CULTURAL RESOURCES

Fatal Flaw and Reconnaissance Cultural Resource Survey for the Proposed Lea County Industrial Park, Lea County, New Mexico



Prepared For

Pettigrew and Associates, PA

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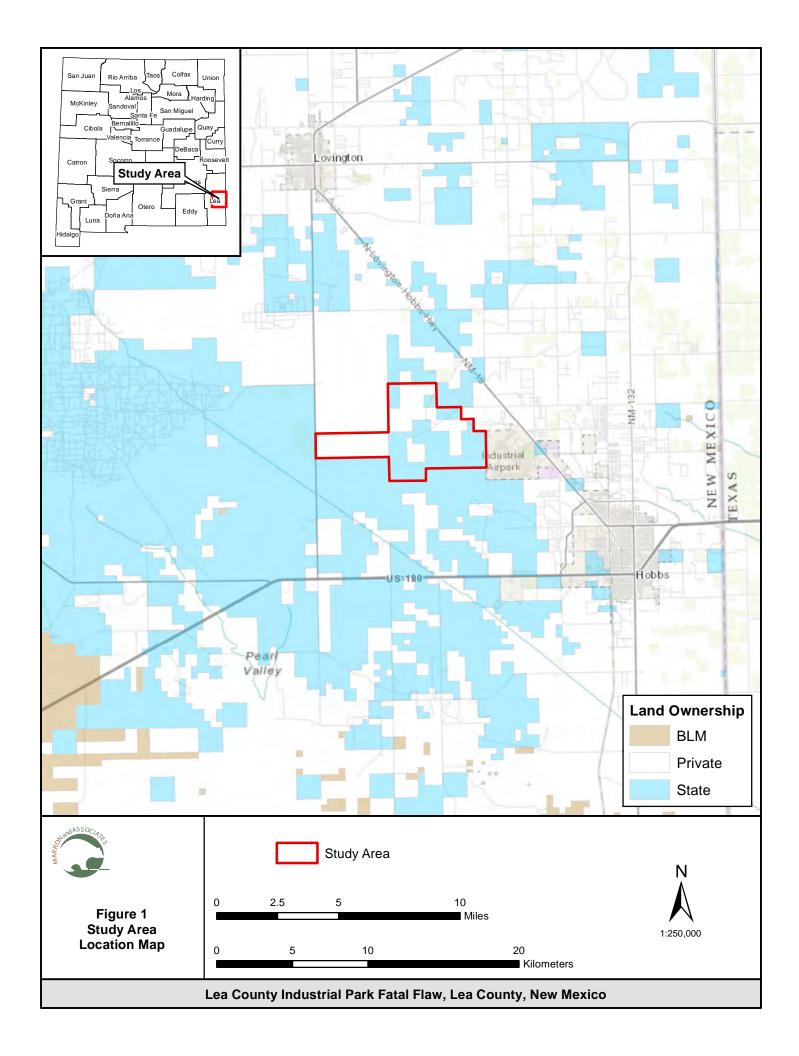
INTRODUCTION

The construction of an Industrial Park is proposed near Hobbs in Lea County, New Mexico. Pettigrew and Associates requested Marron and Associates (Marron) to complete a Phase I, fatal flaw of the proposed area for cultural resources. The area is 3,900 hectares (ha) 9,637 acres (ac), and is located on State Trust land and private land. As part of the fatal flaw, Marron completed a reconnaissance of the area between April 7 and 8, 2014. Toni R. Goar completed the work.

Project Location

The project area is located on State Trust and private land, north of Hobbs, Lea County New Mexico (Figure 1). The project area is depicted on USGS 7.5-minute topographic quadrangles *Humble City* (32103-G2; photorevised 1979) and *Lovington SE* (32103-G; Provision Edition 1985). Legal descriptions for the project area are T17S, R37E, Sections 29 through 34; T18S, R36E, Sections 1 through 3; and T18S, 37E, Sections 3 through 10.





ENVIRONMENT

The project area is in Lea County, which is in the southeast corner of New Mexico. It lies within the Llano Estacado Section of the Great Plains Province (Hawley 1986:24). The Llano Estacado Section in New Mexico occurs as three separate western extensions of two major piedmont plateaus in the Panhandle region of Oklahoma and Texas (Hawley 1986:27). The Llano Estacado has a nearly flat to undulating surface with a slight gradient to the east and southeast of 3.0 to 4.6 meters (m) (10 to 15 feet [ft]) per mile (Turner et al. 1974:85). Elevation of the project area ranges from 1,131 m (3,709 ft) to 1,167 m (3,830 ft) above mean sea level (amsl).

