Volume 2019 Article 96

2019

# Final Cultural Resources Report of the Salt Creek Midstream, LLC Proposed Olifant Eight Inch Pipeline Project on University Lands in Ward County, Texas

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# FINAL CULTURAL RESOURCES REPORT OF THE SALT CREEK MIDSTREAM, LLC PROPOSED OLIFANT EIGHT INCH PIPELINE PROJECT ON UNIVERSITY LANDS IN WARD COUNTY, TEXAS

## Texas Antiquities Permit No. 9012


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October 15, 2019


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ENERCON Project Number: SCM~00044
Cultural Resources Report Number: 19-46

## ABSTRACT

Enercon Services, Inc. (ENERCON), in support of Salt Creek Midstream, LLC, conducted an intensive archeological survey for the proposed Olifant Eight Inch Pipeline Project located near Pyote in Ward County, Texas. The proposed project consists of the construction of an approximately 800 foot (244 m) long eight inch steel pipeline on University Lands, extending from a tie-in at an existing well pad, trending generally south-southeast to a tie-in on the existing Quito Draw pipeline. The Olifant Eight Inch Pipeline Project area is mapped on the United States Geological Survey (USGS) Soda Lake NE, Texas (1967, photorevised 1981) 7.5 Minute Quadrangle map. The construction corridor consists of a 50 foot (15 m) wide permanent pipeline right-of-way (ROW) and a 50 foot (15 m) wide temporary workspace corridor. The cultural resources survey corridor and the area of potential effect (APE) was 100 feet (30 m) wide for the entire 800 foot (244 m) length of the proposed Olifant Eight Inch Pipeline Project, totaling 1.84 acres (.74 hectares).

The proposed project is entirely on University Lands, a political subdivision of the State of Texas. The archeological survey was completed under Texas Antiquities Permit No. 9012. The cultural resources field investigation on University Lands was conducted on February 26, 2019 by ENERCON archeologist Gary Edington, who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61, and consisted of an intensive pedestrian survey utilizing transects spaced no greater than 15 m apart, with shovel tests in areas which had the potential for buried cultural resources. The field investigation was conducted in accordance with the Texas Historical Commission (THC) Archeological Survey Standards for Texas. The entire project was supervised by Michael Margolis, an ENERCON archeologist who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61.

The cultural resources survey did not result in finding any historic or prehistoric artifacts, features, cultural lenses, or sites over 50 years of age on University Lands. Therefore, it is recommended that the project will have no effect on any historic property that may qualify for inclusion in the National Register of Historic Places (NRHP) on University Lands. No further cultural resources investigations are recommended prior to construction of the proposed Olifant Eight Inch Pipeline Project on University Lands. If cultural material, including sites, features, or artifacts that are 50 years old or older are encountered within the ROW during construction of this project, work in the area must cease and the THC must be immediately be notified.

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## INTRODUCTION

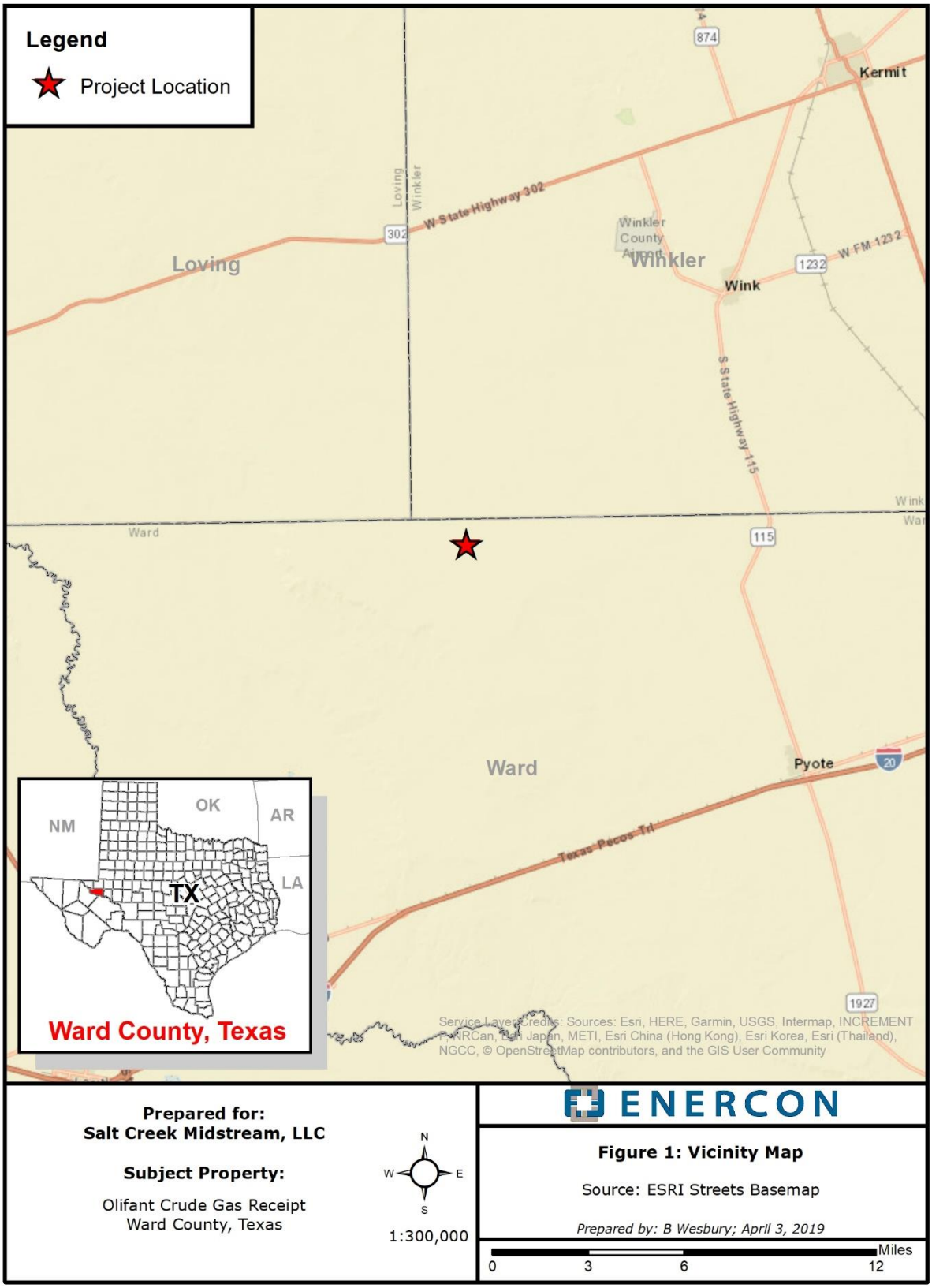
Enercon Services, Inc. (ENERCON), in support of Salt Creek Midstream, LLC, conducted an intensive archeological survey for the proposed Olifant Eight Inch Pipeline Project located near Pyote in Ward County, Texas (Figure 1). The proposed project consists of the construction of an approximately 800 foot (244 m) long eight inch steel pipeline on University Lands extending from a tie-in at an existing well pad trending generally south-southeast to a tie-in on the existing Quito Draw pipeline. The Olifant Eight Inch Pipeline Project area is mapped on the United States Geological Survey (USGS) Soda Lake NE, Texas (1967, photorevised 1981) 7.5 Minute Quadrangle map (Figure 2). The construction corridor consists of a 50 foot (15 m) wide permanent pipeline right-of-way (ROW) and a 50 foot (15 m) wide temporary workspace corridor. The entire temporary ROW will be cleared of vegetation, and the eight inch crude pipeline will be installed in an open cut trench. The cultural resources survey corridor and the area of potential effect (APE) was 100 feet (30 m) wide for the entire 800 foot (244 m) length of the proposed Olifant Eight Inch Pipeline Project, totaling 1.84 acres (.74 hectares).

