September 2018

CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC

Bailey to Jones Creek Transmission Line Project
Environmental Assessment and Alternative Route Analysis

Brazoria, Matagorda and Wharton Counties, Texas

PROJECT NUMBER:
147806

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Bailey to Jones Creek Transmission Line Project

PREPARED FOR: CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC
PREPARED BY: POWER ENGINEERS, INC. (HOUSTON, TEXAS)

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EXECUTIVE SUMMARY

CenterPoint Energy Houston Electric, LLC ("CenterPoint Energy") proposes to construct a new 345 kilovolt ("kV") double-circuit transmission line located in Brazoria, Matagorda and Wharton Counties, Texas, that would extend for approximately 53.9 to 84.3 miles from CenterPoint Energy's existing Bailey Substation located in eastern Wharton County to the existing Jones Creek Substation located in southeastern Brazoria County. The Bailey Substation is located in Wharton County, approximately one mile east of the intersection of State Highway ("SH") 60 and Bailey Road. The Jones Creek Substation is located in Brazoria County, 0.6 mile north of the intersection of SH 36 and County Road 217. CenterPoint Energy retained POWER Engineers, Inc. ("POWER") to prepare this Environmental Assessment and Alternative Route Analysis to support the Public Utility Commission of Texas ("PUC") application for a Certificate of Convenience and Necessity for the proposed project.

POWER, with input from CenterPoint Energy, identified the study area boundaries utilizing the two initial endpoints, as well as potential paralleling features and constraints. CenterPoint Energy provided the location of its existing 138 kV and 345 kV transmission line corridors. Data collection was conducted to identify the environmental and land use constraints within the study area that were pertinent to the identification of preliminary transmission line segments. Data collection activities included a review of readily available data, coordination with federal and state regulatory agencies and local officials and reconnaissance surveys from public viewpoints. POWER and CenterPoint Energy initially identified 261 geographically diverse preliminary transmission line segments that were presented at three public meetings in February 2018 to solicit public input. Input received from the public meetings, local agencies and reconnaissance surveys in conjunction with consideration of the project objectives, including geographic diversity, resulted in the identification of 30 proposed alternative routes.

The potential environmental and land use impacts for each proposed alternative route were tabulated by POWER for each evaluation criteria. CenterPoint Energy provided the engineering review and estimated construction cost for each proposed alternative route. The proposed transmission line routes were grouped into geographically diverse route families and key evaluation criteria were selected and used to compare potential impacts to rank the proposed alternative routes within each route family. POWER compared 30 proposed alternative routes and determined that Routes 5 and 28 are the proposed alternative routes that best address the requirements of the Public Utility Regulatory Act ("PURA") and the PUC Substantive

Rules. Proposed Alternative Route 5 crosses state owned property and Proposed Alternative Route 28 does not.

CenterPoint Energy provided input and review throughout the routing study process and agreed that Proposed Alternative Routes 5 and 28 are the proposed alternative routes that best addresses the requirements of PURA and the PUC Substantive Rules.

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ACRONYMS AND ABBREVIATIONS:

ACEP-WRE	Agricultural Conservation Easement Program Wetland Reserve Easement
AM radio	Amplitude Modulation radio
amsl	above mean sea level
ARNI	Aquatic Resources of National Importance
BEG	Bureau of Economic Geology
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practices
B.P.	Before Present
BRA	Brazos River Authority
CCN	Certificate of Convenience and Necessity
CCS	Compressed Construction Site
CenterPoint Energy	CenterPoint Energy Houston Electric, LLC
CFR	Code of Federal Regulations
CLF	civilian labor force
CMP	Texas Coastal Management Program
CMZ	Costal Management Zone
CNRA	Coastal Natural Resource Areas
CR	County Road
CWA	Clean Water Act
DoD	Department of Defense Siting Clearing House
EA	Environmental Assessment and Alternative Route Analysis
EMF	Electromagnetic Field
ERCOT	Electric Reliability Council of Texas
ESA	Endangered Species Act
ESSS	Ecologically Significant Stream Segment
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FM	Farm-to-Market Road
FM radio	Frequency Modulation radio
FPPA	Farmland Protection Policy Act
GIS	Geographic Information Systems
GLO	Texas General Land Office
HPA	high probability area
HTC	Historic Texas Cemetery
IPaC	Information for Planning and Consultation
ISD	Independent School District
kV	kilovolt
L	lacustrine
MBTA	Migratory Bird Treaty Act
ME	miscellaneous easement
NCED	National Conservation Easement Database

NEPA	National Environmental Protection Act
NESC	National Electrical Safety Code
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
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 Wetland Inventory
NWP	Nationwide Permit
NWR	National Wildlife Refuge
OTHM	Official Texas Historical Marker
PEM	Palustrine emergent
PFO	Palustrine forested
POWER	POWER Engineers, Inc.
Project	Bailey to Jones Creek Transmission Line Project
PSS	Palustrine shrub-shrub
PUB	Palustrine unconsolidated bottom
PUC	Public Utility Commission of Texas
PURA	Public Utility Regulatory Act
RIP	Record, Investigate and Protect program
ROW	right-of-way
RPG	Regional Planning Group
RRC	Railroad Commission of Texas
RTHL	Recorded Texas Historic Landmark
SAL	State Archeological Landmark
SCS	Soil Conservation Service
SH	State Highway
SHPO	State Historic Preservation Office
Staff	PUC Staff
SWPPP	Storm Water Pollution Prevention Plan
TAC	Texas Administrative Code
TARL	Texas Archeological Research Laboratory
TASA	Texas Archeological Site Atlas
TCEQ	Texas Commission on Environmental Quality
TDCJ	Texas Department of Criminal Justice
THC	Texas Historical Commission
THSA	Texas Historical Site Atlas
TLC	Texas Land Conservancy
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
TNRIS	Texas Natural Resource Information System
TPDES	Texas Pollution Discharge Elimination System

TPWD	Texas Parks and Wildlife Department
TSS	Texas Speleological Society
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
TXNDD	Texas Natural Diversity Database
US	United States
U.S.C.	United States Code
US Hwy	United States Highway
USACE	United States Army Corps of Engineers
USBOC	United States Census Bureau
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WMA	Wildlife Management Area

1.0 DESCRIPTION OF THE PROPOSED PROJECT

1.1 SCOPE OF THE PROJECT

CenterPoint Energy Houston Electric, LLC ("CenterPoint Energy") proposes to construct a new 345 kilovolt ("kV") double-circuit transmission line located in Brazoria, Matagorda and Wharton Counties, Texas, also referred to as the Bailey to Jones Creek Transmission Line Project ("Project"). See Figure 1-1 for a map of the Project vicinity. The new transmission line will connect CenterPoint Energy's existing Bailey Substation located in eastern Wharton County to the existing Jones Creek Substation located in southeastern Brazoria County.

CenterPoint Energy retained POWER Engineers, Inc. ("POWER") to prepare this Environmental Assessment and Alternative Route Analysis ("EA") to support the application for a Certificate of Convenience and Necessity ("CCN") for the Project. This EA discusses the environmental and land use constraints identified within the study area, documents routing methodologies and public involvement, and provides an evaluation of alternative routes. This document provides information in compliance with the requirements of Section 37.056(c)(4)(A)-(D) of the Public Utility Regulatory Act ("PURA"), the Public Utility Commission of Texas ("PUC") CCN application form and 16 Texas Administrative Code ("TAC") § 22.52 and § 25.101. The EA may also be used to support any additional local, state, or federal permitting activities that may be required for construction of the Project.

To assist POWER with the evaluation of the Project, CenterPoint Energy provided POWER with the project endpoints, information regarding the need for the Project, CenterPoint Energy's construction practices and right-of-way ("ROW") requirements. CenterPoint Energy also provided information regarding engineering and design requirements, as well as estimated cost information associated with the proposed alternative routes.

1.2 AGENCY ACTIONS

Numerous federal, state and local regulatory agencies have rules and regulations regarding the routing process and potential impact assessment associated with construction of high voltage electrical transmission lines. This section describes the major regulatory agencies and issues that are involved in planning and permitting of transmission lines within the state of Texas. POWER solicited project scoping comments from various regulatory agencies during the development of the EA. Records of correspondence are provided in Appendix A.

1.2.1 Public Utility Commission of Texas

The PUC regulates the routing of transmission lines in Texas under Section 37.056(c)(4)(A)-(D) of PURA. The PUC regulatory rules and guidelines for routing transmission lines include:

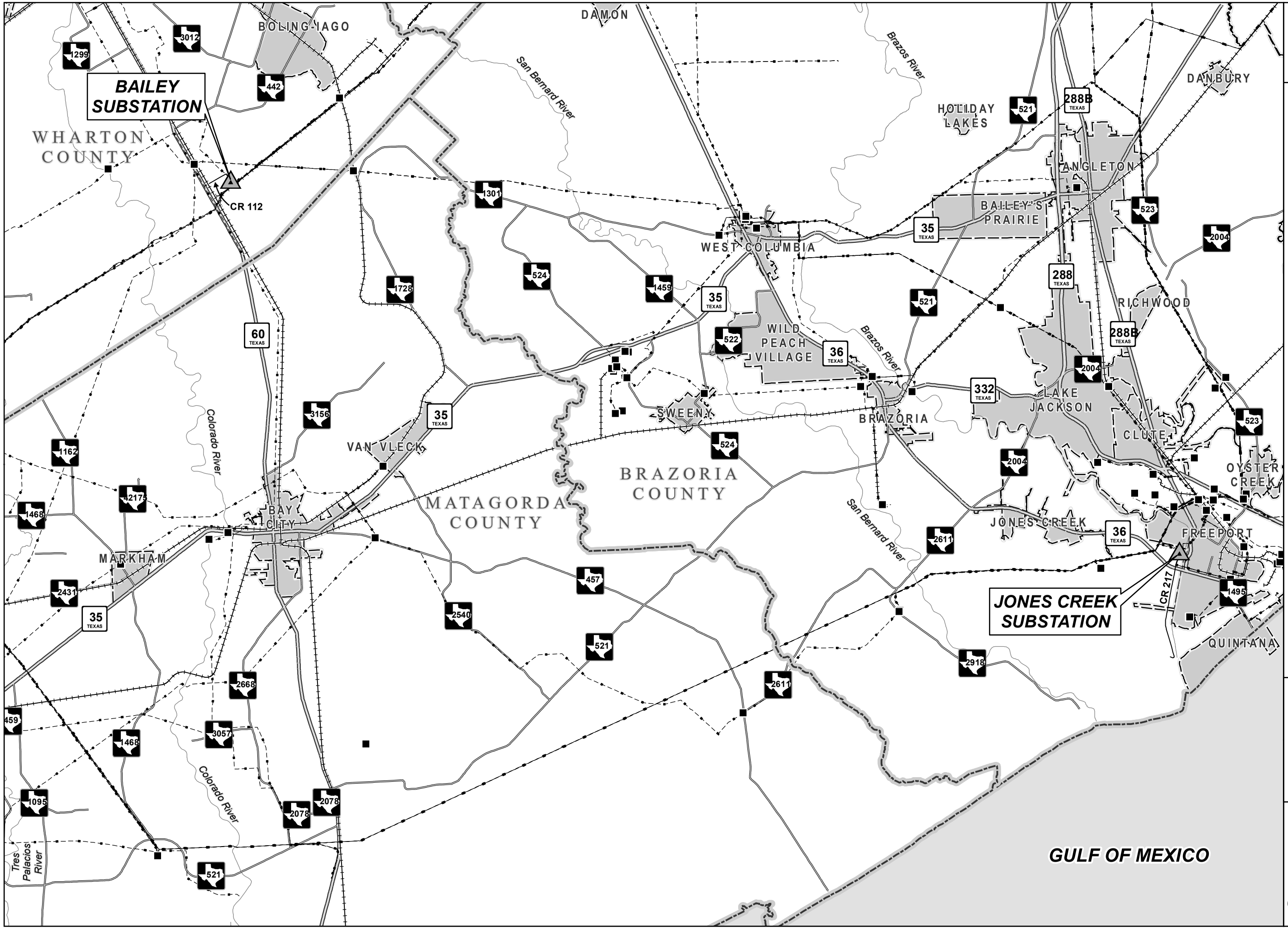
- 16 TAC § 25.101(b)(3)(B)
- 16 TAC § 22.52(a)
- Policy of prudent avoidance
- CCN application requirements

This EA has been prepared by POWER in support of CenterPoint Energy's CCN application for this Project to be filed at the PUC for approval.

1.2.2 United States Army Corps of Engineers

The United States Army Corps of Engineers ("USACE") has been directed by Congress to administer Section 10 of the Rivers and Harbors Act of 1899 (33 United States Code ["U.S.C."] §403) and Section 404 of the Clean Water Act ("CWA") (33 U.S.C. §1344). Under Section 10, the USACE regulates all work or structures in or affecting the course, condition, or capacity of navigable waters of the United States ("US"). The intent of this law is to protect the navigable capacity of waters important to interstate commerce. Under Section 404 of the CWA, the USACE regulates the discharge of dredge and fill material into "waters of the US," including associated wetlands. The purpose of Section 404 is to protect the nation's waters from indiscriminate discharge and to minimize the potential adverse impacts and degradation of the "waters of the US" and aquatic ecosystems.

Although the USACE-Galveston District does not publish a list of designated Section 10 (Navigable) surface waters, the Gulf Intercoastal Waterway, Caney Creek, Live Oak Bayou, Bastrop Bayou, Brazos River, Colorado River and San Bernard River may be considered navigable waters of the US subject to Section 10 of the Rivers and Harbors of 1899. A review of the National Wetland Inventory ("NWI") maps indicated numerous emergent and forested/shrub wetland areas occur throughout the study area.



BAILEY TO JONES CREEK PROJECT

FIGURE 1-1

PROJECT VICINITY

Legend

- Project Substation Tie Point
- Existing Substation
- Existing Transmission Line
- State Highway
- Farm-to-Market Road
- County Road
- Railroad
- River / Stream
- City Limits
- County Boundary

TEXAS Study Area

0 1.75 3.5 Miles

POWER ENGINEERS

CenterPoint Energy

Date: 8/28/2018

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Upon PUC approval of a route, additional coordination, jurisdictional wetland verifications and permitting with the USACE-Galveston District for a Section 404/10 Permit may be required if the approved route includes utility facilities (i.e., substations, foundations and access roads) to be constructed within potential jurisdictional areas. If the facilities are constructed within jurisdictional areas, the construction of the Project may meet the conditions of Nationwide Permit ("NWP") No. 12 - Utility Line Activities. NWP 12 authorizes activities for the construction, repair and removal of utility lines and associated facilities (i.e., substations, foundations and access roads) in waters of the US provided the general and regional conditions of the permit are met. Within Brazoria County NWP Regional Condition 15c does not authorize discharges into designated Columbia Bottomlands habitats. Spatial data of designated Columbia Bottomlands was obtained from the USACE and these areas where mapped by geographic information systems ("GIS") during the routing process and avoided where practical. Based on a review of the current Project endpoints and NWI mapped wetlands, it is uncertain at the time of this report exactly how many wetlands would be impacted and whether/or what mitigation under a Section 404/10 permit would be required for this Project without conducting site specific survey of waters of the US and wetland delineations.

1.2.3 United States Fish and Wildlife Service

The United States Fish and Wildlife Service ("USFWS") is charged with the responsibility of enforcement of federal wildlife laws and providing comments on proposed construction projects with a federal nexus under the National Environmental Protection Act ("NEPA"); and within the framework of several federal laws including the Endangered Species Act ("ESA"), Migratory Bird Treaty Act ("MBTA") and Bald and Golden Eagle Protection Act ("BGEPA"). POWER reviewed the USFWS listed species for Brazoria, Matagorda and Wharton Counties, and solicited Texas Natural Diversity Database ("TXNDD") element occurrence records from the Texas Parks and Wildlife Department ("TPWD"). No known populations of any species protected under the ESA were identified within the study area. The lack of data does not indicate the absence of any listed species or potential habitats within the study area. Bald eagles (*Haliaeetus leucocephalus)* were observed and may be present in the study area and are protected by the BGEPA and MBTA. A survey of eagle nests performed by CenterPoint Energy in February of 2018 confirmed a number of eagle nests in the study area (further discussed in Section 4.4.4.4). The USFWS recommends that the Project follow the National Bald Eagle Management Guidelines to avoid and minimize harm and disturbance of bald eagles.

Upon PUC approval of a route, coordination with the USFWS Texas Coastal Ecological Services Field Offices may be required to determine the need for any required species-specific surveys or additional permitting under the MBTA or Sections 7 or 10 of the ESA.

1.2.4 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:

- A 100:1 slope for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport described in paragraph (d) of 14 CFR Part 77.9 having at least one runway longer than 3,200 feet, excluding heliports.

- A 50:1 slope for a horizontal distance of 10,000 feet from the nearest runway of a public or military airport described in paragraph (d) of 14 CFR Part 77.9 where its longest runway is no longer than 3,200 feet in length, excluding heliports.

- A 25:1 slope for a horizontal distance of 5,000 feet for heliport 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 Airport/Facility Directory (currently the Chart Supplement), public-use or military airports under construction, airports operated by a federal agency or Department of Defense, 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 proposed alternative route centerline. Following PUC approval of a route for the proposed transmission line, CenterPoint Energy 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 30 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.

1.2.5 Department of Defense Siting Clearing House

The Department of Defense ("DoD") 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 electrical transmission towers, may degrade military testing and training operations. The electromagnetic interference from electricity transmission lines can impact critical DoD testing activities. The 16 Texas 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 application. The DoD shall also be provided written notice of the public meeting and if a public meeting is not held, the DoD shall be noticed of the planned filing of the application prior to the completion of the routing study.

1.2.6 Texas Parks and Wildlife Department

The 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). POWER solicited comments from the TPWD during the scoping phase of the Project, 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 any additional surveys, and to avoid or minimize any potential adverse impacts to sensitive habitats, threatened or endangered species, and other fish and wildlife resources.

1.2.7 Texas Coastal Management Program

The Texas Land Commissioner administers the Texas Coastal Management Program ("CMP") under the Texas General Land Office ("GLO"), which has the responsibility for implementing the Texas CMP. This program intends to help ensure the environmental and economic well-being of the Texas coast through proper management of coastal natural resource areas. The Texas CMP has federal and state project and permit action review processes to evaluate consistency with the program.

Portions of the Project are located within the designated Coastal Management Zone ("CMZ") (GLO 2018). When construction is proposed within CMZ, the GLO must conduct a state or federal consistency

review to determine whether the proposed activity is consistent with the CMP goals and policies. A Coastal Zone Consistency Statement must also be submitted to the USACE along with any Section 404/10 permit application. As a state agency, the PUC is charged with complying with the policies of the CMP when approving CCNs for electric transmission lines located in the CMZ.

1.2.8 Floodplain Management

Flood Insurance Rate Maps, published by the Federal Emergency Management Agency ("FEMA"), were reviewed to determine floodplain boundaries within the study area. The mapped 100-year floodplains are typically associated with the larger creeks and streams or rivers. The 100-year floodplain represents a flood event that has a one percent chance of being equaled or exceeded for any given year (FEMA 2018). Construction of the proposed transmission line is not anticipated to create any significant permanent changes in the existing topographical grades and should not significantly affect the stormwater runoff rates within the study area. Additional coordination with the study area counties' floodplain administrators may be required after PUC route approval to determine if any permits or mitigation are necessary.

1.2.9 Texas Commission on Environmental Quality

The construction of the Project may require a Texas Pollution Discharge Elimination System ("TPDES") General Construction Permit (TXR150000) as implemented by the Texas Commission on Environmental Quality ("TCEQ") under the provisions of Section 402 of the CWA and Chapter 26 of the Texas Water Code. The TCEQ has developed a tiered approach for implementing this permit that is dependent on the acreage of ground disturbance. No permitting is required for land disturbances of less than one acre. If more than one acre but less than five acres are disturbed, then a Stormwater Pollution Prevention Plan ("SWPPP") must be developed prior to and implemented during construction activities, accompanied with posting a site notice and sending notification to the Municipal Separate Storm Sewer System Operator. If more than five acres of land are disturbed, then the submittal of a Notice of Intent ("NOI") and Notice of Termination ("NOT") is also required by the TCEQ. Once a route is approved by the PUC, the proposed disturbed surface area will be calculated and appropriate conditions of the TX150000 permit will be determined.

A Section 401 Water Quality Certificate from the TCEQ may also be required if the Project requires an USACE Individual Permit for proposed impacts to surface waters or wetlands as previously discussed.

TCEQ has the authority to review federally permitted or licensed activities that may result in a discharge of pollutants to the waters of the US within the state of Texas.

1.2.10 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). Chapter 26 of the TAC requires state agencies and political subdivisions of the state to notify the Texas Historical Commission ("THC") of ground-disturbing activity on public land. POWER contacted the THC to identify known cultural resources within the study area boundary. POWER also reviewed Texas Archeological Research Laboratory ("TARL") records for known locations of archeological sites and the THC's online, restricted-access Texas Archeological Sites Atlas ("TASA") and Texas Historical Sites Atlas ("THSA") for the locations of recorded cemeteries, NRHP properties, State Antiquities Landmarks ("SALs") and Official Texas Historical Markers ("OTHMs"). Once a route is approved by the PUC, additional coordination with the THC will occur, if required, to determine the need for cultural resource surveys or additional permitting requirements. Even if no additional surveys are required, CenterPoint Energy will implement an unanticipated discovery procedure during construction activities. If artifacts are discovered during construction, activities will cease in the area of discovery and CenterPoint Energy will notify the State Historic Preservation Office ("SHPO") for additional consultation.

1.2.11 Texas Department of Transportation

The Texas Department of Transportation ("TxDOT") has been notified of the Project. If the route approved by the PUC crosses TxDOT roadways, the Project will be constructed in accordance with the rules, regulations, policies and expansion plans of TxDOT. Best Management Practices ("BMP") will be used, as required, to minimize erosion and sedimentation resulting from the construction. Revegetation will occur within existing TxDOT ROWs as required under the "*Revegetation Special Provisions*" contained in TxDOT Form 1023 (Rev. 9-93). Traffic control measures will comply with applicable portions of the Texas Manual of Uniform Traffic Control Devices.

1.2.12 Texas General Land Office

The Texas GLO requires a miscellaneous easement ("ME") for ROWs within any state-owned riverbeds and navigable streams (non-tidal). A ME will be required if the approved Project ROW crosses areas meeting these criteria. After PUC route approval, additional coordination with the Texas GLO may be required to determine the need for any MEs.

1.3 DESCRIPTION OF PROPOSED DESIGN AND CONSTRUCTION

1.3.1 Structure Design

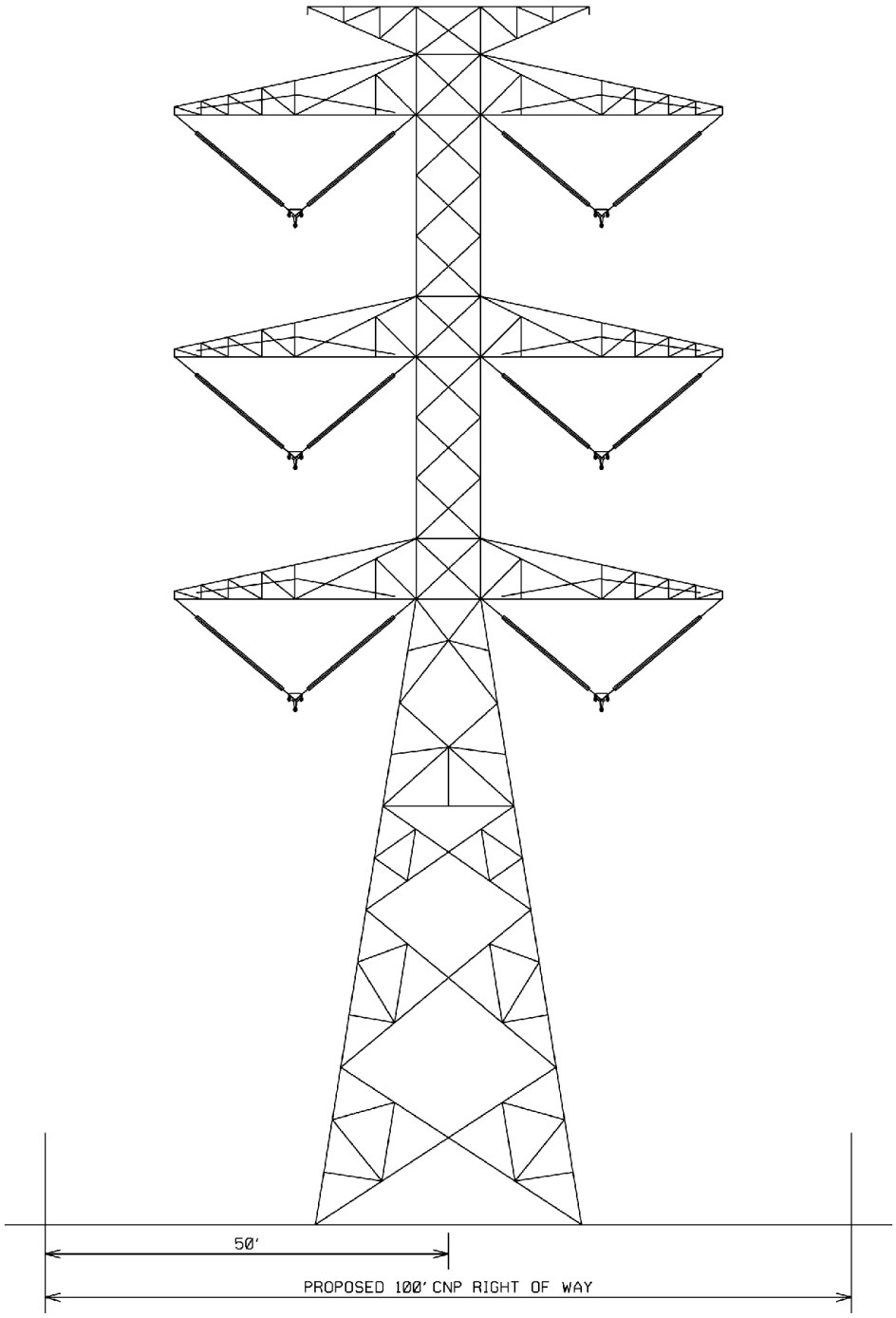
CenterPoint Energy proposes to predominantly use double-circuit steel lattice towers with a vertical phase configuration in a 100-foot-wide ROW for all of the proposed alternative routes. Depending on the terrain and other considerations, such as the length of span between structures and clearance requirements needed to cross rivers, wetland areas, utility crossings and roadway crossings, CenterPoint Energy may require wider ROW widths and alternative structure types (e.g., tubular steel poles and delta lattice steel towers). ROW widths may also vary depending on FAA determination. The exact location or extent of the different structure types and ROW widths cannot be determined until the PUC approves a route, surveys are conducted, and more detailed engineering designs are completed.

Construction of lattice towers will require drilled pier foundations made of steel-reinforced concrete. The span length between lattice tower structures will be approximately 850 feet. Typical lattice tower height with a vertical phase configuration will have a height range of approximately 151 to 171 feet depending on terrain and required National Electrical Safety Code ("NESC") clearances (Figure 1-2). Typical lattice tower height with a delta configuration will have a height range of approximately 136 to 156 feet depending on terrain and required NESC clearances (Figure 1-3).

Construction of tubular steel poles will require drilled shaft foundations made of steel-reinforced concrete. Typical steel poles will have a height range of approximately 150 to 170 feet in height and have a span length of approximately 850 feet (Figure 1-4).

The exact range of different structure heights cannot be determined until a route is approved by the PUC, surveys are conducted, and more detailed engineering designs are completed.

151' to 171' Typical Structure Height



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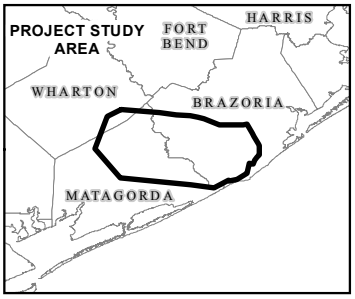

BAILEY TO JONES CREEK PROJECT

FIGURE 1-2
TYPICAL 345 KV DOUBLE-CIRCUIT STEEL TOWER-VERTICAL WITHIN NEW ROW

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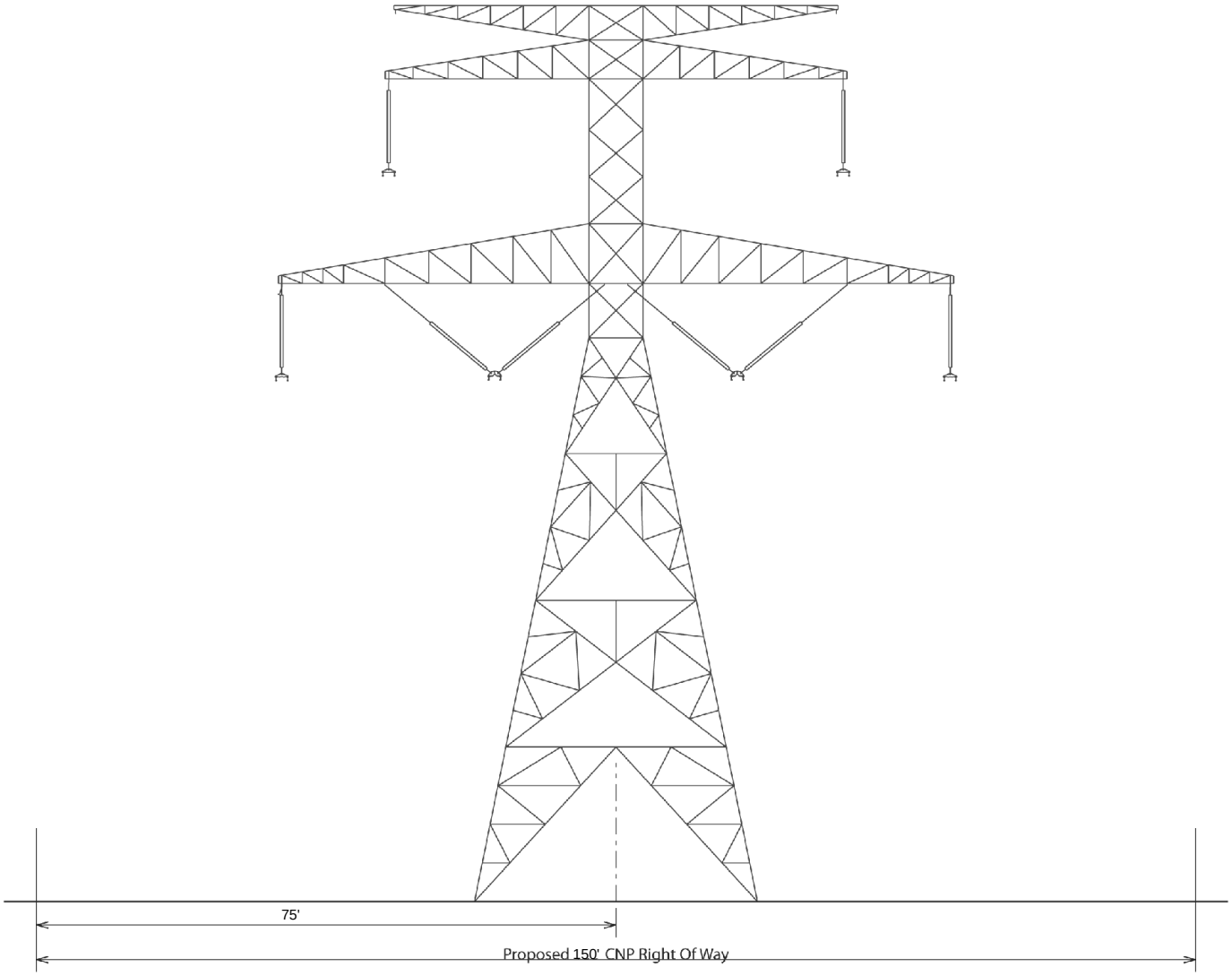
136' to 156' Typical Structure Height



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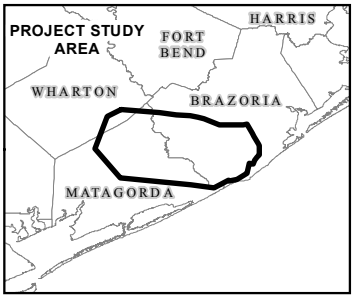

BAILEY TO JONES CREEK PROJECT

FIGURE 1-3
TYPICAL 345 KV DOUBLE-CIRCUIT STEEL TOWER-DELTA WITHIN NEW ROW

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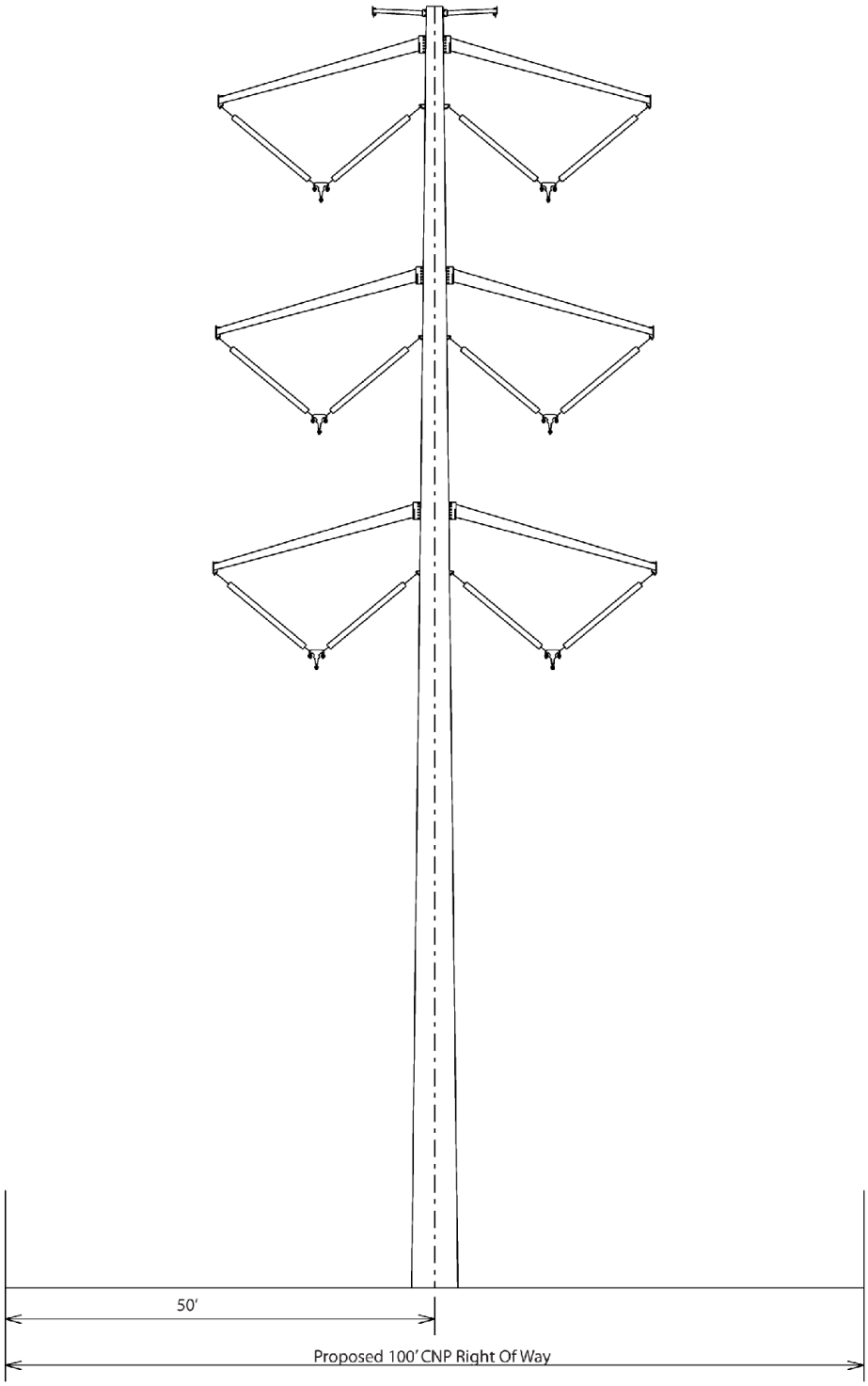
150' to 170' Typical Structure Height



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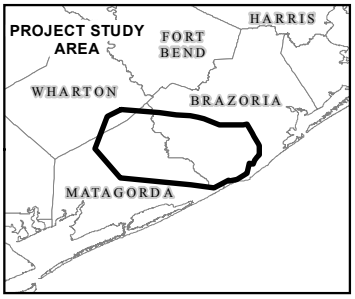

BAILEY TO JONES CREEK PROJECT

FIGURE 1-4
TYPICAL 345 KV DOUBLE-CIRCUIT STEEL POLE-VERTICAL WITHIN NEW ROW

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1.3.2 Surveying

Surveying of the transmission line ROW is required to locate the centerline, the structure locations, obstacles above and below ground, and the edges of both new and existing ROW. Surveying will be conducted after the PUC approves a route.

1.3.3 Clearing

Tree and shrub clearing may be needed in areas where new ROW is acquired. If a SWPPP is required, it will be implemented along the approved route prior to the start of clearing. Mechanized cutters and hand tools will be used to remove impeding vegetation to ground level.

1.3.4 Structure Placement

Specialized wide-track vehicles, tractor trailers and line trucks with trailers will be used to transport construction materials along the ROW to the structure locations. Typically, the concrete foundations will be installed before the steel lattice towers or steel poles are erected to allow the foundations to cure and reach adequate strength.

Steel pole sections will be delivered to the site location shortly before the poles are ready to be set. A large crane would then set the pole sections onto the foundation. The steel lattice towers will be delivered in bundles and set next to the proposed structure location shortly before structure erection. The towers will be assembled on-site and a crane will be used to set the sections onto the previously installed foundations.

1.3.5 Conductor and Static Wire Installation

Once the structures have been erected, the stringing and clipping-in of conductors and static wires will begin. Outages are not anticipated during the conductor and static wire installation. Each road crossing will have either temporary guard structures and/or conductor shields installed for public and laborer protection while stringing in the new conductors. Existing transmission and distribution circuits will have either temporary guard structures and/or conductor shields installed for public and laborer protection while stringing in the new conductors.

1.3.6 Cleanup

Cleanup operations will be performed as construction activities are completed. Cleanup includes removal of debris, unused materials and trash. Any necessary soil stabilization and reestablishing of vegetation

cover will also occur during cleanup, following the procedures dictated in the SWPPP, if required. Pre-construction contours will also be restored following construction.

2.0 DESCRIPTION OF THE STUDY AREA

In November 2017, the Electric Reliability Council of Texas ("ERCOT") staff recommended "Bridge the Gap Upgrades" and construction of a new 345 kV double-circuit transmission line from the Bailey Substation to the Jones Creek Substation, along with other system upgrades, to address both the near-term and long-term reliability needs and to serve the committed and future load in the Freeport area (ERCOT RPG 2017a). This recommendation was subsequently endorsed unanimously by the ERCOT Technical Advisory Committee in November 2017 and also the ERCOT Board of Directors on December 12, 2017 (ERCOT RPG 2017b). Based on ERCOT's recommendation, and with input from CenterPoint Energy, POWER identified the study area boundary, considering the identified endpoints: CenterPoint Energy's existing Bailey and Jones Creek 345 kV Substations. The study area boundary is depicted in Figure 2-1.

The study area was defined to provide an area large enough to develop an adequate set of geographically diverse alternative routes. The northern study area boundary is defined by the location of the Bailey Substation and an existing 138 kV transmission line that extend in an east-west direction. The eastern study area boundary is defined by the location of the Jones Creek Substation and an existing 138 kV and 345 kV transmission line corridor that extend in a north-south direction. The western study area boundary parallels an existing 138 kV transmission line that extends in a northwest-southeast direction and also a portion of Farm-to-Market Road ("FM") 1468. The area to the east of the study area, including the town of Freeport, is defined by intense residential and industrial development. In addition, the areas to the south and west are defined by the waters of the Texas Gulf Coast. The southern study area boundary is defined to provide adequate room for the development of a set of geographically diverse routing alternatives west to east, and the need to minimize potential land use conflicts within the study area.

To describe the environmental setting of the study area, land use and environmental resource data was collected for community values and environmental integrity.

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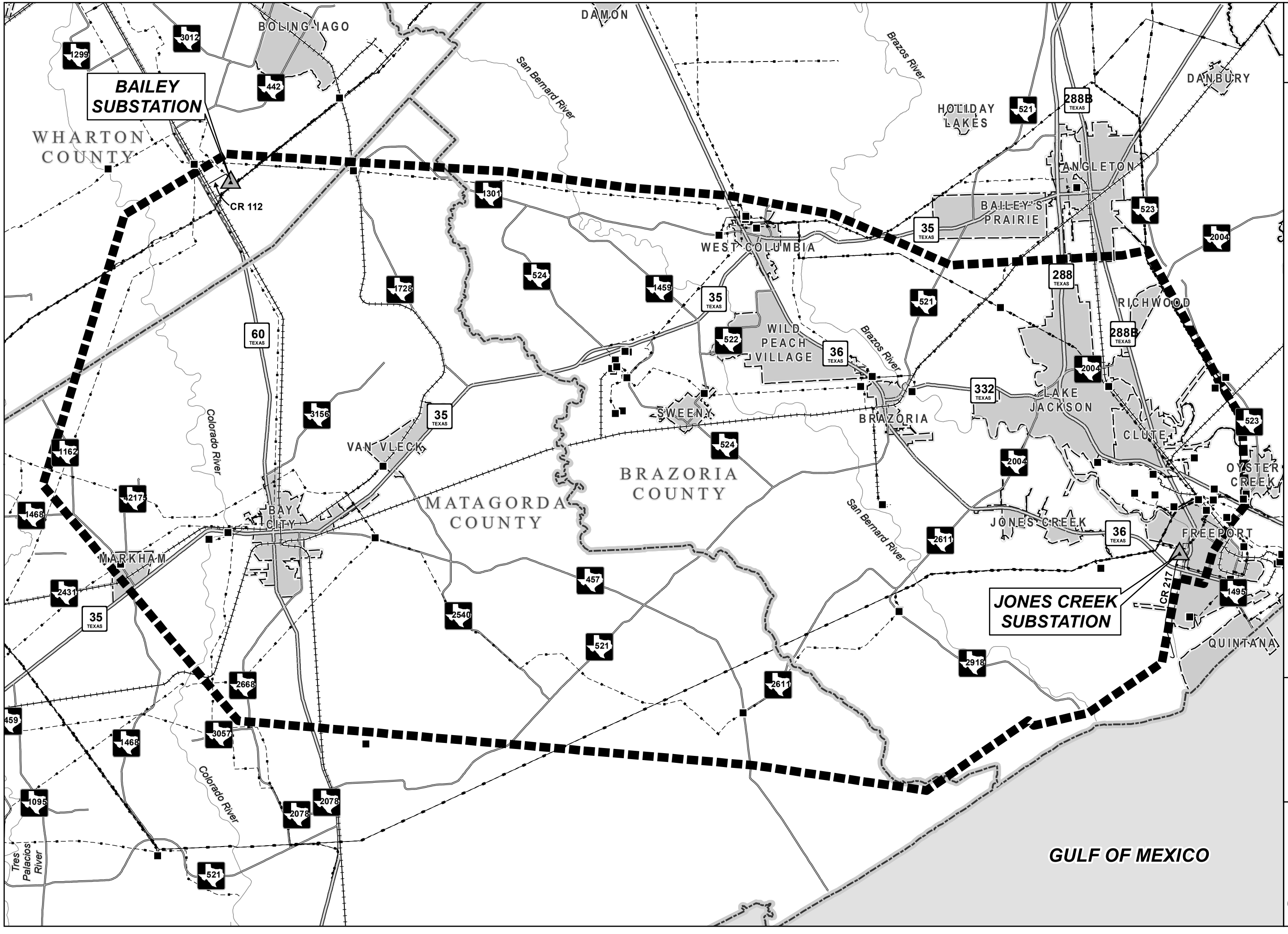


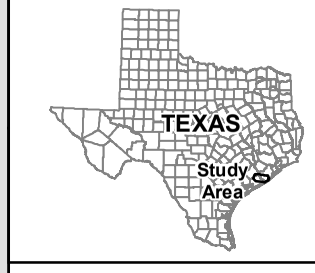
BAILEY TO JONES CREEK PROJECT

FIGURE 2-1

STUDY AREA

Legend

- Project Substation Tie Point
- Study Area Boundary
- Existing Substation
- Existing Transmission Line
- State Highway
- Farm-to-Market Road
- County Road
- Railroad
- River / Stream
- City Limits
- County Boundary



0 1.75 3.5 Miles

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2.1 COMMUNITY VALUES

The term "community values" has not been formally defined for regulatory purposes by the PUC but is included as a consideration for transmission line certification under Section 37.056(c)(4)-(A-D) of PURA. In several dockets, the PUC has used the following as a working definition: "the term 'community values' may be interpreted as a shared appreciation of an area or other natural resource by a national, regional or local community." The PUC CCN application requires information related to the following items that may provide indications of community value impacts:

- Public meeting or public open house required by 16 TAC § 22.52.
- Approval or permits required from other governmental agencies.
- Brief description of the area traversed.
- Habitable structures within 500 feet of the centerline for a 345 kV transmission line.
- Amplitude Modulation ("AM") radio, Frequency Modulation ("FM") radio, microwave and other electronic installations in the area.
- FAA-registered airstrips, private airstrips and heliports located in the area.
- Irrigated pasture or croplands utilizing center-pivot or other traveling irrigation systems.

POWER collected this information and also evaluated the study area for community values that may be of importance to a particular community as a whole. Examples of a particular community value would be avoidance of a park or recreational area, historical or archeological site or a scenic vista, which can be related to aesthetics. Community values data were collected for land use, recreational and park areas and historical and aesthetic values. Recreational and park areas and historical and aesthetic values are further discussed in more detail in Sections 2.2 and 2.3. POWER also mailed consultation letters to local officials to obtain insight into community values from appointed and elected officials. In addition, POWER participated in CenterPoint Energy's public open house meetings to collect information regarding community values directly from the public.

2.1.1 Land Use

Land jurisdiction is defined as the control maintained by major landholders or land managers. Jurisdiction does not necessarily represent ownership. Potential conflicts could arise from crossing jurisdictional boundaries that were evaluated in this study. For example, a 345 kV transmission line crossing publicly-held land may cause a conflict with ongoing planning processes or a land management plan. Land jurisdictions were identified and delineated primarily from GIS metadata (Brazoria County Appraisal District 2017 and 2018; Matagorda County Appraisal District 2017 and 2018; NAIP 2014-2018; PLATTS 2017; Wharton County Appraisal District 2017 and 2018).

Existing land data collected included urban and residential areas, agriculture, oil and gas facilities, planned land use, transportation, aviation, utilities and communication towers. The primary sources of land use information were obtained from interpretation of aerial photographs, United States Geological Survey ("USGS") topographical maps and field reconnaissance surveys. In addition, the economic and demographic characteristics within the study area counties were gathered and are further discussed under Socioeconomics in Section 2.1.2.

2.1.1.1 Urban and Residential Areas

The urban and residential classification represents concentrations of surface disturbing land uses, which include habitable structures and other developed areas characterized with low, medium and high intensities. The various levels of development include a mix of institutional, commercial and industrial land uses.

The PUC definition of a habitable structure was used for this routing study. 16 TAC § 25.101(a)(3) defines habitable structures as "structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis. Habitable structures include, but are not limited to, single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes and schools." Habitable structures were identified using aerial photographs (NAIP 2014-2018) supplemented with readily available websites with aerial imagery, including Google Earth, Bing and reconnaissance surveys from public points of view.

Low, Medium and High Intensity developed areas were identified using aerial photograph interpretation and reconnaissance surveys. These classifications are described below:

- **Low Intensity** areas typically include rural settings with single-family housing units.
- **Medium Intensity** areas typically include single-family housing units that are grouped in residential subdivisions and may include peripheral commercial structures.
- **High Intensity** areas include highly developed areas where people reside or work in high numbers. Examples include apartment complexes and commercial or industrial parks.

The study area is generally located between the City of Oyster Creek in Brazoria County and the Town of Markham in Matagorda County. Existing developments include industrial facilities, residential subdivisions and commercial businesses concentrated along major roadway corridors, including State Highways ("SHs") 35, 36, 60, 227, 288 and 332. Developed medium intensity, single family residences

are clustered within subdivisions. These existing developments are primarily within the eastern portion of the study area.

Schools

The study area is located within the following 10 school districts: Angleton Independent School District ("ISD"), Bay City ISD, Boling ISD, Brazosport ISD, Columbia-Brazoria ISD, El Campo ISD, Tidehaven ISD, Sweeny ISD, Van Vleck ISD and Wharton ISD. There is also one private school within the study area under the Shekinah Rediance Academy called West Columbia Charter School. There was a total of 37 schools identified within the study area (TEA 2017).

2.1.1.2 Planned Land Use

The planned land use component identifies objectives and policies regarding land use goals and plans, including conservation easements, managed lands and proposed developments. Communities typically prepare comprehensive land use plans to provide strategic direction for the individual community. The websites for the study area counties were reviewed and correspondence was submitted to local city and county officials to identify any planned land use conflicts. The City of Lake Jackson has a Comprehensive Master Plan intended to guide future development, redevelopment and community enhancement efforts over the next 20 years (City of Lake Jackson 2016). No other comprehensive land use plans were identified within the study area.

Conservation Easements

A conservation easement is a restriction that property owners voluntarily place on specified uses of their property to protect natural, productive, or cultural features. The property owner retains legal title to the property and determines the types of uses to allow or restrict. The property can still be bought, sold and inherited, but the conservation easement is tied to the land and binds all present and future owners to its terms and restrictions. Conservation easement language will vary as to the individual property owner's allowances for additional developments on the land. The land trusts facilitate the easement and ensure compliance with the specified terms and conditions.

A review of non-governmental groups (e.g., National Conservation Easement Database ["NCED"], The Nature Conservancy ["TNC"] and Texas Land Conservancy ["TLC"]) that are land trusts and hold databases for conservation easements within Texas indicated eight conservation easements within the study area. Five of the easements are held by the US Natural Resource Conservation Service ("NRCS") under the Wetlands Reserve Program, with one of those under the Agricultural Conservation Easement

Program Wetland Reserve Easement ("ACEP-WRE"). Two of the easements are held under Ducks Unlimited, and one of the easements is held under the TLC (NCED 2017).

2.1.1.3 Agriculture

The agriculture classification represents a combination of irrigated and non-irrigated cultivated row crops, which are primarily corn, cotton, hay and sorghum. Agricultural areas are further divided into pasture and cultivated crops based on aerial photography interpretation and reconnaissance surveys. Pasture areas are typically comprised of grasses, legumes or grass-legume mixtures planted for livestock grazing, or the production of seed or hay crops, typically on a perennial cycle. Cultivated crops are areas used for the production of annual row crops and perennial woody crops, such as orchards and vineyards.

Agriculture has a significant influence on the economy throughout Texas and the study area counties have active agricultural sectors. According to the United States Department of Agriculture's ("USDA") National Agricultural Statistics Service's 2012 Census of Agriculture, the total market value for agricultural products sold within the three study area counties was $621,576,000, an increase of 55 percent over the 2007 market value. All of the three study area counties experienced an increase of total market value of agricultural products from 2007 to 2012. Crop sales accounted for the majority of agricultural sales in all of the study area counties. The number of farms in the study area counties increased from 4,989 in 2007 to 5,500 in 2012 (a 10 percent change) (USDA 2012). Detailed agricultural information for the study area counties is provided in Table 2-1.

TABLE 2-1 AGRICULTURE

COUNTY	TOTAL MARKET VALUE OF AGRICULTURAL PRODUCTS			DISTRIBUTION OF PRODUCTS (2012)		NUMBER OF FARMS		
	2007	2012	Change	Crop Sales	Livestock Sales	2007	2012	Change
Brazoria County	$55,123,000	$118,236,000	114%	61%	39%	2,580	3,091	20%
Matagorda County	$106,756,000	$129,703,000	21%	59%	41%	903	856	-5%
Wharton County	$240,197,000	$373,637,000	56%	72%	28%	1,506	1,553	3%

Source: USDA 2012.

2.1.1.4 Oil and Gas Facilities

Oil and gas well data was obtained from the Railroad Commission of Texas ("RRC") (RRC 2017) and digitized by POWER to create a GIS layer for existing oil and gas wells, pipelines and supporting facilities. Data point categories were reviewed and included the following types: permitted locations, oil,

gas, injection/disposal, shut-in, horizontal drain holes and sidetrack well surface locations. Multiple pipelines were identified throughout the study area (RRC 2017).

2.1.1.5 Transportation/Aviation/Utilities

Transportation

Federal, state and local roadways were identified using TxDOT county transportation maps, Texas Natural Resource Information System ("TNRIS") data and field reconnaissance surveys. The roadway transportation system within the study area includes the following major roadways: SHs 35, 36, 60, 227, 288 and 332. The roadway transportation within the study area also includes the following FMs: 521, 522, 523, 524, 1162, 1301, 1459, 1468, 1495, 1728, 2004, 2175, 2431, 2540, 2611, 2668, 2852, 2918 and 3156 (TxDOT 2017a). Numerous county and local roads (paved and unpaved) were also identified.

The TxDOT's "Project Tracker" which contains detailed information by county for every project which is or could be scheduled for construction was reviewed to identify any state roadway projects planned within the study area. The TxDOT Project Tracker indicates that there are several roadway projects located within the study area. In Brazoria County, there are five roadway maintenance and repair projects, one roadway widening project, one project to add shoulders, one project to repair safety objects and one project to replace a bridge deck within the study area. The roadway widening project is along SH 36 and extends the entire length of the highway through the study area. SH 36 will be widening to a four-lane divided roadway and construction is scheduled to begin in 5 to 10 years. In Matagorda County, there are five roadway maintenance and repair projects, two projects to replace bridges, two projects to repair safety objects and one project to add shoulders within the study area. In Wharton County, there are two projects to replace bridges and one project to repair safety objects within the study area (TxDOT 2017b).

The railroads identified within the study area include the Atchison, Topeka and Santa Fe Railway located along SH 60 in the northwestern portion of the study area. The Southern Pacific Railroad line is located along portions of FM 35 in the western portion of the study area, and the Missouri Pacific Railroad is also in the western portion of the study area heading into Bay City. The Union Pacific Railroad Company has a railroad located in the central portion, through the cities of Sweeny and Brazoria, and eastern portion of the study area, through the cities of Lake Jackson, Clute and Freeport (TxDOT 2017b).

Aviation

POWER reviewed the Houston Sectional Aeronautical Chart (FAA 2017a) and the Chart Supplement for the South Central US (formerly the Airport/Facility Directory) (FAA 2017b) to identify FAA registered facilities within the study area subject to notification requirements listed in 14 CFR Part 77.9. Facilities

subject to notification requirements listed in 14 CFR Part 77.9 include public-use airports listed in the Airport/Facility Directory (currently the Chart Supplement), public-use or military airports under construction, airports operated by a federal agency or DoD, or an airport or heliport with at least one FAA-approved instrument approach procedure.

The Chart Supplement for the South Central US, used in conjunction with the Houston Sectional Aeronautical Chart, contains all public-use airports, seaplane bases and public-use heliports, military facilities and selected private-use facilities specifically requested by the DoD for which a DoD Instrument Approach Procedure has been published in the US Terminal Procedures Publication.

Two public-use FAA registered airports were identified within the study area, Bay City Regional Airport and Texas Gulf Coast Regional Airport (FAA 2017b). No public-use heliports or heliports with an instrument approach procedure are listed for the study area in the Chart Supplement for the South Central US (FAA 2017b).

In addition, POWER also reviewed the FAA database (FAA 2017c), USGS topographic maps, recent aerial photography and conducted field reconnaissance from publicly accessible areas to identify private-use airstrips and private-use heliports not subject to notification requirements listed in 14 CFR Part 77.9. There were seven private-use airstrips and four private-use heliports identified within the study area.

The Bay City Non-Directional Beacon was identified within the study area. This is a ground-based, low frequency radio transmitter used as an instrument approach for airports and offshore platforms (SAC 2018).

Utilities

Utility features inventoried include existing electrical transmission lines, pipelines, water wells and water tanks. Data sources used to identify existing electrical transmission lines include utility company and regional system maps, PLATTS data (PLATTS 2017), aerial imagery (NAIP 2014-2018), USGS topographic maps, additional available planning documents and field reconnaissance surveys. Transmission lines identified include four 345 kV transmission lines, approximately twelve 138 kV transmission lines and approximately fourteen 69 kV transmission lines. Distribution lines are prevalent throughout the developed portions of the study area; however, these features were not mapped or inventoried because they were not potential overbuilding opportunities for a 345 kV transmission line.

Numerous water wells are also located throughout the study area (Texas Water Development Board ["TWDB"] 2017a).

2.1.1.6 Communication Towers

Review of the Federal Communication Commission ("FCC") database indicated that no AM radio transmitters are located within the study area. The FCC did indicate that there are 231 FM radio transmitters/microwave towers/other electronic installations within the study area (FCC 2017).

2.1.2 Socioeconomics

The following is a description of the socioeconomic patterns related to population and employment in Brazoria, Matagorda and Wharton Counties, Texas. The trend analysis is based upon the most recent United States Census Bureau ("USBOC") information for the years 2000 and 2010 (USBOC 2000 and 2010).

2.1.2.1 Population Trends

Brazoria and Wharton Counties experienced a population increase of 30 percent and 0.2 percent, between 2000 and 2010 respectively, while Matagorda County experienced a population decrease of three percent. By comparison, population at the state level increased by nearly 21 percent from 2000 to 2010 (USBOC 2000 and 2010).

According to TXSDC projections, all three study area counties are projected to experience population growth during the next 30 years. The largest population increase for 2010 to 2020 between the three counties is projected to be in Brazoria County, at 19 percent. The population increase for 2020 to 2030 and 2030 to 2040 in Brazoria County is projected to be at 18 percent and 17 percent, respectively. In Matagorda County the population increase for 2010 to 2020, 2020 to 2030 and 2030 to 2040 are projected to be at seven percent, six percent and four percent, respectively. In Wharton County the population increases for 2010 to 2020, 2020 to 2030 and 2030 to 2040 are projected to be at six percent, six percent and three percent, respectively. By comparison, the population of Texas is expected to experience population increases of 15 percent, 13 percent and 12 percent over the next three decades, respectively (TXSDC 2014). Table 2-2 presents the past population trends and projections for the study area counties and for the state of Texas.

TABLE 2-2 POPULATION TRENDS

STATE / COUNTY	PAST		PROJECTED		
	2000	2010	2020	2030	2040
Texas	20,851,820	25,145,561	28,813,282	32,680,217	36,550,595
Brazoria County	241,767	313,166	372,259	438,727	512,195
Matagorda County	37,957	36,702	39,448	41,823	43,482
Wharton County	41,188	41,280	43,551	45,988	47,559

Sources: USBOC 2000 and 2010; TXSDC 2014.

2.1.2.2 Employment

From 2000 to 2015, the civilian labor force ("CLF") in all three study area counties increased. Brazoria County saw an increase in its CLF from 2000 to 2015 of 45 percent (50,240 people). Matagorda County saw an increase in CLF of three percent (519 people). Wharton County saw an increase in its CLF of seven percent (1,222 people). By comparison, the CLF at the state level grew by 32 percent (3,175,771 people) over the same time period (USBOC 2000 and 2015). Table 2-3 presents the CLF for the study area counties and the state of Texas for the years 2000 and 2015.

Between 2000 and 2015, only one of the study area counties experienced an increase in their unemployment rate. The unemployment rate for Wharton County increased from a low of 6.0 percent in 2000, to a high of 6.6 percent in 2015. Matagorda County experienced a decrease in unemployment from 8.4 percent to 6.4 percent during the same period. Brazoria County's unemployment rate remained the same from 2000 to 2015, at 5.4 percent. By comparison, the state of Texas also experienced a small increase in the unemployment rate over the same period. The state's unemployment rate increased from 6.1 percent in 2000, to 7.0 percent in 2015 (USBOC 2000 and 2015). Table 2-3 presents the employment and unemployment data for the study area counties and the state of Texas for the years 2000 and 2015.

TABLE 2-3 CIVILIAN LABOR FORCE AND EMPLOYMENT

STATE/COUNTY	2000	2015
Texas		
Civilian Labor Force	9,830,559	13,006,330
Employment	9,234,372	12,094,262
Unemployment	596,187	912,068
Unemployment Rate	6.1%	7.0%
Brazoria County		
Civilian Labor Force	112,798	163,038
Employment	106,662	154,290
Unemployment	6,136	8,748
Unemployment Rate	5.4%	5.4%
Matagorda County		
Civilian Labor Force	16,434	16,953
Employment	15,054	15,874
Unemployment	1,380	1,079
Unemployment Rate	8.4%	6.4%
Wharton County		
Civilian Labor Force	18,682	19,904
Employment	17,563	18,584
Unemployment	1,119	1,320
Unemployment Rate	6.0%	6.6%

Source: USBOC 2000 and 2015.

2.1.2.3 Leading Economic Sectors

The major occupations in Brazoria County in 2015 are listed under the category of management, business, science and arts, followed by the category of sales and office. The major occupations in Matagorda County in 2015 are listed under the category of sales and office, followed by the category of management, business, science and arts. The major occupations in Wharton County in 2015 are listed under the category of management, business, science and arts, followed by the category of sales and office (USBOC 2015). Table 2-4 presents the number of persons employed in each occupation category during 2015 in the study area counties.

TABLE 2-4 OCCUPATIONS IN THE COUNTIES WITHIN THE STUDY AREA

OCCUPATION	BRAZORIA COUNTY	MATAGORDA COUNTY	WHARTON COUNTY
Management, business, science and arts	63,303	3,568	5,061
Service	22,017	3,235	3,620
Sales and office	32,302	3,771	3,725
Natural resources, construction and maintenance	16,965	2,740	3,245
Production, transportation and material moving	19,703	2,560	2,933

Source: USBOC 2015.

In 2000 and 2015, the industry groups employing the most people in all three study area counties were educational services, health care and social assistance. Table 2-5 presents the number of persons employed in each of the industries in the study area counties for the years 2000 and 2015.

TABLE 2-5 INDUSTRIES IN THE COUNTIES WITHIN THE STUDY AREA

INDUSTRY GROUP	BRAZORIA COUNTY		MATAGORDA COUNTY		WHARTON COUNTY	
	2000	2015	2000	2015	2000	2015
Agriculture, forestry, fishing and hunting and mining	2,351	3,858	1,223	975	2,025	2,289
Construction	12,264	13,949	1,758	1,590	1,056	1,640
Manufacturing	19,170	22,244	1,673	1,766	2,546	1,709
Wholesale trade	3,644	3,783	411	355	778	726
Retail trade	10,957	14,844	1,661	1,631	1,887	2,268
Transportation and warehousing and utilities	6,004	7,533	1,730	1,716	910	964
Information	1,914	2,230	112	65	229	113
Finance and insurance and real estate and rental and leasing	5,652	7,179	587	534	764	738
Professional, scientific and management and administrative and waste management services	8,658	16,337	827	1,483	858	1,196
Educational services and health care and social assistance	19,341	36,995	2,907	3,259	3,958	4,425
Arts, entertainment and recreation and accommodation and food services	6,111	10,628	775	1,328	923	992
Other services, except public administration	4,963	7,105	644	883	928	982
Public administration	5,633	7,605	746	289	701	542

Source: USBOC 2000 and 2015.

2.2 RECREATIONAL AND PARK AREAS

Recreational, park and preservation areas were identified through state, federal and local agency websites, county documents and reconnaissance surveys. This category primarily includes existing areas that are:

- Dedicated as park land or open space by a governmental body, an organized group, club or church;
- Recognized as nationally or regionally significant preservation or recreation areas; or
- Formally designated unique or undisturbed natural areas.

Federal and state databases searches and county/local maps were reviewed to identify any parks and/or recreational areas within the study area. Field reconnaissance surveys were also conducted to identify any additional parks or recreational areas.

2.2.1 National/State/County/Local Parks

No national or state parks were identified within the study area (National Parks Service [“NPS”] 2017a; TPWD 2017a).

Two Brazoria County parks were identified within the study area. Hanson Riverside County Park is located on SH 35 along the San Bernard River, and offers a large covered pavilion, picnic tables, an observation tower, playground, fishing pier, canoe launch, extended trail system, paved parking areas and restrooms. Buffalo Camp County Park is located in the Buffalo Camp subdivision, at the corner of Otter Trail and Deer Trail, and offers a large covered pavilion, picnic area, playground, walking trail and paved parking area (Brazoria County 2017). One Matagorda County park was identified within the study area. Matagorda County Birding Nature Center is located on SH 35 along the Colorado River, and offers bird watching, six botanical gardens, walking trails and golf cart rentals (MCBNC 2017).

The Bay City Country Club, located in Matagorda County along SH 35, offers a nine-hole golf course, pro shop, tennis courts and club restaurant. The Freeport Golf Club, located in Brazoria County along CR 217, offers an 18-hole golf course, pro shop and practice facilities. The Rio Colorado Golf Club, located in Matagorda County along Riverside Road, offers an 18-hole golf course, pro shop and practice facilities. The Wilderness Golf Course, located in Brazoria County along SH 332, offers an 18-hole golf course, pro shop and practice facilities. Additional small city parks and school recreational areas were identified throughout the study area, as shown in Table 2-6.

TABLE 2-6 RECREATIONAL AND PARK AREAS WITHIN THE STUDY AREA

NAME/ASSOCIATION	DESCRIPTION
BAY CITY	
Amistad Park	Baseball field, basketball court, playground, pavilion and restrooms
Bay City Park	Soccer fields and restrooms
Baseball Park 1	Baseball fields
Community Park	Baseball fields, restrooms and tennis courts
Duncan Park	Playground, basketball courts, volleyball, horseshoe pits, pavilion and picnic area
Gusman Park	Memorial and oak trees
Hardeman Park	Football fields, skate park, walking trail and restrooms
Henderson Park	Basketball court
Highland Park	Playground and picnic areas
Hilliard Pool	Pool, concession stand and restrooms
Le Tulle Park	Pavilions, lakes, playgrounds, picnic areas and 18-hole disc golf course
Liberty Park	Gazebo and picnic area
Mary Withers Runnells Park	Volleyball courts, tennis courts and picnic areas
Riverside Park	Playground, walking trails, boat ramp, camp ground, restrooms and covered picnic area
Sports Complex	Softball fields
Valiant Pool	Pool, concession stand and restrooms
BRAZORIA CITY	
American Legion Hall	Pavilions for rent, train caboose, playground and restrooms
Lion's Club Park	Playground and covered picnic area
Wilson City Park	Playground, basketball court and covered picnic area

TABLE 2-6 RECREATIONAL AND PARK AREAS WITHIN THE STUDY AREA

NAME/ASSOCIATION	DESCRIPTION
CLUTE	
Broaddus Park	Playground, basketball court and picnic areas
Clute Municipal Park	Playground, basketball court, pavilions, horse shoe pits, outdoor stage, foot bridges, picnic areas, pool, fitness center and event center
Cobb Field	Soccer fields and concession stand
Hardy Park	Basketball court, swings and picnic area
Stratton Ridge Sportsplex	Softball fields, soccer field and playground
Wilson Park	Playground, basketball court, pavilion and picnic area
FREEPORT	
Arrington Park	Playgrounds, basketball court and picnic area
Freeport Community House	Pavilion for rent
Freeport Community House Boat Ramp	Boat ramp
Freeport Municipal Park	Basketball courts, walking trail and playgrounds
Freeport Municipal Park Boat Ramp	Boat ramp and fishing pier
Freeport Recreation Center	Swimming, basketball, volleyball, badmitton and aerobics
Peppermint Park	Playgrounds, backstop and picnic area
Riverside Ball Park	Baseball Fields
Stephen F. Austin Park	Softball Fields, basketball courts and playground
Veteran's Memorial Park	Memorial pavers and reflection area
LAKE JACKSON	
Bluebonnet Park	Benches and open space
Brazos Oaks Park	Playground, backstop and picnic area
Brazoswood Key Club Park	Playground and picnic area
Captain R.R. Terry Park	Playground
Class "C" Parks	Various open spaces
Cottonwood Park	Open Space
Dow Centennial Bottomlands Park	Bottomland forest
Dunbar Park	Dis Golf Course, kayak/canoe launch, football field, pavilion, picnic areas, playground, restrooms and soccer fields
Firemens Park	Playground, bike rack and picnic area
Garland Park	Tennis courts, playground, bike rack and picnic area
Huisache Park	Playground and basketball court
James F. Crews Park	Walking path and open space
Jasmine Park	Tennis courts, playground, meeting hall, picnic area and restrooms
Junior Service League Park	Playground and picnic area
Lake Jackson Recreation Center	Gymnasium and racquetball courts
Lloyd Morrison Park at Shy Pond	Fishing pier, pond, playground, pavilion, restrooms and picnic areas
MacLean Park	Fitness trail, basketball court, pavilion, playground, sand volleyball courts, soccer fields, tennis court, softball fields, restrooms, stage with lighting and picnic areas
Madge Griffith Park	Baseball field, pee wee fields, softball fields, playground, pool and picnic areas
Pecan Park	Playground and picnic area
Plantation Oaks Park	Playground and picnic area
Shadow Glen Park	Playground
Suggs Park	Baseball fields, concession stand and restrooms
Timbercreek Park	Playground
Wilderness Park	Hiking trail, boat ramp and picnic area
Yaupon Park	Open space and picnic area
RICHWOOD	
Richwood Municipal Park	Playground, baseball field, soccer field, tennis court, pavilion, gazebo, back stops and walking trail
Bobby Ford Park	Playground, walking trail, basketball court and picnic area

TABLE 2-6 RECREATIONAL AND PARK AREAS WITHIN THE STUDY AREA

NAME/ASSOCIATION	DESCRIPTION
SWEENY	
Backyard Park	Playground, sand volleyball court, RV connections, pavilion, restrooms and picnic area
Anderson Park	Playground and gazebo
Martin Luther King Park	Playground, basketball court and picnic area
Compost Park	Open space
WEST COLUMBIA	
First Capital Park	Softball field, pool, volleyball, horseshoes, washers, soccer field, playground, walking trail, pond and fishing pier and pavilion
Loggins Park	Playground and picnic area
Robert R. Dixon Memorial Unity Park	Playground and basketball court

Source: City of Bay City 2017; City of Brazoria 2017; City of Clute 2017; City of Freeport 2017; City of Lake Jackson 2017; City of Richwood 2017; City of Sweeny 2017; City of West Columbia 2017.

The Justin Hurst Wildlife Management Area ("WMA") is located within the study area, west of Freeport near Jones Creek in Brazoria County. The Area has approximately 11,938 aces and offers biking, fishing, hiking, hunting and wildlife viewing (TPWD 2017b). The Nannie M. Stringfellow WMA is also located within the study area, west of Freeport and the San Bernard River. The Area has approximately 3,664 acres and offers special hunts and wildlife viewing (TPWD 2017c).

The San Bernard National Wildlife Refuge ("NWR") is located within the study area, west and northwest of Freeport and the San Bernard River. The Refuge has approximately 54,000 acres and offers wildlife watching, photography, hunting, fishing and environmental education programs (USFWS 2017).

Additional recreational opportunities, including hunting and fishing, may occur on private properties within the study area. However, these are not typically considered to be open to the general public.

2.2.2 Wildlife Viewing Trails

A review of the TPWD Great Texas Wildlife Trails Great Texas Coastal Birding Trail – Upper Texas Coast indicated that a portion of the study area is located within three driving loops. The Brazoria Loop offers seven viewing sites within the study area. These sites include: Varner-Hogg Plantation State Historic Site, Hanson Riverside County Park, Lake Jackson Wilderness Park, Gulf Coast Bird Observatory, Dow Centennial Bottomlands Park, Sea Center Texas and Brazosport Nature Center and Planetarium Nature Trail. The San Bernard Loop offers two viewing sites within the study area. These sites include: San Bernard NWR and the Justin Hurst WMA. The Matagorda/Rio Colorado Loop offers one viewing site within the study area, the Matagorda County Birding and Nature Center (TPWD 2017c).

2.3 HISTORICAL AND AESTHETIC VALUES

Section 37.056(c)(4)(A)-(D) of PURA incorporates historical and aesthetic values as a consideration when evaluating the routing of proposed electric transmission facilities. The THC and TARL maintain records of known cultural resources (archeological, architectural and cemeteries) and of previous field investigations. Information from the THC and TARL databases was reviewed and shapefiles showing the locations of all previously documented archeological resources was requested in order to identify potential cultural resource constraints within the study area. Cultural resources include districts, sites, buildings, structures or objects important to a culture, subculture or community for scientific, traditional, religious or other reasons. For this study, cultural resources have been divided into three major categories: archeological resources, architectural resources and cemeteries.

Archeological Resources are locations where human activity has measurably altered the earth or left deposits of physical remains (e.g., burnt rock middens, stone tools, petroglyphs, house foundations, bottles). Archeological resources can date to either prehistoric times or the historic era.

Architectural Resources include standing buildings (e.g., houses, barns, outbuildings) and intact structures (e.g., dams, canals, bridges, roads, silos).

Cemeteries are places of intentional human interment and may include large public burial grounds with multiple burials, small family plots with only a few burials or individual grave sites. In some instances, cemeteries may be designated as Historic Texas Cemeteries ("HTCs"). HTCs include cemeteries that have been officially added to the THC records and are recognized with a Texas Historical Marker. Other cemeteries may have been documented as part of the THC's Record, Investigate and Protect ("RIP") program and have been assigned a designation number (e.g., C-0249).

2.3.1 Cultural Background

The project area is located within the Southeast Texas archeological region (Patterson 1995; Story et al. 1990; Perttula 2004) within the THCs Eastern Planning Region and Central & Southerm Planning Region (Mercado-Allinger et al. 1996) (Figure 2-2). Very generally, the sequence of recognized archeological manifestations in southeast Texas has been divided into three periods: Paleoindian, Archaic and Late Prehistoric or Ceramic periods. These cultural periods are roughly equivalent to broad patterns of environmental change, described by Aten (1983). These patterns are the Late Glacial (12,000 to 9,000 years before present ["B.P."]), post-Pleistocene adaptations that resulted in a shift in economic orientation and an increasing population (9,000 to 3,000 B.P.) and lastly, essentially modern environmental conditions which developed approximately 3,000 B.P. Ricklis (2004) proposes a prehistoric cultural

sequence for southeast Texas consisting of four occupational periods: Paleoindian (ca. 11,500 to 8,000 B.P., Archaic (ca. 8,000 to 1,500 B.P. [inland], 5,000 to 2,220 B.P. [coastal]) and the Ceramic Period (ca 2,000 to 300 B.P.).

2.3.1.1 Paleoindian Period

The earliest well-established human occupations of North America are referred to as Paleoindian. Isolated Paleoindian chipped stone projectile points, typed as Clovis, have been found on the upper Texas coast in surficial or mixed contexts (Hester 1980; Patterson 1980; Wheat 1953). Story et al. (1990) summarized the distribution and context of Paleoindian remains in southeast Texas and found that, except for well inland of the modern coastline, Paleoindian artifacts on the upper Texas coast are from disturbed or secondary contexts.

Aten (1983:116-117) estimates that during the Paleoindian period, the coastline of the Gulf of Mexico was between 30 and 40 kilometers seaward of its present location. Woodlands covered much of the upper Texas coast and probably extended onto the now submerged continental shelf. Most of the archeological sites dating to this period may lie offshore, be deeply buried in the terraces of major streams, or have been obliterated by Holocene erosion (Abbot 2001; Hester 1980). Because such limited data exist for the Paleoindian period in this area, only certain assumptions can be made regarding Paleoindian cultural development in the region. The presence of large projectile points suggests that hunting large mammals was undoubtedly an important component of the subsistence strategy, although a collection of readily available plant foods probably also contributed to the diet (Collins 2002). Environmental changes that brought about the extinction or dislocation of Rancholabrean megafauna triggered a shift away from Paleoindian adaptations toward a broad-based subsistence orientation termed Archaic (Aten 1983; Willey and Phillips 1958).



N

0 30 60 120 180 240

Miles

Source: Mercado- Allinger et. al., 1996

Legend

Cultural Resource Planning Region Boundary

County Boundary

BAILEY TO JONES CREEK PROJECT

FIGURE 2-2

LOCATION OF STUDY AREA IN RELATION TO THE CULTURAL RESOURCE PLANNING REGIONS OF TEXAS

POWER ENGINEERS

Date: 6/26/2018

CenterPoint Energy

2.3.1.2 Archaic Period

Probably the most prominent characteristic of the Archaic period is that it epitomizes the foraging lifestyle. The Archaic period on the upper Texas coast is marked by sea-level rise and climatic fluctuation in the middle to late Holocene, from ca. 9,000 to 1,850 B.P. (Aten 1983). Ricklis (2004) frames the Archaic period in southeast Texas in terms of inland and coastal adaptations. Inland, the Archaic period generally extended from 8,000 to 1,500 years ago. Numerous sites dating to this period have been found along primary streams throughout the region and contain stone projectile points that are diverse and reduced in size from the earlier Paleoindian period. These dart points also tend to be made of poorer quality local resources suggesting reduced group mobility and tighter group territories. A lack of faunal and botanical remains at inland archeological sites precludes inferring more than a generalized hunting and gathering subsistence system.

Well-established cemeteries also appear in the archeological record of inland southeast Texas by the middle Archaic (ca. 6,000 to 3,000 B.P.) (Ricklis 2004; Story 1985). Excavation of Site 41AU36 on the lower Brazos River revealed a cemetery in use from the middle Archaic through the early Ceramic period (Hall 1981). By the late Archaic (ca. 3,000 to 1,500 B.P.), cemeteries increased substantially in size and most burials contained a diverse array of grave goods (Ricklis 2004). Story (1985) suggests that the abundance of cemeteries on the western margin of the coastal prairie zone indicates increased territoriality amongst groups in response to an ever-increasing population. Hall (2000) posits that highly productive environments such as river valley bottoms and the floodplains of major streams were home to an aggregate of resources that were predictable, concentrated and fixed on the landscape. Such resources allowed late Archaic groups to operate within smaller, more exclusive territories.

The Archaic period on the upper Texas coast extended from about 5,000 to 2,200 years ago (Ricklis 2004). However, very few intact early Archaic components are known from this region and Aten (1983) and Story (1985) suggest the inland margin of the coastal plain may have been occupied more intensely than the coast as sea levels rose during the early Archaic. The coastline reached its current location between 7,000 and 5,000 B.P. (Aten 1983) and the earliest known shell middens in the area date to this period (Howard et al. 1991). Coastal Archaic sites that have been tested or excavated near the modern shoreline generally consist of shell-bearing sites with lithic tools and debitage, shell and bone tools and the bones of fish, mammals and reptiles (Story 1985).

Beginning around 3,000 years B.P., subsistence systems increasingly focused on coastal zone resources (Aten 1983; Story et al. 1990), following the establishment of relatively stable sea levels and essentially modern, highly productive estuaries (Ricklis 2004). Aten (1979 and 1983) hypothesized the establishment

of seasonal rounds, including regular movements from littoral to inland areas during the late Archaic. Historic native groups have been demonstrated to move in a yearly round from small, dispersed band-sized or less groups during the warm seasons to aggregated villages during the colder months (Aten 1979; Newcomb 1961).

2.3.1.3 Ceramic Period

Pottery first appeared in southeast Texas along the coast around 2,000 years B.P., ushering in the Early Ceramic period. Based on stylistic elements and the progressively earlier dated occurrences as one moves eastward, they arrived in the region via diffusion from Louisiana or the Lower Mississippi River Valley, suggesting an increasing interregional influence from neighboring groups (Aten 1979; Ricklis 2004). There were no apparent major shifts in lifeways during the early years after pottery was introduced. The contents of shell-bearing sites along the upper Texas coast during the Early Ceramic period vary little from the late Archaic shell middens, except for the addition of pottery and a few evolving dart point types, primarily Gary and Kent types (Ricklis 2004). Discrete cemeteries located close to major streams continue to enforce the notion of well-established group territories in response to increasing populations (Aten 1983). Ceramics appeared in inland southeast Texas several centuries later (Aten 1979: 425) and most likely disseminated from the coastal zone where sandy-paste wares had become commonplace (Ricklis 2004).

2.3.1.4 Late Prehistoric Period

Around 1,300 B.P., small, light, straight and expanded stem arrow points began to appear in archaeological assemblages, indicating the introduction of the bow and arrow – a hallmark of the Late Ceramic Period, often referred to as the Late Prehistoric Period, in southeast Texas. Findings at the Mitchell Ridge site on Galveston Island suggest that the Late Ceramic period in the region can be divided into two sub-periods. The initial Late Prehistoric is associated with the introduction of the bow and arrow as evidenced primarily by the presence of Scallorn arrow points. The end of the Late Ceramic period in southeast Texas correlates with changes taking place throughout much of Texas. These changes include the appearance of bison bone in archaeological assemblages around 700 to 800 years B.P. in association with a variety of stone tools. Stone tools associated with the appearance of bison include Perdiz arrow points, thin bifacial knives, expanded base drills and perforators and unifacial end scrapers. The occurrence of bison bone with these tools suggests a significant shift towards reliance on bison and other large game hunting and the processing of meat and hides (Ricklis 2004).

Ceramics in the region continued to evolve during the Late Prehistoric period. Grog and bone tempering were introduced and decorative elements become more elaborate. The change in external design elements

along the upper Texas coast reflects those of various types of the Coles Creek-Plaquemine sequence occurring in coastal Louisiana and the Lower Mississippi River Valley, suggesting a continued interaction with groups from the east (Ricklis 2004).

2.3.1.5 Historic Period

European contact in the region began in the early sixteenth century with the landing of Cabeza de Vaca and his ill-fated party on the Texas coastline in 1528. It is believed that his party crossed Oyster Creek, Old Caney Creek, and the Brazos and San Bernard rivers in their quest for provisions. More long-term contacts resulting from permanent European settlement did not directly impact aboriginal lifeways in southeast Texas until the early eighteenth century (Patterson 1995), although diseases introduced by explorers and early traders had begun to affect Native American populations in Texas by the sixteenth century (Ewers 1974). Skirmishes with colonists resulted in the expulsion of most of the native population by 1850 (Kleiner 2017a).

Anglo-American settlement in the Brazoria and Matagorda County areas began in the early 1820s, with the arrival of 89 families of Austin's Old Three Hundred (Kleiner 2017a and 2017b). The earliest settlements included Velasco (present-day Surfside), Bell's Landing (East Columbia), Columbia and Brazoria (Kleiner 2017a). In 1829, the town of Matagorda was founded at the mouth of the Colorado River as a military post to protect incoming settlers (Kleiner 2017b).

County residents and settlements played important roles in the Texas Revolution, and in May of 1836, Velasco had become the location of the provisional government of the Republic of Texas. Columbia served as the capital of the Republic when sessions of the first Texas Congress met in October 1836, during which Brazoria County and Matagorda County were established as two of the first 23 counties in Texas (Kleiner 2017a and 2017b). The present boundaries of Brazoria County were established with the creation of Fort Bend and Galveston Counties in 1837 and 1838.

As early as the mid-1830s, cotton farms in Brazoria County produced more than 5,000 bales annually and plantation owners in the area became some of the wealthiest in Texas. Cotton and sugar cane plantations in the county relied heavily on slaveholding and by 1860, Brazoria County had 2,027 whites, 5,110 black slaves and six free black residents (Kleiner 2017a). In the study area, the Varner-Hogg and Durazno Plantations are now listed on the NRHP and the Levi Jordan Plantation and the Lake Jackson Plantation are State Antiquities Landmarks (THC 2018b).

Between 1840 and 1856, the city of Matagorda was the second largest port in the state and quickly developed transportation and industry (Kleiner 2017b). The town had a gristmill and a sugar mill. The main agricultural staples in Matagorda County were corn, sugar, cotton and rice; however, cattle and sheep were significant to the economy as well. During the 1850s, cotton production expanded. Plantations were established in the bottomlands on the east side of the Colorado River. Slaves were brought into the area to work these plantations, increasing the number of slaves from 1,208 in 1850 to 2,107 by 1860. The minority white population took steps to keep their control in the area. These measures included a curfew for slaves and free persons of color, and in 1856 served as an excuse to expel the Mexican populations from the county (Kleiner 2017b).

Brazoria and Matagorda Counties voted overwhelming for secession from the United States (Kleiner 2017a and 2017b). During the ensuing Civil War, the Union blockade of the Texas coast severely damaged the economy, blocking cotton from distant markets. Production of cotton did not bounce back from this wartime decline until after 1870. During Reconstruction after the war, the Ku Klux Klan was active in the area (Kleiner 2017a and 2017b). In 1887, white vigilantes from Brazoria, Matagorda and surrounding counties attacked Vann Settlement, a black settlement, in one of the most violent incidents perpetrated by the Ku Klux Klan in the area (Kleiner 2017b).

After the founding of the Matagorda County Rice and Irrigation Company in 1899, the Matagorda County economy became increasingly based on irrigated crops (Kleiner 2017b). The number of acres devoted to rice production reached 60,000 by 1925. The early 1900s also brought about increased influence in national markets and increased immigration after the New York, Texas and Mexican Railways reached Matagorda County. The economy continued to diversify with the discovery of oil and sulfur. Today oil, gas and agriculture continue to be important economic drivers with the major agricultural products being cattle, cotton, rice, sorghum and soybeans (Kleiner 2017b).

The economy of Brazoria County suffered following the Civil War. Principal crops in the county diversified to include corn, grains, sweet and Irish potatoes, fruits, wild grapes, cotton and sugar. Convict labor replaced slave labor, but sugar production never rebounded to previous levels. Cattle have become increasingly important to the local economy since the 1870s (Kleiner 2017a). Oil production began in Brazoria County in the 1900s and sulfur mining began in 1912. Since then, extractive industries have played a major role in the local economy. Manufacturing jobs increased in importance following the establishment of Dow Chemical in 1941 (Kleiner 2017a). The importance of the manufacturing industries today is apparent in and near the study area.

2.3.2 Records Review

Cultural resource data for the study area were reviewed online through the THSA, TASA and TARL. GIS shapefiles identifying the locations of previously recorded archeological sites were requested from TARL. GIS data from TARL were used to map cultural resource site locations within the study area. Previously recorded cultural resource site data available online from the THSA and TASA were obtained to identify locations of designated historical sites, SALs, cemeteries, HTCs and OTHMs within the study area, as well as previously conducted cultural resource investigations. The TxDOT historic bridges database was also reviewed for bridges that are listed or determined eligible for listing on the NRHP. The NPS databases and websites pertaining to NRHP, National Historic Trails and National Historic Landmark properties were also reviewed to locate and define boundaries for historic properties recorded at the national level (NPS 2018a, 2018b and 2018c).

The results of the record search are summarized in Table 2-7; including the number of previously recorded archeological sites, SALs, cemeteries, HTCs, NRHP-listed properties and OTHMs in the study area.

TABLE 2-7 CULTURAL RESOURCES RECORDED WITHIN THE STUDY AREA

COUNTY	RECORDED ARCHEOLOGICAL SITES	STATE ANTIQUITIES LANDMARKS	NRHP-LISTED PROPERTIES	CEMETERIES	HISTORIC TEXAS CEMETERIES	OTHM
Brazoria	152	10	9	61	8	57
Matagorda	12	1	5	17	0	30
Wharton	1	0	0	0	0	0

Source: THC 2018a and 2018b.

The review of the THSA, TASA (THC 2018a and 2018b) and TARL data indicates that 165 archeological sites have been previously recorded in the study area. Fourteen resources are listed on the NRHP (Table 2-8), including three archeological sites. Eleven State Antiquities Landmarks are designated within the study area, six of which are shipwrecks (including one shipwreck also recorded as an archeological site). Seventy-eight cemeteries are recorded in the study area, eight of which are HTCs and two of which are Recorded Texas Historic Landmarks (“RTHLs”). One cemetery is a designated RTHL and HTC. Eighty-seven OTHMs are recorded in the study area, 18 of which are RTHLs. These cultural resources are discussed in more detail below.

Of the 14 NRHP resources recorded in the study area (Table 2-8), nine are in Brazoria County and five are in Matagorda County. Three of the NRHP resources, the John McCroskey Cabin, the Durazno Plantation and the Varner-Hogg Plantation, have archeological components, recorded as 41BO77,

41BO136 and 41BO133, respectively. The John McCroskey Cabin is an antebellum double log house with associated ruins of a sugar mill and cotton gin. John McCroskey was one of the Old Three Hundred, those settlers that received a grant in Stephen F. Austin's first colony (NRHP 1975). The Durazno Plantation, settled in the 1840s and developed by Stephen F. Austin's nephew, William Joel Bryan, produced sugar, cotton and cattle. Many of the original structures, reminiscent of the antebellum period, were destroyed and what remained was incorporated into later constructions. Original structures include a plantation office and detached kitchen (connected by later constructions), brick cisterns, outbuildings and an unmarked slave cemetery (NRHP 1979a).

TABLE 2-8 NATIONAL REGISTER OF HISTORIC PLACES RESOURCES WITHIN THE STUDY AREA

NRHP REFERENCE NUMBER	PROPERTY NAME	LOCATION	COUNTY	OTHER DESIGNATIONS
91000783	Brazoria Bridge	TX 332	Brazoria	RTHL
10000050	Dow, Alden B. Office and Lake Jackson City Hall	2120 Sixth St., Bay City	Brazoria	
80004081	Durazno Plantation (41BO136)	S of Jones Creek off TX 36, Jones Creek	Brazoria	
91001602	East Columbia Historic District	S. Main St., East Columbia	Brazoria	
4001173	Gazebo for James Richard Marmion	1214 County Road, Sweeney	Brazoria	
75001958	John McCroskey Cabin (41BO77)	Stringfellow Ranch, Cedar Lake	Brazoria	
4001172	Palapa Table for James Richard Marimion	1214 County Road, Sweeny	Brazoria	
76002011	Ammon Underwood House	Main St., East Columbia	Brazoria	RTHL
80004082	Varner-Hogg Plantation (41BO133)	P.O. Box 696	Brazoria	SAL
9000307	Bay City Post Office	2100 Ave. F, Bay City	Matagorda	
6000512	Bay City USO Building	2105 Ave. M, Bay City	Matagorda	
6000927	Hensley-Gusman House	2120 Sixth St., Bay City	Matagorda	
10001223	Judge William Shields Holman House	2504 Ave. K, Bay City	Matagorda	
7000496	South Side Residential Historic District	Bay City	Matagorda	

Source: THC 2017a and 2017b.

The Varner-Hogg Plantation was purchased by Martin Varner in 1824 and used to raise livestock, corn and sugar cane. In 1834, the land was purchased by sugarcane mogul Columbus R. Patton, after which it was known as Patton Place. Slaves built various structures on the property, including the main house, with hand-made brick. After the battle of San Jacinto, Santa Anna was held at the plantation for a short period. The plantation was eventually purchased by Governor James Hogg in hopes of finding oil on the

property (NRHP 1979b). In 1958, it was donated to the state of Texas (Nickles 2010). Prehistoric materials at the site date from the Late Archaic to Ceramic period, including Perdiz and Bulverde projectile points and Goose Creek Plain, Goose Creek Incised and Baytown Plain ceramics. The historic artifacts and structures, including the plantation house and cemetery, date from the 1820s through the mid-1900s (THC 2018b). The site is a SAL and a RTHL (THC 2018b).

Other NRHP properties in the study area are listed for associations with notable individuals and/or their architectural significance. The Ammon Underwood House is representative of Greek revival architecture, built in 1835 to 1836. Ammon Underwood was a Texas revolutionary and legislator. The Brazoria Bridge; Dow, Alden B. Office and Lake Jackson City Hall; East Columbia Historic District; a Gazebo for James Richard Marmion; and a Palapa Table for James Richard Marmion, are also listed NRHP resources in the study area in Brazoria County (THC 2018b). Both the Palapa table and the gazebo are sculptures by Dionicio Rodriguez (NRHP 2004a and 2004b).

NRHP resources in the study area in Matagorda County include the Hensley-Gusman House, a unique example of Queen Anne architectural influences and the Judge William Shields Holman House, a multi-story Queen Anne-style home. The South Side Residential Historic District includes the original Bay City, Texas town plat. The Bay City USO Building and the Bay City Post Office are also NRHP-listed resources in the study area in Matagorda County (THC 2018b).

Of the 165 archeological sites recorded in the study area, 79 are prehistoric in age, 62 are historic and five contain historic and prehistoric components; descriptive information is not available for 19 sites (Table 2-9). Sites 41BO77, 41BO133 and 41BO136 are listed on the NRHP and are discussed above. Sites 41BO140, 41BO165, 41BO172, 41BO229 and 41MG32 have been determined eligible for listing. Eight sites and portions of four sites have been determined ineligible for listing on the NRHP (THC 2018b).

The determined eligible sites include three historic sites, 41BO165, 41BO229 and 41GM32, and two sites with both historic and prehistoric components (41BO140 and 41BO172). Site 41BO165, the Levi Jordan Plantation State Historic Site, dates to the antebellum and Reconstruction periods. Levi Jordan purchased the land for the plantation in 1848 and his slaves built the main house, slave cabins, a brick sugar-house and sugar mill. The plantation produced cotton and sugar cane using slave labor. After the Civil War, many of the freedmen became tenant farmers and continued to work the land. Archeological investigations have been conducted on the main house and the slave quarters. Artifacts associated with domestic activities, including brick, nails, a copper vessel, other metal artifacts and modern debris, have been recovered from the site (Black and Karbula 2015; Karbula et al. 2017; THC 2018b). The majority of

the site is intact, despite impacts from vandals and feral hogs (Black and Karbula 2015; THC 2018b). The Levi Jordan Plantation is a RTHL, SAL and State Historic Site (THC 2018b). Site 41BO229, or the Duff Site, a SAL, is an antebellum plantation with a buried brick cistern and handmade brick fragments reported from the site. Cora (the Caney Creek Wreck), site 41MG32, is a sunken river steam boat (THC 2018b) and is also an SAL.

TABLE 2-9 PREVIOUSLY RECORDED ARCHEOLOGICAL SITES WITHIN THE STUDY AREA

TRINOMIAL	NRHP ELIGIBILITY STATUS	PERIOD	DESCRIPTION
41BO3	Undetermined	Undetermined	No site description
41BO5	Undetermined	Ceramic Period	Shell midden with ceramics
41BO6	Undetermined	Ceramic Period	Shell
41BO7	Undetermined	Historic	Possible historic house
41BO8	Undetermined	Ceramic Period	Shell midden with ceramics and animal bone fragments
41BO9	Undetermined	Ceramic Period	Shell midden
41BO10	Undetermined	Prehistoric	Shell midden
41BO11	Undetermined	Ceramic Period	Shell midden with ceramics and animal bones
41BO12	Undetermined	Ceramic Period	Shell midden with ceramics, animal bone fragments and single burial
41BO13	Undetermined	Ceramic Period	Shell midden with ceramics
41BO14	Undetermined	Ceramic Period	Shell middens with ceramics, debitage, animal bone fragments and a tool fragment
41BO15	Undetermined	Ceramic Period	Shell midden with ceramics, deer and alligator bone
41BO16	Undetermined	Ceramic Period	Shell middens
41BO17	Undetermined	Ceramic Period	Ceramics
41BO18	Undetermined	Ceramic and Historic Period	Shell midden with ceramics, debitage and projectile points, an obsidian projectile point and historic glass
41BO19	Undetermined	Undetermined	No site description
41BO20	Undetermined	Undetermined	No site description
41BO21	Undetermined	Undetermined	No site description
41BO22	Undetermined	Ceramic Period	Campsite with ceramics, animal bone fragments and oyster shells
41BO23	Undetermined	Ceramic Period	Campsite with burned ceramics, animal bone fragments and debitage
41BO24	Undetermined	Undetermined	No site description
41BO30	Undetermined	Ceramic Period	Campsite with shell midden, ceramics and animal bone fragment
41BO31	Undetermined	Ceramic Period	Campsite with animal bone and shells
41BO32	Undetermined	Undetermined	Pumice rock and camel tooth
41BO33	Undetermined	Ceramic Period	Campsite with shell midden
41BO34	Undetermined	Ceramic Period	Campsite with shell midden, ceramics and animal bone fragments
41BO35	Undetermined	Ceramic Period	Extensive shell midden with ceramics, Perdiz and Scallorn projectile points and compound fish hook
41BO36	Undetermined	Undetermined	No site description
41BO37	Undetermined	Undetermined	No site description
41BO50	Undetermined	Ceramic Period	Shell midden with ceramics and deer bones
41BO52	Undetermined	Late Ceramic Period	Campsite with shell midden and ceramics
41BO54	Undetermined	Undetermined	No site description
41BO55	Undetermined	Undetermined	No site description available
41BO56	Undetermined	Undetermined	No site description available

TABLE 2-9 PREVIOUSLY RECORDED ARCHEOLOGICAL SITES WITHIN THE STUDY AREA

TRINOMIAL	NRHP ELIGIBILITY STATUS	PERIOD	DESCRIPTION
41BO57	Undetermined	Undetermined	No site description available
41BO58	Undetermined	Undetermined	No site description available
41BO59	Undetermined	Undetermined	No site description available
41BO60	Undetermined	Undetermined	No site description available
41BO61	Undetermined	Undetermined	No site description available
41BO62	Undetermined	Undetermined	No site description available
41BO63	Undetermined	Undetermined	No site description available
41BO64	Undetermined	Undetermined	No site description available
41BO77	NRHP-listed	Historic Period	McCroskey Log Cabin: Log cabin, cotton gin foundations, brick cistern remains, with sugar mill, cotton gin and cemetery; modern glass, shell and ceramics
41BO79	Eligible; Ineligible	Prehistoric	Campsite with ceramics, lithic flakes, Basal dart fragment, bone awl fragment, animal bone fragments, oyster and rangia shell and charcoal
41BO80	Undetermined	Historic Period	Ellerslie Plantation with structures, foundations and several cisterns
41BO85	Ineligible	Ceramic Period	Shell midden
41BO86	Ineligible	Ceramic Period	Shell midden
41BO87	Undetermined	Ceramic Period	Shell midden
41BO88	Undetermined	Ceramic Period	Shell midden
41BO89	Undetermined	Ceramic Period	Shell midden with animal bone and debitage
41BO90	Undetermined	Ceramic Period	Shell midden with ceramics, animal bone fragments and debitage
41BO91	Undetermined	Ceramic Period	Shell midden
41BO92	Undetermined	Ceramic Period	Shell midden with ceramics
41BO93	Undetermined	Ceramic Period	Shell midden
41BO94	Undetermined	Ceramic Period	Shell midden
41BO95	Undetermined	Ceramic Period	Shell midden with hearths
41BO96	Undetermined	Ceramic Period	Shell midden
41BO97	Undetermined	Ceramic Period	Shell midden
41BO98	Undetermined	Ceramic Period	Shell midden
41BO100	Undetermined	Unknown	Shell midden and charcoal
41BO101	Undetermined	Prehistoric	Shell midden
41BO102	Undetermined	Prehistoric	Shell midden with burned clay and charcoal
41BO103	Undetermined	Ceramic Period	Shell midden with ceramics and animal bone fragments
41BO104	Undetermined	Prehistoric	Shell midden
41BO105	Undetermined	Prehistoric	Shell midden with burned shell and charcoal
41BO106	Undetermined	Prehistoric	Shell midden with burned shell
41BO107	Undetermined	Prehistoric and Historic	Shell midden with glass near the surface of the deposit
41BO108	Undetermined	Prehistoric	Shell midden
41BO109	Undetermined	Ceramic Period and Historic	Foundation remains with historic ceramics and brick fragments and prehistoric ceramics
41BO111	Undetermined	Ceramic Period	Shell midden with, debitage, faunal bones and ceramics
41BO112	Undetermined	Ceramic Period	Shell midden with, ceramics and an oxidized metal pellet
41BO113	Undetermined	Ceramic Period	Shell midden with debitage, animal bones and ceramics
41BO118	Undetermined	Ceramic Period	Shell midden with ceramics and animal bone fragments
41BO119	Undetermined	Ceramic Period	Shell midden with ceramics and charcoal
41BO120	Undetermined	Prehistoric	Shell midden
41BO121	Undetermined	Prehistoric	Shell mound

TABLE 2-9 PREVIOUSLY RECORDED ARCHEOLOGICAL SITES WITHIN THE STUDY AREA

TRINOMIAL	NRHP ELIGIBILITY STATUS	PERIOD	DESCRIPTION
41BO122	Undetermined	Historic Period	Cemetery with multiple grave stones occupied from the 1890s to 1930s
41BO129	Undetermined	Ceramic Period	Shell midden with, debitage, animal bones and ceramics
41BO130	Undetermined	Ceramic Period	Shell midden
41BO131	Undetermined	Ceramic Period	Shell midden
41BO132	Undetermined	Ceramic Period	Shell midden
41BO133	NRHP-listed, SAL	Late Archaic-Ceramic Period and Historic Period	Varner-Hogg Plantation site: structures, burials, refuse pits, glass, historic metal, historic ceramics, perishable fibers, prehistoric ceramics, animal bones and debitage
41BO136	NRHP-listed	Historic Period	Duranzno Plantation: remains of plantation house, slave quarters, sugar mill, slave cemetery, possible Civil War munitions depository and standing kitchen remains
41BO138	Undetermined	Ceramic Period	Shell midden with ceramics, debitage and animal bone fragments
41BO140	Eligible, SAL	Ceramic Period and Historic Period	J.P. Bryan Homestead and shell midden with ceramics, square nails, animal bone fragments, glass, brick foundations including a possible boiler used in ferry operation
41BO141	Undetermined	Historic Period	Historic structure occupied from 1840-1860 with handmade bricks and glass bottle fragments
41BO142	Undetermined	Ceramic Period	Shell midden with ceramics
41BO143	Undetermined	Historic Period	Wharton Family Cemetery associated with a plantation, square nails possibly from a coffin, skull fragments and marble slabs
41BO144	Undetermined	Ceramic Period	Occupation site and shell midden with debitage and tools, two Perdiz points, ceramics, rangia shells, sandstone and animal bone fragments
41BO147	Undetermined	Historic Period	Brick foundation with brick pile and rusted metal scraps
41BO158	Undetermined	Ceramic Period	Shell midden with ceramics and debitage
41BO159	Undetermined	Ceramic Period	Open campsite with clam and terrestrial snail shells and ceramics
41BO160	Undetermined	Ceramic Period	Open campsite with rangia and terrestrial snail shells
41BO164	Undetermined	Historic Period	Mims Plantation and shell midden with house, slave quarters, ferry crossing and cistern
41BO165	Eligible, SAL, THL	Historic Period	Levi Jordan Plantation State Historic Site with a main house, detached kitchen foundation with ceramics, metal, nails, munitions, glass (bottle, jar, chimney lamp, window) and brick fragments (glazed and un-glazed)
41BO169	Undetermined	Ceramic Period	Open campsite with clam and oyster shells
41BO172	Eligible, SAL	Historic Period	Lake Jackson Plantation; pre-civil war plantation with brick structural remains
41BO174	Undetermined	Historic Period	Dance Brothers Gun Factory; Military Arms Manufacturing/Machine Shop and home site with brick foundation, firebox/metal stack and original home
41BO185	Ineligible	Historic Period	Civil War campground and farmstead: cistern, shells, buttons, buckles, metal fragments and bricks and brick fragments
41BO186	Undetermined	Historic Period	House site with silver coin, musket ball, ceramics and a decorated brass hairbrush back
41BO191	Undetermined	Ceramic Period	Shell midden with ceramics and burned and non-burned animal bone fragments

TABLE 2-9 PREVIOUSLY RECORDED ARCHEOLOGICAL SITES WITHIN THE STUDY AREA

TRINOMIAL	NRHP ELIGIBILITY STATUS	PERIOD	DESCRIPTION
41BO192	Undetermined	Prehistoric	Shell concentration
41BO193	Undetermined	Ceramic Period	Shell midden with ceramics and animal bones
41BO196	Undetermined	Historic Period	Engineering structures
41BO201	Undetermined	Ceramic Period and Historic Period	Shell midden with very few prehistoric ceramics and historic to modern dump with structural debris
41BO202	Undetermined, HTC	Historic Period	Pioneer Cemetery: Historic African-American Cemetery with unmarked graves and one grave marker
41BO205	Undetermined	Historic Period	House site with a concrete foundation, well pump housing, wind mill, wooden piers, a metal pipe and a ceramic pipe
41BO211	Undetermined	Ceramic Period	Shell midden
41BO214	Ineligible	Historic Period	Ceramics, glass, metal fragments, modern plastic and animal bones
41BO215	Undetermined	Ceramic Period	Shell midden with burned and unburned shell, charcoal and a possible bone fragment
41BO216	Undetermined	Historic Period	Historic scatter with ceramics, nails, metal and animal bones
41BO219	Ineligible within ROW*	Historic Period	Historic dump associated with a plantation house with transferware ceramics (dark blue, blue, purple), glass, homemade brick, rusted metal and animal bone
41BO220	Ineligible within ROW*	Historic Period	Historic scatter with handmade brick, whiteware and an adjacent historic structure
41BO221	Ineligible within ROW*	Historic Period	Historic trash dump with whiteware, glass, metal and modern trash
41BO222	Undetermined	Historic Period	Bynum Plantation sugar mill with brick walls, foundations, chimne and cisterns
41BO223	Undetermined	Paleo-Indian	Isolated skeletal remains
41BO225	Undetermined	Historic Period	Historic cistern, post holes, pit features, trash scatters with glass, ceramics, metal, bricks and other historic artifacts
41BO226	Undetermined	Historic Period	Confederate gun battery: scatter of hand-made bricks, metal (iron and brass) and glass across three man-made mounds
41BO227	Undetermined	Historic Period	Rock and mortar cattle trough and scatter of historic and modern material
41BO228	Undetermined	Historic Period	Historic farmstead with handmade brick pier foundations, fireplace remnants and chimney fall
41BO229	Eligible; SAL	Historic Period	Duff Site; Pre-Civil War Plantation site with hand-made brick cistern and brick scatter
41BO230	Ineligible	Historic Period	Brick feature: possible chimney, kiln or moonshine still
41BO234	Undetermined	Historic Period	Armstrong cemetery with marked and unmarked graves and a shell concentration
41BO235	Undetermined	Historic Period	Farmstead with buildings, structures, well, cemetery and a scatter of historic and modern trash
41BO236	Undetermined	Historic Period	Farmstead with three standing structures, wells, cistern and trash
41BO237	Undetermined	Historic Period	Farmstead with standing structures, animal pens and historic and modern trash
41BO238	Undetermined	Historic Period	Homestead with burned structural remains and historic trash
41BO241	Undetermined	Ceramic And Historic Period	scatter of brick, glass, metal, historic ceramics and a shell midden with freshwater shell and charcoal

TABLE 2-9 PREVIOUSLY RECORDED ARCHEOLOGICAL SITES WITHIN THE STUDY AREA

TRINOMIAL	NRHP ELIGIBILITY STATUS	PERIOD	DESCRIPTION
41BO243	Undetermined	Historic Period	Scatter with a ceramic tobacco pipe bowl, whiteware, glass (clear and amethyst) round nail and brick
41BO244	Undetermined	Historic/Modern Period	Concrete building rubble
41BO245	Undetermined	Historic/Modern Period	Oil/gas structural remnants with concrete rubble and oyster shells
41BO246	Undetermined	Historic/Modern Period	Scatter with limestone gravels and a butchered animal bone
41BO247	Undetermined	Historic/Modern Period	Oil well (still in use) with modern trash
41BO248	Undetermined	Historic/Modern Period	Trash dump with glass (clear, brown, amethyst), glass bottles and jars of various utility, iron and metal refuse and rubber shoe heel
41BO249	Undetermined	Historic/Modern Period	Homestead with a standing house, collapse shed, chicken coop and trash dump
41BO250	Undetermined	Historic/Modern Period	Trash dump with bottles and jars
41BO251	Undetermined	Modern Period	Outbuilding with brick scatter and modern trash
41BO252	Undetermined	Historic/Modern Period	Structure (possible schoolhouse)
41BO253	Undetermined	Historic Period	Dump with oyster shell and brick fragments
41BO254	Undetermined	Modern Period	Canal and pump house constructed between 1944-1952
41BO255	Undetermined	Historic Period	Plantation and associated outbuildings and features including a pump house, three sheds, a garage, a pig pen, an unidentified outbuilding, ceramics, brick, nails, metal, plastic, glass, animal bone and shell
41BO256	Undetermined, THL	Historic Period	John Sweeny Jr. Cemetery with marked and unmarked graves; associated with Sweeny Jr. Plantation
41BO257	Undetermined	Historic Period	Ranch complex with three standing structures, farm equipment, glass (clear) and mussel shell
41BO258	Undetermined	Ceramic Period	Shell midden with associated debitage
41BO259	Undetermined	Historic Period	Ranch complex with five structures, corrals and a brick cistern
41BO260	Undetermined	Ceramic Period	Shell midden and debitage
41BO262	Undetermined	Modern Period	Domestic site and produce stand
41BO263	Undetermined	Modern Period	Farmstead with four animal shelters/pens, two wells and building materials
41BO265	Undetermined, HTC	Historic Period	Mt. Zion Cemetery; an African-American cemetery with gravestones, a human skull fragment and a square nail
41BO266	Undetermined	Historic	Historic structures and trash with a concrete smoking pit, metal poles, concrete foundation, glass (clear and aqua) and whiteware
41BO267	Undetermined	Ceramic Period	Shell midden with charcoal, ash and debitage
41BO268	Ineligible Within ROW*	Historic Period	Farmstead with an outbuilding, wire nails, faunal bone, concrete, a metal hinge and brick fragments; glass (clear) shards and ceramics
41MG003	Undetermined	Prehistoric	Animal bone fragments and ceramics
41MG031	Undetermined	Historic Period	Brick foundation and remains of sugar cane mill
41MG032	Eligible, SAL	Historic Period	Paddle wheel boat
41MG033	Undetermined	Historic Period	Wooden cabin

TABLE 2-9 PREVIOUSLY RECORDED ARCHEOLOGICAL SITES WITHIN THE STUDY AREA

TRINOMIAL	NRHP ELIGIBILITY STATUS	PERIOD	DESCRIPTION
41MG034	Undetermined	Historic Period	19th century plantation site with cemetery, planation house, cotton gin, sugar mill, cotton press and box car telegraph office
41MG041	Undetermined	Ceramic Period	campsite with ceramics clam shell and debitage
41MG053	Undetermined	Ceramic Period	Shell midden with a burned clay ball and fish, rabbit, turtle and deer remains
41MG069	Undetermined	Ceramic Period	Open campsite with ceramics, groundstone, debitage, a Scallon projectile point, marine animal remains, two bone fragments decorated with black paint and charcoal
41MG136	Ineligible	Historic Period	Railroad bed
41MG138	Undetermined	Historic Period	Farmstead with a house and outbuildings
41MG140	Ineligible	Historic/Modern	Farmstead with brick and whiteware scatter
41MG141	Undetermined	Ceramic and Historic Period	Prehistoric campsite with hearth and farmstead with domestic structure; historic glass (clear, milk, amethyst, brown) bottles and window glass, metal (copper, other), ceramics and other historic debris
41WH096	Undetermined	None Undetermined	No site description available

Source: THC 2017b.

Site 41BO140, also known as the J.P. Bryan Homestead is a multicomponent site designated as an SAL. The historic domestic structure is associated with a ferry and commercial landing. A brick foundation, handmade brick fragments, ceramics, iron and steel artifacts associated with structures, window and bottle glass and animal bone fragments are recorded from the site. The prehistoric occupation includes a shell midden. There is evidence of vandalism and burning in recent years and a well on the property has been destroyed from pipeline construction (THC 2018b). Site 41BO172, the Lake Jackson Plantation also contains a shell midden. A projectile point and two ceramic sherds were located under a brick floor of one historic structure at the multi-component site. The historic occupation consists of structures associated with a pre-Civil War sugar and cotton plantation which continued producing sugar with convict labor after the Civil War (THC 2018b).

A total of 78 cemeteries are reported within the study area, eight of which are designated HTCs (see Table 2-10). Pioneer Cemetery (site 41BO202) is a historic African-American cemetery dating from 1888 to 1942. Previous investigations located a buried metal box grave marker and unmarked graves (THC 2018b). Mt. Zion Cemetery (site 41BO265) is also an African-American cemetery with marked and unmarked graves. During previous investigations, a human skull fragment was unearthed at the cemetery (THC 2018b). Sweeny Cemetery (site 41BO256) is a cemetery associated with the Sweeny Jr. Plantation and was used by the slave laborers. There are 67 grave markers, but historical records indicate there are unmarked graves. Phair Cemetery or Hoskin-Phair Cemetery, is also a RTHL and dates from 1853 to the

present. Other HTC-designated cemeteries include the Old Brazoria Cemetery, Old Columbia, Gulf Prairie-Peach Point Cemetery and the Mims Family Cemetery (THC 2015).

TABLE 2-10 CEMETERIES RECORDED WITHIN THE STUDY AREA

THC NUMBER	PROPERTY NAME	COUNTY	DESIGNATION
BO-C002	Pioneer Cemetery (41BO202)	Brazoria	HTC
BO-C003	Hudgins Cemetery	Brazoria	HTC
BO-C012	Zion Temple/Williams Family/Mims-Fannin Plantation	Brazoria	
BO-C014	Old Brazoria Cemetery	Brazoria	HTC
BO-C015	West Columbia Paradise	Brazoria	
BO-C019	Cedar Grove Cemetery-St. Mary's	Brazoria	
BO-C020	Brown Cemetery	Brazoria	
BO-C021	Phair Cemetery	Brazoria	HTC, RTHL
BO-C022	Restwood Memorial Cemetery #1	Brazoria	
BO-C024	Mt. Zion (41BO265)	Brazoria	HTC
BO-C035	Boone Cemetery	Brazoria	
BO-C037	Velasco Cemetery (41BO122)	Brazoria	
BO-C040	Oakland Cemetery/Overcoming Faith	Brazoria	
BO-C042	Jaden	Brazoria	
BO-C048	Aldridge Grave	Brazoria	
BO-C052	Armstrong Cemetery (41BO234)	Brazoria	
BO-C057	Black Family	Brazoria	
BO-C062	Colonial	Brazoria	
BO-C067	Fields Paradise	Brazoria	
BO-C070	Grant Family	Brazoria	
BO-C071	Hagerman Family	Brazoria	
BO-C072	Harris Family Cemetery	Brazoria	
BO-C077	Jerusalem Baptist	Brazoria	
BO-C079	Jordan Family Cemetery	Brazoria	
BO-C084	McGrew	Brazoria	
BO-C085	McNeal-Stone Cemetery	Brazoria	
BO-C087	Nap Neal	Brazoria	
BO-C097	Peaceful Rest Cemetery	Brazoria	
BO-C100	Rainbow Memorial Cemetery	Brazoria	
BO-C101	Robinson Family	Brazoria	
BO-C105	Simpson Family	Brazoria	
BO-C109	Tunstall-NBA Church/Tunstall Family Grave	Brazoria	
BO-C111	White Oak	Brazoria	
BO-C114	Wilson Point Cemetery	Brazoria	
BO-C122	Gulf Coast Cemetery	Brazoria	
BO-C133	Cedar Lawn Haven of Rest	Brazoria	
BO-C136	Brazoria	Brazoria	
BO-C137	Old Columbia	Brazoria	HTC
BO-C139	Wharton-Eagle Island	Brazoria	
BO-C140	Grace Baptist Cemetery	Brazoria	
BO-C142	Gulf Prairie, Peach Point Cemetery, Gulf Prairie-Peach Point Cemetery	Brazoria	HTC
BO-C152	Old Rippe	Brazoria	
BO-C163	St. Paul Baptist	Brazoria	
BO-C165	Mims Family Cemetery	Brazoria	HTC
BO-C172	Chances's Prairie Cemetery 41BO256	Brazoria	

TABLE 2-10 CEMETERIES RECORDED WITHIN THE STUDY AREA

THC NUMBER	PROPERTY NAME	COUNTY	DESIGNATION
BO-C172	Clemens Prison No.2	Brazoria	
BO-C175	Ebenezer-Mills/Mills Family Cemetery	Brazoria	
BO-C178	Fields Family	Brazoria	
BO-C179	Galilee Church	Brazoria	
BO-C180	Glick	Brazoria	
BO-C191	Phillips Family Cemetery	Brazoria	
BO-C193	Roberts	Brazoria	
BO-C194	Roberts (Black)	Brazoria	
BO-C205	Morris	Brazoria	
BO-C207	Neal Family	Brazoria	
BO-C208	Wish	Brazoria	
BO-C211	Gardener Family	Brazoria	
BO-C212	Sweeny African American	Brazoria	
BO-C219	Jones	Brazoria	
BO-C220	Sweeny 41BO256	Brazoria	RTHL
N/A	Cemetery	Brazoria	
MG-C004	Free System Cemetery	Matagorda	
MG-C005	Union Cemetery	Matagorda	
MG-C006	Mathews Cemetery	Matagorda	
MG-C007	Hudgins Cemetery	Matagorda	
MG-C008	Pleasant Green Cemetery	Matagorda	
MG-C009	Williams Cemetery	Matagorda	
MG-C010	Berean Church Cemetery	Matagorda	
MG-C012	unknown (Lake Bowie)	Matagorda	
MG-C013	unknown (Kennedy Sch)	Matagorda	
MG-C015	Unknown	Matagorda	
MG-C016	East End Cemetery	Matagorda	
MG-C017	Bay City Cemetery	Matagorda	
MG-C018	Vine Grove Cemetery	Matagorda	
MG-C019	Andrews Cemetery	Matagorda	
MG-C020	Free System Cemetery	Matagorda	
N/A	St. Mark's Church Cemetery	Matagorda	
N/A	Union Cemetery	Matagorda	

Source: THC 2017a and 2017b.

Of the 87 OTHMs in the study area, 18 are RTHLs (see Table 2-11). Previously mentioned cultural resources that are RTHLs include the Levi Jordan Plantation, the Sweeny Cemetery, the Ammon Underwood House, the Brazoria Bridge and the Hensley-Guzman House. Other notable OTHMs include locations associated with important events in Texas history and individuals and events important to the region's history. The "Columbia – The First Capital of Texas" marker marks the location of the first site of the Capital of Texas (THC 2018a). Nearby, The Dance Gun Shop marker commemorates a shop that produced weaponry for the Confederacy during the Civil War (THC 2018a) and the site of the Old Columbia Hotel, ran by Carry Nation before she moved to Kansas, is commemorated (THC 2018a). The Battle of Jones Creek marker commemorates a skirmish between the Karankawa and a group of men lead by Captain Randal Jones (THC 2018a).

TABLE 2-11 OFFICIAL TEXAS HISTORICAL MARKERS WITHIN THE STUDY AREA

NAME	COUNTY	DESIGNATION
Kilbride-Barkley House	Brazoria	
Adriance, John	Brazoria	
Aldridge-Smith Home	Brazoria	RTHL
Angier, Samuel Tubbs, M.D.	Brazoria	
Austin, John	Brazoria	
Barrett, Don Carlos	Brazoria	
Bell, Thaddus Constantine	Brazoria	
Bell's Landing	Brazoria	
Bethel Presbyterian Church	Brazoria	RTHL
Brazoria Bridge	Brazoria	RTHL
Brazoria Cemetery	Brazoria	
Brazoria Townsite	Brazoria	
The Brazos Canal	Brazoria	
Brown, Major Reuben R.	Brazoria	
Byrom, John S. D.	Brazoria	
Cedar Lake Salt Works	Brazoria	
Columbia Cemetery	Brazoria	
Columbia	Brazoria	
Columbia United Methodist Church	Brazoria	
Dance Gun Shop	Brazoria	
Eagle Island Plantation	Brazoria	
Ellerslie Plantation	Brazoria	
Republic of Texas	Brazoria	
Hazen, Nathaniel C.	Brazoria	
Battle of Jones Creek	Brazoria	
Jordan, Levi, Plantation	Brazoria	RTHL
Long, Jane	Brazoria	
Mosonic Oak	Brazoria	RTHL
McCroskey-Stringfellow House	Brazoria	
McKinstry, George B.	Brazoria	
Carry Nation's Hotel	Brazoria	
Peach Point	Brazoria	RTHL
Phair Cemetery	Brazoria	RTHL
Phillips Family Cemetery	Brazoria	
Rounds, George	Brazoria	
St. John's Lodge No. 5, A.F. & A.M.	Brazoria	
Stringfellow Ranch	Brazoria	
Sweeny, Thomas Jefferson	Brazoria	
Sweeny Cemetery	Brazoria	RTHL
Sweeny Plantation	Brazoria	
Sweeny-Waddy Log Cabin	Brazoria	RTHL
Velasco	Brazoria	
Four Miles Southeast to the Original Town of Velasco	Brazoria	
Velasco Cemetery	Brazoria	
Velasco Lodge No. 757, A.F. & A.M.	Brazoria	
Velasco Methodist Church	Brazoria	
Underwood, Ammon	Brazoria	RTHL
Underwood, Ammon House	Brazoria	RTHL
Weems, M.L., House	Brazoria	
Wharton, William House	Brazoria	
Nash-Wright House	Brazoria	RTHL
Durazno Plantation	Brazoria	

TABLE 2-11 OFFICIAL TEXAS HISTORICAL MARKERS WITHIN THE STUDY AREA

NAME	COUNTY	DESIGNATION
Old Oakland Plantation	Brazoria	
Joseph H. Hawkins	Brazoria	
Tyler-Bryan-Weems House	Brazoria	RTHL
Gulf Prairie Cemetery	Brazoria	
Columbia (First Capital of Texas)	Brazoria	
Bandstand	Matagorda	RTHL
Bay City Library	Matagorda	
Bay City Methodist Church	Matagorda	
Bay City Post Office	Matagorda	
Bethel Baptist Church	Matagorda	
Cedarvale Cemetery	Matagorda	
Moore, D.P. and Louise House	Matagorda	RTHL
Elliot's Ferry	Matagorda	
First Baptist Church of Bay City	Matagorda	
High School, First in Bay City	Matagorda	
First Presbyterian Church of Bay City	Matagorda	
Ingram, Ira, First Speaker of Texas House of Representatives	Matagorda	
Grove Missionary Baptist Church	Matagorda	
Hensley-Guzman House	Matagorda	RTHL
Holman House	Matagorda	RTHL
Matagorda County	Matagorda	
Matagorda, C.S.A.	Matagorda	
Old Bay City Bank	Matagorda	RTHL
Shiloh Missionary Baptist Church	Matagorda	
Caney Post Office	Matagorda	
Early Bay City School	Matagorda	
St. Mark's Episcopal Church	Matagorda	
Daily Tribune and Matagorda County Tribune	Matagorda	
Bell, Josiah Hughes	Matagorda	
First Berrean Missionary Baptist Church	Matagorda	
Site of Hillard High School	Matagorda	
Mount Pilgrim Missionary Baptist Church	Matagorda	
Holy Cross Catholic Church	Matagorda	
Philip H. Parker Post No. 2438, V.F.W.	Matagorda	
Matagorda County	Matagorda	

Source: THC 2017a and 2017b.

Nine shipwrecks are recorded within the study area, six of which are State Antiquities Landmarks, including one that has been determined eligible for the NRHP (see Table 2-12). The Augusta, E.A. Ogden, Hiawatha, Ocean and Cora are riverboat vessels. The Cora, or Caney Creek Wreck, has been mentioned previously and is eligible for the NRHP; the Joe Ed is a freighter; and two of the wrecks are unknown vessels (THC 2018b).

TABLE 2-12 SHIPWRECKS RECORDED WITHIN STUDY AREA

VESSEL NAME	TYPE	LOCATION	DESIGNATION
Augusta	River steamboat	Brazoria	SAL
E.A. Ogden	River steamboat	Brazoria	SAL
Hiawatha	River steamboat	Brazoria	SAL
Joe Ed	Freighter	Brazoria	
Ocean	River steamboat	Brazoria	SAL
Travis	River steamboat	Brazoria	SAL
Unknown	Unknown	Brazoria	
Unknown	Unknown	Brazoria	
Cora (Caney Creek Wreck) 41MG32	River steamboat	Matagorda	SAL

Source: THC 2017b.

