

MUSEUM OF NEW MEXICO

OFFICE OF ARCHAEOLOGICAL STUDIES

ARCHAEOLOGICAL TESTING OF TEN SITES ALONG NM 63 BETWEEN ROWE AND PECOS, NEW MEXICO

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ARCHAEOLOGY NOTES 195

ADMINISTRATIVE SUMMARY

Test excavations at 10 sites along NM 63 between Rowe and Pecos, New Mexico, exhausted all potential to provide information on local prehistory and history. The project was conducted on highway right-of-way and lands administered by Pecos National Historical Park (PNHP). The fieldwork was conducted in March and April of 1994. The dates of these ten sites range between the early Archaic period (4800-3200 B.C.) and the Historic period (A.D. 1539-1912) and as recent as 1940. At the request of the New Mexico State Highway and Transportation Department (NMSHTD), testing was conducted at these sites.

MNM Project No. 41.517
NMSHTD Project No. SP-0S-1417(201)
CN No. 1315
JPA D04635

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INTRODUCTION

At the request of the New Mexico State Highway and Transportation Department (NMSHTD), the Office of Archaeological Studies of the Museum of New Mexico conducted test excavations at 10 sites along NM 63 between Rowe and Pecos, San Miguel County, New Mexico. Field work was conducted between March 15 and April 22, 1994. Joan K. Gaunt acted as project director and was assisted by James L. Moore, Joy Beasley, and David Hayden. Don Terry contributed many hours of volunteer time and energy. The report was edited by Robin Gould, and figures were produced by Ann Noble. Timothy D. Maxwell acted as principal investigator. All sites were located on land owned by Pecos National Historical Park. Eight sites, LA 85495, LA 85496, LA 85500, LA 85501, LA 85502, LA 85503, LA 85507, LA 85508, and LA 38648 were located and recorded during the initial survey (Lent 1992). During a subsequent survey of CMEs, TCPs, WPAs, and new rights-of-way alignments, four sites were recorded; two were previously recorded sites from the survey (LA 38648 and LA 85503), and two additional sites were recorded (LA 99939 and LA 99940) (Willmer 1993).

During the testing phase, 10 sites were investigated (Fig. 1). LA 85500, a lithic and ceramic scatter with an ephemeral rock alignment, dates to the Rio Grande Classic period. Ceramic artifacts date to A.D. 1400-1550. LA 85502 consists of an extensive prehistoric scatter of lithic and ceramic artifacts. None of the ceramic artifacts were temporally diagnostic. LA 85503 consists of a cobble mound that may represent a structure, a large depression, two small concentrations of cobbles, and a large semicircular mound likely associated with historic road construction activities. Ceramic artifacts date to the Coalition period and into the Rio Grande Classic period, A.D. 1175-1425. One glaze ware sherd provided a date of A.D. 1600-1700. LA 85495, LA 85496, LA 85507, and LA 85508 were combined into one large site, LA 85495. It consists of an extensive lithic and ceramic artifact scatter, seven concentrations of artifacts, nine features, and two structures. An early Archaic projectile point (4800-3200 B.C.) was located. Ceramic artifacts date to A.D. 1300 to 1600, ranging from the Rio Grande Coalition to the Rio Grande Classic (A.D. 1350-1600) periods. LA 99939 was defined as a multicomponent site containing both prehistoric (A.D. 1315 to 1425) and historic (1940s) components. It is a multicomponent site consisting of three prehistoric structures, a possible deflated prehistoric hearth, six lithic and ceramic artifact concentrations, and an historic cobble mound associated with the 1940s main entrance road to the Forked Lightning Ranch. Artifacts date this site from the late to early Rio Grande Classic (A.D. 1315 to 1615) and Historic periods (1760 to 1850). LA 99940 consisted of a cobble concentration that may represent the remains of a fieldhouse with an associated lithic and ceramic artifact scatter. Ceramic artifacts date from the early to late Rio Grande Classic (A.D. 1315 to 1615) and the Historic periods (1760 to 1850).

Sunbelt Geo Physics from Albuquerque performed electromagnetic investigations on June 25 and 26, 1994, to locate and define the ruts of the Santa Fe Trail (LA 38648) (Appendix 1). The area was then tested with mechanical equipment on July 1, 1994.

The limited testing program determined that the portions of the ten sites within the proposed project limits are not likely to yield information beyond that which has already been documented. No additional investigations are recommended. Site location and legal descriptions are included in Appendix 2. (This appendix has been removed from copies in general circulation.)

R.11 E

R.12 L

R.13 E

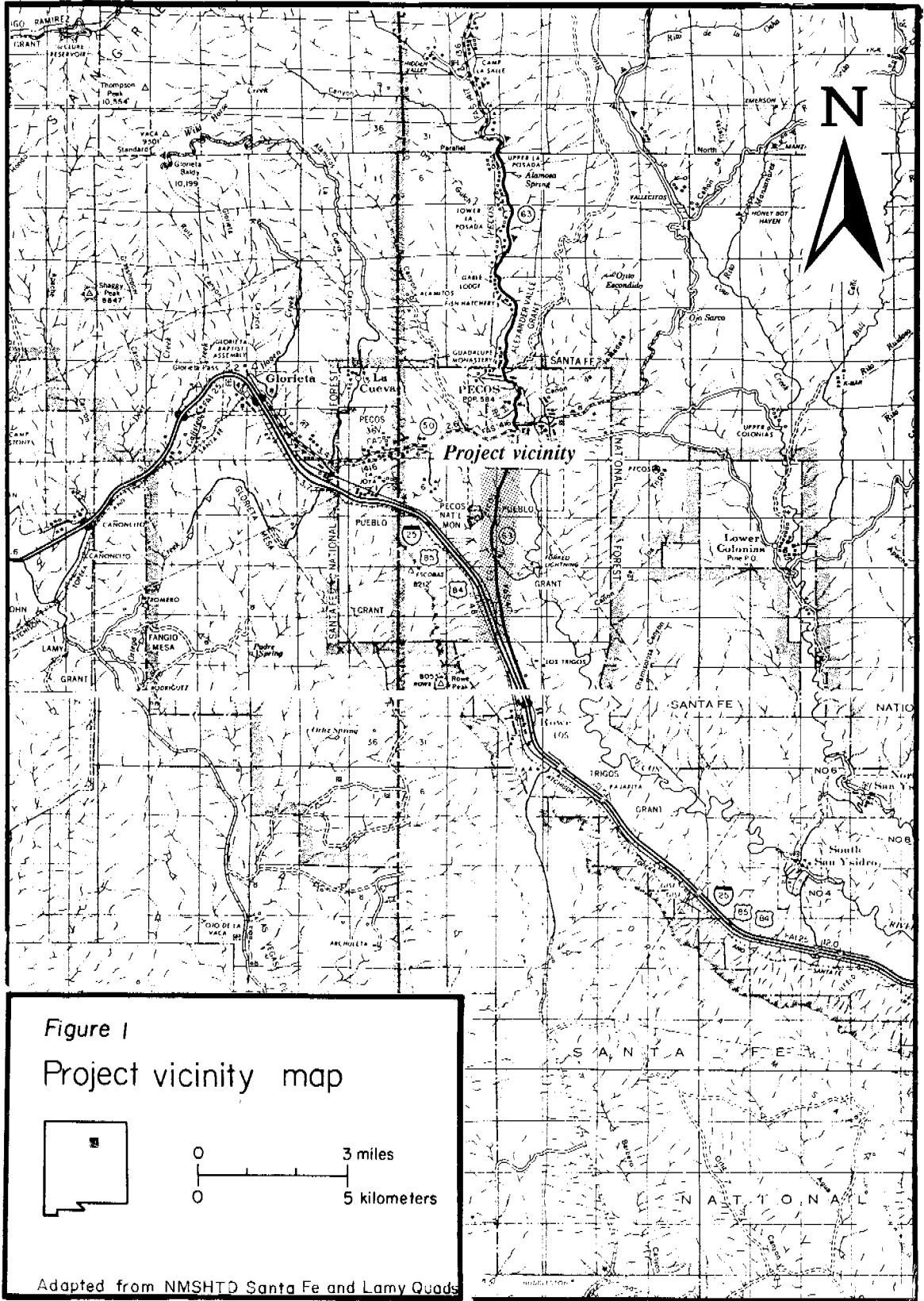
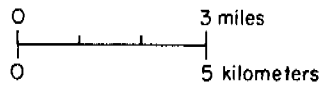
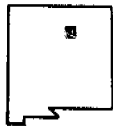


Figure 1
Project vicinity map



Adapted from NMSHTD Santa Fe and Lamy Quads

PHYSICAL ENVIRONMENT

Vernon G. Lujan

The project area is situated nearly in the center of the Pecos Valley, which is incised by Glorieta Creek, a tributary of the Pecos River (Lujan 1992:6). The elevation varied between 2,079 m (6,820 ft) and 2,134 m (7,000 ft). The Pecos River begins 48.3 km (30 mi) north in the 13,000 ft Sangre de Cristo Mountains. As the river leaves the narrow mountain gorge, the valley immediately widens to about 6 miles, bordered on the west by Glorieta and Rowe mesas and on the east by the gradually rising Tecolote foothills. The valley separates Glorieta and Rowe mesas from the Santa Fe Mountains and forms a natural highway through the north-central New Mexican highlands. To the south, the valley is pinched out by the converging mesas and foothills. This area is also a transitional zone between the Southern Rocky Mountain Province and the Sacramento section of the Basin and Range Province (Fenneman 1931). The Sangre de Cristo Mountains represent the Rocky Mountain Province, and Glorieta and Rowe mesas are the northeastern boundary of the Basin and Range Province (Fenneman 1931:393-394). Unless otherwise noted, information on environment is summarized from Moore et al. (1991).

Geology

Structure

The project area is in a transitional zone between physiographic provinces, and its geology is relatively complex. Though the region has a long history of faulting, uplift, and subsidence, only a few of the more pertinent events and structural features will be discussed.

Pennsylvanian and early Permian rocks unconformably overlie Precambrian basement rocks in the region. These strata were deposited in the Rowe-Mora Basin, the area now occupied by the central Sangre de Cristo Mountains (Baltz and Bachman 1956). Considerable deformation occurred during the late Cretaceous-early Tertiary periods. A block measuring 320 km long by up to 30 km wide was uplifted, forming the Sangre de Cristo Mountains (Woodward and Ingersoll 1979). At the same time, the Raton Basin was formed along the eastern edge of this uplifted zone.

Uplift in the Sangre de Cristos resulted in deformation of areas directly south of that feature (Goolsby 1965). The zone separating the Sangre de Cristo uplift from the Glorieta Mesa uplift was severely deformed into a complexly faulted and folded graben (Lisenbee et al. 1979:92-93). These orogenic forces, also felt on the Glorieta uplift, are represented by gentle folds. The Glorieta Mesa uplift is an uplifted arch trending slightly west of north (Griggs and Hendrickson 1951:34).

During the late Cenozoic period (and probably continuing to the present), movement along the Rio Grande Rift formed a series of northward-trending grabens, including the Española Basin (Woodward and Ingersoll 1979). The Española Basin forms part of the western boundaries of the Glorieta Mesa and Sangre de Cristo uplifts and is separated from the former by the Glorieta Mesa boundary fault. Movement along this fault system has been recurrent since the Precambrian period.

As the river enters the Pecos Valley, it leaves behind the granite and other volcanic rock of the mountains and flows through sedimentary formations of horizontally layered sandstones, limestones, shales, and siltstones.

Stratigraphy

Unless otherwise noted, stratigraphic descriptions are summarized from Baltz and Bachman (1956), Goolsby (1965), and Griggs and Hendrickson (1951).

Basement rocks consist of igneous metasedimentary and Precambrian granites, schists, gneisses, and quartzites (Baltz and Bachman 1956; Woodward and Ingersoll 1979). Precambrian rocks outcrop in places along the Pecos River and its tributaries but are generally overlain by later sedimentary deposits. The valley floor is in the Sangre de Cristo formation, a 500-ft thick deposit of sandstone, siltstone, and shale, which is cut by arroyos throughout.

The most common outcropping formations are Precambrian through Permian in age. In nearby areas, they are overlain by various other formations dating from Permian to Tertiary periods. They include (in ascending order) the Artesia sandstone and siltstone formation (Permian); the Entrada sandstone formation (Jurassic); the Todilto limestone formation (Jurassic); the Morrison formation, sandstone with some siltstones and shales (upper Jurassic); the Dakota sandstone formation (Cretaceous); the Mancos formation, shale, sandstone, and limestone (late Cretaceous); and the Galisteo formation, sandstone with occasional conglomeratic lenses (Tertiary).

Outcrops along Glorieta Creek consist of occasional igneous and metamorphosed Precambrian rocks, the Magdalena group, and the Sangre de Cristo, Yeso, and San Andres formations. Precambrian rocks occur as occasional exposures in the Pecos River Valley and its tributaries. The Magdalena group outcrops in the lower portions of the valley. The Sangre de Cristo formation outcrops around the mountain edges and on the lower northern slope of Glorieta Mesa. Yeso formation exposures also occur along the northern mesa slope. The Glorieta sandstone member of the San Andres formation forms a resistant cap over the top of much of Glorieta Mesa, though in places it is overlain by younger rocks. A considerable portion of the mesa top is also covered by the middle member of the same formation, while the upper member outcrops along the east and west sides of the mesa.

The valley floor is in the Sangre de Cristo formation, a 500-ft-thick deposit of sandstone, siltstone, and shale, which is cut by arroyos.

Soils

Information on soils is summarized from Folks (1975:18-19, 21, 43-45). Several soil associations occur in the survey area, including Prewitt loam, Rednun loam, Capillo-Rock outcrop, Capillo gravelly sandy loam, and Cueva very strong clay. Prewitt loam occurs on terraces along Glorieta Creek at elevations of 1,890 to 2,012 m. Flanking the Prewitt loam association on the north side of the valley are soils of the Capillo-Rock outcrop complex and Capillo gravelly sandy loam, which occur at elevations up to 3,353 m. On the south side it is flanked by Rednun loam at elevations between 2,012 and 2,134 m, Cueva very strong clay between 2,134 and 2,438 m, and

Capillo gravelly sandy loam and Capillo-Rock outcrop between 2,438 and 3,353 m.

The Prewitt loam association occurs on level to moderate slopes (0-5 percent) and consists of well-drained soils forming in alluvium weathered from sandstone and shale. Permeability is moderate, run-off speed is medium, and the potential for erosion is severe.

The Rednun loam association occurs on nearly level to moderate slopes (1-9 percent) and consists of well-drained soils forming in old alluvium and mixed eolian deposits. Permeability is slow, run-off speed is medium, and the potential for erosion is moderate.

The Capillo-Rock outcrop complex occurs on moderate to steep slopes (10-50 percent) and consists of 55 percent Capillo gravelly sandy loam, 25 percent rock outcrops, and 20 percent other soils. Capillo gravelly sandy loams are well-drained soils formed on mountain sides in materials derived from weathered sandstone and shale. Permeability is slow, run-off speed is medium to rapid, and the potential for erosion is moderate to severe.

The Capillo gravelly sandy loam association occurs on strongly sloping to steep slopes (10-60 percent) and consists of well drained and moderately well drained soils of the Capillo series formed mostly in materials weathered from granite, gneiss, schist, sandstone, and shale or from basalt and other volcanic debris. A few were formed in alluvium or valley fill. Many of the soils are gravelly or stony and range from very shallow to deep to bedrock. Permeability is slow, run-off speed is medium to rapid, and the potential of erosion is moderate to severe.

The Cueva very strong clay association occurs on hilly to very steep slopes (20-60 percent) and consists of well-drained mountain soils. Permeability is slow, run-off speed is rapid, and the potential for erosion is extreme.

Flora and Fauna

The Pecos and Rowe valleys are located in the Upper Sonoran life zone (Bailey 1913) and support a wide range of animal and plant communities. The heavy piñon-juniper forest continues across the valley floor between the mesas and foothills and, except for the areas cleared by man, would probably cover the entire northern part of the valley. As the valley moves south, however, the piñon and juniper give way to large open areas of grasses. Occasional clumps of ponderosa pine are found throughout the piñon and juniper community.

Flora

The vegetative community within the survey area is dominated by juniper with oak or piñon (Morain 1979). However, vegetation varies with soil type and elevation. Prewitt loam supports mostly mixed grasses. Rednun loam supports piñon, juniper, and mixed grasses. Cueva very strong clay supports growths of piñon, juniper, mixed shrubs, and grasses. The Capillo-Rock outcrop complex and the Capillo gravelly sandy loam supports ponderosa pine, Douglas fir, and white fir, as well as various shrubs and grasses.

A riparian plant community occurs along Glorieta Creek. Various species are supported by the abundant moisture available in such an environment, including cottonwood, willow, tamarisk, cattail, and rushes. Grasses are common on the floodplain and adjacent slopes and include sand dropseed, blue grama, wheatgrass, and ricegrass. Various shrubs and cacti occur on the slopes bordering the stream and include gooseberry, currant, yucca, mountain mahogany, tansy mustard, cholla, and prickly pear.

Fauna

Some of the most common mammals found in the area include cottontail, jackrabbit, and rodents, including the Colorado chipmunk, pocket gopher, western harvest mouse, deer mouse, and Mexican woodrat. Larger rodents include porcupines, squirrels, and prairie dogs.

Native artiodactyls include mule deer and elk. A number of carnivores also occur. Among them are coyotes, raccoons, and skunks. In the survey area, relatively common raptors include the red-tailed hawk. The turkey vulture, raven, and magpie are common scavengers. Other birds found in relative abundance include Gambel's quail, mourning dove, piñon jay, robin, mountain bluebird, house sparrow, wrens, woodpecker, red-winged blackbirds, sparrows, finches, chickadees, and hummingbirds.

Climate

New Mexico is one of three areas in the United States that receives over 40 percent of its annual precipitation in the summer months (Tuan et al. 1973). The annual precipitation rate fluctuates greatly around the mean, and there are more dry years than wet years (Tuan et al. 1973). Though these fluctuations are less severe than those occurring in humid regions, they are of greater significance because of the overall aridity of the area. With less precipitation to begin with, any drop in the annual rate can seriously impact the biotic environment.

Summer rainfall in the Southwest follows a true monsoon pattern (Martin 1963). Moisture-laden winds flowing north from the Gulf of Mexico are the main source of summer moisture, and their movement is controlled by a high-pressure system over the Atlantic Ocean. The amount of summer precipitation in the Southwest depends on the positioning of this system. When it is in a northward position, moist tropical air flows into the Southwest, and the summer is wet. When it is positioned southward the summer can be dry, a condition that may be caused by abnormally cold years in the north temperate latitudes (Martin 1963).

Table 1. Average Seasonal Precipitation Rates, 1925-1954

Season	Mean Precipitation (cm)	Percentage
Winter	5.08	14.82
Spring	8.89	25.93
Summer	12.70	37.04
Fall	7.62	22.22
Total	34.29	

Mean annual precipitation in the general survey area is 34.3 cm, of which nearly 40 percent falls during the summer months. Table 1 illustrates seasonal precipitation patterns for the region. As can be seen, summers receive the most precipitation and winters the least. The relative density of the vegetative mat probably helps prevent much erosion. Damage to the vegetative mat, however, can increase the potential for severe erosion. An overall change in precipitation patterns could adversely affect the vegetative community and, hence, help contribute to erosion.

The valley bottom zone, 1,890-2,012 m (6,201-6,601 ft), has a 130-170 day frost-free period. The date of the first killing frost in the fall is usually around September 30, and the last in the spring is generally around May 20 (Folks 1975; Williams and Morgan 1979). The mean annual temperature is around 9-11 degrees C (48-52 F). These variables differ with altitude. Between 2,012 and 2,134 (6,600 to 7,001 ft), mean annual temperature and precipitation rates remain much the same, but the number of frost-free days drops to 150-160. Between 2,134 and 2,438 m (7,001 to 7,997 ft), mean temperature drops to 9-11 degrees C (48-52 degrees F), while the mean precipitation rate increases to 36-41 cm. The average number of frost-free days falls to 120-130. Between 2,438 and 3,353 m (7,997 to 10,998 ft) altitude, climatic changes are even more extreme. Average annual precipitation increases to 46-51 cm, the mean annual air temperature drops to 6-7 degrees C (43-45 degrees F), and there are only 50-100 frost-free days (Folks 1975).

PAST ARCHAEOLOGICAL PROJECTS

Stephen C. Lentz and Adisa J. Willmer

Resources near the Project Area

Resources such as Pecos Pueblo, Rowe Pueblo, and other major sites near but outside of the project area are described below.

Rowe Ruin (LA 108)

A short distance east of the village of Rowe (LA 5165), New Mexico, lies Rowe Ruin (LA 108). This site is on private land. Rowe Pueblo was first described by Bandelier in 1882 as a ruin composed of "three quadrangles connected with one another," saying that it had two entrances and was fortified. In 1904, Edgar Hewett listed the site as a "Class II Ruin," that is, smaller and older than the ruins at Pecos. He estimated that Rowe contained 400 rooms and that it was finally abandoned in favor of Pecos, which was more defensible (Wait 1980:1).

In 1917, Carl Guthe spent a single six-week field season trenching a portion of the southernmost room blocks and plaza area. He excavated twelve rooms and uncovered three superimposed masonry structures, which he felt represented three distinct occupations. Guthe concluded that the results of his excavations corroborated Bandelier's and Hewett's contention that Rowe predated the major occupation to Pecos and was contemporaneous with the earliest Pecos occupation.

In 1953, Stubbs obtained a tree-ring (noncutting) date of A.D. 1308. Collins (1975), stating that Rowe Pueblo was occupied only during the Rio Grande Coalition phase, placed its occupation between A.D. 1280 and 1318.

In 1977, some limited testing was performed at Rowe Pueblo by the National Park Service (Nordby and Wait 1979). These tests were limited to disturbed areas. Rowe Pueblo was studied in 1979 by the National Park Service. In 1980, 1983, and 1984, Rowe Pueblo was the site of the University of New Mexico field school.

Summarizing the 1980 season, Wait (1980) reports 10 tree-ring dates within the fourteenth century. One cutting date of A.D. 1344 was obtained, in addition to an archaeomagnetic date of A.D. 1395 from Room 11 in the north plaza. Based on chronometric and ceramic data, the author suggests a brief period of occupation (between 70 and 100 years) for the site, roughly between A.D. 1300 and 1400. Adobe walls were found to underlie the major masonry construction, and a local pottery production industry, predating the glaze ware tradition, was inferred. It was felt that during its earlier stages, the site may have been occupied at the same time as Pecos Pueblo. Plains-Pueblo interaction was not indicated by the data set, and a "secure," agriculturally based economy was suggested by the presence of maize in the botanical samples (Wait 1980).

In 1984, under the direction of Dr. Linda Cordell, the University of New Mexico (UNM) field school excavated at Rowe Pueblo for nine weeks. One of the research questions being tested

was Spielmann's (1983) model of prehistoric exchange between the Southwest and the Southern Plains. Trenches and structures from previous excavations were partially reopened, and an interior pit structure in the south plaza was hand trenched down to the floor. Approximately nine rooms were fully or partially excavated. A ramada area was investigated on the south side of the main room block, and 27 extramural trenches were fully or partially excavated. A large pit structure containing substantial quantities of human bone, ceramic and lithic artifacts, large items of ground stone, a bench, and numerous floor features (including a sipapu) was partially exposed. The midden to the east of the main room block was also investigated (Mick-O'Hara, pers. comm., October 1991). A final synthetic report on UNM's excavations at Rowe Pueblo is not available.

Rowe Village (LA 5165) is a Territorial-phase aggregation of 40 to 50 New Mexico vernacular adobe and modern houses. There is a historic artifact scatter associated with the historic buildings. The post office was established in 1884 (Pearce 1965:138).

Pecos Pueblo (LA 625)

Because of its long occupational history, Pecos Pueblo is considered to be an important site in Southwest archaeology. As a result of its continual occupation, a continuum of cultural deposits were laid down over time. It was here that A.V. Kidder (1958) adopted the method of stratigraphic excavation and developed a ceramic sequence for the Pecos area. He dated the Pueblo and these ceramic types based on sequential placements of deposits in the middens that he excavated. Below are descriptions of the three main areas of Pecos National Historical Park.