The survey of the University Lands was completed under Texas Antiquities Permit No. 9012. The cultural resources intensive field investigation and report are intended to assist in adhering to the 1969 Antiquities Code of Texas. The cultural resources field investigation on University Lands was conducted on February 26, 2019 by ENERCON archeologist Gary Edington, who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61, and consisted of an intensive pedestrian survey utilizing transects spaced no greater than 15 m apart, with shovel tests within areas which had the potential for buried archaeological deposits. The field investigation was conducted in accordance with the Texas Historical Commission (THC) Archeological Survey Standards for Texas. The entire project was supervised by Michael Margolis, an ENERCON archeologist who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61. Pursuant to 13 TAC 26.17, correspondence, field records, and photographs generated during field investigations have been prepared for permanent curation at the Texas Archeological Research Laboratory, Austin, Texas.

The cultural resources survey did not result in finding any historic or prehistoric artifacts, features, cultural lenses, or sites over 50 years of age on University Lands. No archeological sites were encountered, and no artifacts were collected. Therefore, it is recommended that the project will have no effect on any cultural resources that may qualify for inclusion in the National Register of Historic Places (NRHP) on University Lands. No further cultural resources investigations are recommended prior to construction of the proposed Olifant Eight Inch Pipeline Project. All documents associated with the project will be curated at the Texas Archeological Research Laboratory (TARL). If cultural material, including sites, features, or artifacts that are 50 years old or older are encountered within the ROW during construction of this project, work in the area must cease and the THC must be immediately be notified.

## ENVIRONMENTAL BACKGROUND

The study area is situated within the Chihuahuan Basins and Playas sub-ecoregion of the Chihuahuan Deserts ecoregion (Griffith et al. 2007). The Chihuahuan Basins and Playas are part of the larger Chihuahuan Deserts which extend from the Madrean Archipelago of Arizona in the west to the Edwards Plateau of west-central Texas. The boundaries of this area are defined by an arid climate with some of the lowest precipitation rates in Texas, with annual rainfall recorded at eight to fourteen inches (20 to 36 centimeters [cm]), which support desert scrub-shrub vegetation dominated by creosote bush on the alkaline or gypsiferous soils (Griffith et al. 2007).


