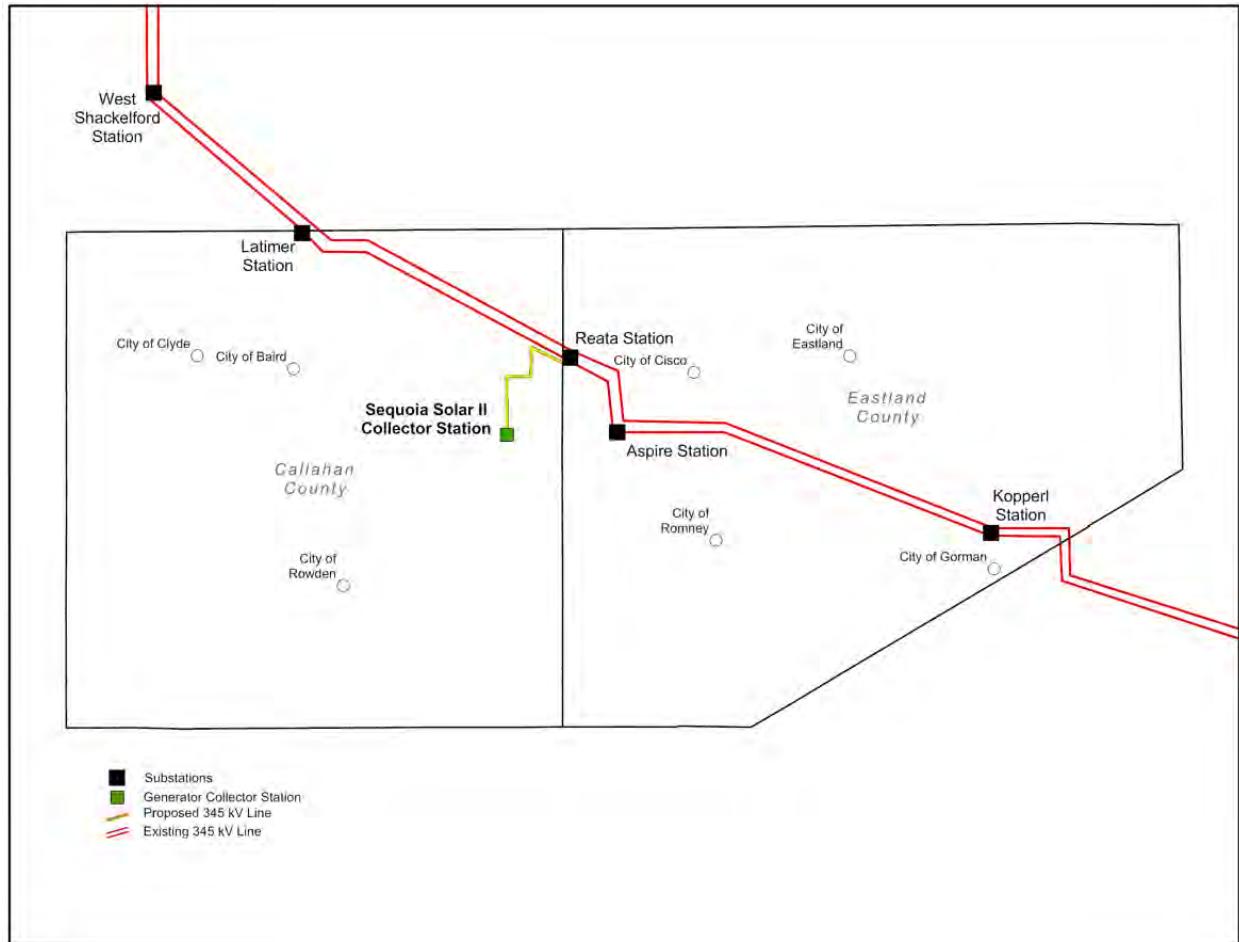
to

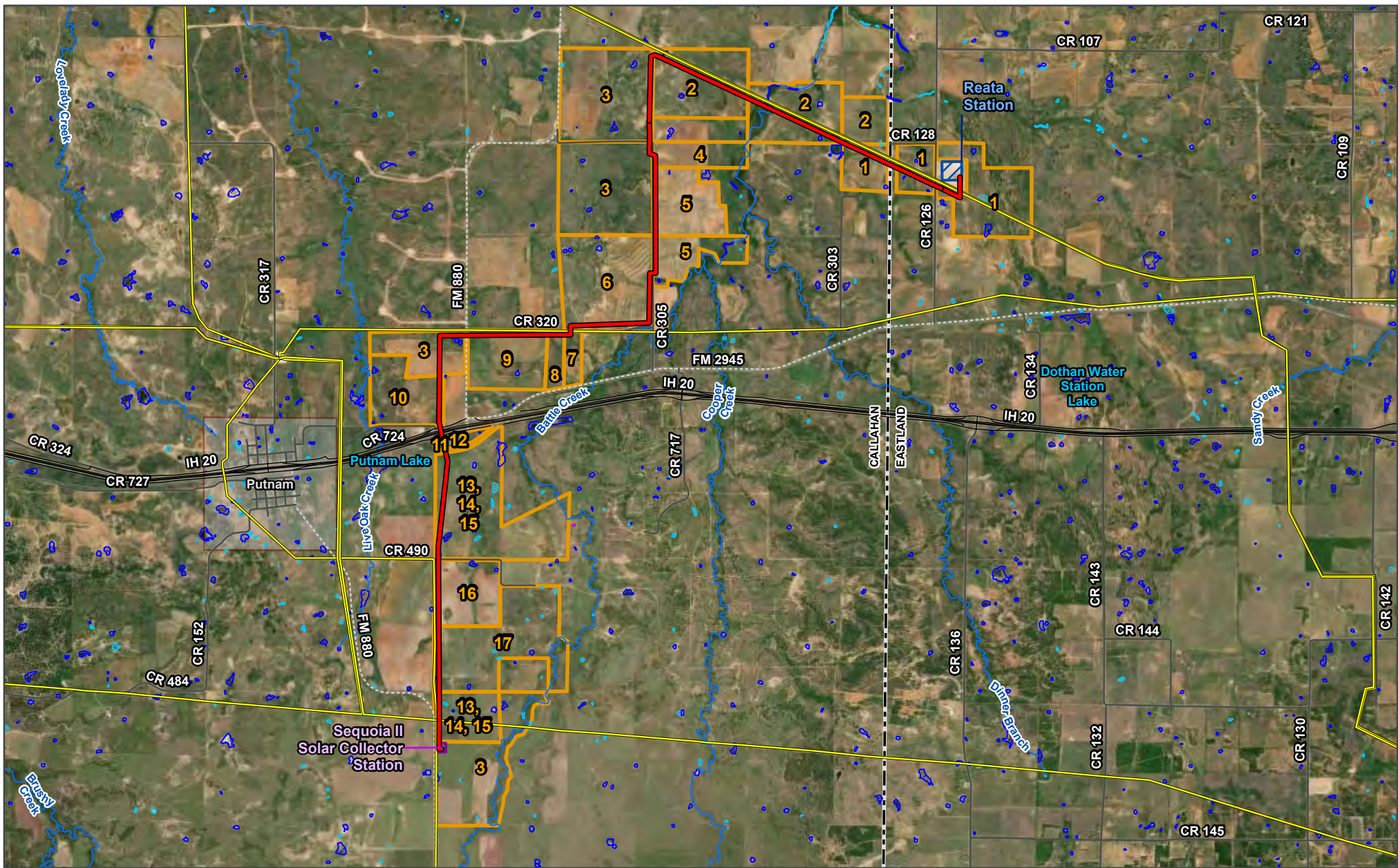
ERCOT Standard Generation Interconnection Agreement