Physiography

Much of the surface of the High Plains is underlain by aeolian and alluvial deposits of the Ogallala Formation and has a resistant caliche caprock. This caprock zone, a secondary carbonate accumulation, is at or near the surface in east-central Lea County (Hawley 1986:27). Geologic material within the project area consists of Quaternary alluvial and aeolian deposits of clayey silty sand that ranges in thickness from 0 to 1 m (3.3 ft) forming the topsoil. Below the topsoil is the Tertiary Ogallala Formation, which is made of nodular caliche and poorly to well-cemented sandstone and limestone gravel. This formation ranges from poorly cemented, soft-carbonate gravel to hard caprock (New Mexico Geological Society 1982).

Climate

Lea County has a semi-arid, continental climate characterized by moderate rainfall, warm summers, and cool, dry winters. The wettest months are May through October; June and July has the least precipitation. The wet period rainfall occurs mostly as brief, heavy thunderstorms originating in the Gulf of Mexico (Houghton 1974:86).

The average annual temperature is 14.3° to 15.4° Celsius (C) (58° to 60° Fahrenheit [F]). The frost-free season is 190 to 205 days. Relative humidity averages from 45 to 50 percent. Although winds are light throughout most of the year, averaging 19.6 kilometers (km) (12.2 miles [mi]) per hour, spring is the windy season. The winds are mainly from the southwest from November through April and from the southeast the rest of the year. Winds greater than 74 km (46 mi) per hour are generally from the west (Houghton 1974:86–87).

Vegetation

The project area supports a Plains-Mesa Grassland vegetation (Dick-Peddie, 1993). Dominant plant species include blue grama (Bouteloua gracilis), black grama (Bouteloua eriopoda), snakeweed (Gutierrezia sarothrae), tabosagrass (Pleuraphis mutica), scarlet globemallow (Sphaeralcea coccinea), and tree cholla (Cylindropuntia imbricata). Other plants common in the project area include prickly pear (Opuntia sp.), desert zinnia (Zinnia acerosa), side-oats grama (Bouteloua curtipendula), and yucca (Yucca sp.).



CULTURAL OVERVIEW

General cultural syntheses for eastern New Mexico have been provided by Wendorf (1960), Thoms (1976), Shelley (1994), Stuart and Gauthier (1984:259–344), Camilli and Allen (1979), and Sebastian and Larralde (1989). Jelinek (1967) provides a prehistoric sequence for the Middle Pecos Valley, and Johnson and Holliday (1986) provide an overview of the Archaic period for the Llano Estacado. Gunnerson (1987) provides an overview of the prehistory of the High Plains. Gunnerson and Gunnerson (1988) summarize the ethnohistory of the High Plains and Athearn (1992) provides an overview of the Spanish frontier.

Paleoindian Period (ca. 10,000-5500 BC)

The earliest well-documented human occupation in eastern New Mexico, the Paleoindian period, is characterized by stylistically distinct projectile points found associated with now-extinct forms of late Pleistocene and early Holocene megafauna. The Paleoindian period can be divided into three subperiods—Clovis (10,000–9000 BC), Folsom (9000–8000 BC), and Plano (8000–5500 BC)—named for different cultural groupings. Clovis was associated with the hunting of mammoths and other now-extinct late Pleistocene fauna. Folsom and Plano cultures were associated with the hunting of now-extinct forms of bison (Frison 1978). By the end of the period, only modern fauna remained. In addition to hunting megafauna, which likely comprised only 50 percent of their diet, the early Holocene hunters and foragers also exploited a variety of floral and smaller faunal resources (Cordell 1979:20, 1997; Martin and Plog 1973:159–160).

Clovis components are characterized by the large-fluted Clovis spear point. Surface finds and a few excavated assemblages occur throughout North America. The Clovis type site is Blackwater Draw, located between the towns of Clovis and Portales in eastern New Mexico (Sellards 1952). In addition to fluted Clovis points, the Clovis tool kit includes spurred end scrapers; large unifacially flaked side scrapers; keeled scrapers on large blades; flake knives; backed, worked blades; gravers; perforators; shaft straighteners; and bone points and foreshafts (Gunnerson 1987:10).

