



**Cultural Resources Survey  
for the Proposed Angelina  
Gas Facility Meter Site,  
Angelina County, Texas**

Prepared for

**Align Midstream Partners**

Prepared by

**SWCA Environmental Consultants**

SWCA Project No. 48636

SWCA Cultural Resources Report No. 18-082

February 2018

**CULTURAL RESOURCES SURVEY FOR THE PROPOSED  
ANGELINA GAS FACILITY METER SITE, ANGELINA  
COUNTY, TEXAS**

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## **ABSTRACT**

On behalf of Align Midstream Partners (Align), SWCA Environmental Consultants (SWCA) conducted a cultural resources survey for the proposed Angelina Gas Facility Meter Site project. Align proposes to construct a gas metering system adjacent to an existing pipeline corridor, encompassing a project area of approximately 0.25 acres in total. For the purposes of this report, this 0.25-acre area is considered the direct area of potential effect (APE); however, SWCA anticipates that the actual construction footprint will be a reduced area. The indirect APE included all properties which intersect a 1,300-foot buffer beyond the boundary of the direct APE. During the course of archaeological study, a prehistoric site was identified; Align elected to study an additional 0.25-acre survey area 100 feet south of the original locus in order to avoid impacts to the site.

Investigations were conducted in compliance with Section 106 of the National Historic Preservation Act (NHPA) (16 United States Code [USC] 470) and its implementing regulations 36 CFR 800, the Antiquities Code of Texas (9 Texas Administrative Code 191.001-191.174), and the Texas Historical Commission (THC) minimum archaeological survey standards for such projects.

The background literature review revealed that a single cultural resources survey had been conducted within the direct and indirect APE. Only one cultural resource, a Texas Historic Cemetery, has been recorded within 1 mile of the direct APE.

During the archaeological investigation, SWCA identified a single cultural resource (Site 41AG245) within the direct APE. Site 41AG245 consists of four prehistoric artifacts identified within two shovel tests. Artifacts included a partial projectile point and sand-tempered ceramic, both dating to the Late Prehistoric period. As these artifacts were deeply buried and evidence of potential features was identified, SWCA recommends the site as UNDETERMINED for the National Register of Historic Places (NRHP) and recommends further work before eligibility may be determined. As currently designed, Align has elected to move their workspace so that the site area will not be affected. SWCA has recommended that high-visibility fencing be erected in the area to prevent inadvertent impacts to the site.

An historic resources reconnaissance survey was also conducted in order to identify the presence of eligible historic standing structures or properties. No aboveground historic structures or buildings are located within the direct APE. One resource (Resource ID 1) was identified as being of historic age within the indirect APE; however, each is recommended NOT ELIGIBLE for the NRHP as the structure is not exceptional in factors of design, materials, setting, and/or workmanship.

SWCA conducted a non-collection survey; therefore, no cultural materials will be curated. Survey documentation will be held on file at SWCA's office in Houston.

In accordance with Section 106 of the NHPA 36 CFR 800.4 (b)(1), SWCA has made a reasonable and good faith effort to identify significant cultural resources within the APE. Although NRHP eligibility for site 41AG245 is UNDETERMINED, the site will not be impacted because of Align's avoidance measures. As such, SWCA recommends no further cultural resources investigation and a finding of NO HISTORIC PROPERTIES AFFECTED per 36 CFR 800.4(d)(1) and further recommends that the project be allowed to proceed.

## CONTENTS

<b>Abstract</b> .....	<b>i</b>
<b>Contents</b> .....	<b>ii</b>
<b>Appendices</b> .....	<b>iii</b>
<b>Figures</b> .....	<b>iii</b>
<b>Tables</b> .....	<b>iii</b>
<b>Management Summary</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>1</b>
Project Description.....	1
<b>Environmental Setting</b> .....	<b>3</b>
Physiographic Region .....	3
Geology.....	3
Soils.....	3
Flora and Fauna.....	3
<b>Cultural Setting</b> .....	<b>5</b>
Prehistoric Cultural Setting.....	5
Paleoindian Period .....	5
Archaic Period .....	6
Formative Period.....	7
Caddo Period.....	9
Historic Cultural Setting .....	12
Historic Period .....	12
Modern Period .....	14
<b>Methodology</b> .....	<b>16</b>
Background Review Methods .....	16
Archaeological Field Survey Methods.....	16
Historic Resources Reconnaissance Survey Methods.....	16
Curation.....	17
<b>Results of Investigations</b> .....	<b>18</b>
Results of Background Review .....	18
Previous Investigations .....	18
Previously Recorded Cultural Resources.....	18
Potential Cultural Resources.....	18
Results of Archaeological Field Survey.....	20
Site 41AG245 (SC-01).....	22
Results of Historic Resources Reconnaissance Survey.....	25
Resource ID 1 .....	27
<b>Summary and Recommendations</b> .....	<b>29</b>
<b>References</b> .....	<b>30</b>

## APPENDICES

- Appendix A. Shovel Test Log
- Appendix B. Avoidance Commitment

## FIGURES

Figure 1. Project location map. ....	2
Figure 2. Previous surveys and cultural resources adjacent to the project. ....	19
Figure 3. Overview of the project area archaeological survey, near shovel test SC-C01, facing north. ....	20
Figure 4. Archaeological survey results. ....	21
Figure 5. Overview of site 41AG245, view facing north. ....	22
Figure 6. Sketchmap of site 41AG245. ....	23
Figure 7. Representative artifacts recovered from site 41AG245: sand tempered ceramic (left) and Late Prehistoric projectile point (right). ....	24
Figure 8. Historic resources reconnaissance survey and results. ....	26
Figure 9. Resource ID 1a and 1b, facing southwest. ....	27
Figure 10. Resource ID 1c, facing southwest. ....	28

## TABLES

Table 1. Summary of historic-age resources within the indirect APE. ....	25
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## **MANAGEMENT SUMMARY**

**Project Title.** Cultural Resources Survey for the Proposed Angelina Gas Facility Meter Site, Angelina County, Texas

**SWCA Project Number.** 48636

**Project Description.** On behalf of Align Midstream Partners (Align), SWCA Environmental Consultants (SWCA) conducted a cultural resources investigation for the proposed Angelina Gas Facility Meter Site project, located approximately 5.5 miles northeast of Lufkin, Texas. The original proposed project area measured approximately 0.25 acres. However, due to the presence of a prehistoric site within the project area, an additional 0.25-acre site was surveyed. The indirect area of potential effects (APE) included all properties intersected by a 1,300-foot buffer beyond the boundary of the direct APE. The present investigation included a background review, archaeological survey, and an historic resources reconnaissance survey.

**Number of Acres Surveyed.** 0.5 acres

**Principal Investigator.** Todd L. Butler

**Dates of Work:** January 24, 2018

**Purpose of Work:** Investigations were conducted in compliance with Section 106 of the National Historic Preservation Act (NHPA) (16 United States Code [USC] 470) and its implementing regulations 36 CFR 800, the Antiquities Code of Texas (9 Texas Administrative Code 191.001-191.174), and the Texas Historical Commission (THC) minimum archaeological survey standards for such projects.

**Number of Sites.** One prehistoric archaeological site (41AG245) was identified within the direct APE and one historic-age property (Resource ID 1) was identified within the indirect APE.

**Eligibility.** Site 41AG245 included deeply-buried, diagnostic material and possible evidence of features. As such, the site is UNDETERMINED and further work is recommended. Align has moved their project workspace and will erect high-visibility fencing to prevent inadvertent impacts to the site. Resource ID 1 is recommended NOT ELIGIBLE for the NRHP as the structure is not exceptional in factors of design, materials, setting, and/or workmanship

**Curation.** SWCA conducted a non-collection survey; therefore, no cultural materials will be curated. Original survey documentation held on file at SWCA's Houston office.

**Comments.** In accordance with Section 106 of the NHPA 36 CFR 800.4 (b)(1), SWCA has made a reasonable and good faith effort to identify significant cultural resources within the APE. Although NRHP eligibility for site 41AG245 is UNDETERMINED, the site will not be impacted because of Align's avoidance measures. As such, SWCA recommends no further cultural resources investigation and a finding of NO HISTORIC PROPERTIES AFFECTED per 36 CFR 800.4(d)(1) and further recommends that the project be allowed to proceed

## **INTRODUCTION**

On behalf of Align Midstream Partners (Align), SWCA Environmental Consultants (SWCA) conducted a cultural resources investigation for the proposed Angelina Gas Facility Meter Site project in Angelina County, Texas.

Investigations were conducted in compliance with Section 106 of the National Historic Preservation Act (NHPA) (16 United States Code [USC] 470) and its implementing regulations 36 CFR 800, the Antiquities Code of Texas (9 Texas Administrative Code [TAC] 191.001-191.174), and the Texas Historical Commission (THC) minimum archaeological survey standards for such projects.

A background research and literature review was completed for the project and surrounding area. Additionally, SWCA archaeologists conducted an intensive archaeological survey and an SWCA architectural historian conducted an historic resources reconnaissance survey in order to identify the presence of eligible historic standing structures or properties.

Todd L. Butler served as Principal Investigator for the project. The report was prepared by archaeologist C. Wesley Mattox and architectural historian Hannah Curry-Shearouse. Steve Cummins conducted the field component of the archaeological survey and Hannah Curry-Shearouse conducted the historic resources survey. Geographic information systems (GIS) support was provided and report graphics were prepared by GIS specialist Colleen Kennedy. The report was edited by Joy Hengst.

## **Project Description**

The proposed Angelina Gas Facility Meter Site is located approximately 5.5 miles northeast of Lufkin, Texas in north central Angelina County (Figure 1). The initial proposed project area measures approximately 200 feet (60.9 m) north-south by 50 feet (15.2 m) east-west for a total of approximately 0.25 acres. During the course of survey, a prehistoric site was identified within the initial proposed project area. Align then moved the project area 100 feet south of the initial location. The new project area maintains the dimensions of the original project area.

For the purposes of this report, both 0.25-acre areas are considered the direct area of potential effect (APE). The indirect APE included all properties that intersect a 1,300-foot buffer beyond the boundary of the direct APE per NRHP and Antiquities Code of Texas requirements for similar projects. At this time, the depth of project impacts is unknown. The project is illustrated on the Redland, Texas, U.S. Geological Survey (USGS) 7.5-minute topographic map.