cancelled Irrevocable Standby Letter of Credit to the Bank with instructions to cancel the Irrevocable Standby Letter of Credit, and shall send to Generator a copy of such cancelled Irrevocable Standby Letter of Credit and instructions for cancellation, and (ii) return all cash deposit(s), if any, then held by TSP to Generator.

First Amendment
to
ERCOT Standard Generation Interconnection Agreement

Schematic of the Lone Star Transmission System in the Proximate Area of the Project





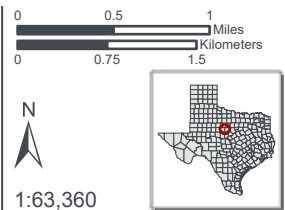
DEVILLE SOLAR GEN-TIE
TRANSMISSION LINE

Directly Affected Landowners Map

Proposed Project	Interstate Highway	County Boundary
Reata Station	Existing Transmission and Sub-Transmission Lines	Intermittent Lake/Pond
Sequoia II Solar Collector Station	Intermittent Stream/River	Perennial Lake/Pond
Farm-to-Market Road	City Boundary	Perennial, Earthen, Water Storage Reservoir
County Road		Directly Affected Property

Callahan County, TX
Eastland County, TX
USGS 7.5' Quadrangle:
Putnam North, TX, 32099-D2
Bernie Lake, TX, 32099-D1
Putnam South, TX, 32099-C2
NAD 1983 2011 UTM Zone 14N
32.375°N 99.1399°W

Base Map: ESRI ArcGIS Online,
accessed September 2025
Updated: 9/8/2025
Project No. 87368
Layout: Directly Affected Landowners
Aprx:
87368_loneStarDevilleGenTie_CCN



1:63,360
SWCA
ENVIRONMENTAL CONSULTANTS

Landowner Names, Property Identification, and Map Locations
Cross-Reference Table

Map ID¹	Parcel ID(s)²	Landowner Name	Address	City	State	Zip
1	Eastland Co. 3128 and 3129 / Callahan Co. 4077	TEB Land & Cattle, LP	P.O. Box 588	Cisco	TX	76437
2	4075, 4057 and 4037	John Doyle Isenhower	650 College Drive, Apartment C	Abilene	TX	79601
3	17511, 3947, 3913 and 5558	Benton Craig Pruet, Trustee of The Benton Jones Pruet Estate Trust	P.O. Box 697	Baird	TX	79504
4	4040	Kenneth L. Chapman	514 East Pershing Street	Eastland	TX	76448
5	4039 and 4044	CBLR Exploration, LLC	149 Overlook Drive	Cisco	TX	76437
6	3946	Winona Migliavacca	609 Gill Drive	Abilene	TX	79601
7	18887	Angel Santoyo	6916 Chisholm Trail	North Richland Hills	TX	76182
8	3925	Shawn Marvin Sanders	7462 Lakeridge Parkway	Abilene	TX	79602
9	18751	Philip Alan Green, Trustee of the Philip Alan Green Investment Trust, UTA December 5, 2012	117 Golden Kinglet Lane	Cisco	TX	76437
10	3912	John Garland Hawkins	258 Hlavek Road	Decatur	TX	76234
11	N/A ³	B. J. Pruet, Inc.	340 PR 4836	Baird	TX	79504
12	5541	Terri Diann Greenway	17338 E. Highway 6	Dublin	TX	76446

¹ Map IDs refer to the numbers identified on the map in Attachment No. 5.

² All Parcel IDs reflect parcels located in Callahan County, except where otherwise noted.

³ Parcel in A-957 / BOA Survey 3 is incorrectly identified and associated with a parcel ID located in A-956 / BOA Survey 2

Map ID¹	Parcel ID(s)²	Landowner Name	Address	City	State	Zip
13	N/A ⁴ and 5557	John David Isenhower	P.O. Box 847	Putnam	TX	76469
14	N/A ⁴ and 5557	Steven Dale Isenhower	P.O. Box 911	Putnam	TX	76469
15	N/A ⁴ and 5557	Cristy Lyn Isenhower	P.O. Box 847	Putnam	TX	76469
16	5575	William C. Earp	3289 CR 268	Baird	TX	79504
17	5578	Cy and Desray Singleton	107 East Enon Avenue	Everman	TX	76140

⁴ Parcel in A-957 / BOA Survey 3 is incorrectly identified and associated with a parcel ID located in A-966 / BOA Survey 8



September 26, 2025

<Landowner Name>

<Address>

<City, State, Zip>

RE: PUC Docket No. 58632; *Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties, Texas*

Dear [Landowner]:

Lone Star Transmission, LLC (Lone Star) gives notice of its intent to amend its Certificate of Convenience and Necessity (CCN) to construct a proposed single-circuit 345-kV transmission line in Eastland and Callahan Counties, Texas. Lone Star has filed its application to amend its CCN with the Public Utility Commission of Texas (Commission or PUC) in Docket No. 58632 – *Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties, Texas*.