Legend
Project Location
Kermit
874
Loving
Winkler
W State Highway 302
302
Winkler County Airport
Winkler
W FM 1232
1232
Wink
S State Highway 115
Loving
Ward
115
Ward
Pyote
20
Texas Pecos Trl
1927
NM
OK
AR
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TX
Ward County, Texas
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community
Prepared for:
Salt Creek Midstream, LLC
Subject Property:
Olifant Crude Gas Receipt
Ward County, Texas
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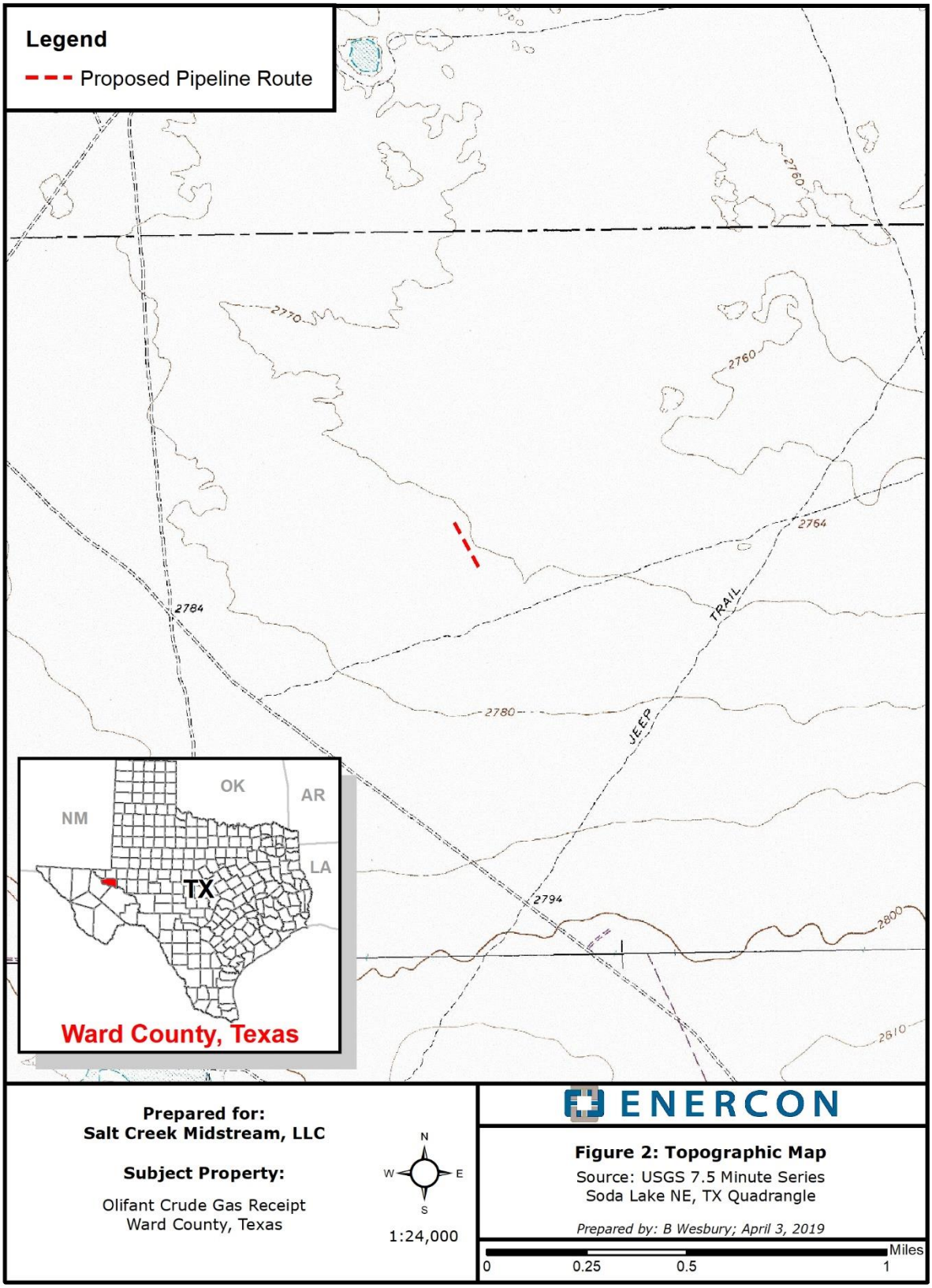
E
S
1:300,000
ENERCON
Figure 1: Vicinity Map
Source: ESRI Streets Basemap
Prepared by: B Wesbury; April 3, 2019
Miles
0
3
6
12


Legend
Proposed Pipeline Route
2760
2770
2760
2764
2784
TRAIL
2780
JEEP
2794
2800
2810
NM
OK
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LA
TX
Ward County, Texas
Prepared for:
Salt Creek Midstream, LLC
Subject Property:
Olifant Crude Gas Receipt
Ward County, Texas
N
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1:24,000
ENERCON
Figure 2: Topographic Map
Source: USGS 7.5 Minute Series
Soda Lake NE, TX Quadrangle
Prepared by: B Wesbury; April 3, 2019
Miles
0
0.25
0.5
1

The elevation of the Chihuahuan Basins and Playas range from 1,200 to 4,500 feet (366 to 1,372 m) above mean sea level (amsl) with local relief varying from 25 to 500 feet (8 to 152 m) (Griffith et al. 2007:10). The major drainage of the approximately 12,625 square mile (32,699 $km^2$) ecoregion is the Pecos River which carries runoff from New Mexico to the north (Griffith et al. 2007:8-9). Otherwise, the ecoregion is primarily internally drained, resulting in alkaline soils, but an efficient recharge rate of local aquifers.