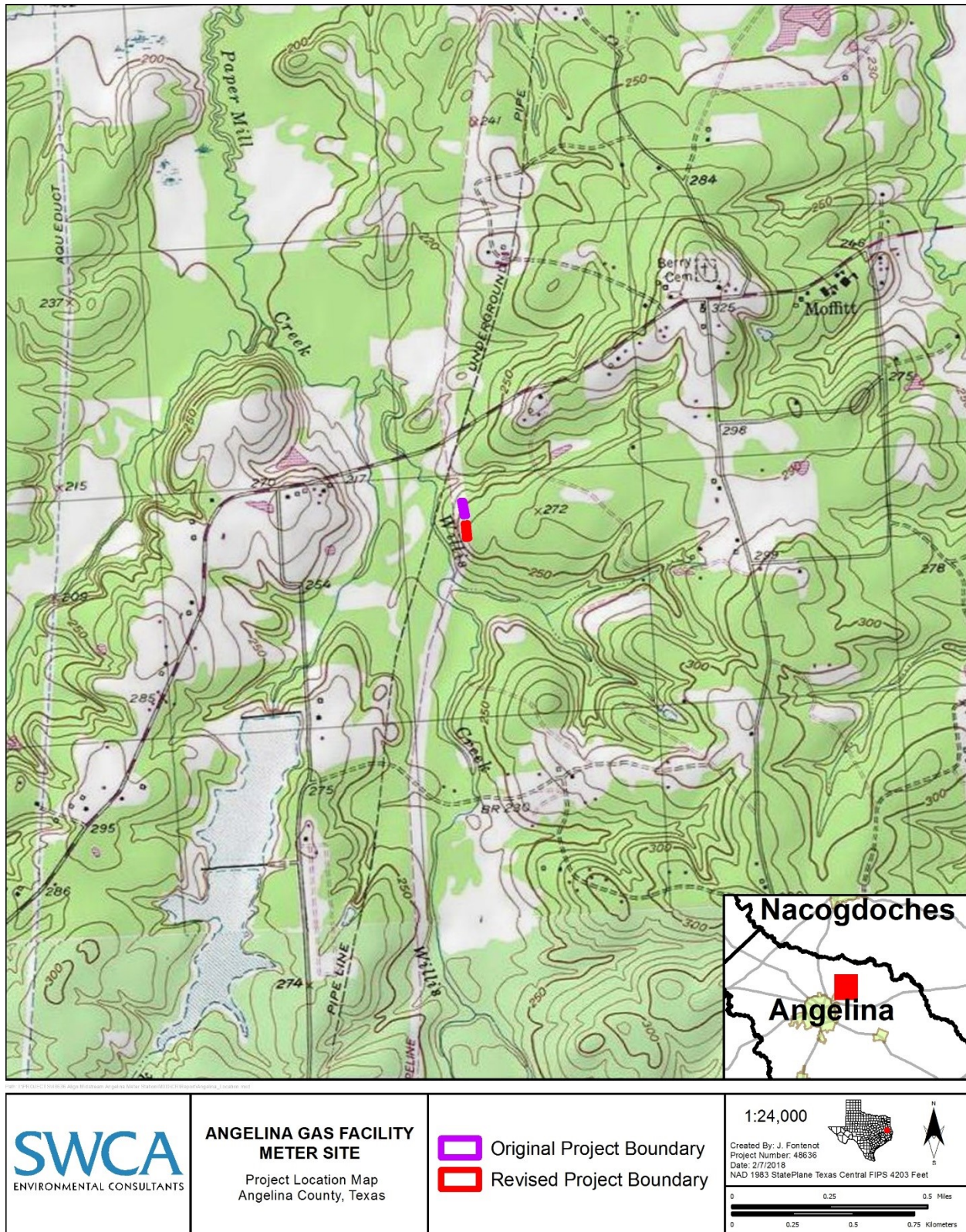


Figure 1. Project location map.



## ENVIRONMENTAL SETTING

### Physiographic Region

The project is located in the Southern Tertiary Uplands sub-section of the South Central Plains ecoregion (Griffith et al. 2007). The Southern Tertiary Uplands are hillier than the piney Flatwoods region to the south, and are characterized by sandier, better drained soils. Vegetation in the area, historically, consisted of forests of longleaf pine (*Pinus palustris*) with an herbaceous understory dominated by bluestem (*Schizachyrium* spp. and *Andropogon* spp.). The project area is drained by Willie Creek, lying approximately 100 m east of the APE, and which eventually flows into the Angelina River. The project area lies on a toeslope of a low ridge which runs down to the floodplain of Willie Creek, and sits at an elevation of 250 to 260 feet above mean sea level (amsl).

### Geology

Geologically, the project is located on the Eocene-aged Yegua Formation. The Yegua formation contains clay, quartz sand and lignite, with the upper portions of the formation comprised mainly of gray and brown, silty, lignitic clay and the lower portions comprised mostly of fine grained, silty, light gray sand (Barnes 1993).

### Soils

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2018), only one soil complex is mapped within the project area. The Kiethville-Sawtown complex, gently undulating, is composed of an equal representation of Kiethville and Sawtown soils. Kiethville soils are deep, moderately well drained, very slowly permeable soils that formed in loamy sediments of Tertiary age. The soils generally occur on flat or gently sloping uplands on coastal plains. Sawtown series soils are very deep, well drained, moderately permeable, loamy soils found on level stream terraces on the coastal plain. Sawtown soils formed in eolian sediments overlying Tertiary-age clay layers (NRCS 2018).

### Flora and Fauna

The modern vegetative communities differ slightly from past biotic communities (Griffith et al. 2007). Historically, vegetation was dominated by longleaf pine and bluestem woodlands (*Pinus palustris*-*Schizachyrium* spp. and *Andropogon* spp.), but a mosaic of forest types were identified depending on landscape, including shortleaf pine and hardwood forests (*Pinus echinata* and *Quercus* spp.), mixed hardwood-loblolly pine (*Pinus taeda*) forests, and hardwood-dominated forests along streams (Griffith et al. 2007:90). Today, the area is dominated by loblolly (*Pinus taeda*) and shortleaf (*Pinus echinata*) pine plantations.

East Texas contains a variety of fauna that are characteristic of the Austroriparian Biotic Province, a designation defined by Blair (1950). According to Davis and Schmidly (1997), common mammalian fauna found throughout east Texas include the following species: whitetail deer (*Odocoileus virginianus*), gray fox (*Urocyon cinereoargenteus*), ringtail (*Bassariscus astutus*), Virginia opossum (*Didelphis virginiana*), eastern cottontail (*Sylvilagus floridanus*), beaver (*Castor Canadensis*), common raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), deer mouse (*Peromyscus* spp.), and hairy-tailed bat (*Lasiurus* spp.). Prior to the twentieth century, bear were also common in East Texas. The black bear (*Ursus americanus*), once prevalent, is now only very occasionally identified in east Texas (Schmidly 2004:157). The grizzly or brown bear (*Ursus arctos*) was exterminated at the advent of the twentieth century (Schmidly 2004:157, 60).

Avian fauna common or abundant in the Pineywoods of East Texas include, but are not limited to, the following species (Wolf et al. 2001): great blue heron (*Ardea herodias*), cattle egret (*Bubulcus ibis*), turkey vulture (*Cathartes aura*), northern shoveler (*Anas clypeata*), American kestrel (*Falco sparverius*), American coot (*Fulica americana*), killdeer (*Charadrius vociferus*), least sandpiper (*Calidris minutilla*), ring-billed gull (*Larus delawarensis*), mourning dove (*Zenaida macroura*), chimney swift (*Chaetura pelagica*), downy woodpecker (*Picoides pubescens*), scissor-tailed flycatcher (*Tyrannus forficatus*), tufted titmouse (*Baeolophus bicolor*), Carolina wren (*Thryothorus ludovicianus*), ruby-crowned kinglet (*Regulus calendula*), savannah sparrow (*Passerculus sandwichensis*), eastern meadowlark (*Sturnella magna*), ring-necked duck (*Aythya collaris*), pectoral sandpiper (*Calidris melanotos*), purple martin (*Progne subis*), cedar waxwing (*Bombycilla cedrorum*), and pine warbler (*Dendroica pinus*).

Reptilian and amphibian species in the study area include the American toad (*Bufo americanus*), east Texas toad (*Bufo woodhousii velatus*), ornate box turtle (*Terrapene ornata ornata*), American alligator (*Alligator mississippiensis*), coral snake (*Micrurus fulvius tenere*), western cottonmouth (*Agkistrodon piscivorus leucostoma*), and copperhead (*Agkistrodon* spp.) (Mecham 2010).

## CULTURAL SETTING

The project is located within the Deep East Texas archaeological region (Perttula 2004a). Prehistoric Native American settlement in Texas is generally divided into four broad chronological categories: the Paleoindian period (approximately 12,000 B.C. to 6000 B.C.), the Archaic period (approximately 6000 B.C. to A.D. 700), the Formative period (200 B.C. to A.D. 800), and the Late Prehistoric period (beginning approximately A.D. 800 and continuing to European contact circa A.D. 1600). The Archaic period is further divided into four subcategories: Early, Middle, Late, and Formative/Woodland. Likewise, the Late Prehistoric period, dominated in the region by Caddo culture, is subdivided into the Formative, Early, Middle, and Late Caddo periods. The following summary draws heavily from regional sources found in *The Prehistory of Texas* (Perttula 2004b) and a comprehensive regional summary provided by Story (1990) in *The Archaeology and Bioarchaeology of the Gulf Coastal Plain*.

The Historic period, beginning circa A.D. 1600, is marked by the explorations and settlement of Europeans in what is now Texas following the early entradas of Spanish conquistadores and French settlement attempts during the sixteenth and seventeenth centuries. Historic Texas is discussed regionally, in terms of Northeast, Central East, and Southeast Texas.

### Prehistoric Cultural Setting

#### ***Paleoindian Period***

In East Texas, the Paleoindian period (ca. 11,500-8000 years before present [B.P.]) is divided into Early (ca. 11,500-10,000 B.P.) and Late (10,000-8500 B.P.) subperiods (Perttula 2004a:9). Fluted points are the most commonly known markers of the Paleoindian period. Early types include Clovis and Folsom points. Late Paleoindian occupation is generally represented by Dalton, San Patrice, and Scottsbluff, in addition to Plainview and Angostura points (Bousman et al. 2004; Ricklis 2004; Turner et al. 2011).

Few Paleoindian sites have been identified, and of those, none have been systematically excavated in Southeast Texas. Paleoindian projectile points have been primarily identified by surface collections in the region. Paleoindian points have been found in excavated contexts, although these have generally been mixed with materials from later periods. Most have been identified along major stream drainages (Ricklis 2004). It is thought that one factor in the lack of intact Paleoindian sites is due to the submersion of coastal occupations by an increase in sea level and the lack of preservation across older upland areas (Aiuvalasit 2007; Aten 1983). Sea levels did not stabilize until the end of the Middle Archaic period, approximately 5000 B.P. (Aten 1983:157).

Well-studied sites in and around this region include the Domebo Site in Caddo County, Oklahoma; Aubrey Site and Lewisville Lake in North Central Texas; Big Pine Lake Site; Lambs Creek Knoll; and several sites in the Red River drainage, including Murphey and Quince (Fields 1990; Heartfield 1990:72; Journey et al. 1989:15; Perttula 2004b:16; Peter et al. 1991:6). One of the largest local collections of Paleoindian artifacts comes from the McFaddin Beach site, located along the coast in Jefferson County, Texas. Numerous Paleoindian points have been recovered, along with a significant amount of materials from later time periods. Research at the site, however, indicates that artifacts have been re-deposited inland from an unknown location offshore (Brown 2009). As no excavation has been conducted at the site proper, little is known about the lifeways of individuals who utilized these projectile points.

Because no discrete Paleoindian components have been directly excavated in Southeast Texas, there is no direct evidence for Paleoindian subsistence practices. In other parts of Texas and the Southeastern United States, early discoveries of Paleoindian artifacts in conjunction with now-extinct Pleistocene megafauna, such as mastodon and *Bison antiquus*, strongly biased early descriptions of Paleoindian subsistence towards exploitation of big game animals (Bousman et al. 2004:15; Williams and Stoltman 1965). Continued evidence from excavated Paleoindian components outside Southeast Texas suggests that Paleoindian subsistence was more widely varied, though exploitation of big game was certainly a part (Bousman et al. 2004:75; Dunbar and Webb 1996).

One significant line of evidence for understanding Paleoindian lifeways comes from their diagnostic projectile points; across North America, archaeologists have documented consistent Paleoindian use of nonlocal raw materials for stone tool manufacture (Bousman et al. 2004). Most of the recovered points in Southeast Texas are of a high grade lithic material that is scarce or absent in the region, suggesting a widespread movement of peoples and materials over long distances in a highly mobile lifestyle that likely depended on a diverse range of food resources (Ricklis 2004). Due to this high-mobility lifestyle, population densities were likely low and social structure is hypothesized as relatively simple (Ricklis 2004).

### **Archaic Period**

The Archaic Period spans a lengthy period, beginning around 6000 B.C. and ending around 200 B.C. In general, the Archaic Period is one of very strong cultural stability (Peter et al. 1991:6). During this period, a variety of tools and projectile points were developed (Heartfield 1990:74). Good examples of Archaic sites in Northeast Texas include the Jake Martin Site in Upshur County, the Yarbrough Site in Van Zandt County, the Manton Miller Site on the Upper Sulphur River in Delta County, and the Finley Fan Site in Hopkins County (Heartfield 1990:75; Perttula 1995:335).

