MUSEUM OF NEW MEXICO
OFFICE OF ARCHAEOLOGICAL STUDIES

ARCHAEOLOGICAL TESTING AT LA 67550 IN THE DRY CIMARRON VALLEY, UNION COUNTY, NEW MEXICO

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with contributions by
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ADMINISTRATIVE SUMMARY

Between August 28 and September 6, 1989, the Office of Archaeological Studies (formerly the Research Section of the Laboratory of Anthropology), Museum of New Mexico conducted archaeological testing at LA 67550, which is located on State Trust Land in Union County, New Mexico. Testing at LA 67550 was conducted at the request of the New Mexico State Highway and Transportation Department to determine the extent and importance of cultural present within the right-of-way slated for proposed improvements to State Road 456.

Two proveniences were defined at the site. One represented a probable early Plains-Woodland camp, and the other was a specialized lithic quarry. No subsurface features or cultural deposits were found in the part of the site tested, and no further investigations are recommended.

MNM Project No. 41.469
NMSHTD Project No. SP-US-1443(202)
State of New Mexico Archaeological Excavation Permit No. AE-37
Submitted in fulfillment of Joint Powers Agreement DO3553 between the NMSHTD and the Office of Archaeological Studies, Museum of New Mexico

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INTRODUCTION

At the request of the New Mexico State Highway and Transportation Department (NMSHTD), an archaeological testing project was conducted at LA 67550 in Union County, New Mexico by archaeologists of the Office of Archaeological Studies (formerly the Research Section of the Laboratory of Anthropology), Museum of New Mexico. LA 67550 is located on State of New Mexico Trust Land (Fig. 1; the exact location is included in Appendix 1). Testing was completed under State of New Mexico Archaeological Excavation Permit No. AE-37. Field work was completed between August 28 and September 6, 1989. James L. Moore served as project director, and was assisted in the field by Anthony E. Martinez. David A. Phillips, Jr. acted as principal investigator. Figures were drafted by Ann Noble, and the report was edited by Robin Gould.

Testing was conducted at LA 67550 to determine the extent and importance of cultural remains present. Testing was restricted to the part of the site lying within the right-of-way for proposed improvements to State Road 456; about 60 percent of the site was present within this zone.

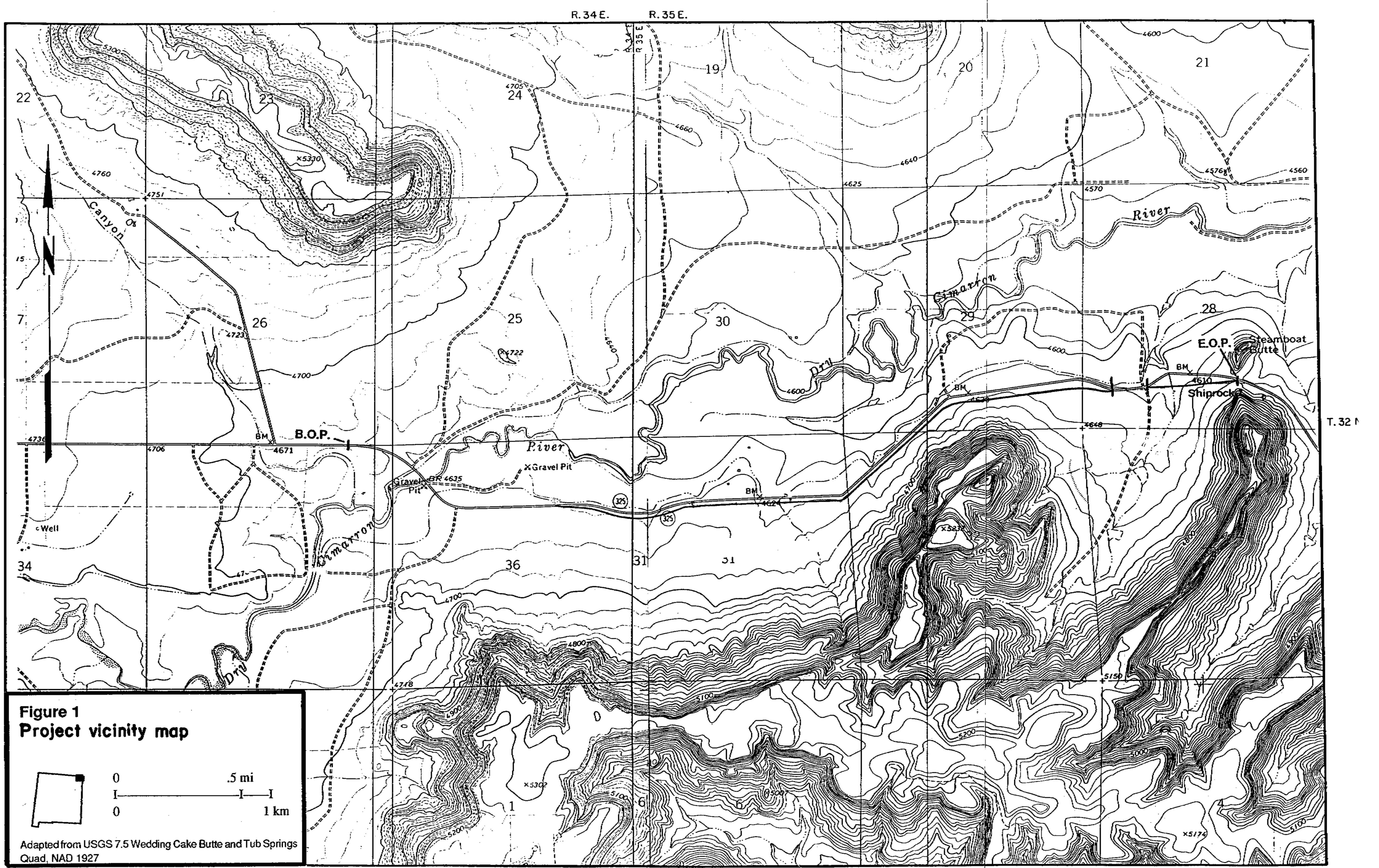

Figure 1
Project vicinity map

Adapted from USGS 7.5 Wedding Cake Butte and Tub Springs Quad, NAD 1927

ENVIRONMENT

by Rhonda Main and James L. Moore

The project area is in the Great Plains physiographic province (Baldwin and Muelberger 1959:5). State Road 456 runs through the broad Dry Cimarron River Valley, which is bordered on the north and south by rolling hills and mesas (Warren 1979). Remains of volcanic activity in the form of fumaroles dot the valley, and extensive basalt flows cap the mesa tops. The high, basalt-capped mesas were created by igneous flows that occurred when the High Plains surface formed. Huge flows between Clayton and Raton represent younger basalts, characterized by the extensive malpais at the border of Union and Colfax counties and by cinder cones and flows near Capulin Peak (Pratt 1986:7).

Exposed geologic formations range from Triassic to Upper Cretaceous in age. Locally, the oldest exposed rocks are of Triassic age, and include the Baldy Hill and Travesser formations (Warren 1979). Jurassic formations include the Exeter sandstone and the Morrison and Purgatoire formations. The Morrison Formation contains an agate bed and a brown siltstone at its base composed of clays, silicified sandstones, gypsum, and limestone. The Purgatoire Formation contains a bed of quartzite and occurs beneath the Dakota Formation, which caps the uplands with a cliff-forming sandstone (Baldwin and Muelberger 1959). The Ogallala formation, a late Cenozoic deposit that occurs on mesa tops, is often concealed by caliche or lava flows. Cenozoic gravel lenses contain Precambrian rocks, local sedimentary rocks, and volcanic rocks (Warren 1979).

