# **OFFICE OF ARCHAEOLOGICAL STUDIES**

# THE MONITORING OF FENCE REPLACEMENT AT LA 2690 (FORT WINGATE RUIN)

Peter Y. Bullock

Submitted by Eric Blinman Principal Investigator

# **ARCHAEOLOGY NOTES 158**

SANTA FE 1996 NEW MEXICO

#### ADMINISTRATIVE SUMMARY

Between August 11 and August 16, 1994, the Office of Archaeological Studies, Museum of New Mexico, monitored fence replacement at LA 2690 (Fort Wingate Ruin), on I-40 east of the McGaffey Interchange. The monitoring was done at the request of the New Mexico State Highway and Transportation Department to ensure the preservation and integrity of cultural resources within the existing right-of-way. Fence replacement was monitored to ensure that fenceposts were set by hand and that they were placed in existing postholes. LA 2690 is a large, C-shaped roomblock dating to the late Pueblo II period, located on Navajo Nation Tribal Fee land. LA 2690 partially extends into the existing right-of-way of I-40. An inventory of traditional cultural properties in the area was conducted between December 18, 1992, and January 28, 1993. This inventory was designed to complement a cultural properties were recorded within the monitored area.

No previously unidentified or incorrectly identified cultural resources or traditional cultural properties were encountered during fence replacement.

This report is submitted in fulfillment of Joint Powers Agreement D05486 between the Museum of New Mexico and the New Mexico State Highway and Transportation Department.

MNM Project No. 41.516 (traditional cultural properties survey) MNM Project No. 41.551 (archaeological survey) NMSHTD Project No. IM-040-1(97)34, CN 2344 Navajo Nation Cultural Resources Inventory Permit No. B9207-B2 NNHPD No. 93-182

# CONTENTS

Administrative Summary ii
Introduction
Environment
Geology and Geomorphology
Climate
Flora and Fauna
Cultural Resource Overview
Paleoindian Period
Archaic Period
Anasazi Pueblo Period
Protohistoric and Historic Navajo Periods
Euroamerican Occupation
Previous Work in the Project Area 11
Fence Replacement Monitoring
References Cited
Appendix 1: Site Location Information (removed from copies for general distribution) 22

# **Figures**

1. Project vicinity ma	ap	 		 															•	2
2. LA 2690 site map	•••	 	•	 						 •									1	4
3. Site location map		 		 	•								•		 •	•			2	3

# **Tables**

1. Recorded sites in the	general area of LA 2690	
--------------------------	-------------------------	--

# INTRODUCTION

At the request of the New Mexico State Highway and Transportation Department, fence replacement was monitored at LA 2690 to ensure the preservation and integrity of cultural resources within the existing right-of-way. A total of 396.66 m (1310 ft) of fence replacement was monitored. LA 2690 and the project area are on unplatted Navajo Nation Tribal Fee land near the McGaffey Interchange on I-40, McKinley County, New Mexico (Fig. 1 and Appendix 1). The beginning of the project is at **Counterchange** on I-40, 18.16 m (60 ft) west of the western site boundary of LA 2690, extending east and ending at **County**.

Monitoring was conducted by Peter Y. Bullock, an archaeologist from the Office of Archaeological Studies, Museum of New Mexico. Fieldwork took place between August 11 and August 16, 1994. Eric Blinman served as principal investigator. Figures were drafted by Ann Noble, and the report was edited by Tom Ireland.



#### ENVIRONMENT

The project area is on a segment of I-40 that crosses a number of ecological zones and topological features. It skirts the southern side of the South Fork of the Puerco River Valley, west of the foothills of the Zuñi Mountains. This area is characterized by a valley bottom of alluvial flats with occasional ridges (Warren 1970:1). Elevation in the vicinity of the project is 2,050 m (6,780 ft). Piñon-juniper woodland occurs on the upper elevations to the south, with juniper scrub extending along the ridges that project into the valley. Lower elevations are dominated by sage and mixed grasses. Soils within the valley bottom consist of fine alluvial silts and clays with channels cutting through the older alluvium.

#### Geology and Geomorphology

The South Fork of the Puerco River is in a wide, flat-bottomed valley running roughly northeast to southwest from the continental divide into Arizona, where it joins the Little Colorado River. The valley floor is characterized by alluvial flats broken along the southern edge by a series of ridges projecting into the valley. This valley is the result of alluvial erosion cutting through sedimentary deposits that form the northern portion of the Zuñi Uplift (Kottlowski 1959:Fig. 1), east of the Nutria Monocline (Jenkins and Keller 1986:140). South of the river valley this erosional process is also a factor in the creation of the foothills of the Zuñi Mountains (Smith et al. 1959:34).

Primarily of Triassic and Jurassic age (Smith et al. 1959:34), these foothills form the southern boundary of the valley. They are comprised of Fort Wingate sandstone and Grants sandstone deposits of the upper Moenkopi above a Permian karst of San Andres limestone (Cooley 1959:66; Smith 1954), and sandstones of the Chinle formation (Gadway 1956:82). The steeply sloping nature of the Zuñi Uplift deposits is revealed in these Chinle formations, which form the foothills of the Zuñi Mountains and then slope under the South Fork of the Puerco River Valley floor (Smith et al. 1956:34).

Cliffs form a broken wall along the northern side of the South Fork of the Puerco River Valley. A portion of these cliffs form the feature known as the "Red Rocks," and are comprised of material associated with the Zuñi Uplift (Fitzsimmons 1959:112-113), These cliffs are composed of Jurassic sedimentary deposits. Lukachuki sandstone forms the base of the cliffs, and the dominant red portion of the cliffs is comprised of Entrada sandstone. Above this material is Todilto limestone, the banded material of the Chaves formation, and Brushy Basin deposits (Gadway 1959:82). Remnant Cretaceous deposits of Dakota sandstone cap portions of the cliffs (Fitzsimmons 1959:113; Gadway 1959:82).