The Early Archaic Period spans approximately 6000 B.C. to 4000 B.C. There is a lack of well-documented Early Archaic sites in North Central and East Texas, as sites in the region often are not single component sites or are not stratified (Jurney et al. 1989:16; Peter et al. 1991:6). The best excavated transitional Paleoindian to Archaic and Early Archaic sites in the region are the Boat Dock Site, the Summers Site, and the Gore Pit Site (Jurney et al. 1989:17). During the Early Archaic period, populations lived in small groups, making seasonal nomadic rounds. The use of ground stone tools begins in this period and may indicate a more intensive use of plant resources. With regard to other stone tools, points transitioned from fluted, long lanceolate to non-fluted points during the Paleoindian period and then changed to the shorter, corner-notched triangulate shapes seen in the Early Archaic (Jurney et al. 1989:16). Dalton, San Patrice, and Meserve are considered transitional point types and are sometimes included in the Paleoindian Period (Heartfield 1990:72; Jurney et al. 1989:16; Peter et al. 1991:6). Early Archaic point types in North-Central Texas include Big Sandy, Hoxie, Hardin, and others (Jurney et al. 1989:17; Turner et al. 2011).

The Middle Archaic Period spans approximately 4000 B.C. to 2000 B.C. Stone tools and points provide a good basis of cultural distinction in the Middle Archaic. Points increase in size from the Early to Middle Archaic periods and change from corner-notched to side-notched. Point bases transition from expanding stem types to parallel stemmed and finally to the contracting stemmed forms of the Middle and Late Archaic. Central and North Texas point types associated with the Middle Archaic include Pedernales, Bulverde, Travis, Nolan, Wells, Carrollton, and Morrill. Use of the basal notched group of points found in Central and North Texas may have started late in the Early Archaic. Burned rock middens, common in Central Texas during this time, have not been associated with Middle Archaic sites in North-Central Texas. Signs of regionalization are first found at the end of Middle Archaic and continue during the Late Archaic (Jurney et al. 1989:18). The exchange of non-local materials, and finished tools in particular, may have been common in some parts of the region during the Middle Archaic period (Perttula 1995:335).

The Late Archaic spans approximately 2000 B.C. to 200 B.C. Compared to the Early and Middle Archaic, the Late Archaic has more sites overall and more archaeological investigations have been conducted at these sites (Heartfield 1990:74; Journey et al. 1989:19). The increase in the number of Late Archaic sites in Northeast Texas is hypothesized to be the result of increased population densities (Journey et al. 1989:19–20; Nickels et al. 1999:21; Perttula 1995:335). However, western portions of Northeast Texas might have been less populated than other parts of the region (Nickels et al. 1999:21). Populations were probably neither sedentary nor did they occupy sites year-round. Rather, archaeological evidence shows that groups moved within limited geographic areas (Perttula 1995:335). Further evidence of increased regionalization in this period comes from areas such as the upper Trinity River drainages that exhibit increased use of local quartzite to replace non-local chert (Perttula 1995:335). Archaic tool types in North Texas are more varied than in South Texas, and North Texas might have experienced wetter, more hospitable conditions (Journey et al. 1989:19). Late Archaic material culture in Northeastern Texas is associated with the broadly defined LaHarpe Aspect (Johnson 1962; Journey et al. 1989:19). This includes contracting based dart points of which the Gary type is the most common. Other types include Ellis, Elam, Ensor, Godley, Dallas, Lange, Marshall, and the slightly earlier Yarbrough and Trinity types (Journey et al. 1989:19).

### **Formative Period**

The Formative period, also known as the Early Ceramic or Woodland Period, is dated from 200 B.C. to A.D. 800. This period is characterized by increasing sedentism and social complexity as well as by possible increases in population (Story et al. 1990). Technological innovations during this period include the use of ceramics, bow and arrow technology, and experimentation with plant domestication and horticulture.

In Northeast Texas, sedentary or semi-sedentary populations occupied villages and hamlets located on floodplains and terraces of larger streams as well as smaller upland components. The construction of burial mounds containing non-local materials, such as cherts, copper ornaments, ceramics, and marine shells, begins during this period on the Middle Sabine, Angelina, Neches, and Red Rivers (Journey et al. 1989:23; Peter et al. 1991:7). Among the westernmost of these mounds are the Harlig Morgan and Sanders sites. The Sanders Site is in the extreme northwest corner of Lamar County at the mouth of Bois d'Arc Creek, near the Red River (Journey et al. 1989:24). Harlig Morgan (41FN1), in Fannin County, is the farthest west of the mound sites, but it has been destroyed since its documentation (Peter et al. 1991:8). There is evidence for at least limited trading ties with other Middle Woodland groups, and there are similarities between East Texas mounds from this period and the Hopewell and Marksville mounds of the Mississippi Valley (Journey et al. 1989:22–24).

Little evidence of domesticated plant use in the Red River drainage during the Formative period exists; however, a squash rind from Site 41HP137 at Cooper Lake in Hopkins County was radiocarbon dated to 140 +/- 30 B.C. (Journey et al. 1989:20; Peter et al. 1991:7). Despite a lack of direct evidence, the introduction of ceramics in this period may be linked to changes in subsistence and food processing (Journey et al. 1989:22–23). Inhabitants of the Northeast Texas region probably began to rely on horticulture during the Formative period, and intensive maize agriculture may have been introduced by the period's end (Kahl et al. 1999:9–10).

The major technological innovations of the bow and arrow and ceramic containers are associated with the Formative Period (Kahl et al. 1999:9; Nickels et al. 1999:22). The use of ceramics within the region is variable; with some sites (particularly along the Red River) yielding copious numbers of ceramic artifacts while others (notably between the Sulphur and Sabine Rivers) produce far less. Because ceramics are associated with boiled foods (particularly those rich in carbohydrates) and increased sedentism, archaeologists have suggested that sites with high numbers of ceramic artifacts reflect different dietary habits and settlement practices than sites with few ceramics (Perttula 2004b; Skibo and Blinman 1999). Ceramic types tend to be of the Lower Mississippi Valley type and include Tchefuncte Stamped, Churupa Punctated, Marksville Incised, Marksville Stamped, and Troyville Stamped. The ceramics may have been traded, or local potters may have adopted these styles from neighboring groups (Perttula and Bruseth 1995; Schambach 1982).

Early ceramics in Northeast Texas are affiliated with the Fourche Maline Phase (Jurney et al. 1989:24; Schambach 1982). The Fourche Maline cultural tradition is found throughout eastern Oklahoma, southwestern Arkansas, and may extend into parts of North Central and Northeast Texas. Grog-tempered ceramics in the region are likely associated with Fourche Maline tradition whose ceramics are often undecorated, flat-based vessels with flaring sides. Williams Plain, a common Fourche Maline ceramic type, dates prior to A.D. 800 and is almost always associated with pre-Caddoan occupations. The Sanders Site may have a pre-Caddoan component, as it yielded a significant amount of Williams Plain. However, these ceramics were mixed with later material. Sand and grit tempered ceramics, likely associated with the Tchefuncte-related cultures, are generally found in South Texas and southern parts of East Texas (Jurney et al. 1989:22). Some sandy paste ceramic types were identified at the Cooper Lake Project, south of Fannin County (Jurney et al. 1989:24).

Mortuary practices from the Formative period provide more evidence for sedentism. The Hurricane Hill Site along the Sulphur River in western Louisiana has yielded flexed, bundle, and cremation burials in a small burial ground (Perttula 1999). At the Snipes Site (41CP8), shallow extended burials included whole vessels, boatstones, celts, and bifaces used as funerary objects (Schambach 1982). Burial practices at the Hurricane Hill Site, and the Johnny Ford Site across the Red River in Arkansas, are comparable to one another, suggesting shared belief systems among Woodland Period groups (Perttula 2004b). Furthermore, Perttula (2004b) maintains that formally bounded cemeteries at Woodland sites suggest the presence of distinctive social groups based on kinship or residence.

In Southeast Texas and toward the coast, the Ceramic Period, or “Late Cultures” as defined by Story (1990), began roughly 2000 years ago. The earlier manifestations of this period have been otherwise named “Woodland,” as a tribute to certain similarities held with eastern cultures, or “Mossy Grove,” Story’s (1990:256) name for the local manifestation. The Mossy Grove culture or tradition extends from the coast northward through the Neches-Angelina River Basin. A pervasive characteristic of these cultures is the presence of plain sandy-paste ceramics. Kent and Gary points are frequent in the early stages of this period and are eventually displaced by arrow points such as Alba and Catahoula, perhaps as early as A.D. 500 to 600. Subsistence strategies depended on hunting and gathering, with little if any evidence of horticulture. Bison may have been exploited in the few centuries prior to European contact.

The Ceramic Period cultural chronology can be further subdivided in more spatially specific divisions. For the Galveston Bay area, Aten (1983:282–290) identifies six archaeological subdivisions, which are based primarily on ceramic seriation. From early to late, these include the Clear Lake, Mayes Island, Turtle Bay, Round Lake, Old River, and Orcoquisic ceramic styles. The Clear Lake period coincides with the first occurrence of ceramics in the area around A.D. 100 and is most commonly represented by Goose Creek Plain wares, a type that predominates throughout the subsequent Mayes Island and Turtle Bay periods. The Round Lake period is marked by the advent of grog-tempered wares and the near elimination of sandy paste wares (Aten 1983:288). The Old River and historic Orcoquisac (Akokisa) periods witness the return of Goose Creek types. Historic exploration and settlement followed the Formative/Ceramic period in southeast Texas.

### ***Caddo Period***

In the northeastern and east central portions of Texas, the Caddo culture emerged around A.D. 800. Throughout the long study of the Caddo, a number of chronological schemes have been developed. The current study follows the divisions and nomenclature proposed by Story (1990:333–334), which includes a five-part division: Formative Caddoan (A.D. 800–1000), Early Caddoan (A.D. 1000–1200), Middle Caddoan (A.D. 1200–1400), Late Caddoan (A.D. 1400–1680), and Historic Caddoan (A.D. 1680–1860). The Caddo culture, which represents the southwestern-most expression of the Mississippian Tradition, was part of a larger culture area that spanned east Texas and parts of Arkansas, Louisiana, Missouri, and Oklahoma. Compared to other cultures and archaeological complexes of the region, the Caddo culture is among the best understood. This is due in part to the cultural continuity from prehistoric to modern times that provide a continuous archaeological, ethnographic, and historical record. Archaeologists have quite often used contact period accounts by Europeans to understand the archaeological record. After contact, the Caddo remained in Northeast Texas, although drastically reduced in numbers, until they either migrated or were removed (1854) to Oklahoma, where they reformed as a now federally recognized tribe. Like the Woodland period, the Caddoan period is hypothesized to have increasing levels of population, sedentism, and social complexity, including social ranking. The Late Caddo period is further subdivided into five locally distinct community phases within Texas including Angelina, Frankston, McCurtain, Texarkana/Belcher, and Titus.

Sites of the Formative, Early, and Middle Caddo periods are found primarily on elevated landforms (alluvial terraces and rises, natural levees, and upland edges) adjacent to streams, minor tributaries, and spring-fed branches. There was a preference for sandy loam soils, perhaps for the good quality of drainage and fertility. All habitats within the region were used, either intensively via sedentary communities or farmsteads, or periodically through short-term camps for specialized resource exploitation. The economy, which was a mixture of hunting, foraging, and agriculture, supported a complex, hierarchical socioeconomic system symbolically centered on mound structures (Perttula 2004b).