The presence of the quality groundwater did not go unnoticed by settlers and early 20th century inhabitants who made use of the abundant groundwater with irrigation wells with flow rates between several hundred to 2000 gallons per minute (Griffith et al. 2007:9). The primary crops on these irrigated agricultural fields have included cotton, pecans, alfalfa, tomatoes, onions, chili peppers and the famous melons, particularly cantaloupe from Reeves County (Griffith el al. 2007; Geiser 2010). Although it is well known that prehistoric and protohistoric populations made use of irrigation in the region in the past (Long 2010, Dethloff and Nall 2010), the ranching and irrigation based agricultural practices developed from the late 19th to 20th century in the region have altered the native environment. In the El Paso area to the west aquifer drawdown has resulted in an over a 100 foot (30.5 m) decline in ground water levels from those recorded at the turn of the 20th century and salt build up in soils has led to the abandonment of Pecos Valley agricultural fields which were previously productive farmlands in the 1900s (Griffith et al. 2007:9). The agricultural and industrial uses of the Pecos River in New Mexico and Texas have reduced the river, which was described by early observers as being 4 to 15 feet (1.2 to 4.6 m) deep, and up to 100 feet (30 m) wide, and as fast, deep and wide (Griffith et al. 2007:9; Hayter 2010), into a gentle, slow, shallow and narrow channel. As an example, the early history of settlement in the region of modern Pecos, Texas was related to the encampments of cowboys in the region due to the safe ford for cattle across the mighty Pecos River to the east of the modern town site (Smith 2010a). The historic to modern grazing practices in the region have also altered the environment. The former grasslands which supported cattle have been reduced by overgrazing to desert shrub lands suitable only for sheep and goats (Griffith et al. 2007:8).

The desert setting of the study area results in relatively sparse vegetation and excellent ground surface visibility (GSV). The dominant creosote bush is an example of the resilient regional flora which can tolerate the diurnal temperature range, low moisture conditions, and high evapotranspiration rates of the region. Additional ecotones include the high saline environments of the playas where saltbush and alkali sacaton may be found along the margins of these dry saltpans and playas (Griffith et al. 2007:8). Honey mesquite, yucca, and mixed grasses are found intermittently in the region.

The study area ranges from approximately 2,770 feet to 2,773 feet (844 to 845 m) amsl. The lowest elevation in the APE occurs near the north terminus of the Olifant Eight Inch Pipeline Project, with the highest elevation occurring near the south terminus. While Ward County has surface water drainage, the project is in an area that is primarily internally drained.

According to the United States Department of Agriculture (USDA), the proposed project APE only crosses the Sharvana soils, nearly level soil unit. The Sharvana soils, nearly level soil unit consists of Pleistocene-age calcareous, loamy eolian deposits from the Blackwater Draw Formation with indurated platy caliche occurring at depths of 16 to 36 inches (41 to 91 cm) (USDA 2019). The Sharvana soils, nearly level soil unit is well drained and moderately permeable and is considered farmland of statewide importance (USDA 2019). The shallow depth to bedrock suggests a low potential for subsurface cultural deposits.

Ward County has a subtropical semi-desert climate with relatively short mild winters and long hot summers. The average daily temperature is 46 Fahrenheit (°F) in the winter and 83°F in the summer (Orton 1975). Annual rainfall averages about 12 inches (30 cm) with the majority of rainfall occurring between May and October, with a long growing season for crops from April through November. The average humidity ranges from 40 to 65 percent due to a general paucity of thunderstorms and heavy rainfall and the fact that only one-third of winters average any measurable snowfall (Orton 1975).

## ARCHEOLOGICAL BACKGROUND

Based on the archeological record, people have inhabited Texas for at least the last 12,000 years. The prehistory of the Southern High Plains has been commonly broken into five temporal periods. The dates assigned to those periods differ between authors but generally include the Paleoindian Period (ca. 11,500-8,500 B.P.), Archaic Period (ca. 8,500-1500 B.P.), and Late Prehistoric Period (ca. 1,500 B.P. to 500 B.P.). The Protohistoric Period (ca. A.D. 1500-1700) is followed by the Historic Period (ca. A.D. 1700-1950) (adapted from Boyd 2004).

A summary of the culture history of the region is summarized below. For additional information on the cultural history of the region and a more detailed review than is possible here, the reader is directed to the works by Patterson (1995), Ensor (1991), Perttula (2004), and Turner, Hester, and McReynolds (2011).

### Paleoindian Period

Evidence for prehistoric occupation of the area is relatively scarce in the Paleoindian Period (ca. 11,500-8,500 B.P.). It is highly likely that earlier sites have been lost to erosion due to the geological context of the area (Boyd 1997). Paleoindian sites are more common on the eastern Edwards Plateau, although sites and isolated artifacts have been recorded. Although there is growing evidence for human presence in the Americas, the Clovis is the first well-defined cultural horizon in the region. The remains of large herbivores are often found in association with Clovis artifacts but there is a growing body of evidence for the procurement of smaller animals and plants during this time. The Clovis projectile points are lanceolate in shape and have fluted bases. Subsequent Paleoindian projectile points include Folsom and Plainview (Turner, Hester, and McReynolds 2011:45). These projectile points were typically hafted to spears, which were often thrown with the aid of atlatls.

### Archaic Period

With the extinction of megafauna, the Archaic Period (ca. 8,500-1,500 B.P.) is generally defined by broader subsistence practices and an increase in intensity of resource exploitation. The climate transitioned from relatively wet in the Early Archaic Period to relatively dry in the Late Archaic Period. Additionally, temperatures appear to have increased which resulted in changes to the biotic community. Fire cracked rock (FCR) and oxidized rock is relatively common during this period and likely results from hearths and ovens (Collins 2004). Although resource exploitation is inferred to be more intense, subsistence appears to be focused on seasonal mobility tied in part to bison hunting (Boyd 1997). Campsites and rock shelters have been identified from this period, mostly from the Late Archaic. Projectile points are normally barbed spear and dart points, and plant-processing tools increase through time (Johnson and Holliday 2004).

