Blanton & Associates, Inc.
ENVIRONMENTAL CONSULTING • PLANNING • PROJECT MANAGEMENT

DRAFT
ARCHEOLOGICAL INVESTIGATIONS FOR CHAMISA CAES AT TULIA LLC SWISHER AND CASTRO COUNTIES, TEXAS

by

Brandon S. Young, Mark D. Willis, and Debra L. Beene

Principal Investigator:
Brandon S. Young

January 2014

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Prepared for

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ABSTRACT

Between February 10 and March 14, 2013, and October 14 through 23, 2013, Blanton & Associates, Inc. (B&A), at the request of Chamisa CAES at Tulia LLC (Chamisa), conducted an intensive archeological survey of an approximately 512-acre site for a proposed electric generating facility using compressed air energy storage (CAES) technology in Swisher County, Texas. Investigations also included the survey of approximately 25 miles (approximately 303 acres) of proposed transmission line corridors for the delivery of electric power in and out of the generating facility. Augmented with the excavation of 117 shovel tests focused at the locations of project infrastructure and along the transmission lines, the survey discovered no archeological resources. No artifacts were identified or collected. Curation was unnecessary.

MANAGEMENT SUMMARY

PROJECT TITLE: Archeological Investigations for Chamisa CAES at Tulia LLC, Swisher and Castro Counties, Texas

PROJECT DESCRIPTION: The project involved an archeological records review and an intensive 100 percent pedestrian archeological survey with shovel testing of a proposed electric generating facility site and associated transmission lines in Castro and Swisher Counties, Texas. The proposed generating facility would be constructed on a 512-acre property while up to 19.5 miles of proposed transmission line corridors would be necessary to bring electric power into the facility and to deliver generated power out of the facility. The Area of Potential Effect (APE) includes all proposed infrastructure, which encompasses approximately 175 acres of the larger 512-acre property, as well as an approximately 6.2-mile long transmission line to bring power into the facility and two transmission line alternatives (one 13.3 miles long and one 5.8 miles long) to convey generated power out of the facility; the combined acreage of the three transmission line alternatives is approximately 303 acres. Investigations consisted of a 100-percent pedestrian survey of the entire 512-acre property and the planned transmission lines. Investigations included the excavation of 117 shovel tests at locations of proposed infrastructure and along the planned transmission line corridors. Surface and subsurface investigations discovered no prehistoric or historic archeological deposits or standing structures.

PROJECT LOCATION: The project area is south and west of Tulia, Texas in Castro and Swisher Counties, Texas. The project area is on the *Tulia, Texas* (3401-321); *Lakeview, Texas* (3401-322); *Nazareth, Texas* (3402-411); and *Edmonson NE, Texas* (3401-234) USGS 7.5-minute topographic quadrangles

TOTAL ACREAGE: The survey was conducted for approximately 512 acres for the planned facility and 303 acres for the proposed transmission line corridors, for a total of approximately 815 acres. However, the proposed project will only use one power-out transmission line option, so the final disturbed acreage would be less.

DATES OF WORK: Between February 10 and March 14, 2013 and October 14 through 23, 2013

PURPOSE OF WORK: B&A assisted the project sponsor in their compliance with Section 106 of the National Historic Preservation Act of 1966 (and subsequent amendments)

PRINCIPAL INVESTIGATOR: Brandon S. Young

PROJECT ARCHEOLOGISTS: Mark D. Willis and Joseph M. Sanchez

NEWLY RECORDED SITES: None

PREVIOUSLY RECORDED SITE(S): None

COMMENTS: Based on the lack of prehistoric or historic archeological deposits or standing structures within the APE, B&A recommends that the proposed project should be allowed to proceed as planned without additional investigations

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INTRODUCTION

Between February 10, 2013 and March 20, 2013 and October 14 through 23, 2013, Blanton & Associates, Inc. (B&A), at the request of Chamisa CAES at Tulia LLC (Chamisa), conducted an intensive archeological survey with shovel testing of a proposed electric generating facility and associated transmission lines in Castro and Swisher Counties, Texas. The proposed power plant will be constructed on a 512-acre property on the west side of Interstate Highway 27 (IH-27), approximately 2.4 kilometers (km) (1.5 mile) west of the town of Tulia (**Figures 1** and **2**). The proposed construction of the compressed air energy storage facility would include the construction of water wells, compression wells, air and water lines, leaching facility, expansion turbines, and supporting structures (**Figure 3.1**). Construction will entail clearing and grading the site, placement of foundations, erection of buildings and other structures including tanks, and installation of equipment, systems and controls necessary to make the proposed project a complete and functional power generating facility.

Up to 19.5 miles of transmission lines bringing power into and out of the facility are also components of the proposed project (**Figures 3.2** and **3.3**). The survey corridor for the proposed transmission lines was 100 feet wide to accommodate a 40-foot wide final transmission line easement and a 60-foot temporary construction easement. One approximately 6.2-mile long transmission line parallel to State Highway (SH) 86 would bring power into the power plant (power in line) from the existing Lakeview Nazareth Substation and one transmission line will deliver generated power out of the facility (power out line). At the time of investigations, Sharyland Utilities had not determined a preferred alignment for the power out transmission line, as such, B&A conducted survey along two proposed power out transmission line options (the 5.8-mile Option 1 and 13.3-mile Option 2); ultimately only one alignment will be constructed. The overall Area of Potential Effect (APE) for the project includes the 512-acre property for the power generating facility and the 303 acres encompassing the three transmission line alignments, for an overall APE approximately 815 acres in size.

Because the proposed construction involves federal permitting (e.g., Greenhouse Gas Prevention of Significant Deterioration [PSD] permit) by the U.S. Environmental Protection Agency (EPA), the project is subject to the provisions of Section 106 (33 CFR Part 800) of the National Historic Preservation Act (NHPA). The intent of the NHPA is to consider the effects on historic properties by actions that are federally funded, licensed, permitted, or which occur on federal property. The act, which created the National Register of Historic Places (NRHP) and the Advisory Council for Historic Preservation (ACHP), states that the ACHP must be afforded an opportunity to comment when historic properties (e.g., sites eligible for inclusion on the NRHP) are present in an area affected by federal agency actions or actions funded, licensed, or permitted by federal agencies. Consideration of archeological historic properties under federal law is tied to eligibility for inclusion in the NRHP (36 CFR 60).

The primary intent of the survey was to identify and describe all archeological and/or historical resources (e.g., standing structures) discovered within the property boundary (with emphasis on proposed infrastructure location), evaluate their eligibility for inclusion to the NRHP and, should significant archeological resources be located, make recommendations for management options, such as avoidance and preservation or further investigations. The survey was designed to comply with appropriate

archeological survey methods as defined in the Department of the Interior's Standards and Guidelines (NPS 1983), the Guidelines of the Council of Texas Archeologists (CTA) (1987), and the Survey Standards for Teas developed by the Texas Historical Commission (THC) in conjunction with the CTA (THC n.d.). Project Archeologists Mark D. Willis and Joseph M. Sanchez conducted field investigations, and Brandon S. Young served as Principal Investigator.

Figure 1
Project Location
Chamisa CAES at Tulia LLC
Swisher and Castro Counties, Texas

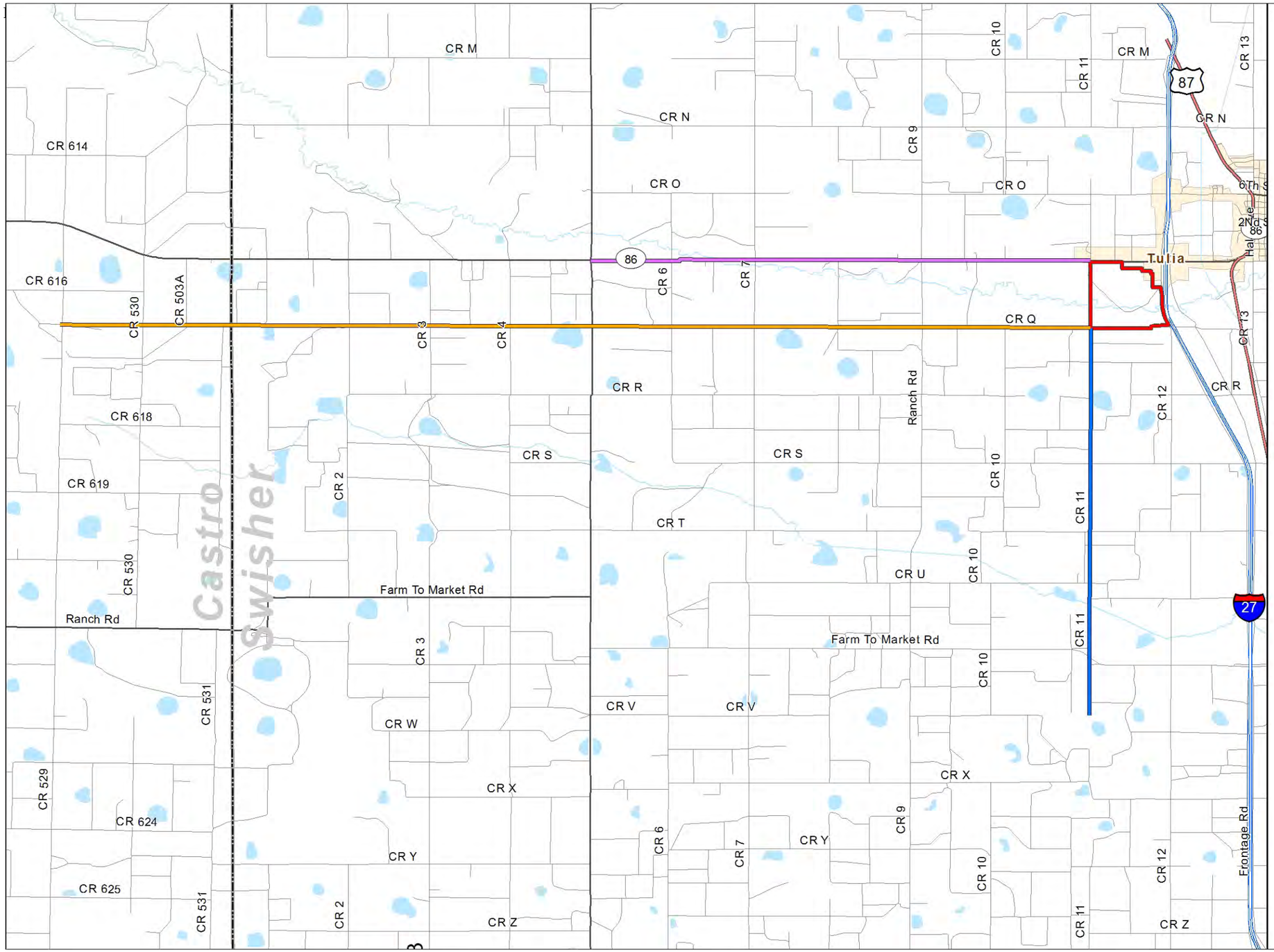
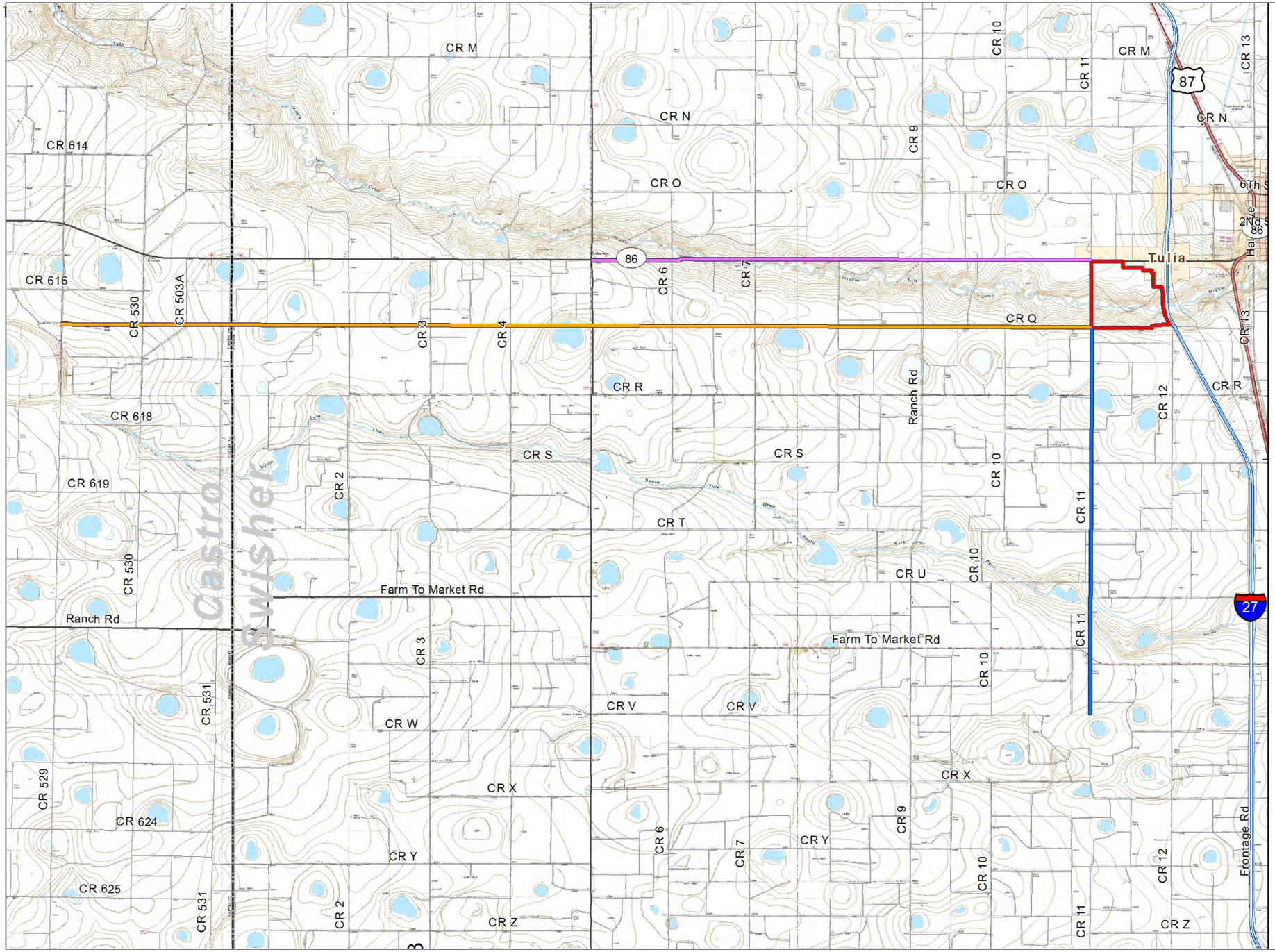
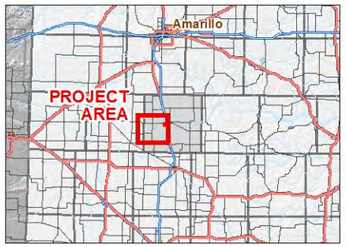


