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Control Number - 57723

Item Number - 2

STANDARD APPLICATION FOR A CERTIFICATE OF CONVENIENCE AND NECESSITY FOR A PROPOSED TRANSMISSION LINE

DOCKET NO. 57723

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

Standard Application for a Certificate of Convenience and Necessity for a Proposed Transmission Line
and
Application for a Certificate of Convenience and Necessity for a Proposed Transmission Line Pursuant To 16 TAC §25.174

Note: As used herein, the term "joint application" refers to an application for proposed transmission facilities for which ownership will be divided. All applications for such facilities should be filed jointly by the proposed owners of the facilities.

1. Applicant (Utility) Name:

For joint applications, provide all information for each applicant.

Applicant (Utility) Name:	Oncor Electric Delivery Company LLC ("Oncor")
Certificate Number:	30043
Street Address:	1616 Woodall Rodgers Freeway Dallas, Texas 75202
Mailing Address:	1616 Woodall Rodgers Freeway Dallas, Texas 75202-1234

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.

Oncor will hold the sole ownership interest in the Glaze Lake Switch 138 kilovolt ("kV") Loop Transmission Line Project (the "Proposed Transmission Line Project").

3.	**Person to Contact:**	Jeremy McConnell
	Title/Position:	Regulatory Manager II
	Phone Number:	(214) 486-5216
	Mailing Address:	1616 Woodall Rodgers Fwy., Suite 6A-015 Dallas, Texas 75202
	Email Address:	Jeremy.McConnell@oncor.com
3a.	**Alternate Contact:**	Thomas Yamin
	Title/Position:	Director of Regulatory, Transmission & Planning
	Phone Number:	(214) 486-3512
	Mailing Address:	1616 Woodall Rodgers Fwy., Suite 6B-005 Dallas, Texas 75202
	Email Address:	Thomas.Yamin@oncor.com

3b.	**Legal Counsel:**	Winston Skinner
	Phone Number:	(512) 542-8427
	Mailing Address:	Vinson & Elkins LLP 200 W. 6th Street, Suite 2500 Austin, Texas 78701
	Email Address:	wskinner@velaw.com

Please contact Winston Skinner with any inquiries regarding the project.

4. Project Description:

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.

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.).

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.

Name or Designation of Project:	Glaze Lake Switch 138 kV Loop Transmission Line Project
Design Voltage Rating (kV):	138 kV
Operating Voltage Rating (kV):	138 kV
Normal Peak Operating Current (A):	2,569 A

The Proposed Transmission Line Project is a new, double-circuit 138 kV transmission line to be built on double-circuit steel monopoles between Oncor's existing Jewett Switch – Crockett Switch 138 kV Line and the proposed Glaze Lake Switch. Between the proposed Glaze Lake Switch and the proposed 138 kV point of interconnection ("POI") for the proposed Leon Solar Park generation facility ("Leon Solar POI"), Oncor will construct 138 kV double-circuit capable steel monopoles, with one 138 kV circuit installed initially.

The proposed endpoint location along Oncor's existing Jewett-Crockett 138 kV line is located approximately 2.1 miles east of the intersection of State Highway ("SH") 7 and Farm to Market Road ("FM") 542 in Leon County, Texas. The proposed Glaze Lake Switch is located approximately 0.13 miles northeast of the intersection of FM 542 and County Road ("CR") 250. The proposed Leon Solar POI will be located approximately 0.4 miles northeast of the proposed Glaze Lake Switch.

Oncor is proposing a single route for the Proposed Transmission Line Project. Oncor and the interconnecting generation developer, Misae Solar IV LLC ("Misae Solar"), have worked with all owners of directly affected land, as defined in 16 TAC § 22.52(a), to acquire the necessary right-of-way ("ROW") for the Proposed Transmission Line Project. Misae Solar will assign the ROW to Oncor upon approval of this CCN Application (*see* Question 6 below).

The Proposed Transmission Line Project's route is approximately 9.7 miles in length between the proposed endpoint location along the existing Jewett Switch – Crockett Switch 138 kV Line and the proposed Glaze Lake Switch, and it is approximately 0.4 miles in length between the proposed Glaze Lake Switch and the proposed Leon Solar POI.

The total estimated cost of the Proposed Transmission Line Project, including costs for Glaze Lake Switch, is approximately $39,900,000.

5. Conductor and Structures:

Conductor Size and Type:	1926.9 kcmil Aluminum Conductor Steel Supported Trapezoidal-Shaped Wire ("ACSS/TW")
Number of conductors per phase:	1
Continuous Summer Static Current Rating (A):	2,569 A
Continuous Summer Static Line Capacity at Operating Voltage (MVA):	614 MVA
Continuous Summer Static Line Capacity at Design Voltage (MVA):	614 MVA
Type and composition of Structures:	Double-Circuit Steel Poles
Height of Typical Structures:	90-120 feet*
Estimated Maximum Height of Structures:	120 feet*

*This number reflects the approximate visible height of the structure from ground to structure top, which may vary depending on terrain and other engineering constraints.

Explain why these structures were selected; include such factors as landowner preference, engineering considerations, and costs comparisons to alternate structures that were considered.

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

Oncor chose the double-circuit 138 kV steel monopole as the structure type to be used for the Proposed Transmission Line Project for numerous reasons, including but not limited to: span length between structures, construction and maintenance issues, structure footprint, ROW requirements, commodity and labor costs, technical specifications, the specific characteristics of the study area, and other engineering-related reasons. The 138 kV steel monopole is Oncor's current standard for this type of project.

Provide dimensional drawings of the typical structures to be used in the project.

A dimensional drawing of the typical tangent structure for the double-circuit portion of the Proposed Transmission Line Project (i.e., between the Jewett Switch – Crockett Switch 138 kV Line and Glaze Lake Switch) is shown in Figure 1-2, page 1-7, of the *Environmental Assessment for the Proposed Glaze Lake Switch 138 kV Loop Transmission Line Project in Leon County, Texas* ("Environmental Assessment"), prepared by Freese and Nichols, Inc. ("FNI") and included as Attachment No. 1. A dimensional drawing of the typical tangent structure for the double-circuit capable, single circuit initial installation portion of the Proposed Transmission Line Project (i.e., between Glaze Lake Switch and the Leon Solar POI) is shown in Figure 1-3, page 1-9, of the Environmental Assessment. Design criteria will comply with applicable statutes, the appropriate edition of the National Electrical Safety Code ("NESC"), and Oncor's standard design practices.

6. **Right-of-way:**

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.

Miles of Right-of-Way:	Approximately 10 miles
Miles of Circuit:	Approximately 20 miles
Width of Right-of-Way:	Approximately 70 feet
Percent of Right-of-Way Acquired:	100%*

* The necessary ROW for the Proposed Transmission Line Project was acquired by Misae Solar and will be assigned to Oncor upon approval of this CCN 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 study area is not located within the city limits or extraterritorial jurisdiction of any incorporated municipality and is situated approximately 12 miles to the west-northwest of the City of Crockett in rural areas of Leon and Houston Counties, Texas. Rural

residential and agricultural development is concentrated along the major roadway corridor, SH 7, and several small county roads. The public road network is sparse, and the study area is dominated by private residential roads.

The study area consists of gently rolling to nearly level, open shrubland and prairie used primarily for rangeland and agricultural land uses. Forage is identified as the primary crop by acreage area in Leon and Houston Counties.

The elevation of the study area ranges from 150 to 250 feet above mean sea level. Drainage throughout the study area is primarily toward, and occurring within, the floodplains of the Upper Keechi Creek and the Trinity River. The Upper Keechi Creek generally flows southeast across the study area to its confluence with the Trinity River, which generally flows from north to south on the eastern side of the study area.

Specific discussion regarding natural, human, and cultural resources in the study area is provided in Sections 3.1 through 3.8, pages 3-1 through 3-96, of the Environmental Assessment.

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.

Not applicable. The Proposed Transmission Line Project will loop into an existing transmission line.

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.

Glaze Lake Switch

The proposed Glaze Lake Switch will be located on Oncor's existing fee-owned property approximately 0.13 miles northeast of the intersection of FM 542 and CR 250 in Leon County. Glaze Lake Switch is designed as a three-breaker 138 kV ring bus arrangement POI station that will provide access to the Electric Reliability Council of Texas ("ERCOT") transmission grid for the proposed Leon Solar generating facilities. The Proposed Transmission Line Project is designed to loop Oncor's existing Jewett Switch – Crockett Switch 138 kV Line through Glaze Lake Switch with a radial extension from Glaze Lake Switch to the proposed Leon Solar POI.

Other 138 kV equipment to be added include: disconnect switches for circuit-breaker isolation, a voltage transformer for relay input, surge arresters for lightning protection, associated tubular aluminum bus, insulators, and steel support structures. Ultimately, the layout can be expanded to accommodate one additional 138 kV terminal in a four-breaker 138 kV ring bus arrangement.

The dimensions of Glaze Lake Switch will be approximately 425 feet by 290 feet. The dimensions of and additional details regarding the layout of Glaze Lake Switch are illustrated in Attachment No. 2.

Proposed Leon Solar POI

The proposed Leon Solar POI is a point of interconnection, not a new HVDC converter station, substation, or switching station. It will be located approximately 0.4 miles northeast of the proposed Glaze Lake Switch.

8. Estimated Schedule:

Estimated Dates of:	Start[1]	Completion[1]
Right-of-way and Land Acquisition[2]	09/2023	08/2025
Engineering and Design	10/2024	01/2026
Material and Equipment Procurement	09/2024	10/2025
Construction of Facilities	09/2025	04/2026
Energize Facilities	-	04/2026

[1] Estimated schedule assumes administrative approval of the CCN Application and numerous other factors. The estimated schedule should not in any way be considered a representation, promise, or guarantee.

[2] The necessary ROW for the project was acquired by Misae Solar and will be assigned to Oncor upon approval of this CCN Application.

9. Counties:

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

The Proposed Transmission Line Project will be constructed wholly within Leon County, Texas.

10. Municipalities:

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

The proposed route will not traverse any municipality's corporate limits or extraterritorial jurisdiction.

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.

To the extent necessary or applicable, evidence of consent for service in this area is publicly available and previously filed in PUCT Docket No. 52.

11. Affected Utilities:

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

No other electric utility will be served by or connected to the Proposed Transmission Line 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 electric 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.

No other electric utility will be involved in the construction of the Proposed Transmission Line Project, and no other electric utility's existing facilities will be utilized for the Proposed Transmission Line Project.

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.

Oncor proposes to finance the facilities included in the Proposed Transmission Line Project with a combination of debt and equity in compliance with its authorized capital structure, which is similar to the means used for previous construction projects. Oncor plans to utilize internally generated funds (equity) and proceeds received from the issuance of securities. Oncor will typically obtain short-term borrowings as needed for interim financing of its construction expenditures in excess of funds generated internally. These borrowings are then repaid through the issuance of long-term debt securities, the type and amount of which are as of yet undetermined.

Oncor is the sole applicant. No other party will be reimbursed for any portion of the Proposed Transmission Line Project.

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.

	Transmission Line Facilities[2]	Glaze Lake Switch[1]
Right-of-way and Land Acquisition[3]	$1,494,000	$6,000
Engineering and Design (Utility)	-	-
Engineering and Design (Contract)	$450,000	$480,000
Procurement of Material and Equipment (including stores)	$6,934,000	$2,641,000
Construction of Facilities (Utility)	-	-
Construction of Facilities (Contract)	$23,290,000	$4,605,000
Other (all costs not included in the above categories)	-	-
Estimated Total Cost	**$32,168,000**	**$7,732,000**

[1] Cost estimates for the Glaze Lake Switch include a three-breaker, 138 kV ring bus arrangement and associated controls to connect the Proposed Transmission Line Project. Relay panels and controls for the 138 kV switchyard equipment will be housed in a proposed control center.

[2] The costs associated with the Leon Solar POI are included in the transmission line cost estimate because it will be a transmission line asset.

[3] Upon approval of the CCN Application, all ROW for the Proposed Transmission Line Project will be assigned to Oncor. Oncor will pay Misae Solar a fair market value for the ROW based on a market survey of the proximate area.

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

Not applicable.

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 Transmission Line Project is needed to connect a new, approximately 211 MW capacity generating facility to the ERCOT grid through the Leon Solar POI. Generation of this capacity requires transmission-level facilities to interconnect to the grid.

The Leon Solar generating facility will be interconnected to the ERCOT grid through nearest existing transmission line that can accommodate generating facilities of that capacity. In the planning studies conducted as part of the generation interconnection process, ERCOT reviewed the transmission facilities in the area and accepted Oncor's existing Jewett Switch – Crockett Switch 138 kV Line as an appropriate means of interconnecting the Leon Solar generation facilities. All necessary generation interconnection studies have been or are being performed in accordance with ERCOT requirements. Misae Solar's point of interconnection to the Oncor system, at Leon Solar POI, will be approximately 0.4 miles northeast of Oncor's proposed Glaze Lake Switch. Misae Solar will construct, own and operate its generating equipment and facilities on its side of the Leon Solar POI, including its own substation.

Accordingly, Oncor and Misae Solar have signed an agreement to provide transmission facilities necessary to interconnect the proposed Leon Solar generation facilities to Oncor's transmission system and the ERCOT grid. Refer to Attachment Nos. 3-A and 3-B for the ERCOT Standard Generation Interconnection Agreement ("SGIA") 26INR0023 between Oncor and Misae Solar dated May 21, 2024, and Amendment No. 1 to the SGIA dated December 5, 2024, respectively.

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.

Due to the location of the proposed generation facilities, the current transmission system configuration in the vicinity of these facilities, and ERCOT's acceptance of the appropriate interconnection location, alternatives to the Proposed Transmission Line Project are limited.

The closest transmission line to Misae Solar's requested service location that can support a 211 MW generator interconnection is Oncor's Jewett Switch – Crockett Switch 138 kV Line. Oncor will establish Glaze Lake Switch that will connect to the Jewett Switch – Crockett Switch 138 kV Line via the Proposed Transmission Line Project.

The only other proximate interconnection option considered was the Grapeland Magnolia Tap – Grapeland Magnolia 138 kV Line; however, that radial line does not have the carrying capacity necessary to support a 211 MW generation interconnection. The next closest 138 kV line that could potentially interconnect a 211 MW generator interconnection, the Jewett – Long Lake – Palestine South 138 kV Line, is farther away than the Jewett Switch – Crockett Switch 138 kV Line. Other, more distant interconnection options would yield a longer and more costly interconnection than the Proposed Transmission Line Project.

Distribution alternatives were not considered because they would not and could not fulfill Misae Solar's request for transmission level service to its generating facility. Upgraded voltage, bundled conductors and additional transformers likewise would not fulfill Misae Solar's request for transmission level service to its generating facility.

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 the transmission system in the proximate area of the Proposed Transmission Line Project is shown in Attachment No. 5. The location and voltage of existing transmission lines, substations, taps, ties, meter points, and other facilities involving other electric utilities in relation to the Proposed Transmission Line Project are included in the map provided as Attachment No. 4. A map outlining the study area is located in Figure 3-1 of Appendix B to the Environmental Assessment included as Attachment 1.

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.

Oncor retained FNI to prepare the Environmental Assessment. The objective of the Environmental Assessment was to provide information in support of this application in addressing the requirements of Texas Utilities Code § 37.056(c)(4)(A)-(D), the Commission's CCN Application form, and 16 Texas Administrative Code ("TAC") § 25.101 as they apply to the Proposed Transmission Line Project.

By examining existing environmental conditions, including the human and natural resources that are located in the study area, the Environmental Assessment appraises the environmental effects of construction, operation, and maintenance of the Proposed Transmission Line Project. The Environmental Assessment may also be used in support of any additional local, state, or federal permitting activities that may be required for the Proposed Transmission Line Project.

To assist FNI in its evaluation, Oncor provided FNI with information regarding the project endpoints and route, need for the project, engineering and design requirements, construction practices, and ROW requirements.

The Proposed Transmission Line Project includes a single proposed route, for which all necessary ROW was acquired, and which addresses the requirements of PURA and the Commission's Substantive Rules.

Specific discussion regarding selection of a study area, identification of constraints, and assessment of the proposed route is set forth in the Environmental Assessment, included as Attachment No. 1.

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.

The Proposed Transmission Line Project, including both endpoints, directly affects properties owned by Oncor and eleven (11) landowners. Under 16 TAC § 22.52(a)(4), a utility must hold a public meeting prior to filing its application if 25 or more persons would be entitled to receive direct mail notice of the application. Therefore, no public meeting for the Proposed Transmission Line Project was required or held.

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).

A one inch = 1,850 feet map is included as Figure 3-1 in Appendix B of the Environmental Assessment included as Attachment No. 1. This base map includes sufficient cultural and natural features to identify the location of the proposed route in the field. This map delineates the study area and proposed route for the Proposed Transmission Line Project. This map also depicts the approximate locations of electronic installations (such as radio transmitters), airstrips, irrigated pasture or cropland, parks and recreational areas, historical and archeological sites, and environmentally sensitive areas (such as wetlands), to the extent any exist. Additionally, the map identifies existing facilities in the area of the Proposed Transmission Line Project, including taps, ties, meter points, or other utility facilities, as applicable.

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.

Figure 3-1 in Appendix B of the Environmental Assessment depicts on an aerial photograph, as applicable: (1) the location of the route for the Proposed Transmission Line Project; (2) the locations of all major public roads, including all federal and state roadways; (3) the locations of all known habitable structures on properties directly affected by the route; and (4) the boundaries (approximate or estimated according to best available information) of all properties directly affected by the route.

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.

Attachment No. 6 includes a table that cross-references each directly affected property identified in Figure 3-1 in Appendix B of the Environmental Assessment; the cross-reference table includes corresponding landowner names and addresses. All landowners crossed by the proposed route have already granted ROW for the Proposed Transmission

Line Project. Notice to landowners includes notice as required under Texas Utilities Code § 37.054(c) because Oncor is requesting approval to build a new station in this application. Additionally, no known habitable structures were identified within 300 feet of the proposed 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.

The following permits/approvals and related actions will be obtained or taken after Commission approval of the application and prior to beginning construction, if necessary:

1. Texas Department of Transportation ("TxDOT") permit(s) will be obtained for crossing a state-maintained roadway.
2. A Storm Water Pollution Prevention Plan ("SWPPP") will be prepared and a Notice of Intent will be submitted to the Texas Commission on Environmental Quality under the Texas Pollutant Discharge Elimination System ("TPDES") program.
3. A cultural resources survey plan will be developed with the Texas Historical Commission ("THC") for the proposed project.
4. Consultation with the U.S. Army Corps of Engineers ("USACE") will occur following the Commission's approval of this application to determine appropriate requirements under Section 404/Section 10 Permit criteria.
5. Consultation with the U.S. Fish and Wildlife Service will occur following the Commission's approval of this application to determine appropriate requirements under the Endangered Species Act.
6. Consultation with the Federal Aviation Administration ("FAA") will occur following the Commission's approval of this application to determine appropriate requirements and notification under Federal Aviation Regulations (14 CFR Part 77).
7. Texas General Land Office miscellaneous easement(s) will be obtained, as necessary, for crossing riverbeds, navigable streams, or other properties involving state property interests.

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.