Caddo Period settlement patterns involved a variety of site types ranging in size, intensity, and occupational duration. The smallest sites were periodically used for limited resource exploitation. Medium-size sites included agricultural hamlets and farmsteads occupied by one or more families on a seasonal or permanent basis. The largest sites were permanently occupied villages associated with mounds or mound complexes (e.g., Bruseth 1998; Cliff 1997; Cliff et al. 1996; Cruse 1994, 1995; Largent et al. 1997; Middlebrook 1994, 1997; Perttula et al. 1986; Thurmond 1990a). The George C. Davis Site in Cherokee County is perhaps the most thoroughly understood site of this type in Texas. The site was occupied from ca. A.D. 800 through 1350 and consisted of a village with three mounds. Mounds A and B were flat-topped platform mounds while Mound C was a burial mound that contained 25 to 30 elite ranking burials (Story 1997, 1998, 2000). The Oak Hill Village Site (41RK214) in Rusk County is a non-mound site with 42 circular to rectangular post structures arranged around a central plaza (Rogers and Perttula 1999). There were also extensive middens, a possible granary, and two large circular structures that may have served as public structures (Cruse 1994, 1995; Rogers et al. 1994; Rogers and Perttula 1999).

Caddo subsistence strategies involved a mixture of hunting, foraging, and agriculture. Hunting and gathering activities focused on fish, deer, and other animal species as well as the collection of nuts and tubers. Cultivated foods included native seed, maize, and squash (Perttula and Bruseth 1983). Maize had long been an important food source, but evidence suggests that between A.D. 1100 and it was a horticultural mainstay for nearly all Caddo groups (Burnett 1990; Perttula 1992a:14; Rose et al. 1998). The presence of granaries at some sites indicates that surpluses were common.

Regular food surpluses catalyzed the development of a rich material culture, helped divert labor efforts to the construction of mounds, and supported political hierarchies. The material culture of Formative, Early, and Middle Caddo groups included well-made corner-notched and rectangular stemmed arrow points, siltstone and greenstone celts, perforators and borers, Gahagan bifaces, ceramic earspools, ceramic figurines, and long-stemmed Red River and cigar-shaped ceramic pipes (Hofman 1967; Newell and Krieger 1949).

Mortuary practices reflect both the wealth of material culture and hint at a hierarchy of social statuses. Burials often include grave offerings such as ceramic vessels, carved shell, bone earspools, shell beads, and more (Middlebrook 1994). The mounds and mound complexes are manifestations of an extensive, integrated socioeconomic system. Both temple (flat-topped platform) mounds and burial mounds were built. The larger sites with multiple mounds and attendant villages served as important civic and/or ceremonial loci. These sites emerged after ca. A.D. 900 and are more or less evenly spaced along the Red River, Sabine River, and Big Cypress Bayou. Thurmond (1990b) suggests that this distribution indicates a regional system of interaction and redistribution.

The Late Caddo Period is characterized by a sedentary, agriculturally based complex society led by social elites who lived at mound centers. In the Late Caddo period, the larger Caddo Culture area (covering parts of Missouri, Arkansas, Oklahoma, Louisiana, and Texas) is subdivided into ten phases. Five of these phases are present within Texas: Angelina, Frankston, McCurtain, Texarkana, and Titus. The Belcher Phase is located along the Texas/Louisiana border.

Within the Piney Woods of Texas, the manifestation of the Late Caddo period has been characterized as part of a rural Caddo community system (Perttula 1992a). Settlements tend to be along secondary drainages and are widely dispersed hamlets and farmsteads. The rural community system was part of a hierarchy of interrelated site types. At the base of the hierarchy were the short-term camps used for resource exploitation and the dispersed hamlets and farmsteads. Next in the hierarchy were larger “towns” of linear but dispersed compounds with specialized structures such as brush-covered shelters and storage platforms. At the top of the hierarchy were civic-ceremonial centers with platform and/or burial mounds (Schambach 1983).

Titus Phase sites, located north of the present study area, provide good examples of the sites within the hierarchy. Small settlements covering 0.5 to 4.5 acres (0.2–1.8 hectares) account for 73 percent of the known Titus phase settlements within the Cypress Creek Basin. These small settlements were occupied year-round, but probably for no more than one generation. Structures were usually circular and constructed of poles covered with grass or wattle and daub. The interior of the structures were made of racks and benches for sleeping, and some refuse debris on the unprepared floor. Children tended to be buried beneath house floors. Household refuse was mostly disposed of in designated areas outside of the house. These refuse dumps were either communal or associated with a particular structure. Pits, drying racks, hearths, and armadas/arbors were common exterior features (Thurmond 1990a).

Within the Cypress Creek Basin, large settlements (larger than 4.5 acres [1.8 hectares]) account for only four percent of the sites. The Pilgrim’s Pride site (41CP304), is a well-studied Titus Phase site. Residential areas cover between 5 and 10 acres (2 and 4 hectares). The village consisted of several circular structures, over 100 pit features, refuse deposits, over 20 burials, and an open plaza. Burials were interred in house floors, as well as a planned cemetery that contained 19 burials (Thurmond 1990b).



Mound centers tend to be concentrated along major drainages and are not found in the study area. Mound centers are typically located on the floodplain floor of a major drainage or on an upland projection. Occupations associated with the mound centers are not found on the floodplain floor, but rather are located on rises within the floodplain, terraces, or upland projections (Perttula 2004b). There are three types of Late Caddo period mounds: temple mounds, burial mounds, and fire mounds (Kelley 1998; Webb 1959). Mound centers served civic-ceremonial functions and were presided over by resident social elites. In part, evidence for social ranking comes from burials. High status burials consisted of large shaft tombs with multiple interments, a high percentage of grave offerings with a great number of arrow points and ceramic vessels, and the inclusion of specialty grave offerings such as large Galt-style bifaces. Only males were interred in this manner (Perttula 2004b).

Late Caddo period people buried their dead in a variety of ways. Children in particular were interred beneath house floors (Perttula 2004b), and small family cemeteries were maintained at hamlets, farmsteads, and in the larger settlements. In addition, formally maintained, community, or supralocal cemeteries are extant, with little incidence of burials intruding one upon another. This suggests that the cemeteries were planned and periodically expanded (Perttula 1992b). Family cemeteries contain single, extended interments with graves placed in rows. Graves have a roughly east-west orientation. Grave offerings differ by age and by sex. The fewest number of offerings were included in children's burials while the greatest numbers were buried with adults. Males tended to be buried with clusters of arrow points, while females were buried with polishing stones or ceramic vessels (Thurmond 1990b). Community cemeteries contained individuals from nearby communities. They typically contain 60 to 70 individuals, but some have as many as 150 to 300 individuals (Perttula 1992a; Perttula and Nelson 1998; Story 1990; Turner 1978). At the Tuck Carpenter site (41CP5), 50 kilometers (31 miles) east of the study area and dating from A.D. 1350 to 1550 and the H.R. Taylor site (41HS3) 40 kilometers (25 miles) east of the middle Texas portion of the study area researchers have found evidence for the segregation of graves based on status (Perttula 1992a; Turner 1978).

The material culture of the Late Caddo Period is rich, particularly in decorated ceramics and adorned luxury items. Ceramics from previous periods were heavily influenced by Lower Mississippi Valley traditions. It was not until ca. A.D. 700 to 900 that Caddo ceramics dominated the assemblages of northeastern Texas. Even so, Lower Mississippi Valley styles remained highly influential (Story 1990). There was a plethora of vessel types including bowls, bottles, and jars with a wide variety of shapes, sizes, and embellishment. Caddo pottery makers produced both utility wares and fine wares. Ceramics appear to have had an importance in Caddo life for cooking and serving food and drink, for storing foodstuffs, as personal possessions, and as exemplars of beauty and craftsmanship. Furthermore, Caddo ceramics served as status markers for subgroups within the society (David et al. 1988; Thurmond 1985). The reader is referred to Perttula (2004b) for an overview of Caddo ceramics.

A variety of artifacts have been recovered from Late Caddo period sites. Earspools were made of ceramics and slate, and in one case, they were plated with copper. Elbow and biconical pipes were decorated with incised lines painted with hematite or kaolin clay (Jackson 1933; Turner 1992). Lithic tools and debris are most conspicuous because of their relative scarcity. This probably reflects a shift to utilization of bone and wood for tool manufacture. Chipped stone tools include triangular and corner-notched arrow points, flake tools, drills, and scrapers. Ground stone implements include petaloid and tabular celts, manos and metates, abrading slabs, and battered and polished cobbles and pebbles (Thurmond 1990a; Turner 1992). Bone tools include beamers, punches, awls, pins, and rattles for turtle carapaces. Exotic materials such as lithic raw materials and Gulf Coast shells suggest that trade existed between the Caddo rural communities and the larger population centers. In addition, people of the Caddo Cultural area maintained trade links with horticulturalists in the southwestern U.S., as well as the Southern Plains and the Lower Mississippi Valley (Baugh 1998; Kidder 1998).

## **Historic Cultural Setting**

### ***Historic Period***

Spanish explorers first encountered the rural Caddo communities of northeastern Texas in 1542 when Luis de Moscoso led a group of men attempting to re-enter Mexico following the death of their leader Hernando De Soto (Hudson et al. 1989:78). While a long hiatus then ensued between contacts with Europeans, Caddo culture was affected by the introduction of trade goods and new epidemic diseases. The Central East Texas Region was populated by Caddo groups during the first historical contacts. The Neches-Angelina River Basin was the southernmost major population center of the Caddo—the Red River Basin served as the northern Caddo center. This southern group, designated the Hasinai, or Asinai, typically comprised nine settlements or tribes according to the first historical accounts (Bolton 1987:30). The most prominent of these were the Hainai, Nabadachos, Neches, Nacogdoches, Nacachaus, Nacanos, and Nabitis, collectively forming a confederacy with a number of other allies that were referred to as “Tejas,” “Techas,” or other close variant of the current state name of Texas (Bolton 1987:53–58). Between roughly the 1680s and 1720s, there was a growing recognition of the “Kingdom of the Texas,” and the colonial powers struggled to establish ties to the exclusion of others, in large part to stake territorial claims through settlement.

Among the early efforts at permanent settlement, in February 1685, French explorer Sieur de La Salle led an expedition that entered Matagorda Bay and established Fort St. Louis along Garcitas Creek. La Salle’s men possibly murdered him in present Cherokee County.

The French colony spurred a century of colonial rivalry on the frontier in East Texas and adjacent areas to the north and east. Beginning in 1689, Alonso de Leon led a series of expeditions designed to neutralize the French colony and subsequently to establish a permanent Spanish presence. In the words of De Leon’s official mandate, his objective was to “destroy and flatten all vestiges that remained of the French nation and to extend the reach and favorable influence (of Spain) over all Indians” (as cited in Chipman 1992:88). The natural course of historical events, as noted previously, preempted his mandate, and consequently, efforts turned to establishing a series of missions and presidios.

A series of Spanish expeditions, including De Leon’s in 1689–1690, one led by Domingo Teran de los Rios, the first governor of the province of Texas, in 1691, and a 1716 trek led by Domingo Ramon led to the establishment of missions and presidios in the region. Of particular relevance to the project area, the mission of Nuestra Señora de la Purisima Concepcion and an associated presidio were established on the Angelina River during Ramon’s 1716 expedition. French pressure led to the temporary abandonment of the Cherokee County mission in June 1719, but the Marqués de Aguayo reoccupied the site two years later. The Cherokee County mission was permanently abandoned in 1730, and the Spanish chose to rely on the Nacogdoches County missions and presidio to maintain their presence in the region and to guard the old El Camino Real de los Tejas.

Over the course of these initial expeditions, a route was established that was probably a series of braided trails used since prehistoric times, and which became known as the Camino Real de los Tejas. This trail linked Mexico City with the Spanish colonial capital at Los Adaes (now in Louisiana). The general route was first used by the Spanish following the establishment of missions in East Texas by Domingo Teran de los Rios and Father Damián Massenet in 1691. This trek formally established the Camino Real as a road between colonial capitals.

During the 1820s through the 1830s, the existing Native Americans were joined by displaced Caddo and Cherokee from U.S.-controlled Louisiana, particularly in Nacogdoches County. Settlement of the area by non-Native Americans created tension between American settlers and native peoples. These tensions prompted the Killough Massacre on October 5, 1838. Native Americans massacred members of the Isaac Killough family at their farm northwest of the site of present day Jacksonville in Cherokee County. This incident sparked the Cherokee War of 1839, which resulted in the expulsion of all Native Americans from the Central-East Texas Region (Ross 2016). Native American habitation was effectively ended in 1840, the year the last Caddo settlement in Nacogdoches County was abandoned (Long 2016).