A review of the TxDOT historical bridges database indicated that one NRHP-listed bridge and one determined eligible bridge are recorded in the study area The NRHP-listed Bridge is the Brazoria Bridge located on SH 36, spanning the Brazos River Channel. The bridge was constructed in 1939 and was designed by J.D. McKenzie. It significance comes from the bridge's use in connecting SHs 35 and 36 which brought increased commercialization and economic opportunities to Brazoria County. The FM 522 Bridge that crosses the San Bernard River in Brazoria County was determined to be eligible for the NRHP. It was built in 1957 and is an early use of neoprene pads as bearing plates (TxDOT 2018).

Review of the previously recorded cultural resource sites data indicates that the study area has not been examined entirely during previous archeological and historical investigations. Consequently, the records review results do not include all possible cultural resource sites within the study area. To further assess and avoid potential impacts to cultural resources, High probability areas ("HPAs") for prehistoric archeological sites were defined during the route analysis process. HPAs were designated based on a review of the site and survey data within the study area, in addition to soils and geologic data and topographic variables. Native American subsistence was dependent on close proximity to natural features, such as springs and streams, which would provide water and attract game animals. Additionally, backswamps and wetlands afforded access to numerous resources. Areas near these resource-rich areas are considered to have a high potential for prehistoric archeological sites. Terraces and topographic high points near potential sources of water that would provide flats for camping and expansive landscape views affording a hunting or defensive advantage are also considered to have a high probability for containing prehistoric archeological sites.

Historic age resources are likely to be found near water sources. However, they will also be located in proximity to primary and secondary transportation routes (e.g., trails, roads and railroads) which provided access to the sites. Buildings and cemeteries are also more likely to be located within or near historic communities. Locations and patterns of distribution for historic-period sites are not readily predictable or

quantifiable and the route analysis process discussed in Section 4.0 considers only recorded sites listed with official state and federal agencies and HPAs developed for prehistoric resources within the study area.

2.3.3 Previous Investigations

According to the TASA (THC 2018b), there have been 207 previously conducted cultural resource investigations within the study area boundaries. Beginning in the 1970s, these surveys were undertaken, for the most part, for the USACE, the United States Environmental Protection Agency ("USEPA") and in advance of oil and gas projects, transportation projects and transmission line projects.

2.3.4 Aesthetic Values

Section 37.056(c)(4)(C) of PURA incorporates aesthetics as a consideration when evaluating proposed electric transmission facilities. There are currently no formal guidelines provided for managing visual resources on private, state or county-owned lands located within the study area. For the purposes of this study, the term aesthetics is defined by POWER to include the subjective perception of natural beauty in a landscape and measurement of an area's scenic qualities. The visual inventory was conducted by describing the regional setting and determining the viewer sensitivity ratings. Related literature, aerial photograph interpretation and reconnaissance surveys were used to describe the regional setting and to determine the landscape character types for the area.

Consideration of the visual environment includes a determination of aesthetic values (where the major potential effect of a project on the resource is considered visual) and recreational values (where the location of a transmission line could potentially affect the scenic enjoyment of the area). POWER considered the following criteria that combine to give an area its aesthetic identity:

- Land form and topography (hills, valleys, etc.)
- Prominence of water in the landscape (rivers, lakes, etc.)
- Vegetation variety (woodland, meadows)
- Diversity of scenic elements
- Degree of human development or alteration
- Overall uniqueness of the scenic environment compared with the larger region

The majority of the study area is generally comprised of scattered residential/commercial/industrial development, cropland/rangeland and bottomland hardwoods. The majority of the study area has been impacted by land improvements associated with agriculture, residential structures, industrial facilities,

airstrips, roadways, oil and gas activities and various utility corridors. Overall, the study area viewscape consists of cropland/rangeland and bottomland hardwoods that drain into the rivers and local creeks.

No known outstanding aesthetic resources, designated views, designated scenic roadways or unique visual elements were identified from the literature review or from reconnaissance surveys of the study area. The study area is located within the 28-county Texas Independence Trail Region of the Texas Heritage Trails. The trail runs along SHs 288 and 36 within the study area. The sites of interest include: Varner-Hogg Plantation State Historic Site, Columbia Historical Museum, Gulf Prairie Presbyterian Church and Cemetery, Sea Center Texas, Lake Jackson Historical Museum and Center of Arts and Sciences (THC 2018c).

A review of the NPS website did not identify any Wild and Scenic Rivers, National Parks, National Monuments, National Historic Sites, National Historic Landmarks, National Historic Trails or National Battlefields within the study area (NWSRS 2017; NPS 2018b and 2018c).

Based on these criteria, the study area exhibits a moderate to high degree of aesthetic quality for the region. The majority of the study area maintains the appearance of a rural community. Although some portions of the study area are visually appealing, the overall aesthetic quality of the study area is not distinguishable from that of adjacent areas within the region.

For this study, the potential visual impacts considered for the Project were limited to line-of-sight views within the immediate foreground (one-half mile, unobstructed) from points located on federal and state highways, FM roads and recreational and park areas.

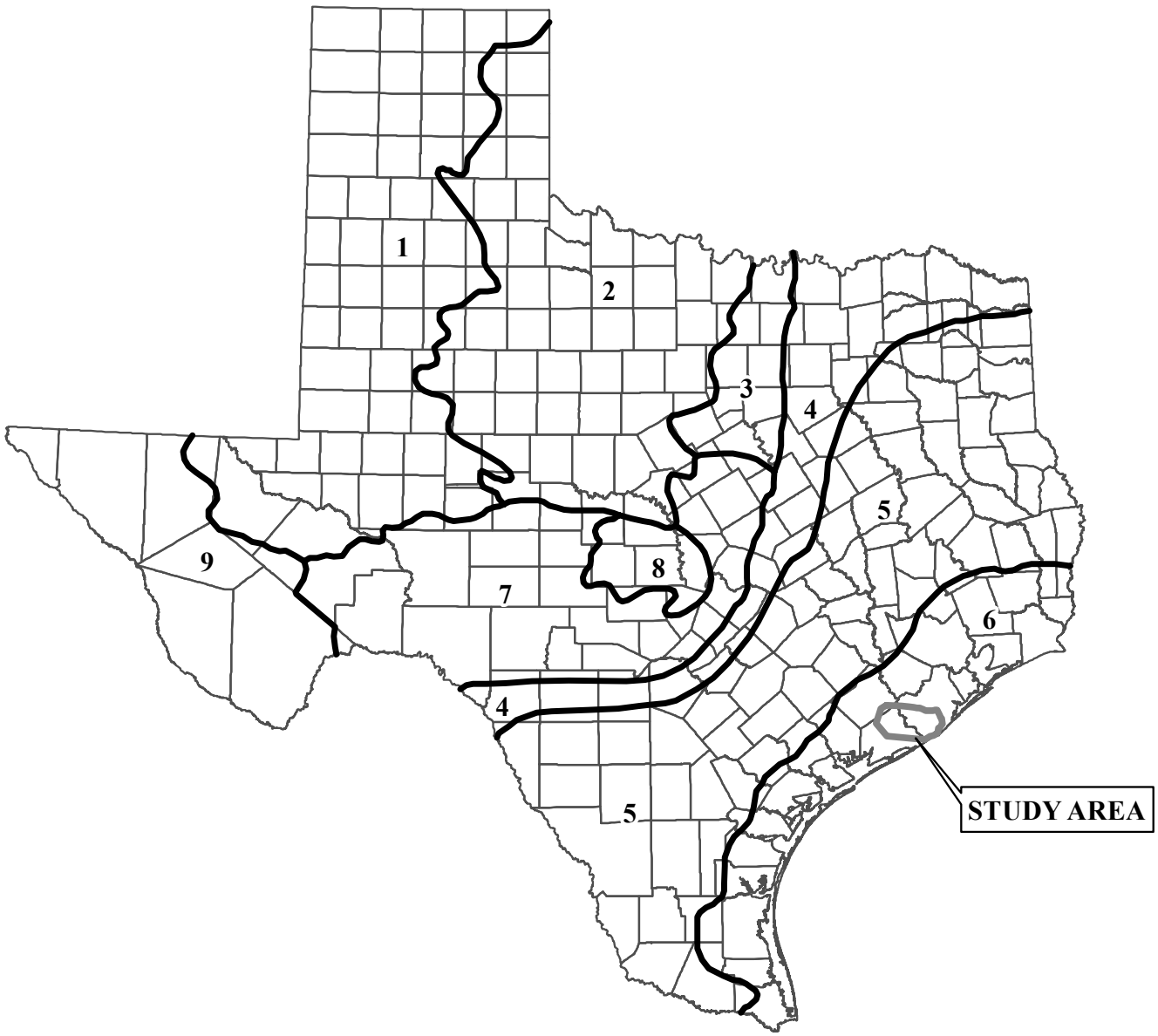
2.4 ENVIRONMENTAL INTEGRITY

Resource inventory data were collected for physiography, geology, soils, surface waters, wetlands and ecological resource areas. These data were mapped within the study area utilizing GIS layers. Additional data collection activities consisted of file and record reviews conducted with the various state and federal regulatory agencies, a review of published literature and review of various maps and aerial photographs. Maps and data layers reviewed include USGS 7.5 minute topographic maps, Google Earth aerial imagery, BEG Geologic Atlas maps, NWI maps, FEMA national flood hazard layer, USEPA Ecoregions of Texas, NRCS soil survey data and TPWD and USFWS endangered species listings

2.4.1 Physiography and Geology

As shown in Figure 2-3, the study area is located within the Coastal Prairies sub-province of the Gulf Coastal Plains Physiographic Region of Texas (BEG 1996). The Coastal Prairies Region extends inland from the Texas Gulf Coast and is characterized by young deltaic sands, silts and clays, creating nearly flat grasslands (BEG 1996). Elevations in the study area range from less than five feet above mean sea level ("amsl") to approximately 75 feet amsl (USGS 2018a).

The study area is underlain by Quaternary-aged alluvium and the Beaumont Formation (BEG 1982 and 1987). Throughout the study area, most creeks and rivers are surrounded by Holocene alluvial deposits and Quaternary fluviatile bench deposits. Alluvium deposits typically consist of unconsolidated clay, silt, sand and gravel. The Beaumont Formation typically consists of clay, silt and sand, and includes point bar, natural levee, stream channel and backswamp deposits. Relict river channels are common features of this formation (BEG 1982 and 1987; USGS 2018b).



0 30 60 120 180 240

Miles

Source: Texas Bureau of Economic Geology, 1996

Legend

Physiographic Region Boundary
1 High Plains
2 North-Central Plains
3 Grand Prairie
4 Blackland Prairies
5 Interior Coastal Plains
6 Gulf Coastal Prairies
7 Edwards Plateau
8 Central Texas Uplift
9 Trans-Pecos Basin and Range

County Boundary

BAILEY TO JONES CREEK PROJECT

FIGURE 2-3

LOCATION OF STUDY AREA IN RELATION TO THE PHYSIOGRAPHIC REGIONS OF TEXAS

POWER ENGINEERS

Date: 6/26/2018

CenterPoint Energy

2.4.1.1 Geological Hazards

Geologic hazards potentially affecting the construction and operation of the transmission line were evaluated within the study area. Hazardous areas reviewed included potential karst areas with known cave locations, faults, historical or current coal/uranium mining locations, gravel quarries, landfills and potential subsurface contamination. Available data for the study area was mapped utilizing GIS.

A review of Texas Speleological Society ("TSS") maps did not indicate any karst geology or known caves within the study area (TSS 1994 and 2018). No known quaternary or seismic faults were identified within the study area (BEG 1982 and 1987). However, the study area occurs within the gulf-margin normal faults region in Texas. Faults in this region are characterized as having a slip-rate category of less than 0.2 millimeter per year (USGS 2018c).

According to the RRC (2018) database, no coal mining activities have historically occurred or currently occur within the study area. Aerial imagery and USGS topographic maps identified several sand and gravel quarries scattered throughout the study area (Google 2018; USGS 2018a). Subsidence may occur within the region due to increased groundwater withdrawal primarily within surrounding Harris, Galveston and Fort Bend counties (TWDB 2017b). Subsidence does occur in portions of central and northwest Brazoria County, but no occurrences were identified within the study area (USGS 2004).

The presence of subsurface contamination of soils or groundwater from commercial activities, such as dumps or landfills, can require additional considerations during routing and may create a potential hazard during construction activities. A review of USEPA Superfund/National Priority List Sites (USEPA 2018) and the TCEQ - State Superfund Sites (TCEQ 2018) did not indicate any listed sites within the study area.

2.4.2 Soils

2.4.2.1 Soil Associations

The published NRCS, formerly the Soil Conservation Service, soil surveys for Brazoria, Matagorda and Wharton counties were reviewed to identify and characterize the soils occurring within the study area. A soil association is a group of soils geographically associated in a characteristic repeating pattern and defined as a single unit (NRCS 2018). Soil associations mapped within the study area are listed in Table 2-13, which also briefly describes each soil association and indicates if any mapped units of the soil series within the association are designated as prime farmlands and/or as hydric soils (NRCS 2018).

TABLE 2-13 SOIL ASSOCIATIONS WITHIN THE STUDY AREA

SOILS ASSOCIATION	DESCRIPTION	SOIL SERIES	PERCENT OF ASSOCIATION	PRIME FARMLAND SOIL	HYDRIC SOIL
Wharton County (SCS 1974; NRCS 2018)					
Edna-Bernard	Poorly drained and somewhat poorly drained soils on uplands that have a surface layer of fine sandy loam and clay loam and lower layers that are dominantly clay	Edna	37	No	No
		Bernard	27	Yes	No
		Other	36	-	-
Lake Charles	somewhat poorly drained soils on uplands that have a surface layer and lower layers of clay	Lake Charles	80	Yes	No
		Other	20	-	-
Miller-Norwood	Moderately well drained and well drained soils on bottomlands that have a surface layer and lower layers of clay and silt loam	Miller	39	No	Yes
		Norwood	23	Yes	No
		Other	38	-	-
Matagorda County (NRCS 2001 and 2018)					
Laewest-Dacosta	Moderately well drained, nearly level to gently sloping, clayey and loamy soils on broad uplands	Laewest	56	Yes	No
		Dacosta	35	Yes	No
		Other	9	-	-
Edna-Texana-Telferner	Moderately well drained and somewhat poorly drained, nearly level to gently sloping, loamy soils	Edna	56	No	No
		Texana	15	Yes	No
		Telferner	11	Yes	No
		Other	18	-	-
Pledger-Asa	Well drained and moderately well drained, nearly level, clayey and loamy soils on broad flood plains	Pledger	69	Yes	No
		Asa	24	Yes	No
		Other	7	-	-
Brazoria-Norwood-Clemville	Well drained and somewhat poorly drained, Nearly level, clayey and loamy soils on nearly level to weakly undulating floodplains along the Colorado River	Brazoria	63	Yes	No
		Norwood	11	Yes	No
		Clemville	9	No	No
		Other	17	-	-
Livia-Palacios-Francitas	Poorly drained, nearly level, loamy and clayey, saline soils on broad, low-lying upland coastal plains and on coastal lowlands	Livia	32	No	No
		Palacios	31	No	No
		Francitas	18	No	No
		Other	19	-	-
Brazoria County (SCS 1981; NRCS 2018)					
Lake Charles	Clayey, somewhat poorly drained, very slowly permeable soils on coastal terraces	Lake Charles	85	Yes	No
		Other	15	-	-
Pledger-Brazoria	Clayey, somewhat poorly drained, very slowly permeable soils on bottom lands	Pledger	70	Yes	No
		Brazoria	25	Yes	No
		Other	5	-	-
Bernard-Edna	Loamy, somewhat poorly drained and poorly drained, very permeable soils on coastal terraces	Bernard	40	Yes	No
		Edna	35	No	No
		Other	25	-	-

TABLE 2-13 SOIL ASSOCIATIONS WITHIN THE STUDY AREA

SOILS ASSOCIATION	DESCRIPTION	SOIL SERIES	PERCENT OF ASSOCIATION	PRIME FARMLAND SOIL	HYDRIC SOIL
Edna-Aris	Loamy, poorly drained and somewhat poorly drained, very permeable soils on coastal terraces	Edna	40	No	No
		Aris	35	No	Yes
		Other	25	-	-
Surfside-Velasco	Clayey, poorly drained and very poorly drained, very permeable soils in marshes	Surfside	60	No	Yes
		Velasco	11	No	Yes
		Other	29	-	-
Harris-Veston	Clayey and loamy, very poorly drained and poorly drained, very slowly permeable and slowly permeable soils in marshes	Harris	50	No	Yes
		Veston	8	No	Yes
		Other	42	-	-
Francitas-Narta	Clayey and loamy, poorly drained and somewhat poorly drained, very slowly permeable soils on coastal terraces	Francitas	40	No	No
		Narta	30	No	Yes
		Other	25	-	-

Source: SCS 1974 and 1981; NRCS 2001 and 2018.

2.4.2.2 Prime Farmland Soils

The Secretary of Agriculture, within 7 U.S.C. § 4201(c)(1)(A), defines prime farmland soils as those soils that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops. They have the soil quality, growing season and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. Additional potential prime farmlands are those soils that meet most of the requirements of prime farmland, but fail because they lack the installation of water management facilities or they lack sufficient natural moisture. The USDA would consider these soils prime farmland if such practices were installed and these soils are designated as Prime Farmland soils in Table 2-8.

This transmission line project is not subject to the requirements of the NEPA or the Farmland Protection Policy Act ("FPPA") because this Project will not be completed by, and will not receive assistance from, any federal agency. The Project is exempt from the FPPA because transmission lines are not a conversion of these farmlands and the site can still be used after construction (as per NRCS letter to POWER on October 19, 2017; Appendix A).

2.4.2.3 Hydric Soils

The National Technical Committee for Hydric Soils defines hydric soils as soils that were formed under conditions of saturation, flooding or ponding long enough during the growing season to develop

anaerobic conditions in the upper part. These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

Soil map units that are dominantly comprised of hydric soils might have small areas, or inclusions, of non-hydric soils in the higher positions on the landform, and map units dominantly made up of non-hydric soils might have inclusions of hydric soils in the lower positions on the landform (NRCS 2018). The soil units classified as hydric are listed in Table 2-8. Minor soils listed within soil units were not evaluated for this criterion.

2.4.3 Water Resources

Information on water resources within the study area were obtained from a variety of sources including USEPA, the National Hydrography Dataset, TWDB, aerial photography, USGS topographic maps, field reconnaissance surveys and aerial photographs (Google 2018).

2.4.3.1 Surface Waters

From west to east, the study area is located within the Colorado-Lavaca, Colorado, Brazos-Colorado, Brazos and San Jacinto-Brazos river basins (TWDB 2014). Rivers identified within the study area include the Brazos River (TECQ Segment ID: 1201, 1202), Colorado River (TECQ Segment ID: 1401, 1402) and San Bernard River (TECQ Segment ID: 1301, 1302). The Brazos River and San Bernard River generally flow in a southeast direction until their confluence with the Gulf of Mexico (TECQ Segment ID: 2501), approximately one mile south of the study area. The Colorado River generally flows in a south direction until its confluence with Matagorda Bay (TECQ Segment ID: 2451), approximately 15 miles south of the study area.

Named linear surface waters within the study area include: Bastrop Bayou (TECQ Segment ID: 1105), Bell Creek, Big Boggy Creek, Big Slough, Blue Creek, Boggy Bayou, Brushy Bayou, Bucks Bayou, Buffalo Camp Bayou, Caney Creek (TECQ Segment ID: 1304, 1305), Canoe Bayou, Cedar Lake Bayou, Cedar Lake Creek, Cocklebur Slough, Cottonwood Creek, Dance Bayou, Dead Slough, Dry Bayou, Dry Creek, Flag Lake Drainage Canal, Flores Bayou, Gardner Slough, Grassy Slough, Hardeman Slough, Gulf Intercoastal Waterway, Jackson Ditch, Jarvis Creek, Johnsons Timber Slough, Jones Creek, Linnville Bayou (TECQ Segment ID: 1304A), Little Linnville Bayou, Little Slough, Live Oak Bayou (TECQ Segment ID: 2441A), Live Oak Creek, McFadden Bayou, Middle Bayou, Mill Bayou, Mound Creek (TECQ Segment ID: 1302E), Old Brazos River Channel (TECQ Segment ID: 1111), Oyster Creek (TECQ Segment ID: 1109, 1110), Peyton Creek, Quinine Slough, Red Bayou, Salt Bayou, San Bernard

River, Snead Slough, Styles Bayou, Varner Creek, Wadsworth Slough, Water Hole Creek, Wildcat Slough and Wilson Creek. Additional named surface waters within the study area include Brazoria Reservoir, Angleton Fishing and Hunting Club Reservoir, York Reservoir, Club Lake, Lake Jackson, Brock Reservoir, Old Ocean Swamp, Little Lake, Betts Lake, Neal Lake, Jennings Lake, Lake Bowie, Williams Lake, Flag Pond and Bird Pond. Unnamed surface waters within the study area include tributaries, streams, canals, ditches, bayous, marshes, swamps, backwaters, sloughs, lakes, reservoirs and ponds.

Surface waters and their associated wetlands located within the study area may be subject to USACE regulations as "waters of the US" under Section 404 of the CWA. Navigable waters and associated tributaries or backwaters located within the study area may be subject to USACE regulations as "navigable waters of the US" under Section 10 of the Rivers and Harbors Act of 1899. The study area is within the USACE-Galveston District, which determines navigable waters on a case-by-case basis and thus does not publish a list of Section 10 waters; however, the Gulf Intercoastal Waterway, Caney Creek, Live Oak Bayou, Bastrop Bayou, Brazos River, Colorado River and San Bernard River may be Section 10 navigable waters.

2.4.3.2 Special Status Waters

Under 31 T.A.C. 357.8, TPWD has identified Ecologically Significant Stream Segments ("ESSS") based on habitat value, threatened and endangered species, species diversity and aesthetic value criteria. Review of the TPWD (2018a) data indicates six surface waters designated as ESSS stream segments within the study area including: the Colorado River, the Brazos River, San Bernard River, Redfish Bayou, Cedar Lake Creek and Jones Creek.

The Colorado River qualified as an ESSS because of its biological function: extensive freshwater and estuarine wetland habitats display significant overall habitat value, and due to a threatened or unique species being present, which is the blue sucker (*Cycleptus elongatus*). The Brazos River qualified as an ESSS because of riparian conservation areas and threatened or endangered species/unique communities, including unique Live Oak-Water Oak-Pecan bottomlands and the diamondback terrapin. The San Bernard River qualified as an ESSS because of its biological function, riparian conservation area and threatened or endangered species/unique communities, including Live Oak-Water Oak-Pecan bottomlands community and diamondback terrapin. Cedar Lake Creek qualified as an ESSS because of its biological function, location within the San Bernard Wildlife Refuge (a riparian conservation area) and threatened or endangered species/unique communities, including reddish egret, wood stork, brown pelican and white-faced ibis. Its aquatic habitat has a high degree of biodiversity. Redfish Bayou qualified as an ESSS

because it contains a riparian conservation area (Justin Hurst Wildlife Management Area). Jones Creek qualified as an ESSS because it contains a riparian conservation area (Peach Point Wildlife Management Area) and its biological function, including bottomland hardwood habitat displaying significant overall habitat value (TPWD 2018a).

In accordance with Section 303(d) and 304(a) of the CWA, the TCEQ identifies surface waters for which effluent limitations are not stringent enough to meet water quality standards and for which the associated pollutants are suitable for measurement by maximum daily load. The index is divided into two main categories: Category 4 includes impaired waters for which Total Maximum Daily Loads ("TMDL") have already been adopted, or for which other management strategies are underway to improve water quality. Category 5 (303d List) includes impaired waters for which TMDLs or other management strategies are planned.

Review of the TCEQ (2014), Texas Integrated Report of Surface Water Quality (formerly called the 303(d) list) lists impaired water bodies within the study area as: Bastrop Bayou (Tidal), Oyster Creek (Tidal and above Tidal), San Bernard River (Tidal and above Tidal), Caney Creek (Tidal and above Tidal) and Linnville (above Tidal). Bastrop Bayou is listed as impaired due to bacteria. Oyster Creek is listed as impaired for bacteria and depressed dissolved oxygen. The San Bernard River has impairment for bacteria. Caney Creek is listed as impaired for bacteria and depressed dissolved oxygen. Linnville Bayou is listed as impaired due to bacteria (TCEQ 2014).

2.4.3.3 Floodplains

Available floodplain and floodway data were obtained from FEMA. A 100-year flood (one percent flood or base flood) represents a flood event that has a one percent chance of being equaled or exceeded for any given year. Detailed FEMA flood hazard boundary maps show the 100-year floodplain includes a large portion of the study area. FEMA mapped floodplains occur primarily on low lying areas near creeks, rivers and bayous (FEMA 2018).

2.4.3.4 Future Surface Water Developments

A review of the 2017 *Texas State Water Plan* did not indicate any evaluated, proposed, or potential new major reservoirs within the study area (TWDB 2017b).

2.4.3.5 Coastal Management Zone

The Texas GLO must develop and implement a comprehensive plan for managing the natural resources along the Texas Gulf of Mexico coastline under the CMP as specified in the Coastal Coordination Act of 1991 (Texas GLO 2018). The PUC must comply with CMP policies when approving CCNs for electric transmission lines that are located within the CMZ under the Coastal Zone Management Act of 1972. The southeast one-third of the study area and a one-mile buffer around the Bernard River lie within the designated CMZ, as defined by the Coastal Management Boundary and Coastal Facilities Designation Line as defined in 31 TAC § 503.1.

POWER reviewed the CMP and also reviewed aerial photography and associated mapping provided by the Texas GLO, FEMA, USFWS and the USGS to identify coastal natural resource areas ("CNRAs") as defined in 31 TAC § 501.3(b). Designated CNRAs include waters of the open Gulf of Mexico, waters under tidal influence, state submerged lands, coastal wetlands, submerged aquatic vegetation, tidal sound and mud flats, oyster reefs, hard substrate reefs, coastal barriers, coastal shore areas, gulf beaches, critical dune areas, special hazard areas (floodplains, etc.), critical erosion areas, coastal historic areas and coastal preserves.

CNRAs potentially occurring within the study area may include Coastal Preserves (San Bernard National Wildlife Refuge, Nannie M. Stringfellow WMA and Justin Hurst WMA); Coastal Shore Areas, Coastal Wetlands (estuarine and freshwater emergent; USFWS 2018a); Special Hazard Areas (FEMA 100-floodplains; FEMA 2018); State Submerged Lands (Portions of Oyster Creek, Brazos River, McNeal Bayou, McNeal Lake, Pelican Lake, Redfish Bayou, San Bernard River, Cedar Lake Creek, Cow Trap Lake and Caney Creek; Texas GLO 2018); and Submerged Aquatic Vegetation, Tidal Sand or Mud Flats and Waters Under Tidal Influence (Portions of Bastrop Bayou, Oyster Creek, Brazos River, San Bernard River, Caney Creek and Live Oak Bayou). Upon PUC approval of a route, on the ground verifications of CNRAs may be required. Refer to Section 4.4.3.3 for further discussion, of potential impacts to CNRAs.

2.4.3.6 Ground Water

The Gulf Coast Aquifer is a major groundwater aquifer that underlies the majority of the study area (TWDB 2011). No minor aquifers were mapped within the study area (TWDB 2011). The Gulf Coast aquifer parallels the Gulf of Mexico coastline from the Louisiana to the Mexican border. It consists of several aquifers, including the Jasper, Evangeline and Chicot aquifers, and is composed of discontinuous sand, silt, clay and gravel beds. The maximum total sand thickness of the Gulf Coast aquifer is approximately 700 feet in the southern portion. Water quality of the Gulf Coast Aquifer is generally good

in the central and northeastern sections, where total dissolved solids are less than 500 milligrams per liter, but declines southward where total dissolved solids range from 1,000 to more than 10,000 milligrams per liter (TWDB 2011).

Review of the TWDB (2018) water well data indicated numerous public and private water wells located throughout the study area. Public water well locations were mapped within the study area. Only one unnamed spring was identified within the study area, located along the San Bernard River west of the city of West Columbia, Texas (Brune 2002; TWDB 2018; and USGS 2018a).

2.4.4 Ecological Resources

2.4.4.1 Ecological Region

The study area is located within the Western Gulf Coastal Plain Level III and within Northern Humid Gulf Coastal Prairies, Floodplains and Low Terraces, and Mid-Coast Barrier Islands and Coastal Marshes IV Ecoregions (USEPA 2018). The Western Gulf Coastal Plain Level III Ecoregion is a flat narrow piece of land paralleling the Gulf Coast and is characterized by its relatively flat topography and grassland natural vegetation. A high percentage of this region has been converted into croplands and in recent years urban and industrial development has greatly expanded (Griffith et al. 2007).

The Northern Humid Gulf Coastal Prairies Level IV Ecoregion are mapped within the western one-third of the study area. This region lies in a band scattered along the northern half of the Texas coast. This region is typically characterized by low flat plains, low rivers and streams with sand, silt and clay substrates. The Northern Humid Gulf Coastal Prairies is a gently sloping coastal plain with generally poorly drained soils. Historically, much of this region was covered in tallgrass prairie and scattered oak mottes. Today, this region has been almost entirely converted into cropland, rangeland or developed for urban or industrial land use. A network of drainage canals, stream channelization and levees also exist in many areas. Commercially important species in the study area include pines, hardwoods, rice and forage crops (Griffith et al. 2007).

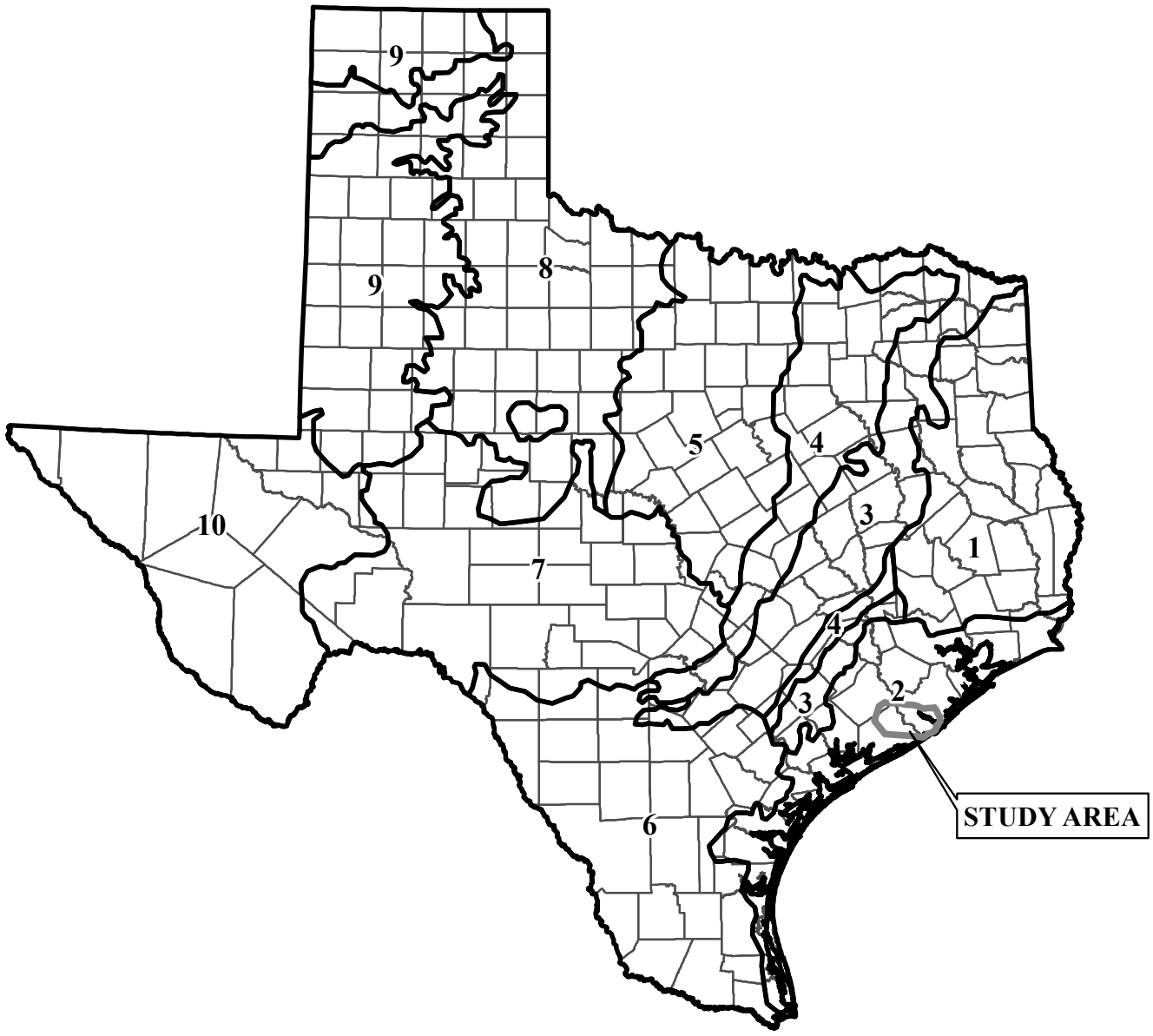
Floodplains and Low Terraces Level IV Ecoregion are mapped within the bulk of the study area, along the Colorado River and from the Live Oak Bayou floodplain in Matagorda County to the Oyster Creek floodplain in Brazoria County. Original vegetation was mostly bottomland forests of pecan, water oak, southern live oak and elm, with some bald cypress on larger streams. The Brazos and Colorado River floodplains are a broad expanse of Holocene alluvial sediments. Large portions of floodplain forest have been removed and converted to cropland and pasture (Griffith et al. 2007).

The Mid-Coast Barrier Islands and Coastal Marshes Level IV Ecoregion are located in a narrow band along the southeast corner of the study area. The region is composed primarily of Holocene deposits with saline, brackish and freshwater marshes; barrier islands with minor washover fans; and tidal flat sands and clays. Smooth cordgrass, marshhay, cordgrass and gulf saltgrass dominate in more saline zones and other vegetation includes primarily grassland composed of seacoast bluestem, sea-oats, common reed, gulfdune paspalum and soilbind morning-glory (Griffith et al. 2007).

2.4.4.2 Vegetation Types

The study area is located within the Gulf Prairies vegetational area of Texas (Gould et al. 1960). Frye et al. (1984) identified four vegetation types within the study area: Crops, Pecan-Elm Forest, Bluestem grassland and Marsh/Barrier Island (Figure 2-4). There are four vegetation sub-types within the Marsh/Barrier Island vegetation type. The freshwater marsh is characterized by maidencane (*Panicum hemitomon*) and alligator weed (*Alternanthera philoxeroides*). A brackish marsh will be characterized by saltmeadow cordgrass (*Spartina patens*) and bulrush (*Scirpus* spp.). As the marsh becomes more saline smooth cordgrass (*Spartina alterniflora*), marsh saltgrass (*Distichlis spicata*) and sea ox-eye (*Borrichia frutescens*) will become the dominate species. Upland vegetation in a marine environment will feature seaoats (*Uniola paniculata)* and seacoast bluestem (*Schizachyrium littorale*).

Mapped vegetation within the Floodplains and Low Terraces Level IV Ecoregion includes bottomland forests of pecan (*Carya illinoinensis*), water oak (*Quercus nigra*), live oak (*Quercus virginiana*) and elm (*Ulmus* spp.), with some bald cypress (*Taxodium distichum*) on larger streams and black hickory (*Carya texana*), post oak (*Quercus stellata*) and winged elm (*Ulmus alata)* (Griffith et al. 2007). Within the study area, mapped vegetation within the Mid-Coast Barrier Islands and Coastal Marshes Level IV Ecoregion includes smooth cordgrass, saltmeadow cordgrass and marsh saltgrass, in more saline zones. Other native grassland vegetation consists of seacoast bluestem, sea-oats, common reed (*Phragmites australis*), gulfdune paspalum (*Paspalum monostachyum*) and beach morning-glory (*Ipomoea pes-caprae*). Some areas may have mottes of sweetbay (*Magnolia virginiana*) and redbay (*Persea borbonia*) (Griffith et al. 2007).



N

0 30 60 120 180 240

Miles

Source: Gould, et. al., 1960.

Legend

Vegetational Areas Boundary

1 Pineywoods
2 Gulf Prairies and Marshes
3 Post Oak Savannah
4 Blackland Prairies
5 Cross Timbers and Prairies
6 South Texas Plains
7 Edwards Plateau
8 Rolling Plains
9 High Plains
10 Trans-Pecos

County Boundary

BAILEY TO JONES CREEK PROJECT

FIGURE 2-4

LOCATION OF STUDY AREA IN RELATION TO THE VEGETATIONAL AREAS OF TEXAS

POWER ENGINEERS

Date: 6/26/2018

CenterPoint Energy

Vegetation within Northern Humid Gulf Coastal Prairies includes prairie grasslands with little bluestem (*Schizachyrium scoparium*), yellow Indiangrass (*Sorghastrum nutans*), brownseed paspalum (*Paspalum plicatulum*), gulf muhly (*Muhlenbergia capillaris*) and switchgrass (*Panicum virgatum*), with some clusters of southern live oak (*Quercus virginiana*). Riparian forests are dominated by water oak (*Quercus nigra*), pecan (*Carya illinoinensis*), southern live oak, American elm (*Ulmus americana*), cedar elm (*Ulmus crassifolia*) and sugar hackberry (*Celtis laevigata*) (see Table 4-14) (Griffith et al. 2007).

Non-native landcover within the study area includes urban and disturbed land, improved pastureland and cropland. Crops in this region typically include rice, soybeans, grain sorghum, cotton, corn, wheat, pecans and hay (Griffith et al. 2007).

TABLE 2-14 POTENTIAL TREE/SHRUB SPECIES WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME
American beautyberry	*Callicarpa Americana*	Mesquite	*Prosopis* spp.
American elm	*Ulmus Americana*	Overcup Oak	*Quercus lyrata*
Ash	*Fraxinus* spp.	Pecan	*Carya illinoensis*
Bald Cypress	*Taxodium distichum*	Post oak	*Quercus stellata*
Black Hickory	*Carya texana*	Rattlebush	*Sesbania drummondii*
Black willow	*Salix nigra*	Redbay	*Persea borbonia*
Blackjack oak	*Quercus marilandica*	Red cedar	*Juniperus virginiana*
Box Elder	*Acer negundo*	Red maple	*Acer rubrum*
Carolina basswood	*Tilia caroliniana*	Red mulberry	*Morus rubra*
Cherry Laurel	*Prunus laurocerasus*	Rusty blackhaw	*Viburnum rufidulum*
Bur Oak	*Quercus macrocarpa*	Salt cedar	*Tamarix spp.*
Cedar elm	*Ulmus crassifolia*	Sea myrtle	*Baccharis halimifolia*
Chinese tallow	*Triadica sebifera*	Sand post oak	*Quercus margaretta*
Chinese privet	*Ligustrum sinense*	Sandjack oak	*Quercus incana*
Chittimwood	*Sideroxylon lanuginosum*	Sassafras	*Sassafras albidum*
Coral-berry	*Symphoricarpos orbiculatus*	Shortleaf pine	*Pinus echinata*
Eastern cottonwood	*Populus deltoids*	Shumard oak	*Quercus shumardii*
Eastern Redbud	*Cercis canadensis*	Southern Live oak	*Quercus virginiana*
Eastern red cedar	*Juniperus virginiana*	Southern red oak	*Quercus falcata*
Escarpment live oak	*Quercus fusiformis*	Sugar hackberry	*Celtis laevigata*
Farkleberry	*Vaccinium arboretum*	Swamp chestnut oak	*Quercus michauxii*
Flowering dogwood	*Cornus florida*	Sweetbay	*Magnolia virginiana*
Green Ash	*Fraxinus pennsylvanica*	Sweetgum	*Liquidambar styraciflua*
Gum	*Nyssa* spp.	Sycamore	*Plantanus americana*
Hawthorn	*Crataegus* spp.	Water oak	*Quercus nigra*

TABLE 2-14 POTENTIAL TREE/SHRUB SPECIES WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME
Holly	*Ilex* spp.	Water elm	*Planera aquatica*
Huisache	*Acacia farnesiana*	Water hickory	*Carya aquatica*
Lime prickleyash	*Zanthoxylum fagara*	Western soapberry	*Sapindus saponaria L. var. drummondii*
Loblolly pine	*Pinus taeda*	Willow Oak	*Quercus phellos*
		Winged elm	*Ulmus alata*

Source: McMahan et al. 1984; Griffith et al. 2007.

Aquatic and Hydric Habitats

Aquatic habitats within the study area may be associated with surface waters and wetlands. Other aquatic habitats may be associated with the tributaries to these surface waters, including pooled areas of perennial or intermittent drainages. Emergent vegetation in these aquatic habitats is typically limited to the shallow areas along the shorelines or within shallow marshes. Aquatic environments support vegetative species, such as water hyacinth (*Eichhornia crassipes*), arrowhead (*Sagittaria* spp.), coontail (*Ceratophyllum demersum*), cabomba (*Cabomba caroliniana*), pickerelweed (*Pontederia cordata*), pennyworts (*Hydrocotyle* spp.), water lilies (*Nymphaea* spp.), spiderworts (*Tradescantia* spp.), duckweeds (*Lemna* spp.), widgeongrass (*Ruppia maritima*) and glasswort (*Salicornia depressa*) (McMahan et al. 1984).

The hydric habitats in the study area are primarily located within floodplains, riparian and depressional wetland areas associated with creeks, bottomland areas, ponds and lakes. These habitats undergo a seasonal inundation and maintain saturated soils. Typical woody plant species in these riparian areas include Chinese tallow (*Triadica sebifera*), pecan, lime prickly ash (*Zanthoxylum fagara*), water oak, black hickory and winged elm (McMahan et al. 1984; Griffith et al. 2007).

Mapped wetland information was derived from digital copies of the USFWS NWI maps (USFWS 2018a). NWI maps are based on topography and interpretation of infrared satellite data and color aerial photographs and are classified under the Cowardin System (Cowardin et al. 1979). These maps are typically conservative estimates of wetlands, primarily because the hydrology of the area has likely been modified by ground disturbing activities, such as farming, channelized streams, installation of levees and drainages. Review of NWI data indicated numerous wetlands throughout the study area with wetland types including palustrine (freshwater) emergent (“PEM”), palustrine forested (“PFO”), palustrine scrub/shrub (“PSS”), freshwater ponds (palustrine unconsolidated bottom; “PUB”) and lakes (lacustrine; “L”). PEM wetlands consist of rooted herbaceous hydrophytes located in pond margins, freshwater marshes or shallow water areas. PFO and PSS wetlands are mapped throughout the study area, primarily within floodplains along creeks. PFO wetlands are wetland areas comprised of hydrophytic trees that

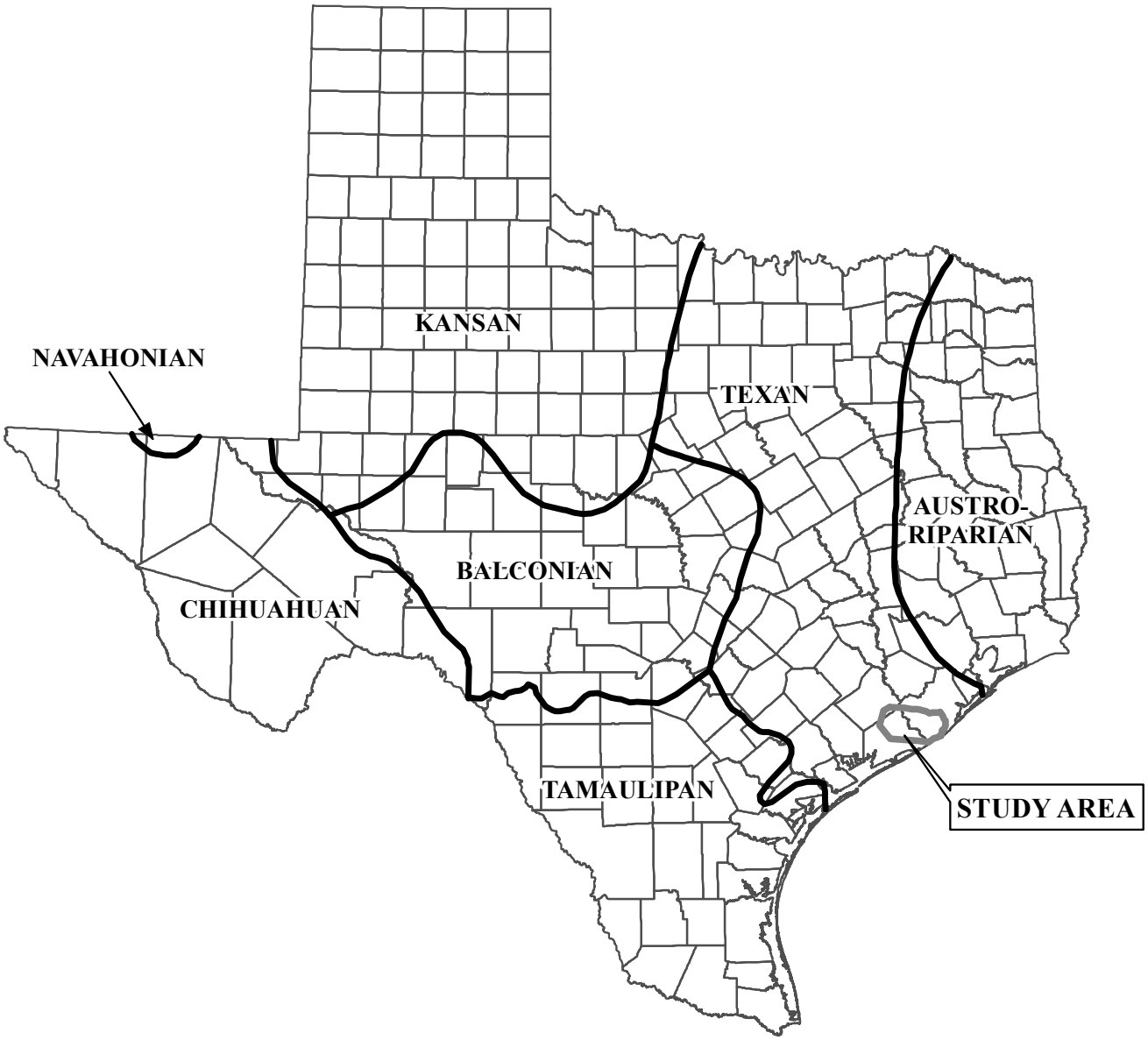
constitute 30 percent or greater of the areal vegetation coverage. PSS wetlands are areas where hydrophytic trees constitute less than 30 percent and the scrub-shrub layer constitutes 30 percent or greater of the areal vegetation cover

Mapped emergent wetlands are particularly numerous in the southeastern corner of the study area, with the largest examples occurring within Justin Hurst WMA. These wetlands are typically comprised of aquatic species, such as cattails (*Typha* spp.), sedges (*Carex* spp.), flatsedges (*Cyperus* spp.), smartweeds (*Polygonum* spp.), bulrushes (*Scirpus* spp.), rushes (*Juncus* spp.), water hyacinth, water-pennywort, pickerelweed, arrowhead, white waterlily (*Nymphaea odorata*), cabomba, coontail and duckweed (McMahan et al. 1984). Mapped forested wetlands are throughout the study area with the largest contiguous patches occurring near large rivers and creeks. These wetland areas may contain bald cypress (*Taxodium distichum*) and black willow (*Salix nigra*) in the wettest areas with an understory of swamp privet (*Forestiera acuminata*) and buttonbush (*Cephalanthus occidentalis*). Areas experiencing less frequent inundation may contain green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*) and water hickory (*Carya aquatica*) (McMahan et al. 1984). The dredging or filling of materials within jurisdictional wetlands is regulated by the USACE under Section 404 of the CWA. Additional coordination with the USACE may be required to determine if any permit requirements will be necessary for the construction of the proposed transmission line.

2.4.4.3 Wildlife and Fisheries

Wildlife

The study area is located in the southeastern portion of the Texan Biotic Province (see Figure 2-5) (Blair 1950). The Texan Biotic Province is located adjacent to the Austroriparian Biotic Province to the east and some overlap between these two provinces would be anticipated. At the time of publication, the Texan Biotic Province was known to support 13 anurans, five urodeles, 39 snake species, nine lizards, two land turtles and at least 49 species of mammals (Blair 1950).



N

0 30 60 120 180 240

Miles

Source: Blair, 1950, modified

Legend

Biotic Province Boundary

County Boundary

BAILEY TO JONES CREEK PROJECT

FIGURE 2-5

LOCATION OF STUDY AREA IN RELATION TO THE BIOTIC PROVINCES OF TEXAS

POWER ENGINEERS

Date: 6/26/2018

CenterPoint Energy

Amphibian species (frogs, toads, salamanders and newts) that potentially occur within the study area counties are listed in Table 2-15. Frogs and toads may occur in all vegetation types and salamanders and newts are typically restricted to moist habitats (Tipton et al. 2012).

TABLE 2-15 AMPHIBIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA COUNTIES

COMMON NAME	SCIENTIFIC NAME
Frogs/Toads	
American bullfrog	*Lithobates catesbeianus*
Cope's gray tree frog	*Hyla chrysoscelis*
Crawfish frog	*Lithobates areolatus*
Eastern narrow-mouth toad	*Gastrophryne carolinensis*
Gray tree frog	*Hyla versicolor*
Great Plains narrow-mouthed toad	*Gastrophryne olivacea*
Green frog	*Lithobates clamitans*
Green tree frog	*Hyla cinerea*
Gulf Coast toad	*Incilius nebulifer*
Hurter's spadefoot toad	*Scaphiopus hurterii*
Northern cricket frog	*Acris crepitans*
Pickerel frog	*Lithobates palustris*
Rio Grande chirping frog	*Eleutherodoctylus cystignathoides*
Southern leopard frog	*Lithobates sphenocephalus*
Spotted chorus frog	*Pseudacris clarkii*
Spring peeper	*Pseudacris crucifer*
Squirrel tree frog	*Hyla squirella*
Strecker's chorus frog	*Pseudacris streckeri*
Upland chorus frog	*Pseudacris feriarum*
Woodhouse's toad	*Anaxyrus woodhousii*
Salamanders/Newts	
Eastern newt	*Notophthalmus viridescens*
Marbled salamander	*Ambystoma opacum*
Small-mouthed salamander	*Ambystoma texanum*
Western lesser siren	*Siren intermedia*

Source: Tipton et al. 2012.

Reptiles (turtles, crocodilians, lizards and snakes) potentially occurring within the study area are listed in Table 2-16. These include those species that are commonly observed near water (i.e., aquatic turtles, alligators and some snakes) and those that are more common in terrestrial habitats (Dixon 2013).

TABLE 2-16 REPTILIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Turtles	
Chicken turtle	*Deirochelys reticularia miaria*
Diamond-backed terrapin	*Malaclemys terrapin littoralis*
Eastern box turtle	*Terrapene carolina*
Eastern mud turtle	*Kinosternon subrubrum hippocrepis*
Eastern musk turtle	*Sternotherus odoratus*
Eastern snapping turtle	*Chelydra serpentina*
False map turtle	*Graptemys pseudogeographica*
Ornate box turtle	*Terrapene ornata ornata*
Pallid spiny softshell	*Apalone spinifera pallida*
Red-eared pond slider	*Trachemys scripta elegans*
River cooter	*Pseudemys concinna*
Smooth softshell	*Apalone mutica*
Texas cooter	*Pseudemys texana*
Yellow mud turtle	*Kinosternon flavescens*
Crocodilians	
American alligator	*Alligator mississippiensis*
Lizards	
Broad-headed skink	*Eumeces laticeps*
Brown anole	*Anolis sagrei*
Common spotted whiptail	*Cnemidophorus gularis*
Eastern six-lined race runner	*Cnemidophorus sexlineatus*
Five-lined skink	*Eumeces fasciatus*
Green anole	*Anolis carolinensis*
Little brown skink	*Scincella lateralis*
Mediterranean gecko	*Hemidactylus turcicus*
Northern fence lizard	*Sceloporus undulatus hyacinthinus*
Prairie skink	*Eumeces septentrionalis obtusirostris*
Slender glass lizard	*Ophisaurus attenuatus*
Texas horned lizard	*Phrynosoma cornutum*
Texas spiny lizard	*Sceloporus olivaceus*
Snakes	
Blotched water snake	*Nerodia erythrogaster transversa*
Broad-banded water snake	*Nerodia fasciata confluens*
Broad-banded copperhead	*Agkistrodon contortrix laticinctus*
Canebrake rattlesnake	*Crotalus horridus atricaudatus*
Checkered garter snake	*Thamnophis marcianus*
Desert massasauga	*Sistrurus catenatus edwardsi*
Diamond-backed water snake	*Nerodia rhombifer rhombifer*
Dusty hog-nosed snake	*Heterodon nasicus gloydi*
Eastern garter snake	*Thamnophis sirtalis sirtalis*
Eastern hog-nosed snake	*Heterodon platirhinos*
Eastern yellow-bellied racer	*Coluber constrictor flaviventris*
Flat-headed snake	*Tantilla gracilis*

TABLE 2-16 REPTILIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Glossy crayfish snake	*Regina rigida sinicola*
Graham's crayfish snake	*Regina grahami*
Gulf Coast ribbon snake	*Thamnophis proximus orarius*
Gulf saltmarsh snake	*Nerodia clarkii clarkii*
Louisiana milk snake	*Lampropeltis triangulum amaura*
Marsh brown snake	*Storeria dekayi limnetes*
Mississippi green water snake	*Nerodia cyclopion*
Mississippi ring-necked snake	*Diadophis punctatus stictogenys*
Prairie king snake	*Lampropeltis calligaster calligaster*
Pygmy rattlesnake	*Sistrurus miliarius streckeri*
Rough earth snake	*Virginia striatula*
Rough green snake	*Opheodrys aestivus*
Smooth green snake	*Opheodrys vernalis*
Southern copperhead	*Agkistrodon contortrix contortrix*
Speckled king snake	*Lampropeltis getula holbrooki*
Texas brown snake	*Storeria dekayi texana*
Texas coral snake	*Micrurus tener*
Texas glossy snake	*Arizona elegans arenicola*
Texas rat snake	*Pantherophis obsoleta lindheimeri*
Western coachwhip	*Masticophis flagellum testaceus*
Western cottonmouth	*Agkistrodon piscivorus leucostoma*
Western diamond-backed rattlesnake	*Crotalus atrox*
Western mud snake	*Farancia abacura reinwardti*
Western ribbon snake	*Thamnophis proximus proximus*

Source: Dixon 2013.

Numerous avian species are present within the study area, including year-round residents or migratory species as listed in Table 2-17. Avian migrants may seasonally travel through the study area in the spring and fall, or use the area for nesting in the spring and summer or to overwinter (Lockwood and Freeman 2014). Avian occurrence checklists were reviewed for the USFWS (2013) Brazoria, San Bernard and Big Boggy NWRs. The likelihood for occurrence of each species depends upon suitable habitat and season. All migratory birds have protection under the MBTA.

TABLE 2-17 BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	*SCIENTIFIC NAME*	RESIDENT	SUMMER	WINTER
ACCIPITRIFORMES: Accipitridae				
Bald eagle	*Haliaeetus leucocephalus*		X	X
Cooper's hawk	*Accipiter cooperii*	X		X
Northern harrier	*Circus cyaneus*			X
Red-shouldered hawk	*Buteo lineatus*	X		
Red-tailed hawk	*Buteo jamaicensis*	X		
Sharp-shinned hawk	*Accipiter striatus*			X
White-tailed hawk	*Geranoaetus albicaudatus*	X		
White-tailed kite	*Elanus leucurus*	X		
ACCIPITRIFORMES: Cathartidae				
Black vulture	*Coragyps atratus*	X		
Turkey vulture	*Cathartes aura*	X		
ACCIPITRIFORMES: Pandionidae				
Osprey	*Pandion haliaetus*			X
ANSERIFORMES: Anatidae				
American wigeon	*Anas americana*			X
Black-bellied whistling-duck	*Dendrocygna autumnalis*	X		
Blue-winged teal	*Anas discors*			X
Bufflehead	*Bucephala albeola*			X
Canada goose	*Branta canadensis*			X
Canvasback	*Aythya valisineria*			X
Cinnamon teal	*Anas cyanoptera*			X
Fulvous whistling-duck	*Dendrocygna bicolor*		X	
Gadwall	*Anas strepera*			X
Greater white-fronted goose	*Anser albifrons*			X
Green-winged teal	*Anas crecca*			X
Hooded merganser	*Lophodytes cucullatus*			X
Lesser scaup	*Aythya affinis*			X
Mallard	*Anas platyrhynchos*	X		X
Northern pintail	*Anas acuta*			X
Northern shoveler	*Anas clypeata*			X
Red-breasted merganser	*Mergus serrator*			X
Redhead	*Aythya americana*			X
Ring-necked duck	*Aythya collaris*			X
Ruddy duck	*Oxyura jamaicensis*			X
Snow goose	*Chen caerulescens*			X
Wood duck	*Aix sponsa*	X		X
APODIFORMES: Apodidae				
Chimney swift	*Chaetura pelagica*		X	
APODIFORMES: Trochilidae				

TABLE 2-17 BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	*SCIENTIFIC NAME*	RESIDENT	SUMMER	WINTER
Ruby-throated hummingbird	*Archilochus colubris*		X	
CAPRIMULGIFORMES: Caprimulgidae				
Chuck-will's-widow	*Antrostomus carolinensis*		X	
Common nighthawk	*Chordeiles minor*		X	
CHARADRIIFORMES: Charadriidae				
Black-bellied plover	*Pluvialis squatarola*			X
Killdeer	*Charadrius vociferus*	X		
Piping plover	*Charadrius melodus*			X
Semipalmated plover	*Charadrius semipalmatus*			X
Snowy plover	*Charadrius nivosus*		X	
Wilson's plover	*Charadrius wilsonia*		X	
CHARADRIIFORMES: Haematopodidae				
American oystercatcher	*Haematopus palliatus*	X		
CHARADRIIFORMES: Laridae				
Black skimmer	*Rynchops niger*	X		
Black tern	*Chlidonias niger*			X
Bonaparte's gull	*Chroicocephalus philadelphia*			X
Common tern	*Sterna hirundo*			X
Forster's tern	*Sterna forsteri*	X		X
Franklin's gull	*Leucophaeus pipixcan*			X
Gull-billed tern	*Gelochelidon nilotica*	X		
Herring gull	*Larus argentatus*			X
Laughing gull	*Leucophaeus atricilla*	X		
Least tern	*Sternula antillarum*		X	
Ring-billed gull	*Larus delawarensis*			X
Royal tern	*Thalasseus maximus*	X		
Sandwich tern	*Thalasseus sandvicensis*	X		
CHARADRIIFORMES: Recurvirostridae				
American avocet	*Recurvirostra americana*	X		X
Black-necked stilt	*Himantopus mexicanus*		X	
CHARADRIIFORMES: Scolopacidae				
Dunlin	*Calidris alpina*			X
Greater yellowlegs	*Tringa melanoleuca*			X
Least sandpiper	*Calidris minutilla*			X
Lesser yellowlegs	*Tringa flavipes*			X
Long-billed curlew	*Numenius americanus*			X
Long-billed dowitcher	*Limnodromus scolopaceus*			X
Marbled godwit	*Limosa fedoa*			X
Pectoral sandpiper	*Calidris melanotos*			X
Ruddy turnstone	*Arenaria interpres*			X

TABLE 2-17 BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	*SCIENTIFIC NAME*	RESIDENT	SUMMER	WINTER
Sanderling	*Calidris alba*			X
Semipalmated sandpiper	*Calidris pusilla*			X
Short-billed dowitcher	*Limnodromus griseus*			X
Solitary sandpiper	*Tringa solitaria*			X
Spotted sandpiper	*Actitis macularius*			X
Stilt sandpiper	*Calidris himantopus*			X
Western sandpiper	*Calidris mauri*			X
Whimbrel	*Numenius phaeopus*			X
White-rumped sandpiper	*Calidris fuscicollis*			X
Willet	*Tringa semipalmata*	X		
Wilson's shalarope	*Phalaropus tricolor*			X
Wilson's snipe	*Gallinago delicata*			X
CICONIIFORMES: Ciconiidae				
Wood stork	*Mycteria americana*		X	
COLUMBIFORMES: Columbidae				
Common ground-dove	*Columbina passerina*	X		
Eurasian collared-dove	*Streptopelia decaocto*	X		
Inca dove	*Columbina inca*	X		
Mourning dove	*Zenaida macroura*	X		
Rock pigeon	*Columba livia*	X		
White-winged dove	*Zenaida asiatica*	X		
CORACIIFORMES: Alcedinidae				
Belted kingfisher	*Megaceryle alcyon*			X
CUCULIFORMES: Cuculidae				
Greater roadrunner	*Geococcyx californianus*	X		
Yellow-billed cuckoo	*Coccyzus americanus*		X	
FALCONIFORMES: Falconidae				
American kestrel	*Falco sparverius*			X
Crested caracara	*Caracara cheriway*	X		
FALCONIFORMES: Falconidae				
Merlin	*Falco columbarius*			X
Peregrine falcon	*Falco peregrinus*			X
GALLIFORMES: Odontophoridae				
Northern bobwhite	*Colinus virginianus*	X		
GALLIFORMES: Phasianidae				
Wild turkey	*Meleagris gallopavo*	X		
GAVIIFORMES: Gaviidae				
Common loon	*Gavia immer*			X
GRUIFORMES: Gruidae				
Sandhill crane	*Grus canadensis*			X

TABLE 2-17 BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	*SCIENTIFIC NAME*	RESIDENT	SUMMER	WINTER
GRUIFORMES: Rallidae				
American coot	*Fulica americana*	X		X
Clapper rail	*Rallus crepitans*	X		
Common gallinule	*Gallinula galeata*	X	X	
King rail	*Rallus elegans*	X		
Purple gallinule	*Porphyrio martinicus*		X	
Sora	*Porzana carolina*			X
Virginia rail	*Rallus limicola*			X
Yellow rail	*Coturnicops noveboracensis*			X
PASSERIFORMES: Alaudidae				
Horned lark	*Eremophila alpestris*	X		
PASSERIFORMES: Bombycillidae				
Cedar waxwing	*Bombycilla cedrorum*			X
PASSERIFORMES: Cardinalidae				
Blue grosbeak	*Passerina caerulea*		X	
Dickcissel	*Spiza americana*		X	
Indigo bunting	*Passerina cyanea*			X
Northern cardinal	*Cardinalis cardinalis*	X		
Painted bunting	*Passerina ciris*		X	
PASSERIFORMES: Corvidae				
American crow	*Corvus brachyrhynchos*	X		
Blue Jay	*Cyanocitta cristata*	X		
PASSERIFORMES: Emberizidae				
Chipping sparrow	*Spizella passerina*			X
Dark-eyed junco	*Junco hyemalis*			X
Field sparrow	*Spizella pusilla*			X
Le Conte's sparrow	*Ammodramus leconteii*			X
Lincoln's sparrow	*Melospiza lincolnii*			X
Savannah sparrow	*Passerculus sandwichensis*			X
Seaside sparrow	*Ammodramus maritimus*	X		
Song sparrow	*Melospiza melodia*			X
Swamp sparrow	*Melospiza georgiana*			X
Vesper sparrow	*Pooecetes gramineus*			X
White-throated sparrow	*Zonotrichia albicollis*			X
PASSERIFORMES: Fringillidae				
American goldfinch	*Spinus tristis*			X
House finch	*Haemorhous mexicanus*	X		
PASSERIFORMES: Hirundinidae				
Bank swallow	*Riparia riparia*		X	
Barn swallow	*Hirundo rustica*		X	

TABLE 2-17 BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	*SCIENTIFIC NAME*	RESIDENT	SUMMER	WINTER
Northern rough-winged swallow	*Stelgidopteryx serripennis*		X	X
Purple martin	*Progne subis*		X	
Tree swallow	*Tachycineta bicolor*			X
PASSERIFORMES: Icteridae				
Boat-tailed grackle	*Quiscalus major*	X		
Bobolink	*Dolichonyx oryzivorus*			X
Brewer's blackbird	*Euphagus cyanocephalus*			X
Brown-headed cowbird	*Molothrus ater*		X	
Common grackle	*Quiscalus quiscula*		X	
Eastern meadowlark	*Sturnella magna*	X		
Great-tailed grackle	*Quiscalus mexicanus*	X		
Orchard oriole	*Icterus spurius*		X	
Red-winged blackbird	*Agelaius phoeniceus*	X		X
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*			X
Loggerhead shrike	*Lanius ludovicianus*	X		
PASSERIFORMES: Mimidae				
Brown thrasher	*Toxostoma rufum*			X
Gray catbird	*Dumetella carolinensis*			X
Northern mockingbird	*Mimus polyglottos*	X		
PASSERIFORMES: Motacillidae				
American pipit	*Anthus rubescens*			X
Sprague's pipit	*Anthus spragueii*			X
PASSERIFORMES: Paridae				
Carolina chickadee	*Poecile carolinensis*	X		
Tufted titmouse	*Baeolophus bicolor*	X		
PASSERIFORMES: Parulidae				
American redstart	*Setophaga ruticilla*			X
Bay-breasted warbler	*Setophaga castanea*			X
Black-and-white warbler	*Mniotilta varia*			X
Blackburnian warbler	*Setophaga fusca*			X
Blackpoll warbler	*Setophaga striata*			X
Black-throated green warbler	*Setophaga virens*			X
Blue-winged warbler	*Vermivora cyanoptera*			X
Canada warbler	*Cardellina canadensis*			X
Chestnut-sided warbler	*Setophaga pensylvanica*			X
Common yellowthroat	*Geothlypis trichas*		X	X
Golden-winged warbler	*Vermivora chrysoptera*			X
Hooded warbler	*Setophaga citrina*			X
Kentucky warbler	*Geothlypis formosa*			X
Louisiana waterthrush	*Parkesia motacilla*			X

TABLE 2-17 BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	*SCIENTIFIC NAME*	RESIDENT	SUMMER	WINTER
Magnolia warbler	*Setophaga magnolia*			X
Nashville warbler	*Oreothlypis ruficapilla*			X
Northern parula	*Setophaga americana*		X	
Northern waterthrush	*Parkesia noveboracensis*			X
Orange-crowned warbler	*Oreothlypis celata*			X
Ovenbird	*Seiurus aurocapilla*			X
Palm warbler	*Setophaga palmarum*			X
Prothonotary warbler	*Protonotaria citrea*			X
Tennessee warbler	*Oreothlypis peregrina*			X
Wilson's warbler	*Cardellina pusilla*			X
Worm-eating warbler	*Helmitheros vermivorum*			X
Yellow warbler	*Setophaga petechia*			X
Yellow-breasted chat	*Icteria virens*			X
Yellow-rumped warbler	*Setophaga coronata*			X
Yellow-throated warbler	*Setophaga dominica*			X
PASSERIFORMES: Passeridae				
House sparrow	*Passer domesticus*	X		
PASSERIFORMES: Polioptilidae				
Blue-gray gnatcatcher	*Polioptila caerulea*			X
PASSERIFORMES: Regulidae				
Ruby-crowned kinglet	*Regulus calendula*			X
PASSERIFORMES: Sturnidae				
European starling	*Sturnus vulgaris*	X		
PASSERIFORMES: Troglodytidae				
Carolina wren	*Thryothorus ludovicianus*	X		
House wren	*Troglodytes aedon*			X
Marsh wren	*Cistothorus palustris*			X
Sedge wren	*Cistothorus platensis*			X
PASSERIFORMES: Turdidae				
American robin	*Turdus migratorius*	X		X
Eastern bluebird	*Sialia sialis*		X	
Gray-cheeked thrush	*Catharus minimus*			X
Hermit thrush	*Catharus guttatus*			X
Swainson's thrush	*Catharus ustulatus*			X
Veery	*Catharus fuscescens*			X
Wood thrush	*Hylocichla mustelina*			X
PASSERIFORMES: Tyrannidae				
Eastern kingbird	*Tyrannus tyrannus*		X	
Eastern phoebe	*Sayornis phoebe*			X
Eastern wood-pewee	*Contopus virens*		X	

TABLE 2-17 BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	*SCIENTIFIC NAME*	RESIDENT	SUMMER	WINTER
Great crested flycatcher	*Myiarchus crinitus*		X	
Olive-sided flycatcher	*Contopus cooperi*			X
Scissor-tailed flycatcher	*Tyrannus forficatus*		X	
Vermilion flycatcher	*Pyrocephalus rubinus*			X
PASSERIFORMES: Vireonidae				
Philadelphia vireo	*Vireo philadelphicus*			X
Red-eyed vireo	*Vireo olivaceus*			X
Warbling vireo	*Vireo gilvus*			X
White-eyed vireo	*Vireo griseus*	X	X	
PELECANIFORMES: Ardeidae				
American bittern	*Botaurus lentiginosus*	X	X	
Black-crowned night-heron	*Nycticorax nycticorax*	X		
Cattle egret	*Bubulcus ibis*	X	X	
Great blue heron	*Ardea herodias*	X		
Great egret	*Ardea alba*	X		
Green heron	*Butorides virescens*	X	X	
Least bittern	*Ixobrychus exilis*		X	
Little blue heron	*Egretta caerulea*		X	
Reddish egret	*Egretta rufescens*	X		
Snowy egret	*Egretta thula*	X		
Tricolored heron	*Egretta tricolor*		X	
Yellow-crowned night-heron	*Nyctanassa violacea*	X	X	
PELECANIFORMES: Pelecanidae				
American white pelican	*Pelecanus erythrorhynchos*	X		X
Brown pelican	*Pelecanus occidentalis*	X		
PELECANIFORMES: Threskiornithidae				
Roseate spoonbill	*Platalea ajaja*	X		
White ibis	*Eudocimus albus*	X	X	
White-faced ibis	*Plegadis chihi*	X		
PICIFORMES: Picidae				
Downy woodpecker	*Picoides pubescens*	X		
Northern flicker	*Colaptes auratus*			X
Pileated woodpecker	*Dryocopus pileatus*	X		
Red-bellied woodpecker	*Melanerpes carolinus*	X		
Red-headed woodpecker	*Melanerpes erythrocephalus*	X		
Yellow-bellied sapsucker	*Sphyrapicus varius*			X
PODICIPEDIFORMES: Podicipedidae				
Eared grebe	*Podiceps nigricollis*			X
Pied-billed grebe	*Podilymbus podiceps*	X		X
STRIGIFORMES: Strigidae				

TABLE 2-17 BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	*SCIENTIFIC NAME*	RESIDENT	SUMMER	WINTER
Barred owl	*Strix varia*	X		
Great Horned owl	*Bubo virginianus*	X		
STRIGIFORMES: Tytonidae				
Barn owl	*Tyto alba*	X		
SULIFORMES: Anhingidae				
Anhinga	*Anhinga anhinga*	X	X	
SULIFORMES: Fregatidae				
Magnificent frigatebird	*Fregata magnificens*		X	
SULIFORMES: Phalacrocoracidae				
Double-crested cormorant	*Phalacrocorax auritus*			X

Source: USFWS 2013; Lockwood and Freeman 2014.

Mammals potentially occurring in the study area are listed in Table 2-18 (Schmidly and Bradley 2016). The occurrence of each species depends upon the availability of suitable habitat.

TABLE 2-18 MAMMALIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
American badger	*Taxidea taxus*
American beaver	*Castor canadensis*
American mink	*Neovison vison*
Attwater's pocket gopher	*Geomys attwateri*
Baird's pocket gopher	*Geomys breviceps*
Big brown bat	*Eptesicus fuscus*
Big free-tailed bat	*Nyctinomops macrotis*
Black-tailed jackrabbit	*Lepus californicus*
Bobcat	*Lynx rufus*
Brazilian free-tailed bat	*Tadarida brasiliensis*
Common raccoon	*Procyon lotor*
Coyote	*Canis latrans*
Deer mouse	*Peromyscus maniculatus*
Eastern cottontail	*Sylvilagus floridanus*
Eastern flying squirrel	*Glaucomys volans*
Eastern fox squirrel	*Sciurus niger*
Eastern gray squirrel	*Sciurus carolinensis*
Eastern harvest mouse	*Reithrodontomys humulis*
Eastern mole	*Scalopus aquaticus*
Eastern pipistrelle	*Perimyotis subflavus*
Eastern red bat	*Lasiurus borealis*
Eastern spotted skunk	*Spilogale putorius*
Eastern woodrat	*Neotoma floridana*

TABLE 2-18 MAMMALIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Evening bat	*Nycticeius humeralis*
Feral pig	*Sus scrofa*
Fulvous harvest mouse	*Reithrodontomys fulvescens*
Gray fox	*Urocyon cinereoargenteus*
Hispid cotton rat	*Sigmodon hispidus*
Hispid pocket mouse	*Chaetodipus hispidus*
Hoary bat	*Lasiurus cinereus*
House mouse	*Mus musculus*
Jaguarundi	*Herpailurus yagouaroundi*
Least shrew	*Cryptotis parva*
Long-tailed weasel	*Mustela frenata*
Marsh rice rat	*Oryzomys palustris*
Mountain lion	*Puma concolor*
Muskrat	*Ondatra zibethicus*
Nine-banded armadillo	*Dasypus novemcinctus*
Northern pygmy mouse	*Baiomys taylori*
Northern yellow bat	*Lasiurus intermedius*
Norway rat	*Rattus norvegicus*
Nutria	*Myocastor coypus*
Ocelot	*Leopardus pardalis*
Red fox	*Vulpes vulpes*
Ringtail	*Bassariscus astutus*
River otter	*Lontra canadensis*
Roof rat	*Rattus rattus*
Seminole bat	*Lasiurus seminolus*
Silver-haired bat	*Lasionycteris noctivagans*
Southern flying squirrel	*Glaucomys volans*
Southern short-tailed shrew	*Blarina carolinensis*
Striped skunk	*Mephitis mephitis*
Swamp rabbit	*Sylvilagus aquaticus*
Virginia opossum	*Didelphis virginiana*
Thirteen-lined ground squirrel	*Spermophilus tridecemlineatus*
White-footed mouse	*Peromyscus leucopus*
White-tailed deer	*Odocoileus virginianus*

Source: Schmidly and Bradley 2016.

Fisheries

The divisions of the biotic provinces were separated on the basis of terrestrial vertebrate distributions; however, the distribution of freshwater fish generally corresponds with the terrestrial province boundaries (Hubbs et al. 2008). Areas showing the greatest deviation from this general rule include northeast Texas and the coastal zone.

The small headwater ephemeral streams and intermittent flowing streams support aquatic species primarily adapted to ephemeral pool habitats. These habitat types will support aquatic species that are typically adapted to rapid dispersal and life cycle completion within in-pool habitats typically having fine-grained substrates. In stream reaches dominated by scoured, sandy-clay bottoms, accumulations of woody debris or leaf pack provide the most important feeding and refuge areas for invertebrates and forage fish. The softer muddy bottoms generally harbor substantial populations of burrowing invertebrates (e.g., larval diptera and oligochaetes) which can be an important food source to higher aquatic trophic levels.

The perennial streams, large ponds and lakes provide consistent aquatic habitat for all trophic levels with fish the most prominent. The relatively stable water levels of the reservoirs and the constant pools and flow of the streams facilitate stable population growth. Species with flowing water or pooled area habitat requirements will utilize perennial streams and those adapted for deeper waters will utilize the lake and pond environments. Larger populations of fish also attract fish eating bird species. Table 2-19 indicates the fish species potentially occurring within the study area (Thomas et al. 2007).

TABLE 2-19 FISH SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Alligator gar	*Atractosteus spatula*
American eel	*Anguilla rostrata*
Banded pygmy sunfish	*Elassoma zonatum*
Bantam sunfish	*Lepomis symmetricus*
Bigscale logperch	*Percina macrolepida*
Black bullhead	*Ameiurus melas*
Black crappie	*Pomoxis nigromaculatus*
Blackspotted topminnow	*Fundulus olivaceus*
Blackstripe topminnow	*Fundulus notatus*
Blacktail shiner	*Cyprinella venusta*
Blue catfish	*Ictalurus furcatus*
Bluegill	*Lepomis macrochirus*
Blue sucker	*Cycleptus elongatus*
Blue tilapia	*Oreochromis aurea*
Bluntnose darter	*Etheostoma chlorosomum*
Bowfin	*Amia calva*
Brook silverside	*Labidesthes sicculus*
Bullhead minnow	*Pimephales vigilax*
Channel catfish	*Ictalurus punctatus*
Common carp	*Cyprinus carpio*

TABLE 2-19 FISH SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Creek chub	*Semotilus atromaculatus*
Creek chubsucker	*Erimyzon oblongus*
Cypress darter	*Etheostoma proeliare*
Dollar sunfish	*Lepomis marginatus*
Dusky darter	*Percina sciera*
Emerald shiner	*Notropis atherinoides*
Fathead minnow	*Pimephales promelas*
Flathead catfish	*Pylodictis olivaris*
Flier	*Centrarchus macropterus*
Freckled madtom	*Noturus nocturnus*
Freshwater drum	*Aplodinotus grunniens*
Ghost shiner	*Notropis buchanani*
Gizzard shad	*Dorosoma cepedianum*
Golden shiner	*Notemigonus crysoleucas*
Golden topminnow	*Fundulus chrysotus*
Goldfish	*Carassius auratus*
Goldstripe darter	*Etheostoma parvipinne*
Grass carp	*Ctenopharyngodon idella*
Green sunfish	*Lepomis cyanellus*
Gulf killifish	*Fundulus grandis*
Inland silverside	*Menidia beryllina*
Lake chubsucker	*Erimyzon sucetta*
Largemouth bass	*Micropterus salmoides*
Longear sunfish	*Lepomis megalotis*
Longnose gar	*Lepisosteus osseus*
Longnose killifish	*Fundulus similis*
Mimic shiner	*Notropis volucellus*
Mississippi silvery minnow	*Hybognathus nuchalis*
Mountain mullet	*Agonostomus monticola*
Orangespotted sunfish	*Lepomis humilis*
Paddlefish	*Polyodon spathula*
Pallid shiner	*Hybopsis amnis*
Pirate perch	*Aphredoderus sayanus*
Pugnose minnow	*Opsopoeodus emiliae*
Rainbow trout	*Oncorhynchus mykiss*
Rainwater killifish	*Lucania parva*
Redbreast sunfish	*Lepomis auritus*
Redear sunfish	*Lepomis microlophus*
Redfin pickerel	*Esox americanus*
Redfin shiner	*Lythrurus umbratilis*
Red shiner	*Cyprinella lutrensis*
Redspotted sunfish	*Lepomis miniatus*
Ribbon shiner	*Lythrurus fumeus*
River carpsucker	*Carpiodes carpio*
Rough silverside	*Membras martinica*
Sailfin molly	*Poecilia latipinna*
Scaly sand darter	*Ammocrypta vivax*
Sharpnose shiner	*Notropis oxyrhyncus*
Sheepshead minnow	*Cyprinodon variegatus*
Shoal chub	*Macrhybopsis hyostoma*
Silver chub	*Macrhybopsis storeriana*
Silverband shiner	*Notropis shumardi*
Slough darter	*Etheostoma gracile*

TABLE 2-19 FISH SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Smallmouth buffalo	*Ictiobus bubalus*
Spotted bass	*Micropterus punctulatus*
Spotted gar	*Lepisosteus oculatus*
Spotted sucker	*Minytrema melanops*
Starhead topminnow	*Fundulus dispar*
Striped bass	*Morone saxatilis*
Striped mullet	*Mugil cephalus*
Tadpole madtom	*Noturus gyrinus*
Threadfin shad	*Dorosoma petenense*
Yellow bass	*Morone mississippiensis*
Yellow bullhead	*Ameiurus natalis*
Warmouth	*Lepomis gulosus*
Weed Shiner	*Notropis texanus*
Western mosquitofish	*Gambusia affinis*
White bass	*Morone chrysops*
White crappie	*Pomoxis annularis*

Source: Thomas et al. 2007.

Perennial aquatic habitats located within the study area are associated with larger surface waters including the Brazos River, San Bernard River, Colorado River, San Bernard Reservoir, Brazoria Reservoir, Cowtrap Lake, McNeal Lake, Oyster Creek, Caney Creek, Live Oak Creek, Jones Creek, Linnville Bayou, Bastrop Bayou, Snead Slough, Grassy Slough and numerous other small perennial waterbodies. Other aquatic habitats include smaller perennial and intermittent creeks, ponds and marshes. The relatively stable water levels and the constant pools and flow of the streams facilitate stable population levels.

Smaller ponds and lakes located in the study area exhibit variability in terms of their age, drainage, use by cattle, past fish stocking and fertilization history. These aquatic habitats are often exposed to full sunlight and do not typically experience the variations in flow as do streams after heavy rainfall events. Typically, fluctuations in water level are experienced during the summer months due to high evaporation rates and repeated heavy rainfall events are required to fill the ponds completely. Periods of extended drought in the region may reduce the water level or dry the pond completely.

Several species of turtles, snakes and amphibians are also dependent on perennial surface waters for their habitat requirements. Several of these species will infrequently use terrestrial habitats to migrate between surface waters, but they primarily inhabit perennial surface waters.

2.4.4.4 Threatened and Endangered Species

Data on special status species and unique vegetation resources within the study area was obtained from a variety of sources including correspondence with the USFWS and TPWD, and county lists of special status species (USFWS 2018b; TPWD 2018b). Additional information was obtained from published literature and technical reports. All biological resource inventory data for the study area was mapped utilizing GIS.

For the purpose of this routing study, emphasis was placed on obtaining known locations of unique vegetative communities and critical habitat or known occurrences of special status species that have been previously documented within the study area. Special status species include those listed by the USFWS as threatened, endangered, proposed or candidate; and those listed by TPWD as threatened, endangered or as a species of concern or rare species. A GIS shapefile of known occurrences for listed species and sensitive vegetative communities was obtained from the TXNDD on August 31, 2017. Review of TXNDD data indicates occurrences of several state and federally listed plant and wildlife species within the study area. It should be noted that TXNDD data is not a substitute for presence/absence surveys and absence of occurrence records does not necessarily indicate absence of the species. A TXNDD occurrence record is an indication that a species was observed in the study area at one time and may or may not currently inhabit the area. Species not designated as federally threatened or endangered are not afforded any regulatory protection under the ESA.

A USFWS (2018b) Information for Planning and Consultation ("IPaC") (Consultation Code: 02ETTX00-2018-SLI-1481) Official Species List for the study area was requested and received on May 14, 2018. The Brazoria, Matagorda and Wharton county listings for federal and state listed species were obtained from the TPWD (2018b) County Lists of Rare Species. By federal definition, a threatened species is defined as likely to become endangered within the near future throughout all or a significant portion of its range. An endangered species is in danger of extinction throughout all or a significant portion of its range. Candidate species are those that have sufficient information on their biological vulnerability and threats to support listing as threatened or endangered and are likely to be proposed for listing in the near future.

The ESA also provides for the conservation of "designated critical habitat," which is defined as the areas of land, water and air space that an endangered species needs for survival. These areas include sites with food and water, breeding areas, cover or shelter sites and sufficient habitat to provide for normal population growth and behavior for the species. The primary threat to threatened and endangered species is the destruction or modification of critical habitat areas by uncontrolled land and water development. No critical habitats occur within the study area boundaries; however, designated critical habitat for the piping

plover (*Charadrius melodus*) occurs within two niles of the study area boundary, located at the southeast corner of the study area boundary near the mouth of the Brazos River (USFWS 2018c).

Plant Species

USFWS (2018b) IPaC species list for the study area and TPWD (2018b) county listings were reviewed for special status plant species potentially occurring within the study area. No federal or state listed threatened or endangered plant species were listed within the study area.

Wildlife Species

The USFWS (2018b) IPaC species list for the study area and TPWD (2018b) listings for Brazoria, Matagorda and Wharton counties of threatened, endangered or candidate animal species lists are summarized in Table 2-20. Species not designated as federally threatened or endangered are not afforded any regulatory protection under the ESA; however, additional federal and state laws may provide additional regulatory protection.

TABLE 2-20 THREATENED, ENDANGERED AND CANDIDATE SPECIES LISTED WITHIN THE STUDY AREA COUNTIES

COMMON NAME	SCIENTIFIC NAME	LISTED COUNTIES			LEGAL STATUS	
		Brazoria	Matagorda	Wharton	USFWS[1]	TPWD[2]
Birds						
American peregrine falcon	*Falco peregrinus anatum*	X	X	X	DL	T
Arctic peregrine falcon	*Falco peregrinus tundrius*	X	X	X	DL	-
Attwater's greater prairie chicken	*Tympanuchus cupido attwateri*	-	-	X	E	E
Bald eagle	*Haliaeetus leucocephalus*	X	X	X	DL	T
Brown pelican	*Pelecanus occidentalis*	X	X	-	DL	-
Eskimo curlew	*Numenius borealis*	X	X	-	E, EXT	E, EXT
Interior least tern	*Sterna antillarum athalassos*	-	-	X	E	E
Northern aplomado falcon	*Falco femoralis septentrionalis*	-	X	-	E	E
Reddish egret	*Egretta rufescens*	X	X	-	-	T
Piping plover	*Charadrius melodus*	X	X	-	T	T
Red knot	*Calidris canutus rufa*	X	X	X	T	-
Sooty tern	*Sterna fuscata*	X	X	-	-	T
White-faced ibis	*Plegadis chihi*	X	X	X	-	T
White-tailed hawk	*Buteo albicaudatus*	X	X	X	-	T
Whooping crane	*Grus americana*	X	X	X	E	E
Wood stork	*Mycteria Americana*	X	X	X	-	T

TABLE 2-20 THREATENED, ENDANGERED AND CANDIDATE SPECIES LISTED WITHIN THE STUDY AREA COUNTIES

COMMON NAME	SCIENTIFIC NAME	LISTED COUNTIES			LEGAL STATUS	
		Brazoria	Matagorda	Wharton	USFWS[1]	TPWD[2]
Fish						
Blue sucker	*Cycleptus elongates*	-	X	X	-	T
Sharpnose shiner	*Notropis oxyrhynchus*	X	-	X	E	-
Smalltooth sawfish	*Pristis pectinata*	X	X	-	E	E
Mammals						
Jaguarundi	*Herpailurus yaguaroundi*	X	-	-	E	E
Louisiana black bear	*Ursus americanus luteolus*	X	X	X	DL	T
Ocelot	*Leopardus pardalis*	X	X	-	E	E
Red wolf	*Canis rufus*	X	X	X	E, EXT	EXT
West Indian manatee	*Trichechus manatus*	X	X	-	E	E
Mollusks						
Golden orb	*Quadrula aurea*	-	-	-	C	T
Smooth pimpleback	*Quadrula houstonensis*	X	X	X	C	T
Texas pimpleback	*Quadrula petrina*	-	X	X	C	T
Texas fawnsfoot	*Truncilla macrodon*	X	X	X	C	T
Reptiles						
Alligator snapping turtle	*Macrochelys temminckii*	X	-	-	-	T
Atlantic hawksbill turtle	*Eretmochelys imbricata*	X	X	-	E	E
Green Sea Turtle	*Chelonia mydas*	X	X	-	T	T
Kemp's Ridley sea turtle	*Lepidochelys kempii*	X	X	-	E	E
Leatherback sea turtle	*Dermochelys coriacea*	X	X	-	E	E
Loggerhead sea turtle	*Caretta caretta*	X	X	-	T	T
Texas horned lizard	*Phrynosoma cornutum*	X	X	X	-	T
Texas scarlet snake	*Cemophora coccinea lineri*	-	X	-	-	T
Texas tortoise	*Gopherus berlandieri*	-	X	-	-	T
Timber rattlesnake	*Crotalus horridus*	X	X	X	-	T

[1] USFWS 2018b.
[2] TPWD 2018b.
C - Candidate Species; DL - Delisted Due to Recovery; E - Federal or State Listed Endangered; T - Federal or State Listed Threatened; EXT - Extirpated

The USFWS (2018b) IPaC report for the study area lists 13 species as federally threatened, endangered or candidate species. TPWD county listings include an additional six federal status species not shown on USFWS IPaC species report. The federal status of species listed in TPWD County Lists of Rare Species has been included in Table 2-15 for consistency. The USFWS (2018b) IPaC report and TPWD (2018b) County Lists of Rare Species are shown in Appendix A.

Two listed fish species are federally listed, including the sharpnose shiner (*Notropis oxyrhynchus*) and the smalltooth sawfish (*Pristis pectinata*). Both of these fish species are listed in the TPWD (2018b) county listings, but not listed within the USFWS (2018b) IPaC species lists for the study area. The sharpnose shiner is endemic to the Brazos, Wichita and Colorado River systems. The current known distribution for this species includes the Brazos River system upstream of Possum Kingdom Reservoir. This species is generally found in river runs and pools and is thought to prefer large turbid waters with sand, gravel and clay-mud bottoms. The smalltooth sawfish is endemic to the Brazos River system, although the current known distribution for this species is restricted to Brazos River system upstream of Possum Kingdom Reservoir and may be found in portions of the Colorado River above Lake Buchanan as a result of introductions. This species typically inhabits river channels or medium-to-large prairie streams with sandy substrate and turbid-to-clear warm water (Thomas et al. 2007; TPWD 2018b). TXNDD (2017) data did not document either of these species in or within five miles of the study area and is not anticipated to occur within the study area.

The Attwater's greater prairie chicken (*Tympanuchus cupido attwateri*) is a medium sized grouse that historically inhabited much of the Texas coastal prairie. Prime habitat is described as large tracts of open native tall grass coastal prairie, dominated by bunchgrasses. The grouse feeds in short to midgrass prairie for plants and insects and congregates at leks to conduct breeding courtship activities. Breeding occurs in early February through July (Campbell 2003; TPWD 2018b). The Attwater's greater prairie chicken occurred historically in Wharton County but is now only found in a few isolated populations in Colorado, Galveston and Goliad Counties. This species is not anticipated to occur within the study area (USFWS 2010).

The northern aplomado falcon (*Falco femoralis septentrionalis*) has a grey back, red breast, black "sash" on its belly and striking black markings on its head. The species historically used coastal prairie and marsh habitats that supported small islands of trees and shrubs or that interfaced with woodlands along freshwater drainages and estuaries. The northern aplomado falcon disappeared from the South Texas area in the 1930s and reintroduction of the species to the region has been ongoing since 1985 (Campbell 2003). From Matagorda County southward, this falcon is a rare resident in the Gulf Coast prairies and associated barrier islands (Lockwood and Freeman 2014). This species may occur within the study area if suitable habitat is available.

The federally endangered whooping crane (*Grus americana*) breeds in Canada and winters in marshes along the gulf coast (TPWD 2018b). The study area is located within the 200-mile-wide migratory pathway of the population that nests at Wood Buffalo National Park in Canada and winters at Aransas

National Wildlife Refuge along the Texas coast; however, 90 percent of sightings have occurred west of the study area. The Aransas/Wood Buffalo Flock is the only naturally occurring population of whooping cranes in the wild and contains between 250 and 300 birds (TPWD 2018b; USFWS 2009). Migration stopover sites typically include small sized surface waters with emergent vegetation cover. Several known stopover sites are utilized yearly, but these are located within the Midwest region. Stopover sites may also occur adjacent to agriculture fields where the birds forage. The whooping crane may occur briefly in the study area during the spring or fall migration, if suitable stopover habitats are available (Lockwood and Freeman 2014).

The interior least tern (*Sterna antillarum athalassos*) is the subspecies of least tern that breeds inland along the Missouri, Mississippi, Colorado, Arkansas, Red and Rio Grande River systems along sand and gravel bars within braided streams and rivers. Birds breeding within 50 miles of the Texas coast are not federally or state listed. Within Texas, interior least terns winter along the coast (Campbell 2003; TPWD 2018b). Least terns may occur as nesting migrants within the study area; however, the study area lies within 50 miles of the coastline. The interior least tern sub-species is not anticipated to occur (Lockwood and Freeman 2014).

The piping plover (*Charadrius melodus*) is a small migratory shorebird that nests within the Great Lakes, Northern Great Plains or Atlantic Coast (TPWD 2018b). Primary fall migration to Texas is from July to early September, while spring migration occurs from March to early May. Piping plovers are common to locally uncommon winter residents along the Gulf of Mexico coastline and may occur within the study area as a non-breeding winter migrant if suitable habitat is available (Lockwood and Freeman 2014).

The red knot (*Calidris canutus rufa*) is a migratory bird, which nests in the drier arctic tundra areas and overwinters along shorelines of the Gulf of Mexico and into Central and South America. A spring migratory stopover is located in Delaware Bay where the species gorges on horseshoe crab eggs (TPWD 2018b). This species is a rare to uncommon non-breeding winter migrant along the Texas Coast, especially the upper coast and may occur within the study area as a non-breeding migrant if suitable habitat exists (Lockwood and Freeman 2014).

The five federally-listed reptiles include the hawksbill sea turtle (*Eretmochelys imbricata*), green sea turtle (*Chelonia mydas*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), leatherback sea turtle (*Dermochelys coriacea*) and loggerhead sea turtle (*Caretta caretta*). These five species of sea turtle occupy brackish and estuarine areas, coastal bays and the Gulf of Mexico, and nest on coastal beaches

(TPWD 2018b). Sea turtles are not anticipated to occur within the study area, due to a lack of suitable marine habitats (Dixon 2013).

Federally listed mammal species includes the West Indian manatee (*Trichechus manatus*), ocelot (*Felis pardalis*) and jaguarondi (*Herpailurus yaguaroundi*). The West Indian manatee species has not been documented in or within five miles of the study area (TXNDD 2017). The West Indian manatee is a rare aquatic species in Texas and occasionally occurs within rivers, estuaries, canal and bays (Schmidly and Bradley 2016). It is not anticipated that the manatee is present within the study area due to a lack of suitable marine habitat.

The ocelot (*Leopardus pardalis*) is a feline with cream-colored fur and reddish-brown spots outlined in black. The ocelot avoids open areas and prefers dense (75 to 95 percent canopy coverage), thorny, low brush habitats such as chaparral thickets, mesquite-thorn scrub and live oak mottes. Estimated minimum habitat patch size to sustain an ocelot is 65 acres. The ocelot was once distributed throughout South Texas, the southern Edwards Plateau and along the Coastal Plain, but its current range is restricted to the Rio Grande Plains and lower Rio Grande Valley (Campbell 2003). Only two known populations consisting of approximately 50 individuals total are documented within Texas. One population inhabits the LANWR and the other is located on private property within Willacy County (USFWS 2016). Review of TXNDD (2017) did not identify any occurences of this species within the study area. This species is listed in the TPWD (2018b) county listings, but not listed within the USFWS (2018b) IPaC species lists for the study area. This species is not anticipated to occur within the study area due to presumed local extirpation from the area.

The Gulf Coast jaguarundi (*Herpailurus yagouaroundi*) is a feline slightly larger than a domestic cat and has a solid rusty-brown or charcoal gray coat with a long tail. Typical habitat includes a patchwork of bunchgrass pastures with dense thornscrub brush areas nearby. Riparian habitats along rivers or creeks are sometimes used for hunting areas and as movement corridors (Campbell 2003). The main threats to the jaguarundi throughout its range are habitat loss, degradation and fragmentation. Review of TXNDD (2017) identified two EOs within the study area, the last sighting occurring in 1991. This species is listed in the TPWD (2018b) county listings, but not listed within the USFWS (2018b) IPaC species lists for the study area. This species is not anticipated to occur within the study area due to presumed local extirpation from the area.

USFWS Delisted Species

The bald eagle (*Haliaeetus leucocephalus*) was delisted in 2007 by the USFWS because the population had recovered beyond the ESA criteria for listing. The status of the bald eagle population is currently monitored by the USFWS and the species is still afforded federal protection under the MBTA and the BGEPA. Bald eagles are a Texas state threatened species. The bald eagle nests in tall trees adjacent to major surface waters. Bald eagles have been documented nesting near Old Ocean, Texas since 1992, in the vicinity of York Reservoir since 1992, along the Colorado River since 2004 and near the Town of Cedar Lake since 2004 (TXNDD 2017). A survey of eagle nests performed by CenterPoint Energy on February 16, 2018, confirmed a number of eagle nests along the Colorado River and an unrecorded nest along Peyton Creek near its confluence with Live Oak Creek in Matagorda County. Bald eagles may occur within the study area, where suitable habitat is present.

Brown pelicans (*Pelecanus occidentalis*) are common local residents along the coast, foraging in saltwater and estuarine waters and nesting on small offshore islands. They may occasionally be found further inland during the late summer and early fall, particularly on or near larger bodies of water (Lockwood and Freeman 2014). Brown pelicans may occur within the study area, where suitable coastal habitat is present.

The Arctic peregrine falcon (*Falco peregrinus tundrius*) is an uncommon winter resident throughout Texas coastal prairies but are more common along bays, estuaries and coastlines during the winter months (Lockwood and Freeman 2014). The peregrine falcon state listing includes two subspecies: American peregrine falcon (*F. p. anatum*) and arctic peregrine falcon (*F. p. tundrius*). Although only the American subspecies is listed as state threatened, both sub-species are listed together due to their similarity of appearance (TPWD 2018b). Both subspecies have been delisted from federal listings due to the recovery of population numbers. The American peregrine falcon utilizes many kinds of habitats during migration, particularly areas providing a source of relatively large avian prey, such as ducks, shorebirds or pigeons (Lockwood and Freeman 2014). Falcons may occur within the study area as a non-breeding winter migrant where suitable habitat is present.

The Louisiana black bear was once a common inhabitant of forested regions of eastern Texas, Louisiana and Mississippi. Today, the majority of the remaining population is located in the Atchafalaya and Tensas River basins of Louisiana. In Texas, the bear is an inhabitant of bottomland hardwoods and large tracts of forested areas in east Texas (Campbell 2003). TPWD (2018b) lists this species as a possible transient within these counties; however, TXNDD (2017) data identifies no occurrences of this species in or near

the study area. This species is not anticipated to occur within the study area due to a lack of suitable habitat.

USFWS Candidate Species

Four mollusk species are candidates to be federally-listed: the golden orb (*Quadrula aurea*), smooth pimpleback *(Quadrula houstonensis)*, Texas pimpleback (*Quadrula petrina*) and Texas fawnsfoot *(Truncilla macrodon)*. The golden orb occurs in mud, sand and gravel substrates of rivers and large creeks from the Guadalupe-San Antonio and Nueces-Frio River basins. The smooth pimpleback occurs in the Colorado and Brazos River basins and occupies mixed mud, sand and gravel bottoms in moderate-sized creeks, rivers and reservoirs. The Texas Pimpleback is known to occur in the Colorado and Guadalupe-San Antonio River systems. This mussel occurs in moderate to large creeks and rivers with flowing waters and substrates of sand, mud and gravel. The Texas fawnsfoot occurs in the Colorado and Brazos River basins and resides in sand, gravel or sandy-mud bottoms, in moderately flowing waters (Howells et al. 1996; TPWD 2018b). TXNDD (2017) did not identify any EO of these species within the study area; however, these species may occur within the study area where suitable aquatic habitats occur.

Extirpated Species

The Eskimo curlew (*Numenius borealis*) was historically a spring migrant through Texas and utilized grasslands, pastures, plowed fields and occasionally marshes and mudflats. Today, the Eskimo curlew is thought by many to be extinct, the last confirmed sighting of this bird in Texas was in 1962 (Lockwood and Freeman 2014; TPWD 2018b), therefore it is not anticipated to occur within the study area due to extirpation.

The red wolf (*Canis rufus*) historically occurred throughout the eastern half of the state in forests, brushlands and prairies. The red wolf was known to prey on rabbits, deer, rodents, prairie chickens, crabs and livestock (Schmidly and Bradley 2016). Changes in land-use and over hybridization with the coyote (*Canis latrans*) are thought to have extirpated the red wolf from Texas. TXNDD (2017) did not identify any EO of this species within the study area and it is not anticipated to occur due to extirpation.

TPWD Listed Species

The reddish egret (*Egretta rufescens*) is a wading bird with blue legs and a pink bill and may occur as white (white phase) or gray with a rusty colored head and neck (dark phase). The reddish egret is a permanent resident of the Texas Gulf Coast and inhabits brackish marshes, shallow salt ponds and tidal flats (Alsop 2002). They nest on the ground or in trees and bushes on dry coastal islands in brushy thickets of yucca and prickly pear (TPWD 2018b). This species may occur within the study area as a

breeding resident in coastal areas and a rare post-breeding visitor to inland areas where suitable habitat is available (Lockwood and Freeman 2014).

The Sooty Tern (*Sterna fuscata*) is a scarce to occasional visitor to South Texas brushlands and is primarily found in the Gulf coastal portion of the region (Arvin 2007). Nonbreeding individuals are pelagic and spend most of their lives at sea where they catch jumping fish. Nesting usually occurs from April to July on barrier islands in sparsely vegetated flats above tidal zones. Sooty Terns occur in Texas regularly from March to October. Occasionally hurricanes will carry individuals onto the coast or farther inland (Lockwood and Freeman 2014; TPWD 2018b). This species may occur as a rare visitor within the study area where suitable coastal habitat is available.

The white-faced ibis (*Plegadis chihi*) is a state-threatened species that inhabits freshwater marshes, swamps, ponds, river, sloughs and irrigated rice fields. This species is a colonial nester and forages on insects, newts, leeches, earthworms, snails, crayfish, frogs and fish. This species is a year-round resident along the Gulf Coast of Texas (TPWD 2018b). This species may occur as a resident within coastal areas of the study area where suitable habitat is present (Lockwood and Freeman 2014).

The wood stork (*Mycteria americana*) formerly nested in Texas prior to 1960. This species is now present in Texas only during the late summer and fall as post-breeding dispersers from the Mexican breeding population migrating into Gulf States seeking mudflats and other wetlands. The federally endangered US-breeding distinct population segment does not occur west of Mississippi. Birds in Texas are state threatened but not federally listed. They can be found in prairie ponds, flooded pastures or fields, ditches and other shallow standing water, including saltwater areas. This species usually roosts communally in tall snags, sometimes in association with other wading birds. This species may occur within the study area as a post-breeding visitor where suitable habitat is present (Lockwood and Freeman 2014; TPWD 2018b).

The white-tailed hawk (*Buteo albicaudatus*) inhabits prairies, cordgrass flats and scrub-live oak habitats near the coast. Farther inland, the white-tailed hawk prefers prairies, mesquite and oak savannas and mixed savanna-chaparral habitats (TPWD 2018b). The primary breeding population occurs along the central and southern coasts, south of Matagorda Bay. This species may occur within the study area as a common to uncommon resident in coastal prairies, if suitable habitat is available (Lockwood and Freeman 2014).

The blue sucker (*Cycleptus elongates*) is a large freshwater fish that occurs in limited numbers within major rivers in Texas, usually in channels and flowing pools with a moderate current. The blue sucker is

mostly carnivorous and feeds within bottom sediments. Spawning occurs during spring within smaller tributaries (Thomas et al. 2007). The blue sucker may occur within large river habitats in the study area.

The alligator snapping turtle (*Macrochelys temminckii*) inhabits perennial freshwater ecosystems, such as lakes, canals, bayous, ponds and river bottoms (Dixon 2013). The turtle may also enter brackish waters near the coast. This species is typically most active from March through October and may breed April – October. This species may occur within the study area where suitable habitat is present (TPWD 2018b).

The Texas horned lizard (*Phrynosoma cornutum*) inhabits a variety of habitats including open desert, grasslands and shrubland in arid and semiarid habitats that contain bunch grasses, cacti and yucca on soils varying from pure sands and sandy loams to coarse gravels, conglomerates and desert pavements. Their primary prey is the harvester ant (*Pogonomyrmex* spp.), but they may also consume grasshoppers, beetles and grubs. The Texas horned lizard thermo-regulates by basking or burrowing into the soil and is active between early-spring to late-summer (Henke and Fair 1998; TPWD 2018b). This species may occur within the study area if suitable habitat exists.

The Texas scarlet snake (*Cemophora coccinea lineri*) is a semi-fossorial species that is restricted to areas of loose, sandy soil. In south Texas it has been recorded from live oak dotted sand dunes, coastal shrub scrub and agricultural lands with sandy soils. Scarlet snakes forage at night feeding on small lizards and reptile eggs (Dixon and Werler 2005). This species may occur within the study area if suitable habitat is present.

The Texas tortoise (*Gopherus berlandieri*) has a shell with yellowish-orange, “horned” scutes (plates) and is a long-lived, charismatic species that prefers open brush habitats with a grass understory and avoids areas only having open grass and bare ground. The Texas tortoise is active during March to November, and when inactive, it occupies shallow depressions at the base of a bush or cactus, underground burrows or under objects. The Texas tortoise feeds on fruits of prickly pear and other mostly succulent plants (TPWD 2018b). This species may occur within the study area if suitable habitat is present.

The timber rattlesnake (*Crotalus horridus*) occupies moist lowland forest and hilly woodland areas near surface waters. The species frequently utilizes fallen hollow logs and stumps as habitat and forages primarily on small mammals (Dixon and Werler 2005). TXNDD (2017) did not identify any EO of these species within the study area; however, this species may occur within the study area if suitable habitat is present.

TPWD Species of Concern and Sensitive Vegetation Communities

While not regulated, TPWD also lists species of concern for each county and TXNDD data contains occurrence information for species of concern and sensitive vegetation communities within the study area. TPWD generally recommends consideration for these species and avoidance of listed vegetation communities when routing linear utility corridors. Table 2-21 summarizes the TPWD listed species of concern for Brazoria, Matagorda and Wharton counties. Several species of concern and sensitive vegetation communities occur within the study area and these are described below (TXNDD 2017). Additional information on animal or plant species of concern may be found in the TPWD (2018b) County Lists of Rare Species are shown in Appendix A.

TABLE 2-21 TPWD LISTED SPECIES OF CONCERN WITHIN THE STUDY AREA COUNTIES

COMMON NAME	SCIENTIFIC NAME	RECORDED IN STUDY AREA?[1]	COUNTIES LISTED[2]		
			Brazoria	Matagorda	Wharton
Plants					
Awnless bluestem	*Bothriochloa exaristata*		X	-	X
Coastal gay-feather	*Liatris bracteata*	Yes	X	X	-
Florida pinkroot	*Spigelia texana*	No	X	X	-
Giant sharpstem umbrella-sedge	*Cyperus cephalanthus*	No	X	-	-
Indianola beakrush	*Rhynchospora indianolensis*	No	-	X	-
Panicled indigobush	*Amorpha paniculata*	No	-	X	-
South Texas spikesedge	*Eleocharis austrotexana*	No	X	X	X
Texas meadow-rue	*Thalictrum texanum*		X	-	-
Texas sunflower	*Helianthus praecox praecox*		X	-	-
Texas tauschia	*Tauschia texana*	Yes	X	X	X
Texas windmill grass	*Chloris texensis*	No	X	-	-
Threeflower broomweed	*Thurovia triflora*	Yes	X	X	-
Shinner's sunflower	*Helianthus occidentalis plantagineus*	Yes	-	X	-
Amphibians					
Southern crayfish frog	*Lithobates areolatus areolatus*	Yes	-	-	X
Reptiles					
Texas diamondback terrapin	Malaclemys terrapin littoralis	Yes	X	X	
Fish					
American eel	*Anguilla rostrata*	No	X	X	X
Crustacean					
A crayfish	*Cambarellus texanus*	Yes	-	-	X
Insect					
Gulf coast clubtail	*Gomphus modestus*	Yes	-	X	-
Birds					
Henslow's sparrow	*Ammodramus henslowii*	No	X	X	X
Black rail	*Laterallus jamaicensis*	No	X	X	-
Snowy plover	*Charadrius alexandrinus*	No	X	X	-

TABLE 2-21 TPWD LISTED SPECIES OF CONCERN WITHIN THE STUDY AREA COUNTIES

COMMON NAME	SCIENTIFIC NAME	RECORDED IN STUDY AREA?[1]	COUNTIES LISTED[2]		
			Brazoria	Matagorda	Wharton
Sprague's pipit	*Anthus spragueii*	No	X	X	-
Western snowy plover	*Charadrius alexandrinus nivosus*	No	X	X	-
Western burrowing owl	*Athene cunicularia hypugaea*		-	X	X
Mammals					
Plains spotted skunk	*Spilogale putorius interrupta*	Yes	X	X	X

Sources: [1] TXNDD 2017; [2]TPWD 2018b.

Rare and Sensitive Vegetation Communities

Sensitive vegetation communities documented by TXNDD (2017) within the study area include: Saltgrass-cordgrass series, Sea Oats-bitter panicum, Gammagrass-swithchgrass series, Marshhay cordgrass series, Seacoast blustem-gulfdune paspalum series, Coastal live oak-pecan series, Water oak-pecan series, Alfisol Coastal Prairie, Vertisol Coastal Prairie and Little Bluestem-Brownseed Paspalum Series. The occurrence of sensitive vegetation communities may depend on location, hydrology, soil type and degree of historical ground disturbance and land management practices. A number of patches of these communities have been documented within the study area, totaling between five acres and 18 square miles of the 908 square mile study area.

Additional sensitive vegetation communities within the study area include the Columbia Bottomlands region. This region is a rare mixture of grasslands, hardwood forests and coastal wetlands that include diverse old-growth bottomlands that are important stopover habitats for millions of migratory birds. USACE Nationwide Permit Regional Condition 15c does not authorize discharges into these habitats. Designated Columbia Bottomlands are defined as waters of the US that are dominated by bottomland hardwoods in the Lower Brazos and San Bernard River basins identified in the 1997 Memorandum of Agreement between the USEPA, USFWS, NRCS and TPWD for bottomland hardwoods in Brazoria County. Spatial data of designated Columbia Bottomlands was obtained from the USACE and these areas were mapped by GIS during the routing process.

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3.0 PROPOSED ALTERNATIVE ROUTE IDENTIFICATION

3.1 ROUTING STUDY METHODOLOGY

This section describes the methodologies and assumptions that were used to conduct the environmental assessment and routing study for the Bailey to Jones Creek Transmission Line Project. A base map was developed for the POWER planning team and CenterPoint Energy to delineate the study area boundaries. The POWER planning team was comprised of technical experts within each respective resource field. Initial field reconnaissance was conducted and preliminary evaluation criteria were developed. Based on data pertinent to the study area, the POWER planning team and CenterPoint Energy also established criteria, consistent with PUC standards, for the resource analysis. Data were collected pertaining to land use, recreational and park areas, historical and aesthetic values and environmental integrity. Available GIS coverage with associated metadata was reviewed, and relevant resource data were selected and mapped. Sensitive resource locations were identified on an environmental and land use composite constraints map. Feasible and geographically diverse preliminary transmission line segments were developed, and three public meetings were conducted. Modifications to the preliminary transmission line segments were completed based on the results of the public meetings and additional agency input. Data were tabulated for the resulting proposed transmission line segments, which were then organized into proposed alternative routes. A comparative potential impact assessment of all the proposed alternative routes was completed, culminating in the recommendation of the proposed alternative routes that best address PURA and PUC substantive rules.

The study approach included the following major tasks:

- Base Map Development;
- Study Area Delineation;
- Development of Evaluation Criteria;
- Data Collection and Mapping;
- Reconnaissance Surveys;
- Resource Analysis;
- Opportunities and Constraints Evaluation;
- Preliminary Transmission Line Segment Identification;
- Public Involvement Program;

- Identification of Proposed Transmission Line Segments;
- Selection of Proposed Alternative Routes;
- Impact Assessment of Proposed Alternative Routes; and
- Proposed Alternative Route Selection that best addresses PURA and the PUC's Substantive Rules.

A detailed description of the methodologies used to complete this environmental assessment and routing study follows.

3.1.1 Base Map Development

A base map was prepared at a scale of 1:39,000 (1.0 inch = 3,250 feet). The base map was a two-sheet map covering the area between the study area boundaries and was used to initially display resource data for the study area. Resource data categories and factors that were determined appropriate within the study area were selected and mapped.

Data displayed on the base map include:

- Major land jurisdictions and uses;
- Major roads, including county roads, farm-to-market roads, US highways and State highways;
- Existing transmission line and pipeline corridors;
- Parks and recreational areas;
- Major political subdivision boundaries;
- Lakes, rivers, creeks and ponds;
- Federal Wildlife Management Area;
- USACE designated Columbia Bottomland Hardwoods; and
- USACE mapped NWI wetlands within Columbia Bottomland Hardwoods,

The base map provides a broad overview of various resource locations indicating obvious routing constraints and areas of potential routing opportunities.

3.1.2 Study Area Delineation

The study area boundaries (see Figure 2-1) were defined to include feasible geographically diverse alternatives for the location of the proposed 345 kV transmission line between the Project endpoints. Major physiographic features, jurisdictional boundaries, sensitive resources, land uses and existing roadways and utility corridors helped to define the study area boundaries. The study area boundary (Figure 2-1) was depicted on a study area map that was included with consultation letters, dated September 11, 2017, that were sent to agencies and officials to solicit comments on the Project (see Appendix A).

3.1.3 Evaluation Criteria

Evaluation criteria were developed to reflect accepted practices for routing electric transmission lines in Texas (see Table 3-1). Emphasis was placed on acquiring the types of information identified in Section 37.056(c)(4)(A)-(D) of PURA, the PUC CCN application and 16 TAC § 25.101, including the policy of prudent avoidance. Evaluation criteria were further refined based on data collection, reconnaissance surveys and public input. The routing activities were conducted with consideration and incorporation of the evaluation criteria. Routing activities included data collection, reconnaissance surveys, resource analysis, identification of routing opportunities and constraints and identification of the preliminary transmission line segments. Evaluation criteria data were collected, mapped, tabulated and analyzed (Section 4.0) for each resulting proposed alternative route and ultimately used as a basis for the comparison of the proposed alternative routes as families and the selection of the proposed alternative routes that best meet the requirements under PURA and PUC rules (Section 5.0).

TABLE 3-1 LAND USE AND ENVIRONMENTAL EVALUATION CRITERIA

LAND USE
Length of route (feet)
Length of route (miles)
Number of habitable structures within 500 feet of route centerline
Number of habitable structures in previous criterion also within 500 feet of an existing transmission line
Number of habitable structures potentially to be relocated/removed
Length of route using existing transmission line easement
Length of new ROW required for route
Length of route parallel to existing transmission line ROW
Length of route not utilizing/paralleling existing transmission line ROW
Length of route parallel to existing pipeline ROW
Length of route parallel to existing railroad ROW
Length of route paralleling apparent property lines

TABLE 3-1 LAND USE AND ENVIRONMENTAL EVALUATION CRITERIA

LAND USE
Length of route parallel to other existing ROW (roadway, etc.)
Length of route not parallel to pipeline ROW, railroad ROW, apparent property lines or other existing ROW (roadway, etc.)
Percent of route parallel with apparent features, property lines, pipelines, railroads or an existing ROW
Length of route across parks/recreational areas
Number of additional parks/recreational areas within 1,000 feet of route centerline
Total length of route across Texas Department of Criminal Justice (TDCJ) and TPWD properties
Length of route across TDCJ property
Length of route across TPWD property
Length of route across residential areas
Length of route across commercial/industrial areas
Length of route across agricultural land/cropland
Length of route across pastureland
Length of route across mobile irrigated cropland or pastureland
Number of pipeline crossings
Number of transmission line crossings
Number of US and state highway crossings
Number of FM road crossings
Number of local road crossings
Number of cemeteries within 1,000 feet of the route centerline
Number of heliports within 5,000 feet of route centerline
Number of private airstrips within 10,000 feet of route centerline
Number of FAA-listed airfields within 10,000 feet of route centerline having no runway more than 3,200 feet
Number of FAA-listed airfields within 20,000 feet of route centerline having at least one runway more than 3,200 feet
Number of commercial AM radio transmitters within 10,000 feet of route centerline
Number of FM radio transmitters, microwave relay stations, and other electronic installations, etc., within 2,000 feet of route centerline
Number of water wells within the ROW
Number of oil and gas wells within the ROW
AESTHETICS
Estimated length of route within foreground visual zone of US and state highways
Estimated length of route within foreground visual zone of FM and county roads
Estimated length of route within foreground visual zone of park and recreational areas
ECOLOGY
Length of route across upland woodlands
Length of route across bottomland/riparian woodlands
Length of route across National Wetland Inventory mapped forested or scrub/shrub wetlands
Length of route across National Wetland Inventory mapped emergent wetlands
Total length of route across National Wetland Inventory mapped wetlands
Length of route across USACE designated Columbia Bottomlands

TABLE 3-1 LAND USE AND ENVIRONMENTAL EVALUATION CRITERIA

LAND USE
Length of route across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands
Length of route across Coastal Management Zone
Length of route across known habitat of federal endangered/threatened species of plants or animals
Number of known state rare/unique plant locations within the ROW
Length of route across open water (lakes or ponds)
Number of stream and canal crossings
Length of route parallel to streams within 100 feet of route centerline
Length of route across 100-year floodplains
CULTURAL RESOURCES
Number of recorded historical or archeological sites crossed within ROW
Number of additional recorded historical or archeological sites within 1,000 feet of route centerline
Number of National Register of Historic Places listed or determined-eligible properties within ROW
Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of route centerline
Length of route across areas of high archeological/historic site potential

3.2 DATA COLLECTION AND CONSTRAINTS MAPPING

Once the initial study area boundary was identified, comprehensive data collection activities began. POWER developed a list of potentially interested regulatory agencies, elected officials and organizations to receive a project scoping letter. The purpose of the letter was to inform the various officials and agencies of the Project and to give them the opportunity to provide information regarding sensitive resources and potential issues within the study area. POWER utilized websites from Brazoria, Matagorda and Wharton counties, in addition to confirmation through telephone calls, to identify local officials. Various federal and state agencies that may have potential concerns or regulatory permitting requirements for the Project were also contacted. Copies of correspondence with the various federal and state regulatory agencies, county and local officials, departments and non-governmental agencies are included in Appendix A.

Federal, state, and local agencies and officials contacted include:

- FEMA
- FAA
- NRCS
- USACE
- DoD Siting Clearinghouse
- USEPA

- USFWS
- RRC
- TCEQ
- TxDOT – Division of Aviation
- TxDOT – District Engineers
- TxDOT – Environmental Affairs Division
- TxDOT – Planning and Programming
- Texas GLO
- THC
- TPWD
- TWDB
- Brazoria County Officials
- Brazoria County Historical Commission
- Brazoria County Engineering Department
- Matagorda County Officials
- Matagorda County Historical Commission
- Wharton County Officials
- Wharton County Historical Commission
- City of Angleton
- City of Bay City
- City of Brazoria
- City of Clute
- City of Freeport
- City of Lake Jackson
- City of Richwood
- City of Sweeny
- Village of Jones Creek
- City of West Columbia
- Angleton ISD
- Bay City ISD
- Boling ISD
- Brazosport ISD
- Columbia-Brazoria ISD

- El Campo ISD
- Sweeny ISD
- Tidehaven ISD
- Van Vleck ISD
- Wharton ISD
- Brazos River Authority
- Friends of the River San Bernard
- Lower Colorado River Authority
- Houston-Galveston Area Council
- Bayou Land Conservancy
- Gulf Coast Birding Observatory
- The Nature Conservancy
- Texas Land Trust Council

Available data were mapped to identify existing conditions and to determine potential conflicts that would result from the proposed 345 kV transmission line. Resource data were collected for land use, historical (cultural and archeological) and aesthetic values, physiographic and geologic features, surface waters, wetlands and biological resource areas. Data were mapped within the study area using GIS layers. Additional data collection consisted of file and record reviews conducted with various state regulatory agencies, a review of published literature and a review of various maps and readily available aerial imagery on the internet (NAIP 2014-2018) and Google Maps. Results from the resource inventory data were described in Section 2.0 and were reflected on the Composite Constraints Map developed at a scale of 1:18,000 (1.0 inch = 1,500 feet).

3.3 RECONNAISSANCE SURVEYS

POWER personnel conducted reconnaissance surveys of the study area to confirm the findings of the research and data collection activities and to identify potential constraints that may not have been previously noted. Reconnaissance surveys confirmed some data point accuracy and identified changes in land use that occurred after the date of the aerial photography. Reconnaissance surveys were limited to visual observations conducted from public roads and existing public ROWs located within the study area.

Reconnaissance surveys were conducted on the following dates:

- September 12, 2017
- November 7, 2017

- April 26, 2018

3.4 RESOURCE ANALYSIS

The composite constraints map was used as a foundation for the resource analysis. Criteria were developed for each resource to establish constraint parameters which facilitated the identification of preliminary transmission line segments. The following definitions were considered:

- **Resource Value**: A measure of rarity, intrinsic worth, singularity or diversity of a resource within a particular area.
- **Protective Status**: A measure of the formal concern as expressed by legal protection or special status designation.
- **Present and Known Future Uses**: A measure of the level of potential conflict with land management and land use policies.
- **Hazards**: A measure of the degree to which construction and operation of the transmission line could be affected by a known resource hazard.

Using this framework, overlays of individual resources were mapped to provide a visual representation of constraint areas, and potential routing opportunity areas were identified. Where feasible, identified constraints were avoided to the extent practicable to minimize potential impacts or conflicts.

3.5 OPPORTUNITIES AND CONSTRAINTS EVALUATION

In order to identify preliminary transmission line segments, information gathered during the data collection task, review of agency comments and management plans, internal review and discussions with the Project team were used to determine routing opportunities and constraints within the study area. Routing opportunities were generally located within open, undeveloped areas, or parallel to existing linear corridors. For example, existing transmission lines, roadways and property boundaries provided routing opportunities.

3.5.1 Existing Linear Corridors

Within the areas of opportunity, POWER identified existing linear corridor features as potential paralleling opportunities in accordance with the PURA Section 37.056(c) and 16 TAC § 25.101(b)(3)(B)(i-iii). Apparent property boundaries, roadways and existing transmission lines were evaluated for potential paralleling opportunities. Data sources used to identify existing linear ROWs include utility company regional system maps, aerial imagery, USGS topographical maps, CAD files

from CenterPoint Energy (Brazoria County Appraisal District 2017 and 2018; Matagorda County Appraisal District 2017 and 2018; Wharton County Appraisal District 2017 and 2018), additional available planning documents and reconnaissance surveys (PLATTS 2017; NAIP 2014-2018).

3.5.2 Apparent Property Boundaries

Apparent property boundaries and fence lines were initially identified using readily available existing aerial photography (NAIP 2014-2018) supplemented by parcel data that was downloaded (Brazoria County Appraisal District 2017 and 2018; Matagorda County Appraisal District 2017 and 2018) and purchased (Wharton County Appraisal District 2017 and 2018). CenterPoint Energy downloaded and purchased parcel information for all counties in the initial study area boundary directly from Brazoria, Matagorda and Wharton county appraisal districts. The December 2017 parcel information was relied on in the beginning phase of the Project to identify potential paralleling opportunities. In June 2018, CenterPoint Energy obtained parcel data layers for a second time directly from Brazoria, Matagorda and Wharton Counties. The 2018 parcel information was relied on to identify apparent property boundaries within the study area.

3.5.3 Roadway ROWs

POWER evaluated paralleling SHs 35, 36, 60, 227, 288 and 332, and numerous other local roads. However, in many instances, existing constraints, developments and habitable structures prohibited paralleling many of the road ROWs due to development that typically occurs along existing road ROWs.

3.5.4 Existing Transmission Line ROWs

POWER identified several existing transmission line corridors in the area, which include four 345 kV transmission lines, approximately twelve 138 kV transmission lines and approximately fourteen 69 kV transmission lines. Numerous opportunities for paralleling these transmission lines were identified. In some instances, constraints are located adjacent to these transmission lines or the location or orientation of these lines precluded paralleling them.

3.5.5 Existing Pipeline ROWs

POWER reviewed aerial photography and RRC data to identify pipeline ROWs within the study area. Pipeline locations were verified, where possible, during field reconnaissance surveys. POWER identified multiple existing pipeline ROWs traversing the study area. The existing pipeline ROWs were considered, but did not always provide suitable paralleling opportunities. The PUC rulemaking Project No. 42740 regarding paralleling of pipelines was also taken into consideration.

3.6 PROPOSED ALTERNATIVE ROUTE IDENTIFICATION

CenterPoint Energy provided the location of the existing Bailey Substation and existing Jones Creek Substation to POWER. Multiple subsequent preliminary transmission line segments were developed to connect the Project endpoints.

3.6.1 Preliminary Transmission Line Segments

Preliminary transmission line segments were identified on an overlay of the composite environmental and land use constraints map. These segments were developed based upon maximizing the use of routing opportunity areas while avoiding areas of high environmental constraints or conflicting land uses. Aerial photography was used as the background of the composite constraints overlay to identify optimal locations for the preliminary transmission line segment centerlines. During the preliminary transmission line segment development process, the location of residential areas, habitable structures, industrial facilities, pipelines, surface water crossings, wetlands, property boundaries, agricultural land and other sensitive resource areas were considered. POWER utilized the following to identify the preliminary transmission line segments:

- Input received from scoping activities with local officials, regulatory agencies and others.
- Results from reconnaissance surveys of the study area.
- Review of aerial photography.
- Findings of the data collection activities.
- Environmental and land use composite constraints maps.
- Apparent property boundaries from the study area counties' appraisal districts.
- Existing compatible opportunity areas.
- Location of existing developments.

