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APPLICATION OF AEP TEXAS INC. TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE ALAMITO CREEK-TO-FORT DAVIS 138-KV TRANSMISSION LINE IN PRESIDIO AND JEFF DAVIS COUNTIES	§ § § § § § § §	**PUBLIC UTILITY COMMISSION OF TEXAS**

MAY 21, 2024

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APPLICATION OF AEP TEXAS INC. TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE ALAMITO CREEK-TO-FORT DAVIS 138-KV TRANSMISSION LINE IN PRESIDIO AND JEFF DAVIS COUNTIES

DOCKET NO. 56413

Applicant AEP Texas Inc. (AEP Texas) requests that all parties serve copies of all pleadings, discovery, correspondence, and other documents on the following representatives:

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1. Applicant (Utility) Name: AEP Texas Inc.

Certificate Number: 30170[1]

Street Address: 539 North Carancahua
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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.

There are no 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.

3. Person to Contact: Kensley L. Greuter

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4. Project Description:

Name or Designation of Project:

Application of AEP Texas Inc. to Amend Its Certificate of Convenience and Necessity for the Alamito Creek-to-Fort Davis 138-kV Transmission Line in Presidio and Jeff Davis Counties (Project or Application).

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.

[1] Certificate Number 30170 was assigned to AEP Texas North Company, which is now AEP Texas Inc.

AEP Texas Inc. (AEP Texas) (Applicant) is proposing to replace the existing Alamito Creek to Fort Davis 69-kilovolt (kV) transmission line in Presidio and Jeff Davis Counties, Texas (Project), due to its age, present condition of wood structures, and lack of overhead ground wire, which results in numerous momentary outages during stormy weather conditions, in order to continue reliable transmission service to electric service customers in this area. This existing transmission line is a radial 69-kV feed beginning from the existing Alamito Creek 69/138-kV Substation located at the southeast intersection of E Murphy St and N E St just east of the City of Marfa in Presidio County, Texas and extending to the existing Fort Davis 69-kV Substation located at the southeast intersection of State Highway (SH) 17 and W Urquhart St in the unincorporated community of Fort Davis in Jeff Davis County, Texas. The new transmission line will be constructed for 138-kV operation. It will be between approximately 20 and 29 miles in length, depending on the Alternative Route selected, and will require a 100-foot-wide right-of-way (ROW).

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

Not applicable.

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

Not applicable.

5. Conductor and Structures:

Conductor Size and Type

The Project will use three 795 kcmil 26/7 Aluminum Conductor Steel-Supported (ACSS) conductors with one (1) optical ground wire in the overhead ground wire position.

Number of Conductors per Phase

The Project will be constructed with one conductor per phase.

Continuous Summer Static Current Rating (A)

The Continuous Summer Static Current Rating for the Project is 1700 Amps.

Continuous Summer Static Line Capacity at Operating Voltage (MVA)

The Continuous Summer Static Line Capacity at Operating Voltage for the Project is 203 MVA.

Continuous Summer Static Line Capacity at Design Voltage (MVA)

The Continuous Summer Static Line Capacity at Design Voltage for the Project is 406 MVA.

Type and Composition of Structures

The Project will be constructed using weathered steel monopole structures with braced post insulators and galvanized steel monopole structures in select locations only.

Height of Typical Structures

Typical structures will range in height between 70 to 100 feet above grade.

Estimated Maximum Height of Structures

Depending on clearance requirements, the estimated maximum height of structures is 150 feet above ground.

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

The area for the construction for this project is primarily rural rangeland used for grazing of cattle and hunting. Access roads are limited to most of the area in general and terrain variation from hills to valleys were sculpted by centuries of erosion. Because of these construction parameters for the Project, AEP Texas determined that steel monopole structures were the most cost competitive solution and easiest to construct for this Project. In addition, based on public input, landowners prefer weathered steel in this region from an aesthetic perspective. Galvanized steel may need to be used in certain situations (i.e., dead-end structures), but would be limited to the extent practicable.

Dimensional drawings of steel monopole structures are included as Figures 1-2 through 1-5 of the Alamito Creek-to-Fort Davis 138-kV Transmission Line Project Environmental Assessment and Alternative Route Analysis. This document, prepared by the Applicant's routing consultant Burns and McDonnell Engineering Company, Inc. (Burns & McDonnell), is also referred to in this Application as the "EA," and is included as Attachment 1 of this Application.

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

Not Applicable. AEP Texas is the sole Applicant.

6. Right-of-way:

Miles of Right-of-Way

The miles of right-of-way (ROW) for the Alternative Routes ranges from approximately 19.91 to 29.00 miles.

A table that shows the miles of right-of-way for each route is included as Attachment 2 of the Application.

Miles of Circuit

The Project will be a single-circuit 138-kV transmission line (operating at 69-kV) for all links except for Links 3, 7, and 8 where the transmission line would need to be double-circuited with the existing Alamito Creek to Barrilla Junction 138-kV Transmission Line for approximately 1.6 miles on these links due to impending erosion along the existing transmission line. The relocation of the existing Alamito Creek to Barrilla Junction 138-kV Transmission Line will be reported separately on AEP Texas' Monthly Construction Progress Report and will not affect circuit miles for this Application. Therefore, the miles of circuit would range from approximately 19.91 to 29.00 miles.

A table that shows the miles of circuit for each route is included as Attachment 2 of the Application.

Width of Right-of-Way

The typical right-of-way is 100 feet wide (50 feet on either side of the centerline). Temporary easements might be required in some areas for additional working space during construction.

Percent of Right-of-Way Acquired

Between zero and five percent of the right-of-way has been acquired for the Project, depending on which Alternative Route is selected.

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

Not Applicable. AEP Texas is the sole Applicant.

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 area traversed by the alternative routes (study area) for this Project is predominantly rural rangeland within a landscape characterized by abrupt changes in elevation, alternating between narrow faulted mountain chains and flat arid valleys or basins. Isolated residences and ranches are scattered throughout the study area.

The study area is located within the Basin and Range Physiographic Province. Elevations within the study area range between approximately 4,665 feet above mean sea level (amsl) to approximately 6,358 feet amsl.

7. Substations or Switching Stations:

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

The Project will be constructed between the existing AEP Texas Alamito Creek 69/138-kV Substation and the existing AEP Texas Fort Davis 69-kV Substation. There are no existing HVDC converter stations associated with the Project. AEP Texas will be the owner of both substations.

No substation upgrades or modifications will be required for either the existing AEP Texas Alamito Creek 69/138-kV Substation or the existing AEP Texas Fort Davis 69-kV Substation. However, phase-over-phase (POP) switch equipment will be required at the Valentine Tap as a result of this Project. Costs associated with the POP switch are located in Attachment 3 in this Application and include a three-way POP design consisting of three side-break switches with a common jaw-end connection mounted on a common stand for each phase and attached to a common pole with phases arranged vertically.

Once the replacement transmission line is constructed, there will be three existing distribution service substations being served by the old transmission line that will need to be either transferred to the new transmission line (Valentine Tap) or retired and replaced (Espy Wells and Kenney Ponder Tap) with distribution feeds from Valentine Tap and Fort Davis Substation through a combination of utilizing the old existing transmission line structures and use of distribution underbuild added to the new transmission line structures, depending on the route selected by the Commission. This work will be performed by AEP Texas Distribution and will not be part of this Application or will the cost be included in this Application.

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.

None.

8. Estimated Schedule:

Estimated Dates of:	**Start**	**Completion**
Right-of-way and Land Acquisition	July 2025	June 2026
Engineering and Design	August 2025	July 2026
Material and Equipment Procurement	November 2025	November 2026
Construction of Facilities	August 2026	April 2028
Energize Facilities	N/A	February 2028

9. Counties:

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

Each of the alternative routes filed in this Application would be constructed in Presidio and Jeff Davis Counties.

10. Municipalities:

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

The AEP Texas Alamito Creek Substation is located just east of the incorporated boundaries of the City of Marfa in Presidio County, Texas. The AEP Texas Fort Davis Substation is located within the unincorporated community of Fort Davis in Jeff Davis County, Texas. Therefore, no portion of the alternative routes would be constructed within a municipal boundary.

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

Not Applicable. The transmission line routing will not utilize municipal public right-of-way.

11. Affected Utilities:

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

None. The transmission line that is the subject of this Application will not be directly connected to any other electric utility.

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

Not Applicable. No other electric utility is involved in the construction of the Project. The Project does not utilize existing facilities owned by any other electric utility.

12. Financing:

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

Funds for this Project will come from short-term borrowings and owner equity.

13. Estimated Costs:

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

Tables that show the estimated cost of the transmission facilities and the station facilities for this Project are included as Attachment 3 of this Application.

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

Not Applicable. AEP Texas is the sole Applicant.

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 existing transmission line was originally placed in service in 1929 and its electric service performance has declined, due to the age and condition of the existing wood structures and lack of overhead ground wire, to the point that it is necessary to replace the transmission line. Additionally, the new transmission line will strengthen the system against west Texas weather and decrease the likelihood and duration of sustained, community-wide outages.

A major complication in the replacement of the existing transmission is that it is a radial line that provides electrical service to three distribution service substations (Valentine Tap, Espey Wells, and Kennedy Ponder Tap) as well as the Fort Davis 69-kV Substation. Therefore, the existing line cannot be taken out of service to rebuild without the loss of electrical service to customers that take their electric service from one of these four substations. AEP Texas proposes to construct the new transmission line and once the new line is in service, one of the substations that takes service from the old radial line, Valentine Tap, will be reconnected to the new line, while the other two substations, Espey Wells and Kennedy Ponder Tap, will be retired. In their place, distribution feeds will come from the Valentine Tap and Fort Davis substations to serve the existing distribution load currently served between Fort Davis and Valentine Tap. Depending upon the final route selected by the PUCT, these distribution feeds will be provided by a combination of utilizing the old existing transmission line structures and distribution underbuild added to the new transmission line structures that will be constructed to allow for such additions. This work will be performed by AEP Texas Distribution and will not be part of this Application nor will the cost be included in this Application.

This plan will allow AEP Texas to continue to provide electric service to the substations while the new transmission facilities are being constructed. Once Valentine Tap is taking service from the new transmission line, and the new distribution feeders that will replace Espey Wells and Kenney Ponder Tap are in service, the old line will be removed where not otherwise utilized by these feeders. Therefore, AEP Texas is proposing to the PUC the construction of this new transmission line to replace the existing transmission line, while also improving electric service to the distribution delivery points currently served by this transmission line. The transition plan will also allow AEP Texas to continue to provide electric service to the substations while the new transmission facilities are being constructed and provide for a separate distribution service plan that will improve electric service to customers once the new transmission line is placed in service.

In addition, since the majority of the existing line is parallel and in close proximity to existing pipelines, constructing the new transmission line farther from the pipelines provides an additional benefit of increasing the distance between the transmission line and the pipelines for future maintenance, repair, and replacement activities on either.

Because the incremental cost is not significant and the cost would be much greater to replace the line when 138-kV service is needed, AEP proposes that the Project be constructed to allow for future 138-kV operation but that the Project be operated at 69-kV upon initial energization (and in the near future).

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.

There are no other practical distribution alternatives to the Project or alternatives involving upgrading of existing transmission facilities that would meet the need for the Project. Additionally, failing to replace the transmission line segment that is being removed from service would create unacceptable reliability problems to the distribution customers served from it.

AEP Texas is not a bundled utility and cannot own or control distributed generation.

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 diagram of the transmission system in the proximate area of the Project is included with this Application as Attachment 4.

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.

A copy of the complete EA that was prepared by Burns & McDonnell is included as Attachment 1 of this Application. The EA presents the analysis that was conducted by Burns & McDonnell and the land use and environmental data for all the Alternative Routes that were considered for this Project.

The objective of the EA was to identify and evaluate an adequate number of geographically diverse alternative transmission line routes that comply with the routing criteria in PURA and the PUC's Substantive Rules, and ultimately recommend to AEP Texas the routes that Burns & McDonnell determined best address the requirements of PURA and the PUC's Substantive Rules from a land use and environmental standpoint. AEP Texas and Burns & McDonnell utilized a comprehensive transmission line routing and evaluation methodology to delineate and evaluate alternative transmission line routes.

As discussed below, the study approach utilized by Burns & McDonnell for this EA consisted of Project scoping and study area delineation, data collection, constraint mapping, Preliminary Alternative Links identification, review and adjustment of alternative routes following field review, consideration of open-house input, alternative route analysis and impact assessment, and finally the recommendation by Burns & McDonnell of alternative routing options to AEP Texas, including the Alternative Routes determined to best address the requirements of PURA and the PUC's Substantive Rules from a land use and environmental perspective.

The first step in the selection of alternative routing options was to select a study area. This area needed to encompass the Project endpoints and include a sufficiently large area within which feasible and geographically diverse Alternative Routes could be delineated. The study area is shown on Figure 2-1 of the EA.

Burns & McDonnell used data in the evaluation of the Alternative Routes that were drawn from a variety of sources, including published literature (documents, reports, maps, aerial photography, etc.), and information from local, state, and federal agencies. Recent ESRI World Imagery (2017-2023), 2022

National Agriculture Inventory Program color aerial imagery, Bing Maps, Google Earth, U.S. Geological Survey (USGS) 7.5 minute quadrangle topographic maps, U.S. Geological Survey National Hydrography Dataset, Federal Emergency Management Agency maps, U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory maps, USFWS Information for Planning and Consultation, Texas Parks and Wildlife Department (TPWD) Texas Natural Diversity Database, TPWD Ecological Mapping Systems of Texas, Texas Natural Resources Information System, Texas Archaeological Sites Atlas, and ground reconnaissance surveys were used throughout the evaluation of the Alternative Routes.

Ground reconnaissance of the study area and computer-based evaluation of digital aerial imagery was utilized for the evaluation of Alternative Routes. Though the data collection effort was concentrated in the early stages of the Project, it was ongoing and continued throughout the evaluation process.

A constraints mapping process was used in the selection and refinement of possible Alternative Routes. The geographic locations of environmentally sensitive and other restrictive areas within the study area were located and considered during transmission line route delineation. These constraints were mapped on an aerial imagery base map, which is included as Figure 2-2 located in a map pocket of the EA in Attachment 1 of this Application.

Using the constraint maps, electrical system maps, field inspections, and input from AEP Texas, Burns & McDonnell designated 36 Preliminary Alternative Links that took into consideration environmental and land use constraints. These Preliminary Alternative Links are shown on Figure 2-3 of the EA in Attachment 1. The principal criteria used to locate these Preliminary Alternative Links were using or paralleling existing transmission facilities, paralleling existing road right-of-way, paralleling apparent property lines, and avoiding residential development.

AEP Texas hosted a virtual town hall meeting, and two in-person open house meetings within the study area to solicit comments, concerns, and input from residents, landowners, and other interested parties. The virtual town-hall meeting was presented via Webex Live to the public on November 9, 2021, while the in-person open-house meetings were held in Fort Davis, Jeff Davis County, on January 19, 2022, and in Marfa, Presidio County, on January 20, 2022.

Following the public meeting, Burns & McDonnell and AEP Texas personnel performed a review and analysis of comments and information received at the public open houses and discussions with landowners and interested stakeholders. The purpose of the review and analysis was to evaluate areas of concern and to consider modifications to the Preliminary Alternative Links for development and identification of the Primary Alternative Links.

The Primary Alternative Links were then used by Burns & McDonnell, with input from the Applicant's project team to finalize 9 Alternative Routes for evaluation. Burns & McDonnell identified potentially affected resources and considered each during this alternative route development process. In evaluating these identified Alternative Routes, Burns & McDonnell considered 41 environmental and land-use criteria. These criteria are listed in Table 2-1 of the EA in Attachment 1 of this Application.

Burns & McDonnell professionals with expertise in different environmental disciplines (ecology, land use/planning, and cultural resources) and the Burns & McDonnell Project Manager evaluated the Alternative Routes. Evaluations were based on environmental and land use conditions present along each Alternative Route. Each of the Alternative Routes was examined in the field at various times between 2019 and 2024, the latest of which was April 2024. Each Burns & McDonnell staff person independently analyzed the environmental data for each Alternative Route from the perspective of their own technical discipline. The evaluators then met as a group and discussed their independent results. The group reached a consensus regarding the relationship and relative sensitivity among the major environmental factors and ranked the Alternative Routes based strictly on the environmental and land use data and shared discussion. Based upon this ranking, Burns & McDonnell recommended a route that best addresses the requirements of PURA and PUC Substantive Rules strictly from an environmental and land use perspective. The results are shown in Table 6-1 of the EA in Attachment 1.

The consensus opinion of the Burns & McDonnell evaluators was to recommend Alternative Route E as the route that best addresses the requirements of PURA and PUC Substantive Rules from an environmental land use perspective, followed by Alternative Routes F, D, and I.

AEP Texas considered all the certification criteria in PURA and the PUC Substantive Rules, input from the public, and the environmental and land use recommendation of its routing consultant, Burns & McDonnell. AEP Texas also evaluated each Alternative Route from an engineering, design, construction, operations, and maintenance perspective, and considered the estimated cost for each of the Alternative Routes.

Based on these considerations and evaluation, AEP Texas believes that Alternative Route E provides the best balance of routing characteristics and best addresses the requirements of PURA and PUC Substantive Rules. Data and a discussion of this determination are included with this Application as Attachment 5. However, all of the Alternative Routes and Routing Links are viable and constructible, and AEP Texas will construct the Project using whichever route or routing links the Commission selects.

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 P.U.C. Proc. R. 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.

Due to the COVID-19 pandemic, AEP Texas was unable to hold an in-person open-house public meeting in the Study Area for its proposed Project in the fall of 2021. Instead, AEP Texas presented a virtual town-hall meeting via Webex Live to the public on November 9, 2021; however, due to technical difficulties and landowner comments it was decided that in-person public meetings would be held. The in-person open-house public meetings were subsequently held in Fort Davis, Jeff Davis County, on January 19, 2022, and in Marfa, Presidio County, on January 20, 2022.

A summary of the public meetings and additional information concerning the open-house meetings, including notice of the meetings, are provided in Section 5.2 and Appendix B of the EA, which is Attachment 1 of the Application.

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).

Figure 2-2 is an aerial-based map (scale of 1 inch = 2,500 feet) that shows the study area, all Primary Alternative Links, Alternative Routes, routing constraints, and other environmental and land use features, and existing transmission lines. It is located in a map pocket of the EA. Figure 2-3 of the EA shows the Preliminary Alternative Links that were presented at the public meeting, and Figure 2-2 (map pocket) and Figure 2-4 show the Primary Alternative Links evaluated for the Project.

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 2-2 is an aerial-based map (scale of 1 inch = 2,500 feet) that shows the study area, Primary Alternative Links, Alternative Routes, existing transmission lines, other environmental and land use features, and the locations of all known habitable structures or groups of habitable structures located within 300 feet of the route centerlines. Figure 2-2 is located in a map pocket of the EA (Attachment 1 of the Application).

Aerial-photograph-based maps (scale of 1 inch = 0.5 mile) are included in this Application as Attachment 6 and show the approximate boundaries of all properties that are directly affected by all routes according to the best information available from county tax appraisal district records.

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

A cross reference table that shows the landowner name, address, property identification number, habitable structure identification number, and the associated route links, which cross reference to the landownership map (Attachment 6) is located in Attachment 7 of this Application.

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.

AEP Texas will coordinate with all of the appropriate local, state, and federal agencies with jurisdiction regarding the construction of the transmission facilities associated with this Project. AEP Texas and/or Burns & McDonnell have initiated contact with and provided information about the Project to various agencies. Some input from these agencies has been incorporated in this Application; however, requests for permits and/or approvals will not be submitted to the appropriate agencies until the final alignment of the approved route is determined. None of the following potential permits, approvals, requirements, easements, or clearances has been obtained.

- Floodplain development permits and road crossing permits might be required by the counties in which the approved route is located, depending on the location of the transmission line structures.
- Permits for crossing roads, highways, and/or other properties owned or maintained by Texas Department of Transportation will be obtained as necessary.
- Cultural resource clearance will be obtained from the Texas Historical Commission for the approved Project right-of-way as necessary.
- A Storm Water Pollution Prevention Plan (SWPPP) may be required by the Texas Commission on Environmental Quality (TCEQ). Each applicant or their contractors will submit a Notice of Intent to the TCEQ at least 48 hours prior to the beginning of construction and will have the SWPPP on site at the initiation of clearing and construction activities.
- A Miscellaneous Easement from the Texas General Land Office will be obtained as necessary for any right-of-way that crosses a state-owned riverbed or navigable stream.
- Notification to the Federal Aviation Administration (FAA) may not be required for any of the Alternative Routes. AEP Texas will make a final determination depending on the alignment of the approved route, structure locations, and structure designs. Requirements to alter the design of the structures or potential requirements to mark and/or illuminate the line will be coordinated with the FAA as needed.

- Permits or other requirements associated with possible impacts to endangered/threatened species will be coordinated with the U.S. Fish and Wildlife Service as necessary.
- Permits or other requirements associated with possible impacts to waters of the U.S. under the jurisdiction of the U.S. Army Corps of Engineers (USACE) will be coordinated with the USACE as necessary. None of the routing links for this Project crosses property that is owned by the USACE, and no easements on USACE property will be necessary.

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.

General descriptions of the habitable structures that are within 300 feet of the centerline of each Alternative Route and the distances from the centerlines are provided in Section 6 of the EA and in Tables 6-2 through 6-10 of the EA. The habitable structures that are located within 300 feet of the Alternative Routes are shown on Figure 2-2 located in a map pocket of the EA in Attachment 1 and on Attachment 6. Of the nine Alternative Routes being evaluated, Routes G and H have the fewest habitable structures located within 300 feet of their centerlines (34 habitable structures), followed by Route D (35 habitable structures), and Route I (36 habitable structures). By comparison, Routes C and A have the greatest number of habitable structures located within 300 feet of their centerlines with 50 and 52 habitable structures, respectively. Details regarding the number of habitable structures that are within 300 feet of the centerline of the Alternative Routes are included in Table 4-1 and in Section 4.3.1 of the EA in Attachment 1.