Figure 2
Project Location on Topographic Map
Chamisa CAES at Tulia LLC
Swisher and Castro Counties, Texas





Power In
Power Out Option 1
Power Out Option 2
Action Area
City of Tulia

1:100,000
Kilometers
0 1 2 3 4

Base Map: ESRI-USA Base Map,
ESRI-U.S. and Canada Detailed Streets

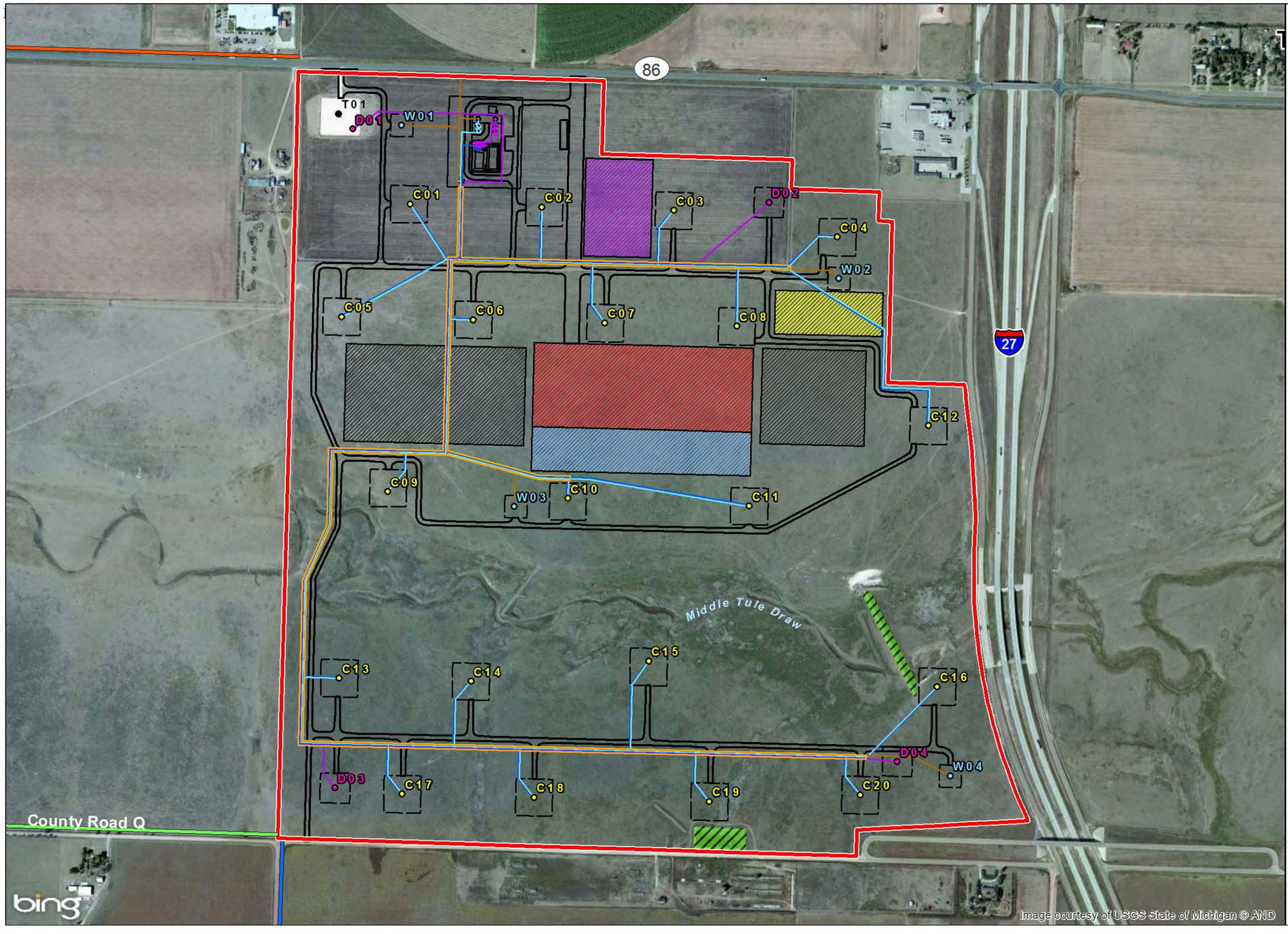


Figure 3.1
Area of Potential Effect
Proposed Facility Schematic
Chamisa CAES at Tulia LLC
Swisher and Castro
Counties, Texas

- Cavern
- Water Well
- Injection Well
- Test Well
- Power Out Option 2
- Power Out Option 1
- Power In
- Pipeline ROW
- Pipeline-Raw Water
- Pipeline-Brine Disposal
- Pipeline-Mining Water-In
- Pipeline-Mining Water-Out
- Roads
- Leaching Plant Components
- Well Pad
- Switchyard
- Fuel Gas Compressor Station
- Utility Power Substation
- CAES Turbines
- Other Facility Components
- Improvements
- Action Area

N
W E
S

1:8,400

Kilometers
0 0.25 0.5

Base Map: 2010 Bing Aerial Imagery

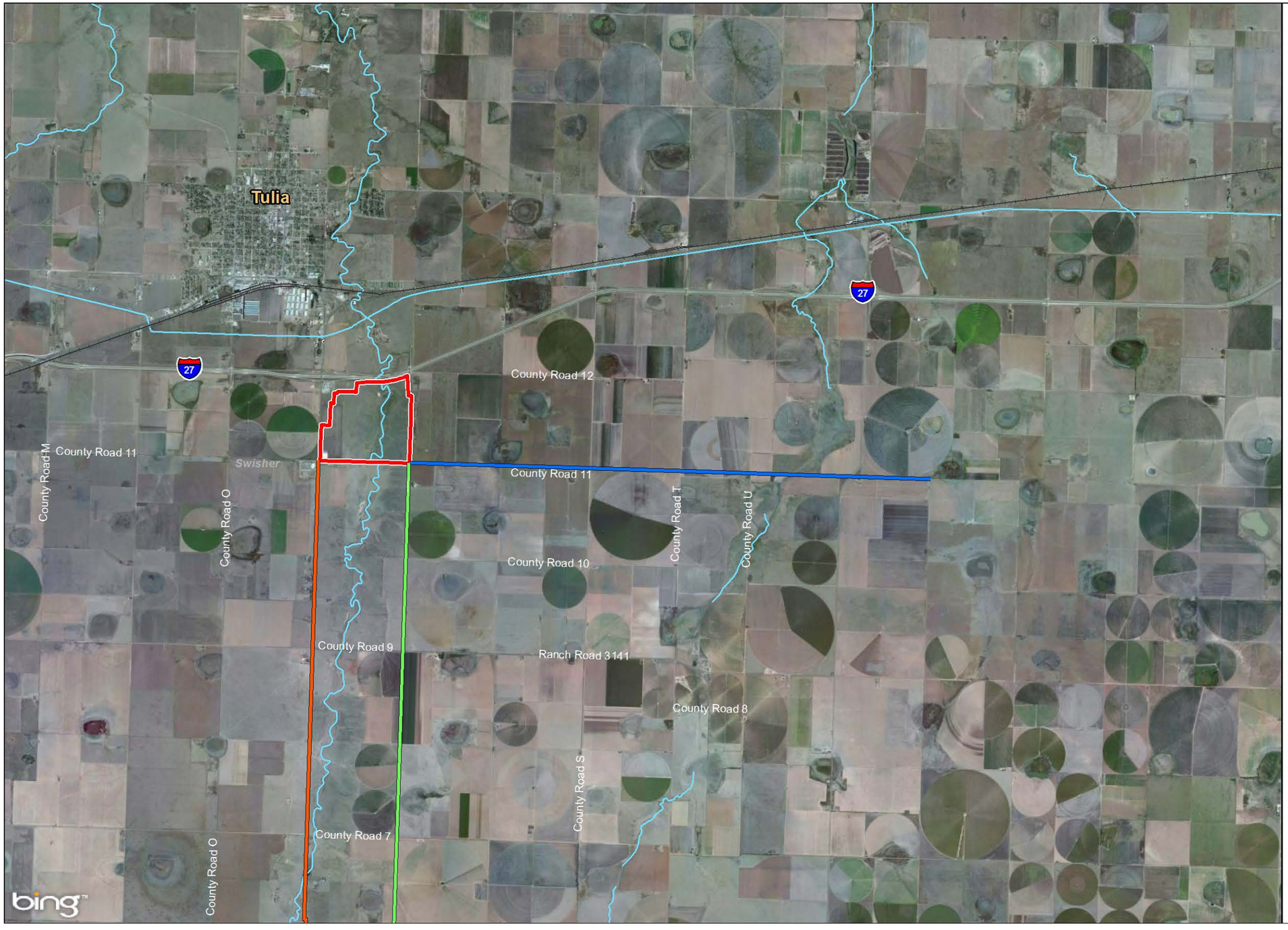


Figure 3.2
Area of Potential Effect
Proposed Facility Schematic
Chamisa CAES at Tulia LLC
Swisher and Castro
Counties, Texas

Action Area
Power In
Power Out Option 1
Power Out Option 2

1: 72,000
Kilometers
0 0.5 1 2

Service Layer Credits: © Harris Corp, Earthstar Geographics LLC State of Michigan

Figure 3.3
Area of Potential Effect
Proposed Facility Schematic
Chamisa CAES at Tulia LLC
Swisher and Castro
Counties, Texas

Action Area
Power In
Power Out Option 1
Power Out Option 2

N
W E
S

1: 72,000
Kilometers
0 0.5 1 2

Service Layer Credits: © Harris Corp, Earthstar Geographics LLC State of Michigan

ENVIRONMENTAL SETTING

The proposed project is located in the south central region of the Texas Panhandle, an area where agricultural land use is largely focused on the cattle and the cultivation of cotton. Wind energy and petroleum extraction are vital and prominent components of the local economy. Historically, biogeographic categorization was based on two independent schemes: biotic provinces (Blair 1950) and ecological zones (Gould 1975). Biotic provinces are based on geological formations, soil types, and vegetation. Ecological zones take into account similar criteria but place greater emphasis on defining domains that are occupied by consistent floral associations.

The APE is in the Kansan biotic province (Blair 1950) and hence historically shared the biotic and climatic imprint of much of the Great Plains. Currently, the 512-acre property consists of a fallow agricultural field and rangeland (pasture) used for cattle grazing (**Figures 4** through **7**). Though remnants of native vegetation remain, it has largely been replaced with introduced grasses. Improvements to the 512-acre area include water wells used to fill an impounded stream (Middle Tule Draw) (see **Figure 8**) in the southeast corner of the APE, and a caliche pad in the northwest corner of the APE (see **Figures 3.1** and **4**). Beyond the 512-acre facility area, the proposed transmission lines traverse plowed fields or previously plowed fields in pasture (**Figures 8** and **9**).

GEOLOGY

The surface geology of the 512-acre facility area is the Pliocene-early Miocene Ogallala Formation along Middle Tule Draw and the Pleistocene Blackwater Draw Formation above the drainage (Barnes 1992). Geology along the planned transmission lines in Swisher County consists also of the Pleistocene Blackwater Draw Formation (Barnes 1992), while to the west in Castro County, the geology transitions to Pleistocene loess (windblown silt) deposits (Barnes 1977). The geology throughout the APE predates human occupation and has negligible to low potential for containing buried archeological resources unless intrusive.