As depicted on Figure 3-1 in Appendix B of the Environmental Assessment, no habitable structures were identified within 300 feet of the proposed route centerline. To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, FNI verified the absence of habitable structures within a measured distance of 320 feet of the proposed route centerline.

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.

There are no known AM radio transmitters located within 10,000 feet of the proposed route centerline. There are no known FM radio transmitters located within 2,000 feet of the proposed route centerline. There are no known microwave or other similar electronic installations located within 2,000 feet of the proposed route centerline.

Please refer to Table 4-1, page 4-25; Section 3.7.7, page 3-90; and Section 4.7.7, page 4-21, of the Environmental Assessment.

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.

FNI's review of federal and state aviation/airport maps and directories, aerial photograph interpretation, and reconnaissance surveys identified: (1) no FAA-registered airport with

a runway greater than 3,200 feet in length within 20,000 feet of the proposed route centerline; (2) no FAA-registered airport with a runway 3,200 feet or less in length within 10,000 feet of the proposed route centerline; (3) no private airstrip within 10,000 feet of the proposed route centerline; and (4) no heliport within 5,000 feet of the proposed route centerline.

Please refer to Table 4-1, page 4-25; Section 3.7.6, pages 3-89 to 3-90; and Section 4.7.6, pages 4-20 to 4-21, of the Environmental Assessment.

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.

Aerial photography interpretation and field reconnaissance surveys did not identify any agricultural land irrigated by traveling irrigation systems (rolling or pivot type) that the proposed route will traverse.

Please refer to Table 4-1, page 4-25; Section 3.7.3, page 3-87; and Section 4.7.3, page 4-18, of the Environmental Assessment.

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.

A copy of the written direct notice, with attached route description and map, that will be provided via first-class mail to the owners of land that will be "directly affected" by the Proposed Transmission Line Project, as that term is used in 16 TAC § 22.52(a)(3), is included as Attachment No. 7. The names and addresses of the directly affected landowners to whom notice will be mailed via first-class mail are included as Attachment No. 6. The list of owners of directly affected land in Attachment No. 6 consists of landowner data obtained via the Leon County tax office and appraisal district. Oncor and eleven (11) landowners are directly affected by the Proposed Transmission Line Project.

Notice to landowners includes notice as required under Texas Utilities Code § 37.054(c) because Oncor is requesting approval to build a new station in this application.

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

A copy of the written direct notice, with attached route description and map, that will be provided to utilities that are located within five miles of the proposed route is included as Attachment No. 8. The following utility will be provided the requisite notice on or before the filing date, as required by Commission rules:

Houston County Electric Cooperative

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 representative copy of the written notice, with attached route description and map, that will be provided to county authorities is included as Attachment No. 8. The following county authorities will be provided the requisite notice on or before the application filing date, as required by Commission rules:

Houston County: County Judge
Houston County: County Commissioners – Precincts 1, 2, 3, and 4
Leon County: County Judge
Leon County: County Commissioners – Precincts 1, 2, 3, and 4

No municipalities are located within five miles of the Proposed Transmission Line Project.

A representative copy of the written notice, with attached route description and map, that will be provided to the Department of Defense Military Aviation and Installation Assurance Siting Clearinghouse by email at osd.dod-siting-clearinghouse@mail.mil, and by first-class mail to the address below on or before the date this application is filed, is included as Attachment No. 8.

DOD Military Aviation and Installation Assurance Siting Clearinghouse
3400 Defense Pentagon, Room 5C646
Washington, DC 20301-3400

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.

Notice for this application will be published in the *Centerville News*, a newspaper of general circulation in Leon County. A representative copy of the general public notice to be published is included as Attachment No. 9.

Proof of publication will be provided in the form of a publisher's affidavit and tear sheet following publication of this notice.

A copy of the application and all attachments will be provided to the Texas Office of Public Utility Counsel ("OPUC"). A representative copy of the written notice, with attached route description and map, that will be provided to OPUC is included as Attachment No. 8.

Notice is required under Texas Utilities Code § 37.054(C) because the Proposed Transmission Line Project proposes to authorize a new station.

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.

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.

After review of federal, state, and local websites and maps, as well as field reconnaissance surveys, no parks or recreation areas owned by a governmental body or an organized group, club, or church were identified within the study area.

Please refer to Table 4-1, page 4-25; Section 3.7.2, page 3-86; Section 4.7.2, pages 4-17 to 4-18; and Section 4.7.5, pages 4-19 to 4-20 of the Environmental Assessment.

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.

Research and a records review of the THC Texas Archaeological Sites Atlas ("TASA") and Texas Archeological Research Laboratory ("TARL") records were conducted to locate known cultural resources within 1,000 feet of the proposed route centerline. THC records indicated no National Register of Historic Places ("NRHP"), no State Antiquities Landmarks ("SALs"), no Recorded Texas Historic Landmarks ("RTHLs"), and no Official Texas Historical Markers ("OTHMs") recorded within 1,000 feet of the proposed route centerline.

THC records indicated one historic cemetery, the Mount Pilgrim Cemetery, within 1,000 feet of the proposed route centerline. This cemetery is located 850 feet northwest of the proposed Leon Solar POI project endpoint.

One previously recorded archeological site, Site 41LN10, was identified within 1,000 feet of the proposed route centerline. This site, located approximately 300 feet east of the proposed route centerline, is described as a village and burial site impacted by cultivation.

Please refer to Table 4-1, page 4-25; Section 3.8, pages 3-90 through 3-96; and Section 4.8, pages 4-21 through 4-24, of the Environmental Assessment.

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 T.A.C. §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 T.A.C. §19.2(a)(21). Using the designations in 31 T.A.C. §501.3(b), identify the type(s) of Coastal Natural Resource Area(s) impacted by any part of the route and/or facilities.

The Proposed Transmission Line Project is not located, either in whole or in part, within the coastal management program boundary as defined in 31 TAC § 27.1 (formerly 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.

The Environmental Assessment prepared by FNI is included as Attachment No. 1.

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
4200 Smith School Road
Austin, Texas 78744

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

A copy of the application and all attachments, including the Environmental Assessment, will be provided to TPWD for review within seven days following the filing of the application for the Proposed Transmission Line Project. Please refer to Attachment No. 11 for a copy of the transmittal letter with which the application and all attachments, including the Environmental Assessment, will be sent to TPWD.

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.

31. List of Attachments to the CCN Application

Attachment No. 1:	Environmental Assessment
Attachment No. 2:	Preliminary Layout – Glaze Lake Switch with the Proposed Transmission Line Project Connection
Attachment No. 3-A:	ERCOT Standard Generation Interconnection Agreement 26INR0023 dated May 21, 2024

Attachment No. 3-B:	ERCOT Standard Generation Interconnection Agreement 26INR0023 Amendment No. 1 dated December 5, 2024
Attachment No. 4:	Transmission Area Map in Project Area
Attachment No. 5:	Schematic of Transmission System in Proximate Area of Project
Attachment No. 6:	List of Directly Affected Landowners for Notice and Pipeline Owners, Operators, and Associations for Courtesy Notice
Attachment No. 7:	Copy of Notice to Directly Affected Land Owners
Attachment No. 8:	Copy of Notice to Utilities, Counties, OPUC, Municipalities, and Department of Defense Military Aviation and Installation Assurance Siting Clearinghouse
Attachment No. 9:	Copy of Newspaper/Public Notice
Attachment No. 10:	Copy of Courtesy Notice to Pipeline Owners, Operators, and Associations
Attachment No. 11:	Transmittal Letter to TPWD
Attachment No. 12:	Affidavit

Innovative approaches
Practical results
Outstanding service

ENVIRONMENTAL ASSESSMENT
for the Proposed
GLAZE LAKE SWITCH 138 kV LOOP TRANSMISSION LINE PROJECT
IN LEON COUNTY, TEXAS

ONCOR ELECTRIC DELIVERY COMPANY LLC

February 2025

Prepared by:

FREESE AND NICHOLS, INC.
801 Cherry Street, Suite 2800
Fort Worth, Texas 76102
817-735-7300

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APPENDICES

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

AM radio	Amplitude Modulation radio (e.g., AM radio transmitter)
APLIC	Avian Power Line Interaction Committee
B.P.	Before Present
BEG	Bureau of Economic Geology
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
CCN	Certificate of Convenience and Necessity
CFR	Code of Federal Regulations
DoD	Department of Defense
EA	Environmental Assessment
e.g.	*exempli gratia* (for example)
EMST	Ecological Mapping Systems of Texas
ESA	Endangered Species Act
et al.	*et alia* (and others)
etc.	*et cetera* (and the rest)
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FHA	Federal Highway Administration
FM	Farm to Market Road (e.g., FM 542)
FM radio	Frequency Modulation radio (e.g., FM radio transmitter)
FNI	Freese and Nichols, Inc.
FPPA	Farmland Protection Policy Act
GIS	Geographic Information System
GLO	Texas General Land Office
GPS	Global Positioning System
HPA	High Probability Area
i.e.	*id est* (that is)
IPaC	Information for Planning and Consultation
ISD	Independent School District
kV	kilovolt (1,000 volts)
LRR	Land Resource Region
MBTA	Migratory Bird Treaty Act
MLRA	Major Land Resource Area

msl	mean sea level
NAIP	National Agriculture Imagery Program
NASS	National Agricultural Statistics Service (an agency of USDA)
NCED	National Conservation Easement Database
NESC	National Electrical Safety Code
NHD	National Hydrography Dataset
NPS	National Park Service
NRCS	Natural Resources Conservation Service (an agency of USDA)
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
NWP	Nationwide Permit
Oncor	Oncor Electric Delivery Company LLC
OTHM	Official Texas Historical Marker
PCB	Polychlorinated biphenyl
PCN	Pre-Construction Notification
POI	Point of Interconnection
PUCT	Public Utility Commission of Texas
ROW	Right-of-Way
RRC	Railroad Commission of Texas
RTEST	Rare, Threatened, and Endangered Species of Texas
RTHL	Recorded Texas Historic Landmark
SAL	State Antiquities Landmark
SCS	Soil Conservation Service (agency was renamed NRCS, see above)
SGCN	Species of Greatest Conservation Need
SH	State Highway (e.g., SH 7)
spp.	plural of species (multiple species of the same Genus)
SWPPP	Storm Water Pollution Prevention Plan
TARL	Texas Archeological Research Laboratory
TASA	Texas Archeological Sites Atlas
TCEQ	Texas Commission on Environmental Quality
THC	Texas Historical Commission
TPWD	Texas Parks and Wildlife Department
TSHA	Texas State Historical Association
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
TXNDD	Texas Natural Diversity Database

U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
var.	specific variety of a species

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1.0 PROJECT DESCRIPTION

1.1 SCOPE OF THE PROJECT

Oncor Electric Delivery Company LLC (Oncor) proposes to construct a new 138 kilovolt (kV) transmission line in Leon County, Texas from a proposed loop location along Oncor's existing Jewett – Crockett 138 kV Transmission Line to the proposed Glaze Lake Switch, ultimately to serve a customer's facilities at the proposed Leon Solar Point of Interconnection (POI). The proposed loop location is located along Oncor's existing Jewett – Crockett 138 kV Transmission Line approximately 2.1 miles east of the intersection of State Highway (SH) 7 and Farm to Market Road (FM) 542. The proposed Glaze Lake Switch is located approximately 0.13 miles northeast of the intersection of FM 542 and County Road 250. The proposed Leon Solar POI is located approximately 0.4 miles northeast of the proposed Glaze Lake Switch. The proposed transmission line project will be approximately 10 miles long. These proposed locations are shown relative to the local road network, county boundaries, and other natural features on **Figure 1-1**.

Freese and Nichols, Inc. (FNI) was retained to prepare an Environmental Assessment (EA) to support Oncor's application to amend its Certificate of Convenience and Necessity (CCN). This report has been prepared to provide information and address requirements of Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code, Public Utility Commission of Texas (PUCT) Procedural Rules Section 22.52(a)(4), PUCT Substantive Rules Section 25.101, and the PUCT CCN application form for a proposed transmission line. This document may also be used in support of any additional local, state, or federal permitting activities that may be required for the proposed project.

To assist FNI in its evaluation of the proposed project, Oncor provided FNI with information regarding the need, construction practices, and right-of-way (ROW) requirements for the proposed project. Oncor also provided information regarding engineering and design requirements for the proposed transmission line project.

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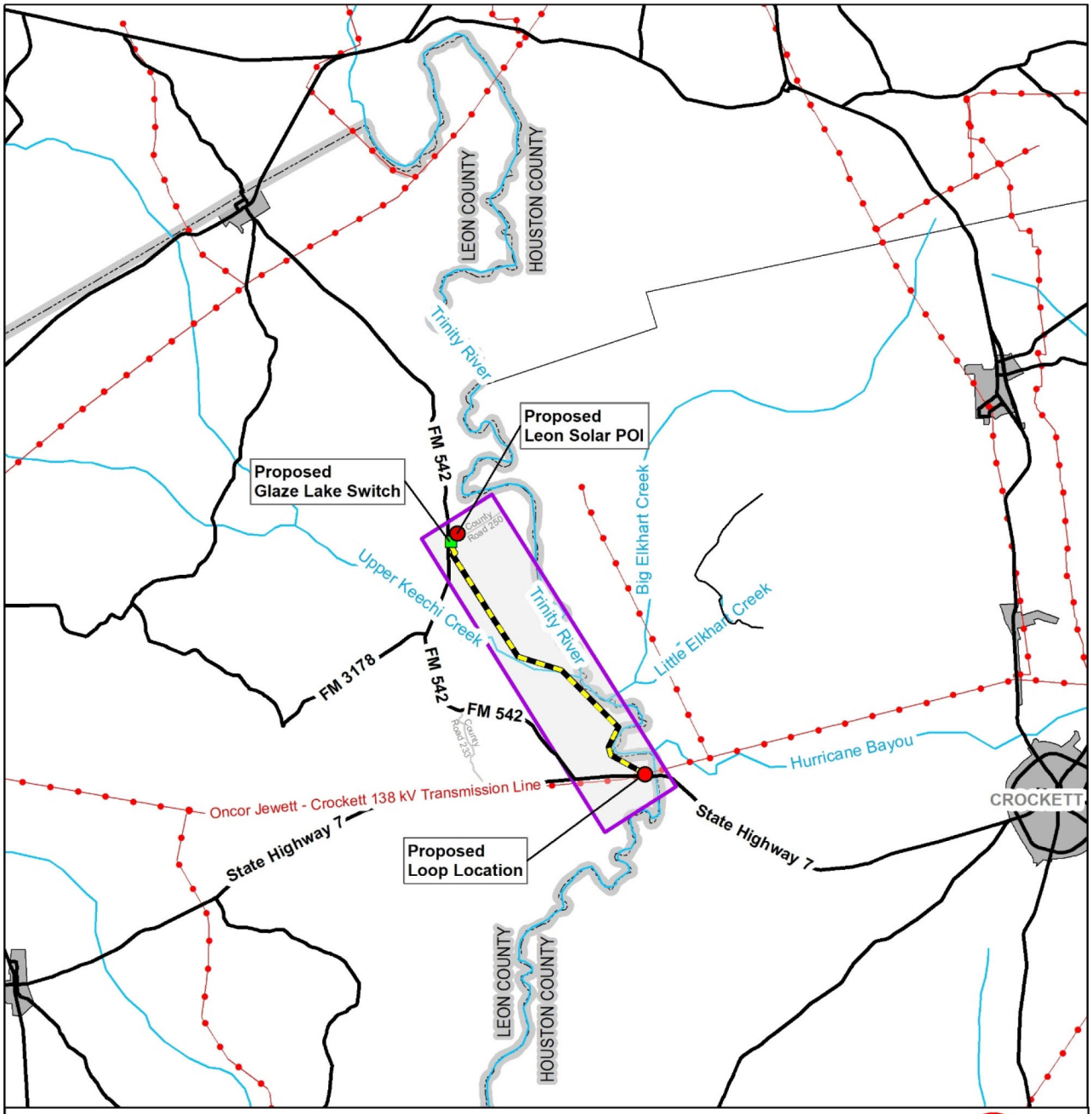


FIGURE 1-1. PROJECT LOCATION MAP
GLAZE LAKE SWITCH 138 kV LOOP TRANSMISSION LINE PROJECT

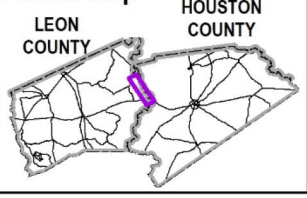
0 1 2 3 4 5 Miles

Note: Data is for display purposes only. All features and boundaries have been approximated from public resources. Aerial Photography (USDA, 2022)

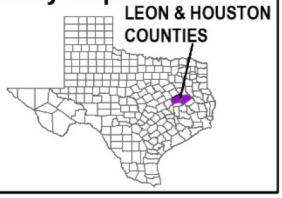
N W E S

Legend
- Proposed End Points
- Proposed Glaze Lake Switch
- Proposed Transmission Line
- Study Area
- Existing Transmission Line
- Major Roads
- Minor Roads
- County Line
- Major Rivers and Creeks

Extent Map



Vicinity Map



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The following sections include a description of the project (**Section 1.0**), an explanation of the environmental assessment methodology (**Section 2.0**), and a description of the existing environmental and social conditions in the study area (**Section 3.0**). An evaluation of the expected environmental impacts is presented in **Section 4.0**, followed by a list of report preparers (**Section 5.0**), and references used in preparing this report (**Section 6.0**). **Appendix A** provides copies of agency correspondence. **Appendix B** contains an environmental and land use constraints map.

1.2 PURPOSE AND NEED FOR THE PROJECT

Oncor will provide support for the purpose and need for the project as a part of the CCN application.

1.3 DESCRIPTION OF PROPOSED CONSTRUCTION

1.3.1 Transmission Line Design

For the proposed project, Oncor anticipates the use of a self-supporting, double-circuit steel monopole (**Figure 1-2**) from the proposed loop location to the proposed Glaze Lake Switch. Oncor anticipates the use of a self-supporting, double-circuit capable, steel monopole with one circuit in place initially (**Figure 1-3**) from the proposed Glaze Lake Switch to the proposed Leon Solar POI. Design criteria will comply with applicable statutes, the appropriate edition of the National Electrical Safety Code (NESC), and Oncor's standard design practices. The typical structure height is anticipated to be 90 to 120 feet. However, pole height may vary depending on terrain and other engineering constraints. The results of site-specific geotechnical and engineering studies will be used to determine the appropriate design and placement of the structures.

1.3.2 Right-of-Way Requirements

The proposed typical ROW width for the proposed project will be approximately 70 feet in most circumstances. The ROW normally extends an equal distance on both sides of the transmission line centerline. Additional ROW may be required at line angles or dead ends, or for terrain-related constraints and other engineering considerations.

