MUSEUM OF NEW MEXICO

OFFICE OF ARCHAEOLOGICAL STUDIES

NM 136 (ARTCRAFT ROAD)–BORDERLANDS: THE TESTING OF FIVE SITES NEAR SANTA TERESA, DOÑA ANA COUNTY, NEW MEXICO

Peter Y. Bullock

with a contribution by
C. Dean Wilson

Submitted by Yvonne R. Oakes
Principal Investigator

ARCHAEOLOGY NOTES 222

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ADMINISTRATIVE SUMMARY

Between August 5 and 23, 1996, the Office of Archaeological Studies, Museum of New Mexico, conducted limited testing at five sites near Santa Teresa, Doña Ana County, New Mexico: LA 49346, LA 35121/LA 86792, LA 86775, LA 113683, and LA 113684. The work was performed at the request of the New Mexico State Highway and Transportation Department (NMSHTD) to determine the extent and importance of cultural resources within the proposed project. NMSHTD proposes to realign portions of NM 136 (Artcraft Road) near Santa Teresa.

All five of the sites are surface ceramic and lithic artifact scatters on private land. No intact cultural features or deposits were found at any of the sites. In all five cases, the data potential of the portions of these sites within the proposed project area is minimal beyond what has already documented, and no further archaeological investigations are recommended.

In addition to the five sites, a turn-out area extending from LA 35121/LA 86779 west to the existing Artcraft Road was surveyed and tested to locate possible cultural features and deposits. Mechanical equipment was utilized during testing with permission granted by the New Mexico State Cultural Properties Review Committee on August 7, 1996. No cultural features or deposits were found within this area.

NMSHTD Project TPM-136(4)00, CN 3383
MNM Project 41.630 (Borderlands)
CPRC Archaeological Survey Permit No. SP-96-027

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INTRODUCTION

At the request of William L. Taylor, environmental program manager, New Mexico State Highway and Transportation Department, a limited testing program was conducted at five sites (LA 49346, LA 35121/LA 86792, LA 86775, LA 113683 and LA 113684) within the area of the proposed realignment of NM 136 (Artcraft Road) near Santa Teresa, New Mexico (Fig. 1 and Appendix 1). Testing was conducted to determine the extent and importance of the portions of the sites within the proposed project area. An additional turn-out area extending from LA 35121/LA 86792 and LA 86779 west to Artcraft Road was surveyed and tested to locate possible cultural features and deposits.

Limited testing was conducted under CPRC Archaeological Survey Permit No. SP-146. Fieldwork, which took place between August 5 and August 22, 1996, was conducted by Peter Y. Bullock, assisted by Raul Troxler and Marcy Snow. Yvonne Oakes acted as principal investigator. Ceramic analysis was carried out by C. Dean Wilson. Maps were drafted by Ann Noble, the report was edited by Tom Ireland, and the photographs were printed by Nancy Warren.

Prior to fieldwork, current listings of the *National Register of Historic Places,* the *State Register of Cultural Properties,* and the site files of the New Mexico Cultural Records Information System were consulted. No properties listed on, nominated to, or approved for submission to either inventory are in the vicinity of LA 49346, LA 35121/LA 86792, LA 86775, LA 113683 or LA 113684.