The Ogallala Formation in Texas is the southernmost extension of the major water-bearing unit underlying the physiographic province of North America. It unconformably overlies Permian, Triassic, Jurassic, and Cretaceous strata and consists primarily of heterogeneous sequences of coarse-grained sand and gravel in the lower part grading upward into fine clay, silt, and sand. Gravel commonly occurs in layers in the basal section and ranges in size from boulders to pea size. In places, the Ogallala Formation contains some quartz gravel and caliche with pebbles and cobbles of quartz and quartzite, and chert is common. It has a maximum thickness of 550 feet (ft).

The Pleistocene Blackwater Draw Formation forms a vast sheet of Quaternary eolian sediment up to 27 ft. thick and feathers out locally. As many as six well-developed buried soils occur in the formation.

Figure 4 View to the northwest showing field and service center on I-27

Figure 5 View to the south showing field and County Road Q

Figure 6 View to the southwest showing fence on western boundary of property

Figure 7 View to east showing an earthen dam on Middle Tule Draw

Figure 8 Typical conditions of plowed fields traversed by proposed transmission lines

Figure 9 Typical previously plowed field in pasture traversed by proposed transmission lines

SOILS

Soils throughout the APE are typically clay or clay loams. The Mansker-Estacado-Bippus Association occupies the side slopes and bottom of Middle Tule Draw. It consists of deep, loamy clay soils that are calcareous and friable throughout (Mitchell et al. 1974:2–4).

Above Middle Tule Draw and along the proposed route for the power-in transmission line is the Pullman Association that consists of deep, nearly level to gently sloping upland soils; these are firm clays and clay loams that become friable with depth. This association includes clayey soils in and around playas; Lofton clay loam and Roscoe clay is found on playa benches and Randall clay is on playa bottoms (Mitchell et al. 1974: 2–4). In various locales throughout the APE, a veneer of eolian sand and silt overlies the clay loams and clays.

VEGETATION

The project area consists primarily of grasslands that can be subdivided into tallgrass, mixed-grass, and shortgrass prairies of the High Plains ecoregion (Gould 1975). The vegetation type of the APE is considered shortgrass prairie and may be known locally as the western plains. The APE has been converted to cropland and rangeland used as pasture. No playa lakes exist in the 512-acre property; however, several are crossed by the planned transmission lines. Playa vegetation is typically dominated by Gray's ragweed (*Ambrosia grayi*) and Texas frogfruit (*Phyla nodiflora*).

Rangelands have a mixture of native plants, with a significant constituent of introduced grasses and forbs that are typical of the region. Frequently seen species included sideoats grama (*Bouteloua curtipendula*), blue grama (*Bouteloua gracilis*), hairy grama (*Bouteloua hirsuta*), silver bluestem (*Bothriochloa laguroides*), cane beard-grass (*Bothriochloa barbinodis*), purple three-awn (*Aristida purpurea*), whorled windmill-grass (*Chloris verticillata*), tumble-grass (*Schedonnardus paniculatus*), Johnson-grass (*Sorghum halepense*), Great Plains yucca (*Yucca glauca*), fireweed (*Kochia scoparia*), Russian thistle (*Salsola kali*), Lambert's articulated crazyweed (*Oxytropis lambertii*), Nuttall's sensitive brier (*Mimosa nuttallii*), goathead (*Tribulus terrestris*), snow-on-the-mountains (*Euphorbia marginata*), tuberous-rooted prickly-pear (*Opuntia macrorhiza*), narrow-leaf milkweed (*Asclepias engelmannia*), broad-leaf milkweed (*Asclepias latifolia*), white tridens (*Tridens albescens*), bush morning glory (*Ipomoea leptophylla*), lance-leaf frogfruit (*Phyla lanceolata*), Texas frogfruit (*Phyla nodiflora*), silver-leaf nightshade (*Solanum elaeagnifolium*), Patagonia plantain (*Plantago patagonica*), Heller's plantain (*Plantago helleri*), buffalo gourd (*Cucurbita foetidissima*), western ragweed (*Ambrosia psilostachya*), Arkansas lazy-daisy (*Aphanostephus skirrhobasis*), western mugwort (*Artemisia ludoviciana*), pasture thistle (*Cirsium undulatum*), Canadian horseweed (*Conyza canadensis*), Engelmann's daisy (*Engelmannia peristenia*), curly-cup gumweed (*Grindelia squarrosa*), common sunflower (*Helianthus annuus*), woolly paper-flower (*Psilostrophe tagetina*), prairie coneflower (*Ratibida columnifera*), prickly lettuce (*Lactuca serriola*), plains ironweed (*Vernonia marginata*), prairie broomweed (*Amphiachyris dracunculoides*), and hairy crab-grass (*Digitaria sanguinalis*).

CULTURAL SETTING

The project area is located in the southeastern extent of the Southern Plains and the southwestern edge of the Rolling Plains. Four broad periods typically define the prehistoric cultural history of the project area. They include the Paleoindian, Archaic, Ceramic, and Protohistoric periods. This area lacks the cultural syntheses that other regions of Texas have. The following draws from a synthesis of the Southern and Rolling Plains in Texas by Johnson and Holiday (1995:519–540). The chapter concludes with an historic overview of the project area and adjacent environs followed by a review of tribal coordination data for Texas and the project area.

PALEOINDIAN PERIOD

The earliest well-documented evidence of human occupation in the region appears in the Paleoindian period during the Late Pleistocene around 9,500 B.C. at the Blackwater Draw, Miami, and Lubbock Lake sites (Johnson and Holliday 1995:552). During the Late Pleistocene the environment was humid with mild winters and summers and the mean temperature was lower than it is today. Grasslands covered much of the plains, and many small streams crossed the countryside (Johnson and Holliday 1995:552).

Megafauna such as mammoth, *Bison antiquus*, camel, giant turtle, horse, short-faced bear, giant beaver, and peccary inhabited this landscape. The common view is that paleoindians were nomadic hunter-gathers who followed large game and lacked many semi-permanent or permanent structures (Johnson and Holliday 1995), but recent evidence suggests that a more diversified and complex lifeway may have existed. The tool kit from this time included large, intricately worked, fluted, lanceolate stone points that were probably hafted on a spear-like weapon. These points include *Clovis*, *Folsom*, *Midland*, *Plainview*, and *Firstview* styles.

ARCHAIC PERIOD

As the cooler and wetter climates of the Late Pleistocene gave way to the warmer and drier Holocene, there were marked changes in fauna and flora of the region. The large mammals vanished from the landscape, possibly aided by overhunting. In the midst of this dramatic environmental shift, a range of cultural changes mark the beginning of the long Archaic period (6,500 B.C. to 700–900 A.D.). With the majority of the large mammals gone and the environment drier, Southern Plains cultures became more sedentary and dependent on *B. bison*, which had replaced the larger *B. antiquus*, and smaller game such as deer and rabbit. While lanceolate projectile point forms remained in use during the Early Archaic, stemmed dart points began to proliferate and eventually replace the lanceolate forms altogether. The dart points were better suited to the lightweight shafts propelled by the atlatl, and the entire toolkit was better adapted to small game. Ground-stone artifacts found at sites of this age may be indicative of a more generalized diet containing more plant material (Johnson and Holliday 1995).

Population grew during the Archaic despite the changing climates and resource base. Specifically, the Hypsithermal during this period was a global phenomenon during which warmer, drier conditions and prolonged, severe droughts affected much of North America. During this time, the parched grasslands and warmer temperatures of the Southern Plains became less attractive to bison (Johnson and

Holliday 1995:526). Bison herds traveled south into the area less frequently, and people became more dependent on plant resources Water became critical during the prolonged droughts of the Hypsithermal.

Between 3,000 B.C and 2,500 B.C, Johnson and Holliday (1995:526) postulate another prolonged hot and dry period occurred that was less severe than the earlier Hypsithermal. As bison ranged the cooler northern plains, plant resources again became a dietary staple. A final climate shift occurred between 2,500 and 1,000 B.C., which overlaps with the beginning of the Late Archaic (ca. 1,100 B.C to 600–700 A.D.), and is once again identified with a reliance on bison as the primary diet. During this period, the climate stabilized and conditions developed that have remained to the modern era (Johnson and Holliday 1995:528).

CERAMIC AND PROTOHISTORIC PERIODS

The Ceramic Period (ca. 600–700 A.D. to 1540 A.D.) is denoted by the appearance of two technologies important to the area: ceramics and the bow and arrow. Arrow points, dart points, and coarse-tempered cord-marked ceramics were found associated with each other at Deadman's Shelter. This seems to indicate that there was a transition between technologies rather than an abrupt switch. Diagnostic materials for the period are corner-notched *Scallorn* points and ceramic trade items from the Mogollon and Puebloan cultures.

The Protohistoric period (1540 A.D. to 1750 A.D.) was defined by Johnson and Holliday (1995:530) as the presence of Europeans in the New World but the apparent lack of European items in the archeological record, suggesting limited cultural interactions. The typical arrow point associated with this time period is the triangular, often serrated *Garza* point. Very little is known about this period, but Hickerson (1994:24) believes that the area was populated by the Jumano Indians by the time of the Coronado expedition. By the early 1700s, the Jumanos were eradicated by disease and the Apache, whom they had been battling with for decades. Later the Apache were supplanted by the Comanche, who controlled the area until the 1870s.

HISTORIC PERIOD

European settlement continued its westward trajectory through what would become Texas during the late eighteenth and nineteenth centuries, and the United States Army eventually defeated the Comanches in the Red River War of 1874. The surviving Native American population was confined to reservations, and shortly thereafter buffalo hunters quickly decimated the local herds, opening the area up to agricultural cultivation (Abbe and Leffler 2013). In the latter part of the nineteenth century several large ranches were also established in the region, including the expanded JA Ranch of Charles Goodnight and John G. Adair.

In 1874 Irish broker John George Adair first met renowned cattleman Charles Goodnight on a cattle drive in Colorado. Adair, eager to take advantage of the large swaths of land opening up in the west, formed a partnership with Goodnight to start a cattle ranch in Palo Duro Canyon. In 1876 the gentlemen hammered out a deal whereby Adair would provide the capitol for the endeavor and Goodnight would see to the cattle. The result was the formation of the JA Ranch, the oldest ranch in the Texas Panhandle.

In 1876 the Texas legislature established Castro and Swisher counties and European settlers slowly began arriving in the region (Abbe 2013). The town of Tulia was established in 1887 when James A. Parrish selected the site for a post office. Two years later W.G. Conner took over the role of postmaster, and moved the office roughly nine miles east to its present location. Conner built a one room school house and church near his homestead and the post office (Anderson 2013b). Meanwhile, in neighboring Castro County, in 1890 the Bedford Town and Land Company bought a section of land roughly 30 miles east of Tulia and began laying out a town site, which was eventually named for Bedford's brother-in-law Reverend W.C. Dimmitt (Anderson 2013a).

Soon after the establishment of Tulia and Dimmitt, residents of Swisher and Castro Counties saw the need for local governments and began pushing for the establishment of county seats. In July 1890 the Swisher county seat was established in Tulia, and in December of the following year Dimmitt was chosen as the Castro County seat. Around the same time a Catholic priest named Joseph Reisdorff arrived in the area with several farmers to start a Catholic settlement. Named for its biblical counterpart, by 1905 the small town of Nazareth, located roughly 20 miles east of Tulia, had grown to include a church, a post office, a blacksmith, a school, and a store (Leffler 2013).

The success of the JA Ranch brought more settlers to the region, and during the late nineteenth century ranching was the primary economic force. In 1900 Swisher County reported 34,000 cattle. Around the turn of the century, settlers realized that the soft soils, combined with the availability of water at shallow depths, was ideal for crop cultivation and soon farmers began growing corn, cotton, wheat, and grain sorghum. By 1900 there were roughly 186 ranches and farms in Swisher County and approximately 76 in Castro County (Abbe 2013; Abbe and Leffler 2013).

In 1906 a branch of the Santa Fe Railroad reached Swisher County from Amarillo and by 1910 the line extended south all the way to Lubbock. The arrival of the railroad, which travelled through the county seat of Tulia, meant the region was located along a major north-south transportation route and was tied to state and national markets. By 1910 the population of Swisher County had reached 4,012 while Castro County had grown to 1,850. Growth continued steadily throughout the next several decades; however, the onset of the Great Depression of the 1930s hit the region especially hard. The population of Swisher County dropped from 7,343 in 1930 to 6,528 in 1940 and Castro County saw a loss of almost 100 residents, down to 4,631, during the same time period (Abbe 2013; Abbe and Leffler 2013).

Eventually as mechanization and agricultural equipment advanced during the latter part of the twentieth century, less labor was needed to keep farms and ranches productive. As a result, Swisher and Castro Counties experienced declining populations. By 2000 Swisher County had 8,378 residents and Castro County had 8,285. Agriculture continues to be one of the region's largest economic forces (Abbe 2013; Abbe and Leffler 2013).

TRIBAL COORDINATION DATA

The background review included an examination of the THC's online "Guidelines for Tribal Consultation" (Guidelines) database to determine what tribes have an interest in Castro and Swisher Counties, Texas. According to the Guidelines, there are currently 27 tribes with known interests in Texas.