Various rocks from these formations were suitable for lithic reduction. Warren (1979:20-23) presents a discussion of the most common materials in the area, which is summarized here. The Baldy Hill and Travesser formations are sources of cherts and silicified woods, with quartzitic sandstone also occurring in the Baldy Hill Formation. Cherts are available in Morrison Formation mudstones and the agate bed, formed by diagenic changes in a volcanic ash and is diagnostic of this formation (Warren 1979:25). Other materials from the Morrison Formation include a highly indurated limestone with a conchoidal fracture and miscellaneous cherts. A variety of quartzitic sandstone comes from either the Morrison or Purgatoire formations. Cherts, quartzites, and basalts are available in Cenozoic gravel deposits along the Dry Cimarron River. Quartzite is also found in high lag gravels of the Santa Fe Formation.

Three soil associations occur along State Road 456 between the Cross L Ranch headquarters and the Oklahoma state border. The predominant soils are of the Manzano-Alicia Association (Maker et al. 1973:20). These soils are found on the nearly level to gently sloping floodplains of the Dry Cimarron River and adjacent tributary drainages, and on alluvial fans and valley slopes extending from the bases of escarpments. The soils are typically deep and well-drained; elevations range from 1,341 m (4,400 ft) to 1,646 m (5,400 ft). Manzano-Alicia soils support a good grass cover and are principally used for livestock grazing. Soils of the Gruver-LaBrier Association are found in only two small areas at the east end of State Road 456 near the Oklahoma state border (Maker et al. 1973:15). They occur on nearly level to very gently sloping plains and in broad basins that are slightly lower than the surrounding terrain. Soils of this association formed in both alluvial and eolian materials, support a relatively dense grass cover, and make good range land. The study area is surrounded by soils of the Travessilla-Carnero-Rock Land Association (Maker et al. 1973:8-9), which occur on the rolling uplands adjacent to the Cimarron River Valley. They form in sandstone residue and make a fair rangeland, but are not as productive as the other soil associations.

This part of New Mexico is semiarid. Variation in annual precipitation over a period of years is typical of this type of environment (Pratt 1986). Between 1951 and 1980, annual rainfall in Clayton varied from 230 mm (8.9 in) to 650 mm (25.7 in). The average recorded over a 33-year period was 390 mm (15.4 in). Most precipitation occurs in May, June, July, and August. The highest average is in May, which is unusual for New Mexico. Mean temperature is 12 degrees C (53.7 degrees F); January and July represent the extremes (Gabin and Lesperance 1977).

Local vegetation is of the piñon-juniper woodland community (Castetter 1956), which occurs on mesa tops, mesa slopes, and in parts of the valley bottom. Plant cover ranges from 20 to 50 percent over most of the region to 50 to 100 percent in some areas. Plants noted near the site include juniper (*Juniperus* sp.), cholla (*Cylindropuntia* sp.), Russian thistle (*Salsola kali*), sunflower (*Helianthus* sp.), thistle (*Cirsium* sp.), snakeweed (*Gutierrezia* sp.), Navajo tea (*Thelesperma* sp.), narrowleaf yucca (*Yucca glauca*), mountain mahogany (*Cercocarpus* sp.), piñon pine (*Pinus edulis*), and scrub oak (*Quercus* sp.). Local grasses include grama (*Bouteloua* spp.), three-awn (*Aristida* sp.), wheatgrass (*Agropyron* sp.), and buffalograss (*Buchloe dactyloides*).

Fauna observed in the valley included mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), and various other mammals, birds, and reptiles.

CULTURAL RESOURCES OVERVIEW

This overview is adapted from Moore et al. (1988:6-12). It has become traditional to begin prehistoric overviews of northeastern New Mexico with a statement on the woeful lack of pertinent archaeological data. However, while there are still serious gaps in our knowledge, quite a bit of information concerning this part of New Mexico has become available during the last decade. Unfortunately, though research has added considerably to our understanding of culture history in the region, the available data are only sufficient to allow archaeologists to address certain basic concerns.

Stuart and Gauthier (1981:291) define two major problems in the archaeological data base for northeastern New Mexico--chronology and cultural identity. The problem of chronology is rooted in a lack of absolute dates. While there have been recent additions to this body of data (J. Campbell et al. 1984; Lent 1982; Winter 1988), many more absolute dates are needed before an accurate scheme of cultural development can be constructed. The problem of cultural identity may be linked to the research orientation of individual investigators, who tend to see cultural processes in the region in light of their own areas of expertise.

Part of this problem stems from the presence of several distinct prehistoric traditions in this part of New Mexico, including Southwestern, Plains, and frontier groups, and the resulting confusion and hybridization of marginal groups. Precise boundaries between these groups are not yet delineated, and their influence on one another remains undetermined.

To attempt a detailed reconstruction of the cultural history of northeastern New Mexico is beyond the scope of this report. Summaries are available in Winter (1988), Lent (1982), and Stuart and Gauthier (1981). Archaeologists feel that the Dry Cimarron Valley falls within the developmental sphere of the Panhandle Culture; thus, it is more closely related to the Plains than the Southwest. The rest of this chapter will discuss the cultural sequence for this area from that perspective, which is summarized in Table 1.

Paleoindian Tradition

The Paleoindian period (10,000-5500 B.C.) was first recognized in 1926 at the Folsom Site (Wormington 1947:20), just west of the study area. Since that time, many other Paleoindian traditions have been defined. Though it was once presumed that Paleoindian economies depended on big-game hunting,the importance of plant gathering and small game hunting has also been recognized (McGregor 1965:120; Willey 1966:38; Jennings 1968:78-79; Wilmsen 1974:115; Cordell 1979:19-21; Stuart and Gauthier 1981:31-33).

Stuart and Gauthier (1981:294-300) provide an excellent summary of the Paleoindian occupation of this region. Beginning with Clovis and continuing through the terminal Plano traditions, Paleoindian use of northeastern New Mexico appears to have been structured in two bands--one paralleling the Canadian Escarpment, the other against the foothills of the Sangre de Cristo Mountains and the Trinidad Escarpment. Clovis, Folsom, and Plainview materials

Table 1. Cultural Sequence of the Dry Cimarron Valley

European Occupation	A.D. 1830s-present
Apache Occupation	A.D. 1500-1887
Plains Tradition Occupation	
Apishapa Phase	A.D. 1100-1350
Plains Woodland	A.D. 200-1100
Archaic Occupation	
Late Period	500 B.C.-A.D. 200
Early Period	5500-500 B.C.
Paleoindian Occupation	
Plano	7500-5500 B.C.
Clovis, Folsom, Plainview	10,000-7500 B.C.

(10,000-7500 B.C.) have been recovered from both bands; Plano remains (7500-5500 B.C.) are primarily restricted to the Canadian Escarpment band. Other than the Folsom locale (LA 8121), Paleoindian sites have rarely been documented in the Dry Cimarron Valley, but are probably present, buried under alluvial fill (Winter 1988). Though documented sites are lacking, many isolated Paleoindian projectile points have been found including Clovis, Folsom, Plainview, Firstview, Alberta, Meserve, Jimmy Allen, and Agate Basin types.

Plains Tradition

Archaic

R. Campbell (1976) divides the Archaic occupation of the Chaquaqua Plateau of southeastern Colorado and northeastern New Mexico into early (5500-500 B.C.) and late (500 B.C.-A.D. 200) periods. Based on diagnostic projectile point styles, a Plains rather than Southwestern affinity is suggested, though several types--particularly those of the late Archaic--are also similar to southwestern styles. No early Archaic sites have been recorded in the Dry Cimarron Valley, but projectile points from that time period occur in local collections, suggesting that they are found in the area (Winter 1988). Late Archaic sites are apparently quite common (Winter 1988).