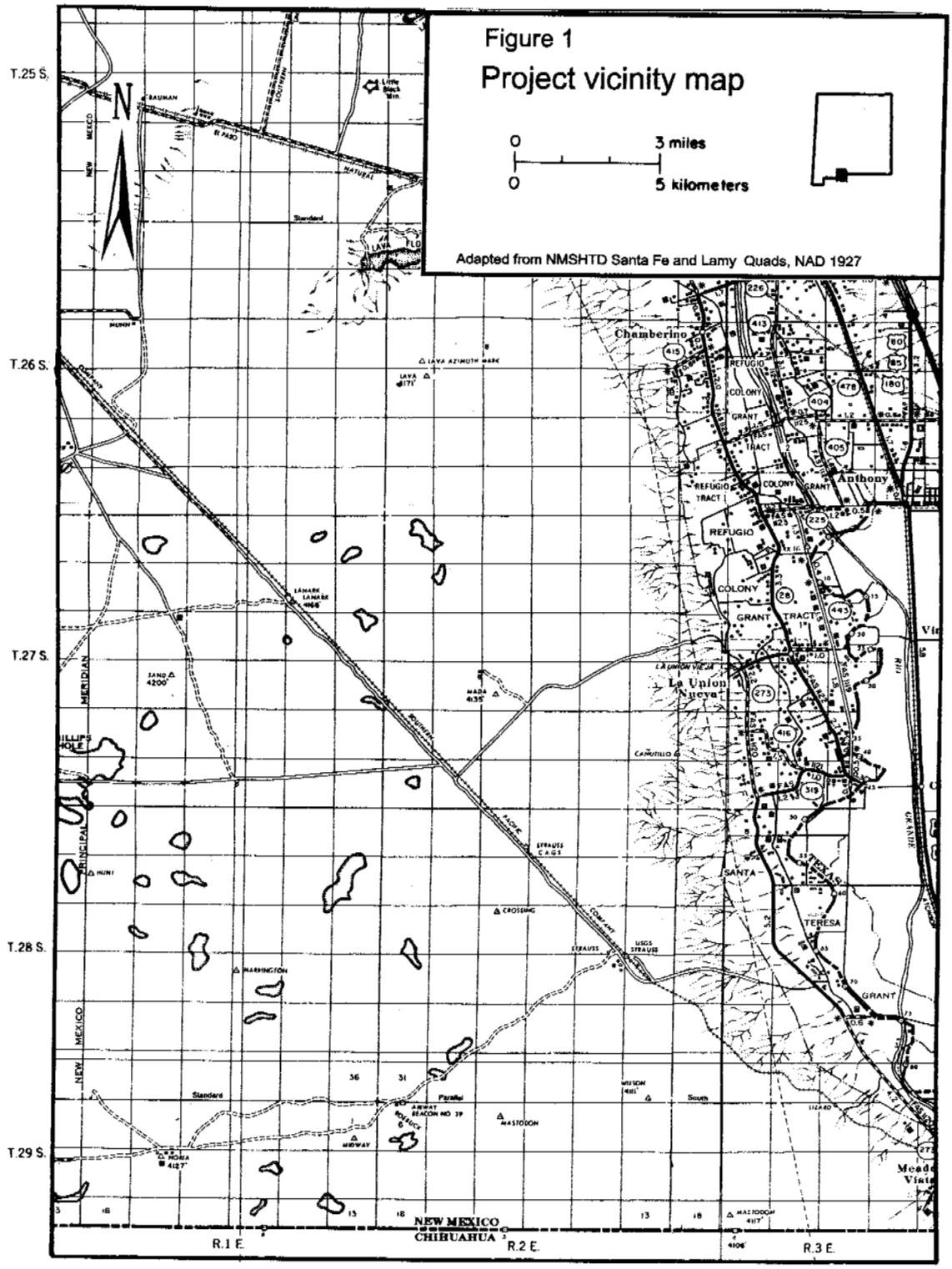
Figure 1
Project vicinity map
0
3 miles
0
5 kilometers
Adapted from NMSHTD Santa Fe and Lamy Quads, NAD 1927
T.25 S.
T.26 S.
T.27 S.
T.28 S.
T.29 S.
R.1 E.
R.2 E.
R.3 E.
NEW MEXICO
CHIHUAHUA
Chamberino
Anthony
La Union
Nueva
SANTA
TERESA
GRANT
REFUGIO
COLONY
TRACT
NEW MEXICO
PRINCIPAL MERIDIAN

ENVIRONMENT

The project area is west of the Rio Grande near the center of the intermontain lowland known as the Mesilla Bolson. Elevation within the project vicinity varies from 1,155.1 m (3,780 ft) to 1,158.2 m (3,800 ft).