Based on a review of available Area of Interest Maps in the Guidelines, the Comanche Nation of Oklahoma, the Jicarilla Apache Nation, and the Tonkawa Tribe of Oklahoma consider Castro and Swisher Counties Areas of Interest. There are, however, 19 additional tribes with a known interest in Texas (see below) for which Area of Interest Maps are not available and coordination with those tribes may be necessary.

Absentee Shawnee Tribe of Oklahoma
Choctaw Nation of Oklahoma
Comanche Nation of Oklahoma
Jicarilla Apache Nation
Muscogee (Creek) Nation
Osage Nation
Tonkawa Tribe of Oklahoma
Ysleta Del Sur Pueblo of Texas
Alabama-Coushatta Tribe of Texas*
Alabama-Quassarte Tribal Town*
Apache Tribe of Oklahoma*
Caddo Nation*
Cherokee Nation of Oklahoma*
Coushatta Tribe of Louisiana*
The Delaware Nation*
Kialegee Tribal Town*
Kickapoo Traditional Tribe of Texas*
Kickapoo Tribe of Oklahoma*
Kiowa Tribe of Oklahoma*
Mescalero Apache Tribe*
Poarch Band of Creek Indians*
Quapaw Tribe of Oklahoma*
Seminole Nation of Oklahoma*
Thlopthlocco Tribal Town*
Tunica-Biloxi Tribe*
United Keetoowah Band of Cherokee Indians*
Wichita and Affiliated Tribes*

* No Area of Interest Map Available

PREVIOUS ARCHEOLOGICAL INVESTIGATIONS

This chapter provides a review of known archeological and historic resources, as well as previously investigated archeological project areas within a 1,000-meter radius of the APE, as documented in the Texas Historical Commission's (THC) online Texas Archeological Sites Atlas (TASA). The review indicated that few archeological surveys have been carried out in the general area of the APE. As a result, there is a low density of recorded sites in this portion of Swisher and Castro Counties, with only one site and one previously investigated archeological project area within 1,000 meters of the APE. However, to provide context, this review includes several known sites in the general project vicinity beyond the 1,000-meter radius.

One prehistoric site (41SW28) within the 1,000-meter search radius of the APE was recorded during a State Department of Highways and Public Transportation (SDHPT) survey in 1979 south of Tulia. [redacted] The site was interpreted as a late Paleoindian or Plainview kill or trap site, processing site, or open campsite. The site consists of cultural deposits filling an ancient arroyo, now perched on the upper banks or terrace overlooking the draw. Bone and lithic material was observed in a paleosol reminiscent, if not indicative of, Plainview deposits. Intensive testing, protection, or mitigation was recommended for the entire site. [redacted] No report associated with the 1979 survey was found during the recent records review. The site was recommended for additional investigations.

Somewhat further to the east along the east side of Business US 87 is the Rose Hill Cemetery (Cemetery No. SW-C003). The cemetery is on a hillside of Middle Tule Draw where a Texas Historical Marker (no. 4347) was erected in 1994. The cemetery dates to October 1890, three months after Swisher County was organized and Tulia was named the county seat. The first recorded burial in the cemetery is that of 18-year old Louis H. Harral, who died on October 17, 1890. Five acres were eventually set aside for the community cemetery. The historical marker indicates that,

> "A cemetery association was formed in 1916 under the leadership of Lula B. Tomlinson, who named the cemetery Rose Hill. The association was officially chartered by the state in 1937, and continues to maintain the site. Among those interred here are numerous city and county elected officials, including two law enforcement officers killed in the line of duty: John Mosley (d. 1933) and Robert (Bob) Potter (d. Christmas Day, 1960). Also buried here are veterans of the Civil War, the Spanish American War, World War I, World War II, Korea and Vietnam."

Four additional sites (41SW31, 41SW32, 41SW33, and 41SW38) have been recorded south and east of the town of Tulia. Sites 41SW31, 41SW32, 41SW33 were recorded in 1997 for the Texas Water Development Board. No data is available for 41SW31; however, limited data is available for 41SW32 and 41SW33. Site 41SW32 is a historic site consisting of, at the time of recording, three concrete and brick structures thought to be the remnants of a horizontal water or fuel tank support. Other observed cultural

material on site included two abandoned washing machines, pieces of sheet metal, a one gallon metal barrel, agricultural implement parts/fragments, two metal watering troughs, several wood posts, a 32-inch diameter wheel filled with concrete, piled remains of a small frame structure, and a few fragments of clear, green, and brown glass. The site was not recommended for State Archeological Landmark (SAL) designation or considered eligible for inclusion to the National Register of Historic Places (NRHP).

41SW33 represents the remains of a farmstead with two structural foundations, one concrete house foundation with a 6-ft deep cellar, and one outbuilding foundation. A few bricks, clear glass, and sheet metal were observed. The site was not recommended eligible for inclusion to the NRHP or for SAL designation.

Site 41SW38, a prehistoric campsite located near the Mackenzie Park Hiking Trail Bridge on the south side of Tulia, was recorded in 2003 (Boyd 2003). One prehistoric pottery sherd was collected; it is tentatively identified as an unpainted sherd of Chupadero Black-on-White (ca. A.D. 1100 to 1500) from the El Paso area. Additional artifacts observed included lithic debitage and fire cracked rocks. The site is located on a Holocene-age first terrace above Middle Tule Draw that had been bladed flat and planted with non-native grasses prior to 2003 (TASA 2013).

METHODS

The investigation consisted of an intensive 100 percent archeological surface survey augmented with shovel testing to determine the nature, extent, and if possible, the significance of any archeological resources discovered within the APE. The survey adhered to THC survey standards (n.d.), as well as the guidelines of the CTA (1987) and the Secretary of the Interior's Standards and Guidelines (NPS 1983). Field investigations were thoroughly documented with digital cameras.

The surface investigation consisted of systematic examination of the ground surface within the entire 512-acre property and along the proposed transmission line corridors using a five to 10-meter wide transect interval looking for surficial archeological materials. Survey standards (CTA 1987 and THC n.d.) recommend that surface surveys be augmented by systematic shovel testing or backhoe trenching as appropriate to prospect for buried archeological materials or when the surface visibility is less than 30 percent. Shovel tests were excavated in areas of proposed infrastructure within the 512-acre property, while along the proposed transmission lines subsurface testing focused on areas where surface visibility was less than 30 percent and in areas thought to have a good potential to contain buried archeological material, such as playa margins, crossings of Middle Tule Draw and South Tule Draw, and topographic high points.

Shovel tests (a minimum of 30 x 30 centimeters in size) were excavated by hand in arbitrary 20-centimeter levels. Hand excavations attempted to reach a maximum depth of 100 centimeters below ground surface or until soil characteristics (e.g., soil cemented with calcium carbonate) or the water table prohibited further excavation. All soil removed from shovel tests (ST) were screened through 0.25-inch wire mesh for artifact recovery. All ST locations were plotted with hand-held differentially corrected global positioning system receivers and documented on appropriate B&A ST forms. During the investigation, it was determined that backhoe trenching was not warranted given the results of shovel testing and surface inspection.

RESULTS OF INVESTIGATIONS

POWER GENERATING FACILITY

Intensive survey of the proposed power generating facility discovered no surface or subsurface archeological materials or historic standing structures (**Figure 10.1**). Survey investigations revealed that the property has experienced substantial previous surface and subsurface impacts, including wheat farming, decades of cattle grazing, the construction of two earthen retention dams across Middle Tule Draw, and the preparation of a pad site in the northwest corner of the project area (see **Figures 3** and **4**).

Depending upon location, ground surface visibility across the APE varied from less than 30 percent to approximately 50 percent. As such, systematic subsurface investigations focused on areas of proposed infrastructure with less than 30 percent ground surface visibility. Subsurface investigations involved the hand excavation of 75 STs (nos. 1 through 75) that typically exhibited approximately 25 centimeters (0 to 25 centimeters below ground surface) of hard and dry clay loam overlying dry and hard to slightly moist and dense clay subsoil to a maximum depth of 80 centimeters below ground surface (**Appendix A**). Due to the compactness and/or hardness of the clay subsoil, excavations to 100 centimeters below ground surface were not possible. In addition to shovel testing, numerous rodent burrows across the APE and the cutbank along Middle Tule Draw were inspected for buried cultural materials. None of the STs, cutbank examinations, or rodent burrows revealed prehistoric or historic artifacts. Subsurface investigations discovered no archeological material.

Although previously recorded site 41SW28 is plotted approximately 255 meters east of the southeast corner of the proposed power plant and east of IH-27 (ATLAS 2013), examinations of the eastern and southeastern margins of the APE discovered no evidence that the site extends west of IH-27 and into the project site. Based on the above data, it is the opinion of B&A that there are no archeological historic properties within the proposed generating facility and there is little to no potential for the proposed construction to impact previously unknown archeological historic properties.

TRANSMISSION LINES

Ground surface visibility within the proposed transmission line corridors (**Figure 10.2**) varied from approximately 40 to 80 percent. In conjunction with the shovel test data generated from the proposed generating facility, the excellent visibility allowed subsurface investigations to focus on areas with a high potential to contain buried archeological material, such as a crossing of Middle Tule Draw along US 86, playa margins, and topographic high points.

Subsurface investigations along the transmission lines involved the excavation of 42 STs (nos. 1T through 42T). Subsurface investigations along the majority of the transmission line corridors revealed soils comparable to those exhibited in the 75 shovel tests within the 512-acre property. The primary difference between the subsurface tests within the planned facility and the tests along the proposed transmission lines is a thin veneer of eolian sand or several areas of sandy loam deposits around playas (see **Appendix A**). The eolian veneer and sandy loam overlie the same dense clay loams and clays observed throughout the APE. Given the results of subsurface testing in the proposed facility, it was determined that

excavations deeper than approximately 40 to 50 centimeters were typically unwarranted (except where necessary in sandy loam deposits) along the transmission lines based on the dense clay subsoils (cemented with calcium carbonate solution) exposed at those depths within the planned facility.

Power In

In order to power components of the power generating facility, it will be necessary to deliver electric power into the planned facility. As such, Swisher County Electric Co-op will construct a new transmission line parallel to an existing east-west transmission along Highway 86 (**Figure 10.2**). The proposed power in transmission line will be approximately 6.2 miles long, extending from the northwest corner of the planned power generating facility westward to the existing Lakeview Nazareth substation in the southeast quadrant of the US 86/FM 1424 intersection. The existing transmission line parallels the north side of US 86 for approximately five miles before turning south, crossing to the south side of US 86, and extending west for approximately one mile before ending at the Lakeview Nazareth substation. Surface investigations along the six-mile segment revealed broad plowed agricultural fields and previously plowed areas currently in pasture exhibiting 40 to 80 percent ground surface visibility (see **Figures 8** and **9**). Subsurface examinations involved the excavation of STs 1T through 11T at playa margins (e.g., STs 1T through 3T and 8T through 11T) and at Middle Tule Draw (e.g., STs 4T through 7T); none of the tests contained any archeological material (see **Figure 10.2** and **Appendix A**).

Power Out

At the time of B&A's investigations, Chamisa had two alternative power out transmission lines delineated, as a preferred route was undetermined. Sharyland Utilities will build the power-out transmission line. As such, B&A conducted intensive survey investigations along both alternative alignments, Options 1 and 2.

Option 1

The Option 1 transmission line route is approximately 5.8 miles long. It extends south along the east side of Swisher County Road (CR) 11 from the southwest corner of the proposed generating facility for approximately three miles before traversing roughly three miles of pasture and plowed fields, and terminating at an existing Competitive Renewable Energy Zone transmission line south of the Swisher CR 11/FM 928 intersection (see **Figure 10.2**). Surface investigations along the 5.8-mile segment revealed broad plowed agricultural fields and previously plowed areas currently in pasture exhibiting 40 to 80 percent ground surface visibility (see **Figures 8** and **9**). Subsurface examinations involved the excavation of STs 31T through 42T. Shovel Tests 31T through 35T were excavated at playa margins while STs 36T through 40T were excavated at South Tule Draw), which contained no archeological material (see **Figure 10.2** and **Appendix A**).

Option 2

The Option 2 transmission line route is approximately 13.3 miles long. The line would extend from the southwest corner of the proposed generating facility along the north side of CR Q in Swisher County for

approximately 11 miles to the Swisher/Castro county line. At the county line, the line continues for approximately two miles along the north side of an unnamed road before terminating at the existing Sharyland Nazareth substation near the intersection of the unnamed road and Castro CR 529 (see **Figure 10.2**). Surface investigations along the 13.3-mile segment revealed broad plowed agricultural fields and previously plowed areas currently in pasture exhibiting 40 to 80 percent ground surface visibility (see **Figures 8** and **9**). Subsurface examinations involved the excavation of STs 12T through 30T at playa margins, which contained no archeological material (see **Figure 10.2** and **Appendix A**).