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.

No commercial AM radio towers are located within 10,000 feet of the centerlines of the Alternative Routes. Routes A, B, and C each have one communication tower (Big Bend Telecom, LTD) located within 2,000 feet of their centerlines. Routes D through I have no FM radio transmitter, microwave tower, or other electronic installation located within 2,000 feet of their route centerlines.

Tables 6-2 through 6-4 of the EA provide the distance of the Big Bend Telecom, LTD communication tower from the centerline of Alternative Routes A, B, and C, respectively. Figure 2-2 is a map that shows the location of the Big Bend Telecom, LTD communication tower in relation to the Alternative Routes. Figure 2-2 is located in a map pocket of the EA in Attachment 1 of the Application.

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.

According to FAA Part 77 regulations, Title 14 CFR § 77.9, notification of the construction of the proposed transmission line will be required if structure heights exceed the height of an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of a public or military airport having at least one runway longer than 3,200 feet. The FAA also requires notification if structure heights exceed a slope of 50 to 1 for a horizontal distance of 10,000 feet from the nearest runway of a public or military airport with no runway longer than 3,200 feet, and if structure heights exceed a 25 to 1 slope for a horizontal distance of 5,000 feet from landing and takeoff areas for heliports (FAA, 2011).

Typical structure heights for this Project will be approximately 75 feet to 100 feet, depending on location and design.

One FAA-registered public/military airport having at least one runway longer than 3,200 feet in length located within 20,000 feet of each primary alternative route. The Marfa Municipal Airport (FAA Identifier MRF) is located on the west side of SH 17 approximately 2.8 miles north of Marfa.

No FAA-registered public/military airport having a runway less than 3,200 feet was identified within 10,000 feet of the primary alternative routes, and no heliport was identified within 5,000 feet of the primary alternative routes.

One private airstrip, the MacGuire Ranch Airport (FAA Identifier 21TE), is located approximately 0.3 mile south of the Study Area with the nearest point of its runway approximately 7,031 feet south of each alternative route (link 1).

Table 4-1 of the EA identifies the number of airports, airstrips, and heliports for each of the Alternative Routes. The locations of the Marfa Municipal Airport and the private airstrip (MacGuire Ranch Airport) are shown on Figure 2-2 located in a map pocket of the EA and the distances from the centerlines of the Alternative Routes to these features are provided in Tables 6-2 through 6-10 in the EA in Attachment 1.

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.

None of the alternative routes for this Project cross cropland or pastureland with known above-ground mobile irrigation systems (rolling or pivot).

25. Notice:

Notice is to be provided in accordance with P.U.C. Proc. R. 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 sample copy of the written direct notice and enclosures that were mailed to owners of directly affected land is provided in Attachments 8a through 8f. A list of the names and addresses of these landowners is provided in Attachment 8g.

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

A sample copy of the written notice to utilities that are located within five miles of the proposed Project is provided in Attachment 9a. The list of the names and addresses of these utilities is provided in Attachment 9b.

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/.

Sample copies of the written notice to county and municipal authorities are provided as Attachment 10a. The list of the names and addresses of these authorities is provided in Attachment 10b. Verification of notice to the DoD Military Aviation and Installation Assurance Siting Clearinghouse of the open house and intent to file the CCN Application is provided as Attachment 10c. Verification of notice to the DoD Military Aviation and Installation Assurance Siting Clearinghouse of the CCN Application filing is provided in Attachment 10d.

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.

The text of the notice to be published in newspapers of general circulation in the counties in which the proposed facilities are to be constructed is provided in Attachment 11a. A list of the newspaper that will publish the notice for this Application is provided as Attachment 11b.

In addition to the notices described above, 16 TAC § 22.52 requires AEP Texas to provide notice of this Application to the Office of Public Utility Counsel. A copy of that notice is included in this Application as Attachment 12.

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

Not Applicable. This is not a CREZ application.

26. Parks and Recreation Areas:

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

Burns & McDonnell performed a review of federal and state databases, and county and local maps to identify parks and/or recreational areas within the study area. Reconnaissance surveys were also conducted to identify any additional park or recreational areas that are located within the study area.

Though none of the Alternative Routes cross a park or recreation area within the study area, all of the alternative routes would have some portion located within the foreground visual zone (FVZ) of recreational areas. Route H would have the greatest length of ROW located within the FVZ of recreational areas (3.01 miles), followed by Routes A and C (2.74 miles). Routes B, D, E, F, G, and I would each have approximately 2.40 miles of ROW located within the FVZ of recreational areas. No significant impacts to the use of the parks and recreation areas located within the study area are anticipated from any of the Alternative Routes.

Table 4-1 of the EA identifies the number of parks and recreational areas located within 1,000 feet of the Alternative Routes. A general description of the parks and recreational areas located within 1,000 feet of the centerline of each Alternative Route and their distances from the centerlines are provided in Tables 6-2 through 6-10 of the EA. The locations of theses parks and recreational areas are shown on Figure 2-2 located in a map pocket of the EA in Attachment 1 of this Application.

27. Historical and Archeological Sites:

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

To identify the historical and archeological sites in the study area, Burns & McDonnell conducted an examination of the Texas Archeological Sites Atlas (TASA), maintained by the THC and Texas Archeological Research Laboratory (TARL), as well as TxDOT's Historic Districts and Properties of Texas Map, to identify previously conducted cultural resources investigations and previously recorded archeological sites, NRHP-listed properties and districts, NHLs, State Antiquities Landmarks (SALs), historic-age cemeteries, and Official Texas Historical Markers (OTHMs), including Recorded Texas Historic Landmarks (RTHLs), within the Study Area.

General descriptions of the historical and archeological sites known to be within 1,000 of the center line the Alternative Routes are provided in Section 4.4 of the EA. The distances from the centerline of the alternative routes are shown in Tables 6-8 and 6-9 of the EA. For the protection of the sites, archeological sites are not shown on the maps.

During the background review, one previously recorded archeological site, 41JD187, was identified within 1,000 feet of Routes G and H. The site does not have an NRHP eligibility determination listed on the TASA, but the site form indicates the site has research potential and contains features, including a stacked stone structure, a cairn or possible burial, and a possible teepee ring. No other previously recorded cultural resources sites were identified within 1,000 feet of any of the Alternative Routes.

Because a cultural resources survey has not been conducted for the alternative routes, additional cultural resource sites that have not yet been recorded or evaluated might also exist within the corridor. Consequently, the potential of impacting undiscovered cultural resources exists along the alternative routes. To assess this potential, areas with a high probability of containing cultural resources (HPAs) were identified along the route. An HPA is an area considered to have a high potential for containing previously unrecorded cultural resources. When identifying HPAs, the topography and the availability of water and subsistence resources are taken into consideration, as well as the effects of geological processes on archeological deposits. Locations that are usually identified as HPAs for the occurrence of prehistoric sites include water crossings, stream confluences, drainages, alluvial terraces, wide floodplains, playa lakes, upland knolls, and areas where lithic or other subsistence resources could be found. Historic sites would be expected adjacent to historic roadways or railways and in areas where structures appear on historic-age maps. HPAs for the Project were identified on TxDOT's Potential Archeological Liability Maps (PALM), where available. In areas without PALM coverage, HPAs were identified based on distance from water sources identified from a review of topographic maps.

Each Alternative Route crosses HPAs for potential archeological sites or other prehistoric cultural resources. The length of right-of-way across HPAs ranges from approximately 8.36 miles on Alternative Route D to 12.94 miles on Alternative Route G (see Table 4-1 in the EA).

28. Coastal Management Program:

For each route, indicate whether the route is located, either in whole or in part, within the coastal management program boundary as defined in 31 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.

No part of this Project is located in or near the Coastal Management Program (CMP) boundary as defined in 31 Tex. Admin. Code §503.

29. Environmental Impact:

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

Wildlife Habitat Assessment Program
Wildlife Division
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

The EA that was conducted by Burns & McDonnell is included with this Application as Attachment 1. Data used by Burns & McDonnell in the delineation and evaluation of Alternative Routes were drawn from a variety of sources, including published literature (documents, reports, maps, aerial photography, etc.), and information from local, state, and federal agencies. Recent aerial imagery (ESRI World Imagery (mosaic of Maxar Vivid satellite imagery, 2017-2023, National Agriculture Inventory Program color aerial photography 2022, Google Earth, Bing Maps, U.S. Geological Survey (USGS) 7.5 minute quadrangle topographic maps, Texas Department of Transportation (TxDOT) county highway maps, USFWS National Wetlands Inventory maps, Texas Natural Diversity Database (TXNDD), Federal Emergency Management Agency maps, Texas Natural Resources Information System (TNRIS), Railroad Commission of Texas (RRC), and ground reconnaissance surveys were also used throughout the selection and evaluation of Alternative Routes. Ground reconnaissance of the study area and computer-based evaluation of digital aerial imagery was utilized for both refinement and evaluation of Alternative Routes. The data collection effort, although concentrated in the early stages of the Project, was an ongoing process and continued up to the point of final Alternative Route option selections.

A copy of the letter of transmittal of the Application, including the EA for this Project, to the TPWD is included in this Application as Attachment 13a. An affidavit verifying that the Application and EA were sent to TPWD is included in this Application as Attachment 13b.

30. Affidavit:

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

The sworn affidavit of the AEP Texas Project Manager for this Project is included with this Application as Attachment 14.

CCN Application - List of Attachments

1	Environmental Assessment and Alternative Route Analysis
2	Estimated Lengths of Alternative Routes
3	Estimated Costs of Alternative Routes and Substations
4	Diagram of Transmission System in Project Area
5	PURA and PUC Best Meets Route Discussion
6	Directly Affected Landowners Map
7	Habitable Structure Cross-Reference Table
8a	Notice – Landowner Letter
8b	Notice – Map of Multiple Routing Options
8c	Notice – Alternative Route Link Descriptions
8d	Notice – PUC Landowner Brochure
8e	Notice – Comment Form
8f	Notice – Intervenor Form
8g	Notice – Landowner List
9a	Notice – Utilities Letter *
9b	Notice – Utilities List
10a	Notice – County Officials Letter *
10b	Notice – County Officials List
10c	Notice – Department of Defense Siting Clearinghouse Open House and Intent to File Letter
10d	Notice – Department of Defense Siting Clearinghouse *
11a	Notice – Newspaper Publication
11b	Notice – Newspaper Publication List
12	Notice – Office of Public Utility Counsel *
13a	Letter of Transmittal of Application to the Texas Parks and Wildlife Department
13b	Affidavit Transmittal of Application to Texas Parks and Wildlife Department
14	Application Affidavit of Project Manager

** Excluding Maps and Route Descriptions provided in Attachment 8 set of documents*

Alamito Creek-to-Fort Davis 138-kV Transmission Line Environmental Assessment and Alternative Route Analysis

Presidio and Jeff Davis Counties

Docket No. 56413

Attachment 1

May 2024

Alamito Creek-to-Fort Davis 138-kV Transmission Line Environmental Assessment and Alternative Route Analysis

prepared for

AEP Texas Inc.

Presidio and Jeff Davis Counties

Docket No. 56413

Attachment 1

May 2024

prepared by

Burns & McDonnell Engineering Company, Inc.
Austin, Texas

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LIST OF ACRONYMS AND ABBREVIATIONS

Abbreviation	Term/Phrase/Name
AEP Texas	AEP Texas Inc.
ANSI	American National Standards Institute
APLIC	Avian Power Line Interaction Committee
APH	Annual Public Hunting
BEG	Bureau of Economic Geology
BGEPA	Bald and Golden Eagle Protection Act
BLS	U.S. Bureau of Labor Statistics
BMP	best management practice
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
CCC	Civilian Conservation Corps
CCN	Certificate of Convenience and Necessity
CDRI	Chihuahuan Desert Research Institute
CFR	Code of Federal Regulations
CWA	Clean Water Act
DoD	Department of Defense
EA	Environmental Assessment and Alternative Routing Analysis
EMST	Ecological Mapping Systems of Texas
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FM	Farm-to-Market Road
FVZ	foreground visual zone
GIS	geographic information system

Abbreviation	Term/Phrase/Name
GLO	General Land Office
HPA	high probability area
IPaC	Information for Planning and Consultation
ISD	Independent School District
kV	kilovolt
LPU	Limited Public Use
MBTA	Migratory Bird Treaty Act
ME	Miscellaneous Easement
msl	mean sea level
NAIP	National Agriculture Imagery Program
NASS	National Agricultural Statistics Service
NCED	National Conservation Easement Database
NDD	TPWD's Natural Diversity Database
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NHD	National Hydrography Dataset
NHL	National Historic Landmark
NHS	National Historic Site
NOI	Notice of Intent
NOT	Notice of Termination
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OTHM	Official Texas Historical Marker
PALM	Potential Archeological Liability Maps

Abbreviation	Term/Phrase/Name
Project	Alamito Creek to Fort Davis 138-kV Transmission Line Project
PUC	Public Utility Commission of Texas
PURA	Public Utility Regulatory Act
RGCOG	Rio Grande Council of Governments
ROW	right-of-way
RRC	Railroad Commission of Texas
RTHL	Recorded Texas Historic Landmark
SAL	State Antiquities Landmark
SCS	Soil Conservation Service
SH	State Highway
SOC	Species of Concern
SWPPP	Storm Water Pollution Prevention Plan
TAC	Texas Administrative Code
TALT	Texas Agricultural Land Trust
TARL	Texas Archeological Research Laboratory
TASA	Texas Archeological Sites Atlas
TCEQ	Texas Commission on Environmental Quality
TDC	Texas Demographic Center
TEA	Texas Education Agency
THC	Texas Historical Commission
TLC	Texas Land Conservancy
TNC	The Nature Conservancy
TORP	Texas Outdoor Recreation Plan
TPDES	Texas Pollution Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
TWC	Texas Workforce Commission
TWDB	Texas Water Development Board

Abbreviation	Term/Phrase/Name
TxDOT	Texas Department of Transportation
UP	Union Pacific
U.S.	United States
US	United States Highway
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WOTUS	waters of the U.S.

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1.0 DESCRIPTION OF THE PROPOSED PROJECT

1.1 Scope of Project

AEP Texas Inc. (AEP Texas) is proposing to replace the existing Alamito Creek to Fort Davis 69-kilovolt (kV) transmission line in Presidio and Jeff Davis Counties, Texas (Project), due to its age and present condition of structures, to continue reliable transmission service to electric service customers in this area. This existing transmission line is a radial 69-kV feed beginning from the existing Alamito Creek 138/69-kV Substation located at the southeast intersection of E Murphy St and N E St just east of the City of Marfa in Presidio County, Texas and extending to the existing Fort Davis 69-kV Substation located at the southeast intersection of State Highway (SH) 17 and W Urquhart St in the unincorporated community of Fort Davis in Jeff Davis County, Texas. The existing transmission line provides transmission service points to three other smaller distribution substations between these two end points (Espy Wells, Kennedy Ponder Tap, and Valentine Tap). The new transmission line will be constructed for 138-kV operation and will continue to be a radial line from the Alamito Creek Substation to the Fort Davis Substation, with the connection to Valentine Tap remaining. Once the new transmission line is placed in service, the two other distribution substations (Espy Wells and Kennedy Ponder Tap) will be retired by bringing distribution feeds from the Valentine Tap and Fort Davis substations to serve the existing distribution load between Fort Davis and Valentine Tap that is currently served by these two existing substations. Depending on the route selected by the Commission, these distribution feeds will be provided by utilizing a combination of the old existing transmission line structures and distribution underbuild added to the new transmission line structures that will be constructed to allow for such addition. This work will be performed by AEP Texas Distribution and will not be part of the Certificate of Convenience and Necessity (CCN) application filing nor will the cost be included in the CCN application. As indicated above, the replacement transmission line will be constructed for 138-kV operation but will be operated at 69 kV until a need to operate at 138 kV arises.

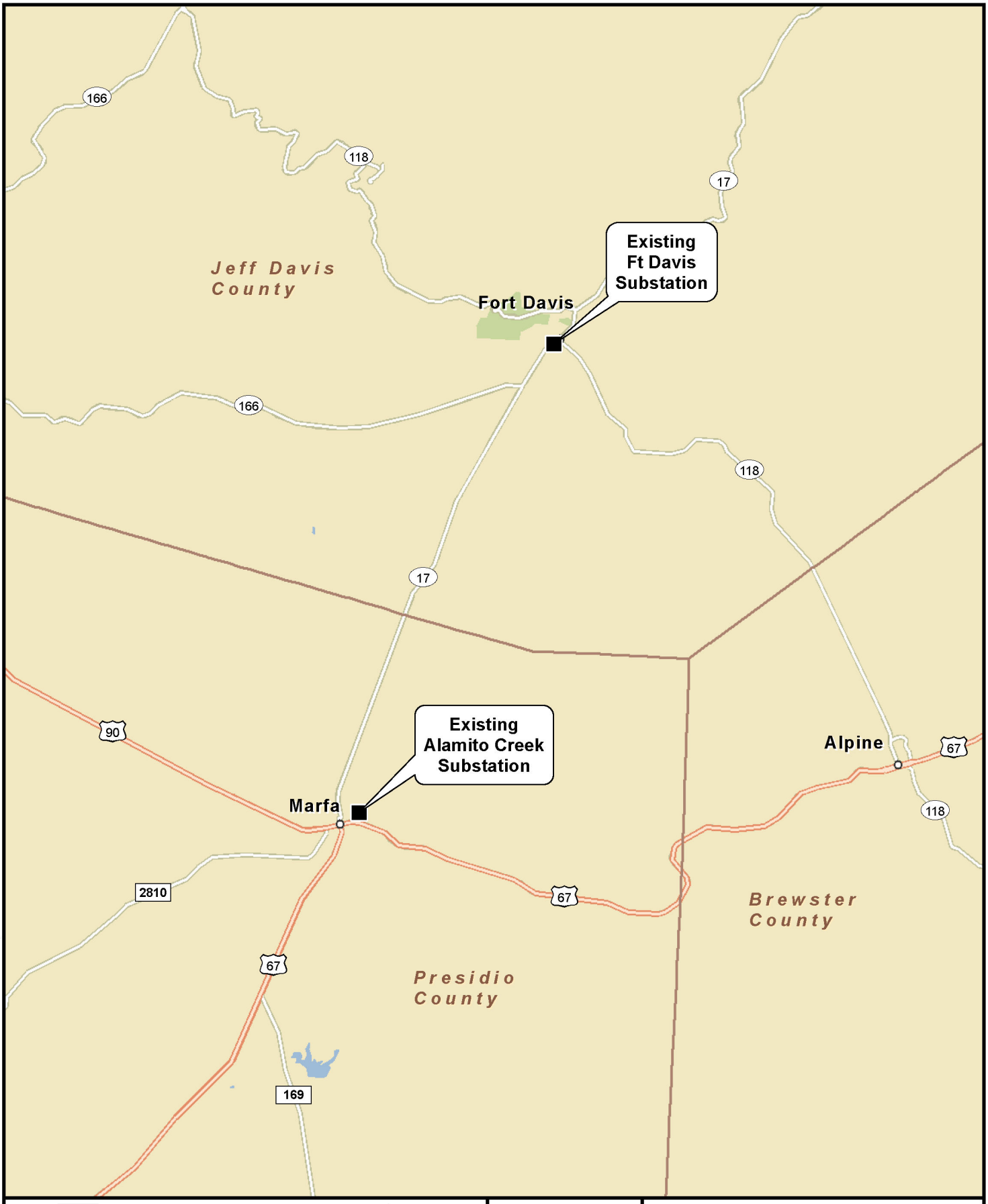
This replacement transmission line will include a double-circuit segment with the existing Alamito Creek to Barrilla Junction 138-kV transmission line as it approaches and terminates at the Alamito Creek Substation. The section of the Alamito Creek to Barrilla Junction 138-kV line to be relocated will be approximately 1.6 miles in length (depending on the route approved as it terminates at the Alamito Creek Substation). Once the CCN route is approved and the new Alamito Creek to Fort Davis transmission line can be placed in service, this section of the existing Alamito Creek to Barrilla Junction 138-kV line will be removed. In general, the geographic location of the new transmission line will be between the existing AEP Texas Alamito Creek Substation, located just east of the city of Marfa, and the existing AEP Texas Fort Davis Substation, located in the southern portion of the unincorporated community of Fort Davis. As

described in the prior paragraphs, the new transmission line will be constructed for 138-kV operation, will have a section that is double-circuit with another existing transmission line, will potentially have sections constructed to allow future distribution underbuild, will retain service to one of the three smaller substations located between Marfa and Fort Davis, and provides for the AEP Texas distribution service plan to retire two of the distribution substations as improved distribution service feeds are constructed from the Fort Davis and Valentine Tap substations . The proposed transmission line will be approximately 19.91 to 29.00 miles in length, depending on the Alternative Route selected by the PUC, and will require a 100-foot-wide right-of-way (ROW). Figure 1-1 shows the Project location; the Study Area is described in Section 2.3.1 and shown on Figure 2-1.

AEP Texas contracted with Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell), to select and evaluate Alternative Routes and to prepare an Environmental Assessment (EA) and Alternative Route Analysis in support of the CCN application to be submitted to the PUC. This document is intended to provide information and address requirements of Section 37.056(c)(4)(A-D) of the Texas Public Utilities Code, the PUC's application form, PUC Substantive Rule §25.101, and the PUC's policy of "prudent avoidance." This EA and Alternative Routing Analysis document also provides the basis for AEP Texas to identify an Alternative Route that best addresses the requirements under the Public Utility Regulatory Act (PURA) and 16 Texas Administrative Code (TAC) § 25.101. AEP Texas provided information in this section and Sections 1.2, 1.3, 1.4, and 1.5 concerning the purpose and need for the Project, proposed design, construction methods, easements, clearing, cleanup, and maintenance. This document is intended to provide information and address issues concerning the natural, human, and cultural environment within the Study Area. This document may also be used in support of any local, State, or Federal permitting activities that may be required for the proposed Project.