Nacogdoches County became a hotbed of rebellion in the early nineteenth century. Nacogdoches was the target of a filibustering expedition led by Augustus W. Magee and José Bernardo Gutiérrez de Lara. The Gutiérrez-Magee expedition seized control of Nacogdoches on August 12, 1812, and marched to the interior. The rebellion was crushed a year later and Nacogdoches became the scene of a bloody purge (Long 2016; McDonald 1980).

James Long led another filibustering expedition to the area in 1819, and was defeated in October 1821. Most of the American settlers were driven out of Texas, and once again Nacogdoches was left virtually abandoned. Within a few years the town's fortunes began to revive as it was located on one of the principal routes of immigration from the United States, the old El Camino Real, now called Old San Antonio Road. The city developed into a leading entry way for Anglo immigrants seeking their fortunes in Texas (Long 2016; McDonald 1980). The Mexican Government assumed control of the region in 1821 after successfully winning its independence from Spain, and began issuing land grants in the area beginning in the 1820s and 1830s (Biesele 2016; Knapp and Biesele 2016; Long 2016). American immigrants rapidly moved into the region, prompting turbulence with the remaining Native Americans (Ross 2016). Immigration into modern Nacogdoches County also created some disputes over land claims, as Antonio Gil Ibarvo, who led the re-establishment of the settlement at Nacogdoches, gave informal land grants to settlers prior to Anglo-American immigration into the region (Long 2016; McDonald 1980).

Following the passage of the Mexican Colonization Law of 1825 by the state of Coahuila and Texas, two empresario grants were given in the area surrounding Nacogdoches, one to Frost Thorn, a former associate of the trading company of Barr and Davenport, and the other to Haden Edwards, a native of Virginia. Edwards's challenge to the validity of many of the previous Spanish and Mexican land titles alienated many of the older settlers of the region. In 1826, in an effort to assert their claims, Edwards' brother, Benjamin W. Edwards, and some 30 followers rode into Nacogdoches, seized the Old Stone Fort, and declared the independence of Texas. The revolt, which became known as the Fredonian Rebellion, was quickly suppressed by Mexican militia, and the Edwards brothers and the others were forced to flee. The incident, however, did little to stem the tide of Anglo-Americans flooding into the area (Long 2016; McDonald 1980).

Among the main concerns of the Mexican government officials was the illegal entry of foreigners, most passing through Louisiana along the Old San Antonio Road. José de las Piedras, the military official charged with enforcing the law, found that he could do little more than ensure that illegal immigrants not enter Nacogdoches itself. Growing dissatisfaction with the immigration laws and the problem of securing land titles spawned another revolt of the Mexican and Anglo-American populace of the region, culminating in the victory of the antigovernment forces in the battle of Nacogdoches in 1832. Piedras and the other Mexican officials were forced to withdraw, and Mexican government authority in the region ended for all practical purposes (McDonald 1980).

The Central East Texas Region was void of any engagements during the Texas Revolution of 1835 to 1836. The region did contribute men and supplies for the Texas cause and provided a safe entry point for American volunteers seeking to fight for Texas independence (McDonald 1980). After the revolution was over, American farmers rapidly populated the counties that compose the Central East Texas Region. The Republic of Texas government contributed to trade in the region by improving the west-east Dallas-Shreveport Road through present Starrville. Slave labor was employed throughout the area, but the pine forests of the region did not allow large-scale plantation farming (Biesele 2016; Knapp and Biesele 2016).

The Civil War dramatically changed the Central-East Texas region. While the vast majority of the population overwhelmingly supported the Confederate cause, Angelina County was the only county in Central East Texas to reject secession. Despite this, Angelina County did contribute two companies of soldiers to fight in the war (Biesele 2016). The Confederacy established training and prisoner of war camps in Smith and Cherokee counties (McCroskey 2016; Ross 2016). Smith County was also the site of the largest Confederate ammunition factory west of the Mississippi River, a large prisoner of war stockade at Camp Ford, and one of the few Confederate medicinal chemical production plants (Ross 2016). The Confederacy constructed two iron foundries and a gun factory in Cherokee County, and an additional foundry in Nacogdoches (Long 2016; McCroskey 2016).

The end of the war and Reconstruction brought great economic devastation to the counties of Central East Texas. The emancipation of African Americans seriously undercut the local economy. Some of these newly freed slaves left the area in search of a fresh start elsewhere but the vast majority became tenant farmers on the lands they formerly worked as slaves. Episodes of violence and racial intimidation did occur, with the worst of these happening in Smith County (McCroskey 2016).

The fortunes of the region began to revive with the construction of rail lines through the area from the 1870s through the turn of the century (Maxwell 1998). The region remained largely agricultural after the Civil War, and the construction of a railroad network in the area not only provided markets for locally produced goods, but also opened up formerly isolated areas to settlement (Biesele 2016; Knapp and Biesele 2016; Long 2016; McKinney 1996, 2000).

### ***Modern Period***

Since the early nineteenth century, lumber production has been a substantial economic force in East Texas. While important in both the northern and southern portions of the project area, the heart of the state's timber industry has generally been the areas around Cherokee, Angelina, and Nacogdoches counties, though the river system often served as the system of transport, feeding shipping ports and sawmills along the coastal bays.

Prior to the Civil War, the 1860 census listed 200 sawmills in Texas, but compared to other lumber exporting states the industry was relatively small (Maxwell 1983). The arrival of the railroad allowed the commercial exploitation of local stands of timber, predominately the area's large tracts of virgin pine forests (Maxwell 1983; McKinney 1996, 2000). Large sawmills and their associated tram railroads sprang up, chiefly in Rusk, Nacogdoches, and Angelina counties, but smaller sawmills appeared all over the region. The production of lumber remains a cornerstone of the area's economy in the modern era (Biesele 2008; Knapp and Biesele 2016; Long 2016; McKinney 2000).

Oil was also discovered in the region beginning with Lyne T. Barret's 1865 construction of the first producing well in Texas, in Nacogdoches County. Previous to Barret's well, oil had been discovered in 1790 at Oil Springs, Nacogdoches County, but was not commercially exploited (Long 2016; McKinney 1996). The discovery of the East Texas Field in Rusk County by C.M. "Dad" Joiner helped to spark the East Texas Oil Boom in the 1930s (Haley 1980; Knapp and Biesele 2016). While no major strikes have been made in recent years, petroleum and natural gas production remains a strong factor in the region's economy (Biesele 2016; Long 2016; McCroskey 2016).

The era of World War II brought about many changes in the Central East Texas Region. The United States Army established Camp Fannin, an infantry-training center, in Smith County in 1943. The camp employed 2,500 civilians, and held German prisoners of war (McCroskey 2016). A blast furnace was constructed in Cherokee County (Ross 2016). Nacogdoches' Stephen F. Austin State University served as the site of a Women's Army Auxiliary Corps (WAAC) training center and another prisoner of war camp was in the county as well (Long 2016; McDonald 1980; McKinney 2000).

While cities such as Longview, Henderson, and Carthage have grown in the decades following World War II, the counties of the Central East Texas Region have remained predominately rural. Agricultural production remains a staple of the local economy, but hydrocarbon and timber production, as well as manufacturing, have supplemented this economic sector (Knapp and Biesele 2016).

## **METHODOLOGY**

### **Background Review Methods**

The background review consisted of a cultural resources and environmental literature review for the proposed project, including a 1-mile radius around the direct APE. An SWCA archaeologist reviewed the corresponding USGS 7.5-minute topographic quadrangle map on the Texas Archeological Sites Atlas (TASA), a restricted online database, for any previously recorded surveys and historic or prehistoric sites located in or near the project. Site files, relevant maps, National Register of Historic Places (NRHP) properties, State Antiquities Landmark (SAL) listings, Registered Texas Historic Landmarks, cemeteries, and local neighborhood surveys were also examined. Listings on TASA are limited to projects under purview of the Antiquities Code of Texas or the NHPA of 1966; therefore, all work conducted in the area may not be available. The Texas Historic Sites Overlay, historical topographic maps, aerial photographs, Bureau of Economic Geology Maps, and the NRCS Web Soil Survey were also examined for historical and environmental information related to the project.

### **Archaeological Field Survey Methods**

The archaeological investigation of the direct APE was designed to be of sufficient intensity to determine the nature, extent, and if possible, significance of any cultural resources located within the potential project location. An intensive pedestrian survey with systematic shovel testing was conducted within the direct APE.

As designed, the survey met all THC minimum archaeological survey standards for such projects with any exceptions thoroughly documented. The field survey consisted of one archaeologist walking the project area and examining the ground surface and any eroded profiles for cultural materials. The pedestrian survey was augmented with a shovel testing strategy that exceeded THC minimum survey standards and excavated shovel tests on a single transect at 30-m interval throughout the entirety of the direct APE.

Shovel/auger tests were 30 cm in diameter and excavated in 20-cm arbitrary levels to 1 m in depth or to culturally sterile deposits, whichever came first. The matrix was screened through ¼-inch hardware mesh. The location of each shovel test was collected using a Trimble Geo 7X global positioning system (GPS) receiver, and each test was recorded on appropriate project field forms.

If an archaeological resource was encountered during the investigation, it was explored as much as possible with consideration to land access constraints. Any discovered resources were assessed in regard to potential significance so that recommendations could be made for proper management (avoidance, non-avoidance, or further work). Additional shovel tests were conducted per THC standards to define horizontal and vertical boundaries for each resource.

### **Historic Resources Reconnaissance Survey Methods**

No standing structures or buildings are located within the direct APE. The historic resources reconnaissance survey was intended to identify all historic-age resources within any properties/tracts that extend into the indirect APE and which can be visually observed from existing right-of-way (ROW). The methods for field survey and reporting for this project includes five components: (1) a background review of historic resources within the survey APE; (2) a compilation of suitable historic contexts within the project area; (3) review of historic and current maps and historic and current aerial photography; (4) fieldwork consisting of the identification of every historic-aged property within the survey APE, and (5) the production of a report of results..

During the fieldwork for the historic resources survey, structures, buildings, objects, and sites visible from the existing ROW were analyzed for physical integrity and historical significance. While NRHP eligibility requirements refer to properties 50 years old or older, SWCA uses the industry standard of 45 years old or older for properties, to allow for potential project construction delays. As such, all resources within the indirect APE with the potential to have been built during or prior to 1972 were photographed at an oblique angle, if possible, from the roadway or public access using a digital camera, and diagnostic features and landscape conditions were noted. As no right-of-entry (ROE) was requested by the investigators, all work was conducted from the existing ROW.

An SWCA architectural historian evaluated the property's age, integrity, and significance. Each property was given a resource ID number, and data such as location, address (if possible), property type, form or plan, stylistic influence, construction date, documentation, and NRHP recommendation was noted in the field. Properties clearly built after 1972 were not photographed during this process unless occupying a parcel containing historic-age resources.

## **Curation**

SWCA conducted a non-collection survey. Artifacts were tabulated, analyzed, and photographed in the field, but not collected. Original survey documentation will be held on file at SWCA's Houston office.

## **RESULTS OF INVESTIGATIONS**

### **Results of Background Review**

#### ***Previous Investigations***

The background review revealed that the project area has not been previously surveyed for cultural resources, and only a single previously conducted cultural resources survey had been completed within 1-mile of the APE (Figure 2).

A survey conducted in 1990 for the Texas Department of Transportation follows State Route 842 west of the intersection with Angelina County Road 124. However, no Texas Antiquities Permit or other identifying information is included within the available records (THC 2018). This survey did not identify cultural resources in the immediate vicinity of the project.