Lone Star is filing a single routing option (Consensus Route) for this project. The new transmission line will be constructed between Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market Road (FM) 2945 in Eastland County, and the Sequoia II Solar Point of Interconnection (POI), located along and east of FM 880 approximately 1.07 miles north of its intersection with CR 482 in Callahan County. The proposed Consensus Route is approximately 9.50 miles in length. The estimated cost of the transmission line is approximately \$21.16 million, and the estimated cost of station improvements at the Reata Station is approximately \$3.26 million. The project will be constructed using primarily concrete and steel monopole structures.

Your land may be directly affected in this docket. If Lone Star's route is approved by the PUC, Lone Star will have the right to build a facility that may directly affect your land. The PUC docket will not determine the value of your land or the value of an easement if one is needed by the applicant to build the facility. If you have questions about the transmission line, you may contact Tracy Wieczorek at (512) 236-3151 (office) or (512) 517-8798 (mobile).

September 26, 2025

Page 2

A map illustrating Lone Star's Consensus Route is enclosed for your review. Also enclosed is a written description of the Consensus Route that has been filed with the Commission in the Lone Star CCN application. A detailed routing map may be downloaded from Lone Star's website at <https://www.lonestartransmission.com/regulatory/reata-to-sequoia-II.html>.

All routes and route segments included in this notice are available for selection and approval by the Public Utility Commission of Texas. Additionally, the PUC may modify any proposed route or segment into different configurations than those proposed.

The enclosed brochure entitled "Guide for Landowners Affected by a New Electric Transmission Line Route" provides basic information about how you may participate in this docket, and how you may contact the PUC. Please read this brochure carefully. It can also be found at https://ftp.puc.texas.gov/public/puct-info/industry/electric/forms/ccn/Guide_for_Landowners_Affected_by_a_New_Electric_Transmission_Line_Route.pdf. The brochure includes sample forms for making comments and for making a request to intervene as a party in this docket. The PUC's brochure emphasizes: ***The only way to fully participate in the PUC's decision on where to locate the transmission line is to intervene in the docket. It is important for an affected person to intervene because Lone Star is not obligated to keep affected persons informed of the PUC's proceedings and cannot predict which route may or may not be approved by the PUC.***

In addition to the contacts listed in the brochure, you may call the PUC's Customer Assistance Hotline at (888) 782-8477. Hearing- and speech-impaired individuals with text telephones (TTY) may contact the PUC's Customer Assistance Hotline at (512) 936-7136 or toll free at (800) 735-2989. If you wish to participate in this proceeding by becoming an intervenor, the deadline for intervention in the proceeding is October 27, 2025, and the PUC should receive a letter from you requesting intervention by that date if you choose to intervene. The request to intervene form is included with your brochure.

The preferred method for you to file your request for intervention is electronically. If you decide to file a request for intervention, you will be required to serve the request on other parties by email. Therefore, please include your own email address on the intervention form. Instructions for electronic filing via the "PUC Filer" on the Commission's website can be found here: <https://interchange.puc.texas.gov/filer>. Instructions for using the PUC Filer are available at https://ftp.puc.texas.gov/public/puct-info/industry/filings/E-Filing_Instructions.pdf. For assistance with your electronic filing, please contact the Commission's Help Desk at (512) 936-7100 or helpdesk@puc.texas.gov. You can review materials filed in this docket on the PUC Interchange at: <http://interchange.puc.texas.gov/>.

September 26, 2025

Page 3

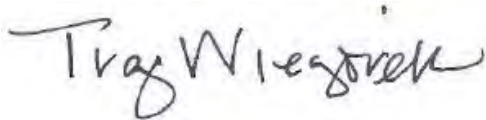
While the preferred method for submitting a request for intervention is electronically, if you are unable to file your request for intervention electronically, you may file your request by mailing a hard copy to the PUC. The PUC should receive a letter from you requesting intervention by the intervention date (October 27, 2025). If you are not filing your request to intervene electronically, mail the request for intervention to:

Public Utility Commission of Texas
Central Records
Attn: Filing Clerk
1701 N. Congress Ave.
P.O. Box 13326
Austin, Texas 78711-3326

Persons who wish to intervene in the docket must also mail a copy of their request for intervention to all parties in the docket and all persons that have pending motions to intervene, at or before the time the request for intervention is mailed to the PUC.

In addition to the intervention deadline, other important deadlines may already exist that affect your participation in this docket. You should review the orders and other filings already made in the docket. The enclosed brochure explains how you can access these filings.

