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Texas General Land Office Parcels: El Paso, Hudspeth, And Reeves Counties, Texas

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Texas General Land Office Parcels: El Paso, Hudspeth, And Reeves Counties, Texas

ROADRUNNER GAS TRANSMISSION, LLC

ROADRUNNER PROJECT
INTRASTATE PIPELINE PROJECT: PHASE 1

TEXAS GENERAL LAND OFFICE PARCELS: EL PASO, HUDSPETH, AND REEVES COUNTIES, TEXAS

TEXAS ANTIQUITIES PERMIT #7252

Phase I Cultural Resources Report

Final Report

Prepared by

an ERM Group company

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Prepared for

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ABSTRACT

In June 2015, Natural Resource Group, LLC conducted Phase I cultural resource investigations within eight parcels that are managed by the Texas General Land Office. The tracts are located in El Paso, Hudspeth, and Reeves counties, Texas and the studies are associated with Phase 1 of the Roadrunner Gas Transmission, LLC (Roadrunner) Roadrunner Project. Roadrunner has entered into an operating agreement with ONEOK WesTex Transmission Company, L.L.C. (WesTex), a subsidiary of ONEOK, to construct, operate and maintain an intrastate pipeline in the State of Texas under the jurisdiction of the Texas Railroad Commission. WesTex plans to construct approximately 205 miles of 30-inch diameter natural gas intrastate pipeline that begins in Pecos County, Texas, and extends westward across Reeves, Culberson, Hudspeth, and El Paso counties. Construction will occur in two stages (Phase 1 and Phase 2). Phase 1 consists of two greenfield segments on the eastern and western ends of the proposed route that total approximately 105 miles. The Phase 2 corridor is approximately 100 miles long, and connects the two Phase 1 segments by generally following an existing pipeline corridor.

The studies were authorized under Texas Antiquities Permit #7252 and General Land Office Authorization to Conduct Archeology No. 15-0010. They were conducted within a 300-foot-wide survey corridor and along segments of five proposed access roads.

No previously recorded archaeological sites or historic structures occur within the investigated areas, and no new cultural resources were identified during the field effort. Therefore, we recommend that construction be allowed to proceed as currently planned without further consideration of cultural resources.

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1.0 INTRODUCTION

This document presents the results of Phase I archaeological and historic structures surveys that Natural Resource Group, LLC (NRG) conducted within eight parcels that are managed by the Texas General Land Office (GLO). The tracts are located in El Paso, Hudspeth, and Reeves counties, Texas and the studies are associated with Phase 1 of the Roadrunner Gas Transmission, LLC (Roadrunner) Roadrunner Project. Roadrunner has entered into an operating agreement with ONEOK WesTex Transmission Company, L.L.C. (WesTex), a subsidiary of ONEOK, to construct, operate and maintain an intrastate pipeline in the State of Texas under the jurisdiction of the Texas Railroad Commission Roadrunner Project (Figures 1.0-1–1.0-5). WesTex plans to construct approximately 205 miles of 30-inch diameter natural gas intrastate pipeline that connects to an existing pipeline in Pecos County, Texas. The proposed route begins in Pecos County and extends westward across Reeves, Culberson, Hudspeth, and El Paso counties where it will connect to a border crossing facility owned by Roadrunner Gas Transmission, LLC. That facility crosses the International border between the United States and Mexico approximately 3 miles south-southwest of the city of Clint, in El Paso County, Texas. The project will also include permanent and temporary access roads, approximately six new meter station facilities, two cross-over interconnections, approximately 18 mainline valves, and a new compressor station.

Construction will occur in two stages (Phase 1 and Phase 2). Phase 1 consists of two greenfield segments on the eastern and western ends of the proposed route that total approximately 105 miles. The Phase 2 corridor is approximately 100 miles long, and connects the two Phase 1 segments by generally following an existing pipeline corridor. The eastern segment of Phase 1 is approximately 82 miles long; it begins in Pecos County, where it will connect with an existing pipeline, and extends westward across Reeves County into Culberson County. The western section begins in Hudspeth County and continues for approximately 23 miles until it connects with the proposed border crossing facility in El Paso County that is mentioned above.

Phase I cultural resource investigations on GLO land were authorized under Texas Antiquities Permit #7252 and General Land Office Authorization to Conduct Archeology No. 15-0010. The proposed pipeline right-of-way (ROW) passes through four investigated GLO tracts, and totals 2.0 miles (Table 1.0-1). Access roads occur on five GLO parcels. The studies sought to identify

TABLE 1.0-1

Cultural Resource Survey Coverage

County	GLO Tract	Component	Cultural Resources
Reeves	Block 71 Section 45	Access Road TAR 0076	None
Reeves	Block C-6 Section 25	Access Road TAR 0028	None
Hudspeth	Block 10 Section 7	Access Road PAR 0155; Access Road TAR 0158.5	None
Hudspeth	Block 10 Section 8	Access Road PAR 0155; Access Road TAR 0158.5	None
Hudspeth	Block 10 Section 17	Access Road TAR 0158.5; Access Road TAR 0160; Pipeline Corridor (0.2 miles)	None
El Paso	Block 78 Section 34	Pipeline Corridor (1.2 miles)	None
El Paso	Block 78 Section 36	Pipeline Corridor (0.3 miles)	None
El Paso	Block 78 Section 37	Pipeline Corridor (0.3 miles)	None

1:880,000

0 5 10 Miles

N

- Milepost
- Roadrunner Project Phase 1
- Roadrunner Project Phase 2
- GLO Parcels (Phase 1)

ONEOK PARTNERS

Figure 1.0-1
Project Overview
Roadrunner Gas Transmission, L.L.C.
Roadrunner Project Corridor on Texas GLO Lands: Blocks and Survey Sections

NATURAL RESOURCE GROUP
an ERM Group company

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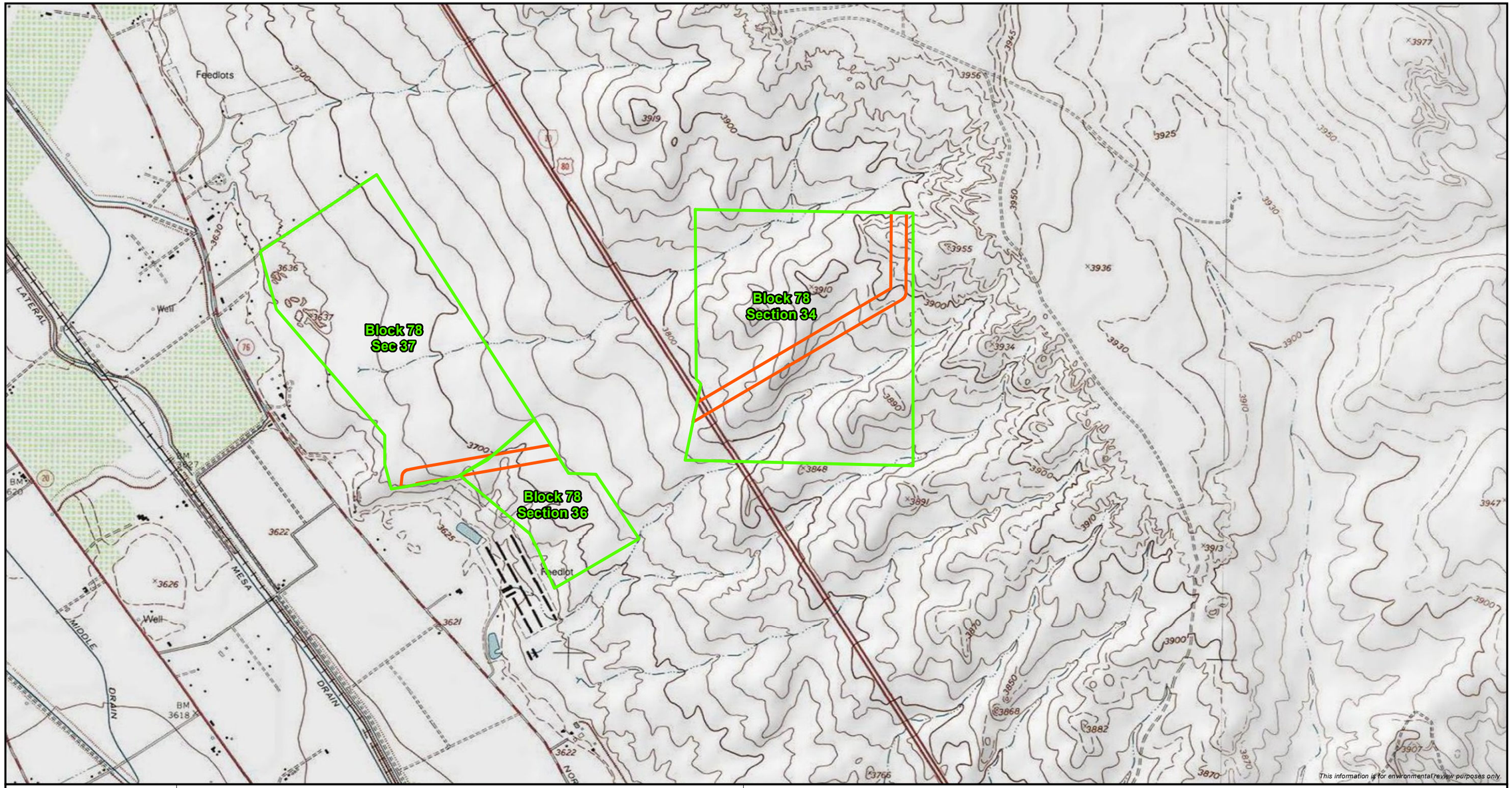

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Survey Corridor

GLO Parcels (Phase 1)

ONEOK PARTNERS

Figure 1.0-2
Block 78 GLO Parcels
Roadrunner Gas Transmission, L.L.C.
Roadrunner Project Corridor on Texas GLO Lands

NATURAL RESOURCE GROUP
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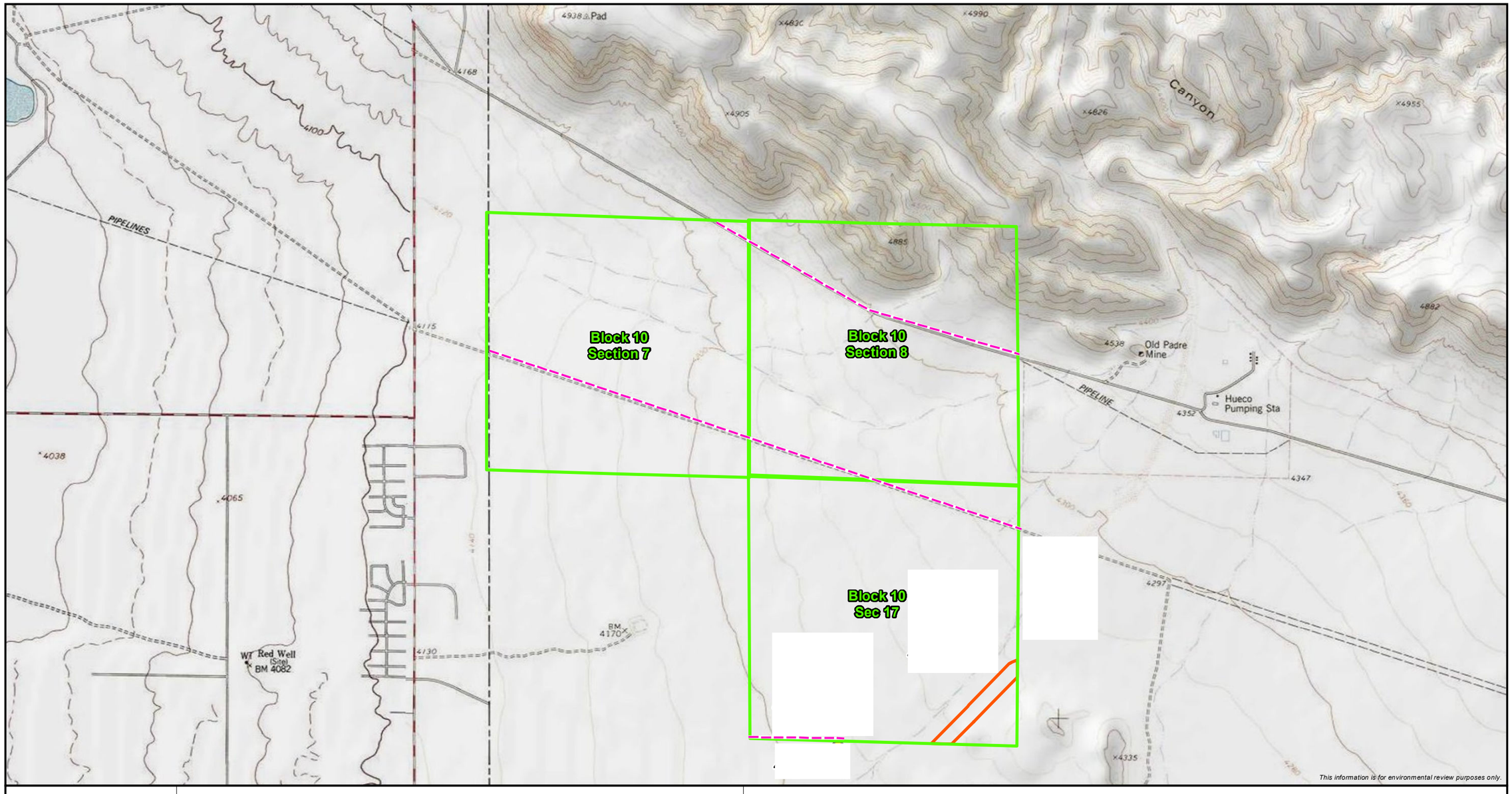