The countryside west of the Rio Grande Valley and north of Santa Teresa is rolling desert grassland (Castetter 1956: Fig.1). The site areas are in a region of active coppice dunes. Historically these dunes have been stabilized; however overgrazing has reduced the local grasses, allowing an increase in the level of erosional duning activity. The invasive species of mesquite, creosote bush, and soap-tree yucca dominate the local vegetation. An in-depth analysis of the project vicinity's environmental setting is available in O'Laughlin (1980).

Geology

The project area is within the Mexican Highland section of the Basin and Range physiographic province (Fenneman 1931:379-380). The area is characterized by north-south block fault ranges uplifted in the Tertiary period. These ranges are separated by intermontain basins which were filled during the upland erosion of the Pleistocene (Kottlowski 1958; Strain 1966). The project area is within one of these basins, the Mesilla Bolson (Fenneman 1931:385). The Mesilla Bolson is bounded to the west by the Sierra de Las Uvas and the Potrillo Mountains, and by the Organ and Franklin Mountains to the east. The Franklin Mountains, an uplift of Precambrian, Paleozoic, Cretaceous, and Tertiary sedimentary rock, with rhyolite, granite, and andesite intrusions (McAnulty 1967), are approximately 11 km (7 miles) east of the project area (O'Laughlin 1980:6).

The project area is west of the Rio Grande Valley in an area of nearly level basin sediments. These once formed the bed of the Pleistocene Lake Cabeza de Vaca (Strain 1966) and are known as the La Mesa surface (Hawley and Kottlowski 1969). Eolian sands blowing off these deposits by westerly winds have been redeposited (Davis 1989:4) as coppice dunes and hummocks (Strain 1966).

The soils of the project vicinity reflect the redeposited erosional material of the La Mesa surface (O'Laughlin 1980:10). Project vicinity soils are Typic Torripsamments, generally comprised of loose noncalcareous fine sand over thick deposits of fine sand, sometimes grading into sandy loam or sandy clay. Deeper deposits may contain slight calcareous deposits. These soils are common in areas of duning (Maker et al. 1974:35).

Climate

The climate of the project area is semiarid mesothermal, with hot days and cool nights. Average annual precipitation for El Paso is 20.1 cm (O'Laughlin 1980:12; Tuan et al. 1973:18). Most rainfall occurs in July, August, and September (Gabin and Lesperance 1977:114; Maker et al. 1974:26; Tuan et al. 1973:20). The average number of frost-free days is 248 (O'Laughlin 1980:12; Tuan et al. 1973: Fig. 35), while the potential growing season for domesticated crops is closer to 348 days (Smith 1920:273, Fig. 79). O'Laughlin (1980:12) has noted that this combination of temperature and rainfall results in one long growing season, with variability of

microclimates and localized conditions having the greatest effect on productivity and crop yield.

The current pattern of summer rains and cool dry winters first appeared in the middle Holocene, when the amount of precipitation was much greater than at present. Despite a great deal of variability (wetter periods are suggested for 1000 B.C. and A.D. 1000), there has been an overall drying trend through time. One result of this drying trend has been a gradual change in biotic communities from savannah grassland to desert grassland and mesquite scrubland (Davis 1989:21; O'Laughlin 1980:12-14; Van Devender and Spaulding 1979).

Flora and Fauna

Little variation is present within the La Mesa surface environmental zone encompassing the project area. What variation that does exist within the plant community tends to reflect localized soil and erosional conditions. In contrast, an increased range of environmental zones is present to the east of the project area in the Franklin Mountains and Rio Grande floodplain. Plant communities generally vary with elevation in the Franklin Mountains (Castetter 1956). The riverine ecosystem of the Rio Grande floodplain serves as a distinct linear oasis, providing habitat for plant and animal communities not normally associated with the desert landscape (O'Laughlin 1980).

