



# INDEX OF TEXAS ARCHAEOLOGY

*Open Access Gray Literature from the Lone Star State*

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Volume 2017

Article 77

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2017

## Cultural Resources Surveys Conducted During August 2017 Central Eagle Ford Zone De Witt, Gonzales, Karnes, Lavaca, and Wilson Counties

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### Cite this Record

Clark, Reign; Ralph, Ron; and Schoch, Phil (2017) "Cultural Resources Surveys Conducted During August 2017 Central Eagle Ford Zone De Witt, Gonzales, Karnes, Lavaca, and Wilson Counties," *Index of Texas Archaeology: Open Access Gray Literature from the Lone Star State*: Vol. 2017, Article 77. ISSN: 2475-9333

Available at: <https://scholarworks.sfasu.edu/ita/vol2017/iss1/77>

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## Cultural Resources Surveys Conducted During August 2017 Central Eagle Ford Zone De Witt, Gonzales, Karnes, Lavaca, and Wilson Counties

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**CULTURAL RESOURCES SURVEYS CONDUCTED DURING AUGUST 2017  
CENTRAL EAGLE FORD ZONE  
DE WITT, GONZALES, KARNES, LAVACA, AND WILSON COUNTIES**

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November 2017



## MANAGEMENT SUMMARY

During August 2017, Goshawk Environmental Consulting, Inc. (Goshawk) conducted seven cultural resources surveys within the Eagle Ford Play, Central Eagle Ford Zone at the request of EOG Resources, Inc. (EOG). The projects subjected to cultural resources investigations included the proposed Dio Unit #16H, #17H, #18H, #19H, and #20H Flowlines right-of-way (ROW); Marek Unit #9H and #11H Flowlines ROW; Crossroads Unit #2H and #3H Flowlines ROW; JM Preston Unit #3H and #4H Access Road ROW; HFS Unit #1H Gas Lift ROW; Lynch Unit #17H and #18H Access Road ROW; and Zimmerman-HB-Annie-Martin Gas Lift Line ROW.

Each Area of Potential Effect (APE) was a 75-foot (23-meter [m]) wide ROW, consisting of a 50-foot (15-m) wide permanent easement and a 25-foot (8-m) wide temporary construction easement. The investigations were conducted by archeologist Phil Schoch with Bear Aspra and Natasia Mitchell. Reign Clark served as primary author and Ron Ralph and Phil Schoch served as contributing authors for this report of investigations. The cultural resources surveys were performed according to Council of Texas Archeologists survey standards; in compliance with the Texas Historical Commission's (THC) Rules of Practice and Procedure, Chapter 26, Section 27; and under the general guidelines of the Register of Professional Archaeologists. Site files on the THC's Archeological Sites website database were consulted prior to the commencement of the field effort for previously recorded site locations; references to previous archeological surveys undertaken; and place names of interest in the vicinity of the proposed projects.

Streams potentially under the United States Army Corps of Engineers (USACE) jurisdiction that cross the APEs were assessed by an ecologist via desktop and field reviews prior to commencement of the cultural resources surveys. As per the established procedure of due diligence, any segment of an APE that falls within an area potentially under federal jurisdiction, or any portion of an APE that falls within a 328-foot (100-m) radius of a known cultural site, would be subjected to a cultural resources survey. Any segment of an APE to be surveyed under this protocol was labeled as a "review area".

Shovel testing and surface survey did not identify any significant cultural deposits within any of the review areas. Based on these results, it is Goshawk's opinion that no cultural resources will be impacted by construction within the surveyed portions of the APEs. Goshawk recommends that the projects be allowed to proceed as planned. In the unlikely event that cultural resources (including human remains) are discovered, all construction or maintenance activities should be immediately halted and both the United States Army Corp of Engineers (USACE) and an archeologist should be notified.





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## 1.0 INTRODUCTION

During August 2017, Goshawk Environmental Consulting, Inc. (Goshawk) conducted seven cultural resources surveys within the Eagle Ford Play, Central Eagle Ford Zone at the request of EOG Resources, Inc. (EOG). The Central Eagle Ford Zone includes portions of Bee, De Witt, Goliad, Gonzales, Karnes, Lavaca, and Wilson Counties (Figure 1-1). The projects subjected to cultural resources investigations included the proposed Dio Unit #16H, #17H, #18H, #19H, and #20H Flowlines right-of-way (ROW); Marek Unit #9H and #11H Flowlines ROW; Crossroads Unit #2H and #3H Flowlines ROW; JM Preston Unit #3H and #4H Access Road ROW; HFS Unit #1H Gas Lift ROW; Lynch Unit #17H and #18H Access Road ROW; and Zimmerman-HB-Annie-Martin Gas Lift Line ROW (Figure 1-2). The Area of Potential Effect (APE) was a 75-foot (23-meter [m]) wide ROW, consisting of a 50-foot (15-m) wide permanent easement and a 25-foot (8-m) wide temporary construction easement.

## 2.0 ENVIRONMENTAL CONTEXT OF THE CENTRAL EAGLE FORD ZONE

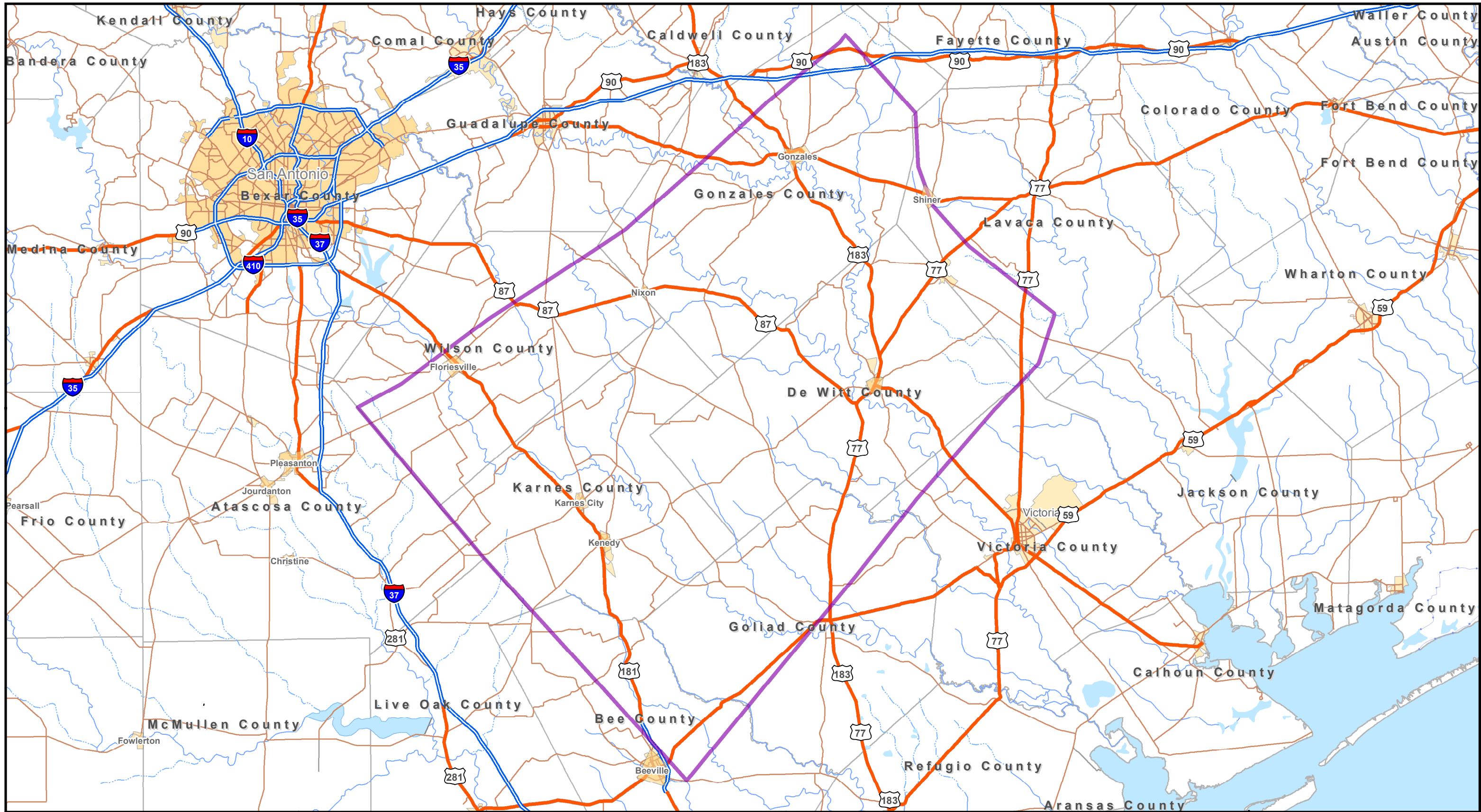
The Eagle Ford Shale Region covers a large portion of south and southeast Texas, totaling approximately 22,000 miles<sup>2</sup> (35,406 kilometers<sup>2</sup> [km<sup>2</sup>]). This region of Texas can be broken down into zones reflecting biologic, geologic, physiographic, and cultural diversity within the Eagle Ford Shale. The Central Eagle Ford Zone is an area characteristic of the Texan Biotic Province (Blair 1950); a transitional vegetative zone between northern hardwoods and the southern scrubland. The Texan Biotic Province is a broad ecotonal area between the forested regions of eastern Texas, and the grasslands of western and northern Texas. This region is characterized by a series of gently rolling uplands, and is dissected by few streams and minor tributaries. As such, riparian areas are somewhat common.

The Central Eagle Ford Zone extends south and southeast from San Antonio to the southern Karnes County line. The zone extends northeastward to central Lavaca County and northwest to northern Gonzales County (See Figure 1-1). This area is crisscrossed by two major rivers: the San Antonio and the Atascosa. The San Antonio River crosses the Central Eagle Ford Zone on a west to east axis. Major creeks, including the Cibolo, Escondido, and Ecleto Creeks, flow in to the San Antonio River; which, connects with the Guadalupe River before it empties into the Gulf of Mexico. The Atascosa River is fed by numerous named creeks and their tributaries, which are dry for most of the year. The Atascosa River traverses the zone on a roughly north to south axis, and joins with the Frio River north of Three Rivers, Texas. The Frio River then empties into the Nueces River south of town.

### 2.1 LAND USE

Currently, cattle ranching, crop cultivation, oil and gas field development, and lease hunting are the most common land practices within the Central Eagle Ford Zone. Many of the land practices lead to clearing omnipresent invasive thorn brush so development can proceed. The persistent problem of invading brush and cacti is often addressed by “chaining”; whereby, a heavy chain is dragged across the landscape by bulldozers, uprooting unwanted brush. Additionally, large senderos are often cut to facilitate wildlife management and seismic surveys. Root plowing, using a large tracked bulldozer and a dragging blade, is also used to clear brush.





Source: ESRI, Maps & Data 10.2, 2013, EIA, 2011

Projection: NAD 1983 UTM 14N

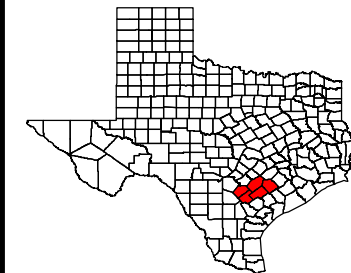
0 4.75 9.5 19 28.5 Kilometers

0 2.5 5 10 15 20 Miles

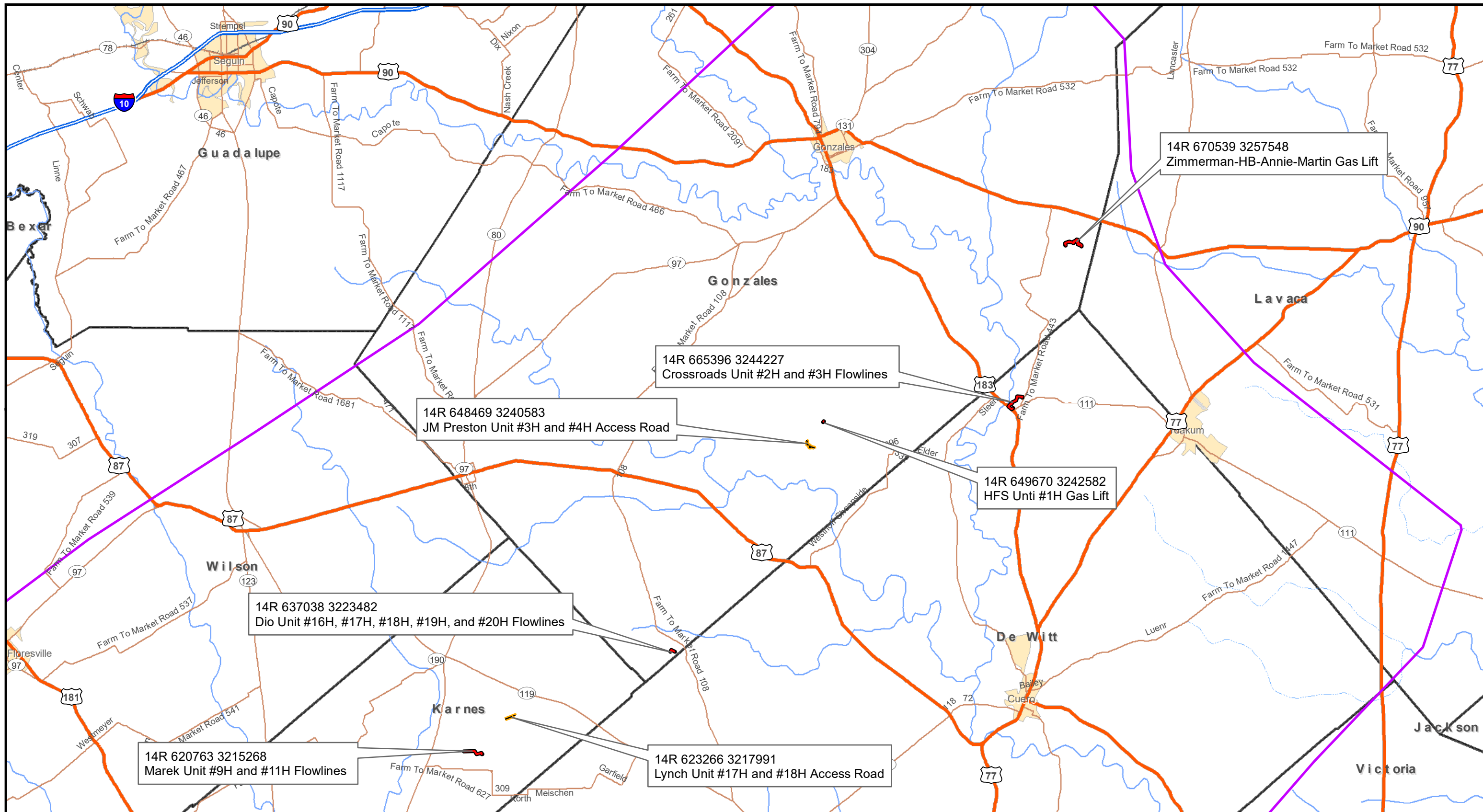
**Figure 1-1**  
Region Map

 Central Eagle Ford Zone Perimeter

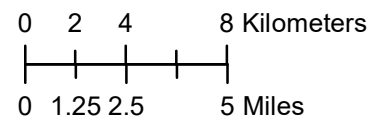
**Central Eagle Ford Zone**







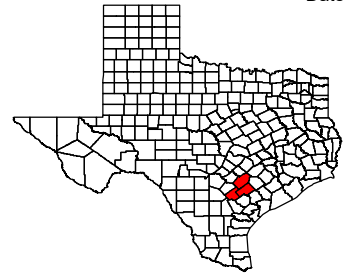
Source: ESRI, Maps & Data 10.2, 2013  
 Projection: NAD 1983 UTM 14N



**Figure 1-2**  
 Project Locations  
 Gonzales and Karnes Counties, Texas

**Central Eagle Ford Zone**

- Central Eagle Ford Zone
- Proposed Alignment



Date: 15 February 2018



All clearing methods are disruptive to archeological sites. Poor soil conservation practices have resulted in the depletion of top soil, exposing clay pans across some areas.

The number of higher-energy streams and increased rainfall totals, over the majority of south Texas, provides a greater opportunity for archeological sites to be capped by alluvial or colluvial processes. Many depositional soil types, present along the rivers and major creeks within the Texan Biotic Province, contain temporally stratified deposits and a higher probability for the presence of significant prehistoric sites. The top soils on upland terrain have been continually cleared of native vegetation. Many of the soils originally mapped in these areas by the Natural Resources Conservation Service (NRCS) possessed pronounced A-horizons. These soils no longer exhibit the characteristics of their pedogenic description. Robust, chert gravel outcrop exposures are common across the uplands, while alluvium blankets many areas along creeks.