This area is in the southeastern portion of the San Juan hydrological basin. Seeps and springs from the San Andres-Glorieta Aquifer occur along the base of the cliffs north of the South Fork of the Puerco River. Springs associated with this aquifer are common within the upper valleys of the Zuñi Mountain foothills to the south (White and Kelley 1986:333). The project area is drained by the South Fork of the Puerco River.

Three major periods of alluviation followed by arroyo cutting occurred during human prehistory. The first episode of alluviation took place from 11,000 to 7500 B.P.. Alluviation from this period is the by-product of a wet and warm environment as evidenced by soils containing the bones of *Bison occidentalis* and Paleoindian projectile points. This was followed by the Altithermal interval, from 6000 to 4500 B.P., a period of erosional weathering, arroyo cutting, channel filling, and soil formation (Cooley 1959). A second period of alluviation occurred from 4000 to 2000 B.P., characterized by floodplain aggradation and channel filling (Sears 1925). The third period of alluviation occurred on the Colorado Plateau from A.D. 1200 to 1800. The heavy arroyo cutting found within most modern floodplains appears to be primarily the result of overgrazing combined with a weather pattern shifting toward heavy summer showers (Hewett 1982:38-39). Modern arroyos cut by the Puerco River and its tributaries are as much as 10 m (30 ft) deep (Warren 1970:1).

Soils within the project area are classified as Haplargids-Torripsamments and Camborthids-Torriorthents. Both of these ustic soil associations are calcareous, highly erodible, and characterized by materials weathered from sedimentary shale and sandstone deposits. The main difference between these two soil associations is their relative depth and the terrain in which each occurs.

Haplargids-Torripsamments soils are well-drained, deep, and comprised of course to moderately fine sediments. They occur mainly on nearly level to gently rolling landscapes (Marker et al. 1974:81). Camborthids-Torriorthents soils are similar in composition but occur in deep to shallow deposits in areas of moderate to steeply rolling landscape, as well as areas of breaks and escarpments (Marker et al. 1974:83-84).

## **Climate**

The climate of west-central New Mexico is characterized as semiarid and arid continental with low humidity. The area experiences moderate to strong winds, and most precipitation is in the summer. Warm summers and cold winters are the norm, with large diurnal temperature variations (Tuan et al. 1973:26).

The mean annual precipitation recorded at Fort Wingate, adjacent to the project area, is 32.7 mm (12.9 inches) (Maker et al. 1974:Table 5; Tuan et al. 1973:18). Precipitation falls in two distinct seasonal periods. April-May and November are the driest months of the year (Maker et al. 1974:78; Tuan et al. 1973:26). The project area is in the summer rain shadow of the Zuñi Mountains, part of the Mogollon complex of mountains and mesas (Tuan et al 1973:36). This serves to limit the amount of rain the area receives. Although most precipitation is during July-August, the area receives only 75 percent of that received to the south of the Zuñi Mountains (Tuan et al. 1973:36). The resulting moisture deficits make modern-day farming uneconomical within the general project area (Maker et al. 1965:81).

Two major shifts in precipitation took place during human prehistory. The first episode of increased precipitation began approximately 9000 B.P. with the collapse of the Laurentide Ice Sheet in eastern Canada. This had previously deflected global westerly air currents to the south, restricting the influx of moist warm air originating from both the Gulf of California and the Gulf of Mexico, from penetrating the central portion of the continent (Davis 1989:3).

Climatic changes since the end of the Altithermal have been the result of shifts in the position of the jet stream. A 65-mile shift to the north of northern winds allowed greater access to the Southwest by moisture-bearing southern winds, leading to increased precipitation in the century following A.D. 1000. This increase peaked in mid-century. The situation was then reversed between A.D. 1100 and 1200, when southern winds were pushed out of the area by northern winds moving south. Rainfall decreased to an intermittent level during this period, with frequent drought (Knight 1982:51).

Yearly temperatures for the project area average 9.2 degrees C (48.6 degrees F), with an average day-to-night difference of 30 degrees F (Knight 1982:510; Gabin and Lesperance 1977:207)). The local growing season averages 150 days, with a range of 110 to 205 days (Maker et al. 1974:Table 5; Tuan et al. 1973:Figs. 37, 38). The first killing frost usually takes place within the first week of October (Tuan et al. 1973:Fig. 40), and the last frost occurs in the first week of May (Tuan et al. 1973:Fig. 39).

## Flora and Fauna

The project area is within the mixed grass vegetation zone (Castetter 1956:267-269). Dominating plant species within this area are galleta grass, blue grama, hairy grama, little bluestem, and Indian grass. Sage, snakeweed, rabbitbrush, and greasewood also occur.

Other restricted flora zones, though not within the project area, occur within the general area and contributed to the vegetational diversity exploited by local prehistoric populations. The piñon-juniper community is in the upland, canyon, and mesa-top areas of the Zuñi Mountain foothills (Castetter 1956:274-275; Maker et al. 1974:79). Higher elevations within the Zuñi Mountains contain ponderosa pine (Maker et al. 1979:79). Extensive riverine plant communities are present near the project area along the South Fork of the Puerco River. Vegetation within this community includes native plants such as sedges and cottonwoods, as well as invasive nonnative species such as tamarisk.