The preliminary transmission line segments were identified in accordance with the PURA § 37.056 (c)(4)(A)-(D), 16 TAC § 25.101, including the PUC's policy of prudent avoidance, while also considering the evaluation criteria in Table 3-1. It was POWER's intent to identify preliminary transmission line segments that, when combined, formed an adequate number of reasonable and geographically diverse proposed alternative transmission line routes based on all of the previously mentioned routing considerations.

POWER, with CenterPoint Energy's input, identified 261 preliminary transmission line segments (see Figure 3-1). The preliminary transmission line segments were overlaid on aerial imagery (NAIP 2014-2018) along with land use and environmental constraint data and were presented at the three public meetings (see Section 3.6.2 and Appendix B).

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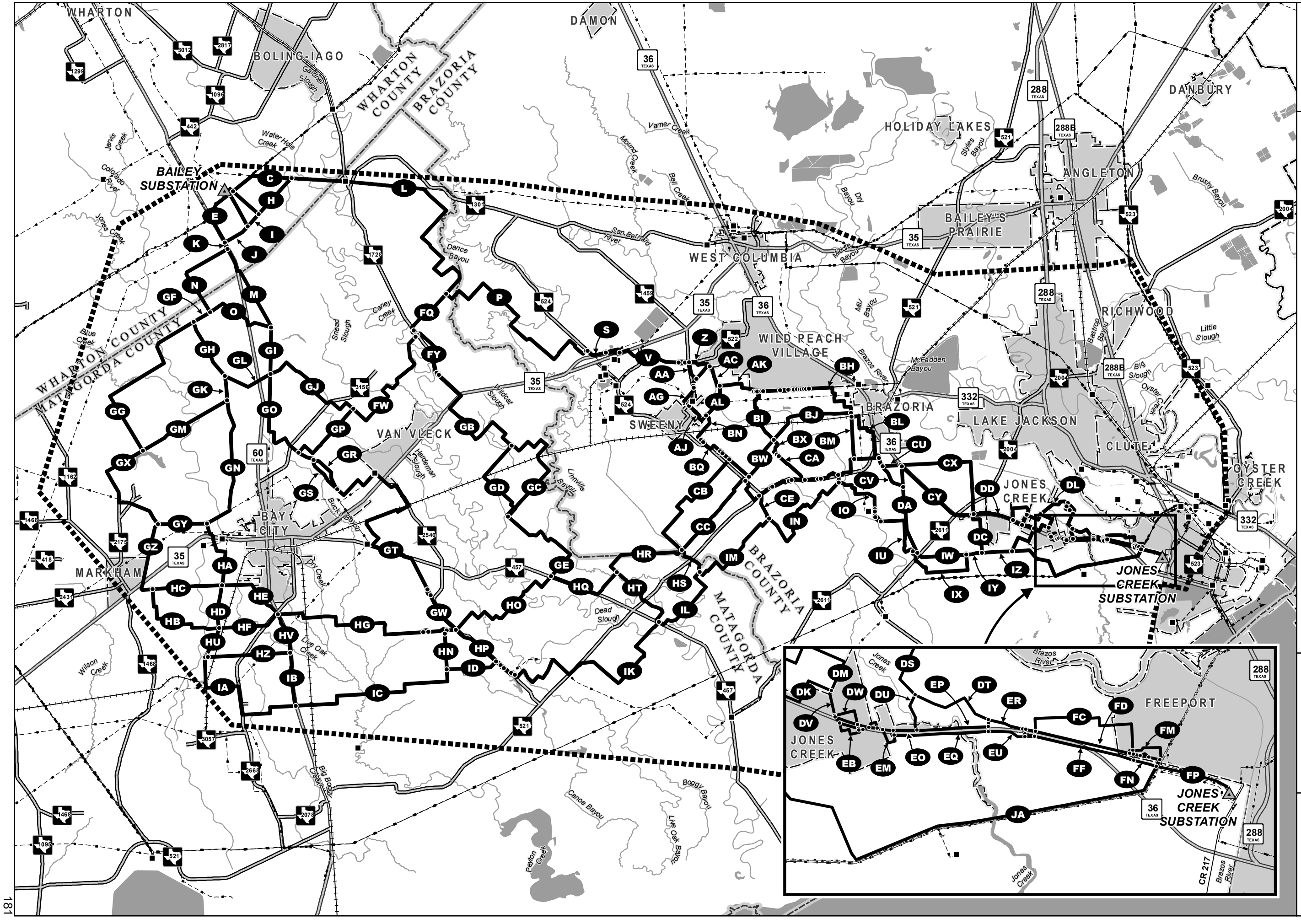
BAILEY TO JONES CREEK PROJECT

FIGURE 3-1

PRELIMINARY TRANSMISSION LINE SEGMENTS



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3.6.2 Public Involvement Program

After developing the 261 preliminary transmission line routing segments, a public meeting was held for each of the three study area counties. The purpose of the public meetings was to solicit comments, concerns and input from residents, landowners, public officials and other interested parties concerning the Project with reference to the preliminary transmission line segments, the overall transmission line routing process, and to:

- Promote a better understanding of the Project, including the purpose, need, potential benefits and impacts and the PUC CCN application approval process.
- Inform the public about the routing procedure, schedule and decision-making process.
- Allow the decision-making process to adequately identify and consider the values and concerns of the public and community leaders.

3.6.2.1 Public Meetings

CenterPoint Energy hosted three public meetings. The meetings were held within the community to solicit comments, concerns and input from residents, landowners, public officials and other interested parties. The public meetings were held on the following dates, times and locations:

- February 6, 2018 from 5:00 to 8:00 p.m., Lake Jackson Civic Center, 333 Highway 332, Lake Jackson, Texas 77566 (Brazoria County).
- February 8, 2018 from 5:00 to 8:00 p.m., Wharton Civic Center, 1924 North Fulton Street, Wharton, Texas 77488 (Wharton County).
- February 13, 2018 from 5:00 to 8:00 p.m., Bay City Civic Center, 201 Seventh Street, Bay City, Texas 77414 (Matagorda County).

Individual notification letters announcing the three public meetings were directly mailed by CenterPoint Energy to 2,398 landowners whose property is located within 530 feet of each of the preliminary transmission line segments. Instead of 500 feet, 530 feet was used to account for the ±30 feet horizontal accuracy of the aerial photography used. CenterPoint Energy also publicized the three public meetings through a public notice published in four local newspapers.

- The Facts: February 1, 2018
- The Wharton Journal-Spectator: February 3, 2018

- Bay City Tribune: February 4, 2018
- Houston Chronicle: February 4, 2018

The public notice announced the location, time and purpose of the meetings. Copies of the landowner notice and the public notice for the three public meetings are provided in Appendix B.

At the public meetings, personnel from CenterPoint Energy and POWER staffed information stations, with each station devoted to a particular aspect of the Project. The stations included maps (two sets of six display maps (3.5-foot by 4.0-foot display boards at a scale of 1:18,000 (1.0 inch = 1,500 feet)), illustrations, photographs and text explaining each topic. In addition to the information stations, CenterPoint Energy also provided six manned GIS computer stations at each meeting. Landowners were provided the opportunity to view their properties or areas of interest in more detail at the GIS stations. POWER staff recorded their comments in a digital format and upon request provided an annotated 8.5-inch by 11-inch color snapshot of their area of interest for the attendee to take home.

Interested citizens and property owners were encouraged to visit each station so that the entire process could be explained in the logical sequence of project development. Using the information station format is advantageous because it allows attendees to process information in a more relaxed manner, and also allows them to focus on their particular area of interest and ask specific questions. Furthermore, one-to-one discussions with CenterPoint Energy and POWER personnel typically encourage more interaction from those citizens who might be hesitant to participate in a more formal speaker-audience format. The names of the information stations were: Registration and Information; Project Need; ROW/Construction; Electromagnetic Field (“EMF”) Information; Routing and Environmental; GIS Computer Stations; Refreshments; and Questionnaire Drop Off.

A video presentation was also provided during the public open house meetings to further explain the Project need and the process.

CenterPoint Energy established a Project website, http://www.centerpointenergy.com/baileyjonescreek, to provide information to the public. The website content explains the scope of the Project including the need for the Project and the construction and routing options, as well as the PUC’s process to review and approve the Project. The website also provides several Project documents, a Project questionnaire, EMF information, maps and aerial photos and a link to the PUC website.

Upon entering the public meetings, visitors were asked to sign in and were handed an information packet, including a questionnaire and a map (see Appendix B) indicating the location of the preliminary transmission line segments and the existing Bailey and Jones Creek Substation sites. The questionnaire solicited comments on the Project and an evaluation of the information presented at the meetings. The information packet also included a welcome sheet that explained how the meeting was organized, a Frequently Asked Questions sheet about the Project, the PUC Certification Process, a project schedule, the transmission need display, several construction displays, the PUC's landowner brochure, landowner protest form, landowner intervention form and State of Texas Landowner's Bill of Rights. Copies of the information packet documents are located in Appendix B.

Of the 2,398 notification letters sent for the three public meetings, 147 people signed in at the public meetings, which represent six percent of the notified landowners. There was a total of 192 known people in attendance at the public meetings. A total of 77 questionnaires were received along with letters and other forms of input such as pictures. Public comments were also recorded at the six GIS computer stations. POWER reviewed and evaluated each questionnaire and comment.

As a result, the analysis indicated that 75 percent of those individuals that submitted a questionnaire agreed that the need for the Project had been adequately explained. The questionnaire solicited comments pertaining to community values and concerns, such as features that should be avoided, if possible, when routing the transmission line. The questionnaire asked the respondents to rank concerns from **1** (greatest concern) to **11** (least concern), from a list of features that included agricultural land, floodplains or wetlands, recreational or park areas, residential areas or subdivisions, commercial areas, schools, churches, cemeteries, historic sites, wildlife or other concerns. Residential areas or subdivisions (44 percent) and schools (13 percent), were ranked as the greatest areas of concern that should be avoided, if possible, when routing the proposed transmission line.

The questionnaire solicited comments regarding which existing linear features the proposed transmission line should follow within the study area. The questionnaire asked the respondents to rank the features they think are most important to follow from **1** (most important) to **7** (least important) from a list that included roads, pipelines, property lines, electrical lines, railroads, ditches and others. The responses that received a rank of **1** (most important) indicated that property lines (34 percent) and electrical lines (12 percent) are the most important existing linear features that should be followed, if possible.

The questionnaire asked if any other factors or features should be considered in determining the location of the proposed transmission line. The majority of responses indicated that consideration should be given to personal property, health effects, wildlife and the effect the proposed transmission line will have on property values. Of the questionnaires received, 39 percent of respondents indicated they were not aware of any incorrect or missing features on the Environmental and Land Use Constraints Map; 35 percent indicated that features were missing or incorrectly plotted on the map; and 25 percent either did not know or did not indicate any incorrect or missing features on the Environmental and Land Use Constraints Map.

When asked on the questionnaire if respondents had a concern with a particular preliminary transmission line segment, 61 (79 percent) responded with either one or more segments. Eleven respondents (14 percent) indicated Segments FW and GP; eight (10 percent) respondents indicated Segments IM, GJ, and GO. The other segments of particular concern include Segments AJ, EA, FQ, and GB (under four percent each). The total percentage does not add up to 100 percent due to multiple answers given by respondents.

When asked on the questionnaire if respondents preferred a specific type of transmission line structure being proposed for the Project, 33 of the respondents (43 percent) answered yes, 22 (29 percent) indicated that they did not have a preference, and the remaining 22 (29 percent) left the question blank.

Of the 33 responses indicating yes, 20 of the respondents indicated a preference for double-circuit steel poles and six would prefer a structure that would have the least impact.

When asked on the questionnaire which of these following situations applied to them (a preliminary transmission line segment is near my home, business, on my land, none of the above or other), and to specify which segment, the following responses were received (the total percentage does not add up to 100 percent due to multiple answers given by respondents):

- Thirty-nine (51 percent) indicated that a preliminary transmission line segment was near their home;
- Eight (10 percent) indicated that a preliminary transmission line segment was near my business;
- Thirty-five (45 percent) indicated that a preliminary transmission line segment was on their land;
- Two (three percent) none of the above; and
- Two (three percent) other.

The questionnaire asked if the information that was provided and the exhibits displayed at the public meeting met their needs. Forty-nine (64 percent) responded "yes," while nine (12 percent) responded "no." The remaining 19 respondents (25 percent) left this question blank.

The questionnaire asked whether the respondent had visited the Bailey to Jones Creek website to view the information about the Project. Of those that responded, 41 answered "yes," and 25 answered "no." This question was left blank or had miscellaneous comments on the remaining 11 questionnaires.

The questionnaire also requested additional comments. Primary themes include property value, personal property, and health risks. Below are selected written comments, remarks and concerns that were provided in response to this question:

- "People and health effects are my concern."
- "It does not seem to be practical to route a transmission line as far south as this line would be to effect my property. I believe the northern most route is the most direct and logical."
- "Please don't run it near my home. I understand the need but pray the highway is a better route for us both. Thank you."
- "If areas of cropland are chosen for the route. Significant attention should be given to marking the tops of the lines with aerial markers such as large round red balls every 200 ft. or so to aid aerial applicators in seeing these lines early in the morning or late evening."
- "Crossing my property would be destroying wetlands and hardwood habitats. The ROW would require taking out 5 or 6 majestic live oak trees that were full grown when Columbus sailed the ocean blue. You would have to cross an existing transmission line that is approx. 80-100 feet tall where it crosses the river."
- "Why come through a city limit or edge of city limit where EMF is a threat and lines would inhibit future housing or business growth, Texas is a pro-business, get'er done place but we are also becoming better educated and concerned about our family's health."
- "If Segment CB which runs across my land is utilized for this Project, I expect to be compensated at today's full market value for my land and not at Brazoria County appraised value."

3.6.2.2 Comments from Agencies, Officials and Organizations

POWER developed a list of federal, state and local agencies and organizations that would potentially have an interest in the Project. Section 3.1.3 lists agencies, organizations and public officials that were sent scoping letters regarding the Project. Maps of the study area were included with each letter. Copies of the agency scoping letters sent and responses received are located in Appendix A.

Responses received are summarized on the following pages.

- The FAA responded with a letter dated September 15, 2017, stating that if CenterPoint Energy is planning to sponsor any construction or alterations which may affect navigable airspace, a FAA Form 7460-1 must be filed electronically via a website. CenterPoint Energy will coordinate with the FAA as necessary once a route is approved for construction.

- FEMA responded with a letter dated September 20, 2017, requesting that each county's floodplain administrator be contacted as to whether a Floodplain Development Permit is needed.

- The NRCS responded with a letter dated October 19, 2017, stating that although they did identify areas of Prime Farmland within the study area, they consider the installation of above ground transmission lines as minimal activity. Therefore, the study area is considered exempt from the FPPA. The NRCS also stated that the proposed site involves USDA-NRCS floodwater retarding structures or Wetland Reserve Program conservation easements within areas of Brazoria and Matagorda counties. Once a final route is selected, they asked that CenterPoint Energy resubmit a request to ensure that these areas will not interfere with the Project corridor. They also encouraged the use of accepted erosion control methods during the construction of the Project.

- The DoD Siting Clearinghouse responded with an email dated October 5, 2017 requesting additional information regarding the Project, which POWER provided in October 13, 2017. The DoD Siting Clearinghouse responded with a letter dated October 20, 2017 stating their informal review of the transmission line project, as proposed, will have minimal impact on military operations conducted in this area.

- The USFWS responded with a letter dated February 1, 2016 and a received stamp dated September 13, 2017, providing a form letter regarding threatened and endangered species inquiries. They also directed POWER to the online listing for federally listed species.

- The TCEQ responded with a letter dated October 13, 2017 stating Brazoria County is designated non-attainment for the 2008 ozone National Ambient Air Quality Standards and classified as moderate. They requested that a completed draft of the EA be completed and submitted for review before the office can provide further comment. They also recommended the environmental assessment address actions that will be taken to prevent surface and groundwater contamination.

- The THC responded with a letter dated September 27, 2017, stating that the study area contains numerous landforms once occupied by prehistoric and historic Native Americans. They further stated that the study area has a moderate to high probability of containing significant cultural resources and that an investigation is warranted. The THC requested that the routes and proposed stations be plotted on a USGS topographic map and submitted for their review.

- The TPWD responded with an email dated September 26, 2017 requesting more information regarding the Project. The TPWD responded with a letter dated October 5, 2017 and provided a project number (38481) and made numerous recommendations. In summary, some of the TPWD recommendations include using existing facilities whenever possible and using existing ROW and utility corridors to minimize impacts to undisturbed habitats, mitigation for all impacts, and avoiding state land.

- The Wildlife Division of TPWD responded with an email dated September 9, 2017 providing data files for the study area and a list of threatened, endangered and rare species.

- The TxDOT responded to POWER's initial scoping letter with an email dated September 22, 2017 providing TxDOT's current project list within the study area for Matagorda and Wharton Counties, stating the list is periodically updated. On October 2, 2017 TxDOT responded to POWER's inquiry regarding state-owned roadway crossings, stating that where the proposed transmission line crosses state-owned roadways (FMs and SHs) a TxDOT utilities permit would be required. Additionally, TxDOT stated that if construction activities require closure of vehicle lanes or the shoulder, separate traffic control approval from the local TxDOT inspector would be needed.

- In response to a request from POWER to TxDOT for more information regarding projects in Brazoria County, TxDOT responded with an email dated March 21, 2018 recommending that POWER contact Bill Brudnick, in the TxDOT Houston District. Mr. Brudnick is responsible for Brazoria County. POWER contacted Mr. Brudnick and TxDOT then responded with a letter

dated April 13, 2018, providing an updated list of major projects in Brazoria County within the study area. The list included the widening of SH 36 to a four-line divided roadway.

- TxDOT responded to a further inquiry from POWER regarding aerial crossings of state highways and FM roads with an email dated April 23, 2018 stating that there is not a problem with aerial power lines crossing an FM road at angles other than 90 degrees. POWER requested further clarification regarding acceptable crossings of state highways and TxDOT represented in an email dated April 24, 2018, that there is some variance in the 90 degree crossing of aerial lines at state highways and FM roads but also suggested that sketches be provided for TxDOT's Utility Section to review. Upon review of the sketches of preliminary state highway crossings, TxDOT responded with an email dated May 10, 2018 stating that an Exception Policy is required for new crossings greater than 105 degrees or less than 75 degrees to highway centerline.

- The TWDB responded with a letter dated September 20, 2017 stating there are not any active TWDB-funded projects located in the areas of the Project. They recommended contacting local entities, including municipalities, county governments, water supply corporations, etc., to determine if there are specific water/wastewater projects that may conflict with the Project.

- The Wharton County Historical Commission responded with a letter dated October 20, 2017, stating that they did not work with projects and permits but that they had appealed to County Judge Phillip Spenrath for a reply.

- The Brazos River Authority ("BRA") responded with a letter dated September 15, 2017, stating that the BRA operates waste water treatment facility within the study area. Should the Project impact the facility they request to be contacted regarding any approvals, permits or easements that might be required.

- The Bayou Land Conservancy responded with a letter dated September 21, 2017, stating that they hold four conservation easements with the study area. Two of the conservation easements also serve as mitigation banks. They would greatly appreciate the Project not crossing these conservation easements if at all possible. A location map of the conservation easements was included.

- The City of Bay City responded with an email dated January 19, 2018 stating the City is not aware of any constraints within the City of Bay City for an alternative route for the proposed transmission line. They also stated they would want to establish a franchise agreement between

the City and CenterPoint Energy if the transmission line is brought through the City. CenterPoint Energy met with Bay City in June of 2018 to discuss the proposed route segments that impact Bay City and the city agreed a franchise agreement would not be needed.

3.6.3 Modifications to Preliminary Transmission Line Segments

POWER and CenterPoint Energy reviewed and considered all comments received from the public meetings and agencies regarding the preliminary transmission line segments (Figure 3-1). The purpose of the review was to evaluate areas of concern and to consider revisions to the preliminary transmission line segments. The information received by CenterPoint Energy and POWER from the public and agencies resulted in modifications to some of the 261 preliminary transmission line segments.

In response to public comments, several segments were modified or combined, and some segments were added to reduce potential impacts to habitable structures and other constraints to the greatest extent practicable, increase geographic diversity and address other concerns from the comments provided. The Project team made final revisions to the preliminary transmission line segments before identifying the proposed alternative transmission line routes to be evaluated by POWER in this EA. The preliminary transmission line segments are presented in Figure 3-1, following the segment modifications derived from data gathered during the public involvement period; the resulting 164 proposed transmission line segments are reflected in Figure 3-2.

Generally, the changes and additions that were made to the preliminary transmission line segments after the open house meetings were made for the following reasons:

- To further reduce the number of habitable structures directly affected by the centerline of the proposed transmission line segments.
- To improve the paralleling of apparent property lines or other physical features.
- To improve the paralleling of compatible ROW.
- To reduce potential land use impacts to ranching and farming operations.
- To increase the number of geographically diverse routing options.

In addition, CenterPoint Energy initially included multiple options to expand the Bailey Substation which required different segment options to enter the Bailey Substation. CenterPoint Energy ultimately

determined that the transmission line could be brought into the Bailey Substation without expanding the footprint of the substation and therefore it was preferable to not include the different expansion options given the greater costs and impacts to surrounding landowners. The preliminary transmission line segments associated with the expansion options were also removed from further consideration.

BAILEY TO JONES CREEK PROJECT

FIGURE 3-2

PROPOSED TRANSMISSION LINE SEGMENTS

Legend

- Study Area Boundary
- Project Substation Tie Point
- Proposed Transmission Line Segment
- Existing Substation
- Existing Transmission Line
- State Highway
- Farm-to-Market Road
- Railroad
- River / Stream
- Waterbody
- City Limits
- County Boundary

TEXAS

Project Study Area

0 1.75 3.5

Miles

N

POWER ENGINEERS

CenterPoint Energy

Date: 8/28/2018

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3.6.4 Proposed Alternative Routes

Of the numerous possible forward progressing route combinations, 30 proposed alternative routes were identified and selected by POWER and CenterPoint Energy. They provide geographically diverse alternatives across the study area to connect CenterPoint Energy's Bailey Substation with the Jones Creek Substation. Each of the 164 proposed transmission line segments is used in at least one of the 30 proposed alternative routes.

The 30 proposed alternative routes and their segment combinations are presented in Table 3-2 below. The proposed alternative routes were also subdivided into geographically diverse groups (or "families") represented by eastern, central, and western characterization based on their location within the study area and segment usage. Figure 3-3 (Sheets 1-6 in map pockets) depicts the location of the proposed transmission line segments that, when combined, form the proposed alternative routes overlain on a USGS topographic map, along with the land use and environmental data and constraints identified and previously discussed. Figure 3-4 (Sheets 1-2 in map pockets) displays the entire study area boundary, mapped constraints and also depicts the location of the proposed transmission line segments.

TABLE 3-2 SEGMENT COMPOSITION OF THE PROPOSED ALTERNATIVE ROUTES

PROPOSED ALTERNATIVE ROUTES	GEOGRAPHIC DESCRIPTION/ FAMILY*	SEGMENT COMBINATION
1	Eastern	B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP
2	Eastern	B-D-F-H-L-P-U-V-X-Y-Z- AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP
3	Eastern	B-D-F-H-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DQ-DR-DS-DU-EP-ES-ER1-ER2-EW-FA-FF-FN-FP
4	Eastern	B-D-F-H-L-P- U-V-X-Y-Z-BI-BX-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DP-DR-DS-DU-EP-ET-EU-FB-FF-FN-FP
5	Eastern	B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CY-DC-IZ-JA-FP
6	Central	B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP
7	Central	B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-JA-FP
8	Central	B-G-J-K-M-GI-GO-GP-FW-FY-GD-GE-HQ-HR-HS-IM-IN-CQ-CR-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP
9	Central	B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP
10	Central	B-G-J-K-N-GF-GH-GL-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DC-IZ-JA-FP
11	Western	B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HU-HW-IC-ID-IE- IL-IM-IN-IO1-IO2-IX-IZ-JA-FP
12	Western	B-E-K-N-GF-GH-GK-GM-GX-GZ-HC-HE-HG-HM-HP-IE- IL-IM-IN-IO1-IO2- IX-IZ-JA-FP
13	Western	B-E-K-N-GF-GH-GK-GN1-GN2-HA1-HA2-HE-HV-IB-IC-HL-HM-HO-HQ-HT-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP

TABLE 3-2 SEGMENT COMPOSITION OF THE PROPOSED ALTERNATIVE ROUTES

PROPOSED ALTERNATIVE ROUTES	GEOGRAPHIC DESCRIPTION/ FAMILY*	SEGMENT COMBINATION
14	Western	B-E-K-N-GF-GH-GK-GM-GX-GZ-HB-HF-HG-HM-HO-HQ-HR-HS-IM- IN-IO1-JC-DA2-IX-IZ-JA-FP
15	Western	B-E-K-N-GF-GG-GX-GZ-HB-HU-HX-IB-IC-ID-IE- IL-IM-IN-IO1-IO2 -IX-IZ-JA-FP
16	Eastern	B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP
17	Eastern	B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CZ-DA1-DA2-IX-IZ-DJ-DK-DV-DX-EF-JE-EN-EQ-EU-FB-FF-FN-FP
18	Western	B-G-J-K-N-GF-GH-GK-GM-GX-GY-HA1-HA2-HD-HU-HW-IC-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP
19	Western	B-G-J-K-N-GF-GH-GK-GN1-JB-HA2-HE-HG-HL-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP
20	Central	B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP
21	Eastern	B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP
22	Eastern	B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP
23	Western	B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HF-HG-HM-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP
24	Central	B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP
25	Central	B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP
26	Central	B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FM-FO-FP
27	Eastern	B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP
28	Eastern	B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DL-DO-DP-DR-DS-DT-ER1-ER2-EV-EZ-FD-FG-FH-FO-FP
29	Eastern	B-D-F-H-L-P-U-V-X-Y-Z- AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP
30	Eastern	B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ES-JF-ER2-EV-EZ-FD-FG-FI-FN-FP

*Geographic Description/Family is defined by use of specific segments: Eastern=Y or Z, Central=HQ or GT, and Western=GK or GX.

These 30 proposed alternative routes are further evaluated, discussed and compared in Section 4.0. Within each resource area, the evaluation criteria for each of the proposed alternative routes were tabulated for comparative purposes.

4.0 IMPACT OF THE PROPOSED ALTERNATIVE ROUTES

Evaluation of the 30 proposed alternative routes identified in Section 3.0 was conducted by utilizing the evaluation criteria listed in Table 3-1 in Section 3.1.3. The tabulated data was used to evaluate the proposed alternative routes and to conduct a quantitative comparative analysis. This analysis, along with consideration of geographic diversity, was the first step in the process POWER and CenterPoint Energy used to identify the set of proposed alternative routes, evaluated in Section 5.0, for inclusion in the PUC CCN Application.

The potential impacts of the proposed alternative routes were compared with respect to community values, recreational and park areas, historic and aesthetic values and environmental integrity. The results of the analysis are provided in Tables 4-1 (segment data) and 4-2 (route data), located in Appendix C. This section provides a summary and discussion of the comparison between the 30 proposed alternative routes.

4.1 COMMUNITY VALUES

Impacts on community resources can be divided into direct and indirect effects. Direct effects are those that would occur if the location and construction of a transmission line results in the removal or loss of public access to a valued resource. Indirect effects are those that would result in a loss in the enjoyment or use of a resource due to the characteristics of the proposed transmission line, poles, tower structures or ROW.

4.1.1 Land Use

The magnitude of potential impacts to land use resulting from the construction of a transmission line is determined by the amount of land or land use type displaced by the actual ROW and by the compatibility of the transmission line ROW with adjacent land uses. During construction, temporary impacts to land uses within the ROW may occur due to the movement of workers, equipment and materials through the area. Construction noise and dust, in addition to temporary disruptions of traffic flow, may also temporarily affect residents and businesses in the area immediately adjacent to the ROW. Coordination between CenterPoint Energy, their contractors and the landowners regarding ROW access and construction scheduling should minimize these disruptions.

The evaluation criteria used to compare potential land use impacts include overall route length, the length of route paralleling existing corridors (including apparent property lines), the proximity of the route to habitable structures, potential impacts to recreational and park areas and the length of route across various

land use types. An analysis of the existing land use adjacent to the proposed ROW was required to evaluate the potential impacts. The following sections address potential impacts to land use associated with the 30 proposed alternative routes.

4.1.2 Proposed Alternative Route Length

The length of a proposed alternative route can be an indicator of the relative magnitude of land use impacts. In general, a shorter route means that less land is crossed, which usually results in the least potential impacts. The total lengths of the proposed alternative routes vary from approximately 53.9 miles for Proposed Alternative Route 2, to approximately 84.3 miles for Proposed Alternative Route 18. The differences in route lengths reflect the direct or indirect pathway of each proposed alternative route between the Project endpoints. The length of the proposed alternative routes may also reflect the effort to parallel existing transmission lines, other existing linear features and apparent property lines and provide geographic diversity. The approximate lengths for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

4.1.3 Compatible ROW

16 TAC § 25.101(b)(3)(B) requires that the PUC consider whether new transmission line routes are within existing compatible ROWs and/or are parallel to existing compatible ROWs, property lines or other natural or cultural features. Criteria were used to evaluate compatible ROW utilization, length of route parallel and adjacent to existing transmission line ROW, length of route parallel to other existing linear ROWs and length of ROW paralleling apparent property lines. It should also be noted that if a segment parallels more than one existing linear corridor, only one linear corridor was tabulated (e.g., the segment parallels both an apparent property line and a roadway, but it was only tabulated as paralleling the roadway). Although pipeline ROW was not generally treated as a routing opportunity, POWER and CenterPoint Energy did consider paralleling pipeline ROW where it paralleled other compatible ROW, or where an area is otherwise undisturbed except for an existing pipeline ROW.

Proposed Transmission Line Segments B, FP and JA are proposed to be built partially within existing CenterPoint Energy ROW and are presented in Table 4-1 (Appendix C). Proposed Alternative Routes 5, 7, 8, 10 through 16, 18 and 19 include Proposed Transmission Line Segments B, FP and JA, and utilize the most existing transmission line ROW with approximately 1.8 miles each. All of the remaining 18 proposed alternative routes utilize less CenterPoint Energy's existing transmission line ROW, with approximately 0.9 mile each. The lengths utilizing CenterPoint Energy's existing transmission line ROW for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

All of the proposed alternative routes run parallel to some length of existing transmission line ROW. The total proposed alternative route lengths parallel to existing transmission line ROW vary from approximately 6.5 miles for Proposed Alternative Route 25, to approximately 18.5 miles each for Proposed Alternative Routes 20 and 24. Thirteen of the proposed alternative routes parallel existing transmission line ROW for over 10 miles. The length parallel to existing transmission line ROW for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

The proposed alternative routes with lengths parallel to existing pipeline ROW ranges from approximately 6.3 miles for Proposed Alternative Route 2, to approximately 24.5 miles for Proposed Alternative Route 18. The lengths parallel to existing pipeline ROW for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

The proposed alternative routes with lengths parallel to existing railroad ROW ranges from approximately zero miles for 24 of the proposed alternative routes, to approximately 1.3 miles each for Proposed Alternative Routes 9, 10, 20 and 24. The remaining two proposed alternative routes parallel existing railroad ROW for approximately 0.3 mile each. The lengths parallel to existing railroad ROW for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

All of the proposed alternative routes parallel apparent property lines to the extent feasible in the absence of other existing linear features. The length of proposed alternative routes that parallel apparent property lines ranges from approximately 17.3 miles for Proposed Alternative Route 2, to approximately 39.1 miles for Proposed Alternative Route 14. Fourteen of the proposed alternative routes parallel apparent property lines for over 30 miles. The lengths paralleling apparent property lines for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

The proposed alternative routes with lengths paralleling other existing linear features, including roadways, range from approximately 8.3 miles for Proposed Alternative Route 16, to approximately 26.6 miles for Proposed Alternative Route 15. Twenty-eight of the proposed alternative routes parallel other existing linear features, including roadways, for 10 or more miles. The lengths paralleling other existing linear features for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

To evaluate whether and to what extent, the proposed alternative routes parallel existing compatible ROWs, apparent property lines, or other natural or cultural features, the percentage of each total route length parallel to these features was estimated. These percentages can be calculated by adding up the total

route length paralleling existing transmission lines, existing railroad, other existing ROW and apparent property lines and then dividing the result by the total length of the route. All of the proposed alternative routes parallel existing linear features for over 70 percent of their lengths, with 18 of the proposed alternative routes paralleling existing linear features for 80 percent or more of their lengths. The percentage of each route that parallels existing linear features ranges from 72 percent for Proposed Alternative Route 16, to 89 percent for Proposed Alternative Route 20. The percentage of each proposed alternative route parallel with existing linear features is presented in Table 4-2 (Appendix C).

4.1.4 Urban and Residential Areas

One of the most important measures of potential land use impacts is the number of habitable structures located in the vicinity of each proposed alternative route. POWER determined the number and distance of habitable structures located within 500 feet of the centerline of each proposed alternative route through the interpretation of aerial photography and during reconnaissance surveys. The horizontal accuracy of the aerial photograph used to identify habitable structures was calculated at ±20 feet. To account for this margin of error and to ensure that all habitable structures were properly identified, POWER identified habitable structures within 520 feet of the centerline of each proposed alternative route.

All of the 30 proposed alternative routes have habitable structures located within 500 feet of their centerlines. Due to the developed nature of the study area and the effort made to parallel existing linear features (e.g., existing transmission line, roadway and pipeline ROWs and apparent property lines), 22 of the 30 proposed alternative routes have 200 or more habitable structures located within 500 feet of their centerlines. Proposed Alternative Route 18 has the least number of habitable structures located within 500 feet of its centerline with 164, with 15 of these already within 500 feet of another existing transmission line. It should be noted that where proposed alternative routes parallel adjacent transmission line ROW, the majority of habitable structures along that section will already be within 500 feet of an existing transmission line. Proposed Alternative Route 20 has the most habitable structures located within 500 feet of its centerline with 447, with 53 of these already within 500 feet of an existing transmission line. The number of habitable structures located within 500 feet of each of the proposed alternative route centerlines are presented in Table 4-2 (Appendix C).

Several of the proposed alternative routes for this Project have habitable structures located within 50 feet of their centerlines. These habitable structures will likely be required to be relocated or removed. Based on aerial photography interpretation and verification during field reconnaissance surveys, there is one habitable structure that would be located in the ROW for Proposed Transmission Line Segments AP, CF,

EZ, FD and IO2 and six habitable structures that would be located in the ROW for Proposed Transmission Line Segment EP. The number of habitable structures that would be located in the ROW ranges from zero for nine of the proposed alternative routes, to 10 for Proposed Alternative Route 22. The number of habitable structures located in the ROW of each of the proposed alternative route centerlines are presented in Table 4-2 (Appendix C).

Tables 5-9 through 5-38 (Appendix D) present detailed information on habitable structures within 520 feet of each of the proposed alternative route centerlines. All known habitable structure locations are shown on Figure 3-3 (Sheets 1-6 in map pockets) and on Figure 5-1 (Sheets 1-6 in map pockets).

4.1.5 Land Use Categories

An analysis of compatibility with adjacent land use types was completed for each proposed alternative route. Land use categories occurring within the study area included residential, commercial and industrial areas, agricultural land or cropland, pastureland and state-owned land.

Proposed alternative routes with the greatest lengths across residential areas typically have a higher number of habitable structures located within 500 feet of their centerlines. The proposed alternative routes with lengths across residential areas range from approximately 5.0 miles for Proposed Alternative Route 5, to approximately 11.9 miles for Proposed Alternative Route 25. The lengths across residential areas for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

Commercial and industrial areas crossed by the proposed alternative routes include the five industrial facilities that were identified within the study area. The proposed alternative routes with lengths across commercial and industrial areas range from approximately 0.8 mile for Proposed Alternative Route 8, to approximately 5.9 miles for Proposed Alternative Route 20. The lengths across commercial and industrial areas for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

All proposed alternative routes cross agricultural land or cropland. However, due to the relatively small area affected (location of the structures), and the short duration of construction activities at any one location, such impacts should be both minor and temporary. The proposed alternative routes with lengths across agricultural land or cropland range from approximately 3.3 miles for Proposed Alternative Route 27, to approximately 17.1 miles for Proposed Alternative Route 15. The lengths across agricultural land or cropland for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

All the proposed alternative routes cross pastureland. However, as CenterPoint Energy is not proposing to fence the ROW or otherwise separate the ROW from adjacent lands, there should not be any long-term or significant displacement of current grazing activities within pasturelands. The proposed alternative routes with lengths across pastureland range from approximately 35.0 miles for Proposed Alternative Route 2, to approximately 55.4 miles for Proposed Alternative Route 6. The lengths across pastureland for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

Proposed Transmission Line Segment GO is proposed to cross agricultural lands with known mobile irrigation systems (rolling or pivot). Proposed Alternative Routes 8, 9, 10, 20 and 24 include Proposed Transmission Line Segment GO, which has the only length across agricultural lands with known mobile irrigation systems (rolling or pivot) with approximately 0.1 mile. All of the remaining 25 proposed alternative routes do not cross any agricultural lands with known mobile irrigation systems. The lengths across agricultural lands with known mobile irrigation systems (rolling or pivot) for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

Twenty-one of the proposed alternative routes cross state-owned land. Proposed Transmission Line Segments CV, CW, CX, CY, CZ, DA1 and DA2 each cross property owned by the TDCJ, and Proposed Transmission Line Segments EM, EN, EQ, ET, EU, FA, FB, FF and JA each cross property owned by the TPWD. The proposed alternative routes with lengths across TDCJ and TPWD properties range from zero miles for nine of the proposed alternative routes, to approximately 7.4 miles for Proposed Alternative Routes 5 and 10. The lengths across TDCJ and TPWD properties for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

4.1.6 Transportation/Aviation/Utilities

4.1.6.1 Transportation

Potential impacts to transportation include temporary disruption of traffic and conflicts with future proposed roadways or utility improvements. Traffic disruptions would include those associated with the movement of equipment and materials to the ROW, slightly increased traffic flow and periodic congestion during the construction phase of the Project. These impacts are typically considered minor, temporary and short-term. CenterPoint Energy would be required to obtain road-crossing permits from TxDOT for any crossing of state-maintained roadways.

The number of US Hwys and SHs crossed by the proposed alternative routes ranges from two highway crossings each for Proposed Alternative Routes 1, 16, 27, 28 and 30, to eight highway crossings each for

Proposed Alternative Routes 2, 6, 9 and 20. The number of FM roads crossed by the proposed alternative routes ranges from five road crossings each for Proposed Alternative Routes 11, 19 and 23, to 18 road crossings each for Proposed Alternative Routes 3, 22, 27 and 30. The number of US Hwys, SHs and FM road crossings for each of the proposed alternative routes are presented in Table 4-2 (Appendix C).

4.1.6.2 Aviation

According to FAA regulations, Title 14 CFR Part 77, the construction of a transmission line requires FAA notification if the tower structure height exceeds the height of a theoretical line extending outward and upward at a slope of 100:1 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 tower structure heights exceed a 50:1 slope for a horizontal distance of 10,000 feet from the nearest runway of a public or military airport where no runway is longer than 3,200 feet in length, and if tower structure heights exceed a 25:1 slope for a horizontal distance of 5,000 feet for heliports.

One public FAA registered airport, Bay City Municipal Airport, is located within 20,000 feet of 14 of the proposed alternative routes. Following PUC approval of a route for the proposed transmission line, CenterPoint Energy will make a final determination of the need for FAA notification, based on specific route location and structure design. The result of this notification and any subsequent coordination with the FAA could include changes in the line design and/or potential requirements to mark and/or light the structures.

None of the proposed alternative routes are within 10,000 feet of a runway at a public or military FAA registered airport where no runway is more than 3,200 feet in length.

The number of private airstrips located within 10,000 feet of the proposed alternative routes ranges from one for Proposed Alternative Route 6, to four each on Proposed Alternative Routes 12 and 14. The number of heliports located within 5,000 feet of the proposed alternative routes ranges from zero on 18 of the proposed alternative routes, to three for Proposed Alternative Route 18. Table 4-3 presents detailed airport, airstrip and heliport information for each of the proposed alternative routes.

Tables 5-9 through 5-38 (Appendix D) present detailed information on airports, airstrips and heliports. The number of airports, airstrips and heliports for each of the proposed alternative route centerlines are presented in Table 4-2 (Appendix C). The distance for each airport/airstrip and heliport from the nearest

proposed alternative route was measured using GIS software and aerial photograph interpretation (Table 4-3). All known airport/airstrip and heliport locations are shown on Figure 3-3 (Sheets 1-6 in map pockets) and on Figure 5-1 (Sheets 1-6 in map pockets).

TABLE 4-3 AIRSTRIP RUNWAY LOCATIONS

FIGURE 5-1 MAP ID	AIRSTRIP	PROPOSED ALTERNATIVE ROUTES	DISTANCE FROM NEAREST ROUTING SEGMENT (FEET)	ESTIMATED RUNWAY LENGTH (FEET)[1]	EXCEEDS SLOPE[1, 2]
1500	Bay City Municipal Airport (FAA Public)	6, 7, 8, 9, 10, 12, 13, 14, 19, 20, 23, 24, 25, 26	3,586	5,107	Yes
1501	Private Airstrip 1	1, 2, 3, 4, 5, 6, 16, 17, 21, 22, 26, 27, 28, 29, 30	3,523	NA	NA
1502	Peterson Airport	1, 2, 3, 4, 5, 9, 16, 17, 21, 22, 27, 28, 29, 30	6,357	NA	NA
1503	Private Airstrip 2	7, 8, 9, 10, 11, 12, 13, 14, 18, 19, 20, 23, 24, 25	2,177	NA	NA
1504	Private Airstrip 3	7, 8, 10, 20, 24, 25	61	NA	NA
1505	W.D. Cornelius Ranch Airport (Private)	12, 14, 15	2,821	NA	NA
1506	Fehmel Dusting Service Airport (Private)	11, 12, 13, 14, 18, 19, 23	2,265	NA	NA
1507	Eagle Air Park (Private)	3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30	2,759	NA	NA
1508	Station 24 Heliport	12, 14, 15, 18	2,680	40	Yes
1509	Cig 809 Heliport	18	3,453	40	Yes
1510	Matagorda Regional Medical Center Heliport	11, 13, 18, 19, 23	1,369	75	Yes
1511	Sweeny Community Hospital Heliport	3, 22, 27, 30	1,420	40	Yes

[1]FAA 2018; POWER aerial photo and USGS interpretation.
[2]POWER used aerial photo and USGS interpretation considering elevation information obtained from USGS topographic maps and a typical transmission structure height of 151 feet.

4.1.6.3 Utilities

Pipelines (including those carrying oil and gas) will be identified on engineering drawings and flagged prior to construction. CenterPoint Energy will coordinate with the respective pipeline companies at each crossing for continued safe operation of the pipeline during transmission line construction and operation. The number of pipelines crossed by each proposed alternative route varies from 98 crossings on Proposed Alternative Route 1, to 264 crossings for Proposed Alternative Route 14. The number of pipeline crossings for each of the proposed alternative routes is presented in Table 4-2 (Appendix C).

Several existing electric transmission lines were identified within the study area and each of the proposed alternative routes crosses several existing transmission lines. The number of transmission line crossings ranges from nine for Proposed Alternative Route 6, to 18 crossings each for Proposed Alternative Routes 11 and 23. CenterPoint Energy will coordinate with the appropriate entity to obtain the necessary permits or written agreements as required. The number of transmission line crossings for each of the proposed alternative routes is presented in Table 4-2 (Appendix C).

4.1.7 Communication Towers

None of the proposed alternative routes would have a significant impact on electronic communication facilities or operations in the study area. No commercial AM radio towers were identified within 10,000 feet of any of the route centerlines for the proposed alternative routes. The number of FM radio transmitters, microwave towers and other electronic installations identified within 2,000 feet of the route centerlines range from three for Proposed Alternative Route 15, to 11 for Proposed Alternative Route 3.

Tables 5-9 through 5-38 (Appendix D) present detailed information on electronic communication facilities. The number of AM radio towers located within 10,000 feet and FM radio and other commination facilities located within 2,000 feet of the proposed alternative route centerlines are presented in Table 4-2 (Appendix C). The distance of each communication tower from the nearest proposed alternative route was measured using GIS software and aerial photograph interpretation (see Table 4-4). All known communication tower locations are shown on Figure 3-3 (Sheets 1-6 in map pockets) and on Figure 5-1 (Sheets 1-6 in map pockets).

TABLE 4-4 ELECTRONIC COMMUNICATION FACILITIES

FIGURE 5-1 MAP ID	TOWER TYPE	PROPOSED ALTERNATIVE ROUTES	DISTANCE FROM NEAREST SEGMENT (FEET)*
1400	Other electronic installation	1, 2, 3, 4, 5, 6, 16, 17, 21, 22, 26, 27, 28, 29, 30	258
1401	FM Tower	7, 8, 9, 10, 11, 12, 13, 14, 15, 18, 19, 20, 23, 24, 25	666
1402	Other electronic installation	7, 8, 20, 24, 25	502
1403	Other electronic installation	6, 26	1,921
1404	Other electronic installation	6, 7, 8, 25, 26	1,499
1405	Other electronic installation	9, 10, 20, 24	516
1406	Other electronic installation	9, 10, 20, 24	1,244
1407	Other electronic installation	11, 19, 23	637
1408	Other electronic installation	11, 13, 18, 19, 23	1,033
1409	Other electronic installation	12, 13, 14, 19, 23	180
1410	Other electronic installation	9, 13, 14	1,566
1411	Other electronic installation	9, 10, 11, 12, 13, 15, 18, 19, 20, 23, 24	948

TABLE 4-4 ELECTRONIC COMMUNICATION FACILITIES

FIGURE 5-1 MAP ID	TOWER TYPE	PROPOSED ALTERNATIVE ROUTES	DISTANCE FROM NEAREST SEGMENT (FEET)*
1412	Other electronic installation	1, 2, 3, 4, 5, 16, 17, 21, 22, 27, 28, 29, 30	945
1413	Other electronic installation	1, 2, 3, 4, 5, 16, 17, 21, 22, 27, 28, 29, 30	454
1414	Other electronic installation	1, 2, 3, 4, 5, 16, 17, 21, 22, 27, 28, 29, 30	854
1415	Other electronic installation	1, 2, 3, 4, 5, 16, 17, 21, 22, 27, 28, 29, 30	947
1416	Other electronic installation	3, 22, 27, 30	1,173
1417	Other electronic installation	3, 22, 27, 30	1,786
1418	Other electronic installation	3, 20, 22, 27, 30	1,247
1419	Other electronic installation	1, 2, 29	1,588
1420	Other electronic installation	5, 6, 16, 17	1,112
1421	Other electronic installation	2, 3, 4, 5, 6, 10, 20	412
1422	Other electronic installation	2, 3, 4, 5, 6, 10, 20	503
1423	Other electronic installation	2, 3, 4, 6, 9, 17, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30	1,038
1424	Other electronic installation	5, 7, 8, 10, 11, 12, 13, 14, 15, 16, 18, 19	1,521

*POWER aerial photo and USGS interpretation; FCC 2017.

4.1.8 Socioeconomics

Construction and operation of the proposed transmission line will not result in a significant change in the population or employment rate within the study area. Construction workers for the Project will commute to the work site on a daily or weekly basis, instead of permanently relocating to the area. The presence of additional workers would likely result in a temporary increase in local retail sales due to purchases of food, fuel and other merchandise. No additional staff will be necessary for line operations and maintenance.

4.2 RECREATIONAL AND PARK AREAS

Impacts to community resources, whether direct or indirect, can be gauged as they affect community recreational and park areas. Potential impacts to recreation include the disruption or preemption of recreational activities during the construction of the Project. There are several parks and recreational areas identified within the study area.

No significant impacts to the use or enjoyment of the parks and recreation facilities located within the study area are anticipated from the construction of any of the proposed alternative routes. No adverse impacts are anticipated for any of the fishing or hunting areas from the construction of any of the proposed alternative routes.

Proposed Transmission Line Segment HU, which is included on Proposed Alternative Routes 11, 15 and 18, crosses approximately 0.5 mile of Riverside Park. Proposed Transmission Line Segments EM, EN, EQ, ET, EU, FA, FB, FF and JA, which are included on Proposed Alternative Routes 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 29, each cross between approximately 0.01 to 4.5 miles of the Justin Hurst WMA (Tables 4-1 and 4-2). These proposed transmission line segments are paralleling existing linear features (roads and transmission lines) to minimize potential impacts within Riverside Park and the Justin Hurst WMA. The lengths of proposed alternative routes that cross parks or recreational areas range from zero on 11 of the proposed alternative routes, to approximately 5.0 miles for Proposed Alternative Routes 11, 15 and 18.

The number of additional parks or recreation areas located within 1,000 feet of the proposed alternative route centerlines ranges from one for Proposed Alternative Route 9, to six each for Proposed Alternative Routes 22, 27 and 30. Refer to Table 4-2 (Appendix C) for the number of parks or recreation areas crossed and located within 1,000 feet of the proposed alternative routes.

Tables 5-9 through 5-38 (Appendix D) present detailed information on parks and recreation areas. The number of parks and recreation areas for each of the proposed alternative route centerlines are presented in Table 4-2 (Appendix C). The distance of each park or recreation area from the nearest proposed alternative route was measured using GIS software and aerial photography interpretation (see Table 4-5). All known park or recreation area locations are shown on Figure 3-3 (Sheets 1-6 in map pockets) and on Figure 5-1 (Sheets 1-6 in map pockets).

TABLE 4-5 PARKS AND RECREATION AREAS

FIGURE 5-1 MAP ID	PARKS AND RECREATION AREAS	PROPOSED ALTERNATIVE ROUTES	DISTANCE FROM NEAREST SEGMENT (FEET)*
1600-A	San Bernard National Wildlife Refuge	1, 2, 3, 4, 5, 6, 16, 17, 21, 22, 26, 27, 28, 29, 30	286
1600-B	San Bernard National Wildlife Refuge	1, 2, 3, 4, 5, 16, 17, 21, 22, 27, 28, 29, 30	149
1600-C	San Bernard National Wildlife Refuge	6, 7, 8, 14, 25, 26	761
1600-D	San Bernard National Wildlife Refuge	3, 22, 27, 30	49
1600-E	San Bernard National Wildlife Refuge	8, 9, 10, 11, 12, 13, 14, 15, 18, 19, 20, 23, 24, 26	185
1601	Matagorda County Birding Nature Center	13, 18	908
1602	Riverside Park	11, 15, 18	0
1603	Levi Jordan Plantation	3, 7, 20, 22, 25, 27, 30	53
1604	Lion's Club Park	1, 6	553
1605	SFA Elementary School Park	5, 7, 8, 10, 11, 12, 13, 14, 15, 16, 18, 19	992
1606	Justin Hurst Wildlife Management Area	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30	0
1607	Freeport Municipal Golf Course	1, 6, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30	337

*POWER aerial photo and USGS interpretation.

4.3 HISTORICAL AND AESTHETIC VALUES

Methods for identifying, evaluating and mitigating impacts to cultural resources have been established for federal projects or permitting actions, primarily for purposes of compliance with the National Historic Preservation Act ("NHPA"). Similar methods are often used when considering cultural resources affected by state-regulated actions. In either case, this process generally involves: (1) identifying significant (i.e., national- or state-designated) cultural resources within 1,000 feet of the centerline of each routing alternative; (2) determining the potential impacts of the project on those resources; and (3) implementing, where appropriate, measures to avoid, minimize or mitigate those impacts.

Impacts associated with the construction, operation and maintenance of transmission lines can affect cultural resources either directly or indirectly. Construction activities associated with any proposed project can adversely impact cultural resources if those activities alter the integrity of key characteristics that contribute to a property's significance as defined by the standards of the NRHP or the Antiquities Code of Texas. These characteristics might include location, design, setting, materials, workmanship, feeling or association for architectural and engineering resources, or archeological information potential for archeological resources.

Direct impacts are those effects that physically or visually alter the integrity of key aspects or qualities that define the historical significance of the resource. Typically, direct impacts are caused by the actual construction of the line or through increased vehicular traffic during the construction phase.

Indirect impacts include those effects caused by the Project that are farther removed in distance or that occur later in time but are reasonably foreseeable. These indirect impacts might include introduction of visual or audible elements that are out of character with the resource or its setting. Indirect impacts might also occur as a result of alterations in the pattern of land use, changes in population density, accelerated growth rates or increased pedestrian or vehicular traffic after construction. Historic buildings, structures, landscapes and districts are among the types of resources that might be adversely impacted by the indirect impact of the proposed transmission structures and wires.

Mitigation for direct and indirect impacts to cultural resources may be achieved, where appropriate, by avoidance through project design. Additional mitigation measures for direct impacts may include implementing a program for data recovery excavations if an archeological site cannot be avoided. Indirect impacts on historical properties and landscapes can be lessened through careful design and landscaping

considerations, such as using vegetation screens or berms where practicable. Additionally, relocation might be possible for some historic structures.

Because none of the proposed alternative routes have been surveyed in their entirety for cultural resources, the possibility of impacting undiscovered cultural resources exists along all of the proposed alternative routes. Areas with a high probability for prehistoric archeological sites include floodplains and secondary terraces of perennial stream channels, as well as areas near backswamps, wetlands and oxbow lakes. These highly productive environments provided high-food-density foraging areas to populations in the study area. Thus, all of the proposed alternative routes have been determined to have some HPA along their lengths, due to their proximity to water courses, wetlands, oxbow lakes and previously recorded archeological sites. The approximate lengths of HPAs crossed by each proposed alternative route are presented in Table 4-2 (Appendix C).

4.3.1 Historical Values

4.3.1.1 Archeological Sites

The file review, including data from TARL, THSA and TASA, indicated that there are 17 documented archeological sites within 1,000 feet of the proposed alternative routes (summarized in Table 4-6). Of these, five are prehistoric, 11 are historic and one has historic and prehistoric components. Site 41BO214 and portions of site 41BO221 have been determined ineligible for listing on the NRHP. Site 41BO214 is a scatter of historic and modern rubbish; site 41BO221 is a dumpsite with historic and modern materials. Site 41BO136, the Durazno Plantation, is listed on the NRHP and is discussed below. Site 41BO165, the Levi Jordan Plantation, is a SAL, a State Historic Site and has been determined eligible for listing on the NRHP. Site 41BO165 is also discussed below. The remaining sites have not been formally assessed for listing on the NRHP. None of the archeological sites are crossed by proposed alternative routes. The site and their distances to the proposed alternative routes are shown in Table 4-6.

TABLE 4-6 ARCHEOLOGICAL SITES WITHIN 1,000 FEET OF PROPOSED ALTERNATIVE ROUTES

SITE TRINOMIAL	DESCRIPTION	DISTANCE IN FEET FROM CENTERLINE	PROPOSED ALTERNATIVE ROUTE(S)	COMMENTS
41BO100	Prehistoric shell midden	814	3, 4, 8, 10, 20	NRHP eligibility undetermined
41BO103	Prehistoric shell midden	250	5, 6, 16, 17	NRHP eligibility undetermined
41BO109	Prehistoric ceramics and historic foundation and scatter	155	1, 2, 4, 5, 16, 17, 21, 28, 29	NRHP eligibility undetermined
41BO136	Durazno Plantation	931	5, 7, 8, 10, 11, 12, 13, 14, 15, 16, 18, 19	NRHP-listed

TABLE 4-6 ARCHEOLOGICAL SITES WITHIN 1,000 FEET OF PROPOSED ALTERNATIVE ROUTES

SITE TRINOMIAL	DESCRIPTION	DISTANCE IN FEET FROM CENTERLINE	PROPOSED ALTERNATIVE ROUTE(S)	COMMENTS
41BO164	Historic Mims Plantation remains	498	3, 4, 8, 10, 20	NRHP eligibility undetermined
41BO165	Levi Jordan Plantation State Historic Site	85	3, 7, 22, 25, 27, 30	SAL, State Historic Site, eligible for NRHP
		140	20	
41BO191	Prehistoric shell midden	984	7, 9, 11, 12, 15, 21, 22, 23, 24, 25, 26, 27, 28, 30	NRHP eligibility undetermined
41BO214	Scatter of historic and modern artifacts	368	2, 3, 4, 5, 6, 10, 20	Determined Ineligible for NRHP
41BO221	Historic trash dump	198	8, 14, 26	Portions of site determined ineligible for NRHP
41BO227	Historic ranching feature and associated artifacts	848	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 20	NRHP eligibility undetermined
41BO238	Historic homestead remains	589	1, 2 ,3, 4, 5, 16, 17, 21, 22, 27, 28, 29, 30	NRHP eligibility undetermined
41BO257	Historic ranch complex	264	3, 20, 22, 27, 30	NRHP eligibility undetermined
41BO258	Prehistoric shell midden	321	7, 9, 11,12, 15, 21, 22, 23, 24, 25, 26, 27, 28, 30	NRHP eligibility undetermined
41BO259	Historic ranch complex	923	5, 10	NRHP eligibility undetermined
41BO260	Prehistoric shell midden	428	7, 9, 11, 12, 15, 21, 22, 23, 24, 25, 26, 27, 28, 30	NRHP eligibility undetermined
41BO262	Historic homestead and produce stand	468	3, 4, 20, 21, 22, 27, 28, 30	NRHP eligibility undetermined
41MG138	Historic farmstead	277	14, 23	NRHP eligibility undetermined

Source: THC 2018b.

4.3.1.2 Cemeteries

Based on data from the THSA, TASA and topographic maps, 20 cemeteries are located within 1,000 feet of the proposed alternative routes. None of these cemeteries are crossed by the proposed alternative routes. The Gulf Prairie Peach Point Cemetery (an HTC), is bisected by Peach Point Road and mapped as two cemeteries, one on each side of the road. The nearest alternative routes are over 500 feet from the Gulf Prairie Peach Point cemetery boundaries. The Mims Family Cemetery is also a designated HTC. The Mims Family cemetery is 72 feet from Proposed Alternative Routes 8, 10, 21, 22, 27, 28 and 30; 560 feet from Proposed Alternative Routes 3, 4 and 20; and 969 feet from Proposed Alternative Routes 7, 9, 11, 12, 13, 14, 15, 18, 19, 23, 24, 25 and 26. The cemeteries within 1,000 feet of the proposed alternative routes are shown in Table 4-7. The number of cemeteries within 1,000 feet of each of the proposed alternative routes is presented in Table 4-2 (Appendix C).

TABLE 4-7 CEMETERIES WITHIN 1,000 FEET OF THE PROPOSED ALTERNATIVE ROUTES

CEMETERY NAME	THC CEMETERY NUMBER	NEAREST SEGMENT	DISTANCE IN FEET FROM CENTERLINE	DIRECTION TO THE CEMETERY	PROPOSED ALTERNATIVE ROUTE	COMMENTS
Black Family Cemetery	BO-C057	V	571	SW	1, 2, 3, 4, 5, 16, 17, 21, 22, 27, 28, 29, 30	
Brazoria Cemetery	BO-C136	BL	91	E	1, 6	
Colonial Cemetery	BO-C062	AP	523	N	1, 2, 29	
Galilee Church Cemetery	BO-C179	IX	104	NE	7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30	
Gardener Family Cemetery	BO-C211	V	780	N	1, 2, 3, 4, 5, 16, 17, 21, 22, 27, 28, 29, 30	
Grace Baptist Cemetery	BO-C140	IN	284	NE	7, 8, 9, 10, 11, 12, 13, 14, 15, 18, 19, 23, 24, 25, 26	
		CE	299		20	
Gulf Prairie, Peach Point Cemetery 1	BO-C142	DI	590	S	2, 20	HTC
		DG	607		3, 4, 6	
Gulf Prairie, Peach Point Cemetery 2	BO-C142	DF	585	N	2, 3, 4, 6, 20	HTC
Jaden Cemetery	BO-C042	IM	545	NE	8. 9, 10, 11, 12, 13, 14, 15, 18, 19, 20, 23, 24, 26	
Mims Community Cemetery	n/a	CM	357	SE	3, 4, 20, 21, 22, 27, 28, 30	
Mims Family Cemetery	BO-C165	CM	560	S	3, 4, 20,	HTC
		CQ	72	W	8, 10, 21, 22, 27, 28, 30,	
		IN	969	N	7, 9, 11, 12, 13, 14, 15, 18, 19, 23, 24, 25, 26	
Morris Cemetery	BO-C205	P	784	NW	1, 2, 3, 4, 5, 16, 17, 21, 22, 27, 28, 29, 30	
Oakland Cemetery	BO-C040	DL	371	S	1, 3, 4, 27, 28, 30,	
Roselawn Memorial Park Cemetery	n/a	GT	165	SW	9, 10, 20, 24	
TDCJ Prison Cemetery	n/a	CY	503	N	2, 3, 4, 5, 6, 10, 20	
Union Church Cemetery	MG-C005	FQ	310	SE	6, 26	
Unknown (Kennedy School) Cemetery	MG-C013	HT	414	SW	9, 13	

TABLE 4-7 CEMETERIES WITHIN 1,000 FEET OF THE PROPOSED ALTERNATIVE ROUTES

CEMETERY NAME	THC CEMETERY NUMBER	NEAREST SEGMENT	DISTANCE IN FEET FROM CENTERLINE	DIRECTION TO THE CEMETERY	PROPOSED ALTERNATIVE ROUTE	COMMENTS
Unknown Cemetery 1	n/a	IN	93	W	7, 8, 9, 10, 11, 12, 13, 14, 15, 18, 19, 23, 24, 25, 26	
Vine Grove Cemetery	MG-C018	IE	236	S	10, 11, 12, 15, 18, 19, 20, 23, 24	
Zion Temple Cemetery/Williams Family/Mims-Fannin Plantation	BO-C012	CM	89	SE	3, 4, 20, 21, 22, 27, 28, 30	

Source: THC 2018a and 2018b; aerial imagery and USGS topographic quadrangles.

4.3.1.3 Architectural Sites

Three NRHP-listed or determined-eligible properties are recorded within 1,000 feet of the proposed alternative routes. The Durazno Plantation, also recorded as archeological site 41BO136, is an NRHP-listed property 931 feet from Proposed Alternative Routes 5, 7, 8, 10, 11, 12, 13, 14, 15, 16, 18 and 19. No direct effects to the plantation are anticipated due to the distance between proposed ROWs and the Durazno Plantation boundary. Much of the proposed transmission line segment nearest the plantation parallels an existing transmission line, diminishing indirect effects to the property. In addition, tree cover between the plantation and proposed alternative routes is expected to obscure the transmission line from view from most of the Durazno Plantation property.

The Gazebo for Richard Marmion is a sculpture that is listed on the NRHP as part of a multiple-property listing honoring the work of sculptor Dionicio Rodriguez. The gazebo is 660 feet from Proposed Alternative Routes 4, 5, 16, 17, 21 and 28. No direct effects are anticipated to the gazebo. Although the viewshed from the gazebo is not a contributing factor to the gazebo's NRHP eligibility, the gazebo is in a wooded area and it is anticipated that tree cover would diminish any indirect effects to the viewshed.

The Levi Jordan Plantation, also recorded as archeological site 41BO165, is a SAL and State Historic Site that has been determined eligible for listing on the NRHP located 85 feet from Proposed Alternative Routes 3, 7, 22, 25, 27 and 30, and 140 feet from Proposed Alternative Route 20. No direct impacts are anticipated to the property. The plantation house is approximately 335 feet from the proposed alternative route centerlines. The proposed centerlines parallel a tree-lined fence line and SH 521 near the plantation, diminishing effects to the viewsheds of the Levi Jordan Plantation.

4.3.1.4 Summary

None of the proposed alternative routes have been systematically surveyed for cultural resources; therefore, the potential for undiscovered cultural resources exists. HPAs have been designated within the study area and the proposed alternative route lengths crossing these areas vary from 23.3 to 35.2 miles. There is the possibility that unknown prehistoric cultural resources and architectural resources may be located along any of the proposed alternative routes.

Proposed Alternative Routes 27, 7 and 3 have the greatest potential to impact recorded archeological sites. These three Proposed Alternative Routes are near the Levi Jordan Plantation State Historic Site. Proposed Alternative Route 7 is also near the Durazno Plantation. These three routes are among those that cross the most HPA, with 31.5, 30.2 and 32.1 miles, respectively. It is anticipated that any sites discovered during engineering or construction phases of the Project would be avoided by spanning or minor route adjustments. Thus, none of the proposed alternative routes are anticipated to have an adverse physical impact on any known cultural resources. Coordination with the THC may be necessary.

4.3.2 Aesthetic Values

Aesthetic impacts or impacts to visual resources, occur when the ROW, transmission line or structures of a transmission line create an intrusion into or substantially alter the character of the existing view. In the case of natural scenic areas, the significance of the impact is directly related to the quality of the view. In the case of valued community resources and recreational areas, the significance of the impact is directly related to the importance of the existing setting in the use and enjoyment of an area.

Construction of the Project could have both temporary and permanent aesthetic effects. Temporary impacts would include views of the actual assembly and erection of the tower structures or concrete poles. Where wooded areas are cleared, the brush and wood debris could have an additional temporary negative impact on the local visual environment. Permanent impacts from the Project would result from visibility of the lattice tower or steel pole structures, conductors and cleared ROW.

Because no landscapes protected by legislation and no landscapes protected from most forms of development were identified within the study area, potential aesthetic impacts were evaluated by tabulating the linear feet of each proposed alternative route that would potentially create a new or additional impact to potential sensitive views. The length of each proposed alternative route within the foreground visual zone of the following viewpoints or corridors was tabulated:

- US and state highways within one-half mile with unobstructed views.
- FM and county roads within one-half mile with unobstructed views.
- Parks and recreational areas within one-half mile with unobstructed views.

Each of the proposed alternative routes has some portion of the route located within the foreground visual zone of US and state highways. Proposed Alternative Route 20 has the longest length of ROW within the foreground visual zone of US and state highways, with approximately 20.2 miles, followed by Proposed Alternative Route 6 with approximately 14.7 miles. Proposed Alternative Route 16 has the least, with approximately 3.8 miles followed by Proposed Alternative Routes 18 and 19 with approximately 4.4 miles each.

All of the proposed alternative routes have some portion of the routes located within the foreground visual zone of FM roads and county roads. Proposed Alternative Route 20 has the longest length of ROW within the foreground visual zone of FM roads and county roads, with approximately 21.6 miles, followed by Proposed Alternative Route 10 with approximately 17.8 miles. Proposed Alternative Routes 16, 17 and 29 have the least, with approximately 6.1 miles each, followed by Proposed Alternative Route 5 with approximately 6.9 miles.

All of the proposed alternative routes have some portion of their ROW length located within the foreground visual zone of parks and recreational areas. Proposed Alternative Route 22 has the longest length of ROW within the foreground visual zone of parks or recreational areas, with approximately 13.0 miles, followed by Proposed Alternative Route 27 with approximately 12.9 miles. Proposed Alternative Route 20 has the least, with 5.3 miles, followed by Proposed Alternative Route 24 with approximately 6.9 miles.

A summary of the lengths for each of the proposed alternative routes within the foreground visual zone of parks and recreational areas, US and state highways, and FM and county roads is presented in Table 4-2 (Appendix C).

4.4 ENVIRONMENTAL INTEGRITY

4.4.1 Physiography and Geology

Construction of the proposed transmission line is not anticipated to have any significant adverse effects on the physiographic or geologic features and resources of the study area. Erection of the lattice towers or monopole structures will require the excavation or minor disturbance of small quantities of near-surface

materials, but should have no measurable impacts on the geologic resources or features along any of the proposed alternative routes. No geologic hazards are anticipated to be encountered or created during construction.

4.4.2 Soils

Activities associated with the construction, operation and maintenance of electrical transmission lines typically do not adversely impact soils when appropriate mitigation measures are implemented during the construction phase as required. Potential impacts to soils include erosion, compaction and conversion of prime farmland soils.

The highest risk for soil erosion and compaction is primarily associated with the construction phase of a project. In accordance with CenterPoint Energy's vegetation management specifications, ROW clearing of woody vegetation including trees, brush and undergrowth will be conducted within the ROW area prior to the start of construction, if required. Areas with total vegetation removal will have the highest potential for soil erosion and the movement of heavy equipment in the ROW creates the greatest potential for soil compaction. A determination of the need for a SWPPP will be made after approval of the route for the line. Prior to construction, CenterPoint Energy will develop a SWPPP if required, to minimize potential impacts associated with soil erosion, compaction and off-ROW sedimentation. Objectives of the plan would incorporate temporary and permanent BMPs to minimize soil erosion on the ROW during significant rainfall events. The SWPPP would also establish the criteria for re-vegetation and mitigating soil compaction to ensure adequate soil stabilization during the construction and post-construction phases. During construction, the native herbaceous layer of vegetation will be maintained to the extent feasible and most bare areas with a low erosion potential will be allowed to re-vegetate with native herbaceous species. Areas with a high erosion potential, including any steep slopes and areas with shallow topsoil, may require seeding or implementation of permanent BMPs (e.g., soil berms or interceptor slopes) to stabilize disturbed areas and minimize soil erosion potential during the post construction phase.

The proposed alternative routes may cross areas designated as prime farmland soils. In addition to the construction-related impacts described above, the major impact on prime farmland soils would be the physical occupation of small areas by the support structures. These occupied areas would not be available for agricultural production and could become obstacles to farm machinery. However, the USDA-NRCS does not consider the limited area of direct impact associated with these structures to be a significant conversion of these soils and the majority of the ROW would be available for agricultural use once construction of the transmission line is completed.

Potential impacts to soils, primarily erosion and compaction, would be minimized if required with the development and implementation of a SWPPP. Therefore, the magnitude of potential soil impacts is considered equivalent for all of the proposed alternative routes. No significant conversions of prime or state important soils are anticipated related to Project activities for any of the proposed alternative routes.

4.4.3 Water Resources

The minimization of potential impacts to surface waters and associated wetlands was considered throughout the routing process. Major water features in the study area included the Brazos River, Colorado River, San Bernard River, Bastrop Bayou, Boggy Bayou, Caney Creek, Gulf Intercoastal Waterway, Linnville Bayou, Live Oak Bayou, Live Oak Creek, Mound Creek, Old Brazos River Channel and Oyster Creek.

Additional named surface waters within the study area include Brazoria Reservoir, Angleton Fishing and Hunting Club Reservoir, York Reservoir, Club Lake, Lake Jackson, Brock Reservoir, Old Ocean Swamp, Little Lake, Betts Lake, Neal Lake, Jennings Lake, Lake Bowie, Williams Lake, Flag Pond and Bird Pond. Additional unnamed surface waters within the study area include tributaries, streams, canals, ditches, bayous, marshes, swamps, backwaters, sloughs, lakes, reservoirs and ponds. Proposed alternative routes crossing these open water areas were minimized, to the extent feasible, by maintaining a perpendicular angle.

4.4.3.1 Surface Water

All of the proposed alternative routes would cross multiple surface waters within the study area. These surface waters typically include rivers, perennial and ephemeral creeks/streams, ponds, small lakes, marshes, bayous and sloughs.

No surface waters or open water areas crossed by the proposed alternative routes exceed the typical spanning distance for a 345 kV transmission line. CenterPoint Energy proposes to span all surface waters crossed by the proposed alternative routes with the structure foundations located outside of the ordinary high water mark, if practical. No proposed construction activities will significantly impede the flow of water within these watersheds. The shorter understory and herbaceous layers of vegetation will remain, where allowable. BMPs will be implemented in accordance with a SWPPP, if required, to reduce the potential for sedimentation outside of the ROW.

All of the proposed alternative routes cross some amount of open water. The approximate lengths of each proposed alternative route crossing open water areas range from 0.1 mile for Proposed Alternative Routes 1, 2, 6, 7, 8 and 29, to 0.5 mile for Proposed Alternative Route 15. The approximate lengths of open water crossed by each proposed alternative route are presented in Table 4-2 (Appendix C).

All of the proposed alternative routes cross existing rivers, streams, creeks and canals. The number of stream crossings for each proposed alternative route range from 53 crossings for Proposed Alternative Route 2, to 84 crossings for Proposed Alternative Route 15. The number of stream and canal crossings for each of the proposed alternative routes is presented in Table 4-2 (Appendix C).

All of the proposed alternative routes parallel some portion of streams and canals within 100 feet. The lengths of each proposed alternative route parallel to streams range from approximately 3.0 miles for Proposed Alternative Routes 2, 3 and 29, to 8.4 miles for Proposed Alternative Route 15. The approximate lengths of each proposed alternative route parallel to streams and canals within 100 feet are presented in Table 4-2 (Appendix C).

All surface waters and their associated wetlands located within the study area are subject to USACE regulations as “waters of the US” under Section 404 of the CWA. Navigable waters and associated tributaries or backwaters located within the study area may be subject to USACE regulations as “navigable waters of the US” under Section 10 of the Rivers and Harbors Act of 1899. The study area is within the USACE-Galveston District, which determines navigable waters on a case-by-case basis and thus does not publish a list of Section 10 waters; however, the Gulf Intercoastal Waterway, Caney Creek, Live Oak Bayou, Bastrop Bayou, Brazos River, Colorado River and San Bernard River may be Section 10 navigable waters. Of these potentially navigable waters, all proposed alternative routes cross the San Bernard River once. Proposed Alternative Routes 12, 13, 14, 15 and 18 each crosses the Colorado River twice. All Proposed Alternative Routes cross Caney Creek at least once. Proposed Alternative Routes 9, 10, 11, 12, 13, 14, 15, 18, 19, 20, 23 and 24 each cross Live Oak Bayou once. Upon PUC approval of a route, additional coordination with the USACE-Galveston District may be required to determine the need for Section 10 Permits.

4.4.3.2 Floodplains

All of the proposed alternative routes cross portions of the mapped 100-year floodplains. Construction of the Project should not have a significant impact on the overall function of the floodplain, nor adversely

affect adjacent or downstream properties. CenterPoint Energy will coordinate with the appropriate local floodplain administrators to determine if there are any permit requirements.

All of the proposed alternative routes cross FEMA mapped 100-year floodplains. The approximate lengths of each proposed alternative route crossing mapped 100-year floodplains range from 7.5 miles for Proposed Alternative Route 20, to 26.8 miles for Proposed Alternative Route 16. The approximate lengths of each proposed alternative route crossing 100-year floodplains are presented in Table 4-2 (Appendix C).

4.4.3.3 Coastal Management Zone

The PUC must comply with CMP policies when approving CCNs for electric transmission lines that are located within the CMZ under the Coastal Zone Management Act of 1972. The southeast one-third of the study area and a one mile buffer around the San Bernard River lie within the designated CMZ. CNRAs potentially occurring within the study area may include Coastal Preserves, (San Bernard National Wildlife Refuge, Nannie M. Stringfellow WMA and Justin Hurst WMA), Coastal Shore Areas, Coastal Wetlands (estuarine and freshwater emergent; [USFWS 2018a]), Special Hazard Areas (FEMA 100-floodplains; [FEMA 2018]), State Submerged Lands (Portions of Oyster Creek, Brazos River, McNeal Bayou, McNeal Lake, Pelican Lake, Redfish Bayou, San Bernard River, Cedar Lake Creek, Cow Trap Lake and Caney Creek [GLO 2018]), Submerged Aquatic Vegetation, Tidal Sand or Mud Flats and Waters Under Tidal Influence (Portions of Bastrop Bayou, Oyster Creek, Brazos River, San Bernard River, Caney Creek and Live Oak Bayou). Upon PUC approval of a route, on the ground verifications of CNRAs may be required.

All 30 proposed alternative routes have some portion of their length within the CMZ. The length of alternative route within the CMZ ranges from approximately 19.3 miles for Proposed Alternative Route 6, to 37.1 miles for Proposed Alternative Routes 23 and 24. The proposed alternative routes are not anticipated to cross any known designated Submerged Aquatic Vegetation, Tidal Sand or Mud Flats. These CNRAs typically occur within the coastal estuarine and marine areas in the southeastern portions of the study area.

All of the 30 proposed alternative routes cross Special Hazard Areas (FEMA 100-floodplains) within the CMZ. No construction activities are anticipated that would impede the flow of water within watersheds or floodplains. Engineering design should alleviate the potential of construction activities to adversely impact flood channels and proper structure placement would minimize any flow impedance during a major flood event. The construction of any of the proposed alternative routes is not likely to significantly

impact the overall function of a floodplain, or adversely affect adjacent or downstream properties. CenterPoint Energy will coordinate with the local floodplain administrators as necessary prior to construction.

All 30 proposed alternative routes likely cross Coastal Wetlands (NWI mapped estuarine and wetlands emergent) within the CMZ. All 30 proposed alternative routes cross Waters Under Tidal Influence within the CMZ. All 30 routes cross the tidal influenced portion of the San Bernard River (TCEQ Stream Segment: 1301) once. Additionally, within the CMZ, Proposed Alternative Routes 9 and 13 each cross the tidal influenced portion Caney Creek (TCEQ Stream Segment: 1304) twice and Proposed Alternative Routes 10, 11, 12, 15, 18, 19, 20, 23 and 24 cross Caney Creek once. All of the 30 proposed alternative routes cross State Submerged Lands and Coastal Shore Areas along the San Bernard River within the CMZ. Each of the 30 proposed alternative routes cross the San Bernard River once. Coastal Shore areas associated with these would each include a 100-foot buffer landward of the OHWM of the State Submerged Land (San Bernard River). CenterPoint Energy proposes to span all surface waters to the extent feasible. Additionally, the implementation of a SWPPP and BMPs will also minimize potential impacts. Therefore, no significant adverse impacts are anticipated to any Coastal Wetlands, State Submerged Lands, Coastal Shore Areas and Waters Under Tidal Influence crossed for any of the Proposed Alternative Routes.

Nineteen of the proposed alternative routes likely cross Coastal Preserve lands. Proposed Alternative Routes 2 through 19 and 29 each cross some portion of the TPWD Justin Hurst WMA. Lengths of proposed alternative routes across the Justin Hurst WMA range from approximately 0.7 mile for Proposed Alternative Route 3, to 4.5 miles for Proposed Alternative Routes 5, 7, 8, 10 through 16, 18 and 19. The proposed alternative routes that cross the Justin Hurst WMA are paralleling existing linear features (existing roads and transmission lines) to minimize habitat fragmentation through these areas. Additionally, CenterPoint Energy proposes to span all surface waters to the extent feasible and the implementation of a SWPPP and BMPs will also minimize potential impacts. Therefore, no significant adverse impacts are anticipated to any Coastal Preserves for any of the proposed alternative routes.

4.4.3.4 Groundwater

The construction, operation and maintenance of the Project are not anticipated to adversely affect groundwater resources within the study area. No measurable decrease of aquifer recharge capacity should occur and groundwater contamination is not anticipated from construction activities. During construction activities, another potential impact for both surface water and groundwater resources is related to

potential fuel and other chemical spills. CenterPoint Energy has standard operating procedures and response specifications relating to petroleum product storage, refueling and maintenance activities of equipment to avoid and minimize potential contamination to groundwater resources.

4.4.4 Ecological Resources

4.4.4.1 Vegetation Types

Potential impacts to native vegetation will result from clearing the ROW of woody vegetation or mowing and clearing herbaceous vegetation. These activities facilitate ROW access for structure construction, conductor installation and future maintenance activities. Removal of woody vegetation within the ROW will be required within upland, riparian and bottomland woodland areas, including wetlands, along fence lines with trees greater in height than 10 feet, within grasslands and open pasture areas. Prior to construction, mowing or shredding of herbaceous vegetation will occur within grassland and pasture areas. Mowing activities will continue periodically within the ROW for maintenance purposes. Future ROW maintenance activities may include periodic mowing and/or herbicide applications to maintain the herbaceous vegetation layer within the ROW.

Clearing trees and shrubs from woodland areas may generate an additional degree of habitat fragmentation. Habitat fragmentation is reduced when a proposed route parallels or utilizes existing linear features such as electrical transmission lines, roads, railroads, pipelines, etc. During the routing process consideration was given to avoid extensive woodland and riparian areas, and to maximize the length of the routes within or parallel to existing linear corridors.

Impacts to vegetation will be limited to that necessary for the construction, operation and maintenance of the Project. ROW clearing activities will be completed with minimal vegetation impacts and the existing herbaceous layer or groundcover will be maintained to the extent practical.

All of the proposed alternative routes cross areas of upland woodlands. The approximate lengths of each proposed alternative route crossing upland woodlands range from 7.5 miles for Proposed Alternative Route 20, to 16.8 miles for Proposed Alternative Route 26. The approximate lengths of each proposed alternative route crossing upland woodlands are presented in Table 4-2 (Appendix C).

All of the proposed alternative routes cross areas of bottomland and/or riparian woodlands. The approximate lengths of each proposed alternative route crossing bottomland/riparian woodlands range from 1.6 miles for Proposed Alternative Route 2, to 5.2 miles for Proposed Alternative Route 13. The

approximate lengths of each proposed alternative route crossing bottomland/riparian woodlands are presented in Table 4-2 (Appendix C).

4.4.4.2 Wetlands

Wetlands serve as habitat to a number of species and are often used as migration corridors for wildlife. Removal of vegetation within wetlands increases the potential for erosion and sedimentation, which can be detrimental to downstream plant communities and aquatic life. Additional potential impacts to wetlands include the temporary or permanent fill associated with structure construction and temporary impacts associated with access. NWI data indicated numerous wetlands throughout the study area with wetland types including freshwater palustrine emergent, palustrine forested, palustrine scrub/shrub, ponds and lakes. CenterPoint Energy proposes to span any wetland areas where practical and hand clear any trees located within the wetland area to minimize potential impacts. The use of equipment mats during construction within emergent herbaceous wetland areas minimizes potential impacts by limiting the level of soil disturbance.

The temporary and/or permanent placement of fill material within jurisdictional surface waters and associated wetlands requires a permit from the USACE under Section 404 of the CWA. Streams and rivers within the study area subject to regulation under Section 404 of the CWA have been avoided where practical, and the placement of fill material may be avoided through spanning if crossed. Prior to construction, an assessment of the PUC approved route would be completed to determine if there would be any planned impacts to possible jurisdictional areas. Additional coordination may be required with the USACE-Galveston District to determine any Section 404 permitting requirements after the PUC issues a final order.

All of the proposed alternative routes cross areas of NWI mapped wetlands. The approximate lengths of each proposed alternative route across total NWI mapped wetlands ranges from 2.03 miles for Proposed Alternative Route 20, to 6.64 miles for Proposed Alternative Route 16. All of the proposed alternative routes cross areas of NWI mapped forested or scrub/shrub wetlands. The approximate lengths of each proposed alternative route across NWI mapped forested or scrub/shrub wetlands range from 0.25 mile for Proposed Alternative Route 20, to 2.17 miles for Proposed Alternative Route 16. All of the proposed alternative routes cross areas of NWI mapped emergent wetlands. The approximate lengths of each proposed alternative route across NWI mapped emergent wetlands ranges from 1.46 miles for Proposed Alternative Route 6, to 5.10 miles for Proposed Alternative Route 13. The approximate lengths of each proposed alternative route crossing NWI mapped wetlands are presented in Table 4-2.

USACE Nationwide Permit Regional Condition 15c does not authorize discharges into Designated Columbia Bottomlands. Columbia Bottomlands are defined as waters of the US that are dominated by bottomland hardwoods in the Lower Brazos and San Bernard River basins. The USEPA and USFWS may designate Columbia Bottomland wetlands as Aquatic Resources of National Importance ("ARNI") and subsequently the USACE may evaluate the potential loss or conversion of these ARNIs on a case-by-case under an Individual Permit. Spatial data of designated potential Columbia Bottomlands was obtained from the USACE and these areas where mapped by GIS during the routing process. Careful consideration was given to these areas during the development of the preliminary transmission line segments and ultimately the proposed alternative routes because of the potential impact on the Project schedule. Only waters of the US within these designated Columbia Bottomlands areas are subject to Regional Condition 15c. Therefore, CenterPoint Energy and POWER minimized crossing of the Columbia Bottomlands, particularly in areas with NWI mapped wetlands or obvious bodies of water. In areas proposed to cross Columbia Bottomlands, the distance can be spanned in whole or in part. Prior to construction, a field assessment of the PUC approved route would be completed to determine if there would be any planned impacts to possible jurisdictional areas and additional coordination with the USACE-Galveston District may be required to determine the need for an Individual Permit.

Twenty-two of the proposed alternative routes cross designated Columbia Bottomlands. The lengths across designated Columbia Bottomlands for each proposed alternative route range from zero miles for Proposed Alternative Routes 7, 11, 12, 13, 14, 15, 18 and 19, to 1.85 miles for Proposed Alternative Route 3. The lengths across NWI Mapped wetlands within designated Columbia Bottomlands for each proposed alternative route range from zero miles for Proposed Alternative Routes 5 through 19, to 0.18 mile (approximately 950 feet) for Proposed Alternative Route 3. All of these crossings can be easily spanned. Careful consideration was given to these areas during the development of the preliminary transmission line segments. These crossings were evaluated using aerial photography, mapped wetlands and NHD data to minimize potential impacts and habitat fragmentation. The length across designated Columbia Bottomlands for each of the proposed alternative routes is presented in Table 4-2 (Appendix C).

4.4.4.3 Wildlife and Fisheries

Impacts on terrestrial wildlife species will be associated with construction activities and with the removal of vegetation, which is considered habitat modification or fragmentation. This will be a temporary disturbance to local wildlife species. Increased noise and equipment movement during construction may temporarily displace mobile wildlife species from the immediate workspace area. These impacts will be

short-term and normal wildlife movements would be expected to resume to previous levels after construction is completed. Potential long-term impacts include impacts resulting from habitat modifications or fragmentation. Native habitats have historically been modified to a high degree to support historical and present land uses within the study area.

Construction activities may also impact small, immobile or fossorial (living underground) animal species through incidental takes or the alteration of local habitats. Incidental takes of these species may occur due to equipment or vehicular movement on the ROW by direct impact or due to the compaction of the soil if the species is fossorial. Potential impacts of this type are not typically considered significant and are not likely to have an adverse effect on any species population dynamics.

If ROW clearing occurs during the nesting season, potential impacts could occur within the ROW related to the taking of migratory bird eggs or nestlings. Increases in noise and activity levels during construction could also potentially disturb breeding or other activities of species nesting in areas immediately adjacent to the ROW.

TXNDD (2017) data identified several avian nesting rookeries within the study area. However, none of the proposed alternative routes are within 2.0 miles of these known rookeries. No significant adverse impacts are anticipated to any known nesting rookeries located adjacent to the ROW for any of the proposed alternative routes.

Tower structure design and additional mitigation measures can be implemented to minimize the risk for electrocution of birds or the collisions of birds with transmission facilities. The danger of electrocution to birds should be insignificant, because the distance between conductors, conductor to structure, or conductor to ground wire for the proposed 345 kV transmission line is greater than the wingspan of any bird in the area (i.e., greater than eight feet). The tower structures and wires may be a collision hazard to birds in flight. The study area is located within the Central Migratory Flyway for neo-tropical migratory birds. The risk for bird strikes increases in the fall migration period when low visibility is common due to inclement weather conditions. CenterPoint Energy has an established avian program implemented through the CenterPoint Energy's Environmental Department. CenterPoint Energy's Environmental Department will evaluate avian habitats, populations and activities within the final CCN route, and work with the Transmission Operations Department to identify and implement appropriate avian protection measures, where necessary.

Potential permanent impacts to wildlife may result from the clearing of upland and bottomland, including wetlands and woodland habitats. By utilizing or paralleling existing linear features to the greatest extent reasonable or minimizing the route lengths within wooded areas, the potential impacts to wildlife and habitat fragmentation are reduced.

Potential impacts to aquatic systems may include effects of erosion, siltation and sedimentation. The clearing of vegetation from the ROW could result in a temporary increase of suspended solids entering surface waters. Increases in suspended solids may adversely affect aquatic organisms that require relatively clear water for foraging or reproduction. Physical aquatic habitat loss or alteration may result wherever riparian vegetation is removed or at any temporary crossings required for access. Increased levels of siltation or sedimentation may also potentially impact downstream areas primarily affecting filter feeding benthic and other aquatic invertebrates. CenterPoint Energy will implement BMPs as part of any required SWPPP provisions to prevent off-ROW sedimentation and degradation of any wetland areas. If emergent wetland areas are traversed by equipment, matting can be used to minimize the potential temporary impacts. No significant adverse impacts are anticipated to any aquatic habitats crossed or located adjacent to the ROW for any of the proposed alternative routes.

4.4.4.4 Threatened and Endangered Species

A review of the federally listed species potentially occurring within the study area and their life histories was used to determine if suitable habitat may be present. Data and information on special status species and unique vegetation resources within the study area were obtained from a variety of sources, including correspondence with the USFWS, TPWD and TXNDD (see Appendix A). Current county listings for federal and state listed threatened and endangered species and USFWS designated critical habitat locations were included in the review. POWER also utilized several published sources to review life histories and habitat requirements of listed species as previously discussed in Section 2.4.4.4. The absence of TXNDD data does not preclude the need for additional habitat evaluations for potential suitable habitat or the need for any species specific surveys for any listed species for the PUC approved route. No federally designated critical habitat (USFWS 2018a) occurs within the study area; therefore, none of the 30 proposed alternative routes cross any known habitat or designated critical habitat for federally listed animal species (TXNDD 2017).

Threatened and Endangered Plant Species

Federally-listed plant species are only afforded federal protection from taking (to “remove and reduce to possession” and/or “maliciously damage or destroy”) if they are located on federal lands and/or federal

funding or actions are associated with the Project. Listed plant species are also protected from commercial trade, as well as import or export.

State-listed threatened and endangered plant species are afforded protection under Chapter 88 within Title 5 of the Texas Parks and Wildlife Code. Within this regulation, a "take" means to collect, pick, cut, dig up or remove. This restricts the "take" of a listed species from public lands. It also prohibits the collection for sale, possession for commercial sale, transport for commercial sale or sale of all or part of an endangered, threatened or protected plant from private land unless permitted through the TPWD.

USFWS IPaC species list for the study area and TPWD county listings were reviewed for special status plant species potentially occurring within the study area. No federal or state-listed threatened or endangered plant species were listed within the study area. Therefore, the potential for any of the proposed alternative routes to adversely affect listed plant species is not anticipated to occur.

Threatened and Endangered Animal Species

Construction activities along the ROW may temporarily displace wildlife species. Although not anticipated to occur, if state-listed species are observed during construction, they would be allowed to leave the area or could be relocated out of the construction area by a permitted individual. Overall, impacts of the Project are expected to be minimal and temporary. Displaced organisms would be expected to return after construction or permanently relocated. Spanning surface waters and wetlands, and implementing the SWPPP to the extent practicable, will avoid and minimize significant adverse impacts to aquatic species; such as fish and mollusks.

Of the federally-listed species for the study area counties, the northern aplomado falcon has the potential to occur within the study area, although TXNDD data did not identify any known occurrences of this species within the study area. When the PUC approves a route, CenterPoint Energy will consult with USFWS, if necessary, to determine the need for any additional field surveys or Section 7/10 permits.

Other listed avian migrant species, including the interior least tern, piping plover, red knot and whooping crane, which may occur within the study area, but are not expected to occur except as possible migrants or post-breeding dispersers that pass through the study area and potentially occupy habitats temporarily or seasonally. These seasonal habitats may be spanned or avoided entirely. Therefore, the Project is not anticipated to have any adverse impacts to these species. TXNDD (2017) data identified several avian nesting rookeries within the study area; however, none of the proposed alternative routes are within 2.0

miles of these known rookeries. If any potential suitable habitat for federally-listed threatened or endangered species is identified during a field survey of the PUC approved route, CenterPoint Energy will further coordinate with the USFWS to determine avoidance or mitigation strategies.

Of the state-listed species for the study area counties the peregrine falcon, reddish egret, sooty tern, white-faced ibis, white-tailed hawk, wood stork, blue sucker, Louisiana pigtoe, sandbank pocketbook, golden orb, smooth pimpleback, Texas pimpleback, Texas fawnsfoot, alligator snapping turtle, northern scarlet snake, Texas tortoise and timber rattlesnake may occur within the study area as seasonal migrants or as residents if suitable habitats are present. The construction of a transmission line does not include activities associated with collecting, hooking, hunting, netting, shooting or snaring by any means or device, and does not include an attempt to conduct such activities. Therefore, "take" of state-listed species as defined in Section 1.01(5) of the Texas Parks and Wildlife Code is not anticipated by this Project. Terrestrial species may be subject to minor temporary disturbance during construction activities and, if observed during construction activities, will be allowed to leave the study area or be relocated by a permitted individual. Avian species may be protected under the BGEPA or MBTA.

Bald eagles may nest and winter within the study area and are usually associated with mature trees near large bodies of water. A survey of eagle nests performed by CenterPoint Energy (February 2018) confirmed a number of eagle nests along the Colorado River and an unrecorded nest along Peyton Creek near its confluence with Live Oak Creek in Matagorda County. The nest along Peyton Creek is located approximately 615 feet from Proposed Alternative Routes 11, 13, 15 and 18. Other identified eagle nests are not within 2,000 feet from any of the proposed alternative routes. If in the course of further biological surveys and/or construction activities, any bald eagle roost or nest trees are identified within the vicinity of the Project, CenterPoint Energy will refer to the National Bald Eagle Management Guidelines to avoid and minimize harm and disturbance of bald eagles as recommended by the USFWS.

5.0 PROPOSED ALTERNATIVE ROUTE SELECTION

5.1 EVALUATION OF PROPOSED ALTERNATIVE ROUTES

CenterPoint Energy and POWER selected 30 forward progressing proposed alternative routes that provide geographic diversity and are feasible from a potential impacts, engineering and cost perspective.

To facilitate the comparison of the 30 proposed alternative routes and selection of a route or routes that best addresses the requirements of PURA and the PUC Substantive Rules, the 30 proposed alternative routes were divided into three geographically diverse route families: Eastern, Central and Western.

Proposed alternative routes within each route family were subjected to a quantitative comparison. The proposed alternative routes were ranked within each family and then compared through a consensus process for recommendation of the proposed alternative route or routes that best addresses the requirements of PURA and the PUC Substantive Rules.

Proposed alternative routes that include Segments Y or Z were grouped into the Eastern Route Family, which includes Proposed Alternative Routes 1 through 5, 16, 17, 21, 22 and 27 through 30. Proposed alternative routes that include Segments Y or Z parallel portions of SH 35, CR 359 and apparent property lines.

Proposed alternative routes that include Segments HQ or GT were grouped into the Central Route Family, which includes Proposed Alternative Routes 6 through 10, 20 and 24 through 26. Proposed alternative routes that include Segments HQ or GT parallel FM 2540, CR 457 and apparent property lines.

Proposed alternative routes that include Segments GK or GX were grouped into the Western Route Family, which includes Proposed Alternative Routes 11 through 15, 18, 19 and 23. Proposed alternative routes that include Segments GK or GX parallel apparent property lines and local roadways.

Based on the results of the data tabulation for the proposed alternative routes completed in Section 4.0, POWER technical experts determined that a few of the evaluation criteria did not capture data that helped facilitate a qualitative or quantitative comparison between the proposed alternative routes. Due to the environmental and land use setting within the study area, the absence of certain features in the study area or within the specified distances often resulted in values of zeros in the data table for all or the majority of the proposed alternative routes. This was the case for the following evaluation criteria:

- Number of FAA-listed airfields within 10,000 feet of route centerline having no runway more than 3,200 feet.
- Number of commercial AM radio transmitters within 10,000 feet of route centerline.
- Length of route across known habitat of federal endangered/threatened species of plants or animals.
- Number of recorded historical or archeological sites crossed within ROW.
- Number of NRHP listed or determined-eligible properties within ROW.

Analysis of other evaluation criteria generated quantitative results but did not provide a qualitative comparison between proposed alternative routes because the difference in performance between the routes in these categories was minimal. Examples of these evaluation criteria include:

- Number of additional parks/recreational areas within 1,000 feet of route centerline.
- Length of route across commercial/industrial areas.
- Number of pipeline crossings.
- Number of transmission line crossings.
- Number of US and SH crossings.
- Number of cemeteries within 1,000 feet of the route centerline.
- Number of private airstrips within 10,000 feet of the centerline.
- Length of route across NWI mapped emergent wetlands.

To facilitate the comparison and ranking of the top five proposed alternative routes within each route family and the selection of a route or routes that best addresses the requirements of PURA and the PUC Substantive Rules, Key Evaluation Criteria (see Table 5-1) were derived from the evaluation criteria results presented in Tables 4-1 and 4-2 (Appendix C). The Key Evaluation Criteria in Table 5-1 were used for the ranking and consensus process.

TABLE 5-1 KEY EVALUATION CRITERIA

CATEGORY	EVALUATION CRITERIA
Land Use	Length of route (miles)
	Number of directly affected habitable structures within 500 feet of route centerline
	Number of directly affected habitable structures also within 500 feet of an existing transmission line
	Number of habitable structures potentially to be relocated/removed
	Length of route using existing transmission line easement
	Length of route parallel to existing transmission line ROW
	Length of route paralleling apparent property lines
	Length of route parallel to other existing ROW (roadway, etc.)
	Percent of route parallel with apparent features, property lines, railroads or an existing ROW
	Length of route across parks/recreational areas
	Total length of route across TDCJ and TPWD properties
	Length of route across TDCJ property
	Length of route across TPWD property
	Length of route across residential areas
Aesthetics	Estimated length of route within foreground visual zone of US and state highways
	Estimated length of route within foreground visual zone of FM and county roads
	Estimated length of route within foreground visual zone of park and recreational areas
Ecology	Length of route across upland woodlands
	Length of route across bottomland/riparian woodlands
	Total length of route across National Wetland Inventory mapped wetlands
	Length of route across USACE designated Columbia Bottomlands
	Length of route across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands
	Length of route across open water (lakes or ponds)
	Number of stream crossings
	Length of route parallel to streams within 100 feet of route centerline
	Length of route across 100-year floodplains
Cultural	Number of additional recorded historical and archeological sites within 1,000 feet of route centerline
	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of route centerline
	Length of route across areas of high archaeological/historic site potential
Cost	Estimated Construction Cost

For comparison purposes, CenterPoint Energy provided construction cost estimates for each proposed alternative route, including ROW acquisition. The estimated total costs for the 30 proposed alternative routes are summarized in Table 5-2.

TABLE 5-2 SUMMARY OF COST ESTIMATES

PROPOSED ALTERNATIVE ROUTE	INCLUSIVE SEGMENTS	FAMILY/ LOCATION[1]	TOTAL LENGTH (MILES)	ESTIMATED CONSTRUCTION COST[2]	ESTIMATED ROW COST[2]	TOTAL
1	B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP	Eastern	56.3	$457,910,000	$99,009,000	$556,919,000
2	B-D-F-H-L-P-U-V-X-Y-Z- AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP	Eastern	53.9	$450,393,000	$99,437,000	$549,830,000
3	B-D-F-H-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DQ-DR-DS-DU-EP-ES-ER1-ER2-EW-FA-FF-FN-FP	Eastern	57.8	$474,339,000	$105,139,000	$579,478,000
4	B-D-F-H-L-P- U-V-X-Y-Z-BI-BX-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DP-DR-DS-DU-EP-ET-EU-FB-FF-FN-FP	Eastern	56.1	$461,694,000	$100,623,000	$562,317,000
5	B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CY-DC-IZ-JA-FP	Eastern	55.2	$392,556,000	$89,164,000	$481,720,000
6	B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP	Central	72.9	$523,752,000	$110,646,000	$634,398,000
7	B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-JA-FP	Central	71.3	$506,937,000	$108,533,000	$615,470,000
8	B-G-J-K-M-GI-GO-GP-FW-FY-GD-GE-HQ-HR-HS-IM-IN-CQ-CR-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP	Central	75.0	$528,726,000	$111,706,000	$640,432,000
9	B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP	Central	73.9	$580,097,000	$115,104,000	$695,201,000
10	B-G-J-K-N-GF-GH-GL-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DC-IZ-JA-FP	Central	73.3	$513,773,000	$107,751,000	$621,524,000
11	B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HU-HW-IC-ID-IE- IL-IM-IN-IO1-IO2-IX-IZ-JA-FP	Western	77.6	$535,938,000	$112,735,000	$648,673,000
12	B-E-K-N-GF-GH-GK-GM-GX-GZ-HC-HE-HG-HM-HP-IE- IL-IM-IN-IO1-IO2- IX-IZ-JA-FP	Western	79.8	$550,613,000	$115,606,000	$666,219,000

TABLE 5-2 SUMMARY OF COST ESTIMATES

PROPOSED ALTERNATIVE ROUTE	INCLUSIVE SEGMENTS	FAMILY/ LOCATION[1]	TOTAL LENGTH (MILES)	ESTIMATED CONSTRUCTION COST[2]	ESTIMATED ROW COST[2]	TOTAL
13	B-E-K-N-GF-GH-GK-GN1-GN2-HA1-HA2-HE-HV-IB-IC-HL-HM-HO-HQ-HT-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP	Western	78.4	$552,469,000	$114,624,000	$667,093,000
14	B-E-K-N-GF-GH-GK-GM-GX-GZ-HB-HF-HG-HM-HO-HQ-HR-HS-IM- IN-IO1-JC-DA2-IX-IZ-JA-FP	Western	78.8	$546,644,000	$115,303,000	$661,947,000
15	B-E-K-N-GF-GG-GX-GZ-HB-HU-HX-IB-IC-ID-IE-IL-IM-IN-IO1-IO2 -IX-IZ-JA-FP	Western	84.0	$570,179,000	$119,981,000	$690,160,000
16	B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP	Eastern	57.4	$420,827,000	$93,500,000	$514,327,000
17	B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CZ-DA1-DA2-IX-IZ-DJ-DK-DV-DX-EF-JE-EN-EQ-EU-FB-FF-FN-FP	Eastern	58.4	$461,560,000	$98,886,000	$560,446,000
18	B-G-J-K-N-GF-GH-GK-GM-GX-GY-HA1-HA2-HD-HU-HW-IC-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP	Western	84.3	$560,848,000	$120,069,000	$680,917,000
19	B-G-J-K-N-GF-GH-GK-GN1-JB-HA2-HE-HG-HL-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP	Western	74.7	$536,475,000	$110,493,000	$646,968,000
20	B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP	Central	68.1	$542,479,000	$114,714,000	$657,193,000
21	B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP	Eastern	56.7	$474,690,000	$106,020,000	$580,710,000
22	B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP	Eastern	58.5	$488,993,000	$111,044,000	$600,037,000
23	B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HF-HG-HM-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP	Western	74.6	$560,205,000	$118,168,000	$678,373,000
24	B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP	Central	70.9	$551,429,000	$115,585,000	$667,014,000

TABLE 5-2 SUMMARY OF COST ESTIMATES

PROPOSED ALTERNATIVE ROUTE	INCLUSIVE SEGMENTS	FAMILY/ LOCATION[1]	TOTAL LENGTH (MILES)	ESTIMATED CONSTRUCTION COST[2]	ESTIMATED ROW COST[2]	TOTAL
25	B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP	Central	72.4	$545,104,000	$118,365,000	$663,469,000
26	B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FM-FO-FP	Central	72.1	$544,185,000	$116,970,000	$661,155,000
27	B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP	Eastern	60.2	$495,839,000	$108,922,000	$604,761,000
28	B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DL-DO-DP-DR-DS-DT-ER1-ER2-EV-EZ-FD-FG-FH-FO-FP	Eastern	57.8	$471,733,000	$103,608,000	$575,341,000
29	B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP	Eastern	57.8	$473,626,000	$105,523,000	$579,149,000
30	B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ES-JF-ER2-EV-EZ-FD-FG-FI-FN-FP	Eastern	59.5	$483,225,000	$107,574,000	$590,799,000

[1] Family/Location defined by the use of specific segments: Eastern = Y or Z, Central = HQ or GT, Western = GK or GX.
[2] Costs for Proposed Alternative Routes are estimated with predominantly double-circuit lattice towers in a vertical configuration within a 100' wide ROW.

POWER, with CenterPoint Energy's input and review, completed a comparison of the proposed alternative routes within each route family, as discussed below, culminating in the ranking of the routes within each family in the following sections. Proposed alternative route selection was completed in compliance with Section 37.056(c)(4)(A)-(D) of PURA, 16 TAC § 22.52(a)(4), 16 TAC §25.101(b)(3)(B) and the PUC's policy of prudent avoidance.

5.2 COMPARISON OF THE PROPOSED ALTERNATIVE ROUTES

POWER used a consensus process to evaluate and compare the potential land use, cultural resource and ecology impacts of the Eastern, Central and Western proposed alternative routes. POWER technical experts with expertise in different disciplines (land use, cultural resources and ecology), as well as POWER's Project Manager, evaluated all the proposed alternative routes based on the environmental conditions present along each route. This evaluation was based on the key evaluation criteria, comments received from the public and from local, state and federal agencies and field reconnaissance of the study area. Each POWER technical expert independently analyzed the routes and the environmental data presented in Tables 5-3, 5-5 and 5-7 and then independently ranked the routes with respect to potential impacts within their respective discipline. The technical experts then met as a group and discussed their independent results. The technical experts as a whole determined the relationship and relative sensitivity among the major land use, cultural resource and ecological factors. The group then ranked the top five proposed alternative routes based strictly upon the environmental data considered along with the cost estimates provided by CenterPoint Energy for later use in facilitating the selection of the route that best addresses the requirements of PURA and the PUC Substantive Rules.

5.2.1 Eastern Route Family

After considering and comparing the key evaluation criteria for the proposed alternative routes within the Eastern Route Family, it was concluded by POWER, with input from CenterPoint Energy that based on the size of the Project, nature of the study area and public input analysis, all the eastern routes would be retained for further consideration. Proposed Alternative Routes 1 through 5, 16, 17, 21, 22 and 27 through 30 were further evaluated. The data tabulation for the Key Evaluation Criteria for the Eastern Route Family is presented in Table 5-3.

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TABLE 5-3
KEY EVALUATION CRITERIA FOR THE EASTERN PROPOSED ALTERNATIVE ROUTES

Key Evaluation Criteria	Eastern Proposed Alternative Routes												
Land Use	**1**	**2**	**3**	**4**	**5**	**16**	**17**	**21**	**22**	**27**	**28**	**29**	**30**
Length of route (miles)	56.3	53.9	57.8	56.1	55.2	57.4	58.6	56.7	58.5	60.2	57.8	57.8	59.5
Number of directly affected habitable structures[1] within 500 feet of route centerline	376	427	323	320	181	174	330	373	377	322	275	393	278
Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	15	17	16	25	25	25	25	23	14	14	23	17	14
Number of habitable structures[1] potentially to be relocated/removed[2]	2	7	7	6	0	0	0	9	10	3	3	7	4
Length of route using existing transmission line easement	0.9	0.9	0.9	0.9	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Length of route parallel to existing transmission line ROW	10.7	7.0	6.7	6.8	13.1	13.1	9.4	9.3	9.3	9.4	9.4	7.0	9.3
Length of route paralleling apparent property lines (or other natural or cultural features)[3]	21.1	17.3	22.3	19.1	18.5	20.0	22.1	20.9	24.3	26.5	21.9	20.8	25.1
Length of route parallel to other existing ROW (roadway, etc.)	10.8	18.4	17.6	17.7	9.5	8.3	11.6	12.2	11.6	10.0	11.1	15.5	10.8
Percent of route parallel with apparent features, property lines, railroads, or an existing ROW	76%	79%	81%	78%	75%	72%	74%	75%	77%	76%	73%	75%	76%
Length of route across parks/recreational areas[4]	0.0	0.9	0.7	0.9	4.5	4.5	2.0	0.0	0.0	0.0	0.0	0.9	0.0
Total length of route across TDCJ and TPWD properties	4.3	3.8	3.7	3.8	7.4	6.3	4.5	0.0	0.0	0.0	0.0	2.7	0.0
Length of route across TDCJ property	4.3	2.9	2.9	2.9	2.9	1.8	2.6	0.0	0.0	0.0	0.0	1.8	0.0
Length of route across TPWD property	0.0	0.9	0.7	0.9	4.5	4.5	2.0	0.0	0.0	0.0	0.0	0.9	0.0
Length of route across residential areas	8.6	8.8	8.4	7.3	5.0	5.8	7.2	8.4	9.4	9.4	8.2	9.9	8.8
Aesthetics													
Estimated length of route within foreground visual zone of U.S. and state highways[5]	10.6	14.6	12.9	12.8	8.1	3.8	9.2	8.0	8.0	6.4	5.9	8.0	5.9
Estimated length of route within foreground visual zone of FM and county roads[5]	7.6	7.1	16.0	9.7	6.9	6.1	6.1	7.9	14.2	14.2	7.9	6.1	14.2
Estimated length of route within foreground visual zone of park and recreational areas[4][6]	9.1	8.6	10.8	8.3	12.1	12.1	10.5	10.5	13.0	12.9	9.8	10.5	12.2
Ecology													
Length of route across upland woodlands	9.8	11.6	10.9	11.5	10.8	11.8	12.9	14.4	14.0	13.4	13.4	13.8	13.1
Length of route across bottomland/riparian woodlands	2.0	1.6	2.0	2.1	2.8	4.1	3.8	3.0	2.8	3.2	3.1	2.8	2.9
Length of route across USACE designated Columbia Bottomlands	1.84	0.71	1.85	1.76	0.75	0.45	0.77	0.88	0.62	1.41	1.75	0.36	1.23
Length of route across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.11	0.05	0.18	0.08	0.0	0.0	0.0	0.05	0.05	0.16	0.07	0.05	0.16
Total length of route across National Wetland Inventory mapped wetlands[7]	2.99	3.41	3.66	3.78	5.78	6.64	5.39	3.95	3.95	4.05	3.90	4.79	4.18
Length of route across open water (lakes or ponds)	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.1	0.2
Number of stream and canal crossings	55	53	65	58	63	66	64	61	69	70	62	56	70
Length of route parallel to streams and canals within 100 feet of route centerline	8.1	3.0	3.0	3.1	4.3	4.3	4.3	4.0	3.9	3.9	4.0	3.0	3.9
Length of route across 100-year floodplains	22.3	22.5	20.4	24.0	26.0	26.8	25.8	23.4	20.4	22.6	25.7	23.4	22.8
Cultural Resources													
Number of additional recorded historical or archeological sites within 1,000 feet of route centerline	3	4	7	7	6	4	4	7	7	7	7	3	7
Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of route centerline	0	0	1	1	2	2	1	1	1	1	1	0	1
Length of route across areas of high archeological/historic site potential	23.4	23.3	32.1	27.5	26.4	26.8	25.6	26.5	31.0	31.5	26.9	24.3	31.4
Cost													
Estimated Total Cost[8] (million)	$556.9	$549.8	$579.5	$562.3	$481.7	$514.3	$560.5	$580.7	$600.0	$604.8	$575.3	$579.1	$590.8

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[7] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

[8] For cost comparison purposes, steel lattice structures are assumed and estimated for segments within all ROW types; 850 foot spans were assumed between tangent structures; and it was also assumed that all crossings would impact only tangent structures. Mitigation costs were estimated by combining the lengths tabulated for the primary transmission line routes paralleling existing pipelines and railroads and assuming the same cost for both per foot.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

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Compared to the other route families, the eastern routes are the shortest and least expensive routes. The eastern routes tend to have middle to higher numbers of habitable structures located within 500 feet of their centerlines. Eight of the 13 proposed alternative routes within the Eastern Route Family cross TDCJ and TPWD property. Overall, the eastern routes are anticipated to have the least impact to natural resources even though the eastern routes tend to have the longest lengths across NWI mapped wetlands within USACE designated Columbia Bottomlands because all of these lengths can be easily spanned with the longest crossing, at approximately 0.18 mile (950 feet). The eastern routes are anticipated to have minimal impacts to cultural resources.

5.2.1.1 Land Use

All of the eastern routes are approximately 60.0 miles in length or less. Within the Eastern Route Family, Proposed Alternative Route 2 is the shortest, at approximately 53.9 miles. Proposed Alternative Route 27 is the longest within the Eastern Route Family, at approximately 60.2 miles. Proposed Alternative Route 2 represents the most direct pathway between the Project endpoints within the Eastern Route Family (Table 5-3).

Within the Eastern Route Family, Proposed Alternative Route 16 has the fewest number of habitable structures located within 500 feet of its centerline with 174, followed by Proposed Alternative Route 5 with 181. Of the 174 and 181 habitable structures located within 500 feet of their centerlines, 25 of the habitable structures are already located within 500 feet of an existing transmission line. Proposed Alternative Route 2 has the most habitable structures located within 500 feet of its centerline with 427. Of these habitable structures, 17 are already located within 500 feet of an existing transmission line (Table 5-3).

Ten of the 13 proposed alternative routes in the Eastern Route Family would potentially require removal or relocation of existing habitable structures (single-family residences). Proposed Alternative Routes 5, 16 and 17 have the fewest with zero each and Proposed Alternative Route 22 has the most with 10, followed by Proposed Alternative Route 21 with nine and Proposed Alternative Routes 2, 3 and 29, each with seven (Table 5-3).

All of the eastern routes utilize existing transmission line ROW for some portion of their lengths. Proposed Alternative Routes 5 and 16 have the greatest length utilizing existing transmission line ROW, with approximately 1.8 miles each, while the remaining eastern routes utilize existing transmission line ROW for approximately 0.9 mile each (Table 5-3).

All of the eastern routes parallel existing transmission line ROWs for approximately 6.7 miles or more. Proposed Alternative Routes 5 and 16 have the greatest length parallel to existing transmission line ROWs, with approximately 13.1 miles each, while Proposed Alternative Route 3 has the least, with approximately 6.7 miles (Table 5-3).

Within the Eastern Route Family, Proposed Alternative Route 2 has the least amount parallel to apparent property lines, with approximately 17.3 miles. Proposed Alternative Route 27 has the most distance parallel to apparent property lines, with approximately 26.5 miles (Table 5-3).

All of the eastern routes parallel apparent features, property lines, railroads, or an existing ROW for approximately 72 percent or more of their lengths. Proposed Alternative Route 16 has the least with approximately 72 percent of its total length parallel to apparent features, property lines, railroads or an existing ROW, and Proposed Alternative Route 3 has the most, with approximately 81 percent. Generally, the Eastern Route Family has less percent of parallel than either the Central or Western Route Families (Table 5-3).

Proposed Alternative Routes 1, 2, 3, 4, 5, 16, 17 and 29 in the Eastern Route Family cross property owned by either TDCJ or TPWD, or both. Lengths for these eight routes across TDCJ property range between approximately 1.8 miles on Proposed Alternative Routes 16 and 29, to approximately 4.3 miles on Proposed Alternative Route 1. Lengths for these routes across TPWD property range between zero mile on Proposed Alternative Routes 1, 21, 22, 27, 28 and 30 to approximately 4.5 miles each on Proposed Alternative Routes 5 and 16 (Table 5-3). Routes 21, 22, 27, 28 and 30 do not cross any TDCJ or TPWD owned property.

Within the Eastern Route Family, Proposed Alternative Route 5 crosses the least amount of residential land use areas, with approximately 5.0 miles. Proposed Alternative Route 29 crosses the most amount of residential land use areas, with 9.9 miles (Table 5-3).

5.2.1.2 Historical and Aesthetic Values

Within the Eastern Route Family, Proposed Alternative Routes 1 and 29 have the fewest recorded historical or archeological sites within 1,000 feet of their route centerline, with three each. The number of recorded historical and archeological sites within 1,000 feet of route centerlines ranges from three along Proposed Alternative Routes 1 and 29, to seven along Proposed Alternative Routes 3, 4, 21, 22, 27, 28 and 30. Proposed Alternative Routes 1, 2 and 29 do not have any NRHP-listed or determined-eligible sites within 1,000 feet of their route centerlines. Proposed Alternative Routes 5 and 16 each have two

NRHP-listed or determined-eligible properties within 1,000 feet of their route centerlines. Proposed Alternative Routes 1, 2 and 29 also cross the least amount of archeological HPA. The distance of route across archeological HPAs for the Eastern Route Family ranges from approximately 23.3 miles crossed by Proposed Alternative Route 2, to approximately 32.1 miles crossed by Proposed Alternative Route 3 (Table 5-3).

Aesthetic Values

Within the Eastern Route Family, Proposed Alternative Route 16 has the shortest length within the foreground visual zone of a US or SHs, at approximately 3.8 miles. Proposed Alternative Route 2 has the longest such length, at approximately 14.6 miles, located within this visual zone (Table 5-3).

Proposed Alternative Routes 16, 17 and 29 have the shortest lengths within the Eastern Route Family, at approximately 6.1 miles each, located within the foreground visual zone of FM and county roads. Proposed Alternative Route 3 has the longest such length located within this visual zone, at approximately 16.0 miles (Table 5-3).

Proposed Alternative Route 4 has the shortest length within the Eastern Route Family, at approximately 8.3 miles, located within the foreground visual zone of park and recreational areas. Proposed Alternative Route 22 has the longest such length located within this visual zone, at approximately 13.0 miles (Table 5-3).

5.2.1.3 Ecology

The eastern routes typically have moderate lengths across upland woodlands when compared to the Central and Western Route Families. Within the Eastern Route Family, Proposed Alternative Route 1 has the shortest length across upland woodlands, at approximately 9.8 miles, followed by Proposed Alternative Routes 5, 3 and 4 (approximately 10.8, 10.9 and 11.5 miles, respectively). Proposed Alternative Route 21 has the longest length across upland woodlands, at approximately 14.4 miles (Table 5-3).

The eastern routes typically have some of the shortest lengths across bottomland/riparian woodlands when compared to the Western and Central Route Families. Eight of the eastern routes have less than 3.0 miles of their length across bottomland woodlands or riparian areas. Within the Eastern Route Family, Proposed Alternative Route 2 has the shortest length across bottomland woodlands or riparian areas, at approximately 1.6 miles, followed by Proposed Alternative Routes 1 and 3, at approximately 2.0 miles, each. These are the shortest lengths across bottomland woodlands or riparian areas for all of the proposed

alternative routes within all three route families. Proposed Alternative Route 16 has the longest length across bottomland woodlands or riparian areas, at approximately 4.1 miles (Table 5-3).

Within the Eastern Route Family, Proposed Alternative Route 1 has the shortest lengths across all NWI mapped wetlands, at approximately 2.99 miles. Proposed Alternative Route 16 has the greatest length all NWI mapped wetlands, at approximately 6.64 miles (Table 5-3).

The eastern routes typically have some of the longest lengths across USACE designated Columbia Bottomlands when compared to the Central and Western Route Families. Within the Eastern Route Family, Proposed Alternative Routes 29 and 16 have the shortest lengths across USACE designated Columbia Bottomlands, at approximately 0.36 and 0.45 mile, respectively. Proposed Alternative Route 3 has the greatest length across designated Columbia Bottomlands, at approximately 1.85 miles. Proposed Alternative Routes 5, 16 and 17, have the shortest lengths across NWI mapped wetlands within USACE designated Columbia Bottomlands, at zero mile each. Proposed Alternative Route 3 has the greatest across length NWI mapped wetlands within USACE designated Columbia Bottomlands, at approximately 0.18 mile (approximately 950 feet) (Table 5-3).

Within the Eastern Route Family, Proposed Alternative Routes 1, 2 and 29 have the shortest lengths across open water (lakes or ponds), at approximately 0.1 mile each. This ties with the Central Route Family for the shortest lengths across open water. Proposed Alternative Routes 21 and 28 has the longest length across open water (lakes or ponds), at approximately 0.3 mile each. Proposed Alternative Route 2 crosses the least number of streams or canals, with 53. This is the least number of stream crossings for all of the proposed alternative routes within all three route families. Proposed Alternative Routes 27 and 30 have highest number of stream or canal crossings within the Eastern Route Family, with 70. Proposed Alternative Routes 2, 3 and 29 have the shortest lengths parallel to streams or canals, at approximately 3.0 miles each. These are also the shortest lengths parallel to streams or canals within all three route families. Proposed Alternative Route 1 has highest length parallel to streams or canals within the Eastern Route Family, at approximately 8.1 miles (Table 5-3).

Within the Eastern Route Family, Proposed Alternative Routes 3 and 22 have the shortest length across mapped 100-year floodplains, at approximately 20.4 miles each. Proposed Alternative Route 16 has the longest length across mapped 100-year floodplains, at approximately 26.8 miles (Table 5-3).

5.2.1.4 Estimated Cost

Based on the cost estimates provided by CenterPoint Energy, the eastern routes are the least expensive with estimated total costs ranging between approximately $481.7 million for Proposed Alternative Route 5, to approximately $604.8 million for Proposed Alternative Route 27 (see Table 5-3). Proposed Alternative Routes 16 (approximately $514.3 million) and 2 (approximately $549.8 million) are the next least expensive routes within the Eastern Route Family and also within all three route families.

5.2.1.5 Eastern Route Family Ranking and Consensus

The technical experts agreed that all of the eastern routes are viable and acceptable from an overall land use, cultural resource and ecological perspective. The technical experts each ranked the top five eastern routes from **1st** to **5th** (with **1st** having the least potential impact and **5th** the greatest potential impact) from the perspective of their own technical discipline. The results of this ranking are summarized in Table 5-4.

TABLE 5-4 POWER'S ENVIRONMENTAL RANKING AND CONSENSUS OF THE EASTERN ROUTE FAMILY

RANKING					
Eastern Proposed Alternative Route	Land Use Specialist	Ecology Specialist	Cultural Resources Specialist	Project Manager	Consensus
1		3rd	1st		
2		1st	3rd		
3		4th			
4		5th			
5	2nd	2nd		1st	1st
16	1st			2nd	2nd
17			4th		
21			5th		
22					
27	5th			5th	
28	3rd			3rd	3rd
29			2nd		
30	4th			4th	

Comparing the 13 eastern routes from a land use perspective, Proposed Alternative Route 16 was selected as the eastern route having the least-potential land use impact followed by Proposed Alternative Routes 5, 28, 30 and 27, in order of preference. The ecologist ranked Proposed Alternative Route 2 as the eastern route having the least-potential ecological impact followed by Proposed Alternative Routes 5, 1, 3 and 4 in order of preference. Proposed Alternative Route 1 was identified as the eastern route having the least-potential impact on cultural resources followed by Proposed Alternative Routes 29, 2, 17 and 21 in order of preference. The POWER Project Manager ranked the eastern routes, considering all of the key evaluation criteria and giving consideration to whether the routes crossed state owned lands or not and the cost information. Proposed Alternative Route 5 was selected by the POWER Project Manager as the best-

balanced eastern route considering all the key evaluation criteria reviewed and cost information followed by Proposed Alternative Routes 16, 28, 30 and 27 in order of preference. Proposed Alternative Routes 5 and 16 both cross state-owned lands, TDCJ and TPWD, while Proposed Alternative Routes 27, 28 and 30 do not.

Through a consensus process, Proposed Alternative Routes 5, 16 and 28 in order of preference, were selected by the technical experts as the best-balanced eastern routes considering all the key evaluation criteria reviewed along with the cost estimates provided by CenterPoint Energy.

5.2.2 Central Route Family

After considering and comparing the key evaluation criteria for the proposed alternative routes within the Central Route Family it was concluded by POWER, with input from CenterPoint Energy that based on the size of the Project, nature of the study area and public input analysis, all of the central routes would be retained for further consideration. Proposed Alternative Routes 6 through 10, 20 and 24 through 26 were further evaluated. The data tabulation for the Key Evaluation Criteria for the Central Route Family is presented in Table 5-5.

The nine central routes have higher costs when compared to the Eastern Route Family and moderate costs when compared to the Western Route Family. The central routes tend to have moderate to high numbers of habitable structures located within 500 feet of their centerlines. The central routes have some of the highest percent of route parallel with apparent features, property lines, railroads, or an existing ROW. Six of the nine central routes cross TDCJ and TPWD property. Overall, the central routes tend to have comparable lengths across NWI mapped wetlands within USACE designated Columbia Bottomlands with the longest lengths, at approximately 0.05 mile (264 feet), which can easily be spanned. Overall, the central routes are anticipated to have moderate impacts to natural resources and minimal impacts to cultural resources.