### Late Prehistoric Period

The Late Prehistoric or Ceramic Period (ca. 1,500 B.P.-500 B.P.) is marked by the presence of ceramics and smaller projectile points indicating the switch from atlatl and spear to the bow and arrow (Johnson and Holliday 2004). Due to further drying of the climate, bison appear to become scarcer in this region. Trading is inferred to have occurred with Southwestern groups including the Jornada Mogollon (Boyd 1997). Brown ware pottery was imported from the Puebloans and habitation structures from this period include pit houses. Campsites were still likely used during parts of the year and would be representative of seasonal mobility. Subsistence practices included the introduction of corn. In the latter part of the period, prestige goods like Olivella shell beads, turquoise, non-local pottery, and obsidian become more common.

**Protohistoric Period**

The Protohistoric Period (ca. A.D. 1500-1700) begins with direct and indirect European influences in the region. The end of the period coincides with an increase in European presence and their effects on traditional lifestyles. Limited access to Europeans goods begins but there is relatively minimal change from the Late Prehistoric. Trade goods include bells, spikes, glass beads, and nails. European settlement did not begin to seriously disrupt aboriginal habitation until after A.D. 1700 (Patterson 1995:249). European diseases, probably introduced by explorers and early traders, began to have impacts as early as A.D. 1528. At least seven epidemics were recorded among the tribes of the study area between that date and A.D. 1890 (Ewers 1974). The Tonkawa appear to have been joined by the Ervipiame from northern Mexico (Hester 1980). Subsequent immigration by the Lipan Apache, Kiowa, and Comanche appear to change control of the area.

**Historic Period (A.D. 1700 to 1950)**

Spanish explorers began expeditions in the Gulf of Mexico beginning in the early 1500s followed by Catholic missionaries accompanied by Spanish soldiers. The Spanish, while teaching locals Christianity and farming, attempted to make loyal Spanish citizens. The first missions were established in Mexico, but were later built in California, Arizona, New Mexico, and Texas (Campbell 2003:36-38). The French, partially to stem the advance of the Spanish, wanted to increase their fur trading territory and gain control of the Mississippi River valley. By 1682, LaSalle, a Frenchman, launched an expedition down the Mississippi River that claimed all of the lands drained by the river for France followed by a colonization effort to settle the mouth of the Mississippi River. Subsequent to the French incursion into the region, the Spanish increased the rate of establishing settlements in Texas (Campbell 2003:41-45, 48).

The Spanish mission system did not expand during the 18th century. Native American attacks and a lack of colonists contributed to the decline of Spanish settlement in Texas. In 1762, the Spanish acquired Louisiana from the French, which slowed the need to settle east Texas. In 1800, Spain ceded Louisiana to France, who then sold it to the U.S. From 1800 to the 1820s, the population of Texas decreased as a result of the effects of the Mexican Revolution. In 1821, Mexico finally became an independent nation, separate from Spain. This newly independent country encouraged Anglo-American settlement within Texas; this effort was led by Stephen F. Austin. Austin came to an agreement with the Mexican government in which he would bring settlers to Texas and, in return, he would be rewarded with land and money. By 1830, ten thousand Anglo-Americans, mostly from the American southeast, had settled in Texas (Campbell 2003:105-110).

Texas operated as an independent nation for 10 years (1836 to 1846) and during this time, the Mexican government never truly recognized its independence. In 1846, Texas was annexed by the U.S. and it was now up to the U.S. government to settle the border dispute with Mexico. The Mexicans claimed the international border as the Nueces River, while the U.S. claimed the Rio Grande River as the demarcation line. After two years of skirmishes and an attack on Mexico City, the U.S. succeeded in its efforts; with the treaty of Guadalupe Hidalgo, Mexico recognized the Rio Grande as the border and ceded the entire southwest to the Pacific Ocean to the U.S. (McComb 1989:57).

At the time of annexation by the U.S., west Texas was unexplored territory, home to various Native American groups. Settlers began slowly pushing into this territory in the mid-19th century. In 1848, the U.S. army stationed troops in west Texas and created travel routes through this new territory, which would become corridors for pioneers traveling to California. These included the Chihuahua Trail, which led from Mexico to Indianola, Texas, and Horsehead Crossing and Castle Gap in Crane County, all of which were utilized as trade networks during the prehistoric period as well as forming part of a historic transportation corridor linking Mexico, the U.S. and Canada. Castle Gap functioned as a primary route for the U.S. Cavalry, California Forty-niners, cattle drives, and stage coach/wagon trains.

During the Civil War, Texas was a large contributor to the Confederacy, but differed significantly from other southern states. Texas was a frontier state, with a diversified population of Mexicans, Anglo-Americans, and Native Americans. The state also had a large European immigrant population, many of whom were small farmers. Two-thirds of the farmers in the state were non-slave holding, which meant that the agricultural economy was maintained following the Civil War. In addition, cattle ranches were a large industry, resulting in economic diversity. Thus, Texas was not as negatively impacted economically as other southern states during post-Civil War Reconstruction (Campbell 2003:209, 213).

The Native American groups of Texas saw the defeat of the Confederacy and the weakening of Texas as a chance to regain lands they had lost. During this period, the Comanche and Apache occupied the areas of west Texas. In response to this increase of Native American attacks, the U.S. sent troops to reoccupy several forts. By 1874, a major campaign was initiated in Texas that took away Native Americans' horses, destroyed their villages and forced them to return to their reservations. The consolidation of Native Americans on reservations allowed for Anglo-Americans to settle permanently in west Texas (Campbell 2003:291, 295).