The North Pueblo (LA 625F and LA 625G). Kidder reconstructed the history of Pecos through archaeological data and ceramic classifications. The first settlement at Pecos (A.D. 1300-1350, late Pueblo III to early Pueblo IV), characterized by many small pueblos located along the mesilla, consisted of low, single-story, stone-masonry structures enclosing open plazas. Kidder (1958) referred to these pueblos as the black-and-white phase sites. Early pottery types were Santa Fe Black-on-white, Galisteo Black-on-white, and Rowe Black-on-white. Also, the presence of Rio Grande Glazes A and B suggests that these black-and-white sites were inhabited during the development of glaze ceramics (Kidder 1932).

By 1450 (mid-Pueblo IV), the main quadrangle pueblo was constructed at the north portion of the mesilla on top of one of the original black-on-white pueblos. The quadrangle consisted of a fortified, three- to four-story rectangular stone masonry pueblo around a large plaza, with many kivas. About the same time, the first of several defensive walls was built around the village (Kidder 1958; Schroeder 1979). Ultimately, a defensive wall enclosed the North and South Pueblos, starting at the north end of the mission complex. Ceramic types representing this time period were predominantly Glaze C and some Biscuit B.

Pecos Pueblo may have been at its largest and most prosperous during the late Pueblo IV to early Pueblo V times. At this time the multistoried pueblo contained from 600 to 700 rooms and from 16 to 17 kivas. Kidder (1958) wrote that the pueblo probably looked the way Castañeda saw it during his visit in 1540 with the Coronado expedition, with corridors, or balconies, going around the first two stories and offering protection. These upper-story structures, which did not have doors on the ground surface, were reached by ladders that could be pulled up in times of defense (Winship 1896). The pueblo had only two narrow passages from the plaza to the outside of the quadrangle. Castañeda also reported that the pueblo was enclosed by a low stone wall. Artifacts

recovered from this period reflected the role Pecos played as a trade center with Plains and northern Pueblo cultures. These include such items as Alibates chert artifacts, clay pipes (considered Plains trade pieces), pottery from the Tewa- and Tiwa-speaking Pueblo groups, and Jemez obsidian. In 1540 (late Pueblo IV), when the Coronado expedition came through the Pecos area, it was reported that Pecos was the largest and richest of the pueblos, with a probable population of 2,000 (Kidder 1958; Gregg 1990). Pottery types that marked the heyday of Pecos were Glazes C, D, and E, and Biscuit B. The inhabitants of Pecos also began making their own polychrome glaze ware (a Glaze E type) at this time.

Construction and maintenance on the North Pueblo continued into the Spanish period. There is evidence of rooms maintained with Spanish-style form-molded adobe. In addition, the Guardhouse Kiva units appear to have been built with Spanish-style molded-adobe blocks and square beams. Kessell (1979) believes that the kivas were built by the Spaniards in an attempt to further fortify the pueblo against the raiding Comanches.

South Pueblo (LA 625E). The South Pueblo is located on the mesilla, south of the North Pueblo. It is a long linear structure, estimated to have been two to three stories. The earliest phase of this pueblo dates to the A.D. 1330s and consisted of a series of unconnected room units. By the 1600s, the pueblo was a several-hundred-room multistoried structure. It looked like the North Pueblo in that it was constructed of stone masonry and had balconies. There is evidence of Spanish-influenced architecture in the north and south ends of South Pueblo, and it is believed that the Spaniards used these areas as temporary *conventos* or to house religious converts. The South Pueblo was partly excavated by Kidder in the 1920s (Kidder 1932), and in 1939, John Corbett and William Witkind conducted more extensive excavations (Kidder 1958; Metzger 1990).

Lost Church (LA 4444). The lost church is located northeast of the North Pueblo complex on a small projection of the mesilla. This church, believed to have been the first built at Pecos, was constructed under the direction of Pedro Zambrano Ortiz around 1619 (Hayes 1974; Stubbs et al. 1957). The church had a single nave and was constructed of adobe bricks with a narrow stone foundation. The church was excavated by the Laboratory of Anthropology, Museum of New Mexico (Stubbs et al. 1957).

Spanish Church and Convento (LA 625A, LA 625B, and LA 625C). The Spanish church and *convento* are located on the southernmost portion of the mesilla. Over a span of 80-odd years, three churches were built in this area, the first church constructed in 1622 under the direction of Andre Suarez (Hayes 1974). This church, uniquely constructed with buttresses and six bell towers, was covered with white plaster. Associated with the church was the *convento*, which consisted of a garth and cloister, a two-story area consisting of 19 rooms, a porter's ledge and courtyard, and a large corral with stables and pens. During the Pueblo Revolt of 1680, this seventeenth-century church was completely destroyed, and the roof and upper walls of the *convento* were damaged. After successfully driving the Spaniards out of Pecos, the Pecos Indians built a kiva in the corral area of the *convento*. The Spaniards returned to Pecos in 1687, and the kiva was backfilled (Hayes 1974). Archaeological evidence of the first church was discovered by Jean Pinkley in 1967 (Hayes 1974).

In 1697, a second church was constructed by leveling the rubble from the south nave wall of the previous church and building the new church up against the north *convento* wall. The church was built under the direction of Fray Diego de la Casa Zienos. This second church was temporarily used for nine years while the last and third, eighteenth-century Pecos church was being constructed

(Hayes 1974). There are no archaeological remains of the 1697 church, and the information pertaining to its existence has been gathered from Spanish records.

In 1705, the construction of the third church was begun by Fray José Arranequi. This church was built on top of the rubble of the demolished 1622 church. It was smaller than the original church and oriented in the opposite direction. At this time, the *convento* was expanded by adding on 53 rooms and 8 corral and pen areas. Hayes (1974) reports that most of the remodeling was conducted from 1694 to 1708.

Some time in the early 1800s a *torreon* was added on to the *convento*. It functioned as a guard or lookout tower for raiding Comanches (Hayes 1974). The *torreon* represents the last known construction episode at Pecos. The *convento* was used until the 1790s, when the mission was downgraded in status. The church remained in use by visiting priests until the abandonment of Pecos in 1838. Excavations of the eighteenth-century church were originally conducted by Jesse L. Nusbaum in 1915. From 1924 through the 1970s numerous investigators have excavated and stabilized parts of the eighteenth-century church and *convento*.

Casa Reales (LA 625J). West of the *convento* lies the Casa Reales. This six- to eight-room structure was believed to serve as living quarters for Spanish visitors. Three of the rooms were excavated by Hayes in 1970, and all that remained were the remnants of a stone foundation.

Presidio (LA 625H). West of the Casa Reales is a structure that Hayes called the presidio. He excavated two rooms of the structure in 1970 and inferred that the area served as a fortification for Spanish soldiers sent to protect Pecos from the Comanches (Hayes 1974).

Forked Lightning Pueblo (LA 672)

Forked Lightning Pueblo is 0.8 km southeast of Pecos Pueblo and was occupied between A.D. 1225 and 1300. Hostile pressure from Plains Indians may have forced the occupants to move to Pecos. Its occupants were afforded an unobstructed view all around from its ridgetop location (Kessell 1979:10). The ruin was partially excavated by Kidder in the early 1900s (Kidder 1958).

Dick's Ruin (LA 276)

Dick's Ruin is an L-shaped pueblo 2.8 km southeast of Pecos Pueblo on a low terrace above the west bank of the Pecos River. Architecturally it is similar to Forked Lightning Pueblo; most of its walls are built of coursed adobe, with little use of stone masonry. It was partially excavated by H. D. Skinner in 1926 as a guest of Phillips Academy at Pecos (Kidder 1958:47).

Loma Lothrop Ruin (LA 277)

Loma Lothrop Ruin is an adobe pueblo northwest of Pecos Pueblo on the opposite side of Glorieta Creek. It is contemporaneous with Forked Lightning Pueblo and was constructed sometime between A. D. 1315-1335 and 1400 (Nordby 1984:17). It was partially excavated by Sam Lothrop in 1926.

Arrowhead Ruin (LA 251)

Arrowhead Mesa, approximately 1 km southeast of the study area on a mesa overlooking Galisteo Creek, has 8 room blocks containing at least 79 rooms and 2 kivas. Tree-ring samples and ceramics date the pueblo to A.D. 1370-1450, though there are small amounts of both earlier and later ceramics present. It was the latest occupied pueblo in the area before its inhabitants moved to Pecos. It was partly excavated by Texas Tech University between 1933 and 1948 (Holden 1955:102).

Pecos National Historical Park Survey

In September 1993, an archaeological survey was conducted at PNHP in three areas within the park boundaries to provide cultural resource data prior to the planning and implementation of various development projects outlined in the park's 1993 General Management Plan (Eininger 1993). Two of the survey areas, the Big House and the Trading Post are located on recently acquired Forked Lightning Ranch and the third survey area is within the core monument south of the existing park offices and maintenance area. A total of 18.5 acres were examined. Four sites were located, PECO 229/LA 102579, PECO 230/LA 102580, PECO 231/LA 102581, and PECO 232/LA 102582.

In the spring of 1995, the National Park Service began a five-year project to survey all of the land within the new boundaries of Pecos National Historical Park. This includes the original monument area, Forked Lightning Ranch, and the Glorieta Battlefield parcel.

CULTURAL HISTORY OVERVIEW

James L. Moore, Adisa J. Willmer,
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Few places in New Mexico have more prehistoric or historic events associated with them than the Glorieta-Pecos area. This region has been the home of numerous Indian groups (including those at the large pueblo of Pecos), it served as an exploratory route for the Spanish *entradas*, was divided into Mexican land grants, was crossed by the Santa Fe Trail, and was the scene of one of the few Civil War battles fought in New Mexico. Today, the area contains Hispanic and Anglo-Americans clustered in several communities along the Pecos River and Glorieta Creek.

Prehistory

Paleoindian: 10,000-5500 B.C.

The earliest occupation of the Southwest was during the Paleoindian period, which contains three broad temporal divisions: Clovis (10,000-9,500 B.C. to 9,000 B.C.), Folsom (9,000-8,500 B.C. to 8,500-8,000 B.C.), and Plano (8,300-8,000 B.C. to 5,500-5,000 B.C.). The latter of these combines several late traditions together (Agogino 1968; Irwin-Williams 1965, 1973; Irwin-Williams and Haynes 1970; Neuman 1967).

Evidence of the Paleoindian occupation in the Pecos area is sparse. Paleoindian points have been recovered in the nearby Sangre de Cristo Mountains (Stuart and Gauthier 1981:295), on the Las Vegas Plateau, and in the Galisteo Basin highlands (Lang 1988:20). The lack of Paleoindian sites in this region is not clearly understood. Nordby (1981:6) suggests that it may be due to a lack of large game species, such as bison, in the area. Some evidence of Paleoindian occupation has been located south of the project area along the Pecos River. Jelinek's (1967:67) middle Pecos work produced five unfluted lanceolate points with lateral and basal grinding, and a Folsom channel flake. A single point fragment similar to a Midland point was found north of Santa Rosa along the Pecos (Levine and Mobley 1975:67).

Archaic: 5500 B.C.-A.D. 400

It was realized at an early date that the Archaic occupation of northern New Mexico was distinct from that of its southern neighbor, the Cochise. Bryan and Toulouse (1943) were the first to separate the northern Archaic from the Cochise, basing their definition of the aceramic San Jose complex on materials found in sand dunes near Grants, New Mexico. Four Archaic traditions have been defined in the Southwest (Irwin-Williams 1979): western, southern, northern, and southeastern. The study area is within the area occupied by the northern, or Oshara tradition.

The Oshara tradition is divided into five phases: Jay (5500-4800 B.C.), Bajada (4800-3200 B.C.), San Jose (3200-1800 B.C.), Armijo (1800-800 B.C.), and En Medio (800 B.C.-A.D. 400). Jay and Bajada sites are usually small, limited base camps (J. Moore 1980; Vierra 1980). San Jose sites are larger and more common than those of the earlier phases. Corn horticulture was probably

adopted by the beginning of the Armijo phase (Irwin-Williams 1973). The En Medio phase corresponds with Basketmaker II, and represents the transition from a mobile hunter-gatherer pattern to a lifestyle combining hunting and gathering with dependence on corn horticulture.

Archaic sites in the Pecos area are primarily found on high benches above waterways (McCrary 1983:5). Archaic sites occur in rock shelters and as lithic artifact scatters in the Pecos Valley near Santa Rosa (Levine and Mobley 1975). Other Archaic sites have been found at high elevations in the Santa Fe National Forest and in the Pecos Wilderness (Wendorf and Miller 1959; Stuart and Farwell 1983), and some are located near water and potentially arable land.

Privately owned projectile point collections from the Pecos Valley contain possible Bajada and San Jose points (Wait and Nordby 1979:7). Archaic projectile points have recently been found on three sites near Pecos in association with Pueblo material (Lent et al. 1991). Obsidian hydration dates from predominantly Puebloan contexts near Rowe (Morrison 1987) suggest material scavenging from Archaic sites, perhaps also located in the Pecos Valley.

Anasazi/Pueblo: A.D. 400-1600

Wendorf and Reed (1955) divide the Rio Grande Anasazi into four periods: Developmental (A.D. 600 to 1200), Coalition (A.D. 1200-1325), Classic (A.D. 1325 to 1600), and Historic (A.D. 1600 to present). The first half of the Developmental period (A.D. 600-900) corresponds to Basketmaker III and Pueblo I of the Pecos classification. Early Developmental sites are rare in the northern Rio Grande (Wendorf and Reed 1955). Sites usually contain one to three circular pithouses in association with rectilinear surface storage structure (Stuart and Gauthier 1981). Three early Developmental period pithouses were found near the administration building at Pecos National Historical Park (L. Nordby, pers. comm. 1991). Subsistence items included small-game, wild plants, and corn. Agricultural fields are thought to have been situated along the lower terraces of the Pecos River and Glorieta Creek.

The second half of the Developmental period (A.D. 900-1200) corresponds to the Pueblo II and early Pueblo III phases. There was a large population increase in the Northern Rio Grande during this period (Wendorf and Reed 1955), accompanied by major changes in settlement pattern, architecture, and site size (Anschuetz 1986). The number of sites and range of environmental zones being exploited increased, and areas of higher elevation began to be used (Stuart and Gauthier 1981:59). The shift from pithouses to above-ground structures began, and communities consisting of definable clusters of villages appeared. Mineral-painted wares, including Kwahe'e Black-on-white, were the most commonly produced decorated ceramics (Mera 1935).

The Coalition period (A.D. 1200-1325) corresponds to late Pueblo III. Carbon-painted wares replaced mineral-painted ceramics; the appearance of Santa Fe Black-on-white marks the beginning of this period. Other changes included an influx of population and expansion into new environmental zones, including upland areas like the Pajarito Plateau (Anschuetz 1986; Wendorf and Reed 1955). Sites ranged in size from 13 to 30 rooms, and were usually arranged in linear or L-shaped room blocks (Stuart and Gauthier 1981:51). By A.D. 1300, large villages of 200 to 300 rooms were established in the Pecos area at Pecos (LA 625), Rowe (LA 108), Forked Lightning (LA 672), Dick's Ruin (LA 672), and Loma Lothrop (LA 277) pueblos. These villages were heavily dependent on agriculture, and are thought to be ancestral to Pecos Pueblo.

Construction began at Cicuye, or Pecos Pueblo (LA 625), between A.D. 1300 and 1350 (Kidder 1958). This first village was a one-story stone pueblo built on a mesilla with an open plaza facing west.

Rowe Ruin (LA 108) is in the upper Pecos Valley, 6.4 km east of Pecos Pueblo. Bandelier (1892:125) described the ruin as "three quadrangles connected with one another," with two entrances "being well constructed for defense." Residents of Pecos Pueblo called it *Ku-uang-ual-a* (Bandelier 1892:125). Excavation in 1917 discovered three superimposed masonry structures representing distinct periods of occupation (Guthe 1917). A wood specimen taken from Guthe's trench by Smiley and others (1953) dated A.D. 1306, showing that it was initially occupied before Pecos Pueblo.

Forked Lightning Ruin is 0.8 km southeast of Pecos Pueblo and was occupied between A.D. 1225 and 1300. Hostile pressure from Plains Indians may have forced the occupants to move to Pecos. This village was partially excavated by Kidder in the early 1900s (Kidder 1958).

Dick's Ruin (LA 672) is an L-shaped pueblo 2.8 km southeast of Pecos Pueblo on a low terrace above the west bank of the Pecos River. Architecturally, it is similar to Forked Lightning Ruin, with most of its walls built of coursed adobe with little use of stone masonry. It was partially excavated by H. D. Skinner in 1926 when he was a guest of Philips Academy at Pecos (Kidder 1958:47).

Loma Lothrop (LA 277) is an adobe pueblo to the northwest of Pecos Pueblo on the opposite side of Glorieta Creek. It was contemporaneous with Forked Lightning Pueblo, and was constructed sometime between A.D. 1315-1335 and 1400 (Nordby 1984:17). It was partially excavated by Sam Lothrop in 1926.

The Classic, or Pueblo IV period (A.D. 1325 to 1600), is marked by the aggregation of smaller communities into large multistoried pueblos, often with several plazas. Regional populations reached their highest prehistoric levels, and village locations shifted from upland areas to the major river valleys. Specialization in ceramic production split the northern Rio Grande into two zones: a northern biscuit ware area, and a southern glaze ware area.

At Pecos, several phases of construction eventually generated a four-sided, three- to four-story Classic period village with a large enclosed plaza (Kidder 1932:3). By 1620, Pecos was a defensive village with no ground floor entrances and second- and third-story corridors containing ladder and trap door features. Pecos reached its zenith during this period, containing 600 to 700 rooms, 15 to 16 kivas, and its first great kiva. Kidder (1958) extensively excavated Pecos Pueblo between 1915 and 1929.

One contemporaneous site is Arrowhead Mesa (LA 251), located 6 km northwest of the Pecos Pueblo. This village was comprised of 8 room blocks containing at least 79 rooms and 2 kivas. Tree-ring samples and pottery date from A.D. 1370 to 1450, though there are some ceramic artifacts that date earlier and later than this time. It was one of the last pueblos occupied in this area before the local population aggregated at Pecos. It was partially excavated by Texas Tech University between 1933 and 1948 (Holden 1955:102). Small structural sites (one to three rooms), both with and without associated lithic and ceramic artifact scatters are common in the Pecos area. Most of these sites date to the late Coalition and Classic periods, and probably represent farming locales. The small structures probably served as farming shelters, while many of the artifact

scatters could be prehistoric field locations.

Trade relations developed between Plains Indians and local Pueblos during this period, particularly at Pecos (Spielman 1982, 1983). Pecos originally imported most of its decorated pottery from the Rio Grande pueblos, but between A.D. 1500 and 1600, it began making and trading its own polychrome pottery (Peckham 1988:38). With the exception of Pecos Pueblo, local villages were abandoned by A.D. 1450. It has been suggested that the local population aggregated at Pecos Pueblo because of intensified raiding by Plains Indians (Hewett 1904; Holden 1955; Kidder 1958; Mera 1940). This idea has since been refuted (Ford et al. 1972:30; J. Gunnerson 1969; Nordby 1981:11). Nordby (1981) suggests that the smaller pueblos may have consolidated to increase the work force necessary for expanded irrigation systems, or that population pressure on arable land created competition and war between pueblos. Fliedner (1981:73) believes that the population declined during this period because the environment was overstressed.

The people of Pecos Pueblo were mostly farmers dependent on corn, beans, and squash. Crops were planted in the flat valley bottoms; however, some crops were grown along intermittent streams and washes and others were planted in higher, less well watered areas. Fliedner (1981) recorded 1,200 probable fieldhouses, mostly within 1 km of the pueblo. Hunting and gathering sites occurred outside this zone, but decreased in number with distance from the pueblo. Fliedner (1981) also noted that the fields increased in size up to A.D. 1300 and oscillated thereafter. Similar to Fliedner's data, more than half the sites located during the Rowe survey were one-room or two-to five-room structures (Morrison 1987).

Spanish Occupation at Pecos

The first European to visit Pecos Pueblo (then known as Cicuye) was Captain Hernando Alvarado in 1540, when he was in command of the Coronado Expedition (Sanchez 1988). Pecos Pueblo sent a delegation to Zuni to offer peace to Coronado, taking him buffalo hides, shields, and feathered headdresses. Captain Alvarado returned with the Pecos delegation to the pueblo. In 1581, the Rodríguez-Chamuscado Expedition visited Pecos, followed by the Espejo-Beltran Expedition in 1582. Spanish attempts to conquer the pueblo for Spain were finally successful in 1590 through the efforts of Castaño de Sosa, who fought briefly with the residents of Pecos. The pueblo was left in peace for the next eight years until Oñate occupied New Mexico in 1598. Shortly after his arrival, he sent a delegation of Franciscan priests as missionaries to Pecos. By the early 1620s, a small church had been built at the pueblo and continued in operation until 1680, when the Spaniards were forced to leave the territory because of the Pueblo Revolt (Kidder 1962). When Don Diego de Vargas recaptured New Mexico in 1692, a new mission church was established at Pecos, and Spanish occupation continued from this time through 1828. By 1838, due to the devastation of an earlier smallpox epidemic, only 17 inhabitants remained at Pecos Pueblo.

The abandonment of Pecos Pueblo by the early to mid-nineteenth century has been attributed to the continual stress on the population from diseases introduced by the Spaniards and increased depredation by Plains Indians (Kidder 1962). The last survivors of Pecos eventually left the Upper Pecos Valley in 1838 and sought refuge with their Towan-speaking relatives at Jemez Pueblo (Kidder 1932; Gregg 1990; Nordby and Wait 1979).

The Plains Indian Influence

In 1525, Plains groups attempted to expand their territory into New Mexico by waging war on Pecos Pueblo, the most eastern Pueblo in the Southwest (Kidder 1932; Rasor 1988). Unable to conquer Pecos, the Apache groups retreated to the Plains, and by 1540 an alliance was made between the Pecos inhabitants and the Apaches. This resulted in the development of an extensive trade economy (Rasor 1988). The location of Pecos in the narrow corridor between the eastern plains of New Mexico and the Rio Grande Valley to the west made it an ideal trade center between the two regions. Rasor (1988) records that the Plains Indians came by the hundreds to trade fairs at Pecos and brought buffalo hides, meat, raw material for stone tools (Alibates chert), and shells for trade. Later on, the Plains groups also traded slaves to the Spaniards for horses (Rasor 1988). In return, the Rio Grande Pueblos provided cotton clothing, pottery, obsidian, feathers, turquoise, and food staples.

A peaceful existence between the Plains and Pueblo Indians endured to approximately 1675. The Spaniards recorded that Apache groups often camped outside the walls of Pecos during severe winters, and by the 1690s some were living with the Pecos people (Rasor 1988). It is speculated that due to Comanche harassment, trade between the Pueblos and Apaches ceased after the 1770s. By the 1740s Comanches were a serious threat to Pecos, and numerous residents of the pueblo were killed. Kidder (1962) reports that by 1750 most adult males had been killed by Plains attacks. The pueblo suffered further devastation in 1788 from the Spanish-introduced smallpox epidemic, which killed off all but 180 people.

Tipi-ring sites have been recorded within the immediate vicinity of Pecos Pueblo (Metzger, pers. comm., October 1991). Tipi-ring sites with associated Pecos pottery have been suggested as evidence that Plains groups were trading with Pecos (see Gunnerson and Gunnerson 1970). These types of Plains sites have been recorded at nearby Anton Chico and to the north near Las Vegas, New Mexico. Also, a burned jacal structure, excavated at Pecos, contained Pueblo and Jicarilla Apache wares (Gunnerson 1988).