#### ***Previously Recorded Cultural Resources***

The background review shows that there are no previously recorded cultural resources within or immediately adjacent to the APE. Only one previously recorded cultural resource is located within 1 mile of the project (see Figure 2). This resource, a Historic Texas Cemetery identified as Berry Cemetery, is located approximately 0.8 miles northeast of the project area. Berry Cemetery includes at least 1012 internments, with burials dating back to the 1860s. No NRHP properties or SALs are located within 1 mile of the project.

#### ***Potential Cultural Resources***

Historical topographic maps (USGS 1950, 1961) and historical maps on the Texas Historical Overlay (Foster et al. 2006) were also examined. The pipeline adjacent to the project area appears to have been constructed between 1950 and 1961. However, no historic age structures were recorded within or adjacent to the project area on historic maps.



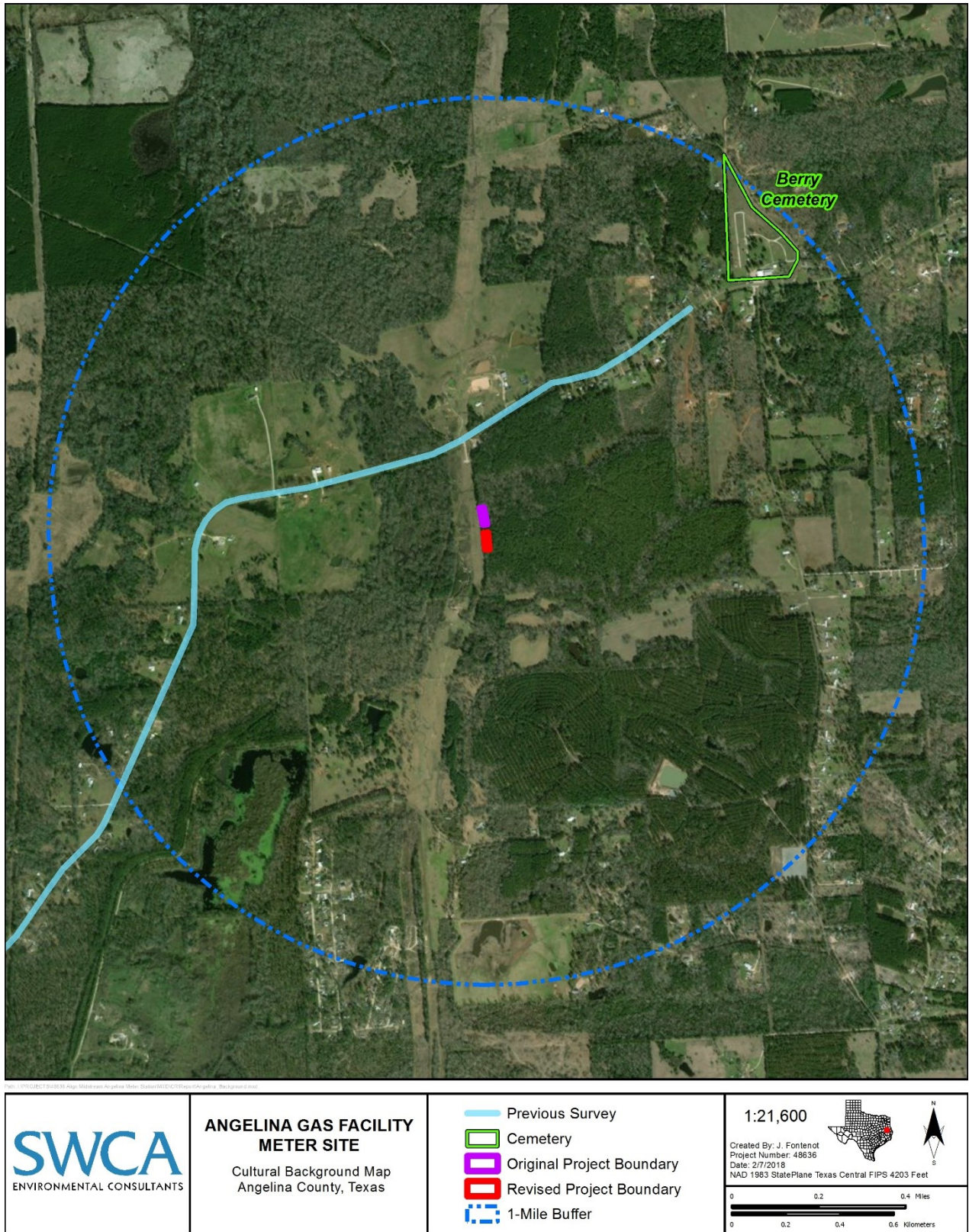


Figure 2. Previous surveys and cultural resources adjacent to the project.

## **Results of Archaeological Field Survey**

An intensive archaeological survey of the direct APE was conducted on January 24, 2018. Archaeological investigations of the project area found that the vegetation had already been cleared within the vicinity (Figure 3). Aerial photographs of the project area taken prior to this investigation showed that the area was originally forested. Shovel tests were placed throughout the original project area at 30-m intervals, resulting in the identification of a site, 41AG245 (see 41AG245 discussion below).

Due to the presence of the identified resource, Align elected to move their gas facility meter site 100 feet south of the original location. Archaeological investigation was conducted throughout the new location, as well as between the two proposed locations. In total, 16 shovel tests were excavated throughout the original and revised project areas (Figure 4). One additional test was plotted, but could not be completed, as it lay within the disturbed area of the existing pipeline corridor. The results for all excavated shovel tests, auger tests, and the cut-bank profile are presented in Appendix A.



Figure 3. Overview of the project area archaeological survey, near shovel test SC-C01, facing north.

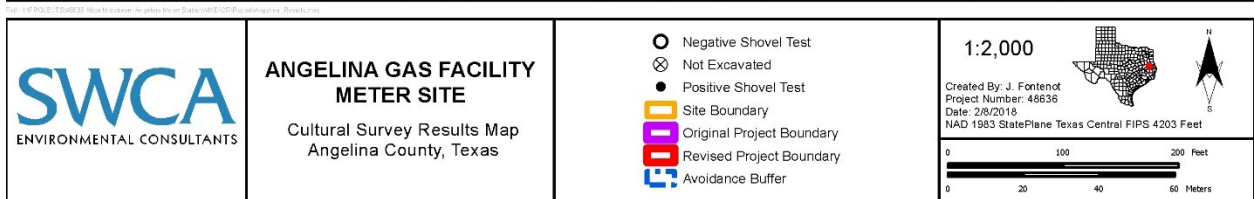


Figure 4. Archaeological survey results.

### **Site 41AG245 (SC-01)**

Site 41AG245 is a subsurface prehistoric open campsite site identified within the project area, approximately 1.2 km (0.75 miles) west by north of the intersection of Angelina County Roads 132 and 125 in north-central Angelina County, Texas (see Figure 4). SWCA identified the site on January 24, 2018.

Site 41AG245 is situated on the toe-slope of a small ridge overlooking the floodplain of Willie Creek, which lies approximately 125 m west of the site. Vegetation throughout the site area consisted of recently cleared piney woods, leaving dense ground cover of branches and leaf litter (Figure 5).



Figure 5. Overview of site 41AG245, view facing north.

Archaeological investigation of 41AG245 included systematic surface survey and subsurface shovel testing. The surface survey was conducted in transects spaced at 10-m intervals. Ground surface visibility was approximately 0 percent. Shovel testing was conducted throughout the site boundaries in a single cruciform pattern at 10-m intervals originating at the initial positive shovel test, and limited to the project area boundaries. Site 41AG245 is oval in shape and measures approximately 12 m north-south by 10 m east-west. The site is located within the southern portion of the original layout of the meter station, approximately 10 m east of the existing pipeline corridor (Figure 6).

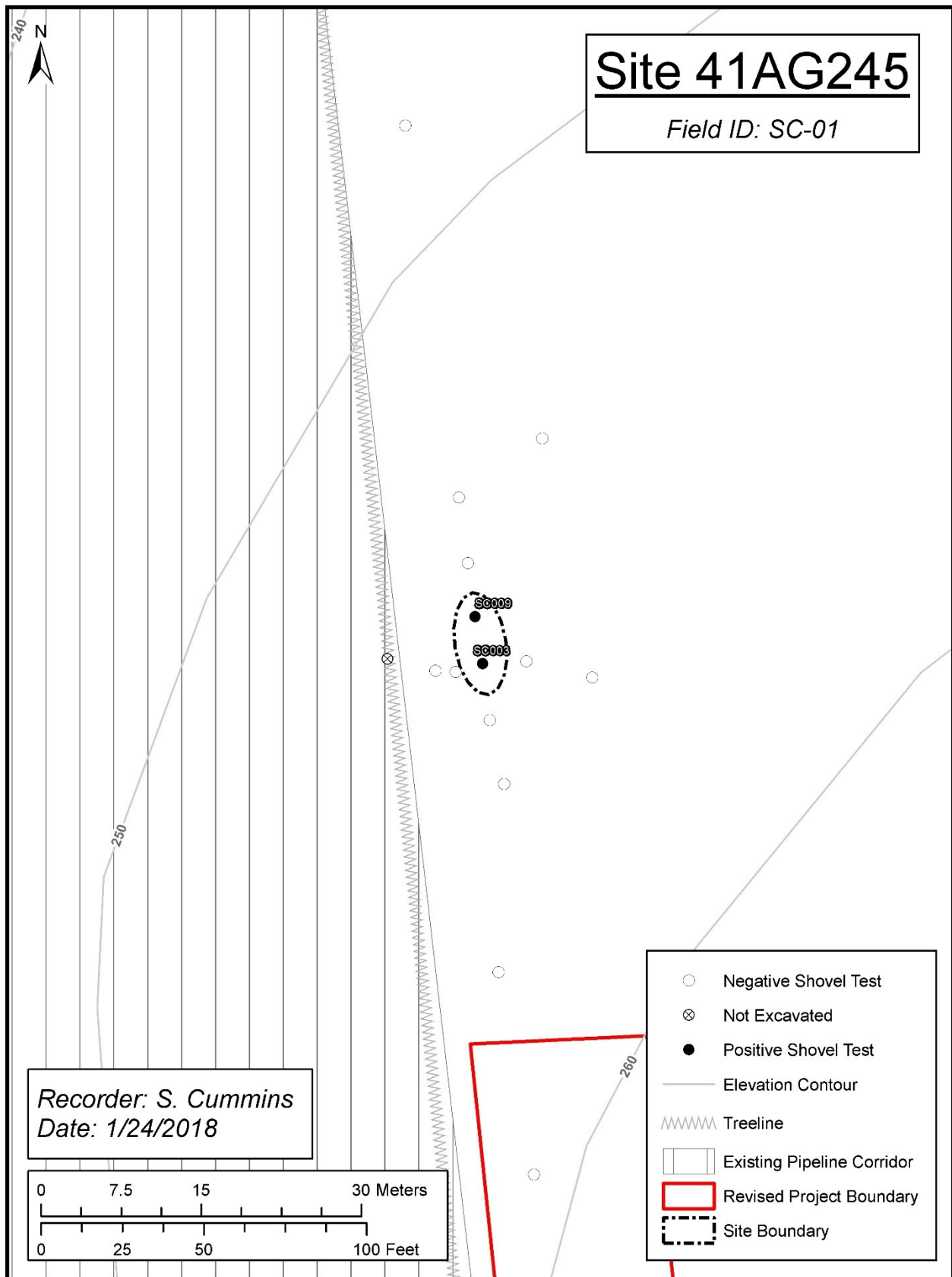


Figure 6. Sketch map of site 41AG245.

A total of 10 shovel tests were excavated to delineate the site; two were positive for cultural materials. An additional shovel test was recorded west of the site, but not excavated due to the presence of the existing pipeline corridor. A typical shovel test was excavated to a depth of 100 cmbs and exhibited two to three strata in profile. Stratum 1 consisted of dark yellowish brown (10YR 4/4) sandy loam with humus extending to a depth of approximately 20 cmbs. Stratum 2 consisted of yellowish brown to brownish yellow (10YR 5/4 to 6/6) sandy loam to depths of approximately 50 cmbs. When present, a third strata, consisting of mottled yellowish brown and yellow (10YR 5/8 with 10YR 7/8) sandy clay loam either extended to depth of testing at 100 cmbs, or when dense, precluded further excavation.