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Survey Corridor

Access Roads GLO Phase 1

GLO Parcels (Phase 1)

GLO Previously Recorded Sites

ONEOK PARTNERS

Figure 1.0-3
Block 10 GLO Parcels
Roadrunner Gas Transmission, L.L.C.
Roadrunner Project Corridor on Texas GLO Lands

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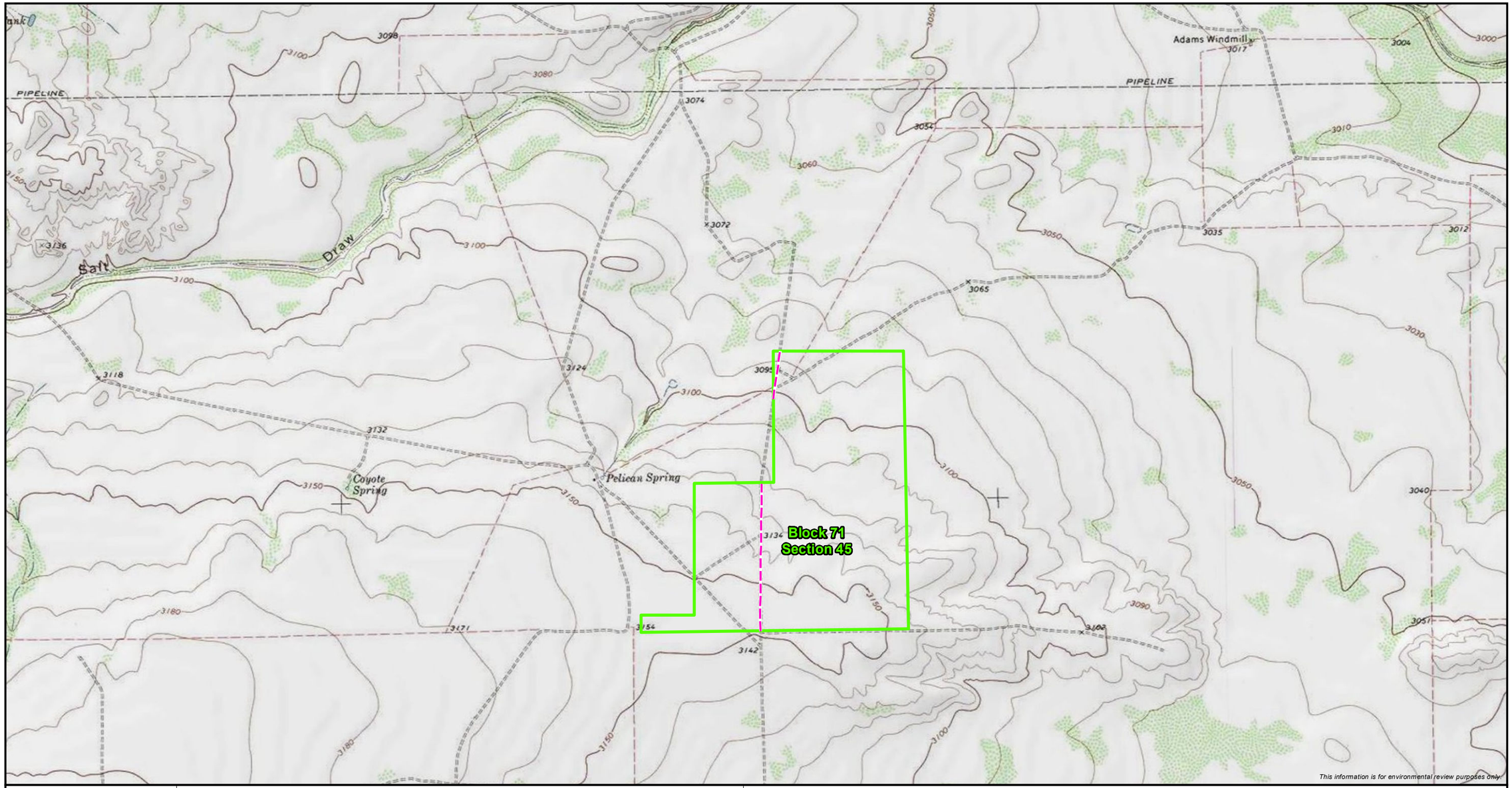

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Access Roads GLO Phase 1

GLO Parcels (Phase 1)

ONEOK PARTNERS

Figure 1.0-4
Block 71 Section 45 GLO Parcel
Roadrunner Gas Transmission, L.L.C.
Roadrunner Project Corridor on Texas GLO Lands

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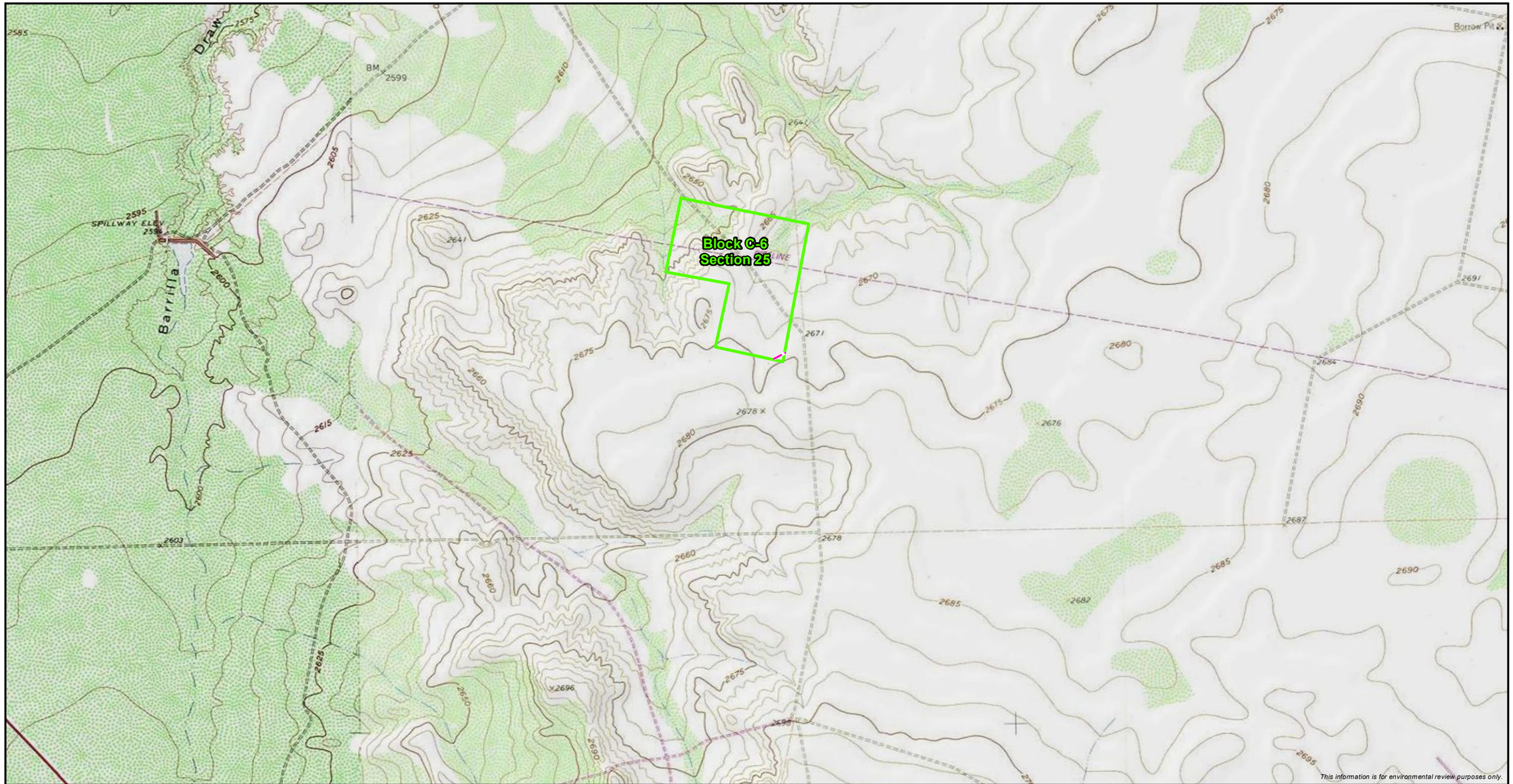

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Access Roads GLO Phase 1

GLO Parcels (Phase 1)

ONEOK PARTNERS

Figure 1.0-5
Block C-6 Section 25 GLO Parcel
Roadrunner Gas Transmission, L.L.C.
Roadrunner Project Corridor on Texas GLO Lands

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any archaeological or historic architectural resources that might be affected by the proposed undertaking, focusing on a 300-foot-wide survey corridor centered on the pipeline right-of-way and along segments of five proposed access roads. Since there will be no permanent, above-ground changes to the landscape, the Area of Potential Effects (APE) for historic resources is limited to places that will be directly impacted by construction.

1.1 MANAGEMENT RECOMMENDATIONS

No new cultural resources were identified during the survey, and no previously recorded archaeological sites or historic structures occur within the surveyed areas. Consequently, we recommend that construction be allowed to proceed as currently planned without further consideration of cultural resources.

2.0 ENVIRONMENTAL SETTING

2.1 LAND USE

The GLO parcels associated with current project are located in areas that are primarily grass and shrubland (Figures 2.1-1 and 2.1-2). Some of that land is used for grazing, while other places are irrigated and cultivated (Figure 2.1-3).

2.2 ECOLOGY, HYDROLOGY, AND GEOLOGY

The study tracts are located within the Chihuahuan Deserts Ecoregion (Griffith et al. 2007). Typical plant communities found within the region include grasslands, shrublands, cactus savannas, and mountain woodlands (Griffith et al. 2007). Animals include big horn sheep, mountain lions, coyotes, rabbits, squirrels, and various species of birds and reptiles.

Hudspeth and El Paso counties are located within the Rio Grande River basin, but most places are internally drained. Most of Reeves County is also internally drained, and it occurs in the Pecos River basin. The Pecos River flows southward and meets the Rio Grande near Del Rio, Texas. The Rio Grande continues to flow southeastward and enters the Gulf of Mexico just south of Brownsville, Texas.

The project area occurs within the Mexican Highland subprovince of the Basin and Range Physiographic Province, which includes parts of Mexico, Texas, New Mexico, Arizona, California, Nevada, Utah, Oregon, and Idaho (Texas State Historical Association 2015). The Basin and Range Province has a varied topography consisting largely of numerous small, roughly parallel mountain ranges (trending north-south) separated by nearly flat desert plains, or basins encompassing nearly 15,000 feet in vertical relief (Miller and Kenmotsu 2004).

Basin and Range topography offers higher elevations and greater local relief than can be found anywhere else in Texas. Although most of the state is relatively flat and less than 2,500 feet above mean sea level (ASML), the Trans-Pecos basins are elevated about 4,000 feet ASML and punctuated by numerous widely spaced mountain ranges that rise an additional 2,000 to 3,000 feet. The study parcels are underlain by alluvium of Paleozoic, Cenozoic, Quaternary, and Holocene age with variable thickness. The alluvial surficial deposits are primarily unconsolidated coarse-detrital sands with a shallow water table (USGS 2015).

Figure 2.1-1. General View of the Project Area in Reeves County.

Figure 2.1-2. General View of the Project Area in Hudspeth County.

Figure 2.1-3. View from GLO Parcel Block 78 Section 36 in El Paso County Overlooking the Rio Grande Valley, Facing Southeast.

The geologic history of the region is diverse and has contributed to the variable rock types and topography present. The oldest rocks in the El Paso area are approximately 1.2 to 1.4 billion years old. In the time since those rock units were formed, the area has been under a sea where deposition of sedimentary layers occurred and then uplifted above sea level where they were exposed to erosion. Approximately 1.1 billion years ago, intrusive magmas breached the earth's surface and initiated a series of volcanos creating layers of igneous rock and igneous xenoliths. Another period of erosion took place until approximately 500 million years ago, which eroded much of those igneous rocks and deposited them into the Bliss Sandstone. The deposition that took place in the Cretaceous Period, late Mesozoic, created shallow marine sediments that contain fossils of marine invertebrates.

Early in the Cenozoic, compressional mountain-building forces created the mountain ranges seen in the area today before an extensional stress began 35 million years ago. Extensional forces created rifts, such as the Rio Grande Rift, by pulling the Earth's crust apart. Future erosion of higher topography and deposition in the low areas began to fill these rifts and form the basins of the region. These sediments are called the Fort Hancock Formation. The basins are deep structures; for example, more than 9,000 feet of sediment underlies the El Paso International Airport and 12,000 feet of basin fill sediment rests on Cretaceous rock under the Mesilla Bolson surface (Cornell 2015).