5.2.2.1 Land Use

Only one of the nine central routes is less than 70.0 miles in length. Within the Central Route Family, Proposed Alternative Route 20 is the shortest, at approximately 68.1 miles and Proposed Alternative Route 8 is the longest, at approximately 75.0 miles. Proposed Alternative Route 26 represents the most direct pathway between the Project endpoints within the Central Route Family (Table 5-5).

TABLE 5-5
KEY EVALUATION CRITERIA FOR THE CENTRAL PROPOSED ALTERNATIVE ROUTES

Key Evaluation Criteria	Central Proposed Alternative Routes								
Land Use	**6**	**7**	**8**	**9**	**10**	**20**	**24**	**25**	**26**
Length of route (miles)	72.9	71.3	75.0	73.9	73.3	68.1	70.9	72.4	72.1
Number of directly affected habitable structures[1] within 500 feet of route centerline	438	270	242	408	258	447	394	407	427
Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	12	7	9	28	46	53	51	7	12
Number of habitable structures[1] potentially to be relocated/removed[2]	2	1	0	1	0	9	9	9	8
Length of route using existing transmission line easement	0.9	1.8	1.8	0.9	1.8	0.9	0.9	0.9	0.9
Length of route parallel to existing transmission line ROW	7.1	10.1	12.4	10.5	16.0	18.5	18.5	6.5	9.1
Length of route paralleling apparent property lines (or other natural or cultural features)[3]	32.8	33.3	35.0	32.6	29.2	20.8	25.9	35.4	33.9
Length of route parallel to other existing ROW (roadway, etc.)	21.3	14.0	13.1	18.3	16.5	20.0	15.3	17.5	15.6
Percent of route parallel with apparent features, property lines, railroads, or an existing ROW	84%	81%	81%	85%	86%	89%	86%	82%	81%
Length of route across parks/recreational areas[4]	1.4	4.5	4.5	2.1	4.5	0.0	0.0	0.0	0.0
Total length of route across TDCJ and TPWD properties	4.3	4.5	6.3	2.1	7.4	2.9	0.0	0.0	0.0
Length of route across TDCJ property	2.9	0.0	1.8	0.0	2.9	2.9	0.0	0.0	0.0
Length of route across TPWD property	1.4	4.5	4.5	2.1	4.5	0.0	0.0	0.0	0.0
Length of route across residential areas	8.9	10.4	8.3	8.7	5.5	6.5	8.0	11.9	11.2
Aesthetics									
Estimated length of route within foreground visual zone of U.S. and state highways[5]	14.7	6.1	8.0	11.7	11.3	20.2	13.6	10.5	7.7
Estimated length of route within foreground visual zone of FM and county roads[5]	13.1	11.3	11.7	15.5	17.8	21.6	15.5	11.3	10.8
Estimated length of route within foreground visual zone of park and recreational areas[4][6]	10.4	11.9	10.9	7.0	8.5	5.3	6.9	10.6	12.6
Ecology									
Length of route across upland woodlands	13.8	14.5	13.1	13.3	9.5	7.5	10.4	15.6	16.8
Length of route across bottomland/riparian woodlands	2.6	3.6	3.3	3.7	3.2	2.0	3.7	3.1	3.5
Length of route across USACE designated Columbia Bottomlands	0.69	0.0	0.05	0.02	0.36	1.02	0.62	0.62	0.62
Length of route across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.0	0.0	0.0	0.05	0.05	0.05	0.05
Total length of route across National Wetland Inventory mapped wetlands[7]	2.74	5.68	5.72	4.66	4.86	2.03	3.53	3.21	3.85
Length of route across open water (lakes or ponds)	0.1	0.1	0.1	0.3	0.3	0.4	0.4	0.2	0.2
Number of stream and canal crossings	67	66	65	65	74	67	67	64	62
Length of route parallel to streams and canals within 100 feet of route centerline	5.4	3.8	6.8	6.2	7.3	4.6	4.5	3.8	5.8
Length of route across 100-year floodplains	21.7	22.7	22.9	19.2	11.7	7.5	10.5	19.1	22.2
Cultural Resources									
Number of additional recorded historical or archeological sites within 1,000 feet of route centerline	3	4	4	4	5	6	4	4	5
Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of route centerline	0	2	1	0	1	1	0	1	0
Length of route across areas of high archeological/historic site potential	32.3	30.2	32.1	27.5	28.5	28.5	26.0	29.5	33.0
Cost									
Estimated Total Cost[8] (million)	$634.4	$615.5	$640.3	$695.2	$621.5	$657.2	$667.0	$663.5	$661.2

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[7] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

[8] For cost comparison purposes, steel lattice structures are assumed and estimated for segments within all ROW types; 850 foot spans were assumed between tangent structures; and it was also assumed that all crossings would impact only tangent structures. Mitigation costs were estimated by combining the lengths tabulated for the primary transmission line routes paralleling existing pip railroads and assuming the same cost for both per foot.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

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Within the Central Route Family, Proposed Alternative Route 8 has the fewest number of habitable structures located within 500 feet of its centerline, with 242. Of the 242 habitable structures, nine of them are already located within 500 feet of an existing transmission line. Proposed Alternative Route 20 has the most habitable structures located within 500 feet of its centerline, with 447. Of these habitable structures, 53 are already located within 500 feet of an existing transmission line (Table 5-5).

Seven of the proposed alternative routes in the Central Route Family would require removal or relocation of existing habitable structures (single-family residences). Proposed Alternative Routes 8 and 10 have the fewest each, with zero, and Proposed Alternative Routes 20, 24 and 25 have the most, with nine each, followed by Proposed Alternative Route 26, with eight (Table 5-5).

All of the nine central routes utilize approximately 0.9 mile or more of existing CenterPoint Energy transmission line ROW. Proposed Alternative Routes 7, 8 and 10 utilize the most, with approximately 1.8 miles each, and Proposed Alternative Routes 6, 9, 20, 24, 25 and 26 have the least, using approximately 0.9 mile each of CenterPoint Energy's existing transmission line ROW (Table 5-5).

Six of the nine proposed alternative routes in the Central Route Family parallel apparent property boundaries for approximately 32.6 miles or more. Proposed Alternative Route 20 has the shortest length parallel to apparent property lines, with approximately 20.8 miles, and Proposed Alternative Route 25 has the longest, with approximately 35.4 miles (Table 5-5).

Within the Central Route Family, the lengths parallel to apparent features, property lines, railroads, or an existing ROW range between approximately 81 percent and 89 percent. Proposed Alternative Routes 7, 8 and 26 have the least, with approximately 81 percent each of their total length parallel to apparent features, property lines, railroads, or an existing ROW and Proposed Alternative Route 20 has the most, with approximately 89 percent (see Table 5-5).

Proposed Alternative Routes 6, 7, 8, 9, 10 and 20 in the Central Route Family cross property owned by either TDCJ or TPWD or both. Lengths for these routes across TDCJ property range between zero miles each for Proposed Alternative Routes 7 and 9, to approximately 2.9 miles each on Proposed Alternative Routes 6, 10 and 20. Lengths for these routes across TPWD property range between approximately zero miles on Proposed Alternative Route 20, to approximately 4.5 miles each on Proposed Alternative Routes 7, 8 and 10 (Table 5-5).

Within the Central Route Family, Proposed Alternative Route 10 crosses the least amount of residential land use areas, with approximately 5.5 miles, and Proposed Alternative Route 25 crosses the most amount of residential land use areas, with approximately 11.9 miles (Table 5-5).

5.2.2.2 Historical and Aesthetic Values

Within the Central Route Family, Proposed Alternative Route 6 has the fewest recorded historical or archeological sites within 1,000 feet of route centerline, with three. Proposed Alternative Route 20 has the most recorded historical or archeological sites within 1,000 feet of route centerline, with six. Proposed Alternative Routes 6, 9, 24 and 26 and do not have any NRHP-listed or determined-eligible sites within 1,000 feet of the route centerlines, whereas Proposed Alternative Routes 8, 10, 20 and 25 each have one, and Proposed Alternative Route 7 has two. The amount of archeological HPAs for the Central Route Family ranges from approximately 26.0 miles crossed by Proposed Alternative Route 24, to approximately 33.0 miles crossed by Proposed Alternative Route 26 (Table 5-5).

Aesthetic Values

Within the Central Route Family, Proposed Alternative Route 7 has the shortest length within the foreground visual zone of a US or SH, at approximately 6.1 miles. Proposed Alternative Route 20 has the longest such length located within this visual zone, at approximately 20.2 miles (Table 5-5).

Proposed Alternative Route 26 has the shortest length in the Central Route Family, at approximately 10.8 miles, within the foreground visual zone of FM and county roads. Proposed Alternative Route 20 has the longest such length located within this visual zone, at approximately 21.6 miles (Table 5-5).

Proposed Alternative Route 20 has the shortest length in the Central Route Family, at approximately 5.3 miles, within the foreground visual zone of park and recreational areas. Proposed Alternative Route 26 has the longest such length located within this visual zone, at approximately 12.6 miles (Table 5-5).

5.2.2.3 Ecology

The central routes have the shortest and longest lengths across upland woodlands when compared to the Eastern and Western Route Families. Within the Central Route Family, Proposed Alternative Route 20 has the shortest length across upland woodlands, at approximately 7.5 miles, followed by Proposed Alternative Routes 10 and 24, at approximately 9.5 and 10.4 miles, respectively. Proposed Alternative Route 26 has the longest length across upland woodlands, at approximately 16.8 miles (Table 5-5).

The central routes typically have moderate lengths across bottomland/riparian woodlands areas when compared to the Eastern and Western Route Families. Within the Central Route Family, only two of the central routes have less than 3.0 miles of their length across bottomland woodlands or riparian areas. Proposed Alternative Route 20 has the shortest length across bottomland woodlands or riparian areas, at approximately 2.0 miles, followed by Proposed Alternative Route 6, at approximately 2.6 miles. Within the Central Route Family, Proposed Alternative Routes 9 and 24 have the longest length across bottomland woodlands or riparian areas, at approximately 3.7 miles each (Table 5-5).

Proposed Alternative Routes 20 and 6 have the shortest lengths across all NWI mapped wetlands at approximately 2.0 and 2.7 miles, respectively. Proposed Alternative Route 8 has the greatest length of all NWI mapped wetlands, at approximately 5.7 miles (see Table 5-5). The central routes typically have moderate lengths across USACE designated Columbia Bottomlands when compared to the Eastern and Western Route Families. Within the Central Route Family, Proposed Alternative Route 7 has the shortest lengths across USACE designated Columbia Bottomlands, at approximately zero miles. Proposed Alternative Route 20 has the greatest length across designated Columbia Bottomlands, at approximately 1.0 miles. Within the Central Route Family, Proposed Alternative Routes 6, 7, 8, 9 and 10 have the shortest lengths across NWI mapped wetlands within USACE designated Columbia Bottomlands, at approximately zero miles each. The remaining Proposed Alternative Routes, 20, 24, 25 and 26, each have the same and longest lengths across NWI mapped wetlands within USACE designated Columbia Bottomlands, at approximately 0.1 mile (approximately 264 feet) (Table 5-5).

Within the Central Route Family, Proposed Alternative Routes 6, 7 and 8 have the shortest lengths across open water (lakes or ponds), at approximately 0.1 mile each. This ties with the Eastern Route Family for shortest lengths across open waters. Proposed Alternative Routes 20 and 24 have the longest lengths across open water (lakes or ponds), at approximately 0.4 mile each. Proposed Alternative Route 26 crosses the least number of streams or canals, with 62. Proposed Alternative Route 10 has highest number of stream or canal crossings within the Central Route Family, with 74. Proposed Alternative Routes 7 and 25 have the shortest lengths parallel to streams or canals, at approximately 3.8 miles, each. Proposed Alternative Route 10 has highest length parallel to streams or canals within the Central Route Family, at approximately 7.3 miles (Table 5-5).

Within the Central Route Family, Proposed Alternative Route 20 has the shortest length across mapped 100-year floodplains, at approximately 7.5 miles. Proposed Alternative Route 8 has the longest length across mapped 100-year floodplains, at approximately 22.9 miles (Table 5-5).

5.2.2.4 Estimated Cost

Based on the cost estimates provided by CenterPoint Energy, the central routes are overall the second least expensive routes. Proposed Alternative Routes 20, 26, 25, 24 and 9 are the five most expensive of the Central Route Family (in order of least expensive to most expense) and are comparable to the total costs of the proposed alternative routes in the Western Route Family. The preliminary total cost estimates for all of the central routes range between approximately $615.5 million for Proposed Alternative Route 7, to approximately $695.2 million for Proposed Alternative Route 9 (see Table 5-2). Proposed Alternative Routes 10 (approximately $621.5 million), 6 (approximately $634.4 million) and 8 (approximately $640.4 million) are the next three least expensive routes within the Central Route Family (Table 5-2).

5.2.2.5 Central Route Family Ranking and Consensus

The technical experts agreed that all of the central routes are viable and acceptable from an overall land use, cultural resource and ecological perspective. The technical experts each ranked the top five central routes from **1st** to **5th** (with **1st** having the least potential impact and **5th** the greatest potential impact) from the perspective of their own technical discipline. The results of this ranking are summarized in Table 5-6.

TABLE 5-6 POWER'S ENVIRONMENTAL RANKING AND CONSENSUS OF THE CENTRAL ROUTE FAMILY

RANKING					
Central Proposed Alternative Route	Land Use Specialist	Ecology Specialist	Cultural Resources Specialist	Project Manager	Consensus
6		4th	3rd		
7	1st			1st	1st
8	3rd			2nd	
9		5th	2nd		
10	2nd	3rd	5th	3rd	2nd
20		1st			
24	4th	2nd	1st		3rd
25	5th			4th	
26			4th	5th	

Comparing the nine central routes from a land use perspective, Proposed Alternative Route 7 was selected as the central route having the least-potential land use impact followed by Proposed Alternative Routes 10, 8, 24 and 25, in order of preference. The ecologist ranked Proposed Alternative Route 20 as the central route having the least-potential ecological impact followed by Proposed Alternative Routes 24, 10, 6 and 9, in order of preference. Proposed Alternative Route 24 was identified as the central route having the least-potential impact on cultural resources followed by Proposed Alternative Routes 9, 6, 26 and 10, in order of preference. The POWER Project Manager ranked the central routes, considering all of the key evaluation criteria and giving consideration to whether the routes crossed state owned lands or not and the

cost information. Proposed Alternative Route 7 was selected by the POWER Project Manager as the best-balanced central route considering all the evaluation criteria reviewed and cost information followed by Proposed Alternative Routes 8, 10, 25 and 26, in order of preference. Proposed Alternative Routes 6, 7, 8, 9, 10 and 20 cross state-owned lands, TDCJ and TPWD, while Proposed Alternative Routes 24, 25 and 26 do not.

Through a consensus process, Proposed Alternative Routes 7, 10 and 24, in order of preference were selected by the technical experts as the best-balanced central routes considering all the key evaluation criteria reviewed along with the cost estimates provided by CenterPoint Energy.

5.2.3 Western Route Family

After considering and comparing the key evaluation criteria for the proposed alternative routes within the Western Route Family, it was concluded by POWER with input from CenterPoint Energy that based on the size of the Project, nature of the study area and public input analysis, all of the western routes would be retained for further consideration. Proposed Alternative Routes 11 through 15, 18, 19 and 23 were further evaluated. The data tabulation for the Key Evaluation Criteria for the Western Route Family is presented in Table 5-7.

Compared to the other route families, the eight proposed alternative routes in the Western Route Family are the longest and most expensive routes. The western routes tend to have the least number of habitable structures located within 500 feet of their centerlines, with the exception of Proposed Alternative Route 23. Similar to the Eastern and Central Route Families, few of these habitable structures are already located within 500 feet of an existing transmission line. The western routes have moderate to high percent of route length parallel with apparent features, property lines, railroads, or an existing ROW. Despite their overall longer route lengths when compared to the other two route families, they have moderate lengths parallel to existing transmission line ROW. Seven of the eight western routes cross TDCJ or TPWD property, or both. Only one of the western routes has a portion of its length across NWI mapped wetlands within USACE designated Columbia Bottomlands, at approximately 0.1 mile (approximately 264 feet), which can easily be spanned. Overall, the western routes are anticipated to have moderate impacts to natural resources and minimal impacts to cultural resources.

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TABLE 5-7
KEY EVALUATION CRITERIA FOR THE WESTERN PROPOSED ALTERNATIVE ROUTES

Key Evaluation Criteria	Western Proposed Alternative Routes							
Land Use	**11**	**12**	**13**	**14**	**15**	**18**	**19**	**23**
Length of route (miles)	77.6	79.8	78.4	78.8	84.0	84.3	74.7	74.6
Number of directly affected habitable structures[1] within 500 feet of route centerline	182	181	200	184	178	164	181	331
Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	28	29	7	10	22	15	21	35
Number of habitable structures[1] potentially to be relocated/removed[2]	1	1	0	0	1	0	0	9
Length of route using existing transmission line easement	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9
Length of route parallel to existing transmission line ROW	15.0	11.0	8.7	7.4	10.1	16.4	8.4	9.7
Length of route paralleling apparent property lines (or other natural or cultural features)[3]	32.0	34.3	32.7	39.1	36.7	33.3	34.1	34.6
Length of route parallel to other existing ROW (roadway, etc.)	21.1	21.1	25.1	19.4	26.6	21.2	19.9	20.3
Percent of route parallel with apparent features, property lines, railroads, or an existing ROW	88%	83%	85%	84%	87%	84%	84%	87%
Length of route across parks/recreational areas[4]	5.0	4.5	4.5	4.5	5.0	5.0	4.5	0.0
Total length of route across TDCJ and TPWD properties	4.5	4.5	5.7	5.7	4.5	5.7	5.7	0.0
Length of route across TDCJ property	0.0	0.0	1.2	1.2	0.0	1.2	1.2	0.0
Length of route across TPWD property	4.5	4.5	4.5	4.5	4.5	4.5	4.5	0.0
Length of route across residential areas	6.1	5.7	8.0	7.5	5.6	5.7	6.4	7.9
Aesthetics								
Estimated length of route within foreground visual zone of U.S. and state highways[5]	5.8	6.4	9.4	6.4	8.6	4.4	4.4	10.1
Estimated length of route within foreground visual zone of FM and county roads[5]	7.8	10.9	9.0	10.2	8.6	9.3	7.6	9.8
Estimated length of route within foreground visual zone of park and recreational areas[4][6]	9.7	8.4	9.4	10.7	11.7	10.7	8.4	7.1
Ecology								
Length of route across upland woodlands	12.7	11.7	14.5	15.3	13.0	13.0	11.9	13.5
Length of route across bottomland/riparian woodlands	4.9	5.0	5.2	4.7	5.1	4.6	5.1	4.8
Length of route across USACE designated Columbia Bottomlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.62
Length of route across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.05
Total length of route across National Wetland Inventory mapped wetlands[7]	5.64	6.40	6.39	5.86	6.42	6.10	5.90	3.07
Length of route across open water (lakes or ponds)	0.3	0.4	0.4	0.4	0.5	0.4	0.3	0.3
Number of stream and canal crossings	74	81	69	73	84	78	66	66
Length of route parallel to streams and canals within 100 feet of route centerline	5.8	5.6	4.3	6.7	8.4	4.7	8.3	6.0
Length of route across 100-year floodplains	20.5	19.5	25.3	24.9	21.4	18.8	17.7	17.0
Cultural Resources								
Number of additional recorded historical or archeological sites within 1,000 feet of route centerline	4	4	1	3	4	1	1	5
Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of route centerline	1	1	1	1	1	1	1	0
Length of route across areas of high archeological/historic site potential	32.7	31.8	35.2	29.7	30.5	33.0	29.0	31.3
Cost								
Estimated Total Cost[8] (million)	$648.7	$666.2	$667.1	$661.9	$690.2	$680.9	$647.0	$678.4

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[7] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

[8] For cost comparison purposes, steel lattice structures are assumed and estimated for segments within all ROW types; 850 foot spans were assumed between tangent structures; and it was also assumed that all crossings would impact only tangent structures. Mitigation costs were estimated by combining the lengths tabulated for the primary transmission line routes paralleling existing pipelines and railroads and assuming the same cost for both per foot.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

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5.2.3.1 Land Use

All of the western routes are 74.6 miles in length or more. Within the Western Route Family, Proposed Alternative Route 23 is the shortest, at approximately 74.6 miles, and Proposed Alternative Route 18 is the longest, at approximately 84.3 miles. Proposed Alternative Route 19 represents the most direct pathway between the Project endpoints within the Western Route Family (Table 5-7).

Within the Western Route Family, Proposed Alternative Route 18 has the fewest number of habitable structures located within 500 feet of its centerline, with 164. Of the 164 habitable structures, 15 of them are located within 500 feet of an existing transmission line. Proposed Alternative Route 23 has the most habitable structures located within 500 feet of its centerline, with 331. Of these habitable structures, 35 are located within 500 feet of an existing transmission line (Table 5-7).

Four of the western routes would potentially require removal or relocation of existing habitable structures (single-family residences). Proposed Alternative Routes 13, 14, 18 and 19 have the fewest, with zero each. Proposed Alternative Routes 11, 12 and 15 each have one; and Proposed Alternative Route 23 has the most, with nine (Table 5-7).

All of the western routes utilize existing CenterPoint Energy transmission line ROW. Proposed Alternative Route 23 utilizes approximately 0.9 mile of CenterPoint Energy's existing transmission line ROW. Proposed Alternative Routes 11, 12, 13, 15, 18 and 19 each utilize approximately 1.8 miles (Table 5-7).

All eight western routes parallel other existing ROWs (roadway, etc.) for over approximately 19.4 miles. Proposed Alternative Route 15 has the greatest length parallel to other existing ROWs (roadway, etc.), with approximately 26.6 miles. Proposed Alternative Route 14 has the least, with approximately 19.4 miles (Table 5-7).

Within the Western Route Family, Proposed Alternative Route 11 has the least amount parallel to apparent property lines, with approximately 32.0 miles. Proposed Alternative Route 14 has the most distance parallel to apparent property lines, with approximately 39.1 miles (Table 5-7).

Within the Western Route Family, the lengths parallel to apparent features, property lines, railroads, or an existing ROW range between approximately 83 percent and 88 percent. Proposed Alternative Route 12 has the least, with approximately 83 percent of its total length parallel to apparent features, property lines, railroads, or an existing ROW. Proposed Alternative Route 11 has the most, with approximately 88

percent. The lengths parallel to apparent features, property lines, railroads, or an existing ROW in the Western Route Family are comparable to the Central Route Family, but more than the Eastern Route Family (Table 5-7).

Proposed Alternative Route 23 in the Western Route Family does not have any portion of its length across TDCJ or TPWD property, while Proposed Alternative Routes 11 through 15, 18 and 19 all cross property owned by either TDCJ or TPWD or both. Lengths for these seven routes across TDCJ property range from zero miles each for Proposed Alternative Routes 11, 12 and 15, to approximately 1.2 miles each on Proposed Alternative Routes 13, 14, 18 and 19. Lengths for these seven western routes across TPWD property are all the same, at approximately 4.5 miles (Table 5-7).

Within the Western Route Family, Proposed Alternative Route 15 crosses the least amount of residential land use areas, with approximately 5.6 miles. Proposed Alternative Route 13 crosses the most amount of residential land use areas, with approximately 8.0 miles (Table 5-7).

5.2.3.2 Historical and Aesthetic Values

Within the Western Route Family, Proposed Alternative Routes 13, 18 and 19 have the fewest recorded historical or archeological sites within 1,000 feet of route centerlines, with one. Proposed Alternative Route 23 has the most recorded historical or archeological sites within 1,000 feet of route centerline, with five. Proposed Alternative Route 23 does not have any NRHP-listed or determined-eligible sites within 1,000 feet of the route centerlines, whereas the remaining routes each have one. The amount of archeological HPAs for the Western Route Family ranges from approximately 29.0 miles crossed by Proposed Alternative Route 19, to approximately 35.2 miles crossed by Proposed Alternative Route 13 (Table 5-7).

Aesthetic Values

Within the Western Route Family, Proposed Alternative Routes 18 and 19 have the shortest length within the foreground visual zone of a US or SH, at approximately 4.4 miles. Proposed Alternative Route 23 has the longest such length located within this zone, at approximately 10.1 miles (Table 5-7).

Proposed Alternative Route 19 has the shortest length within the Western Route Family, at approximately 7.6 miles, within the foreground visual zone of FM and county roads. Proposed Alternative Route 12 has the longest such length within this visual zone, at approximately 10.9 miles (Table 5-7).

Proposed Alternative Routes 12 and 19 have the shortest lengths within the Western Route Family, at approximately 8.4 miles each, within the foreground visual zone of park and recreational areas. Proposed Alternative Route 15 has the longest such length located within this visual zone, at approximately 11.7 miles (Table 5-7).

5.2.3.3 Ecology

The western routes typically have moderate lengths across upland woodlands when compared to the Eastern and Western Route Families. Within the Western Route Family, Proposed Alternative Route 12 has the shortest length across upland woodlands, at approximately 11.7 miles. Proposed Alternative Route 14 has the longest length across upland woodlands, at approximately 15.3 miles (Table 5-7).

The western routes typically have longer lengths across bottomland/riparian woodlands areas when compared to the Eastern and Central Route Families. None of the western routes have less than 4.6 miles of their length across bottomland woodlands or riparian areas. Within the Western Route Family, Proposed Alternative Route 18 has the shortest length across bottomland woodlands or riparian areas, at approximately 4.6 miles. Proposed Alternative Route 13 has the longest length across bottomland woodlands or riparian areas, at approximately 5.2 miles (Table 5-7).

Proposed Alternative Route 23 has the shortest lengths across all NWI mapped wetlands, at approximately 3.1 miles. Proposed Alternative Route 15 has the greatest lengths across all NWI mapped wetlands, at approximately 6.4 miles (Table 5-7). The western routes typically have the shortest lengths across USACE designated Columbia Bottomlands when compared to the Eastern and Central Route Families. Within the Western Route Family, Proposed Alternative Routes 11, 12, 13, 14, 15, 18 and 19 have no portion of their lengths across USACE designated Columbia Bottomlands (zero miles). Proposed Alternative Route 23 has the greatest length across designated Columbia Bottomlands, at approximately 0.6 mile. Within the Western Route Family, Proposed Alternative Routes 11, 12, 13, 14, 15, 18 and 19 have no portion of their lengths across NWI mapped wetlands within USACE designated Columbia Bottomlands (zero miles). Proposed Alternative Route 23 has the greatest length across NWI mapped wetlands within USACE designated Columbia Bottomlands, at approximately 0.1 mile (approximately 264 feet) (Table 5-7).

The western routes typically have longer lengths across open water (lakes or ponds) when compared to the Eastern and Central Route Families. Proposed Alternative Routes 11, 19 and 23 have the shortest lengths across open water (lakes or ponds), at approximately 0.3 mile each. Within the Western Route Family, Proposed Alternative Route 15 has the longest length across open water, at approximately 0.5

mile. Proposed Alternative Routes 19 and 23 cross the least number of streams or canals, with 66 each. Proposed Alternative Route 15 has highest number of stream or canal crossings within the Western Route Family, with 84. Proposed Alternative Route 13 has the shortest length parallel to streams or canals, at approximately 4.3 miles. Proposed Alternative Route 15 has highest length parallel to streams or canals within the Western Route Family, at approximately 8.4 miles (Table 5-7).

Within the Western Route Family, Proposed Alternative Route 23 has the shortest length across mapped 100-year floodplains, at approximately 17.0 miles. Proposed Alternative Route 13 has the longest length across mapped 100-year floodplains, at approximately 25.3 miles (Table 5-7).

5.2.3.4 Estimated Cost

Based on the cost estimates provided by CenterPoint Energy, the proposed alternative routes in the Western Route Family are overall the most expensive routes, with the exception of Proposed Alternative Route 9 in the Central Route Family, at $695.2 million. The estimated total costs for the western routes range between approximately $647.0 million for Proposed Alternative Route 19, to approximately $690.2 million for Proposed Alternative Route 15 (Table 5-2).

5.2.3.5 Western Route Family Ranking and Consensus

The technical experts agreed that all of the western routes are viable and acceptable from an overall land use, cultural resource and ecological perspective. The technical experts each ranked the top five western routes from **1st** to **5th** (with **1st** having the least potential impact and **5th** the greatest potential impact) from the perspective of their own technical discipline. The results of this ranking are summarized in Table 5-8.

TABLE 5-8 POWER'S ENVIRONMENTAL RANKING AND CONSENSUS OF THE WESTERN ROUTE FAMILY

RANKING					
Western Proposed Alternative Route	Land Use Specialist	Ecology Specialist	Cultural Resources Specialist	Project Manager	Consensus
11	2nd	3rd		2nd	2nd
12	4th	4th		4th	
13	5th				
14	3rd	5th	3rd	3rd	3rd
15			5th		
18			4th		
19	1st	2nd	2nd	1st	1st
23		1st	1st	5th	

Comparing the eight western routes from a land use perspective, Proposed Alternative Route 19 was selected as the western route having the least potential land use impact followed by Proposed Alternative Routes 11, 14, 12 and 13, in order of preference. The ecologist ranked Proposed Alternative Route 23 as

the western route having the least potential ecological impact, followed by Proposed Alternative Routes 19, 11, 12 and 14, in order of preference. Proposed Alternative Route 23 was identified as the western route having the least potential impact on cultural resources, followed by Proposed Alternative Routes 19, 14, 18 and 15, in order of preference. The POWER Project Manager ranked the western route, considering all of the key evaluation criteria and giving consideration to whether the routes crossed state owned lands or not and the cost information. Proposed Alternative Route 19 was selected by the POWER Project Manager as the best-balanced eastern route considering all the key evaluation criteria reviewed and the cost information, followed by Proposed Alternative Routes 11, 14, 12 and 23, in order of preference. Proposed Alternative Routes 11 through 15, 18 and 19 all cross state-owned lands, TDCJ or TPWD or both, while Proposed Alternative Route 23 does not.

Through a consensus process, Proposed Alternative Routes 19, 11 and 14 were selected by the technical experts as the best-balanced western routes considering all the key evaluation criteria reviewed along with the cost estimates provided by CenterPoint Energy.

5.3 SELECTION OF THE ROUTE WHICH BEST ADDRESSES THE REQUIREMENTS OF PURA AND PUC SUBSTANTIVE RULES

POWER ranked the top three proposed alternative routes (i.e., the ones having the least potential impact) from each route family. POWER identified the top three Eastern Routes 5, 16 and 28, in order of preference, Central Routes 7, 10 and 24 in order of preference, and Western Routes 19, 11 and 14, in order of preference. POWER, in conjunction with CenterPoint Energy, considered this analysis in the determination of the route that best addresses the requirements of PURA and the PUC Substantive Rules. From these top ranked routes, POWER identified Eastern Route 5 as the route that best addresses the requirements of PURA and the PUC Substantive Rules. However, Proposed Alternative Route 5 crosses approximately 2.9 miles of TDCJ property and approximately 4.5 miles of TPWD property (state owned land). Electric utilities do not have the authority to exercise eminent domain to acquire rights to state owned land. Therefore, POWER looked to identify an additional route that performed well under the evaluation criteria, but that did not cross state owned land. POWER identified Proposed Alternative Route 28 as the second ranked route that best addresses the requirements of PURA and the PUC Substantive Rules, because although it did not perform as well as Proposed Alternative Route 5 did under most of the other designated criteria (including number of habitable structures affected, number of habitable structures that may have to be removed and estimated cost), Proposed Alternative Route 28 does not cross any TDCJ or TPWD property. A discussion on the rationale for the recommendation of a proposed alternative route by consensus that best addresses the requirements of PURA and the PUC Substantive Rules is provided. Tables 5-3, 5-5 and 5-7 summarize the data tabulated for the key

evaluation criteria and include cost estimates for each of the 30 proposed alternative routes. Tables 5-9 through 5-38 in Appendix D present detailed information about habitable structures and other land use features (CCN inventory items) near the 30 proposed alternative routes. The items on Tables 5-9 through 5-38 and the proposed alternative routes are depicted on Figure 5-1 (Sheets 1-6 in the Map Pockets). The 30 proposed alternative routes provide geographic diversity within the Project study area and comply with Section 37.056(c)(4)(A)-(D) of PURA, 16 TAC § 22.52(a)(4), 16 TAC § 25.101(b)(3)(B) and the PUC's Policy of Prudent Avoidance.

Proposed Alternative Route 5 (Segments: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CY-DC-IZ-JA-FP) is recommended as the route that best addresses the requirements of PURA and the PUC's Substantive Rules. Proposed Alternative Route 5 is the second shortest routes, at 55.2 miles, and has one of the fewer numbers of habitable structures within 500 feet of the route centerline of all the proposed alternative routes, with 181. Proposed Alternative Route 5 does not require any habitable structures be relocated or removed. Proposed Alternative Route 5 crosses state owned land, including approximately 2.9 miles across TDCJ's Clemmons Unit along Segments CW and CY that parallel the south side of SH 36, and approximately 4.5 miles across TPWD's Justin Hurst WMA on Segment JA that parallels an existing transmission line for approximately 3.7 miles of this length. These state entities would both have to agree to grant CenterPoint Energy an easement for Alternative Route 5. Proposed Alternative Route 5 is parallel with existing features for 75 percent of its length. This route crosses 10.8 miles of upland woodlands, crosses almost three miles (2.8 miles) of bottomland/riparian woodlands and has a comparable number of stream crossings (63). Proposed Alternative Route 5 has one of the longer total lengths across NWI-mapped wetlands (5.8 miles). However, these potential impacts may be minimized by spanning wetland areas. Proposed Alternative Route 5 crosses approximately 0.75 mile of USACE designated Columbia Bottomlands, but does not cross any NWI mapped wetlands within USACE designated Columbia Bottomlands. The avoidance and minimization of potential impacts to community values and environmental integrity are maximized with this route. Based on the refined cost estimates provided by CenterPoint Energy, Proposed Alternative Route 5 is the least expensive route within all three route families with an estimated total cost of approximately $481.7 million (Table 5-3).

Proposed Alternative Route 28 (Segments: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DL-DO-DP-DR-DS-DT-ER1-ER2-EV-EZ-FD-FG-FH-FO-FP) is recommended as the second route that best addresses the requirements of PURA and the PUC's Substantive Rules, because it does not cross any state owned property (TDCJ or TPWD). Proposed Alternative Route 28 is one of the shorter routes, at 57.8 miles, and has a moderate number of habitable structures within 500 feet of the route centerline, with 275. Proposed Alternative Route 28 has three habitable structures along the centerline

that would potentially require relocation or removal. Proposed Alternative Route 28 is parallel with existing features for 73 percent of its length. This route crosses 13.4 miles of upland woodlands, crosses 3.1 miles of bottomland/riparian woodlands and has a comparable number of stream crossings (62). Proposed Alternative Route 28 has a total length across NWI-mapped wetlands of 3.9 miles. However, these potential impacts may be minimized by spanning wetland areas. Proposed Alternative Route 28 crosses approximately 1.75 miles of USACE designated Columbia Bottomlands, and crosses approximately 0.1 mile of NWI mapped wetlands within USACE designated Columbia Bottomlands. The avoidance and minimization of potential impacts to community values and environmental integrity are maximized with this route. Based on the refined cost estimates provided by CenterPoint Energy, Proposed Alternative Route 28 is the seventh least expensive route within all three route families with an estimated construction cost of approximately $575.3 million (see Table 5-3).

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Appendix A

Agency and Other Correspondence

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BAILEY TO JONES CREEK PROJECT
FEDERAL, STATE AND LOCAL AGENCIES 9/11/2017

FEDERAL

Mr. Kelvin L. Solco
Southwest Regional Administrator
Federal Aviation Administration
10101 Hillwood Parkway
Fort Worth, TX 76177

Mr. Tony Robinson
Region 6 Administrator
Federal Emergency Management Agency
FRC 800 N. Loop 288
Denton, TX 76209-3698

Mr. Salvador Salinas
State Conservationist
NRCS Texas State Office
101 South Main Street
Temple, TX 76501

Colonel Lars Zetterstrom
District Engineer
U.S. Army Corps of Engineers - Galveston District
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Galveston, TX 77553-1229

Mr. Ron Tickle
Executive Director
U. S. Department of Defense Siting Clearinghouse
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Washington, DC 20301-3400

Mr. Samuel Coleman, P.E.
Region 6 Administrator
U. S. Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, TX 75202

Ms. Edith Erfling
Project Leader
U.S. Fish and Wildlife Service
17629 El Camino Real, Suite 211
Houston, TX 77058

Mr. Curtis Jones
San Bernard National Wildlife Refuge Field Office
U.S. Fish and Wildlife Service
6801 County Road 306
Brazoria, TX 77422

STATE

Ms. Kimberly Corley
Executive Director
Railroad Commission of Texas
P.O. Box 12967
Austin, TX 78711-2967

Ms. Ashely K. Wadick
Regional Director
Texas Commission on Environmental Quality
5425 Polk St., Ste. H
Houston, TX 77023-1452

Mr. David Fulton
Director, Department of Aviation
Texas Department of Transportation
125 E. 11th Street
Austin, TX 78701-2483

Mr. Carlos Swonke, P.E.
Director, Environmental Affairs Division
Texas Department of Transportation
125 E. 11th Street
Austin, TX 78701-2483

Mr. Peter Smith, P.E.
Director, Planning & Programming
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Mr. Quincy Allen, P.E.
Houston District Engineer
Texas Department of Transportation
P.O. Box 1386
Houston, TX 77251

BAILEY TO JONES CREEK PROJECT
FEDERAL, STATE AND LOCAL AGENCIES 9/11/2017

Mr. Paul Reitz, P.E.
Yoakum District Engineer
Texas Department of Transportation
403 Huck Street
Yoakum, TX 77995

Mr. George P. Bush
Commissioner
Texas General Land Office
1700 N. Congress Ave., Suite 935
Austin, TX 78701-1495

Mr. Mark Wolfe
Executive Director
Texas Historical Commission
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Austin, TX 78711

Ms. Laura Zebehazy
Wildlife Habitat Assessment Program
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744

Mr. David Butler
Justin Hurst Wildlife Management Area
Texas Parks and Wildlife Department
6233 TX-36
Freeport, TX 77541

Mr. Jeff Walker
Executive Administrator
Texas Water Development Board
1700 N. Congress Avenue
Austin, TX 78701

LOCAL

BRAZORIA

The Honorable L. M. "Matt" Sebesta, Jr.
Brazoria County
County Judge
111 East Locust Street, Suite 102A
Angleton, TX 77515

The Honorable Donald "Dude" Payne
Brazoria County Commissioner
Precinct 1
P.O. Box 998
Clute, TX 77531

The Honorable Ryan Cade
Brazoria County Commissioner
Precinct 2
21017 CR 171
Angleton, TX 77515

The Honorable Stacy Adams
Brazoria County Commissioner
Precinct 3
P.O. Box 548
Alvin, TX 77512

The Honorable David Linder
Brazoria County Commissioner
Precinct 4
121 North 10th Street
West Columbia, TX 77486

Mr. Matt Hanks
County Engineer
Brazoria County Engineering Department
451 North Velasco, Suite 230
Angleton, TX 77515

Ms. BobbyJo Newell
Mayor
City of Brazoria
201 South Main Street
Brazoria, TX 77422

Mr. Calvin Shiflet
Mayor
City of Clute
108 East Clute
Clute, TX 77531

BAILEY TO JONES CREEK PROJECT
FEDERAL, STATE AND LOCAL AGENCIES 9/11/2017

Mr. Troy Brimage
Mayor
City of Freeport
200 West 2nd Street
Freeport, TX 77541

Mr. Joe Rinehart
Mayor
City of Lake Jackson
25 Oak Drive
Lake Jackson, TX 77566

Mr. Mark Guthrie
Mayor
City of Richwood
1800 North Brazosport Blvd.
Richwood, TX 77531

Mr. Dale Lemon
Mayor
City of Sweeny
P.O. Box 248
Sweeny, TX 77480

Mr. Gordon Schlemmer
Mayor
Village of Jones Creek
7207 Stephen F. Austin
Jones Creek, TX 77541

Ms. Laurie B. Kincannon
Mayor
City of West Columbia
P.O. Box 487
West Columbia, TX 77486

Dr. Patricia Montgomery, Ed. D.
Superintendent
Angleton ISD
1900 North Downing Road
Angleton, TX 77515

Mr. Danny Massey
Superintendent
Brazosport ISD
301 West Brazoswood Drive
Clute, TX 77531

Mr. Steven Galloway
Superintendent
Columbia-Brazoria ISD
520 South 16th Street
West Columbia, TX 77486

Dr. Tory C. Hill
Superintendent
Sweeny ISD
1310 North Elm Street
Sweeny, TX 77480

Ms. Sandra Pollan
Chair
Brazoria CHC
109 Lazy Lane
Lake Jackson, TX 77566

<u>MATAGORDA</u>

The Honorable Nate McDonald
Matagorda County
County Judge
1700 7th Street, Room 301
Bay City, TX 77414-5094

The Honorable Gary Graham
Matagorda County Commissioner
Precinct 1
2604 Nichols
Bay City, TX 77414

The Honorable Kent Pollard
Matagorda County Commissioner
Precinct 2
P.O. Box 571
Matagorda, TX 77457

BAILEY TO JONES CREEK PROJECT
FEDERAL, STATE AND LOCAL AGENCIES 9/11/2017

The Honorable James A. Gibson
Matagorda County Commissioner
Precinct 3
25,000 Highway 35 South
Palacios, TX 77465

The Honorable Charles "Bubba" Frick
Matagorda County Commissioner
Precinct 4
P.O. Box 99
El Maton, TX 77440

Mr. Jason Perez
Mayor
City of Angleton
121 South Velasco
Angleton, TX 77515

Mr. Mark A. Bricker
Mayor
City of Bay City
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Dr. Marshall Scott III
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Bay City ISD
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Mr. Wade Stidevent
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Boling ISD
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Boling, TX 77420-0160

Mr. Andrew Seigrist
Superintendent
Tidehaven ISD
P.O. Box 129
El Maton, TX 77440

Mr. John R. O'Brien
Superintendent
Van Vleck ISD
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Van Vleck, TX 77482

Mr. David Holubec
Chair
Matagorda CHC
P.O. Box 1257
Bay City, TX 77404

<u>WHARTON</u>

The Honorable Phillip Spenrath
Wharton County
County Judge
100 South Fulton Street, Suite 100
Wharton, TX 77488

The Honorable Richard Zahn
Wharton County Commissioner
Precinct 1
3738 FM 3012
Wharton, TX 77488

The Honorable Chris King
Wharton County Commissioner
Precinct 2
P.O. Box 399
East Bernard, TX 77435

The Honorable Steven Goetsch
Wharton County Commissioner
Precinct 3
1271 CR 358
El Campo, TX 77437

The Honorable Doug Mathews
Wharton County Commissioner
Precinct 4
P.O. Box 509
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Ms. Kelly E. Water, M. Ed.
Superintendent
El Campo ISD
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El Campo, TX 77437

Ms. Tina Herrington
Superintendent
Wharton ISD
2100 North Fulton
Wharton, TX 77488

Ms. Patricia Blair
Chair
Wharton CHC
1406 Kelving Way
Wharton, TX 77488

Other Regional

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Executive Director
Houston-Galveston Area Council
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Houston, TX 77227-2777

Environmental Organizations

Ms. Laura Huffman
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318 Congress Avenue
Austin, TX 78701

Ms. Lori Olson
Executive Director
Texas Land Trust Council
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Wimberley, TX 78676

Ms. Jill Boullion
Executive Director
Bayou Land Conservancy
10330 Lake Rd., Bldg. J
Houston, TX 77070

Mr. Martin Hagne
Executive Director
Gulf Coast Bird Observatory
299 West Highway 332
Lake Jackson, TX 77566

River Authorities

Mr. Phil Ford
General Manager
Brazos River Authority
P.O. Box 7555
Waco, TX 76710

Mr. John Hofmann
VP Water Operations
Lower Colorado River Authority
3700 Lake Austin Blvd.
Austin, TX 78703

Mr. Kennard Bisett
Real Estate
Lower Colorado River Authority
P.O. Box 220
Austin, TX 78767

Mr. Mark Goodson
President
Friends of the River San Bernard
P.O. Box 93
Brazoria, TX 77422

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POWER ENGINEERS, INC.
16825 NORTHCHASE DRIVE
SUITE 1200
HOUSTON, TX 77060 USA

PHONE 281-765-5500
FAX 281-765-5599

September 11, 2017
(via Mail)

Mr. Kelvin L. Solco
Southwest Regional Administrator
Federal Aviation Administration
10101 Hillwood Parkway
Fort Worth, TX 76177

Subject: Bailey to Jones Creek Project
Brazoria, Matagorda and Wharton Counties, TX
POWER Engineers, Inc. Project No. 147806

Dear Mr. Solco:

CenterPoint Energy Houston Electric, LLC (CenterPoint Energy) is proposing to construct a new double-circuit 345 kilovolt (kV) electric transmission line located in Brazoria, Matagorda and Wharton Counties, Texas. The new transmission line will connect the existing CenterPoint Energy Bailey Substation and the existing CenterPoint Energy Jones Creek Substation. The Bailey Substation is located in Wharton County, off of County Road (CR) 112, approximately one mile northeast of the intersection of CR 112 and State Highway (SH) 60. The Jones Creek Substation is located in Brazoria County, off of CR 217, approximately one mile north of the intersection of SH 36 and CR 217. Please refer to the enclosed map depicting the project study area.

POWER Engineers, Inc. (POWER) has been contracted by CenterPoint Energy to prepare an Environmental Assessment and Alternative Route Analysis to support an application for a Certificate of Convenience and Necessity for the Public Utility Commission of Texas (PUC). POWER is identifying environmental and land use constraints within the study area that will be incorporated into the creation of an environmental and land use constraints map. Based on this information, POWER will identify potential alternative routes for the proposed transmission line project.

CenterPoint Energy and POWER recognize that this is a difficult time in many of Texas's coastal counties, and we hope that you, your family, and everyone in your community are safe and recovering from the impacts of Hurricane Harvey. We know that the recovery work is just beginning and that many organizations, including yours, are undertaking significant efforts to help rebuild and assist your community. In light of this, we also understand that you and your staff have important tasks that may take precedence over responding to our request for feedback and other information related to this project. However, CenterPoint Energy also felt it was important to share information about the project now so that affected communities are informed as early as possible. CenterPoint Energy also plans to follow-up with stakeholders again during the fall of 2017 to be sure those that do not have time to devote to feedback on this project now, will have the opportunity to give input as soon as they are able.

September 11, 2017

If you can at this time, we are requesting that your agency/office provide information concerning environmental and land use constraints or other issues of interest to your agency/office within the study area. Your input will be an important consideration in the evaluation of alternative routes and in the assessment of potential impacts of those routes. In addition, we would appreciate receiving information about any permits, easements, or other approvals by your agency/office that you believe could affect this project, or if you are aware of any major proposed development or construction in the study area. Upon PUC certification of a final route for the proposed project, CenterPoint Energy will identify and obtain necessary permits, if required, from your agency/office.

Thank you for your assistance with this proposed electric transmission line project. Please contact me at 281-765-5507 or by e-mail, lisa.barko@powereng.com, if you have any questions or require additional information. We would appreciate receiving your reply by September 29, 2017.

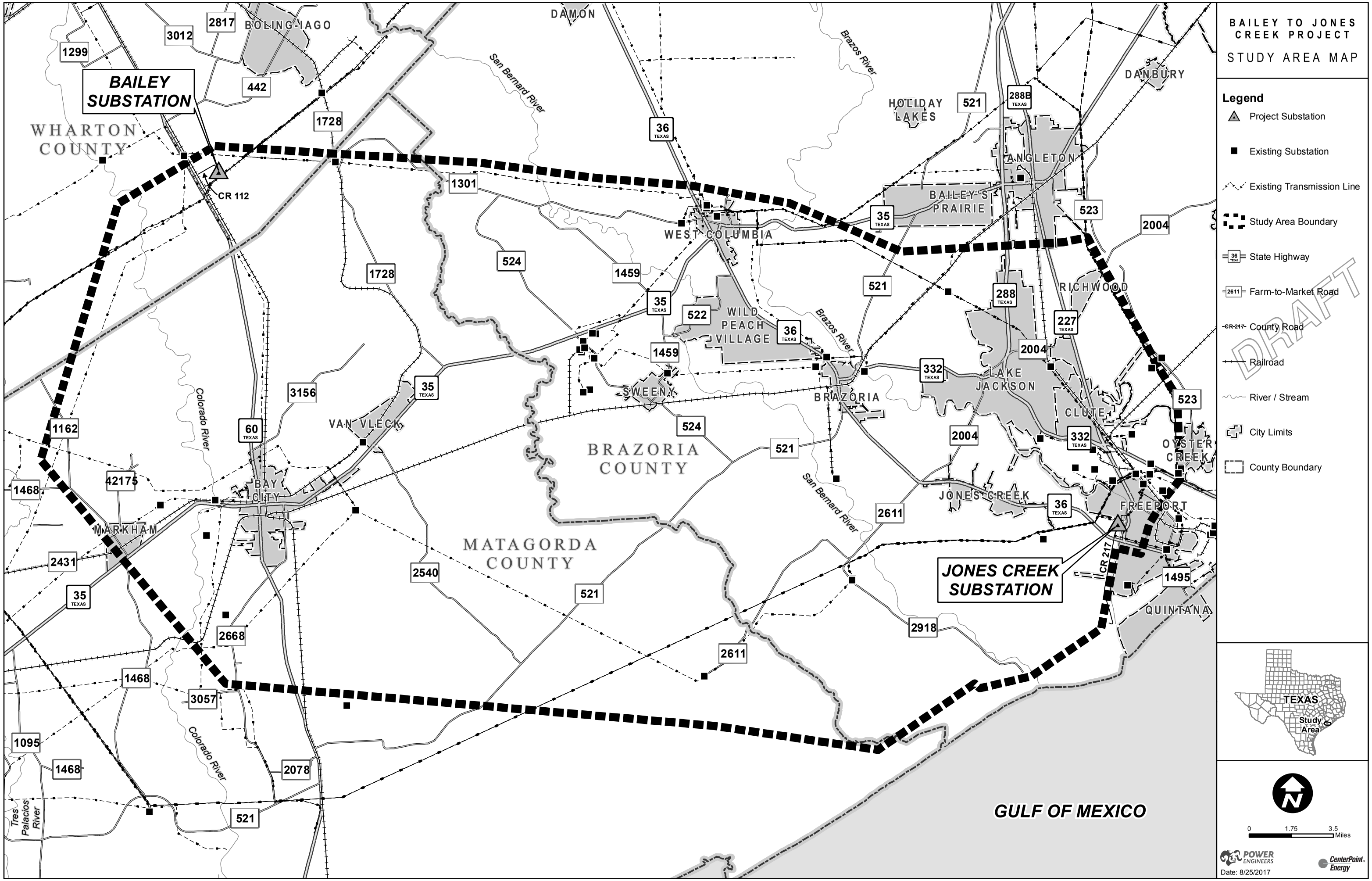
Sincerely,

Lisa Barko Meaux

Lisa Barko Meaux
Project Manager
Department Manager

Enclosure(s): Study Area Map

c: ProjectWise 147806


BAILEY TO JONES CREEK PROJECT
STUDY AREA MAP
Legend
Project Substation
Existing Substation
Existing Transmission Line
Study Area Boundary
State Highway
Farm-to-Market Road
County Road
Railroad
River / Stream
City Limits
County Boundary
DRAFT
BAILEY SUBSTATION
JONES CREEK SUBSTATION
WHARTON COUNTY
BRAZORIA COUNTY
MATAGORDA COUNTY
GULF OF MEXICO
BOLING-IAGO
DAMON
HOLIDAY LAKES
DANBURY
ANGLETON
BAILEY'S PRAIRIE
WEST COLUMBIA
WILD PEACH VILLAGE
RICHWOOD
LAKE JACKSON
CLUTE
OYSTER CREEK
FREEPORT
JONES CREEK
QUINTANA
BRAZORIA
SWEENY
VAN VLECK
BAY CITY
MARKHAM
CR 112
CR 217
San Bernard River
Brazos River
Colorado River
Tres Palacios River
TEXAS
Study Area
0 1.75 3.5 Miles
POWER ENGINEERS
CenterPoint Energy
Date: 8/25/2017

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U.S. Department
of Transportation
**Federal Aviation
Administration**

Southwest Region
10101 Hillwood Parkway
Fort Worth, TX 76177

SEP 15 2017

Lisa Meaux
Power Engineers, Inc.
16825 Northchase Drive
Suite 1200
Houston, TX 77060

Dear Ms. Meaux:

This is in response to your September 11, 2017 correspondence concerning a proposed new double-circuit 345-kilovolt transmission line in Brazoria, Matagorda, and Wharton Counties, Texas. You requested information concerning environmental and land use constraints or other issues within the study area. You also requested information regarding any permits, easements, or other approvals by the agency that may affect the project.

As stated in Title 14 of the Code of Federal Regulations (14 CFR) Part 77, Objects that Affect the Navigable Airspace, the prime objectives of the FAA are to promote air safety and the efficient use of the navigable airspace.

To accomplish this mission, aeronautical studies are conducted based on information provided by the proponents on FAA Form 7460-1, Notice of Proposed Construction or Alteration. If your organization is planning to sponsor any construction or alterations which may affect navigable airspace, you must file FAA Form 7460-1 electronically via https://oeaaa.faa.gov/oeaaa/external/portal.jsp.

For future reference, you may contact the Obstruction Evaluation Group at 10101 Hillwood Parkway, Fort Worth, Texas 76177 or (817) 222-5934.

Sincerely,

Michael C. O'Harra

Michael C. O'Harra
Acting Regional Administrator,
Southwest Region

CC: Obstruction Evaluation Group, AJV-15

+U. S. Department of Homeland Security
FEMA Region 6
800 North Loop 288
Denton, TX 76209-3698

FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION VI
MITIGATION DIVISION

RE: Bailey to Jones Creek Project – Project No. 147806

NOTICE REVIEW/ENVIRONMENTAL CONSULTATION

☐ We have no comments to offer. ☒ We offer the following comments:

WE WOULD REQUEST THAT THE COMMUNITY FLOODPLAIN ADMINISTRATOR BE CONTACTED FOR THE REVIEW AND POSSIBLE PERMIT REQUIREMENTS FOR THIS PROJECT. IF FEDERALLY FUNDED, WE WOULD REQUEST PROJECT TO BE IN COMPLIANCE WITH EO11988 & EO 11990.

Joe Ripple
Brazoria County Floodplain Administrator
451 North Velasco Street
Suite 210
Angleton, TX 77515
joer@brazoria-county.com
(979) 864-1272

Monica Martin
Wharton County Floodplain Administrator
315 East Milan Street
Suite 102
Wharton, TX 77488
monica.martin@co.wharton.tx.us
(979) 532-8587

Lisa Krobot
Matagorda County Floodplain Administrator
2200 7th Street, 1st Floor
Bay City, TX 77414
lkrobot@co.matagorda.tx.us
(979) 244-2717

REVIEWER:

Lauren H. Fulton, CFM
Floodplain Management and Insurance Branch
Mitigation Division
(940) 898-5474

DATE: September 20, 2017

17-9-40328

Date Rec'd: 9/15/17		
Rec'd by: KL		
	Action	Info
RA		X
Deputy RA		X
XA		
Analyst		
RES		
REC		
MIT	X	
MSD		
NP		
Grants		
File		X
Suspense Date: 9/29/17		

POWER ENGINEERS, INC.
16825 NORTHCHASE DRIVE
SUITE 1200
HOUSTON, TX 77060 USA

PHONE 281-765-5500
FAX 281-765-5599

September 11, 2017
(via Mail)

Mr. Tony Robinson
Region 6 Administrator
Federal Emergency Management Agency
FRC 800 N. Loop 288
Denton, TX 76209-3698

Subject: Bailey to Jones Creek Project
Brazoria, Matagorda and Wharton Counties, TX
POWER Engineers, Inc. Project No. 147806

Dear Mr. Robinson:

CenterPoint Energy Houston Electric, LLC (CenterPoint Energy) is proposing to construct a new double-circuit 345 kilovolt (kV) electric transmission line located in Brazoria, Matagorda and Wharton Counties, Texas. The new transmission line will connect the existing CenterPoint Energy Bailey Substation and the existing CenterPoint Energy Jones Creek Substation. The Bailey Substation is located in Wharton County, off of County Road (CR) 112, approximately one mile northeast of the intersection of CR 112 and State Highway (SH) 60. The Jones Creek Substation is located in Brazoria County, off of CR 217, approximately one mile north of the intersection of SH 36 and CR 217. Please refer to the enclosed map depicting the project study area.

POWER Engineers, Inc. (POWER) has been contracted by CenterPoint Energy to prepare an Environmental Assessment and Alternative Route Analysis to support an application for a Certificate of Convenience and Necessity for the Public Utility Commission of Texas (PUC). POWER is identifying environmental and land use constraints within the study area that will be incorporated into the creation of an environmental and land use constraints map. Based on this information, POWER will identify potential alternative routes for the proposed transmission line project.

CenterPoint Energy and POWER recognize that this is a difficult time in many of Texas's coastal counties, and we hope that you, your family, and everyone in your community are safe and recovering from the impacts of Hurricane Harvey. We know that the recovery work is just beginning and that many organizations, including yours, are undertaking significant efforts to help rebuild and assist your community. In light of this, we also understand that you and your staff have important tasks that may take precedence over responding to our request for feedback and other information related to this project. However, CenterPoint Energy also felt it was important to share information about the project now so that affected communities are informed as early as possible. CenterPoint Energy also plans to follow-up with stakeholders again during the fall of 2017 to be sure those that do not have time to devote to feedback on this project now, will have the opportunity to give input as soon as they are able.

September 11, 2017

If you can at this time, we are requesting that your agency/office provide information concerning environmental and land use constraints or other issues of interest to your agency/office within the study area. Your input will be an important consideration in the evaluation of alternative routes and in the assessment of potential impacts of those routes. In addition, we would appreciate receiving information about any permits, easements, or other approvals by your agency/office that you believe could affect this project, or if you are aware of any major proposed development or construction in the study area. Upon PUC certification of a final route for the proposed project, CenterPoint Energy will identify and obtain necessary permits, if required, from your agency/office.

Thank you for your assistance with this proposed electric transmission line project. Please contact me at 281-765-5507 or by e-mail, lisa.barko@powereng.com, if you have any questions or require additional information. We would appreciate receiving your reply by September 29, 2017.

Sincerely,

Lisa Barko Meaux

Lisa Barko Meaux
Project Manager
Department Manager

Enclosure(s): Study Area Map

c: ProjectWise 147806

Meaux, Lisa

From: Villarreal, Carlos - NRCS, Temple,TX <Carlos.Villarreal@tx.usda.gov>
Sent: Tuesday, September 26, 2017 4:04 PM
To: Meaux, Lisa
Subject: Extension Period - Bailey to Jones Creek Project

Lisa Barko Meaux,

Due to the recent hurricane activities in southeast Texas, our office has shifted our workload to accommodate first responders and assistance personnel. I am asking for a 30-day extension period for the completion of the Environmental Assessment concerning the Bailey to Jones Creek Project.

Thank you for your understanding with this matter.

Best Regards,

Carlos J. Villarreal
Soil Scientist
Natural Resources Conservation Service
United States Department of Agriculture
o. 254.742.9836
c. 254.316.1458

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USDA
United States Department of Agriculture

Natural Resources
Conservation Service

State Office

101 S. Main Street
Temple, TX 76501
Voice 254.742.9800
Fax 254.742.9819

October 19, 2017

POWER Engineers, Inc.
16825 Northchase Drive, Suite 1200
Houston, Texas 77060

Attention: Lisa Barko Meaux, Project Manager

Subject: LNU-Farmland Protection
Proposed Bailey to Jones Creek Project
NEPA/FPPA Evaluation
Brazoria, Matagorda, Wharton Counties, Texas

We have reviewed the information provided in your correspondence dated September 11, 2017 concerning the proposed Bailey to Jones Creek Project located in the Brazoria, Matagorda, and Wharton Counties, Texas. This review is part of the National Environmental Policy Act (NEPA) evaluation for the U.S. Department of Agriculture, Rural Development (RD). We have evaluated the proposed site as required by the Farmland Protection Policy Act (FPPA).

The proposed site may involve soils designated as areas of Prime Farmland; however, we consider the installation of above ground transmission lines as a minimal activity. The project description includes the use of existing electric substations and does not involve additions to the structure's footprint. Due to these reasons, the proposed project is exempt from provisions of FPPA and no further consideration from protection is required.

The proposed site involves USDA-NRCS floodwater retarding structures (FRS) or Wetland Reserve Program (WRP) conservation easements within areas of Brazoria and Matagorda Counties. When a final route is selected, we ask that you resubmit a request to ensure these areas will not interfere with the preferred project corridor. We will recommend that the entities developing these areas continue coordination with the Texas Parks and Wildlife Department and the US Fish and Wildlife Service to avoid adverse impacts to wetland ecosystems and habitats.

Along the project area, vehicle trafficability is limited in major extent due to low soil strength and high shrink-swell potential, respectively. Please find the attached percent clay maps to observe areas where these limitations occur. Caution should be exercised while transporting construction equipment and construction traffic should be limited as to reduce soil erosion and protect adjacent potential wetlands.

We recommend using our product delivery service, Web Soil Survey (WSS), to produce a custom soil resource report of the county or study area. Please note that

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the study area may not exceed 100,000 acres when drawing your Area of Interest (AOI).

We strongly encourage the use of acceptable erosion control methods during the construction of this project.

If you have further questions, please contact me at 254.742.9836 or by email at carlos.villarreal@tx.usda.gov.

Sincerely,

CARLOS VILLARREAL

Digitally signed by CARLOS VILLARREAL
Date: 2017.10.19 16:21:54 -05'00'

Carlos J. Villarreal
NRCS Soil Scientist

Attachment: Percent Clay – Brazoria County, Texas
Percent Clay – Matagorda County, Texas
Percent Clay – Wharton County, Texas

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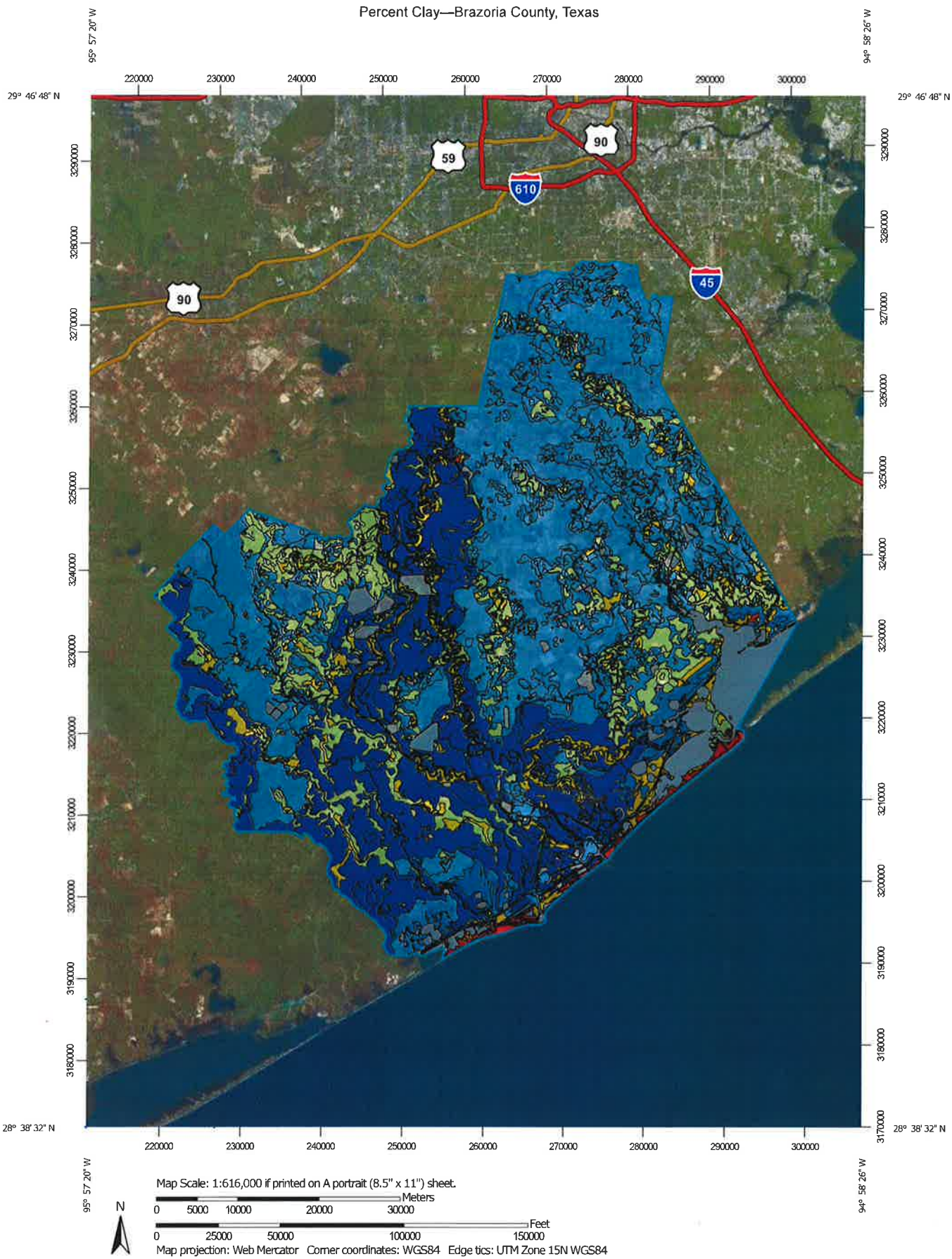
Percent Clay—Brazoria County, Texas
95° 57' 20" W
94° 58' 26" W
29° 46' 48" N
28° 38' 32" N
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230000
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Map Scale: 1:616,000 if printed on A portrait (8.5" x 11") sheet.
Meters
0 5000 10000 20000 30000
Feet
0 25000 50000 100000 150000
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- <= 7.0
- > 7.0 and <= 25.3
- > 25.3 and <= 37.0
- > 37.0 and <= 55.1
- > 55.1 and <= 73.6
- Not rated or not available

Soil Rating Lines
- <= 7.0
- > 7.0 and <= 25.3
- > 25.3 and <= 37.0
- > 37.0 and <= 55.1
- > 55.1 and <= 73.6
- Not rated or not available

Soil Rating Points
- <= 7.0
- > 7.0 and <= 25.3
- > 25.3 and <= 37.0
- > 37.0 and <= 55.1
- > 55.1 and <= 73.6
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Brazoria County, Texas
Survey Area Data: Version 13, Sep 22, 2016

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

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Percent Clay

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
1	Aris fine sandy loam	20.1	5,278.3	0.6%
2	Asa silt loam, 0 to 1 percent slopes, rarely flooded	19.2	12,464.8	1.3%
3	Asa silty clay loam, 0 to 1 percent slopes, rarely flooded	35.2	36,991.8	3.9%
4	Asa-Urban land complex	24.6	1,799.6	0.2%
5	Beaches	1.0	1,440.5	0.2%
6	Bacliff clay, 0 to 1 percent slopes, rarely flooded	44.9	19,046.2	2.0%
7	Bernard clay loam, 0 to 1 percent slopes	43.2	65,939.2	6.9%
8	Bernard-Edna complex, 0 to 1 percent slopes	43.2	49,028.9	5.1%
9	Bernard-Urban land complex	37.0	2,273.3	0.2%
10	Brazoria clay, 0 to 1 percent slopes, rarely flooded	72.6	42,490.7	4.5%
11	Brazoria clay, 1 to 3 percent slopes, rarely flooded	72.6	2,329.3	0.2%
12	Clemville silty clay loam, 0 to 1 percent slopes, occasionally flooded	27.5	3,595.7	0.4%
13	Edna loam, 0 to 1 percent slopes	32.6	37,902.3	4.0%
14	Edna fine sandy loam, 1 to 3 percent slopes	33.6	5,467.5	0.6%
15	Edna-Aris complex, 0 to 1 percent slopes	30.5	25,966.2	2.7%
16	Follet clay loam, 0 to 1 percent slopes, frequently flooded	22.0	3,799.5	0.4%
17	Francitas clay loam, 0 to 1 percent slopes, rarely flooded	41.5	15,473.2	1.6%
18	Galveston fine sand, 0 to 3 percent slopes, occasionally flooded	0.2	1,391.8	0.1%

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
19	Harris clay, 0 to 1 percent slopes, frequently flooded, tidal	50.0	21,554.8	2.3%
20	Harris-Tracosa complex	50.0	5,268.8	0.6%
21	Ijam clay	46.4	7,719.1	0.8%
22	Ijam-Urban land complex	46.8	1,785.2	0.2%
23	Kenney loamy fine sand, 0 to 2 percent slopes	7.0	154.0	0.0%
24	Lake Charles clay, 0 to 1 percent slopes	53.5	257,062.7	27.0%
25	Lake Charles clay, 2 to 5 percent slopes	55.1	2,185.6	0.2%
26	Lake Charles-Urban land complex	50.0	821.5	0.1%
27	Leton loam	17.5	5,143.0	0.5%
28	Leton-Aris complex	20.9	3,927.9	0.4%
29	Morey silt loam	23.3	1,525.9	0.2%
30	Mustang fine sand, 0 to 1 percent slopes, frequently flooded, frequently ponded	1.1	2,245.5	0.2%
31	Madre fine sand, 0 to 1 percent slopes, occasionally flooded, frequently ponded	1.4	3,776.6	0.4%
32	Narta fine sandy loam, 0 to 1 percent slopes, rarely flooded	30.5	14,217.1	1.5%
33	Norwood loam, 0 to 1 percent slopes, rarely flooded	18.8	13,224.7	1.4%
34	Norwood silt loam, 1 to 5 percent slopes, rarely flooded	20.6	2,144.5	0.2%
35	Norwood-Asa complex, 1 to 8 percent slopes	33.2	2,955.4	0.3%
36	Pledger clay, 0 to 1 percent slopes, rarely flooded	69.9	134,931.2	14.2%
37	Pledger-Urban land complex	60.0	919.1	0.1%
38	Churnabog clay, 0 to 1 percent slopes, frequently flooded, occasonally ponded	71.8	6,122.1	0.6%
39	Surfside clay, 0 to 1 percent slopes, occasionally flooded	73.6	40,543.4	4.3%

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
40	Tatlum clay loam, 0 to 1 percent slopes, very frequently flooded, occasionally ponded	30.0	1,621.6	0.2%
41	Tracosa mucky clay	47.5	2,182.6	0.2%
42	Velasco clay, 0 to 1 percent slopes, frequently flooded	70.6	6,653.3	0.7%
43	Veston fine sandy loam, 0 to 1 percent slopes, frequently flooded	16.6	3,771.4	0.4%
44	Veston silty clay loam, strongly saline	25.3	4,388.6	0.5%
W	Water		72,801.9	7.6%
Totals for Area of Interest			**952,326.3**	**100.0%**

Description

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. The estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Most of the material is in one of three groups of clay minerals or a mixture of these clay minerals. The groups are kaolinite, smectite, and hydrous mica, the best known member of which is illite.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

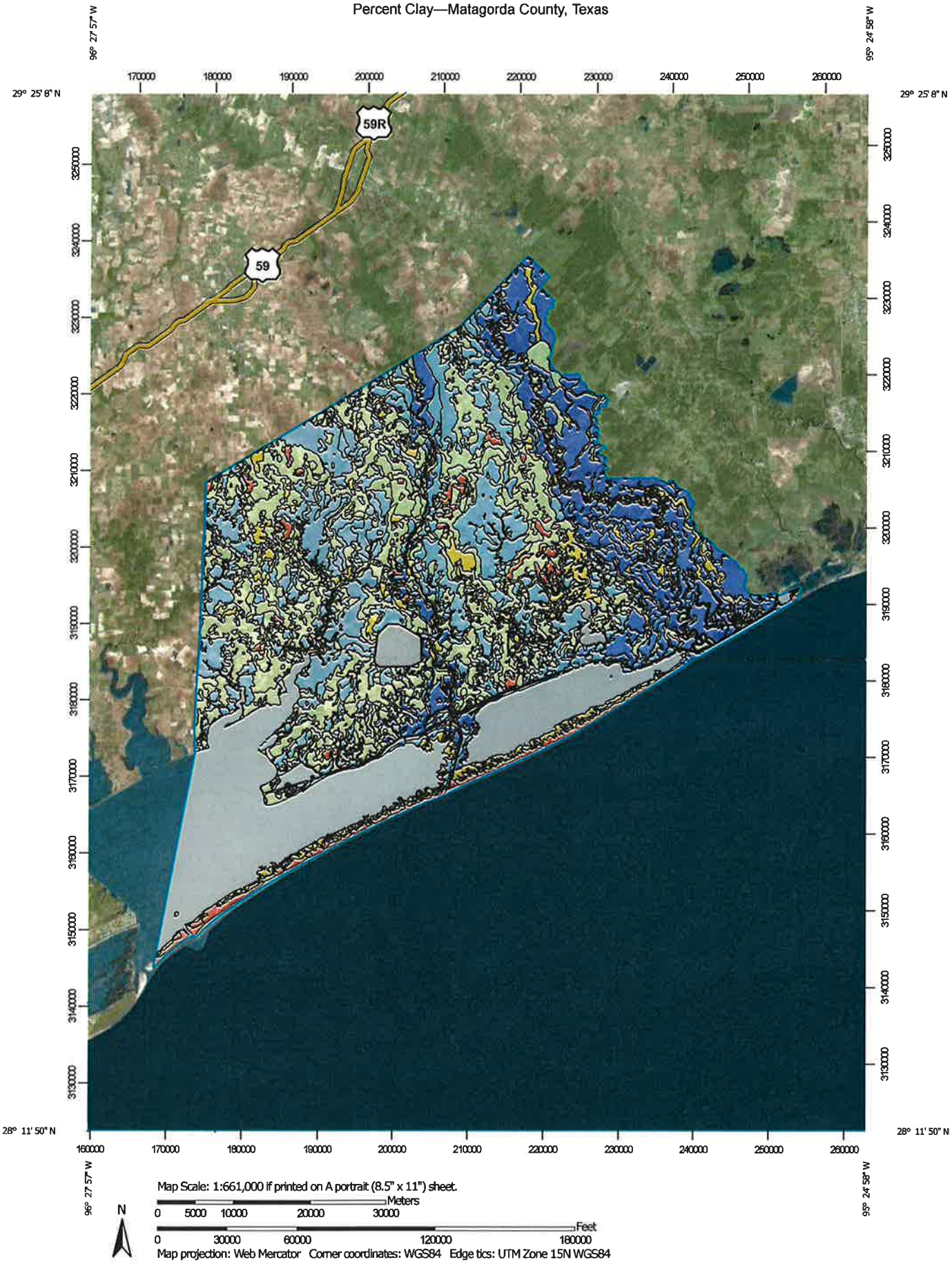
Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 50

Units of Measure: Centimeters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95° 24' 58" W
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28° 11' 50" N
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Meters
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Feet
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N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- <= 9.5
- > 9.5 and <= 25.0
- > 25.0 and <= 36.7
- > 36.7 and <= 52.5
- > 52.5 and <= 73.6
- Not rated or not available

Soil Rating Lines
- <= 9.5
- > 9.5 and <= 25.0
- > 25.0 and <= 36.7
- > 36.7 and <= 52.5
- > 52.5 and <= 73.6
- Not rated or not available

Soil Rating Points
- <= 9.5
- > 9.5 and <= 25.0
- > 25.0 and <= 36.7
- > 36.7 and <= 52.5
- > 52.5 and <= 73.6
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Matagorda County, Texas
Survey Area Data: Version 12, Sep 22, 2016

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

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Percent Clay

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
Aa	Asa silt loam, 0 to 1 percent slopes, rarely flooded	19.2	16,433.1	1.9%
As	Asa silty clay loam, 0 to 1 percent slopes, rarely flooded	35.2	9,475.8	1.1%
Az	Asa silty clay loam, saline, occasionally flooded	29.8	5,369.2	0.6%
BaA	Bacliff clay, 0 to 1 percent slopes, rarely flooded	44.9	19,212.8	2.2%
Bb	Beaches	1.5	3,320.4	0.4%
Br	Brazoria clay, 0 to 1 percent slopes, rarely flooded	72.6	33,221.3	3.8%
CeA	Cieno sandy clay loam, 0 to 1 percent slopes	26.8	1,964.5	0.2%
Cm	Clemville silty clay loam, 0 to 1 percent slopes, occasionally flooded	27.5	5,476.8	0.6%
DaA	Dacosta sandy clay loam, 0 to 1 percent slopes	32.0	104,458.5	11.8%
DAM	Dams		559.7	0.1%
EdA	Edna loam, 0 to 1 percent slopes	32.6	71,748.7	8.1%
EoA	Edna silty clay, 0 to 1 percent slopes, overwash	30.2	6,226.3	0.7%
ExA	Edna-Cieno complex, 0 to 1 percent slopes, frequently ponded	31.8	5,044.0	0.6%
FaA	Faddin loam, 0 to 1 percent slopes	23.0	1,334.1	0.2%
Fe	Follet clay loam, 0 to 1 percent slopes, frequently flooded	22.0	9,216.0	1.0%
FoB	Fordtran loamy fine sand, 0 to 5 percent slopes	8.5	1,649.1	0.2%
FrA	Francitas clay loam, 0 to 1 percent slopes, rarely flooded	41.5	9,250.7	1.0%

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
FuC	Fulshear fine sandy loam, 2 to 5 percent slopes	25.0	3,136.0	0.4%
GaB	Galveston fine sand, 0 to 3 percent slopes, occasionally flooded	0.2	9,198.0	1.0%
Ha	Harris clay, 0 to 1 percent slopes, frequently flooded, tidal	50.0	11,389.6	1.3%
ImB	Ijam clay, 1 to 3 percent slopes	46.8	4,105.4	0.5%
KaB	Midfield loam, 0 to 2 percent slopes	32.9	3,172.4	0.4%
LaA	Laewest clay, 0 to 1 percent slopes	49.9	132,927.4	15.0%
LaB	Laewest clay, 1 to 3 percent slopes	49.2	5,047.9	0.6%
LaD2	Laewest clay, 3 to 8 percent slopes, eroded	49.4	412.7	0.0%
LoA	Laewest silty clay, 0 to 1 percent slopes, overwashed	52.5	11,461.4	1.3%
LtA	Livco-Dacosta complex, 0 to 1 percent slopes	27.8	13,315.3	1.5%
LvA	Livia silt loam, 0 to 1 percent slopes, rarely flooded	36.7	19,709.2	2.2%
M-W	Miscellaneous water		7,037.9	0.8%
MuA	Madre fine sand, 0 to 1 percent slopes, occasionally flooded, frequently ponded	1.4	2,077.8	0.2%
No	Norwood loam, 0 to 1 percent slopes, rarely flooded	18.8	6,308.0	0.7%
PaA	Palacios loam, 0 to 1 percent slopes, rarely flooded	34.4	18,077.8	2.0%
Pc	Placedo clay, 0 to 1 percent slopes, frequently flooded, occasionally ponded	45.0	8,331.3	0.9%
Pe	Pledger clay, 0 to 1 percent slopes, rarely flooded	69.9	61,391.2	6.9%
Pg	Pledger clay, occasionally flooded	64.0	11,354.2	1.3%
RoB	Riolomas fine sand, 1 to 3 percent slopes	15.7	1,275.1	0.1%

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
Sf	Churnabog clay, 0 to 1 percent slopes, frequently flooded, occasonally ponded	71.8	2,325.6	0.3%
Sr	Surfside clay, 0 to 1 percent slopes, occasionally flooded	73.6	23,698.4	2.7%
TfA	Tidehaven fine sandy loam, 0 to 1 percent slopes	15.6	14,678.6	1.7%
TxA	Texana fine sandy loam, 0 to 1 percent slopes	9.5	13,817.3	1.6%
TxB	Texana fine sandy loam, 1 to 3 percent slopes	21.7	7,348.5	0.8%
Ve	Velasco clay, 0 to 1 percent slopes, frequently flooded	70.6	10,017.0	1.1%
Vs	Veston fine sandy loam, 0 to 1 percent slopes, frequently flooded	16.6	7,213.9	0.8%
W	Water		172,931.3	19.5%
Totals for Area of Interest			**885,720.4**	**100.0%**

Description

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. The estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Most of the material is in one of three groups of clay minerals or a mixture of these clay minerals. The groups are kaolinite, smectite, and hydrous mica, the best known member of which is illite.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

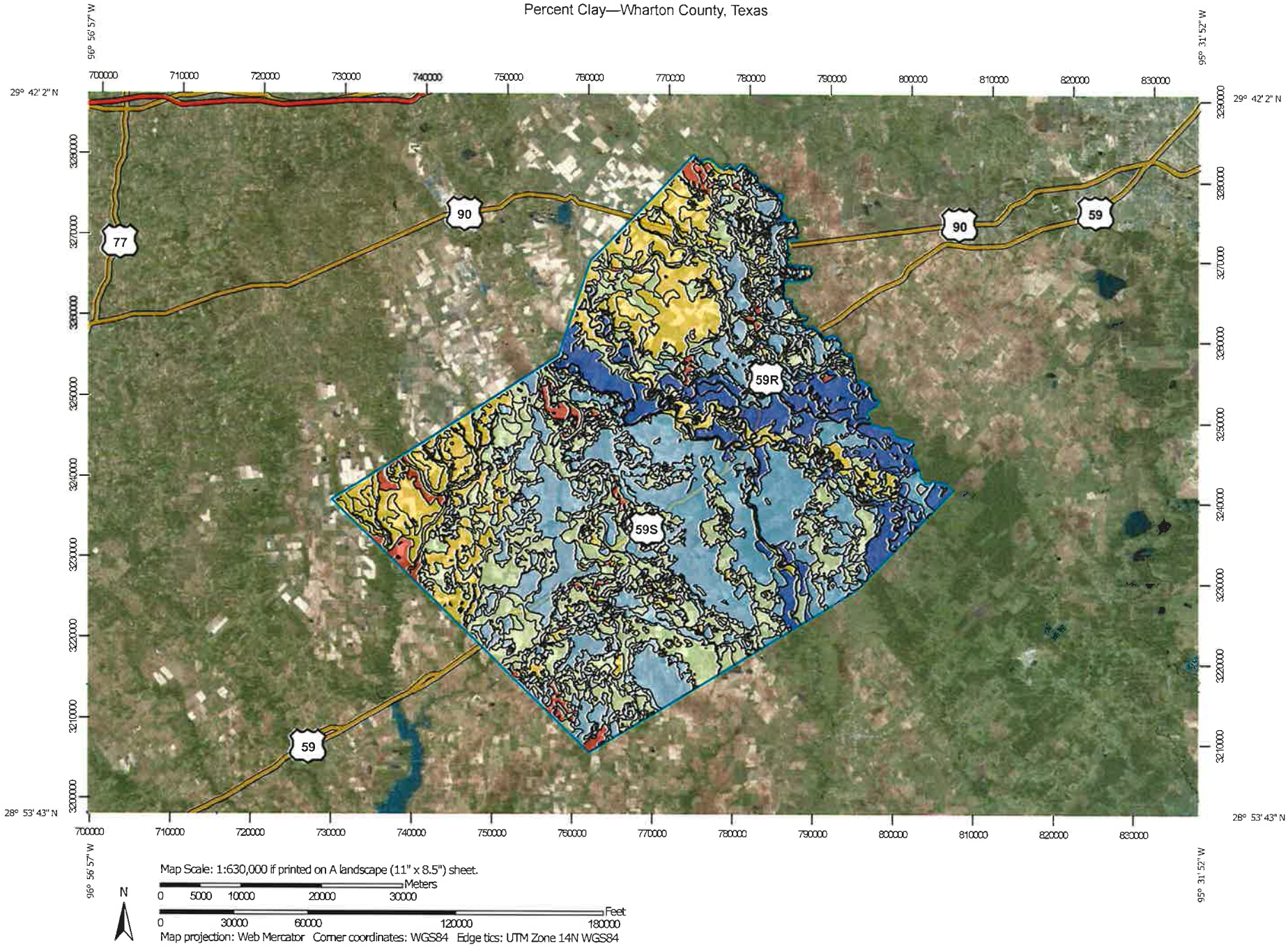
Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 50

Units of Measure: Centimeters

Percent Clay—Wharton County, Texas



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- <= 8.6
- > 8.6 and <= 18.5
- > 18.5 and <= 30.5
- > 30.5 and <= 54.2
- > 54.2 and <= 73.0
- Not rated or not available

Soil Rating Lines
- <= 8.6
- > 8.6 and <= 18.5
- > 18.5 and <= 30.5
- > 30.5 and <= 54.2
- > 54.2 and <= 73.0
- Not rated or not available

Soil Rating Points
- <= 8.6
- > 8.6 and <= 18.5
- > 18.5 and <= 30.5
- > 30.5 and <= 54.2
- > 54.2 and <= 73.0
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Wharton County, Texas
Survey Area Data: Version 11, Sep 21, 2016

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

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Percent Clay

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
AkB	Rupley and Kenney soils, undulating	5.0	3,368.9	0.5%
As	Asa silty clay loam, 0 to 1 percent slopes, rarely flooded	36.5	10,734.9	1.5%
BcA	Dacosta sandy clay loam, 0 to 1 percent slopes	29.5	52,077.0	7.4%
BcB	Dacosta sandy clay loam, 1 to 3 percent slopes	30.5	1,722.5	0.2%
BeA	Bernard-Edna complex, 0 to 1 percent slopes	37.7	47,160.0	6.7%
BP	Pits, borrow		43.2	0.0%
Br	Zalco and Navaca soils	4.0	3,020.4	0.4%
Cn	Clemville silty clay loam, 0 to 1 percent slopes, occasionally flooded	29.0	10,894.2	1.6%
Cr	Tidehaven fine sandy loam, 0 to 1 percent slopes	13.0	10,597.6	1.5%
Ea	Gladewater soils	64.9	3,752.8	0.5%
EdA	Edna loam, 0 to 1 percent slopes	22.4	110,095.1	15.7%
EdB	Edna fine sandy loam, 1 to 3 percent slopes	24.3	2,615.7	0.4%
EdcA	Edco fine sandy loam, 0 to 1 percent slopes	24.5	5,135.7	0.7%
Eh	Edna silty clay, 0 to 1 percent slopes, overwash	42.0	3,206.8	0.5%
EtA	Edna-Cieno complex, 0 to 1 percent slopes, frequently ponded	20.6	17,425.1	2.5%
GP	Pits, gravel		177.5	0.0%
HoB	Hockley fine sandy loam, 0 to 3 percent slopes	13.0	3,439.6	0.5%
KatA	Katy fine sandy loam, 0 to 1 percent slopes	6.4	238.1	0.0%
KeB	Kuy sand, 0 to 5 percent slopes	0.4	11,031.8	1.6%

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
KkC	Fulshear-Kenney complex, 5 to 8 percent slopes	18.5	1,368.0	0.2%
LcA	Lake Charles clay, 0 to 1 percent slopes	51.2	161,802.4	23.1%
LcB	Lake Charles clay, 2 to 5 percent slopes	54.2	1,939.6	0.3%
Md	Bernard loam, 0 to 1 percent slopes	29.1	11,864.5	1.7%
Me	Brazoria clay, 0 to 1 percent slopes, rarely flooded	73.0	55,095.5	7.9%
MidB	Midfield loam, 0 to 2 percent slopes	26.0	6,818.3	1.0%
MilB	Milby sand, 0 to 2 percent slopes	3.3	732.0	0.1%
Mp	Churnabog clay, 0 to 1 percent slopes, frequently flooded, occasonally ponded	71.4	986.1	0.1%
MrcA	Morales-Cieno complex, 0 to 1 percent slopes, frequently ponded	4.8	3,431.9	0.5%
NacA	Nada-Cieno complex, 0 to 1 percent slopes, frequently ponded	11.3	21,615.7	3.1%
NatA	Nada-Telf complex, 0 to 1 percent slopes	15.8	49,966.1	7.1%
NezB	Nez fine sandy loam, 0 to 2 percent slopes	11.0	8,854.1	1.3%
NoA	Norwood loam, 0 to 1 percent slopes, rarely flooded	15.4	21,015.4	3.0%
NoB	Norwood silt loam, 1 to 5 percent slopes, rarely flooded	20.5	4,250.2	0.6%
Nr	Mohat-Norwood complex, 1 to 8 percent slopes, frequently flooded	12.2	1,540.2	0.2%
Pc	Pledger clay, 0 to 1 percent slopes, rarely flooded	69.5	18,281.3	2.6%
SnkA	Snakecreek fine sandy loam, 0 to 1 percent slopes, frequently flooded	6.3	1,834.1	0.3%
TefA	Telf fine sandy loam, 0 to 1 percent slopes	9.7	17,279.1	2.5%
TefB	Telf fine sandy loam, 1 to 3 percent slopes	9.3	2,664.3	0.4%

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
TnaA	Texana fine sandy loam, 0 to 1 percent slopes	8.6	946.0	0.1%
TncA	Texana-Cieno complex, 0 to 1 percent slopes, frequently ponded	4.2	3,594.0	0.5%
Tp	Cieno soils, ponded	25.9	4,149.3	0.6%
W	Water		3,605.3	0.5%
Totals for Area of Interest			**700,370.3**	**100.0%**

Description

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. The estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Most of the material is in one of three groups of clay minerals or a mixture of these clay minerals. The groups are kaolinite, smectite, and hydrous mica, the best known member of which is illite.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 25

Units of Measure: Centimeters

Meaux, Lisa

From: Adkins, Cristina M CTR (US) <cristina.m.adkins.ctr@mail.mil>
Sent: Friday, October 13, 2017 11:58 AM
To: Meaux, Lisa
Subject: RE: [Non-DoD Source] RE: Bailey to Jones Creek Transmission Line Project Inquiry (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Good Afternoon Lisa,

Thank you for the additional information, I will forward it on to the services for further review.

V/r,
Cristina

Cristina Adkins
DoD Siting Clearinghouse
Office of the Assistant Secretary of Defense (Energy, Installations & Environment)
703-571-9057

E-mail: cristina.m.adkins.ctr@mail.mil
Corporate E-mail: osd.dod-siting-clearinghouse@mail.mil

Caution-http://www.acq.osd.mil/dodsc/
-----Original Message-----
From: lisa.barko@powereng.com [mailto:lisa.barko@powereng.com]
Sent: Friday, October 13, 2017 12:37 PM
To: Adkins, Cristina M CTR (US) <cristina.m.adkins.ctr@mail.mil>
Cc: denise.williams@powereng.com
Subject: [Non-DoD Source] RE: Bailey to Jones Creek Transmission Line Project Inquiry (UNCLASSIFIED)

All active links contained in this email were disabled. Please verify the identity of the sender, and confirm the authenticity of all links contained within the message prior to copying and pasting the address to a Web browser.

Ms. Adkins,

Thank you for your email, call and interest in the Bailey to Jones Creek Project. As we discussed on the telephone, at this time we do not have any proposed structure locations so we are unable to provide any project coordinates (lat/longs). The typical height of the structures, based off of similar projects, will likely range between 145 to 175 feet. The engineers are in the process of designing the structure for this project.

Attached, per you request, is a .kml of the study area boundary for the project. We look forward to receiving information on your system within the study area boundaries.

Please confirm receipt of this email at your earliest convenience.

Thank you,
Lisa

Lisa Barko Meaux
Project Manager
Environmental Department Manager
16825 Northchase Drive, Suite 1200
Houston, Texas 77060
281-765-5507 direct
713-962-8476 cell
lisa.barko@powereng.com

POWER Engineers, Inc.
Energy Facilities Communications Environmental Caution-www.powereng.com

-----Original Message-----
From: Adkins, Cristina M CTR (US) [Caution-mailto:cristina.m.adkins.ctr@mail.mil]
Sent: Thursday, October 05, 2017 9:17 AM
To: Meaux, Lisa
Subject: Bailey to Jones Creek Transmission Line Project Inquiry (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Good Morning Ms. Barko Meaux,

The DoD Siting Clearinghouse received your notification letter for the Bailey to Jones Creek Transmission Line project in Brazoria, Matagorda and Wharton Counties, Texas. It is currently under review by the military services, however they are requesting some additional information. Could you provide the project coordinates (lat/longs), as well as, the estimated project height? I appreciate your assistance with this. Please let me know if you are able to provide this information.

V/r,

Cristina Adkins
DoD Siting Clearinghouse
Office of the Assistant Secretary of Defense (Energy, Installations & Environment)
703-571-9057

E-mail: cristina.m.adkins.ctr@mail.mil
Corporate E-mail: osd.dod-siting-clearinghouse@mail.mil

Caution-http://www.acq.osd.mil/dodsc/

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
3400 DEFENSE PENTAGON
WASHINGTON, DC 20301-3400

ENERGY,
INSTALLATIONS
AND ENVIRONMENT

October 20, 2017

Lisa Barko Meaux
Project Manager
Power Engineers, Inc
16825 Northchase Drive, Suite 1200
Houston, TX 77060
Lisa.barko@powereng.com

Dear Ms. Barko Meaux,

As requested, the Department of Defense (DoD) Siting Clearinghouse coordinated within DoD an informal review of the proposed Bailey to Jones Creek Transmission Line project. The results of our informal review indicated that the transmission line project located in Brazoria, Matagorda, and Wharton Counties, Texas, as proposed, will have minimal impact on military operations conducted in this area.

Please note that this informal review by the DoD Siting Clearinghouse does not constitute an action under 49 United States Code Section 44718 and that the DoD is not bound by the conclusion arrived at under this informal review. Please contact me at steven.j.sample4.civ@mail.mil or at 703-571-0076 if you have any questions.

Sincerely,

Steven J. Sample
Deputy Director
DoD Siting Clearinghouse

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Texas Coastal Ecological Services Field Office
17629 El Camino Real, Suite 211
Houston, Texas 77058
281/286-8282 / (FAX) 281/488-5882

In Reply Refer To:
FWS/R2/TCESFO

February 1, 2016

Thank you for your request for threatened and endangered species, fish and wildlife, environmental, and/or aquatic resources information, comments, and/or recommendations within the United States Fish and Wildlife Service (Service) Texas Coastal Ecological Service's area (Houston Office) of responsibility.

In order to obtain information regarding fish and wildlife resources concerning a specific project or project area, we recommend that you first utilize the Service developed Information, Planning, and Conservation (IPaC) System. The IPaC system is designed for easy, public access to information about the natural resources for which the Service has trust or regulatory responsibility. Examples include threatened and endangered species, migratory birds, National Refuge lands, and National Wetlands Inventory wetlands. One of the primary goals of the IPaC system is to provide this information in a manner that assists people in planning their activities within the context of natural resource conservation. The IPaC system also assists people through the various regulatory consultation, permitting and approval processes administered by the Fish and Wildlife Service, helping achieve more effective and efficient results for both the project proponents and natural resources.

The IPaC system can be found at the following website address: http://ecos.fws.gov/ipac/ . Please note, by requesting an Official Species List you will receive an official consultation response letter and tracking number. If you still have questions concerning your project as it relates to fish and wildlife resources after visiting the IPaC system, please feel free to contact our office at the letterhead address above. We will be happy to assist you.

Sincerely,

Charles Ardizzone
Field Supervisor

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Texas Coastal Ecological Services Field Office
17629 El Camino Real #211
Houston, TX 77058
Phone: (281) 286-8282 Fax: (281) 488-5882
http://www.fws.gov/southwest/es/TexasCoastal/
http://www.fws.gov/southwest/es/ES_Lists_Main2.html

In Reply Refer To: May 14, 2018
Consultation Code: 02ETTX00-2018-SLI-1481
Event Code: 02ETTX00-2018-E-03122
Project Name: Bailey to Jones Creek Transmission Line Project

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

To Whom It May Concern:

The U.S. Fish and Wildlife Service (Service) field offices in Clear Lake, Tx, and Corpus Christi, Tx, have combined administratively to form the Texas Coastal Ecological Services Field Office. A map of the Texas Coastal Ecological Services Field Office area of responsibility can be found at: http://www.fws.gov/southwest/es/TexasCoastal/Map.html. All project related correspondence should be sent to the field office responsible for the area in which your project occurs. For projects located in southeast Texas please write to: Field Supervisor; U.S. Fish and Wildlife Service; 17629 El Camino Real Ste. 211; Houston, Texas 77058. For projects located in southern Texas please write to: Field Supervisor; U.S. Fish and Wildlife Service; P.O. Box 81468; Corpus Christi, Texas 78468-1468. For projects located in six counties in southern Texas (Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata) please write: Santa Ana NWR, ATTN: Ecological Services Sub Office, 3325 Green Jay Road, Alamo, Texas 78516.

The enclosed species list identifies federally threatened, endangered, and proposed to be listed species; designated critical habitat; and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project.

New information from updated surveys, changes in the abundance and distribution of species, changes in habitat conditions, or other factors could change the list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website http://ecos.fws.gov/ipac/ at regular intervals during project planning and implementation for updates to species list and information. An updated list may be

requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Candidate species have no protection under the Act but are included for consideration because they could be listed prior to the completion of your project. The other species information should help you determine if suitable habitat for these listed species exists in any of the proposed project areas or if project activities may affect species on-site, off-site, and/or result in "take" of a federally listed species.

"Take" is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. In addition to the direct take of an individual animal, habitat destruction or modification can be considered take, regardless of whether it has been formally designated as critical habitat, if the activity results in the death or injury of wildlife by removing essential habitat components or significantly alters essential behavior patterns, including breeding, feeding, or sheltering.

Section 7

Section 7 of the Act requires that all Federal agencies consult with the Service to ensure that actions authorized, funded or carried out by such agencies do not jeopardize the continued existence of any listed threatened or endangered species or adversely modify or destroy critical habitat of such species. It is the responsibility of the Federal action agency to determine if the proposed project may affect threatened or endangered species. If a "may affect" determination is made, the Federal agency shall initiate the section 7 consultation process by writing to the office that has responsibility for the area in which your project occurs.

Is not likely to adversely affect - the project may affect listed species and/or critical habitat; however, the effects are expected to be discountable, insignificant, or completely beneficial. Certain avoidance and minimization measures may need to be implemented in order to reach this level of effects. The Federal agency or the designated non-Federal representative should seek written concurrence from the Service that adverse effects have been eliminated. Be sure to include all of the information and documentation used to reach your decision with your request for concurrence. The Service must have this documentation before issuing a concurrence.

Is likely to adversely affect - adverse effects to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. If the overall effect of the proposed action is beneficial to the listed species but also is likely to cause some adverse effects to individuals of that species, then the proposed action "is likely to adversely affect" the listed species. An "is likely to adversely affect" determination requires the Federal action agency to initiate formal section 7 consultation with this office.

No effect - the proposed action will not affect federally listed species or critical habitat (i.e., suitable habitat for the species occurring in the project county is not present in or adjacent to the action area). No further coordination or contact with the Service is necessary. However, if the

project changes or additional information on the distribution of listed or proposed species becomes available, the project should be reanalyzed for effects not previously considered.

Regardless of your determination, the Service recommends that you maintain a complete record of the evaluation, including steps leading to the determination of affect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related articles.

Please be advised that while a Federal agency may designate a non-Federal representative to conduct informal consultations with the Service, assess project effects, or prepare a biological assessment, the Federal agency must notify the Service in writing of such a designation. The Federal agency shall also independently review and evaluate the scope and contents of a biological assessment prepared by their designated non-Federal representative before that document is submitted to the Service.

The Service's Consultation Handbook is available online to assist you with further information on definitions, process, and fulfilling Act requirements for your projects at: http://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf

Section 10

If there is no federal involvement and the proposed project is being funded or carried out by private interests and/or non-federal government agencies, and the project as proposed may affect listed species, a section 10(a)(1)(B) permit is recommended. The Habitat Conservation Planning Handbook is available at: http://www.fws.gov/endangered/esa-library/pdf/HCP_Handbook.pdf

Service Response

Please note that the Service strives to respond to requests for project review within 30 days of receipt, however, this time period is not mandated by regulation. Responses may be delayed due to workload and lack of staff. Failure to meet the 30-day timeframe does not constitute a concurrence from the Service that the proposed project will not have impacts to threatened and endangered species.

Proposed Species and/or Proposed Critical Habitat

While consultations are required when the proposed action may affect listed species, section 7(a)(4) was added to the ESA to provide a mechanism for identifying and resolving potential conflicts between a proposed action and proposed species or proposed critical habitat at an early planning stage. The action agency should seek conference from the Service to assist the action agency in determining effects and to advise the agency on ways to avoid or minimize adverse effect to proposed species or proposed critical habitat.

Candidate Species

Candidate species are species that are being considered for possible addition to the threatened and endangered species list. They currently have no legal protection under the ESA. If you find you have potential project impacts to these species the Service would like to provide technical

assistance to help avoid or minimize adverse effects. Addressing potential impacts to these species at this stage could better provide for overall ecosystem healh in the local area and ay avert potential future listing.

Several species of freshwater mussels occur in Texas and four are candidates for listing under the ESA. The Service is also reviewing the status of six other species for potential listing under the ESA. One of the main contributors to mussel die offs is sedimentation, which smothers and suffocates mussels. To reduce sedimentation within rivers, streams, and tributaries crossed by a project, the Service recommends that that you implement the best management practices found at: http://www.fws.gov/southwest/es/TexasCoastal/FreshwaterMussels.html.

Candidate Conservation Agreements (CCAs) or Candidate Conservation Agreements with Assurances (CCAAs) are voluntary agreements between the Service and public or private entities to implement conservation measures to address threats to candidate species. Implementing conservation efforts before species are listed increases the likelihood that simpler, flexible, and more cost-effective conservation options are available. A CCAA can provide participants with assurances that if they engage in conservation actions, they will not be required to implement additional conservation measures beyond those in the agreement. For additional information on CCAs/CCAAs please visit the Service's website at http://www.fws.gov/endangered/what-we-do/cca.html.

Migratory Birds

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. Many may nest in trees, brush areas or other suitable habitat. The Service recommends activities requiring vegetation removal or disturbance avoid the peak nesting period of March through August to avoid destruction of individuals or eggs. If project activities must be conducted during this time, we recommend surveying for active nests prior to commencing work. A list of migratory birds may be viewed at http://www.fws.gov/migratorybirds/regulationspolicies/mbta/mbtandx.html.

The bald eagle (*Haliaeetus leucocephalus*) was delisted under the Act on August 9, 2007. Both the bald eagle and the goden eagle (*Aquila chrysaetos*) are still protected under the MBTA and BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, by making it unlawful to "disturb" eagles. Under the BGEPA, the Service may issue limited permits to incidentally "take" eagles (e.g., injury, interfering with normal breeding, feeding, or sheltering behavior nest abandonment). For more information on bald and golden eagle management guidlines, we recommend you review information provided at http://www.fws.gov/midwest/eagle/pdf/NationalBaldEagleManagementGuidelines.pdf.

The construction of overhead power lines creates threats of avian collision and electrocution. The Service recommends the installation of underground rather than overhead power lines whenever possible. For new overhead lines or retrofitting of old lines, we recommend that project

developers implement, to the maximum extent practicable, the Avian Power Line Interaction Committee guidelines found at http://www.aplic.org/.

Meteorological and communication towers are estimated to kill millions of birds per year. We recommend following the guidance set forth in the Service Interim Guidelines for Recommendations on Communications Tower Siting, Constructions, Operation and Decommissioning, found online at: http://www.fws.gov/habitatconservation/communicationtowers.html, to minimize the threat of avian mortality at these towers. Monitoring at these towers would provide insight into the effectiveness of the minimization measures. We request the results of any wildlife mortality monitoring at towers associated with this project.

We request that you provide us with the final location and specifications of your proposed towers, as well as the recommendations implemented. A Tower Site Evaluation Form is also available via the above website; we recommend you complete this form and keep it in your files. If meteorological towers are to be constructed, please forward this completed form to our office.

More information concerning sections 7 and 10 of the Act, migratory birds, candidate species, and landowner tools can be found on our website at: http://www.fws.gov/southwest/es/TexasCoastal/ProjectReviews.html.

Wetlands and Wildlife Habitat

Wetlands and riparian zones provide valuable fish and wildlife habitat as well as contribute to flood control, water quality enhancement, and groundwater recharge. Wetland and riparian vegetation provides food and cover for wildlife, stabilizes banks and decreases soil erosion. These areas are inherently dynamic and very sensitive to changes caused by such activities as overgrazing, logging, major construction, or earth disturbance. Executive Order 11990 asserts that each agency shall provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial value of wetlands in carrying out the agency's responsibilities. Construction activities near riparian zones should be carefully designed to minimize impacts. If vegetation clearing is needed in these riparian areas, they should be re-vegetated with native wetland and riparian vegetation to prevent erosion or loss of habitat. We recommend minimizing the area of soil scarification and initiating incremental re-establishment of herbaceous vegetation at the proposed work sites. Denuded and/or disturbed areas should be re-vegetated with a mixture of native legumes and grasses. Species commonly used for soil stabilization are listed in the Texas Department of Agriculture's (TDA) Native Tree and Plant Directory, available from TDA at P.O. Box 12847, Austin, Texas 78711. The Service also urges taking precautions to ensure sediment loading does not occur to any receiving streams in the proposed project area. To prevent and/or minimize soil erosion and compaction associated with construction activities, avoid any unnecessary clearing of vegetation, and follow established rights-of-way whenever possible. All machinery and petroleum products should be stored outside the floodplain and/or wetland area during construction to prevent possible contamination of water and soils.

Wetlands and riparian areas are high priority fish and wildlife habitat, serving as important sources of food, cover, and shelter for numerous species of resident and migratory wildlife. Waterfowl and other migratory birds use wetlands and riparian corridors as stopover, feeding, and nesting areas. We strongly recommend that the selected project site not impact wetlands and riparian areas, and be located as far as practical from these areas. Migratory birds tend to concentrate in or near wetlands and riparian areas and use these areas as migratory flyways or corridors. After every effort has been made to avoid impacting wetlands, you anticipate unavoidable wetland impacts will occur; you should contact the appropriate U.S. Army Corps of Engineers office to determine if a permit is necessary prior to commencement of construction activities.

If your project will involve filling, dredging, or trenching of a wetland or riparian area it may require a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (COE). For permitting requirements please contact the U.S. Corps of Engineers, District Engineer, P.O. Box 1229, Galveston, Texas 77553-1229, (409) 766-3002.

Beneficial Landscaping

In accordance with Executive Order 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping (42 C.F.R. 26961), where possible, any landscaping associated with project plans should be limited to seeding and replanting with native species. A mixture of grasses and forbs appropriate to address potential erosion problems and long-term cover should be planted when seed is reasonably available. Although Bermuda grass is listed in seed mixtures, this species and other introduced species should be avoided as much as possible. The Service also recommends the use of native trees, shrubs, and herbaceous species that are adaptable, drought tolerant and conserve water.

State Listed Species

The State of Texas protects certain species. Please contact the Texas Parks and Wildlife Department (Endangered Resources Branch), 4200 Smith School Road, Austin, Texas 78744 (telephone 512/389-8021) for information concerning fish, wildlife, and plants of State concern or visit their website at: http://www.tpwd.state.tx.us/huntwild/wild/wildlife_diversity/texas_rare_species/listed_species/.

If we can be of further assistance, or if you have any questions about these comments, please contact 281/286-8282 if your project is in southeast Texas, or 361/994-9005, ext. 246, if your project is in southern Texas. Please refer to the Service consultation number listed above in any future correspondence regarding this project.

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

Texas Coastal Ecological Services Field Office
17629 El Camino Real #211
Houston, TX 77058
(281) 286-8282

Project Summary

Consultation Code: 02ETTX00-2018-SLI-1481

Event Code: 02ETTX00-2018-E-03122

Project Name: Bailey to Jones Creek Transmission Line Project

Project Type: TRANSMISSION LINE

Project Description: Bailey to Jones Creek Transmission Line Project

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/29.01250181771035N95.72792776546814W



Counties: Brazoria, TX | Matagorda, TX | Wharton, TX

Endangered Species Act Species

There is a total of 14 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
West Indian Manatee *Trichechus manatus* There is **final** critical habitat for this species. Your location is outside the critical habitat. ***This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.*** Species profile: https://ecos.fws.gov/ecp/species/4469	Threatened

Birds

NAME	STATUS
Least Tern *Sterna antillarum* Population: interior pop. No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: ▪ Wind related projects within migratory route. Species profile: https://ecos.fws.gov/ecp/species/8505	Endangered
Northern Aplomado Falcon *Falco femoralis septentrionalis* Population: Wherever found, except where listed as an experimental population No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1923	Endangered
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot *Calidris canutus rufa* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane *Grus americana* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

Reptiles

NAME	STATUS
Green Sea Turtle *Chelonia mydas* Population: North Atlantic DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
Hawksbill Sea Turtle *Eretmochelys imbricata* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3656	Endangered
Kemp's Ridley Sea Turtle *Lepidochelys kempii* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5523	Endangered
Leatherback Sea Turtle *Dermochelys coriacea* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1493	Endangered
Loggerhead Sea Turtle *Caretta caretta* Population: Northwest Atlantic Ocean DPS There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1110	Threatened

Clams

NAME	STATUS
Smooth Pimpleback *Quadrula houstonensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8967	Candidate
Texas Fawnsfoot *Truncilla macrodon* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8965	Candidate
Texas Pimpleback *Quadrula petrina* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8966	Candidate

Critical habitats

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

POWER ENGINEERS, INC.
16825 NORTHCHASE DRIVE
SUITE 1200
HOUSTON, TX 77060 USA

PHONE 281-765-5500
FAX 281-765-5599

RECEIVED
SEP 13 2017
CLEAR LAKE ES
HOUSTON, TEXAS

September 11, 2017
(via Mail)

Ms. Edith Erfling
Project Leader
U.S. Fish and Wildlife Service
17629 El Camino Real, Suite 211
Houston, TX 77058

Subject: Bailey to Jones Creek Project
Brazoria, Matagorda and Wharton Counties, TX
POWER Engineers, Inc. Project No. 147806

Dear Ms. Erfling:

CenterPoint Energy Houston Electric, LLC (CenterPoint Energy) is proposing to construct a new double-circuit 345 kilovolt (kV) electric transmission line located in Brazoria, Matagorda and Wharton Counties, Texas. The new transmission line will connect the existing CenterPoint Energy Bailey Substation and the existing CenterPoint Energy Jones Creek Substation. The Bailey Substation is located in Wharton County, off of County Road (CR) 112, approximately one mile northeast of the intersection of CR 112 and State Highway (SH) 60. The Jones Creek Substation is located in Brazoria County, off of CR 217, approximately one mile north of the intersection of SH 36 and CR 217. Please refer to the enclosed map depicting the project study area.

POWER Engineers, Inc. (POWER) has been contracted by CenterPoint Energy to prepare an Environmental Assessment and Alternative Route Analysis to support an application for a Certificate of Convenience and Necessity for the Public Utility Commission of Texas (PUC). POWER is identifying environmental and land use constraints within the study area that will be incorporated into the creation of an environmental and land use constraints map. Based on this information, POWER will identify potential alternative routes for the proposed transmission line project.

CenterPoint Energy and POWER recognize that this is a difficult time in many of Texas's coastal counties, and we hope that you, your family, and everyone in your community are safe and recovering from the impacts of Hurricane Harvey. We know that the recovery work is just beginning and that many organizations, including yours, are undertaking significant efforts to help rebuild and assist your community. In light of this, we also understand that you and your staff have important tasks that may take precedence over responding to our request for feedback and other information related to this project. However, CenterPoint Energy also felt it was important to share information about the project now so that affected communities are informed as early as possible. CenterPoint Energy also plans to follow-up with stakeholders again during the fall of 2017 to be sure those that do not have time to devote to feedback on this project now, will have the opportunity to give input as soon as they are able.

Bryan W. Shaw, Ph.D., P.E., *Chairman*
Toby Baker, *Commissioner*
Jon Niermann, *Commissioner*
Richard A. Hyde, P.E., *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

October 13, 2017

Ms. Lisa Barko Meaux
Power Engineers, Inc.
16825 Northchase Drive, Suite 1200
Houston, Texas 77060

Via: email

Re: TCEQ NEPA Request #2017-278, Bailey to Jones Creek Project Brazoria, Matagorda and Wharton Counties, TX POWER Engineers, Inc. Project No. 147806

Dear Ms. Barko Meaux:

The Texas Commission on Environmental Quality (TCEQ) has reviewed the above-referenced project and offers the following comments:

Part of the proposed project is located in Brazoria County, which is designated nonattainment for the 2008 ozone National Ambient Air Quality Standards (NAAQS) and classified as moderate. Federal actions in NAAQS nonattainment counties are subject to general conformity requirements under Federal Clean Air Act Section 176(c). General conformity regulations are codified in 40 Code of Federal Regulations Part 93, Subpart B. We request that a completed draft of the Environmental Assessment be completed and submitted for review before the office can provide further comments.

We recommend the environmental assessment address actions that will be taken to prevent surface and groundwater contamination.

Any debris or waste disposal should be at an appropriately authorized disposal facility. If the facility intends to store hazardous waste for more than 90 days, they need to coordinate with our Waste Permits Division to seek authorization prior to storage.

Thank you for the opportunity to review this project. If you have any questions, please contact the agency NEPA Coordinator, at (512) 239-3500 or NEPA@tceq.texas.gov.

Sincerely,

Ryan Vise

Division Director
Intergovernmental Relations

Meaux, Lisa

From: Jeffery Vinklarek <Jeffery.Vinklarek@txdot.gov>
Sent: Friday, September 22, 2017 9:32 AM
To: Meaux, Lisa
Subject: FW: Letter from Power Engineers concerning electric transmission line
Attachments: PE LTR 09112017_Brazoria_Matagorda_Wharton_Houston Distrtict.pdf; TxDOT Projects w Study Area.xlsx

Lisa,

TxDOT did receive your letter about the proposed construction of a new electric transmission line located in Brazoria, Matagorda, and Wharton Counties. Attached is TxDOT's current project list that is within your study area. This list is periodically updated based on needs in the area. Please let us know if you have any questions about these projects, or need any other information from TxDOT. Thanks.

Jeffery Vinklarek, P.E.
Director of Transportation Planning and Development
TxDOT – Yoakum District
(361) 293-4363 (office)
(361) 293-4157 (mobile)
Jeffery.Vinklarek@txdot.gov

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From: Jack Foster
Sent: Friday, September 15, 2017 9:59 AM
To: Bill Brudnick; Jeffery Vinklarek
Subject: Letter from Power Engineers concerning electric transmission line

Howdy Bill and Jeff. Our division received this letter on a proposed power line project that affects your district. We are forwarding to you for responding to Power Engineers as appropriate. Thanks.

Regards,

Jack Foster
Deputy Director
Transportation Planning and Programming

Texas Department of Transportation
Mailing Address: POB 149217, Austin, TX 78714-9217
Physical Address: 118 E. Riverside Dr., Austin, TX 78704
Tel (512) 486-5002 | Mobile (512) 917-0324 | Fax (512) 486-5056

CSJ	FY	Dist Let Date	County	Highway Number	Limits From
269701034	2017	4/1/2017	MATAGORDA	FM 2668	FM 3057
269701035	2017	4/1/2017	MATAGORDA	FM 2668	SH 60
269701035	2017	4/1/2017	MATAGORDA	FM 2668	SH 60
017914008	2017	7/1/2017	MATAGORDA	BS 35-H	SH 35
017914008	2017	7/1/2017	MATAGORDA	BS 35-H	SH 35
024101046	2017	7/1/2017	WHARTON	SH 60	WHARTON SOUTH CITY LIMIT
060501060	2017	7/1/2017	MATAGORDA	FM 457	0.020 MILES NORTH OF MARINA DRIVE
060501064	2018	5/1/2018	MATAGORDA	FM 457	FM 2540
091309066	2019	10/1/2018	WHARTON	CR	AT BLUE CREEK #2 CR 400
252501017	2019	1/1/2019	MATAGORDA	FM 2540	SH 35
017906043	2019	5/1/2019	MATAGORDA	SH 35	3.66 MI. N. OF FM 1468
091321048	2020	2/1/2020	MATAGORDA	CR	AT CANEY CREEK CR 152
024002032	2022	12/1/2021	WHARTON	SH 60	AT MIDDLE BERNARD CREEK

Limits To	BEG_MILE_POINT	END_MILE_POINT	Description
FM 521	15.351	20.476	SAFETY TREAT FIXED OBJECTS
0.016 MI SOUTH OF FM 3057	9.994	15.367	RESTORE ROADWAY
0.016 MI SOUTH OF FM 3057	9.994	15.367	RESTORE ROADWAY
SH 35 WEST OF PALACIOS	0.031	3.648	ACP OVERLAY AND SHOULDER WIDENING
SH 35 WEST OF PALACIOS	0.031	3.648	ACP OVERLAY AND SHOULDER WIDENING
MATAGORDA COUNTY LINE	2.274	15.444	SAFETY TREAT FIXED OBJECTS
CANAL DRIVE	27.572	27.749	REPLACE SWING BRIDGE
FM 521	5.346	13.54	REHABILITATE SHOULDER
(CR 421) STR # AA04-00-002	7.418	7.918	REPLACE BRIDGE AND APPROACHES
FM 457		4.32	SAFETY TREAT FIXED OBJECTS
FM 1468	16.586	20.246	ACP OVERLAY & ADD SHOULDERS
(GRISHAM RD) STR AA01-78-001	0.685	0.785	REPLACE BRIDGE AND APPROACHES
STR # 0240-02-009	3.244	3.344	REPLACE BRIDGE AND APPROACHES

Meaux, Lisa

From: Samir Goel <Samir.Goel@txdot.gov>
Sent: Monday, October 02, 2017 3:27 PM
To: Meaux, Lisa
Subject: RE: Power Engineers, Inc. Project No. 147806

Hello,

Where the proposed CenterPoint Energy (CNP) transmission line crosses State-owned roadways, CNP will need to obtain TxDOT utility permits. Please note that there are several “Farm to Market Roads (FM)” and “State Highways (SH)” within the study area – both of these types of roadway are considered “State-owned”.

TxDOT utility permits are submitted and approved electronically through the Utility Installation Review (UIR) system, which can be accessed here: https://apps.dot.state.tx.us/apps/UIRPROv2/ . Such permits can only be issued to the utility owner, who can upload their utility plans and any other documents through the UIR interface. The design of the proposed utility must comply with the Texas Administrative Code, Title 43, Chapter 21, Rules 21.31 through 21.41, which can be accessed on the Texas Secretary of State website, shown here: http://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=43&pt=1&ch=21&rl=31 .

If you have any questions concerning the above, please contact our utility permit coordinator, Ms. Yolanda Ellis, who can be reached at: (713) 802-5553, or by email at: Yolanda.Ellis@TxDOT.Gov .

Once a utility permit is approved, if your construction contractor needs to close a vehicle lane or the shoulder for construction activities, then your contractor will need to obtain separate traffic control approval from the local TxDOT inspector, which varies by County. Yolanda Ellis can provide you with the appropriate contact information.

There are no fees associated with the TxDOT utility permit or traffic control approval.

Please let me know if you have any other questions.

Thank you,
Samir K. Goel, P.E.
TxDOT Houston District Permits Supervisor
Office: (713) 802-5554
Mobile: (281) 686-9857
Email: Samir.Goel@TxDOT.Gov



From: Jeffery Vinklarek
To: Meaux, Lisa
Cc: Williams, Denise
Subject: RE: Letter from Power Engineers concerning electric transmission line
Date: Wednesday, March 21, 2018 4:29:16 PM
Attachments: image001.jpg

Lisa,

I'm responsible for Matagorda and Wharton Counties and that is the project list that I provided to you. Bill Brudnick is in the Houston District and is responsible for Brazoria County. He was on the same email I was on September 15. Please let me know if you have any other questions.

Jeffery Vinklarek, P.E.
Director of Transportation Planning and Development
TxDOT – Yoakum District
(361) 293-4363 (office)
(361) 293-4157 (mobile)
Jeffery.Vinklarek@txdot.gov

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From: lisa.barko@powereng.com [mailto:lisa.barko@powereng.com]
Sent: Wednesday, March 21, 2018 3:31 PM
To: Jeffery Vinklarek
Cc: denise.williams@powereng.com
Subject: FW: Letter from Power Engineers concerning electric transmission line

Hi Mr. Vinklarek,
I left you a voice message regarding the response we received from you below on the Bailey-Jones Creek Project.
Perhaps on Friday, 3/23 we could discuss the proposed widening of State Highway 36 in Brazoria County.
This project(s) was not on the project list we received and we are trying to understand the schedule of the proposed improvements along State Highway 36.
Thank you in advance,
Lisa

LISA BARKO MEAUX
PROJECT MANAGER
ENVIRONMENTAL DEPARTMENT MANAGER
16825 Northchase Drive, Suite 1200

Houston, Texas 77060

281-765-5507 direct
713-962-8476 cell
lisa.barko@powereng.com

POWER Engineers, Inc.
www.powereng.com

From: Jeffery Vinklarek [mailto:Jeffery.Vinklarek@txdot.gov]
Sent: Friday, September 22, 2017 9:32 AM
To: Meaux, Lisa
Subject: FW: Letter from Power Engineers concerning electric transmission line

Lisa,

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Jeffery Vinklarek, P.E.
Director of Transportation Planning and Development
TxDOT – Yoakum District
(361) 293-4363 (office)
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Jeffery.Vinklarek@txdot.gov

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Regards,

Jack Foster
Deputy Director
Transportation Planning and Programming

Texas Department of Transportation
Mailing Address: POB 149217, Austin, TX 78714-9217
Physical Address: 118 E. Riverside Dr., Austin, TX 78704
Tel (512) 486-5002 | Mobile (512) 917-0324 | Fax (512) 486-5056





Texas Department of Transportation

P.O. Box 1386 Houston, Texas 77007-1386 713-802-5000 | WWW.TXDOT.GOV

April 13, 2018

Mrs. Lisa Barko Meaux
Project Manager/Department Manager
Power Engineers Incorporated
16825 Northchase Drive
Suite 1200
Houston, Texas 77002

RE: Bailey to Jones Creek Project
Brazoria Matagorda and Wharton Counties Texas
POWER Engineers Incorporated Project 147806

Dear Mrs. Meaux:

Please find attached as requested a list of the Major Projects in the Power Engineers Boundary within Brazoria County (County) as referenced in attached letter and map.

If you should need further assistance, please contact my office at (713) 802-5031.

Sincerely,

Larry W Blackburn

For William R. Brudnick, P.E.
Director Transportation Planning and Development
Houston District

Attachments

CC: David C. Roberts

BC: Larry W. Blackburn, P.E.
Jeffery W. Vinklarek, P. E.

POWER ENGINEERS

POWER ENGINEERS, INC.
16825 NORTHCHASE DRIVE
SUITE 1200
HOUSTON, TX 77060 USA

PHONE 281-765-5500
FAX 281-765-5599

September 11, 2017
(via Mail)

Attached to Email between Jack Foster Jeff Vinklarek Bill Brudnick

Mr. Peter Smith, P.E.
Director, Planning & Programming
Texas Department of Transportation
125 E. 11th Street
Austin, TX 78701-2483

Subject: Bailey to Jones Creek Project
Brazoria, Matagorda and Wharton Counties, TX
POWER Engineers, Inc. Project No. 147806

Dear Mr. Smith:

CenterPoint Energy Houston Electric, LLC (CenterPoint Energy) is proposing to construct a new double-circuit 345 kilovolt (kV) electric transmission line located in Brazoria, Matagorda and Wharton Counties, Texas. The new transmission line will connect the existing CenterPoint Energy Bailey Substation and the existing CenterPoint Energy Jones Creek Substation. The Bailey Substation is located in Wharton County, off of County Road (CR) 112, approximately one mile northeast of the intersection of CR 112 and State Highway (SH) 60. The Jones Creek Substation is located in Brazoria County, off of CR 217, approximately one mile north of the intersection of SH 36 and CR 217. Please refer to the enclosed map depicting the project study area.

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CenterPoint Energy and POWER recognize that this is a difficult time in many of Texas's coastal counties, and we hope that you, your family, and everyone in your community are safe and recovering from the impacts of Hurricane Harvey. We know that the recovery work is just beginning and that many organizations, including yours, are undertaking significant efforts to help rebuild and assist your community. In light of this, we also understand that you and your staff have important tasks that may take precedence over responding to our request for feedback and other information related to this project. However, CenterPoint Energy also felt it was important to share information about the project now so that affected communities are informed as early as possible. CenterPoint Energy also plans to follow-up with stakeholders again during the fall of 2017 to be sure those that do not have time to devote to feedback on this project now, will have the opportunity to give input as soon as they are able.