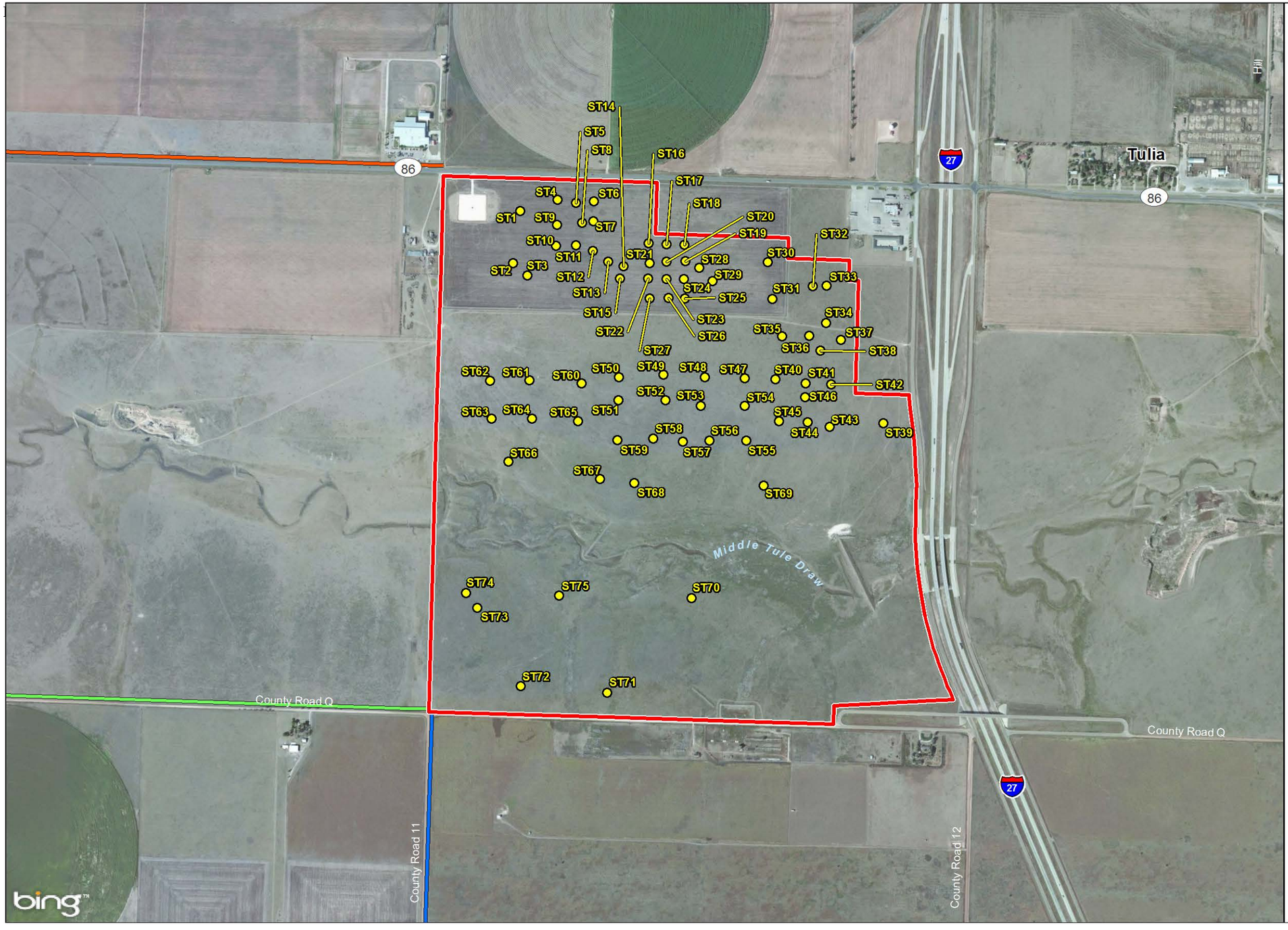


Figure 10.1
Shovel Test Locations
Chamisa CAES at Tulia LLC
Swisher and Castro
Counties, Texas

Property Boundary
Shovel Test (ST#)
Power In
Power Out Option 1
Power Out Option 2

1:12,000

Kilometers
0 0.125 0.25 0.5

Service Layer Credits: Image courtesy of USGS State of Michigan © AND

SUMMARY AND RECOMMENDATIONS

The proposed project APE has experienced moderate surface and subsurface impacts from mechanical disturbances associated with farming, ranching, and water retention efforts. Natural erosion has also impacted the area. The results of the systematic surface and subsurface investigation were negative for prehistoric or historic archeological materials or standing structures.

Given the negative results of the survey, it is the opinion of B&A that there is little to no potential for the APE to contain previously unidentified intact archeological or historic resources eligible for inclusion in the NRHP that could contribute new or important information to our understanding of regional or local prehistory and history. B&A recommends, therefore, that because no surface or subsurface archeological deposits or standing structures were discovered within the APE, the proposed construction should not affect any historic properties pursuant to 36 CFR 800.4(d)(1) and should be allowed to proceed as planned without additional investigations.

If previously unidentified archeological resources are identified during construction, work in the immediate area of the discovery will cease until the THC is contacted and accidental discovery procedures are implemented.

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APPENDIX A

SHOVEL TEST DATA

SHOVEL TEST DATA				
Shovel Test	**Depth (cm below surface)**	**Soil**	**Cultural Material**	**Notes**
1	0 to 16	Clay loam	None	Plowzone
	16 to 90	Clay		Dense slightly moist clay.
2	0 to 20	Clay loam	None	Plowzone
	20 to 85	Clay		Dense slightly moist clay.
3	0 to 17	Clay loam	None	Plowzone
	17 to 80	Clay		Dense slightly moist clay.
4	0 to 23	Clay loam	None	Plowzone
	23 to 80	Clay		Dense slightly moist clay.
5	0 to 23	Clay loam	None	Plowzone
	23 to 75	Clay		Dense slightly moist clay.
6	0 to 20	Clay loam	None	Plowzone
	20 to 80	Clay		Dense slightly moist clay.
7	0 to 22	Clay loam	None	Plowzone
	22 to 75	Clay		Dense slightly moist clay.
8	0 to 17	Clay loam	None	Plowzone
	17 to 70	Clay		Dense slightly moist clay.
9	0 to 17	Clay loam	None	Plowzone
	17 to 75	Clay		Dense slightly moist clay.
10	0 to 25	Clay loam	None	Plowzone
	25 to 70	Clay		Dense slightly moist clay.
11	0 to 20	Clay loam	None	Plowzone
	20 to 70	Clay		Dense slightly moist clay.
12	0 to 20	Clay loam	None	Plowzone
	20 to 75	Clay		Dense slightly moist clay.
13	0 to 15	Clay loam	None	Plowzone
	15 to 70	Clay		Dense slightly moist clay.
14	0 to 18	Clay loam	None	Plowzone
	18 to 75	Clay		Dense slightly moist clay.
15	0 to 22	Clay loam	None	Plowzone
	22 to 80	Clay		Dense slightly moist clay.
16	0 to 20	Clay loam	None	Plowzone
	20 to 75	Clay		Dense slightly moist clay.
17	0 to 25	Clay loam	None	Plowzone
	25 to 70	Clay		Dense slightly moist clay.
18	0 to 28	Clay loam	None	Plowzone
	28 to 70	Clay		Dense slightly moist clay.
19	0 to 15	Clay loam	None	Plowzone
	15 to 65	Clay		Dense slightly moist clay.
20	0 to 20	Clay loam	None	Plowzone
	20 to 80	Clay		Dense slightly moist clay.
21	0 to 25	Clay loam	None	Plowzone
	25 to 75	Clay		Dense slightly moist clay.
22	0 to 20	Clay loam	None	Plowzone
	20 to 80	Clay		Dense slightly moist clay.
23	0 to 21	Clay loam	None	Plowzone
	21 to 55	Clay		Dense slightly moist clay.
24	0 to 18	Clay loam	None	Plowzone
	18 to 75	Clay		Dense slightly moist clay.
25	0 to 20	Clay loam	None	Plowzone
	20 to 75	Clay		Dense slightly moist clay.

SHOVEL TEST DATA				
Shovel Test	**Depth (cm below surface)**	**Soil**	**Cultural Material**	**Notes**
26	0 to 22	Clay loam	None	Plowzone
	22 to 80	Clay		Dense slightly moist clay.
27	0 to 20	Clay loam	None	Plowzone
	20 to 65	Clay		Dense slightly moist clay.
28	0 to 20	Clay loam	None	Plowzone
	20 to 75	Clay		Dense slightly moist clay.
29	0 to 15	Clay loam	None	Plowzone
	15 to 80	Clay		Dense slightly moist clay.
30	0 to 25	Clay loam	None	Plowzone
	25 to 75	Clay		Dense slightly moist clay.
31	0 to 20	Clay loam	None	Plowzone
	20 to 70	Clay		Dense slightly moist clay.
32	0 to 23	Clay loam	None	Humic layer
	23 to 70	Clay		Dense slightly moist clay.
33	0 to 20	Clay loam	None	Humic layer
	20 to 70	Clay		Dense slightly moist clay.
34	0 to 20	Clay loam	None	Humic layer
	20 to 75	Clay		Dense slightly moist clay.
35	0 to 17	Clay loam	None	Humic layer
	17 to 80	Clay		Dense slightly moist clay.
36	0 to 20	Clay loam	None	Humic layer
	20 to 65	Clay		Dense slightly moist clay.
37	0 to 21	Clay loam	None	Humic layer
	21 to 65	Clay		Dense slightly moist clay.
38	0 to 21	Clay loam	None	Humic layer
	21 to 70	Clay		Dense dry clay.
39	0 to 33	Clay loam	None	Humic layer
	33 to 65	Clay		Dense dry clay.
40	0 to 20	Clay loam	None	Humic layer
	20 to 50	Clay		Dense dry clay.
41	0 to 25	Clay loam	None	Humic layer
	25 to 60	Clay		Dense dry clay.
42	0 to 20	Clay loam	None	Humic layer
	20 to 55	Clay		Dense dry clay.
43	0 to 20	Clay loam	None	Humic layer
	20 to 70	Clay		Dense dry clay.
44	0 to 25	Clay loam	None	Humic layer
	25 to 70	Clay		Dense dry clay.
45	0 to 25	Clay loam	None	Dense dry clay.
	25 to 70	Clay		Dense dry clay.
46	0 to 25	Clay loam	None	Humic layer
	25 to 70	Clay		Dense dry clay.
47	0 to 25	Clay loam	None	Humic layer
	25 to 70	Clay		Dense dry clay.
48	0 to 20	Clay loam	None	Humic layer
	20 to 75	Clay		Dense dry clay.
49	0 to 25	Clay loam	None	Humic layer
	25 to 80	Clay		Dense dry clay.
50	0 to 25	Clay loam	None	Humic layer
	25 to 60	Clay		Dense dry clay.

SHOVEL TEST DATA				
Shovel Test	**Depth (cm below surface)**	**Soil**	**Cultural Material**	**Notes**
51	0 to 20	Clay loam	None	Humic layer
	20 to 65	Clay		Dense dry clay.
52	0 to 20	Clay loam	None	Humic layer.
	20 to 65	Clay		Dense dry clay.
53	0 to 20	Clay loam	None	Humic layer
	20 to 75	Clay		Dense dry clay.
54	0 to 25	Clay loam	None	Humic layer
	25 to 65	Clay		Dense dry clay.
55	0 to 30	Clay loam	None	Humic layer
	30 to 65	Clay		Dense dry clay.
56	0 to 30	Clay loam	None	Humic layer
	30 to 65	loam		Dense dry clay.
57	0 to 30	Clay loam	None	Humic layer
	30 to 75	Clay		Dense dry clay.
58	0 to 35	Clay loam	None	Humic layer
	35 to 75	Clay		Dense dry clay.
59	0 to 35	Clay loam	None	Humic layer
	35 to 70	Clay		Dense dry clay.
60	0 to 15	Clay loam	None	Humic layer
	15 to 80	Clay		Dense slightly moist clay.
61	0 to 35	Clay loam	None	Humic layer
	35 to 70	Clay		Water at bottom
62	0 to 30	Clay loam	None	Humic layer
	30 to 75	Clay		Water at bottom
63	0 to 30	Clay loam	None	Humic layer
	30 to 75	Clay		Dense dry clay.
64	0 to 30	Clay loam	None	Humic layer
	30 to 65	Clay		Dense dry clay.
65	0 to 35	Clay loam	None	Humic layer
	35 to 70	Clay		Dense dry clay.
66	0 to 35	Clay loam	None	Humic layer
	35 to 70	Clay		Dense dry clay.
67	0 to 35	Clay loam	None	Humic layer
	35 to 60	Clay		Dense dry clay.
68	0 to 30	Clay loam	None	Humic layer
	30 to 70	Clay		Dense dry clay.
69	0 to 35	Clay loam	None	Humic layer
	35 to 75	Clay		Dense dry clay.
70	0 to 30	Clay loam	None	Humic layer
	30 to 80	Clay loam		Dense dry clay.
71	0 to 30	Clay loam	None	Humic layer
	30 to 75	Clay loam		Dense dry clay.
72	0 to 30	Clay loam	None	Humic layer
	30 to 75	Clay loam		Dense dry clay.
73	0 to 35	Mottled Clay loam	None	Humic layer
	35 to 65	Clay loam		Dense dry clay.
74	0 to 25	Mottled Clay loam	None	Humic layer
	25 to 75	Clay loam		Dense dry clay.
75	0 to 25	Clay loam	None	Humic layer