Plains Woodland

Between A.D. 200 and 450, the Plains Woodland tradition developed from an Archaic base. This adaptation is marked by the first appearance of stone enclosures (above-ground circular masonry structures), ceramics, and new projectile point styles. Little cultural change seems to have occurred between A.D. 450 and 750, though maize horticulture may have been adopted at that time (R. Campbell 1976). The first attributes linking the Plains Woodland tradition to the succeeding Apishapa phase appeared between A.D. 750 and 1000, including shallow pit floors in houses and barrier walls. There seems to have been a substantial population present in the Dry Cimarron Valley during the Plains Woodland period (Winter 1988). Social structure probably remained fluid and mobile, with corn horticulture supplementing a hunting-gathering base without substantially altering that lifestyle (Winter 1988). The relatively rare occurrence of corn in sites from this period may be evidence that some groups never adopted horticulture, and remained pure hunter-gatherers (Winter 1988).

Apishapa Phase of the Panhandle Culture

The Panhandle culture was originally defined in the panhandle regions of Texas and Oklahoma. Krieger (1946) presented the first detailed discussion of the Antelope Creek focus, defining it as a combination of Plains and Southwestern cultures. Selective borrowing and acculturation were suggested as the mechanisms responsible for similarities between the two. Campbell (1976) defined the Apishapa focus in southeastern Colorado and northeastern New Mexico. More recently, Lintz (1984:45) has reexamined data from the upper Canadian River and the southern tributaries of the Arkansas River, combining both foci into phases of the Upper Canark variant of the Panhandle Culture. Rather than being temporal divisions, the Apishapa and Antelope Creek phases represent contemporaneous, spatially distinct groups. The Apishapa phase is found mainly in southeastern Colorado and northeastern New Mexico, and the Antelope Creek phase occurs in the panhandle region of Oklahoma and Texas (Lintz 1984:44).

Lintz (1984:46-64) provides a detailed discussion of both phases and their distinguishing attributes. Most Apishapa structures are single rooms, though they may be paired. Where structures abut vertical rock outcrops they can have up to eight rooms. Most foundations combine horizontal and vertical slab masonry. In contrast, Antelope Creek structures can be considerably larger, containing one to more than 20 contiguous rooms. Foundations are usually double paired rows of vertical slabs, though horizontal slabs, adobe blocks, and posts were also used. Antelope Creek sites contain a greater diversity of architecture and community/settlement planning than do Apishapa sites, and the lithic assemblage is more diverse and specialized. Lintz (1984) disagrees with R. Campbell's (1976) dates for the Apishapa phase on the Chaquaqua Plateau, suggesting a date of A.D. 1100-1350 rather than the traditional A.D. 1000-1300. He also rejects Campbell's proposed architectural scheme (Lintz 1976, 1984).

Winter (1988) also disagrees with some of R. Campbell's conclusions. He suggests that atypical dates retrieved from Apishapa sites in the Dry Cimarron Valley cast doubt on Campbell's (1976) dates. Traditional Apishapa characteristics include vertical slab foundations, defensive site locations, and heavy dependence on maize agriculture. In contrast, Winter (1988) suggests that Apishapa people were semisedentary horticulturists and notes that Apishapa dates have been obtained from stone enclosures with horizontal masonry in nondefensive locations, all supposedly characteristic of the earlier Plains Woodland adaptation. In short, he does not consider the Apishapa lifestyles to have been appreciatively different from that of the preceding Plains Woodland tradition.

Panhandle sites have been recorded in the Dry Cimarron Valley (Winter 1988), and have been tentatively identified along the middle Canadian River. Moorhead (1931:116) found possible Panhandle villages south of Logan and near Mora, and Holden (1931:44) located a number of Panhandlelike sites during survey of the Gallinas, Mora, and Sapello rivers near Las Vegas. None were excavated, so detailed descriptions are lacking. Though interaction with the central and southern Plains was high, some attributes such as ceramic vessel shape, type of maize grown, and certain general structural attributes were quite similar to those of the Southwest. Most of northeastern New Mexico was abandoned by Panhandle peoples by A.D. 1300 or 1350 when the population shifted to the southeastern Canadian River in New Mexico and the Texas-Oklahoma panhandles (R. Campbell 1976:108), or once again became hunter-gatherers.

Protohistoric and Historic Apache

After being abandoned by Panhandle peoples, northeastern New Mexico either remained depopulated or was used by remnant hunter-gatherers. Unfortunately, there is little evidence of occupation between the end of the prehistoric period and settlement of the region by protohistoric Apache.

The protohistoric Apache (southern Athabascans) originated in the far northern Plains. Until separation from their northern cousins, they remained a homogenous group sharing a relatively uniform common language (Young 1983:394). Linguistic analysis suggests that the protohistoric Apache were a single group or a number of closely related groups as late as A.D. 1300. More than 300 years passed between their separation from the Sarcee--the most closely related northern Athabascan group--and the beginning of linguistic differentiation among themselves (Opler 1983:381).

Opler (1983) believes that the Apache reached the Southwest no later than A.D. 1400. He also favors an intermontane route rather than one across the Plains. Dolores Gunnerson (1974) feels that the Apache did not reach the Southwest before the early 1500s and that their first contact with the Pueblos was around 1525. The Apache were certainly present in the Southwest by the time of Coronado's expedition in 1541 (Thomas 1974).

In the early 1500s, the Apache were probably buffalo hunters possessing a Plains-oriented material culture lacking pottery (Gunnerson and Gunnerson 1971). They may have reached the southern Plains by following bison herds south from Canada along a corridor that had been abandoned by farmers because of changing climatic conditions (D. Gunnerson 1974). By 1540, the Apache had established patterns of interaction with sedentary peoples on the edge of the bison range, including Pueblos on the west, Wichita on the east, Mandan, Pawnee, and Arikara on the northeast, and Caddo on the southeast. These early Apache may be represented by remains attributed to the Dismal River Culture (J. Gunnerson 1984; Gunnerson and Gunnerson 1971; Wedel 1959); however, many doubt this interpretation (G. Burgett, personal communication; L. Mick-O'Hara, personal communication).

By 1700 the Plains Apache (Carlana, Paloma, and Cuartelejo bands) had adopted horticulture and formed a continuous block from the Black Hills of South Dakota to central Texas (Gunnerson and Gunnerson 1971:21). By this time they were also in conflict with the Pawnee and

Wichita on their eastern and northern flanks and the Comanche and Ute to the west and north (Gunnerson and Gunnerson 1971).

Groups ancestral to the Jicarilla were living in rancherias in northeastern New Mexico by about 1599 (Thomas 1974). The first documentation of Jicarilla was in 1702 as farmers in the Cimarron-Ponil area (Schroeder 1974). Like the central Plains Apache, the Jicarilla were in conflict with Comanche and Ute by the early eighteenth century (D. Gunnerson 1974).

It appears that the Carlana, Cuartelejo, and Paloma Apache were forced off the Plains and sought refuge with the Jicarilla around 1730. At first they maintained their autonomy, but they eventually merged with the Jicarilla, forming the Llanero or Plains band (Gunnerson and Gunnerson 1971). Presumably, the original Jicarilla formed the Ollero band. By 1748 the Jicarilla were driven out of their rancherias by the Comanche and Ute and moved into the Pecos-Picuris area (Gunnerson and Gunnerson 1971; Schroeder 1974). Until 1846 they mainly lived in the Sangre de Cristo Mountains (Schroeder 1974), but continued to range throughout their ancestral homeland, coming into conflict with American traders and the Plains Indian groups they attracted (Thomas 1974). After that date they moved out of the Sangre de Cristos and began farming near Mora and hunting farther to the southeast (Schroeder 1974).

Events precipitated a general war against the Jicarilla in 1853, culminating in their defeat in 1855 and their restriction to the area between the Chama Valley and the mountains between the headwaters of the Chama and San Juan Rivers (Thomas 1974:98). By 1867 there was pressure to have the Jicarilla removed from northeastern New Mexico, and in 1883 they were transported to a reservation adjoining that of the Mescalero Apache. Discontented because conditions at the new reservation had been misrepresented, they almost immediately began escaping back to northeastern New Mexico (Thomas 1974). In 1887 the current reservation surrounding Dulce was set aside, and the Jicarilla were moved onto it.