The Santa Fe Trail

In the late eighteenth century, when the Spanish land grants were being established in the Pecos River Valley, numerous expeditions brought explorers and traders into New Mexico. At this time, New Mexico was still a territory of Spain, and the Spanish government maintained tight control over its frontier communities. Spain's colonial borders were closed to any type of commerce with foreigners to the east. Spain's new frontier settlements were supposed to have exclusive economic ties with Mexican communities to the south via the Camino Real from Chihuahua. When Mexico gained independence from Spain in 1821, the borders of New Mexico were opened, and trading with the United States began by means of the Santa Fe Trail. The Santa Fe Trail was the first American trans-Mississippi pathway to the West and the only route that entered into another country (Simmons 1988; National Park Service 1963). The trade, centered in Santa Fe, eventually overflowed into the Mexican provinces, where merchants found lucrative markets for their wares.

Historians have referred to William Becknell as the "Father of the Santa Fe Trail" because he, his companions, and their mule trains of merchandise were the first Easterners to travel from Missouri to Santa Fe on what became the Santa Fe Trail. In the autumn of 1821, they were also the first Americans to engage in commerce with the Republic of Mexico. The Santa Fe Trail differed markedly from trails farther north, whose traffic was composed mainly of settlers, ranchers, farmers, and miners trying to reach the Pacific in quest of new homes and opportunities. With time, the trail grew to become a well-traveled route. The Santa Fe trade drew Mexican silver coins, furs, wool, and raw material into the United States. It also precipitated a minor economic boom in Santa Fe, which had previously been a depressed frontier area (Simmons 1984, 1988).

The twenty-five years (1821-1846) in which Mexico controlled the western end of the trade along the Santa Fe Trail are generally regarded as the heyday of the trail. During that period many of the most dramatic events associated with the trail's history occurred. These included the initial survey of the route in 1825; the first experiments with military patrols; rocky diplomatic negotiations with Mexico; the travels of Josiah Gregg, whose book, *Commerce of the Prairies*, first publicized the Santa Fe Trail and the American West, as well as described an assortment of Indian fights and weather disasters (Simmons 1984).

In 1846, during the first year of the Mexican-American War, General Stephen Watts Kearny led his army along the Santa Fe Trail's mountain route and conquered New Mexico. Bringing Santa Fe under the rule of the United States changed the character of the commerce of the trail. However, the route no longer benefited from international ties. Forts were added to the trail to guard against Indian attacks, and military freight trains became a new business. Diverse travelers now used the Santa Fe Trail. Where once the trail had been populated by merchants and their ox-driven caravans, the late 1840s saw the trail traveled by U.S. Army soldiers, government officials, gold seekers bound for California, Catholic priests and nuns, Protestant missionaries, and Old World immigrants (Simmons 1984; Almaraz 1988).

The Santa Fe Trail, including its two main routes, was over 1,200 miles long. The original route started in Franklin, Missouri, and went southwest through Kansas, where it followed the Kansas River. At what is now the town of Cimarron, in western Kansas, the trail split into two routes. The Cimarron Cut-off crossed the Oklahoma Panhandle, entering New Mexico northeast of Clayton; and the Mountain Branch headed west along the Arkansas River into Purgatory, Colorado, then south through the Raton Pass into New Mexico. These two routes then converged at La Junta (now Watrous), New Mexico. This later became the site of Fort Union. The Santa Fe Trail headed south and west from La Junta. San Miguel del Vado was the first Mexican settlement encountered by traders prior to the founding of the town of Las Vegas in 1835. The town consisted of a fortified plaza located near a ford (*vado*) on the Pecos River and served as the port of entry for New Mexico (Pratt and Snow 1988).

The Santa Fe Trail left San Miguel and headed north and west into the mountains. The first travelers would have seen Pecos Pueblo still inhabited by a few families. However, after 1838 the pueblo and mission ruins served as a landmark and campsite for Santa Fe Trail travelers (Pratt and Snow 1988). Sometime in the mid-1830s, the Catholic priest at Pecos left and took up residency at the church at San Miguel. Trail ruts are still visible in part of Pecos National Historical Park and at Forked Lightning Ruin (Kidder 1958:11, fig. 3a). The main trail lies to the west of the mission across the Glorieta Creek. Some spur-trail ruts to the village of Pecos pass the ruins on the eastern side of the mission (Metzger 1990).

After Pecos, the next settlement encountered was the small village of Pecos, 2 miles north. Also in this area were three ranches, which would become important sites in the Civil War Battle of Glorieta: Kozlowski's Ranch near Pecos Pueblo and Pigeon's Ranch on the west side of Glorieta Pass. The most easily accessible route through the mountain range for Santa Fe Trail travelers was Apache Canyon. After passing through Pecos and Apache Canyon, the trail swung west through Arroyo Hondo and north to Santa Fe (National Park Service 1963; Pratt and Snow 1988).

Camp Lewis is a Civil War encampment located 0.7 miles south of Pecos Mission. It was named after Captain William H. Lewis, an army officer of the US Fifth Infantry, who commanded a detachment of regular soldiers during the Battle of Glorieta (Haecker 1998). The camp functioned as a pre- and post battle staging area for Union soldiers. The main body of the army occupied Camp Lewis for only a few days; however, the nearby Kozlowski Stage Station became the field hospital for eight to ten weeks after the battle (Haecker 1998).

Kozlowski's Stage Station was located on Greer Garson's Forked Lightning Ranch along NM 63. The modern headquarters incorporates some of the original walls of Kozlowski's structure. Captain Napoleon Kozlowski, a Polish immigrant and officer with the Missouri Volunteers, came to New Mexico in 1846 and later acquired land on the Santa Fe Trail. The spot where he settled was adjacent to Kozlowski Spring. With adobe and roof timbers scavenged from the Pecos mission and pueblo, Kozlowski built his ranch house, barn, and corrals. There may already have been a structure at this location, perhaps dating back to 1810. Prior to the Civil War, Kozlowski's Stage Station served as a regular stage stop, and Mrs. Kozlowski would serve meals to passengers en route to and from Santa Fe. In 1862, the ranch was used as Union headquarters during the Battle of Glorieta (Simmons 1984).

Pigeon's Ranch, once a 23-room complex, is presently located on NM 50. The ranch, established in the 1850s, was another Santa Fe stopover. Alexander Valle, a Frenchman from St. Louis, built the combination ranch and Santa Fe Trail hostelry. Today only three adobe rooms, a rubble mound, and stone corral footings remain of the original structure. During the Battle of Glorieta, Pigeon's Ranch alternately changed hands between the Union and Confederate forces (Simmons 1984). The site served as a makeshift hospital, a morgue (Simmons 1984), and later the burial ground for 31 Confederate soldiers.

Johnson's Ranch and Stage Station is located at Cañoncito at Apache Canyon, west of Pigeon's Ranch (on the old Pecos Highway). In 1858, Anthony Johnson of St. Louis purchased the ranch and built an adobe and rock residence. Johnson's Ranch became a stop for stagecoaches on the last stretch of the Santa Fe Trail before Santa Fe. Confederate troops occupied the ranch during the Battle of Glorieta and used it as their headquarters and supply depot. It was near Johnson's Ranch that Union troops under the command of Major Chivington destroyed the Confederate supply train and forced the Confederates out of New Mexico (Simmons 1984; Swanson 1985).

By the 1870s, the railroad industry was building new rail lines across Kansas into the Southwest. As each new section was added to the railroad system, only portions of the Santa Fe Trail were traveled. In 1879, when the train line reached Las Vegas, New Mexico, only 65 miles remained of the Santa Fe Trail's original wagon route to Santa Fe. The railroad reached Santa Fe in 1880, marking the end of the Santa Fe Trail as a major commerce highway (Simmons 1984).

The Battle of Glorieta

During the American Civil War, the Army of the Confederacy was trying to gain control of the Santa Fe Trail in northern New Mexico. Their strategy was to control the proposed Southern Pacific Railroad route near the Mexican border. Uniting the Confederacy with transportation routes to the ports and gold fields of California would have bolstered the economy of the Southern states and given the Confederate Army military and political power over most of the United States. The Confederates also planned to annex a portion of Mexico. This vast territory would be acquired as a slave-based economy stretching from the Pacific to the Atlantic (Swanson 1988).

In February and early March of 1862, the Confederate Army, under the command of Brigadier General Sibley, successfully defeated the Union troops in New Mexico. They occupied a portion of New Mexico along the Rio Grande from El Paso, Texas, north to Santa Fe. Sibley then made plans to capture Fort Union, east of Santa Fe. In its role as the protector of the Santa Fe Trail, Fort Union was the headquarters and supply depot for the Department of New Mexico and the key to controlling the entire territory. Sibley, however, never did make it to Fort Union, nor did he ever have another success in New Mexico. The Battle of Glorieta, which took place along the Santa Fe Trail in Glorieta Pass, was the victory by the Union army that resulted in Union control over New Mexico. During this same period, Union forces were defeating Confederate troops from Kansas to Missouri, resulting in Union control over everything west of New Orleans (Swanson 1985, 1988).

In late March 1863, Sibley's Texas Rangers advanced toward Glorieta Pass and Fort Union. They were full of confidence because of their victories over the past month. General Sibley remained in Albuquerque while 300 mounted men under the command of Major Charles Pyron advanced from Santa Fe on the Santa Fe Trail. Pyron stopped at Johnson's Ranch and Stage Stop at the confluence of Apache Creek and Rio de los Indes. At the same time, unknown to the Confederates, Colonel John Slough and his Colorado Volunteers came to the defense of Fort Union. Slough decided to take the initiative and advanced a party of his men, led by Major John M. Chivington, west toward the Confederate lines. The Union troops reached Kozlowski's ranch and Stage Stop, where they camped at the spring (Swanson 1985; Pratt and Snow 1988).

An initial encounter between the Union and Confederate armies occurred in Apache Canyon on the March 26, 1862. This fight was the first Union victory in New Mexico and has been referred to as the "First Skirmish of Apache Canyon." Chivington abandoned pursuit and withdrew to Pigeon's Ranch, where a hospital was established. Pyron and his Confederate troops retreated to Johnson's Ranch and sent a courier requesting reinforcements from Colonel William Scurry, who had several hundred Texas rangers and a supply train standing by near Galisteo. The next day Chivington fell back to Kozlowski's ranch, where he was met by Slough and his backup troops (Swanson 1985).

Both armies, at the opposing ends of Glorieta Pass, simultaneously advanced on the morning of March 28 and fought the Battle of Glorieta at Pigeon's Ranch. Although the battle itself was a Confederate victory, Scurry conceded a defeat after he received word that a Union detachment had emerged over the top of Glorieta Mesa and destroyed the Confederate supply train at Johnson's Ranch. As a result, the Confederate forces retreated from New Mexico, returning to Texas with only one-third of Sibley's original army. The Battle of Glorieta, often called "the Gettysburg of the West," forced the Confederacy to abandon their plans to conquer the West. As

a result of these events, the Union Army retained control of one of their main military supply routes, the Santa Fe Trail (Swanson 1985; National Park Service 1990).

Pecos National Historical Park

Archaeological excavation and preservation activities at Pecos Pueblo have been conducted since 1883. By 1965, when the area became a national monument, considerable work had already been conducted to preserve the ruins. From 1965 to the present there have been numerous excavation, stabilization, and reconstruction projects of the Pecos ruins by the National Park Service.

Pecos National Historical Park is situated on the top of a broad, flat, sandstone-capped mesilla approximately 1 mile west of the Pecos River. Occupation of Pecos Pueblo spanned six centuries, from A.D. 1250 until its abandonment in 1838 (Kidder 1932, 1958). Historians have classified Pecos Pueblo as a frontier community. Its inhabitants had contact with other Pueblo communities, engaged in warfare with the Plains Indians, and eventually became a center of trade among the Pueblo, Plains, and Spanish groups.

The existence of Pecos Pueblo was first documented by the Spaniards during the Coronado expedition of 1540, and it was reported that the pueblo had a large population of approximately 2,000 individuals. In the 1830s, Josiah Gregg traveled on the Santa Fe Trail. He noted that Pecos was still inhabited by a few Indian families and that it was one of the pueblos converted into a Mexican village (Gregg 1990). Adolf Bandelier visited Pecos in 1880 and made a detailed map as well as an ethnohistorical report of the history of the pueblo (Kidder 1962). Twenty years later, in 1904, E. L. Hewett published a paper on archaeology in the Pecos Valley and gathered information about the pueblo from interviews with two native Pecos Indians living at Jemez. In 1910, K. M. Chapman collected a large sample of the potsherds representative of Pecos Pueblo and was surprised at the wide variety of ceramic types, including prehistoric black-on-white wares and historic Rio Grande types. Finally, from 1915 to 1925, A. V. Kidder conducted an extensive archaeological excavation in the Pecos area and Pecos Pueblo and participated in the first steps toward stabilizing portions of Pecos Pueblo to make the cultural resource available for interpretation.

In 1935, the site of Pecos was made into a state monument. The lands were eventually acquired by the federal government, and in 1965 the extensive pueblo ruins, Spanish mission church, and associated *convento* were designated as a national monument by the National Park Service. In 1990, Pecos National Monument was combined with Forked Lightning Ranch and the site of the Battle of Glorieta to make up what is now referred to as Pecos National Historical Park.

FIELD METHODS

Each site was reexamined to ensure that all artifacts or clusters of artifacts and potential cultural features were identified. All artifacts were pinflagged to define artifact scatters and the concentrations. When site limits had increased, the original survey site map was updated. A transit and stadia rod or 50-m tape were used to map the redefined site limits from a main site datum. As requested, all diagnostic artifacts were collected for the Pecos National Historical Park (PNHP) collections. These artifacts are listed in Tables 2 and 3.

A cursory field inventory of surface artifacts was conducted in order to record all artifacts within the concentrations and to locate temporally diagnostic artifacts. This analysis consisted of material type and morphology for ceramic artifacts and material type, color, morphology, and stage of reduction for lithic artifacts.

Test pits were 1-by-1-m grids placed in areas that appeared to have potential subsurface deposits. Excavation was conducted by 10 cm arbitrary levels in 1-by-1-m grids. Individual subdatums were established at each test pit in order to maintain vertical control over recovered artifacts. The horizontal and vertical location is tied to a main site datum. Auger tests were placed in the bottom of some test pits and between test pit locations to determine whether cultural deposits existed outside the areas selected for intensive investigation.

Cultural materials recovered during this testing phase are curated at Pecos National Historical Park. Field and analysis records, maps, photographs, and site forms are on file at Pecos National Historical Park. Site forms are also on file at the Archeological Records Management Section of the New Mexico Historic Preservation Division, located at the Laboratory of Anthropology in Santa Fe.

SITE DESCRIPTIONS

Joan K. Gaunt

LA 38648

A segment of the Santa Fe Trail, as it approaches Kozlowski's Ranch, was tested on June 25 and 26, 1994, by Sunbelt Geo, Inc. An electromagnetic investigation was performed in areas to the west and north of Kozlowski's Ranch to establish the characteristic ground conductivity signature of the Trail. A shallow investigation was first conducted with a Geonics EM-38 ground conductivity meter. Further investigations were then conducted using a Geonics EM-31 conductivity meter. Data were acquired with a data logger and then transferred to a personal computer for reduction and analysis in the field (Appendix 1).

Mechanical equipment was utilized to investigate the probable location of Santa Fe Trail ruts on July 1, 1994. The use of mechanical equipment was determined to be more cost effective to determine the placement of the ruts. Two trenches were excavated across the ruts near Kozlowski's Ranch (Figs. 2 and 3).

Trench A was placed on the west side of NM 63 within the new proposed highway easement. Electromagnetic investigations exhibited proper readings within the data base that would suggest this area was the location of the Santa Fe Trail ruts. The readings became obscured near the overhead utility wires and the barbed wire fence. Trench A was placed within this area, between the utility pole and the fence line, cutting across the trail rut area. The profile of the trench exhibited a distinct stratum or anomaly within the stratigraphy, consisting of a dark reddish brown sandy clay that was fractured and blocky in texture. The south end of the trench cut through a portion of the original ground surface. The profile in this area shows an area within a compacted silty clay that underlies the topsoil that may represent the edge of the trail rut (Fig. 4). Samples of each stratum were collected. One metal artifact, possibly a portion of a stovepipe of unknown age, was recovered 15 cm below ground surface from the west edge of the trail rut.

Trench B was placed in front of Kozlowski's ranch house on the east side of NM 63 between the highway and the fenceline. This particular area was chosen by estimating an alignment of the known trail ruts on the west side of the road to the front of Kozlowski's Ranch. The profile within this trench exhibited the same stratum that was identified in Trench A as the possible trail ruts (Fig. 5). This stratum measures 3.6 m in length and averages 10 cm in thickness. The south end of this stratum is cut by a layer of road construction asphalt.

Three small control units were investigated in separate areas in the right-of-way to define whether this stratum, tentatively defined as trail ruts, appears elsewhere. None of the control units showed this stratum. The third control unit was placed on the north side of Glorieta Creek. A similar texture of fractured and blocky clay was defined in this area yet it was considerably thicker and appeared to be part of the natural development of the soil rather than an anomaly. Its gradation of color and its context preclude any association of it being part of the Santa Fe Trail ruts.

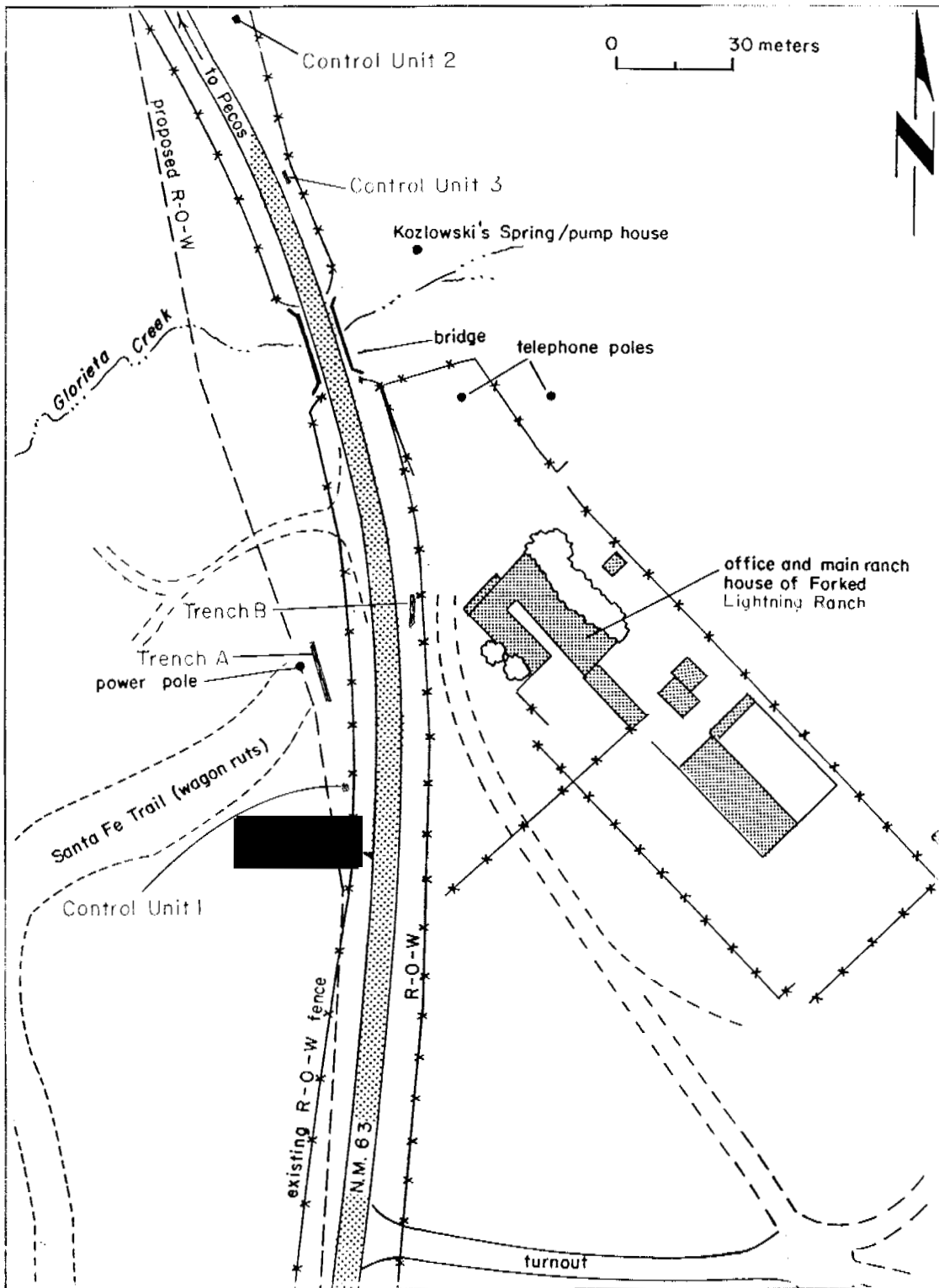


Figure 2. LA 38648. Schematic of Kozlowski's Stage Station showing the location of Trenches A and B and the area of electromagnetic investigation (Control Units).



Figure 3. LA 38648. Kozłowski' Stage Station showing the location of Trenches A and B.

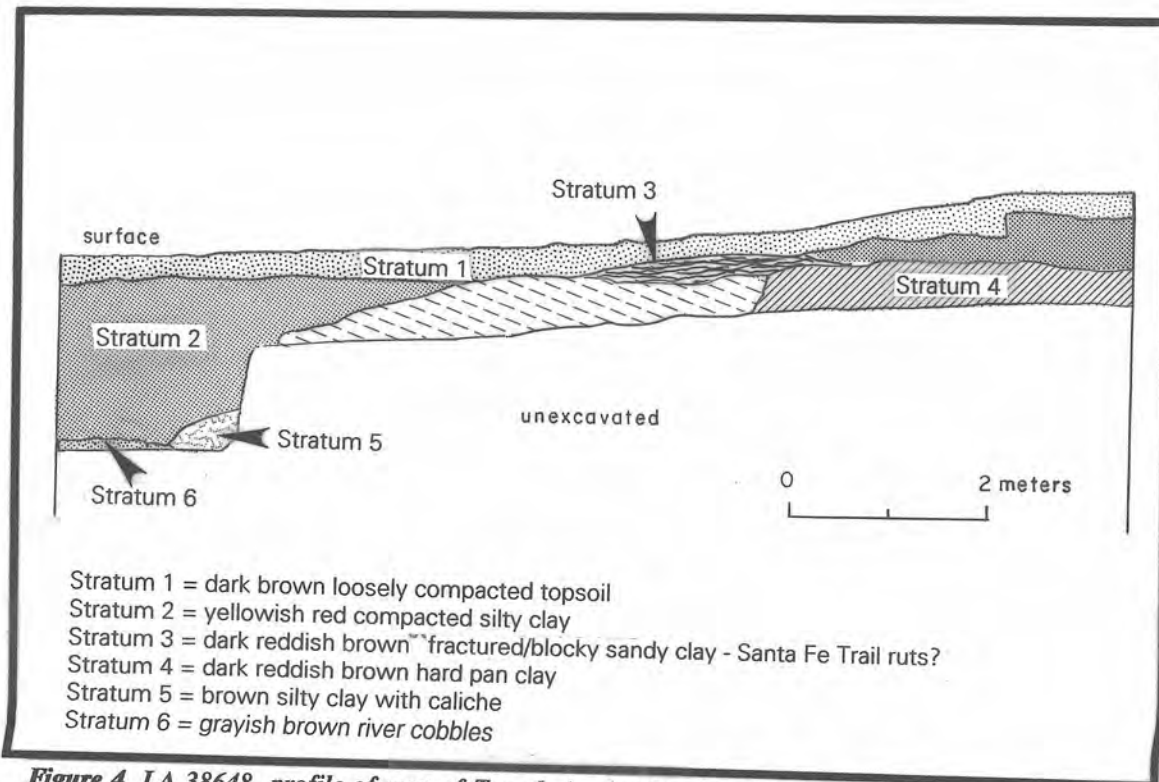


Figure 4. LA 38648, profile of map of Trench A, showing Santa Fe Trail ruts.