Artifacts observed at 41AG245 include one piece of petrified wood lithic debitage, one petrified wood projectile point fragment, one piece of sand-tempered, plain ceramic, and a chunk of burned earth (Figure 7). The sand-tempered ceramic is likely characteristic of Goose Creek Plain, var. unspecified, suggesting a Mossy Grove cultural occupation dating to approximately 450 B.C. to A.D. 900 (Story 1990:247). The petrified wood projectile point is fragmentary, but may represent a Bonham or Perdiz-style arrowhead, dating to the Late Prehistoric (ca. A.D. 900–1500) (Turner et al. 2011). The presence of burned earth was recovered from shovel test SC-C03.

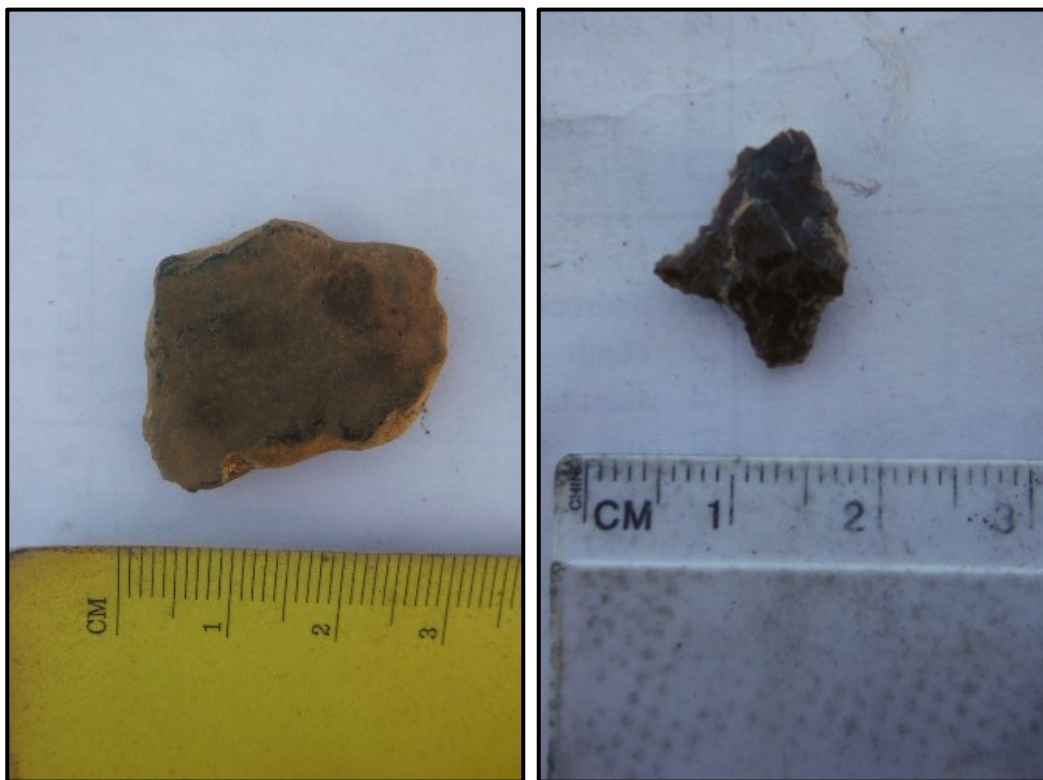


Figure 7. Representative artifacts recovered from site 41AG245: sand tempered ceramic (left) and Late Prehistoric projectile point (right).

Artifacts from 41AG245 were deeply buried; the ceramic and petrified wood flake were recovered at a depth of 70–80 cmbs and the projectile point and burned earth sample was recovered at a depth 90–100cmbs. The deeply buried nature of the artifact assemblage, as well as the potential for hearth features associated with the presence of the burned earth, may suggest that intact, significant deposits could still exist, despite the limited horizontal extent of the site.

Site 41AG245 is a small prehistoric open campsite with limited material remains, likely dating to the Late Prehistoric. Despite its small size, the site features diagnostic artifacts in a deeply buried setting, and may have evidence of intact features, such as hearths. As such, the site may have the potential to contribute to the understanding of local and/or regional prehistory. As such, NRHP eligibility is UNDETERMINED for 41AG245 and further work would be necessary to assess eligibility. Due to the presence of the site, Align has redesigned the location of its meter station into an area further south where no cultural resources were identified. The site is now located outside the proposed workspace, but is within 30 m (100 feet) of the area to be impacted; thus, SWCA recommends that site area be protected with the erection of a high-visibility construction barrier along the edge of the 100 foot avoidance buffer to ensure continued avoidance of the site during construction. Align is committed to avoiding impacts to site 41AG245 (Appendix B).

## Results of Historic Resources Reconnaissance Survey

The historic resources reconnaissance survey of the indirect APE was completed on January 24, 2018. The field reconnaissance survey identified only one historic-age resource on a single property within the indirect APE (Figure 8). This historic-age resource (identified as Resource ID 1) is summarized in Table 1, and discussed below.

Table 1. Summary of historic-age resources within the indirect APE.

Resource ID	Property Type	Form/ Plan	Stylistic Influence	Date - source	Easting (ft.)	Northing (ft.)	Integrity Loss	NRHP Recommendation	
<b>Location: 3140 FM 842</b>									
1	a	Domestic / single dwelling	Building/ house	Ranch	1971 – ACAD	341665	3474159	Design, Workmanship	Not Eligible
	b	Domestic / secondary structure	Building / carport	None	ca. 2016	341655	3474167	Design, Workmanship	Not Eligible
	c	Domestic/ secondary structure	Building / barn	Vernacular	Unknown	341590	3474178	Design, Workmanship	Not Eligible
	d	Domestic / secondary structure	Building / shed	None	ca. 2016	341577	3474121	Design, Workmanship	Not Eligible

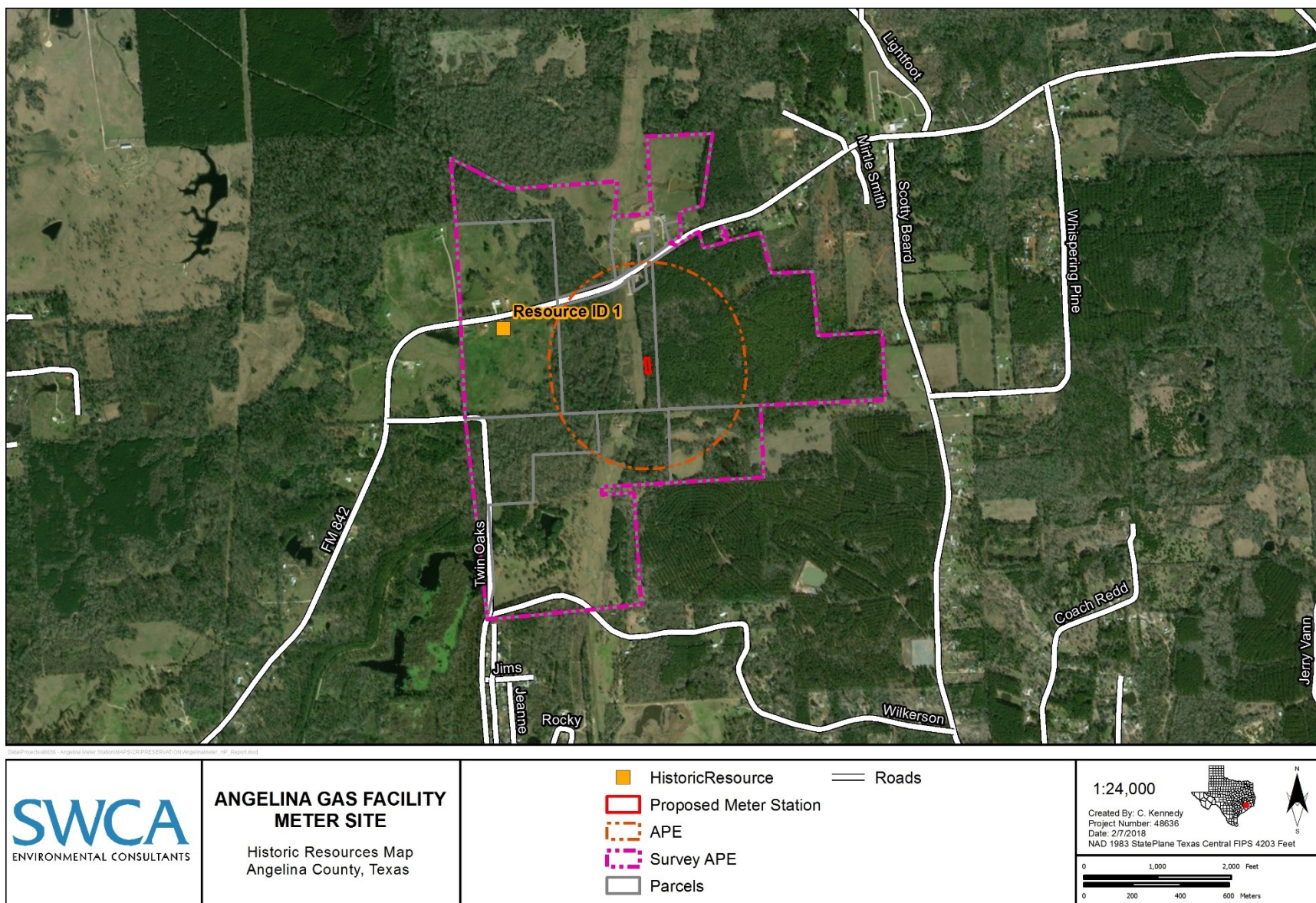


Figure 8. Historic resources reconnaissance survey and results.



## **Resource ID 1**

Resource ID 1 is located at 3140 FM 842 and is a residential property facing north onto the road. Access to the property is via a paved driveway on the south side of FM 842. Resource 1a is the primary residential building, 1b is a carport, 1c is a barn, and 1d is a shed. Angelina County Appraisal District (ACAD) lists the construction date for Resource 1a as 1971.

Resource 1a is an L-plan, hipped roof residence on a concrete slab foundation (Figure 9). The building is a Ranch-style house, following the classification of McAlester (2013:602–603). The exterior is clad in running bond beige brick. A soldier course of brick runs just below a painted frieze board. The roof is clad with composition shingles. The north façade is arranged asymmetrically in an ABACA pattern. A-type bays contain a single 2/2 aluminum or vinyl sash window approximately 24 x30 inches. The B-type bay is the primary entrance located under a hipped portico. The entrance contains a screen door that protects and obscures the primary door. Though not visible in the photos, the front door may have a fan light in the top quarter of the door. The C-type bay contains a single 2/2 aluminum or vinyl sash window approximately 24 x24 inches. The west elevation serves as the foot for the L-plan. The west elevation has no windows, and there is a single overhead door at the south end for access to the attached garage. The east elevation also has no windows, though there is one brick-clad, wood-burning chimney centered on the elevation.



Figure 9. Resource ID 1a and 1b, facing southwest.

Resource 1b is a prefabricated metal carport. The carport has open walls and a metal roof, and it is completely open at both ends. It is currently oriented with an opening facing north towards the street. The carport does not appear in February 2015 aerial imagery and is presumed to have a 2016–2017 construction date (Google Earth 2015).

Resource 1c is a barn (Figure 10). The barn is a wood frame building on a brick pier foundation and horizontal wood siding with an entrance facing east towards the primary residence. The barn itself is a rectangular plan building with east and west facing gables. There are three simple wood steps leading up to the wood batten door. The roof is clad in standing seam sheet metal, and there are shed roof open-air cribs on both the north and south sides of the barn. Both cribs are not on any foundation. The north crib has been clad with corrugated sheet metal on the north wall.



Figure 10. Resource ID 1c, facing southwest.