2.3 SOILS

The primary soil type on the Reeves County tracts is classified as Delnorte-Chilicotal association, rolling (USDA-NRCS n.d.). This soil association consists of shallow to very shallow gravelly loam

on uplands. Slopes range from 0–12 percent, and the soils formed from calcareous gravels. The profile is typically 10–30 cm thick, and overlies weakly cemented caliche.

In Hudspeth and El Paso counties, soils along the project corridor within the GLO parcels are classified as Culberspeth-Chilicotal complex, 1 to 8 percent slopes. These very shallow soils formed on fan remnants and consist of strongly alkaline gravelly loam that is approximately 5–15 cm thick. The Culberspeth-Chilicotal complex is underlain by cemented material.

2.4 CLIMATE

The climate in the Project region is characterized as semi-arid. The average daily summer temperature is 82.8°, and the average daily winter temperature is 44.8° (Jaco 1971). The project area receives approximately 8 inches of rainfall a year. Summer is usually the wettest period, with a monsoon season typically beginning in July; spring is the driest time of the year. Rainfall conditions are highly variable from year to year, however, and those uncertainties undoubtedly influenced prehistoric and early historic settlement and subsistence practices (Miller and Kenmotsu 2004).

3.0 CULTURAL PERSPECTIVE

3.1 PREHISTORIC CONTEXT

This summary highlights the broad patterns of cultural developments that occurred throughout the prehistoric period in the project area, which is located in the Trans-Pecos/Jornada Mogollon region of west Texas. Settlement patterns were strongly influenced by the arid environment that persisted to varying degrees throughout most of the prehistoric era. The three major rivers—the Devils, the Pecos, and the Rio Grande—provided drinking water (of varying quality) and supported important plant and animal resources. Other sources such as springs, seeps, and *tinajas* (potholes) attracted humans to upland areas and provided water on an intermittent basis (Turpin 2004:266–267). Inhabitants along the Pecos and Rio Grande rivers utilized the many rockshelters that formed in the limestone cliffs. Along the Devils River, where fewer rockshelters are found, settlements took the form of large open-air camps at the mouths of each tributary along the river, whose waters may have been valued above those of the saline Pecos and the muddy Rio Grande (Turpin 2004:267).

3.1.1 Paleoindian Period (ca. 10,000–6,000 B.C.)

Archaeologists in the early twentieth century were the first to obtain solid evidence of human occupation in North America during the Pleistocene, when now-extinct species of mammals roamed the continent. Claims had been made in the nineteenth century for the association of humans with extinct fauna, but it was only after incontrovertible evidence was produced from the Folsom site in New Mexico in 1927 and Twelve Mile Creek site in Kansas that the archaeological community embraced the antiquity of Native Americans in North America (Hofman and Graham 1998:87; Meltzer 1983, 1994). Additional discoveries of artifacts in direct association with extinct mammal bones followed at Dent and Lindenmeier in Colorado, and Blackwater Draw near Clovis, New Mexico (Figgins 1933; Howard 1935; Wilmsen and Roberts 1978).

The Paleoindian period has long been considered important by North American archaeologists, as it has been viewed as the earliest settlement in the continent (Bonnichsen and Turnmire 1991; Meltzer 1989; Smith 1986). Associated with diagnostic Clovis fluted projectile points, early

Paleoindian sites under the "Clovis First" model have been interpreted as evidence of a rapid colonization of the North American continent by nomadic hunters arriving via Beringia near the end of the last glacial maximum (e.g., Haynes 1964, 1967, 1982, 1987; Martin 1973). However, research has been accumulating from sites where possible pre-Clovis occupations have been identified, and many archaeologists have come to question the primacy of Clovis in the settlement of North America, particularly after the confirmation of human occupation at 14,600 B.P. in Monte Verde, Chile (Dillehay 1989; Dillehay et al. 2008).

Examples of sites displaying possible pre-Clovis components include Pendejo Cave in New Mexico, where a sequence of radiocarbon assays from stratified deposits of Pleistocene faunal remains date to almost 50,000 B.P. However, there is no direct evidence that the earliest dated material is associated with human activity (MacNeish et al. 1993). At the Big Eddy site, a stratified multicomponent Paleoindian site on the Sac River in the southwestern Missouri, possible manuports were found in a sealed pre-Clovis level (Lopinot et al. 1998, 2000). Likewise, a site in Kiowa County, Oklahoma—the Cooperton mammoth site—has produced fractured mammoth bones possibly dating around 20,400–17,500 B.P. in association with four fractured cobbles that may or may not be cultural (Anderson 1975). The Burnham site on the Cimarron River in northwestern Oklahoma also produced apparent artifacts (flakes and two possible tools) in association with an extinct bison species (*Bison chenyi*) that has not been found at any Clovis site; the dating of the Burnham site is under question and ranges from 40,000–11,500 B.P. (Wyckoff et al. 1990, Wyckoff et al. 1991; Wyckoff and Carter 1994). The Gault site and the nearby Debra L. Friedkin site in central Texas appear to have more robust pre-Clovis archaeological materials in occupation layers dating at least 14,500 or perhaps 15,000 B.P. (Collins et al. 1991; Gault School of Archaeological Research 2011; Waters et al. 2011). The Lovewell Mammoth site in north-central Kansas yielded high-velocity impact points and flaked limb-bone fragments interpreted as tools and faunal materials that may or may not be associated, dated to 18,250 ± 90 years B.P. (Holen 1996:69–70). Somewhat questionable findings also came from the Selby and Dutton sites in eastern Colorado where stone tools were found in association with Pleistocene megafauna in a stratigraphic sequence whose dating is not iron-clad (Stanford 1979). The La Sena mammoth kill site in Nebraska has produced 18,000 ± 190 and 18,440 ± 145 years B.P. dates from bone collagen; although the site has no associated artifacts, the bones are disarticulated and exhibit green bone fracture that might reflect butchering (Bonnichsen and Turnmire 1999:12). At the Burnham site in Oklahoma, chipped stone flakes were found in sediments with extinct bison remains and charcoal dating to between 26,000 and 40,000 years B.P.; retouched flakes and other artifacts from the site were recovered from a deposit dated between 28,000 and 32,000 years B.P. (Wyckoff et. al. 1990:60–62, Wyckoff 1999:356–357). Levi Shelter in central Texas has yielded bone tools, chipped stone tools, numerous flakes, and bones of both extinct and extant fauna along with a 12,800 B.P. radiocarbon date in two levels underlying a Clovis stratum, but the complex stratigraphy at the site could be questioned (Alexander 1982; Wyckoff 1999:349). Bonfire Shelter, also in Texas in the vicinity of the project, has produced a 12,460 ± 490 B.P. date from charcoal in a bone bed with circumstantial evidence of human activity but no stone tools (Wyckoff 1999:349). False Cougar Cave, Montana, produced human hair believed to be from a level dated at 14,500 years B.P. (Frison and Bonnichsen 1996:311). Unfortunately, the data from these sites are not unequivocal due to questions about dating, stratigraphic context, or identification of artifacts, and more research is needed to firmly establish a pre-Clovis presence.

Accepted Paleoindian sites are recognized primarily by distinctive projectile point forms. Most known Paleoindian projectile points are fluted, but styles evolved through the period. Earlier fluted types include Clovis, Folsom, Sedgwick, and Gainey. Intermediate-age point types include

Coldwater, Quad, and Pelican. The late Paleoindian period (beginning circa 10,500–10,000 B.C.) is marked by the Dalton point, as well as types more common to the west such as Plainview, Meserve, San Patrice, and Agate Basin (Collins 2004:117–118; Morrow 1996; Morrow and Morrow 1999; Wyckoff 1965:115–116). Overlap exists in the periods in which different projectile points were in use (Hofman and Graham 1998:96–116). Paleoindian points tend to be made of high-quality lithic raw materials, such as Burlington chert (from the Ozarks), Arkansas novaculite, and Edwards chert from Texas, obtained through a mobile settlement pattern and/or exchange (Hofman et al. 1991; Morrow 2005). Clovis points have been found along with polished beveled bone and ivory spear foreshafts in sites from Montana to Florida (Lahren and Bonnichsen 1974; Stanford 1991).

Clovis sites are more common in the southern Plains, and older radiocarbon dates have been obtained in the south, which contradicts expectations if Clovis peoples represent a wave of migration from Beringia into the North American continent. These observations have prompted a model for Clovis emergence and spread from the southwestern United States; alternatively, some researchers have proposed a Clovis origin in the southeastern United States based on the large number of projectile points recovered in the region (Hofman and Graham 1998:95).

The Paleoindian period began at the end of the last ice age at a time when many species of now extinct Pleistocene megafauna roamed the mid-continent (Meltzer and Mead 1983). Species such as mammoth, mastodon, horse, tapir, ground sloth, and giant bison were among the animals hunted (or scavenged according to Haynes [1991] in the case of mammoths) by Clovis groups. In eastern Missouri, the Kimmswick site has produced Clovis points and lithic debitage in direct association with mastodon. But in addition to the mastodon bone, archaeologists recovered a variety of other species, including white-tailed deer, various small mammals, amphibians, and turtles, reflecting the broad subsistence base that characterized Paleoindian economy (Graham et al. 1981). The environmental changes taking place at the end of the Pleistocene and the changing availability and distribution of resources across the landscape forced Paleoindian groups to adjust their subsistence practices (Hofman and Graham 1998:116; Graham and Mead 1987). For example, Folsom generally postdates most of the megafauna extinctions (Hofman and Graham 1998:118), which may have prompted a more focused exploitation of bison at high-profile kill sites, often employing landform traps, as key events within a subsistence regimen that involved generalized forging across the landscape (Andrews et al. 2008; Todd et al. 1992). Little plant material has been recovered from Paleoindian sites, but it is safe to assume that a variety of plants were used for food and other purposes and that Paleoindian groups were opportunistic hunters and gatherers (Collins 2004:117; Hofman and Graham 1998:118–120).

Paleoindian settlement patterns involved migration from one hunting ground to the next. The occurrence of tools and debitage manufactured from multiple lithic sources, 400 to 500 km distant from the site and from each other in a single component, such as has been documented at the Hell Gap site (Banks 1990), provides concrete evidence of the highly mobile adaptation which has been postulated for the Paleoindian period. Archetypical kill sites like Blackwater Draw, Folsom, Scottsbluff, Plainview, and Lipscomb (Holliday et al. 1999; Howard 1935; Meltzer et al 2002; Todd et al. 1990), where fluted points were found in association with now-extinct megafauna, have shaped widely held conceptions of Paleoindian lifeways. But ecological diversity across the North American continent dictated a focus on varied locally-available resources and different settlement patterns, accordingly.

No kill/butchering sites have been documented in the Trans-Pecos/Jornada Mogollon region. A significant Paleoindian occupation on the Rio Grande has been documented at Bonfire Shelter

(Bone Bed 2), where Folsom and Plainview points have been found along with the butchered remains of extinct bison (around 120 individuals) from at least three large drive hunts in which the animals were herded over a cliff above the shelter; the materials were dated to around 10,000 B.P. and constitute the earliest and southernmost buffalo jump known in North America (Dibble and Lorrain 1968). The Kincaid Shelter near the Sabinal River in Uvalde County features deposits spanning the entire prehistoric sequence, including Paleoindian. The site has yielded bones from a wide range of now extinct species and Clovis and Folsom points in different strata and an unusual prehistoric stone pavement that apparently covered muddy areas within the shelter (Collins et al. 1989).

The ephemeral nature of most Paleoindian sites suggests that these mobile hunters did not live in permanent settlements. Domestic architectural evidence is scant, but a handful of sites have revealed small circular post patterns and floor areas (e.g., Frison and Bradley 1980; Frison and Stanford 1982; Irwin 1971). The distribution of exotic cherts used for Paleoindian artifacts and deposited hundreds of miles from the lithic source areas reveals the geographic range of mobile groups and/or their involvement in long-distance trade (Gillam 1996, 1999; Hofman and Graham 1998). All of the key, high-quality lithic raw materials of the Great Plains were employed by Paleoindian groups, demonstrating their knowledge of the landscape and its resources (Hofman and Graham 1998:118). It is assumed that the nomadic lifestyle pursued by these groups was punctuated by periodic aggregations in which larger groups assembled to exchange information, hold ceremonies, and meet potential mates (Hofman 1994). The artistry, ritual life, and symbolic culture of Paleoindian peoples is difficult to access, given the limited nature of the archaeological record. However, engraved stones have been found at the Gault site in central Texas, a bird bone whistle or flute was found at the Jones-Miller site in Colorado, a painted bison skull has been found at the Cooper bison kill site in northwestern Oklahoma, red ochre has been found in burial contexts and suggests important ritual uses; these finds, along with the craftsmanship of fluted points and other tools suggests aesthetic values, ritualistic behavior, and abstract communication (Bement 1997; Breternitz et al. 1971; Collins et al. 1991; Frison 1991; Hofman and Graham 1998:96; Lahren and Bonnichsen 1974; Stanford 1978).