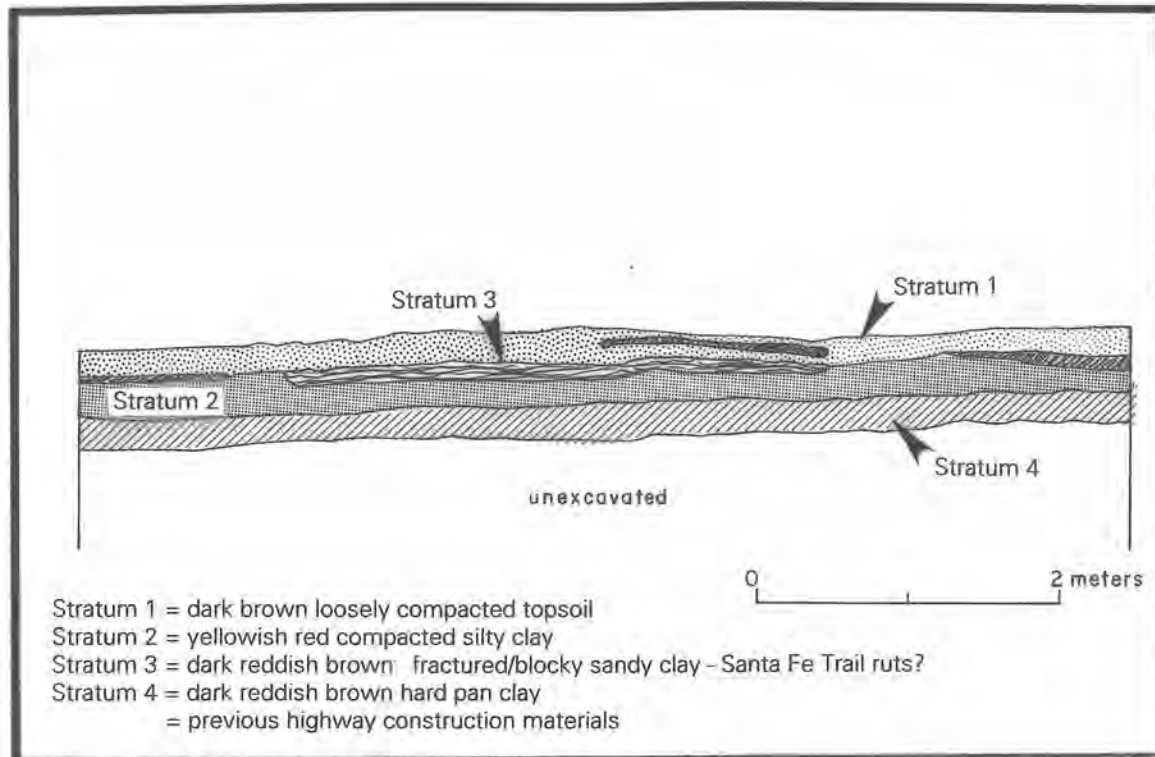


Figure 5. LA 38648, profile map of Trench B showing the Santa Fe Trail ruts.

LA 85495

LA 85495 was originally described as a prehistoric lithic and ceramic scatter covering a 17,500 sq m area (Lent 1992). It was defined as a multicomponent site, with a projectile point dating to the early Archaic period (4800-3200 B.C.) and ceramics dating to the Rio Grande Coalition (A.D. 1175-1350), and the Rio Grande Classic (A.D. 1350-1600) periods. During survey, the artifact scatter was found to extend east across NM 63 to LA 85508. Testing activities within the current right-of-way were conducted to determine if these two sites were continuous. The majority of LA 85495 was located outside of the right-of-way and measures 255 m north-south and averages 40 m east-west. Only a few artifacts remained within the right-of-way.

During the testing phase, a closer examination of the artifacts revealed that the site boundaries of LA 85495 extend south into LA 85496. These two sites join LA 85507 and LA 85508, located on the east side of NM 63. All four sites were recorded and combined into one site, LA 85495. The four sites that were originally defined represent artifact concentrations within the larger site. The redefined size of LA 85495 measures 330 m long and averages 110 m wide and is oriented northwest to southeast (Fig. 6). Seven concentrations of artifacts, nine features, and two structures were identified at LA 85495. Ceramics recovered during the testing phase provided dates of the early Classic period, from A.D. 1300-1425, and glaze ware types ranging between A.D. 1400 and 1650 (see Mensel's ceramic section). One metal artifact, a fence staple, was found close to the National Park Service boundary fence.

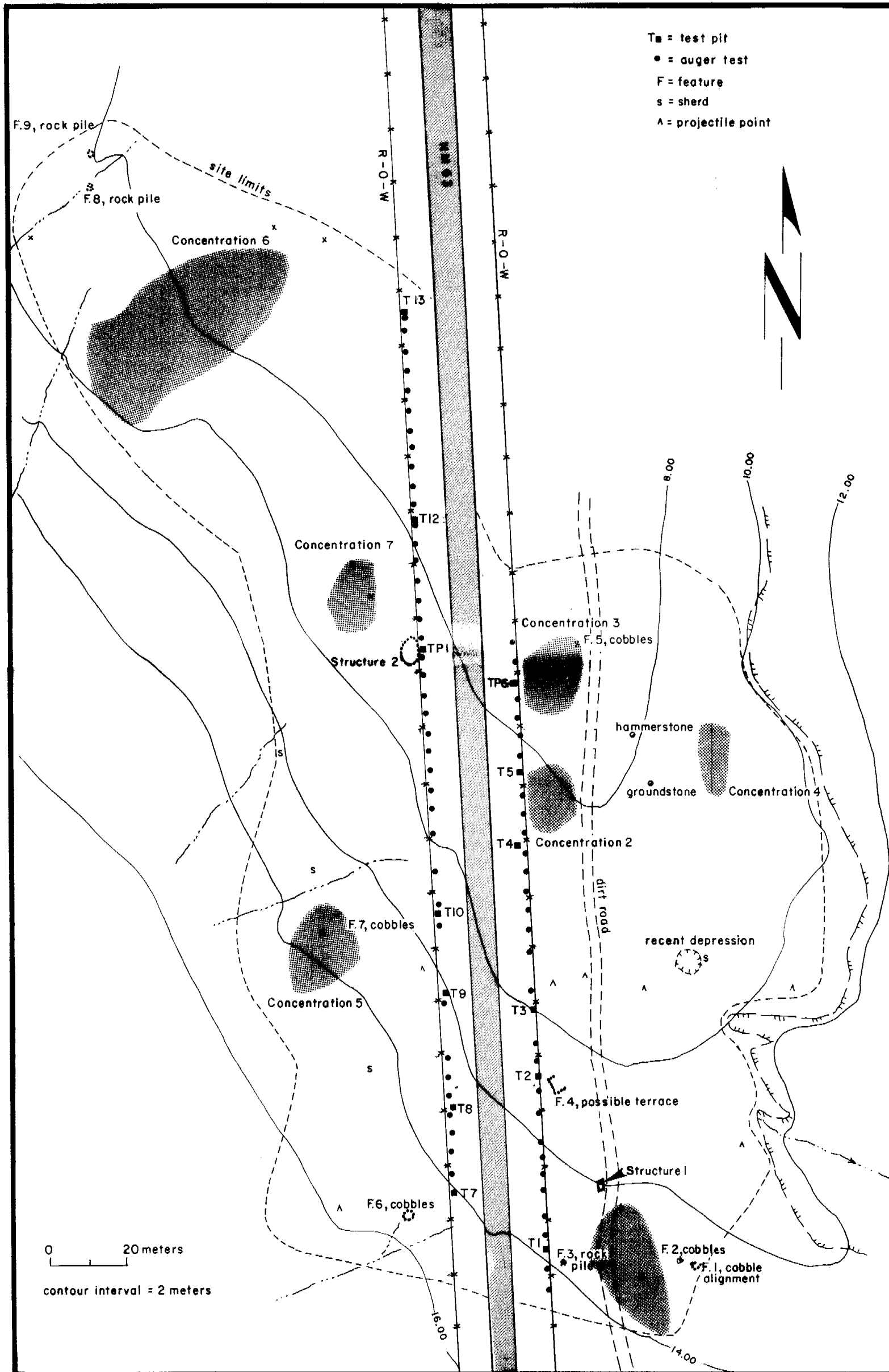


Figure 6. LA 85495, plan view map of the site.

The general scatter of artifacts represented a mixture of Archaic and Anasazi materials, indicating a long-term and repeated use of this part of the landscape. A total of 25 lithic artifacts and ceramic artifacts were recovered. The site appears to be a good location for an Archaic camp as water was accessible in nearby gullies as well as Glorieta Creek. There is a good view, and raw materials are available in local gravel deposits. Most of the debitage is comprised of local materials. A local gray chert predominates, and a white chert that is probably also of local origin is the second most abundant material. Local black quartzite and obsidian were also common. The northwest portion of the site showed sufficient cortical lithic fragments to indicate procurement from the source as well as from gravel deposits for this material. Nonlocal materials on the site include Alibates chert.

Structures

Structure 1 is a possible fieldhouse measuring 3-by-3 m and 0.30 m high. It is located at the south end of the site, east of NM 63 and outside of the right-of-way. It consists of a collection of cobbles forming a low mound, with several small piñon trees growing in its center. This feature occurs at the same level in the local stratigraphy as does Features 1, 2, and 4, and could represent the surface expression of a natural gravel and cobble terrace. However, most of the materials exposed on the mound are medium to large cobbles, and gravels are scarce. Thus, this feature is more likely to be of a cultural origin than most of the possible agricultural features defined on the site. However, no artifact scatter representing a possible midden was found.

Structure 2 is a probable fieldhouse measuring approximately 4-by-2 m. It is located just outside the right-of-way, along the fence line on the west side of NM 63. This structure was originally defined by National Park Service archaeologist Nordby as #101. The mound stands 40 to 50 cm in height and contains a substantial concentration of stone that does not appear to be of natural origin. A small associated scatter of artifacts was analyzed to the south and east of the structure. Numerous piñon and juniper trees are growing out of the mound.

There is a depression in the southeast quadrant of the site. It probably represents a recent excavation of unknown purpose. It was mapped but not given a feature number. Artifacts were found in a few places within the right-of-way where the original ground surface had not been completely removed during previous road construction.

Features

Feature 1 is a collection of cobbles and small boulders that resemble a deteriorated contour terrace or cobble-bordered grid. It is one of several similar features on this site. The cultural nature of this feature is questionable. These cobble concentrations all occur in the same level of the stratigraphy, and similar concentrations were noted in the wall of the deeply incised gully that forms the western boundary of the site. Thus, it is possible that all of these features represent natural cobble deposits. Unfortunately, without subsurface probing, it is impossible to determine whether they are cultural or not.

Feature 1 measures 4.5-by-3 m in size, and seems to include three alignments that form a "C" open to the northwest (Fig. 7). Numerous other cobbles are spread out from the possible alignments, primarily on the southeast side. This may indicate that the walls were more than one

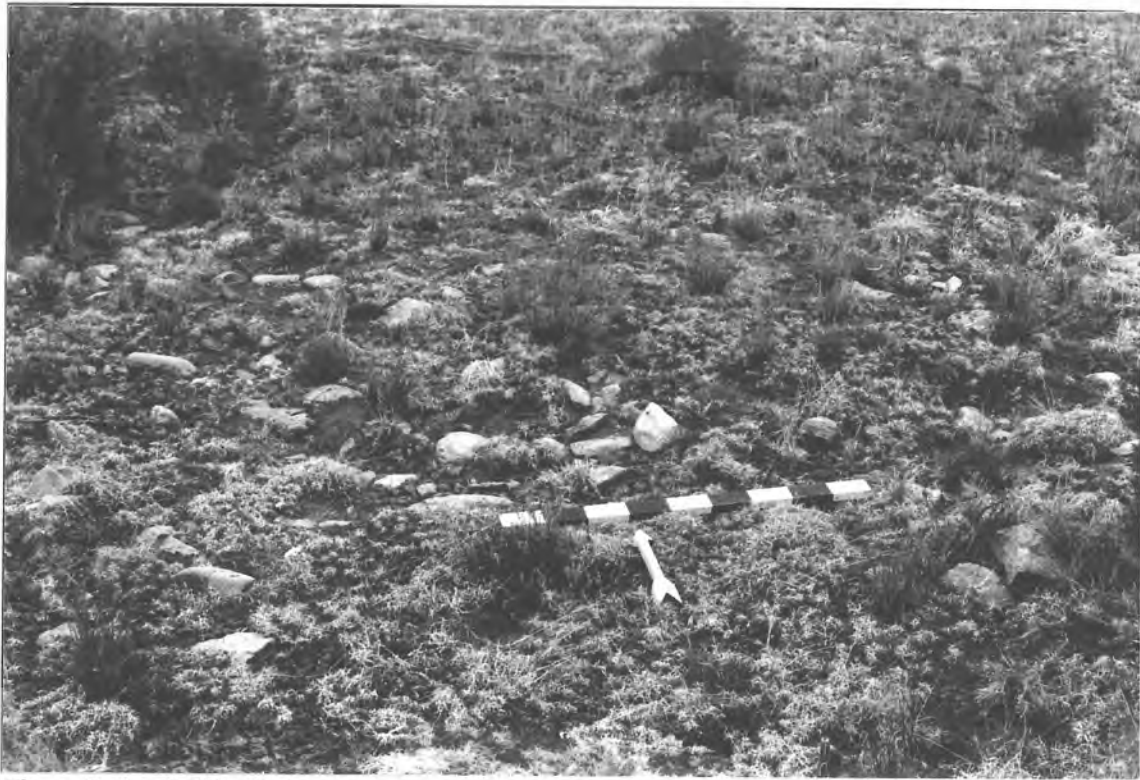


Figure 7. LA 85495, Feature 1.



Figure 8. LA 85495, Feature 2.



Figure 9. LA 85495, Feature 3.



Figure 10. LA 85495, Feature 4.



Figure 9. LA 85495, Feature 3.



Figure 10. LA 85495, Feature 4.

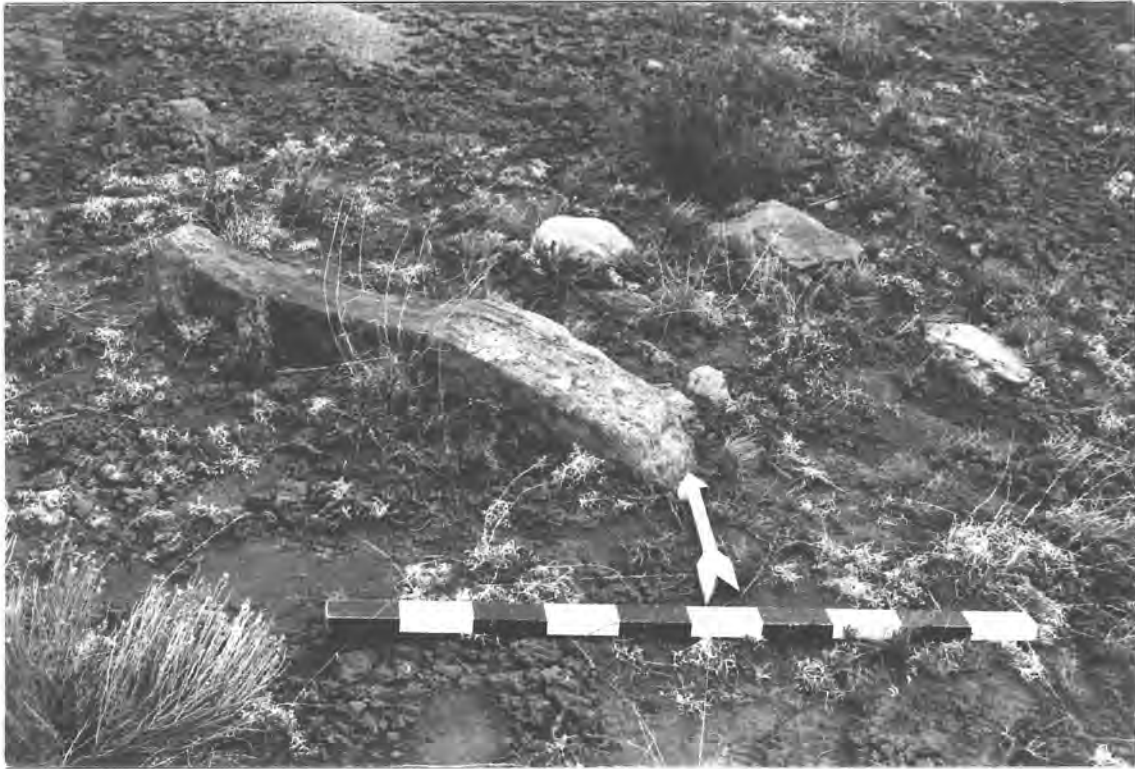


Figure 11. LA 85495, Feature 5.

course in height. Conversely, the distribution might also be evidence of the noncultural nature of this feature.

Feature 2 is a collection of 15 to 20 small- to medium-sized cobbles, forming a small pile (Fig. 8). This pile appears to be a single stone high and occurs at about the same point in the local stratigraphy as Feature 1. This suggests that this feature is also noncultural in origin, although the possibility that it had an agricultural function still remains.

Feature 3 is a rock pile of approximately 20 stones, 1 m in diameter and 1 to 2 stones in height (Fig. 9). This feature seems more likely to be cultural than Features 1 and 2; it is situated lower stratigraphically, and there are fewer associated small cobbles and gravels, common to the more questionable features.

Feature 4 is another possible agricultural feature. It occurs at the same stratigraphic level as Features 1 and 2. It measures 3-by-2.25 m and forms a "C" opening to the northwest (Fig. 10). The presence of large amounts of gravel and unassociated cobbles point to a noncultural origin. If this is cultural, it probably represents a deteriorated contour terrace or cobble-bordered grid and the walls appear to be one stone in height. Three unidentified projectile points and one biface were located in the vicinity of this feature.

Feature 5 consists of a collection of cobbles and a large waterworn slab measuring 1.3 m north-south by 1.65 m east-west and one course in height (Fig. 11). The function of this feature is unknown. This part of the site stratigraphically higher and exposure of cobbles and gravels is rare. This may suggest it is more likely of cultural origin. This feature was located within the limits of Concentration 3.

Feature 6 is a concentration of medium to large-sized cobbles, measuring 2.0-by-1.5 m. The relative lack of gravels and presence of numerous sizeable cobbles in this feature compared to the immediate vicinity suggest the possibility of cultural origin. The lack of an associated midden or artifact concentration may be evidence of a natural origin, but erosion may have removed most of the artifacts and features. One unidentified biface was located 15 m northwest of this feature.

Feature 7 consists of a small concentration of cobbles measuring 1.5 m in diameter, which may represent the location of an ephemeral field structure. While there is little to separate this small concentration of cobbles from others noted in the area and assigned a natural origin, there is a heavy concentration of lithic and ceramic artifacts. These artifacts comprise Concentration 5. The heavy artifact concentration suggests the presence of a shallow midden or discard area associated with some type of structure.

Feature 8 is a rock pile measuring 1.90-by-1.60 m. It consists of a collection of 30 to 40 large cobbles and small boulders up to 25 cm in height. While this feature occurs in an area containing gravel and cobble outcrops, the presence of so many large cobbles in one place suggests a cultural origin.

Feature 9 consists of a rock pile that measures 1.10 m in diameter and stands 20 to 30 cm high. It is located 10 m north of Feature 8. The consistent size of the cobbles and lack of gravels and small cobbles suggest a conscious selection of materials. More rocks extend to the north-northeast of this feature and contain a variety of cobbles and gravels. This area could be the origin of the materials in the rock pile and thus would be a natural terrace. However, they extend across a shallow drainage and could also have eroded down from the rock pile, or may represent an extension of the feature suggesting a checkdam function. These possibilities are impossible to resolve from surface indications alone.

Stratigraphy

All test pits at this site were excavated within the right-of-way. The stratigraphy consists of one layer of a reddish brown (5YR 4/4) sandy clay with a range of sparse small gravels to small and medium-sized stones. Auger tests show the caliche level varying between 26 cm and 62 cm below ground surface. The ground surface in the right-of-way on both sides on NM 63 has been cut by previous road construction 0.20 to 1.0 m below the original ground surface. The placement of each test pit considered this difference and was excavated as close to the original ground surface as possible.

Test Pits

Test Pit 1 was placed at the south end of the site boundary on the east side of NM 63. No artifacts were recovered from the three levels of excavation. Rodent disturbance was present throughout all levels.

Test Pit 2 was excavated 45 m north of Test Pit 1 on the east side of NM 63. Three levels of excavation were completed and no artifacts were recovered. Some root disturbance was present.

Test Pit 3 was situated 18 m north of Test Pit 2 on the east side of NM 63. One glaze-on-yellow sherd with a hornblende-latitude temper was located on the surface of this test pit. No artifacts were recovered in three levels of excavation. There was some root disturbance on the east side of the grid.

Test Pit 4 was located in the northern half of the site on the east side of NM 63, 42 m north of Test Pit 3. This grid contained between 40 and 70 percent large gravels and small to medium stones and deteriorating sandstone. The grid's proximity to a piñon tree has likely caused the high number of stones close to the surface. An unpainted red ware was recovered from Level 1. Three unutilized chert core flakes were located in Level 1 and an unutilized biface flake was recovered from Level 2.

Test Pit 5 was situated 20 m north of test pit 4 on the east side of NM 63, just to the northwest of Concentration 2. The soil contained 10 percent small rocks and its platy texture is due to the growth of a nearby piñon tree. One piece of angular debris, unutilized and made of chert, was recovered from Level 1. An auger hole placed at the base of Level 3 reached a caliche layer 76 cm in depth.

Test Pit 6 was excavated within Concentration 3 at the north end of the site on the east side of NM 63, 23 m north of Test Pit 5. The artifacts within the right-of-way have likely washed down from the original ground surface, which lies 50 cm above the right-of-way surface. One chert and one obsidian unutilized core flakes were recovered from the surface. The fill contained sandy clay with no gravels. Some rodent activity was noted in the southwest corner. An auger test was dug at the base of Level 2 to a depth of 50 cm; the fill remained the same sandy clay, but was drier and therefore lighter in color (7.5YR 6/4 light brown).

Test Pit 7 was located at the south end of the site within the west right-of-way of NM 63. This grid was excavated 12 m northeast of Feature 6 on a decline extending between the original ground surface and the lower right-of-way surface. One utilized chalcedony core flake was recovered from the surface of this test pit. No additional artifacts were recovered in three levels of excavation. An auger hole dug to 43 cm at the base of Level 3 recovered more of the same stratum.

Test Pit 8 was excavated 23 m north of Test Pit 7 within the western right-of-way of NM 63. This location was chosen due to some charcoal flecks that were recovered 30 cm below ground surface in an adjacent auger hole. The fill consisted of sandy clay with 10 percent gravel. A few small flecks of charcoal were noted, but seem to be in association with some rodent activity. One chert and two obsidian unutilized core flakes were recovered in this grid. An auger hole dug in the base of Level 3 to 1.08 m in depth revealed a more compact clay.

Test Pit 9 was placed 30 m north of Test Pit 8 on the west side of NM 63. Three levels of excavation recovered one piece of utilized angular debris from the top level. An auger hole reached caliche, 75 cm below the base of Level 3. A large unidentified corner-notched projectile point fragment was found in this area on the west side of the fence line.

Test Pit 10 was located 21 m north of Test Pit 9 on the west side of NM 63. It is 20 m east of Feature 7 and Concentration 5. No artifacts were encountered in three levels of excavation. An auger test dug 32 cm below Level 3 encountered the caliche layer.

Test Pit 11 was placed just on the other side of the fence from Nordby's fieldhouse (#101), 70 m north of Test Pit 10. This grid held the most potential for recovering subsurface deposits. A large stone on the east side of the grid was found not to articulate with the fieldhouse and could only be assessed as having eroded from the cobble mound. An amorphous stain (7.5 YR 4/4 dark brown) existed in Level 1 but proved to be 2-cm thick and likely washed in from the darker soil associated with the cobble mound. Below the stain, the local sandy clay was located through Level 4. Artifacts from this grid include one unutilized core flake recovered from Level 1.

Test Pit 12 was located in the northwest quadrant of the site, and 33 m north of Test Pit 11. Two levels of excavation were completed and no artifacts were recovered. Extensive root growth in this area precluded further investigation. An auger test reached an additional 23 cm, but was terminated due to the root growth. Fill consisted of sandy clay with up to 30 percent gravel.