1.2 Purpose and Need

The existing transmission line was originally placed in service in 1929 and its electric service performance has declined to the point that it is necessary to replace the transmission line. A major complication in the replacement of the existing transmission is that it is a radial line that provides electrical service to several distribution service substations between Marfa and Fort Davis, including the Fort Davis Substation at the north end of the radial transmission line. The existing transmission line cannot be taken out of service to rebuild without the loss of electrical service to customers fed by one of these substations. Therefore, AEP Texas will propose to the PUC the construction of a new transmission line to replace the existing transmission line, while also improving electric service to the distribution delivery points currently served by this transmission line.



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BURNS McDONNELL

Figure 1-1
Project Location
Alamito Creek to Ft. Davis
138-kV Transmission Line Project
AEP Texas
Jeff Davis & Presidio Counties, TX

Source: ESRI; Burns & McDonnell Engineering Company, Inc

Issued: 6/24/2019

The transition plan will also allow AEP Texas to continue to provide electric service to the substations while the new transmission facilities are being constructed and provide for a separate distribution service plan that will improve electric service to customers once the new transmission line is placed in service.

1.3 Description of Proposed Design and Construction

The following information presents the proposed design and construction of facilities for the proposed transmission line.

1.3.1 Loading, Weather Data, and Design Criteria

AEP Texas proposes to construct a 138-kV single-circuit transmission line with a segment being double-circuited that is in the American National Standards Institute (ANSI) National Electrical Safety Code (NESC) Medium Loading Zone and will be designed to meet or exceed NESC 2020 loading criteria (ANSI C2-2020). Depending on the type of structure used, various combinations of unbalanced vertical, transverse (wind), and longitudinal loadings (with and without ice) were analyzed as to the effects on the structures. The typical structure for this project will be a weathered steel monopole structure with braced post insulators and galvanized steel monopole structures in select locations only. The typical above-grade structure height is approximately 70 to 100 feet but will vary depending on clearance requirements. The distance between structures will be 300 to 600 feet, with some exceptions based on terrain. The new conductor will be a single wire of 795 kcmil 26/7 Aluminum Conductor Steel-Supported (ACSS) "Drake" per phase, with one optical ground wire installed in the overhead ground wire position.

1.3.2 Structural and Geotechnical Design Criteria

All structure components, conductors, and overhead ground wires will be designed using the appropriate overload capacity factors, strength reduction factors, and tension limits as given in NESC 2020 and the manufacturer's recommended strength ratings for hardware. In conjunction with NESC 2020, AEP Texas' transmission line engineering standards will be used. The NESC Medium-Loading Zone design criteria, and extreme wind and ice loading conditions will be utilized to determine tension sags for all wires.

All structures will be designed to support conductors and shield wires as specified above. The configuration of the conductor and shield wires will provide lightning protection and the appropriate clearances for operation of a 138-kV single-circuit and double-circuit transmission line. AEP Texas plans to primarily use weathered steel monopole structures, with some galvanized steel monopole structures required at select locations. The geometry of a typical monopole double-circuit tangent structure configuration is shown on Figure 1-2. The geometry of typical monopole single-circuit tangent structure, turning structure, and dead-end structure configurations are shown on Figures 1-3 through 1-5,

respectively. Geotechnical considerations will include soil borings and in-situ soils testing to provide the parameters for foundation design and embedment depth required for new structures.

1.4 Construction Considerations

Projects of this type require surveying, ROW clearing, foundation installation, structure assembly and erection, conductor and shield wire installation, and cleanup when the project is completed. The following information regarding these activities was provided to Burns & McDonnell by AEP Texas.

1.4.1 Clearing

After regulatory approval and design of the transmission line is finalized, ROW will be acquired and then cleared according to AEP Texas clearing specifications. Any required clearing of the ROW will be performed by the contractor under the direction of AEP Texas. Available methods of disposal are mulching, brush piling, and salvaging. In rural areas of the State, the option often selected by landowners requires that cleared brush or trees be stacked and left for use as wildlife habitat. Trees and brush in the ROW are initially cleared to permit safe construction of the line.

The ROW will be utilized for access during construction operations, with ingress and egress through private property utilized as necessary to access the ROW. In these cases, existing private roads will be used where possible. Culverts will be installed to cross creeks and tributaries, where necessary.

Clearing plans, methods, and practices are extremely important for success in any program designed to minimize the adverse effects of electric transmission lines on the natural environment. The following measures thoughtfully implemented and applied to this project, will help meet this goal:

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

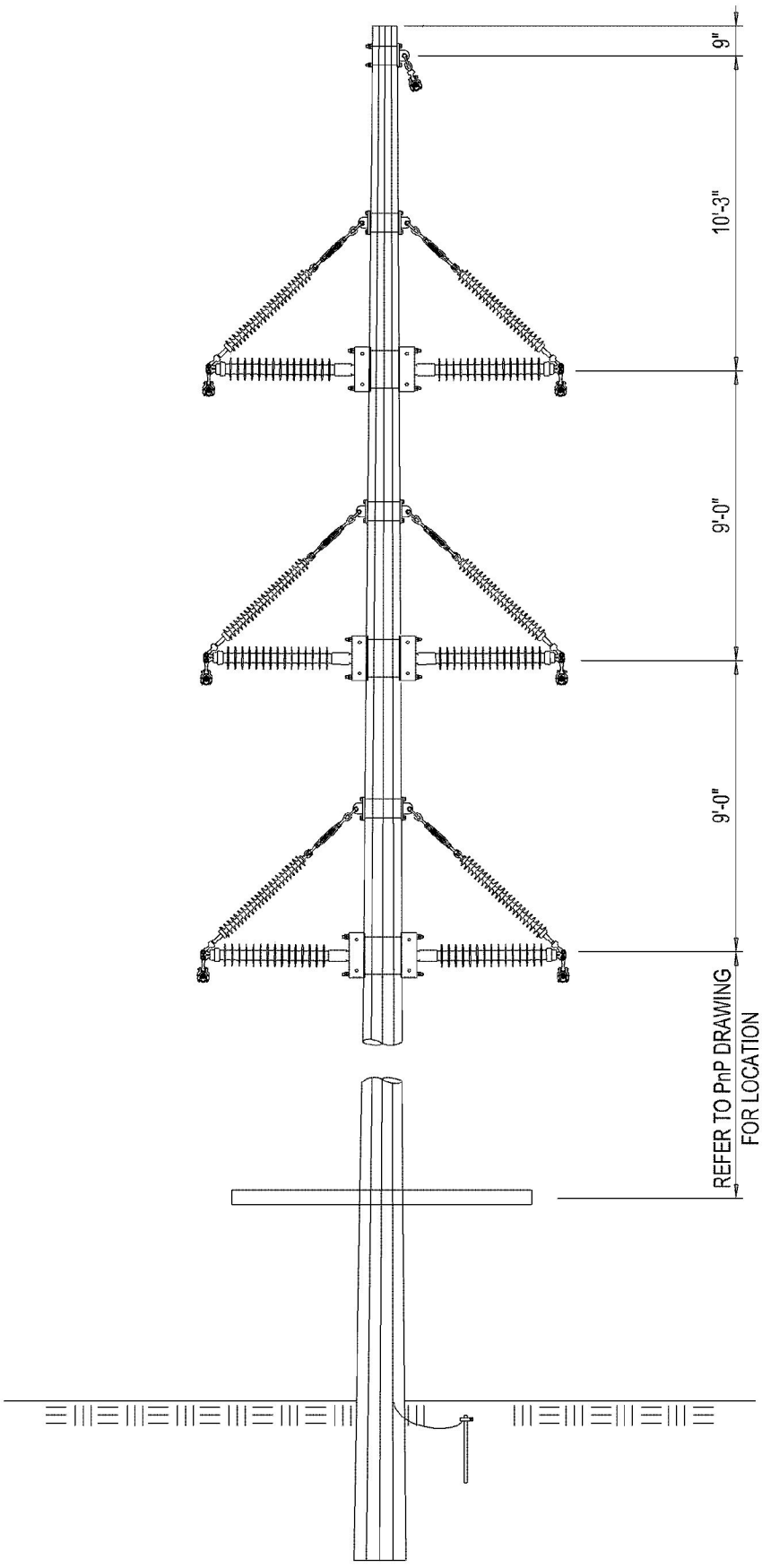

Figure 1-2
Double-Circuit, Vertical,
Zero-Degree Braced Post Structure
Alamito Creek to Ft. Davis
138-kV Transmission Line Project
AEP Texas
Jeff Davis and Presidio Counties, Texas

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Source: AEP (DS11-1323)

Issued: 8/16/2022

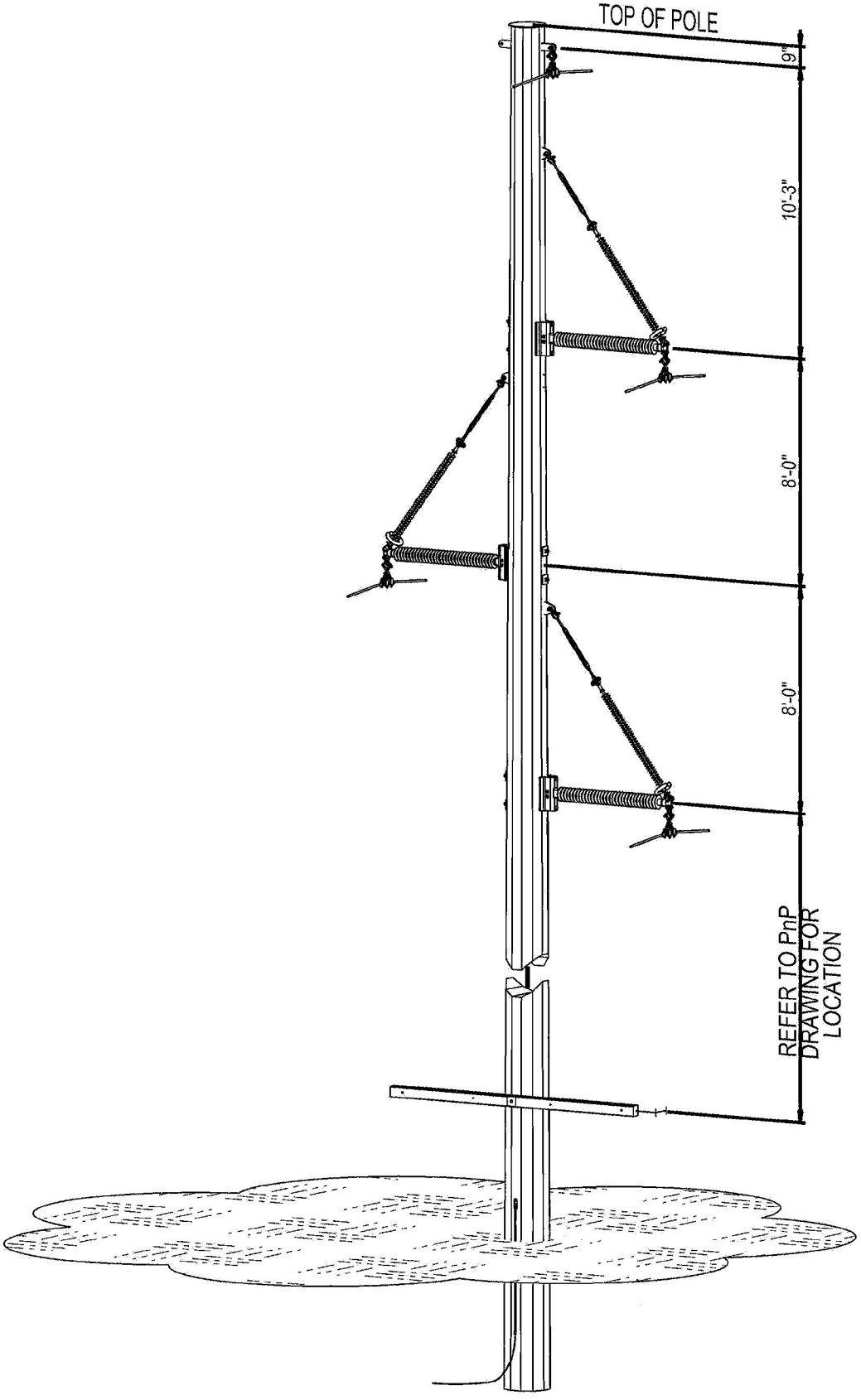

Figure 1-3
Single-Circuit, Alternating,
Zero-Degree Braced Post Structure
Alamito Creek to Ft. Davis
138-kV Transmission Line Project
AEP Texas
Jeff Davis and Presidio Counties, Texas

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Source: AEP (CS11-2395)

Issued: 8/16/2022

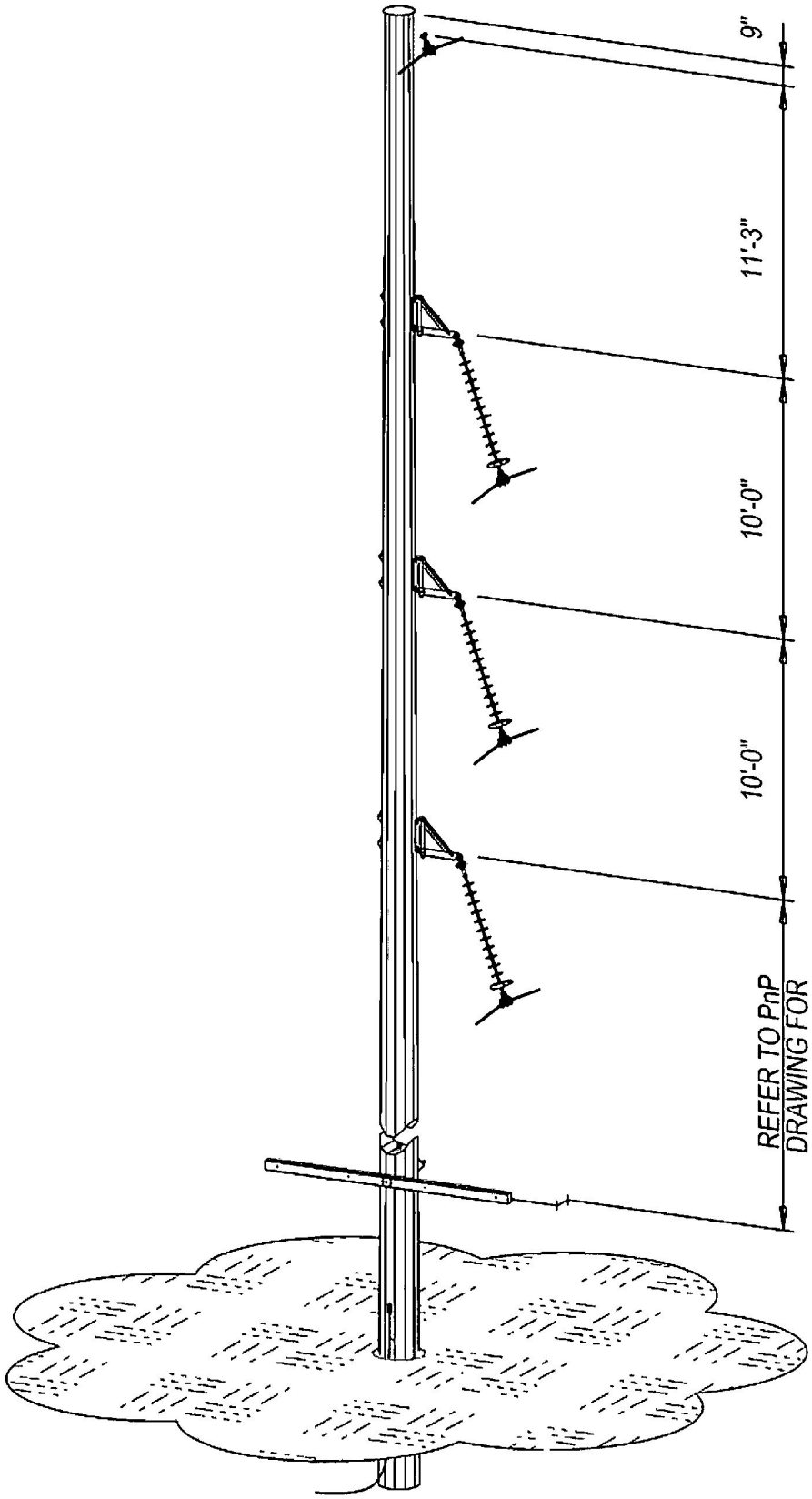

Figure 1-4
Single-Circuit, Running Angle Structure
Alamito Creek to Ft. Davis
138-kV Transmission Line Project
AEP Texas
Jeff Davis and Presidio Counties, Texas

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Source: AEP (CS14-2430)

Issued: 8/16/2022

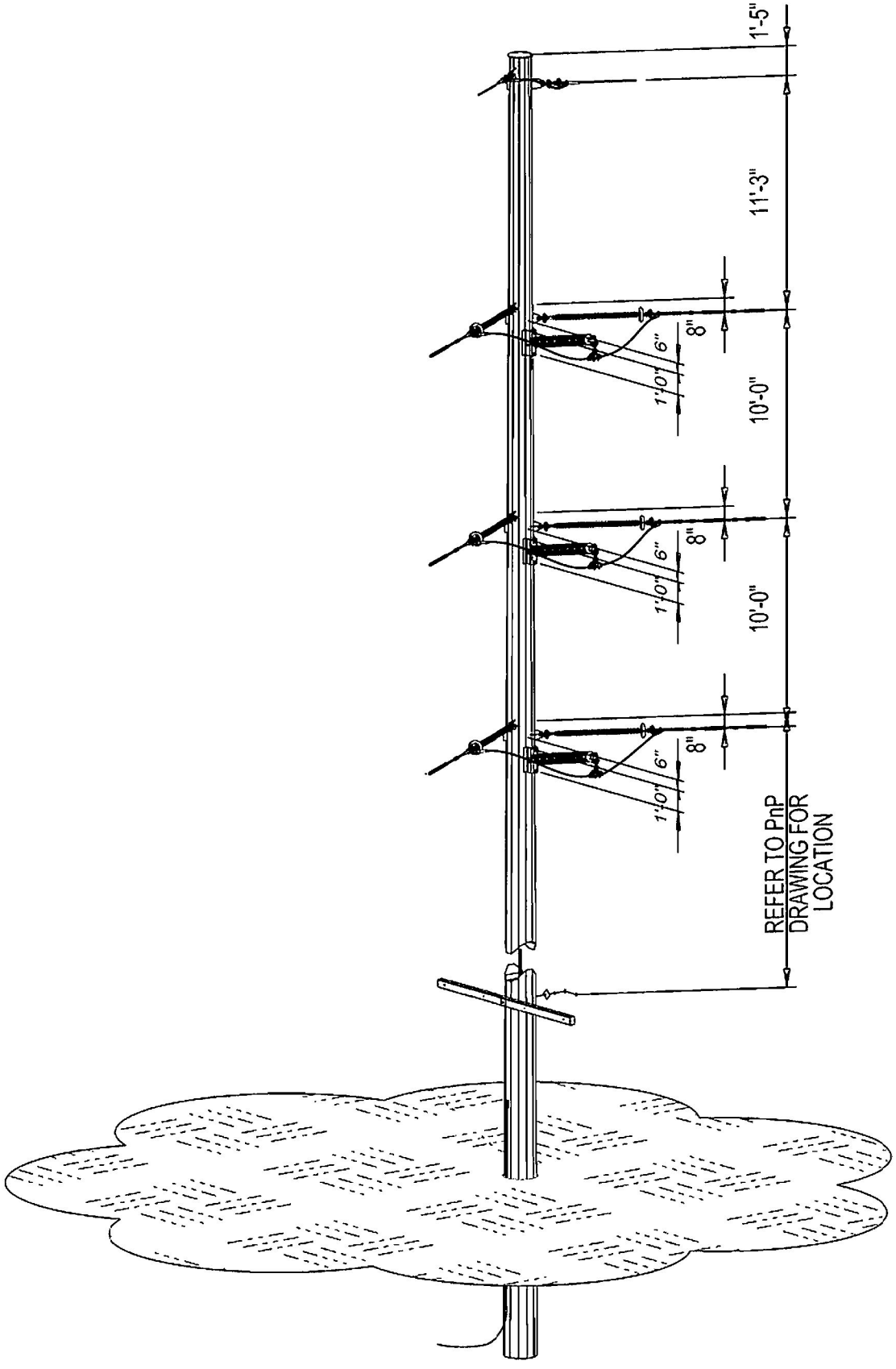

Figure 1-5
Single-Circuit, Light-Angle Deadend Structure
Alamito Creek to Ft. Davis
138-kV Transmission Line Project
AEP Texas
Jeff Davis and Presidio Counties, Texas

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Source: AEP (CS18-2439)

Issued: 8/16/2022

1.4.2 Construction

The following is a description of typical construction methods for transmission line projects. Survey crews will stake or otherwise mark structure locations. Depending on soil type, crews will either direct-embed structures or pour foundations utilizing augured circular holes, rebar cages, and anchor bolts or stubs.

Crews will transport and assemble structures and related hardware. After the foundations have cured sufficiently, crews will set the structures. The usual procedure is to assemble each structure on its side, then lift the structure and set it on its base. However, taller structures may need to have sections assembled in the air. Sections are either jacked together or connected using bolts, which will be torqued to the recommended value. Where direct-embedded structures are used, crews will install them by auguring oversized holes, lifting and setting the structure, and backfilling with native soils, select fill, or concrete, depending on soil conditions at the site (based on soils testing). Although vehicular traffic is a large part of this operation, construction crews will take care to minimize damage to the ROW by minimizing the number of pathways traveled.

Guard structures (temporary wood-pole structures) will be installed near crossings, such as distribution power lines, overhead telephone lines, roadways, and any other areas where a safety hazard may be present during wire installation. The conductors and shield wires are installed via a tension system. A rope is first threaded through the stringing blocks or dollies, which is then used to pull through a steel cable. Conductor and shield wires are then pulled by the steel cables and held tight by a tensioner, which keeps the wires from coming in contact with the ground and other objects that could be damaging to the wire. When the wire is tensioned to the required sag, the wire is taken out of the blocks and placed in the suspension and dead-end clamps for permanent attachment.