The earliest widely recognized Paleoindian remains belong to the Llano complex, typified by fluted Clovis projectile points and prismatic blades, frequently found in association with extinct Pleistocene fauna, most notably mammoth. Subsequent Paleoindian complexes, each with its characteristic set of distinctive projectile points and chipped stone tools, appear to have focused on the exploitation of bison after the passing of the mammoth, mastodon, and other Pleistocene megafauna. Dependence on large game as the major subsistence staple is another distinguishing trait of the period. The Folsom complex followed the Llano in most areas, and like the Llano complex, appears to have been fairly ubiquitous across the central United States. In contrast, the later Paleoindian complexes tend to be geographically differentiated. The Agate Basin Complex, for instance, is recognized on the northern plains while the contemporaneous Plainview and possibly Milnesand complexes are more southerly manifestations (Hofman et al. 1989:40). On the Southern Plains, late Paleoindian Plano complex sites, represented by unfluted Plainview and Hell Gap projectile points, seem to reflect a greater focus on exploitation of bison (Hofman and Graham 1998:103). Such regional differences are suggestive of the genesis of divergent cultural groups adapting to large but separate territories, a process which appears to have accelerated in the succeeding Archaic period.

In the immediate project region, Clovis occupations are represented at Rhodes Canyon and Mockingbird Gap, which are located in the Tularosa Basin of southeastern New Mexico (Beckett 1983; Weber and Agogino 1968). Unfortunately, the Rhodes Canyon material cannot be isolated

from artifacts associated with later occupations, and the cultural deposits at Mockingbird Gap have not been reported on in any detail (Miller and Kenmotsu 2004). Folsom sites are much more numerous, but are usually identified by surface finds, and are often mixed with later material. Two sites (41HZ504 and 41HZ505) in Padre Canyon, which is southeast of El Paso, have yielded numerous Folsom hafted bifaces and reveal evidence of long distance trade and/or travel during that period (Mauldin and Leach 1997). The Plano and Cody complexes are also primarily represented as surface finds and/or occur in mixed contexts. Important sites that date to this era in project vicinity include 41HZ347 on the Diablo Plateau, and LA63880 in the Tularosa basin north of El Paso (Miller and Kenmotsu 2004).

3.1.2 Archaic Period (6000 B.C.–A.D. 200)

Increasing aridity at the end of the Pleistocene transformed what had been a cool, mesic savanna. Megafauna became extinct and semi-desert conditions became established, peaking around 5000 years ago. Precipitation increased for a short interval around 3000 B.P., allowing the southward expansion of the Great Plains grasslands to the Rio Grande (Collins 2004:113–114; Turpin 2004:266).

The Archaic Period in the project region is typically divided into three subperiods: Early Archaic (6000 B.C. – 4000 B.C.), Middle Archaic (4000 B.C. – 1200 B.C.), and Late Archaic (1200 B.C. – A.D. 200). The population generally increased through time, with apparent demographic shifts from small, highly mobile Early Archaic groups inhabiting places for fairly short periods to relatively long-term occupations during the Late Archaic where people supplemented their diet with cultigens (Miller and Kenmotsu 2004). Rockshelters and open-air habitations were common throughout the Archaic period, with shallow pithouses constructed with poles, brush, and daub coming into widespread use by the Middle Archaic (Miller et al. 1993; O'Laughlin 1980). The use of caliche and rock for hearths and other thermal features also became a common practice (Miller and Kenmotsu 2004).

Early Archaic projectile point technology changed from a reliance on lanceolate forms to smaller, stemmed varieties such as Bajada, Jay, and Uvalde. The latter represents a connection to central Texas, where Uvalde hafted bifaces are a common occurrence in Early Archaic contexts (Prewitt 1995). Grinding stones, hammerstones, Guadalupe bifaces (thought to be used for woodworking), and various unifacial and bifacial tools were also used, attesting to the wide range of activities carried out by Early Archaic groups (Collins 2004:119–120). Fiber assemblages are common in dry caves, and reveal the use of sotol and agave (likely lechuguilla) fibers for plaited sandals and other artifacts (Turpin 2004:269–270).

Important Early Archaic sites in the project region that have been radiocarbon dated include Fresnal, Pendejo and Todsen, all of which are multicomponent rockshelters (MacNeish 1993; Miller and Kenmotsu 2004). Locality 21 at the Phantom Lake Springs site in the eastern Trans-Pecos contained buried hearths and other cultural material that was dated to 6050+/-100 B.P; it is one of the few sites in the region where an Early Archaic origin for Uvalde hafted bifaces has been confirmed (Charles 1994; Miller and Kenmotsu 2004).

The inventory of sites with Middle Archaic components is larger than for previous periods, and that is thought to represent an increase in population that coincided with a drier climate. That increase in aridity likely caused a change in resource availability resulting in more focused and intensive subsistence strategies (Miller and Kenmotsu 2004).

Although diversity in overall projectile point morphology also increased during the Middle Archaic period, there are only two primary hafting configurations. The expanding stem and concave base forms commonly associated with the Oshara Tradition and Cochise sequence are generally more common in the immediate project vicinity, while the contracting stem forms with flat or rounded bases that represent the Coahuila traditions are prominent in the eastern Trans-Pecos region (Miller and Kenmotsu 2004).

Keystone Dam 33 and Vista del Sol are two important sites in the Trans-Pecos with Middle Archaic components (Miller et al. 1993; O'Laughlin 1980). They contained residential structures in dated contexts that provide information on their size, configuration, and method of construction (Miller et al. 1993; O'Laughlin 1980). Faunal and botanical remains were recovered from Middle Archaic features at Keystone Dam. Although the sample is small, it suggests that the inhabitants included rabbits and other small-to-medium sized mammals in their diet. The botanical evidence indicates they collected purslane, mesquite, grasses, cacti, and other species that could be used as food, or for utilitarian purposes (Miller and Kenmotsu 2004).

Population continued to increase during the Late Archaic period, as evidenced by a rather dramatic rise in the number of sites with components dating to that era. That is particularly the case in the interior basins. Sites tend to be larger, as are the number and size of burned rock and other thermal features associated with many Late Archaic occupations. Large "ring middens" comprised of burnt rock surrounding a central depression filled with ash and charcoal first appear during the Late Archaic, and have been attributed to an intensified and more focused plant processing strategy (Miller and Kenmotsu 2004).

Subsistence relied heavily on hunting and gathering throughout the Late Archaic, but there is evidence that maize and other cultigens were incorporated into the diet sometime between 1500 and 1000 B.C. (O'Laughlin 1980; Tagg 1996). Although there is clear evidence that cultigens were introduced about that time, they appear to have been a very small part of the overall diet (Miller and Kenmotsu 2004).

Small mammals, especially rabbits, were a major source of meat, but deer, antelope, and mountain goat remains have also been recovered from Late Archaic contexts in the project region (Beckett 1979). Consequently, it appears that large game was an important part of the subsistence base as well.

Hafted biface technology is characterized by the gradual replacement of side notched forms with corner notched and stemmed varieties that exhibit flat or convex bases. Varieties include Palmillas, Ensor, Figueroa, Frio, and Marcos. With the exception of obsidian, which rose in popularity during the Late Archaic, there was also a concomitant increase in the use of local, and somewhat lower quality, raw material. This suggests that group mobility decreased and land use practices were intensified within more localized areas (Miller and Kenmotsu 2004).

There are several notable sites in the project region that contain Late Archaic components. Examples include the previously mentioned Fresnal Shelter and Keystone Dam sites, as well as the Tornillo rockshelter, which is located just north of El Paso (Miller and Kenmotsu 2004; O'Laughlin 1980; Tagg 1996; Upham et al. 1987).

3.1.3 Formative Period (A.D. 200–1450)

The Formative period in the Trans-Pecos/Jornada Mogollon region is broadly divided into the Early Formative (A.D. 200 – 1000) and Late Formative (A.D. 1000 – 1450) sub-periods. The Early

Formative also corresponds to the Mesilla phase, while the Late Formative is divided into the Doña Ana (A.D. 1000 – 1250) and El Paso (A.D. 1250 – 1450) phases (Lehmer 1948; Whalen 1978).

The demarcation between the Early Formative and Late Formative denotes the transition from the Pithouse tradition to the Pueblo tradition, although pithouses continued to be used throughout the Formative. That is especially the case in the eastern portion of the Trans-Pecos, where small La Junta phase "pithouse villages" were established along the Rio Grande while their counterparts in the western Trans-Pecos (El Paso phase) constructed and occupied "rooms" and pueblos (Miller and Kenmotsu 2004). Nonetheless, the Early Formative is often referred to as the Pithouse period while the Late Formative is also known as the Pueblo period.

The use of pithouses during the Formative period is an extension of Late Archaic practices, but they tended to be larger, and many were reoccupied several times after being refurbished or rebuilt. A smaller version of both Late Archaic and Formative pithouses, referred to as "huts," were used during both eras, but are especially common at Mesilla phase sites (Miller and Kenmotsu 2004; Whalen 1978). They were circular with shallow walls, and the floors were not prepared. By the later portion of the Mesilla phase, people began to create isolated "rooms." While pithouses tended to be circular or subrounded, these structures were square with shallow walls and floors prepared with plaster or caliche (Miller and Kenmotsu 2004). They had central hearths and storage areas, and are thought to be the precursor to pueblos, which consist of two or more contiguous rooms. The transition from the construction and use of pithouses to rooms and pueblos began sometime around A.D. 1000, and represents the advent of the El Paso phase (Miller and Kenmotsu 2004).

Mesilla phase settlements occurred throughout the interior basin of the Hueco Bolson, while El Paso groups appear to have been organized in core areas located near alluvial fans next to playas (Whalen 1978). That was likely to take advantage of periodic runoff to irrigate their crops (Miller and Kenmotsu 2004).

In terms of site structure, during the Mesilla phase, pithouses were placed in central clusters that were surrounded by activity areas (Miller 1989, 1990). Some of those areas contained pits lined with fire-cracked rock adjacent to mounds of discarded rock; trash middens are also present in many cases. This practice appears to have continued into the late Mesilla phase when isolated rooms were coming into favor (Miller 1990). During the El Paso phase, pueblos were arranged in a linear fashion along blocks of multiple rooms. Pueblos were also arranged around plazas, but are less common, and tend to be the largest of settlements (Miller and Kenmotsu 2004).

As settlement patterns, site structure, and architecture became more formal and complex, cultigens became an increasingly important addition to the hunting and gathering aspect of the subsistence base. Corn, beans, and curcurbits were the primary cultigens, and they augmented the dietary importance of non-cultivated seeds, succulents, and other plants. That is especially apparent during the El Paso phase, when it appears that hydrological issues were significant factors when establishing settlements (Lehmer 1948; Whalen 1978). One example is a reservoir that has been reported from Hot Well Pueblo, and it is suspected that many other features found at El Paso phase sites could represent reservoirs or canals (Scarborough 1988).

The adoption of ceramic technology marks the advent of the Formative period. Plain El Paso brown and imported Mimbres whiteware pottery, primarily in the form of jars, were being used by the beginning of the Mesilla phase. El Paso brown ware continued to be produced after A.D. 1000, when El Paso bi-chrome and polychrome ceramics were introduced. The bi-chrome and

polychrome designs became increasingly complex and elaborate through time. Necked jars occur in those later assemblages, and are likely associated with an increase in corn production and processing (Miller and Kenmotsu 2004).

Projectile points are a notably small addition to most Formative period assemblages, and evidence of biface production is uncommon (Miller and Kenmotsu 2004). However, it is likely that this perspective is skewed because of research interest bias, and a general lack of reporting on lithic assemblages, especially during the later Formative. Recognized types include Toyah, Perdiz, Fresno, and Soto.

Keystone Dam 37, Hot Well Pueblo, Hueco Tanks, Indian Tank, Meyer Range, and Alamogordo Site 3 are some of the more important sites in the project region (Browning 1991; Carmichael 1985; Lehmer 1948; Lekson and Rorex 1987; Miller 1996). They have played a significant role in Formative period research, and much of the previous discussion is based on data derived from those sites.

3.1.4 Post Pueblo Period (A.D. 1450–1750)

The archeological and radiometric evidence indicates settlements in the Trans-Pecos were abandoned sometime between A.D. 1450 and A.D. 1500. Several explanations have been offered for this phenomenon. Some have argued that the El Paso phase inhabitants were overspecialized agriculturalists that could not cope with environmental changes—in this case drought—and had to abandon the area (Miller and Kenmotsu 2004; O'Laughlin 1980). Another argument also takes environmental conditions into account, but recognizes the influence of the Casa Grande political system centered in what is now the State of Chihuahua in Mexico (Minnis et al. 2006; Wimberly 1979). The third scenario also implicates environmental factors, but suggests that the pueblos were abandoned as groups de-emphasized their reliance on agriculture, and developed a subsistence strategy that focused more on hunting and gathering (Carmichael 1985). Of course, the arrival of Europeans and their impact on native societies cannot be discounted. Additional commentary on this period is provided in the following sections.