Test Pit 13 was placed at the northern site boundary on the west side of NM 63, 55 m north of Test Pit 12. The sandy clay fill contained between 5 and 25 percent small gravel. Two levels were excavated and an auger test reached caliche at 60 cm below the base of Level 2.

Auger Tests

A total of 69 auger holes were tested within the right-of-way at 5 to 10 m intervals, depending on the piñon and juniper tree density. Twenty-eight auger holes on the east side and 41 auger holes on the west side were tested. The east auger tests revealed the caliche layer varying between 28 and 56 cm below ground surface. The west auger tests showed the caliche ranging from 26 to 62 cm below ground surface. The variation of the caliche depths may be related to the sloping elevation that occurs on the site, the higher elevation is to the north, and the lower elevation to the south. A large cobble deposit was located between Auger Test 42 and 53 on the west side of NM 63. One unutilized core flake was recovered from Auger Test 14.

Artifacts

Concentration 1. This concentration is in the southeast corner of the site and measures 35 m north-south by 18 m east-west. While biface flakes are rare, the presence of a Bajada point base, the midsection of another Archaic point, and the edge of a large general purpose biface suggest an Archaic origin for this concentration. The remainder of the scatter seems to represent a multioccupational locale containing a palimpsest of Anasazi materials overlying Archaic remains. Additional artifacts noted in the vicinity appeared to be pieces of En Medio points, suggesting that the most intensive use of this area occurred during BM III times.

Concentration 2. Concentration 2 is in the northeast quadrant of the site and measures 18 m north-south by 12 m east-west. The scatter represents an Archaic locale, although no temporally diagnostic artifacts were found. This concentration, similar to Concentration 3, represents an Archaic reduction locus, although less evidence of biface manufacture/reduction was found in this area.

Concentration 3. This artifact scatter is located in the northeast quadrant of the site measuring 20 m north-south by 15 m east-west. It represents an Archaic locale, although no temporally diagnostic artifacts were found. It contains several flakes removed from large bifaces. Much of the debitage

in this area was fragmented and thus defaulted to core flakes, since the more diagnostic parts of the flakes were often absent. However, many of the distal and medial fragments seemed to be portions of biface flakes, suggesting that large biface reduction was more common in this scatter than is indicated by the field inventory.

Concentration 4. This concentration is located in the northeast quadrant of the site near the eastern site limit. It measured 19 m north-south by 9 m east-west, and primarily represents an Anasazi pot drop. Several fragments of what appear to be the same vessel were found scattered across this area. Lithic artifacts included with this concentration are of questionable association.

Concentration 5. This consists of a heavy concentration of lithic and ceramic artifacts surrounding Feature 7 that includes an Anasazi projectile point. It measures 25 m north-south by 18 m east-west. The heavy artifact concentration suggests the presence of a shallow midden or discard area associated with a structure of some kind. This southwest quadrant of the site consists of a rather diffuse scatter of lithic and ceramic artifacts and it likely represents primarily Anasazi use. One Pueblo side-notched projectile point was located in this area. The presence of a few artifacts in the right-of-way in conjunction with a similar distribution to the east (across NM 63) suggests that both sites previously extended into the current right-of-way.

Concentration 6. This concentration is located in the northwest corner of the site limits measuring 63 m northeast-southwest by 28 m northwest-southeast. It is an extensive scatter comprised largely of lithic artifacts. There is very little evidence of biface reduction found in this area. Several partially reduced cores of local materials were found, and there seemed to be a somewhat higher percentage of cortical debitage present that was noted in other areas of this site. Since there are considerable deposits of gravels and cobbles in this area, it is likely that some quarrying of materials is indicated. However, the presence of a few tools and exotic material (two obsidian types and Alibates chert) indicate that quarrying was not the sole activity accomplished here. Though there are no diagnostic lithic artifacts in this concentration, the paucity of sherds and extreme amounts of patination on many chert artifacts may indicate an Archaic origin for much of the material in this concentration. A Galisteo Black-on-white sherd (A.D. 1300-1425), a Largo Glaze polychrome (A.D. 1400-1450), a San Lazaro Glaze polychrome (A.D. 1490-1515), and a Puaray Glaze polychrome (A.D. 1600-1625) were found in this area. One large, unidentified side-notched projectile point was recovered from this concentration.

Concentration 7. Concentration 7 is also located in the northwest portion of the site and measures 20 m north-south by 11 m east-west. It contains mostly lithic artifacts, though a few sherds were also noted. A yellow ware with latite temper was found in this area although was not temporally diagnostic. The presence of a Chiricahua projectile point base suggests an Archaic origin, while the ceramics and the proximity of this collection of artifacts to Structure 2 argues for an Anasazi origin.

LA 85496

LA 85496 was originally defined as a lithic and ceramic artifact scatter that dates to the Rio Grande Coalition and Classic periods (Lent 1992). The survey recorded the site as measuring 60-by-28 m (1,680 sq m) and was thought to have connected with LA 85507, located on the east side of NM 63. Testing activities within the current right-of-way were conducted to determine if these

two sites were continuous. All of LA 85496 was located outside of the right-of-way, except for a few surface artifacts that had washed down into the right-of-way. The site measures 115 m north-south and averages 30 m east-west.

During testing, a closer examination of the artifacts revealed that the site boundaries of LA 85496 extended north into LA 85495. These two sites together with LA 85507 and LA 85508, located on the east side of NM 63, were combined into one larger site. All four sites were recorded and combined into LA 85495. The redefined size of LA 85495 measures 330 m long and averages 110 m wide and is oriented northwest to southeast. Seven concentrations of artifacts, nine features, and two structures were identified at LA 85495. See LA 85495 for a description of the testing activities.

LA 85500

LA 85500 was defined as a prehistoric lithic and ceramic artifact scatter with an ephemeral rock alignment and a series of bedrock mortars, covering an area of 1,950 sq m (Lent et al. 1991). The site is situated on a northeast-facing slope on the south side of PNHP entrance road. The majority of the site is out of the project limits; only a 210 sq m area in the northeast corner is within the current right-of-way.

During testing, the lithic and ceramic artifact scatter was re-examined in order to locate concentrations of artifacts, features, and boundaries. The redefined boundaries measure 115 m north-south and averages 50 m east-west, a total of 5,750 sq m (Fig. 12). Two grids were placed within the current right-of-way in the northeast corner of the site. No subsurface artifacts or deposits were encountered. Five features were located and recorded. Four auger tests were placed at 5 m intervals; no evidence of subsurface cultural deposits were found. Ceramics date between A.D. 1400 and 1700.

Test Pits

Test Pit 1 was placed in the northeastern part of the site, which extends into the right-of-way. The earlier survey mentioned some lithic artifacts in this area, but they could not be located. Four levels of excavation in this test pit found no artifacts. The soil consisted of a sandy clay with 5 percent small gravels. An auger test placed at the bottom of Level 4 reached a coarse sand at a depth of 44 cm.

Test Pit 2 was 5 m north-northwest of Test Pit 1. No surface artifacts exist in this area; artifacts once exposed during survey have become eroded. Three levels of excavation were completed; no artifacts were recovered. A 55-cm-deep auger test at the bottom of Level 3 reached a coarse sand possibly representing a gravel bed. No cultural materials were found in the auger test.

Features

All features are located outside the right-of-way.

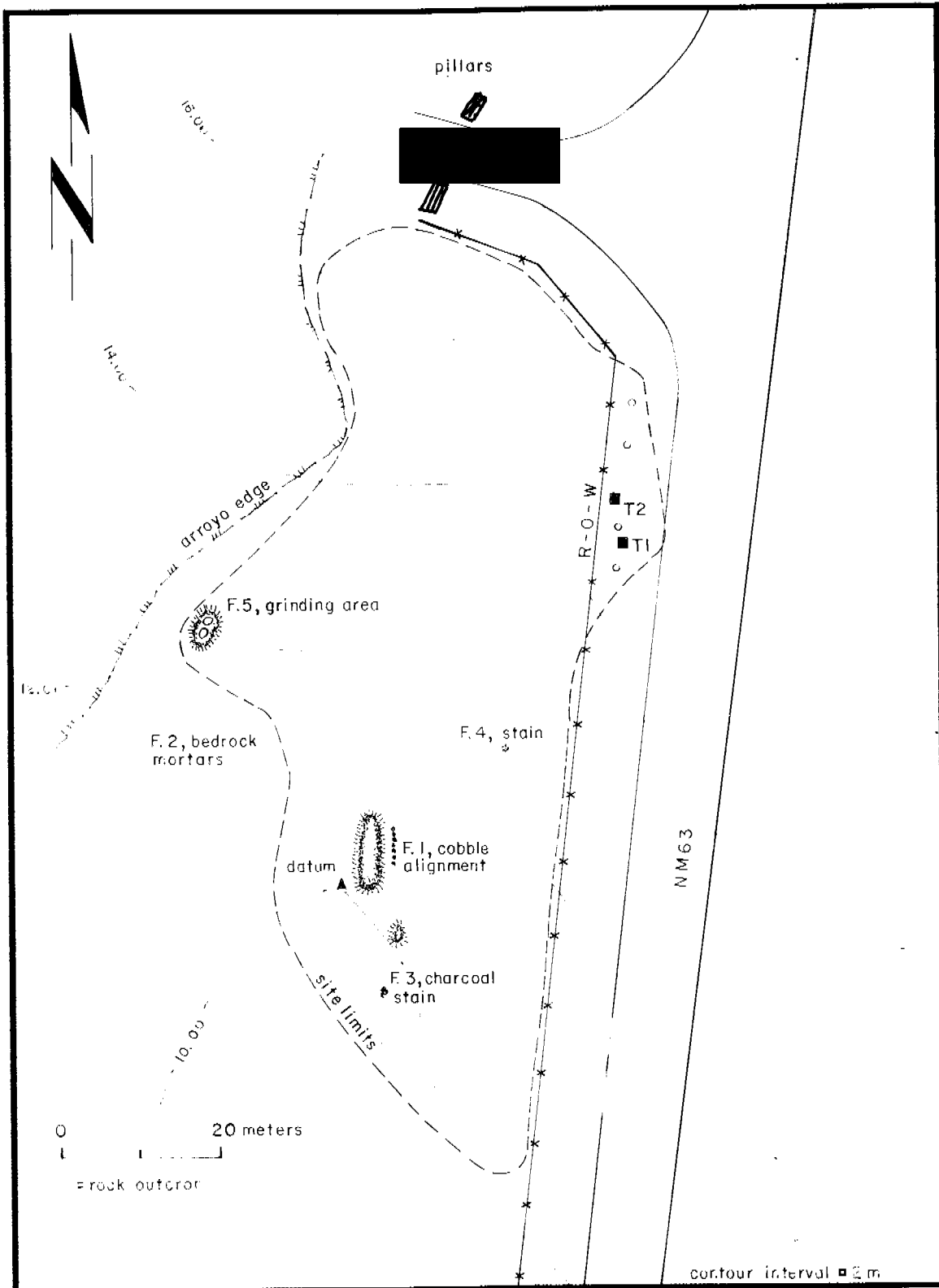


Figure 12. LA 8550, plan view of the site.



Figure 13. LA 85500, Feature 2.

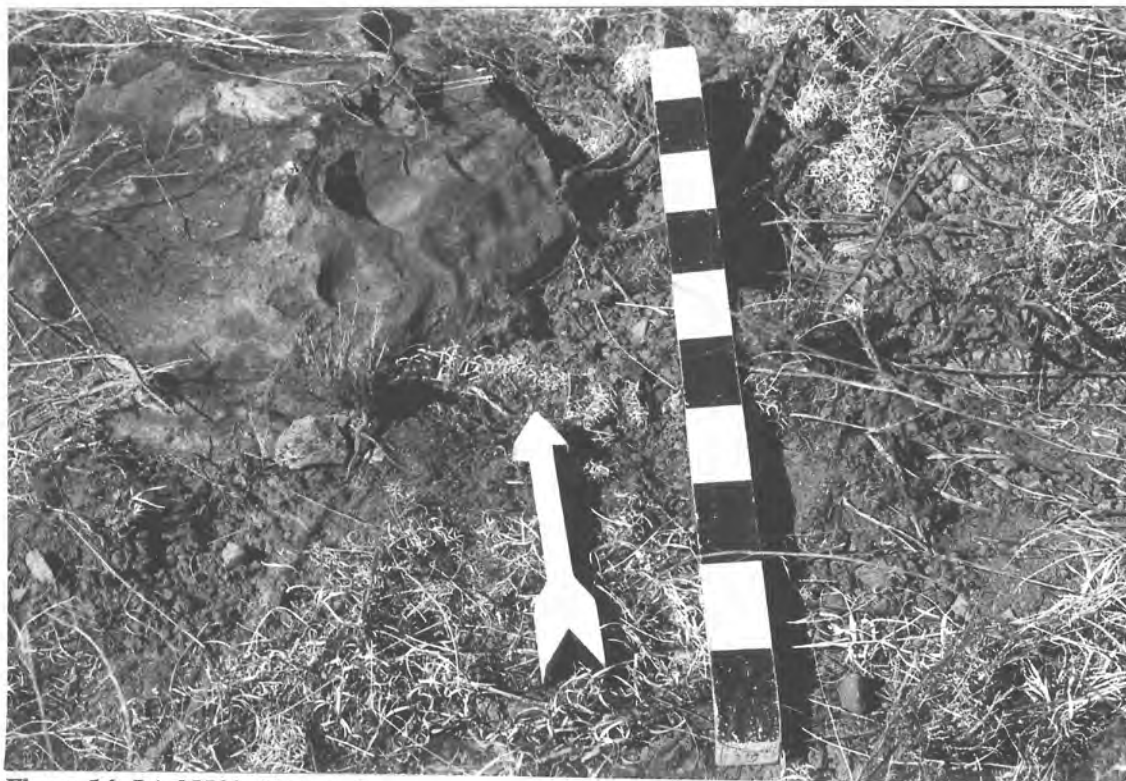


Figure 14. LA 85500, Feature 5.

Feature 1 is located 13 m south of Subdatum 1. It consists of a stone alignment that borders the east side of a sandstone outcrop. The 12 cobbles that comprise this alignment are of varying sizes that measure 3.7 m in length and oriented north-south.

Feature 2 consists of two bedrock mortars located in a sandstone outcrop 10 m northwest of Feature 1. Each mortar is 9 cm wide. Two possible mortars are located 20 cm to the north and 5 cm in width. All mortars are heavily eroded due to exposure to the elements (Fig. 13).

Feature 3 is a dark, charcoal-stained area approximately 1 m in diameter, situated 5 m south of Feature 1. This may have been a subsurface ash and charcoal deposit. There is no burned wood in the immediate area that would suggest that this is a recent burn.

Feature 4 is a small, dark, charcoal stain 20 cm in diameter, located 18 m northeast of Feature 1. There are no pieces of charcoal associated with this feature.

Feature 5 is a sandstone outcrop that contains three grinding areas (Fig. 14). The two on the south side of the outcrop may have been used for horizontal grinding and the northern area is a mortar. This feature is located 30 m northeast of Feature 1 and is situated 5 m east of an arroyo.

Ceramic Artifacts

There were 15 ceramic artifacts recorded during field analysis. Ceramic type and vessel form was the extent of this cursory analysis. Four glaze-on-red jar and bowl sherds, three glaze-on-white bowl sherds, four red slipped jar sherds, and two utility jar sherds could not be temporally designated. One Pecos Faint Striated jar sherd provides a date between A.D. 1600 and 1700. One Biscuit B, or Bandelier Black-on-gray, bowl rim sherd was collected from the surface at the north end of the site that dates A.D. 1400-1550 (see Mensel's ceramic chapter). These ceramics indicate a nearly continuous occupation between A.D. 1400 and 1700.

Lithic Artifacts

A total of 99 lithic artifacts was recorded during field analysis. Material type, reduction stage, and morphology were recorded. Chert was the predominant material type (77 percent) with smaller amounts of obsidian (8 percent), chalcedony (7 percent), and quartzite (3 percent) represented. The morphology of the lithic artifacts consisted of tertiary flakes (61 percent) or angular debris (22 percent) stage of reduction. Biface flakes comprised 8 percent of the assemblage. Three cores, one uniface, and one hammerstone were present.

Auger Tests

Four auger tests were aligned within the right-of-way, placed in areas that were the least altered by previous construction. None of the tests recovered cultural material. All auger tests encountered a sandy clay (5YR 4/4 reddish brown) from the surface to 75 cm below ground surface. A caliche layer (7.5YR 5/4) was located in Auger Test 1 between 40 and 60 cm below ground surface.

LA 85502

LA 85502 was originally recorded as a prehistoric lithic and ceramic artifact scatter located within an eroded area covering 120 sq m (Lent 1992). The ceramics on the site date to the Rio Grande Coalition period, A.D. 1175-1350. The site boundaries were defined by the extent of artifacts to the north, east, and south and by NM 63 to the west. The western edge of the site is located just within CME 4. The majority of the site extends to the east. A few pieces of fire-cracked rock were noted, but no features were present.

During the testing activities, the scatter of artifacts was found to continue along the drainage cut for an additional 150 m. The redefined site limits measure 100 m north-south by 170 m east-west (Fig. 15). Three concentrations of lithic and ceramic artifacts were identified and mapped. Four test pits were excavated: three within the CME, and one in the right-of-way. It is apparent that the artifacts are originating within 20 cm below the present ground surface, yet no prehistoric surface could be defined. Two ceramic artifacts were recovered during test excavations but neither were temporally diagnostic. One undifferentiated biface and two core flakes were the total of lithic artifacts recovered at this site. Five fence staples and one conchoidal flake of clear glass were also recovered.

The NPS conducted a survey (Eininger 1993) that included the trading post. This survey was conducted to provide cultural resource data prior to the planning and implementation of various development projects for the park. The trading post survey located a portion of LA 85502. It was defined as a dispersed lithic scatter covering a 95-by-70-m area. The numbers PECO 232/LA 102582 were assigned.

Artifacts

Concentration 1. This concentration of artifacts extends partially into the northern portion of CME 4. It measures 18 m north-south by 32 m east-west. Ceramic artifacts located in this area could not be temporally designated; four utility sherds, three corrugated sherds, and one white slipped sherd were found. A total of 22 lithic artifacts were recorded during field analysis. Chert was the predominant material (59 percent) with chalcedony and obsidian each comprising 18 percent of the assemblage, and 5 percent quartzite material. Lithic morphology was dominated by angular debris (54 percent). Primary (5 percent), secondary (9 percent), and tertiary flakes (18 percent) were also represented. One core and two biface flakes were also present.

Concentration 2. This concentration contains the highest number of artifacts at the site, comprised solely of lithic artifacts. This area measures 13 m north-south by 40 m east-west and is situated on the north side of the small drainage which cuts east-west through the west side of the site. Although the artifacts seem to extend in all directions from this concentration, an east boundary was established at the dirt road that leads to the new headquarters for Pecos National Historical Park. A total of 88 lithic artifacts were located and recorded during field analysis. Chert (60 percent) and chalcedony (24 percent) comprised the majority of the material types. Quartzite (8 percent), obsidian (7 percent), and basalt (1 percent) were also present. Lithic morphology consisted mostly of tertiary flakes (41 percent) and angular debris (28 percent). Secondary (9 percent) and primary (6 percent) stages of reduction were also represented. A small percentage of biface flakes (9 percent) was present as were four cores and two projectile points.

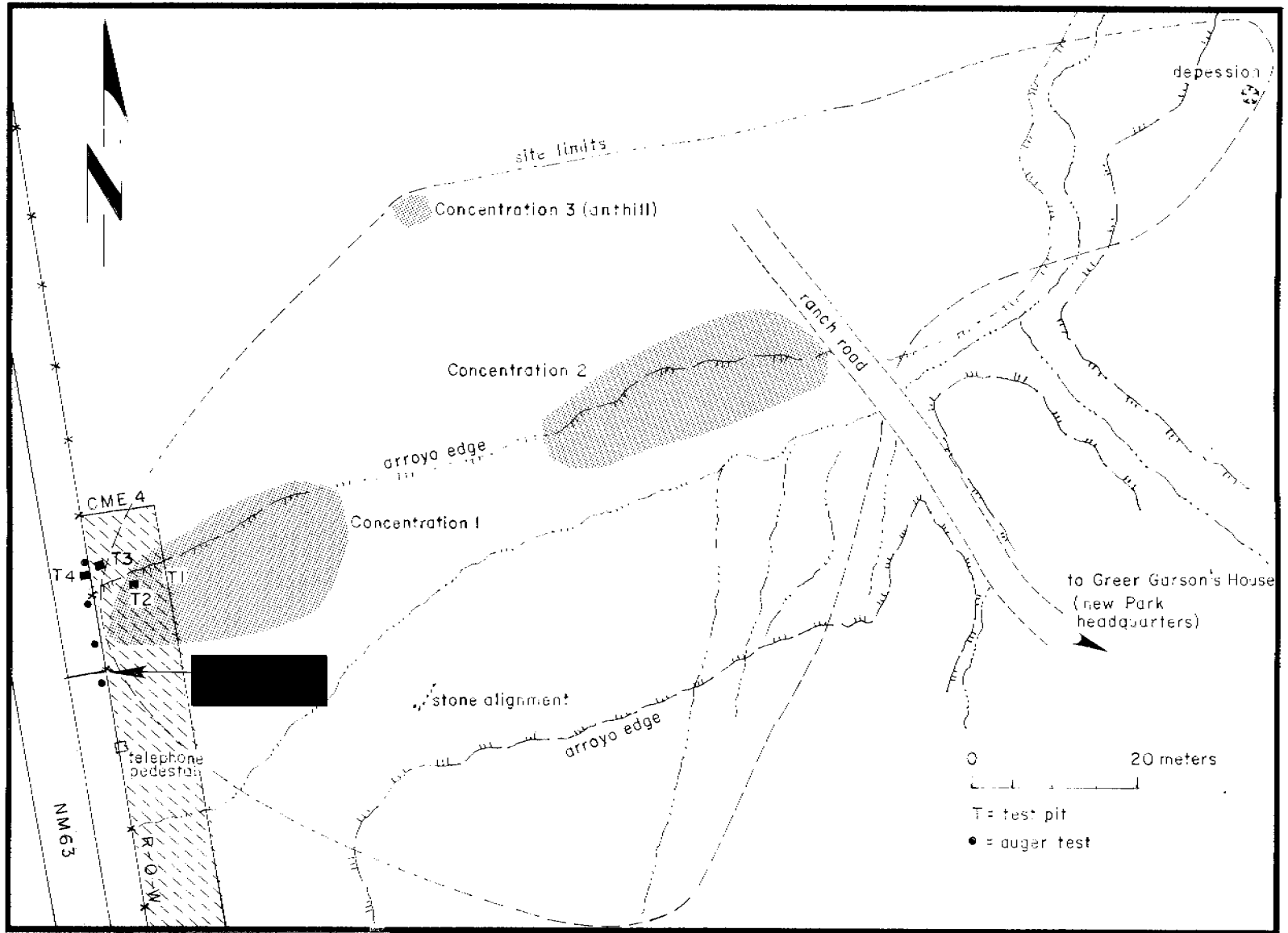


Figure 15. LA 85502, plan view map.

Concentration 3. This concentration represents the highest density of artifacts at the site. It is located near an anthill in the northeast portion of the site. The entire area of the concentration is 4 m in diameter. The anthill contains numerous microflakes. Ceramics are not present. Forty-seven lithic artifacts were recorded during field analysis with chert (45 percent) being the predominant material type. Chalcedony (16 percent), obsidian (19 percent), and quartzite (2 percent) were also represented within this assemblage. Lithic morphology was dominated by tertiary flakes (62 percent) and angular debris (23 percent). Primary flakes (6 percent) and biface flakes (9 percent) were also present. One undifferentiated biface fragment was located 7 m southeast of this concentration.

Test Pits

Test Pit 1 was placed within the CME boundary on the north side of an eroded slope where several artifacts had become exposed. The soil is a reddish brown (5YR 4/4) sandy clay with no gravels. One unutilized chalcedony core flake, a plain utility ware, and an unpainted white ware, both temporally undiagnostic, were recovered from Level 2. The bottom of Level 4 was augered to caliche between 0.70 m and 1.60 m.