Folsom assemblages are characterized by the presence of finely-made fluted Folsom projectile points. Technologically, the Folsom point developed from the preceding Clovis point form. The Folsom type site is located near Folsom, New Mexico. Folsom assemblages are indicative of a hunting and gathering subsistence economy that focused on the seasonal availability of animal and plant foods.

Plano complexes are characterized by a variety of projectile point types and knife forms. Projectile points lack fluting and instead, consist of large lanceolate forms with basal grinding and large parallel flaking (Wheat 1972; Wormington 1957).

Archaic Period (5000 BC-AD 1000)

The Archaic period was characterized by a continuation of the mobile hunting and gathering pattern of the Paleoindian period, but there was a shift towards resource diversification. The resource base included a variety of plants and the modern suite of Plains fauna. The greater dependence on plant foods is reflected in the increased presence of ground stone during the Archaic. Distinctive Archaic artifacts include a variety of stemmed or corner-notched dart point styles, basin metates, and one-hand



manos. Although varied, the remainder of the stone tool assemblage—scrapers, drills, choppers, knives—is undiagnostic and chipping debris is abundant (Cordell 1984, 1997).

Shelley (1994) provides an overview of the Archaic period in the Llano Estacado and adjacent areas of New Mexico. Semi-permanent water sources formed on the Llano Estacado during the Pleistocene as a result of ground dissection and dissolution (e.g., sinkholes, playas). Most of these water sources disappeared during the early Holocene as a result of filling with deposits. Consequently, Archaic and Paleoindian occupations were deeply buried. Occasionally, these buried sites are exposed by major land modifications. In eroded areas, Archaic occupations have eroded onto earlier land surfaces or are exposed on the surfaces on which they were originally deposited. Sites in these situations provide limited information relating to their temporal placement (Shelley 1994:395).

Ceramic Period (AD 1000-1540)

The Ceramic period was characterized by the introduction of the bow and arrow; cultivation of maize, beans, and squash; manufacture of pottery; and a more sedentary settlement pattern. For the southwestern Llano Estacado, three Ceramic period phases—Querecho (AD 950–1100), Maljamar (AD 1100–1300), Ochoa (AD 1300–1450)—have been identified (Corley 1965). This sequence was revised slightly by Leslie (1979:188–192). As discerned by Corley (1965), extreme southeastern New Mexico was inhabited by groups closely related to the Jornada Mogollon during the Ceramic period. The major ceramic types of the Querecho and Maljamar phases were locally produced variants of Jornada Brown. Both structural and nonstructural sites have been identified. Pit structures occurred early in the sequence and were eventually replaced by surface rooms—roomblocks and single units (Sebastian 1989:77). Agriculture was practiced on a very modest scale and a purely horticultural strategy has not been well documented for the region (Stuart and Gauthier 1984:274–275).

Protohistoric Period (AD 1540–1850)

As agricultural adaptations began to disappear from the area after AD 1300, the local hunting and gathering adaptation became increasingly mobile and focused increasingly on the procurement of bison. This economic shift may have resulted from deteriorating environmental conditions or from an increased availability of bison. It is probable that pre-Apache, nonsendentary groups had inhabited portions of the Llano Estacado in southeastern New Mexico during the Ceramic period. In addition, it is also likely that pre-Apache Plains nomads were pushed into the area by the southward migration of Athabaskan groups (Sebastian and Levine 1989:94). Some protohistoric sites in the southeastern portion of New Mexico contain evidence of later groups, such as the Apache, Kiowa, and Comanche (Leslie 1979:193; Sebastian and Levine 1989:95).

The Apacheans

During the 1500s through the early 1700s, eastern New Mexico was home to various bands of Apaches (Gunnerson 1987:136). The Apache are the best-known and best-documented peoples as a result of contact with the Spanish in New Mexico. The Apachean arrival in the Southwest ca. 1525 preceded Francisco Vasquez de Coronado's expedition by only 15 years. If this date is correct, then the southward Apachean migration coincided with the maximum of the "Little Ice Age." Apachean peoples may have followed bison herds along the front range of the Rocky Mountains. This interpretation is supported by



dates for the linguistic splitting of northern and southern Athabaskans, as derived from lexicostatistics (Gunnerson and Gunnerson 1988:1–2).