Euroamerican Occupation

By 1726 the Jicarilla were gone from the Dry Cimarron region, and Comanche and Ute controlled the area (Winter 1988). By the 1830s the typical Plains Indian warfare cycle was established, and several hunting and raiding territories overlapped in the valley (Winter 1988). These included the territories of the Cheyenne and Arapaho alliance to the north, the Kiowa-Comanche-Kiowa Apache alliance to the south, and the Ute, Shoshone, and Pawnee. On occasion even Blackfeet, Sioux, and Gros Ventres traveled through the area (Winter 1988).

With the opening of the Santa Fe Trail in 1821, American traders began moving their wagon trains through northeastern New Mexico. The Mountain Branch of the trail crossed into New Mexico through Raton Pass, while the Cimarron Branch crossed the Dry Cimarron Valley just north of the point where the North Canadian River crosses the state line. Thus, though there was continual conflict between wagon trains and hostile Indians, the study area was probably far from the center of action.

There were no Spanish Colonial or Mexican period land grants within the study area (Pratt 1986). However, though they were risking conflict with local Indians, Hispanic sheep and cattle herders began moving into the canyons of the Dry Cimarron in the 1830s. Some of these early operations were quite extensive. In 1862, for example, Juan Baca moved into the valley with 30,000 sheep. Two years later he was followed by his former neighbors Juan and Ramon Bernal with an additional 20,000 sheep (Winter 1988). In 1864 the small town of Madison was founded by Madison Emery (Winter 1988), but large-scale Euroamerican cattle ranching did not begin until somewhat later because of the continued presence of hostile Indians (Pratt 1986).

In 1871 Jim, Nathan, and William Hall began grazing cattle along the Dry Cimarron, using the Cross L brand (Pratt 1986). They had passed through the area on a cattle drive in 1868, decided that they liked it, and put enough money together to purchase 2,500 head of cattle and move there (Winter 1988). Under pressure, Juan Baca sold out to them for $25,000 and moved away (Winter 1988). This was the beginning of the large-scale cattle ranching that continues to dominate the economy of the region today.

The coming of the railroad opened northeastern New Mexico to homesteaders. In 1888 the Denver, Texas, and Fort Worth Railroad was constructed, linking Trinidad, Colorado, to cities in Texas (Pratt 1986). Clayton was founded as a railhead because of its location, and Folsom was officially founded when the railroad was built, though a Hispanic community was already in existence (Pratt 1986). Cattlemen and Hispanics from further west in New Mexico were among the first homesteaders--the cattlemen to claim land around important watering holes and the Hispanics to found small plazas with farming and sheepherding economies (Pratt 1986). Most early homesteading occurred between the cessation of Indian hostilities and the influx of settlers from the East.

Advertising by railroads, by the Territory of New Mexico, and by other institutions attracted homesteaders from the East. Settlers swarmed over the area between 1905 and 1915 (Pratt 1986). Many sold or leased their land after proving out and moved elsewhere (Pratt 1986). Others remained, but within a few decades were also forced to leave. A series of catastrophes, including mild droughts beginning in 1908 and culminating in the dust bowl of the 1930s, the influenza epidemic of 1918, and the depression of the 1930s, all contributed to the abandonment of homesteads in the region. Northeastern New Mexico was mostly deserted by farmers during the 1930s (Pratt 1986), and the economy returned to cattle raising.

TESTING AT LA 67550

Description of LA 67550

LA 67550 was found during an archaeological survey of the right-of-way for proposed improvements to State Road 456 (Moore et al. 1988). Its exact location is illustrated and described in Appendix 1. During survey, the site was defined as a lithic scatter of unknown cultural and temporal affiliation containing two clusters of artifacts. Sixty or more artifacts were observed on the surface, and preliminary inspection suggested that it measured 75 m north-south by 25 m east-west. This section of the Dry Cimarron Valley contains outcrops of sandstone as well as gravel and cobble terraces. Thus, raw materials for use or tool manufacture were probably obtained at the site or nearby. Fifty or more artifacts were seen in Provenience 1 south of the existing highway, and about ten artifacts were noted in Provenience 2 north of the existing highway. No temporally diagnostic materials were found in either provenience. The crew felt that the site might have extended into the existing right-of-way at one time.

Testing Methods

The first step in testing was to establish a main datum to which all horizontal and vertical measurements were tied. The site surface was then inspected to define its horizontal limits, to locate artifact clusters and potential features, and to find temporally and culturally diagnostic artifacts. Surface artifacts were pinflagged to assist recording and mapping, and the site was gridded into 1 by 1 m squares to provide control for subsurface investigations. A plan of the site was produced using a transit and stadia rod or 30 m tape, and the locations of all test pits, surface artifacts, and current topographic and cultural features were plotted. Topographic contours were mapped to provide an accurate depiction of site structure in relation to its immediate physical environment.

Artifacts were collected when they were recovered in a test pit, were diagnostic of cultural or temporal affiliation, or were in an area that would be disturbed by test pit excavation. All other surface artifacts were analyzed in the field and left in place at the site.

Horizontal test units were 1 by 1 m squares, and were provenienced according to the general grid system. All excavation was completed using hand tools. Test grids were excavated in arbitrary 10 cm levels unless natural stratigraphic breaks were found. When natural strata were defined they became the vertical units of excavation. Soil removed from test grids was screened through ¼-inch mesh hardware cloth. Artifacts recovered by screening were bagged, assigned a field specimen number, and transported to the laboratory for analysis. A form describing the matrix encountered (and listing ending depths and field specimen numbers) was completed for each excavation unit. No flotation, pollen, or radiocarbon samples were collected because no cultural strata were encountered. Excavation ended when bedrock was reached.