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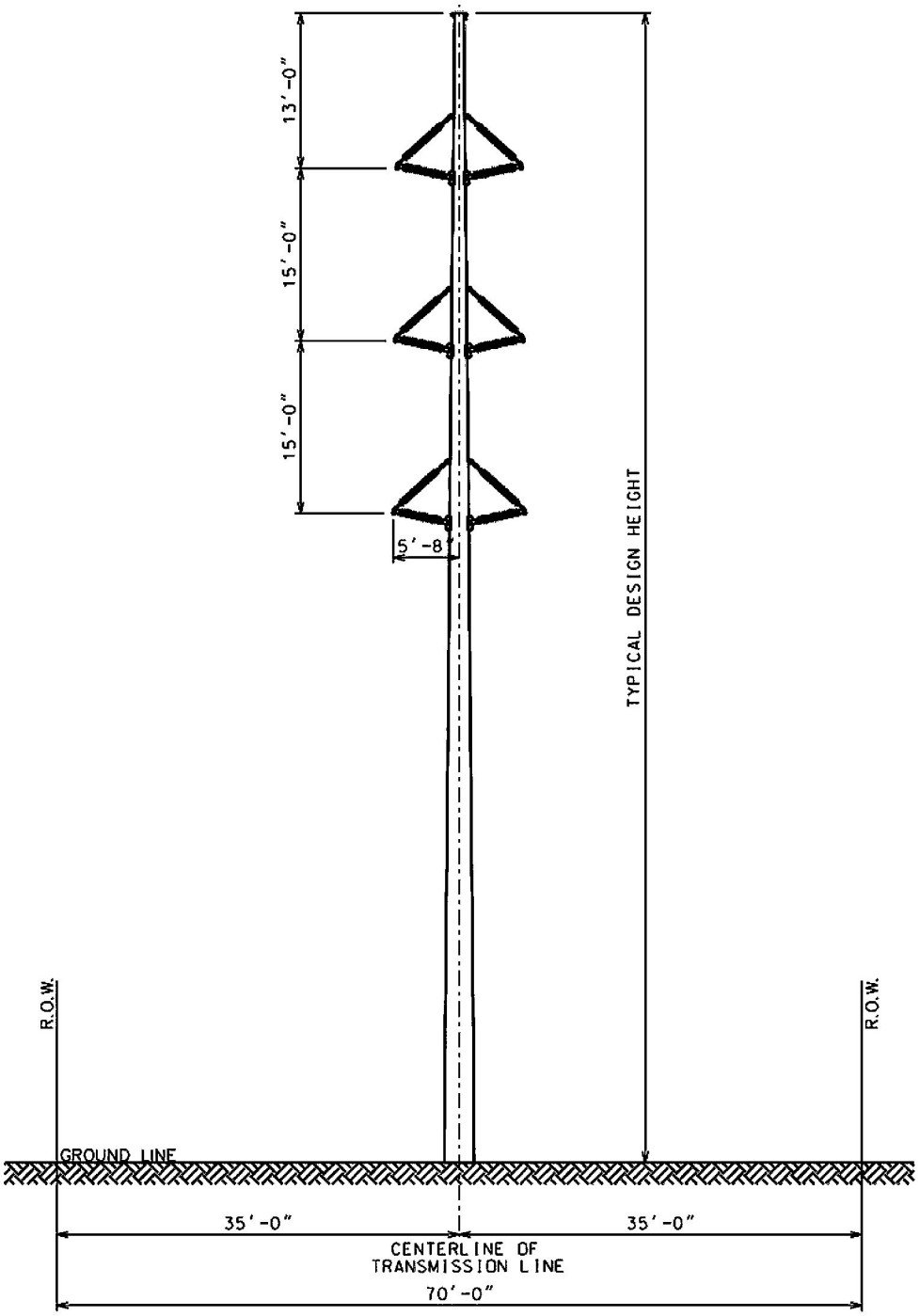

FIGURE 1-2. TYPICAL 138 kV TANGENT DOUBLE-CIRCUIT MONOPOLE GLAZE LAKE SWITCH 138 kV LOOP TRANSMISSION LINE PROJECT (NOT TO SCALE)

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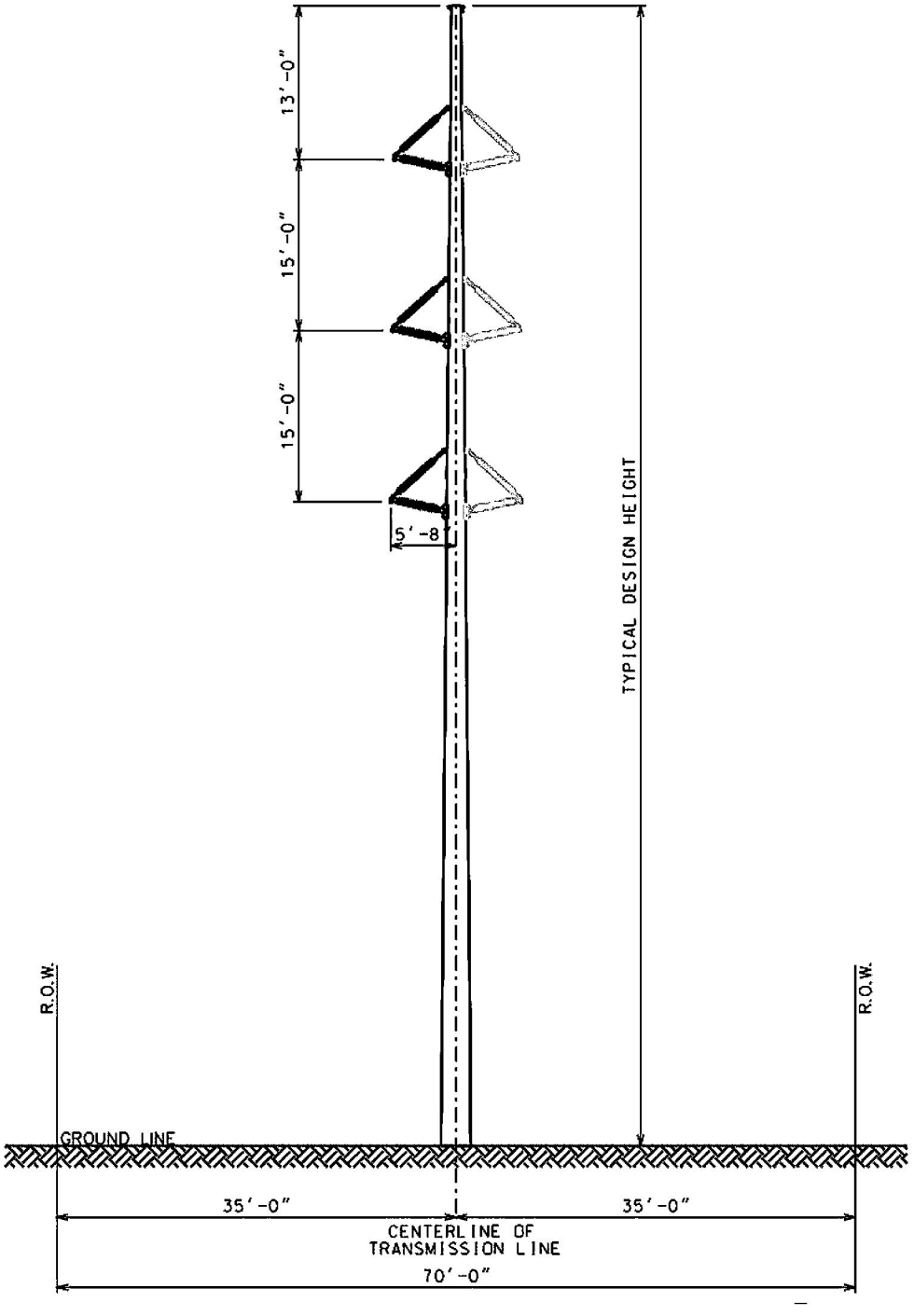

FIGURE 1-3. TYPICAL 138 kV TANGENT DOUBLE-CIRCUIT MONOPOLE (ONE CIRCUIT IN PLACE INITIALLY) GLAZE LAKE SWITCH 138 kV LOOP TRANSMISSION LINE PROJECT (NOT TO SCALE)

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1.3.3 Clearing Requirements

All brush and growth within the ROW, except for low growing groundcover, will be removed and maintained. For areas requiring hand clearing, vegetation will be cut level with the ground. No stump exceeding two inches above the ground surface will remain. Any tree located in a fence line having a diameter greater than four inches will be cut even with the top of the fence. In the event that stumps are located on hillsides or uneven ground, stumps will be cut where a mowing machine can pass over the ROW without striking stumps, roots, or snags.

1.3.4 Support Structure Assembly and Erection

Foundations for the monopole structures will be completed before erecting the structures. If the monopole structure is to be directly embedded, then a single hole will be augered into the ground at each structure location. Once the structure has been placed, the foundation will be filled with concrete, native material, or other Oncor engineering-approved material to hold the structure securely in place.

If the monopole structure is to have an anchor bolted foundation, a hole will be augered into the ground at each structure location, an anchor bolt cage will be placed in addition to steel rebar to reinforce the foundation, and the hole will be filled with concrete. The depth and diameter of the foundation will vary depending on the design of the structure specific to that location.

1.3.5 Conductor Stringing

Once a series of structures has been erected along the transmission line centerline, the conductor stringing phase will begin. Specialized equipment will be attached to properly support and protect the conductor during the pulling, tensioning, and sagging operations. Once conductors and shield wire are in place and tension and sag have been verified, conductor and shield wire hardware will be installed at each suspension point to maintain conductor position. Conductor stringing will continue until the transmission line construction is complete. All construction equipment, temporary culverts, and environmental controls previously installed will be removed once construction-related activities are complete.

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2.0 ROUTE EVALUATION METHODOLOGY

The objective of this study is to evaluate the proposed transmission line route for Oncor's Glaze Lake Switch 138 kV Loop transmission line project. Throughout this report, the terms "environmental" or "environment" shall include the human environment as well as the natural environment. FNI used a comprehensive methodology to evaluate the proposed transmission line route in accordance with Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code, PUCT Procedural Rules Section 22.52(a)(4), PUCT Substantive Rules Section 25.101 (including the PUCT policy of prudent avoidance), and the PUCT CCN application form for a proposed transmission line.

The following sections provide a description of the evaluation process, which includes study area delineation, data collection, reconnaissance surveys, constraints mapping, and evaluation of the proposed route.

2.1 STUDY AREA DELINEATION

The first step in the evaluation of the proposed project was to define a study area. This area needed to encompass the proposed Glaze Lake Switch and the proposed termination points (i.e., the proposed loop location on Oncor's existing Jewett – Crockett 138 kV Transmission Line and the proposed Leon Solar POI) and include an area large enough to adequately evaluate the proposed transmission line project in support of the CCN application. Delineating the study area establishes boundaries and limits for the information gathering process (i.e., identifying environmental and land use constraints) and allows FNI to focus its evaluation of project impacts within a specific area.

FNI reviewed United States (U.S.) Geological Survey (USGS) 1:24,000 scale topographic maps (USGS, 2022a; USGS, 2022b; USGS, 2022c) and aerial photography (U.S. Department of Agriculture [USDA], 2022) to develop and refine the study area boundary for the proposed project. For the purposes of this EA, references to "aerial photography" herein are references to USDA (2022) aerial imagery. FNI located and depicted the project endpoints on the maps and

identified major features in the study area, such as Oncor's existing Jewett – Crockett 138 kV Transmission Line, the Leon County-Houston County line, SH 7, FM 542, County Road 250, County Road 233, the Trinity River, Upper Keechi Creek, Big Elkhart Creek, and other features. **Figure 2-1** provides the study area boundary FNI delineated overlain on aerial photography (USDA, 2022) and general constraints resulting from the above-described process.

The study area is roughly rectangular in shape and encompasses approximately 25 square miles (16,000 acres). Beginning from the northernmost corner, the study area extends approximately 10.1 miles southeast, where it turns southwest for approximately 2.5 miles to a point southeast of the intersection of SH 7 and FM 542. From this point, the study area extends northwest for approximately 10.1 miles, roughly paralleling the long axis. From this point, the study area extends northeast for approximately 2.5 miles, roughly paralleling the short axis, to the previously defined point of origin.

2.2 DATA COLLECTION

2.2.1 Solicitation of Information from Local, Regional, State, and Federal Officials and Agencies

Once the study area boundary was identified, FNI initiated a variety of data collection activities. One of the first data collection activities was the development of a list of officials and agencies to be mailed a consultation letter regarding the proposed project. The purpose of the letter was to inform various local, regional, state, and federal officials and agencies of the proposed project and give them the opportunity to provide information they may have regarding the study area. FNI utilized websites from Leon and Houston Counties, as well as confirmation via telephone calls, to identify local officials. FNI reviewed regional planning agencies' websites to obtain current contact information for the relevant regional planning agencies. FNI also contacted state and federal agencies that may have potential permitting requirements for, or other interests in, the proposed project.

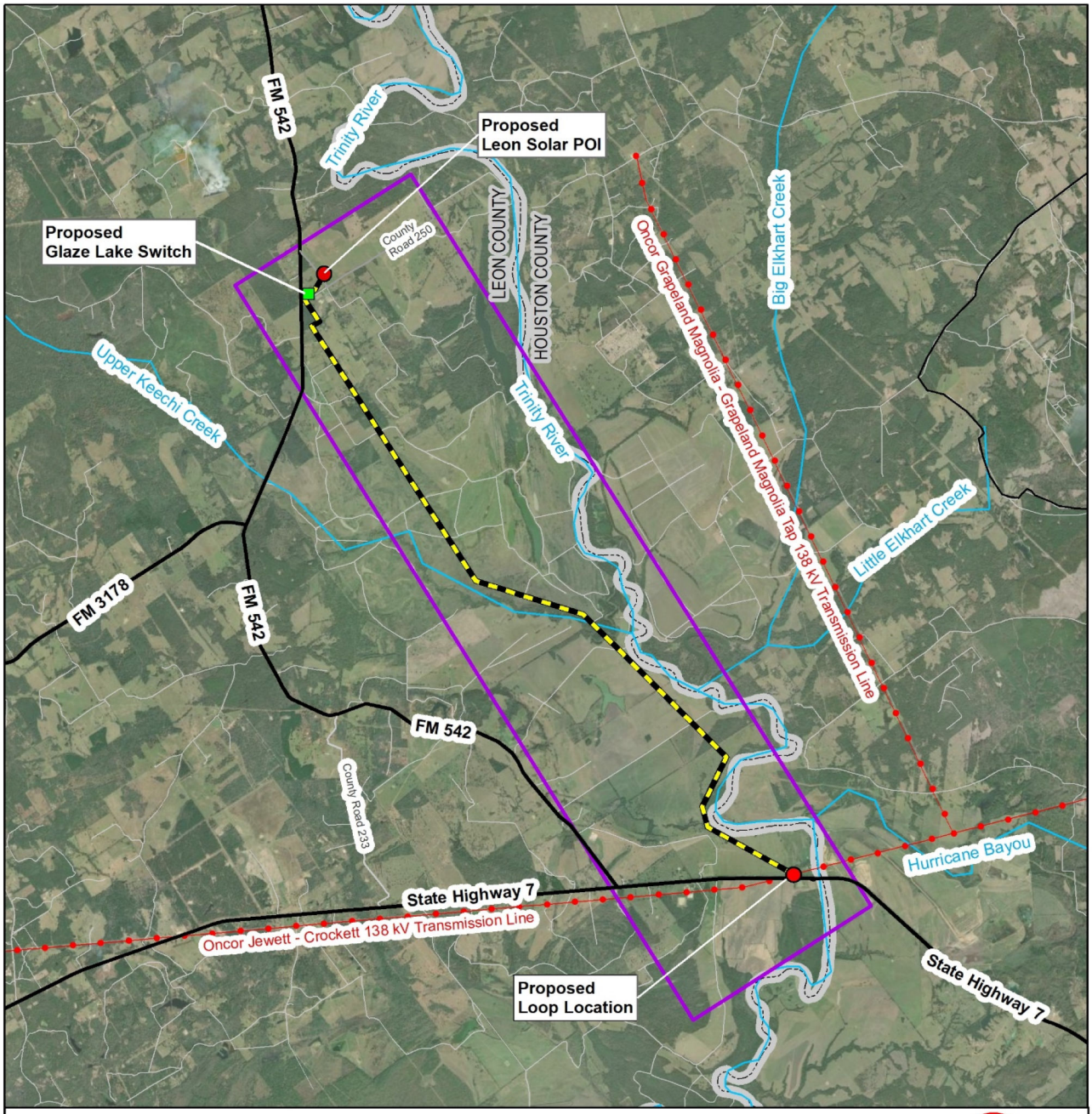


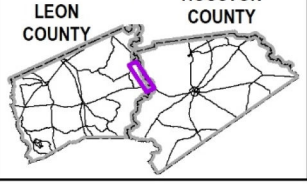
FIGURE 2-1. STUDY AREA MAP
GLAZE LAKE SWITCH 138 kV LOOP TRANSMISSION LINE PROJECT

0 0.5 1 2 Miles

Note: Data is for display purposes only. All features and boundaries have been approximated from public resources. Aerial Photography (USDA, 2022)

Legend
- Proposed End Points
- Proposed Glaze Lake Switch
- Proposed Transmission Line
- Study Area
- Existing Transmission Line
- Major Roads
- Minor Roads
- County Line
- Major Rivers and Creeks

Extent Map



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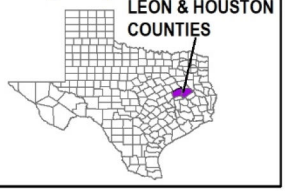

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FNI solicited information from the following federal, state, and regional agencies as well as local officials and departments. **Appendix A** includes copies of correspondence sent to and received from the following:

FEDERAL AGENCIES:

- Federal Aviation Administration (FAA), Southwest Region
- Federal Emergency Management Agency (FEMA), Region VI
- U.S. Army Corps of Engineers (USACE), Fort Worth District
- USDA Natural Resources Conservation Service (NRCS) - Bryan Service Center, Centerville Service Center, Crockett Service Center, Lufkin Service Center, and Palestine Service Center
- U.S. Department of Defense (DoD) Military Aviation and Installation Assurance Siting Clearinghouse
- U.S. Fish and Wildlife Service (USFWS)

STATE AGENCIES:

- Railroad Commission of Texas (RRC)
- State Representative for District 9, Houston County
- State Representative for District 13, Leon County
- State Senator for District 3, Houston County
- State Senator for District 5, Leon County
- Texas Archeological Research Laboratory (TARL)
- Texas Department of Transportation (TxDOT) - Aviation Division, Bryan District, Environmental Affairs Division, and Lufkin District
- Texas General Land Office (GLO)
- Texas Historical Commission (THC)
- Texas Parks and Wildlife Department (TPWD) East Central Texas Plains District, South Central Plains District, and Wildlife Habitat Assessment Program
- Texas Water Development Board (TWDB), Region H and Region I

REGIONAL AGENCIES:

- Bedias Creek Soil and Water Conservation District
- Brazos Valley Council of Governments
- Davy Crockett-Trinity Soil and Water Conservation District
- Deep East Texas Council of Governments
- Mid-East Texas Groundwater Conservation District
- Trinity River Authority

COUNTY AGENCIES:

- Houston County (County Judge and County Commissioners)
- Leon County (County Judge and County Commissioners)

INDEPENDENT SCHOOL DISTRICTS:

- Centerville Independent School District (ISD)
- Crockett ISD
- Grapeland ISD
- Oakwood ISD

In addition to soliciting comments from officials and agencies, FNI performed a review of available local, state, and federal files and records, published literature, and a variety of maps, including recent aerial photography (USDA, 2022), USGS topographic maps (USGS, 2022a; USGS, 2022b; USGS, 2022c), TxDOT and county highway maps, and USFWS National Wetlands Inventory (NWI) maps (USFWS, 2024c). Findings of the data collection activities are detailed in **Section 3.0**.