3.2 EL PASO, HUDSPETH AND REEVES COUNTIES IN THE HISTORIC PERIOD

El Paso, Hudspeth, and Reeves counties are located in far western Texas, in the Trans-Pecos region of west Texas. El Paso and Hudspeth are the only two Texas counties in the Mountain Time zone, while Reeves is in the Central Time zone. El Paso County was formed in 1850 and more fully organized in 1871. The City of El Paso, the population and economic center of the entire region since the late seventeenth century, has been the county seat since 1883. The city limits encompass 240 square miles, about a quarter of the county's area. As of 2014, it ranks as the sixth largest city in the state and the 19th largest in the nation. Since 1890, the city has seen double digit and sometimes triple digit percentage growth in population in each decade with the exception of the 1930s.

Hudspeth County was created in 1917 out of what had been the eastern part of El Paso County. The county seat is Sierra Blanca, in the south-central part of the county. The county was named for Claude Benton Hudspeth, an El Paso resident and an active member of the state senate at the time of its founding. Due to terrain, problems with access to good water, and a lack of other attractive resources Hudspeth County has always been a place of limited population and minimal economic activity.

Reeves County was separated from Pecos County in 1883, with Pecos established as its county seat in 1884. Bordered to the northeast by the Pecos River, it was named for George R. Reeves, who served in the Texas legislature before and after the Civil War, and who served as a colonel in the Confederate army during the conflict. The county's economic sectors include agriculture, ranching, and the oil industry, supplemented by tourism.

The Rio Grande defines approximately 125 miles of the southwestern boundary of El Paso and Hudspeth counties, and serves as the international boundary with Mexico. As with all Texas counties along the Rio Grande, the direct connection with Mexico has strongly influenced the history, culture, and economic development of the two counties from the earliest days of Spanish exploration to the present.

3.2.1 The Colonial Period

The first European incursion into what is now known as Texas was in 1519, when Álvarez de Pineda explored the northern shores of the Gulf of Mexico. Alvar Núñez Cabeza de Vaca, member of Pánfilo de Narváez's 1528 expedition, was shipwrecked near Galveston Island, and with the other survivors he was enslaved by the local Indians. When he escaped in 1529, Cabeza de Vaca traveled up the Rio Grande to a point 75 miles south of El Paso, likely within what would become Hudspeth County, before turning west and arriving in Culiacan in Sinaloa in 1536. Cabeza de Vaca later reported that riches were located in the lands north of his wanderings. In response to his report, Spain's King Charles I sent Friar Marcos de Niza to search out the northern lands. De Niza sighted a distant Pueblo Indian town in New Mexico, which he referred to by the Indian word Cíbola and later described it as being constructed of silver and gold, and assumed it was one of the fabled Seven Cities. A subsequent expedition was headed by Francisco Vásquez de Coronado from Compostela to the Plains states of the present-day United States between 1540 and 1542. Coronado found in west Texas pueblo dwellers he referred to as Teyas, and nomadic bison hunters he referred to as Querechos (Britten 2014:94–95; Calvert et al. 2014:13–15; Smallwood 2014:119).

Cabeza de Vaca may have met members of the Jumano tribe in 1534–1535 in the upper Rio Grande Valley, which includes present-day New Mexico as well as portions of west Texas and southern Colorado. Some Jumanos practiced irrigated agriculture, growing maize, squash, and beans along the Rio Grande, and irrigated crops of corn and peaches from San Solomon Spring in present-day Reeves County; others hunted bison (Britten 2014:97; Calvert et al. 2014:13; Levario 2014:76; Monroe 2014:16; Smith 2010). The Jumanos were related to the Patarabueyes tribe based in the fertile agricultural area at La Junta de los Rios, located at the confluence of the Rio Conchos and Rio Grande, 250 miles southwest of present-day El Paso. The Patarabueyes traded with the Pueblo Indians of New Mexico and with the Caddo confederacy in present-day east Texas. In the mid sixteenth century, Spanish slave-hunters repeatedly captured natives at La Junta (Folsom 2015). Catholic missionaries passed through La Junta in 1581, and when the semi-nomadic Apache tribe began to expand their territory into areas previously controlled by the Jumanos, members of the Jumano tribe asked the Spanish to send missionaries to them, which took place in 1629 and 1632, with six missions being built by 1715 (Calvert et al. 2014:18–19; Folsom 2015). Through their receptivity to the missions, the Jumanos sought to use the Spanish as guards to protect them from intertribal warfare as they hunted and conducted trade with the Caddos (Calvert et al. 2014:19). But by the 1690s, the Caddos preferred traders in French Louisiana, and at the end of the eighteenth century, the remainder of the Jumano tribe had been absorbed by the Apache (Calvert et al. 2014:18–19,40; Monroe 2014:17).

The 1581 RodrÍguez-Sánchez expedition gave the name El Paso del Norte to the location at which the Rio Grande cut through the mountain ranges (Timmons 2010). In 1598 Juan de Oñate claimed the entire territory drained by the Rio Grande. The El Paso area became a trade center on an historic *camino real*, or royal highway, which led to Oñate's political headquarters in northern New Mexico. The Nuestra Señora de Guadalupe Mission was founded in 1659 in present-day in downtown Ciudad Juárez in Chihuahua; it served as the spiritual center for residents along the Rio Grande valley. By 1682 five settlements had been founded west of the river (El Paso County 2015; Levario 2014:76–77). In the late sixteenth and into the seventeenth century, Franciscan friars established a number of fortified missions among the Pueblos of New Mexico, and explorers again began to probe the western plains of Texas and the Texas Panhandle. However, the threat of French settlements along the Gulf Coast of Texas shifted the focus of Spanish colonization efforts back to east Texas in the late seventeenth and early eighteenth centuries (Barkley and Odintz 2000:5–6; Campbell 2003:49–54; Faulk 1964:13–16; Richardson 1967:9, 17–20).

Following the Pueblo Revolt in 1680, in which the Pueblo Indians destroyed Spanish settlements in the upper valley of the Rio Grande (in present-day New Mexico), much of the Spanish population of the area took refuge in El Paso, which had been a small village at present-day Ciudad Juárez, on the west side of the Rio Grande (Calvert et al. 2014:19; Levario 2014:77). Its strategic location between Ciudad Chihuahua and Santa Fe enabled El Paso to become a thriving commercial and military center, supplier, trade center, and way station. By the early eighteenth century, local residents had flourishing farms fed by irrigation ditches, and vineyards dedicated to winemaking. By 1750, settlements in the vicinity of El Paso numbered over 3,000 inhabitants (Levario 2014:77).

Although El Paso grew quickly due to its strategic location and accessible water, the areas of the Trans-Pecos region away from the Rio Grande did not see similar development. Europeans had traveled through what was to become Hudspeth County from the sixteenth century on, with routes defined by a number of springs used as watering places through the otherwise dry territory. (By the 1950s, all these springs had gone dry due to heavy use of ground water for crop irrigation.) Hudspeth County is part of a large region of Trans-Pecos Texas that has long been seen as "a place that people passed through on the way to someplace else" (Kohout 2010).

The first half of the eighteenth century was the period in which trade and the mission system, as well as the first effects of epidemic diseases, began to seriously disrupt the native culture and social systems. By the time that heavy settlement of Texas by Anglo-Americans began in the early 1800s, the indigenous Indian population was greatly diminished (Richardson 1967:21–31; Story 1990:322). During the colonial period, two major Indian groups had moved into southern and western Texas. The Lipan Apache were Athapaskan speakers who moved east into west Texas in the sixteenth century. The Comanche were Uto-Aztecan speakers who split from the Shoshone in the late seventeenth century, and moved from eastern Wyoming into the Southern Plains of Texas, New Mexico, Colorado, Oklahoma, and Kansas in the eighteenth century under pressure from the Cheyenne, Kiowa, and Pawnee, who had the advantage of firearms supplied by French traders (Britten 2014:95; Cash and Wolff 1974:2–3; Lacey 2010:14; Minor 2009). In the early seventeenth century, after initial Lipan Apache migration into west Texas, the Comanche entered the region. Soon, the two groups were in competition to control the southern plains and the bison they supported. With access to horses in the early eighteenth century, both tribes began to implement efficient collective hunting strategies. The Lipan were outnumbered by the Comanche, and after suffering many casualties, were displaced to the south. During the eighteenth and nineteenth centuries, violence continued between the Comanche and the Lipan,

consisting of small-scale raids and taking of captives (Britten 2014:96–97; Hester 1980; Minor 2009; Reeve 1946). The Lipan also launched periodic raids against Spanish colonial settlements. San Antonio was a particular target after the founding of the presidio and missions, and regular attacks continued into the 1770s (Minor 2009:113; Valerio-Jimenez 2013:41).

Spanish military leaders launched expeditions in the 1740s and 1750s, seeking to defend New Spain's northern frontiers against the Apache, and they built a presidio on the opposite side of the Rio Grande from La Junta, but abandoned it in 1760 when it failed to deter Apache raids (Folsom 2015; Utley and Washburn 2002:152–153). By the 1760s, Spanish resources were re-directed toward the controlling French expansion of the fur trade and trading routes on the Mississippi River, and countering the threat posed to the eastern periphery of Texas and New Spain's frontier (Calvert et al. 2014:20). In the 1830s conflicts continued between Native Americans—particularly the Comanche tribe—and Anglo American settlements in their hunting grounds. These settlements appealed to the Comanche as a source of goods, and the natives breached the treaties negotiated with the Republic's government. In the late 1830s, Anglo Texan ranger companies began to develop more effective tactics against the Comanches (Calvert et al. 2014:97).

In 1762, during the French and Indian/Seven Years' War, France ceded its vast Louisiana Territory—including present-day Texas—in a secret treaty to Spain, to obtain Spain's support in France's war against Britain, and to prevent the territory from becoming British (Calvert et al. 2014:43; Library of Congress 2007). Subsequently, native Mexican lower-level administrators suspected of corruption and inefficiency were replaced with trusted officers from Spain. While French traders had been part of a Native American economic network that included the Wichitas, Comanches, and the Caddos (a coalition called by the Spanish the Norteños or Nations of the North), the Spanish were outsiders; and in response to the Spanish-Apache alliance, the Norteños considered the Spanish their bitter enemies (Calvert et al. 2014:41, 44).

By 1760, the population of the El Paso area had reached about 5,000, including people of Spanish descent, Native Americans, and mestizos. Once a large dam and a series of *acequias* (irrigation ditches) were created, agriculture flourished on the broad terraces along the Rio Grande, marked by the presence of fine vineyards and high-quality fruit (Levario 2014:77; Timmons 2010). However, ranching was the principal livelihood of west Texas settlers (*pobladores*), and ranches on the frontier provided settlements with beef and pork, wool, hides and tallow (Calvert et al. 2014:18, 30). By the end of the eighteenth century, thousands of cattle, sheep, goats, horses, and mules roamed the range from the Nueces River to the Rio Grande, foreshadowing the large-scale cattle-raising industry of the nineteenth century (Calvert et al. 2014:31). In the 1770s, decrees regulating the wild herds, cattle-branding, and the exportation of livestock created hardships for the rancheros (Calvert et al. 2014:48). Following the 1800 retrocession of Louisiana to France, the Louisiana Territory was sold to the United States in 1803; however, Spain did not recognize West Florida as a part of Louisiana, and continued to administer it (Davis 2013). American traders and settlers entered the area, and provided a market for livestock, horses and mules that the Comanche Indians had stolen in Texas. Through their commerce and gift-giving, American frontier traders and merchants were accepted as allies by the Comanche, while their enmity toward the Spanish increased (Calvert et al. 2014:46-47). By 1806, the population of El Paso had ballooned to 7,000, owing to the success of farmers, ranchers and merchants in the region. The city obtained new services and amenities, like mail service, schools, and churches (Levario 2014:78).

Toward the end of the eighteenth century, wars in Europe diminished Spain's resources for administering and defending its North American territory. Although it supported the American colonies in the Revolutionary War through its alliance with France, Spain initiated an end of its financial support for the Catholic missions, expecting them to become parishioner-supported institutions sustained by the labor and resources of Indians who had been converted into productive Spanish subjects. This secularization of the missions culminated in the 1820s (Calvert et al. 2014:45). An 1804 royal decree ordered the confiscation of church assets, and as the church called in loans and mortgages, disrupting the credit it had provided in local communities, a financial crisis ensued that was aggravated by bad harvests and disruptions in overseas trade (De la Teja 2010a). When Napoleon invaded Spain in 1808 and forced King Ferdinand VII to abdicate the Spanish throne in favor of Napoleon's brother Joseph, *juntas* (committees) were established in Spain's American colonies to protect the empire until Ferdinand could reassume the throne.