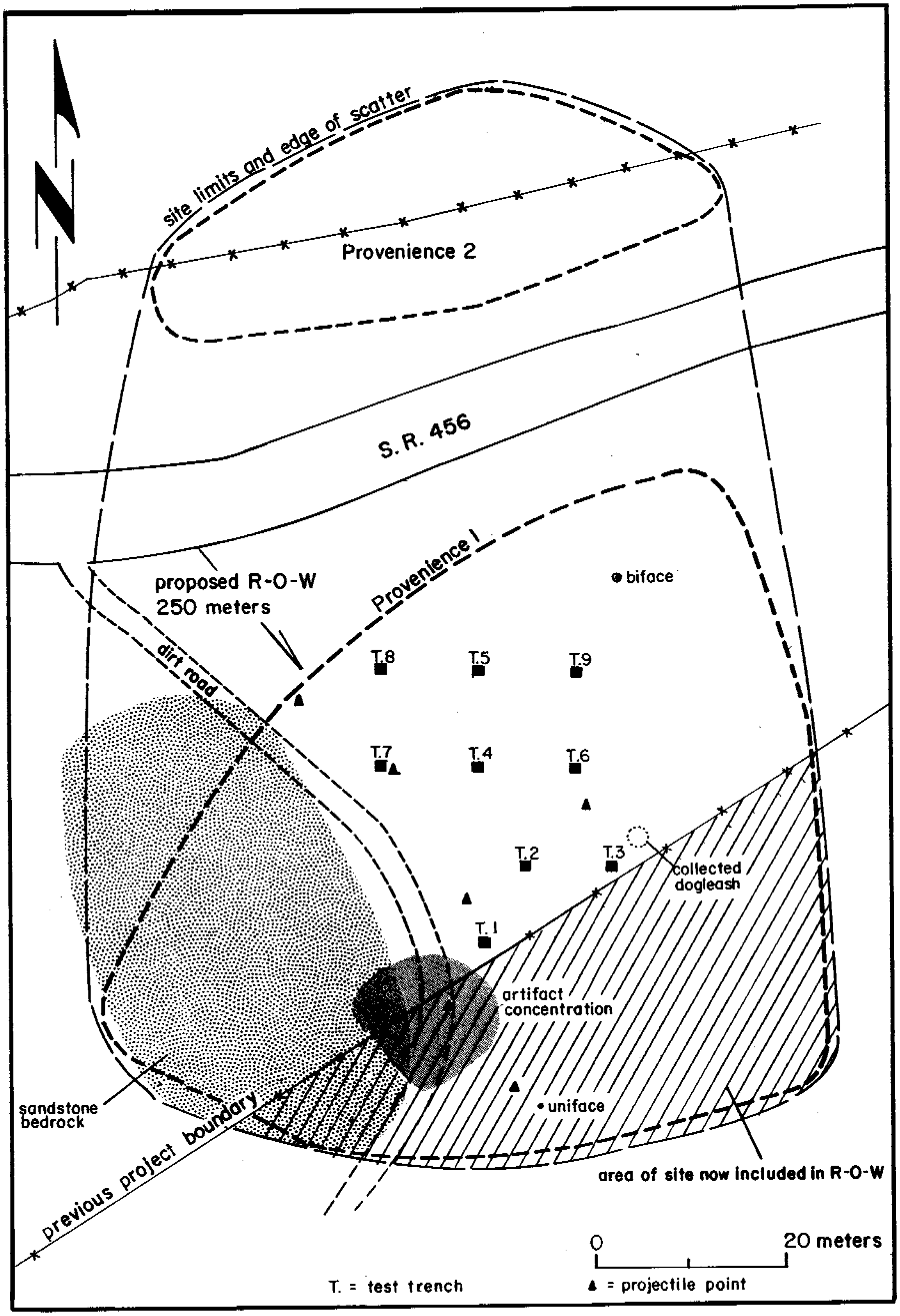

Figure 2. Plan of LA 67550.

Profiles were drawn for each test pit, and general site photographs were taken. Test pits were backfilled when excavation was complete. Cultural materials recovered during these investigations will be curated at the Laboratory of Anthropology, Museum of New Mexico. Field and analysis records will be on file at the Archaeological Records Management System of the Historic Preservation Division.

Testing Results

During testing LA 67550 was found to be larger than originally defined, measuring 110 m north-south by 73 m east-west (Fig. 2). A total of 298 artifacts were recorded on the surface of Provenience 1, and 25 were analyzed on the surface of Provenience 2. Nine 1 by 1 m test pits were excavated and are described below. No subsurface cultural features or deposits were found, and most of the artifacts recovered came from the surface or the upper 5-10 cm of fill. Bedrock was generally encountered at depths of 20-50 cm. Because each test pit ended at bedrock, no auger holes were bored below them. Since Provenience 2 was located outside the proposed right-of-way, subsurface investigations were confined to Provenience 1.

Provenience 1 contained a dense concentration of surface artifacts surrounded by a lighter scatter. The artifact concentration may represent a work area or discard zone; conversely, erosion along an unimproved dirt road that runs through it could also account for exposure of many artifacts. Since testing found no evidence of similar artifact densities in other parts of Provenience 1, the former is probably most likely. Both small and large corner-notched projectile points were found in Provenience 1, suggesting a Plains-Woodland or later date.

Provenience 2 was a light surface scatter of debitage at the edge of a gravel terrace overlooking the Dry Cimarron floodplain. Cobbles (mostly quartzite) suitable for reduction are available on the surface of this provenience. Thus, this part of the site may represent a quarry, and its relation to Provenience 1 is uncertain--it might be part of the same occupation, or it could represent use of the area at another time by a completely different group.

Test Pit Descriptions

Test Pit 1. Test Pit 1 was placed at 92N/99W in the south-central part of Provenience 1 near the main concentration of surface artifacts and the edge of a large sandstone outcrop. Sparse vegetation covered the surface of this grid, and included mixed grasses and snakeweed. Surface rock was also rather sparse and included hematite and quartzite pebbles, and small fragments of red sandstone. Three artifacts were recovered from the surface of this grid: one piece of Baldy Hill chert angular debris, one chert core flake, and one quartzitic sandstone core flake.

Excavation ended 7 cm below surface when bedrock was reached. Testing encountered one stratum above bedrock, consisting of a very fine reddish brown sand or sandy loam containing 60-70 percent rock inclusions--primarily small fragments of red sandstone with some basalt fragments mixed in. The bedrock was a friable red sandstone with a decomposed surface that had clay adhering to it. No artifacts or other cultural materials were found subsurface.

Test Pit 2. Test Pit 2 was placed at 100N/95W near the center of Provenience 1. Sparse vegetation covered the surface of this grid and included grama grass, dropseed grass, other mixed grasses, a small composite, and snakeweed. Surface rock was also rather sparse and included hematite pebbles and small fragments of red sandstone. One Baldy Hill chert core flake was recovered from the surface.

Excavation ended 8 cm below surface when bedrock was reached. Testing encountered one stratum above bedrock, consisting of a fine reddish yellow sand containing 30-40 percent rock inclusions--primarily small fragments of red sandstone with a few hematite pebbles mixed in. The bedrock surface was decomposed, and patches of sandy clay occurred immediately above the more solid areas of rock. No subsurface artifacts or other cultural materials were found.

Test Pit 3. Test Pit 3 was placed at 100N/84W in the east-central part of Provenience 1. A moderate growth of vegetation covered the surface of this grid and included dropseed grass, three-awn grass, grama grass, other mixed grasses, small composites, and snakeweed. Surface rock was sparse and included quartzite and hematite pebbles, and small fragments of red sandstone. No artifacts were recovered from the surface.

Excavation ended 28 cm below surface when bedrock was reached. Testing encountered one stratum above bedrock, consisting of a fine reddish yellow sand or sandy loam containing 15 to 30 percent rock inclusions--primarily basalt, hematite, and quartzite pebbles, and small fragments of red sandstone. The upper 3 to 5 cm of bedrock was decomposed, and contained patches of fine reddish yellow sand and sandy clay. One piece of quartzitic sandstone angular debris was recovered between 8 and 18 cm below surface; no other subsurface artifacts or cultural materials were found.

Test Pit 4. Test Pit 4 was placed at 110N/100W in the north-central part of Provenience 1. Sparse vegetation covered the surface of this grid, and included grama grass, other mixed grasses, and snakeweed. Surface rock was very sparse and consisted of hematite pebbles and small fragments of red sandstone. No artifacts were recovered from the surface.

Excavation ended 11 cm below surface when bedrock was reached. Testing encountered one stratum above bedrock, consisting of fine reddish yellow sand containing 5-30 percent rock inclusions--primarily small fragments of red sandstone with quartzite and hematite pebbles mixed in. The upper bedrock surface was decomposed and was partially excavated through before more solid rock was encountered; this was the source of most of the red sandstone fragments. No subsurface artifacts or other cultural materials were found.

Test Pit 5. Test Pit 5 was placed at 120N/100W in the north part of Provenience 1. A moderate growth of vegetation covered the surface of this grid and included grama grass, dropseed grass, Navajo tea, and snakeweed. Surface rock was very sparse and included hematite pebbles and small fragments of red sandstone. No artifacts were recovered from the surface.

Excavation ended 21 cm below surface when bedrock was reached. Testing encountered one stratum above bedrock, consisting of fine reddish yellow sand containing 10-80 percent rock inclusions--primarily small fragments of red sandstone with a few hematite and basalt pebbles mixed in. The upper bedrock surface was decomposed and was partially excavated through before more solid rock was encountered; this was the source of most of the red sandstone fragments. No subsurface artifacts or other cultural materials were found.

Test Pit 6. Test Pit 6 was placed at 110N/90W in the north-central part of Provenience 1. A moderate growth of vegetation covered the surface of this grid and included grama grass, dropseed grass, three-awn grass, and a small composite. Surface rock was also moderate, consisting of hematite, basalt, and quartzite pebbles, and small fragments of red sandstone. One Baldy Hill chert core flake was recovered from the surface.