2.2.2 Reconnaissance Surveys

FNI conducted reconnaissance surveys of the study area to develop and confirm the findings of the research and data collection activities and identify existing conditions or constraints that may not have been previously noted. The field reconnaissance surveys were conducted by visual observations of study area characteristics from public roads and public ROW, geographically referenced to digital aerial photography base maps (USDA, 2022) using the ArcGIS Collector tool,

and recorded using Global Positioning System (GPS) data points. The reconnaissance surveys were conducted on October 30, 2024 and November 6, 2024.

Results of the various data collection activities (e.g., file and record review; solicitation of information from local, regional, state, and federal officials and agencies; reconnaissance surveys; etc.) are included in **Section 3.0** and **Section 4.0** of this report.

2.3 CONSTRAINTS MAPPING

Information gathered during data collection activities was used to develop an environmental and land use constraints map. The constraints map, public maps, aerial photography (USDA, 2022), reconnaissance surveys, and other research materials were used to identify and analyze the proposed transmission line project within the study area. In this context, constraints are land use or landscape features that may affect or be affected by the location of a transmission line. For linear projects, crossing over or near certain constraints is often unavoidable. In these instances, special considerations or mitigation measures may be used, though there is no law or regulation that would otherwise prohibit the proximity of a transmission line. The geographic locations of different constraints within and proximal to the study area were identified and considered during the impact analysis.

2.4 PUBLIC INVOLVEMENT PROGRAM

PUCT Procedural Rules Section 22.52(a)(4) requires that Oncor hold at least one public meeting if 25 or more persons would be entitled to receive direct mail notice of the CCN application. A property ownership abstractor contracted by Oncor used the proposed route to identify potentially affected landowners in preparation for public meeting notification. Because the total number of directly affected landowners is less than the threshold established by the PUCT Procedural Rules, no public meeting was held.

2.5 EVALUATION OF THE PROPOSED ROUTE

The evaluation of the proposed route presented in **Section 4.0** involved the inventory and tabulation of data related to multiple environmental and land use evaluation factors. Many of

these factors relate to natural and man-made features that would be crossed by the proposed route (e.g., number of stream crossings, length across rangeland pasture, etc.). Some of the evaluation factors include counts of features within a specified distance of the proposed route (e.g., airports, communication towers, etc.). Other factors included the length of the transmission line route that runs parallel to and/or utilizes existing compatible corridors, such as electric transmission lines and public roads. The number or amount of each factor was determined primarily by reviewing recent aerial photography (USDA, 2022) within a Geographic Information System (GIS) mapping program and, where possible, verified by visual observations during the field reconnaissance survey.

3.0 ENVIRONMENTAL SETTING OF THE STUDY AREA

3.1 CONSTRAINTS MAPPING

During the data collection process, FNI identified environmental and land use constraints within the study area. A constraints map was developed that identifies the locations of potential environmentally sensitive areas and other land use constraints, which are mapped on an aerial photograph base map (USDA, 2022) (**Figure 3-1** located in **Appendix B**). The information obtained and reviewed in completing the route evaluation, and the environmental and land use constraints depicted on **Figure 3-1** in **Appendix B,** are described in detail in the following sections.

3.2 PHYSIOGRAPHY AND GEOLOGY

The study area is located in the central eastern region of Texas in Leon and Houston Counties and lies within the Gulf Coastal Plains Physiographic Region of Texas, as shown on **Figure 3-2,** which includes at least two major fault systems that run parallel to the coast (Bureau of Economic Geology [BEG], 1996). According to the Geologic Atlas of Texas, Palestine Sheet (BEG, 1993), the study area is underlain by fluviatile terrace deposits and alluvium deposits of the Quaternary Period consisting of gravel, sand, silt, silty clay, organic matter, and floodplain and low terrace deposits. The deposits include unconsolidated sands and muds, with beds tilted toward the Gulf of Mexico. The region is characterized by an underlying geology of resistant uncemented sands and shales that erode to form sandy ridges, created by wind or alluvial processes occurring over the past two million years across the region (BEG, 1993; BEG, 1996). Underlying formations include the Queen City Sand, the Reklaw Formation, the Carrizo Sand, the Wilcox Group, the Midway Group, the Navarro Group, the Taylor Marl, the Austin Group, the Eagle Ford Shale, the Woodbine Sand, the Washita Group, the Fredericksburg Group, the Trinity Group, the Sligo (Pettet) Formation, and the Hosston Formation (USGS, 1995). Geologic units identified within the study area are provided in **Table 3-1,** along with their descriptions.

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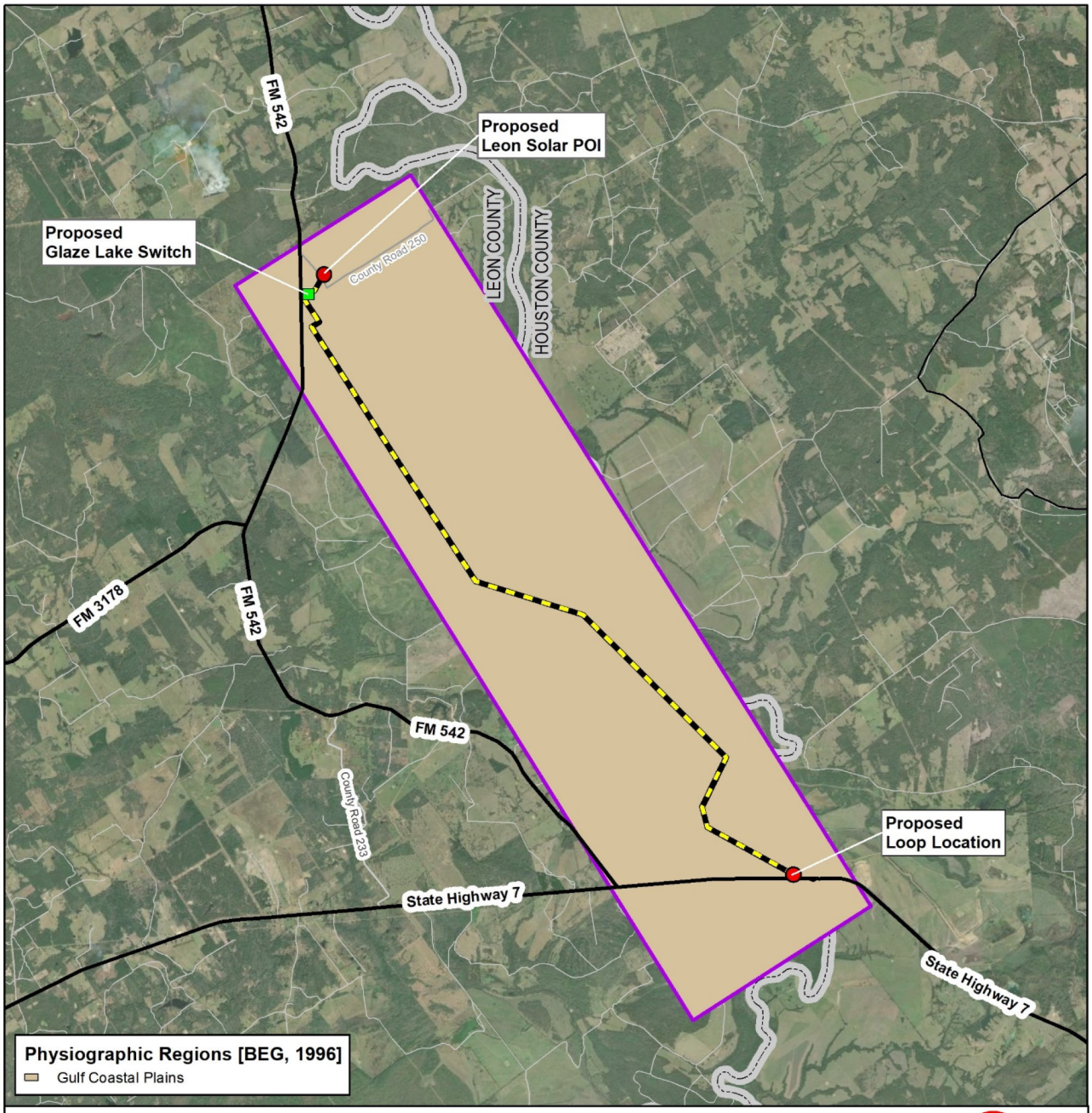


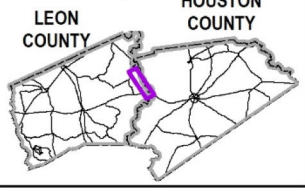
FIGURE 3-2. PHYSIOGRAPHIC REGIONS OF TEXAS MAP
GLAZE LAKE SWITCH 138 kV LOOP TRANSMISSION LINE PROJECT

0 0.5 1 2 Miles

Note: Data is for display purposes only. All features and boundaries have been approximated from public resources. Aerial Photography (USDA, 2022)

Legend
- Proposed End Points
- Proposed Glaze Lake Switch
- Proposed Transmission Line
- Study Area
- Major Roads
- Minor Roads
- County Line

Extent Map



Vicinity Map

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Table 3-1: Geologic Units within the Study Area

Geologic Time	Geologic Unit	Description
Holocene	Alluvium (Qal)	Flood-plain deposits, including low terrace, point bar, natural levee, stream channel, and backswamp deposits, consisting of gravel, sand, silt, silty clay, and abundant organic matter.
Pleistocene	Fluviatile terrace deposits (Qt)	Deposits consist of gravel, sand, and silt. Contiguous terraces are present.
Eocene	Queen City Sand (Eqc)	Littoral sand deposits comprising top member of Wilcox formation. Consists of white porous, loose water-bearing sands, with some interstratified clays.
Eocene	Reklaw Formation (Er)	Quartz sand and clay. The upper part is silty clay with muscovite, laminations, and ironstone concretions. Lower part is quartz sand, fine- to very fine-grained, sparsely glauconitic, and massive with clay ironstone ledges and rubble.
Eocene	Carrizo Sand (Ec)	Interbedded sands and sandy clays containing ferruginous matter and nodules and strings of concretions and laminae. Sands somewhat calcareous and in places indurated to buff sandstone.
Eocene	Wilcox Group (EP_Awi)	Inclusive of Calvert Bluff Formation, Simsboro Formation, and Hooper Formation. Mudstone with sandstone, lignite, and ironstone concretions.
Paleocene	Midway Group (EP_Ami)	Clay and sand interbedded layers grading to mudstone and sand of Wilcox Group.
Gulfian	Navarro Group (K)	Clay that displays calcareous, locally silty, massive, thinly laminated, and conchoidal fracture features.
Gulfian	Taylor Marl (K)	Clay with marly characteristics. Calcareous content decreases upward with hematite and pyrite nodules and variable amounts of silt-size quartz and calcite fragments that become more abundant upward.
Gulfian	Austin Group (K)	Inclusive of Pecan Gap Chalk and Gober Chalk. Chalk, massive, with some interbeds of calcareous clay. The middle part has thin-bedded marl with interbeds of massive chalk. Marine megafossils scarce.
Gulfian	Eagle Ford Shale (K)	Argillaceous shales with marked faunal zones.
Gulfian	Woodbine Sand (K)	Quartz sand, clay, some thin beds of lignite, volcanic sand and tuff. Quartz sand, in part glauconitic, ferruginous, and cross-bedded. Clay, in part lignitic, thinly bedded, and some sideritic concretions. Volcanic sand and tuff, coarse-grained, and cross-bedded. Fossil plants and a few marine megafossils.

Table 3-1: Geologic Units within the Study Area (continued)

Geologic Time	Geologic Unit	Description
Comanchean	Washita Group	Composed of Maness Shale, Buda Limestone, Grayson Marl, and Georgetown Limestone. Alternating thick clay units and thin limestone units. Clay, calcareous, commonly sandy. Limestone is hard in the lower part and soft, thick-bedded in upper part. Marine megafossils.
Comanchean	Fredericksburg Group	Inclusive of Kiamichi Formation and Top Goodland Limestone. Limestones, with some basal or alternating beds of flints and chalk.
Comanchean	Trinity Group	Composed of Paluxy Sand, Mooringsport Formation, Ferry Lake Anhydrite, Rodessa Formation, and Pearsall Formation. Sand, gravel, clay, limestone, and evaporite deposits. Gypsum is mined commercially from this unit.
Coahuilan	Sligo (Pettet) Formation	The tidal-flat complex is characterized by abundant subtidal and intertidal deposits, including burrowed dolomite mudstone and pellet-mollusk dolomite wackestone. Supratidal facies include not only laminated dolomite mudstone but also skeletal and pellet grainstones deposited as beach ridges and channel levees.
Coahuilan	Hosston Formation	The tidal-flat complex is comprised of laminated sandstone, dolomite mudstone, and anhydrite that were deposited on a broad coastal, supratidal mudflat or sandflat.

Source: BEG (1993); BEG (1996); USGS (1995)

The topography of the study area is gently rolling to nearly level with floodplain terraces along the Trinity River and Upper Keechi Creek. The elevation of the study area ranges from 150 to 250 feet above mean sea level (msl) according to the most recent USGS topographic maps for the area (USGS, 2022a; USGS, 2022b; USGS, 2022c). Drainage throughout the study area is primarily toward and occurring within the floodplain of Upper Keechi Creek, which generally flows southeast across the study area to its confluence with the Trinity River, and within the floodplain of the Trinity River, which generally flows from north to south on the eastern side of the study area, eventually reaching the Gulf of Mexico by way of Lake Livingston and Trinity Bay (FEMA, 2024b).

3.3 SOILS

3.3.1 Soil Associations

Data from the USDA NRCS (formerly the Soil Conservation Service [SCS]) were used to identify and characterize the soils within the study area. The Houston County General Soil Map (USDA, 1991), Leon County General Soil Map (USDA, 1987), and the USDA NRCS Web Soil Survey (USDA, 2024a) (a digital general soil map of the U.S. completed in 2006, which consists of a broad inventory and mapping of general soil association units) were used to identify and characterize the soil associations (or types). Soil associations are main patterns of soils defined and delineated based on criteria such as soil texture, parent material, slope, characteristics of horizons in soil profile, and degree of erosion (USDA, 2024a). The USDA NRCS-mapped soil associations within the study area are shown on **Figure 3-3** and described in **Table 3-2**.

The 34 soil associations (excluding the open water mapped areas) occurring within the study area are associated with upland ridges and terraces, bottomlands, flood plains, and drainageways. The underlying geology, described in the previous section, is the foundation for the soils found within the study area.

3.3.2 Prime Farmland

The Farmland Protection Policy Act (FPPA) (1982), in Title 7 United States Code (USC) Chapter 73 Section 4201 (c)(1)(A), defines prime farmland as "land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor." Prime farmlands 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 soils that meet most of the requirements of prime farmland but fail because they lack the installation of water management facilities or sufficient natural moisture. The USDA would consider these soils prime farmland if these areas were irrigated.

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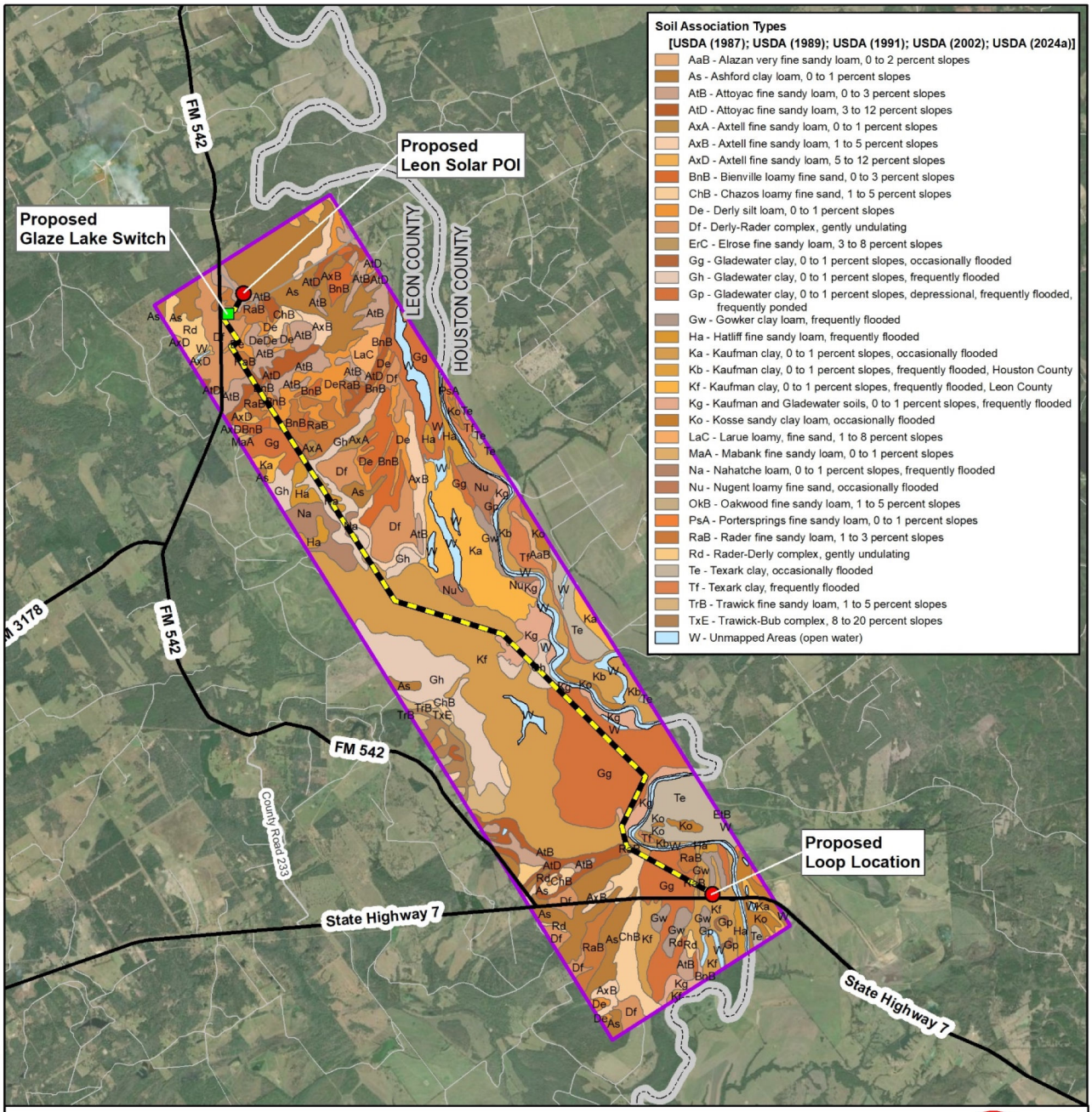

FIGURE 3-3. SOIL ASSOCIATIONS MAP
GLAZE LAKE SWITCH 138 kV LOOP TRANSMISSION LINE PROJECT

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Table 3-2: Soil Associations within the Study Area