## 2.2 GEOLOGY AND PHYSIOGRAPHY

The Central Eagle Ford Zone is one of the most geologically diverse areas of Texas, containing at least 21 mapped geologic formations. Some of the major geologic formations, across the southern portion of the region, include the Catahoula Formation, Oakville Sandstone, and Willis Formation (Texas Water Development Board [TWDB] 1979).

The Catahoula Formation varies in elevation from 100 to 200 feet (30 to 61 m) above mean sea level. Soils on the Catahoula Formation tend to be light-colored, with tuffaceous sands and bentonitic clays; however, some areas also have local concentrations of calcareous material. The Oakville Sandstone overlays the Catahoula Formation, and dates to the Miocene (TWDB 1979). This formation is a mixture of fine to medium grained sand and sandstone, with ashy, sandy, and bentonitic clays (Griffin 2006). In addition, the Oakville Sandstone contains gravel beds comprised of Austin Chalk and fossils, as well as gravels typically found on high ridges.

The Willis Formation dates to the Pliocene (Griffin 2006, TWDB 1979), and is expressed as relict, high-gravel deposits near major streams and along the edges of interfluves. Soils typically contain fluviatile chert, sand, silt, and clay from the Edwards Group strata. The chert outcrops would have been of interest to native peoples as they offered easy access to lithic material.

Numerous geologic formations are banded close together across the northern portion of the Central Eagle Ford Zone, in a northeast to southwest orientation. The major formations include the Cook Mountain Formation, Yegua Formation, Caddell Formation, and Manning Formation. The Catahoula and Oakville Formations extend into this area as well.

The Cook Mountain Formation consists of clay and sandstone. Marine fossils are common in the 200 to 230 foot (61 to 70 m) thick Eocene formation. The Yegua Formation is an Eocene age deposit of sandstone and clay that forms terraces. The sandstone is composed of mostly quartz with some chert, and is fine-grained and indurated to friable with a cross-bedded structure. It is calcareous with a thickness of 400 to 1,050 feet (122 to 320 m).

The Caddell Formation consists of siltstone, clay, and sandstone. The 50 to 100 foot (15 to 30 m) thick Eocene formation is locally fossiliferous. The Manning Formation consists of clay, sandstone,



and Plum Bentonite. This chert-like material is indurated, waxy, and expresses conchoidal fractures. Fossil wood, clay beds, and lignite deposits are common in the 250 to 350 foot (76 to 107 m) thick Eocene formation. Both the Manning Formation and the fossil wood surface gravels would have been of interest to prehistoric populations.

Lesser formations in the area include the Reklaw Formation, Weches Formation, Fleming Formation, Wellborn Formation, and Whitsett Formation. Three separate bands of sand formations are also present and include the Carrizo Sands, Sparta Sands, and Queen City Sands.

Fluviatile terrace deposits and fluvial sediments are mapped in the vicinity of larger creeks and rivers throughout the Central Eagle Ford Zone. The fluviatile terrace deposits of Pleistocene age are remnants of ancient floodplains. During the Pleistocene, streams flowed between 25 and 50 feet (8 and 15 m) higher than the present. These terraces are located above the Holocene-aged alluvial deposits. Later Holocene-aged fluvial sediments are deposited through alluvial deposition on floodplains, levees, and lower terraces within flood zones (Griffin 2006). Many of the major waterways in the region have broad floodplains, and are indicative of greater water depths and volumes earlier in the Holocene. The Guadalupe River in particular has a floodplain between 2 and 5 miles (3.2 and 8 km) wide in places. Quaternary floodplain deposits consist of gravel, sand, clay, silt, and organic material. These recent gravel deposits sometimes provided raw material for prehistoric peoples in search of tool-making stone.

### 2.3 PROJECT AREA SOILS

The Web Soil Survey of the NRCS (NRCS 2017), the De Witt County Soil Survey (Miller 1978), the Gonzales County Soil Survey (Griffin 2006), the Karnes County Soil Survey (Molina 1999), and the Wilson County Soil Survey (Taylor 1977) were consulted for this project. Soils generally encountered within the review areas consisted of clay, clay loam, and sandy loam along benches and terraces adjacent to smaller streams. Very deep, sandy alluvium is sometimes found along the banks of the larger rivers crossing this zone. In situ clay soils are commonly found on the wider floodplains of named creeks. Occasionally, expansive outcrops of chert gravels and cobbles are found on eroded uplands and shoulder slopes; which, prehistoric native groups used as raw material quarries for tool-making. These outcrops are most common on high uplands along the Guadalupe River.

### 2.4 FLORA AND FAUNA

The native tree species within the Central Eagle Ford Zone include mesquite, huisache, pecan, live oak, Texas wild olive, and Texas persimmon. Common shrubs and succulents in the region include prickly pear, fiddlewood, desert yaupon, agave, yucca, and autumn sage. Native grass species include sideoats grama, slender grama, buffalo grass, inland sea-oats, plains lovegrass, and little bluestem (Gould 1978; Texas Parks and Wildlife Department [TPWD] 2017a). The rainfall totals in the Texan Biotic Province are barely in excess of water need (Blair 1950). Traditionally, clayey soils supported vast grasslands; however, recent land management practices have decimated native grass areas. Alluvial soils support trees such as hackberry, pecan, and a variety of oaks, among other hardwoods, are present along major drainage ways.



There are at least 61 mammal species, 57 reptile species, and 22 amphibian species within the Central Eagle Ford Zone (Schmidly 2004). Common small mammals in the region include several species of rats, mice, and bats; the Texas pocket gopher; the eastern mole; the eastern cottontail rabbit; and the Mexican ground squirrel (Blair 1950). Medium to large mammals include white-tailed deer, American hog-nosed skunk, and armadillo. The Mexican opossum is another mammalian species and the only marsupial located in the ecoregion. Rare or extinct mammalian species in the area include ocelot, jaguar, javelina, bison, and jaguarondi (TPWD 2017b).

Reptile species within the region include the western box turtle, Texas banded gecko, Texas spiny lizard, red racer, Western diamondback rattlesnake, and diamond-backed water snake (Blair 1950, TPWD 2017a). Rare reptilian species include the Texas tortoise, indigo snake, and Texas horned lizard (TPWD 2017b). Despite the drier climate within the Texan Biotic Province, the region is host to three species of urodeles (salamanders and newts) and 18 species of anurans (frogs and toads) (Blair 1950; Davis 1978). The dominant bird species near the APEs include Raptors, songbirds, doves, gulls, and terns (Bryan et al. 2006). The rare Cactus Ferruginous pygmy-owl is also occasionally found within the ecoregion (TPWD 2017a, TPWD 2017b).

## 2.5 CLIMATE

The Central Eagle Ford Zone exhibits a subtropical, mild climate. Average temperatures range from a high of 96.8 degrees Fahrenheit in August; a low of 63.7 degrees Fahrenheit in January; and a yearly average of 81.9 degrees Fahrenheit. Temperatures can reach as high as 104 degrees Fahrenheit or drop as low as 15 degrees Fahrenheit. Average rainfall is approximately 29 inches (74 centimeters [cm]) per annum. The greatest amount of rainfall occurs during May, June, September, and October and averages 3.5 inches (8.9 cm) per month. The growing season ranges between 222 days and 351 days in duration.

## 3.0 CULTURAL CONTEXT OF THE CENTRAL EAGLE FORD ZONE

The Central Eagle Ford Zone is located in the South Texas Archeological Region where nomadic hunter-gatherer groups migrated seasonally, following resources and sharing cultural traits with other groups. This is evident in the dispersal of point types and ceramic styles across the region (Prewitt 1995). Open camps are the most common type of archeological site found in the South Texas Archeological Region. Open camps can be shallow or deeply buried; are often adjacent to streams; and usually contain clustered archeological material such as burned rocks, lithic debris, hearths, or middens. Bone and shell are less common in the assemblages, as organics rarely survive due to the alkaline nature of the soils.

Notable work in South Texas archeological research has been conducted by Fox, et al. (1974), Mallouf, et al. (1977), Mercado, et al. (1996), Hall, et al. (1986), Black (1989), and Hester (1980). However, the lack of intensive investigations, high rate of looting, and levels of erosion that occur throughout South Texas have left barriers to fully understanding and dating the periods of occupation in the area (Perttula 2004).

The following cultural background is divided into several periods in this portion of the state: Paleoindian (9500 to 6000 B.C.), Early Archaic (6000 to 2500 B.C.), Middle Archaic (2500 B.C. to





A.D. 400), Late Archaic (A.D. 400 to 700), Late Prehistoric (A.D. 700 to 1750), and Historic (A.D. 1750 to present) (Aten 1983; Perttula 2004; Turner and Hester 1999). Some scholars include another period, the Protohistoric; however, it will not be included in this survey due to the lack of a useful definition and contextual information available in this region.

### 3.1 PREHISTORY

#### **3.1.1 *Paleoindian Period (ca. 9500 to 6000 B.C.)***

Recent archeological evidence indicates prehistoric people may have occupied this area prior to the Paleoindian Period. However, the controversial sites that show evidence of an earlier period of habitation have not yet been widely accepted by the archeological community. For this reason, the prehistoric period will begin with the Paleoindian Period.

Beginning around 9500 B.C., the Paleoindian spans over 3,000 years to about 6000 B.C., and is the earliest identified cultural period in the vicinity of the Central Eagle Ford Zone (Ensor and Ricklis 1998). According to some authors, the Paleoindian Period begins approximately 1,200 years earlier (10,700 B.C.) in the South Texas region. It has been postulated that this is most likely due to the earlier habitation of the Paleoindian Clovis peoples coming north from central Mexico (Perttula 2004).

The Paleoindian Period coincides with the decline of the Wisconsinan Glaciation, and is characterized by a relatively cool, moist climate that encouraged the development of now-extinct species of Pleistocene megafauna, such as bison. This period is sometimes called the Big Game Hunting Tradition (Willey 1966), due to a presumed heavy reliance on megafauna as a food source by Paleoindian peoples during the earlier portion of the period. Environmental changes that brought about the extinction or dislocation of megafauna precipitated a shift toward smaller game, creating the transition into the Archaic (Aten 1983:146-148; Willey and Phillips 1958:107).

Temporally diagnostic tool types attributed to this period include a variety of finely chipped, sometimes fluted, lanceolate projectile point styles, such as Clovis, Folsom, Plainview, and Scottsbluff (Meltzer and Bever 1995; Prikryl 1990; Willey 1966). The Paleoindian projectile point types show a transitional change between the earlier Paleoindian points and the Early Archaic. By the late Paleoindian Period, unfluted lanceolate projectile points such as Plainview, Golondrina, and Angostura were more common (Story, et al. 1990).

#### **3.1.2 *Archaic Period (6000 B.C. to A.D. 400)***

Following the close of the Pleistocene, the South Texas region experienced a trend toward a warmer and drier climate. It has been postulated that this climate shift was at least partially responsible for the extinction of megafaunal species. The archeological record of this period exhibits evidence of a gradual diversification in subsistence patterns. This is the beginning of the Archaic, which is divided into three time periods: the Early Archaic (6050 to 2500 B.C.), the Middle Archaic (2500 B.C. to 1000 B.C.), and the Late Archaic (1000 B.C. to A.D. 400) (Perttula 2004; Turner and Hester 1999).

Few Archaic sites are recorded on the Upper Texas Coast and Story suggests site density was low on the coastal plain during this period (Aten 1983:153; Story 1985:28-29, 31-34). Archaic sites, tested or excavated near the modern shoreline, generally consist of shell-bearing sites, with varying



degrees of lithic tools and debitage, shell or bone tools, and the bones of fish, mammals, and reptiles (Ambler 1967, 1970, 1973; Aten 1979, 1983; Ensor 1998; Howard et al. 1991). Inland sites tend to contain more lithic artifacts and debitage, with terrestrial mammal bones comprising the bulk of the inland faunal assemblages. Archaic patterns in tool-making for the South Texas region are centered on corner-notching technology and triangular points, moving away from the basal-notching technology.

#### 3.1.2.1 Early Archaic Period (6000 to 2500 B.C.)

Late Paleoindian unfluted, lanceolate projectile points such as Plainview, Golondrina, and Angostura were replaced by un-stemmed triangular points and basal or corner notched points in the Early Archaic (Story et al. 1990). The Early Archaic in the South Texas region is significantly shorter than in other regions due to the onset of specific regional cultural patterns occurring around 2500 B.C. These cultural patterns emphasized un-stemmed dart points and smaller bifacial and unifacial beveled tools (Perttula 2004). Additionally, the archeological record indicates the diet of the people in this area consisted of turtles, snails, and freshwater mussels. Land snails (*Rabdotus* sp.) are often present at prehistoric sites, but there is debate regarding whether the prehistoric peoples were consuming them or if the snails were merely “cleaning up” after the group moved out of the area.

#### 3.1.2.2 Middle Archaic Period (2500 to 1000 B.C.)

The Middle Archaic is more thoroughly represented in the archeological record for the South Texas region than the Early Archaic. During this period, the triangular Tortugas and Abasolo points were developed. In addition, the archeological record shows the development of smaller, unifacial, distally beveled tools that show a high amount of reworking and re-sharpening. Evidence supports that these common tools were used in wood-working (Perttula 2004).

During this period, most open campsites were placed in flood-prone zones along low terraces; and while information concerning their diet is scant, numerous types of fuel materials have been identified including mesquite, acacia, oak, and hackberry (Perttula 2004). There is also significant data concerning treatment of the dead, especially later in the period (Patterson et al. 1998). Cemeteries were commonly used, and most contained grave goods such as points, flakes, cores, and sandstone pieces (Perttula 2004; Hall et al. 1986). One such cemetery, Loma Sandia, is dated to the late Middle Archaic and is located in Live Oak County (Taylor and Highley 1995). With its hundreds of burials and thousands of artifacts, it remains one of the most studied archeological sites in South Texas.

#### 3.1.2.3 Late Archaic Period (1000 B.C. to A.D. 400)

In general, Late Archaic sites in the South Texas Region show a marked increase in site utilization, and a heavy dependence on seasonal base camps. Artifact assemblages suggest a more efficient exploitation of local resources with physical evidence of various maintenance, extractive, and processing tasks were used. Assemblages characterizing these technological activities include a variety of dart point styles, a suite of ground and polished stone tools, and the beginning use of ceramics.



### **3.1.3 Late Prehistoric Period (A.D. 400 to 1750)**

The Late Prehistoric period in the South Texas Region saw a continuation of many of the same cultural and subsistence patterns in place during the Late Archaic (e.g. cemeteries and burned rock features) with two very significant technological adaptations: a heavier reliance on ceramics by certain groups and the introduction of the bow and arrow (Ensor 1998).

## **3.2 HISTORIC PERIOD (A.D. 1750 TO PRESENT)**

### **3.2.1 Historic Native Groups in the Area**

Early Spanish expeditions in Texas afford the primary evidence of the relevant historic Indian tribes in the South Texas Region during the late sixteenth through early eighteenth-centuries. The initial exploration of the Gulf of Mexico and the American Southwest was accomplished by Spanish explorers Alonso Alvarez Piñeda (1519) and Alvar Nunez Cabeza de Vaca (1528). Following Piñeda's initial maritime effort to map the Gulf Coast, the earliest exploration of the South Texas Region was accomplished by de Vaca, who shipwrecked in the Gulf of Mexico in 1528 along with other members of an expedition led by Pánfilo de Narváez (Weddle 1985).

De Vaca's account served as the basis upon which subsequent explorations of the region were conducted by Hernando de Soto (1539) and Luis de Moscoso (1542). By 1561, Spain was facing increasing difficulties in maintaining its few colonies in Florida. The relatively poor economic prospects for these colonies and increasing competition from other colonial powers quelled the Spanish Crown's interest in colonizing their Florida territories, which included Texas. As a result, the Texas Gulf Coast remained relatively uninhabited by Europeans for the next two centuries until the threat of increased French exploration stimulated the Spanish government to establish more permanent settlements in the area (Weddle 1991). In 1685, René Robert Cavelier and Sieur de la Salle established Fort St. Louis along the Gulf Coast (Gilmore 1984, Tunnel and Ambler 1967). However, by late 1688 or early 1689, Fort St. Louis was no longer in use due to disease, starvation, and Indian attacks (Bruseth and Turner 2005).