Excavation ended 21 cm below surface when bedrock was reached. Testing encountered one stratum above bedrock, consisting of a fine reddish yellow sand or sandy loam containing 10-50 percent rock inclusions--primarily chert and hematite pebbles and small fragments of red sandstone in the upper 25-30 cm of fill, with red sandstone fragments increasing in quantity with depth. The upper bedrock surface was decomposed and was partially excavated through before more solid rock was encountered; this was the source of most of the red sandstone fragments. One piece of thermally altered Baldy Hill chert angular debris was recovered from the upper 10 cm of excavation. No other subsurface artifacts or cultural materials were found.

Test Pit 7. Test Pit 7 was placed at 120N/90W in the northeast part of Provenience 1. A moderate growth of vegetation covered the surface of this grid and included grama grass, dropseed grass, a small composite, and snakeweed. Surface rock was very sparse, consisting of hematite and quartzite pebbles. No artifacts were recovered from the surface.

Excavation ended 13 cm below surface when bedrock was reached. Testing encountered one stratum above bedrock, consisting of a fine reddish yellow sand or sandy loam containing 15-40 percent rock inclusions--primarily hematite and quartzite pebbles and small fragments of red sandstone in the upper 7-8 cm of fill, with red sandstone fragments increasing in quantity with depth. The upper bedrock surface was decomposed and was partially excavated through before more solid rock was encountered; this was the source of most of the red sandstone fragments. One quartzitic sandstone core flake was recovered from the upper 2-3 cm of loose fill; no other subsurface artifacts or cultural materials were found.

Test Pit 8. Test Pit 8 was placed at 120N/110W in the northwest part of Provenience 1. A moderate growth of vegetation covered the surface of this grid and included wheat grass, grama grass, and snakeweed. Surface rock was sparse, consisting of hematite and quartzite pebbles, and small fragments of red sandstone. No artifacts were recovered from the surface.

Excavation ended 21 cm below surface when bedrock was reached. Testing encountered one stratum above bedrock, consisting of a fine reddish yellow sand or sandy loam containing 5 percent rock inclusions in the upper 2-5 cm of fill and 30 percent below that. Rock inclusions were mostly small fragments of red sandstone, with some hematite and quartzite pebbles mixed in. The upper bedrock surface was decomposed and was partially excavated through before more solid rock was encountered; this was the source of most of the red sandstone fragments. No subsurface artifacts or other cultural materials were found.

Test Pit 9. Test Pit 9 was placed at 110N/110W in the northwest part of Provenience 1. A moderate growth of vegetation covered the surface of this grid and included snakeweed, dropseed grass, grama grass, and a small composite. Surface rock was very sparse, consisting of hematite pebbles and small fragments of red sandstone. No artifacts were recovered from the surface.

Excavation ended 22 cm below surface when bedrock was reached. Testing encountered one stratum above bedrock, consisting of fine reddish yellow sand or sandy loam containing 10 percent rock inclusions in the upper 17-18 cm of fill and 50 percent below that. Rock inclusions were mostly small fragments of red sandstone with some hematite pebbles mixed in. The upper bedrock surface was decomposed and was partially excavated through before more solid rock was encountered; this was the source of most of the red sandstone fragments. No subsurface artifacts or other cultural materials were found.

Lithic Artifact Analysis

In all, 339 lithic artifacts were either analyzed and left at the site (312) or collected from areas disturbed by excavation or as tools (27). Most of the artifacts (329, 97 percent) were debris associated with lithic reduction; only 11 items in the assemblage (3 percent) were formal tools.

Analytic Methods

Attributes analyzed on lithic artifacts included artifact type, material type, texture, percentage of dorsal cortex present, artifact portion, alterations (cultural and noncultural), and dimensions (length, width, and thickness). Debitage was divided into flakes and angular debris, based upon the presence or absence of striking platforms, bulbs of percussion, and recognizable ventral surfaces, with flakes possessing these attributes and angular debris lacking them. Attributes that were recorded on flakes only included platform type and presence or absence of platform lipping. Artifact definitions were consistent with those presented by Chapman (1977:374-378), Chapman and Schutt (1977:85-86), and Schutt and Vierra (1980:50-55).

To facilitate discussion of the reduction stages represented in the lithic artifact assemblage, a variety of physical attributes were used to assign individual flakes to the primary, secondary, and tertiary reduction stages. Primary and secondary flakes result from the two stages of core reduction. Primary reduction is the removal of the weathered and generally useless outer rind of a nodule, and secondary reduction is the removal of interior flakes for use or further modification. Tertiary reduction is the modification of by-products of core reduction into formal tools. The percentage of dorsal cortex was used to distinguish between primary and secondary flakes. Primary flakes were those with more than 50 percent of their dorsal surfaces covered by cortex; flakes with 50 percent or less of their dorsal surfaces covered by cortex were considered to have originated during the secondary stage of reduction. Tertiary flakes (manufacturing flakes) were distinguished from primary and secondary flakes by a polythetic set of variables (as defined by Acklen et al. 1983, table 1.4-1), which took into account flake size, shape, and specific platform characteristics (Table 2). Further evidence of tool manufacture include the presence of unfinished facially flaked tools and/or facially flaked tools broken during manufacture and discarded.

Table 2. Polythetic Set for Defining Manufacturing Flakes

Whole Flakes

1. Platform is:
    a. multifacet
    b. prepared (retouched and/or abraded)
2. Platform is lipped.
3. Platform angle is less than 45 degrees.
4. Dorsal scar orientation is:
    a. parallel
    b. multidirectional
    c. opposing
5. Dorsal topography is regular.
6. Edge outline is even.
7. Flake is less than 5 mm thick.
8. Flake has a relatively even thickness from proximal to distal end.
9. Bulb of percussion is weak.
10. There is a pronounced ventral curvature.

Broken Flakes or Flakes with Collapsed Platforms

1. Dorsal scar orientation is:
    a. parallel
    b. multidirectional
    c. opposing
2. Dorsal topography is regular.
3. Edge outline is even.
4. Flake is less than 5 mm thick.
5. Flake has a relatively even thickness from proximal to distal end.
6. Bulb of percussion is weak.
7. There is a pronounced ventral curvature.

Artifact is a Manufacturing Flake When:

-If whole it fulfills 7 of 10 attributes.
-If broken or platform is collapsed it fulfills 5 of 7 attributes.

Material Selection

A list of artifact types by material types is illustrated in Table 3. Quartzite was the most abundant material, comprising 47 percent of the total assemblage, and 48 percent and 68 percent of the Provenience 1 and 2 assemblages, respectively. Miscellaneous cherts were the second most common materials, comprising 40 percent of the total assemblage, and 41 percent and 24 percent of the Provenience 1 and 2 assemblages, respectively. Other materials were rare, making

Table 3. Artifact Types by Material Types

	Core Flakes	Tertiary Flakes	Angular Debris	Cores	Tools	Total
Provenience 1: Surface						
Chert	64	-	39	-	3	106
Baldy Hill Chert	13	-	6	1	2	22
Quartzite	127	1	15	4	3	150
Limestone	19	-	1	2	-	22
Basalt	4	-	-	1	-	5
Quartz	2	-	-	-	-	2
Obsidian	1	-	-	-	-	1
Igneous Undiff.	-	-	-	1	-	1
Sandstone	-	-	-	-	3	3
Totals	230	1	61	9	11	312
Provenience 1: Subsurface						
Baldy Hill Chert	-	-	1	-	-	1
Quartzite	1	-	1	-	-	2
Totals	1	-	2	-	-	3
Provenience 2: Surface						
Chert	3	-	1	2	-	6
Quartzite	14	-	-	3	-	17
Limestone	1	-	-	-	-	1
Basalt	1	-	-	-	-	1
Totals	19	-	1	5	-	25

up only 11 percent of the total assemblage when combined. However, it is possible that limestone was used more commonly than this analysis suggests--weathering obliterates many signs of flaking on this material, rendering potential artifacts indistinguishable from natural fragments.