3.2.2 Independence Movements, 1810–1836

Despite improving economic prospects over the course of the first decade of the nineteenth century as a result of an enlarged military presence in the province, new settlement projects, trade opportunities with Louisiana, and relative peace with the Apaches and Comanches, the beginning of hostilities in 1811 started an economic and social disintegration that left Texas in ruins on the eve of Mexican independence. Military payrolls continued to be the driving force of the Texas economy in the early 1800s. Between 1810 and 1820, Indian raiders made agricultural work, ranching, and travel dangerous in the western part of the province and throughout the Rio Grande country. In much of Texas, agriculture remained largely a subsistence pursuit during this period, with few farmers producing enough surplus corn to market it among the various military units, and an even smaller number producing commercial amounts of beans, chiles, and even crudely refined cane sugar (*piloncillo*). The cattle market also suffered as ranchers struggled to recover from overharvesting and droughts during the last third of the eighteenth century, with economic effects lingering into the beginning of the nineteenth century (De la Teja 2010b). However, due to its irrigation, agriculture and ranching in the area along the Rio Grande near El Paso continued to flourish (Calvert et al. 2014:67; Levario 2014:78). During this time, distant events were unfolding that would have a major impact on the future of El Paso and west Texas.

Charles Delassus was appointed in 1808 as lieutenant governor of New Spain in 1808. However, the corruption and inefficiency of his administration was viewed by American settlers in west Florida as harmful to their prospects. After calling for political reform, in 1810, a small force of Americans led by Philemon Thomas captured the Spanish Fort San Carlos in Baton Rouge (in present-day Louisiana), and declared the territory to be the Republic of West Florida. However, the United States did not recognize this political entity, and instead annexed it to its Territory of Orleans (Davis 2013). During the United States' First Seminole War in Florida, seeking to remove the American Indians and escaped slaves in Florida who had aided Britain during the War of 1812, Major General Andrew Jackson in 1817–1818 attacked Spanish settlements and captured Spanish forts at St. Marks and Pensacola (Utley and Washburn 2002:130). U.S. Secretary of State John Quincy Adams presented Spain with a demand to either control the inhabitants of East Florida or cede it to the United States. Under the Onís-Adams Treaty of 1819 (also called the Transcontinental Treaty, ratified in 1821), the United States and Spain defined the western limits of the Louisiana Purchase and Spain surrendered its claims to the Pacific Northwest and Florida. In return, the United States recognized Spanish sovereignty over Texas, with the Sabine and Red Rivers marking the Texas-Louisiana border (De la Teja 2010b; U.S. Department of State 2015).

Around this time in Mexico, an 1810 revolution initiated by Father Miguel Hidalgo y Costilla had led to a call for independence in Texas. Hidalgo's movement was propelled by Mexican commoners who wanted to establish self-rule, challenging the Spanish-born elite who ruled New Spain and continued to support the exiled royals deposed by Napoleon. The revolt spread into Texas under the leadership of José Bernardo Maximiliano Gutierrez de Lara. Gutiérrez de Lara and Augustus Magee, a former U.S. Army officer, led the Republican Army of the North, which included Mexicans, Indians, American volunteers from Louisiana and members of the local militia. This force marched from east Texas to central Texas, and proclaimed Texas as an independent state within the Mexican Republic in 1813 with its own governor and *junta.* But the revolutionaries were defeated just four months later by royalist troops south of San Antonio, led by Joaquin de Arredondo, commandant general of the Eastern Interior Provinces. Arredondo then launched a purge on Americans and disloyal Mexicans in Texas that all but left the state uninhabited (Calvert et al. 2014:49; Campbell 2003:89–90; De la Teja 2010a; Faulk 1964:132–140; Richardson 1967:35–37; Vexler 1979:2). José María Morelos y Pavón then assumed leadership of the independence struggle, and oversaw a declaration of independence from Spain and the drafting of a constitution. He could not gain widespread support, and was captured and executed in 1815. In response to revolutionary actions in Spain, as it prepared to re-conquer its North and South American territories, in New Spain royal officer Agustín de Iturbide created an alliance with insurgent leader Vicente R. Guerrero to draft a blueprint for independence called the Plan de Iguala. The plan met with widespread approval both in civilian and military quarters, and when Juan O'Donoju arrived in 1821 to assume leadership of the colonial government, he recognized the lack of support for Spain's rule and signed a treaty granting Mexico independence (Calvert et al. 2014:54; De la Teja 2010a).

While the new Mexican government was preoccupied with the transition from colonial rule to independence, grappling with class distinctions, economic chaos, and the political inexperience of its new leaders, its authority over its northern territory came under challenge. Many Americans were angered by the Onís-Adams Treaty, in which they felt that the U.S. had given up Texas too easily in order to acquire Florida. In response, a group of filibusters led by James Long, a merchant from Natchez, sought to reclaim Texas in 1821. Long was able to march into Nacogdoches and establish a civil government that invited immigrants to take up land there through a land grant system. In spite of the subsequent capture of Long, his activities engendered pervasive distrust of Americans by Mexican officials. Meanwhile, Moses Austin, an American who had lived under Spanish rule in Missouri when it was part of Spanish Louisiana, approached the governor of Texas at San Antonio about renewing his allegiance to the king and starting a colony in Texas. The request was granted in January 1821 and after Moses Austin's death, his son Stephen F. Austin took over the project. Settlers had already begun to arrive in the Brazos and Colorado river valleys in late 1821 when the relatively bloodless revolution led to the independence of Mexico from Spain. Austin had to travel to Mexico City to secure the backing of the new government for his contract, which was accomplished in 1823 (Barkley and Odintz 2000:15; Calvert et al. 2014:55–56; Campbell 2003:94–96, 101–102; Richardson 1967:37–38, 47–49; Vexler 1979:2). Following the approval of Austin's colony, the Mexican government established a colonization policy that permitted Catholic settlers to apply for land grants, or for other settlers to acquire land through an *empresario*, who also received land for facilitating the settlement of a colony of 100 or more families. A total of 41 *empresario* contracts were signed for land in the eastern part of the state, under which some 15,300 families moved to Texas. Many others entered Texas illegally during this time, squatting on unoccupied land. The availability of cheap land in Texas set off a land rush that continued into the 1830s and gave the Mexican province a distinctive Anglo character as the population reached 10,000 (Barkley and Odintz 2000:16; Calvert et al. 2014:59–61; Campbell 2003:103–104, 107–110; Richardson 1967:50–53).

However, the Trans-Pecos region of west Texas remained sparsely populated until well after Texas became part of the United States (Bogener 2014:183).

Stephen Austin had attempted to persuade the governor of the Mexican state of Coahuila y Texas to protect the institution of slavery, arguing that without it, Texas could no longer attract wealthy planters and it would be populated only by shepherds and the poor. He envisioned the establishment of lucrative cotton plantations in Texas, like those in the American South, requiring the use of a slave labor force. Nevertheless, the 1827 state constitution contained language that would have effectively ended the institution of slavery in a matter of time. Initially settlers in Texas circumvented the constitution by drawing up documents that "freed" their slaves, but assigned them to indefinite indentured servitude under contracts that would transfer to their children as well. The Mexican government issued an emancipation proclamation in 1829 in honor of Mexican independence day, but three months later exempted Texas from the provisions under pressure from local officials who feared violent resistance and economic hardship. Disagreement over the issue of slavery was an important basis for Anglo resistance to Mexican authority. In 1800, there were approximately 1,000 African Americans—mostly slaves—in Texas, and that number increased rapidly in the decades that followed. In some parts of west Texas—Young County, for example, slaves constituted a third of the population by 1850. In El Paso County, however, there were only 8 slaves in 1860 (Calvert et al. 2014:61–62; Campbell 2003:112–113; Smallwood 2014:120).

The Americans who moved to Texas under the *empresario* system supported themselves as subsistence farmers in a remote region far from the active influence of the Mexican government. These Anglo settlers did not take their sworn adoption of Mexican nationality seriously, they disregarded Mexican laws and regulations, and they continued to live within the sphere of American commerce and society via New Orleans to the east. The Mexican government became concerned that their presence and de facto autonomy would encourage U.S. claims to Texas. The very success of the American colonization of Texas led to a decision by the Mexican government in 1830 known as the Law of April 6, 1830, to prevent further Anglicization of the state. In 1830, immigration from countries adjacent to Mexican territory was prohibited, importation of slaves was outlawed, and the Mexican government began enforcing tariffs more strictly and arresting religious dissenters to pressure non-Hispanic settlements. The policies led to a backlash, and in 1834 the anti-immigrant policy was rescinded; however, the damage had already been done (Barkley and Odintz 2000:13, 126–130; Binkley 1952:10; Calvert et al. 2014:60–61; Campbell 2003:104, 116–117; Richardson 1967:53–55, 64–65, 70–85).

Tensions reached a head in 1835, when General Santa Anna took over as Mexican president and abolished the federalist constitution of 1824 and took actions to centralize the Mexican government and consolidate his power. In January, Santa Anna reinforced the garrisons at Galveston and Anahuac and began to enforce tariff collection more vigorously. When some agitators protested the collections, they were arrested and reinforcements were sent to Anahuac. A group of citizens at San Felipe, including the previously imprisoned William Travis, heard of the military actions and organized a force to dislodge Captain Antonio Tenorio, who surrendered the 40 men at Anahuac without a fight. Travis' aggressive actions were denounced by a significant number of Texas colonists, who made an effort to smooth things over with the Mexican government. However, the commander of the Mexican forces in Texas, Santa Anna's brother-in-law Martin Perfecto de Cos, was not receptive to the peace efforts and ordered the arrest of dozens of political agitators by the military authorities. Rumors of Santa Anna's intention to invade Texas had put many Anglo Texans on alert, and citizens' committees and militia were organized. Stephen F. Austin, recently released from prison in Mexico, became de facto leader of the revolt

by accepting the chairmanship of the committee of safety at San Felipe. Austin had abandoned his hopes of reconciling with the Mexican government during his imprisonment, seeing Santa Anna's suppression of Zacatecas and move towards centralized power as an inevitable threat to Texas (Barkley and Odintz 2000:17; Binkley 1952:6–11; Calvert et al. 2014:63, 72; Campbell 2003:119–121, 128–130; Nance 2010; Richardson 1967:82–85; Vexler 1979:2).

When Stephen F. Austin declared against Santa Anna on September 8, 1835, Texans began to prepare for a revolution. In October, fighting broke out when a detachment of the Mexican Army was sent to retrieve a cannon given to the town of Gonzales as a defense against Native American attacks, but a small Texan militia refused to surrender it. Several victories followed for the Texans in 1835, but Santa Anna returned in 1836 with a formidable force, determined to crush the resistance with an iron fist. His ruthless slaughter of the tiny force at the Alamo in San Antonio and his execution of captured troops at Goliad in March 1836, however, merely galvanized sentiment for the Texas cause. Sam Houston, who had recently been placed in command of the Texas army, was at Gonzales with the bulk of the Texas army. When he received news of the loss at the Alamo, he decided to beat a hasty retreat toward east Texas, spurring a civilian flight that came to be known as the Runaway Scrape. With an untrained army and Santa Anna's well-organized troops in pursuit, Houston determined not to engage the enemy, but continue his withdrawal to the Brazos River, where he encamped and drilled his inexperienced troops (Barker and Pohl 2015; Barkley and Odintz 2000:20–21; Binkley 1952:68–100; Calvert et al. 2014:73–79; Campbell 2003:130–131; Fehrenbach 1968:227–228; Vexler 1979:2–3).

The approval of the Texas Declaration of Independence at Washington-on-the-Brazos on March 2 added further weight to Houston's survival. The newly elected president of the Republic of Texas, David G. Burnet, criticized Houston's inaction and determined to move the capital farther east. When Santa Anna heard that the government was in flight, he determined to intercept Burnet. Taking his attention off of Houston and dividing his army, Santa Anna led the pursuit through Harrisburg, which he destroyed, toward Lynch's Ferry over the San Jacinto River. Houston had rallied his troops and moved in the same direction, reaching Lynch's Ferry ahead of the Mexicans. His force of some 900 men encamped on the south bank of Buffalo Bayou, north of the road to the ferry. Santa Anna approached the Texans' position on the afternoon of April 20, 1836, and a brief skirmish ensued. However, Santa Anna retired to the south side of the road alongside the San Jacinto River to wait for reinforcements that would arrive the following morning. Expecting Houston to take a defensive posture, Santa Anna rested his men on the 21st. Instead, Houston's men charged the camp when many of the Mexicans were sleeping, shouting "Remember the Alamo! Remember Goliad!" Santa Anna's back was to the river, and his army was completely routed. The battle lasted only 18 minutes, although in their fury the Texans continued to punish the enemy for another hour. Santa Anna escaped, but was soon recaptured. He was forced to sign a treaty of surrender that recognized the Republic of Texas and was later released (Barker and Pohl 2015; Barkley and Odintz 2000:22–25; Binkley 1952:101–108; Calvert et al. 2014:83; Campbell 2003:129–158; Fehrenbach 1968:221–233; Nance 2010).