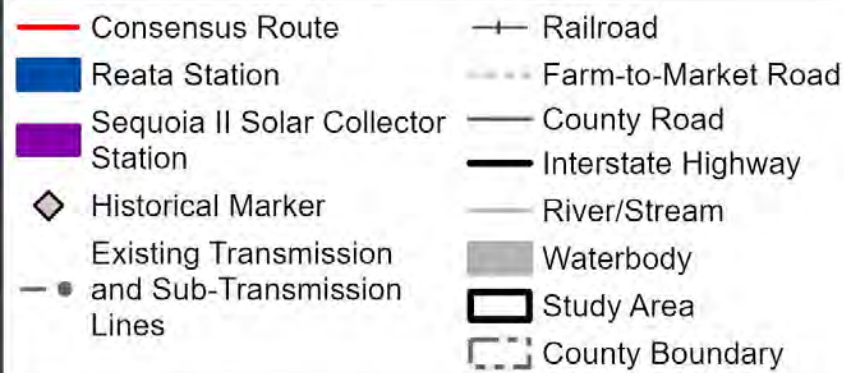
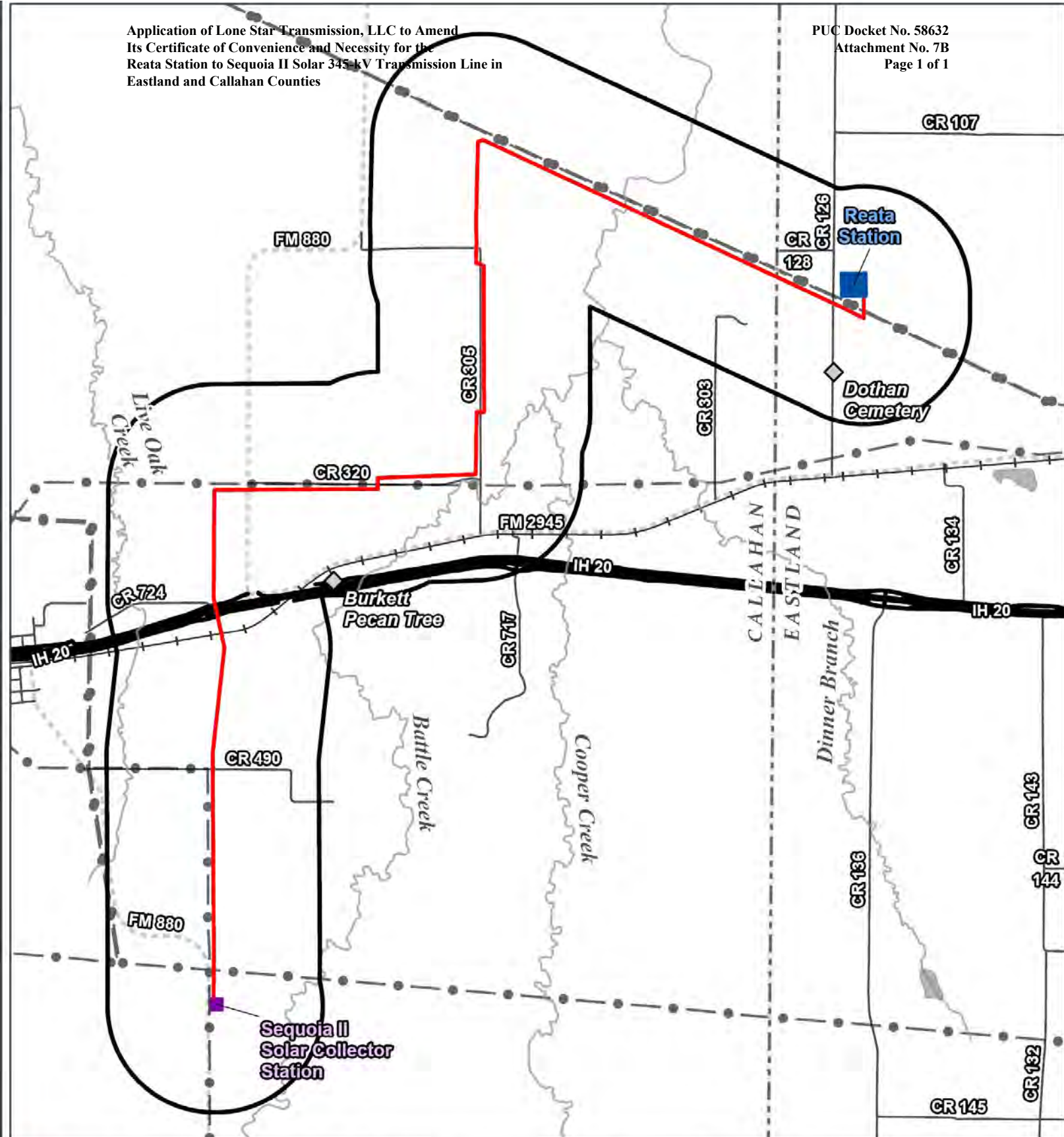
Sincerely,



Tracy Wieczorek
Director, Land Strategy and Community Relations
Lone Star Transmission, LLC
Office: (512) 236-3151
Mobile: (512) 517-8798
Email: Tracy.Wieczorek@lonestar-transmission.com

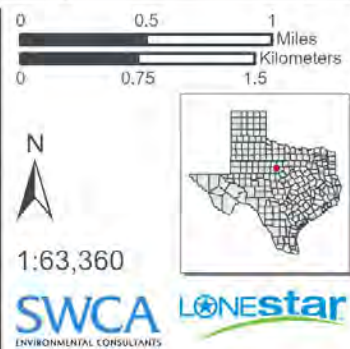
Enclosures:

- Map of Consensus Route
- Consensus Route Description
- Landowner Brochure
- Comment/Protest Form
- Intervenor Form



Callahan County, TX
Eastland County, TX
USGS 7.5' Quadrangle:
Putnam North, TX, 32099-D2
Bernie Lake, TX, 32099-D1
Putnam South, TX, 32099-C2
NAD 1983 UTM Zone 14N
32.3788°N 99.1401°W

Base Map: ESRI ArcGIS Online,
accessed September 2025
Updated: 9/5/2025
Project No. 87368
Layout: PUCT Notice Map
Aprx:
87368 loneStarDevilleGenTie CCN



**Lone Star Transmission, LLC
Reata to Sequoia II Solar 345-kV Transmission Line Project
Consensus Route Description**

The Consensus Route (Route) originates on the south side of Lone Star's existing Reata Station, located along and east of CR 126 approximately 1.10 miles north of its intersection with FM 2945 in Eastland County. Here the Route extends to the south approximately 0.1 miles and then turns northwest for approximately 2.6 miles, crossing CR 126, the Eastland/Callahan County line and Battle Creek and paralleling an existing utility corridor. The Route then angles southwest for approximately 0.04 miles and then turns south for approximately 0.74 miles, paralleling property lines and crossing CR 305. Here the Route angles southeast and extends approximately 0.05 miles, crossing CR 305 again, then turns south and runs approximately 0.89 miles, paralleling property lines. Here the Route turns west and extends approximately 0.05 miles, crossing CR 305 again. Then the Route turns south for approximately 0.38 miles, paralleling property lines, and, then, northwest of the CR 305 and CR 320 intersection, turns west for approximately 0.59 miles. Here the Route turns south and extends approximately 0.07 miles, crossing CR 320. Then the Route turns west and extends approximately 1.02 miles, paralleling property lines and an existing transmission line and crossing FM 880. Here the Route turns south for approximately 0.65 miles, then, angles southeast and extends approximately 0.31 miles, crossing Interstate Highway (IH) 20, IH 20 frontage roads, and a railroad track. The Route then angles southwest for approximately 0.65 miles. Here the Route shifts south and extends approximately 1.53 miles, crossing CR 490 and several private access roads and paralleling an existing transmission line and existing property lines. The Route then turns east, extends approximately 0.03 miles and terminates at the Sequoia II Solar Collector Substation Point of Interconnection, located along and east of FM 880 approximately 1.07 miles north of the FM 880 and CR 482 intersection in Callahan County.



PUBLIC UTILITY COMMISSION OF TEXAS

Guide for Landowners Affected by a New Electric Transmission Line Route

Why am I receiving this notice?

You are receiving this notice because your property is near one of the possible routes for a proposed electric transmission line. You can find maps of the proposed routes on the website of the company that applied to build the line.

What does the Public Utility Commission of Texas (PUC) do?

The PUC is the Texas state agency that decides if a transmission line is needed and what route the line will follow. The PUC does not build or operate electric transmission lines.