Faunal populations vary according to habitats that correspond to plant communities. The number of plant communities near the project area suggests a range of fauna greater than that characteristic of any single specific vegetation zone. Species characteristic of the project area include jackrabbit, cottontail rabbit, prairie dog, and associated small rodents, including varieties of squirrels, mice, rats, and gophers. Larger species include porcupine, skunks, raccoon, badger, coyote, deer, and bobcat.

#### CULTURAL RESOURCES OVERVIEW

A detailed reconstruction of the cultural history of west-central New Mexico is beyond the scope of this report. Regional summaries are available (Gummerman and Olson 1968; Weaver 1978; Nelson and Cordell 1982; Scheick 1983; Kauffman 1985).

# Paleoindian Period

The Paleoindian period (11,000-5500 B.P.) was first recognized in 1926 at the Folsom site in northeastern New Mexico (Wormington 1947:20). A series of Paleoindian traditions have since been defined beginning with Clovis and continuing through Plano (Stuart and Gauthier 1981:294-300). Originally defined on the plains of eastern New Mexico, the Paleoindian cultural area has been expanded to include virtually all of North America. Though originally believed to be dependent on big-game hunting, the importance of plant gathering and small-animal hunting to Paleoindian subsistence is now recognized (McGregor 1965:120; Willey 1966:38; Jennings 1968:78-79; Wilmsen 1975:115; Cordell 1979:19-21; Cordell 1982; Stuart and Gauthier 1981:31-33).

Paleoindian sites have rarely been documented in the Gallup area but are probably buried under alluvial deposits (Cordell 1982). Distinctively shaped Paleoindian projectile points have been found in the general Gallup region (Sessions 1979:45; Acklin and Moore 1982; Judge 1982:21-22; Anderson and Gilpin 1983:53; Banks and Del Bene n.d.:16).

#### Archaic Period

The Archaic period in the northern Southwest (5500 B.C.-A.D. 400) is generally referred to as the Oshara tradition (Irwin-Williams 1973). This period is characterized by distinctive projectile points and lithic artifact scatters that may include grinding implements and fire-cracked rock but that lack ceramics. Archaic subsistence adaptations are based on a highly mobile broad-based economy characterized by a combination of seasonally scheduled hunting and gathering activities (Banks and Del Bene n.d.:23-24; Post 1987:7).

The Oshara tradition is divided into five phases: Jay (5500-4800 B.C.), Bajada (4800-3200 B.C.), San Jose (3200-1800 B.C.), En Medio (1800 B.C.-800 B.C.), and the Armijo (800 B.C.-A.D. 400) (Irwin-Williams 1973). The first four phases are nonagricultural, with a hypothesized increasing dependence on gathered plants, as evidenced by increased numbers of grinding implements. The cultivation of maize as a primary food source occurs during the Armijo phase. However, subsistence continues to be based on hunting and gathering. Relatively few Archaic sites are known to exist in the peripheral areas of the San Juan Basin, including the project area (Cordell 1982). Cultural manifestations known as Basketmaker II further north are usually described in western New Mexico (including the project area) and eastern Arizona as Late Archaic with corn (Wilson and Blinman 1994). This form of cultural development appears to occur first in the elevated perimeter of the San Juan Basin, including the project area (Stuart 1982:157).

A second Archaic tradition, the Cochise culture, developed in southwestern New Mexico and southeastern Arizona. The material culture of the Cochise is similar to that of the Oshara tradition, differing primarily in its projectile point type sequence (Beckett 1973). The Cochise culture may have extended as far north as the Puerco River Valley and the southern periphery of the San Juan Basin. The project area is within this proposed area of cultural overlap. Although no sites associated with the Cochise culture have been recorded for the general project area (Beckett 1973:125), Cochise culture projectile points do occur within the San Juan Basin (Vogler 1982:158).

#### Anasazi Pueblo Period

The Anasazi Pueblo period in the San Juan Basin extends from A.D. 500 to 1300. Temporal divisions of Anasazi culture based on ceramics are Transitional Basketmaker (pre-A.D. 500), Basketmaker III (A.D. 500-700), Pueblo I (A.D. 700-900), Pueblo II (A.D. 900-1100), and Pueblo III (A.D. 1100-1300).

The beginning of the Anasazi period in the southern Colorado Plateau is marked by the adoption of pottery between A.D. 200 and 500 (Burton 1991; Wilson and Blinman 1991). Sites dating to within this time period are associated with brown wares constructed of alluvial clays. Later sites reflect a technological and cultural shift to gray and white wares constructed of geologic clays (Wilson et al. 1992). These early ceramics are associated with shallow pit structures clustered in small homesteads with associated small surface storage rooms.

Basketmaker III is a period of increased population density and apparent cultural homogeneity, reflected in the number and layout of sites. These sites consist of homestead clusters of deep pit structures with their associated surface storage rooms and extramural features (Judge 1982:38; Post 1987:9).

The development of surface habitation structures and the development of Kana'a neckbanded pottery defines Pueblo I (Cordell 1982:66-67). Site locations are primarily in upland settings, away from floodplains and river bottoms (Weaver 1978:37). Clusters of roomblocks appear during this period, though the use of pit structures continues.

The Pueblo II period is a time of both an increase in population (reflected in the number of sites) and an increased diversity in site types and settings. This period represents the greatest extent of the Anasazi across the landscape (Cordell 1982:66-67).

Interaction between the local population of the valley of the South Fork of the Puerco River and the elements of the Chaco phenomenon occurred during the Pueblo II period. Construction of the Chacoan outlier known as Fort Wingate Ruin (LA 2690) occurred during the late Pueblo II period (Peckham 1958:161-163). This site may have been built over an existing Pueblo I structure (Peckham 1958:163), presumably as part of the Chacoan expansion taking place within the San Juan Basin at that time (Vivian 1990). The substance of this interaction between the local population and the Chacoan phenomenon is open to conjecture (Toll 1985; Sebastian 1988; and Vivian 1990).