Most of the materials used at LA 67550 were probably obtained locally. Except for obsidian, the materials found at LA 67550 occur naturally in this section of the Dry Cimarron Valley--Baldy Hill chert at a quarry about 19 km west of the site, quartzitic sandstone and limestone in the Morrison Formation, quartzites in the Purgatoire Formation, and igneous materials in Cenozoic flows capping nearby mesas. Most of these materials were probably also available in gravel terraces flanking the river. The piece of obsidian debitage has not yet been sourced, but it resembles types available in the Jemez Mountains (the nearest source of good obsidian).

Table 4. Material Textures, Core Reduction Debris Only

	Glassy	Fine	Medium	Coarse
Provenience 1: Surface				
Chert	-	101	-	-
Baldy Hill Chert	-	22	-	-
Quartzite	-	93	23	32
Limestone	-	23	-	-
Basalt	-	5	1	-
Quartz	-	-	-	1
Obsidian	1	-	-	-
Igneous Undiff.	-	1	-	-
Totals	1	245	24	33
Provenience 1: Subsurface				
Baldy Hill Chert	-	1	-	-
Quartzite	-	1	1	-
Totals	-	2	1	-
Provenience 2: Surface				
Chert	-	6	-	-
Quartzite	-	-	17	-
Limestone	1	-	-	-
Basalt	-	1	-	-
Totals	1	7	17	-

Fine-grained materials were predominantly selected for reduction (Table 4), and comprise 76 percent of the chipped stone assemblage; medium-grained materials make up 13 percent, and coarse-grained materials constitute 10 percent. The glassy material category included the single obsidian artifact. When material types exhibited a variety of textures, fine-grained materials were also preferred for reduction--56 percent of the quartzite and 86 percent of the basalt chipped stone artifacts were fine-grained.

Cryptocrystalline, isotropic, and highly silicious lithic materials with elastic qualities constitute the most desirable types for reduction (Crabtree 1972:4-5). Chert, obsidian, quartzitic sandstone, and many basalts and quartzites possess these qualities, and dominate the assemblage. Within each type, finer-grained materials were predominantly chosen for reduction. Thus, it appears that site occupants selected the most suitable materials for reduction--those that would flake easily and produce sharp cutting edges. Materials that provide edges more suitable for battering use (coarse-grained, less cryptocrystalline, isotropic, and elastic materials) were not selected as often for reduction.

Lithic Reduction Strategy

If local materials were rare or of poor quality, the use of bifaces as cores would be expected (Kelly 1988:719). This type of strategy would produce few if any cortical flakes. However, when suitable raw materials were abundant and tools were used in the same location as raw materials were procured, an expedient flake technology can be expected, with little use of bifaces as cores (Kelly 1988:719). When suitable local materials were available but there was a relatively large distance between the quarry and the locale of use, some reduction should have occurred before transport. Generally, this should have consisted of trimming cortex from nodules, thereby reducing core weight by removing the useless outer rind. Core preparation before transport would not be expected when little distance existed between the quarry and the locus of reduction.

Analysis of flake attributes suggests that site occupants used a simple core reduction strategy that included both the primary and secondary stages. Table 5 illustrates dorsal cortex information for both proveniences. Over half (57 percent) of the debitage and cores had dorsal cortex. Secondary flakes make up 64 percent of the flake assemblage, and primary flakes comprise 36 percent. This suggests that both primary and secondary core reduction occurred at LA 67550, with the removal of interior flakes for use or further reduction dominating. In turn, it is likely that most raw lithic materials were procured nearby rather than transported from a distant quarry.

Table 6 illustrates flake platform information. Simple unmodified platforms (single facet and cortical) predominate. Multifacet platforms are evidence of prior removals along a core or tool edge. None of the flakes with multifacet platforms appeared to have been produced during tool manufacture, so it is likely that they represent later removals from partially reduced cores.

Platforms can be modified by retouch and/or abrasion to facilitate flake removal, particularly from tools. This increases the edge angle, strengthening it and reducing the possibility that it will shatter during removal. Control over flake size and length is also improved by platform modification. Since no modified platforms were identified in this assemblage, it appears that tool manufacture was rare or did not occur.

Table 5. Dorsal Cortex Information, Core Reduction Debris Only

	Flakes		Angular Debris		Cores	
	0-50%	51-100%	0-50%	51-100%	present	absent
Provenience 1: Surface						
Chert	48	17	32	6	-	-
Baldy Hill Chert	8	6	4	1	1	-
Quartzite	89	39	14	-	4	-
Limestone	9	10	1	-	2	-
Basalt	1	3	-	-	1	1
Quartz	-	2	-	-	-	-
Igneous Undiff.	-	-	-	-	1	-
Obsidian	1	-	-	-	-	-
Totals	156	77	51	7	9	1
Provenience 1: Subsurface						
Baldy Hill Chert	-	-	-	1	-	-
Quartzite	1	-	1	-	-	-
Totals	1	-	1	1	-	-
Provenience 2: Surface						
Chert	1	2	1	-	2	-
Quartzite	4	10	-	-	3	-
Limestone	1	-	-	-	-	-
Basalt	-	1	-	-	-	-
Totals	6	13	1	-	5	-

Table 6. Platform Types

	Single Facet	Multi-facet	Cortical	Crushed	Collapsed	Absent
Provenience 1: Surface						
Chert	24	-	6	8	13	14
Baldy Hill Chert	7	2	2	-	1	1
Quartzite	60	-	27	10	9	22
Limestone	15	-	1	0	3	-
Basalt	3	-	1	-	-	-
Quartz	2	-	-	-	-	-
Obsidian	-	-	-	-	-	1
Totals	111	2	37	18	26	38
Provenience 1: Subsurface						
Quartzite	-	-	-	-	-	1
Provenience 2: Surface						
Chert	-	-	1	-	1	1
Quartzite	7	-	4	-	1	2
Limestone	-	-	-	1	-	-
Basalt	1	-	-	-	-	-
Totals	8	-	5	1	2	3

Obscured (collapsed or crushed) and missing platforms comprise 35.0 percent of the total. Platforms collapse or are crushed during the reduction process. In the former case, the platform is separated from the flake by the force of the blow used to detach it. In the latter, the platform is damaged by the force of the blow, but is not detached. Platforms are absent when a flake has been broken and only a fragment remains. This can result from two processes--the flake can shatter during manufacture, or it can be broken by natural processes like trampling or erosional movement.

Table 7 presents flake breakage data. A rather large number of flakes (27 percent) were broken. Manufacturing breakage takes two forms--impact with the ground after detachment (Cotterell and Kamminga 1987) and secondary compression (Sollberger 1986). While the former cannot be distinguished from other forms of noncultural breakage, the latter can often be

Table 7. Flake Breakage Information

	Provenience 1	Provenience 2	Totals
Whole	177	6	183
Proximal	15	4	19
Distal	20	2	22
Distal BIM[1]	5	2	7
Medial	12	4	16
Lateral	2	0	2
Fragments	1	0	1

[1] Broken in manufacture

identified as distal fragments with hinge or step fractures at their proximal ends. Overall, 24 percent of the analyzed distal fragments were broken in manufacture. However, all cases of manufacturing breakage were probably not identified; only fragments that were definitely attributable to secondary compression breakage were isolated. The actual percentages could be much higher.