Following these campaigns, the military sent troops to conduct detailed expeditions of the former Native American lands. By 1876, several of the counties northeast of the project area were surveyed by parties from Fort Concho. Ranchers moved into these areas and began raising large herds of cattle, as the demand for beef had risen after the Civil War. New cattle trails developed throughout west Texas, where large herds were driven hundreds of miles north to the mid-western railroad routes. In 1881, the Texas and Pacific Railway extended their rail lines through west Texas; up to this point, rail transportation was only available in east Texas. Between the 1870s and 1890s, 8,000 miles (12,875 km) of railway track were laid, connecting the entire state. The new railroads significantly reduced the time and distance it took the cattle industry to transport their herds to market (Campbell 2003:297, 306).

The expansion of the railroad connected the rural communities of west Texas with the booming cities to the east. Towards the end of the 19th century, cattle ranchers began to fence off their herds and create small communities on the frontier. In 1895, a law was passed that broke up these larger ranches, allowing farmers to purchase smaller tracts of land. This led to the end of open-range ranching and attracted additional settlers. West Texas communities grew slowly due to poor soil conditions and the difficulty of accessing water. People began to farm corn and cotton on the newly settled land, but ranching was still the dominant economic activity of west Texas at the end of the 19th century.

*Ward County* is an area consisting of 836 square miles (1,345 $km^2$) of primarily flat lands on the southern margin of the High Plains of southwest Texas, which was formally designated by the Texas Legislature in 1887, and named in honor of prominent Texas statesman Thomas William Ward. Prior to formal organization as a county, the area had a population totaling only 75 residents in 1890 (Justice and Leffler 2010). The previous year, in 1889, the Texas Legislature passed an act to encourage irrigation and development in West Texas which drew the interest of the Rhode Island capitalist George E. Barstow, who, along with other developers promoted a town site in western Ward County on the Texas and Pacific Railway in 1891 (Hazelwood 2010). Ward County was then formally organized with the town of Barstow named as the county seat in 1892, and by 1893, a red sandstone County Courthouse had been constructed at Barstow. Irrigation based agriculture was successful during the first decade and by 1904 the area was noted for crops of melons, grapes, peaches and pears. By 1900, Barstow had a population of 1,103, and Ward County had a population of 1,451 (Hazelwood 2010; Justice and Leffler 2010). The dam constructed on the Pecos River near Barstow collapsed in 1904 and the resulting flood ruined the fields with salt laden water. The subsequent droughts in the region in 1907 and 1911 also took their toll on the local orchard and vineyard economy and by 1911 the fruit industry was in decline, and by 1918, the short-lived fruit industry in Ward County had ceased (Hazelwood 2010; Justice and Leffler 2010). Agriculture did continue, as cotton production increased from 3,000 acres reported in 1910 to 10,000 acres reported in 1920 (Justice and Leffler

2010). In 1926, random drilling resulted in the discovery of the Hendrick Oilfield in central Winkler County, immediately north of Ward County. The rapid development of the of the Hendrick Oilfield brought growth to eastern and central Ward County (Smith 2010b). The shifting of county economic activity in the region from irrigation based agriculture, to oil and gas development resulted in a population and economic shift from the west to the eastern portion of the county. In 1924, Barstow had declined in population from 1,103 in 1910, to an estimated 490 in 1924 and 468 in 1930 (Hazelwood 2010). While in the east, the community of Monahans had an estimated 89 residents in 1905, a population of 378 in 1910 and 816 residents in 1930 (Justice 2010). Monahans, which was incorporated in 1928, replaced Barstow as the County Seat in 1938. By 1940, the population of Monahans was 3,944 (Justice 2010). The population of Ward County was 9,575 in 1940, increased to 13,346 in 1950, and subsequently to 14,917 in 1960, before declining to 13,019 in 1970, then reporting 13,976 in 1980 (Justice and Leffler 2010). The current July 1, 2018 population estimate for Ward County is 11,720 (United States Census Bureau [USCB] 2019).

## BACKGROUND RESEARCH

Prior to field investigations, an address-restricted records search was conducted online at the Texas Archeological Sites Atlas (the Atlas) to locate previously recorded archeological sites, archeological surveys, NHRP properties, and State Antiquities Landmarks (SALs). This research was conducted to determine if any known resources could be affected, as well as the types of resources in the area, and the probability of encountering the resources during fieldwork. A site file check was conducted by Michael Margolis, an ENERCON archeologist who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61, which resulted in the determination that no previously recorded sites were within the proposed APE, or within 1-mile of the APE. Based on the Atlas, there have been no previous archeological studies within 1-mile of the proposed project. Early maps and aerial photographs also do not show any potential cultural resources within the APE. Based on the background research, there is generally a low probability for encountering cultural resources within the APE.

The overall background research of the region suggests that the study area is located within a larger area where climatic conditions, burrowing rodents, and the effects of ranching and oil and gas exploration have each effected the cultural landscape leading to two types of general settings. Wind erosion and extensive bioturbation from rodent burrowing, and sheep and cattle grazing have exposed the upper surface of the landscape within the Chihuahuan Basins and Playas. With the exception of a few geomorphological locations, archeological sites of all ages may be located on the exposed ground surface and/or were never buried (Hall 2006:2-7). The majority of archeological sites are located on eroded surfaces and therefore lack vertical integrity and stratigraphy (Hall 2006:2-15). While intact archeological deposits may be encountered where depositional processes, such as (a) colluvial; (b) eolian sand deposits associated with the playa margins; (c) upland playa and lake fill deposits; and (d) within and adjacent to extant and/or extinct draws and/or drainages of Late-Pleistocene to early Holocene age (Hall 2006:2-7, 2-11; Johnson and Holliday 2004:285, 290, 294). Within the proposed Olifant Eight Inch Pipeline Project APE the former setting is predominant, and many sites would be expected to be resting on the surface, or ephemerally exposed by shifting sand dunes.