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

1. Clearing and grading of construction areas, such as storage areas, setup sites, etc., will be minimized. These areas will be graded in a manner that will minimize erosion and conform to the natural topography.
2. Soil that has been excavated during construction and not used will be evenly backfilled onto a cleared area or removed from the site. The backfilled soil will be sloped gradually to conform to

the terrain and the adjacent land. If natural seeding will not provide ground cover in a reasonable length of time, appropriate reseeding will be performed.

3. Erosion control devices will be constructed where necessary to reduce soil erosion in the ROW.
4. Roads will not be constructed on unstable slopes.
5. Clearing and construction activities near streambeds will be performed in a manner to minimize damage to the natural condition of the area. Streambanks will be restored as necessary to minimize erosion.
6. Efforts will be made to prevent accidental oil spills and other types of pollution, particularly while performing work near streams, lakes, and reservoirs.
7. Precautions will be taken to prevent the possibility of accidentally starting range fires.
8. Precautions will be taken to protect natural features and cultural resources (identified by site-specific review of the project) along the ROW.
9. If endangered species habitat is present, guidance from the U.S. Fish and Wildlife Service (USFWS) will be obtained prior to all clearing and construction activities.
10. Soil disturbance during construction will be kept to a minimum, and restorative measures will be taken in a reasonable length of time.
11. Construction operations will comply with any applicable permitting and required regulatory approval.

1.4.3 Cleanup

The cleanup operation involves the leveling of all disturbed areas, the removal of all construction debris, and the restoration or compensation of any items damaged by the construction of the project. The following criteria generally apply to the cleanup of construction debris and the restoration of the area's natural setting.

1. If site factors make it unusually difficult to establish a protective vegetative cover, other restoration procedures will be used, such as the use of gravel, rocks, concrete, etc.
2. Sears, cuts, fill, or other aesthetically degraded areas will be allowed to seed naturally or may be reseeded with native species to reduce erosion, restore a natural appearance, and to provide food and cover for wildlife.
3. If temporary access roads are removed after construction, the original slopes will be restored.
4. Construction equipment and supplies will be dismantled and removed from the ROW when construction is completed.

5. Clearing down to the mineral soil may be required for road access. In this case, water diversion berms, velocity dissipaters, or other erosion control devices will be used to reduce erosion potential.
6. Construction waste will be removed prior to completion of the Project.
7. Replacement of soil adjacent to water crossings for access roads will be at slopes less than the normal angle of repose for the soil type involved and will be stabilized/revegetated to avoid erosion.
8. Compliance with any applicable permit or regulatory approval.

1.5 Maintenance Considerations

The following information regarding maintenance of the facilities was provided to Burns & McDonnell by AEP Texas. Maintenance of the facilities will include periodic inspection of the line, repair of damaged structures due to structural component failures, accidents, or natural phenomena such as wind or lightning. In areas where treatment of vegetation within the ROW is required, mowing, pruning, and/or application of EPA-approved herbicides will be conducted as necessary. While maintenance patrols will vary, aerial, vehicle and foot patrols will be performed periodically. In cropland areas and properly managed grazing lands, little or no vegetation control will be required, due to existing land-use practices. The major maintenance activity will be the trimming of trees that pose a potential danger to the conductors or structures. Trimming will provide a safe and reliable power line.

The maintenance of AEP Texas' transmission ROW occurs through the implementation of a comprehensive, systematic, integrated vegetation management program designed to ensure that the vegetation along each transmission line is managed at the proper time and in the most cost-effective and environmentally sound manner. Vegetation is managed on a prescriptive basis. Ongoing evaluation of the system through ground and aerial inspections provides the basic information used by AEP Texas to develop an annual plan. Circuit criticality, historical data, line voltage, location, vegetative inventory information, and land use are among the factors considered in developing the annual vegetation management plan. The plans are modified as required by vegetation patrols and changed conditions.

1.6 Agency Actions

Numerous Federal, State, and local regulatory agencies and organizations have promulgated rules and regulations regarding the routing and potential impacts associated with the proposed transmission line Project. This section lists the major regulatory agencies that are involved in project planning and permitting of transmission lines in Texas, and describes the permits or approvals required. Burns & McDonnell solicited comments from various regulatory agencies and officials during the development of

this document. A summary of agency responses is provided in Section 5.1 (Correspondence with Agencies and Officials) and copies of the responses received are included in Appendix A (Agency Correspondence). Construction documents and specifications will indicate any special construction measures needed to comply with the regulatory requirements listed below. In addition, depending upon the location of the transmission line structures, floodplain development permits and road crossing permits may be required by Fort Davis and Presidio Counties.

1.6.1 Public Utility Commission of Texas

AEP Texas' proposed transmission line Project will require AEP Texas to file an application to amend its certificate with the PUC. This EA and Alternative Route Analysis report has been prepared by Burns & McDonnell in support of AEP Texas' application for the CCN on this Project. This document is intended to provide information on certain environmental and land use factors contained in PURA § 37.056(c)(4) and PUC's Substantive Rule 16 TAC § 25.101(b)(3)(B), as well as to address relevant questions in the PUC's CCN application. This report may also be used in support of any local, State or Federal permitting requirements, if necessary. AEP Texas will obtain PUC approval of its CCN application prior to beginning construction of the project.

1.6.2 Federal Aviation Administration

According to Federal Aviation Administration (FAA) regulations, Title 14 Code of Federal Regulations (CFR) Part 77.9, the construction of a transmission line requires FAA notification if a transmission tower structure height will exceed 200 feet or the height of an imaginary surface extending outward and upward at one of the following slopes (FAA, 2011):

- A 100:1 slope for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport as described in paragraph (d) of 14 CFR Part 77.9 having at least one runway longer than 3,200 feet.
- A 50:1 slope for a horizontal distance of 10,000 feet from the nearest runway of each airport as described in paragraph (d) of 14 CFR Part 77.9 where no runway is longer than 3,200 feet in length.
- A 25:1 slope for a horizontal distance of 5,000 feet for heliports as described in paragraph (d) of 14 CFR Part 77.9.

Paragraph (d) of 14 CFR Part 77.9 includes public-use airports listed in the Chart Supplement (formerly the Airport/Facility Directory), public-use or military airports under construction, airports operated by a

Federal agency or the Department of Defense (DoD), or an airport or heliport with at least one FAA-approved instrument approach procedure.

Notification is not required for structures that will be shielded by existing structures of a permanent and substantial nature or by natural terrain or topographic features of equal or greater height and will be located in a congested area of a city, town, or settlement where the shielded structure will not adversely affect safety in air navigation.

The PUC CCN application also requires listing private airports within 10,000 feet of any alternative route centerline. Following PUC approval of a route for the proposed transmission line, AEP Texas will make a final determination of the need for FAA notification, based on specific structure locations and design. If any of the FAA notification criteria are met for the approved route, a Notice of Proposed Construction or Alteration, FAA Form 7460-1, will be completed and submitted to the FAA Southwest Regional Office in Fort Worth, Texas, at least 45 days prior to construction. The result of this notification, and any subsequent coordination with the FAA, could include changes in line design and/or potential requirements to mark and/or light the structures.

1.6.3 U.S. Army Corps of Engineers

Under Section 404 of the Clean Water Act (CWA), activities in waters of the U.S. (WOTUS), including wetlands, are regulated by the U.S. Army Corps of Engineers (USACE), in conjunction with the EPA. Certain construction activities that potentially impact WOTUS may be authorized by one of the USACE's Nationwide Permits (NWPs). Permits that may apply to placement of support structures and associated activities are NWP 25 (Structural Discharges) and NWP 57 (Electric Utility Line and Telecommunications Activities). NWP 25 generally authorizes the discharge of concrete, sand, rock, etc., into tightly sealed forms or cells where the material is used as a structural member for standard pile-supported structures (linear projects, not buildings or other structures).

NWP 57 generally authorizes discharges associated with the construction of utility lines and substations within WOTUS and additional activities affecting WOTUS, such as those associated with the construction and maintenance of utility line substations; foundations for overhead utility line towers, poles, and anchors; and access roads for the construction and maintenance of utility lines. Construction of this transmission line Project will likely meet the criteria for NWP 57. However, if the impacts of the Project exceed the criteria established under General Condition 13 or other regional conditions listed under NWP 57, then a Regional General Permit may be required. An Individual Permit, however, is not anticipated for this Project. If necessary, AEP Texas will coordinate with the USACE prior to clearing

and construction to ensure compliance with the appropriate regulations associated with construction-related impacts to waterbodies and wetland features.

Under Section 10 of the Rivers and Harbors Act of 1899, 33 U.S.C. § 403, the USACE is directed by Congress to regulate all work and structures in, or affecting the course, condition, or capacity of navigable WOTUS, including tidal waters. No navigable waters occur within the Study Area that would require permitting under this Act.

1.6.4 U.S. Fish and Wildlife Service

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

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

1.6.5 Federal Emergency Management Agency

Burns & McDonnell reviewed the Flood Insurance Rate Maps (FIRMs), published by the Federal Emergency Management Agency (FEMA), for the Study Area. Based on FEMA mapping, 100-year floodplains are associated (from northwest to southeast) with Limpia Creek, Chihuahua Creek, Lone Tree Creek, North Fork Cienega Creek, Cienega Creek, Middle Fork Cienega Creek, South Fork Cienega Creek, Merrill Fork, Musquiz Creek, North Fork Alamito Creek, South Fork Alamito Creek, Alamito Creek, and low-lying areas within the Study Area. The construction of the proposed transmission line is not anticipated to significantly alter existing topographical grades or significantly impact the function of the floodplains. Coordination with the local floodplain administrators will be completed after the PUC approves a route to determine if any permits are necessary.

1.6.6 Military Aviation and Installation Assurance Siting Clearinghouse

The DoD Military Aviation and Installation Assurance Siting Clearinghouse works with industry to overcome risks to national security while promoting compatible domestic energy development. Energy production facilities and transmission projects involving tall structures, such as electric transmission towers, may degrade military testing and training operations. The electromagnetic interference from electric transmission lines can impact critical DoD testing activities. 16 TAC § 22.52 states that upon

filing of the application, the DoD shall be notified and an affidavit attesting to the notification shall also be provided with the applicant's proof of notice. Furthermore, the utility is required to provide written notice of the public meeting or, if no public meeting is held, to provide written notice to the DoD of the planned filing of an application prior to completion of the routing study. Burns & McDonnell contacted the DoD Military Aviation and Installation Assurance Siting Clearinghouse regarding the proposed Project to provide notification and to solicit input on July 3, 2019, and again on October 10, 2023. In addition, a public meeting notice was provided to the DoD Military Aviation and Installation Assurance Siting Clearinghouse on October 19, 2021, regarding the virtual town-hall meeting scheduled for November 9, 2021. A notice of the filing of the application will be sent to the DoD Military Aviation and Installation Assurance Siting Clearinghouse when the CCN application is filed with the PUC.

1.6.7 Texas Parks and Wildlife Department

The Texas Parks and Wildlife Department (TPWD) is the State agency with the primary responsibility of protecting the State's fish and wildlife resources in accordance with the Texas Parks and Wildlife Code Section 12.0011(b). Burns & McDonnell solicited comments from the TPWD during the Project scoping phase and a copy of this EA will be submitted to TPWD when the CCN application is filed with the PUC. Once the PUC approves a route, additional coordination with TPWD may be necessary to determine the need for additional surveys and to avoid or minimize potential adverse impacts to sensitive habitats, threatened or endangered species, and other fish and wildlife resources.

1.6.8 Texas Commission on Environmental Quality

The Project may require a Texas Pollution Discharge Elimination System (TPDES) General Construction Permit (TX150000) as implemented by the Texas Commission on Environmental Quality (TCEQ) under the provisions of Section 402 of the CWA and Chapter 26 of the Texas Water Code. The TCEQ has developed a three-tiered approach for implementing this permit that is dependent on the acreage of disturbance. No permit is required for land disturbances of less than 1 acre (Tier I). Disturbance of more than 1 acre, but less than 5 acres, would require implementation of a Storm Water Pollution Prevention Plan (SWPPP) (Tier II). If more than 5 acres of land are disturbed, the requirements mentioned above for Tier II are necessary and the submittal of a Notice of Intent (NOI) and Notice of Termination (NOT) to the TCEQ is also required (Tier III). Once a route is approved by the PUC, AEP Texas will determine the amount of ground disturbance and the appropriate Tier and conditions of the TX150000 permit.

1.6.9 Texas Department of Transportation

Permits and approvals will be obtained from the Texas Department of Transportation (TxDOT) for any crossing of, or access from, a State-maintained roadway. Best management practices (BMPs) will be

used, as required, to minimize erosion and sedimentation resulting from the construction within TxDOT easements. Revegetation within TxDOT easements will occur as required under the "Revegetation Special Provisions" and contained in TxDOT form 1023 (Rev. 9-93).

1.6.10 Texas Historical Commission

Cultural resources are protected by Federal and State laws if they have some level of significance under the criteria of the National Register of Historic Places (NRHP) (36 CFR Part 60) or under State guidance (TAC, Title 13, Part 2, Chapter 26.7-8). AEP Texas will obtain clearance as necessary from the Texas Historical Commission (THC) regarding requirements concerning historic and prehistoric cultural resources before initiating any ground disturbance.

1.6.11 Texas General Land Office

The Texas General Land Office (GLO) requires a Miscellaneous Easement (ME) for any ROW crossing a State-owned riverbed, navigable stream, tidally influenced waters, or State-owned land. Once the PUC approves a route, AEP Texas will coordinate with the GLO as needed to determine if an ME is required.

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2.0 DEVELOPMENT AND EVALUATION OF ALTERNATIVE TRANSMISSION LINE ROUTES

2.1 Objective of Study

The objective of this study was to develop and evaluate an adequate number of Alternative Transmission Line Routes that are feasible from economic, engineering, and environmental standpoints and ultimately identify the route that best addresses the requirements of PURA and 16 TAC § 25.101 for the proposed 138-kV transmission line. AEP Texas and Burns & McDonnell utilized a comprehensive transmission line routing and evaluation methodology to delineate and evaluate Alternative Transmission Line Routes. Methods used to locate and evaluate potential routes were governed by AEP Texas' transmission line routing processes, the Texas Public Utilities Code, and the PUC's Substantive Rules. The following sections provide a description of the process used in the development, evaluation, and selection of Alternative Transmission Line Routes.

2.2 Data Collection

Data used by Burns & McDonnell in the evaluation of the Project was drawn from a variety of sources, including:

- Published literature (documents, reports, maps, aerial photography, etc.)
- Information from local, State and Federal agencies
- Site-specific studies or investigations performed by others
- Recent aerial imagery (2017–2023 ESRI Maxar Vivid Satellite imagery; 2022 U.S. Department of Agriculture [USDA] National Agriculture Imagery Program [NAIP]; Google Earth)
- Google Maps
- 7.5-minute U.S. Geological Survey (USGS) topographic maps
- USGS National Hydrography Dataset (NHD)
- FEMA maps
- USFWS National Wetlands Inventory (NWI) maps
- USFWS Information for Planning and Consultation (IPaC)
- TPWD Natural Diversity Database (NDD)
- TPWD Ecological Mapping Systems of Texas (EMST)
- Texas Archeological Sites Atlas (TASA) through the Texas Archeological Research Laboratory (TARL) and the THC
- Ground reconnaissance surveys

Ground reconnaissance of the Study Area and computer-based evaluation of digital aerial imagery were utilized for both refinement and evaluation of Alternative Routes. Ground reconnaissance of the Study area was conducted on several occasions between 2019 and 2024, the latest of which was September 2023.The data collection effort, although concentrated in the early stages of the Project, is an ongoing process.

2.3 Delineation of Alternative Routes

2.3.1 Study Area Delineation

The first step in the development of the alternative routes was to select a Study Area. The Study Area needed to encompass the endpoints for the proposed project (the existing Alamito Creek Substation and the existing Fort Davis Substation) and include an area in which an adequate number of geographically diverse, forward-progressing Alternative Routes could be located. The boundaries of this area were dictated by the location of existing facilities and other physical and cultural features. Land use constraints, such as commercial and residential development, particularly in the vicinity of the two existing substations, were considered as the Study Area boundaries were developed. This resulted in the establishment of a rectangular Study Area approximately 21 miles long and 11 miles wide, encompassing an area of approximately 231 square miles or 147,862 acres in Presidio and Jeff Davis Counties (Figure 2-1).

2.3.2 Constraints Mapping

To minimize impacts to sensitive environmental and land use features, a constraints mapping process was used in the development and refinement of potential Alternative Routes. The geographic location of environmentally sensitive and other restrictive areas within the Study Area were located and considered during alternative route delineation. These constraints were mapped onto an aerial base map (Figure 2-2, map pocket) created using 2022 NAIP imagery. The overall impact of the Alternative Routes presented in this report has been greatly reduced by avoiding, to the greatest extent practicable, such constraints as concentrated residential development, community facilities, cemeteries, historic and archeological sites, wetland areas, parks, churches, and schools, and by paralleling existing compatible ROW, including transmission lines, roadways, and by paralleling property lines.

2.3.3 Preliminary Alternative Links

Utilizing the information described above, Burns & McDonnell identified numerous preliminary route links, which were examined in the field on several occasions between 2019 and 2022 and presented to AEP Texas for review and comment. These preliminary links, which are shown on Figure 2-3, were

presented to the public during a virtual town hall meeting, and at two in-person Public Open-House meetings held in the Study Area in January 2022. Due to the COVID-19 pandemic, AEP Texas was unable to hold an in-person open-house public meeting in the Study Area for its proposed Project in the fall of 2021. Instead, AEP Texas presented a virtual town-hall meeting via Webex Live to the public on November 9, 2021; however, due to technical difficulties and landowner comments it was decided that in-person public meetings would be held. The in-person open-house public meetings were subsequently held in Fort Davis, Jeff Davis County, on January 19, 2022, and in Marfa, Presidio County, on January 20, 2022.

Following the public meetings, Burns & McDonnell and AEP Texas performed additional reviews to look at areas of concern discussed at the public meetings; communicated with individual landowners, agencies, officials and interested stakeholders; evaluated the public comments; and considered revisions to the preliminary route links. In response to public comments, stakeholder input, and engineering considerations, several links were modified to reduce potential impacts to the Marfa Municipal Airport, habitable structures and other constraints to the greatest extent practicable. This modified route link network is shown on Figure 2-4.

Modifications to the preliminary link network were generally made for the following reasons:

- To eliminate aviation obstructions at the Marfa Municipal Airport
- To reduce new transmission structures near the Alamito Creek Substation
- To decrease potential erosion along streams
- To improve access and constructability
- To avoid difficult terrain impacting construction and access

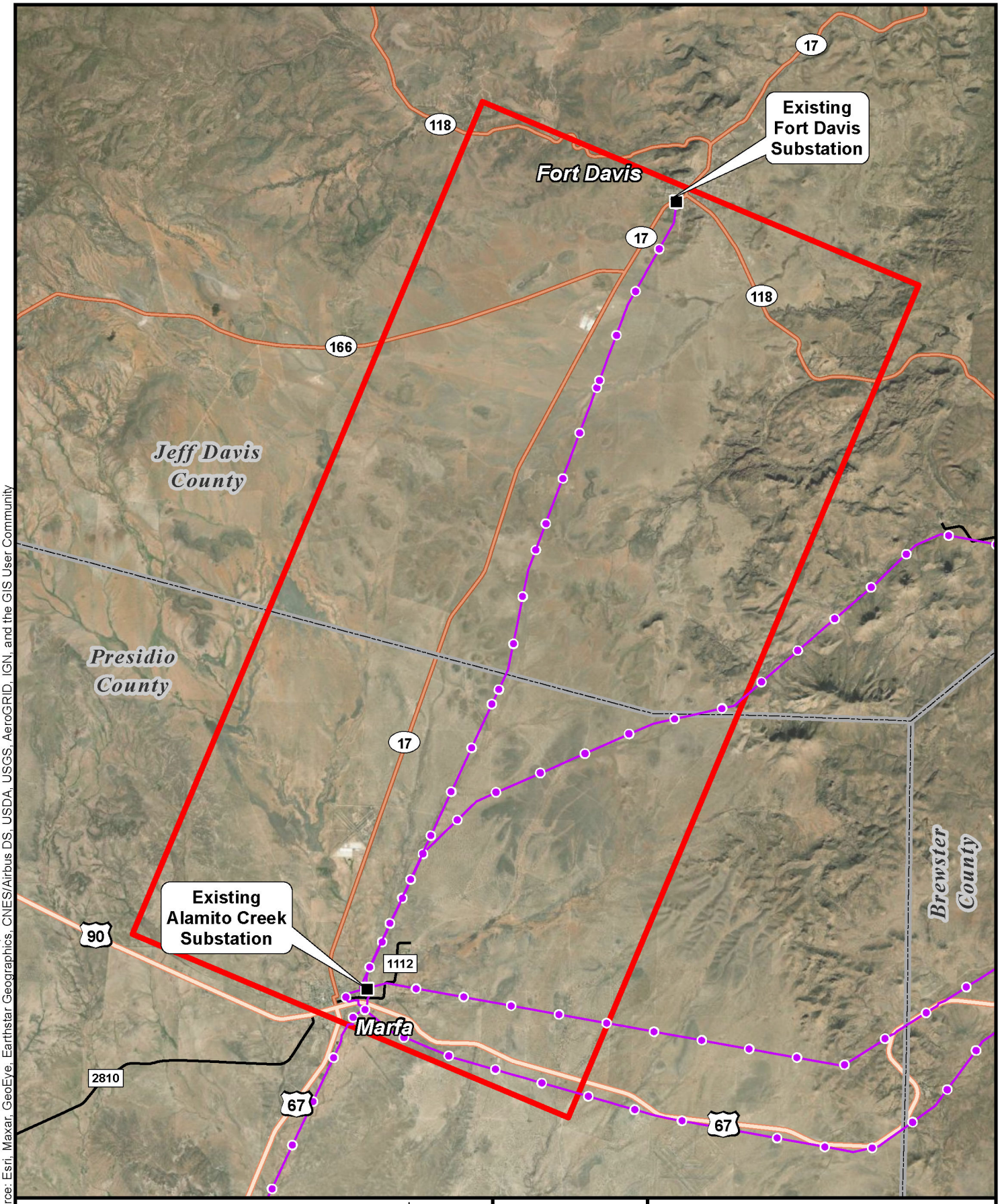

Figure 2-1
Study Area
Alamito Creek to Ft. Davis
138-kV Transmission Line Project
AEP Texas
Jeff Davis & Presidio Counties, TX

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Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Source: ESRI; Burns & McDonnell Engineering Company, Inc

Issued: 3/1/2024

Figure 2-2: Primary Alternative Links in Relation to Environmental and Land Use Constraints, Habitable Structures, and Other Land Use Features (Map Pocket)

This oversized map is located in a map pocket in the back of this document.