In the spring of 1836, the events of the Texas Revolution had little direct effect in the Trans-Pecos region. However, in December of that year, the Republic of Texas declared the Rio Grande to be the southern and western boundary of Texas, setting the stage for the subsequent war with Mexico. In advance of full-scale war, violence erupted in 1841 in response to the Santa Fe Expedition launched by Texas' President, Mirabeau Lamar. The gambit involved sending 320 armed men into New Mexico, in hopes of securing the region and capturing the thriving trade centered in Santa Fe. Local residents had no desire to be annexed by Texas, and Mexican soldiers intercepted the expedition and easily subdued them, taking them to Mexico City where

they were imprisoned. In retaliation, Mexican President Santa Anna ordered troops into the disputed territory where they captured San Antonio, but abandoned it two days later. Texas volunteers then marched on a number of Mexican towns along the Rio Grande; in Mier, the Texans were overpowered by Mexican troops and taken prisoner. After most escaped and were recaptured, some were executed. Neither Texas nor Mexico had the resources to maintain a firm presence in the Trans-Pecos region, ensuring that it remained contested territory until Mexico's defeat in the Mexican-American war in 1848. However, the failure of Texas' armed forces to overpower their Mexican rivals made the possibility of U.S. statehood more attractive to many Texans who desired greater military and financial security (Calvert et al. 2014:86, 102–103; Levario 2014:78).

After Texas gained independence from Mexico in 1836, the Republic considered the Lipan Apache to be a useful buffer against Mexican incursions. The government of the Republic of Texas entered into a number of treaties with the Lipan Apache beginning in 1838. These treaties promised lands and protection from the Comanche in return for an end to cattle rustling. The treaties were repeatedly broken and Texas leaders in the 1840s began pursuing Indian removal policies. Many Lipan moved to Mexico and collaborated with the Mescalero Apache in destructive raids on Texas ranches. After statehood, the 1851 San Saba Treaty forced the remaining Lipan and other Indian tribes in Texas onto reservations. In 1873, U.S. troops launched an assault on the Lipan in Mexico to end the cross-border raiding. Many Lipan were killed, and the remainder were deported to the Mescalero reservation in the Sacramento Mountains of New Mexico (Hester 1980:54; Minor 2009:140–177; Opler 1983:21; Schilz 1987; Watson 1994:15).

3.2.3 Statehood through the Civil War and the San Elizario Salt Wars, 1845–1877

The government in Mexico City refused to recognize the Republic of Texas, but despite the threat of an attack against the rogue state, new immigrants began to pour into Texas after the Revolution. The legal status of slavery had been ambiguous during Mexican rule, but many settlers had brought their bondsmen with them. In Stephen Austin's large colony, the Civil and Criminal Regulations provided the laws necessary to protect slavery. Following the Revolution, it was clear that the Texas Republic would support slavery, and the African-American population expanded rapidly. In 1836, there were an estimated 5,000 slaves in Texas, representing about one in seven Texans. Just over a decade later, in 1847, that number had increased nearly eight-fold, and slaves represented nearly 38 percent of the total population (Barkley and Odintz 2000:32; Richardson 1967:63–64, 139–140). After years of efforts by President Sam Houston, Texas was admitted to the Union in December 1845, as a slave state, which encouraged further immigration. The steady stream of immigrants into Texas before the Civil War nearly tripled the population between 1850 and 1860, from 212,592 to 604,215 (Barkley and Odintz 2000:39; Campbell 2003:111, 159–186; Fehrenbach 1968:281–287).

The war with Mexico in 1846 was fought largely over the question of the position of Texas' border with Mexico (the Nueces or Rio Grande), with battles along the Rio Grande and to the south in Mexico. Mexico was indignant at U.S. annexation of land it considered its territory; diplomatic relations deteriorated rapidly following Texas' statehood. President Polk declared war on Mexico in response to a skirmish on the lower Rio Grande near modern Brownsville between U.S. troops under General Zachary Taylor and Mexican cavalry. The U.S. offensive involved invasion of New Mexico and California, northern Mexico, and central Mexico. After decisive U.S. victories and depredations on the Mexican public by rogue Texas Rangers, General Winfred Scott arrived in Mexico City in September 1847. The Treaty of Guadalupe-Hidalgo was signed in February 1848, ending the war. The war concluded with Texas and the larger American Republic strategically

secure, and Mexico no longer in a position as a rival (Calvert et al. 2014:104–107; Campbell 2003:187–189; Fehrenbach 1968:268–274; Vexler 1979:11).

Following independence and into statehood, violence against Anglo settlers took place sporadically, as Tejanos allied with Native American groups lashed out in response to poor treatment by Texans. Then during the administration of Mirabeau Lamar, the Republic of Texas pursued a policy of driving Native Americans from Texas under threat of extermination. The only Indians not besieged by the Texas government were the Alabamas and Coushattas, who had directly aided Texans during the Revolution, and who were able to retain land on the lower Trinity River. Sam Houston's second term as president saw negotiation of treaties with all Indians in Texas. Although the peace was not lasting, Houston's efforts ended much of the on-going violence between Anglos and Indians (Barkley and Odintz 2000:19, 30–31, 461–462; Campbell 2003:166–167, 169–172, 176–177).

Following statehood, the U.S. government established a military garrison in El Paso in 1849 to protect residents from bandits and hostile Indians. The post was moved to the nearby village of Franklin in 1853 and renamed Ft. Bliss in honor of William Wallace Smith Bliss who had served in the Mexican-American War. El Paso County was created and its first elections held in 1850 (Levario 2014:79). Trails through the region (including what was to become Hudspeth County) became more developed and more actively used during the period of the Texas Republic and early statehood, in part due to its location along a key route to the goldfields of California. By the early 1850s, a stage line between San Antonio and El Paso had been established, forging deeper connections between far west Texas and the more populous areas to the east (Calvert et al. 2014:114).

In the run-up to the Civil War, Texas supported Secession, as many of its residents came from Southern states and embraced the plantation culture and aspirations, even if they did not own slaves themselves. There was also a fear of slave insurrections, subordination of the South to Northern ideals and economic dominance, and appropriation of property (bondsmen) by abolitionists (Campbell 2003:240–246; Fehrenbach 1968:328–330). Support for secession was particularly strong in areas heavily enmeshed in cotton production. Only ten predominantly German immigrant counties around Austin voted against secession (Barkley and Odintz 2000:45; Fehrenbach 1968:346).

During the Civil War, the majority of action in Texas took place along the Gulf Coast, as the Confederacy fought to maintain its ports that were vital in supplying the army. The removal of federal troops from Texas following secession left the southern border and western frontier vulnerable to attacks from Mexico and Comanche Indians, so many men across Texas initially volunteered into Confederate service to defend settlers within Texas. However, a small number of units were sent to fight in the war east of the Mississippi (Barkley and Odintz 2000:46–48; Calvert et al. 2014:132–137; Campbell 2003:246–247; Fehrenbach 1968:359–372; Richardson 1967:188–190). The Texas-Mexico borderland served as conduit for trade in support of the Confederacy during the Civil War; cotton was transported to Mexico in exchange for munitions needed in the war effort. Confederate forces occupied Ft. Bliss in 1861, but the post was retaken by Union forces the following year and the trans-Pecos region remained under Union control for the remainder of the war (Calvert et al. 2014:133; Levario 2014:79).

After Texas became the twenty-eighth state of the United States, the threat of attack by the Comanche and some other groups remained a concern. Generals Edward Tarrant and James Smith led expeditions against hostile groups in the 1840s and 1850s, with considerable success.

Comanche raids on Anglo settlements in west Texas increased during the Civil War, exploiting the lack of protection created by the wartime diversion. But the defeat of the Confederacy encouraged the tribes in west Texas and more raids ensued—some reported as late as 1874, after which time the Comanche were moved to a reservation in Indian territory. After the war, the United States restored a strong military presence in the area, and in the 1870s, launched a series of punishing attacks on Indians across west Texas, not only killing those in their path, but burning villages, destroying possessions, killing horses, and removing all means of self sufficiency so that removal to reservations and dependency on the federal government became their only option. The military tactics employed against Indians in west Texas dovetailed with commercial hunting of bison, which resulted in the near extinction of this key resource, sealing the fate of native groups on the southern Plains. The Indians were conquered as much by the extermination of the buffalo from the Texas Plains in the 1870s as by the actions of the Army. They came to understand that the resources needed to continue their traditional way of life were disappearing and the reservation was their only alternative. After 1874, the only Indians remaining in the state were the Alabama-Coushatta in southeast Texas, and the Tiguas on the Rio Grande near El Paso (Barkley and Odintz 2000:466; Campbell 2003:206, 291–296; Sosebee 2014:198).

During the Indian wars of the late nineteenth century in which the U.S. Army subdued the tribes of the Great Plains and west Texas, the Army enlisted African-American troops who had fought for the Union during the Civil War. Hudspeth County was the location of a number of direct clashes between various bands of Apaches and the U.S. Army and Texas Rangers in the 1870s. This culminated with an engagement in late October of 1880 in which seven members of the famed Tenth United States Cavalry “Buffalo Soldiers” were killed. African Americans also worked as cowboys in west Texas in the late nineteenth century, comprising about 25 percent of the labor force (Smallwood 2014:121–123).

Whereas little blood was shed in the Big Bend region during the Civil War, the San Elizario Salt Wars involved violence between Mexican and American residents of the area in 1877. A number of salt licks in El Paso County had traditionally been open for use by Mexican and American citizens. (The locations are in what was to become Hudspeth County some 40 years later.) In 1872, the county privatized the area, selling the land to Judge Charles Howard, who declared the property off limits. An angry mob led by Louis Cardis kidnapped Howard and held him captive in San Elizario for three days until he promised to give up his claim to the salt licks and leave El Paso. Later, Howard encountered Cardis at an El Paso store and fatally shot him. Cardis’ supporters—mostly Mexicans—demanded Howard’s arrest, then pressured the local sheriff to surrender their guns and Howard, who they soon executed along with some of his allies. Texas Rangers and a group of American vigilantes retaliated, attacking the village of San Elizario and killing several residents. Buffalo Soldiers from Ft. Davis in Jeff Davis County ultimately suppressed the uprising and restored order. Access to the salt licks was restored in 1878 contingent upon payment of a nominal fee (Levario 2014:80–81).

3.2.4 West Texas Enters the Modern Era

Throughout west Texas, including what was to become Hudspeth County, extensive cattle ranching came to dominate the economy in the late nineteenth century. After the bison had been extirpated and Indians resettled onto reservations, the grasslands of west Texas were taken up by large corporate cattle ranching operations. With little forage available on this arid land, cattle ranches became sprawling affairs, averaging 20,000 acres. One of the largest ranches, the XIT, at one time held 3 million acres in the Panhandle. Over time, these massive operations squeezed out smaller ranches (Bogener 2014:183–184; Monroe 2014:19; Sosebee 2014:197–200). The

era of the Texas Cattle Kingdom began after the Civil War, and took advantage of the large herds of feral longhorn cattle roaming throughout Texas, and awaiting appropriation by the first person to brand them. The beef shortage in the postbellum years pushed up the price for cattle. One trail used for cattle drives paralleled the Pecos River, heading north to Fort Sumner in New Mexico; another proceeded north from there to the rail terminus in Pueblo, Colorado. By the beginning of the twentieth century, open range ranching began to decline as a result of the spread of barbed wire fencing to fence range holdings and which prevented long-distance cattle drives, overgrazing, a glut in the cattle market, an influx of farmers that reduced the availability of land, and an unprecedented drought, The large ranches sold off acreage in the early twentieth century to survive the changing market (influenced by increased beef production in Argentina and Australia) and to finance costly infrastructure. The collapse in livestock markets and prices after World War I led to the demise of many debt-ridden stock operations. Cattle producers had recovered to a degree by the late 1920s, but the Great Depression reduced demand, and the drought of the Dust Bowl years crippled west Texas cattle ranches. Although President Roosevelt's New Deal programs extended credit and offered relief to ranchers, many ranches failed during this time. Demand for meat increased during World War II, boosting cattle production in west Texas, and allowing ranchers to invest in improved stock-raising techniques that helped them better compete globally (Bogener 2014:188; Calvert et al. 2014:170–172; Monroe 2014:19–20; Sosebee 2014:200–201, 204–205).

The final linkage between the Southern Pacific rail line from the west and the Texas and Pacific line from the east took place within what would become Hudspeth County in 1881, forming the second transcontinental railroad system (Kohout 2010). The Pecos River Railroad was chartered in 1890 to build a line between Pecos in Reeves County and the border of the New Mexico Territory, providing transportation for local agricultural products, as well as the irrigation and development of lands along the Pecos River (Cravens 2010; Smith 2010). Unfortunately, even with the rail lines, most of the area remained largely uninhabited and used mostly as open range for cattle. As with much of West Texas, the formation of towns and broadly populated rural districts was hindered by a lack of good farm land, easily accessible water, or other resources attractive to settlers.

El Paso's position on an important trade route from Mexico into the rich mining region of the American Southwest, and its access to cheap Mexican labor, propelled the town's economic development in the nineteenth and early twentieth centuries. Refining and smelting ores was central to industrial development in the area. The Kansas City Smelting and Refining Company constructed a large smelter in El Paso in 1887 that primarily handled copper; the company merged with several others in 1899 and formed the American Smelting and Refining Company, which served as the major smelter for northern Mexico and the southwestern United States. Standard Oil also established a large refinery in El Paso, and others followed by the late 1920s. The military also played a role in the local economy, as Fort Bliss grew into an important Army post. El Paso's population was more than 10,000 in 1890, and by 1910, it had nearly quadrupled. The population then doubled to roughly 80,000 by 1925, in part as a result of the Mexican Revolution. A number of revolutionaries were based in El Paso and Ciudad Juarez, where some fighting occurred. Ranchers on both sides of the border were victims of raids by bandits during the years of the revolution from 1910–1920. Prohibition also fueled the local economy, providing opportunities for smugglers and spurring tourism in the form of border-crossing revelry, as was the case in many cities and towns along the Mexican border (Levario 2014:83–85; Wright 2014:153–154).