The Kiowa and Kiowa Apache

In the early 1800s, the Kiowa and Kiowa Apache moved back and forth between New Mexico and the Upper Missouri River area (Gunnerson and Gunnerson 1988:12). A tour of the southwest by Paul Legueste Chouteau in 1835–1836 indicates the Kiowa occupied parts of the High Plains as allies of the Comanche. The Comanche territory is said to have included the area bounded by the Arkansas River on the north to the Mexican settlements on the south and from the Rocky Mountains eastward to the Cross Timbers of Texas and Oklahoma (Gunnerson and Gunnerson 1988:15).

The Comanche

The Comanche are Shoshonean-speakers who likely split from the Shoshoni ca. AD 1550. The Shoshoni occupied parts of Wyoming. The Comanche may also have lived in Wyoming before their arrival in the Southwest. The earliest Spanish record of Comanches was in 1706, after which date they were mentioned frequently. By 1730, after pushing the Cuartelejo and Jicarilla Apache farther south, the Comanche dominated the High Plains. The Comanche functioned as independent bands. Therefore, alliances and animosities between the Comanche and other tribes did not necessarily apply to all Comanche bands. In 1767, the Comanche became hostile toward the Spanish and remained so until 1787 (Gunnerson and Gunnerson 1988:29–30). By 1810, the Comanche began to lose their domination of the High Plains. This resulted from pressure by more northern and eastern tribes moving south. Among these groups were the Arapaho, Cheyenne, Kiowa, Kiowa Apache, Dakota (Sioux), Crow, and Shoshoni.

Historic Period (post- AD 1850)

The 1540–1542 entrada of Francisco Vasquez de Coronado was the first official European entry onto the western plains of North America. In the spring of 1541, Coronado and a smaller force left the Tiwa villages on the Rio Grande where they had wintered and entered the plains of eastern New Mexico. Traveling northeastward, Coronado crossed the Llano Estacado and penetrated deeply into the Kansas plains, eventually reaching the vicinity of the Great Bend of the Arkansas River in eastern Kansas. Frustrated by not finding mineral riches, the expedition returned to the Rio Grande in the fall of 1541. After spending a second winter in the Tiwa pueblos, Coronado returned to Mexico City in the fall of 1542 (Athearn 1992:2–3; Jenkins and Schroeder 1974:14, 17).

In 1821, Mexico declared its independence from Spain and the Republic of Mexico was established in January 1822. The establishment of the Republic of Texas in 1836 and the annexation of Texas by the United States in 1844 led to poor relations between Mexico and the United States. War broke out in 1846 and New Mexico was occupied by Steven Kearny's military expedition. The Treaty of Guadalupe Hidalgo, which ended the war in 1848, ceded most of Mexico's northern territory to the United States. The United States annexed all lands west of Louisiana, including California, thereby establishing ownership of the region (Levine 1987:50).



Extreme southeastern New Mexico lay outside the Spanish and Mexican occupations of New Mexico. The Spanish never established a trail across the Llano between Santa Fe and San Antonio (Hinshaw 1976:6). Long distances, lack of water, an empty landscape, and well-armed Plains groups (e.g., Apache, Kiowa, and Comanche) were effective deterrents to exploration and settlement. Between 1540 and 1860, "the conqueror's foot fell but once—in a United States Army expedition of 1854—in the land that would become Lea County" (Hinshaw 1976:1). Consequently, the Historic period for this area is considered post-1850.

In 1854, the first Euroamericans set foot on the Llano Estacado of present Lea County, "the last unexplored segment of the high plateau" (Hinshaw 1976:32). At that time, Lt. Kenner Garrard, who was with Capt. John Pope's railroad survey expedition, blazed a trail from the mouth of the Delaware River (south of present Carlsbad), past present Hobbs, to Big Spring in western Texas (Hinshaw 1976:32). In spite of this and later military explorations in the region, extreme southeastern New Mexico was virtually ignored until after the Civil War.

When it finally came, the settlement and economic development of the Llano Estacado of Lea County was initially based on the cattle industry. The big boom in the cattle industry of eastern New Mexico did not occur, however, until after the Civil War and it was initiated by Texans. High beef prices during the Civil War depleted cattle in the Northern portion of the U.S. (Beck 1962:258). Texas cattlemen began driving herds to Kansas railheads but some Texans, such as Charles Goodnight and Oliver Loving, decided to drive cattle to Western buyers, primarily U.S. military posts but also Indian agents and mining camps. As competition increased, herds were driven farther northward, supplying the needs of ranchers in Colorado and Wyoming. Due to the presence of ample grassland and water, Texas cattlemen gradually established ranches in eastern New Mexico, including the Llano Estacado (Beck 1962:258–260). The Texas cattle drives only lasted 14 years (1866–1880), but they helped "to populate the Plains area as well as feed the miners and railroad-building crews" (Beck 1962:259).