The grazing of livestock has modified the vegetation of the project vicinity by increasing the speed of the already occurring environmental trend toward scrubland (Castetter 1956:261-262). Previously heavy grass areas of dropseed and black grama grasses have been largely eliminated. Mesquite, soap-tree yucca, four-wing saltbush, and creosote bush currently dominate the existing vegetation (O'Laughlin 1980:19).

The project vicinity supports the Chihuahuan desert faunal complex of jackrabbit, pronghorn, mule deer, coyote, and desert cottontail. A variety of birds and small rodent species are also present (O'Laughlin 1980:21).

CULTURE HISTORY

A complete culture history of the project area is beyond the scope of this report. In-depth historical coverage of the area is available in Lehmer (1948), Moore (1996), Stuart and Gauthier (1988), and Timmons (1990).

Paleoindian Period

The Paleoindian presence in the El Paso area is primarily known from surface finds of distinctive lanceolate projectile points, scrapers, and gravers (Beckes 1977; Everitt and Davis 1977; Hard 1983; and Russell 1968). These artifacts have been restricted to Folsom and later Plano occupations dating roughly between 8,000 and 6,000 B.C. (O'Laughlin 1980:23). Artifacts attributable to the earliest Paleoindian culture (Clovis) have not been found in the general El Paso area.

Although originally considered dependent on large extinct Pleistocene mammals for food, Paleoindian subsistence is now believed be broader based. Although bison did play an important role in Folsom and Plano subsistence (O'Laughlin 1980:23), small animals and wild plants also seem to have been important (Judge 1973).

The presence of surface artifacts indicates that small, highly mobile Paleoindian groups took advantage of the diverse ecology existing in the El Paso area during the late Pleistocene. During this period large expanses of open woodland and savannah separated the then-forested mountain ranges. Small lakes and perennial streams were common. By the middle Holocene, climatic changes had established the ecological communities present today (O'Laughlin 1980:23).

Archaic Period

The Archaic period is characterized by more varied methods of hunting and gathering subsistence than those of the Paleoindian period. Small family-based social groups may have traveled on a seasonal round, structured around the availability of different species of wild plants. Lechuguilla and sotol may have been principal food plants in south-central New Mexico and west Texas (Hard 1983:9).

Although subsistence remained based on wild plants during the Archaic period, the cultivation of maize appears (Hard 1983:8). Maize dating to 1,394 B.C. has been recovered from the Fresnal Shelter in south-central New Mexico (Tagg 1996:317) and to 1,029 B.C. from the Organ Mountains near Las Cruces (Upham et al. 1988).

Archaic sites are identified on the basis of diagnostic projectile points, allowing Archaic sequences to be developed for specific areas. In northwestern New Mexico a cultural sequence known as the Oshara Tradition was developed by Irwin-Williams (1973). The Cochise Culture has been recognized in Arizona and southwestern New Mexico (Beckett 1973).

In addition to projectile points, Archaic sites are characterized by flaked core tools, grinding implements, and clusters of roasting pits and hearths represented by burnt and fire-cracked rock.

Perishable materials, including basketry, sandals, cordage, and matting have been recovered from caves and rockshelters (O'Laughlin 1980:24).

Archaic developments in the El Paso area reflect the Cochise Culture, with the addition of traits such as distinctive projectile points from the Big Bend aspect of the eastern Trans-Pecos area (Hard 1983:9; Lehmer 1958:127). This is particularly true of the Late Archaic Hueco phase (Hard 1983; Lehmer 1948). A number of Archaic sites have been recorded in the general project area (O'Laughlin 1977, 1979, 1980; Whalen 1977, 1980).