The Pueblo III period is said to extend from A.D. 1100 to 1300. This period is characterized by fewer but larger sites. This population aggregation may be tied to political centralization. Pueblo III sites consist of large roomblocks, with great kivas, interior kivas, and satellite communities (Gummerman and Olsen 1968:122-124; Weaver 1978:38-39; Cordell 1982:69-73; Anderson and Gilpin 1983; Eschman 1983:383-384).

Previous archaeological work in west-central New Mexico shows a differentiation in ceramic affiliation taking place during the Pueblo III period (Acklin 1982; Lang 1983). Areas peripheral to the southern and southwestern portions of the San Juan Basin appear to be tied ceramically to different cultural areas over time (Nelson and Cordell 1982; Lang 1983; Scheick 1983). It is suggested this change in affiliation was connected with the regional abandonment of the area after A.D. 1300 (Weaver 1978:38; Nelson and Cordell 1983:983). The Puerco River Valley appears to remain within the Chacoan cultural sphere until A.D. 1300. In contrast, sites maintained into the A.D. 1300-1350 period tend to exhibit connections with the population centers at Manuelito Canyon to the west (Nelson and Cordell 1982:983).

#### Protohistoric and Historic Navajo Periods

The protohistoric Athabascans of the Southwest (Apaches and Navajos) appear to have originated in the northern plains. They remained a homogeneous group sharing a relatively uniform language prior to their arrival into the Southwest and their differentiation into separate cultural entities (Young 1983:394). Though language differentiation has taken place, even today the language differences between the Navajo and different Apache groups remain at the dialect level (Young 1983).

The timing of this Athabascan (including Navajo) arrival into the Southwest is still subject to debate. Klukhohn and Leighton (1962:32) believe the Navajos arrived in New Mexico by A.D. 1000. Opler (1983) prefers a date of no later than A.D. 1400. Gunnerson (1956) believes the Navajos reached the Southwest by 1500 and were in contact with the Pueblos by 1525. Navajo Athabascan occupation of northwestern New Mexico was first documented by the Spaniards between 1540 and 1626 (Scheick 1983).

All Athabascans were considered Apaches by the Spaniards, who referred to the Navajos as the "Apaches de Navajo" as late as 1733 (Hester 1962:78, Table 13). Navajo subsistence during this period (known as the Dinetah phase and dated from A.D. 1350 to 1700) was based on hunting and gathering, supplemented with limited agriculture (Brugge 1983:491; Reed and

Horn 1990:283, 293). Navajo contact with the Pueblos and Spaniards involved trade and Navajo raiding of Pueblo and Spanish settlements (Hester 1962).

Improved relations between the Navajos and Pueblos contributed to the success of the Pueblo Revolt of 1680 (Brugge 1983:491). Pueblo refugees fleeing the returning Spanish in 1692 were aided and harbored by the Navajos, particularly in the Gobernador and Largo Canyon regions, and remote portions of the upper San Juan (Hester 1962).

Navajo movement out of the Gobernador-Largo Canyon areas to Chacra Mesa and the southern San Juan Basin took place between 1700 and 1760. Increased pressure from the north by raiding Utes was a major factor in this population shift toward the south and west away from the San Juan Valley (York 1983:522). Cultural modification of the Navajos occurred as Puebloan and Spanish cultural traits were adopted (Hester 1962:95-96; Brugge 1983:493; Gilpin 1983:527-547). Sheep and goat raising was practiced among the Navajos by 1706 (Hill 1940:396). By 1776-80, Navajos were living in the Gallup area (Hester 1962:79, Fig. 24).

The eighteenth century saw improved relations between the Navajos and the Spaniards as they united to fight the increasingly aggressive Utes. In time, however, pressures created by increasing Spanish settlement led to increased hostility and conflict. Slaving expeditions against the Navajos by the Spaniards led to Navajo attacks on Spanish settlements. Sporadic warfare beginning in 1800 continued between the Navajos and a succession of Spanish, Mexican, and United States governments until 1864.

Defeat of the Navajos in 1864 resulted in the physical removal of approximately 2,400 Navajos from northwestern New Mexico to a reservation at Bosque Redondo, near Fort Sumner on the Pecos River. The Navajos were allowed to return to northwestern New Mexico and northeastern Arizona in 1868 (Gilpin 1983:532; Roessel 1983:510; York 1983:522).

Navajo subsistence based on livestock herding became the norm after 1868, and expansion into commercial herding occurred after 1905 (Gilpin 1983:534). Although some families were displaced by the coming of the Atlantic and Pacific Railroad to the Gallup area in 1880 (McNitt 1962), the railroad created opportunities for commercial herding that expanded after 1905 (Gilpin 1983:543). Dependence on the boom-and-bust cycle of the livestock markets ended with the advent of wage labor opportunities brought on by the beginning of World War II (Gilpin 1983:536).

#### Euroamerican Occupation

The Euroamerican occupation of the project area was limited to a few resident traders prior to the construction of Fort Fauntleroy in 1860. The fort (renamed Fort Lyon in late 1860) served as a base of operations for U.S. troops in their campaigns against the Navajos (Giese 1991:3). Colonel Kit Carson successfully led a force of U.S. troops with Ute and Pueblo auxiliaries against the Navajos in 1863-64. The defeat of the Navajos in 1864 and their subsequent removal from the area to Fort Sumner resulted in the closing of Fort Lyon in 1864 except for caretaker personnel (Giese 1991:3-4). With the return of the Navajos in 1868, Fort Lyon was renamed Fort Wingate (after abandoned old Fort Wingate near Grants) and reoccupied to maintain a presence near the Navajos.