SHOVEL TEST DATA				
Shovel Test	**Depth (cm below surface)**	**Soil**	**Cultural Material**	**Notes**
1T	0 to 38	Sandy clay loam	None	Blocky structure
	38 to 46	Sandy clay	None	Subsoil, calcium carbonate flecks common
2T	0 to 10	Sandy clay loam	None	Moist and friable
	10 to 22	Sandy clay	None	Subsoil; calcium carbonate flecks and masses
3T	0 to 23	Sandy clay loam	None	Dry, hard, and blocky
	23 to 25	Clay and caliche	None	Subsoil
4T	0 to 64	Sandy clay loam	None	Friable to loose matrix
	64 to 70	Sandy clay	None	Subsoil; matrix 30% calcium carbonate masses
5T	0 to 35	Sandy clay loam	None	Moist and blocky
	35 to 45	Sandy clay	None	Subsoil; matrix 15% calcium carbonate nodules
6T	0 to 37	Sandy clay loam	None	Subsoil; semi-moist
	37 to 44	Sandy clay	None	Subsoil; matrix 15% calcium carbonate nodules
7T	0 to 17	Sandy clay	None	Dry and hard
	17 to 25	Sandy clay	None	Subsoil; calcium carbonate flecks and masses
8T	0 to 33	Sandy clay loam	None	Semi-moist and friable
	33 to 40	Clay	None	Subsoil; calcium carbonate flecking
	40 to 46	Sandy clay	None	Subsoil; calcium carbonate masses
9T	0 to 7	Sandy loam	None	Friable to loose
	7 to 10	Caliche hardpan	None	Basal deposit
10T	0 to 15	Sandy clay loam	None	Semi-moist and friable
	15 to 21	Sandy clay	None	Subsoil; calcium carbonate masses
11T	0 to 19	Sandy clay	None	Dry, hard, and blocky
	19 to 28	Sandy clay	None	Subsoil; calcium carbonate nodules after 25 cm
12T	0 to 20	Sandy clay	None	Firm and blocky
	20 to 25	Clay	None	Subsoil; calcium carbonate flecking
13T	0 to 20	Sandy clay loam	None	Dry, hard, and blocky
	20 to 25	Sandy clay	None	Subsoil; very dry and very hard with calcium carbonate nodules
14T	0 to 22	Sandy clay loam	None	Dry, hard, and blocky
	22 to 28	Clay	None	Subsoil; dry and very hard with calcium carbonate masses
15T	0 to 12	Silty sand	None	Loose eolian veneer
	12 to 25	Sandy clay	None	Dry, hard, and blocky
	25 to 33	Sandy clay	None	Subsoil; calcium carbonate nodules throughout
16T	0 to 15	Clay loam	None	Moist, firm, and sticky
	15 to 23	Sandy clay loam	None	Firm and blocky
	23 to 28	Clay	None	Subsoil; dry and hard with calcium carbonate nodules
17T	0 to 12	Sandy clay loam	None	Semi-moist and friable
	12 to 25	Sandy clay	None	Dry and blocky with calcium carbonate nodules
	25 to 31	Sandy clay	None	Subsoil; dry and hard with calcium carbonate nodules
18T	0 to 34	Sandy loam	None	Moist and friable
	34 to 85	Sandy clay loam	None	Compact at depth
19T	0 to 9	Sand	None	Loose eolian deposit
	9 to 40	Clay loam	None	Subsoil; dry, hard, and blocky with calcium carbonate flecks below 30 cm
20T	0 to 21	Clay loam	None	Dry and hard
	21 to 26	Sandy clay loam	None	Calcium carbonate flecking
	26 to 32	Clay	None	Subsoil; calcium carbonate nodules

SHOVEL TEST DATA				
Shovel Test	**Depth (cm below surface)**	**Soil**	**Cultural Material**	**Notes**
21T	0 to 75	Sandy loam	None	Eolian deposit likely
	75 to 85	Sandy clay loam	None	Subsoil; dry and hard with calcium carbonate flecks below 65 cm
22T	0 to 30	Clay loam	None	Dry, blocky, and hard
	30 to 41	Sandy clay	None	Subsoil; dry and hard with calcium carbonate nodules
23T	0 to 30	Sandy loam	None	Moist and friable
	30 to 35	Sandy clay with caliche	None	Subsoil about 30% caliche
24T	0 to 19	Clay loam	None	Dry, hard, and blocky
	19 to 25	Sandy clay with caliche	None	Subsoil about 20% caliche
25T	0 to 20	Sandy clay loam	None	Loose to friable
	20 to 35	Sandy clay	None	Subsoil
26T	0 to 17	Sandy clay loam	None	Moist and friable
	17 to 40	Sandy clay	None	Subsoil; dry, hard, and blocky
27T	0 to 26	Sandy loam	None	Loose to friable
	26 to 43	Sandy clay loam	None	Very dry and very hard; impenetrable at depth
28T	0 to 20	Sandy loam	None	Loose eolian deposit
	20 to 33	Clay loam	None	Very dry and very hard; impenetrable at depth
29T	0 to 18	Sandy loam	None	Friable eolian veneer
	18 to 31	Sandy clay loam	None	Compact, firm, and blocky
	31 to 37	Sandy clay	None	Subsoil; dry and hard with calcium carbonate masses below 33 cm
30T	0 to 23	Sandy clay loam	None	Moist and friable
	23 to 35	Sandy clay loam	None	Dry, hard, and blocky
	35 to 40	Sandy clay	None	Subsoil with calcium carbonate flecks
31T	0 to 19	Sandy loam	None	Plow zone; eolian
	19 to 25	Clay loam	None	Dry, hard, and blocky
	25 to 30	Sandy clay	None	Subsoil; common calcium carbonate nodules
32T	0 to 20	Sandy loam	None	Loose to friable
	20 to 30	Sandy clay loam	None	Dry, hard, and blocky
	30 to 35	Sandy clay	None	Subsoil; calcium carbonate nodules common
33T	0 to 15	Sand	None	Loose eolian veneer
	15 to 35	Sandy clay	None	Subsoil; dry, hard, and blocky
34T	0 to 20	Clay loam	None	Moist and friable; plow zone
	20 to 33	Sandy clay	None	Subsoil with calcium carbonate flecks
35T	0 to 15	Sandy loam	None	Loose; plow zone
	15 to 33	Sandy clay loam	None	Very dry and very hard; impenetrable at depth
36T	0 to 16	Sandy clay loam	None	Moist and friable
	16 to 35	Sandy clay loam	None	Dry and hard
	35 to 40	Sandy clay	None	Subsoil with calcium carbonate flecks
37T	0 to 20	Sandy loam	None	Loose to friable
	20 to 32	Sandy clay loam	None	Dry, hard, and blocky; impenetrable at depth
38T	0 to 8	Sandy loam	None	Loose eolian veneer
	8 to 23	Sandy clay loam	None	Dry, hard, and blocky
	23 to 30	Sandy clay	None	Subsoil; matrix 20% calcium carbonate nodules
39T	0 to 12	Sandy loam	None	Loose eolian veneer
	12 to 17	Sandy clay	None	Subsoil; calcium carbonate nodules common
40T	0 to 25	Sandy clay loam	None	Dry, hard, and blocky
	25 to 31	Sandy clay	None	Subsoil; calcium carbonate nodules common

SHOVEL TEST DATA				
Shovel Test	**Depth (cm below surface)**	**Soil**	**Cultural Material**	**Notes**
41T	0 to 25	Sandy clay loam	None	Moist and firm
	25 to 35	Sandy clay	None	Subsoil; dry, hard, and blocky;
42T	0 to 20	Sandy loam	None	Loose eolian veneer
	20 to 33	Sandy clay loam	None	Dry, hard, and blocky
	33 to 40	Sandy clay	None	Subsoil; calcium carbonate flecks

Appendix B

Principal Investigator Resume

BRANDON S. YOUNG, MA, RPA

Education
M.A., Anthropology, The University of Texas at San Antonio, 2002.

Lambda Alpha National Honor Society for Anthropology, 1999.

B.A. (Cum Laude), Anthropology, The University of Texas at Austin, 1994.

University of Texas at Austin Archeological Field School, WS-Ranch Site, Alma, New Mexico, 1993.

Professional Experience (Selected Projects)
Mr. Young has conducted archeological investigations for transportation, oil and gas, and private development projects in Texas and adjacent states for 19 years. Additionally, Mr. Young has conducted several wind energy projects in Texas, New Mexico, Arizona, and Colorado.

2003 to present
Principal Investigator/Archeologist, Blanton & Associates, Inc. Mr. Young conducts archeological survey, excavation, research, and analysis projects and produces oral and written reports. He has written more than 50 archeological reports and is skilled in general cultural resource management. Mr. Young is also very familiar with local, state, and federal preservation laws, including recommendations and guidelines from the Texas Historical Commission and the Council of Texas Archeologists.

2013
Principal Investigator, archeological survey of the proposed Red Gate power plant, Hidalgo County, Texas.

2012
Principal Investigator, intensive archeological survey of proposed improvements to State Loop 82 from Thorpe Lane to Charles Austin Drive in the City of San Marcos, Hays County, Texas.

2011
Principal Investigator, intensive archeological survey of the proposed Schaefer Road drainage phase I (CB-19) project in northeast Bexar County, Texas.

2010
Principal Investigator, intensive archeological survey of four post-review discoveries within the Del Rio Outer Loop, Val Verde County, Texas.

2008 and 2009
Principal Investigator, September 2008 and July 2009, conducted archeological and geo-archeological investigations prior to the construction of the proposed El Pico Water Treatment Plant (EPWTP) in the City of Laredo, Webb County, Texas. In September 2008, conducted an intensive archeological survey with shovel testing and backhoe trenching of the 400-acre EPWTP project area. In July 2009, conducted a geoarcheological assessment of the project area with Dr. Stephen Hall to evaluate the potential for the study area and the 11 archeological sites (41WB705 through 41WB715) discovered during the 2008 survey to contain intact deposits eligible for inclusion to the National Register of Historic Places or State Antiquities Landmark designation. As a result of the intensive survey and the geoarcheological assessment, it was recommended that feature-focused test excavations of select cultural features on site 41WB710 and 41WB713 were warranted to determine whether they retained deposits eligible for inclusion to the National Register of Historic Places or State Antiquities Landmark designation. The feature-focused archeological testing occurred at sites 41WB710 and 41WB713 during March 2011 and the project was allowed to proceed as planned without additional investigations following the testing phase.

Principal Investigator, archeological survey of a proposed McAllen public utility reservoir and associated pipeline infrastructure in McAllen, Hidalgo County, Texas

2007
Co-Principal Investigator, archeological test excavations at site 41PK248 on the Alabama-Coushatta Indian Reservation, Polk County, Texas.

2006
Principal Investigator, cultural resources survey and avoidance measures for a proposed 3D seismic exploration in the vicinity of the Brownsville Navigation District and the Laguna Madre in Cameron County, Texas.

2005
Principal Investigator, archeological survey of a 10.3-Kilometer (6.4-Mile) long section of U.S. Highway 83 in Starr County, Texas prior to proposed widening and realignment construction.

2004–2005
Principal Investigator, cultural resource avoidance and mitigative efforts for the proposed LCRA Fort Lancaster to Friend Ranch transmission line, Pecos, Terrell, and Crockett Counties, Texas. Archaeological testing and avoidance/mitigative measures at 16 prehistoric sites.

2004
Principal Investigator, pedestrian archaeological survey for the North Pharr to Harlingen Substation Transmission Line Rebuild, Cameron and Hidalgo Counties, Texas. Pedestrian survey with shovel testing and limited backhoe trenching utilizing a probability model and sampling.

2003
Principal Investigator, Center for Big Bend Studies, Sul Ross State University, Alpine, Texas. Six Shooter to Midland Airport Fiber Optic Cable, Pecos, Crockett, Upton, and Midland Counties, Texas.

2002
Archeologist. Center for Big Bend Studies, Sul Ross State University, Alpine, Texas. Lake Meredith/Plum Creek Prescribed Burn Survey 2002, Lake Meredith National Recreation Area, Fritch, Texas. Pedestrian survey of select portions of the recreation area prior to prescribed burns.

Field Supervisor. SWCA Inc., Environmental Consultants, Austin, Texas. TxDOT Bridge Impact Evaluation Project. Responsible for conducting impact evaluations at numerous (30+) bridge locations throughout Denton County, Texas.

2001–2002
Samalayuca Pipeline Project: Performed laboratory analyses and co-authored the final report of investigations concerning the 1997 mitigation of four prehistoric sites (41EP3038, 41EP3042, 41HZ504, and 41HZ505) along the Samalayuca Pipeline, El Paso and Hudspeth Counties, Texas. The project involved organizing excavation data and re-analyzing artifacts and previous notes produced by Centro de Investigaciones Arqueologicas of El Paso, Texas, which was the company responsible for the 1997 data recovery excavations.

2001
Project Archeologist and Field Supervisor. SWCA Inc., Environmental Consultants, Austin, Texas:

Field Supervisor. Cultural Resource Survey of the KPP Supply Company Project Area, Pittsburg County, Oklahoma. Cultural resource investigations along a 53.9-km long water pipeline in east-central Oklahoma. Responsible for supervising field crews and co-author of the report of investigations.

Project Archeologist. LeBrock Power Plant Access Road Survey, Harrison County, Texas. Responsible for conducting an archeological survey along a proposed access road serving the LeBrock Power Plant in Harrison County, Texas, as well as the completion of the report of investigations.