Resource 1d is a shed facing south onto the property. The wood-frame building has a shed roof and is clad with corrugated sheet metal. The building does not appear in February 2015 aerial imagery and is presumed to have a 2016–2017 construction date (Google Earth 2015).

Resource ID 1a-d is a typical example of late twentieth-century Ranch style architecture with associated outbuildings sequentially constructed over time. It is not exceptional nor precedent-setting. Resource ID 1a exhibits no exceptional architectural design, style, craftsmanship, or materials. Resource 1a is a typical example of rural residential construction and is not associated with any person of significance to the area or region, and does not exhibit elements of design or materials of note. The building does not rise to the level of significance needed to be considered for listing in the NRHP under Criteria A or C. As a result, it is SWCA's recommendation that Resource ID 1a and its associated secondary buildings and structures are NOT ELIGIBLE for listing in the NRHP.

## **SUMMARY AND RECOMMENDATIONS**

On behalf of Align, SWCA conducted a cultural resources survey for the proposed Angelina Gas Facility Meter Site project. Align proposes to construct a gas metering system adjacent to an existing pipeline corridor, encompassing a project area of approximately 0.25 acres in total. For the purposes of this report, this 0.25-acre area is considered the direct APE; however, SWCA anticipates that the actual construction footprint will be a reduced area. The indirect APE included all properties which intersect a 1,300-foot buffer beyond the boundary of the direct APE. During the course of archaeological study, a prehistoric site was identified; Align elected to study an additional 0.25-acre survey area 100 feet south of the original locus in order to avoid impacts to the site.

Investigations were conducted in compliance with Section 106 of the NHPA (16 USC 470) and its implementing regulations 36 CFR 800, the Antiquities Code of Texas (9 TAC 191.001-191.174), and the THC minimum archaeological survey standards for such projects.

The background literature review revealed that a single cultural resources survey had been conducted within the direct and indirect APE. Only one cultural resource, a Texas Historic Cemetery, has been recorded within 1 mile of the direct APE.

During the archaeological investigation, SWCA identified a single cultural resource (Site 41AG245) within the direct APE. Site 41AG245 consists of four prehistoric artifacts identified within two shovel tests. Artifacts included a partial projectile point and sand-tempered ceramic, both dating to the Late Prehistoric period. As these artifacts were deeply buried and evidence of potential features was identified, SWCA recommends the site as UNDETERMINED for the NRHP and recommends further work before eligibility may be determined. As currently designed, Align has elected to move their workspace so that the site area will not be affected. SWCA has recommended that high-visibility fencing be erected in the area to prevent inadvertent impacts to the site.

An historic resources reconnaissance survey was also conducted in order to identify the presence of eligible historic standing structures or properties. No aboveground historic structures or buildings are located within the direct APE. One resource (Resource ID 1) was identified as being of historic age within the indirect APE; however, it is recommended NOT ELIGIBLE for the NRHP as the structure is not exceptional in factors of design, materials, setting, and/or workmanship.

SWCA conducted a non-collection survey; therefore, no cultural materials will be curated. Survey documentation will be held on file at SWCA's Houston office.

In accordance with Section 106 of the NHPA 36 CFR 800.4 (b)(1), SWCA has made a reasonable and good faith effort to identify significant cultural resources within the APE. Although NRHP eligibility for site 41AG245 is UNDETERMINED, the site will not be impacted because of Align's avoidance measures and Align's commitment to avoidance provided in Appendix B. As such, SWCA recommends no further cultural resources investigation and a finding of NO HISTORIC PROPERTIES AFFECTED per 36 CFR 800.4(d)(1) and further recommends that the project be allowed to proceed.

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## **APPENDIX A**

### **Shovel Test Log**

Appendix A: Shovel Test Log

Shovel Test	Level	Depth (cmbs)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts	Resource ID	Excavator	Date
SC-CO1	1	0-20	N	10YR 4/4	sandy loam	humic	wooded pines with loblolly, holly, and greenbrier, construction/clearing disturbance, tree litter on surface, 0% GSV due to mulch/litter	basal clay			SC	01/24/18
SC-CO1	2	20-60	N	10YR 6/6 w/ 10% 5YR 6/6	sandy loam			basal clay			SC	01/24/18
SC-CO1	3	60-90	N	10YR 5/4 w/ 10% 10YR 7/8	sandy clay loam			basal clay			SC	01/24/18
SC-CO2	1	0-15	N	10YR 4/4	sandy loam		wooded pines with loblolly, holly, and greenbrier, construction/clearing disturbance, tree litter on surface, 0% GSV due to mulch/litter	depth			SC	01/24/18
SC-CO2	2	15-50	N	10YR 6/6 w/ 10% 10YR 7/8	sandy loam			depth			SC	01/24/18
SC-CO2	3	50-100	N	10YR 5/8 w/ 20% 10YR 7/8	sand			depth			SC	01/24/18
SC-CO3	1	0-20	N	10YR 4/4	sandy loam	humic	pine woods surrounding/on meter site. Site has been cleared, vegetation debris/tree litter, 0% GSV	basal clay		SC-01	SC	01/24/18
SC-CO3	2	20-50	N	10YR 6/6 w/ 10% 10Yr 7/8	sandy loam			basal clay		SC-01	SC	01/24/18
SC-CO3	3	50-100	P	10YR 5/8 w/ 20% 10YR 7/8	sandy clay loam			basal clay	70-80 cmbs: 1 petrified wood flake, 1 potter sherd	SC-01	SC	01/24/18
SC-CO4	1	0-15	N	10YR 4/4	sandy loam	roots	pine woods surrounding/on meter site. Site has been cleared, vegetation debris/tree litter, 0% GSV	basal clay		SC-01	SC	01/24/18
SC-CO4	2	15-40	N	10YR 5/6	sandy clay loam	roots and iron concretions		basal clay		SC-01	SC	01/24/18
SC-CO4	3	40-60	N	10YR 5/8	sandy clay			basal clay		SC-01	SC	01/24/18
SC-CO5	1	0-20	N	10YR 3/2	sandy loam		piney woods surrounding construction overburden, 0% GSV, timber cleared	depth		SC-01	SC	01/24/18

Appendix A: Shovel Test Log

Shovel Test	Level	Depth (cmbs)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts	Resource ID	Excavator	Date
SC-CO5	2	20-60	N	10YR 4/4	sandy loam			depth		SC-01	SC	01/24/18
SC-CO5	3	60-100	N	10YR 5/8	sandy clay loam			depth		SC-01	SC	01/24/18
SC-CO6	1	0-30	N	10YR 3/3	sandy loam	humic	piney woods surrounding construction overburden, 0% GSV, timber cleared	basal clay		SC-01	SC	01/24/18
SC-CO6	2	30-50	N	10YR 3/4 w/ 2% 10YR 5/6	sandy clay			basal clay		SC-01	SC	01/24/18
SC-CO7	1	0-60	N	10YR 5/6	sandy loam		piney woods surrounding construction overburden, 0% GSV, timber cleared	basal clay		SC-01	SC	01/24/18
SC-CO7	2	60-70	N	10YR 5/8 w/ 20% 10YR 7/8	sandy clay			basal clay		SC-01	SC	01/24/18
SC-CO8	1	0-20	N	10YR 3/2	sandy loam		pine woods, construction site with timber overburden, 0% GSV	basal clay		SC-01	SC	01/24/18
SC-CO8	2	20-50	N	10YR 5/8	sandy loam			basal clay		SC-01	SC	01/24/18
SC-CO8	3	50-70	N	10YR 5/8 w/ 20% 10YR 7/8	sandy clay			basal clay		SC-01	SC	01/24/18
SC-CO9	1	0-15	N	10YR 3/2	sandy loam		pine woods, construction site with timber overburden, 0% GSV	depth		SC-01	SC	01/24/18
SC-CO9	2	15-75	N	10YR 5/8	sandy loam			depth		SC-01	SC	01/24/18
SC-CO9	3	75-110	P	10YR 5/8 w/ 20% 10YR 7/8	sandy clay loam			depth	90-100 cmbs: 1 petrified wood projectile point fragment. sample of burned earth	SC-01	SC	01/24/18
SC-CO10	1	0-10	N	10YR 3/2	sandy loam		pine woods, construction site with timber overburden, 0% GSV	depth		SC-01	SC	01/24/18
SC-CO10	2	20-60	N	10YR 5/8	sandy loam			depth		SC-01	SC	01/24/18
SC-CO10	3	60-100	N	10YR 5/8 w/ 20% 10YR 7/8	sandy clay loam			depth		SC-01	SC	01/24/18
SC-CO11	1	0-10	N	10YR 3/2	sandy loam		pine woods, construction site with timber overburden, 0% GSV	depth		SC-01	SC	01/24/18

Appendix A: Shovel Test Log

Shovel Test	Level	Depth (cmts)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts	Resource ID	Excavator	Date
SC-CO11	2	20-60	N	10YR 5/8	sandy loam			depth		SC-01	SC	01/24/18
SC-CO11	3	60-100	N	10YR 5/8 w/ 20% 10YR 7/8	sandy clay loam			depth		SC-01	SC	01/24/18
SC-CO12	1	0-40	N	10Yr 3/4	sandy loam		open, clear-cut facility with overburden, 0% GSV, piney woods	basal clay		SC-01	SC	01/24/18
SC-CO12	2	40-50	N	10YR 3/8	sandy clay			basal clay		SC-01	SC	01/24/18
SC-CO13	1	NE	NE	NE	NE	NE	not excavated: within existing pipeline ROW	NE	NE		SC	01/24/18
SC-CO14	1	0-35	N	10YR 5/8 w/ 7.5YR 6/8	sandy loam		open, clear-cut facility with overburden, 0% GSV, piney woods	basal clay			SC	01/24/18
SC-CO14	2	35-50	N	10YR 6/8 w/ 5YR 5/8	clay			basal clay			SC	01/24/18
SC-CO15	1	0-35	N	10YR 5/8 w/ 7.5YR 6/8	sandy loam		open, clear-cut facility with overburden, 0% GSV, piney woods	basal clay			SC	01/24/18
SC-CO15	2	35-50	N	10YR 6/8 w/ 5YR 5/8	clay			basal clay			SC	01/24/18
SC-CO16	1	0-35	N	10YR 5/8 w/ 7.5YR 6/8	sandy loam		open, clear-cut facility with overburden, 0% GSV, piney woods	basal clay			SC	01/24/18
SC-CO16	2	35-50	N	10YR 6/8 w/ 5YR 5/8	clay			basal clay			SC	01/24/18
SC-CO17	1	0-35	N	10YR 5/8 w/ 7.5YR 6/8	sandy loam		open, clear-cut facility with overburden, 0% GSV, piney woods	basal clay			SC	01/24/18

## **APPENDIX B**

### **Avoidance Commitment**



Matthew Osborn  
President & COO  
Phone: (214) 238-5833  
Fax: (214) 594-8440  
Email: mosborn@alignmidstream.com

February 9, 2018

Arlo McKee  
Texas Historical Commission  
1511 Colorado Street  
Austin, Texas 78701

**RE: Letter of Commitment: Angelina Gas Facility Meter Station project, Angelia County, Texas**

Dear Mr. McKee,

Our consultant, SWCA Environmental Consultants (SWCA), has recommended avoidance of archaeological site 41AG245, situated within 100 feet of a project workspace associated with the Angelina Gas Facility Meter Station project, located in north-central Angelina County, Texas. SWCA recommends that a high visibility construction barrier (e.g. safety fencing or flagging tape) be placed at the margin of the project workspace in order to protect this resources during project construction. Align Midstream Partners is committed to the protection of the afore-mentioned archaeological site and will fulfill SWCA's recommendation prior to project construction.

If you have any questions regarding this matter, please contact Matthew Osborn, President & COO at (214) 238-5833 or mosborn@alignmidstream.com

Sincerely,

A handwritten signature in black ink, appearing to read "M Osborn", is written over a white background.

Matthew Osborn

Cc: Todd Butler, SWCA