Until 1880, the Euroamerican occupation of this area of New Mexico was limited to military personnel, Indian agents assigned to local reservations, and assorted missionaries, traders, ranchers, and suppliers associated with reservations or military posts (Scheick 1983).

Land grants were made to the Atlantic and Pacific Railroad in 1880, and construction began the same year (McNitt 1962). Proximity to the railroad enabled ranchers in the area to move their livestock to markets to the east. Fort Wingate Station was built adjacent to the entrance to the fort for the convenience of military personnel.

Fort Wingate was closed in 1911. It reopened in 1918 under the operation of the Army Ordinance Department, which began using it to store munitions. Part of the fort was turned into a school for Navajos (Giese 1991:4). Though the school is still in operation, Fort Wingate was closed by the government in 1991.

# PREVIOUS WORK IN THE PROJECT AREA

A number of sites have been recorded in the project area (Table 1).

					4
LA Number	Topography/Ecozone	Culture	Period	Site Type	Reference
Church Rock	Quad				
LA 2691	Valley bottom/grassland	Anasazi	ΡII	Masonry roomblock	Wendorf 1956
LA 2688	Hilltop/grassland	Anasazi	P 11	Masonry roomblock	Wendorf 1956
LA 2692	Arroyo/grassland	Anasazi	P II	Sherd scatter	Wendorf 1956
LA 1432	Valley bottom/grassland	Anasazi	P II	Pitstructure	NMCRIS*
LA 59265	Valley bottom/grassland	Anasazi	P II	Sherd scatter	Jacklin 1986
LA 59258	Valley bottom/grassland	Navajo	Recent	Sweat lodge	Jacklin 1986
LA 59259	Hillslope/grassland	Unknown	Unknown	Fire-cracked rock	Jacklin 1986
LA 59257	Alluvial plain/grassland	Navajo	Recent	Fenced grave	Jacklin 1986
LA 59256	Ridge slope/grassland	Anasazi	P II	Sherd scatter	Jacklin 1986
Ciniza Quad					
LA 80680	Terrace/woodland	Anasazi	P II	Sherd scatter	NMCRIS
LAS 2726	Floodplain/woodland	Anasazi	Unknown	Sherd scatter	Wendorf 1956
LA 6367	Slope/grassland	Anasazi	P II- P III	Masonry roomblock	Alexander 1964
LA 2687	Hilltop/grassland	Anasazi	PII	Masonry roomblock	Wendorf 1956
LA 75991	Slope/woodland	Anasazi	PII	Sherd and lithic scatter	Redmond 1990
LA 79660	Slope/woodland	Anasazi	РІ- РІІ	Sherd and lithic scatter	NMCRIS

Table 1. Recorded sites in the general area of LA 2690

\*New Mexico Cultural Resources Information System, Historic Preservation Division

Hester and Olsen conducted the earliest archaeological surveys in the general project area in 1953 by for El Paso Natural Gas (Wendorf 1956). This project resulted in the recording of the sites clustered near the present McGaffey Interchange. One site was partially excavated by Peckham in 1957-58 before the construction of I- 40 (Peckham 1958). A number of small surveys have been conducted in the general area (Alexander 1964; Nelson 1987; Redmond 1989). The largest recent survey conducted within the general project area was in the Iyanbito area (Jacklin 1986). It encompassed a large area north of I-40, but only five of the sites recorded are within 0.5 miles of the project area.

LA 2690 (Fort Wingate Ruin) was recorded by the Laboratory of Anthropology in 1953 and assigned a Pueblo III date based on ceramics (Wendorf 1956:280-281). A kiva, small roomblock, and a great kiva were excavated by Peckham in 1957-58 (Peckham 1958:161-162). He dated the site to the early Pueblo II period but believed there might also be an earlier Pueblo I component (Marshall et al. 1979:294; Peckham 1958:162). These features were later removed by the original construction of I-40.

LA 2690 consists of a two-story roomblock in a C configuration. A one-story curved enclosure wall, consisting of a single row of rooms, forms the fourth side of a plaza. One-story rooms are present on each side of the large roomblock in asymmetrical additions. Ceramics observed at the site date it to the middle or late Pueblo II period. The site extends into the right-of-way, although most of it is outside the right-of-way and is intact (Bullock et al. 1993).

# FENCE REPLACEMENT MONITORING

Before permanent fence replacement could take place, temporary fencing was constructed beyond the east and west ends of the site from the existing right-of-way fence to the edge of the highway pavement. This temporary four-strand barbed wire fencing, erected on January 14, 1994, was designed to prevent vehicle access to LA 2690 during improvements to I-40. Temporary fence construction was monitored by Peter Y. Bullock.

Permanent fencing within the site boundaries of LA 2690 and within 15 m (50 ft) on either side was installed by hand (Fig. 2). All new fenceposts were installed in the postholes of the posts they replaced. No vehicular activity occurred on the site: all fencing materials were hand-carried. All fence replacement was fully monitored. No cultural resources were affected by fence construction.

The site surface was examined for possible previously unidentified or incorrectly identified cultural resources. Special attention was given the areas around the existing fence posts.

A total of 396.66 m (1,310 ft) of existing right-of-way fence was replaced at LA 2690 (Fort Wingate Ruin). No previously unrecorded or incorrectly identified cultural resources or traditional cultural properties were found at LA 2690. No further work is recommended.



Figure 2. LA 2690 site map.