September 11, 2017

If you can at this time, we are requesting that your agency/office provide information concerning environmental and land use constraints or other issues of interest to your agency/office within the study area. Your input will be an important consideration in the evaluation of alternative routes and in the assessment of potential impacts of those routes. In addition, we would appreciate receiving information about any permits, easements, or other approvals by your agency/office that you believe could affect this project, or if you are aware of any major proposed development or construction in the study area. Upon PUC certification of a final route for the proposed project, CenterPoint Energy will identify and obtain necessary permits, if required, from your agency/office.

Thank you for your assistance with this proposed electric transmission line project. Please contact me at 281-765-5507 or by e-mail, lisa.barko@powereng.com, if you have any questions or require additional information. We would appreciate receiving your reply by September 29, 2017.

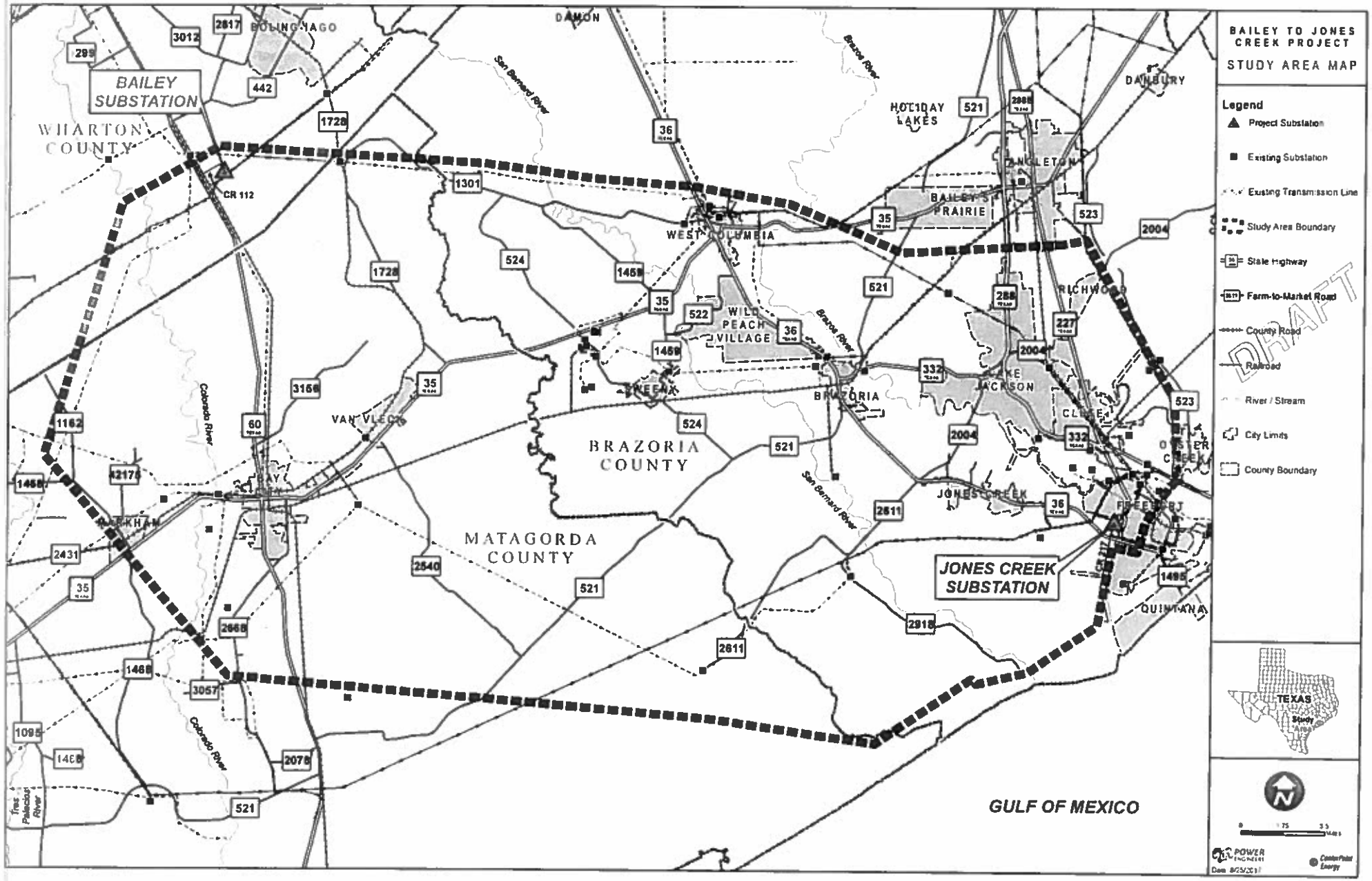
Sincerely,

Lisa Barko Meaux

Lisa Barko Meaux
Project Manager
Department Manager

Enclosure(s): Study Area Map

c: ProjectWise 147806


BAILEY TO JONES CREEK PROJECT
STUDY AREA MAP
Legend
Project Substation
Existing Substation
Existing Transmission Line
Study Area Boundary
State Highway
Farm-to-Market Road
County Road
Railroad
River / Stream
City Limits
County Boundary
DRAFT
BAILEY SUBSTATION
JONES CREEK SUBSTATION
WHARTON COUNTY
BRAZORIA COUNTY
MATAGORDA COUNTY
GULF OF MEXICO
BOLING-IAGO
DAMON
HOLIDAY LAKES
DANBURY
ANGLETON
BAILEY'S PRAIRIE
WEST COLUMBIA
WILD PEACH VILLAGE
RICHWOOD
LAKE JACKSON
CLUTE
OYSTER CREEK
FREEPORT
QUINTANA
JONES CREEK
BRAZORIA
SWEENY
VAN VLECK
BAY CITY
MARKHAM
CR 112
San Bernard River
Brazos River
Colorado River
Tres Palacios River
TEXAS
Study Area
POWER ENGINEERS
Centerpoint Energy

Major Projects in the Power Engineer's Boundary within Brazoria County

CSJ	LET	County	HIGHWAY	CONSTRUCTION ESTIMATE	DESCRIPTION	FROM	TO
Projects in the Unified Transportation Program (UTP) that have a construction funding source identified.							
0111-08-100	09/01/2018	Brazoria	SH 36	$8,500,000	WIDEN TO 4-LANE DIVIDED RURAL	0.9 MI S OF THE BRAZOS RIVER	FM 1495 (SEG. 15).
0188-03-022	01/01/2022	Brazoria	SH 36	$7,300,000	GS OVER NEW SH 35, OVERLAY AND RESTRIPE PAVEMENT FROM 2 TO 4	NORTH OF CR 467/HOGG RANCH RD	SH 35
0188-04-025	03/01/2022	Brazoria	SH 36	$37,400,000	WIDEN TO 4 LANE DIVIDED RURAL	FM 522	2.044 MILES NORTH OF SH 332
0188-04-035	01/01/2022	Brazoria	SH 36	$28,000,000	RECONSTRUCT TO 4 LANE DIVIDED WITH CONTINUOUS LEFT TURN LANE	SH 35	FM 522
0188-04-050	01/01/2022	Brazoria	SH 36	$9,590,486	GS OVER NEW SH 35, OVERLAY AND RESTRIPE PAVEMENT FROM 2 TO 4	SH 35	SOUTH OF SH 35
0188-05-027	09/01/2022	Brazoria	SH 36	$45,500,000	WIDEN TO 4-LANE DIVIDED RURAL AT FM 2004	S OF BRAZORIA	S OF JONES CREEK BRIDGE
0188-06-046	09/01/2022	Brazoria	SH 36	$14,411,000	WIDEN TO 4-LANE DIVIDED RURAL	S. OF JONES CREEK BRIDGE	0.2 MI N OF BRAZOS RIV DIVERSION CH
Projects in the Unified Transportation Program (UTP) that have develop authority only and have not identified a construction funding source.							
0586-01-048	TBD	Brazoria	SH 332	$14,800,000	CONSTRUCT GRADE SEPARATION	0.3 MI N OF FM 523	0.3 MI S OF FM 523
1003-01-061	TBD	Brazoria	FM 523	$14,700,000	WIDEN TO 4 LANE DIVIDED URBAN	SH 332	0.2 MI S OF FM 1495
1524-01-047	TBD	Brazoria	SH 332	$38,300,000	RECONSTRUCT & WIDEN FROM 2 LN RURAL TO 4 LN DIV RURAL RDWY	E OF FM 521	SH 288

Meaux, Lisa

From: Larry Blackburn <Larry.Blackburn@txdot.gov>
Sent: Monday, April 23, 2018 11:32 AM
To: Meaux, Lisa
Cc: David Roberts
Subject: Power Lines Crossing FM Roads

Lisa,

I have verified that there is not a problem with aerial power lines crossing an FM road at angles other than 90 degrees.

Larry W. Blackburn, P.E.
713-802-5617



Meaux, Lisa

From: Larry Blackburn <Larry.Blackburn@txdot.gov>
Sent: Tuesday, April 24, 2018 7:09 AM
To: Meaux, Lisa
Cc: David Roberts
Subject: Transmission Line Crossings

Lisa,

As we discussed yesterday, there is some variance in the 90 degree crossing of aerial lines at state highways and FM roads. I suggest that you send us some sketches of the situations you have and let our utility section review them.

Larry W. Blackburn, P.E.
713-802-5617



Meaux, Lisa

From: Meaux, Lisa
Sent: Thursday, April 26, 2018 5:10 PM
To: Larry Blackburn; David Roberts
Cc: Fox, Steven T; Childress, Scott (Scott.Childress@powereng.com); Williams, Denise (denise.williams@powereng.com)
Subject: RE: Transmission Line Crossings
Attachments: Bailey-Jones Creek TXDOT SH 35 and 36_2018-04-26.pdf

Mr. Blackburn and Mr. Roberts,

Per your suggestion below, attached are sketches (screen shots) of proposed crossings of State Highways 35 and 36.

At this time we do not know where the approved route between the Bailey and Jones Creek substations will be. The yellow lines in the attached PDF are proposed potential segments in the area that may be included in some of proposed alternative routes.

We have done our best to comply with the preferred 90-degree crossing in these areas; however, as explained in the attached, due to existing constraints and congestion this was not possible in these specific locations.

We appreciate your preliminary review of these proposed aerial transmission line crossings of State Highways 35 and 36.

Please call with any questions or let us know if given the existing constraints and congestion in these areas if these proposed state highway crossing would be acceptable.

Thank you,
Lisa

LISA BARKO MEAUX
PROJECT MANAGER
ENVIRONMENTAL DEPARTMENT MANAGER
16825 Northchase Drive, Suite 1200
Houston, Texas 77060

281-765-5507 direct
713-962-8476 cell
lisa.barko@powereng.com

POWER Engineers, Inc.
www.powereng.com

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Larry W. Blackburn, P.E.
713-802-5617



Meaux, Lisa

From: Meaux, Lisa
Sent: Wednesday, May 09, 2018 10:03 AM
To: 'Larry Blackburn'; 'David Roberts'
Cc: 'Fox, Steven T'; Childress, Scott; Williams, Denise
Subject: RE: Transmission Line Crossings
Attachments: Bailey-Jones Creek TXDOT SH 35 and 36_2018-04-26.pdf

Good morning Mr. Blackburn and Mr. Roberts.
I do not recall seeing a response to the below email. Are these proposed crossing under the current conditions in these areas acceptable?
Thank you,
Lisa

LISA BARKO MEAUX
PROJECT MANAGER
ENVIRONMENTAL DEPARTMENT MANAGER
16825 Northchase Drive, Suite 1200
Houston, Texas 77060

281-765-5507 direct
713-962-8476 cell
lisa.barko@powereng.com

POWER Engineers, Inc.
www.powereng.com

From: Meaux, Lisa
Sent: Thursday, April 26, 2018 5:10 PM
To: Larry Blackburn; David Roberts
Cc: Fox, Steven T; Childress, Scott (Scott.Childress@powereng.com); Williams, Denise (denise.williams@powereng.com)
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Thank you,
Lisa

LISA BARKO MEAUX
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ENVIRONMENTAL DEPARTMENT MANAGER
16825 Northchase Drive, Suite 1200
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Larry W. Blackburn, P.E.
713-802-5617



Meaux, Lisa

From: David Roberts <David.Roberts@txdot.gov>
Sent: Thursday, May 10, 2018 11:24 AM
To: Meaux, Lisa
Cc: Stephen Stakemiller; Larry Blackburn
Subject: RE: Transmission Line Crossings
Attachments: TAC Rule 21.35 Exception.pdf

Ms. Barko,

As you point out, TAC Rule §21.37(b)(3) states " New utility facilities crossing the highway shall be installed at approximately 90 degrees to the centerline of the highway." An Exception to Policy is required for new crossings greater than 105 degrees or less than 75 degrees to highway centerline. Please find attached TAC Rule §21.35, which outlines the necessary documentation a utility owner must submit for TxDOT to review an exception request. A primary consideration is whether alternative routes were evaluated, and the basis of their elimination from the pool of alternatives.

Please let me know if I can be of further assistance to you in this matter.

David C. Roberts
Design-Utility Section, Supervisor
Houston District
Texas Department of Transportation

P.O. Box 1386
7600 Washington Ave.
Houston, Tx 77251-4870
713.802.5779 (o)
david.roberts@txdot.gov

From: Larry Blackburn
Sent: Wednesday, May 09, 2018 1:17 PM
To: David Roberts; Stephen Stakemiller
Subject: FW: Transmission Line Crossings

Can one of you respond to this?

From: lisa.barko@powereng.com [mailto:lisa.barko@powereng.com]
Sent: Wednesday, May 09, 2018 10:03 AM
To: Larry Blackburn; David Roberts
Cc: 'Fox, Steven T'; scott.childress@powereng.com; denise.williams@powereng.com
Subject: RE: Transmission Line Crossings

Good morning Mr. Blackburn and Mr. Roberts.
I do not recall seeing a response to the below email. Are these proposed crossing under the current conditions in these areas acceptable?
Thank you,
Lisa

LISA BARKO MEAUX
PROJECT MANAGER
ENVIRONMENTAL DEPARTMENT MANAGER
16825 Northchase Drive, Suite 1200
Houston, Texas 77060

281-765-5507 direct
713-962-8476 cell
lisa.barko@powereng.com

POWER Engineers, Inc.
www.powereng.com

From: Meaux, Lisa
Sent: Thursday, April 26, 2018 5:10 PM
To: Larry Blackburn; David Roberts
Cc: Fox, Steven T; Childress, Scott (Scott.Childress@powereng.com); Williams, Denise (denise.williams@powereng.com)
Subject: RE: Transmission Line Crossings

Mr. Blackburn and Mr. Roberts,

Per your suggestion below, attached are sketches (screen shots) of proposed crossings of State Highways 35 and 36.

At this time we do not know where the approved route between the Bailey and Jones Creek substations will be. The yellow lines in the attached PDF are proposed potential segments in the area that may be included in some of proposed alternative routes.

We have done our best to comply with the preferred 90-degree crossing in these areas; however, as explained in the attached, due to existing constraints and congestion this was not possible in these specific locations.

We appreciate your preliminary review of these proposed aerial transmission line crossings of State Highways 35 and 36.

Please call with any questions or let us know if given the existing constraints and congestion in these areas if these proposed state highway crossing would be acceptable.

Thank you,
Lisa

LISA BARKO MEAUX
PROJECT MANAGER
ENVIRONMENTAL DEPARTMENT MANAGER
16825 Northchase Drive, Suite 1200
Houston, Texas 77060

281-765-5507 direct
713-962-8476 cell
lisa.barko@powereng.com

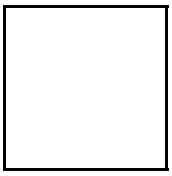
POWER Engineers, Inc.
www.powereng.com

From: Larry Blackburn [mailto:Larry.Blackburn@txdot.gov]
Sent: Tuesday, April 24, 2018 7:09 AM
To: Meaux, Lisa
Cc: David Roberts
Subject: Transmission Line Crossings

Lisa,

As we discussed yesterday, there is some variance in the 90 degree crossing of aerial lines at state highways and FM roads. I suggest that you send us some sketches of the situations you have and let our utility section review them.

Larry W. Blackburn, P.E.
713-802-5617





TEXAS HISTORICAL COMMISSION
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September 27, 2017

Lisa Barko Meaux
Power Engineers
16825 Northchase Dr. Suite 1200
Houston, Texas 77060

Re: Project review under Section 106 of the National Historic Preservation Act of 1966
Proposed Bailey to Jones Creek 345 kV Transmission Line Project, Guadalupe County, Texas.
Power Engineers, Inc. Project No. 147806

Dear Ms. Meaux:

Thank you for allowing us to review the proposed transmission line project referenced above. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission.

The review staff, led by Jeff Durst, has completed its review. The project setting includes numerous landforms occupied by prehistoric and historic Native Americans. Additionally, numerous important water ways are located within the proposed study area and will likely be crossed by the transmission line routes.

This area has a moderate to high probability of containing significant cultural resources; and an archeological investigation is most likely warranted. In order to conduct our review, we need the precise routes and the proposed stations plotted on USGS 7.5' topographic maps. Please submit this information or have your archeological contractor identify the high probability areas for further investigation; we will be pleased to review the methodology and probability maps when available.

Thank you for your cooperation in this federal review process, and for your efforts to preserve the irreplaceable heritage of Texas. **If we may be of further assistance, please call Jeff Durst of our staff at 512/463-8884.**

Sincerely,

for
Mark Wolfe, State Historic Preservation Officer

MW/jjd

From: Huebel, Kenneth
To: TexasNatural.DiversityDatabase@tpwd.texas.gov
Subject: Brazoria County data request
Date: Thursday, August 31, 2017 8:37:41 PM

Texas Natural Diversity Database,

POWER Engineers Inc. is requesting a TXNDD review for the proposed Freeport 345 kV project. The proposed project study area is within Brazoria County, TX and is within or near the following USGS 7.5 minute quadrangles:

Bay City
Bay City NE
Cedar Lane
Cedar Lane NE
Jones Creek
Freeport
Wadsworth
Lake Austin
Sargent
Cedar Lakes West
Cedar Lakes East
Markham
Lane City
Lane City SE
Pledger
Danciger
West Columbia
East Columbia
Angleton
Van Vleck
Ashwood
Sweeny
Brazoria
Lake Jackson
Oyster Creek

The TXNDD data review is relevant for the routing study and environmental assessment for the project. The review deliverable should include an ArcGIS file of element occurrences, Element Occurrence Record List and EOR Report. This information will assist us during the routing process and drafting the environmental assessments for the project.

Please provide all three of the following types of data for each of the USGS quadrangles listed for each project location:
ArcGIS shapefile,

Element Occurrence Record list, and
EOR report

Thank you!

Kenneth Huebel
Biologist
16825 Northchase Drive, Suite 1200
Houston, TX 77060
Direct: 281-765-5566
Cell: 832-264-4188
POWER Engineers, Inc.
Energy ▪ Facilities ▪ Communications ▪ Environmental
www.powereng.com

From:	Huebel, Kenneth
To:	Childress, Scott
Cc:	Ross, Stephen; Williams, Denise
Subject:	FW: Brazoria County data request
Date:	Friday, September 08, 2017 10:14:55 PM
Attachments:	huebel_20170831.zip

Scott,

Attached is the TXNDD data for the CP Freeport Project.

From: Texas Natural Diversity Database [mailto:TexasNatural.DiversityDatabase@tpwd.texas.gov]
Sent: Friday, September 08, 2017 6:39 PM
To: Huebel, Kenneth
Subject: RE: Brazoria County data request

Mr. Huebel,

The Texas Natural Diversity Database (TXNDD) staff provides the following information in response to your request for data. Please read this entire message for important information regarding your request, additional data sources, and project review.

****Your information request area contains known ecologically significant stream segments and federally designated critical habitat for piping plover. Use the links below to obtain these data.****

Data

The TXNDD includes federal and state listed and tracked Threatened, Endangered, and Rare species. Please note that **areas where Element Occurrence (EO) data are absent should not be interpreted as an absence of Threatened, Endangered, and Rare species.** *Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Data from the TXNDD do not provide a definitive statement as to the presence, absence, or condition of special species, natural communities, or other significant features within your project area. These data cannot substitute for an on-site evaluation by qualified biologists.*

Attached documents

The attached .zip file contains several documents that will guide you in appropriate use, restrictions, and interpretation of TXNDD data as well as a reporting form for submitting data to the TXNDD. The .zip file also includes additional supplemental documents. Below is a list of the files in the attached folder:

- **Shapefile** (*eo_[last name of requestor]_yyyymmdd.zip*) of the Threatened, Endangered and Rare species Element Occurrences made from information the TXNDD presently has available for the requested quad(s) (or within the requested county, by requested species when applicable).

- **EO Report** (*eoreport_[last name of requestor]_yyyymmdd.pdf*) of the EOs in the shapefile mentioned above. The **EO Report** includes more detailed information about each EO than what is contained in the attribute table of the shapefile. Link the information in the shapefile to the information in the **EO Report** by *EO ID*. Note that if the number of records in your request area is large, this report may not be included; however, if, in this circumstance, you would like more detailed information about a particular EO, species, or smaller geographic

area, you may request those data.

- **EO List** (*eolist_[last name of requestor]_yyyymmdd.pdf*) for those requests made by USGS 7.5 minute quadrangles. The **EO List** is a list of species for which we have records in the database in the USGS 7.5 minute quadrangles *surrounding* your request area The **EO List** is to inform you of federal and state listed and tracked Threatened, Endangered, and Rare species in the area. Note that the EO list is not included in county requests.

- **County List FAQ** (*County_lists_FAQ_20150415.pdf*) produced by the Wildlife Habitat Assessment Program.

- **TXNDD Information** document (*txndd_information.docx*) that includes a background of the TXNDD, a description of past and current spatial methodology employed, and an explanation of interpretation of the data. Global and subnational (state) conservation ranks are also explained in this document as are the shapefile attributes and EO report sections.

- **TXNDD Reporting Form** (txndd_reporting_form.doc) for reporting observations of tracked elements to the Texas Natural Diversity Database. To submit data, fill out this form and send it to TexasNatural.DiversityDatabase@tpwd.texas.gov. Note that you can also submit data in the form of an Excel spreadsheet or written report.

Project Review, Rare Species County Lists, Project Planning, and BMPs

This email cannot substitute for an environmental review of your project by TPWD. For information on project review and to access the county lists of protected species and species of greatest conservation need with potential to occur in the county, please visit the Wildlife Habitat Assessment (WHAB) website at http://tpwd.texas.gov/huntwild/wild/wildlife_diversity/habitat_assessment/. The WHAB website includes several resources to consider while planning your project to minimize impacts to fish and wildlife resources, including information /guidelines on Wind Energy projects, Transmission Line projects, Communication Towers, and Karst Zones (Travis, Williamson, and Bexar Counties).

Ecologically Significant Stream Segments

If your information request area contains known ecologically significant stream segments, the data can be obtained at
http://tpwd.texas.gov/landwater/water/conservation/water_resources/water_quantity/sigsegs/index.phtml

Critical Habitat

If your information request area contains federally designated critical habitat, the data can be obtained at http://ecos.fws.gov/crithab/.

TPWD Managed Areas

We are no longer providing Managed Area shapefiles and associated Managed Area Reports. To obtain shapefiles for Wildlife Management Areas and State Park Boundaries, please visit the Texas Parks and Wildlife Department GIS Data Download page (https://tpwd.texas.gov/gis/data/).

Sincerely,

Bob Gottfried

Texas Natural Diversity Database Administrator
Texas Parks and Wildlife - Wildlife Division
4200 Smith School Rd
Austin, TX 78744
512-389-8744
TXNDD Information

From: kenneth.huebel@powereng.com [mailto:kenneth.huebel@powereng.com]
Sent: Thursday, August 31, 2017 8:38 PM
To: Texas Natural Diversity Database <TexasNatural.DiversityDatabase@tpwd.texas.gov>
Subject: Brazoria County data request

Texas Natural Diversity Database,

POWER Engineers Inc. is requesting a TXNDD review for the proposed Freeport 345 kV project. The proposed project study area is within Brazoria County, TX and is within or near the following USGS 7.5 minute quadrangles:

Bay City
Bay City NE
Cedar Lane
Cedar Lane NE
Jones Creek
Freeport
Wadsworth
Lake Austin
Sargent
Cedar Lakes West
Cedar Lakes East
Markham
Lane City
Lane City SE
Pledger
Danciger
West Columbia
East Columbia
Angleton
Van Vleck
Ashwood
Sweeny
Brazoria
Lake Jackson
Oyster Creek

The TXNDD data review is relevant for the routing study and environmental assessment for the project. The review deliverable should include an ArcGIS file of element occurrences, Element Occurrence Record List and EOR Report. This information will assist us during the routing process and drafting the environmental assessments for the project.

Please provide all three of the following types of data for each of the USGS quadrangles listed for each project location:
ArcGIS shapefile,
Element Occurrence Record list, and
EOR report

Thank you!

Kenneth Huebel
Biologist
16825 Northchase Drive, Suite 1200
Houston, TX 77060
Direct: 281-765-5566
Cell: 832-264-4188
POWER Engineers, Inc.
Energy ▪ Facilities ▪ Communications ▪ Environmental
www.powereng.com

Meaux, Lisa

From: Rachel Lange <Rachel.Lange@tpwd.texas.gov>
Sent: Tuesday, September 26, 2017 4:13 PM
To: Meaux, Lisa
Subject: Bailey to Jones Creek POWER 147806 / TPWD 38481

Good afternoon,

Would you be able to provide a .shp of the study area for the above-listed project? This would help expedite my review process and allow me to give higher-quality feedback. Please note our system does not accept the .zip file extension.

Thanks very much,

Rachel Lange
Habitat Assessment Program
Texas Parks and Wildlife Department
316 Spring Street, Suite 106
Columbus, TX 78934
(361) 412-9012

Meaux, Lisa

From: Ross, Stephen
Sent: Wednesday, September 27, 2017 10:51 AM
To: Rachel.Lange@tpwd.texas.gov
Cc: Meaux, Lisa; Williams, Denise
Subject: RE: TPWD project review data request
Attachments: Bailey_Jones_Creek_Study_Area.cpg; Bailey_Jones_Creek_Study_Area.dbf; Bailey_Jones_Creek_Study_Area.prj; Bailey_Jones_Creek_Study_Area.sbn; Bailey_Jones_Creek_Study_Area.sbx; Bailey_Jones_Creek_Study_Area.shp; Bailey_Jones_Creek_Study_Area.shx

Ms. Lange,

As requested, I have attached the shapefile for the study area boundary.

Thanks,
Stephen

Stephen Ross
Biologist II
16825 Northchase Drive, Suite 1200
Houston, Texas 77060
Direct: 281-765-5540
Cell: 361-522-8989

POWER Engineers, Inc.
Energy ■ Facilities ■ Communications ■ Environmental
www.powereng.com

From: Dibrell, Lea
Sent: Wednesday, September 27, 2017 9:27 AM
To: Ross, Stephen
Cc: Williams, Denise
Subject: FW: TPWD project review data request

Hi Stephen,

Can you handle this inquiry for this project?

Thank you,
Lea

From: Rachel Lange [mailto:Rachel.Lange@tpwd.texas.gov]
Sent: Tuesday, September 26, 2017 4:17 PM
To: Dibrell, Lea
Subject: TPWD project review data request

Ms. Dibrell,
I received an “out of the office” response from Ms. Barko. Would you please direct my inquiry to the appropriate person who could assist, concerning the Bailey to Jones Creek Transmission Line Project?

Thank you,

Rachel Lange
Habitat Assessment Program
Texas Parks and Wildlife Department
316 Spring Street, Suite 106
Columbus, TX 78934
(361) 412-9012

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Carter P. Smith
Executive Director

October 5, 2017

Ms. Lisa Barko Meaux
POWER Engineers, Inc.
16825 Northchase Drive, Suite 1200
Houston, TX 77060

RE: Bailey to Jones Creek Project, POWER Engineers, Inc. Project No. 147806; Brazoria, Matagorda, and Wharton Counties, Texas

Dear Ms. Barko Meaux:

Texas Parks and Wildlife Department (TPWD) has received and reviewed the submitted documentation regarding the above-referenced proposed transmission line project.

Please be aware that a written response to a TPWD recommendation or informational comment received by a state governmental agency may be required by state law. For further guidance, see the Texas Parks and Wildlife Code, Section 12.0011. For tracking purposes, please refer to TPWD project number 38481 in any return correspondence regarding this project.

TPWD Wildlife Habitat Assessment Program is now accepting projects through electronic submittal. Future project review requests can be submitted to WHAB@tpwd.texas.gov. If submitting requests electronically, please include unzipped geographic location files when available (e.g. GIS shape file, .kmz, etc.).

Comment Period

The submittal letter requested a review response within 18 calendar days. Please note the TPWD Wildlife Habitat Assessment Program strives to respond to requests for project review within a 45-day review period. Responses may be delayed due to workload and lack of staff. Failure to meet the 45-day review timeframe does not constitute a concurrence from TPWD that the proposed project will not adversely impact fish and wildlife resources. Please submit future project review requests per the TPWD 45-day review period to allow the responsible party to address TPWD's recommendations and to make additional assessments or adjustments to the project, as necessary, to minimize impacts to fish and wildlife resources prior to final design and construction.

4200 SMITH SCHOOL ROAD
AUSTIN, TEXAS 78744-3291
512.389.4800
www.tpwd.texas.gov

To manage and conserve the natural and cultural resources of Texas and to provide hunting, fishing and outdoor recreation opportunities for the use and enjoyment of present and future generations.

Project Description

CenterPoint Energy Houston Electric, LLC (CenterPoint Energy) is proposing to construct a new double-circuit 345 kilovolt (kV) electric transmission line located in Brazoria, Matagorda, and Wharton Counties, Texas. The new transmission line will connect the existing Bailey Substation and the existing Jones Creek Substation. The Bailey Substation is located in Wharton County, off of County Road (CR) 112, approximately one mile northeast of the intersection of CR 112 and State Highway (SH) 60. The Jones Creek Substation is located in Brazoria County, off of CR 217, approximately one mile north of the intersection of SH 36 and CR 217. No details regarding the proposed project structures or right-of-way (ROW) are provided.

POWER Engineers, Inc. (POWER) has been contracted by CenterPoint Energy to prepare an Environmental Assessment and Alternative Route Analysis to support an application for a Certificate of Convenience and Necessity for the Public Utility Commission of Texas (PUC). POWER is identifying environmental and land use constraints within the study area that will be incorporated into the creation of an environmental and land use constraints map. Based on this information, POWER will identify potential alternative routes for the proposed transmission line project

TPWD offers the following comments and recommendations concerning this project.

Recommendation: TPWD recommends using existing facilities whenever possible. Where new construction is the only feasible option, TPWD recommends routing new transmission and distribution lines along existing roads, pipelines, transmission lines, or other utility ROW and easements to reduce habitat fragmentation. By utilizing previously disturbed, existing utility corridors, county roads and highway ROWs, adverse impacts to fish and wildlife resources would be mitigated by avoiding and/or minimizing the impacts to undisturbed habitats. Please see the *TPWD Recommendations for Electrical Transmission/Distribution Line Design and Construction* found online at The TPWD Wildlife Habitat Assessment Program: Planning Tools and Best Management Practices webpage. Please review the recommendations and incorporate these measures into design and construction plans.

Federal Laws

Clean Water Act

Section 404 of the Clean Water Act (CWA) establishes a federal program to regulate the discharge of dredged and fill material into the waters of the U.S., including wetlands. The U.S. Army Corps of Engineers (USACE) and the Environmental Protection Agency are responsible for making jurisdictional determinations and regulating wetlands and other waters under Section 404 of the CWA.

Wetland mitigation is out-of-kind and insufficient to compensate for impacts to stream functions. For unavoidable stream impacts, stream compensation is required under 33 CFR §332.3(e)(3); item 11.B.2. in Compensatory Mitigation for Losses of Aquatic Resources (73 Federal Register 19596, April 10, 2008); and the Galveston District Stream Condition Assessment Standard Operating Procedure for Compensatory Stream Mitigation.

Recommendation: TPWD recommends consulting with the USACE for potential impacts to waters of the U.S. including jurisdictional determinations, delineations, and mitigation.

Recommendation: TPWD recommends mitigation for all impacts to aquatic resources. The wetland and stream mitigation plan should be developed in consultation with TPWD. The applicant should coordinate with Winston Denton at (281) 534-0138 or Winston.Denton@tpwd.texas.gov regarding aquatic habitat impacts and mitigation.

Migratory Bird Treaty Act

The MBTA prohibits taking, attempting to take, capturing, killing, selling/purchasing, possessing, transporting, and importing of migratory birds, their eggs, parts and nests, except when specifically authorized by the Department of the Interior. This protection applies to most native bird species, including ground nesting species. The U.S. Fish and Wildlife Service (USFWS) Migratory Bird Office can be contacted at (505) 248-7882 for information on potential impacts to migratory birds.

Recommendation: TPWD recommends any vegetation clearing be scheduled outside of the general bird nesting season of March 15th to September 15th; however, if clearing must occur during nesting season, nest surveys should be conducted prior to clearing. If nests are observed during surveys, a vegetation buffer area of no less than 25-feet in diameter should remain around the nest until all young have fledged.

The potential exists for birds to collide with power lines and associated guy wires and static lines. Bird fatalities can also occur due to electrocution if perching birds simultaneously make contact with energized and grounded structures.

Recommendation: For additional information, please see the guidelines published by USFWS and the Avian Power Lines Interaction Committee (APLIC) in the updated guidance document *Reducing Avian Collisions with Power Lines: State of the Art in 2012*. This manual, released on December 20, 2012, identifies best practices and provides specific guidance to help electric utilities and cooperatives reduce bird collisions with power lines. A companion document, *Suggested Practices for Avian Protection on Power Lines*, was published by APLIC and the USFWS in 2006.

Endangered Species Act

Federally-listed animal species and their habitat are protected from take on any property by the Endangered Species Act (ESA). Take of a federally-listed species can be allowed if it is incidental to an otherwise lawful activity and must be permitted in accordance with Section 7 or 10 of the ESA. Any take of a federally-listed species or its habitat without the required take permit (or allowance) from the USFWS is a violation of the ESA.

Recommendation: The USFWS should be contacted for species occurrence data, guidance, permitting, survey protocols, and mitigation for federally listed species. For the USFWS rare species lists by county please visit the USFWS Information for Planning and Consultation (IPaC) webpage.

State Laws

Aquatic Resources

TPW Code Section 1.011 grants TPWD authority to regulate and conserve aquatic animal life of public waters. Title 31, Chapter 57, Subchapter B, Section 57.157 of Texas Administrative Code (TAC) regulates take of mussels which are **not limited to state-listed mussels.** Section 12.301 of TPW Code identifies liability for wildlife taken in violation of TPW Code or a regulation adopted under TPW Code.

Under TPW Code Section 12.015, 12.019, 66.015 and TAC 52.101-52.105, 52.202, and 57.251-57.259, TPWD regulates the introduction and stocking of fish, shellfish, and aquatic plants into public waters of the state. *The Permit to Introduce Fish, Shellfish or Aquatic Plants into Public Waters* allows for movement (i.e., introduction, stocking, transplant, relocation) of aquatic species in waters of the state. Movement of aquatic species, even within the same river or estuary, has potential natural resources risk (e.g., exotics, timing for successful survival); therefore, a permit is required to minimize that risk. Dewatering or other construction activities can trample, dredge or fill areas exhibiting stationary aquatic resources such as plants and mussels. To avoid or reduce impacts if dewatering or other construction activities are proposed in aquatic habitat, TPWD recommends relocating aquatic life, including, but not limited to, fish, turtles, and mussels, to an area of suitable habitat outside the project footprint. Relocation activities are done under the authority of a TPWD *Permit to Introduce Fish, Shellfish or Aquatic Plants into Public Waters.*

Recommendation: Aquatic Resource Relocation Plans (ARRPs) are used to plan resource handling activities and assist in the permitting process. If construction occurs during times when water is present in streams and dewatering activities or other harmful construction activities are involved (such as placement of temporary or permanent fills), then TPWD recommends relocating potentially impacted native aquatic resources in conjunction with a Permit to Introduce Fish, Shellfish or Aquatic Plants into Public Waters and an ARRP. The ARRP should be completed and approved by the department 30 days prior to activity within project waters and/or resource relocation and submitted with an application for a no-cost *Permit to Introduce Fish, Shellfish, or Aquatic Plants into Public Waters.*

Please contact Winston Denton at (281) 534-0138 or Winston.Denton@tpwd.texas.gov regarding submittal of ARRPs.

Recommendation: All waterways and associated floodplains, riparian corridors, and wetlands, regardless of their jurisdictional status, provide valuable wildlife habitat and should be protected to the maximum extent possible. If dewatering activities and other project-related activities cause mortality to fish and wildlife species, then the responsible party would be subject to investigation by the TPWD Kills and Spills Team (KAST) and will be liable for the value of the lost resources under the authority of TPW Code Sections 12.001 1 (b) (1) and 12.301.

Texas Administrative Code Title 31 §357.8.

As seen on the attached map, the Colorado River, San Bernard River, Brazos River, Cedar Lake Creek, Jones Creek, and Bastrop Bayou have been designated by TPWD as Ecologically Significant Stream Segments (ESSSs). TPWD has identified ESSSs throughout the state to assist regional water planning groups in identifying ecologically unique stream segments under Texas Administrative Code Title 31 §357.8. Until approved by the legislature, this is not a legal designation.

Recommendation: Measures should be taken to ensure that activities that could adversely impact these ecologically significant streams are avoided and/or minimized. Water quality, aesthetic value, and unique habitats should be preserved during project planning and construction.

All waterways and associated floodplains, riparian corridors, playa lakes, and wetlands provide valuable wildlife habitat and should be protected to the maximum extent possible. Natural buffers contiguous to any wetlands or aquatic systems should remain undisturbed to preserve wildlife cover, food sources, and travel corridors. During construction, trucks and equipment should use existing bridge or culvert structures to cross creeks. Destruction of inert microhabitats in waterways such as snags, brush piles, fallen logs, creek banks, pools, and gravel stream bottoms should be avoided, as these provide habitat for a variety of fish and wildlife species and their food sources. Erosion controls and sediment runoff control measures should be installed prior to construction and maintained until disturbed areas are permanently revegetated using site specific native

vegetation. Measures should be properly installed in order to effectively minimize the amount of sediment and other debris entering the waterway.

Parks and Wildlife Code, Chapter 26

Chapter 26 of the Parks and Wildlife Code requires that before a state agency can approve any project that will result in the use or taking of public land designated and used as a park, public recreation area, scientific area, wildlife refuge, or historic site, that state agency must provide certain notices to the public, conduct a hearing, and render a finding that there is no feasible and prudent alternative and that the project includes all reasonable planning to minimize harm to the property. Chapter 26 is modeled on a federal statute known as "section 4(f)" and codified at 49 U.S.C. §303. In fact, much of Chapter 26 is taken word for word from section 4(f). If a proposed transmission line route is located within a TPWD property, approval for an easement from the Parks and Wildlife Commission may be required, which can be a several month to year long process.

TPWD maintains a statewide inventory of Land and Water Resources Conservation and Recreation Plan (LWRCRP) data depicting conservation and recreation lands in Texas, which can be found as an interactive web map at the TPWD Geographic Information Systems webpage. As seen on the attached map, two TPWD-owned Wildlife Management Areas (WMAs) are located within the study area and impacts to this property would be subject to Chapter 26.

Based on the information provided by POWER in the project submittal dated September 11, 2017, and within spatial data provided to TPWD on September 27. 2017, the Nannie M. Stringfellow WMA and Justin Hurst WMA are located within the study area and could be impacted by the proposed project. Impacts of particular concern are negative impacts to waterfowl and potential conflicts with habitat management activities and public use.

Recommendation: TPWD strongly discourages project alternatives that cross TPWD properties. TPWD recommends routing around the Nannie M. Stringfellow WMA and the Justin Hurst WMA. If the proposed project could impact these WMAs, please contact Dennis Gissell at Dennis.Gissell@tpwd.texas.gov.

Recommendation: TPWD recommends avoiding lands owned or managed for conservation or recreation by other county, city, state, and/or federal entities such as the USFWS, USACE, US Department of Agriculture (USDA) Forest Service, and the Texas Historical Commission (THC). Such entities should be contacted early in the planning process to determine if a transmission line may impact their property.

Parks and Wildlife Code, Section 68.015

Section 68.015 of the Parks and Wildlife Code regulates state listed species. Please note that there is no provision for the capture, trap, take, or kill (incidental or otherwise) of state-listed species. A copy of *TPWD Protection of State-Listed Species Guidelines*, which includes a list of penalties for take of species, can be found online at the TPWD Wildlife Habitat Assessment Program: Laws and Regulations Applicable to TPWD Review webpage. State-listed species may only be handled by persons with authorization obtained through TPWD. For more information on this authorization, please contact the Wildlife Permits Office at (512) 389-4647.

Recommendation: TPWD recommends CenterPoint Energy survey potentially disturbed areas for state listed species habitat prior to construction. If suitable habitat for species is observed in the area, disturbance of the habitat should be avoided to the extent feasible.

Species of Concern/Special Features

In addition to state and federally-protected species, TPWD tracks special features, natural communities, and rare species that are not listed as threatened or endangered. TPWD actively promotes their conservation and considers it important to evaluate and, if necessary, minimize impacts to rare species and their habitat to reduce the likelihood of endangerment and preclude the need to list. These species and communities are tracked in the Texas Natural Diversity Database (TXNDD).

Several colonial waterbird rookeries have been documented within and adjacent to the study area in the TXNDD. In general, nesting dates for herons and egrets range from early February to late August in Texas, depending on the species. Great Blue Herons (GBHE) are usually the first to nest. If nesting GBHE are disrupted and abandon nesting, other species of herons and egrets

may not attempt to nest at the rookery that year. Nesting dates for Texas species within rookeries can be found in *Nuisance Heronries in Texas*, available at the TPWD Nuisance Wildlife in Texas webpage.

Recommendation: If rookeries are encountered, TPWD recommends avoiding/minimizing disturbance during nesting. TPWD recommends a primary buffer area of 300 meters (984 feet) from the rookery periphery to avoid any vegetation clearing as a protection measure to protect the rookery species and their habitat. Transmission line construction and permanent easements that would encroach within this buffer area should be re-routed, adjusted, or narrowed to avoid clearing within this buffer area. Utilizing areas that have already been cleared within this buffer area may be acceptable depending on site-specific characteristics. Additionally, human foot traffic or machinery use should not occur within this buffer area during the nesting season.

Recommendation: TPWD recommends a secondary buffer area of 1000 meters (3281 feet) from the rookery periphery to avoid clearing activities or construction using heavy machinery during the breeding season (courting and nesting). If rookeries are identified in the project area and details regarding the rookeries are provided, TPWD staff can discuss the ability to feasibly meet the recommended setback distances. Details to aid in decision making includes the size of the rookery (number of nests and area of rookery), species utilizing the rookery, distance of rookery periphery from the construction area, and characteristics regarding the habitat within and surrounding the rookery.

Please note that the absence of TXNDD information in an area does not imply that a species is absent from that area. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presence, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and cannot be used as presence/absence data. This information cannot be substituted for on-the-ground surveys. The TXNDD is updated continuously. As the project progresses and for future projects, please request the most current and accurate information at TexasNatural.DiversityDatabase@tpwd.texas.gov.

Recommendation: Please review the TPWD county list for Brazoria, Matagorda, and Wharton Counties, as rare species could be present depending upon habitat availability. These lists are available online using the TPWD Rare, Threatened, and Endangered Species of Texas (RTEST) web application. If during construction, the project area is found to contain rare species, natural plant communities, or special features, TPWD recommends that precautions be taken to avoid impacts to them. The USFWS should be contacted for species occurrence data, guidance, permitting, survey protocols, and mitigation for federally listed species.

Determining the actual presence of a species in a given area depends on many variables including daily and seasonal activity cycles, environmental activity cues, preferred habitat, transiency and population density (both wildlife and human). The absence of a species can be demonstrated only with great difficulty and then only with repeated negative observations, taking into account all the variable factors contributing to the lack of detectable presence. If encountered during construction, measures should be taken to avoid impacting wildlife.

Vegetation

Based on a review of the Ecological Mapping Systems of Texas (EMST) project, the following vegetation types are found in the proposed project area:

- Post Oak Savanna: Live Oak Motte and Woodland
- Post Oak Savanna: Post Oak Motte and Woodland
- Post Oak Savanna: Post Oak - Yaupon Motte and Woodland
- Post Oak Savanna: Post Oak - Live Oak Motte and Woodland
- Gulf Coast: Salty Prairie Shrubland
- Gulf Coast: Salty Prairie
- Coastal Bend: Riparian Live Oak Forest
- Coastal Bend: Riparian Live Oak - Hardwood Forest
- Coastal Bend: Riparian Hardwood Forest
- Coastal Bend: Riparian Evergreen Shrubland
- Coastal Bend: Riparian Deciduous Shrubland
- Coastal Bend: Riparian Grassland
- Coastal Bend: Riparian Herbaceous Wetland
- Columbia Bottomlands: Live Oak Forest and Woodland

- Columbia Bottomlands: Mixed Evergreen - Hardwood Forest and Woodland
- Columbia Bottomlands: Hardwood Forest and Woodland
- Columbia Bottomlands: Evergreen Shrubland
- Columbia Bottomlands: Deciduous Shrubland
- Columbia Bottomlands: Grassland
- Columbia Bottomlands: Riparian Live Oak Forest and Woodland
- Columbia Bottomlands: Riparian Mixed Evergreen - Hardwood Forest and Woodland
- Columbia Bottomlands: Riparian Hardwood Forest and Woodland
- Columbia Bottomlands: Riparian Evergreen Shrubland
- Columbia Bottomlands: Riparian Deciduous Shrubland
- Columbia Bottomlands: Herbaceous Wetland
- Columbia Bottomlands: Riparian Grassland
- Columbia Bottomlands: Riparian Herbaceous Wetland
- Gulf Coast: Coastal Prairie
- Gulf Coast: Coastal Prairie Pondshore
- Gulf Coast: Salty Prairie Shrubland
- Gulf Coast: Salty Prairie
- Coastal: Salt and Brackish Low Tidal Marsh
- Coastal: Salt and Brackish High Tidal Shrub Wetland
- Coastal: Salt and Brackish High Tidal Marsh
- Coastal: Sea Ox-eye Daisy Flats
- Coastal: Tidal Flat
- Barren
- Marsh
- Native Invasive: Juniper Shrubland
- Native Invasive: Deciduous Woodland
- Native Invasive: Mesquite Shrubland
- Native Invasive: Common Reed
- Native Invasive: Baccharis Shrubland
- Native Invasive: Huisache Woodland or Shrubland
- Non-native Invasive: Saltcedar Shrubland
- Non-native Invasive: Rose Shrubland
- Non-Native Invasive: Chinese Tallow Forest, Woodland, or Shrubland

- Row Crops
- Pine Plantation 1 to 3 meters tall
- Urban High Intensity
- Urban Low Intensity
- Invasive: Evergreen Shrubland
- Open Water

Additional information about the EMST, including a link to download shape files, can be found at the TPWD Geographic Information Systems webpage.

Recommendation: TPWD recommends utilizing EMST data during project planning and minimizing impacts to native vegetation to the maximum extent feasible during project planning, design, and construction.

Recommendation: Mitigation should be planned for unavoidable loss of native vegetation disturbed by project activities and should be developed in coordination with TPWD. TPWD recommends utilizing online resources concerning vegetation, clearing, and revegetation, available at the TPWD Wildlife Habitat Assessment Program: Planning Tools and Best Management Practices webpage. Specific requirements apply to impacts to wetlands; please reference the above **Federal Laws *Clean Water Act*** and **State Law *Aquatic Resources*** sections for information on coordination of wetland mitigation with federal and state agencies.

Invasive Species

The study area is susceptible to colonization by a variety of invasive species of terrestrial plants. These plants often outcompete native plant species and establish monocultures, making the area less useful for wildlife, people, and lowering aesthetic value of an invaded area. Invasive species of particular concern are common water hyacinth *(Eichhornia crassipes)*, giant reed *(Arundo donax)*, Japanese honeysuckle *(Lonicera japonica)*, Chinese tallow *(Triadica sebifera)*, Japanese climbing fern *(Lygodium japonicum)*, Golden bamboo *(Phyllostachys aurea)*, kudzu *(Pueraria montana var. lobabta)*, Chinaberry *(Melia azedarach)*, giant salvinia *(Salvinia molesta)*, Chinese wisteria *(Wisteria sinensis)*, mimosa *(Albizia julibrissin)*, and Chinese privet *(Ligustrum sinense)*.

Recommendation: TPWD recommends CenterPoint Energy establish sanitation procedures to prevent the spread of invasive terrestrial plants. TPWD recommends such a plan include the following measures to minimize invasive plant spread: 1) Inspect the site for infestation prior to operations. 2) Avoid driving vehicles, mowers, all-terrain vehicles, or spray equipment through infestations in seed or fruit. 3) Brush and wipe all seeds and debris from clothes, boots, socks, and personal protective equipment. 4) Clean motorized equipment, especially the undercarriage and tire surfaces. 5) Cover loads or bag cut invasive plants before transport.

Recommendation: TPWD recommends CenterPoint Energy avoid utilizing invasive species in seed mixes or plantings for revegetation or soil stabilization purposes. More information and resources regarding revegetation and restoration with native plants may be found at TPWD's Wildlife Habitat Assessment Program: Planning Tools and Best Management Practices webpage and at the Pollinator Partnership Planting Guides webpage.

The zebra mussel *(Dreissena polymorpha),* a highly invasive aquatic species, has been documented in Texas lakes including lakes in the Red River Basin, Trinity River Basin, and Brazos River Basin. The zebra mussel larvae and post-larval forms are known to spread between waters via contaminated equipment; post-larval forms can survive several days out of water before being carried to other waters. Post-larval zebra mussels attach to hard surfaces, such as boats, intake structures and piers. The larvae, called veligers, are microscopic and are visually undetectable, thus they are unknowingly carried to other waters via live wells, bait buckets, scuba equipment, and anything that carries small amounts of water.

Statewide rules have been enacted per TAC Title 31, Part 2, Chapter 57, Subchapter N that requires persons leaving or approaching public fresh water to drain all water from their vessels and on-board receptacles (includes live wells, bilges, motors and any other receptacles or water-intake systems coming into contact with public waters). This rule applies to all sites where boats can be launched and includes all types and sizes of boats whether powered or not, personal watercraft, sailboats, kayaks/canoes, or any other vessel used to travel on public waters. Furthermore, per TAC Title 31, Part 2, Chapter 57, Subchapter A, it is an offense for any person to possess, transport,

or release into the water of this state any species, hybrid of a species, subspecies, eggs, seeds, or any part of any species defined as a harmful or potentially harmful exotic fish, shellfish, or aquatic plant. This rule applies not only to zebra mussels (live or dead) and their larvae but also to any species (or fragments thereof) designated as harmful or potentially harmful under this subchapter (e.g., giant salvinia, hydrilla, Eurasian watermillfoil).

Recommendation: If equipment comes in contact with inland streams or water bodies during construction, such as at temporary crossings, , and in order to minimize the risk of transporting zebra mussels or other aquatic invasive species on construction equipment and materials, TPWD recommends ETI review and adhere to the *TPWD Clean/Drain/Dry Procedures and Zebra Mussel Decontamination Procedures for Contractors Working in Inland Public Waters* for equipment and materials entering or leaving waters at the project site. The procedures can be obtained at TPWD's Wildlife Habitat Assessment Program: Planning Tools and Best Management Practices webpage.

Monarch and Pollinator Conservation

There is widespread concern regarding the decline of monarch butterflies (*Danaus plexippus*) and other native insect pollinator species due to reductions in native floral resources. To support pollinators and migrating monarchs, TPWD encourages the establishment of native wildflower habitats on private and public lands. Establishing wildflower habitats in new developments can contribute to pollinator conservation. Infrastructure ROW can provide habitat for a diverse community of pollinators, providing forage for food and breeding or nesting opportunities. Infrastructure ROWs extend across a variety of landscapes and can aid dispersal of pollinators by linking fragmented habitats. By acting as refugia for pollinators in otherwise inhospitable landscapes, this habitat can contribute to the maintenance of healthy ecosystems and provision of ecological services such as crop pollination services. Recent publications on conserving pollinators in Texas can be found at the TPWD Wildlife Habitat Assessment Program: Planning Tools and Best Management Practices webpage.

Recommendation: To contribute to pollinator conservation efforts, TPWD encourages CenterPoint Energy to revegetate impacted areas with vegetation which provides habitat for monarch butterflies and other

pollinator species. Species appropriate for the project area can be found by accessing the Lady Bird Johnson Wildflower Center, working with TPWD biologists to develop an appropriate list of species, or utilizing resources found at the Xerces Society's Guidelines webpage.

Recommendation: TPWD advises against planting the non-native milkweed species black swallow-wort (*Cynanchum louiseae*) and pale swallow-wort (*C. rossicum*). Monarch butterflies will lay eggs on these plant species, but the larvae are unable to feed and complete their life cycle. Additionally, these plant species can be highly invasive.

Conservation Easements

A conservation easement is a legal agreement between a landowner and a land trust or governmental agency that permanently limits uses of the land (including future fragmentation) to protect and conserve the land's natural values such as fertile soils, mature trees, and wildlife habitat. Lands with conservation easements protect existing wildlife habitat from future fragmentation and therefore have greater environmental integrity than comparable lands without conservation easements. Potential fragmentation of wildlife habitat from transmission line construction on properties where conservation agreements serve to protect the state's natural resources now and in the future is of concern to TPWD.

Based on the information provided by POWER in the project submittal dated September 11, 2017, and within spatial data provided to TPWD on September 27. 2017, several conservation easements are located within the study area. These properties are shown on the attached map.

Recommendation: TPWD recommends properties protected by conservation easements be identified in the constraints analysis and avoided during development of alternative routes. Data sources for the location of these properties include, but are not limited to, online databases such as the Protected Areas Data Portal at and the National Conservation Easement Database, as well as available county records. If properties protected by conservation easements would be affected, TPWD recommends the length of routes through these properties be included in any accounting of alternative route impacts presented in the EA.

Mitigation Plan

TPWD recommends preparing a mitigation plan to provide compensatory mitigation for those habitats where impacts from the transmission line cannot be avoided or minimized. This would include impacts to species and habitats covered under federal law (wetlands and associated habitats, threatened or endangered species) and state resource habitat types not covered by state or federal law (riparian areas, native prairies). At a minimum, TPWD recommends a replacement ratio of 1:1 for state resource habitat types. For more detailed suggestions or information regarding a mitigation plan, please contact this office.

Thank you for considering potential impacts to Texas' wildlife and natural resources during project planning. Please contact me at (361) 412-9012 or Rachel.Lange@tpwd.texas.gov if you have any questions.

Sincerely,

Rachel Lange
Wildlife Habitat Assessment Program
Wildlife Division

RL: 38481

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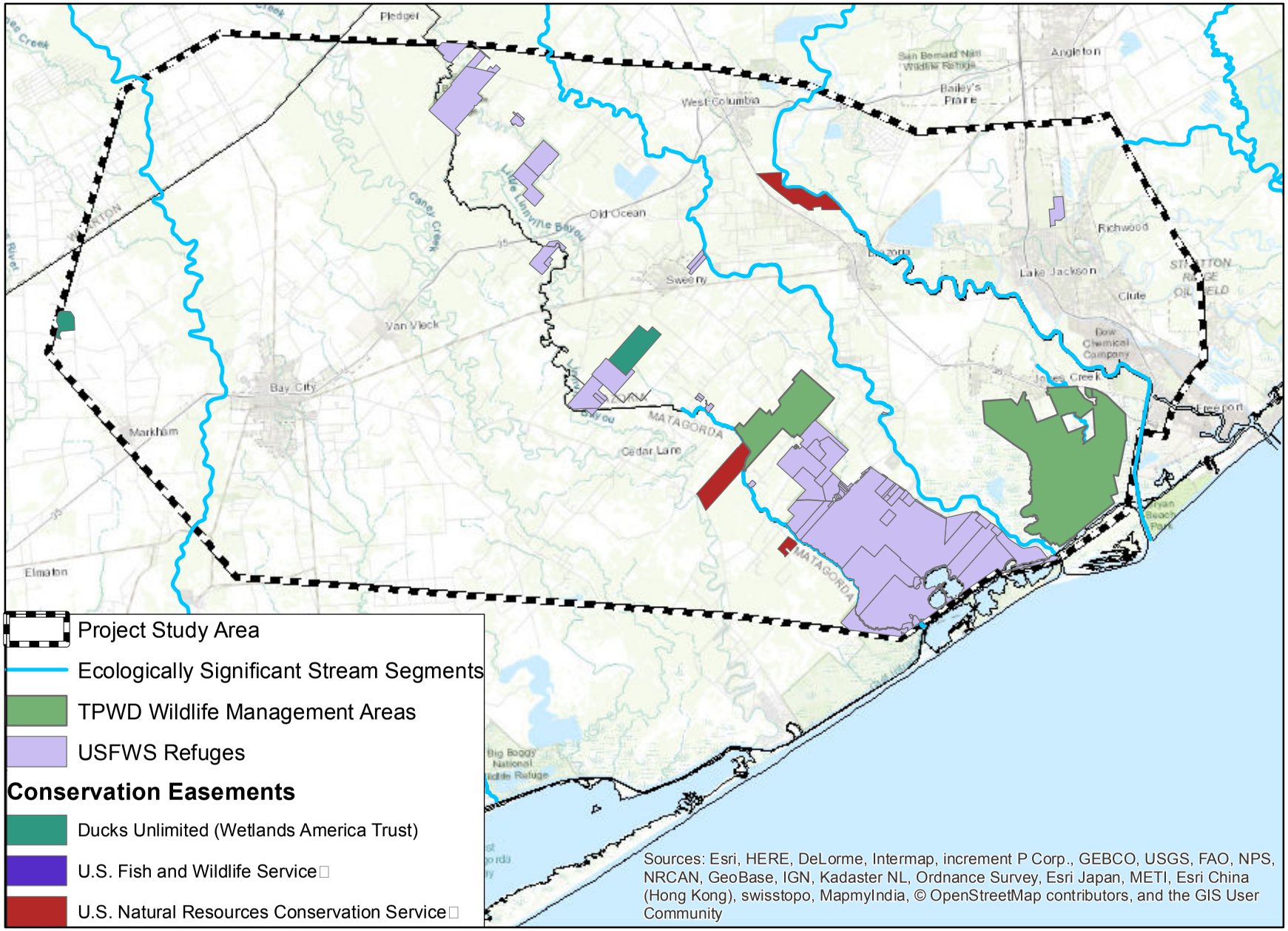
Conservation Properties and ESSS within Bailey to Jones Creek Study Area



10/05/2017

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

TEXAS PARKS & WILDLIFE

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Meaux, Lisa

From: Kristin Miller <Kristin.Miller@twdb.texas.gov>
Sent: Wednesday, September 20, 2017 9:46 AM
To: Meaux, Lisa
Cc: Dain Larsen
Subject: Bailey to Jones Creek Project, Brazoria, Matagorda, and Wharton Counties

Good morning,

We received your letter dated September 13, 2017, requesting information concerning environmental and land use constraints for the Bailey to Jones Creek Project, a new double-circuit 345 kilovolt (kV) electric transmission line located in Brazoria, Matagorda, and Wharton Counties, Texas, within the CenterPoint Energy Houston Electric LLC (Center Point Energy) existing service territory.

To assist responsible development of the state's water resources and provide affordable water and wastewater services, the Texas Water Development Board (TWDB) provides planning, geographic data collection and dissemination, and financial and technical assistance. The TWDB is not a regulatory agency and does not issue permits or easements.

Currently, we have do not have any active TWDB-funded projects located in the areas of the proposed project. Please be aware that this review does not include projects for which local entities may have only submitted brief project information forms or incomplete applications.

For future reference, you may find potential projects in the State Water Plan online (http://www.twdb.texas.gov/waterplanning/swp/index.asp). The Regional Water Planning Area K includes references to needs but does not necessarily describe specific projects. You will need to contact local entities, including municipalities, county governments, water supply corporations, etc., in order to determine if there are specific water/wastewater projects that may conflict with the proposed project.

Please contact me if you have any further questions.

Regards,

Kristin M. Miller, P.G.
Environmental Reviewer
Regional Water Project Development
Water Supply & Infrastructure
1700 N. Congress Avenue
Austin, Texas 78701
512.475.1701
kristin.miller@twdb.texas.gov
Texas Water Development Board

Meaux, Lisa

From: Paul Shinkawa <Paul.Shinkawa@LCRA.ORG>
Sent: Monday, September 18, 2017 3:17 PM
To: Meaux, Lisa
Cc: Marcus Ollington; Vic Ramirez
Subject: Bailey to Jones Creek Project

Lisa:

Would you please send a copy of the ShapeFiles for the Study Area on the Baily to Jones Creek Project to Marcus Ollington. He will oversee getting the LCRA data onto the files. I would appreciate a copy of the fileset as well.

Marcus can be reached at Marcus.Ollington@lcra.org. he can be reached at (512) 578-4530.

-Paul Shinkawa

Meaux, Lisa

From: Meaux, Lisa
Sent: Friday, September 22, 2017 1:21 PM
To: 'Paul Shinkawa'
Cc: Marcus Ollington; Vic Ramirez; 'Fox, Steven T'
Subject: RE: Bailey to Jones Creek Project
Attachments: Bailey_Jones_Creek_Study_Area.zip

Paul and Marcus,
Per your request, attached is the shapefile of the preliminary study area boundary for the Bailey to Jones Creek Project.
Thank you,
Lisa

Lisa Barko Meaux
Project Manager
Environmental Department Manager
16825 Northchase Drive, Suite 1200
Houston, Texas 77060
281-765-5507 direct
713-962-8476 cell
lisa.barko@powereng.com

POWER Engineers, Inc.
Energy ■ Facilities ■ Communications ■ Environmental
www.powereng.com

From: Paul Shinkawa [mailto:Paul.Shinkawa@LCRA.ORG]
Sent: Monday, September 18, 2017 3:17 PM
To: Meaux, Lisa
Cc: Marcus Ollington; Vic Ramirez
Subject: Bailey to Jones Creek Project

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Marcus can be reached at Marcus.Ollington@lcra.org. he can be reached at (512) 578-4530.

-Paul Shinkawa

Meaux, Lisa

From: Marla Jasek <mjasek@cityofbaycity.org>
Sent: Wednesday, January 17, 2018 11:16 AM
To: Meaux, Lisa
Subject: City of Bay City, Matagorda County

Regarding the CenterPoint Energy transmission line. . .

My contact information:

Marla Jasek, PE, CFM
Asst. Director of Public Works
City of Bay City
979.323.1160
Cell 979.429.0675

Meaux, Lisa

From: Marla Jasek <mjasek@cityofbaycity.org>
Sent: Friday, January 19, 2018 1:40 PM
To: Meaux, Lisa
Subject: Bailey to Jones Creek Project

In response to the letter you sent out on September 11, 2017 to our Mayor, Mark Bricker. . .

The City of Bay City is not aware of any constraints within the City of Bay City for an alternative route for the proposed transmission line. If you do bring the transmission line through the city, we would want to establish a franchise agreement between the City and CenterPoint Energy.

If you have any questions about ongoing or proposed development in the Bay City area, give me a call. I am the primary contact platting and utility extensions for new development in the City and ETJ.

FYI—I will be at the public meeting in Bay City on February 13th.

Marla Jasek, PE, CFM
Asst. Director of Public Works
City of Bay City
979.323.1160

Wharton County Historical Commission

"We will protect, preserve and promote our heritage."

October 20, 2017

Lisa Barko Meaux
Project Manager
Power Engineers, Inc.
18825 Northchase Drive, Suite 1200
Houston, TX 77060

Dear Ms. Meaux:

I received your letter of September 11 and want to apologize for my delay in responding. My husband and I have just recently returned from traveling overseas, and I did not see the mail until Tuesday, October 17.

Since I am not working with projects and permits in my volunteer work with Wharton County Historical Commission, I have appealed to County Judge Phillip Spenrath for assistance in replying. I am sure you will receive a prompt reply from his office. If you need additional assistance or information from me, though, please do not hesitate to email me at blairpatm@gmail.com or call our home at 979-532-8023.

Sincerely,

Patricia Blair

Patricia M. Blair, Chair

Brazos River Authority

QUALITY • CONSERVATION • SERVICE

September 15, 2017

Ms. Lisa Barko Meaux
Project Manager
Power Engineers, Inc.
16825 Northchase Drive Suite 1200
Houston, Texas 77060

Re: Bailey to Jones Creek Project
Brazoria, Matagorda and Wharton Counties, TX
POWER Engineers, Inc. Project No. 147806

Dear Ms. Meaux:

Please be advised that the Brazos River Authority operates a waste water treatment facility within the described project study area. The facility is located at 1411 Mockingbird Lane Clute, Tx. 77531. Should your project impact this facility we request that you please contact the Brazos River Authority at 979-265-3619 or 254-761-3100. At that time arrangements will be made for any approvals, permits or easements that may be required.

Sincerely,

JOHN DICKSON
Property Administrator

4600 Cobbs Drive • P.O. Box 7555 • Waco, Texas 76714-7555
254-761-3100 • FAX 254-761-3202

Tel: 281.576.1634
10330 Lake Rd. Bldg. J
Houston TX 77070

September 21, 2017

Lisa Barko Meaux
POWER Engineers, Inc.
16825 Northchase Drive
Suite 1200
Houston, TX 77060
Tel: (281) 765-5500
Email: Lisa.barko@powereng.com

RE: Bailey to Jones Creek Project
Brazoria, Matagorda, and Wharton Counties, TX
POWER Engineers, Inc. Project No. 147806

Dear Ms. Meaux,

Bayou Land Conservancy (BLC) is an accredited regional land trust that holds 58 conservation easements in the Houston region, including four preserves that could be directly impacted by the proposed electric transmission line. We are submitting our comment as an interested party in the Environmental Assessment and Alternative Route Analysis of the Bailey to Jones Creek Project.

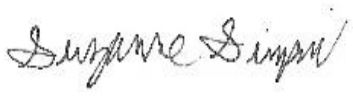
In reviewing the project study area map provided with your letter, **we request that any new electrical transmission lines avoid protected conservation lands and seek an alternate route**. BLC holds conservation easements on two properties located southwest of the intersection of FM 2668 and SH 60, less than 1 mile east of the Colorado River, known as the Live Oak Creek Preserve I and II. BLC also holds conservation easements on two properties located between FM 1459 and FM 524, known as Dance Bayou Preserve and Danza del Rio Preserve. Live Oak Creek I and Danza del Rio also serve as mitigation banks. A location map of the conservation easements is included as *Exhibit A*. New electrical lines, which are prohibited by the terms of the conservation easements, would be detrimental to the ecological values that BLC protects in perpetuity.

Live Oak Creek Preserves I and II are ecologically diverse areas that protect crucial wetland and riparian corridors, which provide thousands of dollars in ecosystem services annually. The restoration of the property will enhance the riparian corridor and contribute to the ecological benefits within the East Matagorda Bay watershed.

Dance Bayou and Danza del Rio Preserves protect and restore the threatened Columbia Bottomland habitat, which is under severe threat from human encroachment and development, and covers only 25% of its original extent. The properties also directly abut the San Bernard National Wildlife Refuge, increasing the connectivity and range of these federally protected lands.

Bayou Land Conservancy appreciates the opportunity to respond. Please reach out to me directly with any questions or comments.

Sincerely,



Suzanne Simpson
Land Stewardship Director
Bayou Land Conservancy

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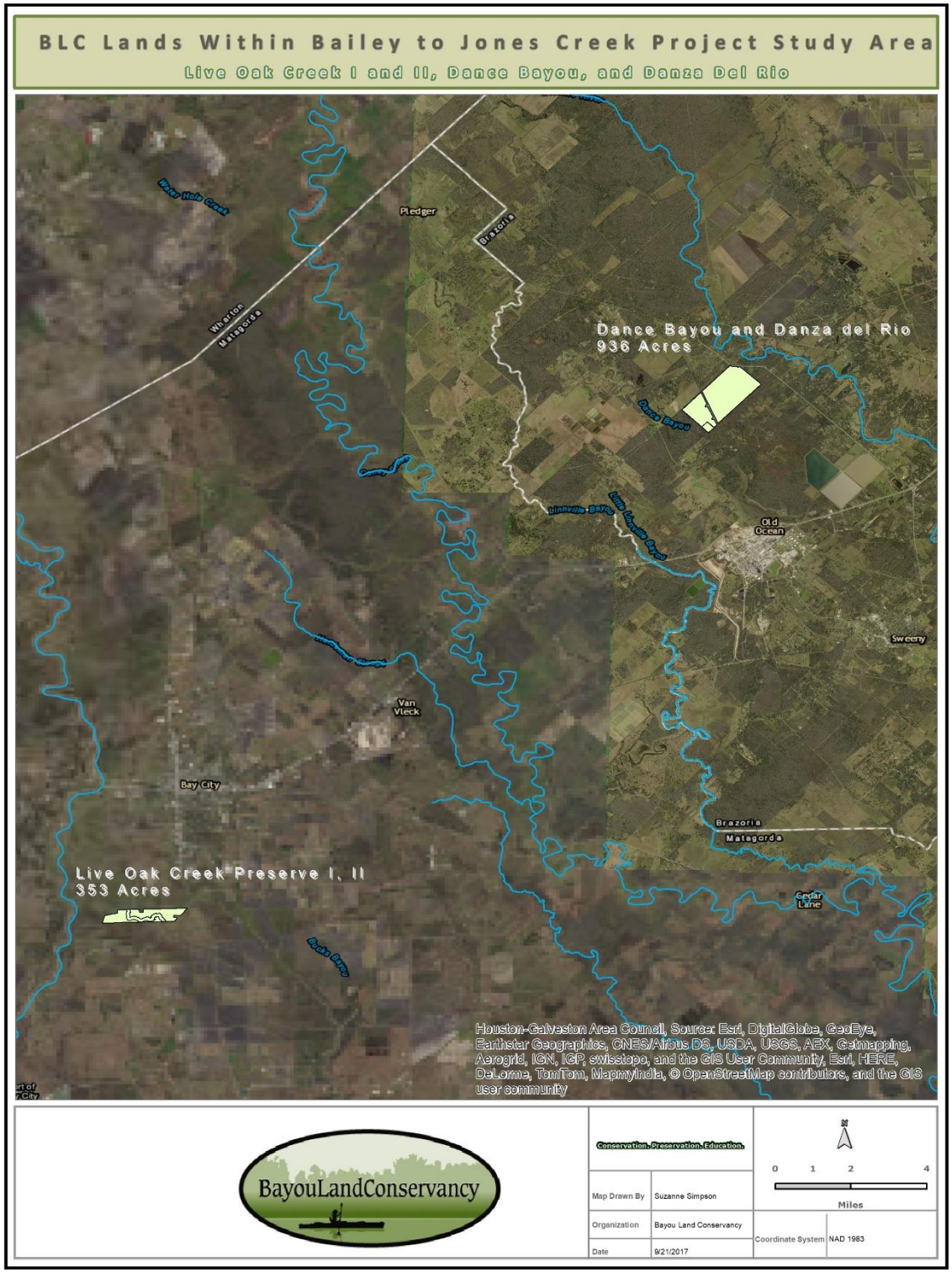
Exhibit 1 – BLC Lands within Study Area



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Meaux, Lisa

From: Paul Shinkawa <Paul.Shinkawa@LCRA.ORG>
Sent: Wednesday, November 01, 2017 11:16 AM
To: Meaux, Lisa
Subject: RE: Bailey to Jones Creek Project
Attachments: matagorda_canals.cpg; matagorda_canals.dbf; matagorda_canals.prj; matagorda_canals.sbn; matagorda_canals.sbx; matagorda_canals.shp; matagorda_canals.shp.xml; matagorda_canals.shx; matagorda_parcels.cpg; matagorda_parcels.dbf; matagorda_parcels.prj; matagorda_parcels.sbn; matagorda_parcels.sbx; matagorda_parcels.shp; matagorda_parcels.shx; Matagorda_assets.pdf

Lisa:

Attached are the shape files for the Bailey to Jones Creek Project containing Lower Colorado River Authority assets. I am told that our reservoir project is about 325 feet outside of your study area, but we have a network of irrigation canals and associated assets within the study area. Let me know if there is anything else you need.

-Paul Shinkawa

From: lisa.barko@powereng.com [mailto:lisa.barko@powereng.com]
Sent: Friday, September 22, 2017 1:21 PM
To: Paul Shinkawa <Paul.Shinkawa@LCRA.ORG>
Cc: Marcus Ollington <Marcus.Ollington@LCRA.ORG>; Vic Ramirez <Vic.Ramirez@LCRA.ORG>; Fox, Steven T <steven.fox@centerpointenergy.com>
Subject: RE: Bailey to Jones Creek Project

Message received from an external source
Paul and Marcus,
Per your request, attached is the shapefile of the preliminary study area boundary for the Bailey to Jones Creek Project.
Thank you,
Lisa

Lisa Barko Meaux
Project Manager
Environmental Department Manager
16825 Northchase Drive, Suite 1200
Houston, Texas 77060
281-765-5507 direct
713-962-8476 cell
lisa.barko@powereng.com

POWER Engineers, Inc.
Energy ■ Facilities ■ Communications ■ Environmental
www.powereng.com

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Cc: Marcus Ollington; Vic Ramirez
Subject: Bailey to Jones Creek Project

Lisa:

Would you please send a copy of the ShapeFiles for the Study Area on the Baily to Jones Creek Project to Marcus Ollington. He will oversee getting the LCRA data onto the files. I would appreciate a copy of the fileset as well.

Marcus can be reached at Marcus.Ollington@lcra.org. he can be reached at (512) 578-4530.

-Paul Shinkawa

Meaux, Lisa

From: Cuyos, Tammie <tammie.cuyos@ineos.com>
Sent: Wednesday, October 04, 2017 12:52 PM
To: Meaux, Lisa
Subject: Project No. 147806

Hi Lisa,

Sorry I missed your deadline but your letter regarding the Bailey to Jones Creek Project just reached my desk.

Based on the map enclosed with your correspondence, INEOS will have no impact to our property or easements.

Thank you,
Tammie

Tammie Cuyos | Land Resource Manager | Pipeline Supply Organization
INEOS USA LLC | PO Box 1488, Alvin, TX 77512-1488
Direct: 281.581.3748 | Cell: 281.910.4916 | tammie.cuyos@ineos.com

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Appendix B

Public Involvement

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CenterPoint Energy to host Public Meetings for the proposed Bailey-Jones Creek Project

CenterPoint Energy Houston Electric, LLC (CenterPoint Energy) will hold public open house meetings at the following dates, times and locations:

Tuesday February 6, 2018 Lake Jackson Civic Center 333 Highway 332, Lake Jackson, TX 77566 5:00 p.m. – 8:00 p.m.	**Thursday February 8, 2018** Wharton Civic Center 1924 North Fulton Street, Wharton, TX 77488 5:00 p.m. – 8:00 p.m.	**Tuesday February 13, 2018** Bay City Civic Center 201 Seventh Street, Bay City, TX 77414 5:00 p.m. – 8:00 p.m.

The purpose of the public meetings is to discuss and share information on potential routes for a proposed 345 kilovolt (kV) electric transmission line in Wharton, Brazoria, and Matagorda Counties known as the Bailey-Jones Creek project. The proposed transmission line is required to maintain transmission grid reliability and accommodate the anticipated load growth in the Brazoria/Freeport Region. The proposed construction includes a 345 kV double-circuit transmission line, located along a yet-to-be-determined route, connecting the existing Bailey substation located in southeast Wharton County to the existing Jones Creek substation located in south-central Brazoria County.

The map illustrates the proposed Preliminary Transmission Line Segments. All of the proposed preliminary segments shown on the map are under consideration at this time; however, not all of the segments will be constructed. The Public Utility Commission of Texas will determine the final route in a proceeding to consider an Application for a Certificate of Convenience and Necessity that will be filed by CenterPoint Energy.

Information stations with representatives from CenterPoint Energy and environmental specialists from both CenterPoint Energy and POWER Engineers, Inc. will be available to share information about the need for the transmission project, the type of structures proposed for the new transmission line, construction methods to be used, and transmission right-of-way requirements. A questionnaire will be provided by CenterPoint Energy for individuals to complete regarding their preferences and to provide comments. Refreshments will be provided.

For more information about the proposed project, the public meetings, and a copy of the questionnaire, please visit our website at http://www.centerpointenergy.com/baileyjonescreek, or contact the 345 kV Bailey-Jones Creek project team at 713-207-6490 or email at baileyjonescreek@centerpointenergy.com.

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BAILEY TO JONES CREEK PROJECT

PRELIMINARY TRANSMISSION LINE SEGMENTS

Legend

- Study Area
- Project Substation Tie Point
- Preliminary Transmission Line Segment
- Existing Substation
- Existing Transmission Line
- State Highway
- Farm-to-Market Road
- Railroad
- River / Stream
- Waterbody
- City Limits
- County Boundary

TEXAS

Project Study Area

0 1.75 3.5

Miles

POWER ENGINEERS

CenterPoint Energy

Date: 1/4/2018

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January 9, 2018

<<Name>>
<<Address1>>
<<Address2>>
<<City>>, <<State>> <<Zip>>

Property ID Number: <<PID>>

Dear <<Name>>,

You are invited to attend any of several public meetings hosted by CenterPoint Energy Houston Electric, LLC ("CenterPoint Energy") to discuss and share information on potential routes for a proposed 345 kilovolt (kV) electric transmission line in Wharton, Brazoria, and Matagorda Counties known as the Bailey-Jones Creek project. As a landowner near the proposed electric transmission line segments, we value your input, feedback, questions and comments and this is an opportunity for CenterPoint Energy to visit with you one-on-one about the process and project.

The dates, times and locations for the public meetings are:

Tuesday February 6, 2018	**Thursday February 8, 2018**	**Tuesday February 13, 2018**
Lake Jackson Civic Center	Wharton Civic Center	Bay City Civic Center
333 Highway 332, Lake Jackson, TX 77566	1924 North Fulton Street, Wharton, TX 77488	201 Seventh Street, Bay City, TX 77414
5:00 p.m. – 8:00 p.m.	5:00 p.m. – 8:00 p.m.	5:00 p.m. – 8:00 p.m.

The proposed transmission line is required to maintain transmission grid reliability and accommodate the anticipated load growth in the Brazoria/Freeport Region. The proposed construction includes a 345 kV double-circuit transmission line, located along a yet-to-be-determined route, connecting the existing Bailey substation located in southeast Wharton County to the existing Jones Creek substation located in southeast Brazoria County.

All of the proposed preliminary segments displayed on the enclosed map are under consideration at this time; however, not all of the segments will be constructed. The Public Utility Commission of Texas will determine the final route in a proceeding when it considers CenterPoint Energy's filing of an Application for a Certificate of Convenience and Necessity.

Information stations with subject matter experts from CenterPoint Energy and environmental specialists from both CenterPoint Energy and a consulting and engineering firm under contract with CenterPoint Energy, POWER Engineers, Inc., will be available to share information about the need for the transmission project, the type of structures proposed for the new transmission line, construction methods to be used, and transmission right-of-way requirements. CenterPoint Energy will provide a questionnaire for landowners to complete regarding their preferences and to provide comments. Refreshments will be provided.

For more information about the proposed project, the public meetings, and a copy of the questionnaire, please visit our website at http://www.centerpointenergy.com/baileyjonescreek, or contact the 345 kV Bailey-Jones Creek project team at 713-207-6490 or email at baileyjonescreek@centerpointenergy.com.

Sincerely,

Lesli Cummings

Lesli Cummings
Manager, Transmission Accounts and Support

Enclosure

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BAILEY TO JONES CREEK PROJECT

PRELIMINARY TRANSMISSION LINE SEGMENTS

Legend

- Study Area
- Project Substation Tie Point
- Preliminary Transmission Line Segment
- Existing Substation
- Existing Transmission Line
- State Highway
- Farm-to-Market Road
- Railroad
- River / Stream
- Waterbody
- City Limits
- County Boundary

TEXAS

Project Study Area

0 1.75 3.5

Miles

POWER ENGINEERS

CenterPoint Energy

Date: 1/4/2018

403

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BAILEY TO JONES CREEK PROJECT
PUBLIC MEETING QUESTIONNAIRE
February 6, 8, and 13, 2018

1. How did you learn about this public meeting?

_____ Newspaper Notice _____ Invitation Letter _____ Other (please specify) _____

2. In your opinion, has the need for the project been adequately explained to you?

Yes ____ No _____ If no, please explain: _____

3. Please rank from 1 to 11 the following land uses that you believe should be considered of greatest concern (avoided if possible) to least concern in routing the transmission line. Please use each number only once. (1 = greatest concern; 11 = least concern)

_____ Agricultural land
_____ Floodplains or wetlands
_____ Recreational or park areas
_____ Residential areas or subdivisions
_____ Commercial areas
_____ Schools
_____ Churches
_____ Cemeteries
_____ Historic Sites
_____ Wildlife
_____ Other (please specify) _____

4. Please rank from 1 to 7 the following linear facilities that you believe should be considered of greatest importance to least importance for the transmission line route to follow. Please use each number only once. (1 = most important; 7 = least important)

_____ Roads
_____ Pipelines
_____ Property lines
_____ Electrical lines
_____ Railroads
_____ Ditches
_____ Other (please specify) _____

5. In your opinion, are there any other factors or features that should be considered in determining the routing of the proposed transmission line?

Yes _____ No _____

If yes, please list them below and briefly explain why they are important to you.

(over)

6. The following features are noted on the Constraints Map at the Routing/Environmental station:

- Churches, schools, nursing homes, hospitals, and cemeteries
- Commercial AM and FM radio transmitters, microwave relay stations, or other similar electronic installations
- Airports and landing strips
- Pastures or cropland irrigated by traveling irrigation systems
- Parks and recreational areas
- Historical and archaeological sites
- Environmentally sensitive areas
- Floodplain and floodway boundaries

Are any of these features incorrectly shown on the map or are you aware of any additional features that were not included?

Yes _____ No _____

If yes, did you speak with a representative and indicate the corrections needed to the map?

Yes _____ No _____

If you were not able to speak to a representative, please identify the approximate location of any missing or incorrectly located features on the Constraints Map by describing the feature and location below.

7. If you have a concern with a particular preliminary transmission line segment(s) shown on the exhibits or the attached map, please indicate the segment letter and describe your concern.

8. Do you have a preference on the type of transmission structures being proposed?

Yes _____ No _____

If so, please explain the type of transmission structures you prefer and why?

9. Which of the following applies to you? Please include the segment(s) letters. (See attached map.)

_____ A preliminary transmission line segment is near my home.
Applicable Segment(s) _____

_____ A preliminary transmission line segment is near my business.
Applicable Segment(s) _____

_____ A preliminary transmission line segment is on my land .
Applicable Segment(s) _____

_____ None of the above

_____ Other (please specify) _____

(over)

10. Did the information provided and exhibits displayed at the public meeting meet your needs?
Yes _____ No _____ If no, please explain: _____

_____

_____

11. Have you visited the Bailey to Jones Creek Project website (www.centerpointenergy.com/baileyjonescreek) to view information about the project?

Yes _____ No _____

12. **Your name and contact information are optional**, unless you have a question that you would like for us to answer.

Name _____

☐ Do Not Contact Me ☐ Contact me regarding the following question (please specify)

_____

_____

_____

_____

I prefer to be contacted by: (choose all that apply)

☐ U.S. Mail Address _____

City _____ State _____Zip _____

☐ Telephone (home) _____ (work) _____ (cell) _____

☐ Email Address _____

13. Additional comments (please specify): _____

_____

_____

_____

_____

THANK YOU FOR COMPLETING THE QUESTIONNAIRE. WE APPRECIATE YOUR INPUT.

Please drop off your completed questionnaire at the registration table as you leave the public meeting. If you need to take it with you to complete later, please mail or email it within 5 days to:

Steven Fox, Bailey to Jones Creek CCN Project Manager
CenterPoint Energy
Transmission Operations, CNP-T 14th Floor
P.O. Box 1700
Houston, TX 77251-1700
Phone: (713) 207-6490
Email: baileyjonescreek@centerpointenergy.com

Appendix C

Environmental and Land Use Data for Proposed Transmission Line Segments and Alternative Routes (Tables 4-1 and 4-2)

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Table 4-1
Environmental and Land Use Data
for the Proposed Transmission Line Segments
8/31/2018

	Evaluation Criteria	Proposed Transmission Line Segments														
	Land Use	**AA**	**AP**	**B**	**BI**	**BJ**	**BK**	**BL**	**BM**	**BU**	**BV**	**BW**	**BX**	**C**	**CB**	**CC**
1	Length of segment (feet)	29,808	26,170	1,202	13,180	19,168	816	14,080	8,977	5,501	1,115	10,537	11,711	13,494	29,115	20,788
2	Length of segment (miles)	5.6	5.0	0.2	2.5	3.6	0.2	2.7	1.7	1.0	0.2	2.0	2.2	2.6	5.5	3.9
3	Number of directly affected habitable structures[1] within 500 feet of segment centerline	53	120	0	35	1	0	46	3	5	5	29	33	0	20	19
4	Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	2	3	0	11	0	0	3	0	0	0	0	0	0	0	0
5	Number of habitable structures[1] potentially to be relocated/removed[2]	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Length of segment using existing transmission line easement	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Length of new ROW required for segment	5.6	5.0	0.05	2.5	3.6	0.2	2.7	1.7	1.0	0.2	2.0	2.2	2.6	5.5	3.9
8	Length of segment parallel to existing transmission line ROW	0.0	0.2	0.2	0.1	0.0	0.1	0.5	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0
9	Length of segment not utilizing/paralleling existing transmission line ROW	5.6	4.7	0.0	2.4	3.6	0.1	2.2	1.7	1.0	0.2	2.0	2.2	0.0	5.5	3.9
10	Length of segment parallel to existing pipeline ROW	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.1	1.0	1.0	0.0
11	Length of segment parallel to existing railroad ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Length of segment paralleling apparent property lines (or other natural or cultural features)[3]	3.6	0.8	0.0	1.4	1.8	0.1	1.0	1.7	1.0	0.2	2.0	0.9	0.0	3.9	3.8
13	Length of segment parallel to other existing ROW (roadway, etc.)	0.7	2.9	0.0	0.9	0.0	0.0	0.8	0.0	0.0	0.0	0.0	1.0	0.0	1.6	0.1
14	Length of segment not parallel to railroad ROW, apparent property lines, or other existing ROW (roadway, etc.)	1.4	1.1	0.0	0.2	1.8	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
15	Percent of segment parallel with apparent features, property lines, railroads, or an existing ROW	**76%**	**79%**	**100%**	**93%**	**50%**	**100%**	**97%**	**100%**	**100%**	**100%**	**100%**	**88%**	**100%**	**100%**	**100%**
16	Length of segment across parks/recreational areas[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Number of additional parks/recreational areas[4] within 1,000 feet of segment centerline	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
18	Total length of segment across TDCJ and TPWD properties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Length of segment across TDCJ property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Length of segment across TPWD property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Length of segment across residential areas	1.5	3.6	0.0	0.8	0.0	0.0	0.4	0.2	0.2	0.2	1.1	0.9	0.0	0.7	0.3
22	Length of segment across commercial/industrial areas	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	Length of segment across agricultural land/cropland	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0
24	Length of segment across pastureland	4.1	3.8	0.0	1.5	3.0	0.1	2.2	1.5	1.0	0.2	2.0	0.9	0.7	5.1	1.9
25	Length of segment across mobile irrigated cropland or pastureland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	Number of pipeline crossings	37	6	3	1	5	0	0	4	3	1	31	15	1	7	2
27	Number of transmission line crossings	1	1	2	1	0	0	1	0	0	0	0	0	0	0	0
28	Number of U.S. and state highway crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	Number of F.M. road crossings	4	0	0	0	0	0	1	0	0	1	0	0	0	1	0
30	Number of local road crossings	2	6	0	5	2	0	2	1	0	0	1	3	0	2	2
31	Number of cemeteries within 1,000 feet of the segment centerline	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
32	Number of heliports within 5,000 feet of segment centerline	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Number of private airstrips within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	Number of FAA-listed airports[5] within 10,000 feet of segment centerline having no runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Number of FAA-listed airports[5] within 20,000 feet of segment centerline having at least one runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Number of commercial AM radio transmitters within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Number of FM radio transmitters, microwave relay stations, and other electronic installations etc. within 2,000 feet of segment centerline	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0
38	Number of water wells within the ROW	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
39	Number of oil and gas wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aesthetics															
40	Estimated length of segment within foreground visual zone[6] of U.S. and state highways	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41	Estimated length of segment within foreground visual zone[6] of FM and county roads	3.6	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.4	0.2	0.2	0.2	0.0	0.6	0.4
42	Estimated length of segment within foreground visual zone[6][7] of park and recreational areas[4]	0.9	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.1
	Ecology															
43	Length of segment across upland woodlands	1.5	1.6	0.0	0.9	0.0	0.0	0.4	0.3	0.4	0.0	0.2	1.3	0.0	1.3	1.6
44	Length of segment across bottomland/riparian woodlands	0.3	0.0	0.01	0.1	0.7	0.0	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6
45	Length of segment across National Wetland Inventory mapped forested or scrub/shrub wetlands[8]	0.07	0.00	0.00	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.22
46	Length of segment across National Wetland Inventory mapped emergent wetlands[8]	0.00	0.00	0.00	0.02	0.20	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.21	0.28	0.00
47	Total length of segment across National Wetland Inventory mapped wetlands	0.07	0.00	0.00	0.04	0.25	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.41	0.28	0.22
48	Length of segment across USACE designated Columbia Bottomlands	0.00	0.004	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00
49	Length of segment across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	Length of segment across Coastal Management Zone	2.7	2.0	0.0	2.5	3.2	0.0	1.0	1.3	0.0	0.0	0.4	0.5	0.0	0.0	0.0
51	Length of segment across known habitat of federal endangered/threatened species of plants or animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	Length of segment across open water (lakes or ponds)	0.03	0.0	0.0	0.1	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.03	0.0
53	Number of stream and canal crossings	9	6	0	6	7	0	3	2	2	0	0	1	3	5	5
54	Length of segment parallel to streams and canals within 100 feet of segment centerline	0.0	0.0	0.0	0.1	0.2	0.0	0.5	0.1	0.0	0.0	0.0	0.0	1.0	0.0	0.0
55	Length of segment across 100-year floodplains	3.0	4.1	0.0	2.5	3.6	0.2	0.1	1.7	0.0	0.0	1.0	0.7	0.4	1.0	0.4
	Cultural Resources															
56	Number of recorded historical and archeological sites crossed within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Number of additional recorded historical and archeological sites within 1,000 feet of segment centerline	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
58	Number of National Register of Historic Places listed or determined-eligible properties within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of segment centerline	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
60	Length of segment across areas of high archaeological/historic site potential	3.6	0.0	0.2	0.5	1.2	0.0	1.4	0.0	0.6	0.2	0.0	0.4	1.2	2.2	2.4

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] As listed in the Chart Supplement South Central U.S. (FAA 2018b formerly known as the Airport/Facility Directory South Central U.S.), and FAA 2018a.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[8] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

Table 4-1
Environmental and Land Use Data
for the Proposed Transmission Line Segments
8/31/2018

	Evaluation Criteria	Proposed Transmission Line Segments														
	Land Use	**CD**	**CE**	**CF**	**CM**	**CQ**	**CR**	**CS**	**CT**	**CU**	**CV**	**CW**	**CX**	**CY**	**CZ**	**D**
1	Length of segment (feet)	6,605	5,765	10,584	8,505	1,610	6,453	5,224	1,877	3,693	6,490	523	25,618	19,126	4,237	871
2	Length of segment (miles)	1.3	1.1	2.0	1.6	0.3	1.2	1.0	0.4	0.7	1.2	0.1	4.9	3.6	0.8	0.2
3	Number of directly affected habitable structures[1] within 500 feet of segment centerline	4	6	32	29	2	7	23	8	21	3	4	17	20	2	0
4	Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
5	Number of habitable structures[1] potentially to be relocated/removed[2]	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6	Length of segment using existing transmission line easement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Length of new ROW required for segment	1.3	1.1	2.0	1.6	0.3	1.2	1.0	0.4	0.7	1.2	0.1	4.9	3.6	0.8	0.2
8	Length of segment parallel to existing transmission line ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
9	Length of segment not utilizing/paralleling existing transmission line ROW	1.3	1.1	2.0	1.6	0.3	1.2	1.0	0.4	0.7	1.2	0.1	4.9	3.6	0.8	0.0
10	Length of segment parallel to existing pipeline ROW	0.4	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
11	Length of segment parallel to existing railroad ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Length of segment paralleling apparent property lines (or other natural or cultural features)[3]	0.9	0.0	0.3	0.8	0.3	0.7	1.0	0.0	0.7	0.0	0.0	4.9	0.0	0.0	0.0
13	Length of segment parallel to other existing ROW (roadway, etc.)	0.4	0.9	1.3	0.3	0.0	0.4	0.0	0.4	0.0	1.2	0.1	0.0	3.6	0.8	0.0
14	Length of segment not parallel to railroad ROW, apparent property lines, or other existing ROW (roadway, etc.)	0.0	0.2	0.4	0.5	0.05	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Percent of segment parallel with apparent features, property lines, railroads, or an existing ROW	**100%**	**85%**	**80%**	**72%**	**85%**	**88%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
16	Length of segment across parks/recreational areas[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Number of additional parks/recreational areas[4] within 1,000 feet of segment centerline	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
18	Total length of segment across TDCJ and TPWD properties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.01	4.3	2.9	0.8	0.0
19	Length of segment across TDCJ property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.01	4.3	2.9	0.8	0.0
20	Length of segment across TPWD property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Length of segment across residential areas	0.3	0.4	1.4	0.1	0.0	0.1	0.5	0.0	0.5	0.0	0.0	0.4	0.0	0.0	0.0
22	Length of segment across commercial/industrial areas	0.0	0.0	0.4	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0
23	Length of segment across agricultural land/cropland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	3.5	2.4	0.8	0.01
24	Length of segment across pastureland	1.0	0.7	1.2	1.4	0.3	0.8	0.6	0.0	0.1	0.5	0.0	1.2	1.1	0.01	0.0
25	Length of segment across mobile irrigated cropland or pastureland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	Number of pipeline crossings	4	0	17	14	14	2	4	0	0	0	0	8	8	0	0
27	Number of transmission line crossings	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
28	Number of U.S. and state highway crossings	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
29	Number of F.M. road crossings	1	0	3	2	1	0	1	0	0	0	0	1	1	0	0
30	Number of local road crossings	0	2	2	2	0	0	0	0	1	1	1	1	0	1	0
31	Number of cemeteries within 1,000 feet of the segment centerline	0	1	0	3	1	1	0	0	0	0	0	0	1	0	0
32	Number of heliports within 5,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Number of private airstrips within 10,000 feet of segment centerline	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
34	Number of FAA-listed airports[5] within 10,000 feet of segment centerline having no runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Number of FAA-listed airports[5] within 20,000 feet of segment centerline having at least one runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Number of commercial AM radio transmitters within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Number of FM radio transmitters, microwave relay stations, and other electronic installations etc. within 2,000 feet of segment centerline	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0
38	Number of water wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Number of oil and gas wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aesthetics															
40	Estimated length of segment within foreground visual zone[6] of U.S. and state highways	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.1	1.1	3.6	0.7	0.0
41	Estimated length of segment within foreground visual zone[6] of FM and county roads	0.9	0.3	2.0	1.6	0.3	0.9	0.7	0.0	0.0	0.0	0.0	0.9	1.3	0.0	0.0
42	Estimated length of segment within foreground visual zone[6][7] of park and recreational areas[4]	1.3	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Ecology															
43	Length of segment across upland woodlands	0.1	0.5	0.8	0.2	0.0	0.3	0.5	0.4	0.3	0.6	0.1	0.03	0.0	0.0	0.0
44	Length of segment across bottomland/riparian woodlands	0.1	0.0	0.0	0.02	0.03	0.2	0.04	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
45	Length of segment across National Wetland Inventory mapped forested or scrub/shrub wetlands[8]	0.00	0.00	0.04	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	Length of segment across National Wetland Inventory mapped emergent wetlands[8]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00
47	Total length of segment across National Wetland Inventory mapped wetlands	0.00	0.00	0.04	0.00	0.00	0.00	0.02	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00
48	Length of segment across USACE designated Columbia Bottomlands	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00
49	Length of segment across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	Length of segment across Coastal Management Zone	0.3	1.1	1.1	1.2	0.3	1.2	1.0	0.4	0.7	1.2	0.1	4.9	3.6	0.8	0.0
51	Length of segment across known habitat of federal endangered/threatened species of plants or animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	Length of segment across open water (lakes or ponds)	0.0	0.0	0.04	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0
53	Number of stream and canal crossings	2	0	5	1	1	1	1	0	0	0	0	3	1	0	1
54	Length of segment parallel to streams and canals within 100 feet of segment centerline	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	0.2
55	Length of segment across 100-year floodplains	0.1	0.0	0.0	0.8	0.3	1.2	0.3	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
	Cultural Resources															
56	Number of recorded historical and archeological sites crossed within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Number of additional recorded historical and archeological sites within 1,000 feet of segment centerline	0	0	1	1	0	2	0	0	0	0	0	0	1	0	0
58	Number of National Register of Historic Places listed or determined-eligible properties within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of segment centerline	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
60	Length of segment across areas of high archaeological/historic site potential	1.3	0.5	1.9	1.1	0.3	0.8	0.3	0.4	0.2	0.7	0.0	0.0	1.5	0.1	0.2

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] As listed in the Chart Supplement South Central U.S. (FAA 2018b formerly known as the Airport/Facility Directory South Central U.S.), and FAA 2018a.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[8] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

Table 4-1
Environmental and Land Use Data
for the Proposed Transmission Line Segments
8/31/2018

	Evaluation Criteria	Proposed Transmission Line Segments														
	Land Use	**DA1**	**DA2**	**DB**	**DC**	**DD**	**DE**	**DF**	**DG**	**DH**	**DI**	**DJ**	**DK**	**DL**	**DM**	**DN**
1	Length of segment (feet)	3,097	6,293	487	9,782	9,817	6,466	2,402	3,111	2,857	2,937	8,555	3,959	6,980	4,563	4,105
2	Length of segment (miles)	0.6	1.2	0.1	1.9	1.9	1.2	0.5	0.6	0.5	0.6	1.6	0.7	1.3	0.9	0.8
3	Number of directly affected habitable structures[1] within 500 feet of segment centerline	5	7	2	13	34	4	8	20	1	11	4	21	10	4	2
4	Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Number of habitable structures[1] potentially to be relocated/removed[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Length of segment using existing transmission line easement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Length of new ROW required for segment	0.6	1.2	0.1	1.9	1.9	1.2	0.5	0.6	0.5	0.6	1.6	0.7	1.3	0.9	0.8
8	Length of segment parallel to existing transmission line ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Length of segment not utilizing/paralleling existing transmission line ROW	0.6	1.2	0.1	1.9	1.9	1.2	0.5	0.6	0.5	0.6	1.6	0.7	1.3	0.9	0.8
10	Length of segment parallel to existing pipeline ROW	0.6	0.9	0.0	0.0	0.0	0.1	0.0	0.6	0.0	0.0	1.2	0.1	0.0	0.0	0.0
11	Length of segment parallel to existing railroad ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Length of segment paralleling apparent property lines (or other natural or cultural features)[3]	0.0	0.0	0.1	1.6	0.2	1.0	0.03	0.0	0.2	0.03	0.6	0.2	0.3	0.9	0.0
13	Length of segment parallel to other existing ROW (roadway, etc.)	0.6	0.1	0.04	0.2	1.3	0.1	0.4	0.6	0.0	0.5	0.4	0.2	0.0	0.0	0.0
14	Length of segment not parallel to railroad ROW, apparent property lines, or other existing ROW (roadway, etc.)	0.0	1.1	0.0	0.04	0.3	0.1	0.04	0.0	0.4	0.03	0.6	0.4	1.0	0.0	0.8
15	Percent of segment parallel with apparent features, property lines, railroads, or an existing ROW	**100%**	**12%**	**100%**	**98%**	**84%**	**88%**	**92%**	**100%**	**35%**	**95%**	**62%**	**52%**	**22%**	**100%**	**0%**
16	Length of segment across parks/recreational areas[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Number of additional parks/recreational areas[4] within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
18	Total length of segment across TDCJ and TPWD properties	0.6	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Length of segment across TDCJ property	0.6	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Length of segment across TPWD property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Length of segment across residential areas	0.04	0.3	0.0	0.6	0.1	0.1	0.1	0.4	0.0	0.1	0.0	0.1	0.3	0.0	0.0
22	Length of segment across commercial/industrial areas	0.0	0.0	0.1	0.0	0.3	0.0	0.02	0.05	0.0	0.1	0.0	0.0	0.0	0.0	0.0
23	Length of segment across agricultural land/cropland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	Length of segment across pastureland	0.6	1.2	0.1	0.3	1.2	1.2	0.4	0.5	0.3	0.5	1.6	0.7	1.1	0.6	0.6
25	Length of segment across mobile irrigated cropland or pastureland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	Number of pipeline crossings	2	28	0	13	0	1	1	0	1	1	4	9	0	3	3
27	Number of transmission line crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	Number of U.S. and state highway crossings	0	0	0	1	0	0	1	1	0	1	1	0	0	0	0
29	Number of F.M. road crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	Number of local road crossings	0	1	0	1	0	0	0	0	1	1	1	0	1	0	1
31	Number of cemeteries within 1,000 feet of the segment centerline	0	0	0	0	0	0	2	2	0	2	0	0	1	0	1
32	Number of heliports within 5,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Number of private airstrips within 10,000 feet of segment centerline	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
34	Number of FAA-listed airports[5] within 10,000 feet of segment centerline having no runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Number of FAA-listed airports[5] within 20,000 feet of segment centerline having at least one runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Number of commercial AM radio transmitters within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Number of FM radio transmitters, microwave relay stations, and other electronic installations etc. within 2,000 feet of segment centerline	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0
38	Number of water wells within the ROW	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
39	Number of oil and gas wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aesthetics															
40	Estimated length of segment within foreground visual zone[6] of U.S. and state highways	0.0	0.0	0.1	0.2	1.9	0.4	0.5	0.5	0.0	0.6	0.5	0.5	0.0	0.0	0.0
41	Estimated length of segment within foreground visual zone[6] of FM and county roads	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	Estimated length of segment within foreground visual zone[6][7] of park and recreational areas[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0
	Ecology															
43	Length of segment across upland woodlands	0.0	0.0	0.0	1.6	0.6	0.0	0.0	0.0	0.1	0.04	0.1	0.2	0.2	0.7	0.01
44	Length of segment across bottomland/riparian woodlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.1	0.0	0.0	0.0	0.0	0.1	0.0
45	Length of segment across National Wetland Inventory mapped forested or scrub/shrub wetlands[8]	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.06	0.06	0.00
46	Length of segment across National Wetland Inventory mapped emergent wetlands[8]	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.01	0.00	0.29	0.01	0.12	0.03	0.00
47	Total length of segment across National Wetland Inventory mapped wetlands	0.00	0.00	0.00	0.02	0.02	0.02	0.00	0.00	0.14	0.00	0.29	0.01	0.18	0.09	0.00
48	Length of segment across USACE designated Columbia Bottomlands	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.08	0.00	0.46
49	Length of segment across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.03	0.0	0.04
50	Length of segment across Coastal Management Zone	0.6	1.2	0.1	1.9	1.9	1.2	0.5	0.6	0.5	0.6	1.6	0.7	1.3	0.9	0.8
51	Length of segment across known habitat of federal endangered/threatened species of plants or animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	Length of segment across open water (lakes or ponds)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.03	0.0	0.0	0.0	0.02	0.00	0.0	0.02
53	Number of stream and canal crossings	2	0	0	0	1	0	0	1	1	0	0	2	3	1	0
54	Length of segment parallel to streams and canals within 100 feet of segment centerline	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	Length of segment across 100-year floodplains	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.8
	Cultural Resources															
56	Number of recorded historical and archeological sites crossed within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Number of additional recorded historical and archeological sites within 1,000 feet of segment centerline	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
58	Number of National Register of Historic Places listed or determined-eligible properties within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	Length of segment across areas of high archaeological/historic site potential	0.5	0.0	0.0	0.3	0.0	0.0	0.1	0.4	0.4	0.6	0.3	0.7	1.3	0.7	0.4

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] As listed in the Chart Supplement South Central U.S. (FAA 2018b formerly known as the Airport/Facility Directory South Central U.S.), and FAA 2018a.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[8] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

Table 4-1
Environmental and Land Use Data
for the Proposed Transmission Line Segments
8/31/2018

	Evaluation Criteria	Proposed Transmission Line Segments														
	Land Use	**DO**	**DP**	**DQ**	**DR**	**DS**	**DT**	**DU**	**DV**	**DW**	**DX**	**E**	**F**	**G**	**H**	**J**
1	Length of segment (feet)	770	1,493	1,043	1,964	2,765	5,334	2,292	1,546	2,395	2,606	12,643	7,261	7,827	10,269	5,886
2	Length of segment (miles)	0.1	0.3	0.2	0.4	0.5	1.0	0.4	0.3	0.5	0.5	2.4	1.4	1.5	1.9	1.1
3	Number of directly affected habitable structures[1] within 500 feet of segment centerline	1	4	3	5	0	3	5	15	41	45	4	0	0	0	3
4	Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
5	Number of habitable structures[1] potentially to be relocated/removed[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Length of segment using existing transmission line easement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Length of new ROW required for segment	0.1	0.3	0.2	0.4	0.5	1.0	0.4	0.3	0.5	0.5	2.4	1.4	1.5	1.9	1.1
8	Length of segment parallel to existing transmission line ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0
9	Length of segment not utilizing/paralleling existing transmission line ROW	0.1	0.3	0.2	0.4	0.5	1.0	0.4	0.3	0.5	0.5	1.2	1.4	1.5	1.9	1.1
10	Length of segment parallel to existing pipeline ROW	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0
11	Length of segment parallel to existing railroad ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Length of segment paralleling apparent property lines (or other natural or cultural features)[3]	0.1	0.2	0.0	0.2	0.3	0.3	0.2	0.3	0.4	0.3	0.0	1.4	0.9	0.3	0.2
13	Length of segment parallel to other existing ROW (roadway, etc.)	0.0	0.0	0.2	0.2	0.0	0.2	0.0	0.0	0.0	0.1	1.2	0.0	0.0	1.7	1.0
14	Length of segment not parallel to railroad ROW, apparent property lines, or other existing ROW (roadway, etc.)	0.0	0.1	0.0	0.0	0.2	0.5	0.2	0.0	0.02	0.1	0.0	0.0	0.5	0.0	0.0
15	Percent of segment parallel with apparent features, property lines, railroads, or an existing ROW	**100%**	**74%**	**100%**	**100%**	**52%**	**52%**	**46%**	**100%**	**95%**	**82%**	**100%**	**100%**	**63%**	**100%**	**100%**
16	Length of segment across parks/recreational areas[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Number of additional parks/recreational areas[4] within 1,000 feet of segment centerline	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
18	Total length of segment across TDCJ and TPWD properties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Length of segment across TDCJ property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Length of segment across TPWD property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Length of segment across residential areas	0.1	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.0	0.1
22	Length of segment across commercial/industrial areas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.04	0.0	0.0	0.0	0.0	0.0
23	Length of segment across agricultural land/cropland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.4	1.5	1.5	1.0
24	Length of segment across pastureland	0.0	0.2	0.2	0.3	0.5	0.9	0.2	0.0	0.3	0.2	0.9	0.0	0.0	0.4	0.02
25	Length of segment across mobile irrigated cropland or pastureland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	Number of pipeline crossings	0	3	3	0	0	0	0	0	0	0	1	0	0	1	1
27	Number of transmission line crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	Number of U.S. and state highway crossings	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
29	Number of F.M. road crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	Number of local road crossings	0	3	0	1	0	1	1	1	0	1	2	0	0	0	1
31	Number of cemeteries within 1,000 feet of the segment centerline	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
32	Number of heliports within 5,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Number of private airstrips within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	Number of FAA-listed airports[5] within 10,000 feet of segment centerline having no runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Number of FAA-listed airports[5] within 20,000 feet of segment centerline having at least one runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Number of commercial AM radio transmitters within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Number of FM radio transmitters, microwave relay stations, and other electronic installations etc. within 2,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Number of water wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Number of oil and gas wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aesthetics															
40	Estimated length of segment within foreground visual zone[6] of U.S. and state highways	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.5	0.5	1.8	0.0	0.0	0.0	0.5
41	Estimated length of segment within foreground visual zone[6] of FM and county roads	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	Estimated length of segment within foreground visual zone[6][7] of park and recreational areas[4]	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Ecology															
43	Length of segment across upland woodlands	0.02	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.2	0.0	0.0	0.0	0.04	0.0
44	Length of segment across bottomland/riparian woodlands	0.0	0.0	0.0	0.0	0.0	0.0	0.03	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
45	Length of segment across National Wetland Inventory mapped forested or scrub/shrub wetlands[8]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	Length of segment across National Wetland Inventory mapped emergent wetlands[8]	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.05	0.00	0.00	0.01	0.00
47	Total length of segment across National Wetland Inventory mapped wetlands	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.05	0.00	0.00	0.01	0.00
48	Length of segment across USACE designated Columbia Bottomlands	0.12	0.28	0.20	0.28	0.00	0.37	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	Length of segment across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.10	0.0	0.0	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	Length of segment across Coastal Management Zone	0.1	0.3	0.2	0.4	0.5	1.0	0.4	0.3	0.5	0.5	0.0	0.0	0.0	0.0	0.0
51	Length of segment across known habitat of federal endangered/threatened species of plants or animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	Length of segment across open water (lakes or ponds)	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	Number of stream and canal crossings	0	0	0	0	0	0	1	0	0	0	3	0	1	1	2
54	Length of segment parallel to streams and canals within 100 feet of segment centerline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
55	Length of segment across 100-year floodplains	0.1	0.3	0.2	0.4	0.5	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
	Cultural Resources															
56	Number of recorded historical and archeological sites crossed within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Number of additional recorded historical and archeological sites within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	Number of National Register of Historic Places listed or determined-eligible properties within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	Length of segment across areas of high archaeological/historic site potential	0.1	0.0	0.0	0.1	0.4	0.4	0.4	0.2	0.0	0.0	1.3	0.3	0.5	0.8	0.9

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] As listed in the Chart Supplement South Central U.S. (FAA 2018b formerly known as the Airport/Facility Directory South Central U.S.), and FAA 2018a.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[8] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

Table 4-1
Environmental and Land Use Data
for the Proposed Transmission Line Segments
8/31/2018

	Evaluation Criteria	Proposed Transmission Line Segments														
	Land Use	**K**	**L**	**M**	**N**	**O**	**P**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**	**EF**	**EM**
1	Length of segment (feet)	1,723	62,958	19,337	19,753	15,738	50,718	3,532	2,916	13,337	1,358	1,372	906	19,246	1,895	1,689
2	Length of segment (miles)	0.3	11.9	3.7	3.7	3.0	9.6	0.7	0.6	2.5	0.3	0.3	0.2	3.6	0.4	0.3
3	Number of directly affected habitable structures[1] within 500 feet of segment centerline	0	9	3	2	1	19	0	0	7	7	4	5	31	56	29
4	Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	0	8	3	0	0	0	0	0	0	0	0	0	0	0	0
5	Number of habitable structures[1] potentially to be relocated/removed[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Length of segment using existing transmission line easement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Length of new ROW required for segment	0.3	11.9	3.7	3.7	3.0	9.6	0.7	0.6	2.5	0.3	0.3	0.2	3.6	0.4	0.3
8	Length of segment parallel to existing transmission line ROW	0.3	5.2	3.2	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Length of segment not utilizing/paralleling existing transmission line ROW	0.05	6.7	0.5	3.7	3.0	9.4	0.2	0.6	2.5	0.3	0.3	0.2	3.6	0.4	0.3
10	Length of segment parallel to existing pipeline ROW	0.3	1.3	0.6	0.3	0.0	4.2	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Length of segment parallel to existing railroad ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Length of segment paralleling apparent property lines (or other natural or cultural features)[3]	0.0	2.5	0.0	0.7	0.6	6.7	0.0	0.0	0.8	0.0	0.0	0.0	0.2	0.1	0.2
13	Length of segment parallel to other existing ROW (roadway, etc.)	0.0	0.5	0.4	2.9	1.1	1.2	0.0	0.6	0.8	0.1	0.0	0.2	1.1	0.04	0.0
14	Length of segment not parallel to railroad ROW, apparent property lines, or other existing ROW (roadway, etc.)	0.04	3.7	0.1	0.2	1.3	1.5	0.2	0.0	1.0	0.2	0.3	0.0	2.3	0.2	0.1
15	Percent of segment parallel with apparent features, property lines, railroads, or an existing ROW	**88%**	**69%**	**97%**	**96%**	**58%**	**85%**	**74%**	**100%**	**60%**	**33%**	**0%**	**100%**	**38%**	**46%**	**74%**
16	Length of segment across parks/recreational areas[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
17	Number of additional parks/recreational areas[4] within 1,000 feet of segment centerline	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0
18	Total length of segment across TDCJ and TPWD properties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
19	Length of segment across TDCJ property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Length of segment across TPWD property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
21	Length of segment across residential areas	0.0	0.2	0.0	0.0	0.0	0.7	0.0	0.0	0.4	0.2	0.0	0.2	1.0	0.3	0.2
22	Length of segment across commercial/industrial areas	0.0	0.0	0.0	0.0	0.0	1.2	0.7	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0
23	Length of segment across agricultural land/cropland	0.3	1.3	1.9	1.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	Length of segment across pastureland	0.1	9.4	1.7	2.2	1.0	8.4	0.4	0.0	1.0	0.0	0.1	0.1	2.5	0.1	0.0
25	Length of segment across mobile irrigated cropland or pastureland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	Number of pipeline crossings	1	20	7	8	4	23	0	0	21	1	0	0	0	0	0
27	Number of transmission line crossings	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0
28	Number of U.S. and state highway crossings	1	0	1	0	1	0	0	0	1	0	0	0	0	1	1
29	Number of F.M. road crossings	0	2	0	0	0	1	0	0	1	0	0	1	0	0	0
30	Number of local road crossings	0	2	1	3	0	7	0	0	1	2	0	0	4	2	1
31	Number of cemeteries within 1,000 feet of the segment centerline	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0
32	Number of heliports within 5,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Number of private airstrips within 10,000 feet of segment centerline	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
34	Number of FAA-listed airports[5] within 10,000 feet of segment centerline having no runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Number of FAA-listed airports[5] within 20,000 feet of segment centerline having at least one runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Number of commercial AM radio transmitters within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Number of FM radio transmitters, microwave relay stations, and other electronic installations etc. within 2,000 feet of segment centerline	1	1	2	1	0	3	1	1	1	0	0	0	0	0	0
38	Number of water wells within the ROW	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
39	Number of oil and gas wells within the ROW	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Aesthetics															
40	Estimated length of segment within foreground visual zone[6] of U.S. and state highways	0.3	0.0	2.4	0.4	1.3	1.2	0.7	0.6	0.7	0.0	0.0	0.0	0.0	0.4	0.3
41	Estimated length of segment within foreground visual zone[6] of FM and county roads	0.0	1.7	0.0	0.0	0.0	1.5	0.0	0.0	0.8	0.1	0.1	0.2	0.6	0.0	0.0
42	Estimated length of segment within foreground visual zone[6][7] of park and recreational areas[4]	0.0	2.5	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3
	Ecology															
43	Length of segment across upland woodlands	0.0	1.6	0.0	0.0	0.0	1.4	0.3	0.6	1.4	0.2	0.1	0.02	0.9	0.1	0.3
44	Length of segment across bottomland/riparian woodlands	0.0	0.4	0.0	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.5	0.0	0.0
45	Length of segment across National Wetland Inventory mapped forested or scrub/shrub wetlands[8]	0.00	0.61	0.00	0.00	0.00	0.07	0.00	0.27	0.05	0.00	0.00	0.00	0.07	0.00	0.00
46	Length of segment across National Wetland Inventory mapped emergent wetlands[8]	0.00	0.00	0.13	0.04	0.04	0.02	0.42	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	Total length of segment across National Wetland Inventory mapped wetlands	0.00	0.61	0.13	0.04	0.04	0.09	0.42	0.39	0.05	0.00	0.00	0.00	0.07	0.00	0.00
48	Length of segment across USACE designated Columbia Bottomlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.02	0.00
49	Length of segment across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	Length of segment across Coastal Management Zone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.2	2.9	0.4	0.3
51	Length of segment across known habitat of federal endangered/threatened species of plants or animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	Length of segment across open water (lakes or ponds)	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.03	0.0	0.0
53	Number of stream and canal crossings	0	12	3	2	5	8	0	2	8	0	0	0	3	0	0
54	Length of segment parallel to streams and canals within 100 feet of segment centerline	0.0	1.6	0.1	0.7	1.6	0.8	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
55	Length of segment across 100-year floodplains	0.0	1.8	0.0	0.9	0.1	7.7	0.3	0.0	0.3	0.0	0.1	0.0	3.0	0.0	0.0
	Cultural Resources															
56	Number of recorded historical and archeological sites crossed within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Number of additional recorded historical and archeological sites within 1,000 feet of segment centerline	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0
58	Number of National Register of Historic Places listed or determined-eligible properties within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	Length of segment across areas of high archaeological/historic site potential	0.2	6.6	0.9	0.5	1.3	5.1	0.6	0.5	0.6	0.3	0.3	0.2	2.0	0.0	0.0

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] As listed in the Chart Supplement South Central U.S. (FAA 2018b formerly known as the Airport/Facility Directory South Central U.S.), and FAA 2018a.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[8] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

Table 4-1
Environmental and Land Use Data
for the Proposed Transmission Line Segments
8/31/2018

	Evaluation Criteria	Proposed Transmission Line Segments														
	Land Use	**EN**	**EO**	**EP**	**EQ**	**ER1**	**ER2**	**ES**	**ET**	**EU**	**EV**	**EW**	**EX**	**EY**	**EZ**	**FA**
1	Length of segment (feet)	295	1,438	4,303	5,679	1,931	220	410	303	2,282	168	332	159	283	619	608
2	Length of segment (miles)	0.1	0.3	0.8	1.1	0.4	0.04	0.1	0.1	0.4	0.03	0.1	0.03	0.1	0.1	0.1
3	Number of directly affected habitable structures[1] within 500 feet of segment centerline	13	19	11	16	7	6	0	0	7	6	6	3	4	4	4
4	Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Number of habitable structures[1] potentially to be relocated/removed[2]	0	0	6	0	0	0	0	0	0	0	0	0	0	1	0
6	Length of segment using existing transmission line easement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Length of new ROW required for segment	0.1	0.3	0.8	1.1	0.4	0.04	0.1	0.1	0.4	0.03	0.1	0.03	0.1	0.1	0.1
8	Length of segment parallel to existing transmission line ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Length of segment not utilizing/paralleling existing transmission line ROW	0.1	0.3	0.8	1.1	0.4	0.04	0.1	0.1	0.4	0.03	0.1	0.03	0.1	0.1	0.1
10	Length of segment parallel to existing pipeline ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Length of segment parallel to existing railroad ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Length of segment paralleling apparent property lines (or other natural or cultural features)[3]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	Length of segment parallel to other existing ROW (roadway, etc.)	0.0	0.3	0.8	1.1	0.4	0.04	0.0	0.0	0.3	0.03	0.0	0.0	0.0	0.1	0.1
14	Length of segment not parallel to railroad ROW, apparent property lines, or other existing ROW (roadway, etc.)	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.1	0.03	0.1	0.0	0.0
15	Percent of segment parallel with apparent features, property lines, railroads, or an existing ROW	**0%**	**100%**	**100%**	**100%**	**100%**	**100%**	**0%**	**0%**	**60%**	**100%**	**0%**	**0%**	**0%**	**100%**	**100%**
16	Length of segment across parks/recreational areas[4]	0.02	0.0	0.0	1.1	0.0	0.0	0.0	0.01	0.1	0.0	0.0	0.0	0.0	0.0	0.1
17	Number of additional parks/recreational areas[4] within 1,000 feet of segment centerline	0	1	1	0	1	1	1	0	0	1	1	1	1	1	0
18	Total length of segment across TDCJ and TPWD properties	0.02	0.0	0.0	1.1	0.0	0.0	0.0	0.01	0.1	0.0	0.0	0.0	0.0	0.0	0.1
19	Length of segment across TDCJ property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Length of segment across TPWD property	0.02	0.0	0.0	1.1	0.0	0.0	0.0	0.01	0.1	0.0	0.0	0.0	0.0	0.0	0.1
21	Length of segment across residential areas	0.03	0.1	0.4	0.01	0.2	0.03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	Length of segment across commercial/industrial areas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.02	0.03	0.02	0.1	0.01
23	Length of segment across agricultural land/cropland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	Length of segment across pastureland	0.0	0.1	0.2	0.2	0.1	0.04	0.1	0.04	0.2	0.03	0.04	0.03	0.04	0.0	0.1
25	Length of segment across mobile irrigated cropland or pastureland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	Number of pipeline crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Number of transmission line crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	Number of U.S. and state highway crossings	1	0	0	0	0	0	0	1	0	0	1	0	1	0	0
29	Number of F.M. road crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	Number of local road crossings	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0
31	Number of cemeteries within 1,000 feet of the segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	Number of heliports within 5,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Number of private airstrips within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	Number of FAA-listed airports[5] within 10,000 feet of segment centerline having no runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Number of FAA-listed airports[5] within 20,000 feet of segment centerline having at least one runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Number of commercial AM radio transmitters within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Number of FM radio transmitters, microwave relay stations, and other electronic installations etc. within 2,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Number of water wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Number of oil and gas wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aesthetics															
40	Estimated length of segment within foreground visual zone[6] of U.S. and state highways	0.1	0.3	0.8	1.1	0.4	0.0	0.1	0.1	0.4	0.0	0.1	0.0	0.1	0.1	0.1
41	Estimated length of segment within foreground visual zone[6] of FM and county roads	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	Estimated length of segment within foreground visual zone[6][7] of park and recreational areas[4]	0.1	0.3	0.8	1.1	0.4	0.0	0.1	0.1	0.4	0.0	0.1	0.0	0.1	0.1	0.1
	Ecology															
43	Length of segment across upland woodlands	0.03	0.1	0.3	0.5	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.04	0.0
44	Length of segment across bottomland/riparian woodlands	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	Length of segment across National Wetland Inventory mapped forested or scrub/shrub wetlands[8]	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.028	0.00	0.00	0.00	0.00	0.00	0.00
46	Length of segment across National Wetland Inventory mapped emergent wetlands[8]	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.003	0.00	0.00	0.01	0.00	0.00	0.00
47	Total length of segment across National Wetland Inventory mapped wetlands	0.00	0.00	0.04	0.21	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.01	0.00	0.00	0.00
48	Length of segment across USACE designated Columbia Bottomlands	0.00	0.00	0.18	0.00	0.36	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	Length of segment across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	Length of segment across Coastal Management Zone	0.1	0.3	0.8	1.1	0.4	0.0	0.1	0.1	0.4	0.0	0.1	0.0	0.1	0.1	0.1
51	Length of segment across known habitat of federal endangered/threatened species of plants or animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	Length of segment across open water (lakes or ponds)	0.0	0.02	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	Number of stream and canal crossings	0	0	1	1	1	0	0	1	1	0	0	0	0	0	0
54	Length of segment parallel to streams and canals within 100 feet of segment centerline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	Length of segment across 100-year floodplains	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.03	0.4	0.0	0.03	0.03	0.03	0.0	0.1
	Cultural Resources															
56	Number of recorded historical and archeological sites crossed within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Number of additional recorded historical and archeological sites within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	Number of National Register of Historic Places listed or determined-eligible properties within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	Length of segment across areas of high archaeological/historic site potential	0.0	0.2	0.8	1.0	0.4	0.0	0.1	0.1	0.4	0.03	0.1	0.0	0.1	0.1	0.0

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[8] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

Table 4-1
Environmental and Land Use Data
for the Proposed Transmission Line Segments
8/31/2018