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Existing Ft Davis Substation
Fort Davis
Jeff Davis County
Presidio County
Jeff Davis
Presidio
Marfa Municipal Airport
Marfa
SEE INSET
Existing Alamito Creek Substation
Alamito Creek to Fort Davis 69-kV Line
Alamito Creek to Barrilla Junction 138-kV Line
Alamito Creek to Alpine 69-kV Line
Alamito Creek Substation Area Inset
Texas Mountain Trl
W San Antonio St
US Highway 90
Musquiz Dr
Texas Mou
Jones St
Project Endpoint
Link Endpoint
Preliminary Link
Existing 69-kV Transmission Line
Existing 138-kV Transmission Line
NORTH
0 0.75 1.5 3
Miles
BURNS McDONNELL
Figure 2-3
Preliminary Alternative Links
Alamito Creek to Ft. Davis
138-kV Transmission Line Project
AEP Texas
Jeff Davis & Presidio Counties, Texas
Path: Z:\Resources\Local\Clients\KCMENS\AEPSvc\116177_Alamito-FtDav\ArcGIS\DataFiles\ArcDocs\Report_Figures\Figure_2_3_Preliminary_Links_Map.mxd gacox 8/19/2022
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Source: ESRI; Burns & McDonnell Engineering Company, Inc

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Existing Ft Davis Substation
Fort Davis
36
35
33
31
32
34
17
166
19
118
29
30
166
28
19
27
31
26
25
20c
23
24
17
21d
19
21c
20b
Jeff Davis County
21b
22
Presidio County
20a
21a
Jeff Davis
Presidio
VT2
17
18
16
VT1
13b
Alamito Creek to Fort Davis 69-kV Line
12
Alamito Creek to Barrilla Junction 138-kV Line
13a
Marfa Municipal Airport
9
11
17
8
Alamito Creek Substation Area Inset
7
9
6
3
SEE INSET
Alamito Creek to Alpine 69-kV Line
5
4
2
Marfa
67
Existing Alamito Creek Substation
Texas Mountain Trl
90
W San Antonio St
1
Project Endpoint
Link Endpoint
Primary Link
Existing 69-kV Transmission Line
Existing 138-kV Transmission Line
NORTH
0 0.75 1.5 3
Miles
BURNS McDONNELL

Figure 2-4
Primary Alternative Links
Alamito Creek to Ft. Davis
138-kV Transmission Line Project
AEP Texas
Jeff Davis & Presidio Counties, Texas

Path: Z:\Resources\Local\Clients\KCMENS\AEPSvc\116177_Alamito-FtDav\ArcGIS\DataFiles\ArcDocs\Report_Figures\Figure_2_4_Primary_Links_Map_March2023_updates.mxd gacox 4/10/2023
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Source: ESRI; Burns & McDonnell Engineering Company, Inc

Issued: 4/10/2023

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2.3.4 Alternative Routes

A total of 41 Primary Alternative Links resulted from the preliminary link modifications, that when combined would form an adequate number of geographically-diverse forward-progressing routes. Ultimately, nine Alternative Routes using the 41 Primary Alternative Links were selected that were then specifically studied in detail and evaluated by Burns & McDonnell. The results of Burns & McDonnell's efforts are presented in this EA in Sections 4.0 and 6.0. The Primary Alternative Route Links are shown on Figure 2-2 (map pocket) and Figure 2-4. The Alternative Routes constitute, for the purposes of this analysis, the only alternative routes addressed in this report. Table 2-1 presents the composition of these Alternative Routes by link, as well as their approximate length in miles.

Table 2-1: Alternative Route Composition and Length

Route	Route Composition	Length (miles)
A	1-2-4-6-7-8-11-12-16-VT2-21a-20a-19-33-36	25.78
B	1-2-5-6-7-8-11-12-16-VT2-21a-20a-19-32-34-35-36	26.02
C	1-2-5-6-7-8-11-12-16-VT2-21a-20a-20b-20c-29-33-36	22.05
D	1-3-7-8-11-12-16-VT2-21a-21b-21c-20c-28-30-34-35-36	21.57
E	1-3-7-8-11-12-16-VT2-21a-21b-21d-23-27-30-34-35-36	19.91
F	1-3-7-8-11-12-16-VT2-21a-21b-21d-24-26-27-30-34-35-36	20.26
G	1-3-7-8-11-13a-VT1-VT2-13b-17-22-25-26-27-30-34-35-36	27.50
H	1-3-7-9-17-18-VT2-22-31-35-36	29.00
I	1-3-7-8-11-12-16-VT2-21a-20a-20b-20c-29-32-34-35-36	22.28

Note: For primary route locations, see Figure 2-2 (map pocket) and Figure 2-4.

2.4 Evaluation of Alternative Routes

The evaluation of the Alternative Routes for the Project involved studying a variety of environmental factors. Each of the Alternative Routes was examined in the field at various times between 2019 and 2024, the latest of which was April 2024. The field evaluations were conducted from publicly accessible areas. In evaluating the alternative routes, 41 environmental criteria were considered. These criteria are presented in Table 2-2.

The goal of this evaluation is to provide comparative environmental data for the nine Alternative Routes, and to select a recommended route and several alternate routes, from an environmental and land use perspective, between the existing Alamito Creek and Fort Davis Substations. The analysis of each Alternative Route involved the inventory and tabulation of the number or quantity of each environmental criterion located along the centerline of each route (e.g., number of habitable structures within 300 feet of the centerline, the length paralleling existing compatible ROW, etc.). The number or amount of each

criterion was determined by using geographic information systems (GIS) software, reviewing various maps and recent color aerial imagery (Google Earth, 2022 NAIP, and 2017–2023 Maxar satellite imagery) and by field verification, where possible. The environmental criteria for each Alternative Route were then evaluated. Potential environmental impacts of the Alternative Routes are addressed in Section 4.0 of this document, while comparative environmental data for the Alternative Routes are provided in Table 4-1 in Section 4.0.

Burns & McDonnell's evaluation and selection of a recommended route from an environmental perspective is discussed in Section 6.1. After Burns & McDonnell considered its ranking of the Alternative Routes, AEP Texas undertook a further evaluation in which Burns & McDonnell's environmental evaluations were considered in conjunction with AEP Texas' assessment of the reliability, constructability, maintenance, operation, and cost to construct each alternative.

Table 2-2: Environmental Criteria for Alternative Route Evaluation

Number	Criterion
Land Use	
1	Length of Alternative Route
2	Number of habitable structures[a] within 300 feet[b] of ROW centerline
3	Length utilizing existing transmission line ROW
4	Length of ROW parallel to existing transmission line ROW
5	Length of ROW parallel to other existing compatible ROW (roads, highways, railroads, etc.—excluding pipelines)
6	Length of ROW parallel to property lines (not following existing ROW)[c]
7	Sum of evaluation criteria 3, 4, 5, and 6
8	Percent of evaluation criteria 3, 4, 5, and 6
9	Length of ROW across parks/recreational areas[d]
10	Number of additional parks/recreational areas[d] within 1,000 feet of ROW centerline
11	Length of ROW across cropland
12	Length of ROW across pastureland/rangeland
13	Length of ROW across cropland or pastureland with mobile irrigation systems
14	Length of ROW parallel to pipeline ROW (less than 500 feet from route centerline) [e]
15	Number of pipeline crossings
16	Number of transmission line crossings
17	Number of U.S. and State highway crossings
18	Number of Farm-to-Market (FM)/Ranch-to-Market (RM) road crossings
19	Number of FAA-registered public/military airfields[f] within 20,000 feet of ROW centerline (with runway >3,200 feet)

Number	Criterion
20	Number of FAA-registered public/military airfields[f] within 10,000 feet of ROW centerline (with runway <3,200 feet)
21	Number of private airstrips within 10,000 feet of ROW centerline
22	Number of heliports within 5,000 feet of ROW centerline
23	Number of commercial AM radio transmitters within 10,000 feet of ROW centerline
24	Number of FM radio transmitters, microwave towers, and other electronic installations within 2,000 feet of ROW centerline
Aesthetics	
25	Estimated length of ROW within foreground visual zone[g] of U.S. and State highways
26	Estimated length of ROW within foreground visual zone[g] of FM/RM roads
27	Estimated length of ROW within foreground visual zone[g] of parks/recreational areas[d]
Ecology	
28	Length of ROW through upland woodland/brushland
29	Length of ROW through bottomland/riparian woodland/brushland
30	Length of ROW across potential wetlands[h]
31	Length of ROW across known occupied habitat of federally listed endangered or threatened species
32	Number of stream crossings
33	Length of ROW parallel (within 100 feet) to streams
34	Length of ROW across open water (ponds, lakes, etc.)
35	Length of ROW across 100-year floodplains
Cultural Resources	
36	Number of cemeteries within 1,000 feet of ROW centerline
37	Number of recorded cultural resource sites crossed by ROW
38	Number of additional recorded cultural resource sites within 1,000 feet of ROW centerline
39	Number of NRHP-listed or determined-eligible sites crossed by ROW
40	Number of additional NRHP-listed or determined-eligible sites within 1,000 feet of ROW centerline
41	Length of ROW crossing areas of high archeological/historical site potential

(a) Single-family and multifamily dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis.
(b) Due to the potential inaccuracies of the aerial photography and data utilized, all habitable structures within 310 feet have been identified.
(c) Property lines created by existing road, highway, or railroad ROW are not double counted in the "Length of ROW parallel to property lines" criterion.
(d) Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.
(e) Not included in length of route parallel to compatible ROW.
(f) As listed in the Chart Supplement South Central U.S. (FAA, 2022a, formerly known as the Airport/Facility Directory South Central U.S.) and FAA (2022b).
(g) One-half mile, unobstructed.
(h) As mapped by the USFWS NWI.

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3.0 EXISTING ENVIRONMENT

3.1 Physiography

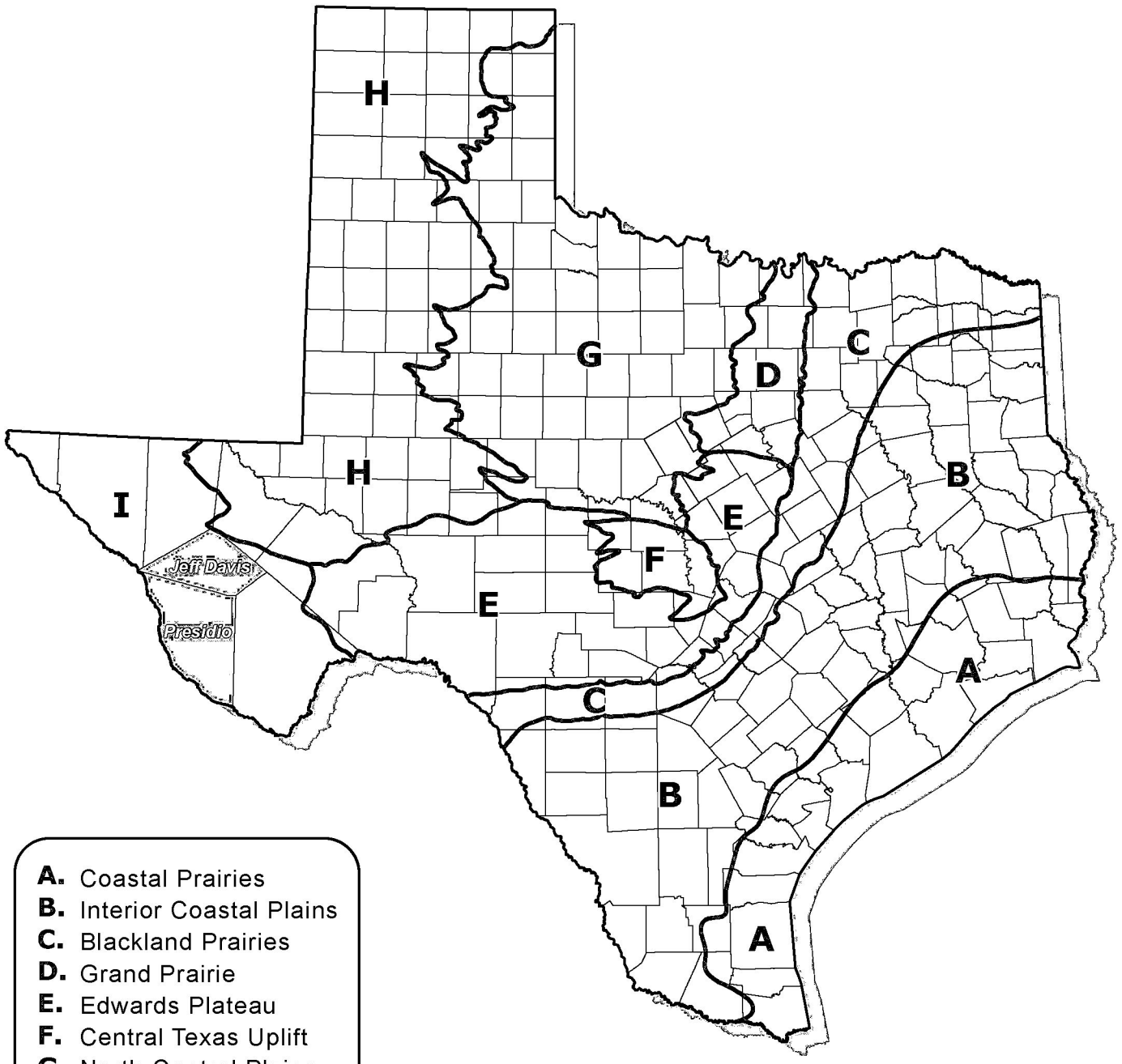
As shown on Figure 3-1, Jeff Davis and Presidio Counties (including the Study Area) are located within the Basin and Range Physiographic Province of Texas (Bureau of Economic Geology [BEG], 1996). The Basin and Range Province is a subdivision of the Intermontane Plateaus, which lies to the west of the Great Plains in the extreme western part of Texas. Several north-south trending mountain ranges are located throughout the central part of this region. Between the mountain ranges are high dry basins or plateaus, in which the rocks are nearly horizontal and less deformed. Within the mountain range interiors are cores of intensely folded and faulted sedimentary and igneous rocks. Extrusive igneous (volcanic) rocks form many peaks. Large pyroclastic flows of volcanic ash and thick deposits of volcanic debris border the slopes of most former volcanos. In addition, the eroded cores of collapsed and subsided volcanoes (calderas) are abundant. Study Area elevations range from a high of approximately 6,358 feet above mean sea level (msl) along the northwestern edge of the Study Area to a low of 4,665 feet above msl along the southern edge of the Study Area in the Alamito Creek bed.

3.2 Geology

According to BEG (1979a, 1995), the Study Area includes the following geologic units (from youngest to oldest): Quaternary-aged alluvium and colluvium and fan deposits, Tertiary-aged intrusive igneous rocks, Perdiz conglomerate, Petan basalt, Barrel Springs Formation, Sleeping Lion Formation, Frazier Canyon Formation, and Star Mountain Rhyolite.

Quaternary-aged alluvium occurs throughout most of the western and southern portions of the Study Area and includes low terrace deposits along streams and may include older Quaternary deposits in some areas. Colluvium and fan deposits occur mainly in the northeastern portion of the Study Area and include older Quaternary deposits in some areas.

Tertiary-aged intrusive igneous rocks occur in a few small areas in the central and northeastern portions of the Study Area and consist of intrusive igneous rocks, stocks, laccoliths, sills, and dikes. Perdiz conglomerate is found in the southern portion of the Study Area and consists of a fanglomerate of highly variable composition shed mostly northeastward from the Chinati Mountains in the Cuesta del Burro region, with a thickness up to approximately 500 feet. Petan basalt occurs in the central portion of the Study Area and consists of mafic flows, dark greenish gray to brownish gray, with a thickness of up to 510 feet. The Barrel Springs Formation occurs in the western portion of the Study Area and, from the top



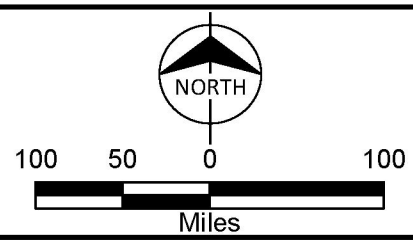


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Figure 3-1
Location of Jeff Davis and Presidio Counties in Relation to the Physiographic Provinces of Texas
Alamito Creek to Ft. Davis
138-kV Transmission Line Project

Source: BEG (1996)

Issued: 5/28/2019

down, includes indurated to friable, fine-grained vitric tuff, non-foliated porphyritic rhyolite (which is pinkish gray to purplish brown), foliated porphyritic rhyolite (which is black), and foliated vitrophyre, with a thickness of approximately 105 feet. Sleeping Lion Formation is located within the northeastern portion of the Study Area and consists of porphyritic, rhyolitic ash-flow tuff, which is reddish brown to gray, and has well developed columnar jointing, with a thickness of approximately 329 to 610 feet. Frazier Canyon Formation is located within the extreme northern portion of the Study Area and consists of vitric-lithic-crystal tuff, which locally contains conglomerate and sandstone, is poorly bedded, and is white to light brown, gray, yellow, or green. It contains three units separated by numerous mafic flows and has a thickness of approximately 351 feet. Star Mountain Rhyolite occurs in the northeastern portion of the Study Area and consists of porphyritic rhyolite and quartz trachyte with aphanitic groundmass. It is gray, green, greenish gray, reddish gray, and purplish lavender, and weathers reddish brown to black. It is normally in three flow units and forms impressive columnar jointed palisade cliffs, with a thickness of approximately 496 to 810 feet. No reported geologic faults are located within the Study Area or in the immediate vicinity of the Study Area.

3.3 Soils

The Study Area occurs within southern Jeff Davis County and northeastern Presidio County. The general soil maps of Jeff Davis County, published by the Soil Conservation Service (SCS) in 1977, and Presidio County, published by the Natural Resources Conservation Service (NRCS) in 2013, were referenced for the following descriptions of the general soil map units within the Study Area.

3.3.1 Soil Associations

The SCS, now renamed as the NRCS, defines a soil association as "a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern." According to the Jeff Davis and Presidio Counties general soil maps, seven soil associations/map units occur within the Study Area:

- Brewster
- Mainstay-Liv-Brewster
- Musquiz-Santo Tomas-Boracho
- Gageby-Rockhouse
- Musquiz-Murray-Marfa
- Brewster-Rock outcrop
- Chinati-Boracho-Chilimol-Berend

The Brewster association, which occurs in the northeastern portion of the Study Area, is characterized by shallow to very shallow, hilly to steep, noncalcareous soils of arid and semiarid hills. The soils of this association are on hills of the lower part of the Davis Mountains where the elevation is mainly 4,500 to 5,000 feet and are only used for range (SCS, 1977).

The Mainstay-Liv-Brewster association, which occurs in the northwestern portion of the Study Area in the Davis Mountains, is characterized by very shallow to moderately deep, hilly to steep, noncalcareous soils of semiarid hills and mountains. The soils of this association are on steep Davis Mountains where elevation is mainly 4,500 to 6,250 feet and are only used for range (SCS, 1977).

The Musquiz-Santo Tomas-Boracho association, which occurs in the north-central portion of the Study Area, is characterized by very shallow to deep, nearly level and gently sloping, noncalcareous and calcareous soils of arid and semiarid valleys. The soils of this association are in intermountain valleys and are used mainly for range. Most of the soils are suitable for irrigated crops, but only a few small areas are irrigated (SCS, 1977).

The Gageby-Rockhouse association, which occurs in two small areas in the northern portion of the Study Area, is characterized by deep, nearly level, noncalcareous soils of floodplains of the larger streams that drain the hills and mountains. The soils of this association are used mainly for native range (SCS, 1977).

The Musquiz-Murray-Marfa map unit, which occurs in most of the southern portion of the Study Area, is characterized by very deep, well drained, loamy to clayey, and gravelly soils. The soils of this map unit make up approximately 19 percent of Presidio County, with approximately 28 percent Musquiz soils, 26 percent Murray soils, 24 percent Marfa soils, and 22 percent other soils (NRCS, 2013).

The Brewster-Rock outcrop map unit, which occurs in three small areas in the central and eastern portions of the Study Area, is characterized by very shallow to very shallow, well drained, loamy, very gravelly to very cobbly soils and areas of exposed igneous bedrock. The soils of this map unit make up approximately 15 percent of Presidio County, with approximately 55 percent Brewster soils, 15 percent Rock outcrop, and 30 percent other soils (NRCS, 2013).

The Chinati-Boracho-Chilimol-Berend map unit, which is located in the southwestern portion of the Study Area, is characterized by very shallow to very shallow, well drained, loamy gravelly to very gravelly soils. The soils of this map unit make up approximately 9 percent of Presidio County, with approximately 31 percent Chinati soils, 23 percent Boracho soils, 12 percent Chilimol soils, 10 percent Berrend soils, and 24 percent other soils (NRCS, 2013).