14

#### **REFERENCES CITED**

Acklin, John C.

1982 Ceramic Analysis. In Anasazi and Navajo Land Use in the McKinley Mine Area near Gallup, New Mexico, vol. 1, edited by Christine G. Allen and Ben A. Nelson, pp. 578-598. Office of Contract Archeology, University of New Mexico, Albuquerque.

Acklin, John C., and James L. Moore

 Paleoindian. In An Archaeological Survey of Approximately 4,000 Acres Located near the Bisti Badlands South of Farmington, New Mexico, edited by John C. Acklin, Scott P. Berger, Mark E. Harlan, Stephen C. Lent, Mary Beth Lucas, and James L. Moore, pp. 21-24. Public Service Company of New Mexico, Albuquerque.

Alexander, R. K.

1964 Highway Cultural Inventory Project Final Report, 1961-1964. New Mexico Cultural Records Information System, Santa Fe.

Anderson, Joseph K., and Dennis Gilpin

1983 Cultural History. In Cultural Resource Investigations on Gallegos Mesa: Excavations in Blocks VIII and IX, and Testing Operations in Blocks I and XI, Navajo Indian Irrigation Project, San Juan County, New Mexico, edited by Lawrence E. Vogler, Dennis Gilpin, and Joseph K. Anderson, pp. 29-68, Navajo Nation Papers in Anthropology 24 (1). Window Rock.

Banks, Kimball M., and Terry Del Bene

n.d. Ch ooshgai: Prehistoric Archaeology of the Navajo National Forest, Arizona and New Mexico. Manuscript on file, Office of Archaeological Studies, Santa Fe.

Beckett, Patrick

1973 Cochise Cultural Sites in South-Central and North-Central New Mexico. Master's thesis, Department of Anthropology, Eastern New Mexico University, Portales.

Brugge, David M.

1983 Navajo Prehistory and History to 1850. In *Handbook of North American Indians*, vol. 10, *Southwest*, edited by Alfonso Ortiz, pp. 489-501. Smithsonian Institution, Washington, D.C.

Bullock, Peter Y., Linda J. Goodman, and Janet Spivey

1993 An Archaeological and Traditional Cultural Properties Survey along I-40 in the Vicinity of Iyanbito, McKinley County, New Mexico. Archaeology Notes 107. Office of Archaeological Studies, Museum of New Mexico, Santa Fe.

Burton, Jeffery F.

1991 The Archaeology of Sivu'ovi: The Archaic to Basketmaker Transition at Petrified Forest National Park. National Park Service, Publications in Anthropology No. 55. Western Archaeological and Conservation Center, Tucson.

Castetter, Edward F.

1956 The Vegetation of New Mexico. *New Mexico Quarterly* 26:257-288.

Cooley, M. E.

1959 Triassic Stratigraphy in the State Line Region of West-Central New Mexico and Eastern-Central Arizona. In *Guidebook of West-Central New Mexico*, edited by James E. Weir, Jr., and Elmer H. Baltz, pp. 66-74. New Mexico Geological Society, New Mexico School of Mines, Socorro.

Cordell, Linda S.

- 1979 Cultural Resources Overview: Middle Rio Grande Valley, New Mexico. Government Printing Office, Washington, D.C.
- 1982 An Overview of Prehistory in the McKinley Mine Area. In Anasazi and Navajo Land Use in the McKinley Mine Area near Gallup, New Mexico, vol. 1, edited by Christine G. Allen and Ben A. Nelson, pp. 75-120. Office of Contract Archeology, University of New Mexico, Albuquerque.

Davis, Jonathan O.

1989 Archaeological Paleoenvironments of the Southwestern Division, U.S. Army Corps of Engineers. Arkansas Archaeological Survey Technical Paper No. 8. Fayetteville.

Eschman, Peter N.

1983 Archaic Site Topology and Chronology. In *Economy and Interaction along the Lower Chaco River*, edited by Patrick Hogan and Joseph C. Winter, pp. 375-384. Office of Contract Archeology and Maxwell Museum of Anthropology, Albuquerque.

Fitzsimmons, J. P.

1959 Structure and Geomorphology of West-Central New Mexico. In *Guidebook to West-Central New Mexico*, edited by James E. Weir, Jr., and Elmer H. Baltz, pp. 112-117. New Mexico Geological Society, Socorro.

Gabin, Vickie L., and Lee E. Lesperance

1977 New Mexico Climatological Data: Precipitation, Temperature, Evaporation, and Wind. Monthly and Annual Means, 1850-1975. W. K. Summers and Associates, Socorro.

Gadway, Keith L.

1959 Cretaceous Sediments of the North Plains and Adjacent Areas, McKinley, Valencia, and Catron Counties, New Mexico. In *Guidebook to West-Central New Mexico*, edited by James E. Weir, Jr., and Elmer H. Baltz, pp. 81-85. New Mexico Geological Society, Socorro.

#### Giese, Alan

1991 Forts of New Mexico. Phelps Dodge Corporation, Silver City.

#### Gilpin, Dennis

1983 Historic Sites Data: Summary and Analysis. In Cultural Resource Investigations on Gallegos Mesa: Excavations in Blocks VIII and IX, and Testing Operations in Blocks I and XI, Navajo Nation Irrigation Project, San Juan County, New Mexico, edited by Lawrence E. Vogler, Dennis Gilpin, and Joseph K. Anderson, pp. 591-844. Navajo Nation Papers in Anthropology 12(1). Window Rock.

Gummerman, George L., and Alan P. Olsen

1968 Prehistory of the Puerco Valley, Eastern Arizona: A Preliminary Report. *Plateau* 39(2):80-87.

Gunnerson, Dolores A.