## METHODOLOGY

The cultural resources field investigation followed the THC's *Archeological Survey Standards for Texas*. The project area was surveyed by using parallel pedestrian transects spaced no more than 15 m apart. The entire 100 foot (30 m) wide survey corridor within the proposed project area on University Lands was subjected to pedestrian survey for cultural resources.

Shovel testing density within the survey followed minimum standards outlined by the THC and the Council of Texas Archeologists' practices and procedures, which call for 16 shovel tests per mile is settings which have the potential for buried deposits. Shovel testing was not required in areas where ground surface visibility (GSV) was greater than 30 percent, or areas with slopes greater than 20 percent, or which did not exhibit potential for buried deposits. Shovel test pits are not excavated in areas with standing water, or in areas in which underground utilities are present.

Shovel tests generally measure 30 cm in diameter and are excavated by hand digging to bedrock, a stratigraphic deposit (e.g. subsoil) that was determined to be below Holocene aged deposits, or to 80-100 cm (dependent on soil matrix consistency and hardness). All shovel test pit fill was passed through ¼ inch mesh screen or gone through by hand if the soil would not pass through the screen. Shovel test pits were excavated in arbitrary 10 cm levels unless stratigraphic changes were observed.

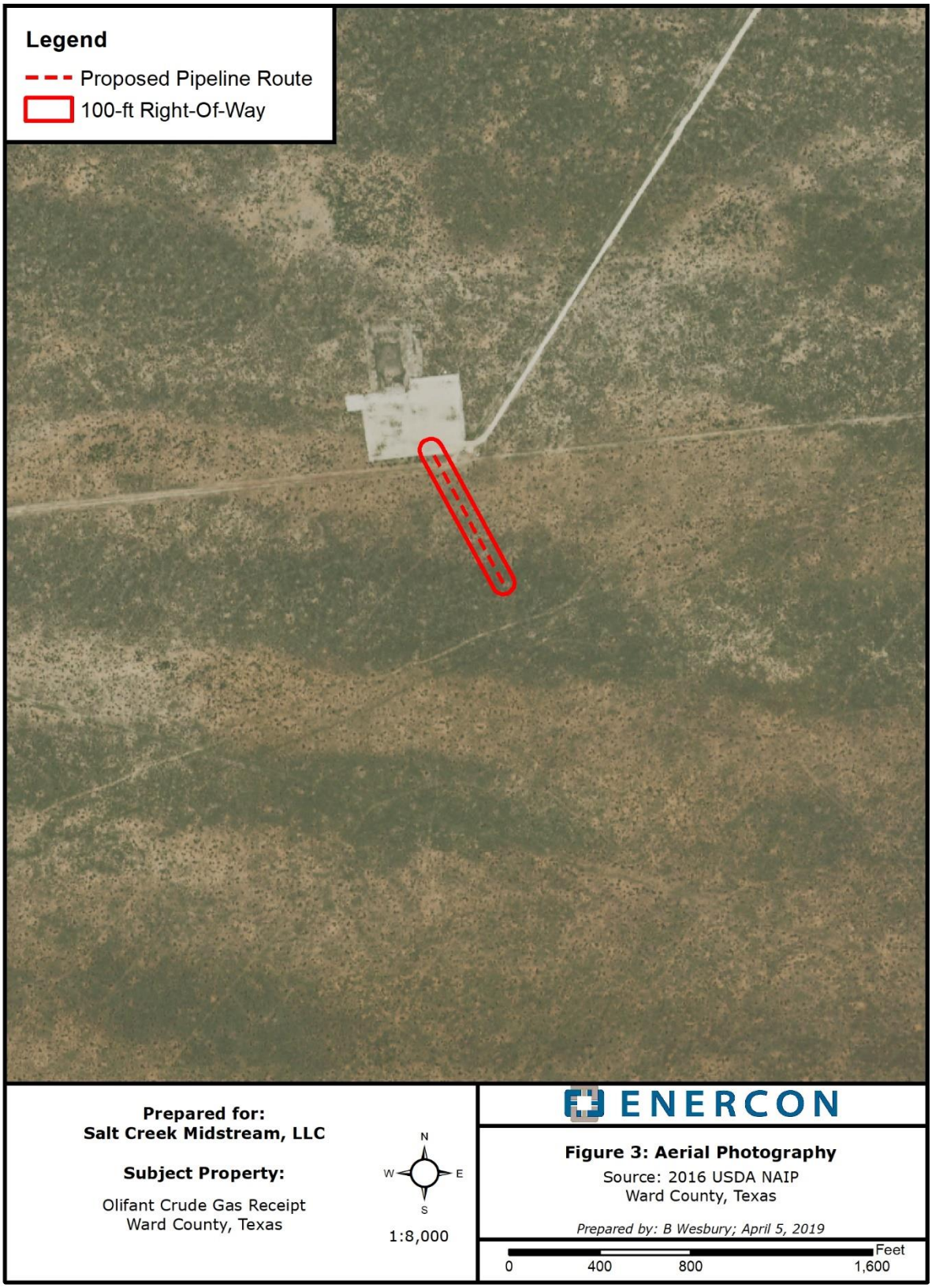
The cultural resources field investigation of the 100 foot (30 m) wide survey corridor exceeded the minimum standards outlined by the THC and the Council of Texas Archeologists' practices and procedures (13 TAC 26.5 and 26.20).