The first permanent settler on the Llano of present Lea County was T. L. (George) Causey who came to the area in 1882 from Texas. Among other firsts, Causey dug the area's first well, built its first house, planted its first trees, and operated its first ranch. By the time he died in 1903, civilization had reached the area (Hinshaw 1976:76–82).

The Texas—New Mexico Railway, a subsidiary of the Texas and Pacific, arrived in Lea County in 1930. The railway connected Monahans, Texas with Lovington, a distance of 178.6 km (111 mi). Based on its initials, the railroad was nicknamed "Toot and Never Move" (Myrick 1990:151–153).

Hobbs was founded in 1910 by Berry Hobbs, a homesteader, who opened the first store and post office. Hobbs remained a tiny rural community into the early 1920s, with a post office, a store, a school, and several homesteads. In 1928, the Midwest Oil Co. (Amoco) discovered the Hobbs Oil Field, and an oil boom ensued. The old community became three towns—Hobbs, New Hobbs, and All Hobbs—that eventually merged as Hobbs (Julyan 1996:167; Hinshaw 1976:190, 193–194).



Prior to the discovery of oil, Lea County was an isolated livestock-raising area. By the early 1930s, a large pipeline extending from Lea County to Eastern markets was transporting oil to and from New Mexico. Today, Lea County's economy is based on cattle ranching and the oil and gas industry.

RESULTS

Previous Archaeological Research

An electronic search of the Museum of New Mexico Archaeological Records Management System (ARMS) on May 5, 2014, revealed no sites were previously recorded within 0.5 km (0.3 mi) of the project area. The nearest previously recorded site is the Hobbs Army Airfield (LA 148623), which is 1.67 km (1 mi) away from the project boundary.

Four archaeological surveys have been completed within 0.5 km (0.3 mi) of the project area (Table 1; Figure A1). Published listings for the State Register of Cultural Properties (SRCP) and the National Register of Historic Places (NRHP) were consulted. No listed properties are in the vicinity of the project area.

Also, a small family cemetery is located in the project area and is likely associated with the homestead.

Table 1 — Previous Archaeological Surveys within 0.5 km (0.3 mi) of the Project Area

NMCRIS No.	Description	Acres	No. of Sites	Author, Date
10032	Federal 27 #1 & Access Road For Bass Enterprises Production Company	5.96	0	Kyte, M., 1983
10370	Southern Union Refining 6" Gas Pipeline For Gulf Interstate Engineering Company	151.27	6	McDonald, E., 1979
86620	Class III Survey for Fencing along NM 482, Lea County, New Mexico	10.66	0	Gregory, Danny, 2004
130452	Data entry in progress – not entered	12.19	0	Not entered

An electronic search of the General Land Office (GLO) land patents was also reviewed. Table 2 lists the land patents for the project area and the dates and accession numbers for the private land owners, and Table 3 is the information on the State Trust land.

These tables indicate that the private land was patented, starting in 1901 and continued until 1917. The State Trust land was acquired in 1909, 1913, and 1959.

Table 2 — GLO Land Patents (Private)

Accession No.	Name	Date	T, R, Section	Aliquots



Accession No.	Name	Date	T, R, Section	Aliquots
450456	Russell S. Latham	12/23/1914	T17S, R37E, Sec. 29	SW1/4
450456	Russell S. Latham	12/23/1914	T17S, R37E, Sec. 32	NW1/4
360277	Alexander C. Richards	10/16/1913	T17S, R37E, Sec. 29	N1/2
401041	Elgin L. Hickman	4/27/1914	T17S, R37E, Sec. 30	E1/2
419277	Jimmie B. Hudgens	7/1/1914	T17S, R37E, Sec. 31	E1/2, W1/2; Lots 1, 2, 3, 4
401042	Chorizan Latham	4/27/1914	T17S, R37E, Sec. 31	E1/2
328104	Charles H. Eller	4/24/1913	T17S, R37E, Sec. 32	NE1/4; E1/2 SE1/4
328104	Charles H. Eller	4/24/1913	T17S, R37E, Sec. 33	W1/2 SW1/4
560923	Charles B. Collier	1/6/1917	T17S, R37E, Sec. 33	E1/2 SW1/4; SE1/4
560923	Charles B. Collier	1/6/1917	T17S, R37E, Sec. 34	W1/2SW1/4
481051	James D. Merrell	6/30/1915	T17S, R37E, Sec. 34	SE1/4
NMNMAA 023252	Richard P. Robertson	6/28/1901	T18S, R36E, Sec. 1	SW1/4 NW1/4
434790	Zilpha A. Christmas	10/9/1914	T18S, R37E, Sec. 4	SE1/4; S1/2 NE1/4; Lots 1, 2
570034	Carrie E. Musick	2/27/1917	T18S, R37E, Sec. 5	SW1/4
570034	Carrie E. Musick	2/27/1917	T18S, R37E, Sec. 6	SE1/4 SE1/4
570034	Carrie E. Musick	2/27/1917	T18S, R37E, Sec. 7	NE1/4 NE1/4
570034	Carrie E. Musick	2/27/1917	T18S, R37E, Sec. 8	N1/2 NW1/4
584615	Dixie Y. Musick	5/17/1917	T18S, R37E, Sec. 6	SE1/4 NE1/4; NE1/4 SE1/4