1956 The Southern Athabascans: Their Arrival in the Southwest. *El Palacio* 63(11-12):346-365.

#### Hester, James

1962 *Early Navajo Migrations and Acculturation in the Southwest*. Museum of New Mexico Papers No. 6. Museum of New Mexico Press, Santa Fe.

## Hewett, Nancy S.

1982 A Review of the Literature concerning the Geology and Hydrology in the Vicinity of Gallup, New Mexico. In Anasazi and Navajo Land Use of the McKinley Mine Area near Gallup, New Mexico, vol. 1, edited by Christine G. Allen and Ben A. Nelson, pp. 22-48. Office of Contract Archeology, University of New Mexico, Albuquerque.

#### Hill, W. W.

1940 Some Navajo Cultural Changes during Two Centuries. Smithsonian Miscellaneous Collections 100:395-416.

#### Irwin-Williams, Cynthia

1973 The Oshara Tradition: Origins of Anasazi Culture. Contributions in Anthropology 1(2). Eastern New Mexico University, Portales.

## Jacklin, M.

1986 Three Roads in Iyanbito, New Mexico, for Iyanbito Chapter, Navajo Nation. Navajo Nation Cultural Resource Management Program Report 86-068. Window Rock.

Jenkins, Richard D., and G. Randy Keller

1986 Interpretation of Basement Structure and Geophysical Anomalies in the Southeastern Colorado Plateau. In Southeastern Colorado Plateau, edited by Orin J. Andersen, Spencer G. Lucus, David W. Love, and Steven M. Cather, pp. 138-142. New Mexico Geological Society, Socorro.

#### Jennings, Jesse D.

1968 Prehistory of North America. McGraw-Hill, New York.

## Judge, W. James

1982 The Paleo-indian and Basketmaker Periods: An Overview and Some Research Problems. In *The San Juan Tomorrow: Planning for the Conservation of Cultural Resources in the San Juan Basin*, edited by Fred Plog and Walter Wait, pp. 5-57. National Park Service and School of American Research, Santa Fe.

#### Kauffman, Barbara

1985 Overview of Regional Prehistory: An Update. In *The Archaeology of McKinley Mine*, vol. 1, *Prehistory*, edited by Barbara Kauffman, pp. 19-30. Report No. 621. Cultural Resource Management Division, New Mexico State University, Las Cruces.

Kluckhohn, Clyde, and Dorothea C. Leighton

1962 The Navajo. Rev. ed. Natural History Library, Garden City, New Jersey.

#### Knight, Paul J.

1982 The Climate of the McKinley Mine Lease Area. In Anasazi and Navajo Land Use in the McKinley Mine Area Near Gallup, New Mexico, vol. 2, edited by Christine G. Allen and Ben A. Nelson, pp. 49-55. Office of Contract Archeology, University of New Mexico, Albuquerque.

Kottlowski, Frank E.

1959 Pennsylvanian Rocks on the Northeastern Edge of the Datil Plateau. In *Guidebook to West-Central New Mexico*, edited by James E. Weir, Jr., and Elmer H. Baltz, pp. 57-62. New Mexico Geological Society, Socorro.

Lang, Richard W.

1982 Ceramics and Site Chronology in the Eastern Red Mesa Valley: A Reevaluation of the Local Uses of Pueblo I-III Pottery of Phase Sequencing, Kiatuthlanna through Wingate. In Archaeological Investigations in the Eastern Red Mesa Valley: The Plains/Escalante Generating Station, edited by John Beals, pp. 62-128. Contract Archeology Report 005. School of American Research, Santa Fe.

Maker, H. J., H. E. Drehne, V. G. Link, and J. U. Anderson

1974 Soils of New Mexico. Agricultural Experimental Station Research Report No. 285. New Mexico State University, Las Cruces.

Marshall, Michael P., John R. Stein, Richard W. Loose, and Judith E. Novotny

1979 Anasazi Communities of the San Juan Basin. Historic Preservation Bureau, Planning Division, State of New Mexico, Santa Fe.

McGregor, John C.

1965 Southwestern Archaeology. University of Illinois Press, Urbana.

#### McNitt, Frank

1962 The Indian Traders. University of Oklahoma Press, Norman.

#### Nelson, Ben A., and Linda S. Cordell

1982 Dynamics of Anasazi Adaptation. In Anasazi and Navajo Land use in the McKinley Mine Area near Gallup, New Mexico, vol. 1, edited by Christine G. Allen and Ben A. Nelson, pp. 867-893. Office of Contract Archeology, University of New Mexico, Albuquerque.

Nelson, Norman B.

1987 Cultural Resource Survey of Interstate 40 from Milepost 35 at Fort Wingate. Environmental Section/Technical Support Bureau, New Mexico State Highway and Transportation Department, Santa Fe.

Opler, Morris E.

1983 The Apachean Culture Pattern and Its Origin. In Handbook of North American Indians, vol. 10, Southwest, edited by Alphonso Ortiz, pp. 368-392. Smithsonian Institution, Washington, D.C.

Peckham, Stuart

1958 Salvage Archaeology in New Mexico, 1957-58: A Partial Report. *El Palacio* 65(5):161-168.

Post, Stephen S.

1987 Testing Results and Research Design for Three Sites along State Route 264, McKinley County, New Mexico. Laboratory of Anthropology Notes 349. Museum of New Mexico, Santa Fe.

Redmond, Louis A.

1990 Survey for Fr 547 Easement on BIA Lands. Mount Taylor Ranger District, Grants, New Mexico.

Reed, Alan D., and Jonathon C. Horn

1990 Early Navajo Occupation of the American Southwest: Reexamination of the Dinetah Phase. *Kiva* 55(4):283-300.

Roessel, Robert, Jr.