Test Pit 2 was placed 5 m east of Test Pit 1 within the CME boundary. It is situated on the eroding slope where artifacts have washed downslope. The soil was the same as Test Pit 1. A few charcoal flecks and stains were found along the north edge of the grid in Level 1. One unutilized core flake was recovered from Level 2. The staining did not appear in Level 2. An auger hole was dug to 1.60 m from the bottom of Level 2, locating caliche between .45 m to 1.55 m.

Test Pit 3 was placed 5 m northwest of Test Pit 2 within the CME boundary. The stratigraphy is the same as Test Pits 1 and 2. It is on a surface that had not been previously eroded. One piece of clear glass from the top 5 cm was the only artifact recovered from four levels of excavation. A stain located at the base of Level 4 was determined to be an organic stain due to rodent activity. An auger test placed in the center of the excavated grid, reached the top of the caliche level at 27 cm below ground surface.

Test Pit 4 was excavated in the right-of-way, 2 m west of Test Pit 3. Soil was the same as the other test pits. No artifacts were recovered in three levels of excavation. An auger test placed at the base of Level 3 reached caliche at 62 cm.

Auger Tests

A total of 10 auger tests were investigated. Systematic augering was conducted at 5 m intervals at the northern end of the CME; here the ground surface was the least eroded, consequently providing the greatest potential. Six auger tests were dug in this area, reaching caliche at depths varying between 47 and 76 cm. None of the tests contained artifacts.

Four additional auger tests were dug within the right-of-way, between the edge of NM 63 and the fenceline. The noncultural red clay extended between 48 cm and 64 cm in depth with caliche directly below the clay.

LA 85503

LA 85503 was defined during survey as a prehistoric lithic and ceramic artifact scatter with two concentrations of fire-cracked rock and a depression. The site boundaries were first defined as the extent of artifacts to the east, south, and west. The north boundary is marked by a large depression. Ceramics on the site date to the Rio Grande Classic period, A.D. 1325-1540. The site is located on both sides of NM 63 and covered a total area of 3,000 sq m.

Testing activities redefined the site limits to measure 120 m north-south and averaging 50 m east-west (6,000 sq m). One structure, four features, and two concentrations of artifacts were recorded (Fig. 16). The Santa Fe Trail ruts exist 20 m from the west side of the site.

Five grids were excavated during the testing phase. Three grids were placed on the east side of NM 63 within the current right-of-way and two grids were placed within the proposed right-of-way on the west side of NM 63. All grids recovered sterile red clay and a layer of gravel terrace between 20 and 30 cm and excavation was terminated. Artifacts were recovered from the top level of excavation. The smeared-indentated corrugated pottery excavated at the site represents a Coalition or early Classic period occupation with an estimated range of A.D. 1175-1425. A Pecos Glaze polychrome (A.D. 1600-1700) was located on the surface (see Mensel's ceramic section). A total of nine lithic artifacts were recovered from this site during the test excavations. One brass cartridge, identified as a U.S. musket (Berdan) .58 caliber, was also located.

Structure 1

Structure 1 is a low cobble mound possibly representing a fieldhouse that measures 3 m north-south by 2 m east-west. It is located outside the proposed right-of-way on the west side on NM 63, 23 m west-southwest of the main datum. Artifact density in proximity to the mound is sparse. A portion of the Santa Fe Trail is 30 m to the west which continues to the Pecos Pueblo located less than 1 mile to the northwest.

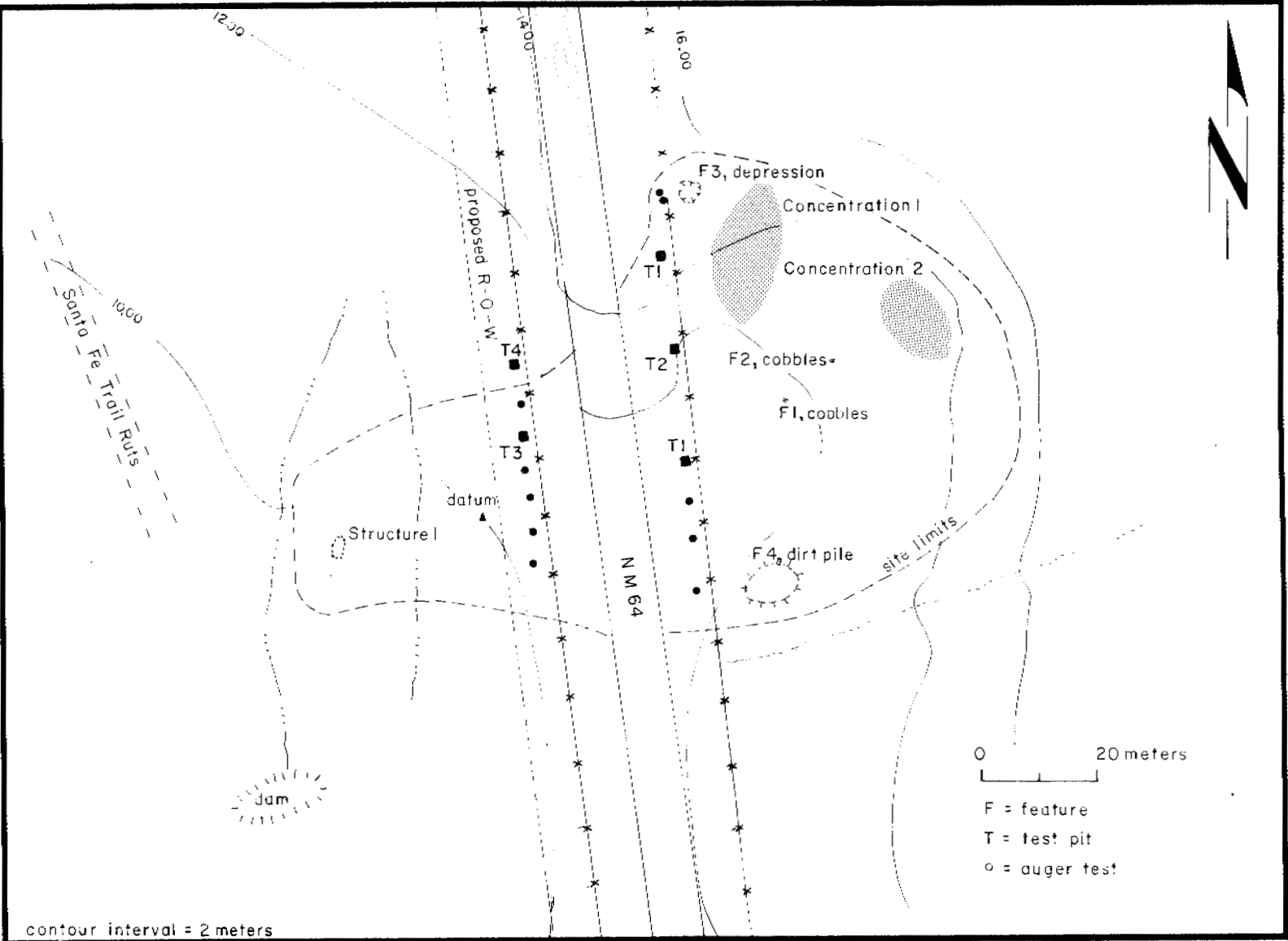
Feature 1

Feature 1 is located 7 m northeast of Subdatum 2 on the east side of NM 63, outside the right-of-way. It consists of a cluster of nine stones measuring 1.20 m north-south by .60 m east-west. There are no associated surface artifacts.

Feature 2

Feature 2 is located 16 m northeast of Subdatum 2 on the east side of NM 63, outside the right-of-way. There is a small concentration of stones that measure 60 cm north-south by 40 cm east-west. There are no associated surface artifacts.

Figure 16. LA 85503, plan view map of the site.



Feature 3

Feature 3 is a shallow depression located on the east side of NM 63, just inside the right-of-way. The depression is at the north end of the site, measures 6 m north-south, and is filled with large juniper and piñon trees. There is a mound extending downslope that appears to be the fill from the depression. A few associated artifacts exist, and Concentration 1 is 5 m southeast of this feature.

Feature 4

Feature 4 consists of a low, circular, bermlike mound of dirt and cobbles. The amount of cobbles is much greater in the feature than the surrounding ground surface. There are few surface artifacts. This feature is located outside of the right-of-way on the east side of NM 63. It is situated 22 m south of Subdatum 2. This feature may be the result of machinery used in previous road construction.

Artifacts

A light scatter of artifacts was found within the site boundaries. Ceramics include one utility jar sherd and two glaze-on-white bowl sherds. Nine lithic artifacts, including three projectile points, were recovered. Historic artifacts include several metal cans, two green glass fragments, and five pieces of purple glass. Below are descriptions of the artifact concentrations.

Concentration 1. This concentration is located between Features 1 and 2 to the south and Feature 3 to the north. It measures 24 m north-south by 11 m east-west. Ceramics recorded within this area include 21 sherds of a red-slipped bowl, one Pecos Glaze polychrome bowl rim sherd (A.D. 1600-1700), two Santa Fe Black-on-white jar sherds (A.D. 1175-1300), and two micaceous utility wares. Eighteen lithics were recorded during field analysis. Chert (72 percent) was the dominant material with smaller amounts of chalcedony (17 percent) and obsidian (11 percent) represented. Lithic morphology was dominated by angular debris (67 percent). Tertiary flakes (11 percent) and secondary flakes (5 percent) were present. Two biface flakes and one projectile point were also located.

Concentration 2. This concentration is located 11 m east of Feature 2 and measures 15 m north-south by 10 m east-west. Ceramics within this area include one Pecos Faint Striated (A.D. 1600-1700), three micaceous utility wares, one indeterminate gray ware, and one white glaze ware. Field analysis included locating and recording 30 lithic artifacts. Chert (63 percent) and obsidian (23 percent) comprised the majority of material types with small amounts of chalcedony, basalt, and quartzite represented. The most common morphology was angular debris (43 percent) and tertiary flakes (37 percent). One biface and three unidentified projectile points were located within this concentration. Historic artifacts were represented by a few metal cans.

Test Pits

Test Pit 1 was placed within the current right-of-way on the east side of the road. It was excavated on a narrow strip of level ground between the fence line and the road cutbank. Surface and excavated artifacts recovered in Level 1 consisted of six metal and one unutilized biface flake. One

piece of unutilized angular debris was recovered in Level 3. The bottom of Level 3 became a sterile red clay mixed with caliche. Excavation was then terminated. An auger test in the center of the grid hit more caliche suggesting that sterile had been reached.

Test Pit 2 was excavated at the north end of the site, on the east side of the right-of-way. One utilized chert core flake was recovered from the surface of this grid and one quartzitic sandstone unutilized core flake was located in Level 1. The soil consisted of a sandy clay matrix with 20 percent to 30 percent gravels. The bottom of Level 3 became very gravelly (30 percent to 40 percent). Caliche was reached with the auger 22 cm below the base of Level 3. The clay became extremely hard and gravel-filled, which precluded further augering.

Test Pit 3 was placed within the proposed right-of-way on the west side of the road. No artifacts were recovered from any of the three excavated grids. The soil is a sandy clay with 10 percent medium to large gravels. Caliche was encountered 80 cm below ground surface during augering.

Test Pit 4 was placed within the proposed right-of-way on the west side of the road. No artifacts were recovered in the two excavated levels. Excavation was terminated when the sterile sandy clay with 10 to 15 percent gravels was observed. Caliche was reached 40 cm below ground surface during augering.

Test Pit 5 was situated at the north end of the site along the east side of the right-of-way. The soil consisted of a sandy clay with 25 percent small gravels and considerable root growth. Auger testing reached caliche 65 cm below ground surface. One piece of unutilized chert angular debris, one obsidian unutilized core flake, one plain utility ware, and three Smearred-indentated Corrugated utility wares were recovered from the top two levels of excavation. Smearred-indentated Corrugated pottery represents a Coalition or early Classic period occupation, A.D. 1175-1425.

Auger Tests

Auger tests were placed at either 5 or 10 m intervals depending on piñon and juniper densities. Seven auger tests were placed in the east right-of-way of NM 63; caliche or rock was reached between 30 and 48 cm below ground surface. No artifacts were recovered. Four auger tests were placed within the proposed right-of-way on the west side of NM 63; caliche was reached between 40 and 52 cm below ground surface. No evidence of subsurface cultural deposits was found through auger testing. No further work is recommended at this site.

LA 85507

LA 85507 was originally defined as a series of agriculturally oriented features and a lithic artifact scatter covering 2,835 sq m. During survey, it was thought that this site may have connected with LA 85496, located on the west side of NM 63. No artifacts were recorded within the existing right-of-way. It was recommended that the intervening space between the two sites be tested to determine if the two sites are one. With the exception of a few artifacts, LA 85507 was located outside of the right-of-way.

During testing, a closer examination of the artifacts revealed that the site boundaries of LA 85507 extend north into LA 85508. These two sites together with LA 85495 and LA 85496, located on the west side of NM 63, were combined into one larger site. All four sites were recorded and combined into LA 85495. The four sites that were originally defined were concentrations of the larger site. The redefined size of LA 85507 measures 330 m long and averages 110 m wide. It is oriented northwest to southeast. Seven concentrations of artifacts, nine features, and two structures were identified at LA 85495. See LA 85495 for a complete description of the testing activities.

LA 85508

LA 85508 was originally defined as a lithic artifact scatter and a fieldhouse within a 1,600 sq m area. During survey, it was thought that this site may have connected with LA 85495, located on the west side of NM 63. No artifacts were recorded within the existing right-of-way. It was recommended that the intervening space between the two sites be tested to determine if the two sites were one. The majority of LA 85508 was located outside of the right-of-way.

During testing, a closer examination of the artifacts revealed that the site boundaries of LA 85508 extend south into LA 85507. These two sites together with LA 85495 and LA 85496, located on the west side of NM 63, were combined into one larger site. All four sites were recorded and combined into LA 85495. The four sites that were originally defined were concentrations of the larger site. The redefined size of LA 85508 measures 330 m long and averages 110 m wide. It is oriented northwest to southeast. Seven concentrations of artifacts, nine features, and two structures were identified at LA 85495. See LA 85495 for a complete description of the testing activities.

LA 99939

LA 99939 was defined as a multicomponent site containing both prehistoric (A.D. 1315 to 1425) and historic (1940s) components. The site covered an area of 5,146 sq m (83-by-62 m); the TCP boundaries fall completely within the site limits. Two features were identified during survey. Feature 1, outside the TCP boundary, consisted of approximately 30 cobbles and a few fire-cracked rocks, which may represent a deflated hearth; ground stone, and lithic and ceramic artifacts were also present. Feature 2, located within the TCP boundary, is a historic rock feature that could be related to the abandoned 1940s entrance road to the Forked Lightning Ranch.

During this testing phase, the site boundary was expanded to include the continuous scatter of lithic and ceramic artifacts. Within the redefined site boundaries of 47,250 sq m (175-by-270 m), five concentrations of lithic and ceramic artifacts and three possible fieldhouse structures were recorded (Fig. 17). Five grids were excavated during testing: four were placed within the TCP boundaries and one was placed within the current right-of-way. Four test pits encountered noncultural clay deposits and excavation was terminated. A total of four lithic artifacts were collected from this site; two undifferentiated bifaces, one unidentified corner-notched projectile point, and one piece of angular debris. No ceramics were collected during testing activities. Historic artifacts included 33 pieces of clear glass and 5 fence staples.

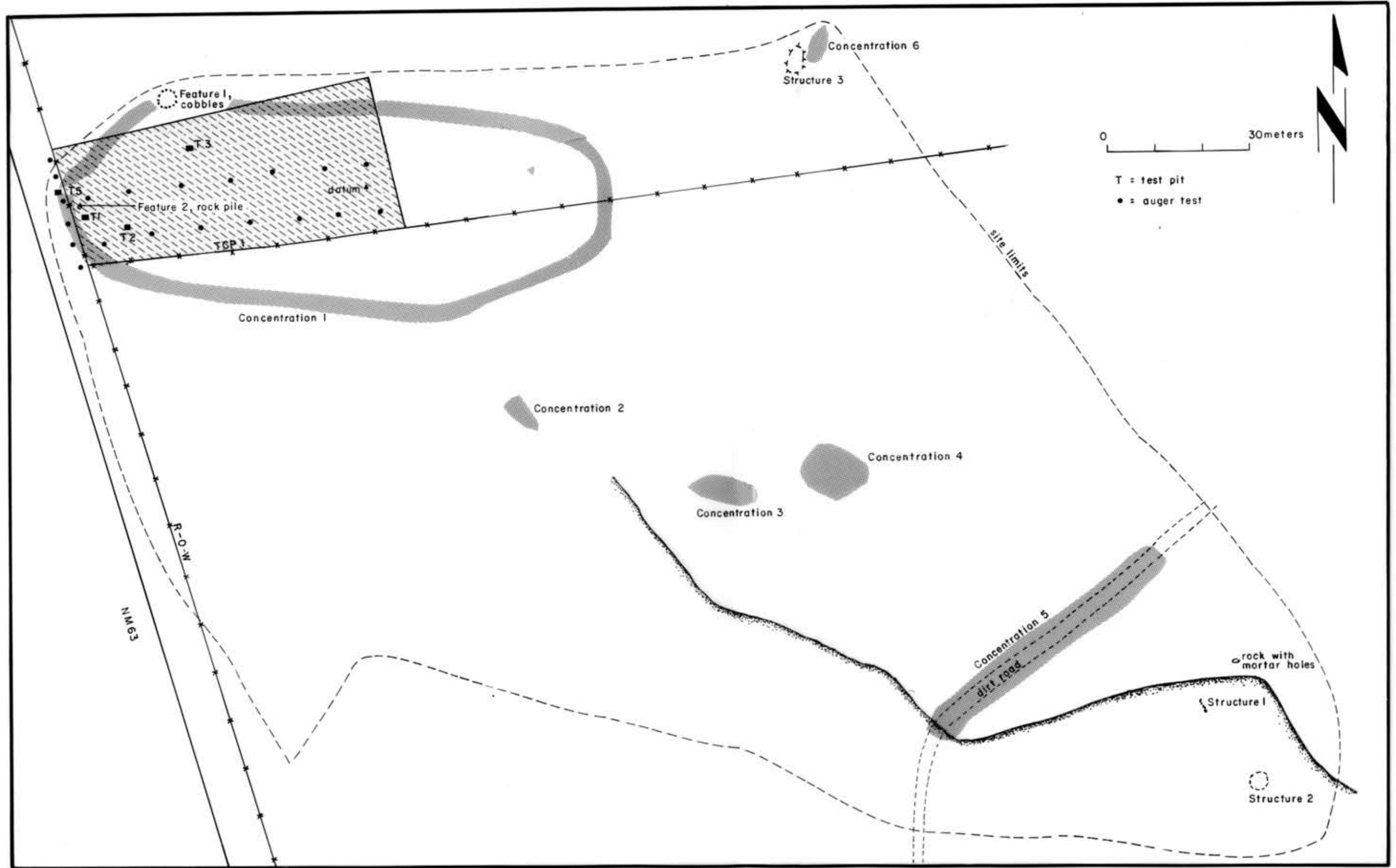


Figure 17. LA 99939, plan view map of the site.



Figure 18. LA 99939, Structure 2.



Figure 19. LA 99939, Feature 2.

Structure 1

This fieldhouse is located 195 m southeast of the southeast corner of the TCP boundary. It consists of four upright sandstone slabs aligned northwest to southeast, 2 m in length. A few other scattered stones are also present. Pine duff in the area is thick, which precludes locating associated artifacts. An outcrop of sandstone boulders containing 14 bedrock mortars is located 8 m to the northeast of the fieldhouse. This structure was not tested as it is outside the TCP boundaries.

Structure 2

This fieldhouse is located 15 m southeast of Structure 1 (Fig. 18). The fieldhouse consists of approximately 20 sandstone elements oriented northwest to southeast. It is square shaped and slightly mounded in its center, measuring 3.2 m north-south by 2.4 m east-west. There is a small scatter of siltstone and chert lithic artifacts north of the fieldhouse in a clearing within the duff. This structure was not tested as it is outside the TCP boundary.

Structure 3

This structure consists of a mound approximately 5.4 m north-south by 3.5 m east-west, 40 cm in height, and covered with large junipers. It is located 90 m east of the northeast corner of the TCP. A few stones are located at the northeast side of the mound. An artifact scatter northeast of the mound includes 18 chert, quartzite, and obsidian lithic artifacts, and 13 ceramic artifacts of primarily Pecos Faint Striated and a few glaze-on-white body sherds. This structure was not tested as it is outside the TCP boundary.

Features

Feature 1 consists of a scatter of cobbles, a few fragments of fire-cracked rock, ground stone, and lithic and ceramic artifacts (Willmer 1993:9). The feature contains approximately 30 sandstone cobbles and a few fire-cracked rock fragments that could represent a deflated hearth; no charcoal or soil staining was present. Within the vicinity of the cobbles are 11 ceramic artifacts representing two separate vessels, a glaze ware black-on-red and a glaze ware polychrome. Two one-hand manos, one slab metate fragment, and ten lithic artifacts were also present. This feature was not tested as it is located 4 m north of the TCP boundary.

Feature 2 is a 3-by-1-by-0.20 m high rock pile composed of unshaped sandstone blocks (Fig. 19). It is located towards the center of the 1940s road alignment. Test Pit 1 and Test Pit 5 were excavated in this feature to determine if it is cultural or an artifact of road construction. Its location coupled with its random pattern of stones suggests that it was likely placed after the 1940s ranch road was no longer in use.

Test Pits

Test Pit 1 was placed on the east side of the feature. The excavation of the fill and sandstone blocks that comprise the small mound were found to be situated just above what appears to be the 1940s

roadbed. The sandstone blocks do not articulate with this surface and show no sign of being a coursed portion of a wall.

Test Pit 2 was placed in the center of the southwest quadrant of the TCP. It was placed in the proximity to an artifact scatter. Subsurface soil consisted of a sterile clay deposit. Two metal artifacts were recovered in the top few centimeters below ground surface. Bedrock was reached 14 cm below ground surface.

Test Pit 3 was excavated in the north-central portion of the TCP. Its location was selected to be within the trees, away from the road alignment and small drainage cuts. One piece of unutilized angular debris was located on the surface of this grid. Subsurface strata consisted of sterile clay; excavation was terminated 20 cm below ground surface.

Test Pit 4 was placed in the right-of-way on a small area of original ground surface. It was within proximity to the four stones clustered from the historic cobble mound. One metal artifact and a 1979 penny was recovered 10 cm below ground surface. Caliche was reached 30 cm below ground surface.

Test Pit 5, a 1-by-0.5 m grid, placed on the west side of Test Pit 1, exhibited more of what had already been determined. In this area, the surface located in Test Pit 1 did not extend into this grid due to erosion. Excavation was then terminated.

Artifacts

Concentration 1. This scatter of artifacts is the largest at the site measuring 45 m north-south by 115 m east-west. The entire TCP falls within the boundary of the scatter, with the exception of its northeast corner. The artifact scatter includes one Pecos Faint Striated jar body sherd. A total of 47 lithic artifacts were located and recorded during field analysis. Chert (75 percent) and quartzite (21 percent) comprise the majority of the lithic material with a remaining 4 percent obsidian. Lithic morphology types include tertiary (45 percent), angular debris (26 percent), secondary (21 percent), biface flakes (6 percent), and one biface fragment.

Concentration 2. Concentration 2 is located 40 m southeast of the southeast corner of the TCP. It measures 10 m north-south by 5 m east-west. Ceramic artifacts include two utility jar rims and two utility jar body sherds. The 13 lithic artifacts located and recorded during field analysis include the following material types: chert (46 percent), quartzite (23 percent), basalt (23 percent), and obsidian (8 percent). Morphological types represented include angular debris (31 percent), tertiary flakes (31 percent), cores (15 percent), biface fragments (15 percent), and one knife.