Pueblo Period

The Pueblo period in south-central New Mexico is part of the Jornada Mogollon culture. Known as the Formative period, it is believed to be a direct offshoot of the Late Archaic Hueco phase (Hard 1983). Major cultural changes that occur include an increased dependence on agriculture, the development of ceramics, and increased sedentism (Hard 1983:9). The Formative period is comprised of the three phases developed by Lehmer (1948), slightly modified later (Moore 1996).

Mesilla Phase

Beginning between A.D. 1 and 200, and extending to A.D. 1100, the Mesilla phase is characterized by the dominant use of El Paso Brown ceramics. Circular or rectangular pit structures are present during this phase. Also common at sites dating to this period are extramural storage cists and hearths, and sheet trash deposits (Hard 1983:9; Lehmer 1948:77).

Regional trade is indicated by intrusive ceramics--suggesting contacts with the Mimbres Culture to the northwest and the Livermore horizon of the West Texas Big Bend area to the east--and the presence of shell from the Gulf of California (Lehmer 1948:77).

Doña Ana Phase

The Doña Ana phase dates to between A.D. 1100 and 1200. This is a transitional phase between the earlier Mesilla phase and the later El Paso phase. The Doña Ana phase is characterized by the presence of both El Paso Brown Ware and El Paso Polychrome in the same cultural deposits (Hard 1983:9-10; Lehmer 1948:78-80).

Small surface pueblos begin to appear during this phase (O'Laughlin 1980:26). However, most of the cultural material of this phase shows little change from the preceding Mesilla phase (Moore 1996). Trough metates tend to become more common within the assemblages, suggesting a greater dependence on agriculture and the processing of maize. A greatly increased range of intrusive ceramic types, in greater numbers, occurs in the Doña Ana phase (Lehmer 1948:78-80).

El Paso Phase

The El Paso phase dates between A.D. 1200 and A.D. 1400. This phase is characterized by the presence of El Paso Polychrome and above-ground adobe structures. An increase in intrusive ceramics takes place during this phase, including material from a wider area (Hard 1983:10; Lehmer 1948:80-82). The overall artifact assemblage is more complex, and a wider range of items

and types of tools are represented than in either of the two earlier phases (Lehmer 1948:81).

Adobe surface structures are the dominant structural type during the El Paso phase. These may be grouped around a plaza or arranged in rows. Internal features are common (Lehmer 1948:8), usually consisting of postholes, pits, and hearths (Moore 1996). Village placement is usually near the base of slopes, possibly to take advantage of seasonal water runoff for agricultural purposes (Hard 1983:10). Village size varies, and clusters of villages are reported in the Alamogordo area (Lehmer 1948) and in the Hueco Bolson (Whalen 1977). Specialized sites such as hunting camps and plant-gathering and -processing camps are easily discernable (O'Laughlin 1980:26).

Ritual, at the village level, is suggested by the presence of specialized rooms at most El Paso phase villages. These rooms are larger than the other rooms in the village, and caches of material are located beneath the floors (Moore 1996). El Paso phase villages were abandoned by about A.D. 1400 (Hard 1983:10).

Protohistoric Period

The El Paso area was inhabited by the Manso Indians, probable descendants of the Jornada Mogollon, at Spanish contact. Although pit structures and adobe pueblos were in use in the La Junta area to the south, and pueblos were used in the Socorro area to the north, the Manso inhabited small huts covered with brush. Beans, squash, and maize were raised and wild plant foods gathered in season. The Manso hunted game and fished in the Rio Grande. After Spanish contact the Manso were gradually absorbed into the general population (Beckett and Corbett 1992; Moore 1996).

Historic Spanish Period

Although a number of Spanish expeditions passed through the El Paso area during the conquest and colonization of New Mexico, no Spanish settlement occurred in the general project area until December 8, 1659. On that date the Mission of Nuestra Señora de Guadalupe de los Mansos del Paso del Norte was founded, becoming the center of Spanish settlement in the El Paso area. A presidio was also soon established (Timmons 1990).