A second means of examining manufacturing breakage is comparison of the number of proximal to medial and distal fragments. If the ratio is relatively even, most breakage is probably attributable to post-reduction processes. However, if few proximal fragments can be identified, most breakage probably occurred during reduction. This phenomenon results from the mechanics of breakage. When a flake breaks during removal, medial and distal fragments are easily recognized, but proximal fragments are indistinguishable from whole flakes since they possess both platforms and hinge or step terminations. A total of 67 flake fragments were identified, of which 28 percent were proximal fragments and 43 percent were distal fragments. When manufacturing breakage is discounted, distal fragments comprise 33 percent of the total, very similar to the percentage of proximal fragments in the assemblage. Thus, while there appears to have been a moderate amount of breakage during manufacture, most is probably attributable to other processes. Since LA 67550 is in an area that is heavily grazed by cattle, the assemblage has probably been heavily impacted by trampling.

Lithic manufacture can be divided into two basic stages--core reduction (primary and secondary stages) and tool manufacture (tertiary stage). Only one manufacturing (or tertiary) flake was identified in the assemblage, and no tools that had been broken and discarded during manufacture were found. Flakes struck from bifaces for use as cutting tools and those removed during the manufacture of a tool are generally indistinguishable from one another.

A high percentage of utilized biface flakes in an assemblage suggests the use of bifaces as cores and infers a lack of suitable raw materials locally as well as a high degree of mobility (Kelly 1988). This should correspond with a low percentage of cortical flakes, and a low incidence of simple percussion cores (Kelly 1988). Little evidence for tool manufacture was found at LA 67550. The lack of biface flakes, the high percentage of cortical debitage, and the predominance of simple percussion cores indicates that site residents were using an expedient reduction strategy, and were dependent on locally procured materials.

Whole flake sizes are listed in Table 8. On the average, flakes on Provenience 2 were considerably larger than those from Provenience 1. Flake size is dependent on several variables. Larger cores produce larger flakes. Thus, as reduction proceeds, flakes decrease in size because the parent material gets smaller. Secondary compression breakage also produces shorter flakes, because the proximal ends of those broken during manufacture display whole flake characteristics, as noted earlier. Unfortunately, this variable cannot be accounted for because distal termination types were not analyzed in this assemblage.

In general, flakes on Provenience 1 appear to have been removed from smaller cores than those on Provenience 2. Since the materials reduced at both proveniences were probably obtained from the same local sources, initial nodule size should have been similar. Thus, the difference in flake size is probably related to the reduction stages represented in each assemblage. This seems to be confirmed by cortical information. Where cortical debitage comprised most (84 percent) of the Provenience 2 assemblage, only 56 percent of those on Provenience 1 were cortical. Primary flakes comprised 33.1 percent on Provenience 1, while they made up 68 percent of the Provenience 2 flake assemblage. Thus, flakes on Provenience 2 are generally larger than those on Provenience 1 because most represent initial removals from nodules. Flakes on Provenience 1 are generally smaller because more were produced during the secondary reduction stage after nodule size had been reduced by previous removals.

Table 8. Whole Flake Measurements

	Provenience 1			Provenience 2		
	length	width	thickness	length	width	thickness
Chert	18.5	17.9	6.2	22.0	23.5	5.5
Baldy Hill Chert	23.0	20.6	10.0	-	-	-
Quartzite	29.1	25.7	9.0	47.6	46.8	14.3
Limestone	42.8	34.8	12.0	35.0	31.0	12.0
Basalt	29.8	23.8	6.0	30.0	40.0	12.0
Quartz	28.0	31.0	8.5	-	-	-
Average	27.5	24.3	8.6	42.5	42.5	12.9

Tools

Eleven formal tools were found on Provenience 1, while none occurred on Provenience 2 (Table 3). They included two bifaces, six projectile points, a one-hand mano, and two metate fragments.

A retouched flake used informally as a scraper was the only tool found on Provenience 2. Because the assemblages were surficial and the area is heavily grazed by cattle, very conservative standards were used to identify cultural edge damage. Thus, the number of informally used tools could easily be underrepresented.

Activities

Several activities were performed at LA 67550. Core reduction was a major activity at Provenience 1; both the primary and secondary stages of core reduction were well represented. The polythetic set used to define tool manufacture (tertiary reduction stage) is very conservative, and only identifies ideal manufacturing flakes. Thus, the number of tertiary flakes found in no way represents the amount of tool manufacture that occurred; it merely demonstrates that some tools were made at this location. Since a tertiary flake was found in the Provenience 1 assemblage, it can be suggested that some tool manufacture was performed in that part of the site.

Several activities are indicated by the formal tools found at Provenience 1. The presence of projectile points implies that hunting might have occurred. Bifaces are general purpose tools that could have been used in several activities including the manufacture and/or maintenance of tools made from perishable materials, vegetal food processing, and butchering. Ground stone tools are specialized vegetal processing implements, and indicate that plant foods such as grass seeds or corn were processed and consumed at this site. Since a variety of reduction, manufacture/maintenance, and food procurement and processing activities seem to be represented, it is likely that Provenience 1 served as a camp site, though no evidence of hearths or structures was found.

Other than limited evidence of informal tool use (one example), the only activity performed at Provenience 2 seems to have been core reduction. The high proportion of both primary and secondary cortical flakes in this assemblage in addition to the ready availability of raw materials in the gravel terrace suggest that this part of the site served as a quarry. Whether it represents a work area associated with the occupation of Provenience 1, or a separate component used at a different time by a another group is impossible to determine. However, the lack of domestic refuse suggests short-term occupancy and specialized use as a quarry rather than as a camp site.

Dating

The only temporally diagnostic artifacts recovered were projectile points from Provenience 1. Three small triangular corner-notched points were identified as Scallorn points, which are dated between A.D. 500 and 1200 (Suhm and Jelks 1962:285-286). All three had barbed ears; one base was convex, one was straight, and the third was broken. The latter had a slightly serrated blade. Three large corner-notched dart points were also found, but all were damaged. Two appeared to have concave bases and most closely resembled the Late Archaic Edgewood type (Suhm and Jelks 1962). The third was too fragmentary for identification. The juxtaposition of arrow points with late Archaic style dart points may indicate an early Plains-Woodland occupation; however, lacking corroborative dates from other sources, this conclusion must be considered tentative.

Conclusions

Lithic materials used at both proveniences seem to have been obtained locally, as an expedient core flake reduction trajectory was used and cortical debitage are common. Materials that were easily flaked to produce sharp edges were selected for reduction; coarser-grained varieties that would have produced duller edges (more suited to battering than cutting) were mostly ignored.

The separation of Provenience 1 from Provenience 2 seems justified by the results of this analysis. Based on the range of artifacts recovered and its lack of structures and features, Provenience 1 appears to have been a temporary camp site. Activities occurring in that part of the site included core reduction, tool manufacture, hunting (or hunt kit refurbishing), vegetal food processing, and (possibly) the manufacture or maintenance of tools made from perishable materials. Though limited tool use may have occurred at Provenience 2, the main activity performed seems to have been the procurement and initial reduction of lithic raw materials. While it is possible that both proveniences were produced during a single occupation and their separation is an artificial result of highway construction, it is more likely that they represent different uses of the same general area.

CONCLUSIONS AND RECOMMENDATIONS

Archaeological testing at LA 67550 recovered no evidence of structures, cultural features, or subsurface cultural strata. Where bedrock did not outcrop, it was encountered at depths ranging between 10 and 50 cm below the surface. While several residential activities took place at Provenience 1, only lithic reduction and (possibly) limited tool use occurred at Provenience 2. Provenience 1 seems to have been a temporary camp and was tentatively dated to the early Plains-Woodland period. Provenience 2 appears to have been a quarry area, and may be completely unrelated to the occupation of Provenience 1. No temporally diagnostic materials were found on Provenience 2, so no date is available.

Within the proposed right-of-way, archaeological testing did not reveal features or deposits likely to yield important information on local prehistory at LA 67550. It is our opinion that no further investigations are needed in the part of the site located within the SR 456 right-of-way. Our examination of parts of the site lying outside the SR 456 right-of-way was limited to surface inspection, but suggests that no subsurface cultural remains are present in those areas either.

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