Spanish expeditions to the South Texas Region include the 1689 expedition of Governor Alonso de León; the 1691 to 1692 expedition of Governor Domingo Terán de los Ríos; the Espinosa-Olivares-Aguirre expedition of 1709; Ramón's expedition of 1716; Alarcón's expedition of 1718; and Rivera's inspection tour of 1727 (Campbell 1983; Foster 1995). The Indians encountered during those journeys included indigenous Sanan speakers and displaced and migrating tribes from well outside the region. These include the Jumano of west Texas, the Wichita-speaking Yojuane of north central Oklahoma, and the Simaomo and Tusonibi of northeastern Mexico (Campbell 1979). According to Chapa, an early historian who documented the annihilation of over 160 groups during the 1600s, many other tribes were decimated by European disease in Coahuila and Nueva Leon (Foster 2008:108).

### **3.2.2 Anglo Settlement**

After Spain recognized Mexico's independence in the early nineteenth century, the first land grants were issued by the Mexican government to encourage foreign settlement. Two empresario land grants went to Stephen F. Austin and Green C. DeWitt. It wasn't originally Stephen F. Austin's desire, but that of his father's, Moses Austin, to become an empresario in Spanish Texas. In 1820,



Moses had been in negotiations with Governor Antonio María Martínez when he offered a proposal to bring 300 colonial families to Texas. His offer was flatly rejected, due to omissions reflecting little understanding of Spanish colonial law. Moses returned with the Baron de Bastrop, second alcalde of Bexar, and a revised proposal (Moore 2014). With the Baron's help, Moses was granted permission to begin colonization of Texas, but died before a single colonist was brought to Texas from the east.

Moses' dream of colonization would come to fruition under his son, Stephen Fuller Austin. In December of 1821, Austin began bringing the first families to settle on the Austin land grants. For each married head of household, a grant comprised of one league (4,428 acres) and one labor (177 acres) of land would be issued. Unmarried males were eligible for a single land grant of one-third league (1,476 acres). While grant selection began in late 1821, actual titles were not issued by Mexican authority until mid-summer 1824. Austin would be awarded two additional large empresario grants, expanding his colony along the Brazos, Colorado, and Trinity Rivers.

DeWitt was confident a grant would be awarded, and appointed James Kerr to survey his colony and its capitol in January 1825. Kerr and his assistants built cabins near a creek that to this day is called Kerr's Creek. This group became the first Anglo community west of the Colorado River (Baumgartner and Vollentine 2014). In April 1825, empresario Green DeWitt was authorized by the Mexican government to settle 400 families between the Guadalupe and Lavaca Rivers. These pioneers began landing at the mouth of the Lavaca River, which became the site of the Old Station settlement (Roell 2014) about 6 miles (9.7 km) from the mouth of the Lavaca River. However, the Mexican government refused their request to remain at Old Station and in late 1827, some settlers returned to the original Gonzales townsite surveyed by Kerr (Baumgartner and Vollentine 2014).

A treaty with the Karankawas was negotiated in 1827 and these local settlers enjoyed relative peace. Tonkawa raids were only occasional, and boundary disputes with De León's colony to the south were settled without bloodshed. The only towns in the area were Gonzales and Guadalupe Victoria to the south and Bexar (the seat of government) to the northwest (Roell 2014). Within three years, more than 100 families had arrived to settle in DeWitt's colony. These families were primarily from Tennessee, Kentucky, Missouri, and other southern states (Baumgartner and Vollentine 2014).

Unfortunately, the Mexican government refused to recognize Kerr as the official surveyor, and Byrd Lockhart was appointed in 1831 to resurvey the Gonzales townsite. In 1831, Gonzales colonists (population of 532) convinced the Mexican government to send a canon for protection against Indian raids (Baumgartner and Vollentine 2014). The Mexican government complied by sending a small signal cannon to the settlers. This "fieldpiece" would later be at the center of the beginning of the war with Mexico for Texas Independence.

### ***3.2.3 Texas Revolution and the Runaway Scrape***

Mexico continued in the tradition of Spain with regard to the settlement of Texas. Although few Mexican colonies were established by the government, Mexico was increasingly more willing to grant land to Anglo-Americans. The change came as a strategic move to increase settlement in what was to be Texas. The first settlements were along the coastal plain area, where land was fertile and less



prone to Indian attacks. Between 1832 and 1835, friction began to occur between the Anglo-American settlers and the Mexican government (Barker and Pohl 2014). To add to the growing tensions, Antonio López de Santa Anna was elected president in 1833 and declared a dictatorship in 1834 (Calcott 2014). His military force and personal policies encouraged the displacement of the Anglo-American settlers through political action and veiled threats (Barker and Pohl 2014). Tension between Anglo settlers and the Mexican government remained high until 1835 when dissatisfaction with Mexican rule came to a head at Gonzales.

According to the historical monument on Highway 97 West, just south of Gonzales, the first shot of the Texas Revolution was fired on 2 October 1835 from the small cannon that Mexican forces were trying to take back from the colonists. After a short skirmish, Mexican troops withdrew in an attempt to prevent all-out war (Hardin 2016). However, distrust between the Mexican government and Anglo-American settlers in Texas had become so great that instead of preventing war, the Texas Revolution began (Barker and Pohl 2014).

After the Battle of Gonzales, Stephen F. Austin, James Bowie, and James W. Fannin, Jr. led a troop of volunteers toward San Antonio and set up a defensive position along the San Antonio River (Barker and Pohl 2014). Although the Texan army was quite successful at fending off Mexican advances, their lack of organization and discipline created major military problems. Several of the men split off from the main group, and fractured an already small army. It was not until 2 March 1836, at Washington-on-the-Brazos, that a convention voted for Texas independence and Sam Houston was appointed the major general of the Texas fighting force.

Between the Battle of Gonzales and the declaration of independence, Santa Anna decided to deal with the insurgents by treating them as pirates. By labeling the rebels as pirates, Santa Anna was allowed to handle them outside the rules of war and without mercy (Barker and Pohl 2014). Santa Anna began his march to San Antonio early in 1836, and amassed an army of 8,000 men. Although Santa Anna met problems related to weather and food, he arrived in San Antonio on 23 February 1836. The Alamo fell after 13 days of siege. All the defenders were killed with only 30 women, children, and enslaved black survivors. Although the bloody way Santa Anna dealt with the defenders of the Alamo initially instilled fear in the Texans, the events in San Antonio would later become a rallying cry.

At the same time, Santa Anna was busy with the Alamo, General José de Urrea was fighting his way toward where Fannin was stationed in Goliad (Barker and Pohl 2014). Although Fannin attempted to escape and move toward Sam Houston's location, his troops were overwhelmed by the Mexican army. After negotiating surrender terms, Fannin and his men were taken back to Goliad and imprisoned. Despite assurances by one of Santa Anna's officers that they would be treated as prisoners of war, Santa Anna felt that Fannin and his men should be executed. The sentence was carried out on 27 March 1836, and 342 men, including Fannin, were killed (Davenport and Roell 2014). Twenty-eight men were able to escape because the Mexican army took the prisoners to a field, near a tree line, for execution. In addition, another 20 were spared due to their skills as physicians, orderlies, interpreters, or mechanics.





Houston arrived in Gonzales around the time of the Goliad Massacre (Barker and Pohl 2014). There he learned from Susanna Dickinson, a wife of an Alamo defender, of the fall of the Alamo and the advancement of the Mexican army towards Gonzales. He decided to retreat, burning the town to the ground to prevent the Mexican army from being able to use anything. Houston also sank his cannons in the Guadalupe River since he lacked transport for them. In what was later known as the Runaway Scrape, he and numerous others began to make their escape toward the Colorado River with refugees from south-central Texas (Barker and Pohl 2014, Covington 2014). This flight took Houston and his army through Gonzales, Lavaca, Colorado, Austin, Waller, and Harris Counties (Anonymous 2016).

Originally, Santa Anna believed that the Alamo and Goliad were proof that the war was over (Barker and Pohl 2014). It was only at the insistence of his officers that Santa Anna decided to pursue the Texan army. However, upon learning the President, David G. Burnet, and his cabinet had fled New Washington for Harrisburg, Santa Anna changed objectives and began pursuing the political party. However, by the time Santa Anna arrived in Harrisburg, Burnet and his group had fled. Unknown to Santa Anna, he and Houston were both heading toward Lynch's Ferry (near modern-day Lynchburg), where the two armies met in a brief clash on 20 April 1836. Santa Anna decided to pull back and wait for reinforcements, despite the fact that his army numbered approximately 13,000 to Houston's 900. Houston launched a surprise attack on 21 April 1836. In a battle that lasted 18 minutes, Houston and his men managed to kill, scatter, and capture Santa Anna's entire army, while only losing nine men. The war was officially over with the two treaties of Velasco that were signed on 14 May 1836 (Barker and Pohl 2014, Barker 1901).

### **3.2.4 Post Revolution**

After the Texas Revolutionary War, Texas remained an independent nation until its annexation into the United States in 1845 (Bauer 2014). Texas's annexation, attempts at purchasing northern California, and continued disputes with Mexico over the border between Texas and Mexico ultimately led to the Mexican-American War in 1846. After several political and subtle military attempts to secure the Rio Grande as the border, President Polk finally ordered General Zachary Taylor and his men to the Rio Grande. Mexico interpreted this as a declaration of war and attacked Taylor's army on 25 April 1846. Polk used the incident to secure a declaration of war from congress, which was given on 13 May 1846.

On 9 March 1847, the United States launched its first large-scale amphibious assaults at Veracruz, Mexico, under Commodore David Conner and General Winfield Scott (Bauer 2014). Scott began the march to Mexico City and received reinforcements in Puebla from Colonel John Coffee Hays, who led a contingency of Texas Rangers. Upon arriving in Mexico City, Scott began attacks on the city and outlying towns. The final assault began on 13 September and ended on 14 September 1847. Although Santa Anna escaped, the Mexican government essentially collapsed.

Due to the lack of government, it was not until February 1848 that a functioning governing body could be formed in Mexico and the Treaty of Guadalupe Hidalgo could be signed. The United States gained California, Arizona, and New Mexico, along with portions of Utah, Nevada, and Colorado with



the end of the Mexican-American War. In addition, the Rio Grande was officially established as the Texas-Mexico boundary.

### **3.2.5 Karnes County**

Karnes County was first settled by Europeans around April 1758, when the first land grant was issued to Andrés Hernández and Luis Antonio Menchaca (Long 2014). Fuerte de Santa Cruz del Cibolo was established around 1770, near the settlement to provide protection from attacks by native groups. However, by 1783, the fort had come under repeated Comanche attacks and much of the area was abandoned.

The area gradually grew in population throughout the early nineteenth-century (Long 2014). The first Anglo-American settlers began to arrive in the region, and by 1852, they had established a settlement at Helena, Texas. The town of Helena was founded by Thomas Ruckman and Lewis S. Owings, and was originally the site of a previously abandoned Mexican settlement known as Alamita. Helena's location was a great boon to the settlers as it was located on a bend of the San Antonio River, where the Chihuahua Trail and the wagon road from Gonzales to San Patricio met. The town's location increased the opportunities for trade and growth in the region, and led to Ruckman and Owings petitioning for the creation of a new county. On 4 February 1854, the Texas legislature recognized Karnes County, which was created from portions of Bexar, Gonzales, DeWitt, Goliad, and San Patricio Counties.

The residents of Karnes County focused mainly on livestock ranching before the Civil War (Long 2014). By 1858, tax assessment rolls indicated some 50,000 head of cattle and 2,000 head of horses were present within the county. In addition to livestock ranching, Polish immigrants focused on growing a wide variety of crops, including corn, melons, potatoes, cucumbers, and pumpkins. Agricultural practices changed in the mid-1880s with the arrival of railroads. Farmers and ranchers of the area suddenly had improved access to markets and the farming economy became more diversified. By the turn of the century, the principle crops of the area included cotton, sorghum, and potatoes.

In 1894, the county seat was moved to where the new railroad town of Karnes City was located, and remains the county seat of Karnes County to this day. Agricultural crops continued to change and vary through time. In the 1930s, boll weevils began to appear in the south, causing cotton production to drop. By 1990, approximately 80 percent of the income from Karnes County was from ranching. Agricultural crops increased in variety and included peanuts, peas, broom corn, onions, small grains, guar, and winter legumes.

#### **3.2.5.1 Panna Maria**

As previously mentioned, a large Polish population began settling in Texas during the mid-nineteenth-century. Panna Maria, the oldest permanent Polish colony in America, is located in Karnes County, Texas (Texas Historical Commission [THC] 2016a). Economic, ethnic, and national turmoil in Europe drove Polish immigrants to Texas, pursuing the promise of new beginnings in the United States. A Polish priest, named Father Leopold Moczygemba, ministered in the German community of New Braunfels and throughout central Texas (THC 2016a). There he saw the



economic opportunities available to newly arrived German immigrants, giving him the idea to bring his fellow Polish countrymen to Texas to escape the chaos in Europe.

Over 100 European families journeyed to Texas in 1854 and landed in Galveston, Texas after nine weeks at sea. The families, including 800 men, women, and children, walked over 200 miles (321.9 km) to the present-day location of Panna Maria. Today, Panna Maria is still a small community, but many of its residents are decedents of the original settlers. A pride in one's Polish heritage was first fostered among the original settlers and is still evident in the community today.

#### 3.2.5.2 Gillett

The town of Gillett, Texas was first settled in 1869 by pioneer Carl Edward Riedel, who built a dam to power his sawmill, gristmill, and ginning operation (THC 2016b). The following year a steam gin, the first in Karnes County, was installed, as well as a series of barracks to house United States soldiers (THC 2016b). By 1873, a town had emerged and was named Riddleville in honor of its founding pioneer. The name of the town changed to its current name, Gillett, in 1905. Toward the end of the nineteenth-century, the town of Riddleville was one of the five principle population centers in Karnes County (THC 2016a).

### 3.3 CULTURAL RESOURCES OF THE CENTRAL EAGLE FORD ZONE

DeWitt County currently lists more than 316 recorded archeological sites; many listings are the direct result of surveys initiated by the recent expansion of oil and gas exploration. According to the THC's Archeological Sites Atlas (Atlas), the DeWitt County Courthouse in Cuero, Texas is the only designated State Antiquities Landmark (SAL), and is one of 58 National Register of Historic Places (NRHP)-listed sites. Neighborhood surveys have resulted in listing over 1,700 historic structures to the database, along with 60 recorded historic cemeteries and 95 historical markers (THC 2016b).

Gonzales County currently lists more than 250 recorded archeological sites. According to the Atlas, five sites have been designated as SALs including, the Leesville Schoolhouse, Fort Waul, Gonzales County Museum and Amphitheater, Gonzales County Jail, and Gonzales County Courthouse. All the SAL-designated properties are also listed on the NRHP, with the exception of Fort Waul. There is a total of 9 NRHP-listed sites in Gonzales County. Over 1,200 historic structures, 65 historic cemeteries, and 128 historical markers have been added to the database for Gonzales County through neighborhood surveys (THC 2016b).

Karnes County currently lists more than 215 recorded archeological sites. The Karnes County Courthouse is the only listed SAL in the county and is also a NRHP-listed property. There are two other NRHP-listed properties in the county, the John Ruckman House and the Panna Maria National Register District (NRD). An additional 18 historic homes have been added to the THC database as a result of neighborhood surveys, as well as 24 historic cemeteries and 30 historical markers (THC 2016a).

Wilson County lists more than 125 recorded archeological sites. According to the Atlas, two properties have been designated as SALs: the Wilson County Courthouse and Jail in Floresville, Texas and the Rancho de las Cabras State Historical site. Both sites are also listed on the NRHP,





along with the Polley Mansion and the Mueller Bridge. The Wilson County Courthouse, designed by architect Alfred Giles, was completed in 1884 and was a two-story stucco brick structure with Italianate architectural elements. There are 137 recorded historic cemeteries and 57 historical markers in the county (THC 2017a).

#### **4.0 METHODOLOGY**

The cultural resources surveys were performed in compliance with the National Historic Preservation Act of 1966 (NHPA), as amended (16 U.S.C. 470 et seq., P.L. 89-665, 80 Stat. 915), and the implementing regulations 36 CFR 800. The surveys complied with the National Environmental Policy Act (NEPA) of 1969; the NEPA of 1974 (PL 81-190, 83 Stat. 915, 41 USC 4321, 1970); the Archeological and Historic Preservation Act of 1974 (PL 93-291); the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Fed. Reg. 44716-42, Sept. 29, 1983); the National Register Bulletin Series of the National Park Service; and the Archeological Resources Protection Act of 1979. The surveys conformed to the standards of the United States Department of the Interior (1977); the guidelines set forth by the Council of Texas Archeologists (1995); and the Register of Professional Archeologists (2016). The cultural resources investigations consisted of archival research, pedestrian survey, shovel testing, and preparation of a report suitable for review by the United States Army Corps of Engineers (USACE), the regulatory agency responsible for oversight in most situations.