What are transmission lines and why do we need them?

Electric transmission lines carry electricity long distances across the state. They bring electricity from power plants to cities and neighborhoods where they link to smaller wires called distribution-level wires, that carry electricity to individual customers' homes and businesses. New electric transmission lines are needed where there is growth in electricity demand or where existing transmission lines are at full capacity.

Public Participation in the Transmission Line Siting Process

How can I participate?

Depending on the level of participation you choose, you can either be a protestor or an intervenor.

- **Protestors** – If you have concerns about the transmission line, you can send us written comments about the proposed routes. These comments are filed in the public record and are available to anyone who is interested in the application. Comments help inform the PUC Commissioners and staff of the public concerns.
- **Intervenors** – Intervening makes you an official participant in the legal case where the transmission line and the route are debated in front of a judge and the PUC Commissioners. You will be allowed to present evidence in the case and can cross-examine witnesses. You can testify in the case and may also be cross-examined by the other parties in the case. Intervenors must follow along with the process of the case, respond to requests from the Administrative Law Judge (ALJ) and other parties, and actively participate in the case. Otherwise, they may lose their status as an intervenor. Intervenors are not required to have an attorney.

Why should I participate?

If you have any concerns about the proposed routes, the PUCT encourages you to participate in the siting process. As a landowner, you have detailed knowledge of the impacted area that might not be reflected in the application. Sharing your knowledge with the PUCT allows us to make better-informed decisions about the route of the line.

How can I follow the process?

All the documents related to a case are filed in the PUCT public document interchange. You can search for the case by name or by the five-digit docket number. You can also sign up to receive a notification every time a new document is added related to the case. The interchange is at <https://interchange.puc.texas.gov/>

What is the process?

After the company applies to build a new transmission line to the PUCT, technical staff reviews the application. The PUCT sends the application to the State Office of Administrative Hearings (SOAH) when an intervenor or technical staff requests a hearing. A SOAH judge will schedule a prehearing conference to address procedural matters, including setting a procedural schedule for the case. The procedural schedule will set a hearing date, deadlines to request information from other participants and deadlines to file written testimony prior to the hearing. SOAH conferences and hearings can be held by video conference with a call-in option. All participants in the case must attend the hearing to have their written testimony entered into evidence. After the hearing, the SOAH judge will give the PUCT a recommendation about the route.

The PUCT Commissioners are not bound by this recommendation in selecting a route for the transmission line. The PUCT Commissioners will issue a final decision at a public meeting, which the people participating in the case can attend and request to make a statement. The PUCT Commissioners can and sometimes do make alterations to the route in response to statements from landowners. The company building the transmission line will then negotiate with landowners for the easements on their property. PUCT Commissioners meet in public meetings broadcast online.

During the time the case is going through the hearing process, participants in the case also negotiate to find a route that satisfies everyone. The PUCT Commissioners are not required to approve a negotiated route.

The entire process can take up to six months.

Where do I go for more information?

The company that has applied to build the line will have maps on their website. For more information about how to participate in the process please contact the PUCT Office of Public Engagement <https://www.puc.texas.gov/agency/about/ope/> or 512-936-7374.

Comments in Docket No. 58632

If you want to be a PROTESTOR only, please complete this form. Although public comments are not treated as evidence, they help inform the PUC and its staff of the public concerns and identify issues to be explored. The PUC welcomes such participation in its proceedings.

For USPS, send one copy to:

Public Utility Commission of Texas
Central Records
P.O. Box 13326
Austin, TX 78711-3326

For all other delivery or courier services, send one copy to:

Public Utility Commission of Texas
Central Records
1701 N. Congress Ave.
Austin, TX 78701

First Name: _____ Last Name: _____

Phone Number: _____ Fax Number: _____

Address, City, State: _____

I am NOT requesting to intervene in this proceeding. As a PROTESTOR, I understand the following:

- I am NOT a party to this case;
- My comments are not considered evidence in this case; and
- I have no further obligation to participate in the proceeding.

Please check one of the following:

- ☐ I own property with a habitable structure located near one or more of the utility's proposed routes for a transmission line.
- ☐ One or more of the utility's proposed routes would cross my property.
- ☐ Other. Please describe and provide comments. You may attach a separate page, if necessary. _____

Signature of person submitting comments:

_____ Date: _____

Request to Intervene in PUC Docket No. 58632

The following information must be submitted by the person requesting to intervene in this proceeding. This completed form will be provided to all parties in this docket. **If you DO NOT want to be an intervenor, but still want to file comments, please complete the "Comments" page.**

For USPS, send one copy to:

Public Utility Commission of Texas
Central Records
P.O. Box 13326
Austin, TX 78711-3326

For all other delivery or courier services, send one copy to:

Public Utility Commission of Texas
Central Records
1701 N. Congress Ave.
Austin, TX 78701

First Name: _____ Last Name: _____

Phone Number: _____ Fax Number: _____

Address, City, State: _____

Email Address: _____

I am requesting to intervene in this proceeding. As an INTERVENOR, I understand the following:

- I am a party to the case;
- I am required to respond to all discovery requests from other parties in the case;
- If I file testimony, I may be cross-examined in the hearing;
- If I file any documents in the case, I will have to provide a copy of that document to every other party in the case; and
- I acknowledge that I am bound by the Procedural Rules of the Public Utility Commission of Texas (PUC) and the State Office of Administrative Hearings (SOAH).

Please check one of the following:

- ☐ I own property with a habitable structure located near one or more of the utility's proposed routes for a transmission line.
- ☐ One or more of the utility's proposed routes would cross my property.
- ☐ Other. Please describe and provide comments. You may attach a separate page, if necessary.

Signature of person requesting intervention:

_____ Date: _____



September 26, 2025

<Name>

<Title>

<Utility Provider Name>

<Address>

<City, State, Zip Code>

RE: PUC Docket No. 58632; *Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties*

Dear [Contact Name],

Lone Star Transmission, LLC ("Lone Star") gives notice of its intent to amend its Certificate of Convenience and Necessity (CCN) to construct a proposed 345-kilovolt (kV) single-circuit transmission line in Eastland and Callahan Counties. Lone Star has filed its application to amend its CCN with the Public Utility Commission of Texas ("Commission" or "PUC") in Docket No. 58632 – *Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties*.

Lone Star is filing a single routing option (Consensus Route) for this project that is approximately 9.50 miles in length. The estimated cost of the transmission line is approximately \$21.16 million with approximately \$3.26 million in additional station interconnection costs. The project will be constructed using primarily concrete monopole structures.