Project Archeologist. Central Texas Telephone Cooperative Survey Project, Colorado Bend State Park, Lampassas and San Saba Counties, Texas.

Responsible for archeological survey along proposed fiber optic cable route, as well as the completion of the report of investigations.

Project Archeologist. Colorado Valley Telephone Cooperative Survey Project, Fayette County, Texas. Responsible for archeological survey along proposed fiber optic cable route, as well as the completion of the report of investigations.

Field Supervisor. Los Indios, Los Tomates, and Pharr-Reynosa Border Safety Inspection Facilities Project, Cameron and Hidalgo Counties, Texas. Responsible for conducting backhoe trench excavations at several proposed inspection facility sites, as well as completing the report of investigations.

Project Archeologist. Medway Ranch Archeological Assessment. Responsible for conducting an archeological assessment survey of the 345-acre Medway Ranch, Travis County, Texas, as well as the completion of the report of investigations.

Project Archeologist. Atascosa County Bridge Replacement Project. Responsible for conducting archeological surveys at bridge locations (two) along FM 2504 at the Atascosa River and Sesterdero Creek in Atascosa County, Texas, as well as completion of the reports of investigations.

Project Archeologist. Wooten Investment Corporation Project. Responsible for conducting archeological survey of a 20-acre tract of land in north Travis County, Texas, as well as the completion of the report of investigations.

Field Supervisor. Center for Big Bend Studies, Sul Ross State University, Alpine, Texas, Data Recovery Excavations at 41PS800, Arroyo de la Presa site, Presidio County, Texas. Primary responsibilities included supervision of block excavations and mechanical trenching, excavation of pit features, as well as the production of extensive stratigraphic profiles.

2000

Research scientist assistant II (Archeologist). Center for Archaeological Research, The University of Texas at San Antonio. Responsible for daily excavation of units and maintenance of excavation records during the Little River Archeological Test Excavations Project, Milam County, Texas.

Archeologist. Hicks & Company, Wilson Ranch Survey, Pecos County, Texas. Pedestrian survey of 105 proposed windmill pads and associated access roads and transmission line rights-of-way. Responsible for the documentation of newly discovered archeological materials, overseeing archeological technicians, and daily communication with client.

Field Supervisor. SWCA Inc., Environmental Consultants. All American Pipeline/El Paso Natural Gas Survey Project. Aided in supervising the resurvey of portions of the All American Pipeline between McCamey and El Paso, Texas. The project involved extensive pedestrian survey in order to revisit numerous, previously recorded sites and record several previously unknown sites.

Field Archeologist. SWCA Inc., Environmental Consultants. Avery Ranch Testing Project. Responsible for daily excavation of units and cultural features, as well as the completion of excavation records, and sample forms during test excavations at two prehistoric sites. The project focused on the Pavo Blanco site (41WM559c), a well-preserved burned rock midden containing temporally diagnostic projectile points dating from the Late Paleoindian (Hell Gap specimen) through the Late Prehistoric.

1999

Project Archeologist, SWCA Inc., Environmental Consultants. Level (3) Communications Cultural Resources Survey, Arkansas. Responsible for supervising crews surveying 47 select miles of proposed fiber optic cable right-of-way from Texarkana, Arkansas to West Memphis, Arkansas. The project involved revisiting previously recorded sites in or near the proposed right-of-way as well as recording any previously unknown sites. Also responsible for completion of the Draft Report of Investigations.

Field Supervisor. Hicks & Company Environmental/Archeological Consulting, Austin, Texas. Involved with the daily supervision of archeological excavation crews for the Guy Town Archeological Testing Project.

1998

Teaching Assistant. Center for Big Bend Studies, Sul Ross State University 1998 Archeological Field School in the Davis and Glass Mountains, Brewster County, Texas. Involved in the daily supervision of student excavations at a prehistoric open campsite and a rockshelter.

1997

Archeologist. Center for Big Bend Studies, Sul Ross State University, Alpine, Texas. The Center for Big Bend Studies/Big Bend National Park Survey Project. Continuation of ongoing archeological survey of Big Bend National Park, Brewster County, Texas.

Archeologist. SWCA Inc., Environmental Consultants. Camino-Colombia Toll Road NRHP Eligibility Testing Project, Webb County, Laredo, Texas. Project involved test excavations at 14 archeological sites along the proposed toll road right-of-way. Daily responsibilities involved maintaining excavation records, sample logs, and general project paperwork.

Archeologist. TRC Mariah Associates, Inc., Austin, Texas. Data recovery excavations at prehistoric open campsite 41ZP364. Responsible for individual, daily excavation of units as well as maintaining all appropriate paperwork for each unit.

1996

Archeologist. Prewitt and Associates, Inc., Consulting Archeologists, Austin, Texas. Ft. Hood NRHP Eligibility Testing Project, Killeen, Texas. Responsible for individual, daily excavation of units as well as maintenance of all appropriate paperwork for each unit.

Archeologist. Center for Big Bend Studies, Sul Ross State University, Alpine, Texas. The Center for Big Bend Studies/Big Bend National Park Survey Project. Continuation of ongoing archeological survey of Big Bend National Park, Brewster County, Texas.

Archeologist. Moore Archeological Consulting, Houston, Texas. Responsible for excavation of shovel tests and site recording during the Trinity River Authority Waterline Survey, Huntsville, Walker County, Texas.

1995

Archeologist. Center for Big Bend Studies, Sul Ross State University, Alpine, Texas. The Center for Big Bend Studies/Big Bend National Park Survey Project. Involved in ongoing archeological survey of Big Bend National Park, Brewster County, Texas.

Field Supervisor. SWCA Inc., Environmental Consultants, Austin, Texas. Continuation of the archeological survey along the 130-mile MIDTEXAS Pipeline Project Area, in Gonzales, DeWitt, Lavaca, Colorado, Austin, and Waller Counties.

Archeologist. Moore Archeological Consulting, Houston, Texas. Responsible for daily excavation of units and maintenance of excavation records during the Wood Forest Road Testing Project, Houston, Texas.

1994

Field Supervisor. SWCA Inc., Environmental Consultants, Austin, Texas. Archeological survey along the 130-mile MIDTEXAS Pipeline Project Area, in Gonzales, DeWitt, Lavaca, Colorado, Austin, and Waller counties.

Archeologist and Laboratory Technician. Office of the State Archeologist, Texas Historical Commission, Austin. Responsible for daily excavation of units and maintenance of excavation records during the Cristianson-Leberman House Testing Project, Austin, Texas. Also responsible for the cataloging of over 7000 faunal remains from the Horace Rivers Site (41HH123), a Plainview campsite in Hemphill County, Texas.

Archeologist. Moore Archeological Consulting, Houston, Texas, Lake O' the Pines Survey Project. Pedestrian survey with shovel testing at

select areas adjacent to Lake O' the Pines, Marion and Upshur counties, Texas.

Publications and Presentations

2013

Archeological Investigations for Chamisa CAES at Tulia LLC. December 2013. Prepared for Chamisa CAES at Tulia LLC.

Cultural Resources Investigations for the Alazan Acequia (41BX620) and Historical Resources Survey for the Westside Multi-Modal Transit Center Phase 2 Project, San Antonio, Texas. November 2013. Prepared for HTNB and Via Metropolitan Transit.

Intensive Archeological Survey of the Proposed Center Point Wastewater Lines and Interceptor in Center Point and Comfort, Kerr and Kendall Counties, Texas. November 2013. Prepared for Kerr County, Texas, and Tetra Tech.

Addendum Report for Intensive Archeological Survey of the Proposed Center Point Wastewater Lines and Interceptor in Center Point and Comfort, Kerr and Kendall Counties, Texas. November 2013. Prepared for Kerr County, Texas, and Tetra Tech.

Intensive Archeological Survey of the Proposed Mountain Creek Interceptor Segments MC-7 And MC-8 in the City of Grand Prairie, Dallas and Tarrant Counties, Texas. November 2013. Prepared for Trinity River Authority of Texas and Lockwood, Andrews & Newnam, Inc.

Prepared the Archeological Resources section of an EIS for Proposed SH 45SW. September 2013. Prepared for RTG and Texas Department of Transportation Austin District.

Addendum Report, Archeological Survey Investigations of Portions of the ATEX Express Pipeline Project (Spread 6), Alternate Route in Liberty County, Texas. August 2013. Prepared for Enterprise Liquids Pipeline Company LLC. Submitted to U.S. Army Corps of Engineers Galveston District.

Archeological Survey of Portions of the Indigo Minerals Logansport Pipeline in DeSoto Parish, Louisiana. July 2013. Prepared for Enterprise Products Operating LLC. Submitted to U.S. Army Corps of Engineers Fort Worth District.

Programmatic Categorical Exclusion, FM 197 at Parsons Creek, On-System Bridge Replacement, Lamar County, Texas. June 2013. Prepared for Federal Highway Administration and Texas Department of Transportation Paris District.

Intensive Archeological Survey of the Proposed Schaefer Road Drainage Phase I (CB-19) Project in Northeast Bexar County, Texas. June 2013. Prepared for Bexar County Flood Control.

Programmatic Categorical Exclusion, FM 97 at Parsons Creek, On-System Bridge Replacement, Lamar County, Texas. June 2013. Prepared for Federal Highway Administration and Texas Department of Transportation Paris District

Archeological Survey of Portions of Seaway Crude Pipeline Company LLC's Proposed Seaway Loop Project–Segment 7 in Jefferson, Liberty, and Chambers Counties, Texas. June 2013. Prepared for Enterprise Crude Pipeline LLC on behalf of Seaway Crude Pipeline Company LLC. Submitted to U.S. Army Corps of Engineers Galveston District.

Archeological Survey of Portions of Enterprise Crude Pipeline LLC's Proposed Seaway Loop – Echo To Mont Belvieu Pipeline Project, Harris And Chambers Counties, Texas. May 2013. Prepared for Enterprise Crude Pipeline LLC. Submitted to U.S. Army Corps of Engineers, Galveston District.

Intensive Archeological Survey of Four Post-review Discoveries within the Del Rio Outer Loop, Val Verde County, Texas. April 2013. Prepared for Val Verde County with Joe Sanchez and Mark Willis.

Archeological Data Recovery at Prehistoric Sites 41VV2012 and 41VV2013 in the Del Rio Outer Loop, Val Verde County, Texas. March 2013. Prepared for Val Verde County and Pate Transportation Partners, LP. Submitted to Texas Department of Transportation Environmental Affairs Division and Texas Historic Commission.

Intensive Archeological Survey of SH 242 from IH 45 to US 59 in Montgomery County, Texas. February 2013. Prepared for Texas Department of Transportation Houston District and Transystems.

Archeological Survey of the Proposed Red Gate Power Plant, Hidalgo County, Texas. February 2013. Prepared for South Texas Electric Cooperative, Inc.

Intensive Archeological Survey, CR 322 at Clear Fork Brazos River, Fisher County, Texas. February 2013. Prepared for Texas Department of Transportation Abilene District.

Intensive Archeological Survey, CR 246 at Clear Fork Brazos River, Fisher County, Texas. February 2013. Prepared for Texas Department of Transportation Abilene District.

2012

Archeological Survey of Portions of Enterprise Liquids Pipeline LLC's Proposed ATEX Express Pipeline from Beaumont to Mont Belvieu, Liberty, Chambers, and Jefferson Counties, Texas. December 2012. Prepared for Enterprise Liquids Pipeline Company LLC. Submitted to Texas Historical Commission.

Addendum Report for Supplemental Archeological Investigations at Site 41HY165 for Proposed Improvements to State Loop 82 from Thorpe Lane to Charles Austin Drive in the City Of San Marcos, Hays County, Texas. November, 2012. Prepared for the City of San Marcos and Texas Department of Transportation Austin District.

Intensive Archeological Survey of Proposed Improvements to County Road 258 from Sunset Ridge to Ronald Reagan Boulevard in Williamson County, Texas. October 2012. Prepared for Williamson County, Texas.

Intensive Archeological Survey of Proposed Improvements to State Loop 82 from Thorpe Lane to Charles Austin Drive in the City of San Marcos, Hays County, Texas. August 2012. Prepared for The City of San Marcos and Texas Department of Transportation Austin District.

Archeological Monitoring Report for the Gavilan/La Pita/Rio Grande Pipeline And Well Pad Number 2 in the Boca Chica Tract of the Lower Rio Grande Valley National Wildlife Refuge in Cameron County, Texas. May 2012. Prepared for Sanchez Oil and Gas, Inc.

Archeological Survey of Proposed Upgrades to the Channel Energy Center, Houston, Harris County, Texas. May 2012. Prepared for Channel Energy Center LLC.

Archeological Survey of Proposed Upgrades to the Deer Park Energy Center, Houston, Harris County, Texas. May 2012. Prepared for Deer Park Energy Center LLC.

Archeological Investigations for the Clara Neal Pipeline Removal Project, Upton County, Texas. March 2012. Prepared for Northern Natural Gas.

Intensive Archeological Survey of Proposed Improvements to Bonnie Brae Street from Vintage Boulevard to Interstate Highway 35 East in the City of Denton, Denton County, Texas. March 2012. Prepared for the City of Denton and Graham Associates, Inc.