Streams potentially under USACE jurisdiction that crossed the APEs were assessed by an ecologist via desktop and field reviews prior to commencement of the cultural resources surveys. As per the established procedure of due diligence, any segment of an APE that falls within an area potentially under federal jurisdiction, or any portion of an APE that falls within a 328-foot (100-m) radius of a known cultural site, would be subjected to a cultural resources survey. Any segment of an APE to be surveyed under this protocol was labeled as a "review area". Unless otherwise noted, the APEs measured 75 feet (23 m) in width, consisting of a 50-foot (15-m) wide permanent easement and a 25-foot (8-m) wide temporary construction easement.

During the survey efforts, the ground surface within the established review areas was visually inspected on foot. Shovel tests were administered in portions of the review areas that harbored the greatest potential for temporally stratified soil deposits. Shovel tests, typically 12 inches (30 cm) in diameter, were excavated to sterile substratum. The shovel probe matrix was sifted through ¼-inch (0.6-cm) hardware cloth. If soils of high clay constituency were encountered, the matrix was hand sorted. Shovel test locations were recorded with hand-held Global Positioning System (GPS) units and transferred to topographic maps. If present, newly discovered or revisited sites were documented using standard State of Texas site recording forms and plotted by GPS coordinates for entry into the Atlas database.

Shovel testing was conducted to ascertain the horizontal and vertical limits of any cultural manifestation discovered within the review areas. Hand-drawn sketch maps were produced for each cultural site recorded or revisited. The field efforts reported herein were performed on private property and were funded by a private source. No artifacts were collected during the survey. If present, artifact assemblages were photographed in the field and left where found.



## **5.0 DIO UNIT #16H, #17H, #18H, #19H, AND #20H FLOWLINES ROW**

Goshawk conducted a cultural resources survey of the proposed ±1,681-foot (512-m) Dio Unit #16H, #17H, #18H, #19H, and #20H Flowlines ROW in Gonzales County, Texas. One review area was identified within the proposed ROW, based upon the presence of one potentially regulated Waters of the US (WATERS). The cultural resources survey, including shovel testing and surface inspection, was conducted within one review area and totaled approximately 1.53 acres (0.62 hectare [ha]). The field investigation was conducted by archeologist Phil Schoch with Natasia Mitchell on 3 August 2017.

The Dio Unit #16H, #17H, #18H, #19H, and #20H Flowlines ROW was located approximately 7.9 miles (12.7 km) northeast of Westhoff, Texas. The dominant local land use was for rangeland and oil and gas development. The ROW was located on the Sample, Texas, United States Geological Survey (USGS) topographic quadrangles (Figure 5-1).

### **5.1 ARCHIVAL RESEARCH**

According to the Atlas, there is one previously recorded archeological site (41KA183) located 3.2 miles (5.2 km) west of the proposed Dio Unit #16H, #17H, #18H, #19H, and #20H Flowlines ROW. The site is described in detail below.

No NRHP-listed properties have been recorded within the proposed ROW. The nearest NRHP-listed property is the Eckhardt Stores, located in the town of Yorktown, Texas, approximately 11.6 miles (18.7 km) south-southeast of the proposed ROW. The ROW is located 14.3 miles (23 km) west of the Cuero I National Register District (NRD). Designated in 1974, the Cuero I NRD encompasses 580,000 acres (234,718 ha) along the Guadalupe River Basin. It was created to define and preserve cultural resources in a region threatened by a proposed reservoir. The work conducted in 1972 to 1973 resulted in the documentation of 352 significant prehistoric and historic sites spanning 9,000 years. The sites ranged in age from Late Paleoindian to early Anglo-American settlements that date from the 1820s to the 1830s.

#### **5.1.1 Site 41KA183**

Site 41KA183 was documented in 2013 by Goshawk archeologists as part of the Thomas to Korth Gathering Pipeline project. The site was recorded as an undifferentiated prehistoric lithic scatter. This site was located on a side slope near a second-order tributary of Mound Creek. The site measured 407 feet (124 m) north to south by 75 feet (23 m) east to west. The artifact assemblage observed included a few flakes and two cores. It was noted that the site probably extended to the upland terraces to the east. The initial evaluation of the site determined that the site was not eligible for designation as a SAL or listing on the NRHP (THC 2017b).

### **5.2 SURVEY RESULTS**

A Cultural Resources Survey was conducted within one review area of the proposed Dio Unit #16H, #17H, #18H, #19H, and #20H Flowlines on 3 August 2017. The review area was established within the proposed ROW, along an unnamed tributary of Shoats Creek. The results of the survey are presented below.



### **5.2.1 Review Area**

The review area was established within the proposed ROW at a crossing of an unnamed tributary of Shoats Creek. Channelization of the tributary was good within the review area (Photos 5-1 and 5-2). Vegetation was open grasslands within the review area with dense brush along the stream. Vegetation consisted of honey mesquite, acacia species, Texas persimmon, green briar, huisache, mustang grape, and hackberry (Photo 5-3). Surface visibility within the review area was poor, averaging between 0 and 15 percent due to thick grasses (Photo 5-4). No cultural materials were found on the ground surface within the review area.

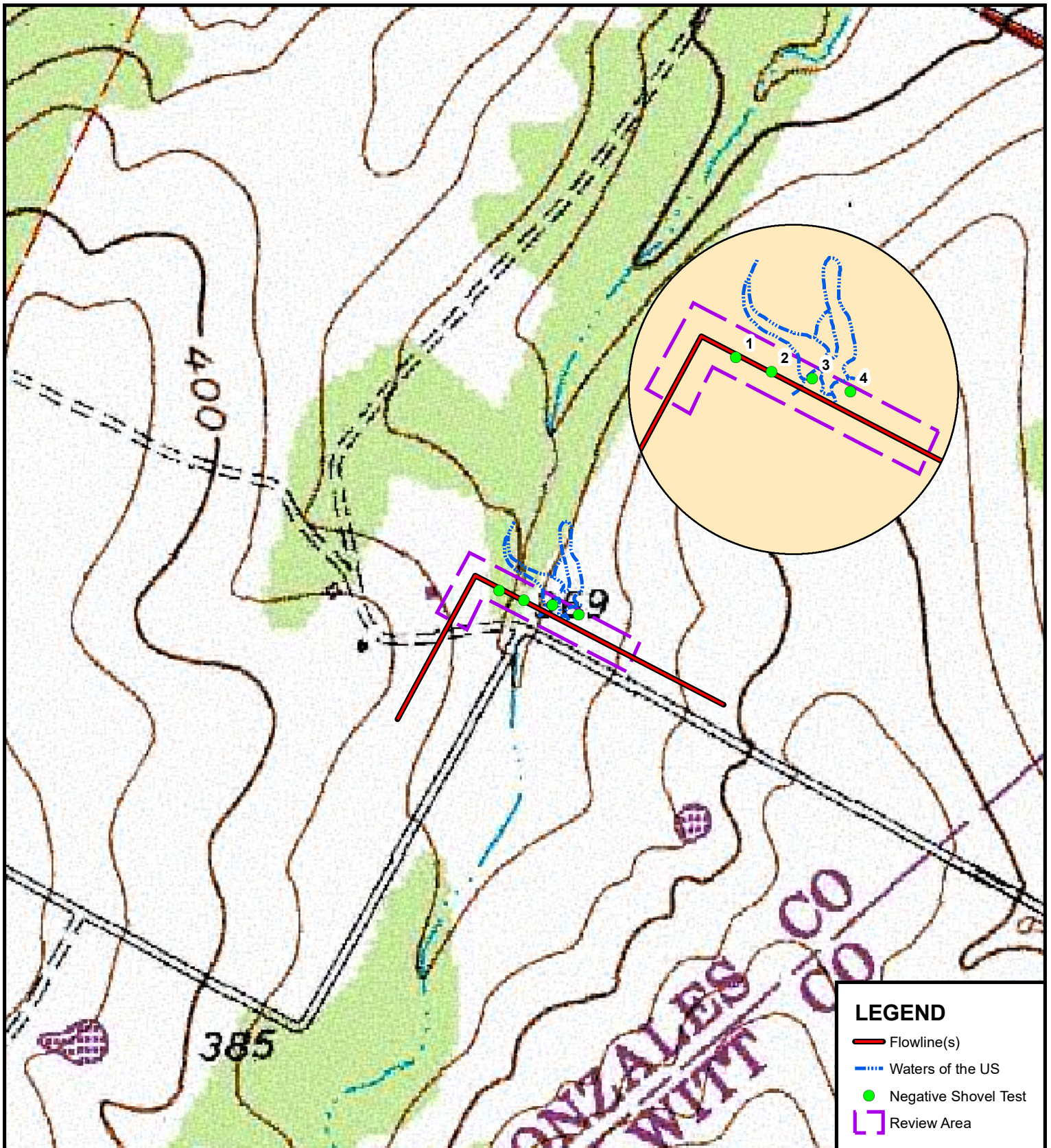
Four shovel tests were conducted within the review area and placed in locations most likely to contain intact, temporally stratified deposits (see Figure 5-1). Soils consisted of either gray, black, or mottled clay throughout the review area. Shovel tests were excavated to depths between 12 and 32 inches (30 and 80 cm) below the ground surface (Table 5-1). All shovel tests administered within the review area yielded entirely negative results.

### **5.3 RECOMMENDATIONS**





Goshawk conducted a cultural resources survey, consisting of an intensive surface inspection and the excavation of four shovel tests, within the Dio Unit #16H, #17H, #18H, #19H, and #20H APE. No cultural resources were observed on the surface and no artifacts were recovered during shovel testing. It is Goshawk's opinion that construction of the Dio Unit #16H, #17H, #18H, #19H, and #20H, as proposed, will cause no impacts to significant cultural resources within the surveyed portion of the APE. Therefore, Goshawk recommends that construction be allowed to proceed as planned. In the unlikely event that cultural resources (including human remains) are discovered, all construction or maintenance activities should be halted immediately and the USACE and an archeologist should be notified.







**LEGEND**

-  Flowline(s)
-  Waters of the US
-  Negative Shovel Test
-  Review Area

Map Source: USGS, Sample, Texas Quadrangle.

Date: 8 August 2017

0 250 500 Feet

**Figure 5-1**  
Shovel Test Map  
Gonzales County, Texas

Dio Unit #16H  
Dio Unit #17H  
Dio Unit #18H

Dio Unit #19H  
Dio Unit #20H

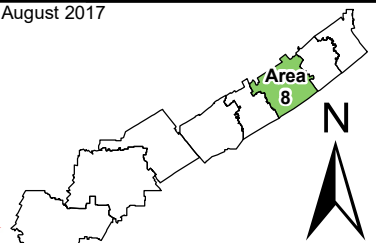






Photo 5-1: Stream Crossing within Proposed ROW, Facing South



Photo 5-2: Stream Crossing within Proposed ROW, Facing Northeast







Photo 5-3: Typical View of Proposed ROW, Facing East



Photo 5-4: Ground Surface Visibility within ROW.



Table 5-1: Dio #16H, #17H, #18H, #19H, and #20H Flowlines Shovel Test Data

ST#	WP#	Northing	Easting	Depth (cm)	Soil color	Soil composition	Artifacts	Comments
PS1	206	3223652	637104	0-35	Very dark gray	Clay	None	Dense dry clay. One CaCo3 at 25 cmbs
PS2	207	3223640	637132	0-30	Black	Clay	None	Chunky dense clay with large pebbles
PS3	208	3223635	637165	0-80	Mottled	Clay	None	Disturbed terrace
PS4	209	3223624	637196	0-30	Black	Clay	None	Dense black clay

\*2.5 cm = 1 inch



## **6.0 MAREK UNIT #9H AND #11H FLOWLINES ROW**

Goshawk conducted a desktop Cultural Resources Review of the proposed ±5,823-foot (1,775-m) Marek Unit #9H and #11H Flowlines ROW in Karnes County, Texas. One review area was identified within the proposed ROW, based upon the presence of one potentially regulated WATERS. The cultural resources survey, including shovel testing and surface inspection, was conducted within one review area and totaled approximately 2.3 acres (0.9 ha). The field investigation was conducted by archeologist Phil Schoch with Natasia Mitchell on 16 August 2017. The results of the archival reviews and field efforts are presented below (Figure 6-1).

The Marek Unit #9H and #11H Flowlines ROW was located approximately 0.8 mile (1.3 km) north of Ecleto, Texas. The dominant local land use was for rangeland and oil and gas development. The ROW was located on the Ecleto, Texas, United States Geological Survey (USGS) topographic quadrangles (Figure 6-1).

### **6.1 ARCHIVAL RESEARCH**

There are no previously recorded archeological sites within the proposed Marek Unit #9H and #11H Flowlines ROWs. There is one site (41KA181) located 0.4 mile (0.6 km) north of the proposed ROW. The site is described in detail below.

The proposed ROW is located approximately 10.3 miles (16.6 km) northeast of the Panna Maria Historic District. Designated in 1976, the Panna Maria NRD encompasses 24,000 acres (9,713 ha) of the town of Panna Maria. This NRD represents an historic Polish community. The nearest NRHP-listed property is the John Ruckman House, located 8.4 miles (13.5 km) south-southwest of the proposed ROW in Helena, Texas.

#### **6.1.1 Site 41KA181**

Site 41KA181 was recorded by Goshawk archeologists in 2012 as part of the Alton Crude Gathering Pipeline Project. The site was initially recorded as a historic farmstead and diffuse, prehistoric campsite. The site was located on an upland terrace, south of a caliche road, and measured 207 feet (63 m) east to west by 223 feet (68 m) north to south. The historic site component included one historic building of unknown use and a chicken coop. The prehistoric artifacts included burned rock, one flake, and one tested cobble.

The historic artifact assemblage included sherds of coarse earthenware, stoneware, refined earthenware, and decorated and undecorated porcelain. The glass assemblage included, clear, amethyst, brown, aqua, blue, and milk glass shards. Other historic-aged materials included a Model A Ford, farm machinery, composite button, hinges, wires, part of a jack, part of a trowel or shovel blade, nails, and a harness buckle. The initial evaluation concluded that further investigation was needed to determine the site's eligibility for designation as a SAL or listing on the NRHP (THC 2017b).





## 6.2 SURVEY RESULTS

A cultural resources survey was conducted within one review area of the proposed Marek Unit #9H and #11H Flowlines on 16 August 2017. The review area was established within the proposed ROW, along an unnamed tributary of Dry Ecleto Creek. The results of the survey are presented below.