The stock market crash of 1929 hurt the regional economy as tourist dollars were no longer flowing into the area. The economy was fully revived, however, with the U.S. entry into World

War II. The start of the war prompted the expansion of Ft. Bliss from its original 1,200 acres to 436,000 acres, and transformation of the facility into the nation's primary anti-aircraft artillery installation (Levario 2014:85–86).

The construction of railroad lines into west Texas in general spurred the growth of commercial agriculture, connecting local farmers to distant markets. With an economical means to ship produce to market, irrigated agriculture developed along the major rivers, like the Rio Grande, where grapes, tomatoes, chiles, onions, alfalfa, pecans, and cotton were raised. Windmills were used to power irrigation systems. Railroads often sold land along their lines to farmers who would then be customers, shipping their produce out of west Texas for sale. Between 1870 and 1900, there was a seven-fold increase in cotton production in the region, and cotton surpassed cattle as the driver of the economy; Texas became the leading cotton-producing state. Farmers and ranchers reached an accommodation in which ranchers bought alfalfa and other products from farms. Mechanization, particularly after 1890, allowed cultivation of larger acreage with less labor. As ranchers sold off land, farming became increasingly important; by the 1920s, farming had overtaken ranching as the center of the economy in west Texas, particularly as new varieties of cotton were developed, adapted to west Texas conditions. However, the west Texas environment was marginal for agriculture, and farmers lived a precarious existence, vulnerable to natural disasters such as drought, locust infestations, and fire. For example, a severe drought in 1895 drove many struggling farmers out of business; subsequent droughts in 1909–1910 and in 1916 further impacted west Texas farmers, with only temporary relief provided by increased meat prices during World War I. Strong demand during World War I encouraged many area farmers to invest in more land and new equipment, taking on new debt that became difficult to service as farm income declined after the war (Bogener 2014:184; Calvert et al. 2014:189–190; Monroe 2014:20; Sosebee 2014:201–206).

To support the mining industry in El Paso and the surrounding region, the State of Texas established the Texas State School of Mines and Metallurgy in 1913. The college became known as the Texas College of Mines and Metallurgy in 1921, and it merged with El Paso Junior College in 1927, bringing in students outside of the engineering field. As the enrollment and curriculum expanded, particularly with the post-war G.I. Bill, the name was changed to Texas Western College. By 1963, the college completed construction of a 30,000-seat stadium, which became the site of the Sun Bowl, college football's second oldest operating bowl game. Texas Western College became the first fully integrated public college or university in the state, when it admitted Thelma White to the institution; the college had 12 black undergraduates enrolled in 1955. In 1966, Texas Western College became the University of Texas at El Paso (Calvert et al. 2014:359; Levario 2014:86–87; University of Texas, El Paso 2014).

The extended drought of the 1930s that came to be known as the Dust Bowl affected farmers in west Texas, creating severe soil erosion and crop loss. Years of overcultivation and removal of native grasses combined with protracted drought and made possible massive dust storms that carried away much of the thin topsoil of the region. Paired with the worldwide economic depression, commodity prices fell precipitously, credit dried up, and many lost their farms, moving to cities to find work. New Deal agencies such as the Agricultural Adjustment Administration, the Farm Credit Administration, and the Civilian Conservation Corps helped some farmers ride out this period of hardship. Like other sectors of the economy, agriculture was lifted out of the Great Depression by the stimulus provided by World War II. West Texas farmers returned to record levels of production, thanks in large part to increased mechanization. It was at this time that west Texas farmers diversified their crops, making grains, sorghum, tomatoes, onions, and other food products a greater part of the agricultural economy (Monroe 2014:20; Sosebee 2014:207–208).

After the Spindletop oil discovery in east Texas in 1901, oil and natural gas exploration soon expanded across the state. With the innovation of rotary drills and improved bits, deeper drilling became possible, and the industry expanded into west Texas in 1926. In Reeves County, Pecos was the focus of the Delaware Basin oil exploration in the early 1920s, and by 1930 oil development had attracted a larger and more diverse population to the area. The discoveries in the region spurred the rise of a number of boom towns and significantly added to the wealth of the state. Oil and gas remain vital components of the region's economy (Calvert et al. 2014:238–240; Monroe 2014:21–22; Smith 2010).

El Paso continued to grow in the post-war years, with high-rises like the headquarters for El Paso Natural Gas Company defining its modern skyline. The Cordova Bridge—later renamed the Bridge of the Americas—and Interstate 10 were constructed in the 1950s (Levario 2014:86–87). By the late twentieth century, textiles, tourism, the manufacture of cement and building materials, the refining of metals and petroleum, and food processing were El Paso's major industries, although the military presence at Ft. Bliss remained central to the economy. The implementation of the North American Free Trade Agreement in 1994 affected the local economy, allowing the expansion of transport, retail, and service firms taking advance of the city's border location and transportation facilities (Timmons 2010). Today, El Paso is the largest metro area along the Texas-Mexico border, and has become one of the largest manufacturing centers in North America (City of El Paso 2015). In terms of agriculture, the availability of water remains a concern relative to the sustainability of ranching and farming in the region. Nonetheless, grape cultivation in the Trans-Pecos region has recently increased to support the winemaking industry, and former cotton farmers now grow peanuts, sunflowers, and sorghum (Sosebee 2014:209).

In contrast to El Paso, Hudspeth County has not seen much economic diversification and growth over the last 100 years. During the 1940s, mining in the mountainous regions of the county produced limited amounts of zinc and fluorspar, a source of fluoride. With a total area of 4,566 square miles, the county has never had a population density that exceeded more than one resident per square mile. Hudspeth has long ranked near the bottom of the list of Texas counties in terms of population, while at the same time it has usually been near the top of the national list for its percentage of residents of Hispanic descent (Kohout 2010). In the 2010 census, over 79 percent of county residents claimed this heritage. The main population center for the county has long been Fort Hancock, within the narrow strip of irrigated farmland along the Rio Grande. Per the 2013 U.S. Census bureau estimate, about 1,650 people live in this unincorporated town. The entire county had an estimated population in 2014 of 3,211, down more than seven percent from the 2010 count (U.S. Census 2015).

In Reeves County, after the numbers of farms and amounts of livestock declined during the 1930s, both crop and livestock values rose in the mid-1950s, and the county's population peaked in 1960. Although additional oilfields were developed in Reeves County during the west Texas oil boom of the 1970s, the county's population decreased, and the oil industry itself experience decline in the 1980s. Agricultural and agribusiness crops include barley, cotton, hay, and wheat, as well as onions, bell peppers, peaches, and pecans. Other industries include sulfur mining and cottonseed oil mills (Smith 2010). In 1982, Reeves County's percentage of residents of Hispanic origin was the twenty-seventh highest in the country; the 2013 census data showed 13,775 persons in the county, of which 74.53 percent were Hispanic or Latino (U.S. Census 2015).

4.0 METHODS

4.1 LITERATURE AND RECORDS SEARCH

Prior to beginning fieldwork, a literature and records search was conducted by consulting the Texas Archeological Sites Atlas and the Texas Historic Sites Atlas. Our goal was to identify the location of all previously recorded archaeological sites or historic resources that could be affected by the project, gather information on those resources, and review their NRHP eligibility status. Another objective was to obtain a perspective on the types of cultural resources that would likely be encountered during field work by reviewing the results of previous cultural resource investigations that have been conducted in the project vicinity.

4.2 ARCHAEOLOGY

Standard methods were used during the Phase I survey, and they meet or exceed all federal and state requirements, including those outlined in *Archeological Survey Standards for Texas*. Surface visibility was 90–100 percent throughout the survey corridor at the time of our investigations (Figure 4.2-1). Therefore, we conducted a comprehensive and systematic pedestrian survey using four transects spaced 15 m apart that enabled us to visually inspect the entire 300-foot-wide survey corridor for the presence of cultural features and other archaeological material. Caliche and bedrock were exposed in most areas, and except for the shallow, shifting sand dunes, shovels could not penetrate the surface. Therefore, no shovel tests were conducted. Finally, all five access roads are existing, improved thoroughfares where they pass through GLO land (Figure 4.2-2). They are graveled, bermed, and will not need widening. Photographs were taken, but field surveys were not required.

A hand-held Global Positioning System unit was used to navigate along the project corridor and obtain all other relevant provenience information. General field conditions were photographed and documented with digital media.

4.3 HISTORIC STRUCTURES

An APE is defined as “the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist” (36 CFR Part 800.16[d]).

Field methods for the historic structures survey involved driving all of the roadways surrounding the project area. All previously unrecorded structures that appeared to be 50 years old or older and visually connected to the proposed Project were to be photographed and marked on the applicable U.S. Geological Survey quadrangle map. Structures that were highly deteriorated were to be excluded, as were structures whose original form had been modified beyond recognition. Survey photographs were to be taken to record the structures’ overall appearance and details. Sketch maps of the properties’ area and associations also were to be made. Additional information on the structures’ appearance and integrity was to be recorded to assist in making recommendations of NRHP eligibility. However, no previously unrecorded historic resources were identified within the APE.

4.4 LABORATORY METHODS

No cultural material was identified during the survey. Therefore, laboratory analyses were not necessary.

Figure 4.2-1.View of Surface Conditions on GLO Parcel Block 78 Section 36, Facing South.

Figure 4.2-1.View of Access Road PAR 0155 on GLO Parcel Block 10 Section 7, Facing Southeast.

4.5 CURATION

No artifacts were collected. The field notes, maps, photographs, and other technical materials generated as a result of this project will be temporarily stored at the NRG corporate office in Atlanta. They will be permanently curated at the Texas Archeological Research Laboratory (TARL) in Austin.

5.0 RESULTS

5.1 PREVIOUS INVESTIGATIONS

One previous cultural resources survey for which information is available has been conducted on the tracts that are the focus of this report. According to the Texas Archeological Sites Atlas, it was conducted in 1993 by Mariah Associates, Inc. Seven archaeological sites discovered during those investigations are located within 0.5 miles of the current project corridor where it crosses GLO land. They are the only previously recorded cultural resources that occur within a 0.5-mile zone around areas included in the June 2015 survey.

5.2 PREVIOUSLY RECORDED CULTURAL RESOURCES

Of the seven archaeological sites recorded during the 1993 Mariah investigations, four occur on GLO Parcel Block 10 Section 17; the remaining sites are located immediately east and west of that tract (Table 5.2-1). None of the sites occur within the survey corridor, or intersect the access roads.

TABLE 5.2-1

Previously Recorded Sites within 0.5 Miles of the Surveyed Areas

Trinomial	Component	NRHP Status	In ROW?
41HZ502	Prehistoric	Ineligible	No
41HZ503	Historic	Ineligible	No
41HZ504	Prehistoric	Determined Eligible	No
41HZ505	Prehistoric	Determined Eligible	No
41HZ515	Prehistoric	Not Assessed	No
41HZ516	Prehistoric	Not Assessed	No
41HZ517	Prehistoric	Ineligible	No

5.3 ARCHAEOLOGY

The proposed pipeline right-of-way passes through four of the eight GLO parcels that are discussed in this report (see Table 1.0-1). They are located in Hudspeth and El Paso counties, and the corridor has a combined length of 2.0 miles. No cultural material was identified during a systematic and comprehensive surface inspection of the survey corridors. Access road segments occur on five GLO tracts. All five access roads are existing thoroughfares that do not pass though previously recorded, or newly identified, archaeological sites.

5.4 HISTORIC STRUCTURES

No previously recorded historic architectural resources occur within the surveyed areas. Since there will be no permanent, above-ground changes to the landscape, there is no area of potential visual effects beyond the actual survey corridor.

6.0 CONCLUSION AND RECOMMENDATIONS

In June, 2015, NRG conducted Phase I archaeological and historic structures surveys on eight parcels in El Paso, Hudspeth, and Reeves counties that are managed by the GLO (see Figures 1.0-1–1.0-5). The work was conducted in association with Phase 1 of the Roadrunner Project, which includes two pipeline corridor segments. The eastern segment is approximately 82 miles long and extends from Pecos County, Texas, to Culberson County, Texas. The western segment is located in Hudspeth and El Paso counties, and is about 23 miles long.

The studies were authorized under Texas Antiquities Permit #7252 and General Land Office Authorization to Conduct Archeology No. 15-0010. They were conducted within a 300-foot-wide survey corridor and along segments of five proposed access roads.

No previously recorded cultural resources occur within the investigated areas, and no archaeological sites or historic structures were identified during field investigations. Therefore, we recommend that construction be allowed to proceed as currently planned without further consideration of cultural resources.

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