Soil Association Map Unit Name (Map Unit Symbol)	Description	Acres in Study Area	Percent Coverage of Study Area
Alazan very fine sandy loam, 0 to 2 percent slopes (AaB)	Very deep, nearly level to very gently sloping soil on stream terraces. Very fine sandy loam surface with sandy clay loam to 80 inches. Soil is moderately well drained. Surface runoff is low. Capacity to transmit water is moderately high to high.	50	0.3
Ashford clay loam, 0 to 1 percent slopes (As)	Deep, nearly level soil on ancient terraces. Clay loam surface with clay to 80 inches. Soil is poorly drained. Surface runoff is negligible. Capacity to transmit water is very low to moderately low.	1,410	8.8
Attoyac fine sandy loam, 0 to 3 percent slopes (AtB)	Deep, nearly level to gently sloping soil on smooth stream terraces. Fine sandy loam surface with sandy clay loam to 72 inches. Soil is well drained. Surface runoff is low. Capacity to transmit water is moderately high to high.	720	4.5
Attoyac fine sandy loam, 3 to 12 percent slopes (AtD)	Deep, gently sloping to strongly sloping soil between terrace levels. Fine sandy loam surface with sandy clay loam to 80 inches. Soil is well drained. Surface runoff is medium. Capacity to transmit water is moderately high to high.	510	3.2
Axtell fine sandy loam, 0 to 1 percent slopes (AxA)	Deep, nearly level soil on uplands and old terraces. Fine sandy loam surface with clay to 60 inches. Clay loam to 80 inches. Soil is moderately well drained. Surface runoff is medium. Capacity to transmit water is moderately low to moderately high.	40	0.2
Axtell fine sandy loam, 1 to 5 percent slopes (AxB)	Deep, gently sloping soil on uplands and old terraces. Fine sandy loam surface with clay to 80 inches. Soil is moderately well drained. Surface runoff is high. Capacity to transmit water is moderately low to moderately high.	380	2.4
Axtell fine sandy loam, 5 to 12 percent slopes (AxD)	Deep, strongly sloping soil on uplands and old terraces. Fine sandy loam surface with clay to 36 inches. Clay loam to 80 inches. Soil is moderately well drained. Surface runoff is very high. Capacity to transmit water is moderately low to moderately high.	80	0.5
Bienville loamy fine sand, 0 to 3 percent slopes (BnB)	Deep, nearly level to gently sloping soil on smooth stream terraces. Loamy fine sand to 80 inches. Soil is somewhat excessively drained. Surface runoff is very low. Capacity to transmit water is high.	440	2.8

Table 3-2: Soil Associations within the Study Area (continued)

Soil Association Map Unit Name (Map Unit Symbol)	Description	Acres in Study Area	Percent Coverage of Study Area
Chazos loamy fine sand, 1 to 5 percent slopes (ChB)	Deep, gently sloping soil on stream terraces. Loamy fine sand surface with clay to 23 inches. Sandy clay loam with clay loam to 80 inches. Soil is moderately well drained. Surface runoff is high. Capacity to transmit water is moderately low to moderately high.	380	2.4
Derly silt loam, 0 to 1 percent slopes (De)	Deep, nearly level soil on ancient stream terraces. Silt loam surface with clay loam to 13 inches. Clay to 80 inches. Soil is poorly drained. Surface runoff is high. Capacity to transmit water is very low to moderately low.	540	3.4
Derly-Rader complex, gently undulating (Df)	Deep, moundy soil on ancient stream terraces. Derly has silt loam surface with clay loam to 15 inches. Clay to 80 inches. Soil is poorly drained, surface runoff is high, and capacity to transmit water is very low to moderately low. Rader has fine sandy loam surface with sandy clay loam to 31 inches. Sandy clay to 64 inches and sandy clay loam to 80 inches. Soil is moderately well drained, surface runoff is medium, and capacity to transmit water is very low to moderately low.	850	5.3
Elrose fine sandy loam, 3 to 8 percent slopes (ErC)	Deep, gently sloping to strongly sloping soil on uplands. Fine sandy loam surface with sandy clay loam to 19 inches. Clay loam to 80 inches. Soil is well drained. Surface runoff is medium. Capacity to transmit water is moderately high to high.	40	0.2
Gladewater clay, 0 to 1 percent slopes, occasionally flooded (Gg)	Deep, nearly level soil on bottom lands. Clay surface with clay loam to 80 inches. Soil is somewhat poorly drained. Surface runoff is high. Capacity to transmit water is very low to moderately low.	1,800	11.2
Gladewater clay, 0 to 1 percent slopes, frequently flooded (Gh)	Deep, nearly level soil on bottom lands. Clay surface with clay loam to 80 inches. Soil is somewhat poorly drained. Surface runoff is high. Capacity to transmit water is very low to moderately low.	1,020	6.4

Table 3-2: Soil Associations within the Study Area (continued)

Soil Association Map Unit Name (Map Unit Symbol)	Description	Acres in Study Area	Percent Coverage of Study Area
Gladewater clay, 0 to 1 percent slopes, depressional, frequently flooded, frequently ponded (Gp)	Deep, nearly level soil on bottomlands. Clay surface with clay loam to 80 inches. Soil is very poorly drained. Surface runoff is negligible. Capacity to transmit water is very low to moderately low.	20	0.1
Gowker clay loam, frequently flooded (Gw)	Deep, nearly level soil on bottomlands. Clay loam to 80 inches. Soil is moderately well drained. Surface runoff is high. Capacity to transmit water is moderately low to moderately high.	190	1.2
Hatliff fine sandy loam, frequently flooded (Ha)	Deep, nearly level soil on bottomlands. Fine sandy loam surface with loamy fine sand to 72 inches. Sand to 80 inches. Soil is moderately well drained. Surface runoff is high. Capacity to transmit water is high.	270	1.7
Kaufman clay, 0 to 1 percent slopes, occasionally flooded (Ka)	Very deep, nearly level soil on flood plains. Clay to 80 inches. Soil is moderately well drained. Surface runoff is high. Capacity to transmit water is very low to moderately low.	740	4.6
Kaufman clay, 0 to 1 percent slopes, frequently flooded, Houston County (Kb)	Very deep, nearly level soil on flood plains. Clay to 80 inches. Soil is moderately well drained. Surface runoff is high. Capacity to transmit water is very low to moderately low.	380	2.4
Kaufman clay, 0 to 1 percent slopes, frequently flooded, Leon County (Kf)	Deep, nearly level soil on bottom lands. Clay to 80 inches. Soil is moderately well drained. Surface runoff is high. Capacity to transmit water is very low to moderately low.	2,520	15.8
Kaufman and Gladewater soils, 0 to 1 percent slopes, frequently flooded (Kg)	Deep, undulating soils on bottom lands. Kaufman has clay to 80 inches. Soil is moderately well drained. Gladewater has clay to 73 inches, with clay loam to 80 inches. Soil is poorly drained. Both soil types have high surface runoff and very low to moderately low capacity to transmit water.	390	2.4
Kosse sandy clay loam, occasionally flooded (Ko)	Very deep, nearly level soil in flood plains. Sandy clay loam to 44 inches with loam to 80 inches. Soil is moderately well drained. Surface runoff is low. Capacity to transmit water is moderate.	280	1.8

Table 3-2: Soil Associations within the Study Area (continued)

Soil Association Map Unit Name (Map Unit Symbol)	Description	Acres in Study Area	Percent Coverage of Study Area
Larue loamy, fine sand, 1 to 8 percent slopes (LaC)	Deep, gently, and strongly sloping soil on convex ridges and smooth uplands. Loamy fine sand surface with sandy clay loam to 80 inches. Soil is well drained. Surface runoff is low. Capacity to transmit water is moderately high to high.	90	0.6
Mabank fine sandy loam, 0 to 1 percent slopes (MaA)	Deep, nearly level soil on uplands. Fine sandy loam surface with clay to 72 inches. Soil is moderately well drained. Surface runoff is high. Capacity to transmit water is very low to moderately low.	10	0.1
Nahatche loam, 0 to 1 percent slopes, frequently flooded (Na)	Deep, nearly level soil on bottom lands along flood plains. Loam surface with clay loam to 80 inches. Soil is somewhat poorly drained. Surface runoff is high. Capacity to transmit water is moderately high to high.	190	1.2
Nugent loamy fine sand, occasionally flooded (Nu)	Deep, nearly level soil on bottom lands on flood plains. Loamy fine sand surface with stratified loamy sand to fine sandy loam to 80 inches. Soil is excessively drained. Surface runoff is negligible. Capacity to transmit water is high.	160	1.0
Oakwood fine sandy loam, 1 to 5 percent slopes (OkB)	Deep, gently sloping soil in middle-upper side slopes of uplands ridges and in broad, convex areas. Fine sandy loam surface with sandy clay loam to 80 inches. Soil is moderately well drained. Surface runoff is low. Capacity to transmit water is moderately high.	10	0.1
Portersprings fine sandy loam, 0 to 1 percent slopes (PsA)	Very deep, nearly level soil on low stream terraces. Fine sandy loam surface with sandy clay loam to a depth of 42 inches. Loamy fine sand to 72 inches. Fine sand to 87 inches. Soil is well drained. Surface runoff is negligible. Capacity to transmit water is moderately high to high.	40	0.2
Rader fine sandy loam, 1 to 3 percent slopes (RaB)	Deep, gently sloping soil on slightly mounded terraces, in lower concave areas, and at drainageway heads on uplands. Fine sandy loam surface with sandy clay loam to 29 inches. Sandy clay to 55 inches. Clay loam to 80 inches. Soil is moderately well drained. Surface runoff is high. Capacity to transmit water is very low to moderately low.	550	3.4

Table 3-2: Soil Associations within the Study Area (continued)

Soil Association Map Unit Name (Map Unit Symbol)	Description	Acres in Study Area	Percent Coverage of Study Area
Rader-Derly complex, gently undulating (Rd)	Deep soils in mounded areas, with Rader found on the mound and Derly found in the low, intermound areas. Rader has fine sandy loam surface with sandy clay loam to 29 inches. Sandy clay to 42 inches. Clay to 74 inches. Soil is moderately well drained. Derly has silt loam surface with clay loam to 26 inches. Clay to 84 inches. Soil is poorly drained. Both soils have high surface runoff and very low to moderately low capacity to transmit water.	180	1.1
Texark clay, occasionally flooded (Te)	Very deep, nearly level soil in flood plains. Clay to 80 inches. Soil is somewhat poorly drained. Surface runoff is high. Capacity to transmit water is very low to moderately low.	550	3.4
Texark clay, frequently flooded (Tf)	Very deep, nearly level soil on flood plains. Clay to 80 inches. Soil is somewhat poorly drained. Surface runoff is high. Capacity to transmit water is very low to moderately low.	190	1.2
Trawick fine sandy loam, 1 to 5 percent slopes (TrB)	Deep, gently sloping soil on uplands. Fine sandy loam surface with clay to 43 inches. Underlain by bedrock to 80 inches. Soil is well drained. Surface runoff is medium. Capacity to transmit water is moderately high.	150	0.9
Trawick-Bub complex, 8 to 20 percent slopes (TxE)	Deep and shallow soils on uplands, ranging from strongly sloping to moderately steep. Trawick has gravelly clay loam surface with clay to 30 inches. Bedrock to 80 inches. Bub has gravelly clay loam surface with gravelly clay to 19 inches. Bedrock to 80 inches. Both soils are well drained, with high surface runoff and moderately high capacity to transmit water.	120	0.8
Unmapped Areas/ Open Water (W)	Areas within open water or surface water features that are not mapped to a specific soil association.	710	4.4

Source: USDA (1987); USDA (1989); USDA (1991); USDA (2002); USDA (2024a).

There are several soil associations within the study area that are regarded as prime farmland soils, including Alazan very fine sandy loam (0 to 2 percent slopes), Attoyac fine sandy loam (0 to 3 percent slopes), Chazos loamy fine sand (1 to 5 percent slopes), Oakwood fine sandy loam (1 to 5 percent slopes), Portersprings fine sandy loam (0 to 1 percent slopes), Rader fine sandy loam (1 to 3 percent slopes), Rader-Derly complex (gently undulating), and Trawick fine sandy loam (1 to 5 percent slopes). Approximately 2,080 acres of study area soils are classified as prime farmland soils (USDA, 1987; USDA, 1991; USDA, 2024a).

The Axtell fine sandy loam (0 to 1 percent slopes), Axtell fine sandy loam (1 to 5 percent slopes), Larue loamy, fine sand (1 to 8 percent slopes), and Mabank fine sandy loam (0 to 1 percent slopes) soil associations are identified as farmland of statewide importance. Approximately 520 acres of study area soils are classified as farmland of statewide importance (USDA, 1987; USDA, 1991; USDA, 2024a).

3.4 WATER RESOURCES

3.4.1 Surface Water Features and Floodplains

The study area occurs within the Trinity River Basin (TWDB, 2014). The Trinity River is the third largest river in Texas by area and is approximately 550 miles long. The Dallas-Fort Worth metropolitan area is located in the upper basin, and in the lower basin, water is exported to the Houston area. Water supply demands in both metropolitan areas are increasing. The Trinity River is fed by seven significant tributaries: Clear Fork, East Fork, Elm Fork, West Fork, Cedar Creek, Chambers Creek, and Richland Creek (TWDB, 2014). The Trinity River transects the study area generally from north to south along the eastern edge of the study area.

Along with the Trinity River, Big Elkhart Creek, Hurricane Bayou, Upper Keechi Creek, and Haley Creek also cross the study area according to USGS topographic maps of the area (USGS, 2022a; USGS, 2022b; USGS, 2022c). Big Elkhart Creek flows from northeast to southwest across the study area to its confluence with the Trinity River. Hurricane Bayou flows from northeast to southwest across the study area to its confluence with the Trinity River. Big Elkhart Creek and Hurricane Bayou occur in the southeastern portion of the study area. Haley Creek flows southwest to

northeast across the study area to its confluence with Upper Keechi Creek, which generally flows from northwest to southeast across the study area to its confluence with the Trinity River.

According to the USGS National Hydrography Dataset (NHD) (USGS, 2024b) and USFWS NWI maps (USFWS, 2024c), several different types of wetland vegetation and surface water features occur within the study area, including approximately 234 acres of emergent wetland, approximately 1,114 acres of forested/shrub wetlands, approximately 104 acres of freshwater ponds, approximately 201 acres of lakes, and approximately 2,549 acres of streams and rivers. A detailed discussion of these wetland features and aquatic/hydric vegetation is included in **Section 3.5.1.2**.

In 1997, state legislation (under the Texas Water Code Section 16.051) assigned statewide water resources planning to regional planning groups. As part of the planning process, each regional planning group recommends ecologically unique river and stream segments to the Texas State Legislature in regional and state water plans (TPWD, 2024b). Designation as an ecologically unique river or stream segment, which includes segments with unique biological functions and/or habitat for threatened and endangered species, means that a state agency or political subdivision of the state may not construct a reservoir in those segments. State designation as ecologically unique also prevents state agencies or municipalities from acquiring property or easements that would destroy the ecological features forming the basis for the designation (TPWD, 2024b).

The Trinity River (from the Houston/Trinity County line upstream to the Anderson/Henderson County line within Stream Segment 0804) is designated as an ecologically unique segment as a riparian conservation area. It earned this designation for its biological function, providing significant overall habitat value with its bottomland hardwood habitat and a home for one of the two largest populations of the threatened species of freshwater mussel, the Texas heelsplitter (*Potamilus amphichaenus*) (Howells, 1997; TPWD, 2024b; TPWD, 2024k). Upper Keechi Creek (from the confluence with the Trinity River in Leon County upstream to the Freestone/Leon County line within Stream Segment 0804H) is designated as an ecologically unique segment as a

riparian conservation area. It earned this designation for its biological function, providing significant overall habitat value due to its high degree of biodiversity (TPWD, 2024b).

The portion of the Trinity River (Stream Segment 0804), which crosses through the study area, is listed on the Texas Integrated Report on Surface Water Quality 303(d) List of impaired water bodies maintained by the Texas Commission on Environmental Quality (TCEQ, 2022). The 303(d) List identifies impaired waters for which the State plans to develop total maximum daily loads. The impaired segment of the Trinity River, which extends upstream of the study area and continues downstream, is listed as impaired for dioxins and polychlorinated biphenyls (PCBs) in fish tissue. These impairments are a result of the bioaccumulation of dioxins and PCBs from municipal wastewater treatment plant effluent and stormwater runoff from urbanized and agricultural areas (TCEQ, 2022). A portion of Upper Keechi Creek (Stream Segment 0804H), which crosses through the study area, is also listed on the 303(d) List. The impaired segment of Upper Keechi Creek, which extends upstream from its confluence with the Trinity River, is listed as impaired for bacteria and dissolved oxygen. This impairment may be a result of point sources, such as inadequately treated sewage or improperly managed animal waste from regulated livestock operations, or nonpoint sources such as pet wastes, wildlife, aquatic birds, or failing septic systems (TCEQ, 2022).

Portions of the study area along the Trinity River, Upper Keechi Creek, Big Elkhart Creek, Hurricane Bayou, and Haley Creek lie within the FEMA 100-year floodplain. FEMA Flood Insurance Rate Maps 48289C0275C, 48289C0300C, 48289C0450C, 48225C0175D, and 48225C0350D cover the study area (FEMA, 2001a; FEMA, 2001b; FEMA, 2001c; FEMA, 2001d; FEMA, 2001e).

3.4.2 Groundwater Resources/Aquifers

The Carrizo-Wilcox Aquifer, specifically the subcrop, underlies the study area and is classified as a major aquifer by the TWDB (TWDB, 2024b). The Carrizo-Wilcox Aquifer stretches southwest across Texas alongside the Gulf Coast Aquifer from the border with Louisiana to Mexico. In Texas, the aquifer consists of sand, gravel, silt, clay, and lignite, and has a maximum thickness of 3,000 feet (TWDB, 2024a). Freshwater saturated thickness averages 670 feet. Slight to moderate

salinity levels are found in the east and central regions of the aquifer. More than 50 percent of the pumped groundwater from this aquifer is used for irrigated agriculture in the region, and another 40 percent contributes to municipal supply. Recharge in the aquifer is estimated to be between 0.1 and 5.8 inches per year (BEG, 2002).

The study area is also underlain by the Queen City and Sparta Aquifers, which are classified as minor aquifers by the TWDB (TWDB, 2024c). The Queen City Aquifer extends from the Louisiana border to south Texas (TWDB, 2024d). Water-bearing sediments include sand, loosely cemented sandstone, and clay layers of the Queen City Formation. The average freshwater saturation is approximately 140 feet. Water in the aquifer is mainly fresh, with salinity declining to the north, and total dissolved solids range from 300 to 750 milligrams per liter. Water consumption in the Queen City Aquifer is predominantly for domestic and livestock use.

The Sparta Aquifer extends across Texas parallel and to the south of the Queen City Aquifer (TWDB, 2024e). Water is stored in the Sparta Formation, part of the Claiborne Group, made up of a sand unit with silt and clay layers. The average freshwater saturation is approximately 120 feet. In the outcrop region, the average total dissolved solids concentration is 300 milligrams per liter, and the entire aquifer demonstrates high iron concentrations. Domestic and livestock uses make up the majority of water consumption from the Sparta Aquifer.

The TWDB Groundwater Database Reports Water Data Interactive Groundwater Data Viewer (TWDB, 2024f) and TWDB Water Well Driller's Logs (TWDB, 2024g) identified 15 groundwater well records within the study area. Ten of the water wells found within the study area represent domestic (four wells), stock (two wells), and irrigation (four wells) water wells. Five water wells were noted as rig or fracking supply wells. While detailed completion information was not available for all 15 water wells, three water wells were designated as completed in the Carrizo Sand.