### **6.2.1 Review Area**

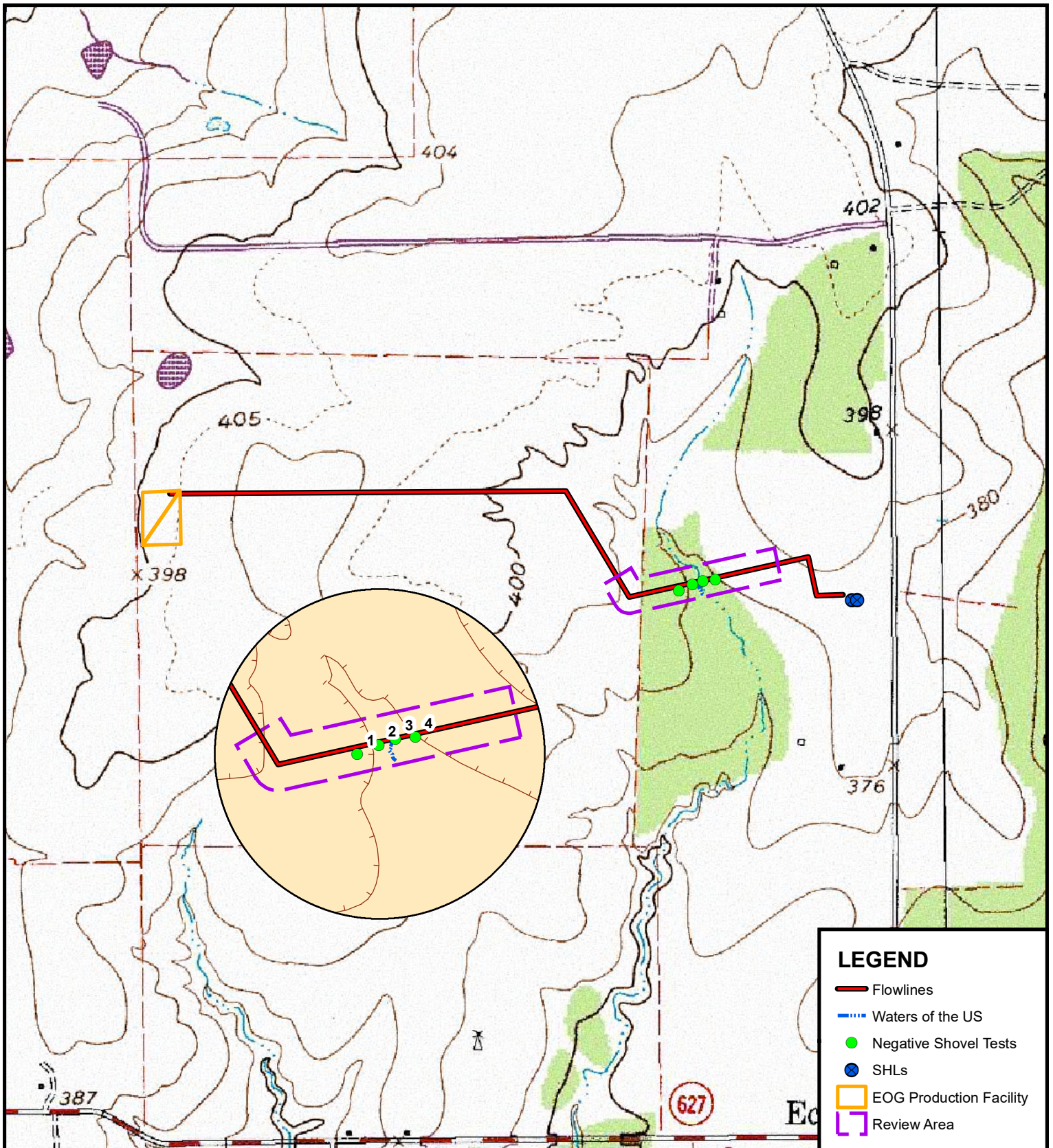
The review area was established within the proposed ROW at a crossing of an unnamed tributary of Dry Ecleto Creek. Channelization of the tributary was modest within the review area (Photos 6-1 and 6-2). Vegetation was dense within the review area and consisted of green briar, live oak, Texas persimmon, huisache, aster, mesquite, and various other grasses and shrubs along the proposed ROW (Photos 6-3). Surface visibility within the review area was poor, averaging between 10 and 20 percent (Photo 6-4). No cultural materials were found on the ground surface within the review area.

Four shovel tests were conducted within the review area and placed in locations most likely to contain intact, temporally stratified deposits (see Figure 6-1). Soils consisted of black argillic clays throughout the review area (see Photo 6-4). Shovel tests were excavated to depths between 6 and 12 inches (15 and 30 cm) below the ground surface (Table 6-1). All shovel tests administered within the review area yielded entirely negative results.

## 6.3 RECOMMENDATIONS

Goshawk conducted one cultural resources survey, consisting of an intensive surface inspection and the excavation of four shovel tests, within the Marek Unit #9H and #11H Flowlines APE. No cultural resources were observed on the surface and no artifacts were recovered from shovel testing. It is Goshawk's opinion that construction of the Marek Unit #9H and #11H Flowlines, as proposed, will cause no impacts to significant cultural resources within the surveyed portions of the APEs. Therefore, Goshawk recommends that construction be allowed to proceed as planned. In the unlikely event that cultural resources (including human remains) are discovered, all construction or maintenance activities should be halted immediately and the USACE and an archeologist should be notified.





**LEGEND**

- Flowlines
- Waters of the US
- Negative Shovel Tests
- SHLs
- EOG Production Facility
- Review Area

Map Source: USGS, Ecleto, Texas Quadrangle.

Date: 21 August 2017

0 500 1,000 Feet

**GOSHAWK**  
ENVIRONMENTAL CONSULTING, INC.

**Figure 7-1**  
Shovel Test Map  
Karnes County, Texas

**Marek Unit #9H**  
**Marek Unit #11H**

Area 2

**eog resources**





Photo 6-1: Stream Crossing within Proposed ROW, Facing North



Photo 6-2: Stream Crossing within Proposed ROW, Facing South







Photo 6-3: Typical View of Proposed ROW, Facing East



Photo 6-4: Ground Surface Visibility and Argillic Soil within ROW.



Table 6-1: Marek Unit #9H and #11H Flowlines Shovel Test Data

ST#	WP#	Northing	Easting	Depth (cm)	Soil color	Soil composition	Artifacts	Comments
PS1	241	621052	3215039	0-25	Black	Clay	N	Firm chunky black clay
PS2	242	621083	3215052	0-25	Black	Clay	N	Firm chunky black clay, some CaCO <sub>3</sub> in matrix
PS3	256	621107	3215061	0-30	Black	Clay	N	Firm chunky black clay, some CaCO <sub>3</sub> in matrix
PS4	257	621135	3215064	0-15	Black/brown mottles	Clay	N	Disturbed. Dense black clay and disturbed soil

\*2.5 cm = 1 inch



## **7.0 CROSSROADS UNIT #2H AND #3H FLOWLINES ROW**

Goshawk conducted a cultural resources survey of the proposed ±7,552-foot (2,302-m) Crossroads Unit #2H and #3H Flowlines ROW in DeWitt County, Texas. Three review areas were identified within the proposed ROW, based upon the presence of two potentially regulated WATERS and two previously documented archeological sites. The cultural resources survey, including shovel testing and surface inspection, was conducted within three review areas and totaled approximately 4.9 acres (2 ha). The field investigation was conducted by archeologist Phil Schoch with Natasia Mitchell on 16 August 2017.

The Crossroads Unit #2H and #3H Flowlines ROW was located approximately 0.2 mile (0.3 km) due northwest of Hochheim, Texas. The dominant local land use was for rangeland and oil and gas development. The ROW was located on the Hochheim, Texas, United States Geological Survey (USGS) topographic quadrangle (Figure 7-1).

### **7.1 ARCHIVAL RESEARCH**

According to the Atlas, there are five previously recorded archeological sites in the vicinity of the proposed ROW. There are five archeological sites (41DW11, 198, 206, 277, and 278) located approximately 0.25 mile (0.4 km) of the proposed ROW. At its nearest point, site 41DW11 was located 427 feet (130 m) northwest of the proposed ROW, and site 41DW277 was located 984 feet (300 m) northeast of the proposed ROW. The two nearest sites, 41DW11 and 41DW277, will be discussed in greater detail below.

No NRHP-listed properties have been recorded within the proposed ROW. The nearest NRHP-listed property is the Municipal Power Plant, located approximately 8.7 miles (14 km) east-southeast of the proposed ROW. The proposed ROW is located within the Cuero I National Register District (NRD). Designated in 1974, the Cuero I NRD encompasses 580,000 acres (234,718 ha) along the Guadalupe River Basin. It was created to define and preserve cultural resources in a region threatened by a proposed reservoir. The work, conducted in 1972 to 1973, resulted in the documentation of 352 significant prehistoric and historic sites spanning 9,000 years. The sites ranged in age from Late Paleoindian to early Anglo-American settlements that date to the 1820s to the 1830s.

#### **7.1.1 Site 41DW11**

Site 41DW11 was documented as a prehistoric open campsite in 1967 by C.A. Calhoun. The site was documented on the east bank of the Guadalupe River, just east of highway 183. No exact measurements for site dimensions or location are noted. The artifact assemblage consisted of mostly scattered flint flakes, mussel shell, and an occasional broken blade or dart point. A lens of ash and mussel shell was found about a foot deep that was exposed by a gully near a road cut. The initial evaluation made no determinations as to eligibility for designation as a SAL or for listing on the NRHP (THC 2017b).

#### **7.1.2 Site 41DW277**

Site 41DW277 was originally documented by TXDOT in 2009 as part of the US 183@Guadalupe River Bridge Replacement. The site was described as a broad lithic scatter with areas of fire-cracked





rock. Mechanical trenching was used to determine the depth of deposits approximately 3.3 feet (1 m) below the surface. Several disturbed burned rock features were encountered along with various lithic debitage. Due to the density of cultural materials found, the site was recommended for further testing to determine SAL or NRHP eligibility.

In May of 2012, Amaterra, on behalf of TXDOT, performed gradall trenching hand excavation of 32 test units. The trenches and units were excavated to a depth of 6.6 feet (2 m). This site is a multicomponent site containing prehistoric, late archaic, middle archaic, and early archaic occupational time periods. The artifact assemblage included thousands of fire-cracked rock and lithic artifacts. The breakdown of lithic artifacts from the 3.3-6.6 feet (1–2 m) depth includes 56 expedient tools or modified flakes, 27 whole or fragmented bifaces, 38 whole or fragmented cores, five tested cobbles, six pieces of ground stone, three projectile points, 2 hammerstones, 901 whole flakes, 767 incomplete flakes, and 781 pieces of unclassifiable debitage. Among the bifaces are a Clear Fork gouge and several artifacts that are broken and untypeable projectile points. Charcoal from 13 different proveniences was collected. Five of these samples were submitted to Beta Analytic, Inc. for AMS dating and these yielded conventional radiocarbon dates ranging from 2590–5260±30 before present (BP). Four bulk sediment samples were also submitted for AMS dates and these yielded conventional dates of 3020–5030±30 BP. The dates generally reinforce the idea that the site contains three intact, stratified occupation zones situated 3.3-6.6 feet (1–2 m) in depth that range in age from the early Middle Archaic to Transitional Archaic Periods. It was noted that only material in the lower deposits below 4.9 feet (1.5 m) would be eligible based on their age and data potential of features/artifacts. Since the bridge construction would not impact below 4.9 feet (1.5 m), data recovery was not recommended. The upper deposits were found to be ineligible for listing to the NRHP or designation as a SAL.

## 7.2 SURVEY RESULTS

A cultural resources survey was conducted on 18 August 2017. Three review areas were established within the proposed ROW on both banks of minor tributaries of the Guadalupe River, and within the 984-foot (300-m) due diligence buffer of previously documented archeological sites 41DW11 and 41DW277. Results of this survey are discussed in detail below.

### 7.2.1 Review Area 1

Review Area 1 was established within the proposed ROW within the 984-foot (300-m) due diligence buffer of previously documented archeological sites 41DW11 and 41DW277. Vegetation was open within the review area and consisted of green briar, live oak, huisache, aster, mesquite, silverleaf nightshade, and various other grasses and shrubs along the proposed ROW (Photo 7-1). With the exception of a small two-track road, surface visibility within the review area was very poor, averaging between 0 and 5 percent (Photos 7-2). No cultural materials were found on the ground surface within the review area or observed on the surface within the two-track.

Thirteen shovel tests were conducted within the review area and placed in locations most likely to contain intact, temporally stratified deposits (see Figure 7-1). Soils consisted of mostly hardpan dark grayish brown or dark gray clay throughout the review area. The slope that the review area traversed was heavily eroded, and sandstone bedrock was visible on the surface in many locations. Shovel



tests were excavated to depths between 2 and 12 inches (5 and 30 cm) below the ground surface (Table 7-1). All shovel tests administered within the review area yielded entirely negative results.

### **7.2.2 Review Area 2**

Review Area 2 was established within the proposed ROW at a crossing of an unnamed tributary of the Guadalupe River. Channelization of the tributaries was good within the review area (Photo 7-3). Vegetation was open within the review area, but dense along the stream banks, and consisted of green briar, live oak, huisache, aster, mesquite, silverleaf nightshade, and various other grasses and shrubs along the proposed ROW (see Photo 7-3). Surface visibility within the review area was very poor, averaging 0 and 5 percent (Photo 7-4). No cultural materials were found on the ground surface within the review area.

Four shovel tests were conducted within the review area and placed in locations most likely to contain intact, temporally stratified deposits (see Figure 7-1). Soils consisted of dark grayish brown or grayish brown clay or loamy clay with calcium carbonate inclusions throughout the review area. Shovel tests were excavated to depths between 4 and 8 inches (10 and 20 cm) below the ground surface (see Table 7-1). All shovel tests administered within the review area yielded entirely negative results.

### **7.2.3 Review Area 3**

The review area was established within the proposed ROW at a crossing of an unnamed tributary of Guadalupe River. Channelization of the tributaries was good within the review area (see Photo 7-2). Vegetation was open within the review area, but dense along the stream banks, and consisted of green briar, live oak, huisache, aster, mesquite, silverleaf nightshade, and various other grasses and shrubs along the proposed ROW (see Photos 7-1, 7-2, and 7-3). Surface visibility within the review area was very poor, averaging between 0 and 5 percent (see Photo 7-4). No cultural materials were found on the ground surface within the review area.

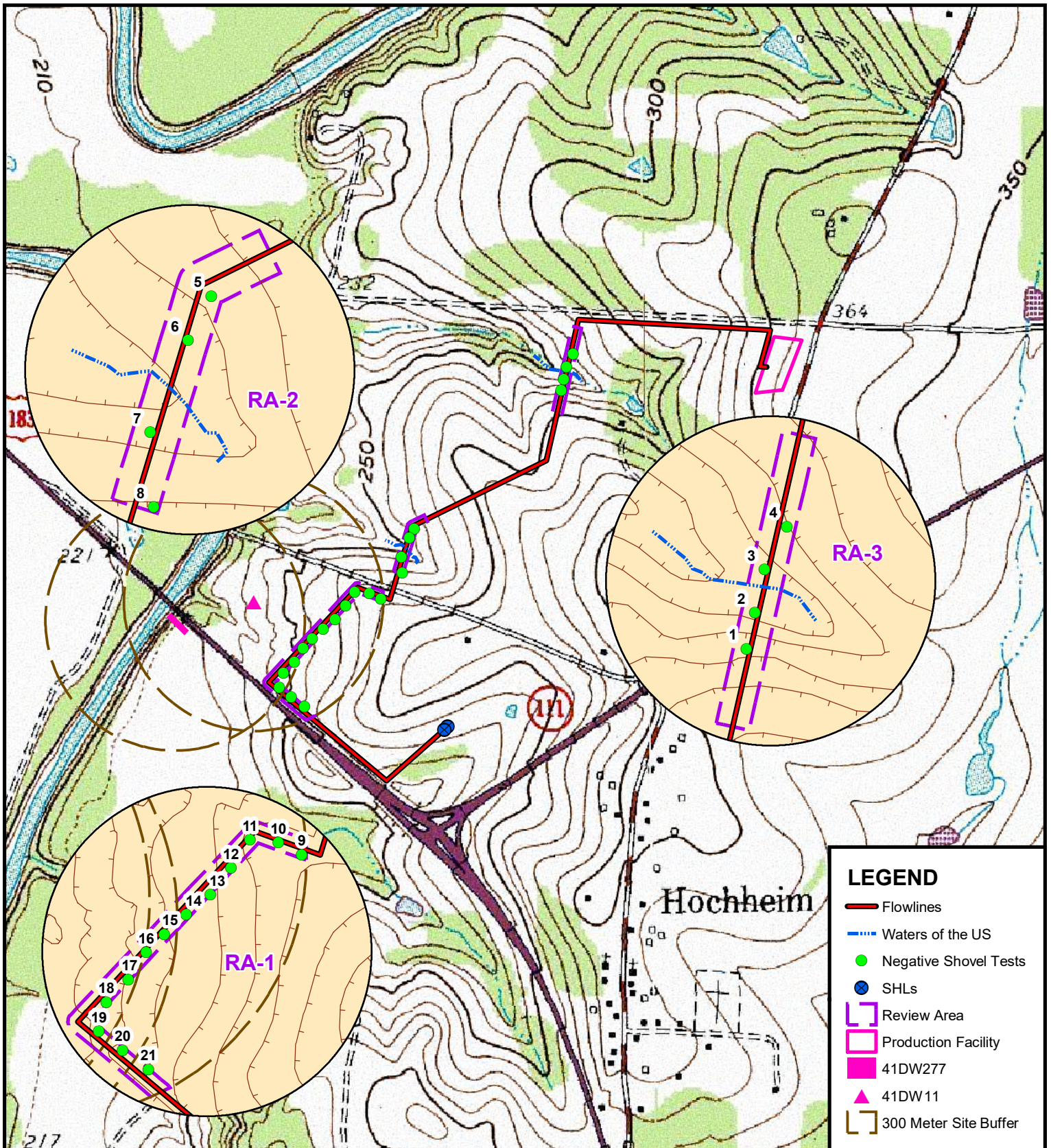
Four shovel tests were conducted within the review area and placed in locations most likely to contain intact, temporally stratified deposits (see Figure 7-1). Soils consisted of dark brown or grayish brown clay loam or loamy clay with calcium carbonate inclusions throughout the review area. Shovel tests were excavated to depths between 2 and 12 inches (5 and 30 cm) below the ground surface (see Table 7-1). All shovel tests administered within the review area yielded entirely negative results.