The small Spanish population of the area increased dramatically with the influx of refugees from the northern settlements of New Mexico with the Pueblo Revolt of 1680. Many Spanish and Indian refugees refused to return north after the Reconquest in 1692, settling in the El Paso area and becoming part of the local population (Timmons 1990).

Early Spanish settlement in the El Paso area was concentrated along the Rio Grande Valley, to the south of the pass that gave the area its name. The threat of Apache raids effectively limited settlement to the north until the late 1700s (Timmons 1990).

The Spanish government granted a number of land grants in the Mesilla Valley to encourage settlement, a policy that was continued by the Mexican government. The Santa Teresa grant was established by 1790 on the west bank of the Rio Grande. The El Brazito grant, further north on the east bank of the Rio Grande, was first established in 1805 and reestablished in 1816 (Price 1995:2) and 1823 (Sayles and Williams 1986:105-107). The Canutillo grant, on the east bank of the Rio

Grande, was established in 1823 (Timmons 1990). All of these grants were abandoned by 1833 due to Apache raids, and the land remained unsettled until American control (Timmons 1990). One successful settlement was Doña Ana, settled in 1843 (Price 1995:2), on the Doña Ana Bend grant, which was established in 1839 (Sayles and Williams 1986:105-107).

The Mexican War brought an American presence to New Mexico when American forces captured Santa Fe in April 1846. Doña Ana and El Paso were captured in December of the same year. At the end of the Mexican War, the west bank of the Rio Grande from Doña Ana to El Paso remained the territory of Mexico. Mexican citizens from both areas who were unwilling, or unable, to remain in the territory captured by the Americans moved into this portion of the Mesilla Valley with the encouragement of the Mexican government (Price 1995:14). The largest settlement in this area was the town of Mesilla, founded in 1850 by Mexican refugees from Doña Ana (Price 1995; Stribling 1986; Timmons 1990).

The Mexican Government legitimized this settlement with a series of land grants. The J. M. S. Baca grant, on the west side of the Rio Grande, was established in 1849. The Refugio Colony #1 grant and the Refugio Colony #2 grant were both established in 1852 (Sayles and Williams 1986:105-107) (or 1850, according to Price 1995). The Mesilla Civil Colony grant and the Santo Tomas de Iturbide Colony grant were both established in 1853 (Sayles and Williams 1986:105-107) (or 1852, according to Price 1995).

Anglo-American Period

The west side of the Mesilla Valley became part of the United States with the Gadsen Purchase of 1854. The Gadsen Purchase was obtained from Mexico for $15 million and included the territory south of the Gila River between the Rio Grande and Colorado Rivers (Stribling 1986; Timmons 1990). The small population of this territory was clustered in Mesilla Valley and in the mission settlements of southern Arizona (centered on Tucson).

In 1859 the Anglo-American residents of the Mesilla Valley and Tucson areas petitioned the United States Congress to establish of the new proslavery Arizona Territory, to be made out of the southern half of New Mexico (Price 1995:12). This petition was not adopted, but with the advent of the Civil War, many Anglo-American residents of the area supported a Confederate victory. Mesilla was captured by Confederate forces on July 1, 1861, and a Territory of Arizona was proclaimed as part of the Confederacy (Price 1995:26; Stribling 1986:19; Timmons 1990).

Although not originally motivated by the issues leading up to the Civil War, the invasion of New Mexico by Texas Confederate forces rallied the Mexican-American population of southern New Mexico to support the Union. The final defeat of Confederate forces in New Mexico and the subsequent capture of El Paso by Union Forces in 1862 ended Confederate control of the Mesilla Valley (Stribling 1986; Timmons 1990).

The southern area of the Mesilla Valley remained a sparsely settled agricultural area. Farming and some ranching took place mainly along the Rio Grande. The economics of the area altered after the 1880s with the arrival of the railroads.