3.3.2 Prime Farmland Soils

The Secretary of Agriculture, in 7 USC 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, and without intolerable soil erosion, as determined by the Secretary. Additional potential prime farmlands are those soils that meet most of the requirements of prime farmland but fail because they lack sufficient natural moisture, or they lack the installation of water management facilities. Such soils would be considered prime farmland if these practices were implemented.

According to the NRCS (2018), no prime farmland soils occur within the Study Area (147,862 acres). Jeff Davis County encompasses 1,439,382 acres and Presidio County encompasses 2,463,690 acres, none of which contains prime farmland soils.

3.4 Mineral and Energy Resources

One major mineral resource, volcanic rocks, is mapped as occurring within the central to southern portion of the Study Area (BEG, 1979b). It consists of fine-grained volcanic rocks, generally of rhyolitic, trachytic, or basaltic composition. No additional quarries or mines were observed while reviewing USGS topographic maps. Additionally, a review of the USGS Mineral Data Resource System found no mining operations within the Study Area (USGS, 2011).

No energy resources are mapped within the Study Area (BEG, 1976). According to the Railroad Commission of Texas (RRC), no active or plugged oil and gas wells are recorded in the Study Area, and none are visible on aerial photography. However, two wells, recorded as “dry holes” are located in the southwestern portion of the Study Area. West Texas Gas (WTG) Processing, LP operates underground natural gas transmission pipelines east of SH 17 between Marfa and Fort Davis (RRC, 2021).

3.5 Water Resources

3.5.1 Surface Water

For surface water planning purposes, Jeff Davis and Presidio Counties lie within the Rio Grande Basin, which has a total drainage area of 182,215 square miles, of which 88,968 square miles are in the U.S., and 49,387 square miles are in Texas. It is the largest basin by area within Texas, but only the ninth largest by annual flow volume (Texas Water Development Board [TWDB], 1997, 2007).

According to USGS topographic maps and the USACE NHD, named surface water features (e.g., streams, ponds, canals, lakes, etc.) mapped within the Study Area, include (from the northwest to the

southeast) Limpia Creek, Chihuahua Creek, Cienaga Creek, Lone Tree Creek, North Fork Cienega Creek, Middle Fork Cienega Creek, Merrill Fork, South Fork Cienega Creek, Musquiz Creek, North Fork Alamito Creek, South Fork Alamito Creek, and Alamito Creek. Average rainfall within the Study Area ranges from approximately 10 to 15 inches annually (TWDB, 2012).

To assist regional water planning groups in identifying sensitive stream segments under TAC Title 31 357.8, TPWD has identified ecologically significant stream segments throughout the State based on criteria pertaining to biological function, hydrological function, riparian conservation areas, water quality, aquatic life, aesthetic value, and the presence of threatened or endangered species or unique communities. No stream segments within the Study Area are designated as ecologically significant streams (TPWD, 2023a).

3.5.2 Floodplains

FEMA has conducted detailed floodplain analyses for Jeff Davis and Presidio Counties (FEMA, 1985). The resulting Flood Insurance Rate Maps (FIRMs) indicate the limits of the 100-year floodplain (areas with a 1 percent annual chance of flooding) within the Study Area. Based on FEMA mapping, floodplains are associated (from northwest to southeast) with Limpia Creek, Chihuahua Creek, Lone Tree Creek, North Fork Cienega Creek, Cienega Creek, Middle Fork Cienega Creek, South Fork Cienega Creek, Merrill Fork, Musquiz Creek, North Fork Alamito Creek, South Fork Alamito Creek, Alamito Creek, and low-lying areas within the Study Area (Figure 2-2, map pocket).

3.5.3 Groundwater

According to the TWDB, 9 major aquifers (aquifers that produce large amounts of water over large areas) and 21 minor aquifers (aquifers that produce minor amounts of water over large areas or large amounts of water over small areas) are recognized within Texas. These major and minor aquifers can produce groundwater for household, municipal, industrial, and agricultural uses and supply over 59 percent of the water used in Texas (TWDB, 2007).

The principal water-bearing unit in the Study Area is the Igneous Aquifer, a minor aquifer, which occupies 6,075 square miles in Far West Texas. The aquifer consists of volcanic rocks made up of a complex series of welded pyroclastic rock, lava, and volcaniclastic sediments and includes of 40 different named units up to 6,000 feet thick, with freshwater saturated thickness averaging approximately 1,800 feet. Although the water in the aquifer is fresh and contains less than 1,000 milligrams per liter of total dissolved solids, elevated levels of silica and fluoride have been found in water from some wells. Water is primarily used to meet the municipal needs for the cities of Alpine, Fort Davis, and Marfa, as well as

some agricultural needs, and no significant water level declines have been measured throughout the aquifer (TWDB, 2007).

3.6 Vegetation

3.6.1 Regional Vegetation

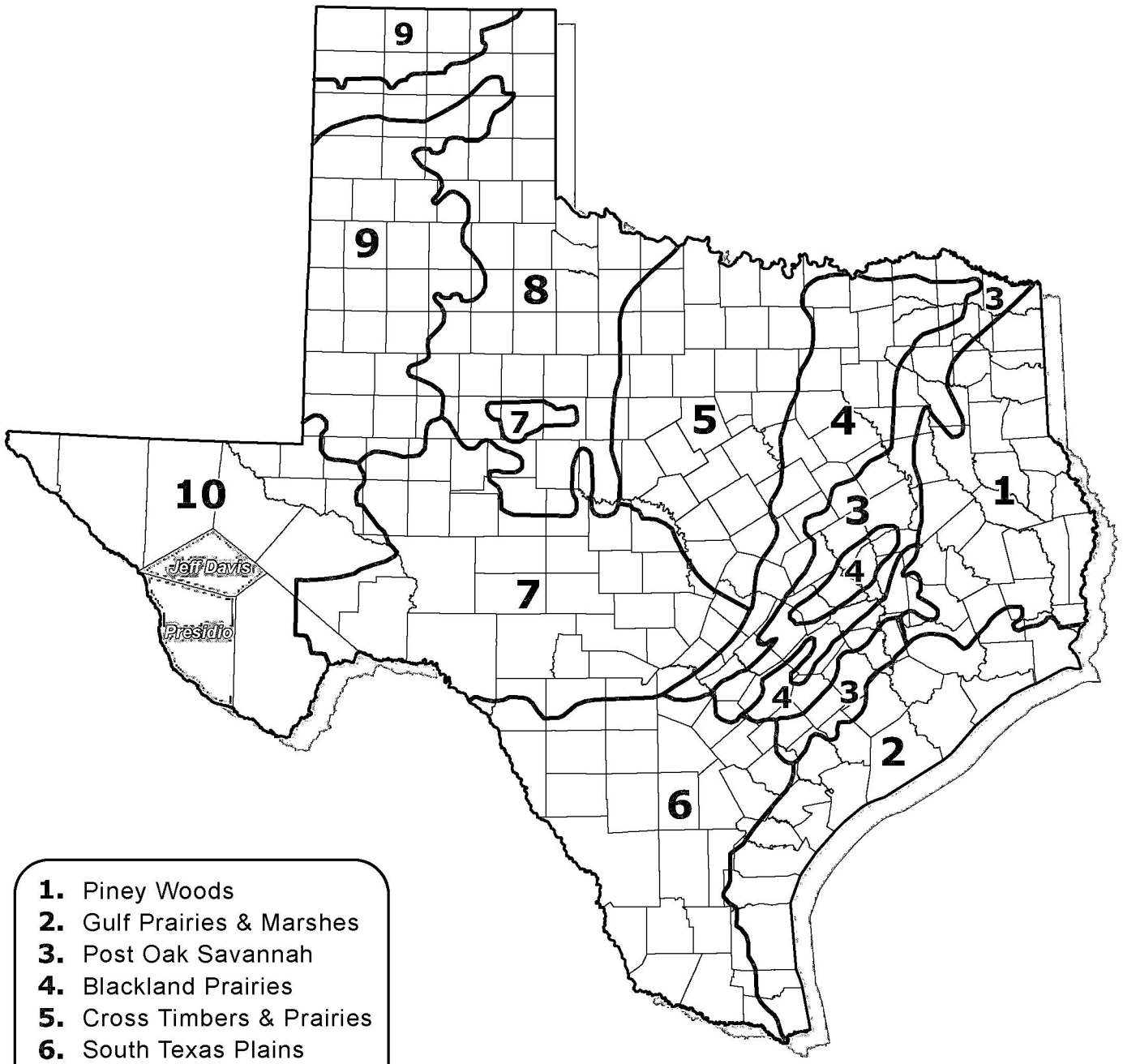
As shown on Figure 3-2, Jeff Davis and Presidio Counties are located within the Trans Pecos Vegetational Area, which was delineated by Gould et al. (1960) and characterized by Hatch et al. (1990). The Trans-Pecos Vegetational Area is traversed by the eastern chain of the Rocky Mountains into the Basin and Range Physiographic Province and has ecosystems typical of the southwestern U.S. The original vegetation ranged from desert grassland and desert shrub on lower slopes and elevations through juniper, and pine at mid elevations, to pine and forest vegetation on the higher slopes of the mountains. Poisonous plants present considerable problems in this harsh environment. More than 95 percent of the area remains as rangeland, and with irrigation, various crops are grown including cotton, alfalfa, sorghum, cantaloupe, sugar beets, grapes, and vegetables (Hatch et al., 1990).

3.6.2 Vegetation Community Types in the Study Area

According to the TPWD EMST vegetation cover types, approximately 39 percent of the Study Area consists of Trans-Pecos: Loamy Plains Grassland, 25 percent as Trans-Pecos: Shallow Plains Grassland, 8 percent as Trans-Pecos: Hill and Foothill Grassland, 5 percent as Trans-Pecos: Mountain Grassland, 4 percent as Trans-Pecos: Mixed Desert Shrubland, 3 percent as Native Invasive: Mesquite Shrubland, 3 percent as Native Invasive: Catclaw Shrubland, and 2 percent Southwest: Tobosa Grassland. The remaining 11 percent consists of 28 additional vegetation cover types (TPWD, 2023b).

Trans Pecos: Loamy Plains Grassland occurs on relatively deep loamy soils. Important grasses include sideoats grama (*Bouteloua curtipendula*), black grama (*Bouteloua eriopoda*), blue grama (*Bouteloua gracilis*), hairy grama (*Bouteloua hirsuta*), tobosa (*Pleuraphis mutica*), silver bluestem (*Bothriochloa laguroides*), and fluffgrass (*Tridens* spp.). Honey mesquite (*Prosopis glandulosa*) is a common invasive species, along with creosote bush (*Larrea tridentata*) and tarbush (*Flourensia cernua*).

Trans Pecos: Shallow Plains Grassland occurs over shallow soils, often in areas within a matrix of broad grasslands over deeper soils (Trans-Pecos: Loamy Plains Grassland) or more rolling, discontinuous soils (Trans-Pecos: Hill and Foothill Grassland). Important grasses may include sideoats grama, black grama, blue grama, hairy grama, tobosa, silver bluestem, and fluffgrass. Common shrubs include Javelina bush (*Condalia ericoides*), junipers (*Juniperus* spp.), and whitethorn acacia (*Vachellia constricta*), but most areas lack honey mesquite, tarbush, or creosote bush in much density.



NORTH

100 50 0 100

Miles

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Figure 3-2
Location of Jeff Davis and Presidio Counties in Relation to the Vegetational Areas of Texas
Alamito Creek to Ft. Davis
138-kV Transmission Line Project

Source: Hatch et al (1990)

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Trans Pecos: Hill and Foothill Grassland occurs over gravelly or rocky, generally sloping soils that are not continuous and thus support a mixture of grasses, shrubs, and succulents. Important grasses mayinclude sideoats grama, black grama, chino grama (*Bouteloua ramosa*), tanglehead, threeawns (*Aristida* spp.), bush muhly (*Muhlenbergia porteri*), Arizona cottontop (*Digitaria californica*), and fluffgrass. Common shrubs include ocotillo (*Fouquieria splendens*), creosote bush, mariola (*Parthenium incanum*), skeleton-leaf golden eye (*Viguiera stenoloba*), and whitethorn acacia, while common succulents include Torrey's yucca (*Yucca torreyi*), lechuguilla (*Agave lechuguilla*), sotol (*Dasylirion* spp.), Texas sacahuista (*Nolina texana*), Engelman pricklypear (*Opuntia engelmannii*), and other *Opuntia* and *Echinocereus* species.

Trans Pecos: Mountain Grassland represents a variety of grassland types at different elevations, which are often diverse. Species include sideoats grama, blue grama, bull muhly (*Muhlenbergia emersleyi*), black grama, silver bluestem, tanglehead (*Heteropogon contortus*), little bluestem (*Schizachyrium scoparium*), woolyspike balsamscale (*Elionurus barbiculmis*), and pinyon ricegrass (*Piptochaetium fimbriatum*). This type is often interspersed with woodlands dominated by species such as pinyon or Mexican pinyon pine (*Pinus cembroides*), ponderosa or Arizona pine (*Pinus arizonica*), gray oak (*Quercus grisea*), and species of juniper.

Trans Pecos: Mixed Desert Shrubland occurs on moderate slopes, usually in hills and low mountains rather than alluvial or colluvial desert basins. Shrub diversity is often relatively high, and common components include mariola, creosote bush, whitethorn acacia, skeleton-leaf golden eye, honey mesquite, catclaw acacia (*Senegalia greggii*), Torrey's yucca, lechuguilla, sotol, and ocotillo.

Native Invasive: Mesquite Shrubland, relatively dense honey mesquite shrublands, also may include redberry juniper (*Juniperus arizonica*), wolfberry (*Lycium* spp.), and creosote bush. Species of *Yucca* and *Opuntia* are common succulents, and this vegetation type is mapped on soils that are classically considered to have supported grasslands or open shrublands in pre-European settlement times.

Native Invasive: Catclaw Shrubland occur as dense shrublands generally dominated by catclaw acacia and catclaw mimosa (*Mimosa aculeaticarpa*). Mariola and honey mesquite are other common woody components, and Torrey's yucca and sotol are common succulents.

Southwest: Tobosa Grassland occurs on clay flats. Common grasses include tobosa, blue grama, galleta (*Pleuraphis* sp.), vine mesquite (*Panicum obtusum*), and western wheatgrass (*Pascopyrum smithii*). Woody components include honey mesquite and rough jointfir (*Ephedra aspera*), with species of *Opuntia* and *Yucca* often present.

3.6.3 Waters of the U.S., Including Wetlands

Waters of the U.S. or WOTUS include, but are not limited to, territorial seas, lakes, rivers, streams, oceans, bays, ponds, and other special aquatic features, including wetlands. The USACE regulates WOTUS, including wetlands, under Section 404 of the CWA. The USACE and EPA jointly define wetlands as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include bogs, seeps, marshes, swamps, forested bottomland wetlands, and other similar areas (40 CFR 230.3[t]). Wetlands are defined in a broad sense as transitional areas (ecotones) between terrestrial and aquatic systems where the water table is usually at or near the ground surface, or where shallow water covers the land (Cowardin et al., 1979).

The USFWS NWI maps encompassing the Study Area indicate the presence of wetland and open-water habitat features within the Study Area. Features in the Study Area are classified as riverine and palustrine. Riverine systems include all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens; and (2) habitats with water containing ocean-derived salts exceeding 0.5 percent. Palustrine systems include vegetated, freshwater wetlands and small (less than 20 acres), nonvegetated freshwater wetlands that are both shallow (deepest point less than 6.6 feet at low water) and lack an active wave-formed or bedrock shoreline (Cowardin et al., 1979).

Hydric and aquatic habitats may be considered regulatory wetlands by the USACE. Construction activities resulting in the discharge of dredged or fill materials within WOTUS are subject to the regulations and restrictions outlined in Section 404 of the CWA and may require coordination with the USACE to ensure compliance.

3.7 Fish and Wildlife

3.7.1 Fish and Wildlife Habitats and Species

Blair (1950) delineated seven biotic provinces within Texas. As shown on Figure 3-3, Jeff Davis and Presidio Counties occur within the Chihuahuan Biotic Province. The Chihuahuan Biotic Province includes all Trans-Pecos Texas except the Guadalupe Mountains of northern Culberson County and has a greater diversity of physiographic features than any other province in the State. The mammalian fauna is the richest of any biotic province in the State and 14 species in Texas are limited to this province. The

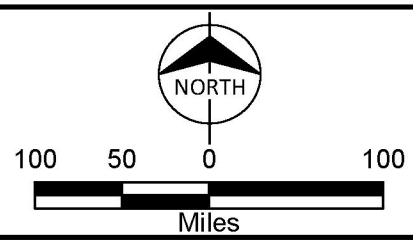

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Figure 3-3
Location of Jeff Davis and Presidio Counties in Relation to the Biotic Provinces of Texas
Alamito Creek to Ft. Davis
138-kV Transmission Line Project

Source: Blair (1950)

Issued: 5/28/2019

mammal species in the basin deserts and grasslands are in many cases different from the species of nearby mountains. Additionally, more lizard species are found in the Chihuahuan Biotic Province than any other province in Texas. Only one species of urodele, the barred tiger salamander (*Ambystoma mavortium mavortium*), occurs in the province and is found in abundance in dirt tanks throughout the area (Blair, 1950). Aquatic habitats occurring within the Study Area include Limpia Creek, Chihuahua Creek, Cienaga Creek, Lone Tree Creek, North Fork Cienega Creek, Middle Fork Cienega Creek, Merrill Fork, South Fork Cienega Creek, Musquiz Creek, North Fork Alamito Creek, South Fork Alamito Creek, and Alamito Creek and their tributaries, and several mapped ponds. Aquatic vegetation is limited by the ephemeral nature of these features.

3.7.2 Fish

Fish species are not expected in the Study Area due to the lack of permanent waterbodies. Fish species that may occur in the region include the common carp (*Cyprinus carpio*), black bullhead (*Ameiurus melas*), green sunfish (*Lepomis cyanellus*), orangespotted sunfish (*Lepomis humilis*), bluegill (*Lepomis macrochirus*), white crappie (*Pomoxis annularis*), channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*), and largemouth bass (*Micropterus salmoides*) (Thomas et al., 2007).

3.7.3 Amphibians and Reptiles

A representative list of amphibian and reptile species of potential occurrence in the Study Area is included as Table 3-1.

Table 3-1: Representative List of Reptile and Amphibian Species of Potential Occurrence[a] in the Study Area

Common Name[b]	Scientific Name[b]
Amphibians	
Barred tiger salamander	*Ambystoma mavortium mavortium*
Frogs and Toads	
Blanchard's cricket frog	*Acris blanchardi*
Couch's spadefoot	*Scaphiopus couchii*
Great Plains toad	*Anaxyrus cognatus*
Mexican spadefoot	*Spea multiplicata*
Rio Grande leopard frog	*Lithobates berlandieri*
Texas toad	*Anaxyrus speciosus*
Western narrow-mouthed toad	*Gastrophryne olivacea*
Lizards	
Chihuahuan greater earless lizard	*Cophosaurus texanus scitulus*

Common Name[b]	Scientific Name[b]
Crevice spiny lizard	*Sceloporus poinsettii*
Eastern collared lizard	*Crotaphytus collaris*
Texas horned lizard	*Phrynosoma cornutum*
Short-lined skink	*Plestiodon tetragrammus brevilineatus*
Texas spotted whiptail	*Aspidoscelis gularis gularis*
Western marbled whiptail	*Aspidoscelis marmorata marmorata*
Snakes	
Checkered gartersnake	*Thamnophis marcianus*
Chihuahuan nightsnake	*Hypsiglena jani*
Desert kingsnake	*Lampropeltis splendida*
Long-nosed snake	*Rhinocheilus lecontei*
New Mexico threadsnake	*Rena dissecta*
Plain-bellied watersnake	*Nerodia erythrogaster*
Plains black-headed snake	*Tantilla nigriceps*
Trans-Pecos ratsnake	*Bogertophis subocularis*
Variable groundsnake	*Sonora semiannulata semiannulata*
Western coachwhip	*Coluber flagellum testaceus*
Western diamond-backed rattlesnake	*Crotalus atrox*
Turtles	
Desert box turtle	*Terrapene ornata luteola*
Red-eared slider	*Trachemys scripta elegans*
Yellow mud turtle	*Kinosternon flavescens*

(a) According to Werler and Dixon (2000) and Dixon (2013)
(b) Nomenclature follows Crother et al. (2017)

3.7.4 Birds

Avian species of potential occurrence in the Study Area include many year-round residents, migrants/summer residents, and migrants/winter residents. A representative list of bird species of potential occurrence in the Study Area is included as Table 3-2.