## **7.3 RECOMMENDATIONS**

Goshawk conducted a cultural resources survey, consisting of an intensive surface inspection and the excavation of twenty-one shovel tests, within Crossroads Unit #2H and #3H Flowlines APE. No cultural resources were observed on the surface and no artifacts were recovered from shovel testing. It is Goshawk's opinion that construction of the Crossroads Unit #2H and #3H Flowlines, as proposed, will cause no impacts to significant cultural resources within the surveyed portion of the APE. Therefore, Goshawk recommends that construction be allowed to proceed as planned. In the unlikely event that cultural resources (including human remains) are discovered, all construction or maintenance activities should be halted immediately and the USACE and an archeologist should be notified.







**LEGEND**

- Flowlines
- Waters of the US
- Negative Shovel Tests
- SHLs
- Review Area
- Production Facility
- 41DW277
- 41DW11
- 300 Meter Site Buffer

Map Source: USGS, Hochheim, Texas Quadrangle.

Date: 15 February 2018

0 500 1,000 Feet

**Figure 7-1**  
Shovel Test Map  
DeWitt County, Texas

Crossroads Unit #2H  
Crossroads Unit #3H

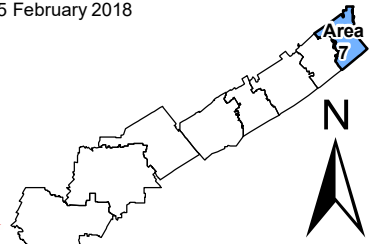






Photo 7-1: Overview of ROW within Review Area, Facing Northeast



Photo 7-2: Typical Ground Surface Visibility and Two-Track within ROW







Photo 7-3: Overview of Stream crossing within ROW, Facing East



Photo 7-4: Average Surface Visibility within ROW







Photo 7-5: Typical Vegetation within Northern Line Section ROW, Facing Southeast



Photo 7-6: Average Surface Visibility within ROW



Table 7-1: Crossroads Unit #2H & #3H Flowlines Shovel Test Data

ST#	WP#	Northing	Easting	Depth (cm)	Soil color	Soil composition	Artifacts	Comments
PS1	219	665672	3244510	0-30	Dark Brown	Clay loam	N	Disutrbed soil on steep gradient (20%). South of stream
PS2	221	665678	3244534	0-5	Brown	Loamy clay	N	Sandstone bedrock at 5cmb.
PS3	222	665685	3244563	0-20	Grayish Brown	Loamy clay	N	Disutrbed soil on steep gradient (20%). North of stream. CaCO3 inclusions
PS4	223	665700	3244592	0-20	Grayish Brown	Clay loam	N	Disturbed soil on steep gradient (20%). North of stream. CaCO3 inclusions
PS5	224	665332	3244188	0-20	Grayish Brown	Clay	N	Lots of CaCO3 inclusions, rabdotus, and small gravels
PS6	225	665321	3244167	0-10	Dark Grayish Brown	Clay	N	Chunky dense clay. On terrace north of stream
PS7	226	665303	3244122	0-10	Grayish Brown	Loamy clay	N	Disturbed. South of stream. CaCO3 inclusions
PS8	227	665305	3244086	0-15	Grayish Brown	Loamy clay	N	Disturbed. South of stream. CaCO3 inclusions
PS9	228	665255	3244026	0-15	Gray	Clay loam	N	Indurated. Lots of sandstone gravel and CaCO3
PS10	229	665228	3244039	0-10	Gray	Clay	N	Indurated. Lots of sandstone gravel and CaCO3
PS11	230	665195	3244042	0-10	Gray	Loamy Clay	N	Found mussel shell fragment at 10cm.
				0-30	Grayish Brown	Clay	N	CaCO3 inclusions in 2nd layer
PS12	231	665173	3244010	0-5	Grayish Brown	Clay	N	Indurated. Exposed bedrock surrounding test
PS13	232	665149	3243979	0-10	Dark Grayish Brown	Sandy clay	N	Indurated at 30cm.
				10-30	Dark Grayish Brown	Clay	N	CaCO3 and rabdotus throughout



PS14	233	665122	3243956	0-10	Very dark gray	Clay	N	Dense black clay. Fire ants in test
PS15	234	665096	3243933	0-20	Very dark grayish brown	Clay	N	Root obstruction. Clay
PS16	235	665075	3243913	0-20	Very dark grayish brown	Clay	N	Clay. Terrain slopes west towards river
PS17	236	665054	3243881	0-30	Very dark gray	Clay	N	Next to two-track. Dense clay
PS18	237	665029	3243855	0-30	Reddish brown	Clay	N	Next to two-track. Dense clay
PS19	238	665020	3243821	0-15	Reddish brown	Clay	N	Along fenceline. Going southeast upslope
PS20	239	665048	3243799	0-5	Grayish Brown	Clay	N	Indurated. Going southeast upslope
PS21	240	665078	3243777	0-5	Grayish Brown	Clay	N	Indurated. Going southeast upslope

\*2.5 cm = 1 inch





## **8.0 JM PRESTON UNIT #3H AND #4H ACCESS ROAD ROW**

Goshawk conducted a cultural resources survey of the proposed ±3,049-foot (929-m) JM Preston Unit #3H and #4H Access Road ROW in Gonzales County, Texas. One review area was identified within the proposed ROW, based upon the presence of potentially regulated WATERS. The cultural resources survey, including shovel testing and surface inspection, was conducted within one review area, which totaled approximately 0.7 acre (0.3 ha). The field investigation was conducted by Goshawk Archeologist Reign Clark and Bear Aspra on 21 August 2017.

The JM Preston Unit #3H and #4H Access Road ROW was located approximately 6 miles (9.7 km) north of Westhoff, Texas. The dominant local land use was for rangeland and oil and gas development. The ROW was located on the Cheapside, Texas, United States Geological Survey (USGS) topographic quadrangle (Figure 8-1).

### **8.1 ARCHIVAL RESEARCH**

According to the Atlas, there are no previously recorded archeological sites within the proposed JM Preston Unit #3H and #4H Access Road ROW. The nearest recorded archeological site (41GZ201) is located approximately 1.3 miles (2.1 km) northeast of the proposed ROW. This site is discussed in detail below.

No NRHP-listed properties have been recorded within the proposed ROW. The nearest NRHP-listed property is the Gonzales County Courthouse, located approximately 14.7 miles (23.7 km) north of the proposed ROW in Gonzales, Texas. The ROW is located 3.6 miles (5.8 km) west the Cuero I National Register District (NRD). Designated in 1974, the Cuero I NRD encompasses 580,000 acres (234,718 ha) along the Guadalupe River Basin. It was created to define and preserve cultural resources in a region threatened by a proposed reservoir. The survey, conducted in 1972 to 1973, resulted in the documentation of 352 significant prehistoric and historic sites spanning 9,000 years. The sites ranged in age from Late Paleoindian to early Anglo-American settlements that date to the 1820s to the 1830s.

#### **8.1.1 Site 41GZ201**

Site 41GZ201 was recorded in 1994 as an undifferentiated, prehistoric, lithic scatter during the Teco/Midtexas Pipeline Survey Project. The site measured approximately 820 feet (250 m) north to south by 1,279 feet (390 m) east to west and was mapped on a low ridge on the west bank of an unnamed tributary of Five Mile Creek. The artifact assemblage included approximately 150 flakes of various materials. Most of the lithic materials were primary flakes, but a few secondary and tertiary flakes were observed. Recorders also observed shatter, tested cobbles, a chert drill tip, a quartzite mano, a quartzite hammer stone, and 15 core fragments. The initial evaluation concluded that the site was potentially eligible for designation as a SAL or for listing on the NRHP and was recommended for avoidance (THC 2017b).

### **8.2 SURVEY RESULTS**

A cultural resources survey was conducted on 21 August 2017. One review area was established within the proposed JM Preston Unit #3H and #4H Access Road ROW in the vicinity of a single unnamed tributary (see Figure 8-1). Results of the review area survey are discussed in detail below.



### **8.2.1 Review Area 1**

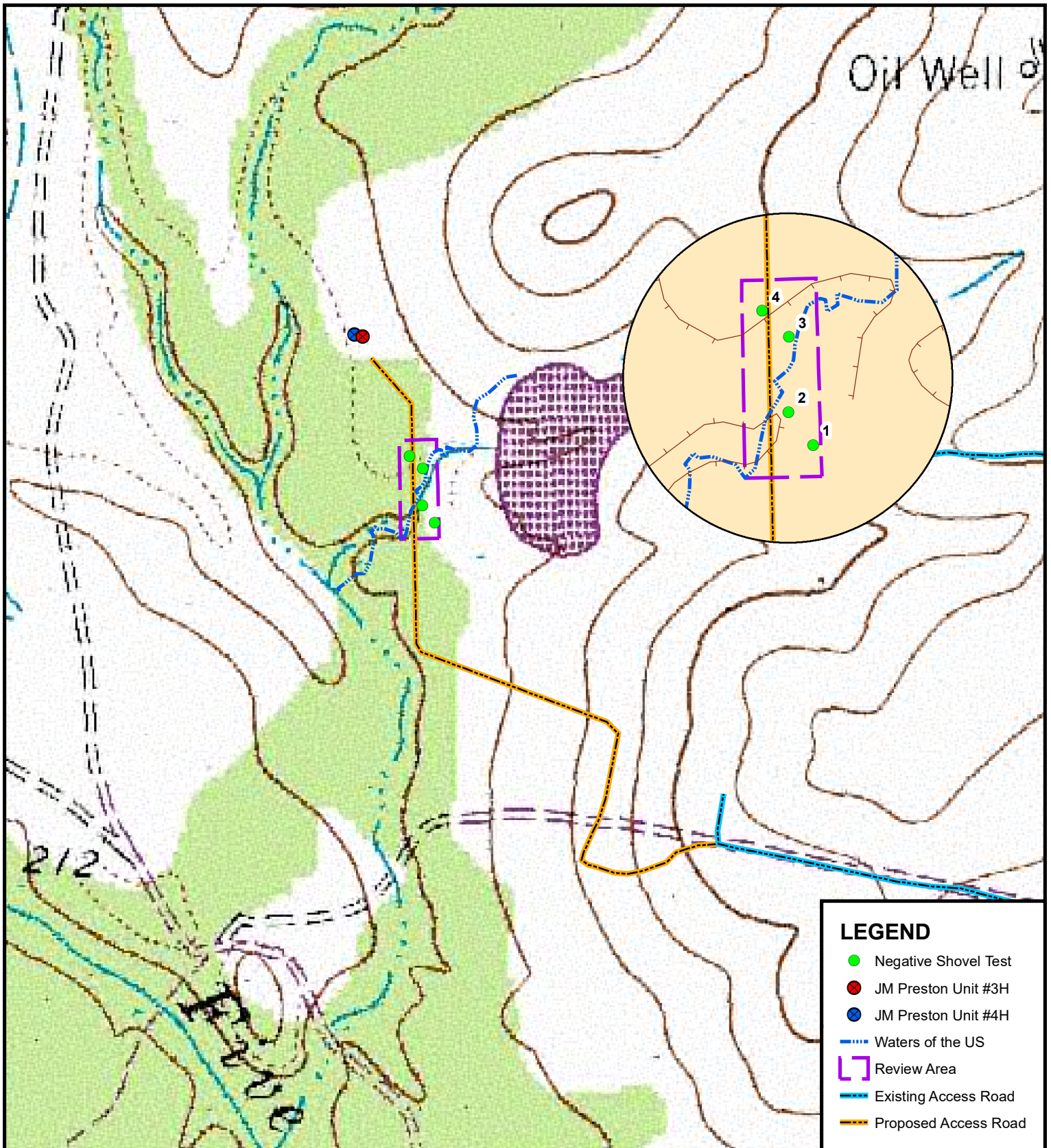
The review area was established along the proposed ROW in the vicinity of a single unnamed tributary of Five Mile Creek. The stream was well-channelized in the vicinity of the proposed ROW (Photos 8-1 and 8-2). Vegetation within the ROW consisted of mesquite, cedar elm, prickly pear, and various forbs and grasses (Photo 8-3). Surface visibility within the review area was excellent averaging between 30 and 80 percent (Photo 8-4). No cultural materials were observed within the review area during the surface survey.

Four shovel tests were conducted within the review area in an effort to locate subsurface deposits in the vicinity of the unnamed tributary (see Figure 8-1). Shovel tests produced silt loam overlying argillic clay throughout the review area. Tests were excavated between 10 and 24 inches (25 and 60 cm) below ground surface. All the shovel tests conducted within the review area yielded negative results (Table 8-1).

### **8.3 RECOMMENDATIONS**

Goshawk conducted a cultural resources survey, consisting of an intensive surface inspection and the excavation of four shovel tests, JM Preston Unit #3H and #4H Access Road APE. No cultural resources were observed on the surface and no artifacts were recovered from shovel testing. It is Goshawk's opinion that construction of the JM Preston Unit #3H and #4H Access Road, as proposed, will cause no impacts to significant cultural resources within the surveyed portion of the APE. Therefore, Goshawk recommends that construction be allowed to proceed as planned. In the unlikely event that cultural resources (including human remains) are discovered, all construction or maintenance activities should be halted immediately and the USACE and an archeologist should be notified.



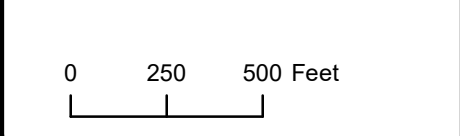


**LEGEND**

- Negative Shovel Test
- JM Preston Unit #3H
- JM Preston Unit #4H
- Waters of the US
- Review Area
- Existing Access Road
- Proposed Access Road

Map Source: USGS, Cheapside, Texas Quadrangle.

Date: 23 August 2017



**Figure 8-1**  
Shovel Test Map  
Gonzales County, Texas

**JM Preston Unit #3H**  
**JM Preston Unit #4H**







Photo 8-1: Unnamed Tributary within Review Area, Facing South



Photo 8-2: Unnamed Tributary within Review Area, Facing North







Photo 8-3: Overview of ROW, Facing Northwest



Photo 8-4: Average Surface Visibility within ROW, Review Area



Table 8-1: JM Preston Unit #3H and #4H Access Road Shovel Test Data (Zone 14, NAD 1983)

Report ST#	ST#	WP#	Easting	Northing	Depth (cm)	Soil Color	Soil Composition	Artifacts
1	JK-1	34	4162153	748358	0-60	Dark Gray	Silt loam	None
					60+	Black	Argillic clay	None
2	JK-2	35	4162172	748344	0-50	Dark Gray	Silt loam	None
					50+	Black	Argillic clay	None
3	JK-3	36	4162216	748344	0-25	Dark Gray	Silt loam	None
					25+	Black	Argillic clay	None
4	JK-4	37	4162231	748329	0-25	Dark Gray	Silt loam	None
					25+	Black	Argillic clay	None

\*2.5 cm = 1 inch





## 9.0 HFS UNIT #1H GAS LIFT ROW

Goshawk conducted a cultural resources survey of the proposed ±475-foot (145-m) HFS Unit #1H Gas Lift ROW in Gonzales County, Texas. One review area was identified within the proposed ROW, based upon the presence of one previously documented archeological site. The cultural resources survey, including shovel testing and surface inspection, was conducted within one review area and totaled approximately 0.5 acres (0.2 ha). The field investigation was conducted by Goshawk archeologist Reign Clark with Bear Aspra on 21 August 2017.

The HFS Unit #1H Gas Lift ROW was located approximately 7.4 miles (11.9 km) north of Westhoff, Texas. The dominant local land use was for rangeland and oil and gas development. The ROW was located on the Cheapside, Texas, United States Geological Survey (USGS) topographic quadrangles (Figure 9-1).

### 9.1 ARCHIVAL RESEARCH

According to the Atlas, there is one previously recorded archeological site (41GZZ01) that falls within 190 feet (58 m) of the proposed HFS Unit #1H Gas Lift ROW. This site is discussed in detail below.

No NRHP-listed properties have been recorded within the proposed ROW. The nearest NRHP-listed property is the Gonzales County Courthouse, located approximately 13.7 miles (22 km) north of the proposed ROW. The ROW is located 2.4 miles (3.9 km) west the Cuero I National Register District (NRD). Designated in 1974, the Cuero I NRD encompasses 580,000 acres (234,718 ha) along the Guadalupe River Basin. It was created to define and preserve cultural resources in a region threatened by a proposed reservoir. The work, conducted in 1972 to 1973, resulted in the documentation of 352 significant prehistoric and historic sites spanning 9,000 years. The sites ranged in age from Late Paleoindian to early Anglo-American settlements that date to the 1820s to the 1830s.