Table 3 — GLO Land Patents (State Trust)

Accession No.	Name	Date	T, R, Section	Aliquots
NMR 0026342	State of New Mexico	6/10/1913	T17S, R37E, Sec. 29	SE1/4
NMR 0026342	State of New Mexico	6/10/1913	T17S, R37E, Sec. 30	E1/2 W1/2; Lots 1, 2, 3, 4,



Accession No.	Name	Date	T, R, Section	Aliquots
NMR 0026342	State of New Mexico	6/10/1913	T17S, R37E, Sec. 33	N1/2
NMR 0026342	State of New Mexico	6/10/1913	T17S, R37E, Sec. 34	E1/2 SW1/4
1202897	State of New Mexico	12/31/1959	T17S, R37E, Sec. 32	SW1/4; W1/2 SE1/4
NMR 0001339	State of New Mexico	5/26/1909	T18S, R36E, Sec. 1	SE1/2; S1/2 NE1/4; SE1/4 NW1/4; Lots 1, 2, 3, 4
NMR 0001340	State of New Mexico	5/26/1909	T18S, R36E, Sec. 2	S/12; S1/2 NE1/4; SW1/4 NW1/4; Lots 1, 2, 3, 4
NMR 0001341	State of New Mexico	5/26/1909	T18S, R36E, Sec. 2	SE1/4 NW1/4
NMR 0001341	State of New Mexico	5/26/1909	T18S, R36E, Sec. 3	SE1/2; S1/2 NE1/4; Lots 1, 2, 3, 4
NMR 0001328	State of New Mexico	5/26/1909	T18S, R36E, Sec. 3	S1/2 NW1/4
NMR 0026349	State of New Mexico	4/30/1913	T18S, R37E, Sec. 3	S1/2; S1/2 N1/2; Lots 1, 2, 3, 4
NMR 0026349	State of New Mexico	4/30/1913	T18S, R37E, Sec. 4	SW1/4; S1/2 NW1/4; Lots 3, 4
NMR 0026349	State of New Mexico	4/30/1913	T18S, R37E, Sec. 5	SE1/4; S1/2 N1/2; Lots 1, 2, 3, 4
NMR 0026349	State of New Mexico	4/30/1913	T18S, R37E, Sec. 6	E1/2 SW1/4; W1/2 SE1/4; SW1/4 NE1/4; SE1/4 NW1/4; Lots 1, 2, 3, 4, 5, 6, 7
NMR 0026349	State of New Mexico	4/30/1913	T18S, R37E, Sec. 7	SE1/4; E1/2 W1/2; W1/2 NE1/4; SE1/4 NE1/4; Lots 1, 2, 3, 4
NMR 0026349	State of New Mexico	4/30/1913	T18S, R37E, Sec. 8	S1/2; NE1/4; S1/2 NW1/4
NMR 0026349	State of New Mexico	4/30/1913	T18S, R37E, Sec. 9	



Accession No.	Name	Date	T, R, Section	Aliquots
NMR 0026349	State of New Mexico	4/30/1913	T18S, R37E, Sec. 10	N1/2; SW1/4; N1/2 SE1/4; SW1/4 SE1/4

Reconnaissance Survey

On April 7 and 8, 2014, a reconnaissance survey of the project area was completed. A vehicular inspection of the area and some walking was conducted. Map A2 shows areas where cultural resources were observed or areas where cultural resources may occur.