	Evaluation Criteria	Proposed Transmission Line Segments														
	Land Use	**FB**	**FC**	**FD**	**FE**	**FF**	**FG**	**FH**	**FI**	**FM**	**FN**	**FO**	**FP**	**FQ**	**FW**	**FY**
1	Length of segment (feet)	585	8,677	5,811	369	6,273	225	1,721	370	2,504	1,414	458	4,518	12,627	29,562	44,156
2	Length of segment (miles)	0.1	1.6	1.1	0.1	1.2	0.04	0.3	0.1	0.5	0.3	0.1	0.9	2.4	5.6	8.4
3	Number of directly affected habitable structures[1] within 500 feet of segment centerline	4	50	3	2	3	1	3	1	3	1	0	1	16	2	50
4	Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
5	Number of habitable structures[1] potentially to be relocated/removed[2]	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6	Length of segment using existing transmission line easement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
7	Length of new ROW required for segment	0.1	1.6	1.1	0.1	1.2	0.04	0.3	0.1	0.5	0.3	0.1	0.2	2.4	5.6	8.4
8	Length of segment parallel to existing transmission line ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.04	0.0	0.1	0.9	0.0	0.0	0.0
9	Length of segment not utilizing/paralleling existing transmission line ROW	0.1	1.6	1.1	0.1	1.2	0.04	0.3	0.1	0.4	0.3	0.0	0.0	2.4	5.6	8.4
10	Length of segment parallel to existing pipeline ROW	0.0	0.0	0.4	0.1	0.0	0.04	0.2	0.0	0.5	0.2	0.1	0.0	0.6	2.0	1.7
11	Length of segment parallel to existing railroad ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Length of segment paralleling apparent property lines (or other natural or cultural features)[3]	0.0	1.0	0.0	0.1	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	1.3	2.6	3.5
13	Length of segment parallel to other existing ROW (roadway, etc.)	0.0	0.6	1.1	0.0	1.1	0.04	0.2	0.0	0.0	0.3	0.0	0.0	1.1	0.3	2.5
14	Length of segment not parallel to railroad ROW, apparent property lines, or other existing ROW (roadway, etc.)	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	2.7	2.4
15	Percent of segment parallel with apparent features, property lines, railroads, or an existing ROW	**0%**	**100%**	**100%**	**100%**	**94%**	**100%**	**63%**	**0%**	**88%**	**100%**	**100%**	**100%**	**100%**	**52%**	**72%**
16	Length of segment across parks/recreational areas[4]	0.1	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Number of additional parks/recreational areas[4] within 1,000 feet of segment centerline	0	2	2	1	0	1	1	1	1	0	0	0	0	0	0
18	Total length of segment across TDCJ and TPWD properties	0.1	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Length of segment across TDCJ property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Length of segment across TPWD property	0.1	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Length of segment across residential areas	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.7
22	Length of segment across commercial/industrial areas	0.01	0.4	0.9	0.01	0.5	0.04	0.1	0.1	0.0	0.2	0.1	0.3	0.0	0.0	0.2
23	Length of segment across agricultural land/cropland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
24	Length of segment across pastureland	0.1	1.2	0.8	0.1	0.7	0.04	0.3	0.02	0.5	0.1	0.05	0.8	2.4	5.1	6.9
25	Length of segment across mobile irrigated cropland or pastureland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	Number of pipeline crossings	0	3	1	0	1	0	2	0	2	4	1	4	1	8	27
27	Number of transmission line crossings	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
28	Number of U.S. and state highway crossings	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
29	Number of F.M. road crossings	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
30	Number of local road crossings	0	5	2	0	1	0	1	1	1	0	1	0	1	0	0
31	Number of cemeteries within 1,000 feet of the segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
32	Number of heliports within 5,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Number of private airstrips within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	Number of FAA-listed airports[5] within 10,000 feet of segment centerline having no runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Number of FAA-listed airports[5] within 20,000 feet of segment centerline having at least one runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Number of commercial AM radio transmitters within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Number of FM radio transmitters, microwave relay stations, and other electronic installations etc. within 2,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
38	Number of water wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
39	Number of oil and gas wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aesthetics															
40	Estimated length of segment within foreground visual zone[6] of U.S. and state highways	0.1	1.6	1.1	0.1	1.2	0.0	0.3	0.1	0.3	0.3	0.1	0.3	0.0	0.0	1.6
41	Estimated length of segment within foreground visual zone[6] of FM and county roads	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.5	3.3
42	Estimated length of segment within foreground visual zone[6][7] of park and recreational areas[4]	0.1	1.6	1.1	0.1	1.2	0.0	0.3	0.1	0.5	0.3	0.1	0.5	0.0	0.0	0.0
	Ecology															
43	Length of segment across upland woodlands	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1.3	0.5	1.7
44	Length of segment across bottomland/riparian woodlands	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
45	Length of segment across National Wetland Inventory mapped forested or scrub/shrub wetlands[8]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.05	0.00
46	Length of segment across National Wetland Inventory mapped emergent wetlands[8]	0.10	0.27	0.12	0.00	1.04	0.00	0.00	0.02	0.00	0.27	0.01	0.65	0.00	0.15	0.02
47	Total length of segment across National Wetland Inventory mapped wetlands	0.10	0.27	0.12	0.00	1.04	0.00	0.00	0.02	0.00	0.27	0.01	0.65	0.06	0.20	0.02
48	Length of segment across USACE designated Columbia Bottomlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	Length of segment across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	Length of segment across Coastal Management Zone	0.1	1.6	1.1	0.1	1.2	0.0	0.3	0.1	0.5	0.3	0.1	0.9	0.0	0.0	0.0
51	Length of segment across known habitat of federal endangered/threatened species of plants or animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	Length of segment across open water (lakes or ponds)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	Number of stream and canal crossings	0	0	0	0	0	0	0	0	0	0	0	2	2	4	10
54	Length of segment parallel to streams and canals within 100 feet of segment centerline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
55	Length of segment across 100-year floodplains	0.1	0.0	0.0	0.0	1.2	0.0	0.0	0.05	0.0	0.3	0.1	0.9	0.2	0.9	0.2
	Cultural Resources															
56	Number of recorded historical and archeological sites crossed within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Number of additional recorded historical and archeological sites within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
58	Number of National Register of Historic Places listed or determined-eligible properties within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	Length of segment across areas of high archaeological/historic site potential	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.9	1.3	3.1	2.3

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] As listed in the Chart Supplement South Central U.S. (FAA 2018b formerly known as the Airport/Facility Directory South Central U.S.), and FAA 2018a.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[8] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

Table 4-1
Environmental and Land Use Data
for the Proposed Transmission Line Segments
8/31/2018

	Evaluation Criteria	Proposed Transmission Line Segments														
	Land Use	**GC**	**GD**	**GE**	**GF**	**GG**	**GH**	**GI**	**GJ**	**GK**	**GL**	**GM**	**GN1**	**GN2**	**GO**	**GP**
1	Length of segment (feet)	30,042	21,004	22,811	8,034	36,209	9,352	9,820	25,229	5,116	10,773	20,752	23,718	5,623	22,187	16,954
2	Length of segment (miles)	5.7	4.0	4.3	1.5	6.9	1.8	1.9	4.8	1.0	2.0	3.9	4.5	1.1	4.2	3.2
3	Number of directly affected habitable structures[1] within 500 feet of segment centerline	2	12	3	0	1	0	0	12	0	0	0	8	0	0	2
4	Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Number of habitable structures[1] potentially to be relocated/removed[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Length of segment using existing transmission line easement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Length of new ROW required for segment	5.7	4.0	4.3	1.5	6.9	1.8	1.9	4.8	1.0	2.0	3.9	4.5	1.1	4.2	3.2
8	Length of segment parallel to existing transmission line ROW	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	1.1	2.3	0.0
9	Length of segment not utilizing/paralleling existing transmission line ROW	5.7	4.0	4.3	1.5	6.9	1.8	0.0	4.8	1.0	2.0	3.9	4.5	0.0	1.9	3.2
10	Length of segment parallel to existing pipeline ROW	0.9	1.6	0.0	0.0	1.2	0.0	0.0	0.6	0.0	1.0	3.9	2.4	0.5	0.4	0.0
11	Length of segment parallel to existing railroad ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Length of segment paralleling apparent property lines (or other natural or cultural features)[3]	4.3	3.6	3.3	1.5	6.7	1.8	0.0	2.7	1.0	1.0	2.4	3.7	0.0	1.6	3.2
13	Length of segment parallel to other existing ROW (roadway, etc.)	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.7	0.0	0.0	0.0
14	Length of segment not parallel to railroad ROW, apparent property lines, or other existing ROW (roadway, etc.)	0.3	0.4	1.0	0.0	0.1	0.0	0.0	0.5	0.0	1.0	1.5	0.1	0.0	0.3	0.0
15	Percent of segment parallel with apparent features, property lines, railroads, or an existing ROW	**95%**	**91%**	**77%**	**100%**	**98%**	**100%**	**100%**	**90%**	**100%**	**50%**	**61%**	**97%**	**100%**	**92%**	**100%**
16	Length of segment across parks/recreational areas[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Number of additional parks/recreational areas[4] within 1,000 feet of segment centerline	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
18	Total length of segment across TDCJ and TPWD properties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Length of segment across TDCJ property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Length of segment across TPWD property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Length of segment across residential areas	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
22	Length of segment across commercial/industrial areas	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	Length of segment across agricultural land/cropland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.01	0.4	1.0	2.0	0.0	2.6	3.1
24	Length of segment across pastureland	5.5	3.9	4.0	0.6	4.7	1.1	1.9	0.2	0.6	1.5	2.5	2.0	0.2	1.3	0.02
25	Length of segment across mobile irrigated cropland or pastureland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
26	Number of pipeline crossings	3	6	3	0	13	7	9	8	3	3	5	6	2	6	12
27	Number of transmission line crossings	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0
28	Number of U.S. and state highway crossings	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
29	Number of F.M. road crossings	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
30	Number of local road crossings	1	1	1	0	0	0	1	3	0	0	0	2	0	1	1
31	Number of cemeteries within 1,000 feet of the segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	Number of heliports within 5,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Number of private airstrips within 10,000 feet of segment centerline	0	0	0	0	0	1	1	2	1	1	1	1	0	2	1
34	Number of FAA-listed airports[5] within 10,000 feet of segment centerline having no runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Number of FAA-listed airports[5] within 20,000 feet of segment centerline having at least one runway more than 3,200 feet	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
36	Number of commercial AM radio transmitters within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Number of FM radio transmitters, microwave relay stations, and other electronic installations etc. within 2,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Number of water wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Number of oil and gas wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aesthetics															
40	Estimated length of segment within foreground visual zone[6] of U.S. and state highways	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.9	0.0
41	Estimated length of segment within foreground visual zone[6] of FM and county roads	0.0	0.0	0.4	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	1.1	0.4
42	Estimated length of segment within foreground visual zone[6][7] of park and recreational areas[4]	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Ecology															
43	Length of segment across upland woodlands	0.0	0.0	1.3	0.7	1.3	0.6	0.0	0.2	0.0	0.0	0.3	0.2	0.4	0.1	0.0
44	Length of segment across bottomland/riparian woodlands	0.3	0.1	0.1	0.1	1.3	0.1	0.0	0.0	0.6	0.1	0.1	0.4	0.3	0.02	0.0
45	Length of segment across National Wetland Inventory mapped forested or scrub/shrub wetlands[8]	0.17	0.00	0.00	0.00	0.11	0.00	0.02	0.00	0.00	0.00	0.07	0.00	0.05	0.03	0.00
46	Length of segment across National Wetland Inventory mapped emergent wetlands[8]	0.00	0.06	0.00	0.00	0.30	0.00	0.10	0.02	0.00	0.00	0.11	0.00	0.02	0.00	0.00
47	Total length of segment across National Wetland Inventory mapped wetlands	0.17	0.06	0.00	0.00	0.41	0.00	0.12	0.02	0.00	0.00	0.18	0.00	0.07	0.03	0.00
48	Length of segment across USACE designated Columbia Bottomlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	Length of segment across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	Length of segment across Coastal Management Zone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	Length of segment across known habitat of federal endangered/threatened species of plants or animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	Length of segment across open water (lakes or ponds)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.02	0.1	0.01	0.01
53	Number of stream and canal crossings	6	4	4	5	12	2	2	6	0	5	5	5	5	7	3
54	Length of segment parallel to streams and canals within 100 feet of segment centerline	1.2	0.4	0.3	0.6	2.5	0.5	0.0	0.6	0.0	0.9	0.0	1.2	0.0	0.8	2.8
55	Length of segment across 100-year floodplains	1.4	1.6	3.0	0.01	4.1	0.0	0.1	0.0	0.0	0.0	2.2	1.8	0.7	0.1	0.3
	Cultural Resources															
56	Number of recorded historical and archeological sites crossed within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Number of additional recorded historical and archeological sites within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	Number of National Register of Historic Places listed or determined-eligible properties within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	Length of segment across areas of high archaeological/historic site potential	4.1	3.1	2.9	0.3	2.4	0.9	0.5	0.5	0.4	0.3	2.6	2.3	1.1	0.5	0.8

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] As listed in the Chart Supplement South Central U.S. (FAA 2018b formerly known as the Airport/Facility Directory South Central U.S.), and FAA 2018a.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[8] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

Table 4-1
Environmental and Land Use Data
for the Proposed Transmission Line Segments
8/31/2018

	Evaluation Criteria	Proposed Transmission Line Segments														
	Land Use	**GQ**	**GR**	**GS**	**GT**	**GX**	**GY**	**GZ**	**HA1**	**HA2**	**HB**	**HC**	**HD**	**HE**	**HF**	**HG**
1	Length of segment (feet)	3,689	8,625	8,210	65,568	26,000	10,283	16,672	8,138	7,143	22,041	14,594	9,165	16,512	12,573	42,036
2	Length of segment (miles)	0.7	1.6	1.6	12.4	4.9	1.9	3.2	1.5	1.4	4.2	2.8	1.7	3.1	2.4	8.0
3	Number of directly affected habitable structures[1] within 500 feet of segment centerline	0	2	0	81	4	0	0	1	0	0	0	0	0	1	6
4	Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	0	0	0	23	3	0	0	0	0	0	0	0	0	0	0
5	Number of habitable structures[1] potentially to be relocated/removed[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Length of segment using existing transmission line easement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Length of new ROW required for segment	0.7	1.6	1.6	12.4	4.9	1.9	3.2	1.5	1.4	4.2	2.8	1.7	3.1	2.4	8.0
8	Length of segment parallel to existing transmission line ROW	0.0	0.0	0.0	5.0	1.1	1.9	0.0	0.0	1.4	0.0	0.0	1.7	0.0	0.0	0.0
9	Length of segment not utilizing/paralleling existing transmission line ROW	0.7	1.6	1.6	7.4	3.9	0.0	3.2	1.5	0.0	4.2	2.8	0.0	3.1	2.4	8.0
10	Length of segment parallel to existing pipeline ROW	0.7	0.6	0.7	1.4	3.2	1.9	0.0	0.1	0.2	1.4	0.0	0.1	0.0	0.5	0.7
11	Length of segment parallel to existing railroad ROW	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Length of segment paralleling apparent property lines (or other natural or cultural features)[3]	0.6	1.3	0.0	3.4	1.0	0.0	0.6	0.4	0.0	4.0	2.7	0.0	1.0	1.8	2.8
13	Length of segment parallel to other existing ROW (roadway, etc.)	0.0	0.1	0.0	2.3	1.7	0.0	2.3	0.0	0.0	0.0	0.0	0.0	1.7	0.5	3.5
14	Length of segment not parallel to railroad ROW, apparent property lines, or other existing ROW (roadway, etc.)	0.1	0.2	1.6	0.5	1.1	0.0	0.3	1.1	0.0	0.2	0.1	0.0	0.4	0.1	1.7
15	Percent of segment parallel with apparent features, property lines, railroads, or an existing ROW	**91%**	**89%**	**0%**	**96%**	**77%**	**100%**	**90%**	**27%**	**100%**	**96%**	**98%**	**100%**	**86%**	**97%**	**79%**
16	Length of segment across parks/recreational areas[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	Number of additional parks/recreational areas[4] within 1,000 feet of segment centerline	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
18	Total length of segment across TDCJ and TPWD properties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Length of segment across TDCJ property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Length of segment across TPWD property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Length of segment across residential areas	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	Length of segment across commercial/industrial areas	0.0	0.0	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	Length of segment across agricultural land/cropland	0.6	0.0	0.0	2.2	1.5	1.4	2.8	0.0	0.0	0.3	0.8	0.0	1.0	0.0	1.1
24	Length of segment across pastureland	0.03	1.5	1.6	8.8	3.3	0.5	0.0	1.4	1.4	2.7	1.4	0.7	2.7	1.6	5.6
25	Length of segment across mobile irrigated cropland or pastureland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	Number of pipeline crossings	11	4	4	11	22	8	3	4	1	7	3	3	1	8	11
27	Number of transmission line crossings	0	0	0	2	1	0	1	2	0	0	0	0	1	1	1
28	Number of U.S. and state highway crossings	0	0	0	1	0	0	2	2	0	0	0	0	0	0	1
29	Number of F.M. road crossings	0	0	0	3	1	0	0	0	0	0	0	0	1	1	0
30	Number of local road crossings	0	0	2	2	1	0	0	0	1	0	1	0	0	0	1
31	Number of cemeteries within 1,000 feet of the segment centerline	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
32	Number of heliports within 5,000 feet of segment centerline	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0
33	Number of private airstrips within 10,000 feet of segment centerline	1	1	1	1	0	0	1	0	1	1	2	1	1	1	1
34	Number of FAA-listed airports[5] within 10,000 feet of segment centerline having no runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Number of FAA-listed airports[5] within 20,000 feet of segment centerline having at least one runway more than 3,200 feet	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
36	Number of commercial AM radio transmitters within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Number of FM radio transmitters, microwave relay stations, and other electronic installations etc. within 2,000 feet of segment centerline	0	0	0	2	0	0	0	1	1	0	0	0	0	0	1
38	Number of water wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Number of oil and gas wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aesthetics															
40	Estimated length of segment within foreground visual zone[6] of U.S. and state highways	0.0	0.0	0.0	1.6	0.0	0.0	1.4	0.9	0.0	0.1	0.1	0.0	0.3	0.4	0.7
41	Estimated length of segment within foreground visual zone[6] of FM and county roads	0.1	0.0	0.0	7.2	1.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.6	1.2	1.0
42	Estimated length of segment within foreground visual zone[6][7] of park and recreational areas[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.1	0.0	0.0	0.0	0.3	0.0
	Ecology															
43	Length of segment across upland woodlands	0.0	0.2	0.0	0.4	0.03	0.0	0.1	0.1	0.0	0.9	0.3	0.3	0.0	0.6	0.8
44	Length of segment across bottomland/riparian woodlands	0.0	0.0	0.0	0.6	0.1	0.02	0.0	0.1	0.0	0.2	0.2	0.0	0.1	0.1	0.4
45	Length of segment across National Wetland Inventory mapped forested or scrub/shrub wetlands[8]	0.00	0.08	0.00	0.03	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02
46	Length of segment across National Wetland Inventory mapped emergent wetlands[8]	0.00	0.00	0.05	0.20	0.28	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.59	0.00	0.04
47	Total length of segment across National Wetland Inventory mapped wetlands	0.00	0.08	0.05	0.23	0.28	0.00	0.09	0.01	0.00	0.00	0.00	0.00	0.59	0.00	0.05
48	Length of segment across USACE designated Columbia Bottomlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	Length of segment across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	Length of segment across Coastal Management Zone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	Length of segment across known habitat of federal endangered/threatened species of plants or animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	Length of segment across open water (lakes or ponds)	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.04	0.03	0.0	0.0	0.05	0.1
53	Number of stream and canal crossings	3	0	4	12	8	2	2	3	0	7	7	1	3	2	9
54	Length of segment parallel to streams and canals within 100 feet of segment centerline	0.7	0.0	0.4	1.4	0.0	0.0	0.0	0.0	0.0	1.4	0.2	0.0	0.6	0.0	2.0
55	Length of segment across 100-year floodplains	0.0	0.0	0.3	0.1	0.0	0.0	0.0	1.1	1.0	1.0	1.6	0.0	0.1	0.5	1.6
	Cultural Resources															
56	Number of recorded historical and archeological sites crossed within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Number of additional recorded historical and archeological sites within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
58	Number of National Register of Historic Places listed or determined-eligible properties within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	Length of segment across areas of high archaeological/historic site potential	0.1	0.1	1.0	2.3	0.8	0.0	0.2	1.3	0.3	1.1	1.6	0.7	0.7	1.6	2.3

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] As listed in the Chart Supplement South Central U.S. (FAA 2018b formerly known as the Airport/Facility Directory South Central U.S.), and FAA 2018a.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[8] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

Table 4-1
Environmental and Land Use Data
for the Proposed Transmission Line Segments
8/31/2018

	Evaluation Criteria	Proposed Transmission Line Segments														
	Land Use	**HL**	**HM**	**HO**	**HP**	**HQ**	**HR**	**HS**	**HT**	**HU**	**HV**	**HW**	**HX**	**IB**	**IC**	**ID**
1	Length of segment (feet)	8,314	1,942	28,909	10,871	16,933	18,556	6,872	17,005	6,393	9,019	32,426	17,872	11,740	37,985	10,891
2	Length of segment (miles)	1.6	0.4	5.5	2.1	3.2	3.5	1.3	3.2	1.2	1.7	6.1	3.4	2.2	7.2	2.1
3	Number of directly affected habitable structures[1] within 500 feet of segment centerline	1	1	4	7	29	8	4	10	0	5	1	1	9	0	0
4	Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	0	1	2	7	0	0	0	0	0	0	0	0	0	0	0
5	Number of habitable structures[1] potentially to be relocated/removed[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Length of segment using existing transmission line easement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Length of new ROW required for segment	1.6	0.4	5.5	2.1	3.2	3.5	1.3	3.2	1.2	1.7	6.1	3.4	2.2	7.2	2.1
8	Length of segment parallel to existing transmission line ROW	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	1.2	0.0	2.4	0.0	0.0	0.0	0.0
9	Length of segment not utilizing/paralleling existing transmission line ROW	1.6	0.4	5.5	0.0	3.2	3.5	1.3	3.2	0.0	1.7	3.7	3.4	2.2	7.2	2.1
10	Length of segment parallel to existing pipeline ROW	1.4	0.4	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	3.1	0.0
11	Length of segment parallel to existing railroad ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Length of segment paralleling apparent property lines (or other natural or cultural features)[3]	0.0	0.0	4.6	0.0	0.7	2.8	0.4	1.4	0.0	0.2	3.7	3.3	0.0	0.02	0.0
13	Length of segment parallel to other existing ROW (roadway, etc.)	1.4	0.4	0.5	0.0	2.0	0.7	0.4	0.5	0.0	1.3	0.0	0.0	2.2	6.8	2.1
14	Length of segment not parallel to railroad ROW, apparent property lines, or other existing ROW (roadway, etc.)	0.1	0.0	0.4	0.0	0.5	0.04	0.5	1.3	0.0	0.3	0.0	0.1	0.04	0.4	0.0
15	Percent of segment parallel with apparent features, property lines, railroads, or an existing ROW	**91%**	**100%**	**93%**	**100%**	**83%**	**99%**	**60%**	**59%**	**100%**	**85%**	**100%**	**97%**	**98%**	**95%**	**100%**
16	Length of segment across parks/recreational areas[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
17	Number of additional parks/recreational areas[4] within 1,000 feet of segment centerline	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0
18	Total length of segment across TDCJ and TPWD properties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Length of segment across TDCJ property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Length of segment across TPWD property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Length of segment across residential areas	0.0	0.0	0.0	0.3	2.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
22	Length of segment across commercial/industrial areas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	Length of segment across agricultural land/cropland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.0	2.3	2.0	2.8	1.1
24	Length of segment across pastureland	1.5	0.4	5.3	2.0	3.1	3.0	0.9	2.1	0.9	1.4	3.3	0.9	0.1	3.3	1.0
25	Length of segment across mobile irrigated cropland or pastureland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	Number of pipeline crossings	3	0	8	3	4	0	2	2	3	2	7	4	0	8	2
27	Number of transmission line crossings	0	0	1	0	0	0	0	0	0	1	2	2	0	0	0
28	Number of U.S. and state highway crossings	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0
29	Number of F.M. road crossings	0	0	2	0	2	0	1	1	0	0	1	1	0	0	0
30	Number of local road crossings	2	0	2	2	0	2	0	2	1	0	0	0	0	2	0
31	Number of cemeteries within 1,000 feet of the segment centerline	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
32	Number of heliports within 5,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Number of private airstrips within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
34	Number of FAA-listed airports[5] within 10,000 feet of segment centerline having no runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Number of FAA-listed airports[5] within 20,000 feet of segment centerline having at least one runway more than 3,200 feet	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
36	Number of commercial AM radio transmitters within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Number of FM radio transmitters, microwave relay stations, and other electronic installations etc. within 2,000 feet of segment centerline	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0
38	Number of water wells within the ROW	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
39	Number of oil and gas wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aesthetics															
40	Estimated length of segment within foreground visual zone[6] of U.S. and state highways	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.5	0.5	2.2	0.5	0.0
41	Estimated length of segment within foreground visual zone[6] of FM and county roads	0.2	0.4	1.5	2.1	2.6	0.0	0.9	1.6	0.0	0.6	2.1	1.2	0.0	0.0	0.5
42	Estimated length of segment within foreground visual zone[6][7] of park and recreational areas[4]	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	1.1	0.0	0.1	2.1	0.0	0.0	0.0
	Ecology															
43	Length of segment across upland woodlands	0.0	0.0	1.0	0.2	1.2	0.4	0.3	0.9	0.6	0.0	0.4	0.02	0.0	0.8	0.0
44	Length of segment across bottomland/riparian woodlands	0.04	0.0	0.1	0.02	0.0	0.3	0.03	0.02	0.0	0.04	0.1	0.01	0.0	0.05	0.0
45	Length of segment across National Wetland Inventory mapped forested or scrub/shrub wetlands[8]	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	Length of segment across National Wetland Inventory mapped emergent wetlands[8]	0.04	0.00	0.15	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.41	0.03
47	Total length of segment across National Wetland Inventory mapped wetlands	0.04	0.00	0.22	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.41	0.03
48	Length of segment across USACE designated Columbia Bottomlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	Length of segment across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	Length of segment across Coastal Management Zone	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	Length of segment across known habitat of federal endangered/threatened species of plants or animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	Length of segment across open water (lakes or ponds)	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.02	0.01	0.0	0.1	0.0
53	Number of stream and canal crossings	4	0	7	3	1	4	1	4	0	1	12	3	2	6	2
54	Length of segment parallel to streams and canals within 100 feet of segment centerline	0.0	0.0	0.0	0.0	0.0	1.4	0.1	0.0	0.0	0.0	0.2	0.7	0.0	0.1	1.5
55	Length of segment across 100-year floodplains	0.0	0.0	1.9	0.3	3.2	3.5	1.2	1.8	0.0	0.1	0.3	0.0	0.2	2.3	0.0
	Cultural Resources															
56	Number of recorded historical and archeological sites crossed within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Number of additional recorded historical and archeological sites within 1,000 feet of segment centerline	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
58	Number of National Register of Historic Places listed or determined-eligible properties within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	Length of segment across areas of high archaeological/historic site potential	0.6	0.1	3.3	1.4	0.9	0.9	1.2	2.9	0.8	0.5	1.6	0.2	0.7	3.4	0.2

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[8] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

Table 4-1
Environmental and Land Use Data
for the Proposed Transmission Line Segments
8/31/2018

	Evaluation Criteria	Proposed Transmission Line Segments													
	Land Use	**IE**	**IL**	**IM**	**IN**	**IO1**	**IO2**	**IX**	**IZ**	**JA**	**JB**	**JC**	**JD**	**JE**	**JF**
1	Length of segment (feet)	54,073	18,189	22,523	26,843	8,240	13,395	28,638	6,298	31,391	9,957	10,001	3,244	791	1,860
2	Length of segment (miles)	10.2	3.4	4.3	5.1	1.6	2.5	5.4	1.2	5.9	1.9	1.9	0.6	0.1	0.4
3	Number of directly affected habitable structures[1] within 500 feet of segment centerline	13	8	4	43	29	10	35	4	0	0	4	1	22	8
4	Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Number of habitable structures[1] potentially to be relocated/removed[2]	0	0	0	0	0	1	0	0	0	0	0	0	0	0
6	Length of segment using existing transmission line easement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0
7	Length of new ROW required for segment	10.2	3.4	4.3	5.1	1.6	2.5	5.4	1.2	5.0	1.9	1.9	0.6	0.1	0.4
8	Length of segment parallel to existing transmission line ROW	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.4	0.0	0.0	0.0	0.0
9	Length of segment not utilizing/paralleling existing transmission line ROW	8.7	3.4	4.3	5.1	1.6	2.5	5.4	1.2	1.3	1.5	1.9	0.6	0.1	0.4
10	Length of segment parallel to existing pipeline ROW	0.1	0.0	0.0	0.5	0.5	2.0	2.0	1.2	4.4	0.5	0.2	0.1	0.0	0.0
11	Length of segment parallel to existing railroad ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Length of segment paralleling apparent property lines (or other natural or cultural features)[3]	3.9	2.7	3.8	2.6	1.3	0.6	3.8	0.2	0.0	0.8	1.5	0.6	0.0	0.0
13	Length of segment parallel to other existing ROW (roadway, etc.)	3.1	0.2	0.1	2.4	0.1	0.9	0.8	0.0	0.0	0.0	0.0	0.0	0.1	0.4
14	Length of segment not parallel to railroad ROW, apparent property lines, or other existing ROW (roadway, etc.)	1.7	0.5	0.4	0.1	0.2	1.1	0.9	1.0	2.2	0.6	0.4	0.0	0.05	0.0
15	Percent of segment parallel with apparent features, property lines, railroads, or an existing ROW	**84%**	**84%**	**91%**	**97%**	**88%**	**59%**	**83%**	**15%**	**62%**	**67%**	**78%**	**100%**	**68%**	**100%**
16	Length of segment across parks/recreational areas[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0	0.0	0.0	0.0
17	Number of additional parks/recreational areas[4] within 1,000 feet of segment centerline	0	0	1	0	0	0	0	1	1	0	0	0	1	1
18	Total length of segment across TDCJ and TPWD properties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.01	0.0	0.0	0.0
19	Length of segment across TDCJ property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0
20	Length of segment across TPWD property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0	0.0	0.0	0.0
21	Length of segment across residential areas	0.6	0.0	0.1	2.1	0.9	0.2	1.5	0.0	0.0	0.0	0.1	0.0	0.1	0.04
22	Length of segment across commercial/industrial areas	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.03	0.2	1.0	0.0	0.0	0.0
23	Length of segment across agricultural land/cropland	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	Length of segment across pastureland	8.8	2.6	4.0	3.1	0.6	1.5	2.4	1.0	5.2	1.3	0.4	0.3	0.0	0.02
25	Length of segment across mobile irrigated cropland or pastureland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	Number of pipeline crossings	5	1	8	17	0	25	16	17	56	6	25	0	0	0
27	Number of transmission line crossings	1	0	0	0	1	1	0	0	0	3	0	0	0	0
28	Number of U.S. and state highway crossings	0	0	0	0	0	0	0	0	1	2	0	0	0	0
29	Number of F.M. road crossings	3	0	0	0	0	0	1	0	0	0	0	0	0	0
30	Number of local road crossings	5	1	2	5	2	5	6	1	1	0	1	0	0	1
31	Number of cemeteries within 1,000 feet of the segment centerline	1	0	2	3	1	0	1	0	0	0	0	0	0	0
32	Number of heliports within 5,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	1	0	0	0	0
33	Number of private airstrips within 10,000 feet of segment centerline	0	0	0	1	1	1	1	0	0	0	1	0	0	0
34	Number of FAA-listed airports[5] within 10,000 feet of segment centerline having no runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Number of FAA-listed airports[5] within 20,000 feet of segment centerline having at least one runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Number of commercial AM radio transmitters within 10,000 feet of segment centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Number of FM radio transmitters, microwave relay stations, and other electronic installations etc. within 2,000 feet of segment centerline	1	1	0	0	0	0	0	0	1	2	0	0	0	0
38	Number of water wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Number of oil and gas wells within the ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aesthetics														
40	Estimated length of segment within foreground visual zone[6] of U.S. and state highways	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.9	0.0	0.4	0.1	0.4
41	Estimated length of segment within foreground visual zone[6] of FM and county roads	3.6	0.6	0.0	0.03	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	Estimated length of segment within foreground visual zone[6][7] of park and recreational areas[4]	0.0	0.0	0.6	0.4	0.0	0.0	0.0	1.0	5.9	0.0	0.0	0.0	0.1	0.4
	Ecology														
43	Length of segment across upland woodlands	0.6	0.3	0.6	2.1	0.8	1.1	2.3	0.2	0.6	0.4	1.6	0.2	0.1	0.0
44	Length of segment across bottomland/riparian woodlands	0.2	0.6	0.1	0.7	0.1	0.0	1.1	0.0	0.4	0.1	0.1	0.1	0.0	0.0
45	Length of segment across National Wetland Inventory mapped forested or scrub/shrub wetlands[8]	0.10	0.00	0.00	0.31	0.00	0.00	0.38	0.01	0.42	0.00	0.04	0.10	0.00	0.00
46	Length of segment across National Wetland Inventory mapped emergent wetlands[8]	0.12	0.00	0.00	0.11	0.02	0.00	0.25	0.22	2.53	0.00	0.00	0.00	0.00	0.00
47	Total length of segment across National Wetland Inventory mapped wetlands	0.22	0.00	0.00	0.42	0.02	0.00	0.63	0.23	2.96	0.00	0.04	0.10	0.00	0.00
48	Length of segment across USACE designated Columbia Bottomlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
49	Length of segment across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	Length of segment across Coastal Management Zone	5.9	3.4	4.3	5.1	1.6	2.5	5.4	1.2	5.9	0.0	1.9	0.6	0.1	0.4
51	Length of segment across known habitat of federal endangered/threatened species of plants or animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	Length of segment across open water (lakes or ponds)	0.03	0.02	0.0	0.0	0.05	0.0	0.1	0.0	0.02	0.0	0.0	0.0	0.0	0.0
53	Number of stream and canal crossings	11	1	2	1	1	5	2	1	6	4	0	1	0	1
54	Length of segment parallel to streams and canals within 100 feet of segment centerline	0.3	0.6	0.0	0.0	0.0	0.04	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
55	Length of segment across 100-year floodplains	0.8	1.3	1.1	0.5	1.6	2.3	0.9	0.0	3.6	1.3	0.4	0.0	0.0	0.0
	Cultural Resources														
56	Number of recorded historical and archeological sites crossed within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Number of additional recorded historical and archeological sites within 1,000 feet of segment centerline	0	0	0	0	0	3	0	0	0	0	0	0	0	0
58	Number of National Register of Historic Places listed or determined-eligible properties within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of segment centerline	0	0	0	0	0	0	0	0	1	0	0	0	0	0
60	Length of segment across areas of high archaeological/historic site potential	4.0	2.4	2.7	1.0	0.5	1.2	1.2	0.7	3.7	1.3	0.4	0.2	0.0	0.4

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] As listed in the Chart Supplement South Central U.S. (FAA 2018b formerly known as the Airport/Facility Directory South Central U.S.), and FAA 2018a.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[8] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

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Table 4-2
Environmental and Land Use Data
for the Proposed Alternative Routes
8/28/2018

	Evaluation Criteria	Proposed Alternative Routes														
	Land Use	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	Length of route (feet)	297,294	284,808	305,322	295,964	291,593	384,850	376,528	396,084	389,993	387,198	409,610	421,311	413,738	415,853	443,266
2	Length of route (miles)	56.3	53.9	57.8	56.1	55.2	72.9	71.3	75.0	73.9	73.3	77.6	79.8	78.4	78.8	84.0
3	Number of directly affected habitable structures[1] within 500 feet of route centerline	376	427	323	320	181	438	270	242	408	258	182	181	200	184	178
4	Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	15	17	16	25	25	12	7	9	28	46	28	29	7	10	22
5	Number of habitable structures[1] potentially to be relocated/removed[2]	2	7	7	6	0	2	1	0	1	0	1	1	0	0	1
6	Length of route using existing transmission line easement	0.9	0.9	0.9	0.9	1.8	0.9	1.8	1.8	0.9	1.8	1.8	1.8	1.8	1.8	1.8
7	Length of new ROW required for route	55.4	53.1	57.0	55.2	53.4	72.0	69.5	73.2	73.0	71.6	75.8	78.0	76.6	77.0	82.2
8	Length of route parallel to existing transmission line ROW	10.7	7.0	6.7	6.8	13.1	7.1	10.1	12.4	10.5	16.0	15.0	11.0	8.7	7.4	10.1
9	Length of route not utilizing/paralleling existing transmission line ROW	44.7	46.0	50.3	48.4	40.3	64.9	59.4	60.9	62.5	55.6	60.8	67.0	67.9	69.6	72.1
10	Length of route parallel to existing pipeline ROW	8.0	6.3	9.0	7.4	12.5	8.0	17.7	16.5	11.7	11.5	21.3	22.1	21.1	23.3	22.5
11	Length of route parallel to existing railroad ROW	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	1.3	1.3	0.0	0.0	0.0	0.0	0.0
12	Length of route paralleling apparent property lines (or other natural or cultural features)[3]	21.1	17.3	22.3	19.1	18.5	32.8	33.3	35.0	32.6	29.2	32.0	34.3	32.7	39.1	36.7
13	Length of route parallel to other existing ROW (roadway, etc.)	10.8	18.4	17.6	17.7	9.5	21.3	14.0	13.1	18.3	16.5	21.1	21.1	25.1	19.4	26.6
14	Length of route not parallel to railroad ROW, apparent property lines, or other existing ROW (roadway, etc.)	13.4	11.2	11.3	12.5	14.0	11.3	13.9	14.5	11.2	10.4	9.5	13.5	11.9	12.9	10.6
15	Percent of route parallel with apparent features, property lines, railroads, or an existing ROW	**76%**	**79%**	**81%**	**78%**	**75%**	**84%**	**81%**	**81%**	**85%**	**86%**	**88%**	**83%**	**85%**	**84%**	**87%**
16	Length of route across parks/recreational areas[4]	0.0	0.9	0.7	0.9	4.5	1.4	4.5	4.5	2.1	4.5	5.0	4.5	4.5	4.5	5.0
17	Number of additional parks/recreational areas[4] within 1,000 feet of route centerline	5	2	4	2	3	4	3	3	1	2	2	2	3	3	2
18	Total length of route across TDCJ and TPWD properties	4.3	3.8	3.7	3.8	7.4	4.3	4.5	6.3	2.1	7.4	4.5	4.5	5.7	5.7	4.5
19	Length of route across TDCJ property	4.3	2.9	2.9	2.9	2.9	2.9	0.0	1.8	0.0	2.9	0.0	0.0	1.2	1.2	0.0
20	Length of route across TPWD property	0.0	0.9	0.7	0.9	4.5	1.4	4.5	4.5	2.1	4.5	4.5	4.5	4.5	4.5	4.5
21	Length of route across residential areas	8.6	8.8	8.4	7.3	5.0	8.9	10.4	8.3	8.7	5.5	6.1	5.7	8.0	7.5	5.6
22	Length of route across commercial/industrial areas	4.1	4.1	4.6	4.2	2.8	2.8	1.6	0.8	5.1	3.5	1.4	1.2	1.4	1.4	1.2
23	Length of route across agricultural land/cropland	7.0	6.8	6.8	6.8	5.9	7.2	9.5	11.0	11.9	13.8	12.3	12.7	11.3	10.0	17.1
24	Length of route across pastureland	38.7	35.0	38.2	35.7	37.7	55.4	48.2	52.5	47.3	47.8	49.4	53.4	51.6	52.5	50.7
25	Length of route across mobile irrigated cropland or pastureland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
26	Number of pipeline crossings	98	110	172	126	180	129	218	257	178	207	208	220	236	264	224
27	Number of transmission line crossings	12	12	12	12	12	9	12	11	15	14	18	16	16	15	16
28	Number of U.S. and state highway crossings	2	8	6	6	4	8	4	4	8	6	5	5	7	5	7
29	Number of F.M. road crossings	7	7	18	9	7	11	8	10	10	10	5	6	7	8	6
30	Number of local road crossings	38	30	25	36	27	28	34	26	42	29	39	38	36	30	37
31	Number of cemeteries within 1,000 feet of the route centerline	6	7	10	10	4	5	4	5	7	7	6	6	6	5	6
32	Number of heliports within 5,000 feet of route centerline	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1
33	Number of private airstrips within 10,000 feet of route centerline	2	2	3	3	2	1	3	3	3	3	3	4	3	4	2
34	Number of FAA-listed airports[5] within 10,000 feet of route centerline having no runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Number of FAA-listed airports[5] within 20,000 feet of route centerline having at least one runway more than 3,200 feet	0	0	0	0	0	1	1	1	1	1	0	1	1	1	0
36	Number of commercial AM radio transmitters within 10,000 feet of route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Number of FM radio transmitters, microwave relay stations, and other electronic installations etc. within 2,000 feet of route centerline	6	9	11	8	9	7	4	4	6	7	5	4	6	4	3
38	Number of water wells within the ROW	3	2	2	2	1	4	1	1	1	0	0	0	1	1	0
39	Number of oil and gas wells within the ROW	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	Aesthetics															
40	Estimated length of route within foreground visual zone[6] of U.S. and state highways	10.6	14.6	12.9	12.8	8.1	14.7	6.1	8.0	11.7	11.3	5.8	6.4	9.4	6.4	8.6
41	Estimated length of route within foreground visual zone[6] of FM and county roads	7.6	7.1	16.0	9.7	6.9	13.1	11.3	11.7	15.5	17.8	7.8	10.9	9.0	10.2	8.6
42	Estimated length of route within foreground visual zone[6][7] of park and recreational areas[4]	9.1	8.6	10.8	8.3	12.1	10.4	11.9	10.9	7.0	8.5	9.7	8.4	9.4	10.7	11.7
	Ecology															
43	Length of route across upland woodlands	9.8	11.6	10.9	11.5	10.8	13.8	14.5	13.1	13.3	9.5	12.7	11.7	14.5	15.3	13.0
44	Length of route across bottomland/riparian woodlands	2.0	1.6	2.0	2.1	2.8	2.6	3.6	3.3	3.7	3.2	4.9	5.0	5.2	4.7	5.1
45	Length of route across National Wetland Inventory mapped forested or scrub/shrub wetlands[8]	1.18	1.12	1.32	1.33	1.81	1.28	1.42	1.25	1.13	0.94	1.22	1.35	1.29	1.36	1.38
46	Length of route across National Wetland Inventory mapped emergent wetlands[8]	1.80	2.29	2.33	2.46	3.98	1.46	4.26	4.47	3.53	3.92	4.42	5.05	5.10	4.50	5.04
47	Total length of route across National Wetland Inventory mapped wetlands	2.99	3.41	3.66	3.78	5.78	2.74	5.68	5.72	4.66	4.86	5.64	6.40	6.39	5.86	6.42
48	Length of route across USACE designated Columbia Bottomlands	1.84	0.71	1.85	1.76	0.75	0.69	0.00	0.05	0.02	0.36	0.00	0.00	0.00	0.00	0.00
49	Length of route across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.11	0.05	0.18	0.08	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	Length of route across Coastal Management Zone	23.3	21.6	23.2	25.1	26.2	19.3	24.0	29.3	32.7	35.8	36.2	36.2	32.3	28.1	36.2
51	Length of route across known habitat of federal endangered/threatened species of plants or animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	Length of route across open water (lakes or ponds)	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.3	0.3	0.3	0.4	0.4	0.4	0.5
53	Number of stream and canal crossings	55	53	65	58	63	67	66	65	65	74	74	81	69	73	84
54	Length of route parallel to streams and canals within 100 feet of route centerline	8.1	3.0	3.0	3.1	4.3	5.4	3.8	6.8	6.2	7.3	5.8	5.6	4.3	6.7	8.4
55	Length of route across 100-year floodplains	22.3	22.5	20.4	24.0	26.0	21.7	22.7	22.9	19.2	11.7	20.5	19.5	25.3	24.9	21.4
	Cultural Resources															
56	Number of recorded historical and archeological sites crossed within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Number of additional recorded historical and archeological sites within 1,000 feet of route centerline	3	4	7	7	6	3	4	4	4	5	4	4	1	3	4
58	Number of National Register of Historic Places listed or determined-eligible properties within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of route centerline	0	0	1	1	2	0	2	1	0	1	1	1	1	1	1
60	Length of route across areas of high archaeological/historic site potential	23.4	23.3	32.1	27.5	26.4	32.3	30.2	32.1	27.5	28.5	32.7	31.8	35.2	29.7	30.5

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] As listed in the Chart Supplement South Central U.S. (FAA 2018b formerly known as the Airport/Facility Directory South Central U.S.), and FAA 2018a.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[8] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

Table 4-2
Environmental and Land Use Data
for the Proposed Alternative Routes
8/28/2018

	Evaluation Criteria	Proposed Alternative Routes														
	Land Use	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
1	Length of route (feet)	302,986	309,441	445,075	394,472	359,655	299,165	308,642	393,996	374,231	382,508	380,846	317,823	305,372	305,193	314,344
2	Length of route (miles)	57.4	58.6	84.3	74.7	68.1	56.7	58.5	74.6	70.9	72.4	72.1	60.2	57.8	57.8	59.5
3	Number of directly affected habitable structures[1] within 500 feet of route centerline	174	330	164	181	447	373	377	331	394	407	427	322	275	393	278
4	Number of directly affected habitable structures[1] also within 500 feet of an existing transmission line	25	25	15	21	53	23	14	35	51	7	12	14	23	17	14
5	Number of habitable structures[1] potentially to be relocated/removed[2]	0	0	0	0	9	9	10	9	9	9	8	3	3	7	4
6	Length of route using existing transmission line easement	1.8	0.9	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7	Length of new ROW required for route	55.6	57.7	82.5	72.9	67.2	55.8	57.6	73.7	70.0	71.6	71.3	59.3	57.0	56.9	58.7
8	Length of route parallel to existing transmission line ROW	13.1	9.4	16.4	8.4	18.5	9.3	9.3	9.7	18.5	6.5	9.1	9.4	9.4	7.0	9.3
9	Length of route not utilizing/paralleling existing transmission line ROW	42.5	48.3	66.2	64.5	48.7	46.5	48.3	64.0	51.5	65.1	62.1	49.9	47.6	49.9	49.4
10	Length of route parallel to existing pipeline ROW	16.0	13.1	24.5	15.7	7.9	14.6	16.2	16.2	14.8	15.6	13.6	16.2	14.9	12.2	16.3
11	Length of route parallel to existing railroad ROW	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0
12	Length of route paralleling apparent property lines (or other natural or cultural features)[3]	20.0	22.1	33.3	34.1	20.8	20.9	24.3	34.6	25.9	35.4	33.9	26.5	21.9	20.8	25.1
13	Length of route parallel to other existing ROW (roadway, etc.)	8.3	11.6	21.2	19.9	20.0	12.2	11.6	20.3	15.3	17.5	15.6	10.0	11.1	15.5	10.8
14	Length of route not parallel to railroad ROW, apparent property lines, or other existing ROW (roadway, etc.)	15.9	15.4	13.5	12.3	7.5	14.2	13.3	10.0	9.9	13.0	13.6	14.3	15.4	14.4	14.4
15	Percent of route parallel with apparent features, property lines, railroads, or an existing ROW	**72%**	**74%**	**84%**	**84%**	**89%**	**75%**	**77%**	**87%**	**86%**	**82%**	**81%**	**76%**	**73%**	**75%**	**76%**
16	Length of route across parks/recreational areas[4]	4.5	2.0	5.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0
17	Number of additional parks/recreational areas[4] within 1,000 feet of route centerline	3	2	3	2	4	4	6	3	3	4	5	6	4	2	6
18	Total length of route across TDCJ and TPWD properties	6.3	4.5	5.7	5.7	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0
19	Length of route across TDCJ property	1.8	2.6	1.2	1.2	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0
20	Length of route across TPWD property	4.5	2.0	4.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0
21	Length of route across residential areas	5.8	7.2	5.7	6.4	6.5	8.4	9.4	7.9	8.0	11.9	11.2	9.4	8.2	9.9	8.8
22	Length of route across commercial/industrial areas	2.8	3.6	1.4	1.6	5.9	5.1	5.5	2.8	5.6	2.7	2.0	4.7	5.0	3.6	5.5
23	Length of route across agricultural land/cropland	3.4	4.2	15.3	10.8	12.7	3.4	3.4	7.6	10.3	9.5	3.8	3.3	3.4	4.4	3.4
24	Length of route across pastureland	41.0	39.2	52.9	50.1	45.2	37.3	39.7	49.7	47.4	47.8	54.5	42.2	39.3	38.9	41.4
25	Length of route across mobile irrigated cropland or pastureland	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
26	Number of pipeline crossings	205	167	263	230	135	192	238	172	167	179	170	233	185	167	232
27	Number of transmission line crossings	12	12	15	17	14	13	13	18	15	12	10	13	13	12	13
28	Number of U.S. and state highway crossings	2	6	5	5	8	4	4	7	6	6	4	2	2	6	2
29	Number of F.M. road crossings	7	7	6	5	14	9	18	5	8	8	10	18	9	7	18
30	Number of local road crossings	32	40	34	35	38	48	40	48	49	44	42	42	50	37	40
31	Number of cemeteries within 1,000 feet of the route centerline	4	4	6	6	10	7	7	6	7	4	6	8	8	5	8
32	Number of heliports within 5,000 feet of route centerline	0	0	3	1	0	0	1	1	0	0	0	1	0	0	1
33	Number of private airstrips within 10,000 feet of route centerline	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3
34	Number of FAA-listed airports[5] within 10,000 feet of route centerline having no runway more than 3,200 feet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Number of FAA-listed airports[5] within 20,000 feet of route centerline having at least one runway more than 3,200 feet	0	0	0	1	1	0	0	1	1	1	1	0	0	0	0
36	Number of commercial AM radio transmitters within 10,000 feet of route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Number of FM radio transmitters, microwave relay stations, and other electronic installations etc. within 2,000 feet of route centerline	7	7	4	6	9	6	9	6	6	4	4	9	6	7	9
38	Number of water wells within the ROW	1	1	0	0	1	1	1	0	0	1	2	1	1	1	1
39	Number of oil and gas wells within the ROW	1	1	0	0	0	1	1	0	0	0	0	1	1	1	1
	Aesthetics															
40	Estimated length of route within foreground visual zone[6] of U.S. and state highways	3.8	9.2	4.4	4.4	20.2	8.0	8.0	10.1	13.6	10.5	7.7	6.4	5.9	8.0	5.9
41	Estimated length of route within foreground visual zone[6] of FM and county roads	6.1	6.1	9.3	7.6	21.6	7.9	14.2	9.8	15.5	11.3	10.8	14.2	7.9	6.1	14.2
42	Estimated length of route within foreground visual zone[6][7] of park and recreational areas[4]	12.1	10.5	10.7	8.4	5.3	10.5	13.0	7.1	6.9	10.6	12.6	12.9	9.8	10.5	12.2
	Ecology															
43	Length of route across upland woodlands	11.8	12.9	13.0	11.9	7.5	14.4	14.0	13.5	10.4	15.6	16.8	13.4	13.4	13.8	13.1
44	Length of route across bottomland/riparian woodlands	4.1	3.8	4.6	5.1	2.0	3.0	2.8	4.8	3.7	3.1	3.5	3.2	3.1	2.8	2.9
45	Length of route across National Wetland Inventory mapped forested or scrub/shrub wetlands[8]	2.17	1.94	1.34	1.27	0.25	1.68	1.70	0.81	0.88	0.99	1.73	1.86	1.84	1.51	1.86
46	Length of route across National Wetland Inventory mapped emergent wetlands[8]	4.47	3.46	4.76	4.63	1.78	2.27	2.25	2.26	2.65	2.21	2.12	2.19	2.06	3.28	2.32
47	Total length of route across National Wetland Inventory mapped wetlands	6.64	5.39	6.10	5.90	2.03	3.95	3.95	3.07	3.53	3.21	3.85	4.05	3.90	4.79	4.18
48	Length of route across USACE designated Columbia Bottomlands	0.45	0.77	0.00	0.00	1.02	0.88	0.62	0.62	0.62	0.62	0.62	1.41	1.75	0.36	1.23
49	Length of route across National Wetland Inventory mapped wetlands within USACE designated Columbia Bottomlands	0.0	0.0	0.0	0.0	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.16	0.07	0.05	0.16
50	Length of route across Coastal Management Zone	28.3	29.6	36.7	36.7	33.0	26.5	24.6	37.1	37.1	25.1	29.2	26.4	27.6	25.4	25.7
51	Length of route across known habitat of federal endangered/threatened species of plants or animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	Length of route across open water (lakes or ponds)	0.2	0.2	0.4	0.3	0.4	0.3	0.2	0.3	0.4	0.2	0.2	0.2	0.3	0.1	0.2
53	Number of stream and canal crossings	66	64	78	66	67	61	69	66	67	64	62	70	62	56	70
54	Length of route parallel to streams and canals within 100 feet of route centerline	4.3	4.3	4.7	8.3	4.6	4.0	3.9	6.0	4.5	3.8	5.8	3.9	4.0	3.0	3.9
55	Length of route across 100-year floodplains	26.8	25.8	18.8	17.7	7.5	23.4	20.4	17.0	10.5	19.1	22.2	22.6	25.7	23.4	22.8
	Cultural Resources															
56	Number of recorded historical and archeological sites crossed within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Number of additional recorded historical and archeological sites within 1,000 feet of route centerline	4	4	1	1	6	7	7	5	4	4	5	7	7	3	7
58	Number of National Register of Historic Places listed or determined-eligible properties within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Number of additional National of Register Historic Places listed or determined-eligible properties within 1,000 feet of route centerline	2	1	1	1	1	1	1	0	0	1	0	1	1	0	1
60	Length of route across areas of high archaeological/historic site potential	26.8	25.6	33.0	29.0	28.5	26.5	31.0	31.3	26.0	29.5	33.0	31.5	26.9	24.3	31.4

[1] Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a regular basis within 500 feet of the centerline of a transmission line project greater than 230-kV.

[2] CenterPoint Energy will potentially relocate/remove habitable structures within 50 feet of the centerline.

[3] Apparent property boundaries created by existing roads, highway, or railroad ROW are not "double counted" in the length of ROW parallel to apparent property boundaries criteria. Property boundary information was provided by CenterPoint Energy.

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

[5] As listed in the Chart Supplement South Central U.S. (FAA 2018b formerly known as the Airport/Facility Directory South Central U.S.), and FAA 2018a.

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of Interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

[8] NWI mapped wetlands not included within USACE designated Columbia Bottomlands.

Note: All length measurements in miles unless noted otherwise. All linear measurements were obtained from various aerial photograph sources: NAIP 2016 and Google Earth with the exception of high probability areas for archaeological historical/resources which were measured from USGS Topographic Quadrangles using GIS software.

Appendix D

Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Routes (CCN Inventory Tables)

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Table 5-9 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 1

Segment Combinations: B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
10	Single-family Residence	341	P
11	Single-family Residence	307	P
12	Single-family Residence	332	P
13	Single-family Residence - Mobile Home	350	P
14	Single-family Residence - Mobile Home	109	P
15	Single-family Residence - Mobile Home	441	P
16	Single-family Residence	454	P
17	Single-family Residence	264	P
18	Single-family Residence	115	P
19	Single-family Residence	108	P
20	Single-family Residence	377	P
21	Single-family Residence	67	P
22	Single-family Residence - Mobile Home	159	P
23	Single-family Residence - Mobile Home	178	P
24	Single-family Residence - Mobile Home	251	P
25	Single-family Residence - Mobile Home	69	P
26	Single-family Residence	210	P
27	Single-family Residence	143	P
28	Single-family Residence - Mobile Home	150	P
29	Single-family Residence - Mobile Home	391	V
30	Single-family Residence - Mobile Home	348	V
31	Single-family Residence	326	V
32	Single-family Residence	310	V
33	Single-family Residence	233	V
34	Single-family Residence	248	V
35	Single-family Residence	101	W
36	Single-family Residence	122	W

Table 5-9 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 1

Segment Combinations: B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
37	Single-family Residence	124	W
38	Single-family Residence	288	W
39	Single-family Residence	355	W
40	Single-family Residence	312	W
41	Single-family Residence	281	Y
42	Single-family Residence	380	Y
43	Single-family Residence	270	Y
44	Single-family Residence	399	Z
45	Single-family Residence	403	Z
46	Single-family Residence	143	Z
47	Single-family Residence	166	Z
48	Single-family Residence	178	Z
49	Single-family Residence	210	Z
50	Single-family Residence	263	Z
51	Single-family Residence - Mobile Home	110	Z
52	Single-family Residence	87	Z
53	Single-family Residence	68	Z
54	Single-family Residence	276	Z
55	Single-family Residence	411	Z
56	Single-family Residence - Mobile Home	213	Z
57	Single-family Residence	256	Z
58	Single-family Residence	162	Z
59	Single-family Residence	128	Z
60	Single-family Residence	349	Z
61	Single-family Residence	221	Z
62	Single-family Residence	362	Z
63	Single-family Residence	416	Z
64	Single-family Residence	112	Z
65	Single-family Residence	150	Z
66	Single-family Residence - Mobile Home	51	Z
67	Single-family Residence	245	AP
68	Single-family Residence	207	AP
69	Single-family Residence	55	AP
70	Single-family Residence	55	AP
71	Single-family Residence	363	AP
72	Single-family Residence	220	AP

Table 5-9 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 1

Segment Combinations: B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
73	Single-family Residence	214	AP
74	Single-family Residence	213	AP
75	Single-family Residence - Mobile Home	209	AP
76	Single-family Residence	285	AP
77	Single-family Residence	312	AP
78	Single-family Residence	392	AP
79	Single-family Residence	189	AP
80	Single-family Residence	172	AP
81	Single-family Residence	289	AP
82	Single-family Residence	274	AP
83	Single-family Residence	317	AP
84	Single-family Residence - Mobile Home	254	AP
85	Single-family Residence	103	AP
86	Single-family Residence	132	AP
87	Single-family Residence - Mobile Home	160	AP
88	Single-family Residence	428	AP
89	Single-family Residence - Mobile Home	176	AP
90	Single-family Residence	42	AP
91	Single-family Residence - Mobile Home	384	AP
92	Single-family Residence	242	AP
93	Single-family Residence	478	AP
94	Single-family Residence	55	AP
95	Single-family Residence	51	AP
96	Single-family Residence	67	AP
97	Single-family Residence	176	AP
98	Single-family Residence - Mobile Home	217	AP
99	Single-family Residence	375	AP
100	Single-family Residence	60	AP
101	Single-family Residence	241	AP
102	Single-family Residence	299	AP
103	Single-family Residence - Mobile Home	515	AP
104	Single-family Residence	81	AP
105	Single-family Residence - Mobile Home	196	AP
106	Single-family Residence - Mobile Home	211	AP
107	Single-family Residence - Mobile Home	188	AP
108	Single-family Residence	209	AP

Table 5-9 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 1

Segment Combinations: B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
109	Single-family Residence	250	AP
110	Single-family Residence	54	AP
111	Single-family Residence	61	AP
112	Single-family Residence	312	AP
113	Single-family Residence	188	AP
114	Single-family Residence	263	AP
115	Single-family Residence	190	AP
116	Single-family Residence	233	AP
117	Single-family Residence	218	AP
118	Single-family Residence	206	AP
119	Single-family Residence	340	AP
120	Single-family Residence - Mobile Home	197	AP
121	Single-family Residence - Mobile Home	196	AP
122	Single-family Residence	222	AP
123	Single-family Residence	152	AP
124	Single-family Residence	156	AP
125	Single-family Residence	210	AP
126	Single-family Residence	161	AP
127	Single-family Residence	193	AP
128	Single-family Residence	272	AP
129	Single-family Residence	192	AP
130	Single-family Residence	174	AP
131	Single-family Residence - Mobile Home	358	AP
132	Single-family Residence	475	AP
133	Single-family Residence	351	AP
134	Single-family Residence	296	AP
135	Single-family Residence	199	AP
136	Church	155	AP
137	Single-family Residence	218	AP
138	Single-family Residence	408	AP
139	Single-family Residence	259	AP
140	Single-family Residence	162	AP
141	Single-family Residence	241	AP
142	Single-family Residence	241	AP
143	Single-family Residence	164	AP
144	Single-family Residence	187	AP

Table 5-9 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 1

Segment Combinations: B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
145	Single-family Residence	322	AP
146	Single-family Residence	497	AP
147	Single-family Residence	140	AP
148	Single-family Residence - Mobile Home	304	AP
149	Single-family Residence	140	AP
150	Single-family Residence	138	AP
151	Single-family Residence	347	AP
152	Single-family Residence	451	AP
153	Single-family Residence	136	AP
154	Single-family Residence	273	AP
155	Single-family Residence	314	AP
156	Single-family Residence	430	AP
157	Single-family Residence	294	AP
158	Single-family Residence	386	AP
159	Single-family Residence	497	AP
160	Single-family Residence	104	AP
161	Single-family Residence - Mobile Home	81	AP
162	Single-family Residence	118	AP
163	Single-family Residence - Mobile Home	226	AP
164	Single-family Residence	70	AP
165	Single-family Residence	58	AP
166	Single-family Residence	52	AP
167	Single-family Residence	63	AP
168	Single-family Residence	113	AP
169	Single-family Residence	160	AP
170	Single-family Residence	61	AP
171	Single-family Residence	122	AP
172	Single-family Residence	74	AP
173	Single-family Residence	293	AP
174	Single-family Residence	80	AP
175	Single-family Residence	116	AP
176	Single-family Residence	493	AP
177	Single-family Residence	481	AP
178	Single-family Residence	66	AP
179	Single-family Residence	109	AP
180	Single-family Residence	84	AP

Table 5-9 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 1

Segment Combinations: B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
181	Single-family Residence	182	AP
182	Single-family Residence	389	AP
183	Single-family Residence	95	AP
184	Single-family Residence	384	AP
185	Single-family Residence	217	AP
186	Single-family Residence - Mobile Home	339	BL
187	Single-family Residence - Mobile Home	507	BL
188	Single-family Residence	321	BL
189	Single-family Residence	460	BL
190	Single-family Residence	344	BL
191	Single-family Residence	188	BL
192	Single-family Residence	148	BL
193	Single-family Residence	258	BL
194	Single-family Residence	312	BL
195	Single-family Residence	454	BL
196	Single-family Residence	459	BL
197	Single-family Residence	399	BL
198	Commercial Business	450	BL
199	Commercial Business	415	BL
200	Commercial Business	245	BL
201	Commercial Business	242	BL
202	Commercial Business	175	BL
203	Commercial Business	422	BL
204	Commercial Business	444	BL
205	Commercial Business	190	BL
206	Commercial Business	259	BL
207	Commercial Business	193	BL
208	Commercial Business	189	BL
209	Commercial Business	252	BL
210	Single-family Residence	369	BL
211	Single-family Residence	437	BL
212	Commercial Business	269	BL
213	Single-family Residence	229	BL
214	Church	221	BL
215	Church Facility	371	BL
216	Single-family Residence	218	BL

Table 5-9 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 1

Segment Combinations: B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
217	Commercial Business	127	BL
218	Commercial Business	414	BL
219	Commercial Business	478	BL
220	Single-family Residence	348	BL
221	Single-family Residence	506	BL
222	Single-family Residence	265	BL
223	Commercial Business	247	BL
224	Single-family Residence	353	BL
225	Single-family Residence	164	BL
226	Single-family Residence	80	BL
227	Single-family Residence	236	BL
228	Single-family Residence	175	BL
229	Single-family Residence	156	BL
230	Single-family Residence	136	BL
231	Single-family Residence	393	BL
232	Single-family Residence	463	CT
233	Single-family Residence	153	CT
234	Single-family Residence	442	CT
235	Single-family Residence	92	CU
236	Single-family Residence	315	CU
237	Single-family Residence	299	CU
238	Single-family Residence	503	CU
239	Single-family Residence	309	CU
240	Single-family Residence	314	CU
241	Single-family Residence	268	CU
242	Single-family Residence	301	CU
243	Single-family Residence	279	CU
244	Single-family Residence	303	CU
245	Single-family Residence	264	CU
246	Single-family Residence	250	CU
247	Single-family Residence	253	CU
248	Single-family Residence	247	CU
249	Single-family Residence	252	CU
250	Single-family Residence	264	CU
251	Commercial Business	495	CU
252	Single-family Residence	233	CU

Table 5-9 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 1

Segment Combinations: B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
253	Commercial Business	189	CU
254	Single-family Residence - Mobile Home	83	CU
255	Single-family Residence	498	CX
256	Single-family Residence	296	CX
257	Single-family Residence - Mobile Home	290	CX
258	Single-family Residence	301	CX
259	Single-family Residence	291	CX
260	Single-family Residence - Mobile Home	242	CX
261	Single-family Residence - Mobile Home	222	CX
262	Single-family Residence	221	CX
263	Single-family Residence	232	CX
264	Single-family Residence	256	CX
265	Single-family Residence	433	CX
266	Single-family Residence - Mobile Home	281	CX
267	Single-family Residence - Mobile Home	299	CX
286	Commercial Business	105	DD
287	Single-family Residence	459	DD
288	Single-family Residence	417	DD
289	Single-family Residence	405	DD
296	Single-family Residence	358	DD
297	Single-family Residence	402	DD
298	Single-family Residence	387	DD
299	Single-family Residence	373	DD
300	Single-family Residence	399	DD
301	Single-family Residence	410	DD
302	Single-family Residence	303	DD
303	Single-family Residence	389	DD
304	Commercial Business	160	DD
305	Single-family Residence	235	DD
306	Single-family Residence	337	DD
307	Single-family Residence	383	DD
308	Single-family Residence	445	DD
309	Single-family Residence	499	DD
310	Single-family Residence	496	DD
311	Single-family Residence	468	DD
312	Single-family Residence	410	DD

Table 5-9 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 1

Segment Combinations: B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
313	Single-family Residence	333	DD
314	Single-family Residence	361	DD
315	Single-family Residence	287	DD
316	Single-family Residence	372	DD
317	Single-family Residence	467	DD
318	Single-family Residence	411	DD
319	Single-family Residence	319	DD
320	Single-family Residence	414	DD
321	Single-family Residence	98	DD
322	Single-family Residence	168	DE
323	Single-family Residence	345	DD
324	Single-family Residence	448	DD
325	Single-family Residence	376	DD
354	Single-family Residence	290	DH
355	Single-family Residence	364	DL
356	Single-family Residence	132	DL
357	Single-family Residence - Mobile Home	427	DL
358	Single-family Residence - Mobile Home	502	DL
359	Single-family Residence - Mobile Home	56	DL
360	Single-family Residence - Mobile Home	179	DL
361	Church	347	DL
362	Single-family Residence - Mobile Home	368	DL
363	Single-family Residence	481	DL
364	Single-family Residence	469	DL
370	Single-family Residence	89	DN
371	Single-family Residence	339	DN
372	Single-family Residence	277	DT
373	Single-family Residence	185	DT
374	Single-family Residence	197	ER1
375	Single-family Residence	208	ER1
376	Commercial Business	334	ER1
377	Single-family Residence	347	ER1
378	Commercial Business	0	EZ
379	Single-family Residence	143	EZ
380	Single-family Residence - Mobile Home	164	FC
381	Single-family Residence	195	FC

Table 5-9 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 1

Segment Combinations: B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
382	Single-family Residence	465	FC
383	Single-family Residence	268	FC
384	Single-family Residence	499	FC
385	Multi-family Residence	207	FC
386	Multi-family Residence	274	FC
387	Multi-family Residence	272	FC
388	Multi-family Residence	367	FC
389	Multi-family Residence	432	FC
390	Multi-family Residence	194	FC
391	Multi-family Residence	254	FC
392	Multi-family Residence	316	FC
393	Multi-family Residence	375	FC
394	Multi-family Residence	435	FC
395	Multi-family Residence	428	FC
396	Multi-family Residence	370	FC
397	Multi-family Residence	314	FC
398	Multi-family Residence	253	FC
399	Multi-family Residence	189	FC
400	Multi-family Residence	186	FC
401	Multi-family Residence	249	FC
402	Multi-family Residence	309	FC
403	Multi-family Residence	366	FC
404	Multi-family Residence	427	FC
405	Multi-family Residence	423	FC
406	Multi-family Residence	364	FC
407	Multi-family Residence	303	FC
408	Multi-family Residence	241	FC
409	Multi-family Residence	182	FC
410	Multi-family Residence	177	FC
411	Multi-family Residence	238	FC
412	Multi-family Residence	298	FC
413	Multi-family Residence	359	FC
414	Multi-family Residence	417	FC
415	Single-family Residence - Mobile Home	86	FC
416	Single-family Residence - Mobile Home	92	FC
417	Single-family Residence	420	FC

Table 5-9 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 1

Segment Combinations: B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
418	Single-family Residence	236	FC
419	Single-family Residence	119	FC
420	Single-family Residence	102	FC
421	Church	200	FC
422	Single-family Residence	233	FC
423	Single-family Residence	367	FC
424	Single-family Residence	313	FC
425	Single-family Residence	238	FC
426	Church	149	FC
427	Church Facility	222	FM
428	Single-family Residence	348	FM
429	Commercial / Industrial Related	405	FP
431	Commercial Business	371	EV
432	Commercial Business	271	ER1
433	Single-family Residence	261	ER1
438	Single-family Residence	462	DT
1400	Other electronic installation	258	L
1412	Other electronic installation	945	P
1413	Other electronic installation	454	P
1414	Other electronic installation	854	P
1415	Other electronic installation	947	V
1419	Other electronic installation	1588	AP
1501	Private Airstrip 1	3523	L
1502	Peterson Airport	6357	P
1600-A	San Bernard National Wildlife Refuge	286	L
1600-B	San Bernard National Wildlife Refuge	149	P
1604	Lion's Club Park	553	BL
1606	Justin Hurst Wildlife Management Area	236	EZ
1607	Freeport Municipal Golf Course	337	FM
1702	Morris Cemetery	784	P
1703	Gardener Family Cemetery	780	V
1704	Black Family Cemetery	571	V
1713	Colonial Cemetery	523	AP
1714	Brazoria Cemetery	91	BL
1719	Oakland Cemetery	371	DL
--	41BO227	--	FP

Table 5-9 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 1

Segment Combinations: B-D-C-L-P-T-V-W-Y-Z-AP-BK-BL-CT-CU-CX-DD-DE-DH-DL-DN-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
--	41BO238	--	P
--	41BO109	--	Z

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-10 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 2

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
10	Single-family Residence	341	P
11	Single-family Residence	307	P
12	Single-family Residence	332	P
13	Single-family Residence - Mobile Home	350	P
14	Single-family Residence - Mobile Home	109	P
15	Single-family Residence - Mobile Home	441	P
16	Single-family Residence	454	P
17	Single-family Residence	264	P
18	Single-family Residence	115	P
19	Single-family Residence	108	P
20	Single-family Residence	377	P
21	Single-family Residence	67	P
22	Single-family Residence - Mobile Home	159	P
23	Single-family Residence - Mobile Home	178	P
24	Single-family Residence - Mobile Home	251	P
25	Single-family Residence - Mobile Home	69	P
26	Single-family Residence	210	P
27	Single-family Residence	143	P
28	Single-family Residence - Mobile Home	150	P
29	Single-family Residence - Mobile Home	391	V
30	Single-family Residence - Mobile Home	348	V
31	Single-family Residence	326	V
32	Single-family Residence	310	V
33	Single-family Residence	233	V
34	Single-family Residence	248	V
35	Single-family Residence	331	X
39	Single-family Residence	446	X

Table 5-10 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 2

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
40	Single-family Residence	318	Y
41	Single-family Residence	281	Y
42	Single-family Residence	380	Y
43	Single-family Residence	270	Y
44	Single-family Residence	399	Z
45	Single-family Residence	403	Z
46	Single-family Residence	143	Z
47	Single-family Residence	166	Z
48	Single-family Residence	178	Z
49	Single-family Residence	210	Z
50	Single-family Residence	263	Z
51	Single-family Residence - Mobile Home	110	Z
52	Single-family Residence	87	Z
53	Single-family Residence	68	Z
54	Single-family Residence	276	Z
55	Single-family Residence	411	Z
56	Single-family Residence - Mobile Home	213	Z
57	Single-family Residence	256	Z
58	Single-family Residence	162	Z
59	Single-family Residence	128	Z
60	Single-family Residence	349	Z
61	Single-family Residence	221	Z
62	Single-family Residence	362	Z
63	Single-family Residence	416	Z
64	Single-family Residence	112	Z
65	Single-family Residence	150	Z
66	Single-family Residence - Mobile Home	51	Z
67	Single-family Residence	245	AP
68	Single-family Residence	207	AP
69	Single-family Residence	55	AP
70	Single-family Residence	55	AP
71	Single-family Residence	363	AP
72	Single-family Residence	220	AP
73	Single-family Residence	214	AP
74	Single-family Residence	213	AP
75	Single-family Residence - Mobile Home	209	AP

Table 5-10 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 2

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
76	Single-family Residence	285	AP
77	Single-family Residence	312	AP
78	Single-family Residence	392	AP
79	Single-family Residence	189	AP
80	Single-family Residence	172	AP
81	Single-family Residence	289	AP
82	Single-family Residence	274	AP
83	Single-family Residence	317	AP
84	Single-family Residence - Mobile Home	254	AP
85	Single-family Residence	103	AP
86	Single-family Residence	132	AP
87	Single-family Residence - Mobile Home	160	AP
88	Single-family Residence	428	AP
89	Single-family Residence - Mobile Home	176	AP
90	Single-family Residence	42	AP
91	Single-family Residence - Mobile Home	384	AP
92	Single-family Residence	242	AP
93	Single-family Residence	478	AP
94	Single-family Residence	55	AP
95	Single-family Residence	51	AP
96	Single-family Residence	67	AP
97	Single-family Residence	176	AP
98	Single-family Residence - Mobile Home	217	AP
99	Single-family Residence	375	AP
100	Single-family Residence	60	AP
101	Single-family Residence	241	AP
102	Single-family Residence	299	AP
103	Single-family Residence - Mobile Home	515	AP
104	Single-family Residence	81	AP
105	Single-family Residence - Mobile Home	196	AP
106	Single-family Residence - Mobile Home	211	AP
107	Single-family Residence - Mobile Home	188	AP
108	Single-family Residence	209	AP
109	Single-family Residence	250	AP
110	Single-family Residence	54	AP
111	Single-family Residence	61	AP

Table 5-10 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 2

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
112	Single-family Residence	312	AP
113	Single-family Residence	188	AP
114	Single-family Residence	263	AP
115	Single-family Residence	190	AP
116	Single-family Residence	233	AP
117	Single-family Residence	218	AP
118	Single-family Residence	206	AP
119	Single-family Residence	340	AP
120	Single-family Residence - Mobile Home	197	AP
121	Single-family Residence - Mobile Home	196	AP
122	Single-family Residence	222	AP
123	Single-family Residence	152	AP
124	Single-family Residence	156	AP
125	Single-family Residence	210	AP
126	Single-family Residence	161	AP
127	Single-family Residence	193	AP
128	Single-family Residence	272	AP
129	Single-family Residence	192	AP
130	Single-family Residence	174	AP
131	Single-family Residence - Mobile Home	358	AP
132	Single-family Residence	475	AP
133	Single-family Residence	351	AP
134	Single-family Residence	296	AP
135	Single-family Residence	199	AP
136	Church	155	AP
137	Single-family Residence	218	AP
138	Single-family Residence	408	AP
139	Single-family Residence	259	AP
140	Single-family Residence	162	AP
141	Single-family Residence	241	AP
142	Single-family Residence	241	AP
143	Single-family Residence	164	AP
144	Single-family Residence	187	AP
145	Single-family Residence	322	AP
146	Single-family Residence	497	AP
147	Single-family Residence	140	AP

Table 5-10 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 2

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
148	Single-family Residence - Mobile Home	304	AP
149	Single-family Residence	140	AP
150	Single-family Residence	138	AP
151	Single-family Residence	347	AP
152	Single-family Residence	451	AP
153	Single-family Residence	136	AP
154	Single-family Residence	273	AP
155	Single-family Residence	314	AP
156	Single-family Residence	430	AP
157	Single-family Residence	294	AP
158	Single-family Residence	386	AP
159	Single-family Residence	497	AP
160	Single-family Residence	104	AP
161	Single-family Residence - Mobile Home	81	AP
162	Single-family Residence	118	AP
163	Single-family Residence - Mobile Home	226	AP
164	Single-family Residence	70	AP
165	Single-family Residence	58	AP
166	Single-family Residence	52	AP
167	Single-family Residence	63	AP
168	Single-family Residence	113	AP
169	Single-family Residence	160	AP
170	Single-family Residence	61	AP
171	Single-family Residence	122	AP
172	Single-family Residence	74	AP
173	Single-family Residence	293	AP
174	Single-family Residence	80	AP
175	Single-family Residence	116	AP
176	Single-family Residence	493	AP
177	Single-family Residence	481	AP
178	Single-family Residence	66	AP
179	Single-family Residence	109	AP
180	Single-family Residence	84	AP
181	Single-family Residence	182	AP
182	Single-family Residence	389	AP
183	Single-family Residence	95	AP

Table 5-10 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 2

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
184	Single-family Residence	384	AP
185	Single-family Residence	217	AP
228	Single-family Residence	424	CT
229	Single-family Residence	309	CT
230	Single-family Residence	166	CT
231	Single-family Residence	441	CT
232	Single-family Residence	463	CT
233	Single-family Residence	153	CT
234	Single-family Residence	442	CT
235	Single-family Residence	92	CU
236	Single-family Residence	315	CU
237	Single-family Residence	299	CU
238	Single-family Residence	503	CU
239	Single-family Residence	309	CU
240	Single-family Residence	314	CU
241	Single-family Residence	268	CU
242	Single-family Residence	301	CU
243	Single-family Residence	279	CU
244	Single-family Residence	303	CU
245	Single-family Residence	264	CU
246	Single-family Residence	250	CU
247	Single-family Residence	253	CU
248	Single-family Residence	247	CU
249	Single-family Residence	252	CU
250	Single-family Residence	264	CU
251	Commercial Business	495	CU
252	Single-family Residence	233	CU
253	Commercial Business	189	CU
254	Single-family Residence - Mobile Home	83	CU
256	Single-family Residence	496	CW
268	Single-family Residence	371	CY
269	Single-family Residence	344	CY
270	Single-family Residence	492	CY
271	TDCJ Clemens Unit Office	512	CY
272	Single-family Residence	452	CY
273	Multi-family Residence	406	CY

Table 5-10 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 2

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
274	Single-family Residence	233	CY
275	Single-family Residence	198	CY
276	Single-family Residence	260	CY
277	Single-family Residence	451	CY
278	Single-family Residence	301	CY
279	Single-family Residence	416	CY
280	Single-family Residence	509	CY
281	Single-family Residence	401	CY
282	Single-family Residence	503	CY
283	Single-family Residence	497	CY
284	Single-family Residence	397	CY
285	Single-family Residence	299	CY
286	Commercial Business	105	DD
287	Single-family Residence	314	DB
288	Single-family Residence	417	DD
289	Single-family Residence	405	DD
296	Single-family Residence	358	DD
297	Single-family Residence	402	DD
298	Single-family Residence	387	DD
299	Single-family Residence	373	DD
300	Single-family Residence	399	DD
301	Single-family Residence	410	DD
302	Single-family Residence	303	DD
303	Single-family Residence	389	DD
304	Commercial Business	160	DD
305	Single-family Residence	235	DD
306	Single-family Residence	337	DD
307	Single-family Residence	383	DD
308	Single-family Residence	445	DD
309	Single-family Residence	499	DD
310	Single-family Residence	496	DD
311	Single-family Residence	468	DD
312	Single-family Residence	410	DD
313	Single-family Residence	333	DD
314	Single-family Residence	361	DD
315	Single-family Residence	287	DD

Table 5-10 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 2

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
316	Single-family Residence	372	DD
317	Single-family Residence	467	DD
318	Single-family Residence	411	DD
319	Single-family Residence	319	DD
320	Single-family Residence	414	DD
321	Single-family Residence	98	DD
322	Single-family Residence	462	DD
323	Single-family Residence	345	DD
324	Single-family Residence	414	DF
325	Single-family Residence	192	DF
326	Single-family Residence	357	DF
327	Single-family Residence	393	DF
328	Single-family Residence	483	DI
329	Single-family Residence	73	DI
330	Commercial Business	204	DI
331	Commercial Business	250	DI
332	Single-family Residence	345	DI
333	Single-family Residence	401	DI
334	Single-family Residence	368	DI
335	Single-family Residence	270	DI
336	Single-family Residence	142	DI
337	Single-family Residence	265	DI
338	Single-family Residence	403	DI
378	Commercial Business	300	FB
379	Single-family Residence	488	FB
428	Single-family Residence	393	FN
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	316	FF
431	Commercial Business	51	EU
432	Commercial Business	128	EU
433	Single-family Residence	136	EU
434	Single-family Residence	293	EU
435	Single-family Residence	171	EU
436	Single-family Residence	196	EU
437	Single-family Residence	274	EU
438	Single-family Residence	490	EP

Table 5-10 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 2

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
439	Commercial Business	458	EP
440	Single-family Residence - Mobile Home	9	EP
441	Single-family Residence	0	EP
442	Single-family Residence	11	EP
443	Single-family Residence	31	EP
444	Single-family Residence - Mobile Home	19	EP
445	Single-family Residence - Mobile Home	27	EP
446	Single-family Residence	109	EP
447	Single-family Residence	112	EO
448	Single-family Residence	118	EO
449	Single-family Residence	429	EO
450	Single-family Residence - Mobile Home	498	EO
451	Single-family Residence	422	EO
452	Single-family Residence	185	EO
453	Single-family Residence	390	JE
454	Single-family Residence	297	JE
455	Single-family Residence	157	JE
456	Single-family Residence	128	JE
457	Single-family Residence	109	JE
458	Single-family Residence	148	JE
459	Single-family Residence	263	JE
460	Single-family Residence	352	JE
461	Single-family Residence	380	EF
462	Single-family Residence	377	EF
463	Single-family Residence	377	EF
464	Single-family Residence	381	EF
465	Single-family Residence	425	EF
466	Single-family Residence	509	EF
467	Single-family Residence	179	EF
468	Single-family Residence	338	EF
469	Single-family Residence	64	EF
470	Single-family Residence	125	EF
471	Single-family Residence	112	EF
472	Single-family Residence	164	EF
473	Single-family Residence	279	EF
474	Commercial Business	176	DW

Table 5-10 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 2

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
475	Commercial Business	87	DW
476	Single-family Residence	283	DW
477	Single-family Residence	80	DW
478	Single-family Residence	256	DW
479	Single-family Residence	364	EF
480	Single-family Residence	277	EF
481	Single-family Residence	419	EF
482	Single-family Residence	457	DW
483	Single-family Residence	295	DW
484	Single-family Residence	83	DW
485	Single-family Residence	235	DW
486	Single-family Residence	459	DW
487	Single-family Residence	508	EF
488	Single-family Residence	483	DW
489	Single-family Residence	334	DW
490	Single-family Residence	244	DW
491	Single-family Residence	118	DW
492	Single-family Residence	60	DW
493	Single-family Residence	169	DW
494	Single-family Residence - Mobile Home	468	DW
495	Single-family Residence	457	DV
496	Single-family Residence	486	DV
502	Single-family Residence	400	DK
503	Single-family Residence	321	DK
504	Single-family Residence	497	DK
505	Single-family Residence	326	DK
506	Single-family Residence	330	DK
507	Single-family Residence	438	DK
508	Single-family Residence	122	DK
509	Single-family Residence	173	DK
510	Church	327	DK
511	Single-family Residence	176	DK
512	Church Facility	393	DK
513	Single-family Residence	173	DK
514	Single-family Residence	321	DK
515	Single-family Residence	342	DK

Table 5-10 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 2

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
516	Single-family Residence	177	DK
517	Single-family Residence	116	DK
518	Single-family Residence	265	DK
519	Single-family Residence	369	DK
520	Single-family Residence - Mobile Home	498	DV
521	Single-family Residence	223	DV
522	Single-family Residence	96	DV
523	Single-family Residence	152	DV
524	Single-family Residence	245	DV
525	Commercial Business	323	DV
526	Commercial Business	504	DV
527	Single-family Residence	488	DV
528	Single-family Residence	383	DW
529	Single-family Residence	297	DW
532	Single-family Residence	503	DW
533	Single-family Residence	490	DW
542	Single-family Residence	134	DW
548	Single-family Residence	184	DW
550	Single-family Residence	407	EF
551	Single-family Residence	361	EF
552	Single-family Residence	350	EF
554	Single-family Residence	495	EF
555	Single-family Residence	377	EF
556	Single-family Residence	329	EF
557	Single-family Residence	116	EF
558	Single-family Residence	62	EF
559	Single-family Residence	80	EF
560	Single-family Residence	62	EF
561	Single-family Residence	244	EF
562	Single-family Residence	265	EF
563	Commercial Business	62	EF
564	Commercial Business	62	EF
565	Single-family Residence	264	EF
566	Single-family Residence	297	EF
567	Single-family Residence	340	EF
568	Single-family Residence	142	EF

Table 5-10 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 2

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
569	Single-family Residence	260	EF
570	Single-family Residence	241	EF
571	Commercial Business	183	EF
572	Single-family Residence	219	EF
573	Single-family Residence	419	EF
585	Single-family Residence	426	EO
586	Single-family Residence	466	EO
587	Single-family Residence	309	EO
588	Single-family Residence	282	JE
589	Single-family Residence	90	JE
590	Single-family Residence	54	JE
1112	Single-family Residence	243	BM
1113	Single-family Residence	309	CS
1114	Single-family Residence	338	BM
1115	Single-family Residence	337	CS
1116	Single-family Residence	447	CS
1117	Single-family Residence - Mobile Home	471	CS
1118	Single-family Residence - Mobile Home	397	CS
1119	Single-family Residence	355	CS
1120	Single-family Residence	419	CS
1121	Single-family Residence	302	CS
1122	Single-family Residence	421	CS
1123	Single-family Residence	500	CS
1124	Single-family Residence	458	CS
1125	Single-family Residence	128	CS
1126	Commercial Business	142	CS
1127	Commercial Business	238	CS
1128	Commercial Business	329	CS
1129	Commercial Business	464	CS
1130	Single-family Residence	488	CS
1131	Single-family Residence	354	CS
1400	Other electronic installation	258	L
1412	Other electronic installation	945	P
1413	Other electronic installation	454	P
1414	Other electronic installation	854	P
1415	Other electronic installation	947	V

Table 5-10 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 2

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1419	Other electronic installation	1588	AP
1421	Other electronic installation	412	CY
1422	Other electronic installation	503	CY
1423	Other electronic installation	1038	DF
1501	Private Airstrip 1	3523	L
1502	Peterson Airport	6357	P
1600-A	San Bernard National Wildlife Refuge	286	L
1600-B	San Bernard National Wildlife Refuge	149	P
1606	Justin Hurst Wildlife Management Area	0	EU
1702	Morris Cemetery	784	P
1703	Gardener Family Cemetery	780	V
1704	Black Family Cemetery	571	V
1713	Colonial Cemetery	523	AP
1716	TDCJ Prison Cemetery	503	CY
1717	Gulf Prairie, Peach Point Cemetery 1	590	DI
1718	Gulf Prairie, Peach Point Cemetery 2	585	DF
--	41BO214	--	CY
--	41BO227	--	FP
--	41BO238	--	P
--	41BO109	--	Z

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-11 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 3

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DQ-DR-DS-DU-EP-ES-ER1-ER2-EW-FA-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
10	Single-family Residence	341	P
11	Single-family Residence	307	P
12	Single-family Residence	332	P
13	Single-family Residence - Mobile Home	350	P
14	Single-family Residence - Mobile Home	109	P
15	Single-family Residence - Mobile Home	441	P
16	Single-family Residence	454	P
17	Single-family Residence	264	P
18	Single-family Residence	115	P
19	Single-family Residence	108	P
20	Single-family Residence	377	P
21	Single-family Residence	67	P
22	Single-family Residence - Mobile Home	159	P
23	Single-family Residence - Mobile Home	178	P
24	Single-family Residence - Mobile Home	251	P
25	Single-family Residence - Mobile Home	69	P
26	Single-family Residence	210	P
27	Single-family Residence	143	P
28	Single-family Residence - Mobile Home	150	P
29	Single-family Residence - Mobile Home	391	V
30	Single-family Residence - Mobile Home	348	V
31	Single-family Residence	326	V
32	Single-family Residence	310	V
33	Single-family Residence	233	V
34	Single-family Residence	248	V
35	Single-family Residence	331	X
39	Single-family Residence	446	X

Table 5-11 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 3

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DQ-DR-DS-DU-EP-ES-ER1-ER2-EW-FA-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
40	Single-family Residence	318	Y
41	Single-family Residence	281	Y
42	Single-family Residence	380	Y
43	Single-family Residence	270	Y
228	Single-family Residence	424	CT
229	Single-family Residence	309	CT
230	Single-family Residence	166	CT
231	Single-family Residence	441	CT
232	Single-family Residence	463	CT
233	Single-family Residence	153	CT
234	Single-family Residence	442	CT
235	Single-family Residence	92	CU
236	Single-family Residence	315	CU
237	Single-family Residence	299	CU
238	Single-family Residence	503	CU
239	Single-family Residence	309	CU
240	Single-family Residence	314	CU
241	Single-family Residence	268	CU
242	Single-family Residence	301	CU
243	Single-family Residence	279	CU
244	Single-family Residence	303	CU
245	Single-family Residence	264	CU
246	Single-family Residence	250	CU
247	Single-family Residence	253	CU
248	Single-family Residence	247	CU
249	Single-family Residence	252	CU
250	Single-family Residence	264	CU
251	Commercial Business	495	CU
252	Single-family Residence	233	CU
253	Commercial Business	189	CU
254	Single-family Residence - Mobile Home	83	CU
256	Single-family Residence	496	CW
268	Single-family Residence	371	CY
269	Single-family Residence	344	CY
270	Single-family Residence	492	CY
271	TDCJ Clemens Unit Office	512	CY

Table 5-11 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 3

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DQ-DR-DS-DU-EP-ES-ER1-ER2-EW-FA-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
272	Single-family Residence	452	CY
273	Multi-family Residence	406	CY
274	Single-family Residence	233	CY
275	Single-family Residence	198	CY
276	Single-family Residence	260	CY
277	Single-family Residence	451	CY
278	Single-family Residence	301	CY
279	Single-family Residence	416	CY
280	Single-family Residence	509	CY
281	Single-family Residence	401	CY
282	Single-family Residence	503	CY
283	Single-family Residence	497	CY
284	Single-family Residence	397	CY
285	Single-family Residence	299	CY
286	Commercial Business	105	DD
287	Single-family Residence	314	DB
288	Single-family Residence	417	DD
289	Single-family Residence	405	DD
296	Single-family Residence	358	DD
297	Single-family Residence	402	DD
298	Single-family Residence	387	DD
299	Single-family Residence	373	DD
300	Single-family Residence	399	DD
301	Single-family Residence	410	DD
302	Single-family Residence	303	DD
303	Single-family Residence	389	DD
304	Commercial Business	160	DD
305	Single-family Residence	235	DD
306	Single-family Residence	337	DD
307	Single-family Residence	383	DD
308	Single-family Residence	445	DD
309	Single-family Residence	499	DD
310	Single-family Residence	496	DD
311	Single-family Residence	468	DD
312	Single-family Residence	410	DD
313	Single-family Residence	333	DD

Table 5-11 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 3

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DQ-DR-DS-DU-EP-ES-ER1-ER2-EW-FA-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
314	Single-family Residence	361	DD
315	Single-family Residence	287	DD
316	Single-family Residence	372	DD
317	Single-family Residence	467	DD
318	Single-family Residence	411	DD
319	Single-family Residence	319	DD
320	Single-family Residence	414	DD
321	Single-family Residence	98	DD
322	Single-family Residence	462	DD
323	Single-family Residence	345	DD
324	Single-family Residence	414	DF
325	Single-family Residence	192	DF
326	Single-family Residence	357	DF
327	Single-family Residence	393	DF
330	Commercial Business	351	DG
331	Commercial Business	213	DG
332	Single-family Residence	170	DG
333	Single-family Residence	343	DG
339	Single-family Residence	351	DG
340	Single-family Residence	185	DG
341	Single-family Residence	167	DG
342	Single-family Residence	344	DG
343	Single-family Residence	487	DG
344	Single-family Residence	346	DG
345	Single-family Residence	158	DG
346	Single-family Residence	175	DG
347	Single-family Residence	345	DG
348	Single-family Residence	347	DG
349	Single-family Residence	175	DG
350	Single-family Residence	177	DG
351	Single-family Residence	332	DG
352	Single-family Residence	449	DG
353	Single-family Residence	175	DG
354	Single-family Residence	290	DH
355	Single-family Residence	364	DL
356	Single-family Residence	132	DL

Table 5-11 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 3

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DQ-DR-DS-DU-EP-ES-ER1-ER2-EW-FA-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
357	Single-family Residence - Mobile Home	427	DL
358	Single-family Residence - Mobile Home	502	DL
359	Single-family Residence - Mobile Home	56	DL
360	Single-family Residence - Mobile Home	179	DL
361	Church	347	DL
362	Single-family Residence - Mobile Home	368	DL
363	Single-family Residence	481	DL
364	Single-family Residence	161	DO
365	Single-family Residence	195	DQ
367	Single-family Residence	276	DR
368	Single-family Residence - Mobile Home	231	DR
369	Single-family Residence - Mobile Home	199	DR
370	Single-family Residence	162	DR
374	Single-family Residence	197	ER1
375	Single-family Residence	208	ER1
376	Commercial Business	334	ER1
377	Single-family Residence	347	ER1
378	Commercial Business	260	FA
379	Single-family Residence	438	FA
428	Single-family Residence	393	FN
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	316	FF
431	Commercial Business	155	EW
432	Commercial Business	271	ER1
433	Single-family Residence	261	ER1
438	Single-family Residence	490	EP
439	Commercial Business	458	EP
440	Single-family Residence - Mobile Home	9	EP
441	Single-family Residence	0	EP
442	Single-family Residence	11	EP
443	Single-family Residence	31	EP
444	Single-family Residence - Mobile Home	19	EP
445	Single-family Residence - Mobile Home	27	EP
446	Single-family Residence	109	EP
447	Single-family Residence	204	DU
448	Single-family Residence	355	DU

Table 5-11 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 3

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DQ-DR-DS-DU-EP-ES-ER1-ER2-EW-FA-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
449	Single-family Residence	489	DU
1017	Single-family Residence	91	BV
1018	Single-family Residence	220	CD
1019	Single-family Residence	449	BV
1020	Single-family Residence	415	BU
1021	Single-family Residence	427	BU
1077	Single-family Residence	356	CF
1078	Single-family Residence	244	CF
1079	Single-family Residence	163	CF
1080	Single-family Residence	55	CM
1081	Single-family Residence	238	CM
1082	Single-family Residence	385	CM
1083	Single-family Residence	216	CM
1084	Church	217	CM
1085	Church Facility	275	CM
1086	Single-family Residence	244	CM
1087	Single-family Residence	79	CM
1088	Single-family Residence	202	CM
1089	Single-family Residence	264	CM
1090	Single-family Residence - Mobile Home	75	CM
1091	Single-family Residence	336	CM
1092	Commercial Business	215	CM
1093	Commercial Business	210	CM
1094	Commercial Business	271	CM
1095	Church	251	CM
1096	Church Facility	281	CM
1097	Single-family Residence	79	CM
1098	Single-family Residence	200	CM
1099	Single-family Residence	362	CM
1100	Single-family Residence	100	CM
1101	Single-family Residence	129	CM
1102	Single-family Residence	244	CM
1103	Single-family Residence	204	CM
1104	Single-family Residence	308	CM
1105	Single-family Residence - Mobile Home	105	CM
1106	Single-family Residence	257	CM

Table 5-11 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 3

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DQ-DR-DS-DU-EP-ES-ER1-ER2-EW-FA-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1108	Single-family Residence	374	CR
1109	Church Facility	344	CR
1110	Church	385	CR
1111	Single-family Residence	271	CR
1112	Single-family Residence	326	CR
1113	Single-family Residence	309	CS
1115	Single-family Residence	337	CS
1116	Single-family Residence	447	CS
1117	Single-family Residence - Mobile Home	471	CS
1118	Single-family Residence - Mobile Home	397	CS
1119	Single-family Residence	355	CS
1120	Single-family Residence	419	CS
1121	Single-family Residence	302	CS
1122	Single-family Residence	421	CS
1123	Single-family Residence	500	CS
1124	Single-family Residence	458	CS
1125	Single-family Residence	128	CS
1126	Commercial Business	142	CS
1127	Commercial Business	238	CS
1128	Commercial Business	329	CS
1129	Commercial Business	464	CS
1130	Single-family Residence	488	CS
1131	Single-family Residence	354	CS
1141	Single-family Residence	157	CD
1142	Single-family Residence	336	CD
1143	Single-family Residence - Mobile Home	264	CF
1144	Commercial Business	262	CF
1145	Commercial Business	57	CF
1146	Single-family Residence	228	CF
1147	Church	327	CF
1148	Single-family Residence	54	CF
1149	Single-family Residence	275	CF
1150	Single-family Residence	258	CF
1151	Single-family Residence	274	CF
1152	Single-family Residence	295	CF
1153	Commercial Business	12	CF

Table 5-11 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 3

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DQ-DR-DS-DU-EP-ES-ER1-ER2-EW-FA-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1154	Single-family Residence	156	CF
1155	Single-family Residence	260	CF
1156	Single-family Residence	476	CF
1157	Single-family Residence	156	CF
1158	Single-family Residence	193	CF
1159	Single-family Residence	82	CF
1160	Single-family Residence	296	CF
1161	Single-family Residence	297	CF
1162	Single-family Residence	139	CF
1163	Commercial Business	52	CF
1164	Single-family Residence - Mobile Home	93	CF
1165	Single-family Residence	231	CF
1166	Single-family Residence	122	CF
1167	Single-family Residence	167	CF
1168	Single-family Residence	51	CF
1169	Single-family Residence	216	CF
1170	Single-family Residence - Mobile Home	319	CF
1195	Single-family Residence	491	BU
1196	Single-family Residence	261	BU
1197	Single-family Residence	87	BU
1198	Single-family Residence	390	AA
1199	Single-family Residence - Mobile Home	54	AA
1200	Single-family Residence - Mobile Home	55	AA
1201	Single-family Residence	196	AA
1202	Single-family Residence - Mobile Home	380	AA
1203	Single-family Residence - Mobile Home	504	AA
1204	Single-family Residence	245	AA
1205	Single-family Residence	451	AA
1206	Single-family Residence	327	AA
1207	Single-family Residence	51	AA
1208	Single-family Residence	480	AA
1209	Single-family Residence - Mobile Home	360	AA
1210	Single-family Residence	450	AA
1211	Single-family Residence	139	AA
1212	Single-family Residence	206	AA
1213	Single-family Residence - Mobile Home	349	AA

Table 5-11 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 3

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DQ-DR-DS-DU-EP-ES-ER1-ER2-EW-FA-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1214	Single-family Residence	342	AA
1215	Single-family Residence	204	AA
1216	Single-family Residence - Mobile Home	223	AA
1217	Single-family Residence - Mobile Home	400	AA
1218	Single-family Residence	392	AA
1219	Single-family Residence	98	AA
1220	Single-family Residence	199	AA
1221	Single-family Residence	145	AA
1222	Single-family Residence	242	AA
1223	Single-family Residence	514	AA
1224	Multi-family Residence	468	AA
1225	Multi-family Residence	468	AA
1226	Multi-family Residence	506	AA
1227	Multi-family Residence	480	AA
1228	Multi-family Residence	453	AA
1229	Single-family Residence	365	AA
1230	Single-family Residence	388	AA
1231	Single-family Residence	54	AA
1232	Single-family Residence - Mobile Home	189	AA
1233	Single-family Residence - Mobile Home	202	AA
1234	Single-family Residence	132	AA
1235	Single-family Residence	227	AA
1236	Single-family Residence	261	AA
1237	Single-family Residence	135	AA
1238	Single-family Residence	269	AA
1239	Single-family Residence	486	AA
1240	Single-family Residence	372	AA
1241	Single-family Residence	260	AA
1242	Single-family Residence	314	AA
1243	Single-family Residence	327	AA
1244	Single-family Residence	239	AA
1245	Single-family Residence	438	AA
1246	Single-family Residence	502	AA
1247	Single-family Residence	343	AA
1248	Single-family Residence	498	AA
1400	Other electronic installation	258	L

Table 5-11 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 3

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DQ-DR-DS-DU-EP-ES-ER1-ER2-EW-FA-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1412	Other electronic installation	945	P
1413	Other electronic installation	454	P
1414	Other electronic installation	854	P
1415	Other electronic installation	947	V
1416	Other electronic installation	1173	AA
1417	Other electronic installation	1786	AA
1418	Other electronic installation	1247	CF
1421	Other electronic installation	412	CY
1422	Other electronic installation	503	CY
1423	Other electronic installation	1038	DF
1501	Private Airstrip 1	3523	L
1502	Peterson Airport	6357	P
1507	Eagle Air Park	9976	CR
1511	Sweeny Community Hospital Heliport	1420	AA
1600-A	San Bernard National Wildlife Refuge	286	L
1600-B	San Bernard National Wildlife Refuge	149	P
1600-D	San Bernard National Wildlife Refuge	49	AA
1603	Levi Jordan Plantation	53	CD
1606	Justin Hurst Wildlife Management Area	0	FF
1702	Morris Cemetery	784	P
1703	Gardener Family Cemetery	780	V
1704	Black Family Cemetery	571	V
1710	Zion Temple Cemetery/Williams Family/Mims-Fannin Plantation	89	CM
1711	Mims Community Cemetery	357	CM
1712	Mims Family Cemetery	560	CM
1716	TDCJ Prison Cemetery	503	CY
1717	Gulf Prairie, Peach Point Cemetery 1	607	DG
1718	Gulf Prairie, Peach Point Cemetery 2	585	DF
1719	Oakland Cemetery	371	DL
--	41BO257	--	CF
--	41BO262	--	CM
--	41BO100	--	CR
--	41BO164	--	CR
--	41BO214	--	CY
--	41BO227	--	FP

Table 5-11 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 3

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DQ-DR-DS-DU-EP-ES-ER1-ER2-EW-FA-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
--	41BO238	--	P
--	Levi Jordan Plantation	85	CD

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-12 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 4

Segment Combinations: B-D-F-H-L-P- U-V-X-Y-Z-BI-BX-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DP-DR-DS-DU-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
10	Single-family Residence	341	P
11	Single-family Residence	307	P
12	Single-family Residence	332	P
13	Single-family Residence - Mobile Home	350	P
14	Single-family Residence - Mobile Home	109	P
15	Single-family Residence - Mobile Home	441	P
16	Single-family Residence	454	P
17	Single-family Residence	264	P
18	Single-family Residence	115	P
19	Single-family Residence	108	P
20	Single-family Residence	377	P
21	Single-family Residence	67	P
22	Single-family Residence - Mobile Home	159	P
23	Single-family Residence - Mobile Home	178	P
24	Single-family Residence - Mobile Home	251	P
25	Single-family Residence - Mobile Home	69	P
26	Single-family Residence	210	P
27	Single-family Residence	143	P
28	Single-family Residence - Mobile Home	150	P
29	Single-family Residence - Mobile Home	391	V
30	Single-family Residence - Mobile Home	348	V
31	Single-family Residence	326	V
32	Single-family Residence	310	V
33	Single-family Residence	233	V
34	Single-family Residence	248	V
35	Single-family Residence	331	X
39	Single-family Residence	446	X

Table 5-12 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 4

Segment Combinations: B-D-F-H-L-P- U-V-X-Y-Z-BI-BX-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DP-DR-DS-DU-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
40	Single-family Residence	318	Y
41	Single-family Residence	281	Y
42	Single-family Residence	380	Y
43	Single-family Residence	270	Y
44	Single-family Residence	399	Z
45	Single-family Residence	403	Z
46	Single-family Residence	143	Z
47	Single-family Residence	166	Z
48	Single-family Residence	178	Z
49	Single-family Residence	210	Z
50	Single-family Residence	263	Z
51	Single-family Residence - Mobile Home	110	Z
52	Single-family Residence	87	Z
53	Single-family Residence	68	Z
54	Single-family Residence	276	Z
55	Single-family Residence	411	Z
56	Single-family Residence - Mobile Home	213	Z
57	Single-family Residence	256	Z
58	Single-family Residence	162	Z
59	Single-family Residence	128	Z
60	Single-family Residence	349	Z
61	Single-family Residence	221	Z
62	Single-family Residence	362	Z
63	Single-family Residence	416	Z
64	Single-family Residence	112	Z
65	Single-family Residence	150	Z
66	Single-family Residence - Mobile Home	51	Z
67	Single-family Residence	255	Z
160	Single-family Residence	55	BI
161	Single-family Residence - Mobile Home	305	BI
162	Single-family Residence	284	BI
163	Single-family Residence - Mobile Home	281	BI
164	Single-family Residence	449	BI
228	Single-family Residence	424	CT
229	Single-family Residence	309	CT
230	Single-family Residence	166	CT

Table 5-12 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 4

Segment Combinations: B-D-F-H-L-P- U-V-X-Y-Z-BI-BX-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DP-DR-DS-DU-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
231	Single-family Residence	441	CT
232	Single-family Residence	463	CT
233	Single-family Residence	153	CT
234	Single-family Residence	442	CT
235	Single-family Residence	92	CU
236	Single-family Residence	315	CU
237	Single-family Residence	299	CU
238	Single-family Residence	503	CU
239	Single-family Residence	309	CU
240	Single-family Residence	314	CU
241	Single-family Residence	268	CU
242	Single-family Residence	301	CU
243	Single-family Residence	279	CU
244	Single-family Residence	303	CU
245	Single-family Residence	264	CU
246	Single-family Residence	250	CU
247	Single-family Residence	253	CU
248	Single-family Residence	247	CU
249	Single-family Residence	252	CU
250	Single-family Residence	264	CU
251	Commercial Business	495	CU
252	Single-family Residence	233	CU
253	Commercial Business	189	CU
254	Single-family Residence - Mobile Home	83	CU
256	Single-family Residence	496	CW
268	Single-family Residence	371	CY
269	Single-family Residence	344	CY
270	Single-family Residence	492	CY
271	TDCJ Clemens Unit Office	512	CY
272	Single-family Residence	452	CY
273	Multi-family Residence	406	CY
274	Single-family Residence	233	CY
275	Single-family Residence	198	CY
276	Single-family Residence	260	CY
277	Single-family Residence	451	CY
278	Single-family Residence	301	CY

Table 5-12 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 4

Segment Combinations: B-D-F-H-L-P- U-V-X-Y-Z-BI-BX-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DP-DR-DS-DU-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
279	Single-family Residence	416	CY
280	Single-family Residence	509	CY
281	Single-family Residence	401	CY
282	Single-family Residence	503	CY
283	Single-family Residence	497	CY
284	Single-family Residence	397	CY
285	Single-family Residence	299	CY
286	Commercial Business	105	DD
287	Single-family Residence	314	DB
288	Single-family Residence	417	DD
289	Single-family Residence	405	DD
296	Single-family Residence	358	DD
297	Single-family Residence	402	DD
298	Single-family Residence	387	DD
299	Single-family Residence	373	DD
300	Single-family Residence	399	DD
301	Single-family Residence	410	DD
302	Single-family Residence	303	DD
303	Single-family Residence	389	DD
304	Commercial Business	160	DD
305	Single-family Residence	235	DD
306	Single-family Residence	337	DD
307	Single-family Residence	383	DD
308	Single-family Residence	445	DD
309	Single-family Residence	499	DD
310	Single-family Residence	496	DD
311	Single-family Residence	468	DD
312	Single-family Residence	410	DD
313	Single-family Residence	333	DD
314	Single-family Residence	361	DD
315	Single-family Residence	287	DD
316	Single-family Residence	372	DD
317	Single-family Residence	467	DD
318	Single-family Residence	411	DD
319	Single-family Residence	319	DD
320	Single-family Residence	414	DD

Table 5-12 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 4

Segment Combinations: B-D-F-H-L-P- U-V-X-Y-Z-BI-BX-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DP-DR-DS-DU-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
321	Single-family Residence	98	DD
322	Single-family Residence	462	DD
323	Single-family Residence	345	DD
324	Single-family Residence	414	DF
325	Single-family Residence	192	DF
326	Single-family Residence	357	DF
327	Single-family Residence	393	DF
330	Commercial Business	351	DG
331	Commercial Business	213	DG
332	Single-family Residence	170	DG
333	Single-family Residence	343	DG
339	Single-family Residence	351	DG
340	Single-family Residence	185	DG
341	Single-family Residence	167	DG
342	Single-family Residence	344	DG
343	Single-family Residence	487	DG
344	Single-family Residence	346	DG
345	Single-family Residence	158	DG
346	Single-family Residence	175	DG
347	Single-family Residence	345	DG
348	Single-family Residence	347	DG
349	Single-family Residence	175	DG
350	Single-family Residence	177	DG
351	Single-family Residence	332	DG
352	Single-family Residence	449	DG
353	Single-family Residence	175	DG
354	Single-family Residence	290	DH
355	Single-family Residence	364	DL
356	Single-family Residence	132	DL
357	Single-family Residence - Mobile Home	427	DL
358	Single-family Residence - Mobile Home	502	DL
359	Single-family Residence - Mobile Home	56	DL
360	Single-family Residence - Mobile Home	179	DL
361	Church	347	DL
362	Single-family Residence - Mobile Home	368	DL
363	Single-family Residence	481	DL

Table 5-12 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 4

Segment Combinations: B-D-F-H-L-P- U-V-X-Y-Z-BI-BX-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DP-DR-DS-DU-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
364	Single-family Residence	161	DO
365	Single-family Residence	58	DP
366	Single-family Residence	443	DP
367	Single-family Residence	276	DR
368	Single-family Residence - Mobile Home	231	DR
369	Single-family Residence - Mobile Home	199	DR
370	Single-family Residence	162	DR
378	Commercial Business	300	FB
379	Single-family Residence	488	FB
428	Single-family Residence	393	FN
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	316	FF
431	Commercial Business	51	EU
432	Commercial Business	128	EU
433	Single-family Residence	136	EU
434	Single-family Residence	293	EU
435	Single-family Residence	171	EU
436	Single-family Residence	196	EU
437	Single-family Residence	274	EU
438	Single-family Residence	490	EP
439	Commercial Business	458	EP
440	Single-family Residence - Mobile Home	9	EP
441	Single-family Residence	0	EP
442	Single-family Residence	11	EP
443	Single-family Residence	31	EP
444	Single-family Residence - Mobile Home	19	EP
445	Single-family Residence - Mobile Home	27	EP
446	Single-family Residence	109	EP
447	Single-family Residence	204	DU
448	Single-family Residence	355	DU
449	Single-family Residence	489	DU
1048	Single-family Residence	288	BX
1049	Single-family Residence	146	BX
1050	Single-family Residence - Mobile Home	185	BX
1051	Single-family Residence	403	BX
1052	Single-family Residence	448	BX

Table 5-12 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 4

Segment Combinations: B-D-F-H-L-P- U-V-X-Y-Z-BI-BX-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DP-DR-DS-DU-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1053	Single-family Residence	60	BX
1054	Single-family Residence - Mobile Home	142	BX
1055	Single-family Residence - Mobile Home	246	BX
1056	Single-family Residence - Mobile Home	307	BX
1057	Single-family Residence	131	BX
1058	Single-family Residence	176	BX
1059	Single-family Residence	353	BX
1060	Single-family Residence	468	BX
1061	Single-family Residence	375	BX
1062	Single-family Residence - Mobile Home	229	BX
1063	Single-family Residence - Mobile Home	82	BX
1064	Single-family Residence	410	BX
1065	Single-family Residence	170	BX
1066	Single-family Residence	228	BX
1067	Single-family Residence	348	BX
1068	Single-family Residence	87	BX
1069	Single-family Residence	72	BX
1070	Single-family Residence	116	BX
1071	Single-family Residence	168	BX
1072	Single-family Residence - Mobile Home	198	BX
1073	Single-family Residence	222	BX
1074	Single-family Residence	329	BX
1075	Single-family Residence - Mobile Home	179	BX
1076	Single-family Residence - Mobile Home	261	BX
1077	Single-family Residence	311	BX
1078	Single-family Residence	118	BX
1079	Single-family Residence	168	CM
1080	Single-family Residence	55	CM
1081	Single-family Residence	238	CM
1082	Single-family Residence	385	CM
1083	Single-family Residence	216	CM
1084	Church	217	CM
1085	Church Facility	275	CM
1086	Single-family Residence	244	CM
1087	Single-family Residence	79	CM
1088	Single-family Residence	202	CM

Table 5-12 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 4

Segment Combinations: B-D-F-H-L-P- U-V-X-Y-Z-BI-BX-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DP-DR-DS-DU-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1089	Single-family Residence	264	CM
1090	Single-family Residence - Mobile Home	75	CM
1091	Single-family Residence	336	CM
1092	Commercial Business	215	CM
1093	Commercial Business	210	CM
1094	Commercial Business	271	CM
1095	Church	251	CM
1096	Church Facility	281	CM
1097	Single-family Residence	79	CM
1098	Single-family Residence	200	CM
1099	Single-family Residence	362	CM
1100	Single-family Residence	100	CM
1101	Single-family Residence	129	CM
1102	Single-family Residence	244	CM
1103	Single-family Residence	204	CM
1104	Single-family Residence	308	CM
1105	Single-family Residence - Mobile Home	105	CM
1106	Single-family Residence	257	CM
1108	Single-family Residence	374	CR
1109	Church Facility	344	CR
1110	Church	385	CR
1111	Single-family Residence	271	CR
1112	Single-family Residence	326	CR
1113	Single-family Residence	309	CS
1115	Single-family Residence	337	CS
1116	Single-family Residence	447	CS
1117	Single-family Residence - Mobile Home	471	CS
1118	Single-family Residence - Mobile Home	397	CS
1119	Single-family Residence	355	CS
1120	Single-family Residence	419	CS
1121	Single-family Residence	302	CS
1122	Single-family Residence	421	CS
1123	Single-family Residence	500	CS
1124	Single-family Residence	458	CS
1125	Single-family Residence	128	CS
1126	Commercial Business	142	CS

Table 5-12 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 4

Segment Combinations: B-D-F-H-L-P- U-V-X-Y-Z-BI-BX-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DP-DR-DS-DU-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1127	Commercial Business	238	CS
1128	Commercial Business	329	CS
1129	Commercial Business	464	CS
1130	Single-family Residence	488	CS
1131	Single-family Residence	354	CS
1249	Single-family Residence	57	BI
1250	Single-family Residence	503	BI
1251	Single-family Residence - Mobile Home	377	BI
1252	Single-family Residence	211	BI
1253	Single-family Residence - Mobile Home	164	BI
1254	Single-family Residence - Mobile Home	149	BI
1255	Single-family Residence - Mobile Home	168	BI
1256	Single-family Residence	91	BI
1257	Single-family Residence	232	BI
1258	Single-family Residence	302	BI
1259	Single-family Residence - Mobile Home	267	BI
1260	Single-family Residence - Mobile Home	282	BI
1261	Single-family Residence	245	BI
1262	Single-family Residence	516	BI
1263	Single-family Residence	193	BI
1264	Single-family Residence	104	BI
1265	Single-family Residence	466	BI
1266	Single-family Residence	92	BI
1267	Single-family Residence	181	BI
1268	Single-family Residence	348	BI
1269	Single-family Residence	430	BI
1270	Single-family Residence	377	BI
1271	Single-family Residence	205	BI
1272	Single-family Residence	491	BI
1273	Single-family Residence	423	BI
1274	Single-family Residence	422	BI
1275	Single-family Residence	89	BI
1400	Other electronic installation	258	L
1412	Other electronic installation	945	P
1413	Other electronic installation	454	P
1414	Other electronic installation	854	P

Table 5-12 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 4

Segment Combinations: B-D-F-H-L-P- U-V-X-Y-Z-BI-BX-CM-CR-CS-CT-CU-CW-CY-DB-DD-DF-DG-DH-DL-DO-DP-DR-DS-DU-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1415	Other electronic installation	947	V
1421	Other electronic installation	412	CY
1422	Other electronic installation	503	CY
1423	Other electronic installation	1038	DF
1501	Private Airstrip 1	3523	L
1502	Peterson Airport	6357	P
1507	Eagle Air Park	9976	CR
1600-A	San Bernard National Wildlife Refuge	286	L
1600-B	San Bernard National Wildlife Refuge	149	P
1606	Justin Hurst Wildlife Management Area	0	EU
1702	Morris Cemetery	784	P
1703	Gardener Family Cemetery	780	V
1704	Black Family Cemetery	571	V
1710	Zion Temple Cemetery/Williams Family/Mims-Fannin Plantation	89	CM
1711	Mims Community Cemetery	357	CM
1712	Mims Family Cemetery	560	CM
1716	TDCJ Prison Cemetery	503	CY
1717	Gulf Prairie, Peach Point Cemetery 1	607	DG
1718	Gulf Prairie, Peach Point Cemetery 2	585	DF
1719	Oakland Cemetery	371	DL
--	41BO262	--	CM
--	41BO100	--	CR
--	41BO164	--	CR
--	41BO214	--	CY
--	41BO227	--	FP
--	41BO238	--	P
--	41BO109	--	Z
--	Gazebo for James Richardson Marimion	660	BI

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-13 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 5

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
10	Single-family Residence	341	P
11	Single-family Residence	307	P
12	Single-family Residence	332	P
13	Single-family Residence - Mobile Home	350	P
14	Single-family Residence - Mobile Home	109	P
15	Single-family Residence - Mobile Home	441	P
16	Single-family Residence	454	P
17	Single-family Residence	264	P
18	Single-family Residence	115	P
19	Single-family Residence	108	P
20	Single-family Residence	377	P
21	Single-family Residence	67	P
22	Single-family Residence - Mobile Home	159	P
23	Single-family Residence - Mobile Home	178	P
24	Single-family Residence - Mobile Home	251	P
25	Single-family Residence - Mobile Home	69	P
26	Single-family Residence	210	P
27	Single-family Residence	143	P
28	Single-family Residence - Mobile Home	150	P
29	Single-family Residence - Mobile Home	391	V
30	Single-family Residence - Mobile Home	348	V
31	Single-family Residence	326	V
32	Single-family Residence	310	V
33	Single-family Residence	233	V
34	Single-family Residence	248	V
35	Single-family Residence	331	X
39	Single-family Residence	446	X

Table 5-13 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 5

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
40	Single-family Residence	318	Y
41	Single-family Residence	281	Y
42	Single-family Residence	380	Y
43	Single-family Residence	270	Y
44	Single-family Residence	399	Z
45	Single-family Residence	403	Z
46	Single-family Residence	143	Z
47	Single-family Residence	166	Z
48	Single-family Residence	178	Z
49	Single-family Residence	210	Z
50	Single-family Residence	263	Z
51	Single-family Residence - Mobile Home	110	Z
52	Single-family Residence	87	Z
53	Single-family Residence	68	Z
54	Single-family Residence	276	Z
55	Single-family Residence	411	Z
56	Single-family Residence - Mobile Home	213	Z
57	Single-family Residence	256	Z
58	Single-family Residence	162	Z
59	Single-family Residence	128	Z
60	Single-family Residence	349	Z
61	Single-family Residence	221	Z
62	Single-family Residence	362	Z
63	Single-family Residence	416	Z
64	Single-family Residence	112	Z
65	Single-family Residence	150	Z
66	Single-family Residence - Mobile Home	51	Z
67	Single-family Residence	255	Z
160	Single-family Residence	55	BI
161	Single-family Residence - Mobile Home	305	BI
162	Single-family Residence	284	BI
163	Single-family Residence - Mobile Home	281	BI
164	Single-family Residence	449	BI
228	Single-family Residence	424	CT
229	Single-family Residence	309	CT
230	Single-family Residence	166	CT

Table 5-13 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 5

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
231	Single-family Residence	441	CT
232	Single-family Residence	463	CT
233	Single-family Residence	153	CT
234	Single-family Residence	442	CT
235	Single-family Residence	92	CU
236	Single-family Residence	315	CU
237	Single-family Residence	299	CU
238	Single-family Residence	503	CU
239	Single-family Residence	309	CU
240	Single-family Residence	314	CU
241	Single-family Residence	268	CU
242	Single-family Residence	301	CU
243	Single-family Residence	279	CU
244	Single-family Residence	303	CU
245	Single-family Residence	264	CU
246	Single-family Residence	250	CU
247	Single-family Residence	253	CU
248	Single-family Residence	247	CU
249	Single-family Residence	252	CU
250	Single-family Residence	264	CU
251	Commercial Business	495	CU
252	Single-family Residence	233	CU
253	Commercial Business	189	CU
254	Single-family Residence - Mobile Home	83	CU
256	Single-family Residence	496	CW
268	Single-family Residence	371	CY
269	Single-family Residence	344	CY
270	Single-family Residence	492	CY
271	TDCJ Clemens Unit Office	512	CY
272	Single-family Residence	452	CY
273	Multi-family Residence	406	CY
274	Single-family Residence	233	CY
275	Single-family Residence	198	CY
276	Single-family Residence	260	CY
277	Single-family Residence	451	CY
278	Single-family Residence	301	CY

Table 5-13 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 5

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
279	Single-family Residence	416	CY
280	Single-family Residence	509	CY
281	Single-family Residence	401	CY
282	Single-family Residence	503	CY
283	Single-family Residence	497	CY
284	Single-family Residence	397	CY
285	Single-family Residence	299	CY
286	Commercial Business	336	DC
287	Single-family Residence	167	DC
290	Single-family Residence	322	DC
291	Single-family Residence	360	DC
292	Single-family Residence	217	DC
293	Single-family Residence	173	DC
294	Single-family Residence	139	DC
295	Single-family Residence	474	DC
429	Commercial / Industrial Related	405	FP
859	Single-family Residence	485	DC
860	Single-family Residence	357	DC
861	Single-family Residence	344	DC
862	Single-family Residence	318	DC
863	Single-family Residence - Mobile Home	494	DC
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
1048	Single-family Residence	361	BJ
1112	Single-family Residence	243	BM
1113	Single-family Residence	309	CS
1114	Single-family Residence	338	BM
1115	Single-family Residence	337	CS
1116	Single-family Residence	447	CS
1117	Single-family Residence - Mobile Home	471	CS
1118	Single-family Residence - Mobile Home	397	CS
1119	Single-family Residence	355	CS
1120	Single-family Residence	419	CS
1121	Single-family Residence	302	CS

Table 5-13 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 5

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1122	Single-family Residence	421	CS
1123	Single-family Residence	500	CS
1124	Single-family Residence	458	CS
1125	Single-family Residence	128	CS
1126	Commercial Business	142	CS
1127	Commercial Business	238	CS
1128	Commercial Business	329	CS
1129	Commercial Business	464	CS
1130	Single-family Residence	488	CS
1131	Single-family Residence	354	CS
1249	Single-family Residence	57	BI
1250	Single-family Residence	503	BI
1251	Single-family Residence - Mobile Home	377	BI
1252	Single-family Residence	211	BI
1253	Single-family Residence - Mobile Home	164	BI
1254	Single-family Residence - Mobile Home	149	BI
1255	Single-family Residence - Mobile Home	168	BI
1256	Single-family Residence	91	BI
1257	Single-family Residence	232	BI
1258	Single-family Residence	302	BI
1259	Single-family Residence - Mobile Home	267	BI
1260	Single-family Residence - Mobile Home	282	BI
1261	Single-family Residence	245	BI
1262	Single-family Residence	516	BI
1263	Single-family Residence	193	BI
1264	Single-family Residence	104	BI
1265	Single-family Residence	466	BI
1266	Single-family Residence	92	BI
1267	Single-family Residence	181	BI
1268	Single-family Residence	348	BI
1269	Single-family Residence	430	BI
1270	Single-family Residence	377	BI
1271	Single-family Residence	205	BI
1272	Single-family Residence	491	BI
1273	Single-family Residence	423	BI
1274	Single-family Residence	422	BI