#### 9.1.1 Site 41GZZ01

Site 41GZZ01 was recorded as an undifferentiated prehistoric lithic scatter in 1994 by SWCA archeologists during TEC/MIDTEXAS pipeline survey. The site was measured at 820 feet (250 m) north to south by 1,280 feet (390 m) east to west. Fourteen shovel tests conducted by SWCA indicated there was no more than 4 inches (10 cm) of depth to the deposit. Approximately 150 flakes of chert and silicified wood (including palmwood) were documented by the surveyors. The artifacts were predominantly secondary cortex flakes, with a lesser number of primary and tertiary flakes. Some shatter and tested cobbles were observed, as well as one chert drill-tip, one quartzite mano, one quartzite hammerstone and about 15 core fragments. No surface artifacts were collected nor was any fire-cracked rock observed. Abundant raw material is available on site in the form of a shallowly buried gravel deposit. This is evidenced by an examination of the fence line and road erosional areas. It was initially determined the site had potential but required further testing to determine its eligibility for inclusion to the NHRP or designation as a SAL (THC 2017b).

### 9.2 SURVEY RESULTS

A cultural resources survey was conducted on 21 August 2017. One review area was established within the proposed HFS Unit #1H Gas Lift Line ROW, near previously recorded archeological site



41GZ201. The northern terminus of the proposed ROW is located only 190 feet (58 m) from the southern edge of site 41GZ201. Results of the review area survey are discussed in detail below.

### **9.2.1 Review Area**

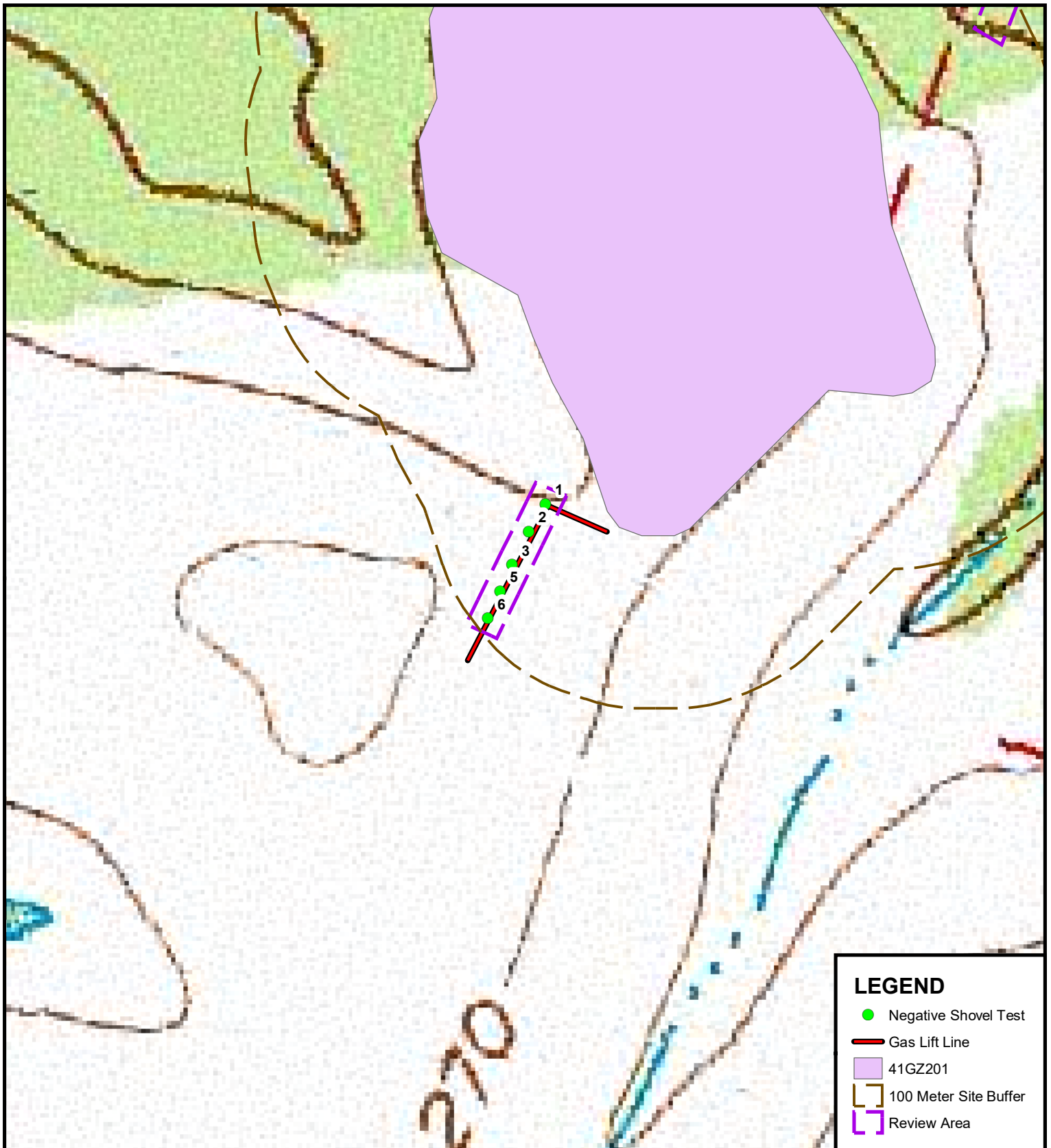
The review area was established along the proposed ROW within a 984-foot (300-m) due diligence radius of previously documented archeological site 41GZ201. Sparse grasses and a few forbs were the only vegetation across the review area. Surface visibility within the review area was excellent averaging 80 percent (Photos 9-1, 9-2, and 9-3). No cultural materials were observed within the review area during the surface survey.

Five shovel tests were conducted within the review area in an effort to locate subsurface deposits associated with site 41GZ201 (see Figure 9-1). Shovel tests produced disturbed clay and caliche associated with reclaimed well pad throughout the review area. Tests were excavated between 2 and 6 inches (5 and 15 cm) below ground surface. All the shovel tests conducted within the review area yielded negative results (Table 9-1).

### **9.3 RECOMMENDATIONS**

Goshawk conducted a cultural resources survey, consisting of an intensive surface inspection and the excavation of five shovel tests, within the HFS Unit #1H Gas Lift Line APE. No cultural resources were observed on the surface and no artifacts were recovered from shovel testing. It is Goshawk's opinion that construction of the HFS Unit #1H Gas Lift Line, as proposed, will cause no impacts to significant cultural resources within the surveyed portion of the APE. Therefore, Goshawk recommends that construction be allowed to proceed as planned. In the unlikely event that cultural resources (including human remains) are discovered, all construction or maintenance activities should be halted immediately and the USACE and an archeologist should be notified.



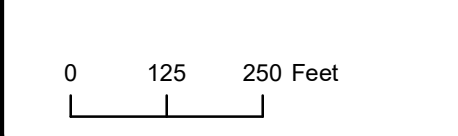


**LEGEND**

- Negative Shovel Test
- Gas Lift Line
- 41GZ201
- 100 Meter Site Buffer
- Review Area

Map Source: USGS, Cheapside, Texas Quadrangle.

Date: 15 February 2018



**Figure 9-1**  
Shovel Test Map  
Gonzales County, Texas

**HFS Unit #1H Gas Lift**

**eog resources**







Photo 9-1: Review Area and ROW, Facing Northeast Toward site 41GZ201



Photo 9-2: Review Area and ROW, Facing Southwest





Photo 9-3: Average Surface Visibility within Review Area and ROW



Table 9-1: HFS Unit #1H Gas Lift Line Shovel Test Data (Zone 14, NAD 1983)

Report ST#	ST#	WP#	Easting	Northing	Depth (cm)	Soil Color	Soil Composition	Artifacts	Comments
1	JK-1	42	4163934	749710	0-5	Black	Clay/Caliche	None	Reclaimed pad
2	JK-2	43	4163918	749700	0-5	Black	Clay	None	None
3	JK-3	44	4163899	749690	0-5	Black	Clay	None	None
4	JK-4	45	4163884	749683	0-15	Black	Clay	None	None
5	JK-5	46	4163868	749676	0-10	Black	Clay	None	None

\*2.5 cm = 1 inch





## **10.0 LYNCH UNIT #17H AND #18H ACCESS ROAD ROW**

Goshawk conducted a cultural resources survey of the proposed ±3,145-foot (959-m) Lynch Unit #17H and #18H Access Road ROW in Karnes County, Texas. One review area was identified within the proposed ROW, based upon the presence of one potentially regulated WATERS. The cultural resources survey, including shovel testing and surface inspection, was conducted within one review area and totaled approximately 0.4 acre (0.2 ha). The field investigation was conducted by archeologist Phil Schoch with Bear Aspra on 30 August 2017.

The Lynch Unit #17H and #18H Access Road was located approximately 4.4 miles (7.1 km) north-southeast of Gillett, Texas. The dominant local land use was for rangeland and oil and gas development. The ROW was located on the Garfield, Texas, United States Geological Survey (USGS) topographic quadrangles (Figure 9-1).

### **10.1 ARCHIVAL RESEARCH**

According to the Atlas, there are no previously recorded archeological sites within the proposed Lynch Unit #17H and #18H Access Road ROW. The nearest recorded archeological site (41KA181) is located approximately 1.5 miles (2.4 km) west-southwest of the proposed ROW.

No NRHP-listed properties have been recorded within the proposed ROW. The proposed access road is located approximately 12.5 miles (20.1 km) northeast of the Panna Maria National Register District (NRD). Designated in 1976, the Panna Maria NRD encompasses 24,000 acres (9,713 ha), inclusive of the town of Panna Maria. This NRD represents an historic Polish community. No NRHP properties have been recorded within 1.2 miles (1.9 km) of the proposed Flowlines. According to the Atlas, the John Ruckman house is the nearest NRHP-listed property, located in the town of Helena, Texas, approximately 10.3 miles (16.6 km) south-southwest of the ROW.

#### **10.1.1 Site 41KA181**

Site 41KA181 was recorded by Goshawk archeologists in 2012 as part of the Alton Crude Gathering Pipeline Project. The site was initially recorded as an historic farmstead and diffuse prehistoric campsite. The site was located on an upland terrace, south of a caliche road and measured 207 feet (63 m) east to west by 223 feet (68 m) north to south. The historic site component included one historic building of unknown use and a chicken coop. The prehistoric artifacts included one flake, burned rock, and one tested cobble.

The historic artifact assemblage included sherds of coarse earthenware, stoneware, refined earthenware, and decorated and undecorated porcelain. The glass assemblage included, clear, amethyst, brown, aqua, blue, and milk glass shards. Other historic-aged materials included a Model A Ford, farm machinery, composite button, hinges, wires, part of a jack, part of a trowel or shovel blade, nails, and a harness buckle. The initial evaluation concluded that further investigation was needed to determine the site's eligibility for designation as a SAL or listing on the NRHP (THC 2017b).



## 10.2 SURVEY RESULTS

A cultural resources survey was conducted on 30 August 2017. One review area was established within the proposed Lynch Unit #17H and #18H Access Road ROW in the vicinity of a single unnamed tributary. Results of the review area survey are discussed in detail below.

### **10.2.1 Review Area**

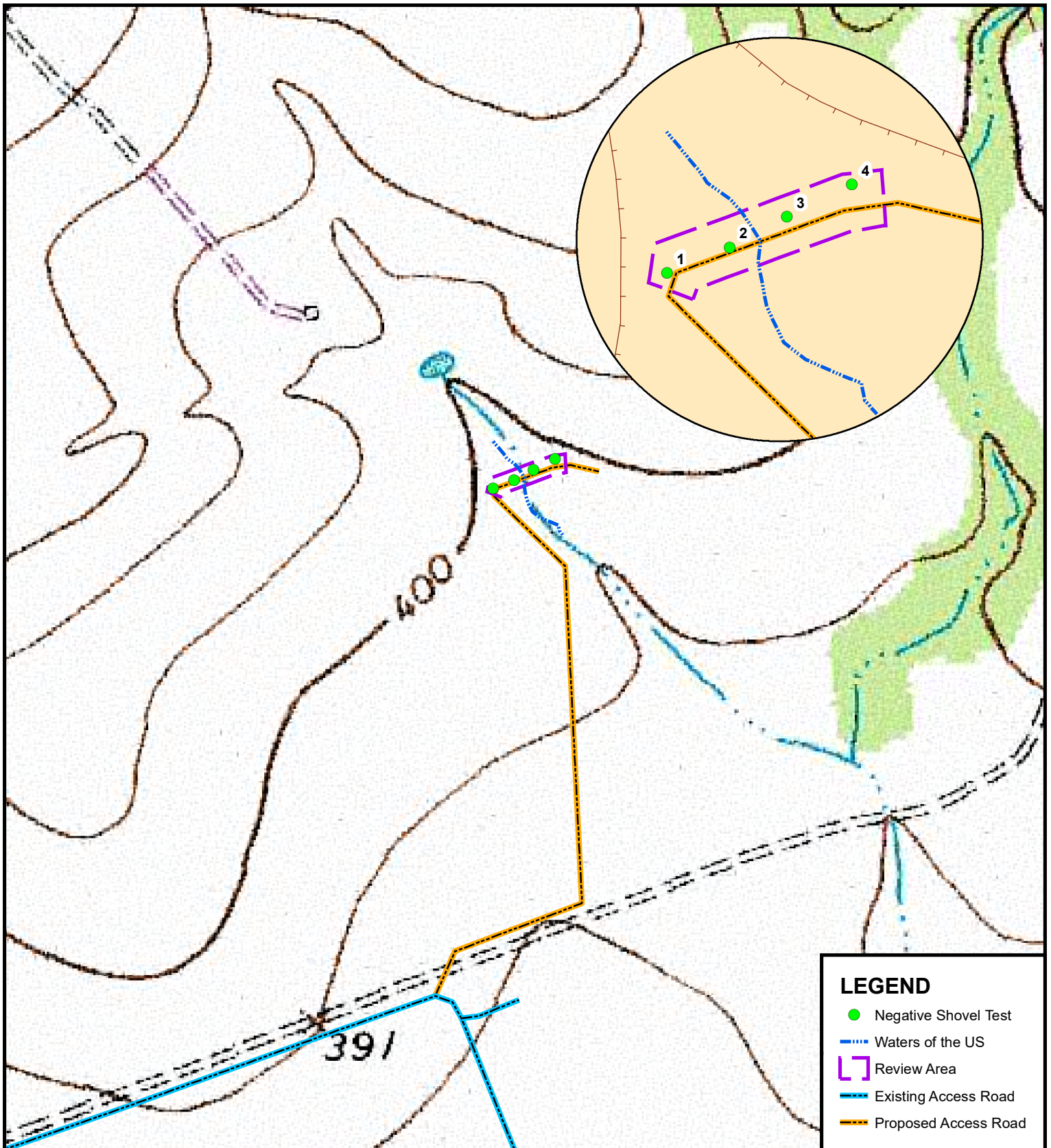
The review area was established along the proposed ROW in the vicinity of a single unnamed tributary of Dry Ecleto Creek. The stream was poorly channelized in the vicinity of the proposed ROW (Photos 10-1 and 10-2). Vegetation within the ROW consisted of mesquite, cedar elm, prickly pear, and various forbs and grasses (Photo 10-3). Surface visibility within the review area was very poor due to dense grasses and averaged around 0 percent (Photo 10-4). No cultural materials were observed within the review area during the surface survey.

Four shovel tests were conducted within the review area in an effort to locate subsurface deposits in the vicinity of the unnamed tributary (Figure 10-1). Shovel tests produced black clays throughout the entire review area. Tests were excavated to 12 inches (30 cm) below ground surface. All the shovel tests conducted within the review area yielded negative results (Table 10-1).

## 10.3 RECOMMENDATIONS

Goshawk conducted a cultural resources survey, consisting of an intensive surface inspection and the excavation of four shovel tests, within the Lynch Unit #17H and #18H Access Road APE. No cultural resources were observed on the surface and no artifacts were recovered from shovel testing. It is Goshawk's opinion that construction of the Lynch Unit #17H and #18H Access Road, as proposed, will cause no impacts to significant cultural resources within the surveyed portion of the APE. Therefore, Goshawk recommends that construction be allowed to proceed as planned. In the unlikely event that cultural resources (including human remains) are discovered, all construction or maintenance activities should be halted immediately and the USACE and an archeologist should be notified.