A map illustrating Lone Star's proposed Consensus Route is enclosed for your review. Also enclosed is a written description of the Consensus Route that has been filed with the Commission in the Lone Star CCN application.

If you have questions about this transmission line project or Lone Star's CCN application, you may contact Lone Star's representative, Tracy Wiczorek at (512) 236-3151 (office) or (512) 517-8798 (mobile).

Persons who wish to intervene in the proceeding or comment upon the action must submit a request to intervene to the PUC. The deadline for intervention in the proceeding is October 27, 2025, and a letter requesting intervention should be received by the PUC by that date.

The preferred method for you to file your request for intervention is electronically, and you will be required to serve the request on other parties by email. Therefore, please include your own email address on the intervention form. Instructions for electronic filing via the "PUC Filer" on the Commission's website can be found here: <https://interchange.puc.texas.gov/filer>. Instructions

September 26, 2025
Page 2

for using the PUC Filer are available at https://ftp.puc.texas.gov/public/puct-info/industry/filings/E-Filing_Instructions.pdf. Once you obtain a tracking sheet associated with your filing from the PUC Filer, you may email the tracking sheet and the document you wish to file to: centralrecords@puc.texas.gov. For assistance with your electronic filing, please contact the Commission's Help Desk at (512) 936-7100 or helpdesk@puc.texas.gov. You can review materials filed in this docket on the PUC Interchange at: <http://interchange.puc.texas.gov/>.

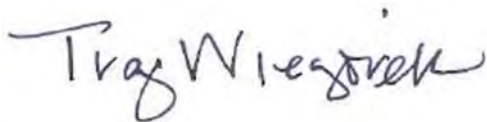
If you are unable to file your request for intervention electronically, you may file your request for intervention by mailing a hard copy of your request to the PUC. The PUC should receive your request to intervene by the intervention date (October 27, 2025). Mail the request for intervention (along with 10 copies of the request) to the following address:

Public Utility Commission of Texas
Central Records
Attn: Filing Clerk
1701 N. Congress Ave.
P.O. Box 13326
Austin, Texas 78711-3326

All routes and routing links included in this notice are available for selection and approval by the Public Utility Commission of Texas.

The Commission has developed a brochure titled "Guide for Landowners Affected by a New Electric Transmission Line Route". Copies of the brochure are available from Lone Star by calling Tracy Wieczorek or may be downloaded from the PUC's website at https://ftp.puc.texas.gov/public/puct-info/industry/electric/forms/ccn/Guide_for_Landowners_Affected_by_a_New_Electric_Transmission_Line_Route.pdf. To obtain additional information about this case, contact the PUC at (512) 936-7120 or toll free at (888) 782-8477. Hearing- and speech-impaired individuals with text telephones (TTY) may contact the PUC at (512) 936-7136 or toll free at (800) 735-2989.

Sincerely,



Tracy Wieczorek
Director, Land Strategy and Community Relations
Lone Star Transmission, LLC
Office: (512) 236-3151
Mobile: (512) 517-8798
Email: Tracy.Wieczorek@Lonestar-Transmission.com

Enclosures:

- Map of Consensus Route
- Consensus Route Description

List of Utilities Receiving Notice of Application

AEP Texas Inc.

Chad Burnett
Vice President, Regulatory and Finance
American Electric Power Inc.
539 N. Carancahua
Corpus Christi, Texas 78401

Comanche County Electric Cooperative Association

Alan Lesley
General Manager
Comanche County Electric Cooperative Association
P.O. Box 729
Comanche, Texas 76442

Electric Transmission Texas LLC

Hannah R. Turner
Director, Regulatory and Finance
Electric Transmission Texas LLC
400 West 15th Street, Suite 800
Austin, Texas 78701

September 26, 2025

<Office Holder Name, County/City or DoD or OPUC>

<Address>

<City, State, Zip>

RE: PUC Docket No. 58632; *Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties, Texas*

Dear Sir or Madam:

Lone Star Transmission, LLC (Lone Star) gives notice of its intent to amend its Certificate of Convenience and Necessity (CCN) to construct a proposed single-circuit 345-kV transmission line in Eastland and Callahan Counties, Texas. Lone Star has filed its application to amend its CCN with the Public Utility Commission of Texas (Commission or PUC) in Docket No. 58632 – *Application of Lone Star Transmission, LLC to Amend its Certificate of Convenience and Necessity for the Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties, Texas*.

Lone Star is filing a single routing option (Consensus Route) for this project. The new transmission line will be constructed between Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market Road (FM) 2945 in Eastland County, and the Sequoia II Solar Point of Interconnection (POI), located along and east of FM 880 approximately 1.07 miles north of its intersection with CR 482 in Callahan County. The proposed Consensus Route is approximately 9.50 miles in length. The estimated cost of the transmission line is approximately \$21.16 million, and the estimated cost of station improvements at the Reata Station is approximately \$3.26 million. The project will be constructed using primarily concrete and steel monopole structures.

A map illustrating Lone Star's proposed Consensus Route is enclosed for your review. Also enclosed is a written description of the Consensus Route that has been filed with the Commission in the Lone Star CCN application. A detailed routing map may be downloaded from Lone Star's website at <https://www.lonestartransmission.com/regulatory/reata-to-sequoia-II.html>.

If you have questions about this transmission line project or Lone Star's CCN application, you may contact Lone Star's representative, Tracy Wieczorek at (512) 236-3151 (office) or (512) 517-8798 (mobile).

If you decide to file a request for intervention, you will be required to serve the request on other parties by email. Therefore, please include your own email address on the intervention form. Instructions for electronic filing via the "PUC Filer" on the Commission's website can be found here: <https://interchange.puc.texas.gov/filer>. Instructions for using the PUC Filer are available at https://ftp.puc.texas.gov/public/puct-info/industry/filings/E-Filing_Instructions.pdf. For assistance with your electronic filing, please contact the Commission's Help Desk at (512) 936-7100 or helpdesk@puc.texas.gov. You can review materials filed in this docket on the PUC Interchange at: <http://interchange.puc.texas.gov/>. The deadline to intervene is October 27, 2025.