Table 5-13 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 5

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1275	Single-family Residence	89	BI
1400	Other electronic installation	258	L
1412	Other electronic installation	945	P
1413	Other electronic installation	454	P
1414	Other electronic installation	854	P
1415	Other electronic installation	947	V
1420	Other electronic installation	1112	BJ
1421	Other electronic installation	412	CY
1422	Other electronic installation	503	CY
1424	Other electronic installation	1521	JA
1501	Private Airstrip 1	3523	L
1502	Peterson Airport	6357	P
1600-A	San Bernard National Wildlife Refuge	286	L
1600-B	San Bernard National Wildlife Refuge	149	P
1605	SFA Elementary School Park	992	JA
1606	Justin Hurst Wildlife Management Area	0	JA
1702	Morris Cemetery	784	P
1703	Gardener Family Cemetery	780	V
1704	Black Family Cemetery	571	V
1716	TDCJ Prison Cemetery	503	CY
--	41BO103	--	BJ
--	41BO214	--	CY
--	41BO259	--	DC
--	41BO227	--	FP
--	41BO238	--	P
--	41BO109	--	Z
--	Durazno Plantation	931	JA
--	Gazebo for James Richardson Marimion	660	BI

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-14 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 6

Segment Combinations: B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
186	Single-family Residence - Mobile Home	339	BL
187	Single-family Residence - Mobile Home	507	BL
188	Single-family Residence	321	BL
189	Single-family Residence	460	BL
190	Single-family Residence	344	BL
191	Single-family Residence	188	BL
192	Single-family Residence	148	BL
193	Single-family Residence	258	BL
194	Single-family Residence	312	BL
195	Single-family Residence	454	BL
196	Single-family Residence	459	BL
197	Single-family Residence	399	BL
198	Commercial Business	450	BL
199	Commercial Business	415	BL
200	Commercial Business	245	BL
201	Commercial Business	242	BL
202	Commercial Business	175	BL
203	Commercial Business	422	BL
204	Commercial Business	444	BL
205	Commercial Business	190	BL
206	Commercial Business	259	BL
207	Commercial Business	193	BL
208	Commercial Business	189	BL
209	Commercial Business	252	BL
210	Single-family Residence	369	BL
211	Single-family Residence	437	BL
212	Commercial Business	269	BL

Table 5-14 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 6

Segment Combinations: B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
213	Single-family Residence	229	BL
214	Church	221	BL
215	Church Facility	371	BL
216	Single-family Residence	218	BL
217	Commercial Business	127	BL
218	Commercial Business	414	BL
219	Commercial Business	478	BL
220	Single-family Residence	348	BL
221	Single-family Residence	506	BL
222	Single-family Residence	265	BL
223	Commercial Business	247	BL
224	Single-family Residence	353	BL
225	Single-family Residence	164	BL
226	Single-family Residence	80	BL
227	Single-family Residence	236	BL
228	Single-family Residence	175	BL
229	Single-family Residence	156	BL
230	Single-family Residence	136	BL
231	Single-family Residence	393	BL
232	Single-family Residence	463	CT
233	Single-family Residence	153	CT
234	Single-family Residence	442	CT
235	Single-family Residence	92	CU
236	Single-family Residence	315	CU
237	Single-family Residence	299	CU
238	Single-family Residence	503	CU
239	Single-family Residence	309	CU
240	Single-family Residence	314	CU
241	Single-family Residence	268	CU
242	Single-family Residence	301	CU
243	Single-family Residence	279	CU
244	Single-family Residence	303	CU
245	Single-family Residence	264	CU
246	Single-family Residence	250	CU
247	Single-family Residence	253	CU
248	Single-family Residence	247	CU

Table 5-14 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 6

Segment Combinations: B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
249	Single-family Residence	252	CU
250	Single-family Residence	264	CU
251	Commercial Business	495	CU
252	Single-family Residence	233	CU
253	Commercial Business	189	CU
254	Single-family Residence - Mobile Home	83	CU
256	Single-family Residence	496	CW
268	Single-family Residence	371	CY
269	Single-family Residence	344	CY
270	Single-family Residence	492	CY
271	TDCJ Clemens Unit Office	512	CY
272	Single-family Residence	452	CY
273	Multi-family Residence	406	CY
274	Single-family Residence	233	CY
275	Single-family Residence	198	CY
276	Single-family Residence	260	CY
277	Single-family Residence	451	CY
278	Single-family Residence	301	CY
279	Single-family Residence	416	CY
280	Single-family Residence	509	CY
281	Single-family Residence	401	CY
282	Single-family Residence	503	CY
283	Single-family Residence	497	CY
284	Single-family Residence	397	CY
285	Single-family Residence	299	CY
286	Commercial Business	105	DD
287	Single-family Residence	314	DB
288	Single-family Residence	417	DD
289	Single-family Residence	405	DD
296	Single-family Residence	358	DD
297	Single-family Residence	402	DD
298	Single-family Residence	387	DD
299	Single-family Residence	373	DD
300	Single-family Residence	399	DD
301	Single-family Residence	410	DD
302	Single-family Residence	303	DD

Table 5-14 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 6

Segment Combinations: B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
303	Single-family Residence	389	DD
304	Commercial Business	160	DD
305	Single-family Residence	235	DD
306	Single-family Residence	337	DD
307	Single-family Residence	383	DD
308	Single-family Residence	445	DD
309	Single-family Residence	499	DD
310	Single-family Residence	496	DD
311	Single-family Residence	468	DD
312	Single-family Residence	410	DD
313	Single-family Residence	333	DD
314	Single-family Residence	361	DD
315	Single-family Residence	287	DD
316	Single-family Residence	372	DD
317	Single-family Residence	467	DD
318	Single-family Residence	411	DD
319	Single-family Residence	319	DD
320	Single-family Residence	414	DD
321	Single-family Residence	98	DD
322	Single-family Residence	462	DD
323	Single-family Residence	345	DD
324	Single-family Residence	414	DF
325	Single-family Residence	192	DF
326	Single-family Residence	357	DF
327	Single-family Residence	393	DF
330	Commercial Business	351	DG
331	Commercial Business	213	DG
332	Single-family Residence	170	DG
333	Single-family Residence	343	DG
339	Single-family Residence	351	DG
340	Single-family Residence	185	DG
341	Single-family Residence	167	DG
342	Single-family Residence	344	DG
343	Single-family Residence	487	DG
344	Single-family Residence	346	DG
345	Single-family Residence	158	DG

Table 5-14 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 6

Segment Combinations: B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
346	Single-family Residence	175	DG
347	Single-family Residence	345	DG
348	Single-family Residence	347	DG
349	Single-family Residence	175	DG
350	Single-family Residence	177	DG
351	Single-family Residence	332	DG
352	Single-family Residence	449	DG
353	Single-family Residence	175	DG
354	Single-family Residence	290	DH
378	Commercial Business	0	EZ
379	Single-family Residence	143	EZ
380	Single-family Residence - Mobile Home	506	EZ
426	Church	479	FH
427	Church Facility	512	FH
428	Single-family Residence	88	FH
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	20	FD
431	Commercial Business	51	EU
432	Commercial Business	128	EU
433	Single-family Residence	136	EU
434	Single-family Residence	293	EU
435	Single-family Residence	171	EU
436	Single-family Residence	196	EU
437	Single-family Residence	274	EU
440	Single-family Residence - Mobile Home	229	EQ
441	Single-family Residence	215	EQ
442	Single-family Residence	280	EQ
443	Single-family Residence	303	EQ
444	Single-family Residence - Mobile Home	295	EQ
445	Single-family Residence - Mobile Home	304	EQ
446	Single-family Residence	404	EQ
447	Single-family Residence	437	EQ
448	Single-family Residence	442	EQ
452	Single-family Residence	498	EQ
456	Single-family Residence	401	EM
457	Single-family Residence	278	EM

Table 5-14 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 6

Segment Combinations: B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
458	Single-family Residence	176	EM
459	Single-family Residence	302	EM
460	Single-family Residence	375	EF
461	Single-family Residence	380	EF
462	Single-family Residence	377	EF
463	Single-family Residence	377	EF
464	Single-family Residence	381	EF
465	Single-family Residence	425	EF
466	Single-family Residence	509	EF
467	Single-family Residence	179	EF
468	Single-family Residence	338	EF
469	Single-family Residence	64	EF
470	Single-family Residence	125	EF
471	Single-family Residence	112	EF
472	Single-family Residence	164	EF
473	Single-family Residence	279	EF
474	Commercial Business	257	EF
475	Commercial Business	283	EF
476	Single-family Residence	369	EF
477	Single-family Residence	475	EF
478	Single-family Residence	491	EF
479	Single-family Residence	364	EF
480	Single-family Residence	277	EF
481	Single-family Residence	419	EF
482	Single-family Residence	464	EF
487	Single-family Residence	508	EF
495	Single-family Residence	457	DV
496	Single-family Residence	486	DV
497	Single-family Residence	379	DM
520	Single-family Residence - Mobile Home	498	DV
521	Single-family Residence	223	DV
522	Single-family Residence	96	DV
523	Single-family Residence	152	DV
524	Single-family Residence	245	DV
525	Commercial Business	323	DV
526	Commercial Business	504	DV

Table 5-14 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 6

Segment Combinations: B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
527	Single-family Residence	488	DV
528	Single-family Residence	365	DX
529	Single-family Residence	262	DX
530	Single-family Residence	479	DX
531	Single-family Residence	312	DX
532	Single-family Residence	211	DX
533	Single-family Residence	89	DX
534	Single-family Residence	306	DX
535	Single-family Residence	493	DX
536	Single-family Residence	503	DX
537	Single-family Residence	491	DX
538	Single-family Residence	369	DX
539	Single-family Residence	132	DX
540	Single-family Residence	229	DX
541	Single-family Residence	497	DX
542	Single-family Residence	164	DX
543	Single-family Residence	130	DX
544	Commercial Business	194	DX
545	Single-family Residence	68	DX
546	Single-family Residence	176	DX
547	Single-family Residence	202	DX
548	Single-family Residence	235	EF
549	Single-family Residence	197	DX
550	Single-family Residence	191	DX
551	Single-family Residence	203	DX
552	Single-family Residence	198	DX
553	Single-family Residence	514	DX
554	Single-family Residence	493	DX
555	Single-family Residence	288	DX
556	Single-family Residence	225	DX
557	Single-family Residence	55	DX
558	Single-family Residence	62	EF
559	Single-family Residence	80	EF
560	Single-family Residence	62	EF
561	Single-family Residence	244	EF
562	Single-family Residence	265	EF

Table 5-14 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 6

Segment Combinations: B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
563	Commercial Business	62	EF
564	Commercial Business	62	EF
565	Single-family Residence	264	EF
566	Single-family Residence	297	EF
567	Single-family Residence	340	EF
568	Single-family Residence	142	EF
569	Single-family Residence	260	EF
570	Single-family Residence	241	EF
571	Commercial Business	183	EF
572	Single-family Residence	112	EM
573	Single-family Residence	244	EM
574	Single-family Residence	303	EM
575	Single-family Residence	484	EM
576	Single-family Residence	484	EM
577	Single-family Residence	322	EM
578	Single-family Residence	301	EM
579	Single-family Residence	473	EM
580	Single-family Residence	292	EM
581	Single-family Residence	488	EM
582	Single-family Residence	307	EM
583	Single-family Residence	510	EM
584	Single-family Residence	100	EM
585	Single-family Residence	177	EM
586	Single-family Residence	107	EM
587	Single-family Residence	191	EM
588	Single-family Residence	80	EM
589	Single-family Residence	197	EM
590	Single-family Residence	73	EM
868	Single-family Residence	158	FQ
869	Single-family Residence	120	FQ
870	Church	163	FQ
871	Single-family Residence	159	FQ
872	Single-family Residence - Mobile Home	369	FQ
873	Single-family Residence	120	FQ
874	Single-family Residence	273	FQ
875	Single-family Residence - Mobile Home	406	FQ

Table 5-14 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 6

Segment Combinations: B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
876	Single-family Residence - Mobile Home	144	FQ
877	Single-family Residence	221	FQ
878	Single-family Residence	173	FQ
879	Single-family Residence	98	FQ
880	Single-family Residence	353	FQ
881	Single-family Residence	223	FQ
882	Single-family Residence	191	FY
883	Single-family Residence - Mobile Home	142	FY
884	Single-family Residence	488	FY
885	Single-family Residence	164	FY
886	Single-family Residence	357	FY
887	Single-family Residence	483	FY
888	Single-family Residence	278	FY
889	Single-family Residence	509	FY
890	Single-family Residence	330	FY
891	Commercial Business	399	FY
892	Single-family Residence	487	FY
893	Single-family Residence	483	FY
894	Single-family Residence	155	FY
895	Single-family Residence	181	FY
896	Single-family Residence	152	FY
897	Single-family Residence	503	FY
898	Single-family Residence	260	FY
899	Single-family Residence	198	FY
900	Single-family Residence	298	FY
901	Single-family Residence	237	FY
902	Single-family Residence	218	FY
903	Single-family Residence	171	FY
904	Single-family Residence	158	FY
905	Single-family Residence	132	FY
906	Single-family Residence	510	FY
907	Single-family Residence	364	FY
908	Commercial Business	176	FY
909	Single-family Residence	379	FY
910	Single-family Residence	428	FY
911	Single-family Residence - Mobile Home	331	FY

Table 5-14 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 6

Segment Combinations: B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
912	Single-family Residence	375	FY
913	Single-family Residence	373	FY
914	Single-family Residence	367	FY
915	Multi-family Residence	458	FY
916	Multi-family Residence	432	FY
917	Multi-family Residence	460	FY
918	Multi-family Residence	432	FY
919	Multi-family Residence	501	FY
920	Multi-family Residence	444	FY
921	Multi-family Residence	364	FY
922	Multi-family Residence	451	FY
923	Multi-family Residence	367	FY
924	Multi-family Residence	450	FY
925	Multi-family Residence	369	FY
926	Multi-family Residence	446	FY
927	Multi-family Residence	371	FY
928	Single-family Residence - Mobile Home	77	FY
929	Single-family Residence	128	FY
930	Single-family Residence	232	FY
931	Single-family Residence	425	FY
932	Single-family Residence	252	GC
933	Single-family Residence	511	GC
946	Single-family Residence	247	GE
947	Single-family Residence - Mobile Home	150	GE
948	Single-family Residence - Mobile Home	348	GE
949	Single-family Residence	191	HQ
950	Single-family Residence	191	HQ
951	Single-family Residence	518	HQ
952	Single-family Residence - Mobile Home	172	HQ
953	Single-family Residence	187	HQ
954	Single-family Residence	196	HQ
955	Single-family Residence	201	HQ
956	Single-family Residence	194	HQ
957	Single-family Residence	421	HQ
958	Single-family Residence - Mobile Home	177	HQ
959	Single-family Residence - Mobile Home	445	HQ

Table 5-14 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 6

Segment Combinations: B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
960	Single-family Residence	188	HQ
961	Single-family Residence	195	HQ
962	Single-family Residence - Mobile Home	196	HQ
963	Single-family Residence	193	HQ
964	Single-family Residence	204	HQ
965	Single-family Residence - Mobile Home	184	HQ
966	Single-family Residence	308	HQ
967	Single-family Residence	145	HQ
968	Single-family Residence	196	HQ
969	Single-family Residence	400	HQ
970	Single-family Residence - Mobile Home	296	HQ
971	Single-family Residence	270	HQ
972	Single-family Residence	268	HQ
973	Single-family Residence	321	HQ
974	Single-family Residence	497	HQ
975	Single-family Residence	446	HQ
976	Single-family Residence - Mobile Home	330	HQ
977	Single-family Residence - Mobile Home	306	HQ
988	Single-family Residence	238	HR
989	Single-family Residence	133	HR
990	Single-family Residence	208	HR
991	Single-family Residence	345	HR
992	Single-family Residence	362	HR
993	Single-family Residence	121	HR
994	Single-family Residence	311	HR
995	Single-family Residence	205	HR
1020	Single-family Residence	412	BW
1021	Single-family Residence	301	BW
1022	Single-family Residence	471	BW
1023	Single-family Residence	364	BW
1024	Single-family Residence	471	BW
1025	Single-family Residence	478	BW
1026	Single-family Residence	485	BW
1027	Single-family Residence	496	BW
1028	Single-family Residence	457	BW
1029	Single-family Residence	418	BW

Table 5-14 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 6

Segment Combinations: B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1030	Single-family Residence	265	BW
1031	Single-family Residence	137	BW
1032	Single-family Residence	152	BW
1033	Single-family Residence	108	BW
1034	Single-family Residence	203	BW
1035	Single-family Residence	202	BW
1036	Single-family Residence	164	BW
1037	Single-family Residence	149	BW
1038	Single-family Residence	509	BW
1039	Single-family Residence	467	BW
1040	Single-family Residence	412	BW
1041	Single-family Residence	458	BW
1042	Single-family Residence - Mobile Home	160	BW
1043	Single-family Residence	348	BW
1044	Single-family Residence	420	BW
1045	Single-family Residence	109	BW
1046	Single-family Residence - Mobile Home	231	BW
1047	Single-family Residence - Mobile Home	134	BW
1048	Single-family Residence	172	BW
1175	Single-family Residence	423	CB
1176	Single-family Residence	391	CB
1177	Single-family Residence - Mobile Home	235	CB
1178	Single-family Residence - Mobile Home	276	CB
1179	Single-family Residence	262	CB
1180	Single-family Residence	394	CB
1181	Single-family Residence	274	CB
1182	Single-family Residence	160	CB
1183	Single-family Residence	376	CB
1184	Single-family Residence	232	CB
1185	Single-family Residence	310	CB
1186	Single-family Residence	485	CB
1187	Single-family Residence	310	CB
1188	Single-family Residence	370	CB
1189	Single-family Residence	318	CB
1190	Single-family Residence	422	CB
1191	Single-family Residence	459	CB

Table 5-14 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 6

Segment Combinations: B-D-F-H-L-FQ-FY-GC-GE-HQ-HR-CB-BU-BW-BJ-BK-BL-CT-CU-CW-CY-DB-DD-DF-DG-DH-DM-DV-DX-EF-EM-EQ-EU-EX-EY-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1192	Single-family Residence	427	CB
1193	Single-family Residence	309	CB
1194	Single-family Residence	299	CB
1195	Single-family Residence	491	BU
1196	Single-family Residence	261	BU
1197	Single-family Residence	87	BU
1400	Other electronic installation	258	L
1403	Other electronic installation	1921	FQ
1404	Other electronic installation	1499	FY
1420	Other electronic installation	1112	BJ
1421	Other electronic installation	412	CY
1422	Other electronic installation	503	CY
1423	Other electronic installation	1038	DF
1500	Bay City Municipal Airport	17243	GC
1501	Private Airstrip 1	3523	L
1600-A	San Bernard National Wildlife Refuge	286	L
1600-C	San Bernard National Wildlife Refuge	761	HR
1604	Lion's Club Park	553	BL
1606	Justin Hurst Wildlife Management Area	0	EU
1607	Freeport Municipal Golf Course	686	FH
1700	Union Church Cemetery	310	FQ
1714	Brazoria Cemetery	91	BL
1716	TDCJ Prison Cemetery	503	CY
1717	Gulf Prairie, Peach Point Cemetery 1	607	DG
1718	Gulf Prairie, Peach Point Cemetery 2	585	DF
--	41BO103	--	BJ
--	41BO214	--	CY
--	41BO227	--	FP

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-15 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 7

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
429	Commercial / Industrial Related	405	FP
595	Single-family Residence	172	J
596	Single-family Residence	151	J
597	Single-family Residence	201	J
598	Single-family Residence	240	M
599	Single-family Residence	354	M
600	Single-family Residence	306	M
604	Single-family Residence	433	GJ
605	Single-family Residence	472	GJ
606	Single-family Residence	238	GJ
607	Single-family Residence	384	GJ
608	Single-family Residence	268	GJ
609	Single-family Residence	273	GJ
610	Single-family Residence	243	GJ
611	Single-family Residence	274	GJ
612	Single-family Residence	361	GJ
613	Single-family Residence	271	GJ
614	Single-family Residence	282	GJ
615	Single-family Residence	235	GJ
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN

Table 5-15 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 7

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN
772	Single-family Residence	458	IN
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1

Table 5-15 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 7

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX

Table 5-15 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 7

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
882	Single-family Residence	191	FY
883	Single-family Residence - Mobile Home	142	FY

Table 5-15 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 7

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
884	Single-family Residence	488	FY
885	Single-family Residence	164	FY
886	Single-family Residence	357	FY
887	Single-family Residence	483	FY
888	Single-family Residence	278	FY
889	Single-family Residence	509	FY
890	Single-family Residence	330	FY
891	Commercial Business	399	FY
892	Single-family Residence	487	FY
893	Single-family Residence	483	FY
894	Single-family Residence	155	FY
895	Single-family Residence	181	FY
896	Single-family Residence	152	FY
897	Single-family Residence	503	FY
898	Single-family Residence	260	FY
899	Single-family Residence	198	FY
900	Single-family Residence	298	FY
901	Single-family Residence	237	FY
902	Single-family Residence	218	FY
903	Single-family Residence	171	FY
904	Single-family Residence	158	FY
905	Single-family Residence	132	FY
906	Single-family Residence	510	FY
907	Single-family Residence	364	FY
908	Commercial Business	176	FY
909	Single-family Residence	379	FY
910	Single-family Residence	428	FY
911	Single-family Residence - Mobile Home	331	FY
912	Single-family Residence	375	FY
913	Single-family Residence	373	FY
914	Single-family Residence	367	FY
915	Multi-family Residence	458	FY
916	Multi-family Residence	432	FY
917	Multi-family Residence	460	FY
918	Multi-family Residence	432	FY
919	Multi-family Residence	501	FY

Table 5-15 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 7

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
920	Multi-family Residence	444	FY
921	Multi-family Residence	364	FY
922	Multi-family Residence	451	FY
923	Multi-family Residence	367	FY
924	Multi-family Residence	450	FY
925	Multi-family Residence	369	FY
926	Multi-family Residence	446	FY
927	Multi-family Residence	371	FY
928	Single-family Residence - Mobile Home	77	FY
929	Single-family Residence	128	FY
930	Single-family Residence	232	FY
931	Single-family Residence	425	FY
934	Single-family Residence	277	GD
935	Single-family Residence	395	GD
936	Single-family Residence	436	GD
937	Single-family Residence	233	GD
938	Single-family Residence - Mobile Home	207	GD
939	Single-family Residence	447	GD
940	Single-family Residence - Mobile Home	338	GD
941	Single-family Residence	422	GD
942	Single-family Residence	113	GD
943	Commercial / Industrial Related	89	GD
944	Commercial / Industrial Related	132	GD
945	Commercial Business	170	GD
946	Single-family Residence	247	GE
947	Single-family Residence - Mobile Home	150	GE
948	Single-family Residence - Mobile Home	348	GE
949	Single-family Residence	191	HQ
950	Single-family Residence	191	HQ
951	Single-family Residence	518	HQ
952	Single-family Residence - Mobile Home	172	HQ
953	Single-family Residence	187	HQ
954	Single-family Residence	196	HQ
955	Single-family Residence	201	HQ
956	Single-family Residence	194	HQ
957	Single-family Residence	421	HQ

Table 5-15 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 7

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
958	Single-family Residence - Mobile Home	177	HQ
959	Single-family Residence - Mobile Home	445	HQ
960	Single-family Residence	188	HQ
961	Single-family Residence	195	HQ
962	Single-family Residence - Mobile Home	196	HQ
963	Single-family Residence	193	HQ
964	Single-family Residence	204	HQ
965	Single-family Residence - Mobile Home	184	HQ
966	Single-family Residence	308	HQ
967	Single-family Residence	145	HQ
968	Single-family Residence	196	HQ
969	Single-family Residence	400	HQ
970	Single-family Residence - Mobile Home	296	HQ
971	Single-family Residence	270	HQ
972	Single-family Residence	268	HQ
973	Single-family Residence	321	HQ
974	Single-family Residence	497	HQ
975	Single-family Residence	446	HQ
976	Single-family Residence - Mobile Home	330	HQ
977	Single-family Residence - Mobile Home	306	HQ
988	Single-family Residence	238	HR
989	Single-family Residence	133	HR
990	Single-family Residence	208	HR
991	Single-family Residence	345	HR
992	Single-family Residence	362	HR
993	Single-family Residence	121	HR
994	Single-family Residence	311	HR
995	Single-family Residence	205	HR
1000	Single-family Residence - Mobile Home	150	CC
1001	Single-family Residence - Mobile Home	140	CC
1002	Single-family Residence	153	CC
1003	Single-family Residence	412	CC
1004	Single-family Residence	90	CC
1005	Single-family Residence - Mobile Home	133	CC
1006	Single-family Residence	288	CC
1007	Single-family Residence - Mobile Home	493	CC

Table 5-15 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 7

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
1008	Single-family Residence	60	CC
1009	Single-family Residence - Mobile Home	55	CC
1010	Single-family Residence	309	CC
1011	Single-family Residence	355	CC
1012	Single-family Residence	321	CC
1013	Single-family Residence	324	CC
1014	Single-family Residence	132	CC
1015	Single-family Residence	359	CC
1016	Single-family Residence	232	CC
1017	Single-family Residence	291	CC
1018	Single-family Residence	220	CD
1141	Single-family Residence	157	CD
1142	Single-family Residence	336	CD
1145	Commercial Business	272	CE
1171	Single-family Residence	390	CE
1172	Single-family Residence - Mobile Home	227	CE
1173	Single-family Residence	127	CE
1174	Single-family Residence	54	CE
1401	FM Tower	666	M
1402	Other electronic installation	502	M
1404	Other electronic installation	1499	FY
1424	Other electronic installation	1521	JA
1500	Bay City Municipal Airport	17152	GD
1503	Private Airstrip 2	8177	GJ
1504	Private Airstrip 3	8419	GJ
1507	Eagle Air Park	2759	IO2
1600-C	San Bernard National Wildlife Refuge	761	HR
1603	Levi Jordan Plantation	53	CD
1605	SFA Elementary School Park	992	JA
1606	Justin Hurst Wildlife Management Area	0	JA
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	969	IN
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	41BO191	--	IO2

Table 5-15 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 7

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
--	41BO258	--	IO2
--	41BO260	--	IO2
--	Durazno Plantation	931	JA
--	Levi Jordan Plantation	85	CD

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-16 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 8

Segment Combinations: B-G-J-K-M-GI-GO-GP-FW-FY-GD-GE-HQ-HR-HS-IM-IN-CQ-CR-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
228	Single-family Residence	424	CT
229	Single-family Residence	309	CT
230	Single-family Residence	166	CT
231	Single-family Residence	441	CT
232	Single-family Residence	463	CT
233	Single-family Residence	153	CT
234	Single-family Residence	442	CT
235	Single-family Residence	153	CT
429	Commercial / Industrial Related	405	FP
595	Single-family Residence	172	J
596	Single-family Residence	151	J
597	Single-family Residence	201	J
598	Single-family Residence	240	M
599	Single-family Residence	354	M
600	Single-family Residence	306	M
615	Single-family Residence	472	GP
616	Single-family Residence	508	GP
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN

Table 5-16 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 8

Segment Combinations: B-G-J-K-M-GI-GO-GP-FW-FY-GD-GE-HQ-HR-HS-IM-IN-CQ-CR-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
756	Single-family Residence - Mobile Home	160	IN
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN
772	Single-family Residence	458	IN
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX

Table 5-16 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 8

Segment Combinations: B-G-J-K-M-GI-GO-GP-FW-FY-GD-GE-HQ-HR-HS-IM-IN-CQ-CR-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
882	Single-family Residence	191	FY
883	Single-family Residence - Mobile Home	142	FY
884	Single-family Residence	488	FY
885	Single-family Residence	164	FY
886	Single-family Residence	357	FY
887	Single-family Residence	483	FY

Table 5-16 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 8

Segment Combinations: B-G-J-K-M-GI-GO-GP-FW-FY-GD-GE-HQ-HR-HS-IM-IN-CQ-CR-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
888	Single-family Residence	278	FY
889	Single-family Residence	509	FY
890	Single-family Residence	330	FY
891	Commercial Business	399	FY
892	Single-family Residence	487	FY
893	Single-family Residence	483	FY
894	Single-family Residence	155	FY
895	Single-family Residence	181	FY
896	Single-family Residence	152	FY
897	Single-family Residence	503	FY
898	Single-family Residence	260	FY
899	Single-family Residence	198	FY
900	Single-family Residence	298	FY
901	Single-family Residence	237	FY
902	Single-family Residence	218	FY
903	Single-family Residence	171	FY
904	Single-family Residence	158	FY
905	Single-family Residence	132	FY
906	Single-family Residence	510	FY
907	Single-family Residence	364	FY
908	Commercial Business	176	FY
909	Single-family Residence	379	FY
910	Single-family Residence	428	FY
911	Single-family Residence - Mobile Home	331	FY
912	Single-family Residence	375	FY
913	Single-family Residence	373	FY
914	Single-family Residence	367	FY
915	Multi-family Residence	458	FY
916	Multi-family Residence	432	FY
917	Multi-family Residence	460	FY
918	Multi-family Residence	432	FY
919	Multi-family Residence	501	FY
920	Multi-family Residence	444	FY
921	Multi-family Residence	364	FY
922	Multi-family Residence	451	FY
923	Multi-family Residence	367	FY

Table 5-16 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 8

Segment Combinations: B-G-J-K-M-GI-GO-GP-FW-FY-GD-GE-HQ-HR-HS-IM-IN-CQ-CR-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
924	Multi-family Residence	450	FY
925	Multi-family Residence	369	FY
926	Multi-family Residence	446	FY
927	Multi-family Residence	371	FY
928	Single-family Residence - Mobile Home	77	FY
929	Single-family Residence	128	FY
930	Single-family Residence	232	FY
931	Single-family Residence	425	FY
934	Single-family Residence	277	GD
935	Single-family Residence	395	GD
936	Single-family Residence	436	GD
937	Single-family Residence	233	GD
938	Single-family Residence - Mobile Home	207	GD
939	Single-family Residence	447	GD
940	Single-family Residence - Mobile Home	338	GD
941	Single-family Residence	422	GD
942	Single-family Residence	113	GD
943	Commercial / Industrial Related	89	GD
944	Commercial / Industrial Related	132	GD
945	Commercial Business	170	GD
946	Single-family Residence	247	GE
947	Single-family Residence - Mobile Home	150	GE
948	Single-family Residence - Mobile Home	348	GE
949	Single-family Residence	191	HQ
950	Single-family Residence	191	HQ
951	Single-family Residence	518	HQ
952	Single-family Residence - Mobile Home	172	HQ
953	Single-family Residence	187	HQ
954	Single-family Residence	196	HQ
955	Single-family Residence	201	HQ
956	Single-family Residence	194	HQ
957	Single-family Residence	421	HQ
958	Single-family Residence - Mobile Home	177	HQ
959	Single-family Residence - Mobile Home	445	HQ
960	Single-family Residence	188	HQ
961	Single-family Residence	195	HQ

Table 5-16 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 8

Segment Combinations: B-G-J-K-M-GI-GO-GP-FW-FY-GD-GE-HQ-HR-HS-IM-IN-CQ-CR-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
962	Single-family Residence - Mobile Home	196	HQ
963	Single-family Residence	193	HQ
964	Single-family Residence	204	HQ
965	Single-family Residence - Mobile Home	184	HQ
966	Single-family Residence	308	HQ
967	Single-family Residence	145	HQ
968	Single-family Residence	196	HQ
969	Single-family Residence	400	HQ
970	Single-family Residence - Mobile Home	296	HQ
971	Single-family Residence	270	HQ
972	Single-family Residence	268	HQ
973	Single-family Residence	321	HQ
974	Single-family Residence	497	HQ
975	Single-family Residence	446	HQ
976	Single-family Residence - Mobile Home	330	HQ
977	Single-family Residence - Mobile Home	306	HQ
988	Single-family Residence	238	HR
989	Single-family Residence	133	HR
990	Single-family Residence	208	HR
991	Single-family Residence	345	HR
992	Single-family Residence	362	HR
993	Single-family Residence	121	HR
994	Single-family Residence	311	HR
995	Single-family Residence	205	HR
996	Single-family Residence	366	HS
997	Single-family Residence	473	HS
998	Single-family Residence	82	HS
999	Single-family Residence	184	HS
1106	Single-family Residence	444	CQ
1107	Single-family Residence	245	CQ
1108	Single-family Residence	374	CR
1109	Church Facility	344	CR
1110	Church	385	CR
1111	Single-family Residence	271	CR
1112	Single-family Residence	326	CR
1113	Single-family Residence	309	CS

Table 5-16 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 8

Segment Combinations: B-G-J-K-M-GI-GO-GP-FW-FY-GD-GE-HQ-HR-HS-IM-IN-CQ-CR-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1115	Single-family Residence	337	CS
1116	Single-family Residence	447	CS
1117	Single-family Residence - Mobile Home	471	CS
1118	Single-family Residence - Mobile Home	397	CS
1119	Single-family Residence	355	CS
1120	Single-family Residence	419	CS
1121	Single-family Residence	302	CS
1122	Single-family Residence	421	CS
1123	Single-family Residence	500	CS
1124	Single-family Residence	458	CS
1125	Single-family Residence	128	CS
1126	Commercial Business	142	CS
1127	Commercial Business	238	CS
1128	Commercial Business	329	CS
1129	Commercial Business	464	CS
1130	Single-family Residence	488	CS
1131	Single-family Residence	354	CS
1132	Single-family Residence	195	CV
1133	Single-family Residence	150	CV
1134	Single-family Residence	228	DA1
1135	Single-family Residence	245	DA2
1136	Single-family Residence	305	DA2
1137	Single-family Residence	238	DA2
1138	Single-family Residence	252	DA2
1139	Single-family Residence	391	DA2
1140	Single-family Residence	390	DA2
1401	FM Tower	666	M
1402	Other electronic installation	502	M
1404	Other electronic installation	1499	FY
1424	Other electronic installation	1521	JA
1500	Bay City Municipal Airport	17152	GD
1503	Private Airstrip 2	4480	GO
1504	Private Airstrip 3	61	GP
1507	Eagle Air Park	7738	IN
1600-C	San Bernard National Wildlife Refuge	761	HR
1600-E	San Bernard National Wildlife Refuge	185	IM

Table 5-16 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 8

Segment Combinations: B-G-J-K-M-GI-GO-GP-FW-FY-GD-GE-HQ-HR-HS-IM-IN-CQ-CR-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1605	SFA Elementary School Park	992	JA
1606	Justin Hurst Wildlife Management Area	0	JA
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	72	CQ
1715	Galilee Church Cemetery	104	IX
--	41BO100	--	CR
--	41BO164	--	CR
--	41BO227	--	FP
--	41BO221	--	HS
--	Durazno Plantation	931	JA

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-17 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 9

Segment Combinations: B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
378	Commercial Business	300	FB
379	Single-family Residence	488	FB
428	Single-family Residence	393	FN
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	316	FF
431	Commercial Business	51	EU
432	Commercial Business	128	EU
433	Single-family Residence	136	EU
434	Single-family Residence	293	EU
435	Single-family Residence	171	EU
436	Single-family Residence	196	EU
437	Single-family Residence	274	EU
440	Single-family Residence - Mobile Home	229	EQ
441	Single-family Residence	215	EQ
442	Single-family Residence	280	EQ
443	Single-family Residence	303	EQ
444	Single-family Residence - Mobile Home	295	EQ
445	Single-family Residence - Mobile Home	304	EQ
446	Single-family Residence	404	EQ
447	Single-family Residence	437	EQ
448	Single-family Residence	442	EQ
452	Single-family Residence	498	EQ
456	Single-family Residence	401	EM
457	Single-family Residence	278	EM
458	Single-family Residence	176	EM
459	Single-family Residence	302	EM
460	Single-family Residence	375	EF
461	Single-family Residence	380	EF
462	Single-family Residence	377	EF
463	Single-family Residence	377	EF
464	Single-family Residence	381	EF
465	Single-family Residence	425	EF
466	Single-family Residence	509	EF
467	Single-family Residence	179	EF
468	Single-family Residence	338	EF
469	Single-family Residence	64	EF
470	Single-family Residence	125	EF

Table 5-17 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 9

Segment Combinations: B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
471	Single-family Residence	112	EF
472	Single-family Residence	164	EF
473	Single-family Residence	279	EF
474	Commercial Business	257	EF
475	Commercial Business	283	EF
476	Single-family Residence	369	EF
477	Single-family Residence	475	EF
478	Single-family Residence	491	EF
479	Single-family Residence	364	EF
480	Single-family Residence	277	EF
481	Single-family Residence	419	EF
482	Single-family Residence	464	EF
487	Single-family Residence	508	EF
495	Single-family Residence	457	DV
496	Single-family Residence	486	DV
499	Single-family Residence	335	DJ
500	Single-family Residence	238	DJ
501	Single-family Residence	152	DJ
502	Single-family Residence	376	DJ
503	Single-family Residence	321	DK
504	Single-family Residence	497	DK
505	Single-family Residence	326	DK
506	Single-family Residence	330	DK
507	Single-family Residence	438	DK
508	Single-family Residence	122	DK
509	Single-family Residence	173	DK
510	Church	327	DK
511	Single-family Residence	176	DK
512	Church Facility	393	DK
513	Single-family Residence	173	DK
514	Single-family Residence	321	DK
515	Single-family Residence	342	DK
516	Single-family Residence	177	DK
517	Single-family Residence	116	DK
518	Single-family Residence	265	DK
519	Single-family Residence	369	DK
520	Single-family Residence - Mobile Home	498	DV

Table 5-17 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 9

Segment Combinations: B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
521	Single-family Residence	223	DV
522	Single-family Residence	96	DV
523	Single-family Residence	152	DV
524	Single-family Residence	245	DV
525	Commercial Business	323	DV
526	Commercial Business	504	DV
527	Single-family Residence	488	DV
528	Single-family Residence	365	DX
529	Single-family Residence	262	DX
530	Single-family Residence	479	DX
531	Single-family Residence	312	DX
532	Single-family Residence	211	DX
533	Single-family Residence	89	DX
534	Single-family Residence	306	DX
535	Single-family Residence	493	DX
536	Single-family Residence	503	DX
537	Single-family Residence	491	DX
538	Single-family Residence	369	DX
539	Single-family Residence	132	DX
540	Single-family Residence	229	DX
541	Single-family Residence	497	DX
542	Single-family Residence	164	DX
543	Single-family Residence	130	DX
544	Commercial Business	194	DX
545	Single-family Residence	68	DX
546	Single-family Residence	176	DX
547	Single-family Residence	202	DX
548	Single-family Residence	235	EF
549	Single-family Residence	197	DX
550	Single-family Residence	191	DX
551	Single-family Residence	203	DX
552	Single-family Residence	198	DX
553	Single-family Residence	514	DX
554	Single-family Residence	493	DX
555	Single-family Residence	288	DX
556	Single-family Residence	225	DX
557	Single-family Residence	55	DX

Table 5-17 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 9

Segment Combinations: B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
558	Single-family Residence	62	EF
559	Single-family Residence	80	EF
560	Single-family Residence	62	EF
561	Single-family Residence	244	EF
562	Single-family Residence	265	EF
563	Commercial Business	62	EF
564	Commercial Business	62	EF
565	Single-family Residence	264	EF
566	Single-family Residence	297	EF
567	Single-family Residence	340	EF
568	Single-family Residence	142	EF
569	Single-family Residence	260	EF
570	Single-family Residence	241	EF
571	Commercial Business	183	EF
572	Single-family Residence	112	EM
573	Single-family Residence	244	EM
574	Single-family Residence	303	EM
575	Single-family Residence	484	EM
576	Single-family Residence	484	EM
577	Single-family Residence	322	EM
578	Single-family Residence	301	EM
579	Single-family Residence	473	EM
580	Single-family Residence	292	EM
581	Single-family Residence	488	EM
582	Single-family Residence	307	EM
583	Single-family Residence	510	EM
584	Single-family Residence	100	EM
585	Single-family Residence	177	EM
586	Single-family Residence	107	EM
587	Single-family Residence	191	EM
588	Single-family Residence	80	EM
589	Single-family Residence	197	EM
590	Single-family Residence	73	EM
595	Single-family Residence	172	J
596	Single-family Residence	151	J
597	Single-family Residence	201	J
601	Single-family Residence	175	N

Table 5-17 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 9

Segment Combinations: B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
602	Single-family Residence	179	N
603	Single-family Residence	115	O
617	Single-family Residence	482	GR
618	Single-family Residence	104	GR
619	Single-family Residence	125	GT
620	Single-family Residence	121	GT
621	Single-family Residence	431	GT
622	Single-family Residence	223	GT
623	Single-family Residence	186	GT
624	Single-family Residence	157	GT
625	Single-family Residence	364	GT
626	Single-family Residence	133	GT
627	Single-family Residence	253	GT
628	Single-family Residence	340	GT
629	Single-family Residence	434	GT
630	Single-family Residence	194	GT
631	Single-family Residence	343	GT
632	Single-family Residence	422	GT
633	Single-family Residence	349	GT
634	Single-family Residence	225	GT
635	Single-family Residence	362	GT
636	Single-family Residence	506	GT
637	Single-family Residence	182	GT
638	Single-family Residence	353	GT
639	Single-family Residence	399	GT
640	Single-family Residence	512	GT
641	Single-family Residence	141	GT
642	Single-family Residence	165	GT
643	Single-family Residence	236	GT
644	Single-family Residence	355	GT
645	Single-family Residence	430	GT
646	Single-family Residence - Mobile Home	369	GT
647	Single-family Residence - Mobile Home	418	GT
648	Single-family Residence	201	GT
649	Single-family Residence - Mobile Home	368	GT
650	Single-family Residence	413	GT
651	Single-family Residence	501	GT

Table 5-17 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 9

Segment Combinations: B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
652	Industrial Related	362	GT
653	Single-family Residence	225	GT
654	Community Center	511	GT
655	Single-family Residence	178	GT
656	Single-family Residence	175	GT
657	Single-family Residence	262	GT
658	Single-family Residence	410	GT
659	Commercial Business	366	GT
660	Single-family Residence	253	GT
661	Single-family Residence	259	GT
662	Single-family Residence - Mobile Home	165	GT
663	Single-family Residence	195	GT
664	Single-family Residence - Mobile Home	266	GT
665	Single-family Residence - Mobile Home	368	GT
666	Single-family Residence - Mobile Home	453	GT
667	Single-family Residence - Mobile Home	159	GT
668	Single-family Residence	246	GT
669	Single-family Residence	197	GT
670	Commercial Business	359	GT
671	Single-family Residence	346	GT
672	Single-family Residence	448	GT
673	Single-family Residence	350	GT
674	Single-family Residence	222	GT
675	Single-family Residence	392	GT
676	Single-family Residence	409	GT
677	Commercial Business	119	GT
678	Commercial Business	184	GT
679	Single-family Residence	180	GT
680	Single-family Residence	178	GT
681	Single-family Residence	174	GT
682	Single-family Residence	493	GT
683	Single-family Residence	341	GT
684	Single-family Residence	512	GT
685	Single-family Residence	305	GT
686	Single-family Residence	508	GT
687	Single-family Residence	296	GT
688	Industrial Related	186	GT

Table 5-17 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 9

Segment Combinations: B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
689	Single-family Residence	341	GT
690	Single-family Residence	349	GT
691	Single-family Residence	362	GT
692	Single-family Residence	95	GT
693	Single-family Residence	230	GT
694	Single-family Residence - Mobile Home	168	GT
695	Single-family Residence	215	GT
696	Single-family Residence	252	GT
697	Single-family Residence	302	GT
698	Single-family Residence	394	GT
699	Single-family Residence	81	HO
700	Single-family Residence	207	HO
730	Single-family Residence	225	IL
731	Single-family Residence	242	IL
732	Single-family Residence	420	IL
733	Single-family Residence	155	IL
734	Single-family Residence	332	IL
735	Single-family Residence	248	IL
736	Single-family Residence	193	IL
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN

Table 5-17 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 9

Segment Combinations: B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN
772	Single-family Residence	458	IN
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1

Table 5-17 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 9

Segment Combinations: B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX

Table 5-17 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 9

Segment Combinations: B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
949	Single-family Residence	191	HQ
950	Single-family Residence	191	HQ
951	Single-family Residence	518	HQ

Table 5-17 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 9

Segment Combinations: B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
952	Single-family Residence - Mobile Home	172	HQ
953	Single-family Residence	187	HQ
954	Single-family Residence	196	HQ
955	Single-family Residence	201	HQ
956	Single-family Residence	194	HQ
957	Single-family Residence	421	HQ
958	Single-family Residence - Mobile Home	177	HQ
959	Single-family Residence - Mobile Home	445	HQ
960	Single-family Residence	188	HQ
961	Single-family Residence	195	HQ
962	Single-family Residence - Mobile Home	196	HQ
963	Single-family Residence	193	HQ
964	Single-family Residence	204	HQ
965	Single-family Residence - Mobile Home	184	HQ
966	Single-family Residence	308	HQ
967	Single-family Residence	145	HQ
968	Single-family Residence	196	HQ
969	Single-family Residence	400	HQ
970	Single-family Residence - Mobile Home	296	HQ
971	Single-family Residence	270	HQ
972	Single-family Residence	268	HQ
973	Single-family Residence	321	HQ
974	Single-family Residence	497	HQ
975	Single-family Residence	446	HQ
976	Single-family Residence - Mobile Home	330	HQ
977	Single-family Residence - Mobile Home	306	HQ
978	Single-family Residence	125	HT
979	Single-family Residence	268	HT
980	Single-family Residence	502	HT
981	Church	436	HT
982	Single-family Residence - Mobile Home	480	HT
983	Single-family Residence	401	HT
984	Single-family Residence	122	HT
985	Single-family Residence - Mobile Home	199	HT
986	Single-family Residence	162	HT
987	Single-family Residence	241	HT
1318	Historic Church	210	HO

Table 5-17 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 9

Segment Combinations: B-G-J-K-N-O-GI-GO-GQ-GR-GT-HO-HQ-HT-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-EM-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1319	Single-family Residence	133	HO
1401	FM Tower	1151	N
1405	Other electronic installation	516	GT
1406	Other electronic installation	1244	GT
1410	Other electronic installation	1566	HO
1411	Other electronic installation	1108	IL
1423	Other electronic installation	1678	DJ
1500	Bay City Municipal Airport	3586	GT
1503	Private Airstrip 2	4480	GO
1504	Private Airstrip 3	2212	GR
1507	Eagle Air Park	2759	IO2
1600-E	San Bernard National Wildlife Refuge	185	IM
1606	Justin Hurst Wildlife Management Area	0	EU
1701	Roselawn Memorial Park Cemetery	165	GT
1706	Unknown (Kennedy School) Cemetery	414	HT
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	969	IN
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	41BO191	--	IO2
--	41BO258	--	IO2
--	41BO260	--	IO2

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-18 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 10

Segment Combinations: B-G-J-K-N-GF-GH-GL-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
228	Single-family Residence	424	CT
229	Single-family Residence	309	CT
230	Single-family Residence	166	CT
231	Single-family Residence	441	CT
232	Single-family Residence	463	CT
233	Single-family Residence	153	CT
234	Single-family Residence	442	CT
235	Single-family Residence	92	CU
236	Single-family Residence	315	CU
237	Single-family Residence	299	CU
238	Single-family Residence	503	CU
239	Single-family Residence	309	CU
240	Single-family Residence	314	CU
241	Single-family Residence	268	CU
242	Single-family Residence	301	CU
243	Single-family Residence	279	CU
244	Single-family Residence	303	CU
245	Single-family Residence	264	CU
246	Single-family Residence	250	CU
247	Single-family Residence	253	CU
248	Single-family Residence	247	CU
249	Single-family Residence	252	CU
250	Single-family Residence	264	CU
251	Commercial Business	495	CU
252	Single-family Residence	233	CU
253	Commercial Business	189	CU
254	Single-family Residence - Mobile Home	83	CU
256	Single-family Residence	496	CW
268	Single-family Residence	371	CY
269	Single-family Residence	344	CY
270	Single-family Residence	492	CY
271	TDCJ Clemens Unit Office	512	CY
272	Single-family Residence	452	CY
273	Multi-family Residence	406	CY
274	Single-family Residence	233	CY
275	Single-family Residence	198	CY

Table 5-18 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 10

Segment Combinations: B-G-J-K-N-GF-GH-GL-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
276	Single-family Residence	260	CY
277	Single-family Residence	451	CY
278	Single-family Residence	301	CY
279	Single-family Residence	416	CY
280	Single-family Residence	509	CY
281	Single-family Residence	401	CY
282	Single-family Residence	503	CY
283	Single-family Residence	497	CY
284	Single-family Residence	397	CY
285	Single-family Residence	299	CY
286	Commercial Business	336	DC
287	Single-family Residence	167	DC
290	Single-family Residence	322	DC
291	Single-family Residence	360	DC
292	Single-family Residence	217	DC
293	Single-family Residence	173	DC
294	Single-family Residence	139	DC
295	Single-family Residence	474	DC
429	Commercial / Industrial Related	405	FP
595	Single-family Residence	172	J
596	Single-family Residence	151	J
597	Single-family Residence	201	J
601	Single-family Residence	175	N
602	Single-family Residence	179	N
619	Single-family Residence	125	GT
620	Single-family Residence	121	GT
621	Single-family Residence	431	GT
622	Single-family Residence	223	GT
623	Single-family Residence	186	GT
624	Single-family Residence	157	GT
625	Single-family Residence	364	GT
626	Single-family Residence	133	GT
627	Single-family Residence	253	GT
628	Single-family Residence	340	GT
629	Single-family Residence	434	GT
630	Single-family Residence	194	GT

Table 5-18 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 10

Segment Combinations: B-G-J-K-N-GF-GH-GL-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
631	Single-family Residence	343	GT
632	Single-family Residence	422	GT
633	Single-family Residence	349	GT
634	Single-family Residence	225	GT
635	Single-family Residence	362	GT
636	Single-family Residence	506	GT
637	Single-family Residence	182	GT
638	Single-family Residence	353	GT
639	Single-family Residence	399	GT
640	Single-family Residence	512	GT
641	Single-family Residence	141	GT
642	Single-family Residence	165	GT
643	Single-family Residence	236	GT
644	Single-family Residence	355	GT
645	Single-family Residence	430	GT
646	Single-family Residence - Mobile Home	369	GT
647	Single-family Residence - Mobile Home	418	GT
648	Single-family Residence	201	GT
649	Single-family Residence - Mobile Home	368	GT
650	Single-family Residence	413	GT
651	Single-family Residence	501	GT
652	Industrial Related	362	GT
653	Single-family Residence	225	GT
654	Community Center	511	GT
655	Single-family Residence	178	GT
656	Single-family Residence	175	GT
657	Single-family Residence	262	GT
658	Single-family Residence	410	GT
659	Commercial Business	366	GT
660	Single-family Residence	253	GT
661	Single-family Residence	259	GT
662	Single-family Residence - Mobile Home	165	GT
663	Single-family Residence	195	GT
664	Single-family Residence - Mobile Home	266	GT
665	Single-family Residence - Mobile Home	368	GT
666	Single-family Residence - Mobile Home	453	GT

Table 5-18 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 10

Segment Combinations: B-G-J-K-N-GF-GH-GL-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
667	Single-family Residence - Mobile Home	159	GT
668	Single-family Residence	246	GT
669	Single-family Residence	197	GT
670	Commercial Business	359	GT
671	Single-family Residence	346	GT
672	Single-family Residence	448	GT
673	Single-family Residence	350	GT
674	Single-family Residence	222	GT
675	Single-family Residence	392	GT
676	Single-family Residence	409	GT
677	Commercial Business	119	GT
678	Commercial Business	184	GT
679	Single-family Residence	180	GT
680	Single-family Residence	178	GT
681	Single-family Residence	174	GT
682	Single-family Residence	493	GT
683	Single-family Residence	341	GT
684	Single-family Residence	512	GT
685	Single-family Residence	305	GT
686	Single-family Residence	508	GT
687	Single-family Residence	296	GT
688	Industrial Related	186	GT
689	Single-family Residence	341	GT
690	Single-family Residence	349	GT
691	Single-family Residence	362	GT
692	Single-family Residence	95	GT
693	Single-family Residence	230	GT
694	Single-family Residence - Mobile Home	168	GT
695	Single-family Residence	215	GT
696	Single-family Residence	252	GT
697	Single-family Residence	302	GT
698	Single-family Residence	394	GT
700	Single-family Residence	398	HP
701	Single-family Residence	429	HP
702	Single-family Residence	374	HP
703	Single-family Residence	495	HP

Table 5-18 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 10

Segment Combinations: B-G-J-K-N-GF-GH-GL-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
704	Single-family Residence	284	HP
705	Single-family Residence	362	HP
706	Single-family Residence	249	HP
707	Single-family Residence	306	IE
708	Single-family Residence	213	IE
709	Single-family Residence	223	IE
710	Single-family Residence	244	IE
711	Single-family Residence	266	IE
712	Single-family Residence	234	IE
713	Single-family Residence	394	IE
714	Single-family Residence	254	IE
715	Single-family Residence	384	IE
716	Single-family Residence	140	IE
717	Single-family Residence	103	IE
718	Single-family Residence	126	IE
719	Single-family Residence	452	IE
720	Single-family Residence	309	IE
721	Single-family Residence	299	IE
722	Single-family Residence	370	IE
723	Single-family Residence	368	IE
724	Single-family Residence	350	IE
725	Single-family Residence	298	IE
726	Single-family Residence - Mobile Home	168	IE
727	Single-family Residence	378	IE
728	Single-family Residence	476	IE
729	Single-family Residence	415	IE
730	Single-family Residence	225	IL
731	Single-family Residence	242	IL
732	Single-family Residence	420	IL
733	Single-family Residence	155	IL
734	Single-family Residence	332	IL
735	Single-family Residence	248	IL
736	Single-family Residence	193	IL
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM

Table 5-18 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 10

Segment Combinations: B-G-J-K-N-GF-GH-GL-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN
772	Single-family Residence	458	IN
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN

Table 5-18 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 10

Segment Combinations: B-G-J-K-N-GF-GH-GL-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
859	Single-family Residence	485	DC
860	Single-family Residence	357	DC
861	Single-family Residence	344	DC
862	Single-family Residence	318	DC
863	Single-family Residence - Mobile Home	494	DC
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
987	Single-family Residence	132	IE
1106	Single-family Residence	444	CQ
1107	Single-family Residence	245	CQ
1108	Single-family Residence	374	CR
1109	Church Facility	344	CR
1110	Church	385	CR
1111	Single-family Residence	271	CR
1112	Single-family Residence	326	CR
1113	Single-family Residence	309	CS
1115	Single-family Residence	337	CS
1116	Single-family Residence	447	CS
1117	Single-family Residence - Mobile Home	471	CS
1118	Single-family Residence - Mobile Home	397	CS
1119	Single-family Residence	355	CS
1120	Single-family Residence	419	CS
1121	Single-family Residence	302	CS
1122	Single-family Residence	421	CS
1123	Single-family Residence	500	CS
1124	Single-family Residence	458	CS
1125	Single-family Residence	128	CS

Table 5-18 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 10

Segment Combinations: B-G-J-K-N-GF-GH-GL-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DC-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1126	Commercial Business	142	CS
1127	Commercial Business	238	CS
1128	Commercial Business	329	CS
1129	Commercial Business	464	CS
1130	Single-family Residence	488	CS
1131	Single-family Residence	354	CS
1401	FM Tower	1151	N
1405	Other electronic installation	516	GT
1406	Other electronic installation	1244	GT
1411	Other electronic installation	948	IE
1421	Other electronic installation	412	CY
1422	Other electronic installation	503	CY
1424	Other electronic installation	1521	JA
1500	Bay City Municipal Airport	3586	GT
1503	Private Airstrip 2	2460	GL
1504	Private Airstrip 3	3067	GQ
1507	Eagle Air Park	7738	IN
1600-E	San Bernard National Wildlife Refuge	185	IM
1605	SFA Elementary School Park	992	JA
1606	Justin Hurst Wildlife Management Area	0	JA
1701	Roselawn Memorial Park Cemetery	165	GT
1705	Vine Grove Cemetery	236	IE
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	72	CQ
1716	TDCJ Prison Cemetery	503	CY
--	41BO100	--	CR
--	41BO164	--	CR
--	41BO214	--	CY
--	41BO259	--	DC
--	41BO227	--	FP
--	Durazno Plantation	931	JA

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-19 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 11

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HU-HW-IC-ID-IE- IL-IM-IN-IO1-IO2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
429	Commercial / Industrial Related	405	FP
591	Single-family Residence	186	E
592	Single-family Residence - Mobile Home	481	E
593	Single-family Residence - Mobile Home	218	E
594	Single-family Residence	238	E
601	Single-family Residence	175	N
602	Single-family Residence	179	N
707	Single-family Residence	306	IE
708	Single-family Residence	213	IE
709	Single-family Residence	223	IE
710	Single-family Residence	244	IE
711	Single-family Residence	266	IE
712	Single-family Residence	234	IE
713	Single-family Residence	394	IE
714	Single-family Residence	254	IE
715	Single-family Residence	384	IE
716	Single-family Residence	140	IE
717	Single-family Residence	103	IE
718	Single-family Residence	126	IE
719	Single-family Residence	452	IE
720	Single-family Residence	309	IE
721	Single-family Residence	299	IE
722	Single-family Residence	370	IE
723	Single-family Residence	368	IE
724	Single-family Residence	350	IE
725	Single-family Residence	298	IE
726	Single-family Residence - Mobile Home	168	IE
727	Single-family Residence	378	IE
728	Single-family Residence	476	IE
729	Single-family Residence	415	IE
730	Single-family Residence	225	IL
731	Single-family Residence	242	IL
732	Single-family Residence	420	IL
733	Single-family Residence	155	IL
734	Single-family Residence	332	IL
735	Single-family Residence	248	IL

Table 5-19 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 11

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HU-HW-IC-ID-IE- IL-IM-IN-IO1-IO2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
736	Single-family Residence	193	IL
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN

Table 5-19 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 11

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HU-HW-IC-ID-IE- IL-IM-IN-IO1-IO2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
772	Single-family Residence	458	IN
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1

Table 5-19 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 11

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HU-HW-IC-ID-IE- IL-IM-IN-IO1-IO2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX

Table 5-19 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 11

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HU-HW-IC-ID-IE- IL-IM-IN-IO1-IO2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
987	Single-family Residence	132	IE
1276	Single-family Residence	426	GN1
1277	Single-family Residence	487	GN1
1278	Single-family Residence	508	GN1
1279	Single-family Residence	475	GN1
1280	Single-family Residence	415	GN1
1281	Single-family Residence	409	GN1
1282	Single-family Residence	500	GN1
1283	Single-family Residence	508	GN1
1284	Single-family Residence - Mobile Home	514	JB
1285	Single-family Residence - Mobile Home	408	JB
1286	Single-family Residence - Mobile Home	371	JB
1287	Single-family Residence - Mobile Home	325	JB
1288	Single-family Residence - Mobile Home	309	JB
1289	Single-family Residence - Mobile Home	354	JB
1290	Single-family Residence - Mobile Home	430	JB
1291	LCRA Facility	203	JB

Table 5-19 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 11

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HU-HW-IC-ID-IE- IL-IM-IN-IO1-IO2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1292	LCRA Facility	308	JB
1312	Single-family Residence	353	HW
1401	FM Tower	1151	N
1407	Other electronic installation	637	JB
1408	Other electronic installation	1033	JB
1411	Other electronic installation	948	IE
1424	Other electronic installation	1521	JA
1503	Private Airstrip 2	2177	GK
1506	Fehmel Dusting Service Airport	7616	HA2
1507	Eagle Air Park	2759	IO2
1510	Matagorda Regional Medical Center Heliport	1369	JB
1600-E	San Bernard National Wildlife Refuge	185	IM
1602	Riverside Park	0	HU
1605	SFA Elementary School Park	992	JA
1606	Justin Hurst Wildlife Management Area	0	JA
1705	Vine Grove Cemetery	236	IE
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	969	IN
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	41BO191	--	IO2
--	41BO258	--	IO2
--	41BO260	--	IO2
--	Durazno Plantation	931	JA

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-20 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 12

Segment Combinations: B-E-K-N-GF-GH-GK-GM-GX-GZ-HC-HE-HG-HM-HP-IE- IL-IM-IN-IO1-IO2- IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
429	Commercial / Industrial Related	405	FP
591	Single-family Residence	186	E
592	Single-family Residence - Mobile Home	481	E
593	Single-family Residence - Mobile Home	218	E
594	Single-family Residence	238	E
601	Single-family Residence	175	N
602	Single-family Residence	179	N
700	Single-family Residence	398	HP
701	Single-family Residence	429	HP
702	Single-family Residence	374	HP
703	Single-family Residence	495	HP
704	Single-family Residence	284	HP
705	Single-family Residence	362	HP
706	Single-family Residence	249	HP
707	Single-family Residence	306	IE
708	Single-family Residence	213	IE
709	Single-family Residence	223	IE
710	Single-family Residence	244	IE
711	Single-family Residence	266	IE
712	Single-family Residence	234	IE
713	Single-family Residence	394	IE
714	Single-family Residence	254	IE
715	Single-family Residence	384	IE
716	Single-family Residence	140	IE
717	Single-family Residence	103	IE
718	Single-family Residence	126	IE
719	Single-family Residence	452	IE
720	Single-family Residence	309	IE
721	Single-family Residence	299	IE
722	Single-family Residence	370	IE
723	Single-family Residence	368	IE
724	Single-family Residence	350	IE
725	Single-family Residence	298	IE
726	Single-family Residence - Mobile Home	168	IE
727	Single-family Residence	378	IE
728	Single-family Residence	476	IE

Table 5-20 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 12

Segment Combinations: B-E-K-N-GF-GH-GK-GM-GX-GZ-HC-HE-HG-HM-HP-IE- IL-IM-IN-IO1-IO2- IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
729	Single-family Residence	415	IE
730	Single-family Residence	225	IL
731	Single-family Residence	242	IL
732	Single-family Residence	420	IL
733	Single-family Residence	155	IL
734	Single-family Residence	332	IL
735	Single-family Residence	248	IL
736	Single-family Residence	193	IL
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN
764	Single-family Residence	78	IN

Table 5-20 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 12

Segment Combinations: B-E-K-N-GF-GH-GK-GM-GX-GZ-HC-HE-HG-HM-HP-IE- IL-IM-IN-IO1-IO2- IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN
772	Single-family Residence	458	IN
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1

Table 5-20 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 12

Segment Combinations: B-E-K-N-GF-GH-GK-GM-GX-GZ-HC-HE-HG-HM-HP-IE- IL-IM-IN-IO1-IO2- IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX

Table 5-20 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 12

Segment Combinations: B-E-K-N-GF-GH-GK-GM-GX-GZ-HC-HE-HG-HM-HP-IE- IL-IM-IN-IO1-IO2- IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
987	Single-family Residence	132	IE
1295	Single-family Residence	352	GX
1296	Single-family Residence - Mobile Home	142	GX
1297	Single-family Residence	185	GX
1298	Single-family Residence	225	GX
1300	Single-family Residence	451	HG
1313	Single-family Residence	138	HG
1314	Single-family Residence - Mobile Home	135	HG
1315	Single-family Residence	147	HG
1316	Single-family Residence	236	HG

Table 5-20 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 12

Segment Combinations: B-E-K-N-GF-GH-GK-GM-GX-GZ-HC-HE-HG-HM-HP-IE- IL-IM-IN-IO1-IO2- IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1317	Single-family Residence	486	HG
1401	FM Tower	1151	N
1409	Other electronic installation	1823	HG
1411	Other electronic installation	948	IE
1424	Other electronic installation	1521	JA
1500	Bay City Municipal Airport	14738	HG
1503	Private Airstrip 2	2177	GK
1505	W. D. Cornelius Ranch Airport	2821	GZ
1506	Fehmel Dusting Service Airport	2265	HE
1507	Eagle Air Park	2759	IO2
1508	Station 24 Heliport	2680	GX
1600-E	San Bernard National Wildlife Refuge	185	IM
1605	SFA Elementary School Park	992	JA
1606	Justin Hurst Wildlife Management Area	0	JA
1705	Vine Grove Cemetery	236	IE
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	969	IN
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	41BO191	--	IO2
--	41BO258	--	IO2
--	41BO260	--	IO2
--	Durazno Plantation	931	JA

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-21 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 13

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-GN2-HA1-HA2-HE-HV-IB-IC-HL-HM-HO-HQ-HT-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
429	Commercial / Industrial Related	405	FP
591	Single-family Residence	186	E
592	Single-family Residence - Mobile Home	481	E
593	Single-family Residence - Mobile Home	218	E
594	Single-family Residence	238	E
601	Single-family Residence	175	N
602	Single-family Residence	179	N
699	Single-family Residence	81	HO
700	Single-family Residence	207	HO
730	Single-family Residence	225	IL
731	Single-family Residence	242	IL
732	Single-family Residence	420	IL
733	Single-family Residence	155	IL
734	Single-family Residence	332	IL
735	Single-family Residence	248	IL
736	Single-family Residence	193	IL
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN

Table 5-21 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 13

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-GN2-HA1-HA2-HE-HV-IB-IC-HL-HM-HO-HQ-HT-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN
772	Single-family Residence	458	IN
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1

Table 5-21 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 13

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-GN2-HA1-HA2-HE-HV-IB-IC-HL-HM-HO-HQ-HT-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	517	JC
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX

Table 5-21 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 13

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-GN2-HA1-HA2-HE-HV-IB-IC-HL-HM-HO-HQ-HT-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
949	Single-family Residence	191	HQ
950	Single-family Residence	191	HQ
951	Single-family Residence	518	HQ
952	Single-family Residence - Mobile Home	172	HQ
953	Single-family Residence	187	HQ
954	Single-family Residence	196	HQ
955	Single-family Residence	201	HQ
956	Single-family Residence	194	HQ
957	Single-family Residence	421	HQ
958	Single-family Residence - Mobile Home	177	HQ
959	Single-family Residence - Mobile Home	445	HQ
960	Single-family Residence	188	HQ
961	Single-family Residence	195	HQ

Table 5-21 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 13

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-GN2-HA1-HA2-HE-HV-IB-IC-HL-HM-HO-HQ-HT-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
962	Single-family Residence - Mobile Home	196	HQ
963	Single-family Residence	193	HQ
964	Single-family Residence	204	HQ
965	Single-family Residence - Mobile Home	184	HQ
966	Single-family Residence	308	HQ
967	Single-family Residence	145	HQ
968	Single-family Residence	196	HQ
969	Single-family Residence	400	HQ
970	Single-family Residence - Mobile Home	296	HQ
971	Single-family Residence	270	HQ
972	Single-family Residence	268	HQ
973	Single-family Residence	321	HQ
974	Single-family Residence	497	HQ
975	Single-family Residence	446	HQ
976	Single-family Residence - Mobile Home	330	HQ
977	Single-family Residence - Mobile Home	306	HQ
978	Single-family Residence	125	HT
979	Single-family Residence	268	HT
980	Single-family Residence	502	HT
981	Church	436	HT
982	Single-family Residence - Mobile Home	480	HT
983	Single-family Residence	401	HT
984	Single-family Residence	122	HT
985	Single-family Residence - Mobile Home	199	HT
986	Single-family Residence	162	HT
987	Single-family Residence	241	HT
1135	Single-family Residence	197	JC
1136	Single-family Residence	305	DA2
1137	Single-family Residence	238	DA2
1138	Single-family Residence	252	DA2
1139	Single-family Residence	391	DA2
1140	Single-family Residence	390	DA2
1276	Single-family Residence	426	GN1
1277	Single-family Residence	487	GN1
1278	Single-family Residence	508	GN1
1279	Single-family Residence	475	GN1

Table 5-21 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 13

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-GN2-HA1-HA2-HE-HV-IB-IC-HL-HM-HO-HQ-HT-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1280	Single-family Residence	415	GN1
1281	Single-family Residence	409	GN1
1282	Single-family Residence	500	GN1
1283	Single-family Residence	508	GN1
1293	Single-family Residence	163	HA1
1300	Single-family Residence	206	HV
1301	Single-family Residence	170	HV
1302	Single-family Residence	394	HV
1303	Single-family Residence	304	HV
1304	Single-family Residence	407	IB
1305	Single-family Residence	300	IB
1306	Single-family Residence	225	IB
1307	Single-family Residence	393	IB
1308	Single-family Residence	300	IB
1309	Single-family Residence	272	IB
1310	Single-family Residence - Mobile Home	350	IB
1311	Single-family Residence - Mobile Home	501	IB
1317	Single-family Residence	126	HL
1318	Historic Church	210	HO
1319	Single-family Residence	133	HO
1401	FM Tower	1151	N
1408	Other electronic installation	1311	HA1
1409	Other electronic installation	180	HV
1410	Other electronic installation	1566	HO
1411	Other electronic installation	1108	IL
1424	Other electronic installation	1521	JA
1500	Bay City Municipal Airport	13320	HO
1503	Private Airstrip 2	2177	GK
1506	Fehmel Dusting Service Airport	2265	HE
1507	Eagle Air Park	5491	IO1
1510	Matagorda Regional Medical Center Heliport	2052	HA1
1600-E	San Bernard National Wildlife Refuge	185	IM
1601	Matagorda County Birding Nature Center	908	HA1
1605	SFA Elementary School Park	992	JA
1606	Justin Hurst Wildlife Management Area	0	JA

Table 5-21 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 13

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-GN2-HA1-HA2-HE-HV-IB-IC-HL-HM-HO-HQ-HT-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1706	Unknown (Kennedy School) Cemetery	414	HT
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	969	IN
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	Durazno Plantation	931	JA

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-22 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 14

Segment Combinations: B-E-K-N-GF-GH-GK-GM-GX-GZ-HB-HF-HG-HM-HO-HQ-HR-HS-IM- IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
429	Commercial / Industrial Related	405	FP
591	Single-family Residence	186	E
592	Single-family Residence - Mobile Home	481	E
593	Single-family Residence - Mobile Home	218	E
594	Single-family Residence	238	E
601	Single-family Residence	175	N
602	Single-family Residence	179	N
699	Single-family Residence	81	HO
700	Single-family Residence	207	HO
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN

Table 5-22 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 14

Segment Combinations: B-E-K-N-GF-GH-GK-GM-GX-GZ-HB-HF-HG-HM-HO-HQ-HR-HS-IM- IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN
772	Single-family Residence	458	IN
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1

Table 5-22 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 14

Segment Combinations: B-E-K-N-GF-GH-GK-GM-GX-GZ-HB-HF-HG-HM-HO-HQ-HR-HS-IM- IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	517	JC
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX

Table 5-22 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 14

Segment Combinations: B-E-K-N-GF-GH-GK-GM-GX-GZ-HB-HF-HG-HM-HO-HQ-HR-HS-IM- IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
949	Single-family Residence	191	HQ
950	Single-family Residence	191	HQ
951	Single-family Residence	518	HQ
952	Single-family Residence - Mobile Home	172	HQ
953	Single-family Residence	187	HQ
954	Single-family Residence	196	HQ
955	Single-family Residence	201	HQ
956	Single-family Residence	194	HQ
957	Single-family Residence	421	HQ
958	Single-family Residence - Mobile Home	177	HQ
959	Single-family Residence - Mobile Home	445	HQ
960	Single-family Residence	188	HQ
961	Single-family Residence	195	HQ
962	Single-family Residence - Mobile Home	196	HQ
963	Single-family Residence	193	HQ
964	Single-family Residence	204	HQ
965	Single-family Residence - Mobile Home	184	HQ
966	Single-family Residence	308	HQ
967	Single-family Residence	145	HQ
968	Single-family Residence	196	HQ

Table 5-22 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 14

Segment Combinations: B-E-K-N-GF-GH-GK-GM-GX-GZ-HB-HF-HG-HM-HO-HQ-HR-HS-IM- IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
969	Single-family Residence	400	HQ
970	Single-family Residence - Mobile Home	296	HQ
971	Single-family Residence	270	HQ
972	Single-family Residence	268	HQ
973	Single-family Residence	321	HQ
974	Single-family Residence	497	HQ
975	Single-family Residence	446	HQ
976	Single-family Residence - Mobile Home	330	HQ
977	Single-family Residence - Mobile Home	306	HQ
988	Single-family Residence	238	HR
989	Single-family Residence	133	HR
990	Single-family Residence	208	HR
991	Single-family Residence	345	HR
992	Single-family Residence	362	HR
993	Single-family Residence	121	HR
994	Single-family Residence	311	HR
995	Single-family Residence	205	HR
996	Single-family Residence	366	HS
997	Single-family Residence	473	HS
998	Single-family Residence	82	HS
999	Single-family Residence	184	HS
1135	Single-family Residence	197	JC
1136	Single-family Residence	305	DA2
1137	Single-family Residence	238	DA2
1138	Single-family Residence	252	DA2
1139	Single-family Residence	391	DA2
1140	Single-family Residence	390	DA2
1295	Single-family Residence	352	GX
1296	Single-family Residence - Mobile Home	142	GX
1297	Single-family Residence	185	GX
1298	Single-family Residence	225	GX
1299	Single-family Residence	329	HF
1300	Single-family Residence	451	HG
1313	Single-family Residence	138	HG
1314	Single-family Residence - Mobile Home	135	HG
1315	Single-family Residence	147	HG

Table 5-22 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 14

Segment Combinations: B-E-K-N-GF-GH-GK-GM-GX-GZ-HB-HF-HG-HM-HO-HQ-HR-HS-IM- IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1316	Single-family Residence	236	HG
1317	Single-family Residence	486	HG
1318	Historic Church	210	HO
1319	Single-family Residence	133	HO
1401	FM Tower	1151	N
1409	Other electronic installation	1823	HG
1410	Other electronic installation	1566	HO
1424	Other electronic installation	1521	JA
1500	Bay City Municipal Airport	13320	HO
1503	Private Airstrip 2	2177	GK
1505	W. D. Cornelius Ranch Airport	2821	GZ
1506	Fehmel Dusting Service Airport	4361	HG
1507	Eagle Air Park	5491	IO1
1508	Station 24 Heliport	2680	GX
1600-C	San Bernard National Wildlife Refuge	761	HR
1600-E	San Bernard National Wildlife Refuge	185	IM
1605	SFA Elementary School Park	992	JA
1606	Justin Hurst Wildlife Management Area	0	JA
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	969	IN
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	41MG138	--	HF
--	41BO221	--	HS
--	Durazno Plantation	931	JA

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-23 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 15

Segment Combinations: B-E-K-N-GF-GG-GX-GZ-HB-HU-HX-IB-IC-ID-IE- IL-IM-IN-IO1-IO2 -IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
429	Commercial / Industrial Related	405	FP
591	Single-family Residence	186	E
592	Single-family Residence - Mobile Home	481	E
593	Single-family Residence - Mobile Home	218	E
594	Single-family Residence	238	E
601	Single-family Residence	175	N
602	Single-family Residence	179	N
707	Single-family Residence	306	IE
708	Single-family Residence	213	IE
709	Single-family Residence	223	IE
710	Single-family Residence	244	IE
711	Single-family Residence	266	IE
712	Single-family Residence	234	IE
713	Single-family Residence	394	IE
714	Single-family Residence	254	IE
715	Single-family Residence	384	IE
716	Single-family Residence	140	IE
717	Single-family Residence	103	IE
718	Single-family Residence	126	IE
719	Single-family Residence	452	IE
720	Single-family Residence	309	IE
721	Single-family Residence	299	IE
722	Single-family Residence	370	IE
723	Single-family Residence	368	IE
724	Single-family Residence	350	IE
725	Single-family Residence	298	IE
726	Single-family Residence - Mobile Home	168	IE
727	Single-family Residence	378	IE
728	Single-family Residence	476	IE
729	Single-family Residence	415	IE
730	Single-family Residence	225	IL
731	Single-family Residence	242	IL
732	Single-family Residence	420	IL
733	Single-family Residence	155	IL
734	Single-family Residence	332	IL
735	Single-family Residence	248	IL

Table 5-23 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 15

Segment Combinations: B-E-K-N-GF-GG-GX-GZ-HB-HU-HX-IB-IC-ID-IE- IL-IM-IN-IO1-IO2 -IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
736	Single-family Residence	193	IL
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN

Table 5-23 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 15

Segment Combinations: B-E-K-N-GF-GG-GX-GZ-HB-HU-HX-IB-IC-ID-IE- IL-IM-IN-IO1-IO2 -IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
772	Single-family Residence	458	IN
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1

Table 5-23 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 15

Segment Combinations: B-E-K-N-GF-GG-GX-GZ-HB-HU-HX-IB-IC-ID-IE- IL-IM-IN-IO1-IO2 -IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX

Table 5-23 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 15

Segment Combinations: B-E-K-N-GF-GG-GX-GZ-HB-HU-HX-IB-IC-ID-IE- IL-IM-IN-IO1-IO2 -IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
987	Single-family Residence	132	IE
1294	Single-family Residence	445	GG
1295	Single-family Residence	352	GX
1296	Single-family Residence - Mobile Home	142	GX
1297	Single-family Residence	185	GX
1298	Single-family Residence	225	GX
1303	Single-family Residence	318	IB
1304	Single-family Residence	407	IB
1305	Single-family Residence	300	IB
1306	Single-family Residence	225	IB
1307	Single-family Residence	393	IB
1308	Single-family Residence	300	IB
1309	Single-family Residence	272	IB
1310	Single-family Residence - Mobile Home	350	IB
1311	Single-family Residence - Mobile Home	501	IB
1401	FM Tower	1151	N
1411	Other electronic installation	948	IE

Table 5-23 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 15

Segment Combinations: B-E-K-N-GF-GG-GX-GZ-HB-HU-HX-IB-IC-ID-IE- IL-IM-IN-IO1-IO2 -IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
1424	Other electronic installation	1521	JA
1505	W. D. Cornelius Ranch Airport	2821	GZ
1507	Eagle Air Park	2759	IO2
1508	Station 24 Heliport	2680	GX
1600-E	San Bernard National Wildlife Refuge	185	IM
1602	Riverside Park	0	HU
1605	SFA Elementary School Park	992	JA
1606	Justin Hurst Wildlife Management Area	0	JA
1705	Vine Grove Cemetery	236	IE
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	969	IN
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	41BO191	--	IO2
--	41BO258	--	IO2
--	41BO260	--	IO2
--	Durazno Plantation	931	JA

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-24 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 16

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
10	Single-family Residence	341	P
11	Single-family Residence	307	P
12	Single-family Residence	332	P
13	Single-family Residence - Mobile Home	350	P
14	Single-family Residence - Mobile Home	109	P
15	Single-family Residence - Mobile Home	441	P
16	Single-family Residence	454	P
17	Single-family Residence	264	P
18	Single-family Residence	115	P
19	Single-family Residence	108	P
20	Single-family Residence	377	P
21	Single-family Residence	67	P
22	Single-family Residence - Mobile Home	159	P
23	Single-family Residence - Mobile Home	178	P
24	Single-family Residence - Mobile Home	251	P
25	Single-family Residence - Mobile Home	69	P
26	Single-family Residence	210	P
27	Single-family Residence	143	P
28	Single-family Residence - Mobile Home	150	P
29	Single-family Residence - Mobile Home	391	V
30	Single-family Residence - Mobile Home	348	V
31	Single-family Residence	326	V
32	Single-family Residence	310	V
33	Single-family Residence	233	V
34	Single-family Residence	248	V
35	Single-family Residence	331	X
39	Single-family Residence	446	X

Table 5-24 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 16

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
40	Single-family Residence	318	Y
41	Single-family Residence	281	Y
42	Single-family Residence	380	Y
43	Single-family Residence	270	Y
44	Single-family Residence	399	Z
45	Single-family Residence	403	Z
46	Single-family Residence	143	Z
47	Single-family Residence	166	Z
48	Single-family Residence	178	Z
49	Single-family Residence	210	Z
50	Single-family Residence	263	Z
51	Single-family Residence - Mobile Home	110	Z
52	Single-family Residence	87	Z
53	Single-family Residence	68	Z
54	Single-family Residence	276	Z
55	Single-family Residence	411	Z
56	Single-family Residence - Mobile Home	213	Z
57	Single-family Residence	256	Z
58	Single-family Residence	162	Z
59	Single-family Residence	128	Z
60	Single-family Residence	349	Z
61	Single-family Residence	221	Z
62	Single-family Residence	362	Z
63	Single-family Residence	416	Z
64	Single-family Residence	112	Z
65	Single-family Residence	150	Z
66	Single-family Residence - Mobile Home	51	Z
67	Single-family Residence	255	Z
160	Single-family Residence	55	BI
161	Single-family Residence - Mobile Home	305	BI
162	Single-family Residence	284	BI
163	Single-family Residence - Mobile Home	281	BI
164	Single-family Residence	449	BI
228	Single-family Residence	424	CT
229	Single-family Residence	309	CT
230	Single-family Residence	166	CT

Table 5-24 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 16

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
231	Single-family Residence	441	CT
232	Single-family Residence	463	CT
233	Single-family Residence	153	CT
234	Single-family Residence	442	CT
235	Single-family Residence	153	CT
429	Commercial / Industrial Related	405	FP
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX

Table 5-24 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 16

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
1048	Single-family Residence	361	BJ
1112	Single-family Residence	243	BM
1113	Single-family Residence	309	CS
1114	Single-family Residence	338	BM
1115	Single-family Residence	337	CS
1116	Single-family Residence	447	CS
1117	Single-family Residence - Mobile Home	471	CS
1118	Single-family Residence - Mobile Home	397	CS
1119	Single-family Residence	355	CS
1120	Single-family Residence	419	CS
1121	Single-family Residence	302	CS
1122	Single-family Residence	421	CS
1123	Single-family Residence	500	CS
1124	Single-family Residence	458	CS
1125	Single-family Residence	128	CS
1126	Commercial Business	142	CS
1127	Commercial Business	238	CS
1128	Commercial Business	329	CS
1129	Commercial Business	464	CS
1130	Single-family Residence	488	CS
1131	Single-family Residence	354	CS
1132	Single-family Residence	195	CV
1133	Single-family Residence	150	CV
1134	Single-family Residence	228	DA1
1135	Single-family Residence	245	DA2
1136	Single-family Residence	305	DA2
1137	Single-family Residence	238	DA2

Table 5-24 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 16

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
1138	Single-family Residence	252	DA2
1139	Single-family Residence	391	DA2
1140	Single-family Residence	390	DA2
1249	Single-family Residence	57	BI
1250	Single-family Residence	503	BI
1251	Single-family Residence - Mobile Home	377	BI
1252	Single-family Residence	211	BI
1253	Single-family Residence - Mobile Home	164	BI
1254	Single-family Residence - Mobile Home	149	BI
1255	Single-family Residence - Mobile Home	168	BI
1256	Single-family Residence	91	BI
1257	Single-family Residence	232	BI
1258	Single-family Residence	302	BI
1259	Single-family Residence - Mobile Home	267	BI
1260	Single-family Residence - Mobile Home	282	BI
1261	Single-family Residence	245	BI
1262	Single-family Residence	516	BI
1263	Single-family Residence	193	BI
1264	Single-family Residence	104	BI
1265	Single-family Residence	466	BI
1266	Single-family Residence	92	BI
1267	Single-family Residence	181	BI
1268	Single-family Residence	348	BI
1269	Single-family Residence	430	BI
1270	Single-family Residence	377	BI
1271	Single-family Residence	205	BI
1272	Single-family Residence	491	BI
1273	Single-family Residence	423	BI
1274	Single-family Residence	422	BI
1275	Single-family Residence	89	BI
1400	Other electronic installation	258	L
1412	Other electronic installation	945	P
1413	Other electronic installation	454	P
1414	Other electronic installation	854	P
1415	Other electronic installation	947	V
1420	Other electronic installation	1112	BJ

Table 5-24 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 16

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-JA-FP

Map Number	Structure or Feature	Approximate Distance from Route Centerline[1] (feet)	Nearest Alternative Route Segment[2]
1424	Other electronic installation	1521	JA
1501	Private Airstrip 1	3523	L
1502	Peterson Airport	6357	P
1507	Eagle Air Park	8258	DA2
1600-A	San Bernard National Wildlife Refuge	286	L
1600-B	San Bernard National Wildlife Refuge	149	P
1605	SFA Elementary School Park	992	JA
1606	Justin Hurst Wildlife Management Area	0	JA
1702	Morris Cemetery	784	P
1703	Gardener Family Cemetery	780	V
1704	Black Family Cemetery	571	V
1715	Galilee Church Cemetery	104	IX
--	41BO103	--	BJ
--	41BO227	--	FP
--	41BO238	--	P
--	41BO109	--	Z
--	Durazno Plantation	931	JA
--	Gazebo for James Richardson Marimion	660	BI

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-25 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 17

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CZ-DA1-DA2-IX-IZ-DJ-DK-DV-DX-EF-JE-EN-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
10	Single-family Residence	341	P
11	Single-family Residence	307	P
12	Single-family Residence	332	P
13	Single-family Residence - Mobile Home	350	P
14	Single-family Residence - Mobile Home	109	P
15	Single-family Residence - Mobile Home	441	P
16	Single-family Residence	454	P
17	Single-family Residence	264	P
18	Single-family Residence	115	P
19	Single-family Residence	108	P
20	Single-family Residence	377	P
21	Single-family Residence	67	P
22	Single-family Residence - Mobile Home	159	P
23	Single-family Residence - Mobile Home	178	P
24	Single-family Residence - Mobile Home	251	P
25	Single-family Residence - Mobile Home	69	P
26	Single-family Residence	210	P
27	Single-family Residence	143	P
28	Single-family Residence - Mobile Home	150	P
29	Single-family Residence - Mobile Home	391	V
30	Single-family Residence - Mobile Home	348	V
31	Single-family Residence	326	V
32	Single-family Residence	310	V
33	Single-family Residence	233	V
34	Single-family Residence	248	V
35	Single-family Residence	331	X
39	Single-family Residence	446	X

Table 5-25 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 17

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CZ-DA1-DA2-IX-IZ-DJ-DK-DV-DX-EF-JE-EN-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
40	Single-family Residence	318	Y
41	Single-family Residence	281	Y
42	Single-family Residence	380	Y
43	Single-family Residence	270	Y
44	Single-family Residence	399	Z
45	Single-family Residence	403	Z
46	Single-family Residence	143	Z
47	Single-family Residence	166	Z
48	Single-family Residence	178	Z
49	Single-family Residence	210	Z
50	Single-family Residence	263	Z
51	Single-family Residence - Mobile Home	110	Z
52	Single-family Residence	87	Z
53	Single-family Residence	68	Z
54	Single-family Residence	276	Z
55	Single-family Residence	411	Z
56	Single-family Residence - Mobile Home	213	Z
57	Single-family Residence	256	Z
58	Single-family Residence	162	Z
59	Single-family Residence	128	Z
60	Single-family Residence	349	Z
61	Single-family Residence	221	Z
62	Single-family Residence	362	Z
63	Single-family Residence	416	Z
64	Single-family Residence	112	Z
65	Single-family Residence	150	Z
66	Single-family Residence - Mobile Home	51	Z
67	Single-family Residence	255	Z
160	Single-family Residence	55	BI
161	Single-family Residence - Mobile Home	305	BI
162	Single-family Residence	284	BI
163	Single-family Residence - Mobile Home	281	BI
164	Single-family Residence	449	BI
228	Single-family Residence	424	CT
229	Single-family Residence	309	CT
230	Single-family Residence	166	CT

Table 5-25 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 17

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CZ-DA1-DA2-IX-IZ-DJ-DK-DV-DX-EF-JE-EN-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
231	Single-family Residence	441	CT
232	Single-family Residence	463	CT
233	Single-family Residence	153	CT
234	Single-family Residence	442	CT
235	Single-family Residence	92	CU
236	Single-family Residence	315	CU
237	Single-family Residence	299	CU
238	Single-family Residence	503	CU
239	Single-family Residence	309	CU
240	Single-family Residence	314	CU
241	Single-family Residence	268	CU
242	Single-family Residence	301	CU
243	Single-family Residence	279	CU
244	Single-family Residence	303	CU
245	Single-family Residence	264	CU
246	Single-family Residence	250	CU
247	Single-family Residence	253	CU
248	Single-family Residence	247	CU
249	Single-family Residence	252	CU
250	Single-family Residence	264	CU
251	Commercial Business	495	CU
252	Single-family Residence	233	CU
253	Commercial Business	189	CU
254	Single-family Residence - Mobile Home	83	CU
256	Single-family Residence	496	CW
378	Commercial Business	300	FB
379	Single-family Residence	488	FB
428	Single-family Residence	393	FN
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	316	FF
431	Commercial Business	51	EU
432	Commercial Business	128	EU
433	Single-family Residence	136	EU
434	Single-family Residence	293	EU
435	Single-family Residence	171	EU
436	Single-family Residence	196	EU

Table 5-25 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 17

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CZ-DA1-DA2-IX-IZ-DJ-DK-DV-DX-EF-JE-EN-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
437	Single-family Residence	274	EU
440	Single-family Residence - Mobile Home	229	EQ
441	Single-family Residence	215	EQ
442	Single-family Residence	280	EQ
443	Single-family Residence	303	EQ
444	Single-family Residence - Mobile Home	295	EQ
445	Single-family Residence - Mobile Home	304	EQ
446	Single-family Residence	404	EQ
447	Single-family Residence	437	EQ
448	Single-family Residence	442	EQ
452	Single-family Residence	447	EN
453	Single-family Residence	390	JE
454	Single-family Residence	297	JE
455	Single-family Residence	157	JE
456	Single-family Residence	128	JE
457	Single-family Residence	109	JE
458	Single-family Residence	148	JE
459	Single-family Residence	263	JE
460	Single-family Residence	352	JE
461	Single-family Residence	380	EF
462	Single-family Residence	377	EF
463	Single-family Residence	377	EF
464	Single-family Residence	381	EF
465	Single-family Residence	425	EF
466	Single-family Residence	509	EF
467	Single-family Residence	179	EF
468	Single-family Residence	338	EF
469	Single-family Residence	64	EF
470	Single-family Residence	125	EF
471	Single-family Residence	112	EF
472	Single-family Residence	164	EF
473	Single-family Residence	279	EF
474	Commercial Business	257	EF
475	Commercial Business	283	EF
476	Single-family Residence	369	EF
477	Single-family Residence	475	EF

Table 5-25 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 17

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CZ-DA1-DA2-IX-IZ-DJ-DK-DV-DX-EF-JE-EN-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
478	Single-family Residence	491	EF
479	Single-family Residence	364	EF
480	Single-family Residence	277	EF
481	Single-family Residence	419	EF
482	Single-family Residence	464	EF
487	Single-family Residence	508	EF
495	Single-family Residence	457	DV
496	Single-family Residence	486	DV
499	Single-family Residence	335	DJ
500	Single-family Residence	238	DJ
501	Single-family Residence	152	DJ
502	Single-family Residence	376	DJ
503	Single-family Residence	321	DK
504	Single-family Residence	497	DK
505	Single-family Residence	326	DK
506	Single-family Residence	330	DK
507	Single-family Residence	438	DK
508	Single-family Residence	122	DK
509	Single-family Residence	173	DK
510	Church	327	DK
511	Single-family Residence	176	DK
512	Church Facility	393	DK
513	Single-family Residence	173	DK
514	Single-family Residence	321	DK
515	Single-family Residence	342	DK
516	Single-family Residence	177	DK
517	Single-family Residence	116	DK
518	Single-family Residence	265	DK
519	Single-family Residence	369	DK
520	Single-family Residence - Mobile Home	498	DV
521	Single-family Residence	223	DV
522	Single-family Residence	96	DV
523	Single-family Residence	152	DV
524	Single-family Residence	245	DV
525	Commercial Business	323	DV
526	Commercial Business	504	DV

Table 5-25 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 17

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CZ-DA1-DA2-IX-IZ-DJ-DK-DV-DX-EF-JE-EN-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
527	Single-family Residence	488	DV
528	Single-family Residence	365	DX
529	Single-family Residence	262	DX
530	Single-family Residence	479	DX
531	Single-family Residence	312	DX
532	Single-family Residence	211	DX
533	Single-family Residence	89	DX
534	Single-family Residence	306	DX
535	Single-family Residence	493	DX
536	Single-family Residence	503	DX
537	Single-family Residence	491	DX
538	Single-family Residence	369	DX
539	Single-family Residence	132	DX
540	Single-family Residence	229	DX
541	Single-family Residence	497	DX
542	Single-family Residence	164	DX
543	Single-family Residence	130	DX
544	Commercial Business	194	DX
545	Single-family Residence	68	DX
546	Single-family Residence	176	DX
547	Single-family Residence	202	DX
548	Single-family Residence	235	EF
549	Single-family Residence	197	DX
550	Single-family Residence	191	DX
551	Single-family Residence	203	DX
552	Single-family Residence	198	DX
553	Single-family Residence	514	DX
554	Single-family Residence	493	DX
555	Single-family Residence	288	DX
556	Single-family Residence	225	DX
557	Single-family Residence	55	DX
558	Single-family Residence	62	EF
559	Single-family Residence	80	EF
560	Single-family Residence	62	EF
561	Single-family Residence	244	EF
562	Single-family Residence	265	EF

Table 5-25 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 17

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CZ-DA1-DA2-IX-IZ-DJ-DK-DV-DX-EF-JE-EN-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
563	Commercial Business	62	EF
564	Commercial Business	62	EF
565	Single-family Residence	264	EF
566	Single-family Residence	297	EF
567	Single-family Residence	340	EF
568	Single-family Residence	142	EF
569	Single-family Residence	260	EF
570	Single-family Residence	241	EF
571	Commercial Business	183	EF
572	Single-family Residence	219	EF
573	Single-family Residence	419	EF
584	Single-family Residence	379	EQ
585	Single-family Residence	221	EQ
586	Single-family Residence	361	EQ
587	Single-family Residence	267	EN
588	Single-family Residence	282	JE
589	Single-family Residence	90	JE
590	Single-family Residence	54	JE
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX

Table 5-25 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 17

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CZ-DA1-DA2-IX-IZ-DJ-DK-DV-DX-EF-JE-EN-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
1048	Single-family Residence	361	BJ
1112	Single-family Residence	243	BM
1113	Single-family Residence	309	CS
1114	Single-family Residence	338	BM
1115	Single-family Residence	337	CS
1116	Single-family Residence	447	CS
1117	Single-family Residence - Mobile Home	471	CS
1118	Single-family Residence - Mobile Home	397	CS
1119	Single-family Residence	355	CS
1120	Single-family Residence	419	CS
1121	Single-family Residence	302	CS
1122	Single-family Residence	421	CS
1123	Single-family Residence	500	CS
1124	Single-family Residence	458	CS
1125	Single-family Residence	128	CS

Table 5-25 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 17

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CZ-DA1-DA2-IX-IZ-DJ-DK-DV-DX-EF-JE-EN-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1126	Commercial Business	142	CS
1127	Commercial Business	238	CS
1128	Commercial Business	329	CS
1129	Commercial Business	464	CS
1130	Single-family Residence	488	CS
1131	Single-family Residence	354	CS
1132	Single-family Residence	245	CZ
1133	Single-family Residence	250	DA1
1134	Single-family Residence	228	DA1
1135	Single-family Residence	245	DA2
1136	Single-family Residence	305	DA2
1137	Single-family Residence	238	DA2
1138	Single-family Residence	252	DA2
1139	Single-family Residence	391	DA2
1140	Single-family Residence	390	DA2
1249	Single-family Residence	57	BI
1250	Single-family Residence	503	BI
1251	Single-family Residence - Mobile Home	377	BI
1252	Single-family Residence	211	BI
1253	Single-family Residence - Mobile Home	164	BI
1254	Single-family Residence - Mobile Home	149	BI
1255	Single-family Residence - Mobile Home	168	BI
1256	Single-family Residence	91	BI
1257	Single-family Residence	232	BI
1258	Single-family Residence	302	BI
1259	Single-family Residence - Mobile Home	267	BI
1260	Single-family Residence - Mobile Home	282	BI
1261	Single-family Residence	245	BI
1262	Single-family Residence	516	BI
1263	Single-family Residence	193	BI
1264	Single-family Residence	104	BI
1265	Single-family Residence	466	BI
1266	Single-family Residence	92	BI
1267	Single-family Residence	181	BI
1268	Single-family Residence	348	BI
1269	Single-family Residence	430	BI

Table 5-25 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 17

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BJ-BK-BM-CS-CT-CU-CW-CZ-DA1-DA2-IX-IZ-DJ-DK-DV-DX-EF-JE-EN-EQ-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1270	Single-family Residence	377	BI
1271	Single-family Residence	205	BI
1272	Single-family Residence	491	BI
1273	Single-family Residence	423	BI
1274	Single-family Residence	422	BI
1275	Single-family Residence	89	BI
1400	Other electronic installation	258	L
1412	Other electronic installation	945	P
1413	Other electronic installation	454	P
1414	Other electronic installation	854	P
1415	Other electronic installation	947	V
1420	Other electronic installation	1112	BJ
1423	Other electronic installation	1678	DJ
1501	Private Airstrip 1	3523	L
1502	Peterson Airport	6357	P
1507	Eagle Air Park	8258	DA2
1600-A	San Bernard National Wildlife Refuge	286	L
1600-B	San Bernard National Wildlife Refuge	149	P
1606	Justin Hurst Wildlife Management Area	0	EU
1702	Morris Cemetery	784	P
1703	Gardener Family Cemetery	780	V
1704	Black Family Cemetery	571	V
1715	Galilee Church Cemetery	104	IX
--	41BO103	--	BJ
--	41BO227	--	FP
--	41BO238	--	P
--	41BO109	--	Z
--	Gazebo for James Richardson Marimion	660	BI

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-26 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 18

Segment Combinations: B-G-J-K-N-GF-GH-GK-GM-GX-GY-HA1-HA2-HD-HU-HW-IC-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
429	Commercial / Industrial Related	405	FP
595	Single-family Residence	172	J
596	Single-family Residence	151	J
597	Single-family Residence	201	J
601	Single-family Residence	175	N
602	Single-family Residence	179	N
707	Single-family Residence	306	IE
708	Single-family Residence	213	IE
709	Single-family Residence	223	IE
710	Single-family Residence	244	IE
711	Single-family Residence	266	IE
712	Single-family Residence	234	IE
713	Single-family Residence	394	IE
714	Single-family Residence	254	IE
715	Single-family Residence	384	IE
716	Single-family Residence	140	IE
717	Single-family Residence	103	IE
718	Single-family Residence	126	IE
719	Single-family Residence	452	IE
720	Single-family Residence	309	IE
721	Single-family Residence	299	IE
722	Single-family Residence	370	IE
723	Single-family Residence	368	IE
724	Single-family Residence	350	IE
725	Single-family Residence	298	IE
726	Single-family Residence - Mobile Home	168	IE
727	Single-family Residence	378	IE
728	Single-family Residence	476	IE
729	Single-family Residence	415	IE
730	Single-family Residence	225	IL
731	Single-family Residence	242	IL
732	Single-family Residence	420	IL
733	Single-family Residence	155	IL
734	Single-family Residence	332	IL
735	Single-family Residence	248	IL
736	Single-family Residence	193	IL

Table 5-26 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 18

Segment Combinations: B-G-J-K-N-GF-GH-GK-GM-GX-GY-HA1-HA2-HD-HU-HW-IC-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN
772	Single-family Residence	458	IN

Table 5-26 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 18

Segment Combinations: B-G-J-K-N-GF-GH-GK-GM-GX-GY-HA1-HA2-HD-HU-HW-IC-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1

Table 5-26 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 18

Segment Combinations: B-G-J-K-N-GF-GH-GK-GM-GX-GY-HA1-HA2-HD-HU-HW-IC-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	517	JC
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX

Table 5-26 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 18

Segment Combinations: B-G-J-K-N-GF-GH-GK-GM-GX-GY-HA1-HA2-HD-HU-HW-IC-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
987	Single-family Residence	132	IE
1135	Single-family Residence	197	JC
1136	Single-family Residence	305	DA2
1137	Single-family Residence	238	DA2
1138	Single-family Residence	252	DA2
1139	Single-family Residence	391	DA2
1140	Single-family Residence	390	DA2
1293	Single-family Residence	163	HA1
1295	Single-family Residence	352	GX
1296	Single-family Residence - Mobile Home	142	GX
1297	Single-family Residence	185	GX
1298	Single-family Residence	225	GX
1312	Single-family Residence	353	HW
1401	FM Tower	1151	N
1408	Other electronic installation	1311	HA1
1411	Other electronic installation	948	IE
1424	Other electronic installation	1521	JA
1503	Private Airstrip 2	2177	GK
1506	Fehmel Dusting Service Airport	7616	HA2
1507	Eagle Air Park	5491	IO1
1508	Station 24 Heliport	2680	GX
1509	CIG 809 Heliport	3453	GY
1510	Matagorda Regional Medical Center Heliport	2052	HA1
1600-E	San Bernard National Wildlife Refuge	185	IM
1601	Matagorda County Birding Nature Center	908	HA1
1602	Riverside Park	0	HU
1605	SFA Elementary School Park	992	JA
1606	Justin Hurst Wildlife Management Area	0	JA

Table 5-26 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 18

Segment Combinations: B-G-J-K-N-GF-GH-GK-GM-GX-GY-HA1-HA2-HD-HU-HW-IC-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1705	Vine Grove Cemetery	236	IE
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	969	IN
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	Durazno Plantation	931	JA

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-27 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 19

Segment Combinations: B-G-J-K-N-GF-GH-GK-GN1-JB-HA2-HE-HG-HL-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
429	Commercial / Industrial Related	405	FP
595	Single-family Residence	172	J
596	Single-family Residence	151	J
597	Single-family Residence	201	J
601	Single-family Residence	175	N
602	Single-family Residence	179	N
707	Single-family Residence	306	IE
708	Single-family Residence	213	IE
709	Single-family Residence	223	IE
710	Single-family Residence	244	IE
711	Single-family Residence	266	IE
712	Single-family Residence	234	IE
713	Single-family Residence	394	IE
714	Single-family Residence	254	IE
715	Single-family Residence	384	IE
716	Single-family Residence	140	IE
717	Single-family Residence	103	IE
718	Single-family Residence	126	IE
719	Single-family Residence	452	IE
720	Single-family Residence	309	IE
721	Single-family Residence	299	IE
722	Single-family Residence	370	IE
723	Single-family Residence	368	IE
724	Single-family Residence	350	IE
725	Single-family Residence	298	IE
726	Single-family Residence - Mobile Home	168	IE
727	Single-family Residence	378	IE
728	Single-family Residence	476	IE
729	Single-family Residence	415	IE
730	Single-family Residence	225	IL
731	Single-family Residence	242	IL
732	Single-family Residence	420	IL
733	Single-family Residence	155	IL
734	Single-family Residence	332	IL
735	Single-family Residence	248	IL
736	Single-family Residence	193	IL

Table 5-27 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 19

Segment Combinations: B-G-J-K-N-GF-GH-GK-GN1-JB-HA2-HE-HG-HL-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN
772	Single-family Residence	458	IN

Table 5-27 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 19

Segment Combinations: B-G-J-K-N-GF-GH-GK-GN1-JB-HA2-HE-HG-HL-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1

Table 5-27 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 19

Segment Combinations: B-G-J-K-N-GF-GH-GK-GN1-JB-HA2-HE-HG-HL-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	517	JC
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX

Table 5-27 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 19

Segment Combinations: B-G-J-K-N-GF-GH-GK-GN1-JB-HA2-HE-HG-HL-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
987	Single-family Residence	132	IE
1135	Single-family Residence	197	JC
1136	Single-family Residence	305	DA2
1137	Single-family Residence	238	DA2
1138	Single-family Residence	252	DA2
1139	Single-family Residence	391	DA2
1140	Single-family Residence	390	DA2
1276	Single-family Residence	426	GN1
1277	Single-family Residence	487	GN1
1278	Single-family Residence	508	GN1
1279	Single-family Residence	475	GN1
1280	Single-family Residence	415	GN1
1281	Single-family Residence	409	GN1
1282	Single-family Residence	500	GN1
1283	Single-family Residence	508	GN1
1284	Single-family Residence - Mobile Home	514	JB
1285	Single-family Residence - Mobile Home	408	JB
1286	Single-family Residence - Mobile Home	371	JB
1287	Single-family Residence - Mobile Home	325	JB
1288	Single-family Residence - Mobile Home	309	JB
1289	Single-family Residence - Mobile Home	354	JB
1290	Single-family Residence - Mobile Home	430	JB
1291	LCRA Facility	203	JB
1292	LCRA Facility	308	JB
1300	Single-family Residence	451	HG
1313	Single-family Residence	138	HG
1314	Single-family Residence - Mobile Home	135	HG
1315	Single-family Residence	147	HG
1316	Single-family Residence	236	HG

Table 5-27 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 19

Segment Combinations: B-G-J-K-N-GF-GH-GK-GN1-JB-HA2-HE-HG-HL-ID-IE-IL-IM-IN-IO1-JC-DA2-IX-IZ-JA-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1317	Single-family Residence	126	HL
1401	FM Tower	1151	N
1407	Other electronic installation	637	JB
1408	Other electronic installation	1033	JB
1409	Other electronic installation	1823	HG
1411	Other electronic installation	948	IE
1424	Other electronic installation	1521	JA
1500	Bay City Municipal Airport	14738	HG
1503	Private Airstrip 2	2177	GK
1506	Fehmel Dusting Service Airport	2265	HE
1507	Eagle Air Park	5491	IO1
1510	Matagorda Regional Medical Center Heliport	1369	JB
1600-E	San Bernard National Wildlife Refuge	185	IM
1605	SFA Elementary School Park	992	JA
1606	Justin Hurst Wildlife Management Area	0	JA
1705	Vine Grove Cemetery	236	IE
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	969	IN
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	Durazno Plantation	931	JA

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
228	Single-family Residence	424	CT
229	Single-family Residence	309	CT
230	Single-family Residence	166	CT
231	Single-family Residence	441	CT
232	Single-family Residence	463	CT
233	Single-family Residence	153	CT
234	Single-family Residence	442	CT
235	Single-family Residence	92	CU
236	Single-family Residence	315	CU
237	Single-family Residence	299	CU
238	Single-family Residence	503	CU
239	Single-family Residence	309	CU
240	Single-family Residence	314	CU
241	Single-family Residence	268	CU
242	Single-family Residence	301	CU
243	Single-family Residence	279	CU
244	Single-family Residence	303	CU
245	Single-family Residence	264	CU
246	Single-family Residence	250	CU
247	Single-family Residence	253	CU
248	Single-family Residence	247	CU
249	Single-family Residence	252	CU
250	Single-family Residence	264	CU
251	Commercial Business	495	CU
252	Single-family Residence	233	CU
253	Commercial Business	189	CU
254	Single-family Residence - Mobile Home	83	CU
256	Single-family Residence	496	CW
268	Single-family Residence	371	CY
269	Single-family Residence	344	CY
270	Single-family Residence	492	CY
271	TDCJ Clemens Unit Office	512	CY
272	Single-family Residence	452	CY
273	Multi-family Residence	406	CY
274	Single-family Residence	233	CY
275	Single-family Residence	198	CY

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
276	Single-family Residence	260	CY
277	Single-family Residence	451	CY
278	Single-family Residence	301	CY
279	Single-family Residence	416	CY
280	Single-family Residence	509	CY
281	Single-family Residence	401	CY
282	Single-family Residence	503	CY
283	Single-family Residence	497	CY
284	Single-family Residence	397	CY
285	Single-family Residence	299	CY
286	Commercial Business	105	DD
287	Single-family Residence	314	DB
288	Single-family Residence	417	DD
289	Single-family Residence	405	DD
296	Single-family Residence	358	DD
297	Single-family Residence	402	DD
298	Single-family Residence	387	DD
299	Single-family Residence	373	DD
300	Single-family Residence	399	DD
301	Single-family Residence	410	DD
302	Single-family Residence	303	DD
303	Single-family Residence	389	DD
304	Commercial Business	160	DD
305	Single-family Residence	235	DD
306	Single-family Residence	337	DD
307	Single-family Residence	383	DD
308	Single-family Residence	445	DD
309	Single-family Residence	499	DD
310	Single-family Residence	496	DD
311	Single-family Residence	468	DD
312	Single-family Residence	410	DD
313	Single-family Residence	333	DD
314	Single-family Residence	361	DD
315	Single-family Residence	287	DD
316	Single-family Residence	372	DD
317	Single-family Residence	467	DD

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
318	Single-family Residence	411	DD
319	Single-family Residence	319	DD
320	Single-family Residence	414	DD
321	Single-family Residence	98	DD
322	Single-family Residence	462	DD
323	Single-family Residence	345	DD
324	Single-family Residence	414	DF
325	Single-family Residence	192	DF
326	Single-family Residence	357	DF
327	Single-family Residence	393	DF
328	Single-family Residence	483	DI
329	Single-family Residence	73	DI
330	Commercial Business	204	DI
331	Commercial Business	250	DI
332	Single-family Residence	345	DI
333	Single-family Residence	401	DI
334	Single-family Residence	368	DI
335	Single-family Residence	270	DI
336	Single-family Residence	142	DI
337	Single-family Residence	265	DI
338	Single-family Residence	403	DI
374	Single-family Residence	197	ER1
375	Single-family Residence	208	ER1
376	Commercial Business	334	ER1
377	Single-family Residence	347	ER1
378	Commercial Business	0	EZ
379	Single-family Residence	143	EZ
380	Single-family Residence - Mobile Home	506	EZ
426	Church	483	FI
428	Single-family Residence	393	FN
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	20	FD
431	Commercial Business	371	EV
432	Commercial Business	271	ER1
433	Single-family Residence	261	ER1
438	Single-family Residence	490	EP

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
439	Commercial Business	458	EP
440	Single-family Residence - Mobile Home	9	EP
441	Single-family Residence	0	EP
442	Single-family Residence	11	EP
443	Single-family Residence	31	EP
444	Single-family Residence - Mobile Home	19	EP
445	Single-family Residence - Mobile Home	27	EP
446	Single-family Residence	109	EP
447	Single-family Residence	112	EO
448	Single-family Residence	118	EO
449	Single-family Residence	429	EO
450	Single-family Residence - Mobile Home	498	EO
451	Single-family Residence	422	EO
452	Single-family Residence	185	EO
453	Single-family Residence	390	JE
454	Single-family Residence	297	JE
455	Single-family Residence	157	JE
456	Single-family Residence	128	JE
457	Single-family Residence	109	JE
458	Single-family Residence	148	JE
459	Single-family Residence	263	JE
460	Single-family Residence	352	JE
461	Single-family Residence	380	EF
462	Single-family Residence	377	EF
463	Single-family Residence	377	EF
464	Single-family Residence	381	EF
465	Single-family Residence	425	EF
466	Single-family Residence	509	EF
467	Single-family Residence	179	EF
468	Single-family Residence	338	EF
469	Single-family Residence	64	EF
470	Single-family Residence	125	EF
471	Single-family Residence	112	EF
472	Single-family Residence	164	EF
473	Single-family Residence	279	EF
474	Commercial Business	257	EF

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
475	Commercial Business	283	EF
476	Single-family Residence	369	EF
477	Single-family Residence	475	EF
478	Single-family Residence	491	EF
479	Single-family Residence	364	EF
480	Single-family Residence	277	EF
481	Single-family Residence	419	EF
482	Single-family Residence	464	EF
487	Single-family Residence	508	EF
495	Single-family Residence	457	DV
496	Single-family Residence	486	DV
502	Single-family Residence	400	DK
503	Single-family Residence	321	DK
504	Single-family Residence	497	DK
505	Single-family Residence	326	DK
506	Single-family Residence	330	DK
507	Single-family Residence	438	DK
508	Single-family Residence	122	DK
509	Single-family Residence	173	DK
510	Church	327	DK
511	Single-family Residence	176	DK
512	Church Facility	393	DK
513	Single-family Residence	173	DK
514	Single-family Residence	321	DK
515	Single-family Residence	342	DK
516	Single-family Residence	177	DK
517	Single-family Residence	116	DK
518	Single-family Residence	265	DK
519	Single-family Residence	369	DK
520	Single-family Residence - Mobile Home	498	DV
521	Single-family Residence	223	DV
522	Single-family Residence	96	DV
523	Single-family Residence	152	DV
524	Single-family Residence	245	DV
525	Commercial Business	323	DV
526	Commercial Business	504	DV

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
527	Single-family Residence	488	DV
528	Single-family Residence	365	DX
529	Single-family Residence	262	DX
530	Single-family Residence	479	DX
531	Single-family Residence	312	DX
532	Single-family Residence	211	DX
533	Single-family Residence	89	DX
534	Single-family Residence	306	DX
535	Single-family Residence	493	DX
536	Single-family Residence	503	DX
537	Single-family Residence	491	DX
538	Single-family Residence	369	DX
539	Single-family Residence	132	DX
540	Single-family Residence	229	DX
541	Single-family Residence	497	DX
542	Single-family Residence	164	DX
543	Single-family Residence	130	DX
544	Commercial Business	194	DX
545	Single-family Residence	68	DX
546	Single-family Residence	176	DX
547	Single-family Residence	202	DX
548	Single-family Residence	235	EF
549	Single-family Residence	197	DX
550	Single-family Residence	191	DX
551	Single-family Residence	203	DX
552	Single-family Residence	198	DX
553	Single-family Residence	514	DX
554	Single-family Residence	493	DX
555	Single-family Residence	288	DX
556	Single-family Residence	225	DX
557	Single-family Residence	55	DX
558	Single-family Residence	62	EF
559	Single-family Residence	80	EF
560	Single-family Residence	62	EF
561	Single-family Residence	244	EF
562	Single-family Residence	265	EF

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
563	Commercial Business	62	EF
564	Commercial Business	62	EF
565	Single-family Residence	264	EF
566	Single-family Residence	297	EF
567	Single-family Residence	340	EF
568	Single-family Residence	142	EF
569	Single-family Residence	260	EF
570	Single-family Residence	241	EF
571	Commercial Business	183	EF
572	Single-family Residence	219	EF
573	Single-family Residence	419	EF
585	Single-family Residence	426	EO
586	Single-family Residence	466	EO
587	Single-family Residence	309	EO
588	Single-family Residence	282	JE
589	Single-family Residence	90	JE
590	Single-family Residence	54	JE
591	Single-family Residence	186	E
592	Single-family Residence - Mobile Home	481	E
593	Single-family Residence - Mobile Home	218	E
594	Single-family Residence	238	E
598	Single-family Residence	240	M
599	Single-family Residence	354	M
600	Single-family Residence	306	M
619	Single-family Residence	125	GT
620	Single-family Residence	121	GT
621	Single-family Residence	431	GT
622	Single-family Residence	223	GT
623	Single-family Residence	186	GT
624	Single-family Residence	157	GT
625	Single-family Residence	364	GT
626	Single-family Residence	133	GT
627	Single-family Residence	253	GT
628	Single-family Residence	340	GT
629	Single-family Residence	434	GT
630	Single-family Residence	194	GT

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
631	Single-family Residence	343	GT
632	Single-family Residence	422	GT
633	Single-family Residence	349	GT
634	Single-family Residence	225	GT
635	Single-family Residence	362	GT
636	Single-family Residence	506	GT
637	Single-family Residence	182	GT
638	Single-family Residence	353	GT
639	Single-family Residence	399	GT
640	Single-family Residence	512	GT
641	Single-family Residence	141	GT
642	Single-family Residence	165	GT
643	Single-family Residence	236	GT
644	Single-family Residence	355	GT
645	Single-family Residence	430	GT
646	Single-family Residence - Mobile Home	369	GT
647	Single-family Residence - Mobile Home	418	GT
648	Single-family Residence	201	GT
649	Single-family Residence - Mobile Home	368	GT
650	Single-family Residence	413	GT
651	Single-family Residence	501	GT
652	Industrial Related	362	GT
653	Single-family Residence	225	GT
654	Community Center	511	GT
655	Single-family Residence	178	GT
656	Single-family Residence	175	GT
657	Single-family Residence	262	GT
658	Single-family Residence	410	GT
659	Commercial Business	366	GT
660	Single-family Residence	253	GT
661	Single-family Residence	259	GT
662	Single-family Residence - Mobile Home	165	GT
663	Single-family Residence	195	GT
664	Single-family Residence - Mobile Home	266	GT
665	Single-family Residence - Mobile Home	368	GT
666	Single-family Residence - Mobile Home	453	GT

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
667	Single-family Residence - Mobile Home	159	GT
668	Single-family Residence	246	GT
669	Single-family Residence	197	GT
670	Commercial Business	359	GT
671	Single-family Residence	346	GT
672	Single-family Residence	448	GT
673	Single-family Residence	350	GT
674	Single-family Residence	222	GT
675	Single-family Residence	392	GT
676	Single-family Residence	409	GT
677	Commercial Business	119	GT
678	Commercial Business	184	GT
679	Single-family Residence	180	GT
680	Single-family Residence	178	GT
681	Single-family Residence	174	GT
682	Single-family Residence	493	GT
683	Single-family Residence	341	GT
684	Single-family Residence	512	GT
685	Single-family Residence	305	GT
686	Single-family Residence	508	GT
687	Single-family Residence	296	GT
688	Industrial Related	186	GT
689	Single-family Residence	341	GT
690	Single-family Residence	349	GT
691	Single-family Residence	362	GT
692	Single-family Residence	95	GT
693	Single-family Residence	230	GT
694	Single-family Residence - Mobile Home	168	GT
695	Single-family Residence	215	GT
696	Single-family Residence	252	GT
697	Single-family Residence	302	GT
698	Single-family Residence	394	GT
700	Single-family Residence	398	HP
701	Single-family Residence	429	HP
702	Single-family Residence	374	HP
703	Single-family Residence	495	HP

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
704	Single-family Residence	284	HP
705	Single-family Residence	362	HP
706	Single-family Residence	249	HP
707	Single-family Residence	306	IE
708	Single-family Residence	213	IE
709	Single-family Residence	223	IE
710	Single-family Residence	244	IE
711	Single-family Residence	266	IE
712	Single-family Residence	234	IE
713	Single-family Residence	394	IE
714	Single-family Residence	254	IE
715	Single-family Residence	384	IE
716	Single-family Residence	140	IE
717	Single-family Residence	103	IE
718	Single-family Residence	126	IE
719	Single-family Residence	452	IE
720	Single-family Residence	309	IE
721	Single-family Residence	299	IE
722	Single-family Residence	370	IE
723	Single-family Residence	368	IE
724	Single-family Residence	350	IE
725	Single-family Residence	298	IE
726	Single-family Residence - Mobile Home	168	IE
727	Single-family Residence	378	IE
728	Single-family Residence	476	IE
729	Single-family Residence	415	IE
730	Single-family Residence	225	IL
731	Single-family Residence	242	IL
732	Single-family Residence	420	IL
733	Single-family Residence	155	IL
734	Single-family Residence	332	IL
735	Single-family Residence	248	IL
736	Single-family Residence	193	IL
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
741	Church	167	CE
987	Single-family Residence	132	IE
1077	Single-family Residence	356	CF
1078	Single-family Residence	244	CF
1079	Single-family Residence	163	CF
1080	Single-family Residence	55	CM
1081	Single-family Residence	238	CM
1082	Single-family Residence	385	CM
1083	Single-family Residence	216	CM
1084	Church	217	CM
1085	Church Facility	275	CM
1086	Single-family Residence	244	CM
1087	Single-family Residence	79	CM
1088	Single-family Residence	202	CM
1089	Single-family Residence	264	CM
1090	Single-family Residence - Mobile Home	75	CM
1091	Single-family Residence	336	CM
1092	Commercial Business	215	CM
1093	Commercial Business	210	CM
1094	Commercial Business	271	CM
1095	Church	251	CM
1096	Church Facility	281	CM
1097	Single-family Residence	79	CM
1098	Single-family Residence	200	CM
1099	Single-family Residence	362	CM
1100	Single-family Residence	100	CM
1101	Single-family Residence	129	CM
1102	Single-family Residence	244	CM
1103	Single-family Residence	204	CM
1104	Single-family Residence	308	CM
1105	Single-family Residence - Mobile Home	105	CM
1106	Single-family Residence	257	CM
1108	Single-family Residence	374	CR
1109	Church Facility	344	CR
1110	Church	385	CR
1111	Single-family Residence	271	CR

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1112	Single-family Residence	326	CR
1113	Single-family Residence	309	CS
1115	Single-family Residence	337	CS
1116	Single-family Residence	447	CS
1117	Single-family Residence - Mobile Home	471	CS
1118	Single-family Residence - Mobile Home	397	CS
1119	Single-family Residence	355	CS
1120	Single-family Residence	419	CS
1121	Single-family Residence	302	CS
1122	Single-family Residence	421	CS
1123	Single-family Residence	500	CS
1124	Single-family Residence	458	CS
1125	Single-family Residence	128	CS
1126	Commercial Business	142	CS
1127	Commercial Business	238	CS
1128	Commercial Business	329	CS
1129	Commercial Business	464	CS
1130	Single-family Residence	488	CS
1131	Single-family Residence	354	CS
1143	Single-family Residence - Mobile Home	264	CF
1144	Commercial Business	262	CF
1145	Commercial Business	57	CF
1146	Single-family Residence	228	CF
1147	Church	327	CF
1148	Single-family Residence	54	CF
1149	Single-family Residence	275	CF
1150	Single-family Residence	258	CF
1151	Single-family Residence	274	CF
1152	Single-family Residence	295	CF
1153	Commercial Business	12	CF
1154	Single-family Residence	156	CF
1155	Single-family Residence	260	CF
1156	Single-family Residence	476	CF
1157	Single-family Residence	156	CF
1158	Single-family Residence	193	CF
1159	Single-family Residence	82	CF

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1160	Single-family Residence	296	CF
1161	Single-family Residence	297	CF
1162	Single-family Residence	139	CF
1163	Commercial Business	52	CF
1164	Single-family Residence - Mobile Home	93	CF
1165	Single-family Residence	231	CF
1166	Single-family Residence	122	CF
1167	Single-family Residence	167	CF
1168	Single-family Residence	51	CF
1169	Single-family Residence	216	CF
1170	Single-family Residence - Mobile Home	319	CF
1171	Single-family Residence	390	CE
1172	Single-family Residence - Mobile Home	227	CE
1173	Single-family Residence	127	CE
1174	Single-family Residence	54	CE
1401	FM Tower	666	M
1402	Other electronic installation	502	M
1405	Other electronic installation	516	GT
1406	Other electronic installation	1244	GT
1411	Other electronic installation	948	IE
1418	Other electronic installation	1247	CF
1421	Other electronic installation	412	CY
1422	Other electronic installation	503	CY
1423	Other electronic installation	1038	DF
1500	Bay City Municipal Airport	3586	GT
1503	Private Airstrip 2	4480	GO
1504	Private Airstrip 3	3067	GQ
1507	Eagle Air Park	9976	CR
1600-E	San Bernard National Wildlife Refuge	185	IM
1603	Levi Jordan Plantation	160	CE
1606	Justin Hurst Wildlife Management Area	199	EO
1607	Freeport Municipal Golf Course	804	FI
1701	Roselawn Memorial Park Cemetery	165	GT
1705	Vine Grove Cemetery	236	IE
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	299	CE

Table 5-28 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 20

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-CQ-CR-CS-CT-CU-CW-CY-DB-DD-DF-DI-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1710	Zion Temple Cemetery/Williams Family/Mims-Fannin Plantation	89	CM
1711	Mims Community Cemetery	357	CM
1712	Mims Family Cemetery	560	CM
1716	TDCJ Prison Cemetery	503	CY
1717	Gulf Prairie, Peach Point Cemetery 1	590	DI
1718	Gulf Prairie, Peach Point Cemetery 2	585	DF
--	41BO257	--	CF
--	41BO262	--	CM
--	41BO100	--	CR
--	41BO164	--	CR
--	41BO214	--	CY
--	41BO227	--	FP
--	Levi Jordan Plantation	140	CE

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-29 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 21

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
10	Single-family Residence	341	P
11	Single-family Residence	307	P
12	Single-family Residence	332	P
13	Single-family Residence - Mobile Home	350	P
14	Single-family Residence - Mobile Home	109	P
15	Single-family Residence - Mobile Home	441	P
16	Single-family Residence	454	P
17	Single-family Residence	264	P
18	Single-family Residence	115	P
19	Single-family Residence	108	P
20	Single-family Residence	377	P
21	Single-family Residence	67	P
22	Single-family Residence - Mobile Home	159	P
23	Single-family Residence - Mobile Home	178	P
24	Single-family Residence - Mobile Home	251	P
25	Single-family Residence - Mobile Home	69	P
26	Single-family Residence	210	P
27	Single-family Residence	143	P
28	Single-family Residence - Mobile Home	150	P
29	Single-family Residence - Mobile Home	391	V
30	Single-family Residence - Mobile Home	348	V
31	Single-family Residence	326	V
32	Single-family Residence	310	V
33	Single-family Residence	233	V
34	Single-family Residence	248	V
35	Single-family Residence	331	X
39	Single-family Residence	446	X