Groundwater resources for Leon and Houston Counties are managed by and located within the TWDB Regions H and I Water Planning Groups, Groundwater Management Areas 11 and 12, and the Mid-East Texas Groundwater Conservation District boundaries (TWDB, 2024f).

3.5 ECOLOGY

3.5.1 Vegetation

Natural vegetation is a result of the combination of geography, soils, and climate of an area. These key characteristics of a landscape describe the land's potential for supporting vegetation that occurs throughout the environment. The USDA NRCS published a 2006 handbook that describes Land Resource Regions (LRRs), which are areas that share similar soil properties, moisture and climate characteristics, and overall landscape and geologic features (USDA, 2006). This approach to the study of vegetation focuses on the relationship between soils and soil-forming factors of a region and natural vegetation or agricultural practices that can be supported.

The study area is located at a boundary between the Southwestern Prairies Cotton and Forage Region and the South Atlantic and Gulf Slope Cash Crops, Forest, and Livestock Region (USDA, 2006) (**Figure 3-4**). As described in **Section 3.2**, the topography of the study area is consistent with that of the region and includes nearly flat to gently rolling hills. The Southwestern Prairies Cotton and Forage Region (located in the eastern portion of Leon County and western portion of Houston) extends across much of the Cross Timbers from Texas to Oklahoma. Within this LRR, topography is nearly level to strongly rolling and narrow to moderately broad hilltops to the north and nearly level to gently sloping plains that are dissected by broad rivers to the south. Average precipitation ranges from 32 to 46 inches throughout most of the region (USDA, 2006).

The South Atlantic and Gulf Slope Cash Crops, Forest, and Livestock Region (located in the eastern portion of Leon County and western portion of Houston County) extends southward from northern Virginia across North Carolina, South Carolina, Georgia, northern Florida, and Alabama; bends northward through Mississippi, western Tennessee, and western Kentucky to reach southernmost Illinois and southeast Missouri; then turns south again to cross into southern Arkansas, southern Oklahoma, northern Louisiana, and east Texas. The southwestern reaches of this LRR, which includes the study area, includes level to steep uplands which are dissected by streams, broad flood plains and terraces in this area. Average precipitation ranges from 46 to 58 inches and occurs almost entirely as rainfall (USDA, 2006).

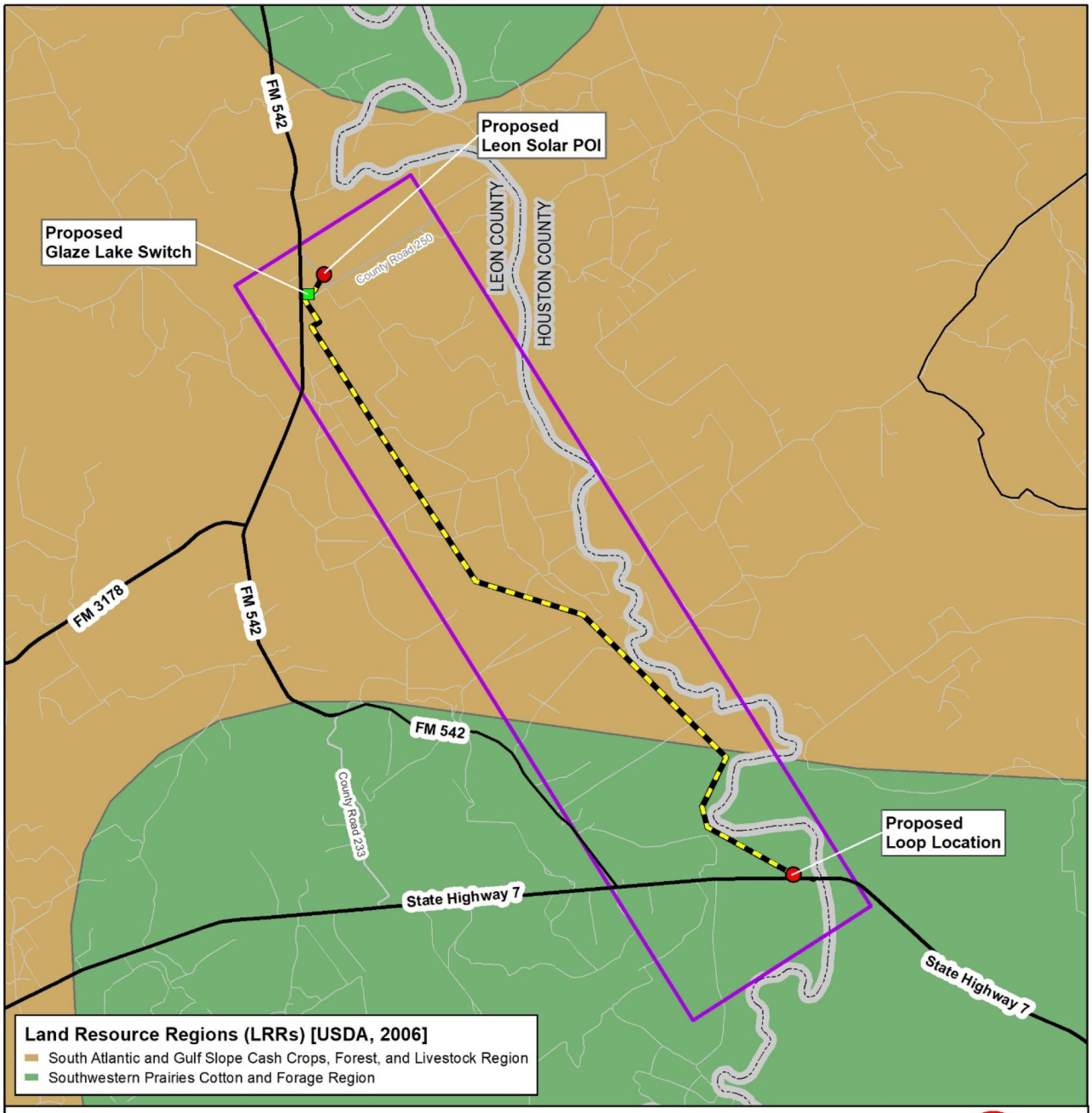


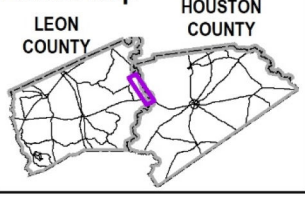
FIGURE 3-4. LAND RESOURCE REGIONS MAP
GLAZE LAKE SWITCH 138 kV LOOP TRANSMISSION LINE PROJECT

0 0.5 1 2 Miles

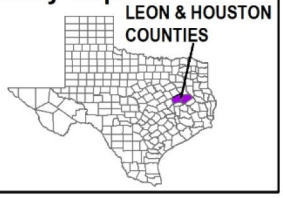
Note: Data is for display purposes only. All features and boundaries have been approximated from public resources. Aerial Photography (USDA, 2022)

Legend
- Proposed End Points
- Proposed Glaze Lake Switch
- Proposed Transmission Line
- Study Area
- Major Roads
- Minor Roads
- County Line

Extent Map



Vicinity Map



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The dominant tree species include loblolly pine (*Pinus taeda*), post oak (*Quercus stellata*), and blackjack oak (*Quercus marilandica*). Little bluestem (*Schizachyrium scoparium*) is the most dominant grass species, with beaked panicum (*Panicum anceps*), Indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), longleaf Uniola (*Chasmanthium sessiliflorum*), big bluestem (*Andropogon gerardi*), brownseed paspalum (*Paspalum plicatulum*), and pinhole bluestem (*Bothriochloa barbinodis*) among the grasses found throughout this region.

The USDA NRCS further subdivided the LRRs into Major Land Resources Areas (MLRAs). LRRs consist of a group of geographically associated MLRAs, and identification of these large areas is key in statewide, regional, and national agricultural planning. As the criteria used to define both MLRAs and the larger LRRs focus fundamentally on soils and soil-forming factors, the delineation of MLRAs are therefore closely linked to the various soil associations that have been mapped over the past half century. This approach to the study of vegetation focuses on the land potential for supporting natural vegetation or agricultural practices, rather than simply reporting a snapshot of vegetation as it may exist at a single point in time.

The study area is located near the boundary between the Texas Claypan Area, Southern Part and Western Coastal Plains (Griffith et al., 2007; TPWD, 2024a; USDA, 2006). The location of the study area within the mapped MLRAs is shown on **Figure 3-5**.

The distinctive element of the Texas Claypan Area, Southern Part, is the predominant land use for farmland, with most of the farmland used for pasture and livestock grazing and cropland production, with cotton, peanuts, and corn as the major crops. Nearly level to gently irregular plains dissected by broad river systems that cross the area, gently sloping uplands merge into narrow valleys with sloping valley walls. The northeastern part of this MLRA, which includes the study area, primarily supports oak savanna vegetation. Little bluestem (*Schizachyrium scoparium*) dominates most sites, with beaked panicum (*Panicum anceps*) in poorly drained sites. Indiangrass (*Sorghastrum nutans*), brownseed paspalum (*Paspalum plicatulum*), switchgrass (*Panicum virgatum*), and big bluestem (*Andropogon gerardii*) grow throughout the area. Woody

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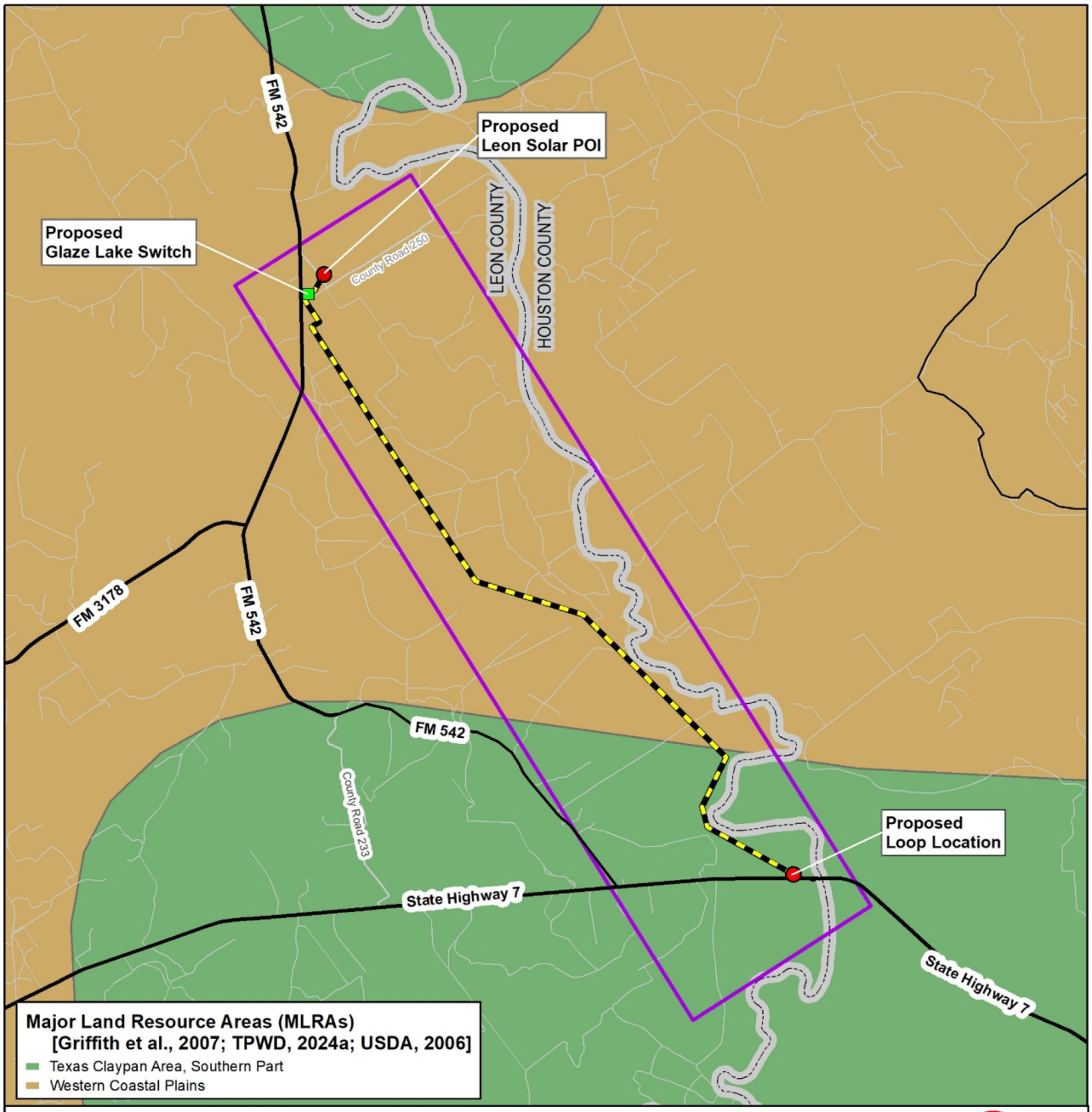


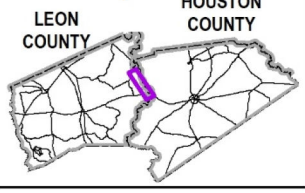
FIGURE 3-5. MAJOR LAND RESOURCE AREAS MAP
GLAZE LAKE SWITCH 138 kV LOOP TRANSMISSION LINE PROJECT

0 0.5 1 2 Miles

Note: Data is for display purposes only. All features and boundaries have been approximated from public resources. Aerial Photography (USDA, 2022)

Legend
- Proposed End Points
- Proposed Glaze Lake Switch
- Proposed Transmission Line
- Study Area
- Major Roads
- Minor Roads
- County Line

Extent Map



Vicinity Map

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species include post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), elm (*Ulmus* spp.), pecan (*Carya illinoinensis*), with a wide variety of forbs, legumes, shrubs, and woody vines, such as dayflower (*Commelina communis*), spiderwort (*Tradescantia humilis*), bundleflower (*Desmanthus illinoensis*), sensitive briar (*Mimosa nuttallii*), sugar hackberry (*Celtis laevigata*), hawthorn (*Crataegus texana*), yaupon (*Ilex vomitoria*), elbow bush (*Forestiera pubescens*), saw greenbriar (*Smilax bona-nox)*, and honeysuckle (*Lonicera sempervirens*) (Griffith et al., 2007; TPWD, 2024a; USDA, 2006).

The distinctive element of the Western Coastal Plains is the forested areas used primarily for lumber and pulpwood production. Cleared land in this region is mainly utilized for pasture and hay cultivation. It consists of level to steep uplands dissected by streams, where broad floodplains and terraces are found. Pine-hardwood vegetation predominates the southwestern part of this MLRA, which includes the study area. The dominant trees are loblolly pine (*Pinus taeda*), shortleaf pine (*Pinus echinata*), sweetgum (*Liquidambar styraciflua*), southern red oak (*Quercus falcata*), white oak (*Quercus alba*), flowering dogwood (*Cornus florida*), and post oak (*Quercus stellata*). The woody understory consists of American beautyberry (*Callicarpa americana*), saw greenbriar (*Smilax bona-nox)*, hawthorn (*Crataegus texana*), and various berry vines. Little bluestem (*Schizachyrium scoparium*) and pinhole bluestem (*Bothriochloa barbinodis*) are the primary herbaceous species, with other primary grasses including beaked panicum (*Panicum anceps*), longleaf Uniola (*Chasmanthium sessiliflorum*), spike Uniola (*Chasmanthium laxum*), and yellow Indiangrass (*Sorghastrum nutans*). The plant community has many species of low-growing panicums (*Panicum* spp.), paspalums (*Paspalum* spp.), and perennial forbs (Griffith et al., 2007; TPWD, 2024a; USDA, 2006).

Each of the terrestrial or aquatic vegetation types identified within the study area are discussed below in **Section 3.5.1.1** or **Section 3.5.1.2**, respectively.

3.5.1.1 Terrestrial Vegetation

Spatial data from the TPWD Ecological Mapping Systems of Texas (EMST) descriptions were used to estimate areas of major types of existing terrestrial vegetation within the study area (**Figure 3-6**) (Elliott, 2014; Elliott et al., 2014; TPWD, 2024a). Data was developed from satellite imagery with 10-meter by 10-meter mapping resolution collected from 2005 to 2007 and refined with *in situ* data Using this refined imagery, the TPWD created a statewide land cover data set that includes a sufficient number of land cover classes to provide insights for planning and management at a variety of scales (TPWD, 2024a; USGS, 2023).

According to spatial data from the TPWD EMST, the study area contains 23 different terrestrial vegetation types (Elliott, 2014; Elliott et al., 2014; TPWD, 2024a). **Figure 3-6** displays the TPWD land cover data by different land/vegetation cover types. Descriptions of the terrestrial vegetation occurring within the study area, as provided in **Table 3-3**, are based on field observations, interpretation of recent aerial photography (USDA, 2022), and a review of reports and maps produced by Elliott (2014) and Elliott et al. (2014).

3.5.1.2 Aquatic/Hydric Vegetation

Aerial photography (USDA, 2022), topographic maps (USGS, 2022a; USGS, 2022b; USGS, 2022c), and the USFWS NWI Wetlands Mapper (USFWS, 2024c) were examined to identify areas that may contain potential wetland vegetation that could be considered waters of the U.S. Site reconnaissance was conducted on October 30, 2024 and November 6, 2024 to confirm the aquatic vegetation types within the study area that were identified in the USFWS NWI maps (USFWS, 2024c). **Figure 3-7** shows the surface water features identified by the USFWS NWI maps (USFWS, 2024c) as well as the features confirmed during site reconnaissance. Descriptions of each of the aquatic vegetation types identified within the study area are provided in **Table 3-4**. Several different types of wetlands occur within the study area, including emergent wetlands (approximately 234 acres) and forested/shrub wetlands (approximately 1,114 acres) (**Figure 3-7**).