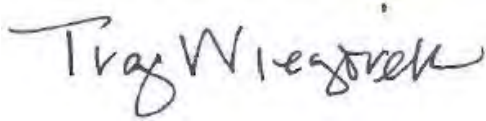
If you are unable to file your request for intervention electronically, you may file your request for intervention by mailing a hard copy of your request to the PUC. The PUC should receive your request to intervene by the intervention date of October 27, 2025. Mail the request for intervention to the following address:

Public Utility Commission of Texas
Central Records
Attn: Filing Clerk
1701 N. Congress Avenue
P.O. Box 13326
Austin, Texas 78711-3326

All routes and route segments included in this notice are available for selection and approval by the Public Utility Commission of Texas.

The Commission has developed a brochure titled "Guide for Landowners Affected by a New Electric Transmission Line Route". Copies of the brochure are available from Lone Star by calling Tracy Wieczorek or may be downloaded from the PUC's website at <https://ftp.puc.texas.gov/public/puct-info/industry/electric/forms/ccn/Guide for Landowners Affected by a New Electric Transmission Line Route.pdf>. To obtain additional information about this case, contact the PUC at (512) 936-7120 or toll free at (888) 782-8477. Hearing- and speech-impaired individuals with text telephones (TTY) may contact the PUC's Customer Assistance Hotline at (512) 936-7136 or toll free at (800) 735-2989.

Sincerely,

A handwritten signature in black ink that reads "Tracy Wieczorek". The signature is written in a cursive, slightly slanted style.

Tracy Wieczorek
Director, Land Strategy and Community Relations
Lone Star Transmission, LLC
Office: (512) 236-3151
Mobile: (512) 517-8798
Email: Tracy.Wieczorek@lonestar-transmission.com

Enclosures:

- Map of Consensus Route
- Consensus Route Description
- Comment/Protest Form
- Intervenor Form

List of Public Officials Receiving Notice of Application

Eastland County

The Honorable David Hullum
Eastland County Judge
100 W. Main, Suite 203
Eastland, TX 76448

Andy Maxwell
Eastland County Precinct 1 Commissioner
Commissioners Court
100 W. Main, Suite 203
Eastland, TX 76448

James Crenshaw
Eastland County Precinct 2 Commissioner
Commissioners Court
100 W. Main, Suite 203
Eastland, TX 76448

Ronnie Wilson
Eastland County Precinct 3 Commissioner
Commissioners Court
100 W. Main, Suite 203
Eastland, TX 76448

Robert Rains
Eastland County Precinct 4 Commissioner
Commissioners Court
100 W. Main, Suite 203
Eastland, TX 76448

Department of Defense Siting Clearinghouse

Department of Defense
Military Aviation and Installation Assurance
Siting Clearinghouse
3400 Defense Pentagon
Room 5C646
Washington, D.C. 20301-3400
osd.dod-siting-clearinghouse@mail.mil

Callahan County

The Honorable Nicki Harle
Callahan County Judge
100 West Fourth Street, Suite 200
Baird, TX 79504

Ashley McGowen
Callahan County Precinct 1 Commissioner
1521 FM 2700
Clyde, TX 79510

Bryan Farmer
Callahan County Precinct 2 Commissioner
19314 FM 604 South
Clyde, TX 79510

Tom Windham
Callahan County Precinct 3 Commissioner
1100 West 3rd
Baird, TX 79504

Erwin Clark
Callahan County Precinct 4 Commissioner
300 South Chestnut
Cross Plains, TX 76443

Office of Public Utility Counsel

Benjamin Barkley
Chief Executive and Public Counsel
Office of Public Utility Counsel
P.O. Box 12397
Austin, Texas 78711-2397

PUBLIC NOTICE

Application of Lone Star Transmission, LLC to Amend its Certificate of Convenience and Necessity for the Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties, Texas

PUBLIC UTILITY COMMISSION OF TEXAS (PUC) DOCKET NO. 58632

Lone Star Transmission, LLC (Lone Star) gives notice of its intent to amend its Certificate of Convenience and Necessity (CCN) to construct a proposed 345-kV single-circuit transmission line in Eastland and Callahan Counties, Texas. Lone Star has filed its application to amend its CCN with the Public Utility Commission of Texas (Commission or PUC) in Docket No. 58632 – *Application of Lone Star Transmission, LLC to Amend its Certificate of Convenience and Necessity for the Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties, Texas*.

Lone Star is filing a single routing option (Consensus Route) for this project that is approximately 9.50 miles in length. The estimated cost of the transmission line is approximately \$21.16 million, and the estimated cost of station improvements at the Reata Station is approximately \$3.26 million.

The new transmission line will be constructed between Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market Road (FM) 2945 in Eastland County, and the Sequoia II Solar Point of Interconnection (POI), located along and east of FM 880 approximately 1.07 miles north of its intersection with CR 482 in Callahan County. The project will be constructed using primarily concrete and steel monopole structures.

All routes and route segments included in this notice are available for selection and approval by the Public Utility Commission of Texas.

Persons who are affected by the transmission line and wish to intervene in the docket or comment on the applicant's application should submit a request for intervention or comments to the PUC. The preferred method for you to file your request for intervention or comments is electronically, and you will be required to serve the request on other parties by email. Therefore, please include your own email address on the intervention form. Instructions for electronic filing via the "PUC Filer" on the Commission's website can be found here:

<https://interchange.puc.texas.gov/filer>. Instructions for using the PUC Filer are available at https://ftp.puc.texas.gov/public/puct-info/industry/filings/E-Filing_Instructions.pdf. For assistance with your electronic filing, please contact the Commission's Help Desk at (512) 936-7100 or helpdesk@puc.texas.gov. You can review materials filed in this docket on the PUC Interchange at: <http://interchange.puc.texas.gov/>.

If you are unable to file your request for intervention electronically, you may file your request for intervention by mailing a hard copy of your request to the PUC. Mail the request for intervention to the following address:

Public Utility Commission of Texas
Central Records
Attn: Filing Clerk
1701 N. Congress Ave.
P.O. Box 13326
Austin, Texas 78711-3326

The deadline for intervention in the docket is October 27, 2025, and the PUC should receive a letter from anyone requesting intervention by that date.

Persons who wish to intervene in the docket must also mail a copy of their request for intervention to all parties in the docket and all persons that have pending motions to intervene, at or before the time the request for intervention is mailed to the PUC. In addition to the intervention deadline, other important deadlines may already exist that affect your participation in this docket. You should review the orders and other filings already made in the docket.

The only way to fully participate in the PUC's decision on where to locate the transmission line is to intervene in the docket. It is important for an affected person to intervene because the utility is not obligated to keep affected persons informed of the PUC's proceedings and cannot predict which route may or may not be approved by the PUC.