Table 5-29 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 21

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
40	Single-family Residence	318	Y
41	Single-family Residence	281	Y
42	Single-family Residence	380	Y
43	Single-family Residence	270	Y
44	Single-family Residence	399	Z
45	Single-family Residence	403	Z
46	Single-family Residence	143	Z
47	Single-family Residence	166	Z
48	Single-family Residence	178	Z
49	Single-family Residence	210	Z
50	Single-family Residence	263	Z
51	Single-family Residence - Mobile Home	110	Z
52	Single-family Residence	87	Z
53	Single-family Residence	68	Z
54	Single-family Residence	276	Z
55	Single-family Residence	411	Z
56	Single-family Residence - Mobile Home	213	Z
57	Single-family Residence	256	Z
58	Single-family Residence	162	Z
59	Single-family Residence	128	Z
60	Single-family Residence	349	Z
61	Single-family Residence	221	Z
62	Single-family Residence	362	Z
63	Single-family Residence	416	Z
64	Single-family Residence	112	Z
65	Single-family Residence	150	Z
66	Single-family Residence - Mobile Home	51	Z
67	Single-family Residence	255	Z
160	Single-family Residence	55	BI
161	Single-family Residence - Mobile Home	305	BI
162	Single-family Residence	284	BI
163	Single-family Residence - Mobile Home	281	BI
164	Single-family Residence	449	BI
374	Single-family Residence	197	ER1
375	Single-family Residence	208	ER1
376	Commercial Business	334	ER1

Table 5-29 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 21

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
377	Single-family Residence	347	ER1
378	Commercial Business	0	EZ
379	Single-family Residence	143	EZ
380	Single-family Residence - Mobile Home	506	EZ
426	Church	483	FI
428	Single-family Residence	393	FN
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	20	FD
431	Commercial Business	371	EV
432	Commercial Business	271	ER1
433	Single-family Residence	261	ER1
438	Single-family Residence	490	EP
439	Commercial Business	458	EP
440	Single-family Residence - Mobile Home	9	EP
441	Single-family Residence	0	EP
442	Single-family Residence	11	EP
443	Single-family Residence	31	EP
444	Single-family Residence - Mobile Home	19	EP
445	Single-family Residence - Mobile Home	27	EP
446	Single-family Residence	109	EP
447	Single-family Residence	112	EO
448	Single-family Residence	118	EO
449	Single-family Residence	429	EO
450	Single-family Residence - Mobile Home	498	EO
451	Single-family Residence	422	EO
452	Single-family Residence	185	EO
453	Single-family Residence	390	JE
454	Single-family Residence	297	JE
455	Single-family Residence	157	JE
456	Single-family Residence	128	JE
457	Single-family Residence	109	JE
458	Single-family Residence	148	JE
459	Single-family Residence	263	JE
460	Single-family Residence	352	JE
461	Single-family Residence	380	EF
462	Single-family Residence	377	EF

Table 5-29 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 21

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
463	Single-family Residence	377	EF
464	Single-family Residence	381	EF
465	Single-family Residence	425	EF
466	Single-family Residence	509	EF
467	Single-family Residence	179	EF
468	Single-family Residence	338	EF
469	Single-family Residence	64	EF
470	Single-family Residence	125	EF
471	Single-family Residence	112	EF
472	Single-family Residence	164	EF
473	Single-family Residence	279	EF
474	Commercial Business	176	DW
475	Commercial Business	87	DW
476	Single-family Residence	283	DW
477	Single-family Residence	80	DW
478	Single-family Residence	256	DW
479	Single-family Residence	364	EF
480	Single-family Residence	277	EF
481	Single-family Residence	419	EF
482	Single-family Residence	457	DW
483	Single-family Residence	295	DW
484	Single-family Residence	83	DW
485	Single-family Residence	235	DW
486	Single-family Residence	459	DW
487	Single-family Residence	508	EF
488	Single-family Residence	483	DW
489	Single-family Residence	334	DW
490	Single-family Residence	244	DW
491	Single-family Residence	118	DW
492	Single-family Residence	60	DW
493	Single-family Residence	169	DW
494	Single-family Residence - Mobile Home	468	DW
495	Single-family Residence	457	DV
496	Single-family Residence	486	DV
499	Single-family Residence	335	DJ
500	Single-family Residence	238	DJ

Table 5-29 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 21

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
501	Single-family Residence	152	DJ
502	Single-family Residence	376	DJ
503	Single-family Residence	321	DK
504	Single-family Residence	497	DK
505	Single-family Residence	326	DK
506	Single-family Residence	330	DK
507	Single-family Residence	438	DK
508	Single-family Residence	122	DK
509	Single-family Residence	173	DK
510	Church	327	DK
511	Single-family Residence	176	DK
512	Church Facility	393	DK
513	Single-family Residence	173	DK
514	Single-family Residence	321	DK
515	Single-family Residence	342	DK
516	Single-family Residence	177	DK
517	Single-family Residence	116	DK
518	Single-family Residence	265	DK
519	Single-family Residence	369	DK
520	Single-family Residence - Mobile Home	498	DV
521	Single-family Residence	223	DV
522	Single-family Residence	96	DV
523	Single-family Residence	152	DV
524	Single-family Residence	245	DV
525	Commercial Business	323	DV
526	Commercial Business	504	DV
527	Single-family Residence	488	DV
528	Single-family Residence	383	DW
529	Single-family Residence	297	DW
532	Single-family Residence	503	DW
533	Single-family Residence	490	DW
542	Single-family Residence	134	DW
548	Single-family Residence	184	DW
550	Single-family Residence	407	EF
551	Single-family Residence	361	EF
552	Single-family Residence	350	EF

Table 5-29 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 21

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
554	Single-family Residence	495	EF
555	Single-family Residence	377	EF
556	Single-family Residence	329	EF
557	Single-family Residence	116	EF
558	Single-family Residence	62	EF
559	Single-family Residence	80	EF
560	Single-family Residence	62	EF
561	Single-family Residence	244	EF
562	Single-family Residence	265	EF
563	Commercial Business	62	EF
564	Commercial Business	62	EF
565	Single-family Residence	264	EF
566	Single-family Residence	297	EF
567	Single-family Residence	340	EF
568	Single-family Residence	142	EF
569	Single-family Residence	260	EF
570	Single-family Residence	241	EF
571	Commercial Business	183	EF
572	Single-family Residence	219	EF
573	Single-family Residence	419	EF
585	Single-family Residence	426	EO
586	Single-family Residence	466	EO
587	Single-family Residence	309	EO
588	Single-family Residence	282	JE
589	Single-family Residence	90	JE
590	Single-family Residence	54	JE
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1

Table 5-29 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 21

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX

Table 5-29 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 21

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
1048	Single-family Residence	288	BX
1049	Single-family Residence	146	BX

Table 5-29 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 21

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1050	Single-family Residence - Mobile Home	185	BX
1051	Single-family Residence	403	BX
1052	Single-family Residence	448	BX
1053	Single-family Residence	60	BX
1054	Single-family Residence - Mobile Home	142	BX
1055	Single-family Residence - Mobile Home	246	BX
1056	Single-family Residence - Mobile Home	307	BX
1057	Single-family Residence	131	BX
1058	Single-family Residence	176	BX
1059	Single-family Residence	353	BX
1060	Single-family Residence	468	BX
1061	Single-family Residence	375	BX
1062	Single-family Residence - Mobile Home	229	BX
1063	Single-family Residence - Mobile Home	82	BX
1064	Single-family Residence	410	BX
1065	Single-family Residence	170	BX
1066	Single-family Residence	228	BX
1067	Single-family Residence	348	BX
1068	Single-family Residence	87	BX
1069	Single-family Residence	72	BX
1070	Single-family Residence	116	BX
1071	Single-family Residence	168	BX
1072	Single-family Residence - Mobile Home	198	BX
1073	Single-family Residence	222	BX
1074	Single-family Residence	329	BX
1075	Single-family Residence - Mobile Home	179	BX
1076	Single-family Residence - Mobile Home	261	BX
1077	Single-family Residence	311	BX
1078	Single-family Residence	118	BX
1079	Single-family Residence	168	CM
1080	Single-family Residence	55	CM
1081	Single-family Residence	238	CM
1082	Single-family Residence	385	CM
1083	Single-family Residence	216	CM
1084	Church	217	CM
1085	Church Facility	275	CM

Table 5-29 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 21

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1086	Single-family Residence	244	CM
1087	Single-family Residence	79	CM
1088	Single-family Residence	202	CM
1089	Single-family Residence	264	CM
1090	Single-family Residence - Mobile Home	75	CM
1091	Single-family Residence	336	CM
1092	Commercial Business	215	CM
1093	Commercial Business	210	CM
1094	Commercial Business	271	CM
1095	Church	251	CM
1096	Church Facility	281	CM
1097	Single-family Residence	79	CM
1098	Single-family Residence	200	CM
1099	Single-family Residence	362	CM
1100	Single-family Residence	100	CM
1101	Single-family Residence	129	CM
1102	Single-family Residence	244	CM
1103	Single-family Residence	204	CM
1104	Single-family Residence	308	CM
1105	Single-family Residence - Mobile Home	105	CM
1106	Single-family Residence	257	CM
1107	Single-family Residence	245	CQ
1249	Single-family Residence	57	BI
1250	Single-family Residence	503	BI
1251	Single-family Residence - Mobile Home	377	BI
1252	Single-family Residence	211	BI
1253	Single-family Residence - Mobile Home	164	BI
1254	Single-family Residence - Mobile Home	149	BI
1255	Single-family Residence - Mobile Home	168	BI
1256	Single-family Residence	91	BI
1257	Single-family Residence	232	BI
1258	Single-family Residence	302	BI
1259	Single-family Residence - Mobile Home	267	BI
1260	Single-family Residence - Mobile Home	282	BI
1261	Single-family Residence	245	BI
1262	Single-family Residence	516	BI

Table 5-29 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 21

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1263	Single-family Residence	193	BI
1264	Single-family Residence	104	BI
1265	Single-family Residence	466	BI
1266	Single-family Residence	92	BI
1267	Single-family Residence	181	BI
1268	Single-family Residence	348	BI
1269	Single-family Residence	430	BI
1270	Single-family Residence	377	BI
1271	Single-family Residence	205	BI
1272	Single-family Residence	491	BI
1273	Single-family Residence	423	BI
1274	Single-family Residence	422	BI
1275	Single-family Residence	89	BI
1400	Other electronic installation	258	L
1412	Other electronic installation	945	P
1413	Other electronic installation	454	P
1414	Other electronic installation	854	P
1415	Other electronic installation	947	V
1423	Other electronic installation	1678	DJ
1501	Private Airstrip 1	3523	L
1502	Peterson Airport	6357	P
1507	Eagle Air Park	2759	IO2
1600-A	San Bernard National Wildlife Refuge	286	L
1600-B	San Bernard National Wildlife Refuge	149	P
1606	Justin Hurst Wildlife Management Area	199	EO
1607	Freeport Municipal Golf Course	804	FI
1702	Morris Cemetery	784	P
1703	Gardener Family Cemetery	780	V
1704	Black Family Cemetery	571	V
1710	Zion Temple Cemetery/Williams Family/Mims-Fannin Plantation	89	CM
1711	Mims Community Cemetery	357	CM
1712	Mims Family Cemetery	72	CQ
1715	Galilee Church Cemetery	104	IX
--	41BO262	--	CM
--	41BO227	--	FP

Table 5-29 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 21

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
--	41BO191	--	IO2
--	41BO258	--	IO2
--	41BO260	--	IO2
--	41BO238	--	P
--	41BO109	--	Z
--	Gazebo for James Richardson Marimion	660	BI

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-30 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 22

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
10	Single-family Residence	341	P
11	Single-family Residence	307	P
12	Single-family Residence	332	P
13	Single-family Residence - Mobile Home	350	P
14	Single-family Residence - Mobile Home	109	P
15	Single-family Residence - Mobile Home	441	P
16	Single-family Residence	454	P
17	Single-family Residence	264	P
18	Single-family Residence	115	P
19	Single-family Residence	108	P
20	Single-family Residence	377	P
21	Single-family Residence	67	P
22	Single-family Residence - Mobile Home	159	P
23	Single-family Residence - Mobile Home	178	P
24	Single-family Residence - Mobile Home	251	P
25	Single-family Residence - Mobile Home	69	P
26	Single-family Residence	210	P
27	Single-family Residence	143	P
28	Single-family Residence - Mobile Home	150	P
29	Single-family Residence - Mobile Home	391	V
30	Single-family Residence - Mobile Home	348	V
31	Single-family Residence	326	V
32	Single-family Residence	310	V
33	Single-family Residence	233	V
34	Single-family Residence	248	V
35	Single-family Residence	331	X
39	Single-family Residence	446	X

Table 5-30 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 22

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
40	Single-family Residence	318	Y
41	Single-family Residence	281	Y
42	Single-family Residence	380	Y
43	Single-family Residence	270	Y
374	Single-family Residence	197	ER1
375	Single-family Residence	208	ER1
376	Commercial Business	334	ER1
377	Single-family Residence	347	ER1
378	Commercial Business	0	EZ
379	Single-family Residence	143	EZ
380	Single-family Residence - Mobile Home	506	EZ
426	Church	483	FI
428	Single-family Residence	393	FN
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	20	FD
431	Commercial Business	371	EV
432	Commercial Business	271	ER1
433	Single-family Residence	261	ER1
438	Single-family Residence	490	EP
439	Commercial Business	458	EP
440	Single-family Residence - Mobile Home	9	EP
441	Single-family Residence	0	EP
442	Single-family Residence	11	EP
443	Single-family Residence	31	EP
444	Single-family Residence - Mobile Home	19	EP
445	Single-family Residence - Mobile Home	27	EP
446	Single-family Residence	109	EP
447	Single-family Residence	112	EO
448	Single-family Residence	118	EO
449	Single-family Residence	429	EO
450	Single-family Residence - Mobile Home	498	EO
451	Single-family Residence	422	EO
452	Single-family Residence	185	EO
453	Single-family Residence	390	JE
454	Single-family Residence	297	JE
455	Single-family Residence	157	JE

Table 5-30 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 22

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
456	Single-family Residence	128	JE
457	Single-family Residence	109	JE
458	Single-family Residence	148	JE
459	Single-family Residence	263	JE
460	Single-family Residence	352	JE
461	Single-family Residence	380	EF
462	Single-family Residence	377	EF
463	Single-family Residence	377	EF
464	Single-family Residence	381	EF
465	Single-family Residence	425	EF
466	Single-family Residence	509	EF
467	Single-family Residence	179	EF
468	Single-family Residence	338	EF
469	Single-family Residence	64	EF
470	Single-family Residence	125	EF
471	Single-family Residence	112	EF
472	Single-family Residence	164	EF
473	Single-family Residence	279	EF
474	Commercial Business	176	DW
475	Commercial Business	87	DW
476	Single-family Residence	283	DW
477	Single-family Residence	80	DW
478	Single-family Residence	256	DW
479	Single-family Residence	364	EF
480	Single-family Residence	277	EF
481	Single-family Residence	419	EF
482	Single-family Residence	457	DW
483	Single-family Residence	295	DW
484	Single-family Residence	83	DW
485	Single-family Residence	235	DW
486	Single-family Residence	459	DW
487	Single-family Residence	508	EF
488	Single-family Residence	483	DW
489	Single-family Residence	334	DW
490	Single-family Residence	244	DW
491	Single-family Residence	118	DW

Table 5-30 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 22

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
492	Single-family Residence	60	DW
493	Single-family Residence	169	DW
494	Single-family Residence - Mobile Home	468	DW
495	Single-family Residence	457	DV
496	Single-family Residence	486	DV
499	Single-family Residence	335	DJ
500	Single-family Residence	238	DJ
501	Single-family Residence	152	DJ
502	Single-family Residence	376	DJ
503	Single-family Residence	321	DK
504	Single-family Residence	497	DK
505	Single-family Residence	326	DK
506	Single-family Residence	330	DK
507	Single-family Residence	438	DK
508	Single-family Residence	122	DK
509	Single-family Residence	173	DK
510	Church	327	DK
511	Single-family Residence	176	DK
512	Church Facility	393	DK
513	Single-family Residence	173	DK
514	Single-family Residence	321	DK
515	Single-family Residence	342	DK
516	Single-family Residence	177	DK
517	Single-family Residence	116	DK
518	Single-family Residence	265	DK
519	Single-family Residence	369	DK
520	Single-family Residence - Mobile Home	498	DV
521	Single-family Residence	223	DV
522	Single-family Residence	96	DV
523	Single-family Residence	152	DV
524	Single-family Residence	245	DV
525	Commercial Business	323	DV
526	Commercial Business	504	DV
527	Single-family Residence	488	DV
528	Single-family Residence	383	DW
529	Single-family Residence	297	DW

Table 5-30 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 22

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
532	Single-family Residence	503	DW
533	Single-family Residence	490	DW
542	Single-family Residence	134	DW
548	Single-family Residence	184	DW
550	Single-family Residence	407	EF
551	Single-family Residence	361	EF
552	Single-family Residence	350	EF
554	Single-family Residence	495	EF
555	Single-family Residence	377	EF
556	Single-family Residence	329	EF
557	Single-family Residence	116	EF
558	Single-family Residence	62	EF
559	Single-family Residence	80	EF
560	Single-family Residence	62	EF
561	Single-family Residence	244	EF
562	Single-family Residence	265	EF
563	Commercial Business	62	EF
564	Commercial Business	62	EF
565	Single-family Residence	264	EF
566	Single-family Residence	297	EF
567	Single-family Residence	340	EF
568	Single-family Residence	142	EF
569	Single-family Residence	260	EF
570	Single-family Residence	241	EF
571	Commercial Business	183	EF
572	Single-family Residence	219	EF
573	Single-family Residence	419	EF
585	Single-family Residence	426	EO
586	Single-family Residence	466	EO
587	Single-family Residence	309	EO
588	Single-family Residence	282	JE
589	Single-family Residence	90	JE
590	Single-family Residence	54	JE
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1

Table 5-30 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 22

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2

Table 5-30 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 22

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX

Table 5-30 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 22

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
1017	Single-family Residence	91	BV
1018	Single-family Residence	220	CD
1019	Single-family Residence	449	BV
1020	Single-family Residence	415	BU
1021	Single-family Residence	427	BU
1077	Single-family Residence	356	CF
1078	Single-family Residence	244	CF
1079	Single-family Residence	163	CF
1080	Single-family Residence	55	CM
1081	Single-family Residence	238	CM
1082	Single-family Residence	385	CM
1083	Single-family Residence	216	CM
1084	Church	217	CM
1085	Church Facility	275	CM
1086	Single-family Residence	244	CM
1087	Single-family Residence	79	CM
1088	Single-family Residence	202	CM
1089	Single-family Residence	264	CM
1090	Single-family Residence - Mobile Home	75	CM
1091	Single-family Residence	336	CM
1092	Commercial Business	215	CM
1093	Commercial Business	210	CM
1094	Commercial Business	271	CM
1095	Church	251	CM
1096	Church Facility	281	CM
1097	Single-family Residence	79	CM
1098	Single-family Residence	200	CM
1099	Single-family Residence	362	CM
1100	Single-family Residence	100	CM
1101	Single-family Residence	129	CM
1102	Single-family Residence	244	CM

Table 5-30 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 22

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1103	Single-family Residence	204	CM
1104	Single-family Residence	308	CM
1105	Single-family Residence - Mobile Home	105	CM
1106	Single-family Residence	257	CM
1107	Single-family Residence	245	CQ
1141	Single-family Residence	157	CD
1142	Single-family Residence	336	CD
1143	Single-family Residence - Mobile Home	264	CF
1144	Commercial Business	262	CF
1145	Commercial Business	57	CF
1146	Single-family Residence	228	CF
1147	Church	327	CF
1148	Single-family Residence	54	CF
1149	Single-family Residence	275	CF
1150	Single-family Residence	258	CF
1151	Single-family Residence	274	CF
1152	Single-family Residence	295	CF
1153	Commercial Business	12	CF
1154	Single-family Residence	156	CF
1155	Single-family Residence	260	CF
1156	Single-family Residence	476	CF
1157	Single-family Residence	156	CF
1158	Single-family Residence	193	CF
1159	Single-family Residence	82	CF
1160	Single-family Residence	296	CF
1161	Single-family Residence	297	CF
1162	Single-family Residence	139	CF
1163	Commercial Business	52	CF
1164	Single-family Residence - Mobile Home	93	CF
1165	Single-family Residence	231	CF
1166	Single-family Residence	122	CF
1167	Single-family Residence	167	CF
1168	Single-family Residence	51	CF
1169	Single-family Residence	216	CF
1170	Single-family Residence - Mobile Home	319	CF
1195	Single-family Residence	491	BU

Table 5-30 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 22

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1196	Single-family Residence	261	BU
1197	Single-family Residence	87	BU
1198	Single-family Residence	390	AA
1199	Single-family Residence - Mobile Home	54	AA
1200	Single-family Residence - Mobile Home	55	AA
1201	Single-family Residence	196	AA
1202	Single-family Residence - Mobile Home	380	AA
1203	Single-family Residence - Mobile Home	504	AA
1204	Single-family Residence	245	AA
1205	Single-family Residence	451	AA
1206	Single-family Residence	327	AA
1207	Single-family Residence	51	AA
1208	Single-family Residence	480	AA
1209	Single-family Residence - Mobile Home	360	AA
1210	Single-family Residence	450	AA
1211	Single-family Residence	139	AA
1212	Single-family Residence	206	AA
1213	Single-family Residence - Mobile Home	349	AA
1214	Single-family Residence	342	AA
1215	Single-family Residence	204	AA
1216	Single-family Residence - Mobile Home	223	AA
1217	Single-family Residence - Mobile Home	400	AA
1218	Single-family Residence	392	AA
1219	Single-family Residence	98	AA
1220	Single-family Residence	199	AA
1221	Single-family Residence	145	AA
1222	Single-family Residence	242	AA
1223	Single-family Residence	514	AA
1224	Multi-family Residence	468	AA
1225	Multi-family Residence	468	AA
1226	Multi-family Residence	506	AA
1227	Multi-family Residence	480	AA
1228	Multi-family Residence	453	AA
1229	Single-family Residence	365	AA
1230	Single-family Residence	388	AA
1231	Single-family Residence	54	AA

Table 5-30 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 22

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1232	Single-family Residence - Mobile Home	189	AA
1233	Single-family Residence - Mobile Home	202	AA
1234	Single-family Residence	132	AA
1235	Single-family Residence	227	AA
1236	Single-family Residence	261	AA
1237	Single-family Residence	135	AA
1238	Single-family Residence	269	AA
1239	Single-family Residence	486	AA
1240	Single-family Residence	372	AA
1241	Single-family Residence	260	AA
1242	Single-family Residence	314	AA
1243	Single-family Residence	327	AA
1244	Single-family Residence	239	AA
1245	Single-family Residence	438	AA
1246	Single-family Residence	502	AA
1247	Single-family Residence	343	AA
1248	Single-family Residence	498	AA
1400	Other electronic installation	258	L
1412	Other electronic installation	945	P
1413	Other electronic installation	454	P
1414	Other electronic installation	854	P
1415	Other electronic installation	947	V
1416	Other electronic installation	1173	AA
1417	Other electronic installation	1786	AA
1418	Other electronic installation	1247	CF
1423	Other electronic installation	1678	DJ
1501	Private Airstrip 1	3523	L
1502	Peterson Airport	6357	P
1507	Eagle Air Park	2759	IO2
1511	Sweeny Community Hospital Heliport	1420	AA
1600-A	San Bernard National Wildlife Refuge	286	L
1600-B	San Bernard National Wildlife Refuge	149	P
1600-D	San Bernard National Wildlife Refuge	49	AA
1603	Levi Jordan Plantation	53	CD
1606	Justin Hurst Wildlife Management Area	199	EO
1607	Freeport Municipal Golf Course	804	FI

Table 5-30 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 22

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1702	Morris Cemetery	784	P
1703	Gardener Family Cemetery	780	V
1704	Black Family Cemetery	571	V
1710	Zion Temple Cemetery/Williams Family/Mims-Fannin Plantation	89	CM
1711	Mims Community Cemetery	357	CM
1712	Mims Family Cemetery	72	CQ
1715	Galilee Church Cemetery	104	IX
--	41BO257	--	CF
--	41BO262	--	CM
--	41BO227	--	FP
--	41BO191	--	IO2
--	41BO258	--	IO2
--	41BO260	--	IO2
--	41BO238	--	P
--	Levi Jordan Plantation	85	CD

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-31 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 23

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HF-HG-HM-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
374	Single-family Residence	197	ER1
375	Single-family Residence	208	ER1
376	Commercial Business	334	ER1
377	Single-family Residence	347	ER1
378	Commercial Business	0	EZ
379	Single-family Residence	143	EZ
380	Single-family Residence - Mobile Home	506	EZ
426	Church	483	FI
428	Single-family Residence	393	FN
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	20	FD
431	Commercial Business	371	EV
432	Commercial Business	271	ER1
433	Single-family Residence	261	ER1
438	Single-family Residence	490	EP
439	Commercial Business	458	EP
440	Single-family Residence - Mobile Home	9	EP
441	Single-family Residence	0	EP
442	Single-family Residence	11	EP
443	Single-family Residence	31	EP
444	Single-family Residence - Mobile Home	19	EP
445	Single-family Residence - Mobile Home	27	EP
446	Single-family Residence	109	EP
447	Single-family Residence	112	EO
448	Single-family Residence	118	EO
449	Single-family Residence	429	EO
450	Single-family Residence - Mobile Home	498	EO
451	Single-family Residence	422	EO
452	Single-family Residence	185	EO
453	Single-family Residence	390	JE
454	Single-family Residence	297	JE
455	Single-family Residence	157	JE
456	Single-family Residence	128	JE
457	Single-family Residence	109	JE
458	Single-family Residence	148	JE
459	Single-family Residence	263	JE

Table 5-31 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 23

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HF-HG-HM-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
460	Single-family Residence	352	JE
461	Single-family Residence	380	EF
462	Single-family Residence	377	EF
463	Single-family Residence	377	EF
464	Single-family Residence	381	EF
465	Single-family Residence	425	EF
466	Single-family Residence	509	EF
467	Single-family Residence	179	EF
468	Single-family Residence	338	EF
469	Single-family Residence	64	EF
470	Single-family Residence	125	EF
471	Single-family Residence	112	EF
472	Single-family Residence	164	EF
473	Single-family Residence	279	EF
474	Commercial Business	176	DW
475	Commercial Business	87	DW
476	Single-family Residence	283	DW
477	Single-family Residence	80	DW
478	Single-family Residence	256	DW
479	Single-family Residence	364	EF
480	Single-family Residence	277	EF
481	Single-family Residence	419	EF
482	Single-family Residence	457	DW
483	Single-family Residence	295	DW
484	Single-family Residence	83	DW
485	Single-family Residence	235	DW
486	Single-family Residence	459	DW
487	Single-family Residence	508	EF
488	Single-family Residence	483	DW
489	Single-family Residence	334	DW
490	Single-family Residence	244	DW
491	Single-family Residence	118	DW
492	Single-family Residence	60	DW
493	Single-family Residence	169	DW
494	Single-family Residence - Mobile Home	468	DW
495	Single-family Residence	457	DV

Table 5-31 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 23

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HF-HG-HM-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
496	Single-family Residence	486	DV
499	Single-family Residence	335	DJ
500	Single-family Residence	238	DJ
501	Single-family Residence	152	DJ
502	Single-family Residence	376	DJ
503	Single-family Residence	321	DK
504	Single-family Residence	497	DK
505	Single-family Residence	326	DK
506	Single-family Residence	330	DK
507	Single-family Residence	438	DK
508	Single-family Residence	122	DK
509	Single-family Residence	173	DK
510	Church	327	DK
511	Single-family Residence	176	DK
512	Church Facility	393	DK
513	Single-family Residence	173	DK
514	Single-family Residence	321	DK
515	Single-family Residence	342	DK
516	Single-family Residence	177	DK
517	Single-family Residence	116	DK
518	Single-family Residence	265	DK
519	Single-family Residence	369	DK
520	Single-family Residence - Mobile Home	498	DV
521	Single-family Residence	223	DV
522	Single-family Residence	96	DV
523	Single-family Residence	152	DV
524	Single-family Residence	245	DV
525	Commercial Business	323	DV
526	Commercial Business	504	DV
527	Single-family Residence	488	DV
528	Single-family Residence	383	DW
529	Single-family Residence	297	DW
532	Single-family Residence	503	DW
533	Single-family Residence	490	DW
542	Single-family Residence	134	DW
548	Single-family Residence	184	DW

Table 5-31 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 23

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HF-HG-HM-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
550	Single-family Residence	407	EF
551	Single-family Residence	361	EF
552	Single-family Residence	350	EF
554	Single-family Residence	495	EF
555	Single-family Residence	377	EF
556	Single-family Residence	329	EF
557	Single-family Residence	116	EF
558	Single-family Residence	62	EF
559	Single-family Residence	80	EF
560	Single-family Residence	62	EF
561	Single-family Residence	244	EF
562	Single-family Residence	265	EF
563	Commercial Business	62	EF
564	Commercial Business	62	EF
565	Single-family Residence	264	EF
566	Single-family Residence	297	EF
567	Single-family Residence	340	EF
568	Single-family Residence	142	EF
569	Single-family Residence	260	EF
570	Single-family Residence	241	EF
571	Commercial Business	183	EF
572	Single-family Residence	219	EF
573	Single-family Residence	419	EF
585	Single-family Residence	426	EO
586	Single-family Residence	466	EO
587	Single-family Residence	309	EO
588	Single-family Residence	282	JE
589	Single-family Residence	90	JE
590	Single-family Residence	54	JE
591	Single-family Residence	186	E
592	Single-family Residence - Mobile Home	481	E
593	Single-family Residence - Mobile Home	218	E
594	Single-family Residence	238	E
601	Single-family Residence	175	N
602	Single-family Residence	179	N
700	Single-family Residence	398	HP

Table 5-31 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 23

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HF-HG-HM-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
701	Single-family Residence	429	HP
702	Single-family Residence	374	HP
703	Single-family Residence	495	HP
704	Single-family Residence	284	HP
705	Single-family Residence	362	HP
706	Single-family Residence	249	HP
707	Single-family Residence	306	IE
708	Single-family Residence	213	IE
709	Single-family Residence	223	IE
710	Single-family Residence	244	IE
711	Single-family Residence	266	IE
712	Single-family Residence	234	IE
713	Single-family Residence	394	IE
714	Single-family Residence	254	IE
715	Single-family Residence	384	IE
716	Single-family Residence	140	IE
717	Single-family Residence	103	IE
718	Single-family Residence	126	IE
719	Single-family Residence	452	IE
720	Single-family Residence	309	IE
721	Single-family Residence	299	IE
722	Single-family Residence	370	IE
723	Single-family Residence	368	IE
724	Single-family Residence	350	IE
725	Single-family Residence	298	IE
726	Single-family Residence - Mobile Home	168	IE
727	Single-family Residence	378	IE
728	Single-family Residence	476	IE
729	Single-family Residence	415	IE
730	Single-family Residence	225	IL
731	Single-family Residence	242	IL
732	Single-family Residence	420	IL
733	Single-family Residence	155	IL
734	Single-family Residence	332	IL
735	Single-family Residence	248	IL
736	Single-family Residence	193	IL

Table 5-31 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 23

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HF-HG-HM-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN
772	Single-family Residence	458	IN

Table 5-31 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 23

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HF-HG-HM-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1

Table 5-31 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 23

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HF-HG-HM-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX

Table 5-31 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 23

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HF-HG-HM-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
987	Single-family Residence	132	IE
1276	Single-family Residence	426	GN1
1277	Single-family Residence	487	GN1
1278	Single-family Residence	508	GN1
1279	Single-family Residence	475	GN1
1280	Single-family Residence	415	GN1
1281	Single-family Residence	409	GN1
1282	Single-family Residence	500	GN1
1283	Single-family Residence	508	GN1
1284	Single-family Residence - Mobile Home	514	JB
1285	Single-family Residence - Mobile Home	408	JB
1286	Single-family Residence - Mobile Home	371	JB
1287	Single-family Residence - Mobile Home	325	JB
1288	Single-family Residence - Mobile Home	309	JB
1289	Single-family Residence - Mobile Home	354	JB
1290	Single-family Residence - Mobile Home	430	JB
1291	LCRA Facility	203	JB
1292	LCRA Facility	308	JB

Table 5-31 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 23

Segment Combinations: B-E-K-N-GF-GH-GK-GN1-JB-HA2-HD-HF-HG-HM-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1299	Single-family Residence	329	HF
1300	Single-family Residence	451	HG
1313	Single-family Residence	138	HG
1314	Single-family Residence - Mobile Home	135	HG
1315	Single-family Residence	147	HG
1316	Single-family Residence	236	HG
1317	Single-family Residence	486	HG
1401	FM Tower	1151	N
1407	Other electronic installation	637	JB
1408	Other electronic installation	1033	JB
1409	Other electronic installation	1823	HG
1411	Other electronic installation	948	IE
1423	Other electronic installation	1678	DJ
1500	Bay City Municipal Airport	14738	HG
1503	Private Airstrip 2	2177	GK
1506	Fehmel Dusting Service Airport	4361	HG
1507	Eagle Air Park	2759	IO2
1510	Matagorda Regional Medical Center Heliport	1369	JB
1600-E	San Bernard National Wildlife Refuge	185	IM
1606	Justin Hurst Wildlife Management Area	199	EO
1607	Freeport Municipal Golf Course	804	FI
1705	Vine Grove Cemetery	236	IE
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	969	IN
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	41MG138	--	HF
--	41BO191	--	IO2
--	41BO258	--	IO2
--	41BO260	--	IO2

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-32 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 24

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
374	Single-family Residence	197	ER1
375	Single-family Residence	208	ER1
376	Commercial Business	334	ER1
377	Single-family Residence	347	ER1
378	Commercial Business	0	EZ
379	Single-family Residence	143	EZ
380	Single-family Residence - Mobile Home	506	EZ
426	Church	483	FI
428	Single-family Residence	393	FN
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	20	FD
431	Commercial Business	371	EV
432	Commercial Business	271	ER1
433	Single-family Residence	261	ER1
438	Single-family Residence	490	EP
439	Commercial Business	458	EP
440	Single-family Residence - Mobile Home	9	EP
441	Single-family Residence	0	EP
442	Single-family Residence	11	EP
443	Single-family Residence	31	EP
444	Single-family Residence - Mobile Home	19	EP
445	Single-family Residence - Mobile Home	27	EP
446	Single-family Residence	109	EP
447	Single-family Residence	112	EO
448	Single-family Residence	118	EO
449	Single-family Residence	429	EO
450	Single-family Residence - Mobile Home	498	EO
451	Single-family Residence	422	EO
452	Single-family Residence	185	EO
453	Single-family Residence	390	JE
454	Single-family Residence	297	JE
455	Single-family Residence	157	JE
456	Single-family Residence	128	JE
457	Single-family Residence	109	JE
458	Single-family Residence	148	JE
459	Single-family Residence	263	JE

Table 5-32 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 24

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
460	Single-family Residence	352	JE
461	Single-family Residence	380	EF
462	Single-family Residence	377	EF
463	Single-family Residence	377	EF
464	Single-family Residence	381	EF
465	Single-family Residence	425	EF
466	Single-family Residence	509	EF
467	Single-family Residence	179	EF
468	Single-family Residence	338	EF
469	Single-family Residence	64	EF
470	Single-family Residence	125	EF
471	Single-family Residence	112	EF
472	Single-family Residence	164	EF
473	Single-family Residence	279	EF
474	Commercial Business	257	EF
475	Commercial Business	283	EF
476	Single-family Residence	369	EF
477	Single-family Residence	475	EF
478	Single-family Residence	491	EF
479	Single-family Residence	364	EF
480	Single-family Residence	277	EF
481	Single-family Residence	419	EF
482	Single-family Residence	464	EF
487	Single-family Residence	508	EF
495	Single-family Residence	457	DV
496	Single-family Residence	486	DV
499	Single-family Residence	335	DJ
500	Single-family Residence	238	DJ
501	Single-family Residence	152	DJ
502	Single-family Residence	376	DJ
503	Single-family Residence	321	DK
504	Single-family Residence	497	DK
505	Single-family Residence	326	DK
506	Single-family Residence	330	DK
507	Single-family Residence	438	DK
508	Single-family Residence	122	DK

Table 5-32 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 24

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
509	Single-family Residence	173	DK
510	Church	327	DK
511	Single-family Residence	176	DK
512	Church Facility	393	DK
513	Single-family Residence	173	DK
514	Single-family Residence	321	DK
515	Single-family Residence	342	DK
516	Single-family Residence	177	DK
517	Single-family Residence	116	DK
518	Single-family Residence	265	DK
519	Single-family Residence	369	DK
520	Single-family Residence - Mobile Home	498	DV
521	Single-family Residence	223	DV
522	Single-family Residence	96	DV
523	Single-family Residence	152	DV
524	Single-family Residence	245	DV
525	Commercial Business	323	DV
526	Commercial Business	504	DV
527	Single-family Residence	488	DV
528	Single-family Residence	365	DX
529	Single-family Residence	262	DX
530	Single-family Residence	479	DX
531	Single-family Residence	312	DX
532	Single-family Residence	211	DX
533	Single-family Residence	89	DX
534	Single-family Residence	306	DX
535	Single-family Residence	493	DX
536	Single-family Residence	503	DX
537	Single-family Residence	491	DX
538	Single-family Residence	369	DX
539	Single-family Residence	132	DX
540	Single-family Residence	229	DX
541	Single-family Residence	497	DX
542	Single-family Residence	164	DX
543	Single-family Residence	130	DX
544	Commercial Business	194	DX

Table 5-32 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 24

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
545	Single-family Residence	68	DX
546	Single-family Residence	176	DX
547	Single-family Residence	202	DX
548	Single-family Residence	235	EF
549	Single-family Residence	197	DX
550	Single-family Residence	191	DX
551	Single-family Residence	203	DX
552	Single-family Residence	198	DX
553	Single-family Residence	514	DX
554	Single-family Residence	493	DX
555	Single-family Residence	288	DX
556	Single-family Residence	225	DX
557	Single-family Residence	55	DX
558	Single-family Residence	62	EF
559	Single-family Residence	80	EF
560	Single-family Residence	62	EF
561	Single-family Residence	244	EF
562	Single-family Residence	265	EF
563	Commercial Business	62	EF
564	Commercial Business	62	EF
565	Single-family Residence	264	EF
566	Single-family Residence	297	EF
567	Single-family Residence	340	EF
568	Single-family Residence	142	EF
569	Single-family Residence	260	EF
570	Single-family Residence	241	EF
571	Commercial Business	183	EF
572	Single-family Residence	219	EF
573	Single-family Residence	419	EF
585	Single-family Residence	426	EO
586	Single-family Residence	466	EO
587	Single-family Residence	309	EO
588	Single-family Residence	282	JE
589	Single-family Residence	90	JE
590	Single-family Residence	54	JE
591	Single-family Residence	186	E

Table 5-32 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 24

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
592	Single-family Residence - Mobile Home	481	E
593	Single-family Residence - Mobile Home	218	E
594	Single-family Residence	238	E
598	Single-family Residence	240	M
599	Single-family Residence	354	M
600	Single-family Residence	306	M
619	Single-family Residence	125	GT
620	Single-family Residence	121	GT
621	Single-family Residence	431	GT
622	Single-family Residence	223	GT
623	Single-family Residence	186	GT
624	Single-family Residence	157	GT
625	Single-family Residence	364	GT
626	Single-family Residence	133	GT
627	Single-family Residence	253	GT
628	Single-family Residence	340	GT
629	Single-family Residence	434	GT
630	Single-family Residence	194	GT
631	Single-family Residence	343	GT
632	Single-family Residence	422	GT
633	Single-family Residence	349	GT
634	Single-family Residence	225	GT
635	Single-family Residence	362	GT
636	Single-family Residence	506	GT
637	Single-family Residence	182	GT
638	Single-family Residence	353	GT
639	Single-family Residence	399	GT
640	Single-family Residence	512	GT
641	Single-family Residence	141	GT
642	Single-family Residence	165	GT
643	Single-family Residence	236	GT
644	Single-family Residence	355	GT
645	Single-family Residence	430	GT
646	Single-family Residence - Mobile Home	369	GT
647	Single-family Residence - Mobile Home	418	GT
648	Single-family Residence	201	GT

Table 5-32 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 24

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
649	Single-family Residence - Mobile Home	368	GT
650	Single-family Residence	413	GT
651	Single-family Residence	501	GT
652	Industrial Related	362	GT
653	Single-family Residence	225	GT
654	Community Center	511	GT
655	Single-family Residence	178	GT
656	Single-family Residence	175	GT
657	Single-family Residence	262	GT
658	Single-family Residence	410	GT
659	Commercial Business	366	GT
660	Single-family Residence	253	GT
661	Single-family Residence	259	GT
662	Single-family Residence - Mobile Home	165	GT
663	Single-family Residence	195	GT
664	Single-family Residence - Mobile Home	266	GT
665	Single-family Residence - Mobile Home	368	GT
666	Single-family Residence - Mobile Home	453	GT
667	Single-family Residence - Mobile Home	159	GT
668	Single-family Residence	246	GT
669	Single-family Residence	197	GT
670	Commercial Business	359	GT
671	Single-family Residence	346	GT
672	Single-family Residence	448	GT
673	Single-family Residence	350	GT
674	Single-family Residence	222	GT
675	Single-family Residence	392	GT
676	Single-family Residence	409	GT
677	Commercial Business	119	GT
678	Commercial Business	184	GT
679	Single-family Residence	180	GT
680	Single-family Residence	178	GT
681	Single-family Residence	174	GT
682	Single-family Residence	493	GT
683	Single-family Residence	341	GT
684	Single-family Residence	512	GT

Table 5-32 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 24

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
685	Single-family Residence	305	GT
686	Single-family Residence	508	GT
687	Single-family Residence	296	GT
688	Industrial Related	186	GT
689	Single-family Residence	341	GT
690	Single-family Residence	349	GT
691	Single-family Residence	362	GT
692	Single-family Residence	95	GT
693	Single-family Residence	230	GT
694	Single-family Residence - Mobile Home	168	GT
695	Single-family Residence	215	GT
696	Single-family Residence	252	GT
697	Single-family Residence	302	GT
698	Single-family Residence	394	GT
700	Single-family Residence	398	HP
701	Single-family Residence	429	HP
702	Single-family Residence	374	HP
703	Single-family Residence	495	HP
704	Single-family Residence	284	HP
705	Single-family Residence	362	HP
706	Single-family Residence	249	HP
707	Single-family Residence	306	IE
708	Single-family Residence	213	IE
709	Single-family Residence	223	IE
710	Single-family Residence	244	IE
711	Single-family Residence	266	IE
712	Single-family Residence	234	IE
713	Single-family Residence	394	IE
714	Single-family Residence	254	IE
715	Single-family Residence	384	IE
716	Single-family Residence	140	IE
717	Single-family Residence	103	IE
718	Single-family Residence	126	IE
719	Single-family Residence	452	IE
720	Single-family Residence	309	IE
721	Single-family Residence	299	IE

Table 5-32 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 24

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
722	Single-family Residence	370	IE
723	Single-family Residence	368	IE
724	Single-family Residence	350	IE
725	Single-family Residence	298	IE
726	Single-family Residence - Mobile Home	168	IE
727	Single-family Residence	378	IE
728	Single-family Residence	476	IE
729	Single-family Residence	415	IE
730	Single-family Residence	225	IL
731	Single-family Residence	242	IL
732	Single-family Residence	420	IL
733	Single-family Residence	155	IL
734	Single-family Residence	332	IL
735	Single-family Residence	248	IL
736	Single-family Residence	193	IL
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN
757	Single-family Residence	266	IN

Table 5-32 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 24

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN
772	Single-family Residence	458	IN
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1

Table 5-32 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 24

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX

Table 5-32 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 24

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
987	Single-family Residence	132	IE
1401	FM Tower	666	M
1402	Other electronic installation	502	M

Table 5-32 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 24

Segment Combinations: B-E-K-M-GI-GO-GQ-GS-GT-HP-IE-IL-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DX-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1405	Other electronic installation	516	GT
1406	Other electronic installation	1244	GT
1411	Other electronic installation	948	IE
1423	Other electronic installation	1678	DJ
1500	Bay City Municipal Airport	3586	GT
1503	Private Airstrip 2	4480	GO
1504	Private Airstrip 3	3067	GQ
1507	Eagle Air Park	2759	IO2
1600-E	San Bernard National Wildlife Refuge	185	IM
1606	Justin Hurst Wildlife Management Area	199	EO
1607	Freeport Municipal Golf Course	804	FI
1701	Roselawn Memorial Park Cemetery	165	GT
1705	Vine Grove Cemetery	236	IE
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	969	IN
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	41BO191	--	IO2
--	41BO258	--	IO2
--	41BO260	--	IO2

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-33 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 25

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
374	Single-family Residence	197	ER1
375	Single-family Residence	208	ER1
376	Commercial Business	334	ER1
377	Single-family Residence	347	ER1
378	Commercial Business	0	EZ
379	Single-family Residence	143	EZ
380	Single-family Residence - Mobile Home	506	EZ
426	Church	220	FM
427	Church Facility	222	FM
428	Single-family Residence	348	FM
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	20	FD
431	Commercial Business	371	EV
432	Commercial Business	271	ER1
433	Single-family Residence	261	ER1
438	Single-family Residence	490	EP
439	Commercial Business	458	EP
440	Single-family Residence - Mobile Home	9	EP
441	Single-family Residence	0	EP
442	Single-family Residence	11	EP
443	Single-family Residence	31	EP
444	Single-family Residence - Mobile Home	19	EP
445	Single-family Residence - Mobile Home	27	EP
446	Single-family Residence	109	EP
447	Single-family Residence	112	EO
448	Single-family Residence	118	EO
449	Single-family Residence	429	EO
450	Single-family Residence - Mobile Home	498	EO
451	Single-family Residence	422	EO
452	Single-family Residence	185	EO
453	Single-family Residence	390	JE
454	Single-family Residence	297	JE
455	Single-family Residence	157	JE
456	Single-family Residence	128	JE
457	Single-family Residence	109	JE
458	Single-family Residence	148	JE

Table 5-33 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 25

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
459	Single-family Residence	263	JE
460	Single-family Residence	352	JE
461	Single-family Residence	380	EF
462	Single-family Residence	377	EF
463	Single-family Residence	377	EF
464	Single-family Residence	381	EF
465	Single-family Residence	425	EF
466	Single-family Residence	509	EF
467	Single-family Residence	179	EF
468	Single-family Residence	338	EF
469	Single-family Residence	64	EF
470	Single-family Residence	125	EF
471	Single-family Residence	112	EF
472	Single-family Residence	164	EF
473	Single-family Residence	279	EF
474	Commercial Business	176	DW
475	Commercial Business	87	DW
476	Single-family Residence	283	DW
477	Single-family Residence	80	DW
478	Single-family Residence	256	DW
479	Single-family Residence	364	EF
480	Single-family Residence	277	EF
481	Single-family Residence	419	EF
482	Single-family Residence	457	DW
483	Single-family Residence	295	DW
484	Single-family Residence	83	DW
485	Single-family Residence	235	DW
486	Single-family Residence	459	DW
487	Single-family Residence	508	EF
488	Single-family Residence	483	DW
489	Single-family Residence	334	DW
490	Single-family Residence	244	DW
491	Single-family Residence	118	DW
492	Single-family Residence	60	DW
493	Single-family Residence	169	DW
494	Single-family Residence - Mobile Home	468	DW

Table 5-33 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 25

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
495	Single-family Residence	457	DV
496	Single-family Residence	486	DV
499	Single-family Residence	335	DJ
500	Single-family Residence	238	DJ
501	Single-family Residence	152	DJ
502	Single-family Residence	376	DJ
503	Single-family Residence	321	DK
504	Single-family Residence	497	DK
505	Single-family Residence	326	DK
506	Single-family Residence	330	DK
507	Single-family Residence	438	DK
508	Single-family Residence	122	DK
509	Single-family Residence	173	DK
510	Church	327	DK
511	Single-family Residence	176	DK
512	Church Facility	393	DK
513	Single-family Residence	173	DK
514	Single-family Residence	321	DK
515	Single-family Residence	342	DK
516	Single-family Residence	177	DK
517	Single-family Residence	116	DK
518	Single-family Residence	265	DK
519	Single-family Residence	369	DK
520	Single-family Residence - Mobile Home	498	DV
521	Single-family Residence	223	DV
522	Single-family Residence	96	DV
523	Single-family Residence	152	DV
524	Single-family Residence	245	DV
525	Commercial Business	323	DV
526	Commercial Business	504	DV
527	Single-family Residence	488	DV
528	Single-family Residence	383	DW
529	Single-family Residence	297	DW
532	Single-family Residence	503	DW
533	Single-family Residence	490	DW
542	Single-family Residence	134	DW

Table 5-33 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 25

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
548	Single-family Residence	184	DW
550	Single-family Residence	407	EF
551	Single-family Residence	361	EF
552	Single-family Residence	350	EF
554	Single-family Residence	495	EF
555	Single-family Residence	377	EF
556	Single-family Residence	329	EF
557	Single-family Residence	116	EF
558	Single-family Residence	62	EF
559	Single-family Residence	80	EF
560	Single-family Residence	62	EF
561	Single-family Residence	244	EF
562	Single-family Residence	265	EF
563	Commercial Business	62	EF
564	Commercial Business	62	EF
565	Single-family Residence	264	EF
566	Single-family Residence	297	EF
567	Single-family Residence	340	EF
568	Single-family Residence	142	EF
569	Single-family Residence	260	EF
570	Single-family Residence	241	EF
571	Commercial Business	183	EF
572	Single-family Residence	219	EF
573	Single-family Residence	419	EF
585	Single-family Residence	426	EO
586	Single-family Residence	466	EO
587	Single-family Residence	309	EO
588	Single-family Residence	282	JE
589	Single-family Residence	90	JE
590	Single-family Residence	54	JE
595	Single-family Residence	172	J
596	Single-family Residence	151	J
597	Single-family Residence	201	J
598	Single-family Residence	240	M
599	Single-family Residence	354	M
600	Single-family Residence	306	M

Table 5-33 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 25

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
604	Single-family Residence	433	GJ
605	Single-family Residence	472	GJ
606	Single-family Residence	238	GJ
607	Single-family Residence	384	GJ
608	Single-family Residence	268	GJ
609	Single-family Residence	273	GJ
610	Single-family Residence	243	GJ
611	Single-family Residence	274	GJ
612	Single-family Residence	361	GJ
613	Single-family Residence	271	GJ
614	Single-family Residence	282	GJ
615	Single-family Residence	235	GJ
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN

Table 5-33 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 25

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN
772	Single-family Residence	458	IN
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1

Table 5-33 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 25

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX

Table 5-33 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 25

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
882	Single-family Residence	191	FY
883	Single-family Residence - Mobile Home	142	FY
884	Single-family Residence	488	FY
885	Single-family Residence	164	FY
886	Single-family Residence	357	FY
887	Single-family Residence	483	FY
888	Single-family Residence	278	FY
889	Single-family Residence	509	FY
890	Single-family Residence	330	FY

Table 5-33 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 25

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
891	Commercial Business	399	FY
892	Single-family Residence	487	FY
893	Single-family Residence	483	FY
894	Single-family Residence	155	FY
895	Single-family Residence	181	FY
896	Single-family Residence	152	FY
897	Single-family Residence	503	FY
898	Single-family Residence	260	FY
899	Single-family Residence	198	FY
900	Single-family Residence	298	FY
901	Single-family Residence	237	FY
902	Single-family Residence	218	FY
903	Single-family Residence	171	FY
904	Single-family Residence	158	FY
905	Single-family Residence	132	FY
906	Single-family Residence	510	FY
907	Single-family Residence	364	FY
908	Commercial Business	176	FY
909	Single-family Residence	379	FY
910	Single-family Residence	428	FY
911	Single-family Residence - Mobile Home	331	FY
912	Single-family Residence	375	FY
913	Single-family Residence	373	FY
914	Single-family Residence	367	FY
915	Multi-family Residence	458	FY
916	Multi-family Residence	432	FY
917	Multi-family Residence	460	FY
918	Multi-family Residence	432	FY
919	Multi-family Residence	501	FY
920	Multi-family Residence	444	FY
921	Multi-family Residence	364	FY
922	Multi-family Residence	451	FY
923	Multi-family Residence	367	FY
924	Multi-family Residence	450	FY
925	Multi-family Residence	369	FY
926	Multi-family Residence	446	FY

Table 5-33 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 25

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
927	Multi-family Residence	371	FY
928	Single-family Residence - Mobile Home	77	FY
929	Single-family Residence	128	FY
930	Single-family Residence	232	FY
931	Single-family Residence	425	FY
934	Single-family Residence	277	GD
935	Single-family Residence	395	GD
936	Single-family Residence	436	GD
937	Single-family Residence	233	GD
938	Single-family Residence - Mobile Home	207	GD
939	Single-family Residence	447	GD
940	Single-family Residence - Mobile Home	338	GD
941	Single-family Residence	422	GD
942	Single-family Residence	113	GD
943	Commercial / Industrial Related	89	GD
944	Commercial / Industrial Related	132	GD
945	Commercial Business	170	GD
946	Single-family Residence	247	GE
947	Single-family Residence - Mobile Home	150	GE
948	Single-family Residence - Mobile Home	348	GE
949	Single-family Residence	191	HQ
950	Single-family Residence	191	HQ
951	Single-family Residence	518	HQ
952	Single-family Residence - Mobile Home	172	HQ
953	Single-family Residence	187	HQ
954	Single-family Residence	196	HQ
955	Single-family Residence	201	HQ
956	Single-family Residence	194	HQ
957	Single-family Residence	421	HQ
958	Single-family Residence - Mobile Home	177	HQ
959	Single-family Residence - Mobile Home	445	HQ
960	Single-family Residence	188	HQ
961	Single-family Residence	195	HQ
962	Single-family Residence - Mobile Home	196	HQ
963	Single-family Residence	193	HQ
964	Single-family Residence	204	HQ

Table 5-33 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 25

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
965	Single-family Residence - Mobile Home	184	HQ
966	Single-family Residence	308	HQ
967	Single-family Residence	145	HQ
968	Single-family Residence	196	HQ
969	Single-family Residence	400	HQ
970	Single-family Residence - Mobile Home	296	HQ
971	Single-family Residence	270	HQ
972	Single-family Residence	268	HQ
973	Single-family Residence	321	HQ
974	Single-family Residence	497	HQ
975	Single-family Residence	446	HQ
976	Single-family Residence - Mobile Home	330	HQ
977	Single-family Residence - Mobile Home	306	HQ
988	Single-family Residence	238	HR
989	Single-family Residence	133	HR
990	Single-family Residence	208	HR
991	Single-family Residence	345	HR
992	Single-family Residence	362	HR
993	Single-family Residence	121	HR
994	Single-family Residence	311	HR
995	Single-family Residence	205	HR
1000	Single-family Residence - Mobile Home	150	CC
1001	Single-family Residence - Mobile Home	140	CC
1002	Single-family Residence	153	CC
1003	Single-family Residence	412	CC
1004	Single-family Residence	90	CC
1005	Single-family Residence - Mobile Home	133	CC
1006	Single-family Residence	288	CC
1007	Single-family Residence - Mobile Home	493	CC
1008	Single-family Residence	60	CC
1009	Single-family Residence - Mobile Home	55	CC
1010	Single-family Residence	309	CC
1011	Single-family Residence	355	CC
1012	Single-family Residence	321	CC
1013	Single-family Residence	324	CC
1014	Single-family Residence	132	CC

Table 5-33 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 25

Segment Combinations: B-G-J-K-M-GI-GJ-FW-FY-GD-GE-HQ-HR-CC-CD-CE-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FD-FE-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1015	Single-family Residence	359	CC
1016	Single-family Residence	232	CC
1017	Single-family Residence	291	CC
1018	Single-family Residence	220	CD
1141	Single-family Residence	157	CD
1142	Single-family Residence	336	CD
1145	Commercial Business	272	CE
1171	Single-family Residence	390	CE
1172	Single-family Residence - Mobile Home	227	CE
1173	Single-family Residence	127	CE
1174	Single-family Residence	54	CE
1401	FM Tower	666	M
1402	Other electronic installation	502	M
1404	Other electronic installation	1499	FY
1500	Bay City Municipal Airport	17152	GD
1503	Private Airstrip 2	8177	GJ
1504	Private Airstrip 3	8419	GJ
1507	Eagle Air Park	2759	IO2
1600-C	San Bernard National Wildlife Refuge	761	HR
1603	Levi Jordan Plantation	53	CD
1606	Justin Hurst Wildlife Management Area	199	EO
1607	Freeport Municipal Golf Course	337	FM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	969	IN
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	41BO191	--	IO2
--	41BO258	--	IO2
--	41BO260	--	IO2
--	Levi Jordan Plantation	85	CD

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-34 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 26

Segment Combinations: B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
374	Single-family Residence	197	ER1
375	Single-family Residence	208	ER1
376	Commercial Business	334	ER1
377	Single-family Residence	347	ER1
378	Commercial Business	0	EZ
379	Single-family Residence	143	EZ
380	Single-family Residence - Mobile Home	164	FC
381	Single-family Residence	195	FC
382	Single-family Residence	465	FC
383	Single-family Residence	268	FC
384	Single-family Residence	499	FC
385	Multi-family Residence	207	FC
386	Multi-family Residence	274	FC
387	Multi-family Residence	272	FC
388	Multi-family Residence	367	FC
389	Multi-family Residence	432	FC
390	Multi-family Residence	194	FC
391	Multi-family Residence	254	FC
392	Multi-family Residence	316	FC
393	Multi-family Residence	375	FC
394	Multi-family Residence	435	FC
395	Multi-family Residence	428	FC
396	Multi-family Residence	370	FC
397	Multi-family Residence	314	FC
398	Multi-family Residence	253	FC
399	Multi-family Residence	189	FC
400	Multi-family Residence	186	FC

Table 5-34 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 26

Segment Combinations: B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
401	Multi-family Residence	249	FC
402	Multi-family Residence	309	FC
403	Multi-family Residence	366	FC
404	Multi-family Residence	427	FC
405	Multi-family Residence	423	FC
406	Multi-family Residence	364	FC
407	Multi-family Residence	303	FC
408	Multi-family Residence	241	FC
409	Multi-family Residence	182	FC
410	Multi-family Residence	177	FC
411	Multi-family Residence	238	FC
412	Multi-family Residence	298	FC
413	Multi-family Residence	359	FC
414	Multi-family Residence	417	FC
415	Single-family Residence - Mobile Home	86	FC
416	Single-family Residence - Mobile Home	92	FC
417	Single-family Residence	420	FC
418	Single-family Residence	236	FC
419	Single-family Residence	119	FC
420	Single-family Residence	102	FC
421	Church	200	FC
422	Single-family Residence	233	FC
423	Single-family Residence	367	FC
424	Single-family Residence	313	FC
425	Single-family Residence	238	FC
426	Church	149	FC
427	Church Facility	222	FM
428	Single-family Residence	348	FM
429	Commercial / Industrial Related	405	FP
431	Commercial Business	371	EV
432	Commercial Business	271	ER1
433	Single-family Residence	261	ER1
438	Single-family Residence	490	EP
439	Commercial Business	458	EP
440	Single-family Residence - Mobile Home	9	EP
441	Single-family Residence	0	EP

Table 5-34 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 26

Segment Combinations: B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
442	Single-family Residence	11	EP
443	Single-family Residence	31	EP
444	Single-family Residence - Mobile Home	19	EP
445	Single-family Residence - Mobile Home	27	EP
446	Single-family Residence	109	EP
447	Single-family Residence	112	EO
448	Single-family Residence	118	EO
449	Single-family Residence	429	EO
450	Single-family Residence - Mobile Home	498	EO
451	Single-family Residence	422	EO
452	Single-family Residence	185	EO
453	Single-family Residence	390	JE
454	Single-family Residence	297	JE
455	Single-family Residence	157	JE
456	Single-family Residence	128	JE
457	Single-family Residence	109	JE
458	Single-family Residence	148	JE
459	Single-family Residence	263	JE
460	Single-family Residence	352	JE
461	Single-family Residence	380	EF
462	Single-family Residence	377	EF
463	Single-family Residence	377	EF
464	Single-family Residence	381	EF
465	Single-family Residence	425	EF
466	Single-family Residence	509	EF
467	Single-family Residence	179	EF
468	Single-family Residence	338	EF
469	Single-family Residence	64	EF
470	Single-family Residence	125	EF
471	Single-family Residence	112	EF
472	Single-family Residence	164	EF
473	Single-family Residence	279	EF
474	Commercial Business	176	DW
475	Commercial Business	87	DW
476	Single-family Residence	283	DW
477	Single-family Residence	80	DW

Table 5-34 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 26

Segment Combinations: B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
478	Single-family Residence	256	DW
479	Single-family Residence	364	EF
480	Single-family Residence	277	EF
481	Single-family Residence	419	EF
482	Single-family Residence	457	DW
483	Single-family Residence	295	DW
484	Single-family Residence	83	DW
485	Single-family Residence	235	DW
486	Single-family Residence	459	DW
487	Single-family Residence	508	EF
488	Single-family Residence	483	DW
489	Single-family Residence	334	DW
490	Single-family Residence	244	DW
491	Single-family Residence	118	DW
492	Single-family Residence	60	DW
493	Single-family Residence	169	DW
494	Single-family Residence - Mobile Home	468	DW
495	Single-family Residence	457	DV
496	Single-family Residence	486	DV
499	Single-family Residence	335	DJ
500	Single-family Residence	238	DJ
501	Single-family Residence	152	DJ
502	Single-family Residence	376	DJ
503	Single-family Residence	321	DK
504	Single-family Residence	497	DK
505	Single-family Residence	326	DK
506	Single-family Residence	330	DK
507	Single-family Residence	438	DK
508	Single-family Residence	122	DK
509	Single-family Residence	173	DK
510	Church	327	DK
511	Single-family Residence	176	DK
512	Church Facility	393	DK
513	Single-family Residence	173	DK
514	Single-family Residence	321	DK
515	Single-family Residence	342	DK

Table 5-34 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 26

Segment Combinations: B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
516	Single-family Residence	177	DK
517	Single-family Residence	116	DK
518	Single-family Residence	265	DK
519	Single-family Residence	369	DK
520	Single-family Residence - Mobile Home	498	DV
521	Single-family Residence	223	DV
522	Single-family Residence	96	DV
523	Single-family Residence	152	DV
524	Single-family Residence	245	DV
525	Commercial Business	323	DV
526	Commercial Business	504	DV
527	Single-family Residence	488	DV
528	Single-family Residence	383	DW
529	Single-family Residence	297	DW
532	Single-family Residence	503	DW
533	Single-family Residence	490	DW
542	Single-family Residence	134	DW
548	Single-family Residence	184	DW
550	Single-family Residence	407	EF
551	Single-family Residence	361	EF
552	Single-family Residence	350	EF
554	Single-family Residence	495	EF
555	Single-family Residence	377	EF
556	Single-family Residence	329	EF
557	Single-family Residence	116	EF
558	Single-family Residence	62	EF
559	Single-family Residence	80	EF
560	Single-family Residence	62	EF
561	Single-family Residence	244	EF
562	Single-family Residence	265	EF
563	Commercial Business	62	EF
564	Commercial Business	62	EF
565	Single-family Residence	264	EF
566	Single-family Residence	297	EF
567	Single-family Residence	340	EF
568	Single-family Residence	142	EF

Table 5-34 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 26

Segment Combinations: B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
569	Single-family Residence	260	EF
570	Single-family Residence	241	EF
571	Commercial Business	183	EF
572	Single-family Residence	219	EF
573	Single-family Residence	419	EF
585	Single-family Residence	426	EO
586	Single-family Residence	466	EO
587	Single-family Residence	309	EO
588	Single-family Residence	282	JE
589	Single-family Residence	90	JE
590	Single-family Residence	54	JE
737	Single-family Residence - Mobile Home	203	IM
738	Single-family Residence	313	IM
739	Single-family Residence - Mobile Home	260	IM
740	Single-family Residence - Mobile Home	426	IN
741	Church	161	IN
742	Single-family Residence	247	IN
743	Single-family Residence	247	IN
744	Single-family Residence - Mobile Home	213	IN
745	Single-family Residence - Mobile Home	203	IN
746	Single-family Residence - Mobile Home	182	IN
747	Single-family Residence - Mobile Home	304	IN
748	Single-family Residence	228	IN
749	Single-family Residence	215	IN
750	Single-family Residence	323	IN
751	Single-family Residence	378	IN
752	Single-family Residence	298	IN
753	Single-family Residence	349	IN
754	Church	207	IN
755	Single-family Residence	336	IN
756	Single-family Residence - Mobile Home	160	IN
757	Single-family Residence	266	IN
758	Single-family Residence	224	IN
759	Single-family Residence	280	IN
760	Single-family Residence	256	IN
761	Single-family Residence	293	IN

Table 5-34 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 26

Segment Combinations: B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
762	Single-family Residence - Mobile Home	200	IN
763	Single-family Residence	235	IN
764	Single-family Residence	78	IN
765	Single-family Residence	52	IN
766	Single-family Residence	129	IN
767	Single-family Residence	332	IN
768	Single-family Residence	113	IN
769	Single-family Residence	92	IN
770	Single-family Residence - Mobile Home	76	IN
771	Single-family Residence	144	IN
772	Single-family Residence	458	IN
773	Single-family Residence	467	IN
774	Commercial / Industrial Related	269	IN
775	Single-family Residence	419	IN
776	Single-family Residence	155	IN
777	Single-family Residence	159	IN
778	Single-family Residence	396	IN
779	Single-family Residence	414	IN
780	Single-family Residence	508	IN
781	Single-family Residence	381	IN
782	Single-family Residence - Mobile Home	164	IN
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1

Table 5-34 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 26

Segment Combinations: B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX

Table 5-34 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 26

Segment Combinations: B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
868	Single-family Residence	158	FQ
869	Single-family Residence	120	FQ
870	Church	163	FQ
871	Single-family Residence	159	FQ
872	Single-family Residence - Mobile Home	369	FQ
873	Single-family Residence	120	FQ
874	Single-family Residence	273	FQ

Table 5-34 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 26

Segment Combinations: B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
875	Single-family Residence - Mobile Home	406	FQ
876	Single-family Residence - Mobile Home	144	FQ
877	Single-family Residence	221	FQ
878	Single-family Residence	173	FQ
879	Single-family Residence	98	FQ
880	Single-family Residence	353	FQ
881	Single-family Residence	223	FQ
882	Single-family Residence	191	FY
883	Single-family Residence - Mobile Home	142	FY
884	Single-family Residence	488	FY
885	Single-family Residence	164	FY
886	Single-family Residence	357	FY
887	Single-family Residence	483	FY
888	Single-family Residence	278	FY
889	Single-family Residence	509	FY
890	Single-family Residence	330	FY
891	Commercial Business	399	FY
892	Single-family Residence	487	FY
893	Single-family Residence	483	FY
894	Single-family Residence	155	FY
895	Single-family Residence	181	FY
896	Single-family Residence	152	FY
897	Single-family Residence	503	FY
898	Single-family Residence	260	FY
899	Single-family Residence	198	FY
900	Single-family Residence	298	FY
901	Single-family Residence	237	FY
902	Single-family Residence	218	FY
903	Single-family Residence	171	FY
904	Single-family Residence	158	FY
905	Single-family Residence	132	FY
906	Single-family Residence	510	FY
907	Single-family Residence	364	FY
908	Commercial Business	176	FY
909	Single-family Residence	379	FY
910	Single-family Residence	428	FY

Table 5-34 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 26

Segment Combinations: B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
911	Single-family Residence - Mobile Home	331	FY
912	Single-family Residence	375	FY
913	Single-family Residence	373	FY
914	Single-family Residence	367	FY
915	Multi-family Residence	458	FY
916	Multi-family Residence	432	FY
917	Multi-family Residence	460	FY
918	Multi-family Residence	432	FY
919	Multi-family Residence	501	FY
920	Multi-family Residence	444	FY
921	Multi-family Residence	364	FY
922	Multi-family Residence	451	FY
923	Multi-family Residence	367	FY
924	Multi-family Residence	450	FY
925	Multi-family Residence	369	FY
926	Multi-family Residence	446	FY
927	Multi-family Residence	371	FY
928	Single-family Residence - Mobile Home	77	FY
929	Single-family Residence	128	FY
930	Single-family Residence	232	FY
931	Single-family Residence	425	FY
932	Single-family Residence	252	GC
933	Single-family Residence	511	GC
946	Single-family Residence	247	GE
947	Single-family Residence - Mobile Home	150	GE
948	Single-family Residence - Mobile Home	348	GE
949	Single-family Residence	191	HQ
950	Single-family Residence	191	HQ
951	Single-family Residence	518	HQ
952	Single-family Residence - Mobile Home	172	HQ
953	Single-family Residence	187	HQ
954	Single-family Residence	196	HQ
955	Single-family Residence	201	HQ
956	Single-family Residence	194	HQ
957	Single-family Residence	421	HQ
958	Single-family Residence - Mobile Home	177	HQ

Table 5-34 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 26

Segment Combinations: B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
959	Single-family Residence - Mobile Home	445	HQ
960	Single-family Residence	188	HQ
961	Single-family Residence	195	HQ
962	Single-family Residence - Mobile Home	196	HQ
963	Single-family Residence	193	HQ
964	Single-family Residence	204	HQ
965	Single-family Residence - Mobile Home	184	HQ
966	Single-family Residence	308	HQ
967	Single-family Residence	145	HQ
968	Single-family Residence	196	HQ
969	Single-family Residence	400	HQ
970	Single-family Residence - Mobile Home	296	HQ
971	Single-family Residence	270	HQ
972	Single-family Residence	268	HQ
973	Single-family Residence	321	HQ
974	Single-family Residence	497	HQ
975	Single-family Residence	446	HQ
976	Single-family Residence - Mobile Home	330	HQ
977	Single-family Residence - Mobile Home	306	HQ
988	Single-family Residence	238	HR
989	Single-family Residence	133	HR
990	Single-family Residence	208	HR
991	Single-family Residence	345	HR
992	Single-family Residence	362	HR
993	Single-family Residence	121	HR
994	Single-family Residence	311	HR
995	Single-family Residence	205	HR
996	Single-family Residence	366	HS
997	Single-family Residence	473	HS
998	Single-family Residence	82	HS
999	Single-family Residence	184	HS
1400	Other electronic installation	258	L
1403	Other electronic installation	1921	FQ
1404	Other electronic installation	1499	FY
1423	Other electronic installation	1678	DJ
1500	Bay City Municipal Airport	17243	GC

Table 5-34 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 26

Segment Combinations: B-D-C-L-FQ-FY-GC-GE-HQ-HR-HS-IM-IN-IO1-IO2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ES-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1501	Private Airstrip 1	3523	L
1507	Eagle Air Park	2759	IO2
1600-A	San Bernard National Wildlife Refuge	286	L
1600-C	San Bernard National Wildlife Refuge	761	HR
1600-E	San Bernard National Wildlife Refuge	185	IM
1606	Justin Hurst Wildlife Management Area	199	EO
1607	Freeport Municipal Golf Course	337	FM
1700	Union Church Cemetery	310	FQ
1707	Jaden Cemetery	545	IM
1708	Grace Baptist Cemetery	284	IN
1709	Unknown Cemetery 1	93	IN
1712	Mims Family Cemetery	969	IN
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	41BO221	--	HS
--	41BO191	--	IO2
--	41BO258	--	IO2
--	41BO260	--	IO2

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-35 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 27

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
10	Single-family Residence	341	P
11	Single-family Residence	307	P
12	Single-family Residence	332	P
13	Single-family Residence - Mobile Home	350	P
14	Single-family Residence - Mobile Home	109	P
15	Single-family Residence - Mobile Home	441	P
16	Single-family Residence	454	P
17	Single-family Residence	264	P
18	Single-family Residence	115	P
19	Single-family Residence	108	P
20	Single-family Residence	377	P
21	Single-family Residence	67	P
22	Single-family Residence - Mobile Home	159	P
23	Single-family Residence - Mobile Home	178	P
24	Single-family Residence - Mobile Home	251	P
25	Single-family Residence - Mobile Home	69	P
26	Single-family Residence	210	P
27	Single-family Residence	143	P
28	Single-family Residence - Mobile Home	150	P
29	Single-family Residence - Mobile Home	391	V
30	Single-family Residence - Mobile Home	348	V
31	Single-family Residence	326	V
32	Single-family Residence	310	V
33	Single-family Residence	233	V
34	Single-family Residence	248	V
35	Single-family Residence	331	X
39	Single-family Residence	446	X

Table 5-35 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 27

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
40	Single-family Residence	318	Y
41	Single-family Residence	281	Y
42	Single-family Residence	380	Y
43	Single-family Residence	270	Y
355	Single-family Residence	364	DL
356	Single-family Residence	132	DL
357	Single-family Residence - Mobile Home	427	DL
358	Single-family Residence - Mobile Home	502	DL
359	Single-family Residence - Mobile Home	56	DL
360	Single-family Residence - Mobile Home	179	DL
361	Church	347	DL
362	Single-family Residence - Mobile Home	368	DL
363	Single-family Residence	481	DL
364	Single-family Residence	161	DO
365	Single-family Residence	195	DQ
367	Single-family Residence	276	DR
368	Single-family Residence - Mobile Home	231	DR
369	Single-family Residence - Mobile Home	199	DR
370	Single-family Residence	162	DR
372	Single-family Residence	277	DT
373	Single-family Residence	185	DT
374	Single-family Residence	197	ER1
375	Single-family Residence	208	ER1
376	Commercial Business	334	ER1
377	Single-family Residence	347	ER1
378	Commercial Business	0	EZ
379	Single-family Residence	143	EZ
380	Single-family Residence - Mobile Home	164	FC
381	Single-family Residence	195	FC
382	Single-family Residence	465	FC
383	Single-family Residence	268	FC
384	Single-family Residence	499	FC
385	Multi-family Residence	207	FC
386	Multi-family Residence	274	FC
387	Multi-family Residence	272	FC
388	Multi-family Residence	367	FC

Table 5-35 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 27

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
389	Multi-family Residence	432	FC
390	Multi-family Residence	194	FC
391	Multi-family Residence	254	FC
392	Multi-family Residence	316	FC
393	Multi-family Residence	375	FC
394	Multi-family Residence	435	FC
395	Multi-family Residence	428	FC
396	Multi-family Residence	370	FC
397	Multi-family Residence	314	FC
398	Multi-family Residence	253	FC
399	Multi-family Residence	189	FC
400	Multi-family Residence	186	FC
401	Multi-family Residence	249	FC
402	Multi-family Residence	309	FC
403	Multi-family Residence	366	FC
404	Multi-family Residence	427	FC
405	Multi-family Residence	423	FC
406	Multi-family Residence	364	FC
407	Multi-family Residence	303	FC
408	Multi-family Residence	241	FC
409	Multi-family Residence	182	FC
410	Multi-family Residence	177	FC
411	Multi-family Residence	238	FC
412	Multi-family Residence	298	FC
413	Multi-family Residence	359	FC
414	Multi-family Residence	417	FC
415	Single-family Residence - Mobile Home	86	FC
416	Single-family Residence - Mobile Home	92	FC
417	Single-family Residence	420	FC
418	Single-family Residence	236	FC
419	Single-family Residence	119	FC
420	Single-family Residence	102	FC
421	Church	200	FC
422	Single-family Residence	233	FC
423	Single-family Residence	367	FC
424	Single-family Residence	313	FC

Table 5-35 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 27

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
425	Single-family Residence	238	FC
426	Church	149	FC
427	Church Facility	222	FM
428	Single-family Residence	348	FM
429	Commercial / Industrial Related	405	FP
431	Commercial Business	371	EV
432	Commercial Business	271	ER1
433	Single-family Residence	261	ER1
438	Single-family Residence	462	DT
498	Single-family Residence	506	JD
499	Single-family Residence	335	DJ
500	Single-family Residence	238	DJ
501	Single-family Residence	152	DJ
502	Single-family Residence	376	DJ
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1

Table 5-35 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 27

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX

Table 5-35 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 27

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
1017	Single-family Residence	91	BV
1018	Single-family Residence	220	CD
1019	Single-family Residence	449	BV
1020	Single-family Residence	415	BU
1021	Single-family Residence	427	BU
1077	Single-family Residence	356	CF
1078	Single-family Residence	244	CF
1079	Single-family Residence	163	CF
1080	Single-family Residence	55	CM
1081	Single-family Residence	238	CM
1082	Single-family Residence	385	CM
1083	Single-family Residence	216	CM
1084	Church	217	CM
1085	Church Facility	275	CM

Table 5-35 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 27

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1086	Single-family Residence	244	CM
1087	Single-family Residence	79	CM
1088	Single-family Residence	202	CM
1089	Single-family Residence	264	CM
1090	Single-family Residence - Mobile Home	75	CM
1091	Single-family Residence	336	CM
1092	Commercial Business	215	CM
1093	Commercial Business	210	CM
1094	Commercial Business	271	CM
1095	Church	251	CM
1096	Church Facility	281	CM
1097	Single-family Residence	79	CM
1098	Single-family Residence	200	CM
1099	Single-family Residence	362	CM
1100	Single-family Residence	100	CM
1101	Single-family Residence	129	CM
1102	Single-family Residence	244	CM
1103	Single-family Residence	204	CM
1104	Single-family Residence	308	CM
1105	Single-family Residence - Mobile Home	105	CM
1106	Single-family Residence	257	CM
1107	Single-family Residence	245	CQ
1141	Single-family Residence	157	CD
1142	Single-family Residence	336	CD
1143	Single-family Residence - Mobile Home	264	CF
1144	Commercial Business	262	CF
1145	Commercial Business	57	CF
1146	Single-family Residence	228	CF
1147	Church	327	CF
1148	Single-family Residence	54	CF
1149	Single-family Residence	275	CF
1150	Single-family Residence	258	CF
1151	Single-family Residence	274	CF
1152	Single-family Residence	295	CF
1153	Commercial Business	12	CF
1154	Single-family Residence	156	CF

Table 5-35 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 27

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1155	Single-family Residence	260	CF
1156	Single-family Residence	476	CF
1157	Single-family Residence	156	CF
1158	Single-family Residence	193	CF
1159	Single-family Residence	82	CF
1160	Single-family Residence	296	CF
1161	Single-family Residence	297	CF
1162	Single-family Residence	139	CF
1163	Commercial Business	52	CF
1164	Single-family Residence - Mobile Home	93	CF
1165	Single-family Residence	231	CF
1166	Single-family Residence	122	CF
1167	Single-family Residence	167	CF
1168	Single-family Residence	51	CF
1169	Single-family Residence	216	CF
1170	Single-family Residence - Mobile Home	319	CF
1195	Single-family Residence	491	BU
1196	Single-family Residence	261	BU
1197	Single-family Residence	87	BU
1198	Single-family Residence	390	AA
1199	Single-family Residence - Mobile Home	54	AA
1200	Single-family Residence - Mobile Home	55	AA
1201	Single-family Residence	196	AA
1202	Single-family Residence - Mobile Home	380	AA
1203	Single-family Residence - Mobile Home	504	AA
1204	Single-family Residence	245	AA
1205	Single-family Residence	451	AA
1206	Single-family Residence	327	AA
1207	Single-family Residence	51	AA
1208	Single-family Residence	480	AA
1209	Single-family Residence - Mobile Home	360	AA
1210	Single-family Residence	450	AA
1211	Single-family Residence	139	AA
1212	Single-family Residence	206	AA
1213	Single-family Residence - Mobile Home	349	AA
1214	Single-family Residence	342	AA

Table 5-35 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 27

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1215	Single-family Residence	204	AA
1216	Single-family Residence - Mobile Home	223	AA
1217	Single-family Residence - Mobile Home	400	AA
1218	Single-family Residence	392	AA
1219	Single-family Residence	98	AA
1220	Single-family Residence	199	AA
1221	Single-family Residence	145	AA
1222	Single-family Residence	242	AA
1223	Single-family Residence	514	AA
1224	Multi-family Residence	468	AA
1225	Multi-family Residence	468	AA
1226	Multi-family Residence	506	AA
1227	Multi-family Residence	480	AA
1228	Multi-family Residence	453	AA
1229	Single-family Residence	365	AA
1230	Single-family Residence	388	AA
1231	Single-family Residence	54	AA
1232	Single-family Residence - Mobile Home	189	AA
1233	Single-family Residence - Mobile Home	202	AA
1234	Single-family Residence	132	AA
1235	Single-family Residence	227	AA
1236	Single-family Residence	261	AA
1237	Single-family Residence	135	AA
1238	Single-family Residence	269	AA
1239	Single-family Residence	486	AA
1240	Single-family Residence	372	AA
1241	Single-family Residence	260	AA
1242	Single-family Residence	314	AA
1243	Single-family Residence	327	AA
1244	Single-family Residence	239	AA
1245	Single-family Residence	438	AA
1246	Single-family Residence	502	AA
1247	Single-family Residence	343	AA
1248	Single-family Residence	498	AA
1400	Other electronic installation	258	L
1412	Other electronic installation	945	P

Table 5-35 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 27

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ER1-ER2-EV-EZ-FC-FM-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1413	Other electronic installation	454	P
1414	Other electronic installation	854	P
1415	Other electronic installation	947	V
1416	Other electronic installation	1173	AA
1417	Other electronic installation	1786	AA
1418	Other electronic installation	1247	CF
1423	Other electronic installation	1678	DJ
1501	Private Airstrip 1	3523	L
1502	Peterson Airport	6357	P
1507	Eagle Air Park	2759	IO2
1511	Sweeny Community Hospital Heliport	1420	AA
1600-A	San Bernard National Wildlife Refuge	286	L
1600-B	San Bernard National Wildlife Refuge	149	P
1600-D	San Bernard National Wildlife Refuge	49	AA
1603	Levi Jordan Plantation	53	CD
1606	Justin Hurst Wildlife Management Area	221	IZ
1607	Freeport Municipal Golf Course	337	FM
1702	Morris Cemetery	784	P
1703	Gardener Family Cemetery	780	V
1704	Black Family Cemetery	571	V
1710	Zion Temple Cemetery/Williams Family/Mims-Fannin Plantation	89	CM
1711	Mims Community Cemetery	357	CM
1712	Mims Family Cemetery	72	CQ
1715	Galilee Church Cemetery	104	IX
1719	Oakland Cemetery	371	DL
--	41BO257	--	CF
--	41BO262	--	CM
--	41BO227	--	FP
--	41BO191	--	IO2
--	41BO258	--	IO2
--	41BO260	--	IO2
--	41BO238	--	P
--	Levi Jordan Plantation	85	CD

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-36 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 28

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DL-DO-DP-DR-DS-DT-ER1-ER2-EV-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
10	Single-family Residence	341	P
11	Single-family Residence	307	P
12	Single-family Residence	332	P
13	Single-family Residence - Mobile Home	350	P
14	Single-family Residence - Mobile Home	109	P
15	Single-family Residence - Mobile Home	441	P
16	Single-family Residence	454	P
17	Single-family Residence	264	P
18	Single-family Residence	115	P
19	Single-family Residence	108	P
20	Single-family Residence	377	P
21	Single-family Residence	67	P
22	Single-family Residence - Mobile Home	159	P
23	Single-family Residence - Mobile Home	178	P
24	Single-family Residence - Mobile Home	251	P
25	Single-family Residence - Mobile Home	69	P
26	Single-family Residence	210	P
27	Single-family Residence	143	P
28	Single-family Residence - Mobile Home	150	P
29	Single-family Residence - Mobile Home	391	V
30	Single-family Residence - Mobile Home	348	V
31	Single-family Residence	326	V
32	Single-family Residence	310	V
33	Single-family Residence	233	V
34	Single-family Residence	248	V
35	Single-family Residence	331	X
39	Single-family Residence	446	X

Table 5-36 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 28

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DL-DO-DP-DR-DS-DT-ER1-ER2-EV-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
40	Single-family Residence	318	Y
41	Single-family Residence	281	Y
42	Single-family Residence	380	Y
43	Single-family Residence	270	Y
44	Single-family Residence	399	Z
45	Single-family Residence	403	Z
46	Single-family Residence	143	Z
47	Single-family Residence	166	Z
48	Single-family Residence	178	Z
49	Single-family Residence	210	Z
50	Single-family Residence	263	Z
51	Single-family Residence - Mobile Home	110	Z
52	Single-family Residence	87	Z
53	Single-family Residence	68	Z
54	Single-family Residence	276	Z
55	Single-family Residence	411	Z
56	Single-family Residence - Mobile Home	213	Z
57	Single-family Residence	256	Z
58	Single-family Residence	162	Z
59	Single-family Residence	128	Z
60	Single-family Residence	349	Z
61	Single-family Residence	221	Z
62	Single-family Residence	362	Z
63	Single-family Residence	416	Z
64	Single-family Residence	112	Z
65	Single-family Residence	150	Z
66	Single-family Residence - Mobile Home	51	Z
67	Single-family Residence	255	Z
160	Single-family Residence	55	BI
161	Single-family Residence - Mobile Home	305	BI
162	Single-family Residence	284	BI
163	Single-family Residence - Mobile Home	281	BI
164	Single-family Residence	449	BI
355	Single-family Residence	364	DL
356	Single-family Residence	132	DL
357	Single-family Residence - Mobile Home	427	DL

Table 5-36 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 28

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DL-DO-DP-DR-DS-DT-ER1-ER2-EV-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
358	Single-family Residence - Mobile Home	502	DL
359	Single-family Residence - Mobile Home	56	DL
360	Single-family Residence - Mobile Home	179	DL
361	Church	347	DL
362	Single-family Residence - Mobile Home	368	DL
363	Single-family Residence	481	DL
364	Single-family Residence	161	DO
365	Single-family Residence	58	DP
366	Single-family Residence	443	DP
367	Single-family Residence	276	DR
368	Single-family Residence - Mobile Home	231	DR
369	Single-family Residence - Mobile Home	199	DR
370	Single-family Residence	162	DR
372	Single-family Residence	277	DT
373	Single-family Residence	185	DT
374	Single-family Residence	197	ER1
375	Single-family Residence	208	ER1
376	Commercial Business	334	ER1
377	Single-family Residence	347	ER1
378	Commercial Business	0	EZ
379	Single-family Residence	143	EZ
380	Single-family Residence - Mobile Home	506	EZ
426	Church	479	FH
427	Church Facility	512	FH
428	Single-family Residence	88	FH
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	20	FD
431	Commercial Business	371	EV
432	Commercial Business	271	ER1
433	Single-family Residence	261	ER1
438	Single-family Residence	462	DT
498	Single-family Residence	506	JD
499	Single-family Residence	335	DJ
500	Single-family Residence	238	DJ
501	Single-family Residence	152	DJ
502	Single-family Residence	376	DJ

Table 5-36 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 28

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DL-DO-DP-DR-DS-DT-ER1-ER2-EV-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2

Table 5-36 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 28

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DL-DO-DP-DR-DS-DT-ER1-ER2-EV-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX

Table 5-36 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 28

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DL-DO-DP-DR-DS-DT-ER1-ER2-EV-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
1048	Single-family Residence	288	BX
1049	Single-family Residence	146	BX
1050	Single-family Residence - Mobile Home	185	BX
1051	Single-family Residence	403	BX
1052	Single-family Residence	448	BX
1053	Single-family Residence	60	BX
1054	Single-family Residence - Mobile Home	142	BX
1055	Single-family Residence - Mobile Home	246	BX
1056	Single-family Residence - Mobile Home	307	BX
1057	Single-family Residence	131	BX
1058	Single-family Residence	176	BX
1059	Single-family Residence	353	BX
1060	Single-family Residence	468	BX
1061	Single-family Residence	375	BX
1062	Single-family Residence - Mobile Home	229	BX
1063	Single-family Residence - Mobile Home	82	BX
1064	Single-family Residence	410	BX
1065	Single-family Residence	170	BX
1066	Single-family Residence	228	BX
1067	Single-family Residence	348	BX
1068	Single-family Residence	87	BX
1069	Single-family Residence	72	BX
1070	Single-family Residence	116	BX
1071	Single-family Residence	168	BX
1072	Single-family Residence - Mobile Home	198	BX
1073	Single-family Residence	222	BX
1074	Single-family Residence	329	BX
1075	Single-family Residence - Mobile Home	179	BX

Table 5-36 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 28

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DL-DO-DP-DR-DS-DT-ER1-ER2-EV-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1076	Single-family Residence - Mobile Home	261	BX
1077	Single-family Residence	311	BX
1078	Single-family Residence	118	BX
1079	Single-family Residence	168	CM
1080	Single-family Residence	55	CM
1081	Single-family Residence	238	CM
1082	Single-family Residence	385	CM
1083	Single-family Residence	216	CM
1084	Church	217	CM
1085	Church Facility	275	CM
1086	Single-family Residence	244	CM
1087	Single-family Residence	79	CM
1088	Single-family Residence	202	CM
1089	Single-family Residence	264	CM
1090	Single-family Residence - Mobile Home	75	CM
1091	Single-family Residence	336	CM
1092	Commercial Business	215	CM
1093	Commercial Business	210	CM
1094	Commercial Business	271	CM
1095	Church	251	CM
1096	Church Facility	281	CM
1097	Single-family Residence	79	CM
1098	Single-family Residence	200	CM
1099	Single-family Residence	362	CM
1100	Single-family Residence	100	CM
1101	Single-family Residence	129	CM
1102	Single-family Residence	244	CM
1103	Single-family Residence	204	CM
1104	Single-family Residence	308	CM
1105	Single-family Residence - Mobile Home	105	CM
1106	Single-family Residence	257	CM
1107	Single-family Residence	245	CQ
1249	Single-family Residence	57	BI
1250	Single-family Residence	503	BI
1251	Single-family Residence - Mobile Home	377	BI
1252	Single-family Residence	211	BI

Table 5-36 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 28

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DL-DO-DP-DR-DS-DT-ER1-ER2-EV-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1253	Single-family Residence - Mobile Home	164	BI
1254	Single-family Residence - Mobile Home	149	BI
1255	Single-family Residence - Mobile Home	168	BI
1256	Single-family Residence	91	BI
1257	Single-family Residence	232	BI
1258	Single-family Residence	302	BI
1259	Single-family Residence - Mobile Home	267	BI
1260	Single-family Residence - Mobile Home	282	BI
1261	Single-family Residence	245	BI
1262	Single-family Residence	516	BI
1263	Single-family Residence	193	BI
1264	Single-family Residence	104	BI
1265	Single-family Residence	466	BI
1266	Single-family Residence	92	BI
1267	Single-family Residence	181	BI
1268	Single-family Residence	348	BI
1269	Single-family Residence	430	BI
1270	Single-family Residence	377	BI
1271	Single-family Residence	205	BI
1272	Single-family Residence	491	BI
1273	Single-family Residence	423	BI
1274	Single-family Residence	422	BI
1275	Single-family Residence	89	BI
1400	Other electronic installation	258	L
1412	Other electronic installation	945	P
1413	Other electronic installation	454	P
1414	Other electronic installation	854	P
1415	Other electronic installation	947	V
1423	Other electronic installation	1678	DJ
1501	Private Airstrip 1	3523	L
1502	Peterson Airport	6357	P
1507	Eagle Air Park	2759	IO2
1600-A	San Bernard National Wildlife Refuge	286	L
1600-B	San Bernard National Wildlife Refuge	149	P
1606	Justin Hurst Wildlife Management Area	221	IZ
1607	Freeport Municipal Golf Course	686	FH

Table 5-36 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 28

Segment Combinations: B-D-C-L-P-U-V-X-Y-Z-BI-BX-CM-CQ-IO1-IO2-IX-IZ-DJ-DL-DO-DP-DR-DS-DT-ER1-ER2-EV-EZ-FD-FG-FH-FO-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1702	Morris Cemetery	784	P
1703	Gardener Family Cemetery	780	V
1704	Black Family Cemetery	571	V
1710	Zion Temple Cemetery/Williams Family/Mims-Fannin Plantation	89	CM
1711	Mims Community Cemetery	357	CM
1712	Mims Family Cemetery	72	CQ
1715	Galilee Church Cemetery	104	IX
1719	Oakland Cemetery	371	DL
--	41BO262	--	CM
--	41BO227	--	FP
--	41BO191	--	IO2
--	41BO258	--	IO2
--	41BO260	--	IO2
--	41BO238	--	P
--	41BO109	--	Z
--	Gazebo for James Richardson Marimion	660	BI

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-37 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 29

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
10	Single-family Residence	341	P
11	Single-family Residence	307	P
12	Single-family Residence	332	P
13	Single-family Residence - Mobile Home	350	P
14	Single-family Residence - Mobile Home	109	P
15	Single-family Residence - Mobile Home	441	P
16	Single-family Residence	454	P
17	Single-family Residence	264	P
18	Single-family Residence	115	P
19	Single-family Residence	108	P
20	Single-family Residence	377	P
21	Single-family Residence	67	P
22	Single-family Residence - Mobile Home	159	P
23	Single-family Residence - Mobile Home	178	P
24	Single-family Residence - Mobile Home	251	P
25	Single-family Residence - Mobile Home	69	P
26	Single-family Residence	210	P
27	Single-family Residence	143	P
28	Single-family Residence - Mobile Home	150	P
29	Single-family Residence - Mobile Home	391	V
30	Single-family Residence - Mobile Home	348	V
31	Single-family Residence	326	V
32	Single-family Residence	310	V
33	Single-family Residence	233	V
34	Single-family Residence	248	V
35	Single-family Residence	331	X
39	Single-family Residence	446	X

Table 5-37 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 29

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
40	Single-family Residence	318	Y
41	Single-family Residence	281	Y
42	Single-family Residence	380	Y
43	Single-family Residence	270	Y
44	Single-family Residence	399	Z
45	Single-family Residence	403	Z
46	Single-family Residence	143	Z
47	Single-family Residence	166	Z
48	Single-family Residence	178	Z
49	Single-family Residence	210	Z
50	Single-family Residence	263	Z
51	Single-family Residence - Mobile Home	110	Z
52	Single-family Residence	87	Z
53	Single-family Residence	68	Z
54	Single-family Residence	276	Z
55	Single-family Residence	411	Z
56	Single-family Residence - Mobile Home	213	Z
57	Single-family Residence	256	Z
58	Single-family Residence	162	Z
59	Single-family Residence	128	Z
60	Single-family Residence	349	Z
61	Single-family Residence	221	Z
62	Single-family Residence	362	Z
63	Single-family Residence	416	Z
64	Single-family Residence	112	Z
65	Single-family Residence	150	Z
66	Single-family Residence - Mobile Home	51	Z
67	Single-family Residence	245	AP
68	Single-family Residence	207	AP
69	Single-family Residence	55	AP
70	Single-family Residence	55	AP
71	Single-family Residence	363	AP
72	Single-family Residence	220	AP
73	Single-family Residence	214	AP
74	Single-family Residence	213	AP
75	Single-family Residence - Mobile Home	209	AP

Table 5-37 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 29

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
76	Single-family Residence	285	AP
77	Single-family Residence	312	AP
78	Single-family Residence	392	AP
79	Single-family Residence	189	AP
80	Single-family Residence	172	AP
81	Single-family Residence	289	AP
82	Single-family Residence	274	AP
83	Single-family Residence	317	AP
84	Single-family Residence - Mobile Home	254	AP
85	Single-family Residence	103	AP
86	Single-family Residence	132	AP
87	Single-family Residence - Mobile Home	160	AP
88	Single-family Residence	428	AP
89	Single-family Residence - Mobile Home	176	AP
90	Single-family Residence	42	AP
91	Single-family Residence - Mobile Home	384	AP
92	Single-family Residence	242	AP
93	Single-family Residence	478	AP
94	Single-family Residence	55	AP
95	Single-family Residence	51	AP
96	Single-family Residence	67	AP
97	Single-family Residence	176	AP
98	Single-family Residence - Mobile Home	217	AP
99	Single-family Residence	375	AP
100	Single-family Residence	60	AP
101	Single-family Residence	241	AP
102	Single-family Residence	299	AP
103	Single-family Residence - Mobile Home	515	AP
104	Single-family Residence	81	AP
105	Single-family Residence - Mobile Home	196	AP
106	Single-family Residence - Mobile Home	211	AP
107	Single-family Residence - Mobile Home	188	AP
108	Single-family Residence	209	AP
109	Single-family Residence	250	AP
110	Single-family Residence	54	AP
111	Single-family Residence	61	AP

Table 5-37 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 29

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
112	Single-family Residence	312	AP
113	Single-family Residence	188	AP
114	Single-family Residence	263	AP
115	Single-family Residence	190	AP
116	Single-family Residence	233	AP
117	Single-family Residence	218	AP
118	Single-family Residence	206	AP
119	Single-family Residence	340	AP
120	Single-family Residence - Mobile Home	197	AP
121	Single-family Residence - Mobile Home	196	AP
122	Single-family Residence	222	AP
123	Single-family Residence	152	AP
124	Single-family Residence	156	AP
125	Single-family Residence	210	AP
126	Single-family Residence	161	AP
127	Single-family Residence	193	AP
128	Single-family Residence	272	AP
129	Single-family Residence	192	AP
130	Single-family Residence	174	AP
131	Single-family Residence - Mobile Home	358	AP
132	Single-family Residence	475	AP
133	Single-family Residence	351	AP
134	Single-family Residence	296	AP
135	Single-family Residence	199	AP
136	Church	155	AP
137	Single-family Residence	218	AP
138	Single-family Residence	408	AP
139	Single-family Residence	259	AP
140	Single-family Residence	162	AP
141	Single-family Residence	241	AP
142	Single-family Residence	241	AP
143	Single-family Residence	164	AP
144	Single-family Residence	187	AP
145	Single-family Residence	322	AP
146	Single-family Residence	497	AP
147	Single-family Residence	140	AP

Table 5-37 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 29

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
148	Single-family Residence - Mobile Home	304	AP
149	Single-family Residence	140	AP
150	Single-family Residence	138	AP
151	Single-family Residence	347	AP
152	Single-family Residence	451	AP
153	Single-family Residence	136	AP
154	Single-family Residence	273	AP
155	Single-family Residence	314	AP
156	Single-family Residence	430	AP
157	Single-family Residence	294	AP
158	Single-family Residence	386	AP
159	Single-family Residence	497	AP
160	Single-family Residence	104	AP
161	Single-family Residence - Mobile Home	81	AP
162	Single-family Residence	118	AP
163	Single-family Residence - Mobile Home	226	AP
164	Single-family Residence	70	AP
165	Single-family Residence	58	AP
166	Single-family Residence	52	AP
167	Single-family Residence	63	AP
168	Single-family Residence	113	AP
169	Single-family Residence	160	AP
170	Single-family Residence	61	AP
171	Single-family Residence	122	AP
172	Single-family Residence	74	AP
173	Single-family Residence	293	AP
174	Single-family Residence	80	AP
175	Single-family Residence	116	AP
176	Single-family Residence	493	AP
177	Single-family Residence	481	AP
178	Single-family Residence	66	AP
179	Single-family Residence	109	AP
180	Single-family Residence	84	AP
181	Single-family Residence	182	AP
182	Single-family Residence	389	AP
183	Single-family Residence	95	AP

Table 5-37 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 29

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
184	Single-family Residence	384	AP
185	Single-family Residence	217	AP
228	Single-family Residence	424	CT
229	Single-family Residence	309	CT
230	Single-family Residence	166	CT
231	Single-family Residence	441	CT
232	Single-family Residence	463	CT
233	Single-family Residence	153	CT
234	Single-family Residence	442	CT
235	Single-family Residence	153	CT
378	Commercial Business	300	FB
379	Single-family Residence	488	FB
428	Single-family Residence	393	FN
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	316	FF
431	Commercial Business	51	EU
432	Commercial Business	128	EU
433	Single-family Residence	136	EU
434	Single-family Residence	293	EU
435	Single-family Residence	171	EU
436	Single-family Residence	196	EU
437	Single-family Residence	274	EU
438	Single-family Residence	490	EP
439	Commercial Business	458	EP
440	Single-family Residence - Mobile Home	9	EP
441	Single-family Residence	0	EP
442	Single-family Residence	11	EP
443	Single-family Residence	31	EP
444	Single-family Residence - Mobile Home	19	EP
445	Single-family Residence - Mobile Home	27	EP
446	Single-family Residence	109	EP
447	Single-family Residence	112	EO
448	Single-family Residence	118	EO
449	Single-family Residence	429	EO
450	Single-family Residence - Mobile Home	498	EO
451	Single-family Residence	422	EO

Table 5-37 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 29

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
452	Single-family Residence	185	EO
453	Single-family Residence	390	JE
454	Single-family Residence	297	JE
455	Single-family Residence	157	JE
456	Single-family Residence	128	JE
457	Single-family Residence	109	JE
458	Single-family Residence	148	JE
459	Single-family Residence	263	JE
460	Single-family Residence	352	JE
461	Single-family Residence	380	EF
462	Single-family Residence	377	EF
463	Single-family Residence	377	EF
464	Single-family Residence	381	EF
465	Single-family Residence	425	EF
466	Single-family Residence	509	EF
467	Single-family Residence	179	EF
468	Single-family Residence	338	EF
469	Single-family Residence	64	EF
470	Single-family Residence	125	EF
471	Single-family Residence	112	EF
472	Single-family Residence	164	EF
473	Single-family Residence	279	EF
474	Commercial Business	176	DW
475	Commercial Business	87	DW
476	Single-family Residence	283	DW
477	Single-family Residence	80	DW
478	Single-family Residence	256	DW
479	Single-family Residence	364	EF
480	Single-family Residence	277	EF
481	Single-family Residence	419	EF
482	Single-family Residence	457	DW
483	Single-family Residence	295	DW
484	Single-family Residence	83	DW
485	Single-family Residence	235	DW
486	Single-family Residence	459	DW
487	Single-family Residence	508	EF

Table 5-37 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 29

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
488	Single-family Residence	483	DW
489	Single-family Residence	334	DW
490	Single-family Residence	244	DW
491	Single-family Residence	118	DW
492	Single-family Residence	60	DW
493	Single-family Residence	169	DW
494	Single-family Residence - Mobile Home	468	DW
495	Single-family Residence	457	DV
496	Single-family Residence	486	DV
499	Single-family Residence	335	DJ
500	Single-family Residence	238	DJ
501	Single-family Residence	152	DJ
502	Single-family Residence	376	DJ
503	Single-family Residence	321	DK
504	Single-family Residence	497	DK
505	Single-family Residence	326	DK
506	Single-family Residence	330	DK
507	Single-family Residence	438	DK
508	Single-family Residence	122	DK
509	Single-family Residence	173	DK
510	Church	327	DK
511	Single-family Residence	176	DK
512	Church Facility	393	DK
513	Single-family Residence	173	DK
514	Single-family Residence	321	DK
515	Single-family Residence	342	DK
516	Single-family Residence	177	DK
517	Single-family Residence	116	DK
518	Single-family Residence	265	DK
519	Single-family Residence	369	DK
520	Single-family Residence - Mobile Home	498	DV
521	Single-family Residence	223	DV
522	Single-family Residence	96	DV
523	Single-family Residence	152	DV
524	Single-family Residence	245	DV
525	Commercial Business	323	DV

Table 5-37 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 29

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
526	Commercial Business	504	DV
527	Single-family Residence	488	DV
528	Single-family Residence	383	DW
529	Single-family Residence	297	DW
532	Single-family Residence	503	DW
533	Single-family Residence	490	DW
542	Single-family Residence	134	DW
548	Single-family Residence	184	DW
550	Single-family Residence	407	EF
551	Single-family Residence	361	EF
552	Single-family Residence	350	EF
554	Single-family Residence	495	EF
555	Single-family Residence	377	EF
556	Single-family Residence	329	EF
557	Single-family Residence	116	EF
558	Single-family Residence	62	EF
559	Single-family Residence	80	EF
560	Single-family Residence	62	EF
561	Single-family Residence	244	EF
562	Single-family Residence	265	EF
563	Commercial Business	62	EF
564	Commercial Business	62	EF
565	Single-family Residence	264	EF
566	Single-family Residence	297	EF
567	Single-family Residence	340	EF
568	Single-family Residence	142	EF
569	Single-family Residence	260	EF
570	Single-family Residence	241	EF
571	Commercial Business	183	EF
572	Single-family Residence	219	EF
573	Single-family Residence	419	EF
585	Single-family Residence	426	EO
586	Single-family Residence	466	EO
587	Single-family Residence	309	EO
588	Single-family Residence	282	JE
589	Single-family Residence	90	JE

Table 5-37 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 29

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
590	Single-family Residence	54	JE
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX

Table 5-37 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 29

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
1112	Single-family Residence	243	BM
1113	Single-family Residence	309	CS
1114	Single-family Residence	338	BM
1115	Single-family Residence	337	CS
1116	Single-family Residence	447	CS
1117	Single-family Residence - Mobile Home	471	CS
1118	Single-family Residence - Mobile Home	397	CS
1119	Single-family Residence	355	CS
1120	Single-family Residence	419	CS
1121	Single-family Residence	302	CS
1122	Single-family Residence	421	CS
1123	Single-family Residence	500	CS
1124	Single-family Residence	458	CS
1125	Single-family Residence	128	CS
1126	Commercial Business	142	CS
1127	Commercial Business	238	CS
1128	Commercial Business	329	CS
1129	Commercial Business	464	CS
1130	Single-family Residence	488	CS
1131	Single-family Residence	354	CS
1132	Single-family Residence	195	CV
1133	Single-family Residence	150	CV
1134	Single-family Residence	228	DA1
1135	Single-family Residence	245	DA2
1136	Single-family Residence	305	DA2
1137	Single-family Residence	238	DA2
1138	Single-family Residence	252	DA2
1139	Single-family Residence	391	DA2
1140	Single-family Residence	390	DA2
1400	Other electronic installation	258	L
1412	Other electronic installation	945	P
1413	Other electronic installation	454	P

Table 5-37 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 29

Segment Combinations: B-D-F-H-L-P-U-V-X-Y-Z-AP-BK-BM-CS-CT-CV-DA1-DA2-IX-IZ-DJ-DK-DV-DW-EF-JE-EO-EP-ET-EU-FB-FF-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1414	Other electronic installation	854	P
1415	Other electronic installation	947	V
1419	Other electronic installation	1588	AP
1423	Other electronic installation	1678	DJ
1501	Private Airstrip 1	3523	L
1502	Peterson Airport	6357	P
1507	Eagle Air Park	8258	DA2
1600-A	San Bernard National Wildlife Refuge	286	L
1600-B	San Bernard National Wildlife Refuge	149	P
1606	Justin Hurst Wildlife Management Area	221	IZ
1702	Morris Cemetery	784	P
1703	Gardener Family Cemetery	780	V
1704	Black Family Cemetery	571	V
1713	Colonial Cemetery	523	AP
1715	Galilee Church Cemetery	104	IX
--	41BO227	--	FP
--	41BO238	--	P
--	41BO109	--	Z

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Table 5-38 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 30

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ES-JF-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1	Single-family Residence	126	L
2	Single-family Residence - Mobile Home	119	L
3	Single-family Residence	187	L
4	Single-family Residence - Mobile Home	329	L
5	Single-family Residence	389	L
6	Single-family Residence - Mobile Home	386	L
7	Church	405	L
8	Single-family Residence	331	L
9	Single-family Residence	286	L
10	Single-family Residence	341	P
11	Single-family Residence	307	P
12	Single-family Residence	332	P
13	Single-family Residence - Mobile Home	350	P
14	Single-family Residence - Mobile Home	109	P
15	Single-family Residence - Mobile Home	441	P
16	Single-family Residence	454	P
17	Single-family Residence	264	P
18	Single-family Residence	115	P
19	Single-family Residence	108	P
20	Single-family Residence	377	P
21	Single-family Residence	67	P
22	Single-family Residence - Mobile Home	159	P
23	Single-family Residence - Mobile Home	178	P
24	Single-family Residence - Mobile Home	251	P
25	Single-family Residence - Mobile Home	69	P
26	Single-family Residence	210	P
27	Single-family Residence	143	P
28	Single-family Residence - Mobile Home	150	P
29	Single-family Residence - Mobile Home	391	V
30	Single-family Residence - Mobile Home	348	V
31	Single-family Residence	326	V
32	Single-family Residence	310	V
33	Single-family Residence	233	V
34	Single-family Residence	248	V
35	Single-family Residence	331	X
39	Single-family Residence	446	X

Table 5-38 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 30

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ES-JF-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
40	Single-family Residence	318	Y
41	Single-family Residence	281	Y
42	Single-family Residence	380	Y
43	Single-family Residence	270	Y
355	Single-family Residence	364	DL
356	Single-family Residence	132	DL
357	Single-family Residence - Mobile Home	427	DL
358	Single-family Residence - Mobile Home	502	DL
359	Single-family Residence - Mobile Home	56	DL
360	Single-family Residence - Mobile Home	179	DL
361	Church	347	DL
362	Single-family Residence - Mobile Home	368	DL
363	Single-family Residence	481	DL
364	Single-family Residence	161	DO
365	Single-family Residence	195	DQ
367	Single-family Residence	276	DR
368	Single-family Residence - Mobile Home	231	DR
369	Single-family Residence - Mobile Home	199	DR
370	Single-family Residence	162	DR
372	Single-family Residence	277	DT
373	Single-family Residence	185	DT
374	Single-family Residence	438	JF
375	Single-family Residence	270	JF
376	Commercial Business	373	JF
377	Single-family Residence	358	JF
378	Commercial Business	0	EZ
379	Single-family Residence	143	EZ
380	Single-family Residence - Mobile Home	506	EZ
426	Church	483	FI
428	Single-family Residence	393	FN
429	Commercial / Industrial Related	405	FP
430	Commercial / Industrial Related	20	FD
431	Commercial Business	371	EV
432	Commercial Business	252	JF
433	Single-family Residence	229	JF
436	Single-family Residence	458	JF

Table 5-38 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 30

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ES-JF-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
438	Single-family Residence	462	DT
498	Single-family Residence	506	JD
499	Single-family Residence	335	DJ
500	Single-family Residence	238	DJ
501	Single-family Residence	152	DJ
502	Single-family Residence	376	DJ
783	Single-family Residence - Mobile Home	181	IO1
784	Single-family Residence - Mobile Home	144	IO1
785	Single-family Residence - Mobile Home	169	IO1
786	Single-family Residence - Mobile Home	186	IO1
787	Single-family Residence - Mobile Home	179	IO1
788	Single-family Residence - Mobile Home	158	IO1
789	Single-family Residence - Mobile Home	152	IO1
790	Single-family Residence - Mobile Home	353	IO1
791	Single-family Residence	467	IO1
792	Single-family Residence	138	IO1
793	Single-family Residence	372	IO1
794	Single-family Residence - Mobile Home	434	IO1
795	Single-family Residence	285	IO1
796	Single-family Residence	183	IO1
797	Single-family Residence	262	IO1
798	Single-family Residence	434	IO1
799	Single-family Residence	351	IO1
800	Single-family Residence	294	IO1
801	Single-family Residence	195	IO1
802	Single-family Residence	139	IO1
803	Single-family Residence	268	IO1
804	Single-family Residence	359	IO1
805	Single-family Residence	468	IO1
806	Single-family Residence	392	IO1
807	Single-family Residence	289	IO1
808	Single-family Residence	283	IO1
809	Single-family Residence	352	IO1
810	Single-family Residence	411	IO1
811	Single-family Residence - Mobile Home	429	IO1
812	Single-family Residence	318	IO2

Table 5-38 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 30

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ES-JF-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
813	Single-family Residence - Mobile Home	324	IO2
814	Single-family Residence	163	IO2
815	Commercial / Industrial Related	307	IO2
816	Commercial / Industrial Related	353	IO2
817	Industrial Related	132	IO2
818	Industrial Related	129	IO2
819	Industrial Related	43	IO2
820	Single-family Residence	219	IO2
821	Single-family Residence	410	IO2
822	Single-family Residence	148	IO2
823	Single-family Residence	199	IO2
824	Single-family Residence	144	IX
825	Single-family Residence	109	IX
826	Single-family Residence	274	IX
827	Single-family Residence	456	IX
828	Single-family Residence	228	IX
829	Single-family Residence	316	IX
830	Single-family Residence - Mobile Home	142	IX
831	Single-family Residence - Mobile Home	252	IX
832	Single-family Residence - Mobile Home	357	IX
833	Single-family Residence	506	IX
834	Single-family Residence	428	IX
835	Church	241	IX
836	Single-family Residence	116	IX
837	Single-family Residence	286	IX
838	Single-family Residence	119	IX
839	Single-family Residence	51	IX
840	Single-family Residence	328	IX
841	Single-family Residence	385	IX
842	Church	171	IX
843	Single-family Residence	191	IX
844	Single-family Residence - Mobile Home	199	IX
845	Single-family Residence	304	IX
846	Single-family Residence	434	IX
847	Single-family Residence	406	IX
848	Single-family Residence	297	IX

Table 5-38 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 30

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ES-JF-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
849	Single-family Residence	187	IX
850	Church	165	IX
851	Church Facility	185	IX
852	Single-family Residence	204	IX
853	Single-family Residence - Mobile Home	126	IX
854	Single-family Residence - Mobile Home	463	IX
855	Single-family Residence	89	IX
856	Single-family Residence - Mobile Home	52	IX
857	Single-family Residence	255	IX
858	Single-family Residence	298	IX
864	Single-family Residence	189	IZ
865	Single-family Residence	196	IZ
866	Single-family Residence	102	IZ
867	Single-family Residence	150	IZ
1017	Single-family Residence	91	BV
1018	Single-family Residence	220	CD
1019	Single-family Residence	449	BV
1020	Single-family Residence	415	BU
1021	Single-family Residence	427	BU
1077	Single-family Residence	356	CF
1078	Single-family Residence	244	CF
1079	Single-family Residence	163	CF
1080	Single-family Residence	55	CM
1081	Single-family Residence	238	CM
1082	Single-family Residence	385	CM
1083	Single-family Residence	216	CM
1084	Church	217	CM
1085	Church Facility	275	CM
1086	Single-family Residence	244	CM
1087	Single-family Residence	79	CM
1088	Single-family Residence	202	CM
1089	Single-family Residence	264	CM
1090	Single-family Residence - Mobile Home	75	CM
1091	Single-family Residence	336	CM
1092	Commercial Business	215	CM
1093	Commercial Business	210	CM

Table 5-38 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 30

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ES-JF-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1094	Commercial Business	271	CM
1095	Church	251	CM
1096	Church Facility	281	CM
1097	Single-family Residence	79	CM
1098	Single-family Residence	200	CM
1099	Single-family Residence	362	CM
1100	Single-family Residence	100	CM
1101	Single-family Residence	129	CM
1102	Single-family Residence	244	CM
1103	Single-family Residence	204	CM
1104	Single-family Residence	308	CM
1105	Single-family Residence - Mobile Home	105	CM
1106	Single-family Residence	257	CM
1107	Single-family Residence	245	CQ
1141	Single-family Residence	157	CD
1142	Single-family Residence	336	CD
1143	Single-family Residence - Mobile Home	264	CF
1144	Commercial Business	262	CF
1145	Commercial Business	57	CF
1146	Single-family Residence	228	CF
1147	Church	327	CF
1148	Single-family Residence	54	CF
1149	Single-family Residence	275	CF
1150	Single-family Residence	258	CF
1151	Single-family Residence	274	CF
1152	Single-family Residence	295	CF
1153	Commercial Business	12	CF
1154	Single-family Residence	156	CF
1155	Single-family Residence	260	CF
1156	Single-family Residence	476	CF
1157	Single-family Residence	156	CF
1158	Single-family Residence	193	CF
1159	Single-family Residence	82	CF
1160	Single-family Residence	296	CF
1161	Single-family Residence	297	CF
1162	Single-family Residence	139	CF

Table 5-38 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 30

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ES-JF-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1163	Commercial Business	52	CF
1164	Single-family Residence - Mobile Home	93	CF
1165	Single-family Residence	231	CF
1166	Single-family Residence	122	CF
1167	Single-family Residence	167	CF
1168	Single-family Residence	51	CF
1169	Single-family Residence	216	CF
1170	Single-family Residence - Mobile Home	319	CF
1195	Single-family Residence	491	BU
1196	Single-family Residence	261	BU
1197	Single-family Residence	87	BU
1198	Single-family Residence	390	AA
1199	Single-family Residence - Mobile Home	54	AA
1200	Single-family Residence - Mobile Home	55	AA
1201	Single-family Residence	196	AA
1202	Single-family Residence - Mobile Home	380	AA
1203	Single-family Residence - Mobile Home	504	AA
1204	Single-family Residence	245	AA
1205	Single-family Residence	451	AA
1206	Single-family Residence	327	AA
1207	Single-family Residence	51	AA
1208	Single-family Residence	480	AA
1209	Single-family Residence - Mobile Home	360	AA
1210	Single-family Residence	450	AA
1211	Single-family Residence	139	AA
1212	Single-family Residence	206	AA
1213	Single-family Residence - Mobile Home	349	AA
1214	Single-family Residence	342	AA
1215	Single-family Residence	204	AA
1216	Single-family Residence - Mobile Home	223	AA
1217	Single-family Residence - Mobile Home	400	AA
1218	Single-family Residence	392	AA
1219	Single-family Residence	98	AA
1220	Single-family Residence	199	AA
1221	Single-family Residence	145	AA
1222	Single-family Residence	242	AA

Table 5-38 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 30

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ES-JF-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1223	Single-family Residence	514	AA
1224	Multi-family Residence	468	AA
1225	Multi-family Residence	468	AA
1226	Multi-family Residence	506	AA
1227	Multi-family Residence	480	AA
1228	Multi-family Residence	453	AA
1229	Single-family Residence	365	AA
1230	Single-family Residence	388	AA
1231	Single-family Residence	54	AA
1232	Single-family Residence - Mobile Home	189	AA
1233	Single-family Residence - Mobile Home	202	AA
1234	Single-family Residence	132	AA
1235	Single-family Residence	227	AA
1236	Single-family Residence	261	AA
1237	Single-family Residence	135	AA
1238	Single-family Residence	269	AA
1239	Single-family Residence	486	AA
1240	Single-family Residence	372	AA
1241	Single-family Residence	260	AA
1242	Single-family Residence	314	AA
1243	Single-family Residence	327	AA
1244	Single-family Residence	239	AA
1245	Single-family Residence	438	AA
1246	Single-family Residence	502	AA
1247	Single-family Residence	343	AA
1248	Single-family Residence	498	AA
1400	Other electronic installation	258	L
1412	Other electronic installation	945	P
1413	Other electronic installation	454	P
1414	Other electronic installation	854	P
1415	Other electronic installation	947	V
1416	Other electronic installation	1173	AA
1417	Other electronic installation	1786	AA
1418	Other electronic installation	1247	CF
1423	Other electronic installation	1678	DJ
1501	Private Airstrip 1	3523	L

Table 5-38 Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Route 30

Segment Combinations: B-D-C-L-P-U-V-X-Y-AA-BU-BV-CD-CF-CM-CQ-IO1-IO2-IX-IZ-DJ-JD-DL-DO-DQ-DR-DS-DT-ES-JF-ER2-EV-EZ-FD-FG-FI-FN-FP			
Map Number	**Structure or Feature**	**Approximate Distance from Route Centerline[1] (feet)**	**Nearest Alternative Route Segment[2]**
1502	Peterson Airport	6357	P
1507	Eagle Air Park	2759	IO2
1511	Sweeny Community Hospital Heliport	1420	AA
1600-A	San Bernard National Wildlife Refuge	286	L
1600-B	San Bernard National Wildlife Refuge	149	P
1600-D	San Bernard National Wildlife Refuge	49	AA
1603	Levi Jordan Plantation	53	CD
1606	Justin Hurst Wildlife Management Area	218	JF
1607	Freeport Municipal Golf Course	804	FI
1702	Morris Cemetery	784	P
1703	Gardener Family Cemetery	780	V
1704	Black Family Cemetery	571	V
1710	Zion Temple Cemetery/Williams Family/Mims-Fannin Plantation	89	CM
1711	Mims Community Cemetery	357	CM
1712	Mims Family Cemetery	72	CQ
1715	Galilee Church Cemetery	104	IX
1719	Oakland Cemetery	371	DL
--	41BO257	--	CF
--	41BO262	--	CM
--	41BO227	--	FP
--	41BO191	--	IO2
--	41BO258	--	IO2
--	41BO260	--	IO2
--	41BO238	--	P
--	Levi Jordan Plantation	85	CD

[1] Due to the potential horizontal inaccuracies of the aerial photography and data utilized, all habitable structures within 320' have been identified.

[2] Distances to sensitive cultural resource sites are not provided for protection of the sites.

Figure 3-3 (Sheets 1-6)

Proposed Transmission Line Segments with Environmental and Land Use Constraints (Topographic Base Map with Constraints)

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Figure 3-3
Sheet 1 of 6

PROPOSED TRANSMISSION LINE SEGMENTS WITH ENVIRONMENTAL AND LAND USE CONSTRAINTS (TOPOGRAPHIC BASE MAP WITH CONSTRAINTS)

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Figure 3-3
Sheet 2 of 6

PROPOSED TRANSMISSION LINE SEGMENTS WITH ENVIRONMENTAL AND LAND USE CONSTRAINTS (TOPOGRAPHIC BASE MAP WITH CONSTRAINTS)

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Figure 3-3
Sheet 3 of 6

PROPOSED TRANSMISSION LINE SEGMENTS WITH ENVIRONMENTAL AND LAND USE CONSTRAINTS (TOPOGRAPHIC BASE MAP WITH CONSTRAINTS)

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Figure 3-3
Sheet 4 of 6

PROPOSED TRANSMISSION LINE SEGMENTS WITH ENVIRONMENTAL AND LAND USE CONSTRAINTS (TOPOGRAPHIC BASE MAP WITH CONSTRAINTS)

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PROPOSED TRANSMISSION LINE SEGMENTS WITH ENVIRONMENTAL AND LAND USE CONSTRAINTS (TOPOGRAPHIC BASE MAP WITH CONSTRAINTS)

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Figure 3-3
Sheet 5 of 6

PROPOSED TRANSMISSION LINE SEGMENTS WITH ENVIRONMENTAL AND LAND USE CONSTRAINTS (TOPOGRAPHIC BASE MAP WITH CONSTRAINTS)

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Figure 3-3
Sheet 6 of 6

PROPOSED TRANSMISSION LINE SEGMENTS WITH ENVIRONMENTAL AND LAND USE CONSTRAINTS (TOPOGRAPHIC BASE MAP WITH CONSTRAINTS)

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Figure 3-4 (Sheets 1-2)

Proposed Transmission Line Segments with Environmental and Land Use Constraints (Aerial Photograph Base Map with Expanded Study Area Boundary) (Map Pocket – Sheets 1 - 2)

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Figure 3-4
Sheet 1 of 2

PROPOSED TRANSMISSION LINE SEGMENTS WITH ENVIRONMENTAL AND LAND USE CONSTRAINTS (AERIAL PHOTOGRAPH BASE MAP WITH EXPANDED STUDY AREA BOUNDARY)

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Figure 3-4
Sheet 2 of 2

PROPOSED TRANSMISSION LINE SEGMENTS WITH ENVIRONMENTAL AND LAND USE CONSTRAINTS (AERIAL PHOTOGRAPH BASE MAP WITH EXPANDED STUDY AREA BOUNDARY)

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Figure 5-1 (Sheets 1-6)

Habitable Structures and Other Land Use Features in the Vicinity of the Proposed Alternative Routes (Aerial Photograph Base Map with CCN Inventory Items)

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Figure 5-1
Sheet 1 of 6

HABITABLE STRUCTURES AND OTHER LAND USE FEATURES IN THE VICINITY OF THE PROPOSED ALTERNATIVE ROUTES (AERIAL PHOTOGRAPH BASE MAP WITH CCN INVENTORY ITEMS)

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HABITABLE STRUCTURES AND OTHER LAND USE FEATURES IN THE VICINITY OF THE PROPOSED ALTERNATIVE ROUTES (AERIAL PHOTOGRAPH BASE MAP WITH CCN INVENTORY ITEMS)

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HABITABLE STRUCTURES AND OTHER LAND USE FEATURES IN THE VICINITY OF THE PROPOSED ALTERNATIVE ROUTES (AERIAL PHOTOGRAPH BASE MAP WITH CCN INVENTORY ITEMS)

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