**LEGEND**

- Negative Shovel Test
- - - Waters of the US
- - - Review Area
- Existing Access Road
- - - Proposed Access Road

Map Source: USGS, Garfield, Texas Quadrangle.

Date: 31 August 2017

0      250      500 Feet

**Figure 10-1**  
Shovel Test Map  
Karnes County, Texas

Lynch Unit #17H  
Lynch Unit #18H

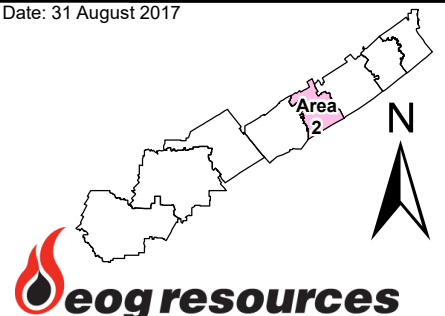






Photo 10-1: Stream Crossing within Proposed ROW, Facing North



Photo 10-2: Stream Crossing within Proposed ROW, Facing south







Photo 10-3: Typical View of Proposed ROW, Facing West



Photo 10-4: Ground Surface Visibility within ROW.



Table 10-1: Lynch Unit #17H and #18H Access Road Shovel Test Data (Zone 14, NAD 1983)								
ST#	WP#	Northing	Easting	Depth (cm)	Soil color	Soil composition	Artifacts	Comments
PS1	9	723149	4139217	0-30	Black	Clay	N	Soft clay and moist due to recent rains
PS2	10	723173	4139226	0-10	Black	Loamy clay	N	First layer loose and friable
				10-30	Black	Clay	N	Dense clay 2nd layer
PS3	11	723195	4139238	0-30	Black	Clay	N	Dense black clay
PS4	12	723220	4139251	0-30	Black	Clay	N	Dense black clay

\*2.5 cm = 1 inch





## **11.0 ZIMMERMAN-HB-ANNIE-MARTIN GAS LIFT LINE ROW**

Goshawk conducted a cultural resources survey of the proposed  $\pm 9,380$ -foot (2,859-m) Zimmerman-HB-Annie-Martin Gas Lift Line ROW in Gonzales County, Texas. Four review areas were identified within the proposed ROW, based upon the presence of four potentially regulated WATERS. The cultural resources survey, including shovel testing and surface inspection, was conducted within four review areas and totaled approximately 2.2 acres (0.9 ha). The field investigation was conducted by archeologist Phil Schoch with Bear Aspra on 30 August 2017.

The Zimmerman-HB-Annie-Martin Gas Lift Line ROW was located approximately 3.3 miles (5.3 km) west of Shiner, Texas. The dominant local land use was for rangeland and oil and gas development. The ROW was located on the Shiner and Hamon, Texas, United States Geological Survey (USGS) topographic quadrangles (Figure 11-1).

### **11.1 ARCHIVAL RESEARCH**

According to the Atlas, there are no previously recorded archeological sites within the proposed Zimmerman-HB-Annie-Martin Gas Lift Line ROW. The nearest site (41GZ236) is located 1.8 miles (2.9 km) west-northwest of the proposed ROW.

No NRHP-listed properties have been recorded within the proposed ROW. The nearest NRHP-listed property is the Saints Cyril and Methodius Church, located approximately 4.3 miles (6.9 km) east of the proposed ROW, located in Shiner, Texas. The ROW is located within the Cuero I National Register District (NRD). Designated in 1974, the Cuero I NRD encompasses 580,000 acres (234,718 ha) along the Guadalupe River Basin. It was created to define and preserve cultural resources in a region threatened by a proposed reservoir. The work, conducted in 1972 to 1973, resulted in the documentation of 352 significant prehistoric and historic sites spanning 9,000 years. The sites ranged in age from Late Paleoindian to early Anglo-American settlements that date to the 1820s to the 1830s.

#### **11.1.1 Site 41GZ236**

Site 41GZ236 was recorded in 2011 as part of the Koska Farm Project, and was documented as an early twentieth-century historic structure. This site was located on a terrace south of CR 360. The site measured 131 by 131 feet (40 by 40 m) and contained three features, a residential structure, an outhouse, and a hand-dug well. The residential structure measured 24 by 19 feet (7.3 by 5.8 m). The structure was a gabled roof single-room bungalow which included a single-bay garage. It was noted that the site represented a common turn-of-the-century farmstead. The outhouse was located to the east of the residential structure and the hand-dug well was located to the north of the residential structure. The initial evaluation concluded that the site was not eligible for designation as a SAL or listing on the NRHP (THC 2017b).

### **11.2 SURVEY RESULTS**

A cultural resources survey was conducted on 30 August 2017. Four review areas were established within the proposed Zimmerman-HB-Annie-Martin Gas Lift Line ROW. The review area was established within the proposed ROW, along Rocky Creek and three of its unnamed tributaries. The results of the survey are presented below.



### **11.2.1 Review Area 1**

Review Area 1 was established at a crossing of an unnamed tributary of Rocky Creek. Channelization of the tributary was very good within the review area (see Photo 11-1). Vegetation within the review area was dense, consisting of cedar elm, hackberry, mustang grape, Texas persimmon, and various other shrubs and grasses (Photo 11-3). Surface visibility within the review area was poor, averaging less than 5 percent in most places (Photo 11-4).

Four shovel tests were conducted within the review area and placed in locations most likely to contain intact, temporally stratified deposits (see Figure 11-1). Soils consisted primarily of dense black in situ clays. Shovel tests were excavated to depths between 8 and 12 inches (20 and 30 cm) below the ground surface (Table 11-1). All shovel tests administered within the review area yielded entirely negative results.

### **11.2.1 Review Area 2**

Review Area 2 was established at a crossing of Rocky Creek. Channelization of the tributary was very good within the review area (see Photo 11-2). Vegetation within the review area was dense, consisting of cedar elm, hackberry, mustang grape, Texas persimmon, and various other shrubs and grasses (see Photo 11-3). Surface visibility within the review area was poor, averaging less than 5 percent in most places (see Photo 11-4).

Four shovel tests were conducted within the review area and placed in locations most likely to contain intact, temporally stratified deposits (see Figure 11-1). Soils consisted primarily of dense dark brown or black in situ clays. Shovel tests were excavated to depths between 8 and 12 inches (20 and 30 cm) below the ground surface (see Table 11-1). All shovel tests administered within the review area yielded entirely negative results.

### **11.2.1 Review Area 3**

Review Area 3 was established at a crossing of an unnamed tributary of Rocky Creek. Channelization of the tributary was good within the review area. Vegetation within the review area was dense, consisting of cedar elm, hackberry, mustang grape, Texas persimmon, and various other shrubs and grasses (see Photo 11-3). Surface visibility within the review area was poor, averaging less than 5 percent in most places.

Four shovel tests were conducted within the review area and placed in locations most likely to contain intact, temporally stratified deposits (see Figure 11-1). The slope northwest of the of the tributary was disturbed with heavy deposits of rock and caliche gravel. Soils consisted primarily of disturbed yellow brown gravelly clays or black in situ clays. Shovel tests were excavated to depths between 2 and 8 inches below the ground surface (see Table 11-1). All shovel tests administered within the review area yielded entirely negative results.

### **11.2.1 Review Area 4**

Review Area 4 was established at a crossing of an unnamed tributary of Rocky Creek. Channelization of the tributary was good within the review area. Vegetation within the review area was dense, consisting of cedar elm, hackberry, mustang grape, Texas persimmon, and various other



shrubs and grasses (see Photo 11-3). Surface visibility within the review area was poor, averaging less than 5 percent in most places.

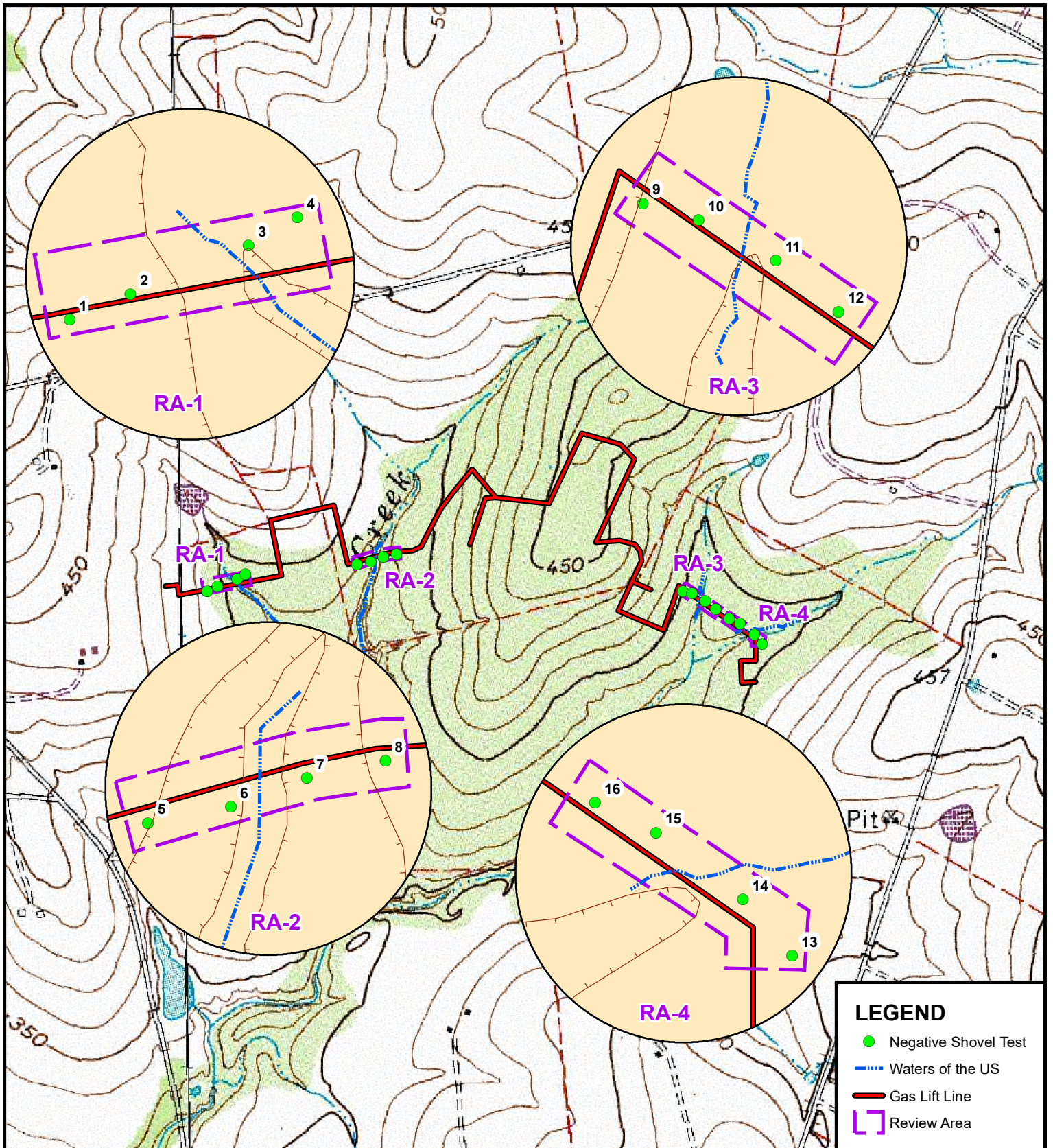
Four shovel tests were conducted within the review area and placed in locations most likely to contain intact, temporally stratified deposits (see Figure 11-1). The slope southeast of the of the tributary was disturbed with heavy deposits of rock and caliche gravel. Soils consisted primarily of yellowish brown loamy clay or black in situ clays. Shovel tests were excavated to depths between 8 and 10 inches (20 and 25 cm) below the ground surface (see Table 11-1). All shovel tests administered within the review area yielded entirely negative results.

### 11.3 RECOMMENDATIONS

Goshawk conducted a cultural resources survey, consisting of an intensive surface inspection and the excavation of four shovel tests, within the Zimmerman-HB-Annie-Martin Gas Lift Line APE. No cultural resources were observed on the surface and no artifacts were recovered from shovel testing. It is Goshawk's opinion that construction of the Zimmerman-HB-Annie-Martin Gas Lift Line, as proposed, will cause no impacts to significant cultural resources within the surveyed portion of the APE. Therefore, Goshawk recommends that construction be allowed to proceed as planned. In the unlikely event that cultural resources (including human remains) are discovered, all construction or maintenance activities should be halted immediately and the USACE and an archeologist should be notified.





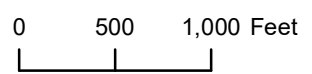


**LEGEND**

- Negative Shovel Test
- Waters of the US
- Gas Lift Line
- Review Area

Map Source:  
USGS, Shiner & Hamon, Texas Quadrangle.

Date: 31 August 2017



**Figure 11-1**  
Shovel Test Map  
Gonzales County, Texas

Zimmerman Unit  
HB Unit  
Annie Unit  
Martin Unit

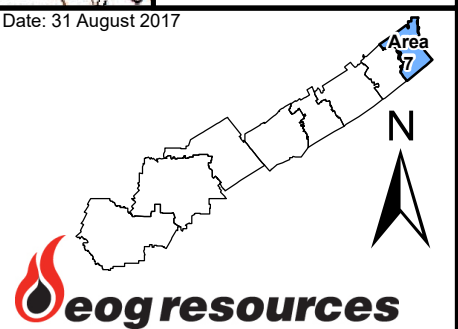






Photo 11-1: Dry Ecletto Creek within Proposed ROW, Facing Southwest



Photo 11-2: Dry Ecletto Creek within Proposed ROW, Facing North







Photo 11-3: Typical Vegetation within ROW, Facing North



Photo 11-4: Average Surface Visibility within the ROW





Table 11-1: Schneider Unit #8H and #9H Flowlines Shovel Test (14 NAD 1983)									
Report Name	ST#	WP#	Easting	Northing	Depth (cm)	Soil color	Soil composition	Artifacts	Comments
1	KF1	26	623370	3216704	0-70	Dark brown	Sandy clay loam	None	Soft, wet soil; organics
					70-80	Black	Clay	None	
2	KF2	27	623394	3216698	0-60	Dark brown	Sandy clay loam	None	Heavy roots 0-20 cm
					60-70	Black	Clay	None	
3	KF3	28	623427	3216704	0-40	Light brown	Sandy clay loam	None	Heavy roots throughout
					40-70	Black	Sandy clay loam	None	
					70-90	Pale brown	Sandy clay	None	
4	KF4	29	623444	3216701	0-30	Dark brown	Clay	None	

\*2.5 cm = 1 inch



## 12.0 DISCUSSION

The goal of the cultural resource surveys was not only to locate and record sites, but to provide conclusions and site recommendations based on NRHP criteria of significance (36 CFR 60.4), and the requirements of Section 106 and 36 CFR 800. According to the NRHP “The quality of significance in American history, architecture, archeology, engineering, and culture is present in district, sites, materials, workmanship, feeling, and association that:

- a. are associated with events that have made a significant contribution to the broad patterns of our history;
- b. are associated with the lives of persons significant in our past;
- c. embody distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
- d. have yielded, or may be likely to yield, information important in prehistory or history.”

## 13.0 CONCLUSIONS AND RECOMMENDATIONS

During August 2017 Goshawk conducted seven cultural resources surveys within the Eagle Ford Play, Central Eagle Ford Zone. The projects subjected to cultural resources investigation included the proposed Dio Unit #16H, #17H, #18H, #19H, and #20H Flowlines right-of-way (ROW); Marek Unit #9H and #11H Flowlines ROW; Crossroads Unit #2H and #3H Flowlines ROW; JM Preston Unit #3H and #4H Access Road ROW; HFS Unit #1H Gas Lift ROW; Lynch Unit #17H and #18H Access Road ROW; and Zimmerman-HB-Annie-Martin Gas Lift Line ROW. During the survey, shovel tests were placed within the review areas near the streams and upon the adjacent slopes and within the proposed ROWs, in the vicinity of previously documented archeological sites. No significant cultural deposits were documented within the survey areas as a result of the shovel testing and surface inspection.

Based on the results of the investigations, it is Goshawk’s opinion that no significant cultural resources will be impacted by construction within the surveyed portions of the APEs. Goshawk recommends that the projects be allowed to proceed as planned, with the caveat that construction be limited to the established, surveyed APEs. In the unlikely event cultural resources (including human remains) are discovered, all construction or maintenance activities should be immediately halted and both the USACE and an archeologist should be notified.



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