Concentration 3. This concentration of artifacts is situated 80 m southeast of the southeast corner of the TCP. It is 5 m north-south by 15 m east-west. Five utility ware body sherds were located and recorded during field analysis. The 15 lithic artifacts represented include mostly chert (80 percent) with a few basalt and quartzite flakes. The lithic morphology was dominated by tertiary flakes (60 percent), angular debris (20 percent), secondary flakes (7 percent) and cores (13 percent).

Concentration 4. Concentration 4 had the highest percentage of tools. It is located 98 m southeast of the southeast corner of the TCP. It measures 12 m north-south by 15 m east-west. One utility

jar body sherd and one quartzitic sandstone unifacial mano was present. A total of 23 lithic artifacts were recorded. Chert (82 percent) was the predominant material type and quartzite and basalt were each 2 percent of the assemblage. Morphological types represented were tertiary flakes (62 percent), angular debris (13 percent), cores (13 percent), a scraper (4 percent), a biface flake (4 percent), and one projectile point (4 percent).

Concentration 5. This scatter of artifacts was located along a portion of a two-track road in the southeast portion of the site. It is oriented northeast-southwest and measures 60 m long by 8 m wide. A total of 23 lithic artifacts were recorded during field analysis. Chert (92 percent) was the dominant material type with small amounts of quartzite (9 percent) and basalt (9 percent). Morphological types represented include tertiary flakes (39 percent), secondary flakes (35 percent), angular debris (22 percent), and one biface flake (4 percent).

Auger Tests

Six auger holes were dug at 5 m intervals within the current right-of-way. Fourteen additional auger holes were dug within the TCP boundaries along two alignments extending east-west at 10 m intervals. The auger tests varied in depth from 13 cm to 70 cm below ground surface. All auger holes reached sterile clay and then bedrock or caliche and contained no artifacts.

LA 99940

LA 99940 was defined as a cobble concentration with two possible features and an associated lithic and ceramic artifact scatter (Willmer 1993). Ceramic artifacts date from the early to the late Rio Grande Classic (A.D. 1315 to 1615) and the Historic periods (1760 to 1850). The site measured 18 m north-south by 16 m east-west for a total of 288 sq m. Old ruts are present along the eastern edge of the site that are likely associated with a paralleling utility line.

The site was reexamined to identify all artifact concentrations and features. The boundaries were expanded to include a wider scatter of artifacts measuring 50 m north-south by 25 m east-west, a total of 1,250 sq m (Fig. 20). Four grids were excavated, two within the current right-of-way and two within the proposed right-of-way. The two grids within the current right-of-way were placed on rock features that are located 5 m apart just outside the site limits. It was determined through testing that these were not cultural and are instead recent rock piles. The location of the two grids within the new right-of-way were in the only two areas where ground surface was not eroded. These grids recovered sterile red clay within 20 cm and excavation was terminated.

The cobble concentration in the center of the site is likely a fieldhouse due to its size and proximity to a drainage and marsh area. It measures 3.2 m north-south by 2.4 m east-west and 15 cm in height. There are no alignments visible within the cobble mound. The building elements consist of local waterworn cobbles. There is a small associated midden to the west of the structure. A Pecos Glaze polychrome (A.D. 1600-1700) and one organic-painted historic polychrome (A.D. 1650-1800) were found on the surface.

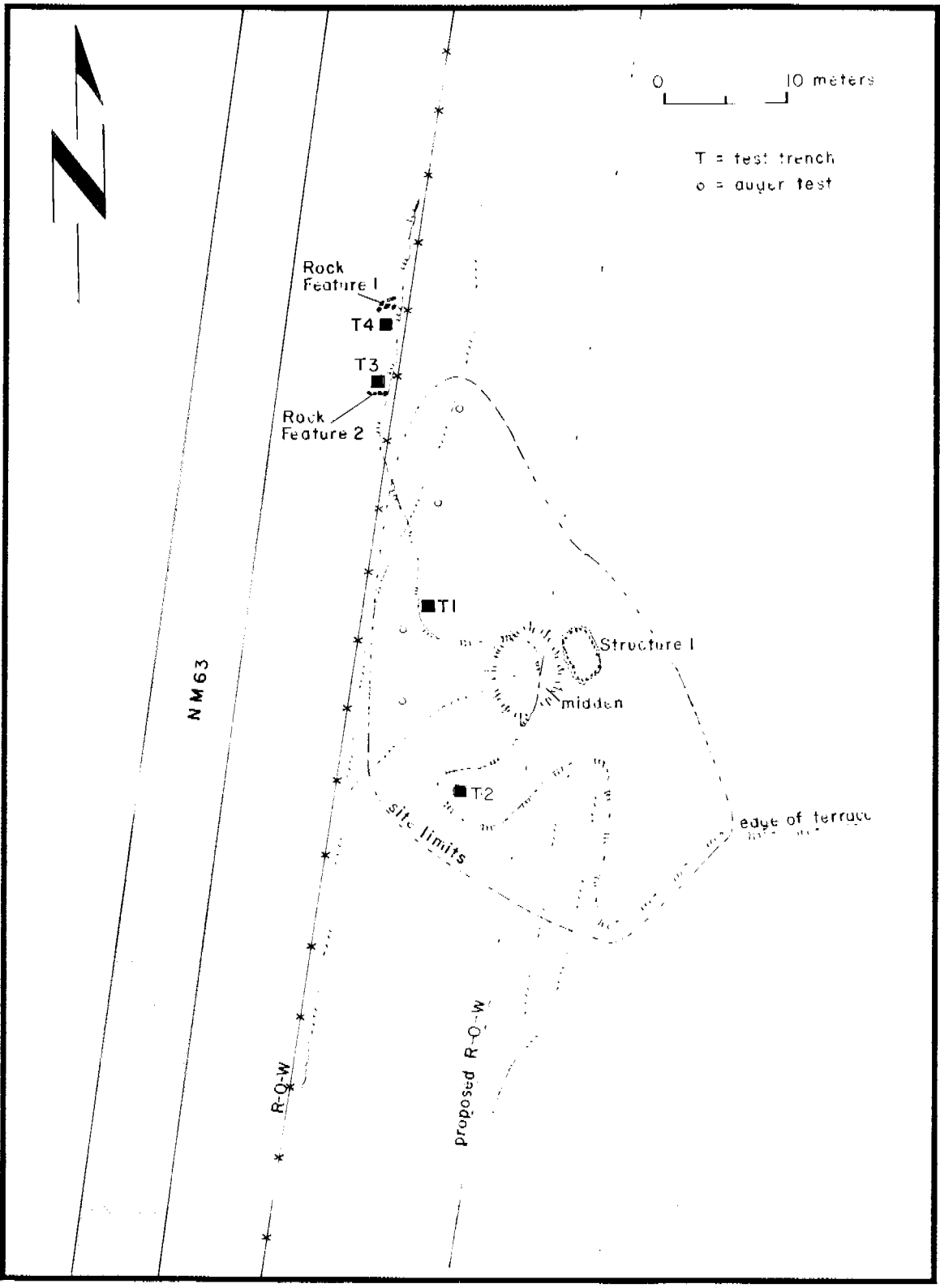


Figure 20. LA 99940, plan view map of the site.

Test Pits

Test Pit 1 was placed within the proposed right-of-way on one of the only level areas free from extensive erosion, typical of the surrounding area. One unutilized biface flake was found on the surface and another in Level 1. Subsurface strata consisted of a sterile sandy clay disturbed by root growth and rodent activity. Excavation was terminated 27 cm below ground surface.

Test Pit 2 was placed on the only other level ground within the proposed right-of-way. One undifferentiated uniface was recovered 10 cm below ground surface. Excavation was terminated 30 cm below ground surface. Sterile sandy clay comprised the stratum. Augering went to a depth of 1 m and caliche was encountered.

Test Pit 3 was on the edge of Rock Feature 2. It is located at the bottom of a near vertical cutbank along the road shoulder. One unutilized obsidian core flake and biface flake were recovered from Level 1. Two plain utility ware sherds were also found 10 to 15 cm below ground surface in Level 2. Their location within an otherwise sterile stratum suggested they were intrusive, largely due to the accelerated erosion created by the cutbank. It was determined that the pile of stones was the result of highway construction.

Test Pit 4 was placed on the edge of Rock Feature 1. Similar to the Test Pit 3 discussion, this feature was determined to also be a result of previous road construction.

Artifacts

Surface artifacts were located and a field analysis was conducted. There was a concentration of artifacts which comprised the midden located west of the structure. Within the site boundaries, there was a thin scatter of artifacts which consisted of 35 lithic artifacts. Both of these areas were recorded during field analysis.

Twenty-nine lithic artifacts were recorded in the midden. The most common material type was quartzite (34 percent) and chert (31 percent). Basalt (15 percent), chalcedony (10 percent), obsidian (7 percent), and silicified wood (3 percent) were also present. Lithic morphology consisted mostly of tertiary (48 percent) and secondary flakes (28 percent). Angular debris (14 percent) and two cores (7 percent) were represented. Eight ceramic artifacts within the midden included four utility sherds, one glaze-on-white sherd, four glaze-on-red sherds, and one red ware sherd.

The thin lithic artifact scatter within the site boundaries was dominated by quartzite (40 percent) and chalcedony (26 percent). Obsidian (11 percent), chert (11 percent), siltstone (6 percent), and basalt (6 percent) were also represented. The majority of the lithic morphology was tertiary flakes (43 percent) and angular debris (14 percent). Secondary flakes (14 percent) and one core (3 percent) were present.

Auger Tests

Four auger holes were dug within the new right-of-way at irregular intervals in areas where the ground surface had not eroded. No artifacts or staining were located during the auger tests. Rocks were reached at approximately 40 cm below ground surface and caliche was reached at 85 cm below ground surface.

CERAMIC ANALYSIS

Macy Mensel

LA 85495

A total of thirteen sherds were recovered during testing at LA 85495. The inventory is predominantly glaze wares, but an unpainted white ware, an unpainted red ware and a Galisteo Black-on-white sherd were also found. The Galisteo Black-on-white sherd represents an early Classic period (A.D. 1325-1540) pottery type and is dated from 1300-1425 (Lang 1977). The glaze ware types present at the site include Glaze B, D, and E, and were produced over a period from A.D. 1400 to 1650. The combined date range of all pottery types present at the site is A. D. 1300-1650. Table 2 lists the ceramic inventory by type and temper. A description of each pottery type is presented below.

Table 2. LA 85495 Ceramic Inventory by Type and Temper

FS	Type	Temper	Dates (A.D.)
17-2	White ware (unpainted)	sherd	
7-1	Galisteo Black-on-white	sherd	1300-1425 (Lang 1977)
6-1	Yellow ware	latite	
2-1	Glaze-on-yellow	hornblende-latite	
25-1	Glaze-on-yellow	sandstone	
28-1	Glaze-on-red	tuff	
8-1	Largo Glaze Polychrome	augite latite	1400-1450 (Warren 1976; 1979)
15-1	San Lazaro Glaze Polychrome	sand	1490-1515 (Warren 1979)
5-1	Pecos Glaze Polychrome	sandstone	1600-1700 (Warren 1979)
16-1	Pecos Glaze Polychrome	sandstone	1600-1700 (Warren 1979)
17-1	Pecos Glaze Polychrome	sandstone	1600-1700 (Warren 1979)
3-1	Puaray Glaze Polychrome (late variety)	sand	1600-1650 (Warren 1979)
19-1	Red ware, unpainted	vitric tuff	

Indeterminate White Ware

An indeterminate white ware was found on the surface at LA 85495. The ceramic is from a bowl and contains sherd temper in a light, blue-gray paste. Both the interior and exterior surfaces are slipped and polished. The white ware could not be more specifically identified because of the absence of a painted design.

Galisteo Black-on-white

One Galisteo Black-on-white sherd was found on the surface of the site. The sherd contains sherd temper in a light blue-gray paste. A thick, creamy white slip covers the interior and exterior surfaces of the sherd. Very little of the organic-painted design is visible, but it appears to have a thick framing line below the rim. The rim is rounded, although rim wear has slightly altered the rounded shape.

Galisteo Black-on-white is an organic-painted white ware characterized by a blue-gray paste with sherd or crushed rock temper, and a thick, glossy white slip that is often crackled or crazed. The bowl forms are generally slipped on the interior and exterior, and jars are slipped only on the exterior. Organic-painted designs appear on well-polished slipped surfaces. Stylistic design is usually oriented from a thick framing line with panelled bands of oblique and horizontal solids, triangles, and keys. The use of hatching is rare. Rim forms are generally squared and frequently ticked, but rounded rims also occur.

Galisteo Black-on-white was originally identified as "Crackle type" by Amsden (1931:25-26) because of the crazing or crackling that appears on the thick, white slip. The type was later named and described by Mera (1935) who noted stylistic similarities with the San Juan region type Mesa Verde Black-on-white.

Galisteo Black-on-white is generally the predominant painted ceramic type on early Classic period (A.D. 1325-1540) sites in the northern Rio Grande Valley. The production of Galisteo Black-on-white was centered in the Galisteo Basin and the first varieties of the type were present by the early 1300s (Sundt 1987; Lang and Schieck 1989:67). Lang (1977) summarizes the Galisteo Black-on-white tradition as having appeared in the late 1200s, was locally well-established by A.D. 1310-1315, and widely accepted as a trade ware by 1320. Peak production probably occurred around A.D. 1320-1360, and the type was produced with decreasing frequency until A.D. 1425. For the purposes of assigning a date range for Galisteo Black-on-white at LA 85495, the range 1300-1425 (Lang 1977) is assumed.

Indeterminate Glaze Ware

Four sherds from glaze ware vessels of indeterminate types were found at LA 85495. The first sherd, an unpainted, yellow-slipped bowl rim, contains latite temper in a light gray paste. The sherd is unusual because only the bowl exterior is slipped and well-polished. The interior of the sherd is unslipped and slightly polished. The rim is a typical Glaze A rim with an even thickness from the flat rim top down to the bowl wall.

Two glaze-painted sherds with yellow slips were found on the surface of the site. The first sherd has latite temper in a reddish paste with a dark gray core. The sherd is from a jar and has a thin, washy, cream-colored slip on the exterior. The slip is unevenly applied and the reddish paste is exposed in many areas. The glaze paint is thick and dark and shows no sign of running or spreading. The only visible design is a thick rectilinear line.

The second glaze-on-yellow sherd contains sandstone temper in a dark, reddish brown paste with a gray core. This bowl sherd is unusual because the interior surface has a thin cream-colored slip and the exterior surface has a partial, thick, white chalky slip. The exterior slip is similar to

a white, matte paint, but covers enough area of the sherd to confirm that it is a slip and not a white matte painted design. The rest of the exterior is unslipped. The glaze paint is thin, but controlled, and the design appears to be a pair of perpendicular lines. The sandstone temper and reddish brown paste suggest that this sherd was made locally.

The final glaze ware sherd has glaze paint on a red-slipped background and was found on the surface of the site. The sherd contains tuff temper in a gray paste. This glaze-on-red sherd was from a jar with an unfinished interior and a rough, pitted exterior. The vessel appears to have been oxidized, resulting in a dark red, unslipped exterior surface. The dark brown glaze paint is thick and dull and much of the design has chipped off the surface so that no design elements can be identified.

Largo Glaze Polychrome (Glaze B)

A Largo Glaze polychrome sherd was found on the surface at LA 85495. The bowl rim sherd contains augite-latite temper in a light gray paste. A dull, yellowish white slip covers the interior and exterior surfaces. The slip is not well polished. The rim, a classic Glaze B rim, is wide and flat at the top and thins as it extends down to the vessel wall.

The glaze paint is a thin, dark brown with very little running or spreading. The only visible portion of the interior design is a thick horizontal line below the rim. On the exterior, thick parallel lines with red matte fill are painted directly below the rim top. The red matte paint is a very dark reddish brown and has begun to flake off the surface.

Largo Glaze polychrome was originally segregated from Glaze A Yellow types because of the thickened rim top (Mera 1933), and was considered a "degenerate form" of Glaze A because of the poor quality of the slip and glaze paint (Kidder and Shepard 1936). The limited production and distribution of Glaze B, and the characteristic lack of quality, suggest that the type was a short-lived, transitional form between Glaze A Yellow and Glaze C (Kidder and Shepard 1936).

The type is characterized by dark glaze paint on light-slipped backgrounds ranging in color from pinkish white to light brown or tan. The polychrome style incorporates a matte red paint into designs on bowl exteriors. The quality of glaze paint varies from thick, lustrous browns to bubbly, uneven greenish-browns. Rim forms resemble Glaze A rims but are slightly thickened at the rim top.

Glaze B was produced almost exclusively in the Galisteo Basin area from A.D. 1400 to 1450 (Warren 1979). The pueblo of San Marcos was a prominent producer, and Glaze B vessels from there are identified by the presence of a distinctive augite-latite temper in orange-red burning clays (Warren 1976:B97). The sherd found at LA 85495 contains augite-latite temper, but in a light gray clay. Although it was probably not produced at San Marcos, it is reasonable to assume that it was from a vessel produced in the Galisteo Basin area.

San Lazaro Glaze Polychrome (Glaze D)

One sherd of San Lazaro Glaze polychrome was found on the surface of the site. The sherd contains sand temper in a light reddish paste with a light gray core. The sherd is from a jar rim,

with a dark red slip on the interior neck and exterior surface. The rim, which is everted at the top with an interior carina, resembles the Glaze IV (Glaze D) olla rims documented at Pecos (Kidder and Shepard 1936:167).

San Lazaro Glaze polychrome is characterized by a variety of dark slips in reds, red-browns, buff and tans, that often appear in the same color as the paste. The type is consistently polychrome, and the background slips are so dark that the glaze and red matte contrast is very subtle. Mera (1933) characterized the type on rim form alone, where the pronounced carina of Glaze C is shifted lower and becomes more of a curve than carina.

San Lazaro Glaze polychrome has the shortest production range of all glaze wares (ca. A.D. 1490-1515), but it appears in abundance at sites all over the Rio Grande Valley (Warren 1979). During the Glaze D period in the late 1400s, pottery production in the Galisteo Basin began to decline, and the center of pottery manufacture shifted to Tonque Pueblo (Warren 1979:190). Vessels produced at Tonque Pueblo were tempered with a distinctive hornblende latite in a buff or light-colored clay.

Local production continued at many villages including Zia, San Marcos, Kuaua and Pecos, but much of this pottery was never traded out of the village (Warren 1979:190). At Pecos Pueblo, Kidder and Shepard (1936:509) found that siltstone, a local material, was the primary temper type in Glaze IV (Glaze D). This temper appeared in dark gray or brown clays that fired red-brown if oxidized. The sherd at LA 85495 contained sand in a reddish brown paste and it is reasonable to assume that the vessel it represents was produced locally.

Pecos Glaze Polychrome

Three sherds of Pecos Glaze polychrome were found at LA 85495. All the sherds are from bowl rims and have sandstone temper in gray pastes. One sherd has a thick creamy white slip on both surfaces. The other two sherds are slipped pinkish white. All three sherds have a thick, dark brown glaze that shows no signs of running or spreading. Interior designs consist of parallel lines at the incurve where the rim meets the vessel wall. Exterior designs are not visible on two sherds, but on the third, a bold geometric design of rectilinear and ticked parallel lines covers the exterior. All three rims are characteristic of Pecos Glaze polychrome rim forms, slightly bulbous with a sharp angle where the rim meets the bowl wall.

Pecos Glaze polychrome is a variety of Glaze E that was produced exclusively at Pecos Pueblo. The type is identifiable by its sand or sandstone temper in brown or gray paste and shorter, thicker Glaze E rim. The type was thoroughly described by Kidder and Shepard (1936) who considered it as representative of the Glaze E style. Mera (1933) recognized it as a local variety with a limited distribution, and classified it as a subtype of Glaze E. Warren (1979) estimates that Pecos Glaze polychrome was produced from A.D. 1600 to 1700.

Pecos Glaze polychrome is characterized by light slips with smaller red matte design elements made bold by the increased line thickness of the runny glaze paint that outlines them. At Pecos Pueblo, slip colors varied from creamy white to yellow or gray, and appear thick in order to cover the dark paste below (Kidder and Shepard 1936). The local temper was consistently siltstone or stream sand in a brown or gray clay (Kidder and Shepard 1936). All the sherds at LA 85495 contained sandstone temper in a dark gray paste and are representative of the local

production of Pecos Glaze polychrome.

Puaray Glaze Polychrome (Glaze E)

Two rim sherds from a Puaray Glaze polychrome bowl were found on the surface at LA 85495. The sherds are from the same vessel and contain sand temper in a gray paste. A streaky cream-colored slip is visible on the interior and exterior surfaces. On the interior of the bowl, a series of parallel lines with red matte fill begins at the incurve where the bowl rim meets the vessel wall. On the exterior, a banded design with thick rectilinear lines and red matte fill begins directly below the rim. The bold geometric designs are painted in a dark brown, runny glaze that often spreads into the red matte paint obscuring the design. The rim is flat on the top with an abrupt thickening that tapers into the incurve where the rim meets the vessel wall.

Puaray Glaze polychrome is characterized by a range of slip colors, temper types and rim forms indicating less uniformity in glaze ware production than in previous periods. In general, the type is identified by an elongated rim with a thickened mid-section and light or red-slipped backgrounds.

At Pecos, Kidder and Shepard (1936) identified a late Glaze E, that he considered a "degenerate" variety of the type with dull, yellowish or dirty white slips that are thin and streaky and a very runny glaze that often spreads into the red matte elements it outlines. Warren (1979) also recognized early and late varieties and estimated a production range of A.D. 1515-1600 for the early variety and A.D. 1600-1650 for the late variety.

The Puaray sherd at LA 85495 has sand temper and gray clay that suggests it was made locally. The streaky cream-colored slip and a runny glaze paint are representative of the late variety of the type that was produced from A.D. 1600 to 1650.

Indeterminate Red Ware

One red ware sherd was found at LA 85495. For the purposes of this analysis, red ware is a classification used for ceramics with gray to pink or reddish pastes, and unpainted, unslipped surfaces. These sherds most likely represent the unfinished underbodies of historic matte-paint polychrome vessels (Tewa, Ogapoge, and Powhoge polychrome).

The red ware sherd at LA 85495 contains vitric tuff temper in a light pink paste with a gray carbon core. This type of paste and temper is characteristic of the historic Tewa ceramic tradition in the region. The sherd is polished on the exterior and smoothed on the interior and may be from either a bowl or a jar. The sherd also has a rounded edge, indicating some type of post-firing modification.

Although this sherd could not be identified as a specific ceramic type, the paste is characteristic of the historic Tewa ceramic tradition in the northern Rio Grande. It is reasonable to conclude that this sherd represents a vessel that was not produced before the late seventeenth century.

LA 85500

Only one sherd, identified as a Biscuit B or Bandelier Black-on-gray, was recovered from the surface at LA 85500. The sherd is from a bowl rim and has a light gray paste with crystal pumice temper. Light black organic-painted designs appear on a dull, white-slipped background on both the interior and exterior of the bowl. Because of the small size of the sherd and the condition of the surface, the painted designs are not identifiable. The rim form is similar to Honea's (1968:141) Biscuit B, Variety B form, that is characterized as a standing rim with expanding sides. Fat tick marks decorate the rim top.

The biscuit ware types were first identified and named from the excavations at the Agua Fria Schoolhouse site (Kidder 1915 and 1917). Kidder recognized that these sherds were distinctive in paste color and texture from the other organic-painted black-on-white wares found at the site, and he tentatively described them as "biscuit" in reference to their soft texture and light color. Later, from excavations at Pecos Pueblo, Kidder (1931) was able to develop a thorough description of the biscuit ware types, and he attempted to construct a picture of their geographic and chronological distribution.

Biscuit ware vessels are characterized by a soft, gray to yellow paste, and when tempered, with finely crushed pumice or tuff temper. Biscuit A, or Abiquiu Black-on-gray, is known only from bowl forms, and decoration is confined to the interior surface, with smoothed or unfinished exteriors. Biscuit B, or Bandelier Black-on-gray, is distinguished from Biscuit A by the occurrence of yellowish pastes (Kidder and Amsden 1931), with slipped and decoration on bowl exteriors as well as interiors.