Intensive Archeological Survey of the Proposed Brushy Creek Wastewater Interceptor Phase II in Williamson County, Texas. March 2012. Prepared for Walker Engineering and the City of Hutto. Submitted to Texas Historical Commission.

Intensive Archeological Survey Supplemental Report, US 77 from SH 107 in the City of Combes to SH 44 in the City of Robstown, Cameron, Willacy, Kenedy, Kleberg, and Nueces Counties, Texas. January 2012. Prepared for Texas Department of Transportation and Texas Turnpike Authority Division.

2011

Intensive Archeological Survey of McCombs Street/FM 2529 from US 54 to Just North of FM 2637 in El Paso, El Paso County, Texas. October 2011. Prepared for Texas Department of Transportation El Paso District. Submitted to Texas Historical Commission.

Archeological Survey of FM 407 at Trail Creek in Denton County, Texas. October 2011. Prepared for Texas Department of Transportation Dallas District and Parsons Brinckerhoff. Submitted to Texas Historical Commission.

Intensive Archeological Survey of the Proposed Highland Sewer Line, City of McAllen, Hidalgo County, Texas. October 2011. Prepared for City of McAllen. Submitted to Texas Historical Commission.

Intensive Archeological Survey of the M325 Segment of the Proposed Village Creek Relief Sanitary Sewer Line in Tarrant County, Texas. October 2011. Prepared for the City of Fort Worth. Submitted to Texas Historical Commission.

An Archeological Survey of IH 35 at CR 132, Hays County, Texas. September 2011. Prepared for Texas Department of Transportation Austin District. Submitted to Texas Historical Commission.

Intensive Archeological Survey of the Proposed Rosillo Creek NWWC (SC-15) Project in the City of Kirby, Bexar County, Texas. September 2011. Prepared for Bexar County Flood Control and Pate Engineers, Inc.

Intensive Archeological Survey of Old Airport Road at Burgess Creek in Parker County, Texas. September 2011. Prepared for Texas Department of Transportation Fort Worth District, and Aguirre & Fields, LP.

Archeological Testing at 41WB710 and 41WB713 within the Proposed El Pico Water Treatment Plan in the City of Laredo, Webb County, Texas. June 2011. Prepared for the City of Laredo and Dannenbaum Engineering Corporation.

Intensive Archeological Survey of a Proposed Water Main for the County Road 108 Water Improvement Project, City of Hutto, Williamson County, Texas. April 2011. Prepared for Walker Engineering and the City of Hutto. Submitted to Texas Historical Commission.

Intensive Archeological Survey of a Proposed Wastewater Collection System in the Rosa Azul Subdivision Area, Socorro, El Paso County, Texas. February 2011. Prepared for Moreno Cardenas Inc. Consultign Engineers and Lower Valley Water District. Submitted to Texas Historical Commission.

Intensive Archeological Survey of SH 286 from SH 358 to One Mile South of FM 43 in the City of Corpus Christi, Nueces County, Texas. January 2011. Prepared for Texas Department of Transportation Corpus Christi District.

Cultural Resources Survey for the Proposed Biggs East Gate Road, El Paso County, Texas. January 2011. Prepared for Texas Department of Transportation El Paso District.

Archeological Survey on SH: 75 from IH 45 to Post Oak Road in the City of Conroe, Montgomery County, Texas. January 2011. Prepared for Texas Department of Transportation Houston District and KBR.

Archeological Survey of FM 3083 from IH 45 to LP 336 in the City of Conroe, Montgomery County, Texas. January 2011. Prepared for Texas Department of Transportation Houston District and TranSystems.

<u>2010</u>

Interim Archeological Survey Report for a Portion of the Trinity River Authority's Proposed MC-7/MC-8 Sanitary Sewer Project, Dallas and Tarrant Counties. December 2, 2010. Prepared for Trinity River Authority. Submitted to the Texas Historical Commission.

Spinning Star Wind Ranch and Transmission Line Environmental Report, Upton, Reagan, and Crockett Counties, Texas December 2010. Prepared for Spinning Star Energy, LLC, for U.S. Department of Energy application.

Intensive Archeological Survey of Selected Parts of Loop 1604 from US 90 to IH 35 in the City of San Antonio, Bexar County, Texas. December 2010. Prepared for Alamo Regional Mobility Authority. Submitted to Texas Department of Transportation Environmental Affairs Division.

Research Design, Archeological Data Recovery Excavations at Prehistoric Sites 41VV2012 and 41VV2013 in the Del Rio Outer Loop, Val Verde County, Texas. September 29, 2010. Prepared for Texas Department of Transportation Environmental Affairs Division.

Archeological Survey of Lake Falcon County Park and Boat Ramp in the City of Zapata, Zapata County, Texas. September 2010. Prepared for the County of Zapata and the Texas Department of Transportation Pharr District. Submitted to the Texas Historical Commission.

Summary of Construction Impacts to Sites 41VV2012 and 41VV2013 in the Del Rio Outer Loop, Val Verde County, Texas. August 30, 2010. Prepared for Texas Department of Transportation Environmental Affairs Division.

Intensive Archeological Survey of FM 90 at Lacy Fork Creek, An Unnamed Relief Drainage, and Caney Creek in Kaufman County, Texas. August 2010. Prepared for Texas Department of Transportation Dallas District. Submitted to Texas Department of Transportation Environmental Affairs District.

Intensive Archeological Survey of FM 1139 at Brushy Creek in Rockwall County, Texas. August 2010. Prepared for Texas Department of Transportation Dallas District. Submitted to Texas Department of Transportation Environmental Affairs District.

Archeological Investigations for the Proposed Gavilan/La Pita/Rio Grande Pipeline and Well Pad No. 2 in the Boca Chica Tract of the Lower Rio Grande Valley National Wildlife refuge in Cameron County, Texas. June 2010. Prepared for Sanchez Oil & Gas Corporation. Submitted to U.S. Fish and Wildlife Service Southwest Region and Texas Historical Commission.

Intensive Archeological Survey of US 77 from SH 107 in the City of Combes to SH 44 in the City of Robstown, Cameron, Willacy, Kenedy, Kleberg, and Nueces Counties, Texas. February 2010. Prepared forTexas Department of Transportation Pharr and Corpus Christi Districts. Submitted to Texas Turnpike Authority and Texas Department of Transportation Environmental Affairs Division.

Intensive Archeological Survey of Loop 375/Joe Battle Boulevard at FM 659/Zaragoza Road in the City of El Paso, El Paso County, Texas. June 2010. Prepared for Texas Department of Transportation El Paso District. Submitted to Texas Department of Transportation Environmental Affairs Division.

Intensive Archeological Survey of a Proposed City of Grand Prairie Wastewater Utility Line on U.S. Army Corps of Engineers Property South of Joe Pool Lake in Ellis County, Texas. May 2010. Prepared for City of Grand Prairie and Espey Consultants. Submitted to U.S. Army Corps of Engineers Fort Worth District.

Intensive Archeological Survey of Loop 375 from Approximately One Mile West of U.S. Highway 54 to Business Highway 54 (Dyer Street), El Paso, El Paso County, Texas. April 2010. Prepared for Texas Department of Transportation El Paso District.

Intensive Archeological Survey of Loop 375 from Interstate Highway 10 to Franklin Mountains State Park, El Paso County, Texas. April 2010. Prepared for Texas Department of Transportation El Paso District.

An Intensive Archeological Survey in Hazel Bazemore County Park, Nueces County, Texas. April 2010. Prepared for Nueces County and Olivarri & Associates, Inc. Submitted to the Texas Historical Commission.

Cultural Resources Survey for the Proposed Expansion of the North McAllen Wastewater Treatment Plan in the City of McAllen, Hidalgo County, Texas. April 2010. Prepared for Dannenbaum Engineering on Behalf of the City of McAllen. Submitted to the Texas Historical Commission.

An Intensive Archeological Survey of a Proposed Extension to the McCarty Lane Improvement Project from 5,170 Feet East of IH 35 to 6,534 Feet East of IH 35, Hays County, Texas. March 2010. Prepared for the City of San Marcos and

KBR, Inc. Submitted to the Texas Historical Commission.

Intensive Archeological Survey of Two Off-system Bridges in Wise County, Texas. March 2010. Prepared for Texas Department of Transportation Fort Worth District. Submitted to the Texas Historical Commission.

2009

Archeological Assessment, Proposed Pavement Repairs and Drainage Improvements on Sessom Drive in the City of San Marcos, Hays County, Texas. December 16, 2009. Prepared for the City of San Marcos.

Archeological and Geoarcheological Investigations for the Proposed El Pico Waste Water Treatment Plant in the City of Laredo, Webb County, Texas. December 2009. Prepared for City of Laredo and Dannenbaum Engineering. Submitted to Texas Historical Commission.

Archeological Survey of a Proposed Bike and Hike Trail along Wonder World Drive in the City of San Marcos, Hays County, Texas. November 2009. Prepared for the City of San Marcos and KBR.

Archeological Survey of McCarty Lane at Cottonwood Creek in the City of San Marcos, Hays County, Texas. November 2009. Prepared for City of San Marcos and KBR, Inc.

Archeological Investigations for the Proposed Redhead Ridge Gas Well Pad in Laguna Atascosa National Wildlife Refuge, Cameron County, Texas. October 2009. Prepared for Sanchez Oil and Gas, Inc. Submitted to Texas Historical Commission.

Interim Report: Archeological and Geoarcheological Investigations for the Proposed El Pico Water Treatment Plant in the City of Laredo, Webb County, Texas. October 2, 2009. Prepared for the City of Laredo. Submitted to the Texas Historical Commission.

Intensive Archeological Survey of Paseo Del Norte Road from I-10 to North Resler Drive in the City of El Paso, El Paso County, Texas. September 2009. Prepared for City of El Paso and Texas Department of Transportation El Paso District. Submitted to Texas Department of Transportation Environmental Affairs Division.

An Intensive Archeological Survey for the Proposed Realignment of the Las Cruces Drive/ FM 1472 Intersection in the City of Laredo, Webb County, Texas. June 2009. Prepared for the City of Laredo and the Texas Department of Transportation Laredo District.

Archeological Survey of Chisholm Trail Road and the Proposed Chisholm Trail Parkway Extension in the City of Round Rock, Williamson County, Texas. May 2009. Prepared for the City of Round Rock and Rodriguez Transportation Group.

Intensive Archeological Survey of FM 1391 at Cedar Creek Relief and FM 1565 at Draw in Kaufman County, Texas. April 2009. Prepared for Texas Department of Transportation Dallas District.

Archeological Survey Investigations for a Proposed Salado Utility, Inc., Wastewater Treatment Plan in Salado, Bell County, Texas. March 2009.Prepared for Sterling Development Company. Submitted to Texas Historical Commission.

Archeological Survey of a Proposed McAllen Public Utility Reservoir and Pipeline Infrastructure in McAllen, Hidalgo County, Texas. March 2009. Prepared for McAllen Public Utility and Melden and Hunt, Inc. Submitted to Texas Historical Commission.

2008

Archeological Investigations for the Proposed Creekside Villas in the City of Buda, Hays County, Texas. October 2008. Prepared for ECS-Texas, LLP.

An Intensive Archeological Survey of IH 45 from Just North of Wintergreen Road to Just South of Pleasant Run Road, Dallas County, Texas. October 2008. Prepared for Texas Department of

Transportation Dallas District and Dannenbaum Engineering Corporation.

Archeological Investigations on CR 142 at Stinking Creek in Kent County, Texas. October 2008. Prepared for the Texas Department of Transportation Abilene District. Submitted to the Texas Historical Commission.

Archeological Investigations for Three Off-system Bridge Replacements in Scurry County, Texas. October 2008. Prepared for the Texas Department of Transportation Abilene District. Submitted to the Texas Historical Commission.

Archeological Investigations for the Proposed Deadwood Gas Well in Laguna Atascosa National Wildlife Refuge, Cameron County, Texas. October 2008. Prepared for Sanchez Oil & Gas Corporation. Submitted to Texas Historical Commission.

Archeological Assessment, SH 352 (Scyene Road) at Union Pacific Railroad between Hatcher Street and Dixon Avenue in the City of Dallas, Dallas County, Texas. September 18, 2008. Prepared for Texas Department of Transportation Dallas District.

Archeological Survey of FM 89 at Elm Creek, Taylor County, Texas. July 2008. Prepared for Federal Highway Administration and Texas Department of Transportation Abilene District.

An Intensive Archeological Survey of US 80 at SH 352 in Dallas County, Texas. June 2008. Prepared for Texas Department of Transportation Dallas District.

Archeological Survey of Military Drive from Market Street to Arnold Boulevard in the City of Abilene, Taylor County, Texas. June 2008. Prepared for Texas Department of Transportation Abilene District.

An Intensive Archeological Survey of the Proposed Old Milwaukee Outfall Pipeline in the City of Laredo, Webb County, Texas. June 2008.

Archeological Survey for the Salado Creek Hike and Bike Trail between Houston Street and Benz-Englemen Road in the City of San Antonio, Bexar County, Texas. May 2008. Prepared for the City of San Antonio and Lockwood Andrews and Newnam.

Archeological Survey of US 277 at Fish Creek in Nolan County, Texas. May 2008. Prepared for Federal Highway Administration and Texas Department of Transportation Abilene District.

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