1983 Navajo History 1850-1923. In Handbook of North American Indians, vol. 10, Southwest, edited by Alphonso Ortiz, pp. 506-510. Smithsonian Institution, Washington, D.C.

Scheick, Cherie

1983 The Gamerco Project: Flexibility as an Adaptive Response. Report No. 071. Contract Archaeology Division, School of American Research, Santa Fe.

Sears, J. D.

1925 Geology and Resources of the Gallup-Zuñi Basin, New Mexico. U.S. Geological Survey Bulletin No. 767. Washington, D.C.

Sebastian, Lynne

1988 Leadership, Power, and Productive Potential: A Political Model of the Chaco System. Ph.D. dissertation, Department of Anthropology, University of New Mexico, Albuquerque.

Sessions, Steven E.

1979 Results of the Archaeological Survey. In *The Archaeology of Southwest Gallegos Mesa: The EPCC Survey Project*, edited by Steve E. Sessions, pp. 45-60. Navajo Nation Papers in Anthropology 1. Window Rock.

Smith, C. T.

1959 Jurassic Rocks of the Zuñi Mountains. In *Guidebook to West-Central New Mexico*, edited by Lames E. Weir, Jr., and Elmer H. Baltz, pp. 74-81. New Mexico Geological Society, Socorro.

Smith, Clay, Ray Foster, Frank Kottlowski, and Robert Ostrander

- 1959 Road Log for Friday, October 16, 1959. In *Guidebook to West-Central New Mexico*, edited by James E, Weir, Jr., and Elmer H. Baltz, pp. 25-36. New Mexico Geological Society, Socorro.
- Stuart, David E.
- 1981 Power and Efficiency: Demographic Behavior, Sedentism, and Energetic Trajectories in Cultural Evolution. In *The San Juan Tomorrow: Planning for the Conservation of Cultural Resources in the San Juan Basin*, edited by Fred Plog and Walter Wait, pp. 127-162. National Park Service and School of American Research, Santa Fe.

Stuart, David E., and Rory P. Gauthier

- 1981 Prehistoric New Mexico: Background for Survey. New Mexico State Historic Preservation Division, Santa Fe.
- Toll, H. Wolcott
- 1985 Pottery, Production, Public Architecture and the Chaco Anasazi System. Ph.D. dissertation, Department of Anthropology, University of Colorado, Boulder.

Tuan, Yi-Fu, Cyril E. Everard, Jerold G. Widdison, and Iven Bennett

1973 The Climate of New Mexico. Rev. ed. New Mexico State Planning Office, Santa Fe.

#### Vivian, R. Gwinn

1990 The Chacoan Prehistory of the San Juan Basin. Academic Press, San Diego.

Vogler, Lawrence E.

1982 Summary of Prehistoric Cultural Resources. In Cultural Resource Investigations on Gallegos Mesa: Excavations in Blocks VIII and IX, and Testing Operations in Blocks I and XI, San Juan County, New Mexico, edited by Lawrence E. Vogler, Dennis Gilpin, and Joseph K. Anderson, pp. 147-284. Navajo Nation Papers in Anthropology 12(1). Window Rock. Warren, A. H.

1970 Geology and Resources of the Manuelito Area, McKinley County, New Mexico. Laboratory of Anthropology Notes 58b. Museum of New Mexico, Santa Fe.

Weaver, Donald E., Jr.

1978 Prehistoric Population Dynamics and Environmental Exploitation in the Manuelito Canyon District, Northwestern New Mexico. Ph.D. dissertation, Department of Anthropology, Arizona State University, Tempe.

Wendorf, Fred, Nancy Fox, and Orian L. Lewis (editors)

1956 Pipeline Archaeology-Salvage Operations in the Southwest on El Paso Natural Gas Company Projects, 1950-53. Laboratory of Anthropology and Museum of Northern Arizona, Santa Fe and Flagstaff.

White, William, and T. E. Kelley

1986 The San Andres-Glorieta Aquifer in West-Central New Mexico. In Southeastern Colorado Plateau, edited by Orin J. Anderson, Spencer G. Lucus, Davis W. Love, and Steven M. Cather, pp. 331-335. New Mexico Geological Society, Socorro.

Willey, Gordon R.

1966 An Introduction to American Archaeology, North and Middle America. Prentice-Hall, Englewood Cliffs, New Jersey.

Wilmsen, Edwin N.

1974 Lindenmeier: A Pleistocene Hunting Society. Harper and Row, New York.

Wilson, C. Dean, and Eric Blinman

1991 Early Anasazi Ceramics and the Basketmaker Tradition. Paper presented at the Anasazi Symposium, Mesa Verde National Park.

Wilson, C. Dean, Eric Blinman, James M. Skibo, and Michael Brian Schiffer

1992 The Designing of Southwestern Pottery: A Technological Approach. Paper submitted for consideration at the University of Arizona Press, Tucson.

## Wormington, H. Marie

1947 Prehistoric Indians of the Southwest. Denver Museum of Natural History, Denver.

York, Frederick

1983 Navajo Settlement and Subsistence within the Last Century. In *Economy and Interaction* Along the Lower Chaco River, edited by Patrick Hogan and Joseph C. Winter, pp. 521-545. Office of Contract Archeology and Maxwell Museum of Anthropology, Albuquerque.

#### Young, Robert W.

1983 Apachean Languages. In Handbook of North American Indians, vol. 10, Southwest, edited by Alphonso Ortiz, pp. 393-400. Smithsonian Institution, Washington, D.C.