The biscuit ware types appear slipped and unslipped. On slipped varieties, a thin dull to dirty white slip is applied and evenly polished, creating a smooth, but not glossy, surface. On Biscuit B the slip color is often the same shade as the paste color and occasionally shows signs of chipping.

Biscuit ware vessels are decorated with a thin, flat organic paint that appears dull, but does not run or spread along line edges. Stylistic design is generally in a banded pattern with panels of repeating hatched or solid geometrical elements, some with ticked edges, and parallel or rectilinear lines.

Kidder described Biscuit B bowl rims as plain or modified and noted a progressive straightening and heightening of modified forms on early to late varieties (Kidder and Amsden 1931:103). At Cochiti, Honea (1968:140) described two common Biscuit B rims. Variety A was referred to as a standing form with parallel rim sides and Variety B was a standing form with expanding rim sides. Honea also concluded that there was a progression in the straightening and heightening of early to late Biscuit B rim forms.

The bowl rim sherd at LA 85500 is the same as Honea's Variety B, a standing rim with expanding sides. In Honea's seriation, this Biscuit B sherd would be identified as a late variety of the type.

In 1934, Mera published his comprehensive study on the distribution of the biscuit ware types in the northern Rio Grande Valley. From his surface collections at 58 pueblos, Mera

concluded that the center of biscuit ware distribution was the confluence of the Rio Grande and Rio Chama because of an abundance of biscuit ware sites along the creeks and drainages in the area. Based on the stratigraphic evidence at Pecos, Kidder (Kidder and Amsden 1931) determined that Biscuit ware types arrived fully developed at the pueblo and he concluded that both Biscuit A and B represented trade wares. The Biscuit B sherd at LA 85500 was not produced locally and represents a trade ware in the Pecos area.

In most cases, the date ranges for the biscuit ware types are cited from tree-ring data compiled by Breternitz (1966) for the northern Rio Grande Valley because of a lack of any other dating source. In the case of Biscuit B, Breternitz (1966:70) concludes that the type is well dated between 1400 and 1500 and based on data in Smiley, Stubbs, and Bannister (1953:58), he extends the terminal date to 1550. For the purposes of dating Biscuit B at LA 85500, the date of A.D. 1400-1550 (Breternitz 1966) is assumed.

LA 85502

At LA 85502, only two sherds were found. Both sherds were recovered from Level 2 of Test Pit 1. One is a plain utility sherd and the other is an unpainted white ware sherd. Although neither sherd is temporally diagnostic, the sherds are probably associated with the prehistoric occupation of the area. A description of the ceramics is presented below.

Plain Utility Ware

The sherd of plain utility ware found at LA 85502 contains sand temper in a dark gray paste. The sherd is from a cooking or storage jar and is thin walled and unpolished.

Sand, sometimes in combination with mica, was the most common tempering material in the culinary wares at Forked Lightning and Pecos (Kidder and Shepard 1936:560-565). It is reasonable to conclude that the sherd at LA 85502 represents a type of locally produced plain utility ware.

Plain utility vessels have been produced sporadically from ca. A.D. 600 through the 1700s. Because production of plain utility vessels has occurred over an extended period, this pottery type has limited use as a temporally diagnostic marker. The earliest plain utility type, Lino Gray, first appeared on sites in the northern Rio Grande Valley sometime around A.D. 600 (Breternitz 1966; Sundt 1987). The practice of neckbanding, where multiple coils were left unsmeared at the jar neck, was introduced with the type Kana'a Gray in the late 700s (Breternitz 1966; Sundt 1987). Sherds from the lower bodies of neckbanded vessels are identified as plain utility ware sherds if the area of banding is absent.

Neckbanding later evolved into the practice of all-over corrugation, a utility type found on sites beginning in the 1100s (Mera 1935). Although plain utility wares continued to be produced during this time, corrugated, indented-corrugated and smeared-indented corrugated types dominated utility ware assemblages on sites from the early 1200s through the 1400s (Mera 1935). Corrugated types were replaced by striated utility types sometime during the sixteenth century with the introduction of Glaze V (Kidder and Shepard 1936:36).

Plain utility types began to increase in frequency again during the production of matte-painted polychrome ceramics, a tradition that begins ca. A.D. 1650. Plain utility types produced during the historic period can usually be distinguished from prehistoric types because they are thicker walled and vessel surfaces are generally polished, striated, or smudged.

The plain utility sherd found at LA 85502 is thin walled and unpolished and was found in association with an unpainted white ware. At best, we can assume that the sherd is from a vessel produced during the prehistoric occupation of the area.

White Ware

The unpainted white ware sherd found at LA 85502 is extremely small (< 5 cm), and contains sherd temper in a light blue-gray paste. Polishing on the interior surface indicates that the sherd is from a bowl. No slip was evident on the interior, and the exterior surface is unfinished. The absence of a painted design on this sherd makes it impossible to identify a specific ceramic type, but the temper and paste suggest it is some type of prehistoric white ware.

LA 85503

Five sherds were recovered during the testing at LA 85503. One glaze ware sherd was found on the surface of the site, and four utility ware sherds were found in the excavation of Test Pit 5. Two types of utility wares, plain and smeared-indentated corrugated were identified. The smeared-indentated corrugated pottery present at the site represents a Coalition or early Classic period occupation with an estimated range of ca. A.D. 1175-1425. The glaze ware sherd may represent a varietal form of Pecos Glaze polychrome, a type dated from A.D. 1600-1700 (Warren 1979). A description of the ceramics is presented below.

Plain Utility Ware

One sherd of plain utility ware was found in Level 1 of Test Pit 5. The sherd contains sand temper in a gray paste. The sherd is likely from a jar, as the interior surface was unfinished. Sand and sandstone are found locally in the Pecos area, and are frequently used as temper in the production of ceramics in that area (Kidder and Shepard 1936). It is reasonable to conclude that this sherd represents a type of locally produced plain utility ware.

As mentioned previously in the ceramic descriptions for LA 85502, the production of plain utility wares occurred over a long period in the Northern Rio Grande area, which limits their use as temporal markers. In general, plain utility wares produced during the prehistoric period can be distinguished from plain utility wares produced during the historic period by the thickness of the vessel wall and the types of surface treatment. Prehistoric types are thin walled with unpolished surfaces. Historic types are generally thicker walled and are sometimes polished, smudged, or striated. The sherd found at LA 85503 was thin walled and unpolished and was probably produced during the prehistoric period.

Smeared-Indented Corrugated Utility Ware

Three sherds of smeared-indent-ed corrugated, from two separate vessels, were found in Levels 1 and 2 of Test Pit 5. Two of the smeared-indent-ed corrugated sherds found in Level 1 of Test Pit 5 were from the same vessel and contain sand and igneous rock temper in a dark gray paste. The sand grains in the temper are very large and protrude slightly from the vessel wall. The sherds are from a jar with an unfinished surface on the interior of the vessel, and a smoothed, but not polished, exterior surface. Sand is a common temper material used in the Pecos area, however, the source of the igneous rock is unknown. These sherds may or may not represent a locally produced utility vessel.

The other sherd, found in Level 2, contains sandstone temper in a dark gray paste. This sherd is also from a jar with an unfinished interior surface and a smoothed exterior surface. Sand, sometimes in combination with mica, was the most common temper material in the culinary wares at Forked Lightning and Pecos, although crushed rock, sherd, and tuff also occurred (Kidder and Shepard 1936:560-565). The presence of sand or sandstone in a gray clay indicates that this sherd was made locally.

Smeared-indent-ed Corrugated was referred to as Indented-blind Corrugated by Kidder (Kidder and Shepard 1936), and a variety with mica was named Tesuque Smeared-indent-ed Corrugated by Mera (1935). Indented-blind Corrugated is a smeared version of Indented Corrugated, where the junctures between coils are completely obliterated, leaving shallow indentations visible on the vessel surface.

Indented-blind Corrugated became the dominant utility ware type toward the middle of the occupation at Forked Lightning and remained dominant through the black-on-white period at Pecos (Kidder and Shepard 1936:560). Based on its association with Santa Fe Black-on-white, a pottery type dating A.D. 1175-1300 (Sundt 1987) and Galisteo Black-on-white, a type dating A.D. 1300-1425 (Lang 1977), we can estimate a combined range of A.D. 1175-1425 for the type Smeared-indent-ed Corrugated.

Glaze Ware

One polychrome glaze ware was found on the surface at LA 85503. The sherd contains sand temper in a dark gray paste and has an unusual rim form and dual slip colors on opposing surfaces. The interior surface is red-slipped, polished, and unpainted, and the exterior surface is cream-slipped, polished, and glaze-painted. The designs are not identifiable because of the size of the sherd and the runny quality of the glaze paint. San Clemente Glaze polychrome, produced from ca. A.D. 1325-1425 (Warren 1979), is the only glaze ware type characterized by red and white slipped surfaces. However, the runny quality of the glaze paint and the unusual rim form of the sherd at LA 85503 do not correspond to the type description for San Clemente. The rim form on this sherd is rounded at the rim top with an enlarged mid-section that is tapered at the rim base. The angle of the bowl wall to the base of the rim is sharp. The closest association to any known glaze rim would be a variation between a Pecos Glaze polychrome and a Puaray Glaze polychrome bowl rim. Because of the temper, paste, and rim form, it would be reasonable to conclude that the sherd represents a varietal form of Pecos Glaze polychrome, a pottery type produced exclusively at Pecos Pueblo from A.D. 1600 to 1700 (Warren 1979).

LA 99940

Four ceramic artifacts were recovered during testing at LA 99940. Two sherds, a Pecos Glaze polychrome sherd and a historic organic-painted polychrome sherd were located on the surface. The other two ceramics were from the same plain utility vessel and were found during the excavation of Test Pit 3. The Pecos Glaze polychrome sherd is the only temporally diagnostic ceramic and it represents a production range from A.D. 1600 to 1700 (Warren 1979).

Plain Utility Ware

The two plain utility ware sherds found in Level 2 of Test Pit 3 were from the same vessel and contain sandstone temper in a dark gray clay. The interior surface was slightly polished, suggesting that the sherds may be from either a bowl or a jar. Sand and sandstone are found locally in the Pecos area, and were frequently used as temper in the production of prehistoric culinary ware in that area (Kidder and Shepard 1936). It is reasonable to conclude that these sherds represent a locally produced plain utility ware vessel.

As mentioned, the production of plain utility wares occurs over a long period in the Northern Rio Grande area which limits their use as temporal markers. The sherd found at LA 99940 was thin walled and unpolished and was probably produced during the prehistoric period.

Pecos Glaze Polychrome

The Pecos Glaze polychrome sherd found at LA 99940 has a dark gray paste with sandstone temper. Both the interior and exterior surfaces are slipped light gray with linear glaze designs. The thick slip is unevenly applied and polished. The dark brown glaze paint is thick and does not run or spread. The bowl rim is characteristic of a Pecos Glaze polychrome rim, slightly bulbous with a sharp angle where the rim meets the vessel wall.

Pecos Glaze polychrome is a variety of Glaze E that was produced exclusively at Pecos Pueblo. The type is identifiable by its sand or sandstone temper in brown or gray paste and shorter, thicker Glaze E rim. The type was thoroughly described by Kidder (Kidder and Shepard 1936) who considered it representative of the Glaze E style. Mera (1933) recognized it as a local variety with a limited distribution, and classified it as a subtype of Glaze E. Warren (1979) estimates that the type was produced from A.D. 1600 to 1700.

Pecos Glaze polychrome is characterized by light slips with smaller red matte design elements made bold by the increased line thickness of the runny glaze paint that outlines them. At Pecos Pueblo, slip colors varied from creamy white to yellow or gray, and are thick in order to cover the dark paste below (Kidder and Shepard 1936). The temper was described as either siltstone or stream sand in a brown or gray clay (Kidder and Shepard 1936). The sherd at LA 99940 contains sandstone temper in a dark gray paste. The ceramic type and temper are good indicators that the sherd was from a locally produced vessel.

Organic-on-Red (Historic)

The final sherd, from a jar, has a partial red slip and black organic paint on the exterior. The edge of the red slip is bordered by an organic-painted line and the remaining surface is unslipped but polished. The red slip has flaked off most of the surface and the painted line has been obscured by surface wear. The jar interior is smoothed but not polished.

The paste is reddish brown with a dark gray core and sandstone temper, which suggests that it was produced in the Pecos area.

The partial red slip and organic paint indicate that this sherd is from a historic matte-painted polychrome jar. Matte-painted polychrome is a general designation for the historic ceramic types produced from the 1650s through the late 1800s in the Rio Grande Valley. The organic paint indicates a Tewa influence, because other matte-paint polychrome types produced in the Santo Domingo Basin and west of Albuquerque are generally mineral painted.

Matte-painted polychrome is a general designation for the historic ceramic types produced from the 1650s through the late 1800s in the Rio Grande Valley. The types Tewa, Ogapoge, Pojoaque, and Powhoge polychrome are in this designation and were produced by the northern Tewa pueblos beginning ca. 1650.

LITHIC ANALYSIS

Joan K. Gaunt and Lewis Kimmelman

LA 85495

Twenty-five lithic artifacts were recovered during testing excavations at LA 85495. Other lithic artifacts located outside the right-of-way were recorded as part of the cursory field analysis. (See LA 85495 site description for a list of these lithic artifacts.) The largest morphological sample from the excavated portion of the site was unutilized core flakes, six of chert and four of obsidian. Also located during testing were two pieces of chert angular debris, one utilized and one unutilized, one utilized chalcedony core flake, and one unutilized chalcedony biface flake. Eleven bifaces and projectile points were also collected as part of an agreement between PNHP and OAS to collect all diagnostic artifacts outside of the right-of-way. Table 3 lists these lithic artifacts.

Table 3. Lithic Artifacts Surface Collected from LA 85495

FS#	Morphology	Material	Number	Function
22	biface, early stage	chert	1	projectile point, unidentified
21 & 27	biface, mid-stage	chert	2	biface, undifferentiated
9	biface, mid-stage	obsidian	1	biface undifferentiated
10	biface, mid-stage	silicified wood	1	large corner notched. En Medio-BM II
26	biface, mid-stage	obsidian	1	small corner notched, resembles En Medio projectile point
23 & 24	biface, late stage	obsidian	2	projectile point, unidentified
20	biface, late stage	nonvesicular basalt	1	stemmed projectile point, Bajada base, early Archaic
18	biface, late stage	chert	1	Pueblo side-notched projectile point
4	biface, late stage	chert	1	large side-notched projectile point, bifurcated base, probably late Archaic

LA 85502

Five lithic artifacts were recovered during excavations from two of the test pits at LA 85502. Three unutilized core flakes (obsidian, chalcedony, and metamorphic) comprised the majority of the sample. One obsidian undifferentiated biface and a chert multidirectional core were also recovered.

LA 85503

A total of six lithic artifacts were located during the excavation of three of the five test pits. These consisted of two pieces of unutilized angular chert debris, one utilized chert core flake, two unutilized core obsidian flakes, and one quartzitic sandstone unutilized core flake. Three projectile points located during recording were collected by PNHP's request. These consisted of a small triangular unnotched point with a concave base, probably from the protohistoric or historic period, another similar point with a shallow side notch, and a small triangular corner-notched Pueblo point that ranges in date between A.D. 400 and 1700.

LA 99939

Four lithics were recovered during testing activities at this site. Only one lithic artifact was recovered during excavation, a piece of unutilized chert angular debris from Level 1 in Test Pit 3. Three projectile points were surface collected from the site as requested by PNHP. These included one chert En Medio point, one chert Archaic point, and a chert possible Archaic point.

LA 99940

Five lithic artifacts were recovered from three test pits during excavation. These were identified as two obsidian unutilized biface flakes, one obsidian unutilized core flake, one chert unutilized biface flake, and one chert uniface.

HISTORIC ARTIFACT ANALYSIS

Natasha Williamson

Analysis of historic artifacts from six sites along NM 63 between Rowe and Pecos was conducted. A total of 47 artifacts were analyzed from LA 38648, LA 85495, LA 85502, LA 85503, and LA 99939.

At LA 38648, one historic artifact was located. It is a piece of sheet metal, approximately 20.5 inches long, and unfinished on both ends. Its thickness ranges from .030 to .035 inches. It has flanged ends, so if it was hooked together, it would make a cylinder about 6.25 inches in diameter. Its function is not known, although it is possible that it may have been a portion of a stovepipe as there is one perforated section possibly caused from a burnout. It could also have been flattened down and utilized for another function.

LA 85495 had one metal artifact, a fence staple. This was found close to the National Park Service fence, likely associated with its construction or repair.

At LA 85502, one glass and five metal artifacts were recovered. Five fence staples measuring 1.21 inches, 1.27 inches, 1.45 inches, and two at 1.68 inches. One piece of sheet metal, .05 inch thick and approximately 1.6 inches long on each side. It is irregular in shape and appears to have been cut. A conchoidal flake of clear glass was too small to be diagnostic.

At LA 85503, the only artifact is a centerfire brass cartridge. It was identified as a U.S. musket (Berdan) .58 caliber. A head stamp was not present, common for this cartridge. The rim diameter is .646 and the length of the case is .001 longer than the specification (Barnes 1985:138). The U.S. musket .58 was a black powder cartridge, introduced around 1869 for use in the Berdan breechloading conversion of the Springfield rifled musket (Barnes 1985:133). This cartridge was used for the rifle rather than the carbine, which has a shorter case. The cartridge, in spite of its name, was never formally adopted by any U.S. armed service. The centerfire cartridge is a somewhat later development from the rimfire type, but no date is given. A rough date of 1867 (based on the internal primer) to 1895 might be applied. Blackpowder did not lose ground in the United States until about 1910 and numerous cartridges were still commercially available as late as 1937 (Barnes 1985:89).

At LA 99939, a total of 38 artifacts was analyzed. Thirty-three of the artifacts are clear glass, 25 pieces were from a piece of plate glass measuring between .235 and .245 in thickness. Although the American plate glass industry began around 1878 (Roenke 1978), no date can be assigned to this artifact. Bubbles and inclusions characteristic of pre-1930 glass can not be discerned, due to the numerous scars along the edges. Five artifacts were fence staples measuring 1.75 inches, 1.75 inches, 1.5 inches, 1.5 inches, and 1.4 inches. The greater standardization of size may reflect a later date for this group. Although fence staples are often associated with the use of barbed wire, introduced in the mid-1870s, no date is assigned for fence staples. Pliers are shown in Barlow's (1989) antique tool catalogue with dates ranging from 1880 to 1910, yet no specific fence pliers are shown.

RECOMMENDATIONS

The limited archaeological testing program determined that the portions of LA 85495 (previously defined as LA 85495, LA 85496, LA 85507, and LA 85508), LA 85500, LA 85502, LA 85503, LA 99939, and LA 99940 within the proposed project limits are not likely to yield information on the local prehistory or history beyond that which has already been documented. It is our opinion that no further investigations are necessary at these sites.

The Santa Fe Trail ruts (LA 38648) were located within both trench profiles. On the west side of NM 63, the electromagnetic testing showed the conductivity signature of the trail ruts extending from the hillslope to the west down to the utility pole. From this point over to the fence line, the signature readings became obscured due to overhead wires and the fence line. Trench A placed within this area exhibits trail ruts within the stratigraphy. One metal artifact of unknown age was recovered from the north side of the trail ruts, 15 cm below the ground surface. Trench B, on the east side NM 63, exhibited the same stratum identified in Trench A as the Santa Fe Trail ruts.

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APPENDIX 1. ELECTROMAGNETIC SURVEY

Electromagnetic Survey of The Santa Fe Trail
Near Kozlowski's Stage Station
Pecos, New Mexico

Prepared for:

Museum of New Mexico
Office of Archaeological Studies
Santa Fe, NM

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July 1994

Summary

An electromagnetic soil conductivity investigation of the Santa Fe Trail has been conducted at three sites in the vicinity of Kozlowski's Stage Station near Pecos, New Mexico. The survey started in an area where the Santa Fe Trail is visible, and was successful in mapping the trail into an area with no visible trail features. The survey failed to detect any remnant trail features in a second area.

Introduction

The position of remnants of the Santa Fe Trail is in question in the vicinity of Kozlowski's Stage Station near Pecos, New Mexico. An electromagnetic survey was conducted in an attempt to map the trail in two areas without recognizable trail features. This report details the survey activities and presents the results.

Background

Santa Fe Trail ruts are clearly visible to the southwest of Kozlowski's Stage Station, generally running north-south. These ruts become obscure on the southern bank of Glorieta Creek, approximately 150 meters immediately west of the stage station. It has been presumed that the trail turned east to the stage station, but erosion and relatively recent activities have obscured any obvious trail features between the visible ruts and the stage station. A portion of this area is in the right-of-way for planned road work on New Mexico Highway 63. Another area to the north of the stage station and immediately east of Highway 63 is also in the right-of-way for future construction and has potential for containing remnants of the Santa Fe Trail.

An electromagnetic soil conductivity survey was performed covering both a portion of the visible ruts and the two areas with no obvious trail features in the right-of-way for future construction. The survey over the visible ruts was conducted to capture the characteristic soil conductivity features of the trail, which were then compared to the soil conductivity features in the areas of interest.

Soil conductivity is highly influenced by both soil moisture and the ionic content of the soil moisture. Several years of Santa Fe Trail traffic could be expected to have disrupted the natural drainage of the soil, and have introduced significant organic waste matter into the soil. Both these influences of past trail activities were expected to increase the soil conductivity, allowing identification of the trail where not obvious at the surface.

Methodology

Electromagnetic data were acquired with a Geonics EM-31 ground conductivity meter. This instrument utilizes two coils to measure soil conductivity. A transmitting coil generates a magnetic dipole that penetrates the subsurface and induces small eddy currents in the soil. A second, receiver coil measures the magnetic field generated by these eddy currents. The magnitude of the magnetic field generated by the eddy currents can be related to the conductivity of the soil.

The EM-31 was operated in both the vertical and horizontal dipole mode. The vertical dipole mode provided a measurement of the soil conductivity to a depth of approximately 5.5 meters. The

horizontal dipole mode provided a much shallower measurement, with the bulk of the response from the first meter of soil. Each site received a shallow (horizontal dipole) and a deep (vertical dipole) survey.

Spatial control for data acquisition at the three survey sites was maintained by establishing a parallel baseline and endline bracketing each site. A tape with flags every 2 meters was stretched between the baseline and endline, generating a uniform measurement grid.

The EM-31 data were recorded with a data logger and transferred to a personal computer for processing. The DAT31 program (Geonics Ltd.) was used for data reduction. The Geosoft Mapping and Processing package (Geosoft Inc.) was used for preparation of the final data presentations.

Results

The deep (vertical dipole) conductivity data from the area of visible trail ruts and the area west of the stage station are presented together in Figure 1. The ruts are coincident with bands of high conductivity (in red) which are observed bending to the east toward the area of planned construction. Very similar conductivity patterns are observed in the second survey area. It is interpreted that the trail continues as indicated in Figure 1.

The shallow (horizontal dipole) conductivity data for the same two surveys are presented in Figure 2. There are conductivity features in the area of visible ruts, but they are not as distinct and linear as in the deeper data. Shallow conductivity features in the eastern survey are similar to the deeper conductivity data. The continuation of the trail from the area of observed ruts to the east is not as clear in the shallow data, as indicated in Figure 2. It is likely that erosion and relatively modern activities have altered the shallow trail effects.

The deep and shallow conductivity data from the survey site north of the stage station are presented in Figures 3 and 4, respectively. No conductivity patterns similar to those found in the area of visible ruts are observed. It can be concluded that there are no trail features in this area similar to the test site.

A magnetic investigation was conducted over the area of visible ruts in order to gain a qualitative appreciation of the distribution of relic iron objects in the study area. The original survey traverses were walked while sweeping with a Schonstedt 52B magnetic locator. The magnetic locator is able to detect iron or steel objects buried to approximately a half meter. A count of magnetic "hits" was made during the sweep. Significant magnetic occurrences were observed with an areal density of approximately 2 per 100 square meters. A few rusted tin cans and numerous magnetic rocks were found on the surface. It is likely that most of the subsurface magnetic "hits" were due to magnetic rocks.