The PUC has developed a brochure titled "Guide for Landowners Affected by a New Electric Transmission Line Route". Copies of the brochure are available from Lone Star by calling Tracy Wieczorek or may be downloaded from the PUC's website at https://ftp.puc.texas.gov/public/puct-info/industry/electric/forms/ccn/Guide_for_Landowners_Affected_by_a_New_Electric_Transmission_Line_Route.pdf. The brochure includes sample forms for making comments and for making a request to intervene as a party in this docket. In addition to the contacts listed in the brochure, you may call the PUC at (512) 936-7120 or toll free at (888) 782-8477. Hearing- and speech-impaired individuals with text telephones (TTY) may contact the PUC at (512) 936-7136 or toll free at (800) 735-2989.

A detailed routing map may be downloaded from Lone Star's website at <https://www.lonestartransmission.com/regulatory/reata-to-sequoia-II.html>.

If you have questions about the transmission line, you may contact Lone Star representative Tracy Wieczorek at (512) 236-3151 (office) or (512) 517-8798 (mobile).

Consensus Route Description

For this project, only a Consensus Route is filed in Lone Star's CCN. The following narrative, along with the map in this notice shows the route and provides a detailed description of the route.

The Consensus Route (Route) originates on the south side of Lone Star's existing Reata Station, located along and east of CR 126 approximately 1.10 miles north of its intersection with FM 2945 in Eastland County. Here the Route extends to the south approximately 0.1 miles and then turns northwest for approximately 2.6 miles, crossing CR 126, the Eastland/Callahan County line

and Battle Creek and paralleling an existing utility corridor. The Route then angles southwest for approximately 0.04 miles and then turns south for approximately 0.74 miles, paralleling property lines and crossing CR 305. Here the Route angles southeast and extends approximately 0.05 miles, crossing CR 305 again, then turns south and runs approximately 0.89 miles, paralleling property lines. Here the Route turns west and extends approximately 0.05 miles, crossing CR 305 again. Then the Route turns south for approximately 0.38 miles, paralleling property lines, and, then, northwest of the CR 305 and CR 320 intersection, turns west for approximately 0.59 miles. Here the Route turns south and extends approximately 0.07 miles, crossing CR 320. Then the Route turns west and extends approximately 1.02 miles, paralleling property lines and an existing transmission line and crossing FM 880. Here the Route turns south for approximately 0.65 miles, then, angles southeast and extends approximately 0.31 miles, crossing Interstate Highway (IH) 20, IH 20 frontage roads, and a railroad track. The Route then angles southwest for approximately 0.65 miles. Here the Route shifts south and extends approximately 1.53 miles, crossing CR 490 and several private access roads and paralleling an existing transmission line and existing property lines. The Route then turns east, extends approximately 0.03 miles and terminates at the Sequoia II Solar Collector Substation Point of Interconnection, located along and east of FM 880 approximately 1.07 miles north of the FM 880 and CR 482 intersection in Callahan County.

Newspaper Publication List

Notice of the CCN Application will be published in the following newspaper of general circulation in Eastland and Callahan Counties:

Eastland County

Eastland County Today Cisco Press

Eastland County Newspapers

215 S. Seaman

Eastland, Texas 76448

(254) 629-1707

Callahan County

Baird Banner

P.O. Box 817

Clyde, Texas 79510

(254) 210-1558

September 26, 2025

Mr. Alan Cain
Director of Wildlife
Wildlife Division
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

RE: PUC Docket No. 58632; *Application of Lone Star Transmission, LLC to Amend Its Certificate of Convenience and Necessity for the Reata Station to Sequoia II Solar 345-kV Transmission Line in Eastland and Callahan Counties*

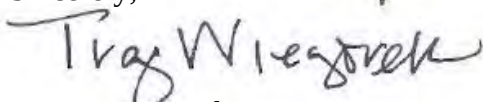
Dear Mr. Cain:

Lone Star Transmission, LLC (Lone Star) gives notice that it has filed an application with the Public Utility Commission of Texas (PUC) to amend its Certificate of Convenience and Necessity (CCN) in the above-referenced docket. The new transmission line will be constructed between Lone Star's Reata Station, located along and east of County Road (CR) 126 approximately 1.10 miles north of its intersection with Farm to Market Road (FM) 2945 in Eastland County, and the Sequoia II Solar Collection Substation Point of Interconnection, located along and east of FM 880 approximately 1.07 miles north of its intersection with CR 482 in Callahan County.

In accordance with the requirements of 16 Texas Administrative Code (TAC) § 22.52 and the PUC's CCN Application form, I have enclosed a copy of Lone Star's Application and its *Environmental Assessment for the Reata Station to Sequoia II Solar 345-kV Transmission Line Project*, which was prepared by SWCA Environmental Consultants and is Attachment 1 to Lone Star's CCN Application.

If you have questions about this project or Lone Star's CCN Application or Environmental Assessment, you may contact me at (512) 236-3151 (office) or (512) 517-8798 (mobile).

Sincerely,



Tracy Wieczorek
Director, Land Strategy & Community Relations
Lone Star Transmission, LLC
Office: (512) 236-3151
Mobile: (512) 517-8798
Email: tracy.wieczorek@lonestar-transmission.com

Enclosures:

- Lone Star's CCN Application and Environmental Assessment

AFFIDAVIT

STATE OF TEXAS

COUNTY OF TRAVIS

I, Robert Orr, being duly sworn, file this application as Director, Regulatory Affairs for Lone Star Transmission, LLC (Lone Star), that, in such capacity, I am qualified and authorized on behalf of Lone Star to file and verify such application, am personally familiar with the maps and attachments filed with this application, and have complied with all the requirements contained in the application; and that all statements made and matters set forth therein and all attachments thereto are true and correct. I further state that the application is made in good faith and that this application does not duplicate any filing presently before the Public Utility Commission of Texas.

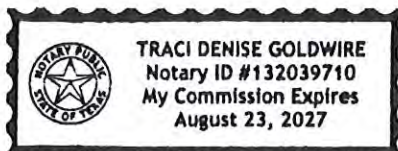


Robert Orr
Director, Regulatory Affairs
Lone Star Transmission, LLC

SUBSCRIBED AND SWORN TO BEFORE ME,

a Notary Public in and for the State of Texas, this

the 10th day of September, 2025.



Notary Public State of Texas

My Commission Expires: August 23, 2027