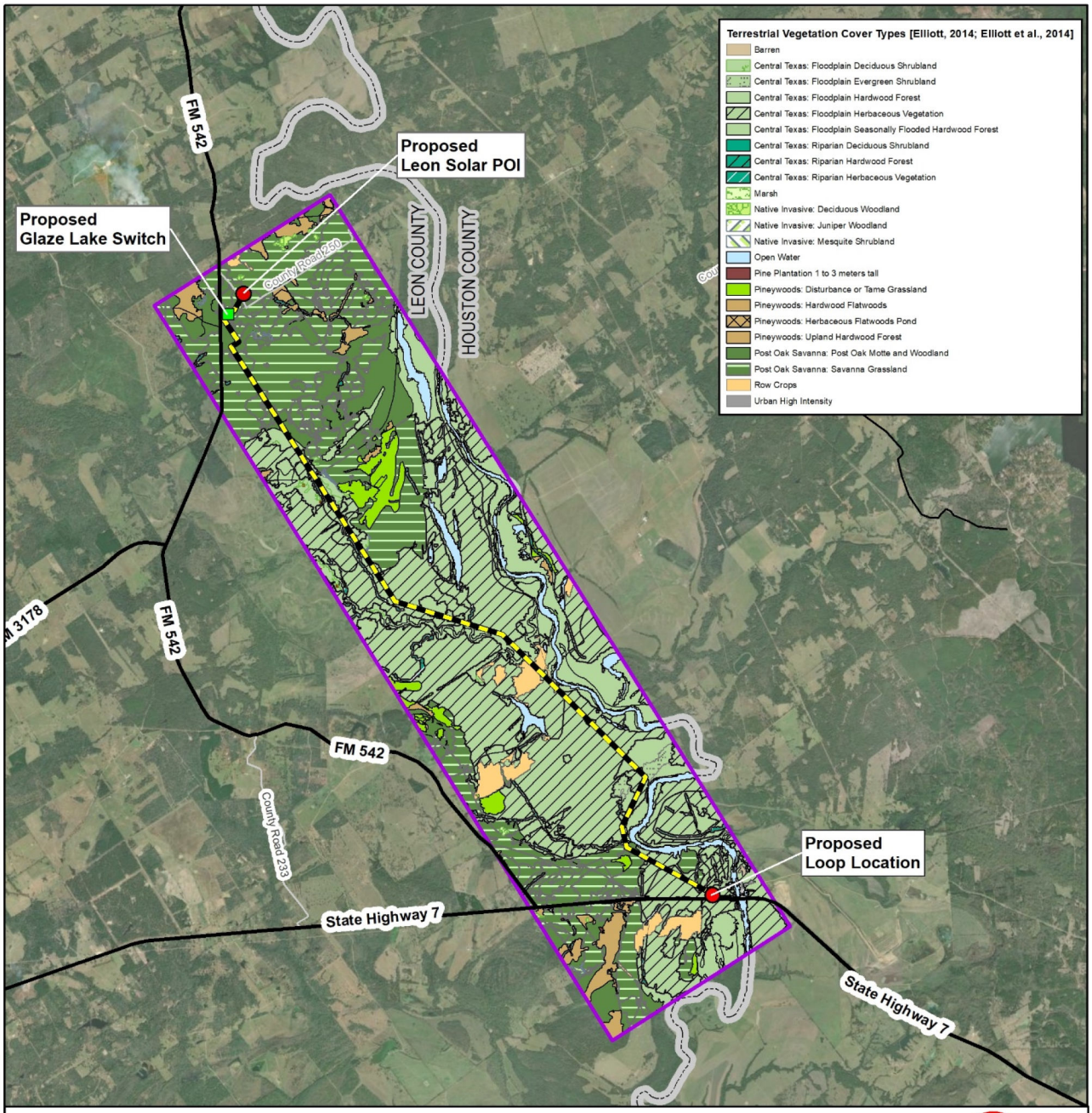

FIGURE 3-6. TERRESTRIAL VEGETATION COVER TYPE MAP
GLAZE LAKE SWITCH 138 kV LOOP TRANSMISSION LINE PROJECT

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Table 3-3: Terrestrial Vegetation Types within the Study Area

Vegetation Type	Description	Acres in Study Area	Percent Coverage of Study Area
Barren	Areas where little or no vegetative cover existed at the time of image data collection. Large areas cleared for development are included, as well as rural roads and buildings and associated clearing in primarily rural areas. Stream beds with exposed gravel or bedrock, rock outcrops, quarries, and mines may be mapped as this type. Fallow fields or areas within cropland blocks that remain barren throughout one growing season or heavily grazed pastures where bare soils are dominant may also be mapped as barren.	5	<0.1
Central Texas: Floodplain Deciduous Shrubland	Shrublands dominated by deciduous shrubs such as possumhaw (*Ilex decidua*), honey mesquite (*Prosopis glandulosa*), black willow (*Salix nigra*), roughleaf dogwood (*Cornus drummondii*), and common buttonbush (*Cephalanthus occidentalis*). This vegetation type may also include areas with sparse woodlands composed of typical deciduous overstory species, or sites in early succession dominated by species such as honey mesquite (*Prosopis glandulosa*), huisache (*Acacia farnesiana*), sugar hackberry (*Celtis laevigata*), or Chinese tallow (*Triadica sebifera*).	160	1.0
Central Texas: Floodplain Evergreen Shrubland	Shrublands dominated by juniper (*Juniperus spp.*) occurring as shrubs, or other evergreen shrubs, such as yaupon (*Ilex vomitoria*) or the non-native Macartney rose (*Rosa bracteata*). This vegetation type may also include young stands of loblolly pine (*Pinus taeda*).	75	0.5
Central Texas: Floodplain Hardwood Forest	Dominant canopy communities include pecan (*Carya illinoinensis*), white ash (*Fraxinus americana*), water oak (*Quercus nigra*), cedar elm (*Ulmus crassifolia*), sugar hackberry (*Celtis laevigata*), American elm (*Ulmus americana*), plateau or coastal live oak (*Quercus fusiformis* or *Quercus virginiana*), American sycamore (*Platanus occidentalis*), boxelder (*Acer negundo*), common honeylocust (*Gleditsia triacanthos*), bur oak (*Quercus macrocarpa*), red mulberry (*Morus rubra*), green ash (*Fraxinus pennsylvanica*), and western soapberry (*Sapindus saponaria* var. *drummondii*). Especially along river margins, species such as American sycamore (*Platanus occidentalis*), eastern cottonwood (*Populus deltoides*), and black willow (*Salix nigra*) may dominate. Seasonally flooded sites, especially within the Trinity River basin, may have overcup oak (*Quercus lyrata*) as an overstory component.	2,220	13.9

Table 3-3: Terrestrial Vegetation Types within the Study Area (continued)

Vegetation Type	Description	Acres in Study Area	Percent Coverage of Study Area
Central Texas: Floodplain Herbaceous Vegetation	Floodplains of the region lack a significant overstory or shrub canopy but retain cover in the herbaceous layer. Non-native grass species such as bermudagrass (*Cyodon dactylon*), King Ranch bluestem (*Bothriochloa ischaemum* var. *songarica*), and Johnsongrass (*Sorghum halepense*) may frequently dominate this vegetation type.	5,940	37.1
Central Texas: Floodplain Seasonally Flooded Hardwood Forest	Bottomlands that are seasonally flooded are dominated by species that may be more commonly encountered to the east, such as overcup oak (*Quercus lyrate*) and willow oak (*Quercus phellos*). Black willow (*Salix nigra*) may also be commonly encountered within this vegetation type. Herbaceous cover is very limited due to the frequency of flooding. Shrubs that can withstand frequent inundation, such as common buttonbush (*Cephalanthus occidentalis*), water elm (*Planera aquatica*), and swamp privet (*Forestiera acuminata*), may be present to dominant.	30	0.2
Central Texas: Riparian Deciduous Shrubland	Shrublands in riparian sites that may be dominated by deciduous shrubs such as possumhaw (*Ilex decidua*), honey mesquite (*Prosopis glandulosa*), black willow (*Salix nigra*), roughleaf dogwood (*Cornus drummondii*), swamp privet (*Forestiera acuminata*), and/or common buttonbush (*Cephalanthus occidentalis*). This vegetation type may also represent relatively sparse woodlands dominated by overstory species typical of the system.	5	<0.1
Central Texas: Riparian Hardwood Forest	Trees that may be present in stands of this system include southern red oak (*Quercus falcata*) and sweetgum (*Liquidambar styraciflua*), with evergreen species like loblolly pine (*Pinus taeda*) and shortleaf pine (*Pinus echinata*) in eastern areas. The shrub layer is diverse, featuring species such as swamp privet (*Forestiera acuminata*), possumhaw (*Ilex decidua*), and common persimmon (*Diospyros virginiana*). Some areas may be shrub-dominated without an overstory, containing species like common buttonbush (*Cephalanthus occidentalis*). Herbaceous cover varies and includes species like Virginia wildrye (*Elymus virginicus*) and switchgrass (*Panicum virgatum*). Woody vines like saw greenbriar (*Smilax bona-nox*) are common. Non-native species such as giant reed (*Arundo donax*) and Chinese tallow (*Triadica sebifera*) are also introduced in these habitats.	35	0.2

Table 3-3: Terrestrial Vegetation Types within the Study Area (continued)

Vegetation Type	Description	Acres in Study Area	Percent Coverage of Study Area
Central Texas: Riparian Herbaceous Vegetation	Riparian sites lack overstory or shrub canopy but retaining herbaceous cover. Some sites may be dominated by species such as little bluestem (*Schizachyrium scoparium*) or Indiangrass (*Sorghastrum nutans*), that are more commonly encountered in surrounding uplands. Other sites may be dominated by the non-natives like giant reed (*Arundo donax*), King Ranch bluestem (*Bothriochloa ischaemum* var. *songarica*), or bermudagrass (*Cynodon dactylon*).	190	1.2
Marsh	Areas mapped as marsh are small and consist of wet or alternatively wet and dry soils with herbaceous vegetation. These are often near tanks or ponds, and may contain cattails (*Typha* spp.), spikerushes (*Eleocharis* spp.), bulrushes (*Schoenoplectus* spp.), and bermudagrass (*Polygonum* spp.) as important species. Some shrubs such as common buttonbush (*Cephalanthus occidentalis*) and black willow (*Salix nigra*) may be important in this vegetation type.	5	<0.1
Native Invasive: Deciduous Woodland	This broadly defined vegetation type may have sugar hackberry (*Celtis Laevigata*), water oak (*Quercus nigra*), cedar elm (*Ulmus crassifolia*), sweetgum (*Liquidambar styraciflua*), winged elm (*Ulmus alata*), yaupon (*Ilex vomitoria*), huisache (*Acacia farnesiana*), ashes (*Fraxinus* spp.), or honey mesquite (*Prosopis glandulosa*) among the dominants. To the south and west, species such as granjeno (*Celtis ehrenbergiana*), Colima (*Zanthoxylum fagara*), and Texas persimmon (*Diospyros texana*) are more common. Post oak (*Quercus stellata*), coastal live oak (*Quercus virginiana*), and plateau live oak (*Quercus fusiformis*) may be important. Eastern redcedar (*Juniperus virginiana*) and loblolly pine (*Pinus taeda*) may also be present.	25	0.2
Native Invasive: Juniper Woodland	This vegetation type may be dominated either by Ashe juniper (*Juniperus ashei*) over Edwards Plateau limestones, by easter redcedar (*Juniperus virginiana*) in the northeast and east, or by redberry juniper (*Juniperus pinchotii*) to the northwest. Plateau live oak (*Quercus fusiformis*) is a common component, and species such as sugar hackberry (*Celtis laevigata*) and cedar elm (*Ulmus crassifolia*) occur throughout. Post oak (*Quercus stellata*) and yaupon (*Ilex vomitoria)* are commonly associated with eastern redcedar (*Juniperus virginiana*).	5	<0.1

Table 3-3: Terrestrial Vegetation Types within the Study Area (continued)

Vegetation Type	Description	Acres in Study Area	Percent Coverage of Study Area
Native Invasive: Mesquite Shrubland	Honey mesquite (*Prosopis glandulosa*) is often the dominant species of this broadly defined vegetation type, but species such as huisache (*Acacia farnesiana*), sugar hackberry (*Celtis laevigata*), Ashe juniper (*Juniperus ashei*), cedar elm (*Ulmus crassifolia*), lotebush (*Ziziphus obtusifolia*), agarito (*Mahonia trifoliolata*), winged elm (*Ulmus alata*), sumacs (*Rhus* spp.), brasil (*Condalia hookeri*), common persimmon (*Diospyros virginiana*), Texas persimmon (*Diospyros texana*), granjeno (*Celtis ehrenbergiana*), and Linheimer prickly pear (*Opuntia engelmannii* var. *lindheimeri*) may also be important. Trees such as Plateau live oak (*Quercus fusiformis*), coastal live oak (*Quercus virginiana*), and post oak (*Quercus stellata*) may form a sparse canopy.	20	0.1
Open Water	In addition to large lakes, rivers, and marine water, ephemeral ponds may be mapped as open water.	560	3.5
Pine Plantation 1 to 3 meters tall	Young, planted loblolly pine (*Pinus taeda*) stands are most common within this vegetation type, which is mapped over moist soils where natural pine stands are not expected to occur. Other species such as sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), winged elm (*Ulmus alata*), yaupon (*Ilex vomitoria*), and southern dewberry (*Rubus trivialis*) may also be components. Some sites mapped as this vegetation type contain sparse or short coastal live oak (*Quercus virginiana*), eastern redcedar (*Juniperus virginiana*), or yaupon (*Ilex vomitoria*).	5	<0.1
Pineywoods: Disturbance or Tame Grassland	This grass dominated vegetation type occurs within a landscape that would naturally be dominated by forest or woodland. Natural occurrences would be short-lived following natural disturbances, such as fire. The predominant cover often consists of non-native grass species such as bermudagrass (*Cynodon dactylon*), Bahia grass (*Paspalum notatum*), Italian ryegrass (*Lolium perenne*), tall fescue (*Schedonorus phoenix*), and/or rescuegrass (*Bromus catharticus*). However, native grasses such as little bluestem (*Schizachyrium scoparium*) and broomsedge bluestem (*Andropogon virginicus*) may also have significant cover. Various forbs and some woody species may also be present. These sites will develop significant woody cover in the absence of active management.	395	2.5

Table 3-3: Terrestrial Vegetation Types within the Study Area (continued)

Vegetation Type	Description	Acres in Study Area	Percent Coverage of Study Area
Pineywoods: Hardwood Flatwoods	This woodland or forest system is often dominated by more mesic species on interior ridges, including post oak (*Quercus stellata*), white oak (*Quercus alba*), southern red oak (*Quercus falcata*), and black hickory (*Carya texana*). On the somewhat wetter sites of the swales, species such as water oak (*Quercus nigra*), willow oak (*Quercus phellos*), laurel oak (*Quercus laurifolia*), blackgum (*Nyssa sylvatica*), sweetgum (*Liquidambar styraciflua*), and green ash (*Fraxinus pennsylvanica*) may be dominant. Herbaceous cover is generally sparse, with species such as woodoats (*Chasmanthium* spp.), bushy bluestem (*Andropogon glomeratus*), and Carolina jessamine (*Gelsemium sempervirens*).	450	2.8
Pineywoods: Herbaceous Flatwoods Pond	Herbaceous wetlands dominated by species such as maidencane (*Panicum hemitomon*), sedges (*Carex* spp.), beaksedges (*Rhynchospora* spp.), spikerushes (*Eleocharis* spp.), bushy bluestem (*Andropogon glomeratus*), and water-primroses (*Ludwigia* spp.). Some sites may be dominated by the non-native bermudagrass (*Cynodon dactylon*). A few woody species may occur, including swamp tupelo (*Nyssa biflora*), sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), water elm (*Planera aquatica*), and common buttonbush (*Cephalanthus occidentalis*). Flatwood ponds represent a more restricted subset of herbaceous-dominated sites with saturated soils resulting from perched water table due to an impermeable subsurface.	5	<0.1
Pineywoods: Upland Hardwood Forest	Dominated by deciduous hardwoods but may (and often does) have some cover of pine, usually loblolly pine (*Pinus taeda*). Deciduous hardwoods include sweetgum (*Liquidambar styraciflua*), black hickory (*Carya texana*), post oak (*Quercus stellata*), southern red oak (*Quercus falcata*), white oak (*Quercus alba*), water oak (*Quercus nigra*), winged elm (*Ulmus alata*), cedar elm (*Ulmus crassifolia*), and blackgum (*Nyssa sylvatica*). Yaupon (*Ilex vomitoria*), saplings and seedlings of overstory species, American beautyberry (*Callicarpa americana*), wax-myrtle (*Morella cerifera*), farkleberry (*Vaccinium arboreum*), and flowering dogwood (*Cornus florida*) commonly occupy the shrub layer, which may be well-developed, with understory canopy cover to 40% or more.	40	0.3

Table 3-3: Terrestrial Vegetation Types within the Study Area (continued)

Vegetation Type	Description	Acres in Study Area	Percent Coverage of Study Area
Post Oak Savanna: Post Oak Motte and Woodland	Typically dominated by post oak (*Quercus stellata*), with blackjack oak (*Quercus marilandica*) and/or plateau live oak (*Quercus fusiformis*) also present. Tree species such as sugar hackberry (*Celtis laevigata*), honey mesquite (*Prosopis glandulosa*), water oak (*Quercus nigra*), eastern persimmon (*Diospyros virginiana*), eastern redcedar (*Juniperus virginiana*), winged elm (*Ulmus alata*), and cedar elm (*Ulmus crassifolia*) are often overstory components and are often stunted in height. The shrub layer includes species such as American beautyberry (*Callicarpa americana*), possumhaw (*Ilex decidua*), yaupon (*Ilex vomitoria*), gum bumelia (*Sideroxylon lanuginosum*), saw greenbriar (*Smilax bona-nox*), coral-berry (*Symphoricarpos orbiculatus*), farkleberry (*Vaccinium arboreum*), and Hercules' club (*Zanthoxylum clavaherculis*). Herbaceous plants are often represented by components of the surrounding prairies, primarily little bluestem (*Schizachyrium scoparium*), but also Indiangrass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardii*), and, to the south and east, brownseed paspalum (*Paspalum plicatulum*). Other grass species may include silver bluestem (*Bothriochloa laguroides* var. *torreyana*), Canada wildrye (*Elymus canadensis*), switchgrass (*Panicum virgatum*), Florida paspalum (*Paspalum floridanum*), thin paspalum (*Paspalum setaceum*), tall dropseed (*Sporobolus compositus*), and purpletop (*Tridens flavus*).	1,235	7.7
Post Oak Savanna: Savanna Grassland	Mosaic of woody and herbaceous cover types as suggested by reference to a savanna. These grasslands are often dominated by mid- and tallgrass species often present in the understory of woody expressions of the system. Dominant species include little bluestem (*Schizachyrium scoparium*), Indiangrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*). Other grasses present include big bluestem (*Andropogon gerardii*), silver bluestem (*Bothriochloa laguroides* var. *torreyana*), brownseed paspalum (*Paspalum plicatulum*) (to the south), Texas wintergrass (*Nassella leucotricha*), and sand dropseed (*Sporobolus cryptandrus*). Nonnative grass species such as King Ranch bluestem (*Bothriochloa ischaemum* var. *songarica*), Bahia grass (*Paspalum notatum*), Klein grass (*Panicum coloratum*), Kleberg bluestem (*Dichanthium annulatum*), and bermudagrass (*Cynodon dactylon*) may dominate some sites.	4,260	26.6

Table 3-3: Terrestrial Vegetation Types within the Study Area (continued)

Vegetation Type	Description	Acres in Study Area	Percent Coverage of Study Area
Row Crops	This vegetation type includes all cropland where fields are fallow for some portion of the year. Some fields may rotate into and out of cultivation frequently, and year-round cover crops are generally mapped as grassland.	330	2.1
Urban High Intensity	This mapped vegetation type consists of built-up areas and wide transportation corridors that are dominated by impervious cover that may include manicured or landscaped areas.	5	<0.1

Source: Elliott (2014); Elliott et al. (2014).