The project area is located on the Llano Estacado and is relatively flat, with rocky surface soil. No areas of aeolian sand build-up were observed. Also, the mesquite was sparse and there were no indications of shinnery oak. The sands and vegetation are indicators of areas where cultural resources are likely to occur.

Windmills, old fencelines, an abandoned homestead, stock tanks, feed covers, a 1950s trailer, an irrigation ditch, and old fields were noted, indicating that this area was utilized in the 1900s (Figures 2 and 3). This is supported by the GLO information previously presented. During an intensive (100 percent), cultural resource survey features such as those listed above, would be recorded.

Also, playas and draws were noted in the project area, which are areas where water may have existed prehistorically. These areas tend to have cultural resources in their vicinity.

Most of the project area appears to be sparse for cultural resources.





Figure 2 — Homestead Area



Figure 3 — Irrigation Ditch



SUMMARY

- The Caprock in Southeastern New Mexico tends to be sparse for cultural resources.
- No indicators such as aeolian (blow sand) sand dunes, abundant shinnery oak, or abundant
 mesquite were found in the project area. These species indicators and sand build-up are areas
 where cultural resources are located in Southeastern New Mexico as the shinnery oak and
 mesquite were used for food, wood, and other purposes.
- The reconnaissance cultural resource investigations did find historic resources relating to homesteading, farming, and ranching. The features noted include an irrigation ditch, windmills, oil industry features (pre-1964), houses/outbuildings, stock tanks, and stock ponds.
- A small family cemetery, which is likely associated with the homestead, should be avoided.
- The project area has playas which could contain water during prehistoric times which tended to draw people to these areas for hunting and collecting such as water, plants, and animals. It is currently unknown whether cultural resources exist around the playas.

Note that the information provided in this report is for internal planning purposes only and does not constitute a compliance document.



REFERENCES CITED

Athearn, Frederic J.

1992 A Forgotten Kingdom: The Spanish Frontier in Colorado and New Mexico, 1540–1821. 2nd edition. Cultural Resource Series No. 29. Colorado State Office, Bureau of Land Management, Denver.

Beck, Warren A.

1962 New Mexico: A History of Four Centuries. University of Oklahoma Press, Norman.

Camilli, Eileen L., and Christina G. Allen, assemblers

1979 A Cultural Resources Overview for the Bureau of Land Management, Roswell District, edited by L. S. Cordell and M. E. Harlan. Office of Contract Archeology, University of New Mexico, Albuquerque.

Cordell, Linda S.

1979 A Cultural Resources Overview of the Middle Rio Grande Valley, New Mexico. USDA Forest Service, Albuquerque and USDI Bureau of Land Management, Santa Fe. U.S. Government Printing Office, Washington, D.C.

1984 Prehistory of the Southwest. Academic Press, New York.

1997 Archaeology of the Southwest. 2nd edition. Academic Press, San Diego.

Corley, J. A.

A Proposed Eastern Extension of the Jornada Branch of the Mogollon. *Bulletin of the Lea County Archaeological Society* 1:30–36.

Dick-Peddie, William A.

1993 *New Mexico Vegetation: Past, Present, and Future.* University of New Mexico Press, Albuquerque.

Frison, George C.

1978 Prehistoric Hunters of the High Plains. Academic Press, New York.

Gunnerson, James H.

1987 Archaeology of the High Plains. *Cultural Resource Series* No. 19. Bureau of Land Management, Denver.

Gunnerson, James H. and Dolores A. Gunnerson

1988 Ethnohistory of the High Plains. *Cultural Resource Series* No. 26. Bureau of Land Management, Denver.

Hawley, John W.

1986 Physiographic Provinces. In *New Mexico in Maps*, edited by Jerry L. Williams, pp. 23–27. 2nd edition. University of New Mexico Press, Albuquerque.



Hinshaw, Gil

1976 Lea, New Mexico's Last Frontier. The Hobbs Daily News-Sun, Hobbs.

Houghton, Frank E.

1974 Climate. In *Soil Survey of Lea County, New Mexico*, by Millard T. Turner, Dellon N. Cox, Brice C. Mickelson, Archie J. Roath, and Carl D. Wilson, pp. 86–87. U.S. Department of Agriculture, Soil Conservation Service, Washington, D.C.

Jelinek, Arthur J.

1967 A Prehistoric Sequence in the Middle Pecos Valley, New Mexico. University of Michigan, Museum of Anthropology, *Anthropological Papers* No. 31. Ann Arbor.