Table 3-2: Representative List of Avian Species of Potential Occurrence[a] in the Study Area

Common Name	Scientific Name[b]	Likely Seasonal Occurrence[a, c]
American wigeon	*Anas americana*	M, WR
Ash-throated flycatcher	*Myiarchus cinerascens*	M, SR
Black-chinned hummingbird	*Archilochus alexandri*	M, SR
Black-throated sparrow	*Amphispiza bilineata*	R
Brewer's blackbird	*Euphagus cyanocephalus*	M, WR

Common Name	Scientific Name[b]	Likely Seasonal Occurrence[a, c]
Brown-headed cowbird	*Molothrus ater*	R
Bullock's oriole	*Icterus bullockii*	M, SR
Canyon towhee	*Melozone fusca*	R
Cassin's sparrow	*Peucaea cassinii*	M, SR
Cattle egret	*Bubulcus ibis*	R
Cedar waxwing	*Bombycilla cedrorum*	M, WR
Cliff swallow	*Petrochelidon pyrrhonota*	M, SR
Common nighthawk	*Chordeiles minor*	M, SR
Common raven	*Corvus corax*	R
Curve-billed thrasher	*Toxostoma curvirostre*	R
European starling	*Sturnus vulgaris*	R
Franklin's gull	*Leucophaeus pipixcan*	M
Gadwall	*Anas strepera*	M, WR
Great blue heron	*Ardea herodias*	R
Great horned owl	*Bubo virginianus*	R
Greater roadrunner	*Geococcyx californianus*	R
Great-tailed grackle	*Quiscalus mexicanus*	R
Green heron	*Butorides virescens*	M, SR
Green-winged teal	*Anas crecca*	M, WR
House finch	*Haemorhous mexicanus*	R
House sparrow	*Passer domesticus*	R
Killdeer	*Charadrius vociferus*	R
Ladder-backed woodpecker	*Dryobates scalaris*	R
Lark bunting	*Calamospiza melanocorys*	M, WR
Least sandpiper	*Calidris minutilla*	M, WR
Mallard	*Anas platyrhynchos*	R
Mississippi kite	*Ictinia mississippiensis*	M
Mourning dove	*Zenaida macroura*	R
Northern cardinal	*Cardinalis cardinalis*	R
Northern harrier	*Circus cyaneus*	M, WR
Northern mockingbird	*Mimus polyglottos*	R
Northern pintail	*Anas acuta*	M, WR
Northern shoveler	*Anas clypeata*	M, WR
Painted bunting	*Passerina ciris*	M, SR
Pied-billed grebe	*Podilymbus podiceps*	R
Pyrrhuloxia	*Cardinalis sinuatus*	R

Common Name	Scientific Name[b]	Likely Seasonal Occurrence[a, c]
Redhead	*Aythya americana*	M, WR
Red-tailed hawk	*Buteo jamaicensis*	R
Red-winged blackbird	*Agelaius phoeniceus*	M, R
Rock wren	*Salpinctes obsoletus*	R
Ruby-crowned kinglet	*Regulus calendula*	M, WR
Ruddy duck	*Oxyura jamaicensis*	M, WR
Rufous-crowned sparrow	*Aimophila ruficeps*	R
Sandhill crane	*Antigone canadensis*	M, WR
Savannah sparrow	*Passerculus sandwichensis*	M, WR
Say's phoebe	*Sayornis saya*	R
Scissor-tailed flycatcher	*Tyrannus forficatus*	M, SR
Scaled quail	*Callipepla squamata*	R
Swainson's hawk	*Buteo swainsoni*	M, SR
Turkey vulture	*Cathartes aura*	M, SR
Verdin	*Auriparus flaviceps*	R
Western kingbird	*Tyrannus verticalis*	M, SR
Western meadowlark	*Sturnella neglecta*	R
White-crowned sparrow	*Zonotrichia leucophrys*	M, WR
White-winged dove	*Zenaida asiatica*	R
Wild turkey	*Meleagris gallopavo*	R
Yellow-rumped warbler	*Setophaga coronata*	M, WR

(a) According to Lockwood and Freeman (2014)
(b) Nomenclature follows (Chesser et al., 2021)
(c) R – Resident: Occurring regularly in the same general area throughout the year-implies breeding
SR – Summer Resident: Implies breeding but may include nonbreeders
WR – Winter Resident: Occurring during winter season
M – Migrant: Occurs as a transient passing through the area either in spring or fall or both

3.7.5 Mammals

A representative list of common mammals that may occur in the Study Area is included as Table 3-3.

Table 3-3: Representative List of Mammalian Species of Potential Occurrence[a] in the Study Area

Common Name[b]	Scientific Name[b]
Cingulantans	
Nine-banded armadillo	*Dasypus novemcinctus*
Chiroptera	
American parastrelle	*Parastrellus hesperus*
Brazilian free-tailed bat	*Tadarida brasiliensis*
Cave myotis	*Myotis velifer*
Pallid bat	*Antrozous pallidus*

Common Name[b]	Scientific Name[b]
Carnivores	
American badger	*Taxidea taxus*
Bobcat	*Lynx rufus*
Common gray fox	*Urocyon cinereoargenteus*
Coyote	*Canis latrans*
Northern raccoon	*Procyon lotor*
Ringtail	*Bassariscus astutus*
Striped skunk	*Mephitis mephitis*
Artiodactyls	
Mule deer	*Odocoileus hemionus*
White-tailed deer	*Odocoileus virginianus*
Rodents	
Black-tailed prairie dog	*Cynomys ludovicianus*
Chihuahuan desert pocket mouse	*Chaetodipus eremicus*
Hispid cotton rat	*Sigmodon hispidus*
Merriam's kangaroo rat	*Dipodomys merriami*
Merriam's pocket mouse	*Perognathus merriami*
Ord's kangaroo rat	*Dipodomys ordii*
Rock pocket mouse	*Chaetodipus intermedius*
Rock squirrel	*Otospermophilus variegatus*
Southern plains woodrat	*Neotoma micropus*
Texas antelope squirrel	*Ammospermophilus interpres*
Western harvest mouse	*Reithrodontomys megalotis*
White-footed deermouse	*Peromyscus leucopus*
White-toothed woodrat	*Neotoma leucodon*
Yellow-faced pocket gopher	*Cratogeomys castanops*
Lagomorphs	
Black-tailed jackrabbit	*Lepus californicus*
Desert cottontail	*Sylvilagus audubonii*
Eastern cottontail	*Sylvilagus floridanus*

(a) According to Schmidly and Bradley (2016)
(b) Nomenclature follows Bradley et al. (2014)

3.8 Recreationally and Commercially Important Species

A species is considered important if one or more of the following criteria applies:

a. The species is recreationally or commercially valuable
b. The species is endangered or threatened
c. The species affects the well-being of some important species within criterion (a) or (b)
d. The species is critical to the structure and function of the ecological system
e. The species is a biological indicator

Wildlife resources within the Study Area provide human benefits resulting from both consumptive and nonconsumptive uses. Nonconsumptive uses include observing and photographing wildlife, bird watching, and other similar activities. These uses, although difficult to quantify, deserve consideration in the evaluation of the wildlife resources of the Study Area. Consumptive uses, such as fishing, hunting, and trapping, are more easily quantifiable. Consumptive and nonconsumptive uses of wildlife are often enjoyed contemporaneously and are generally compatible. Many species occurring in the Study Area provide consumptive uses, and all provide the potential for nonconsumptive benefits.

The white-tailed deer (*Odocoileus virginianus*) is the most economically important big game mammal in Texas (Schmidly and Bradley, 2016); however, the mule deer is more abundant in the region that contains the Study Area. The TPWD divides the State into ecological regions for deer management. Jeff Davis and Presidio Counties fall within the Trans Pecos, Mountains and Basins Ecological Region. During the 2019–2020 hunting season, an estimated 6,745 mule deer and 20,357 white-tailed deer were harvested within this ecological region (Purvis, 2020a).

The Trans Pecos, Mountains and Basins Ecological Region also provides habitat for a variety of economically and recreationally important upland game birds, including the mourning dove (*Zenaida macroura*), white-winged dove (*Zenaida asiatica*), scaled quail (*Callipepla squamata*), and wild turkey (*Meleagris gallopavo*). During the 2019–2020 hunting season, an estimated 58,904 mourning dove, 15,137 white-winged dove, 11,132 Eurasian collared-dove, and 24,080 scaled quail were harvested within this ecological region (Purvis, 2020b).

3.9 Endangered and Threatened Species

An endangered species is one that is in danger of extinction throughout all or a significant portion of its natural range, while a threatened species is one likely to become endangered within the foreseeable future throughout all or a significant portion of its range. A candidate species is one that is currently in the assessment process to determine if listing is appropriate using the listing factors in Section 4 of the ESA.

3.9.1 Federally Listed Plant Species

Available information from the USFWS (2023a), TPWD (2023c), and TPWD NDD (TPWD, 2023d) was reviewed to identify endangered or threatened plant species of potential occurrence within the Study Area. Currently, 35 plant species are listed by the USFWS as endangered or threatened species in Texas (USFWS, 2023b). The USFWS (2023a) and TPWD (2023c) county lists of endangered and threatened species indicate that five federally listed endangered, threatened, or candidate plant species may occur in Jeff Davis and Presidio Counties. These are the federally listed endangered Guadalupe fescue (*Festuca*

ligulata) and Little Aguja pondweed (*Potamogeton clystocarpus*), and the threatened Hinckley oak (*Quercus hinckleyi*), Lloyd's mariposa cactus (*Sclerocactus mariposensis*), and Wright's (marsh) thistle (*Cirsium wrightii*).

3.9.1.1 Guadalupe Fescue

Guadalupe fescue is a short-lived perennial grass species found only in a few high mountains of the Chihuahuan Desert, west of the Pecos River in Texas and in the State of Coahuila, Mexico. Its habitat consists of conifer-oak woodlands above 5,905 feet elevation. In Texas, current known populations exist only in Big Bend National Park (USFWS, 2017). It is unlikely that this species would occur in the Study Area due to its restricted range and lack of suitable habitat within the Study Area.

3.9.1.2 Little Aguja Pondweed

Little Aguja pondweed, a submersed aquatic perennial, is endemic to the Davis Mountains of Jeff Davis County in Trans-Pecos Texas. It occurs in still or slowly flowing water of pools in intermittent creeks and rooted in sand and gravel from the surrounding mountains (Poole et al., 2007). It is extremely unlikely that this species would occur in the Study Area due to its restricted range and lack of suitable habitat within the Study Area.

3.9.1.3 Hinckley Oak

The Hinckley oak is a dwarf evergreen shrub that is endemic to the State of Chihuahua (Mexico) and the Chihuahuan Desert in Brewster and Presidio Counties in West Texas. It grows on Creosote bush-mariola or lechuguilla-sotol shrublands on arid limestone slopes at mid-elevations (Poole et. al, 2007). No documented records exist from the Study Area (TPWD, 2023d), and although unlikely, the species may occur within the Study Area in areas of suitable habitat.

3.9.1.4 Lloyd's Mariposa Cactus

Lloyd's mariposa cactus is a small, subglobose cactus that grows among low shrubs and rosette-forming perennials in gravelly or rocky soils on arid slopes in thin Boquillas limestone soils with an elevation of 2,450 to 3,450 feet (Poole et al., 2007). It occurs in Chihuahuan Desert Shrublands on gravelly or rocky limestone slopes in Brewster and Presidio Counties in Texas, and in the Mexican States of Coahuila and Nuevo León (TPWD, 2023e). It is unlikely that this species would occur in the Study Area due to its restricted range and lack of suitable habitat within the Study Area.

3.9.1.5 Wright's (Marsh) Thistle

Wright's (marsh) thistle is a wetland plant that occurs in wet meadows associated with alkaline springs and seeps (cienegas), and marshy edges of streams and ponds between 3,450 and 7,850 feet in elevation. The species was historically known to occur in Arizona and New Mexico in the United States, and Chihuahua and Sonora in Mexico. Historic reports of the species from Texas were common; however, the majority of the specimens have been found to be other *Cirsium* species. At least two herbarium specimens collected in Texas from Presidio and Pecos Counties have been determined to be Wright's thistle (USFWS, 2023c). It is unlikely that this species would occur in the Study Area due to its restricted range and lack of suitable habitat within the Study Area.

3.9.1.6 Sensitive Plant Communities

No sensitive plant communities have been specifically identified by either the USFWS or TPWD as occurring within the Study Area (USFWS, 2023a; TPWD 2023c, 2023d).

3.9.2 Federally Listed Fish and Wildlife Species

The USFWS (2023a) and TPWD (2023c) county lists of endangered and threatened species indicate that 17 federally listed endangered/threatened, proposed for listing, or candidate fish and wildlife species may occur in Jeff Davis and Presidio Counties (Table 3-4). Additionally, one species (the Rio Grande silvery minnow) is listed as an experimental population (nonessential) in Jeff Davis and Presidio Counties and is only provided protection under the ESA in National Wildlife Refuges and National Parks. Protection under the ESA can also include protection of habitat designated as critical habitat for supporting a listed species. It should be noted that inclusion in this table does not necessarily mean that a species is known to occur in the Study Area, but only acknowledges the potential for its occurrence, based on historic records, known ranges, and presence of potential habitat. Only those species that USFWS lists as endangered or threatened have Federal protection under the ESA. Most avian species are protected under the MBTA, and bald and golden eagles are protected under the BGEPA.

Table 3-4: Federally Listed Fish and Wildlife Species for Jeff Davis and Presidio Counties[a]

Common Name	Scientific Name[b]	Status	Potential for Occurrence in the Study Area
		USFWS	
Birds			
Northern aplomado falcon	*Falco femoralis septentrionalis*	Endangered	Not likely[d]
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	Not likely
Mexican spotted owl	*Strix occidentalis lucida*	Threatened	Not likely
Piping plover[c]	*Charadrius melodus*	Threatened	Not likely[d]

Common Name	Scientific Name[b]	Status	Potential for Occurrence in the Study Area
		USFWS	
Red knot[c]	*Calidris canutus rufa*	Threatened	Not likely[d]
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	Threatened	Not likely[d]
Crustaceans			
Diminutive amphipod[f]	*Gammarus hyalleloides*	Endangered	Does not occur
Fishes			
Comanche Springs pupfish[f]	*Cyprinodon elegans*	Endangered	Does not occur
Pecos gambusia	*Gambusia nobilis*	Endangered	Does not occur
Rio Grande silvery minnow	*Hybognathus amarus*	Experimental population[e]	Does not occur
Insects			
Monarch butterfly	*Danaus plexippus*	Candidate	Likely
Mammals			
Mexican long-nosed bat[f]	*Leptonycteris nivalis*	Endangered	Not likely[d]
Tricolored bat	*Perimyotis subflavus*	Proposed endangered	Not likely[d]
Mollusks			
Phantom springsnail[f]	*Pyrgulopsis texana*	Endangered	Does not occur
Phantom tryonia[f]	*Tryonia cheatumi*	Endangered	Does not occur
Texas hornshell[f]	*Popenaias popeii*	Endangered	Does not occur
Mexican fawnsfoot[f]	*Truncilla cognata*	Proposed endangered	Not likely
Salina mucket[f]	*Potamilus metnecktayi*	Proposed endangered	Not likely

(a) According to USFWS (2023a) and TPWD (2023c, 2023d)
(b) Nomenclature follows Bradley et al. (2014), Crother et al. (2017), USFWS (2023a), and TPWD (2023c)
(c) Only needs to be considered for wind energy projects
(d) Only expected to occur as a migrant, transient, or rare vagrant within the Study Area
(e) In Texas: in Rio Grande from Little Box Canyon to Amistad Dam
(f) Not listed by USFWS (2023a) as occurring in the Study Area

The TPWD county list for Presidio County shows the Texas hornshell to be federally listed as endangered. The USFWS (2023a) lists the Texas hornshell in four Texas counties but does not list them for Jeff Davis County or Presidio County. In addition to their Federal status, TPWD also lists 13 of the 15 species included in Table 3-4 as State threatened or endangered. The western yellow-billed cuckoo, monarch butterfly, and tricolored bat are not State listed by TPWD.

3.9.2.1 Northern Aplomado Falcon

The northern aplomado falcon is a small raptor that inhabits coastal prairies, desert grasslands, and open woodlands, where it nests on stick platforms constructed on yuccas, tree branches, and utility poles, often using abandoned raptor or corvid nests (Keddy-Hector, 2000). The species ranges from South America, north to the southwestern U.S. Aplomado falcons historically occurred in coastal grasslands in south Texas and desert grasslands in parts of the Southwest, but populations declined during the mid-Twentieth century, resulting in extirpation from the U.S. However, various conservation groups have been successful in reintroducing the species at more than a dozen sites along the Texas Gulf Coast from Matagorda County to Cameron County. Since 1985, these efforts have led to the release of over 100 captive-reared aplomado falcons at selected sites on the central Texas coast, in the Lower Rio Grande Valley, and the Trans-Pecos. This species is now a rare resident along the Coastal Prairies from western Matagorda County southward, including associated barrier islands (Lockwood and Freeman, 2014). Although unlikely, this species may occur in the Study Area as a rare vagrant; however, it is unlikely that this species resides or nests within the Study Area.

3.9.2.2 Southwestern Willow Flycatcher

The Southwestern willow flycatcher is generally considered a riparian habitat specialist and can occur at elevations ranging from seal level to 8,000 feet. It requires at least a 30-foot width of riparian habitat, presence of water or saturated soils, and thick vegetation from ground level up to 14 meters in height, usually a monotypic plant community consisting of Russian olive (*Elaeagnus angustifolia*), saltcedar (*Tamarix ramosissima*), cottonwood (*Populus deltoides*), alder (*Alnus* sp.), or common buttonbush (*Cephalanthus occidentalis*) (Finch et al., 2000). In Texas, the willow flycatcher was formerly a rare summer resident in the central and western Trans-Pecos (Lockwood and Freeman, 2014). No documented records of the willow flycatcher exist from the Study Area (TPWD, 2023d; eBird, 2023), and it is extremely unlikely that this species would occur in the Study Area due to a lack of suitable habitat.

3.9.2.3 Mexican Spotted Owl

The Mexican spotted owl occurs in disjunct localities that correspond to isolated forested mountain systems, forested canyons, and in some cases steep, rocky canyonlands throughout the southwestern U.S. and Mexico (USFWS, 2012). In Texas, the Mexican spotted owl is a rare and local resident in wooded canyons in the Guadalupe and Davis Mountains of the Trans-Pecos (Lockwood and Freeman, 2014). No documented records of the spotted owl exist from the Study Area (TPWD, 2023d; eBird, 2023), and it is extremely unlikely that this species would occur in the Study Area due to its restricted range and a lack of suitable habitat.

3.9.2.4 Piping Plover

The piping plover is a small shorebird that inhabits sandy beaches and alkali flats (Cornell Lab of Ornithology, 2022). Approximately 35 percent of the known global population of the piping plover winters along the Texas Gulf Coast, where the plovers spend 60 to 70 percent of the year (Campbell, 2003). The piping plover population that winters in Texas breeds on the northern Great Plains and around the Great Lakes. The species is an uncommon to locally common winter resident along the coastal areas of Texas and can linger through the summer on very rare occasions (Lockwood and Freeman, 2014). No documented records of the piping plover exist from the Study Area (TPWD, 2023d; eBird, 2023), and it is extremely unlikely that this species would occur in the Study Area.

3.9.2.5 Red Knot

The red knot is a medium-sized, stocky, short-necked sandpiper with a rather short straight bill. The *rufa* subspecies, one of three subspecies occurring in North America, has one of the longest migration distances known, travelling between its breeding grounds in the central Canadian Arctic to wintering areas that are primarily in South America (USFWS, 2011). During migration and winter in Texas, red knots may be found feeding in small groups on sandy, shell-lined beaches, and to a lesser degree, on flats of bays and lagoons (Oberholser, 1974). It is an uncommon migrant along the coast, especially the Upper Texas coast, and very rare to casual inland, primarily in the eastern half of the State (Lockwood and Freeman, 2014). No documented records of the red knot exist from the Study Area (TPWD, 2023d; eBird, 2023), and it is extremely unlikely that this species would occur in the Study Area.

3.9.2.6 Western Yellow-billed Cuckoo

The western yellow-billed cuckoo is a medium-sized brown bird that breeds in riparian habitat and associated drainages, and deciduous woodlands with dense willow and cottonwood stands. The status applies only to the western populations beyond the Pecos River Drainage, which have suffered major declines in the 20th century due to habitat loss and fragmentation, local extinctions, and low colonization rates (Laymon and Halterman, 1987). No documented records exist from the Study Area (TPWD, 2023d; eBird, 2023), and the species is not expected to occur within the Study Area due to the general absence of suitable habitat.

3.9.2.7 Diminutive Amphipod

The diminutive amphipod is a crustacean limited to spring outflows in the San Solomon Springs system near Balmorhea in Reeves and Jeff Davis Counties, Texas. In 2013, the USFWS designated San Solomon, Giffin, and East Sandia Springs in Reeves County and Phantom Lake Spring in Jeff Davis County, a total

of 9.2 acres, as a critical habitat unit for the diminutive amphipod, phantom springsnail, and phantom tryonia (USFWS, 2013). This species does not occur in the Study Area due to its restricted range.

3.9.2.8 Comanche Springs Pupfish

The Comanche Springs pupfish historically occurred in Comanche Springs near Fort Stockton, Texas, but these fish died when the springs went dry in 1955. This rare species is now found only in the springs near Balmorhea, Texas (TPWD, 2023f). The Comanche Springs pupfish does not occur in the Study Area due to its restricted range.

3.9.2.9 Pecos Gambusia

The Pecos gambusia is restricted to isolated aquatic areas in Diamond Y Spring and its outflow stream, Leon Creek, north of Fort Stockton, and springs and the manmade ciénega near Balmorhea (Hubbs et al., 2008; TPWD, 2023g). This species does not occur in the Study Area due to its restricted range.

3.9.2.10 Rio Grande Silvery Minnow

The Rio Grande silvery minnow, which prefers large streams with slow to moderate current, is restricted to just a few locations of the Rio Grande in New Mexico. Although it was once abundant throughout the Rio Grande and Pecos basins, it is apparently now extinct in Texas (USFWS, 2023d). This species does not occur in the Study Area due to its restricted range.

3.9.2.11 Monarch Butterfly

Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. The bright coloring of a monarch serves as a warning to predators that eating them can be toxic. Texas is an important state in monarch migration because it is situated between the principal breeding grounds in the north and the overwintering areas in Mexico. Monarchs funnel through Texas both in the fall (September–November) and the spring (March). Early each March, overwintering monarchs begin arriving from their overwintering grounds in Mexico. Seeking emerging milkweeds (*Asclepias* spp.), they move through Texas laying eggs before dying. Their offspring continue heading north, leaving most of Texas behind, the first of several new generations of monarchs that repopulate the eastern half of the U.S. and southern Canada. Most adult butterflies live approximately 2 to 5 weeks; overwintering adults, however, enter into reproductive diapause (suspended reproduction) and live 6 to 9 months (USFWS 2023e; TPWD, 2023h). The monarch butterfly may be found within the Study Area during migration but would not be expected outside this period.