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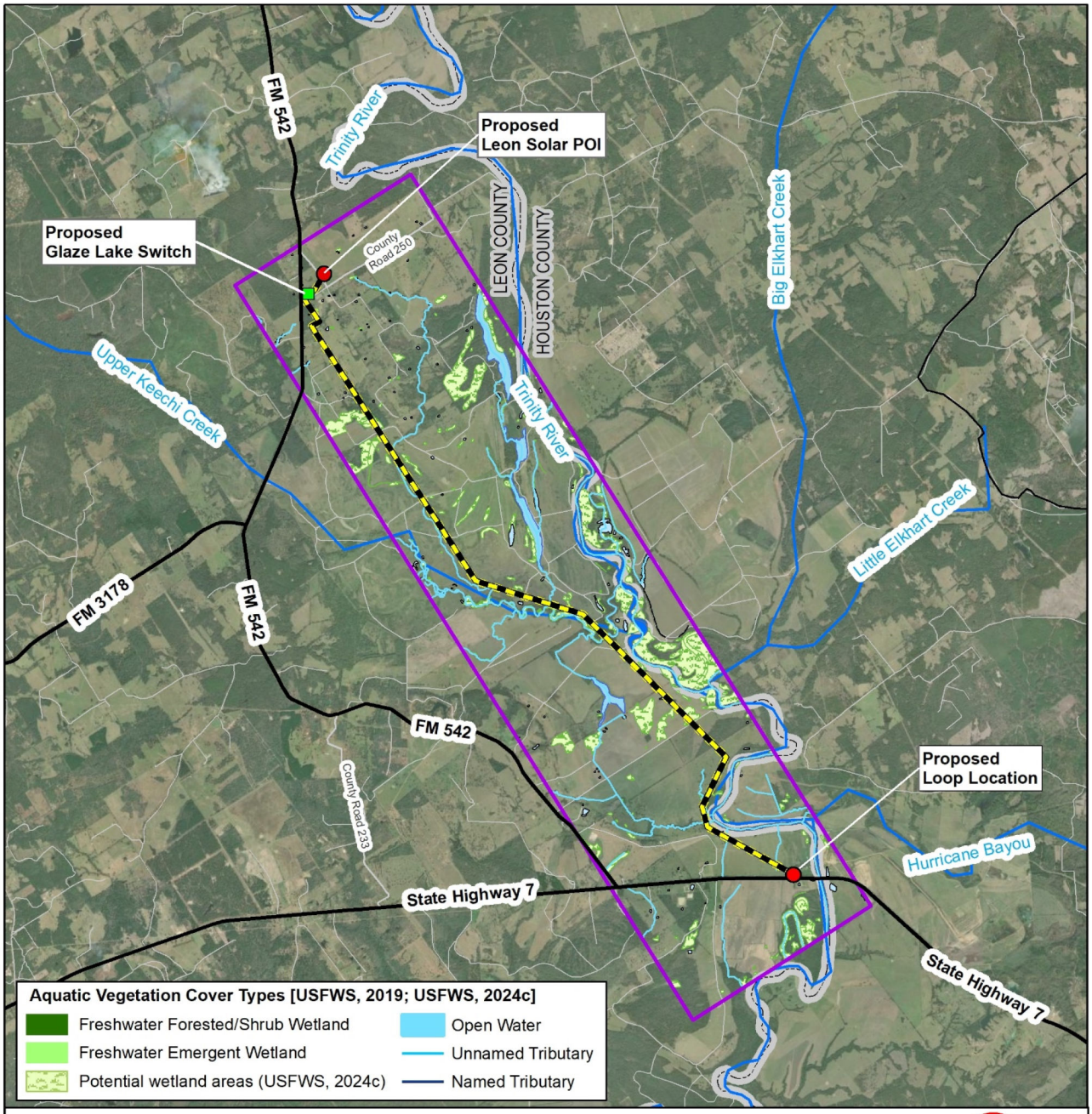


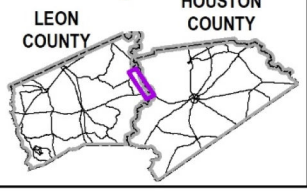
FIGURE 3.7. AQUATIC VEGETATION COVER TYPE MAP
GLAZE LAKE SWITCH 138 kV LOOP TRANSMISSION LINE PROJECT

0 0.5 1 2 Miles

Note: Data is for display purposes only. All features and boundaries have been approximated from public resources. Aerial Photography (USDA, 2022)

Legend
- Proposed End Points
- Proposed Glaze Lake Switch
- Proposed Transmission Line
- Study Area
- Major Roads
- Minor Roads
- County Line
- Major Rivers and Creeks

Extent Map



Vicinity Map

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Table 3-4: Aquatic Vegetation Types and Surface Water Features within the Study Area

Vegetation Type	Description	Acres in Study Area	Percent Coverage of Study Area
Herbaceous (Emergent) Wetland	Herbaceous marsh, fen, swale, and wet meadow	234	1.5
Forested / Shrub Wetland	Forested swamp or wetland shrub bog or wetland	1,114	7.0
Freshwater Pond	Pond	104	0.7
Lake	Lake or reservoir basin	201	1.3
Streams and Rivers	Rivers, streams, and their tributaries	2,549	15.9

Source: USFWS (2019); USFWS (2024c).

Additionally, as described in **Section 3.4.1**, the study area contains a total of 48.7 linear miles of surface water features, including the Trinity River and Upper Keechi Creek as well as contributing named and unnamed tributaries and adjacent floodplains. There are several named lakes within the study area including Stanmire Lake, Clear Lake, Tubb Lake, Flat Lake, Zeke Lake, Alligator Lake, and Buzzard Lake. In addition, there are several unnamed freshwater ponds (USGS, 2024b). Overall, surface water features account for approximately 2,854 acres of the study area including freshwater ponds (approximately 104 acres), lakes (approximately 201 acres), and streams and rivers (approximately 2,549 acres) (USFWS, 2024c; USGS, 2024b).

These wetland areas and surface water features may meet the criteria necessary to define them as waters of the U.S. pursuant to Section 404 of the Clean Water Act, and, therefore, certain activities (e.g., placement of fill) within them may be subject to regulation by the USACE.

3.5.1.3 Commercially or Recreationally Important Plant Species

Commercially important species are defined as those that (a) are commercially or recreationally valuable; (b) are endangered or threatened; (c) affect the well-being of some important species within criterion (a) or (b); and (d) are critical to the structure and function of the ecological system or are biological indicators. Commercially important vegetation within the study area includes

forage and row crops. According to the National Agricultural Statistics Service (NASS), the primary crop by highest number of acres in Leon County is hay for forage followed by wheat for grain and corn for grain. In Houston County, the primary crop is hay for forage followed by corn for grain and vegetables harvested (NASS, 2022).

3.5.1.4 Endangered, Threatened, and Rare Plant Species

As defined by the USFWS under the Endangered Species Act (ESA), an endangered species is one that is in danger of extinction throughout all or a significant portion of its range, while a threatened species is one likely to become endangered within the foreseeable future throughout all or a significant portion of its range (USFWS, 2024a).

According to the USFWS and the TPWD Rare, Threatened, and Endangered Species of Texas (RTEST) county lists, as well as the USFWS Information for Planning and Consultation (IPaC) website and the TPWD Texas Natural Diversity Database (TXNDD) for Leon and Houston County, there are two endangered plant species, Large-fruited sand-verbena (*Abronia macrocarpa)* and Navasota ladies'-tresses (*Spiranthes parksii*) (USFWS, 2024b; TPWD, 2024h).

Descriptions of these listed endangered plant species and likelihood of occurrence within the study area are provided below and in **Table 3-5**.

Large-fruited sand-verbena. The Large-fruited sand-verbena (*Abronia macrocarpa*) is a perennial non-woody herb with a taproot and produces pink-purple five lobed, flared, funnel-shaped flowers. Large-fruited sand-verbena occurs in sandy, mild alkaline soils of East Texas oak savanna regions. The TPWD TXNDD (2024h) and iNaturalist (2024) show no observations of Large-fruited sand-verbena within Leon or Houston County. It is not likely that the proposed transmission line project will impact Large-fruited sand-verbena.

Navasota ladies'-tresses. The Navasota ladies'-tresses (*Spiranthes parksii*), an orchid, is a perennial herb with a single row of white flowers that spiral around the upper portion of the stalk. Navasota ladies'-tresses primarily occur in openings of post oak woodlands

Table 3-5: Federally and State Listed Endangered, Threatened, and Rare Plant Species with Potential for Occurrence within the Study Area

Common Name	Scientific Name	Listing Status [1, 2]		Potential to Occur within Study Area
		Federal	State	
Centerville Brazos-mint	*Brazoria truncata var. pulcherrima*	None	SGCN	Yes
Chapman's yellow-eyed grass	*Xyris chapmanii*	None	SGCN	No
Goldenwave tickseed	*Coreopsis intermedia*	None	SGCN	No
Large beakrush	*Rhynchospora macra*	None	SGCN	No
Large-fruited sand-verbena	*Abronia macrocarpa*	E	SGCN	No
Mohlenbrock's sedge	*Cyperus grayoides*	None	SGCN	No
Navasota ladies'-tresses	*Spiranthes parksii*	E	SGCN	No
Neches River rose-mallow	*Hibiscus dasycalyx*	None	SGCN	No
Oklahoma grass pink	*Calopogon oklahomensis*	None	SGCN	No
Panicled indigobush	*Amorpha paniculata*	None	SGCN	Yes
Parks' jointweed	*Polygonella parksii*	None	SGCN	Yes
Sandhill woolywhite	*Hymenopappus carrizoanus*	None	SGCN	Yes
Small-headed pipewort	*Eriocaulon koernickianum*	None	SGCN	No
Soxman's milkvetch	*Astragalus soxmaniorum*	None	SGCN	Yes
Texas three-birds orchid	*Triphora trianthophora* var. *texensis*	None	SGCN	No
Texas trillium	*Trillium texanum*	None	SGCN	No

Source: TPWD (2024c); TPWD (2024f).

[1] USFWS listing codes: E = Endangered; None = No federal status

[2] TPWD listing codes: SGCN = Species of Greatest Conservation Need (i.e., rare species with no regulatory listing status)

in sandy loam soils, often over impermeable clay layer, adjacent to drainages and seasonal streams. The TPWD TXNDD (2024h) and iNaturalist (2024) show no observations of Navasota ladies'-tresses within Leon or Houston County. It is not likely that the proposed transmission line project will impact Navasota ladies'-tresses.

Correspondence from the TPWD (2024c) identified no other threatened, endangered, or candidate plant species that have been documented within, or in proximity to, the study area. Conservation efforts during construction activities are recommended to minimize habitat disturbance for these listed species.

The ESA also provides for the conservation of "critical habitat," the areas of land, water, and air space that a federally listed species needs for survival. These areas include sites with food and water, breeding areas, cover or shelter sites, and sufficient habitat to provide for normal population growth and behavior. No designated critical habitat for any endangered or threatened plant species occurs within the study area (USFWS, 2024b).

The TPWD also protects rare species of greatest conservation need (SGCN) within Texas (TPWD, 2024f). **Table 3-5** lists the species of rare SGCN plants with the potential to occur within the study area.

Correspondence from the TPWD (2024c) identified no other rare SGCN plant species that have been documented within, or in proximity to, the study area. Conservation efforts during construction activities are recommended to minimize habitat disturbance for these rare species.

Descriptions of the specified rare SGCN plant species and the likelihood of occurrence within the study area are provided below.

Centerville Brazos-mint. The Centerville Brazos-mint (*Brazoria truncata* var. *pulcherrima*) is an annual herb with simple, opposite, spatulate leaves with a dentate margin. Centerville Brazos-mint is native to the Post Oak belt of east-central Texas and grows in deep sandy areas with open overstory. The TPWD TXNDD (2024h) and iNaturalist (2024) data indicate that Centerville Brazos-mint has been observed in or near the study area; however, the proposed transmission line project is not expected to permanently affect the occurrence of the species within the study area.

Chapman's yellow-eyed grass. The Chapman's yellow-eyed grass (Xyris chapmanii) is a perennial herb with fibrous roots and clusters of distinctive, yellow lateral buds at the

base of the plant. Chapman's yellow-eyed grass inhabits sandhill seepage bogs in areas of copious lateral seepage. The TPWD TXNDD (2024h) and iNaturalist (2024) show no observations of Chapman's tallow-eyed grass within Leon or Houston County. It is not likely that the proposed transmission line project will impact Chapman's tallow-eyed grass.

Goldenwave tickseed. The Goldenwave tickseed (*Coreopsis intermedia*) is an annual wildflower that produces yellow and reddish-brown to purple petals. Goldenwave tickseed occurs in prairies, savanna, and plains, preferring full sun and dry to medium soil moisture. The TPWD TXNDD (2024h) and iNaturalist (2024) show no observations of Goldenwave tickseed within Leon or Houston County. It is not likely that the proposed transmission line project will impact Goldenwave tickseed.

Large beakrush. The Large beakrush (*Rhynchospora macra*) is a perennial, herbaceous sedge, with enclosed flowers within brown scales and barbed bristles. Large beakrush grows in sandy marshes, dune swales, seepages, intermittent wetlands, and sandy and peaty edges of wetlands. The TPWD TXNDD (2024h) and iNaturalist (2024) show no observations of Large beakrush within Leon or Houston County. It is not likely that the proposed transmission line project will impact Large beakrush.

Mohlenbrock's sedge. The Mohlenbrock's sedge (*Cyperus grayoides*) is a perennial herb which grows from a tuberous rhizome producing triangular stems with clusters of rounded spikes containing multiple spikelets. Mohlenbrock's sedge is natural disturbance dependent and occurs in open dune sand to open sandy spaces in early successional sand prairies. The TPWD TXNDD (2024h) and iNaturalist (2024) show no observations of Mohlenbrock's sedge within Leon or Houston County. It is not likely that the proposed transmission line project will impact Mohlenbrock's sedge.

Neches River rose-mallow. The Neches River rose-mallow (*Hibiscus dasycalyx*) a perennial herb with 3-lobed "T" shaped leaves consisting of creamy white flowers with deep red center and densely pubescent calyx. Neches River rose-mallow exist in three

watersheds in east Texas (Neches, Trinity, and Angelina) occurring within floodplains of permanent streams or rivers and near open sunny sloughs, oxbows, and sandbars. The TPWD TXNDD (2024h) and iNaturalist (2024) show no observations of Neches River rose-mallow within Leon or Houston County. It is not likely that the proposed transmission line project will impact Neches River rose-mallow.

Oklahoma grass pink. The Oklahoma grass pink orchid (*Calopogon oklahomensis*) is a perennial herb with 6-parted pink irregular flowers with a modified petal on top with a singular grass-like leaf. Oklahoma grass pink occurs in mesic, acidic, sandy to loamy prairies, pine savannas, oak woodlands, edges of bogs, and frequently mowed meadows. The TPWD TXNDD (2024h) and iNaturalist (2024) show no observations of Oklahoma grass pink within Leon or Houston County. It is not likely that the proposed transmission line project will impact Oklahoma grass pink.

Panicled indigobush. The Panicled indigobush (*Amorpha paniculata*) is a deciduous shrub with odd-pinnate, compound fuzzy leaflets that have prominent raised veins. Panicled indigobush occurs in deep acid woodlands, marshes, and sloughs in East Texas, but more recently found along utility corridors. The TPWD TXNDD (2024h) and iNaturalist (2024) data indicates that Panicled indigobush has been observed in or near the study area; however, the proposed transmission line project is not expected to permanently affect the occurrence of the species within the study area.

Parks' jointweed. The Parks' jointweed (*Polygonella parksii*) is an annual herbaceous legume with erect stems usually branching proximally and distally, sometimes simple and glabrous. Parks' jointweed occurs in deep, loose sand (especially Carrizo Formation) in oak woodlands, sandy rangeland, and disturbed sites. The TPWD TXNDD (2024h) and iNaturalist (2024) data indicates that Parks' jointweed has been observed in or near the study area; however, the proposed transmission line project is not expected to permanently affect the occurrence of the species within the study area.

Sandhill woolywhite. The Sandhill woolywhite (*Hymenopappus carrizoanus*) is a biennial herb belonging to the daisy family and forms a rosette with a large tap root. Sandhill woolywhite is restricted to the Carrizo sands of Central Texas. The TPWD TXNDD (2024h) and iNaturalist (2024) data indicate that Sandhill woolywhite has been observed in or near the study area; however, the proposed transmission line project is not expected to permanently affect the occurrence of the species within the study area.

Small-headed pipewort. The Small-headed pipewort (*Eriocaulon koernickianum*) is a small perennial herb with narrow leaves and small gray ball flower. Small-headed pipewort prefers moist, sandy, acidic soils in bogs, seeps, and other wetlands. The TPWD TXNDD (2024h) and iNaturalist (2024) show no observations of Small-headed pipewort within Leon or Houston County. It is not likely that the proposed transmission line project will impact Small-headed pipewort.

Soxman's milkvetch. The Soxman's milkvetch (*Astragalus soxmaniorum*) is a perennial forb and consists of hairy stems and pinnately compound leaves, the fruit pods are slender containing kidney-shaped seeds. Soxman's milkvetch occurs in sandhills, Sandylands, and longleaf pine savannas. The TPWD TXNDD (2024h) and iNaturalist (2024) data indicate that Soxman's milkvetch has been observed in or near the study area; however, the proposed transmission line project is not expected to permanently affect the occurrence of the species within the study area.

Texas three-birds orchid. The Texas three-birds orchid (*Triphora trianthophora* var. *texensis*) is a perennial herb that produced small, pink or white flowers with three-lobed labellum with three green ridges at the center. The Texas three-bird orchid occurs in moist, deciduous forests, woodlands, thickets, and occasionally swamps. The TPWD TXNDD (2024h) and iNaturalist (2024) show no observations of Texas three-birds orchid within Leon or Houston County. It is not likely that the proposed transmission line project will impact Texas three-birds orchid.

Texas trillium. The Texas trillium (*Trillium texanum*) is a small, perennial herb that produces showy, three-petaled flowers with leaf like bracts that whorl at the stem apex. Texas trillium occurs in wet, acidic soil on the lower slopes and wetlands. The TPWD TXNDD (2024h) and iNaturalist (2024) show no observations of Texas trillium within Leon or Houston County. It is not likely that the proposed transmission line project will impact Texas trillium.

3.5.2 Fish and Wildlife

3.5.2.1 Terrestrial Wildlife

The study area is located within the Austroriparian biotic provinces as described by Blair (1950). Blair (1950) recognized at least 47 species of mammals, 29 species of snakes, 10 lizards, two land turtles, 17 anuran species (frogs and toads), and 18 urodele species (salamanders) that occur in Texas. Of those species, the species with potential for occurrence in the study area are included in **Table 3-6** through **Table 3-8**. Herpetological species (reptiles and amphibians) with potential for occurrence in the study area are included in **Table 3-6**. Mammalian species with potential for occurrence in the study area are included in **Table 3-7**. Avian species with potential for occurrence in the study area are included in **Table 3-8**.

3.5.2.2 Fish and Aquatic Wildlife

The study area lies within the Trinity River Basin, and specifically the Cedar Branch-Trinity River, Haley Creek-Upper Keechi Creek, Knight Creek-Trinity River, Lower Hurricane Bayou, and Lower Big Elkhart Creek sub watersheds (TPWD, 2024j). The region has been significantly impacted by human activities, including the construction of 22 reservoirs on the Trinity River to provide drinking water and flood control for the surrounding cities. The Trinity River Basin has historically been home to diverse habitats, including bottomland hardwood forests and wetlands; however, conversion of land use for urbanization, commercial/industrial development, farming, livestock production, timber production, and outdoor recreation have all altered the extent of these diverse habitats and the species that depend on them (TPWD, 2012).