## RESULTS

ENERCON, in support of Salt Creek Midstream, LLC, conducted an intensive archeological survey for the proposed Oilfant Crude Line Project on University Lands. The proposed pipeline is approximately 800 feet (244 m) in length and is located near Pyote in Ward County, Texas. The cultural resources field investigation of the Olifant Eight Inch Pipeline Project on University Lands occurred on February 26, 2019 by Gary Edington, an ENERCON archeologist who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61. The entire project was supervised by Michael Margolis, an ENERCON archeologist who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61. The cultural resources survey corridor was 100 feet (30 m) wide for the entire 800 foot (244 m) length of the Olifant Eight Inch Pipeline Project on University Lands (Figure 3). The total area inspected during the cultural resources field investigation was 1.84 acres (.74 hectares).

During the fieldwork, the weather was seasonal, with a low temperature in the 70s°F, and a daytime high temperature of 78°F, with partly cloudy to clear skies and light winds. The terrain within study area was flat to gently sloped with major disturbance from oilfield construction and almost no vegetation. The vegetation outside of the APE generally consisted of mesquite trees, creosote bush, sand sage and thin mixed grasses (Figures 4 to 7). GSV ranged from 90 to 100 percent, with an average greater than 95 percent (Figures 4 to 7). The west portion of the proposed Oilfant Crude Line Project had been completely cleared and a recently installed pipeline was evident (Figures 5 to 7). The intended trench line of the proposed Oilfant Crude Line Project was evident by the HydroVac pot holes, surrounded by orange safety fencing, to expose three extant east-west pipelines on the northern portion of the proposed Oilfant Crude Line Project ROW (Figures 5 to 7). Approximately 60 percent of the proposed Oilfant Crude Line Project ROW had been cleared by multiple previous pipeline projects, an existing well pad, and other construction activities in the area. In addition to conducting pedestrian transects in the proposed Oilfant Crude Pipeline Project ROW, the area of the exposed previous construction site was also inspected for cultural materials over 50 years of age, and the HydroVac pot holes were inspected for geomorphology information. The HydroVac pot holes revealed only disturbed caliche soils, as was expected in these three previous pipeline trenches. The general setting of the proposed Oilfant Crude Line Project ROW is an area of lower probability for prehistoric cultural resources due to the shallow fine sandy loam soils and the lack of any water resources within 2640 feet (805 m). No shovel tests were excavated within the APE due to the low probability of buried deposits and the excellent GSV, which exceeded 80 percent throughout the APE (Figures 4 to 7).

The cultural resources survey did not result in the observation of any cultural materials, including prehistoric and historic artifacts, features, cultural lenses or archeological sites over 50 years of age on University Lands within the APE of the proposed Olifant Eight Inch Pipeline Project.


Legend
Proposed Pipeline Route
100-ft Right-Of-Way
Prepared for:
Salt Creek Midstream, LLC
Subject Property:
Olifant Crude Gas Receipt
Ward County, Texas
N
W
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1:8,000
ENERCON
Figure 3: Aerial Photography
Source: 2016 USDA NAIP
Ward County, Texas
Prepared by: B Wesbury; April 5, 2019
Feet
0
400
800
1,600

**Figure 4. General overview of the APE, facing north from the south tie-in.**

**Figure 5. General overview of the APE, facing north toward the existing well pad along the west boundary of the APE.**

**Figure 6. General overview of the APE, facing south along the west boundary of the APE.**

**Figure 7. General overview of the APE, facing south along the proposed pipeline trench from the north tie-in.**

## RECOMMENDATIONS

ENERCON, in support of Salt Creek Midstream, LLC, conducted an intensive archeological survey for the proposed Olifant Eight Inch Pipeline Project located near Pyote, in Ward County, Texas. The proposed project consists of the construction of an approximately 800 foot (244 m) long pipeline on University Lands property extending from a tie-in at the existing well pad to a tie-in at the existing Quito Draw pipeline. The Olifant Eight Inch Pipeline Project area is mapped on the USGS Soda Lake NE, Texas (1967, photorevised 1981) 7.5 Minute Quadrangle map. The construction corridor consists of a 50 foot (15 m) wide permanent pipeline ROW and a 50 foot (15 m) wide temporary workspace corridor. The cultural resources survey corridor and the APE was 100 feet (30 m) wide for the entire 800 foot (244 m) length of the proposed Olifant Eight Inch Pipeline Project, totaling 1.84 acres (.74 hectares).

The proposed project is entirely on University Lands, a political subdivision of the State of Texas. The archeological survey was completed under Texas Antiquities Permit No. 9012. The cultural resources field investigation on University Lands was conducted on February 26, 2019 by ENERCON archeologist Gary Edington, who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61, and consisted of an intensive pedestrian survey utilizing transects spaced no greater than 15 m apart, with shovel tests in areas which had the potential for buried cultural resources. The field investigation was conducted in accordance with the Texas Historical Commission (THC) Archeological Survey Standards for Texas. The entire project was supervised by Michael Margolis, an ENERCON archeologist who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61. Pursuant to 13 TAC 26.17, correspondence, field records, and photographs generated during field investigations have been prepared for permanent curation at the Texas Archeological Research Laboratory, Austin, Texas.

The cultural resources survey did not result in finding any historic or prehistoric artifacts, features, cultural lenses, or sites over 50 years of age on University Lands. Therefore, it is recommended that the project will have no effect on any cultural resources that may qualify for inclusion in the NRHP on University Lands. No further cultural resources investigations are recommended prior to construction of the proposed Olifant Eight Inch Pipeline Project on University Lands. If cultural material, including sites, features, or artifacts that are 50 years old or older are encountered within the ROW during construction of this project, work in the area must cease and the THC must be immediately be notified.

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