3.9.2.12 Mexican Long-nosed Bat

The Mexican long-nosed bat is a highly colonial, cave-dwelling, migratory bat that inhabits deep caverns. The species has been recorded in the U.S. in southwestern New Mexico and Trans-Pecos, Texas, where it has been captured in Big Bend National Park in Brewster County and in the Chinati Mountains of Presidio County (Schmidly and Bradley, 2016). Although occasionally found in desert scrub habitats at lower elevations, these bats prefer mountainous, pine-oak habitats at elevations of 1,500 to 2,300 meters where they reside from June to August, after which they migrate south to winter in Mexico (Schmidly, 1991). No documented records exist from the Study Area (TPWD, 2023d), and the species is not expected to occur within the Study Area due to the general absence of suitable habitat.

3.9.2.13 Tricolored Bat

The tricolored bat, one of the smallest bats in eastern North America, is a small insectivorous bat that is distinguished by its unique tricolored fur and often appears yellowish to nearly orange. The once-common species is wide ranging across the eastern and central U.S. and portions of southern Canada, Mexico, and Central America. It is found in 39 States, including Texas. During the winter, tricolored bats are often found in caves and abandoned mines, although in the southern U.S., where caves are sparse, tricolored bats are often found roosting in road-associated culverts and sometimes in tree cavities and abandoned water wells. During summer the tricolored bat forages along forest edges and over ponds and waterways for small insects, and the sexes live separately; males are often solitary while females form small maternity colonies of 35 individuals or less in buildings, tree cavities, and rock crevices. Tricolored bats face extinction due primarily to the rangewide impacts of white-nose syndrome, a deadly disease affecting cave-dwelling bats across the continent (USFWS, 2023f). The tricolored bat would not be expected in the Study Area due to the species most western range lying along the easternmost edge of the Study Area. They would only be expected in appropriate habitat within the Study Area as a transient or vagrant.

3.9.2.14 Phantom Springsnail

The phantom springsnail is limited to spring outflows, where it is most commonly attached to hard surfaces, especially large algae-covered rocks, in the San Solomon Springs system near Balmorhea in Reeves and Jeff Davis Counties, Texas. In 2013, the USFWS designated San Solomon, Giffin, and East Sandia springs in Reeves County and Phantom Lake Spring in Jeff Davis County, a total of 9.2 acres, as a critical habitat unit for the diminutive amphipod, phantom springsnail, and phantom tryonia (USFWS, 2013). This species does not occur in the Study Area due to its restricted range.

3.9.2.15 Phantom Tryonia

The phantom tryonia is a small freshwater snail limited to spring outflows in the San Solomon Springs system near Balmorhea in Reeves and Jeff Davis Counties, Texas. In 2013, the USFWS designated San Solomon, Giffin, and East Sandia springs in Reeves County and Phantom Lake Spring in Jeff Davis County, a total of 9.2 acres, as a critical habitat unit for the diminutive amphipod, phantom springsnail, and phantom tryonia (USFWS, 2013). This species does not occur in the Study Area due to its restricted range.

3.9.2.16 Texas Hornshell

The Texas hornshell is a freshwater mussel that most often occurs in crevices, undercut riverbanks, travertine shelves, and the base of small boulders where small-grained material gathers and provides suitable substrata for anchoring (Carman, 2007). Historically, populations of this species in Texas existed in the Rio Grande and Pecos Rivers. While individuals have been found more recently in additional areas in southwestern Texas, no documented records of this species exist in the Study Area (TPWD, 2023d). The Texas hornshell does not occur within the Study Area due to a lack of suitable habitat.

3.9.2.17 Mexican Fawnsfoot

The Mexican fawnsfoot, which historically occurred in a large section of the Rio Grande system, currently inhabits only a small section of the lower Rio Grande in Laredo, Texas. The species may be nearly extinct as the 2002 discoveries of two living specimens marked the first living documentation of the species in three decades (Howells, 2004). The Study Area is outside of the species' known range, and it is unlikely to occur in the Study Area.

3.9.2.18 Salina Mucket

The Salina mucket historically occurred in the Rio Grande as far north and west as New Mexico and as far south as northern Mexico, inhabiting flowing streams and rivers with sand and gravel substrates. Currently, the species is known from the Rio Grande in Brewster County, Texas, downstream to below the Falcon Dam in Starr County, Texas, and a few sites along the border with and into Mexico (Howells et al., 1996). The Study Area is outside of the species' known range, and it is unlikely to occur in the Study Area.

3.9.2.19 Critical Habitat

The USFWS, in Section 3(5)(A) of the ESA, defines critical habitat as:

> *"(i) the specific areas within the geographical area occupied by the species, at the time that it is listed in accordance with the ESA, on which are found those physical or biological features (I)*

essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination by the Secretary of the Interior that such areas are essential for the conservation of the species" (USFWS, 1973).

No critical habitat has been designated in the Study Area for any species included under the ESA.

3.9.3 State-Listed Plant Species

Available information from the TPWD (2023c), and TPWD's NDD (TPWD, 2022d) was reviewed to identify endangered or threatened State-listed plant species of potential occurrence within the Study Area. The TPWD (2023c) county lists of endangered and threatened species indicate that one State-listed endangered, threatened, or candidate plant species, the State-listed threatened Livermore sweet-cicely (*Osmorhiza bipatriata*), may occur in Jeff Davis County; however, no State-listed plant species are listed for Presidio County.

Livermore sweet-cicely, a member of the carrot family, occurs in moist igneous-derived soils of shaded rocky slopes around springs in high mountain canyons. In Texas, the species is only known from Madera Canyon in the Davis Mountains in Jeff Davis County (Poole et al., 2007). Due to this species' restricted range and a lack of suitable habitat, it is unlikely to occur within the Study Area.

3.9.4 State-Listed Fish and Wildlife Species

State-listed species receive protection under State laws, such as Chapters 67, 68, and 88 of the TPWD Code, and sections 65.171–65.184 and 69.01–69.14 of Title 31 of the Texas Administrative Code. Twenty-three species are protected at the State level and designated as threatened within Jeff Davis and Presidio Counties (Table 3-5) (TPWD, 2023c).

Table 3-5: State-Listed Fish and Wildlife Species for Jeff Davis and Presidio Counties[a]

Common Name	Scientific Name[b]	Status	Potential for Occurrence in the Study Area
		TPWD	
Birds			
American peregrine falcon	*Falco peregrinus anatum*	Threatened	Not likely[c]
Common black hawk	*Buteogallus anthracinus*	Threatened	Likely
Gray hawk	*Buteo plagiatus*	Threatened	Likely
White-faced ibis	*Plegadis chihi*	Threatened	Not likely
Zone-tailed hawk	*Buteo albonotatus*	Threatened	Likely
Fishes			
Chihuahua shiner	*Notropis chihuahua*	Threatened	Not likely

Common Name	Scientific Name[b]	Status TPWD	Potential for Occurrence in the Study Area
Conchos pupfish	*Cyprinodon eximius*	Threatened	Not likely
Headwater catfish	*Ictalurus lupus*	Threatened	Not likely
Mexican stoneroller	*Campostoma ornatum*	Threatened	Not likely
Rio Grande chub	*Gila pandora*	Threatened	Does not occur
Rio Grande shiner	*Notropis jemezanus*	Threatened	Not likely
Roundnose minnow	*Dionda episcopa*	Threatened	Not likely
Speckled chub	*Macrhybopis aestivalis*	Threatened	Not likely
Tamaulipas shiner	*Notropis braytoni*	Threatened	Not likely
Mammals			
Black bear	*Ursus americanus*	Threatened	Not likely[c]
Tawny-bellied cotton rat	*Sigmodon fulviventer*	Threatened	Not likely
Mollusks			
Limpia Creek springsnail	*Pyrgulopsis davisi*	Threatened	Not likely
Metcalf's tryonia	*Tryonia metcalfi*	Threatened	Not likely
Presidio County springsnail	*Pyrgulopsis metcalfi*	Threatened	Not likely
Reptiles			
Mexican Plateau mud turtle	*Kinosternon hirtipes murrayi*	Threatened	Not likely
Greater short-horned lizard	*Phrynosoma hernandesi*	Threatened	Not likely
Texas horned lizard	*Phrynosoma cornutum*	Threatened	Likely
Trans-Pecos black-headed snake	*Tantilla cucullata*	Threatened	Likely

(a) According to USFWS (2023a) and TPWD (2023c, 2023d).
(b) Nomenclature follows Bradley et al. (2014), Crother et al. (2017), USFWS (2023a), and TPWD (2023c)
(c) Only expected to occur as a migrant, transient, or rare vagrant within the Study Area.

3.9.4.1 American Peregrine Falcon

The peregrine falcon was removed from Federal listing under the ESA by the USFWS in 1999. The TPWD also revised the status of the subspecies American peregrine falcon (*Falco peregrinus anatum*) from endangered to threatened and dropped the subspecies Arctic peregrine falcon (*Falco peregrinus tundrius*) from the State endangered and threatened list altogether. The American peregrine falcon is a rare summer resident in the mountains of Trans-Pecos in Texas (Lockwood and Freeman, 2014). Although the TPWD (2023d) has no records from the Study Area, the species may occasionally traverse the Study Area in the summer but would not be expected to nest within the Study Area due to a lack of appropriate habitat.

3.9.4.2 Common Black Hawk

The common black hawk is a rare and local summer resident found riparian habitat in the Davis Mountains in the Trans-Pecos, with additional small nesting populations along the Rio Grande in southern Brewster and adjacent Presidio Counties, along the Devils River in central Val Verde County, and in the Concho Valley (Lockwood and Freeman, 2014). Recent documented records of the common black hawk exist from the Study Area (eBird, 2023), and the species is likely to occur in the Study Area.

3.9.4.3 Gray Hawk

The gray hawk is a neotropical raptor whose range reaches its northernmost limits along the U.S.-Mexico border. Gray hawks inhabit mature riparian woodlands and nearby mesquite and scrub grasslands (Oberholser, 1974). In West Texas, the species is a rare and local summer resident in the Trans-Pecos in the Davis Mountains and at Big Bend National Park and very rare west along the Rio Grande in Presidio County (Lockwood and Freeman, 2014). Recent documented records of the gray hawk exist from the Study Area (eBird, 2023), and the species is likely to occur in the Study Area.

3.9.4.4 White-faced Ibis

The white-faced ibis is a medium-sized wading bird that inhabits freshwater marshes, sloughs, and irrigated rice fields, but also frequents brackish and saltwater habitats (Ryder and Manry, 1994). White-faced ibis are permanent residents along the Texas Gulf Coast with nesting records existing from areas away from the coast as far north as the Panhandle (Lockwood and Freeman, 2014). The species is a rare to uncommon migrant throughout the State and occasionally occurs as a postbreeding visitor north and west of its typical range. The white-faced ibis has been documented within the Study Area (eBird, 2023), and although unlikely, the species may occasionally occur within the Study Area.

3.9.4.5 Zone-tailed Hawk

The zone-tailed hawk is an uncommon and local summer resident in the mountains of the central Trans-Pecos, east through the southern Edwards Plateau regions of Texas and is a rare migrant and winter resident in the Lower Rio Grande Valley (Lockwood and Freeman, 2014). Zone-tailed hawks have been documented within the Study Area (eBird, 2023), and the species is likely to occur within the Study Area.

3.9.4.6 Chihuahua Shiner

The Chihuahua shiner, an inhabitant of clear, cool desert spring waters, has been recorded only from the Rio Conchos in Mexico and minor tributaries of the Rio Grande in the Big Bend region of Texas. It is typically found in riffle and pool complexes over coarse substrata (Lee et al., 1980; Hubbs et al, 2008).

Due to this species' restricted range and a lack of suitable habitat it is unlikely to occur within the Study Area.

3.9.4.7 Conchos Pupfish

The Conchos pupfish, a resident of the Devil's River and Alamito Creek in Texas (Hubbs et al., 2008), prefers shallow water on bedrock shelves and in coves and backwaters over soft bottoms, where current is negligible (TPWD, 2023c). Currently, this species is known from Alamito Creek; however, due to the ephemeral nature of Alamito Creek within the Study Area, it is not expected to occur.

3.9.4.8 Headwater Catfish

The headwater catfish is a freshwater fish that inhabits spring-fed rivers and creeks in riffles, runs, and pools. In Texas, the species occurs in the Pecos River and Rio Grande drainages and was once widespread throughout Central Texas; however, it is now thought extirpated from this area (Thomas et al., 2007). Although unlikely, the species could possibly occur in Study Area creeks within suitable habitat.

3.9.4.9 Mexican Stoneroller

The Mexican stoneroller, a member of the minnow family (*Cyprinidae*), is predominately found in the Chihuahuan region of Mexico, though its range extends into west Texas and southern Arizona. The species occupies clear riffle and pool complexes in small to mid-sized streams with gravelly or sandy substrata (Lee et al., 1980). Due to this species' restricted range and a lack of suitable habitat, it would not be expected to occur within the Study Area.

3.9.4.10 Rio Grande Chub

The Rio Grande chub is found in headwaters, creeks, and small rivers in limited areas of the Rio Grande and Pecos basins in New Mexico and southern Colorado. In Texas, an isolated population occurs in Little Aguja Creek (Nations Canyon) in the Davis Mountains (Hassan-Williams and Bonner, 2013). Due to this species' restricted range and a lack of suitable habitat, it does not occur within the Study Area.

3.9.4.11 Rio Grande Shiner

The Rio Grande shiner is typically found in large rivers or creeks, and prefers turbid water over a substrate of rubble, gravel, and sand, often overlain with silt (Lee et al., 1980). Currently, this species is known in Texas from the Rio Grande basin (Thomas et al., 2007); however, due to the ephemeral nature of the streams within the Study Area, it is not expected to occur.

3.9.4.12 Roundnose Minnow

The roundnose minnow, which can reach up to 3 inches in length, is found in headwaters, rivers, and creeks in pools and runs (Thomas et al., 2007). In Texas, the species is known to occur in the Rio Grande and Pecos River basins and additionally, a reported collection of the species exists from Limpia Creek at Fort Davis in Jeff Davis County (Schonhuth et al., 2008). Although a 1988 record occurs in Cienega Creek, the species would not be expected to occur due to the ephemeral nature of the creeks within the Study Area.

3.9.4.13 Speckled Chub

The speckled chub is found in runs of rivers and creeks with the Rio Grande and Pecos River basins (Thomas et al., 2007). In Texas, the species is found primarily in the Rio Grande between the confluence with the Rio Conchos and the Pecos River (Hubbs et al., 2008). Due to this species' restricted range and a lack of suitable habitat, it would not be expected to occur within the Study Area.

3.9.4.14 Tamaulipas Shiner

The Tamaulipas shiner, which can reach up to 2.8 inches in length, is found in river and creek channels in the Rio Grande basin (Thomas et al., 2007). The species is typically found in large rivers or large creeks with rubble, gravel, and sand bottom, often overlain with silt (Lee et al., 1980). Due to the lack of suitable habitat and the ephemeral nature of the creeks within the Study Area, it is not expected to occur.

3.9.4.15 Black Bear

Formerly widespread throughout the State, the American black bear is now restricted to mountainous areas of the Trans-Pecos region and the far southwestern edge of the Edwards Plateau. The USFWS delisted the Louisiana black bear (*Ursus americanus luteolus*); however, the TPWD still lists the black bear as threatened in Jeff Davis and Presidio Counties (TPWD, 2023c). While the black bear may occasionally occur in the region, the species is unlikely to occur regularly in the Study Area.

3.9.4.16 Tawny-bellied Cotton Rat

The tawny-bellied cotton rat is a small to medium-sized cotton rat with brownish, buff brown, or fulvous underparts. In the United States, it is known to occur in grassland habitats in southeastern Arizona and southwestern New Mexico to the middle Rio Grande Valley. In Texas, this species is only known from an isolated population that was first recorded in 1991 near Fort Davis. Subsequent attempts to document it in the same place and surrounding areas have failed, suggesting that it is extremely rare or extirpated in Texas (Schmidly and Bradley, 2016). Due to its limited population and range in Texas, it is unlikely that this species occurs in the Study Area.

3.9.4.17 Limpia Creek Springsnail

The Limpia Creek spring snail, a small freshwater snail, is only known from a single population in a tributary of Limpia Creek about 5 miles northeast of Fort Davis in Jeff Davis County (NatureServe, 2022). Due to its limited population and restricted range in Texas, it is unlikely that this species occurs in the Study Area.

3.9.4.18 Metcalf's Tryonia

The Metcalf's tryonia is a freshwater snail found on mud, decaying vegetation, and on the undersides of rocks. The species is endemic to a single locality along the east side of the Rio Grande above the mouth of the Rio Conchos; the locality is a complex of small seeps that discharges into a broad arroyo in La Cienega in Presidio County, Texas (Zootaxa, 2011). The Study Area is outside of the species' known range, and it is unlikely to occur in the Study Area.

3.9.4.19 Presidio County Springsnail

The Presidio County spring snail, a very small or minute species, is found in the outflows of springs with a temperature of approximately 75 degrees in fine mud and dense watercress (Glenn, 2006; TPWD, 2023c). Due to the lack of suitable habitat and the ephemeral nature of the creeks within the Study Area, it is not expected to occur.

3.9.4.20 Mexican Plateau Mud Turtle

The Mexican plateau mud turtle is common in Mexico, but rare in the U.S., restricted to the Alamito Creek drainage in Presidio County (Dixon, 2013). The species' habitat includes cattle tanks, stock ponds, and creeks, where it resides in bodies of freshwater with abundant aquatic vegetation (TPWD, 2023c). The Study Area is outside of the species' known range, and it is unlikely to occur in the Study Area.

3.9.4.21 Greater Short-horned Lizard

In Texas, the greater short-horned lizard only resides in higher elevations, in the forests of the Davis and Guadalupe mountains (TPWD, 2023i). The diurnal species, which may cover itself with soil at night, inhabits forested areas or semiarid plains with sandy soil and pebbles (Garrett and Barker, 1987). It is unlikely that this species would occur in the Study Area due to a lack of suitable habitat.

3.9.4.22 Texas Horned Lizard

The Texas horned lizard occurs throughout the western half of the State in a variety of habitats but prefers arid and semiarid environments in sandy loam or loamy sand soils that support patchy bunchgrasses, cacti, yucca, and various shrubs (Henke and Fair, 2017). While the species has almost vanished from the

eastern half of the State over the past 30 years, it still maintains relatively stable numbers in west Texas. Although TPWD (2023d) shows no documented records within the Study Area for this species, the Texas horned lizard may occur in small numbers in suitable habitat within the Study Area.

3.9.4.23 Trans-Pecos Black-headed Snake

The Trans-Pecos black-headed snake is a nocturnal species that spends much of its time buried in moist leaf litter within semiarid forested regions or under rock and debris. Dixon (2013) demonstrated that *Tantilla rubra* is a Mexican species, and that the races of *rubra* in Texas (*cucullata* and *diabolica*) are examples of polymorphism within a single population. TPWD (2023d) shows a documented record within the Study Area for this species, and the species may occur in small numbers in suitable habitat within the Study Area.

3.10 Socioeconomics

This section presents a summary of economic and demographic characteristics of Jeff Davis and Presidio Counties and provides a brief comparison with the socioeconomic environment of the State of Texas. Reviewed literature sources include publications of the U.S. Census Bureau, the U.S. Bureau of Labor Statistics (BLS), the Texas Demographic Center (TDC), and the Texas Workforce Commission (TWC).

3.10.1 Population Trends

As shown in Table 3-6, the populations of both Jeff Davis and Presidio Counties have fluctuated over the last 30 years. According to Census data, each county recorded marginal growth between 1990 and 2010, but ultimately recorded population declines by 2020. Comparatively, the State's population increased by more than 12 million, or 72 percent, during the same period (U.S. Census Bureau, 2012, 2020).

According to TDC projections, the populations of Jeff Davis and Presidio Counties are expected to experience additional population losses. In fact, the TDC places Jeff Davis and Presidio Counties in the bottom 10 counties in the State for projected percent population change between 2010 and 2050, ranking 249th and 254th, respectively. Although Texas is generally characterized by rapid and high growth rates, counties experiencing the greatest population losses are mostly located in rural and sparsely populated areas in parts of east, west, and south Texas (TDC, 2019). As shown in Table 3-6, Jeff Davis County's population is projected to decrease by 645 (32 percent) and Presidio County's population is projected to decrease by 1,584 (26 percent) between 2020 and 2040. By comparison, the State's population is expected to grow by more than 4.6 million (16 percent) during that same period (TDC, 2022).

Table 3-6: Population Trends and Projections

Place	Population					
	1990	2000	2010	2020	2030	2040
Jeff Davis County	1,946	2,207	2,342	1,996	1,716	1,351
Presidio County	6,637	7,304	7,818	6,131	5,220	4,547
Texas (in 1000s)	16,986	20,852	25,146	29,145	31,621	33,772

Source: U.S. Census Bureau (2012, 2020); TDC (2022)

3.10.2 Employment

As shown in Table 3-7, the labor force in Jeff Davis and Presidio Counties reflects the fluctuation of each county's population. The labor force grew with the population increases between 1990 and 2010, then decreased as the populations declined between 2010 and 2020. By comparison, the State's labor force increased approximately 5.3 million, or 62 percent, between 1990 and 2020 (BLS, 2021).

Table 3-7 also shows that unemployment in Jeff Davis County has been recorded below the Statewide average, while Presidio County's unemployment has historically been recorded well above the State's average (BLS, 2021).

Table 3-7: Labor Force and Unemployment

Place		1990	2000	2010	2020
Jeff Davis County					
	Labor Force	861	1,166	1,274	975
	Unemployment Rate	3.0%	3.9%	4.9%	5.1%
Presidio County					
	Labor Force	3,113	3,200	3,750	3,231
	Unemployment	14.9%	16.8%	18.5%	14.7%
State of Texas					
	Labor Force	8,610	10,388	12,260	13,983
	Unemployment Rate	6.4%	4.4%	8.2%	7.6%

Source: BLS (2021)

3.10.3 Leading Economic Sectors

Covered employment data incorporates the number of workers covered by State unemployment insurance and most agricultural employees within a county. The employment count includes all corporation