Jenkins, Myra Ellen, and Albert H. Schroeder

1974 A Brief History of New Mexico. University of New Mexico Press, Albuquerque.

Johnson, Eileen, and Vance T. Holliday

1986 The Archaic Record at Lubbock Lake. Plains Anthropologist 31(114 Part 2):7-54.

Julyan, Robert

1996 The Place Names of New Mexico. University of New Mexico Press, Albuquerque.

Leslie, Robert H.

1979 The Eastern Jornada Mogollon: Extreme Southeastern New Mexico. In *Jornada Mogollon Archaeology: Proceedings of the First Jornada Conference*, edited by Patrick H. Beckett and Regge N. Wiseman, pp. 179–199. New Mexico Historic Preservation Division, Santa Fe.

Levine, Frances

1987 Historical Settlement Patterns and Land-Use Practices on the Pecos Frontier. In Investigations at Sites 48 and 77, Santa Rosa Lake, Guadalupe County, New Mexico: An Inquiry into the Nature of Archeological Reality, edited and assembled by Frances Levine and Joseph C. Winter, pp. 551–611. Office of Contract Archeology, University of New Mexico, Albuquerque.

Martin, Paul S., and Fred Plog

1973 The Archeology of Arizona. Doubleday, New York.

Myrick, David F.

1990 *New Mexico's Railroads: A Historical Survey*. Revised edition. University of New Mexico Press, Albuquerque.

New Mexico Geological Society

1982 *New Mexico Highway Geologic Map.* New Mexico Bureau of Mine and Mineral Resources, Socorro.

Sebastian, Lynne

1989 The Ceramic Period. In *Living on the Land: 11,000 Years of Human Adaptation in Southeastern New Mexico*, by Lynne Sebastian and Signa Larralde, pp. 73–92. Cultural Resources Series No. 6. New Mexico Bureau of Land Management, Santa Fe.



Sebastian, Lynne, and Signa Larralde

1989 Living on the Land: 11,000 Years of Human Adaptation in Southeastern New Mexico. Cultural Resources Series No. 6. New Mexico Bureau of Land Management, Santa Fe.

Sebastian, Lynne, and Frances Levine

1989 The Protohistoric and Spanish Colonial Periods. *In Living on the Land: 11,000 Years of Human Adaptation in Southeastern New Mexico*, by Lynne Sebastian and Signa Larralde, pp. 93–103. Cultural Resources Series No. 6. New Mexico Bureau of Land Management, Santa Fe.

Sellards, E. H., G. L. Evans, and G. E. Meade

1947 Fossil Bison and Associated Artifacts from Plainview, Texas, with Descriptions of Artifacts by A. D. Krieger. *Bulletin of the Geological Society of America* 58:927–954.

Shelley, Phillip H.

A Geoarchaeological and Technological Evaluation of the Archaic Archaeology of the Llano Estacado and Adjacent Areas of New Mexico. In *Archaic Hunter-Gatherer Archaeology in the American Southwest*, edited by B. J. Vierra, pp. 372–404. Eastern New Mexico University Contributions in Anthropology, Vol. 13, No. 1. Portales.

Stuart, David E., and Rory P. Gauthier

1984 *Prehistoric New Mexico: Background for Survey,* 2nd edition. New Mexico Historic Preservation Division, Santa Fe.

Thoms, A. V.

1988 Review of Northeastern New Mexico Archaeology. Awanyu 4(1):8–35.

Turner, Millard T., Dellon N. Cox, Brice C. Mickelson, Archie J. Roath, and Carl D. Wilson

1974 *Soil Survey of Lea County, New Mexico*. U.S. Department of Agriculture, Soil Conservation Service, Washington, D.C.

Wendorf, Fred

1960 The Archaeology of Northeastern New Mexico. *El Palacio* 67:55–65.

Wheat, Joe B.

1972 The Olsen-Chubbuck Site: A Paleo-Indian Bison Kill. *Society for American Archaeology, Memoir* 26.

Wormington, H. M.

1957 Ancient Man in North America, 4th edition. Denver Museum of Natural History, Popular Series No. 4. Denver.



APPENDIX A: CULTURAL RESOURCES LOCATION DATA

Confidential: The public disclosure of the location of archaeological sites is prohibited by Section 18-6-11.1 New Mexico Statutes Annotated 1978 and by 36 CFR 296.18.