The Southern Pacific Railroad Company completed its track, just east of the project area, from Deming to El Paso on May 19, 1881 (Myrick 1990:60). The El Paso and Southwestern Railroad

completed its track between Hermanas, New Mexico, and El Paso, Texas, in November 1902 (Myrick 1990:95). This line, north of the project area, was abandoned in 1961 (Myrick 1990:70).

A number of communities are in this portion of New Mexico. Near the site area are the La Union and Santa Teresa. La Union, the oldest community in the area, was created by the union of two earlier settlements in 1856 (Julyan 1996:192; Pearce 1965:86; Price 1995:9). Santa Teresa, named for the Santa Teresa Land Grant, is a recently established residential community (Julyan 1996:327). Anapra, south of the project area, was founded as a railroad town. This community is now part of Sunland Park (Julyan 1996:15; Pearce 1965:7), incorporated as a town in 1960 and named after the local racetrack (Julyan 1996:393; Pearce 1965:161).

Economic activity in this part of New Mexico is now centered in the growing El Paso-Juarez area, to the east, and to a lesser extent, in Las Cruces, to the north.

TESTING PROGRAM

LA 49346, LA 35121/LA 86792, LA 86775, LA 113683, and LA 113684 were recorded as surface scatters of ceramic and lithic artifacts (Marshall 1996). All five sites were tested as part of the planned realignment of NM 136 (Artcraft Road) near Santa Teresa, Doña Ana County, New Mexico. An additional turn-out area extending west from LA 351121/LA 86792 and LA 86779 to Artcraft Road was also surveyed and tested to locate cultural features and deposits. The purpose of the limited testing was to determine the extent and importance of the portions of the sites within the proposed project limits. All five sites and the additional turn-out area are on private land.

Limited testing followed the procedures and practices outlined in the *Testing and Site Evaluation Proposal* (HPD Log 43648). A main datum and baseline were established for each site. Surface artifacts were pinflagged to locate artifact clusters and assist in recording and mapping site limits. A map of each site was produced using a transit, stadia rod, and a 50 m tape, and the locations of all test units and cultural features were plotted. The location of all surface artifacts was plotted with a 50 m tape and mapped. Lithic artifacts and ground stone artifacts were analyzed in the field and left in place. Ceramic artifacts were collected once their locations were mapped.

Originally, hand excavated test units measuring 1 by 1 m were planned for each site. However, because of the heavily deflated or dune-covered nature of these sites, hand excavating test units proved to be an inefficient testing method. Instead, a testing strategy based on a combination of auger holes and backhoe trenches was followed at these sites.

Auger holes were hand excavated in, or adjacent to, areas of clustered surface artifacts. Each auger hole was dug until culturally sterile soil was reached, and the depth of the hole was recorded. All of the excavated soil was inspected, and any artifacts present were collected. Soil descriptions were recorded.

Backhoe trenches were mechanically excavated in areas of dunes or possible remaining site integrity within each site. Soil was mechanically removed in 10 cm levels until cultural features or deposits were encountered, or to a depth of 1 m. Profiles of each trench were drawn and soil descriptions recorded.

All excavated areas were backfilled when excavation was completed. Cultural material recovered through these excavations will be curated at the Archaeological Research Collection at the Laboratory of Anthropology, Museum of New Mexico. Field and analysis records will be on file at the Historic Preservation Division, Archaeological Records Management Section.

LA 49346

LA 49346 (Fig. 2) is a ceramic and lithic artifact scatter measuring 90 m north-south by 35 m east-west. The site is heavily deflated, without any remaining site integrity. The artifacts present are redeposited from a now eroded surface and are exposed on culturally sterile caliche in a series of blowouts between large mesquite hummocks and coppice dunes of redeposited sand. A dirt track crosses LA 49346 in a southwest to northeast direction. Two hearths were originally recorded within the site area, indicated by dark stained soil. A historic component was also originally recorded at LA 49346, represented by glazed Mexican pottery (Marshall 1996:8-9). None of the

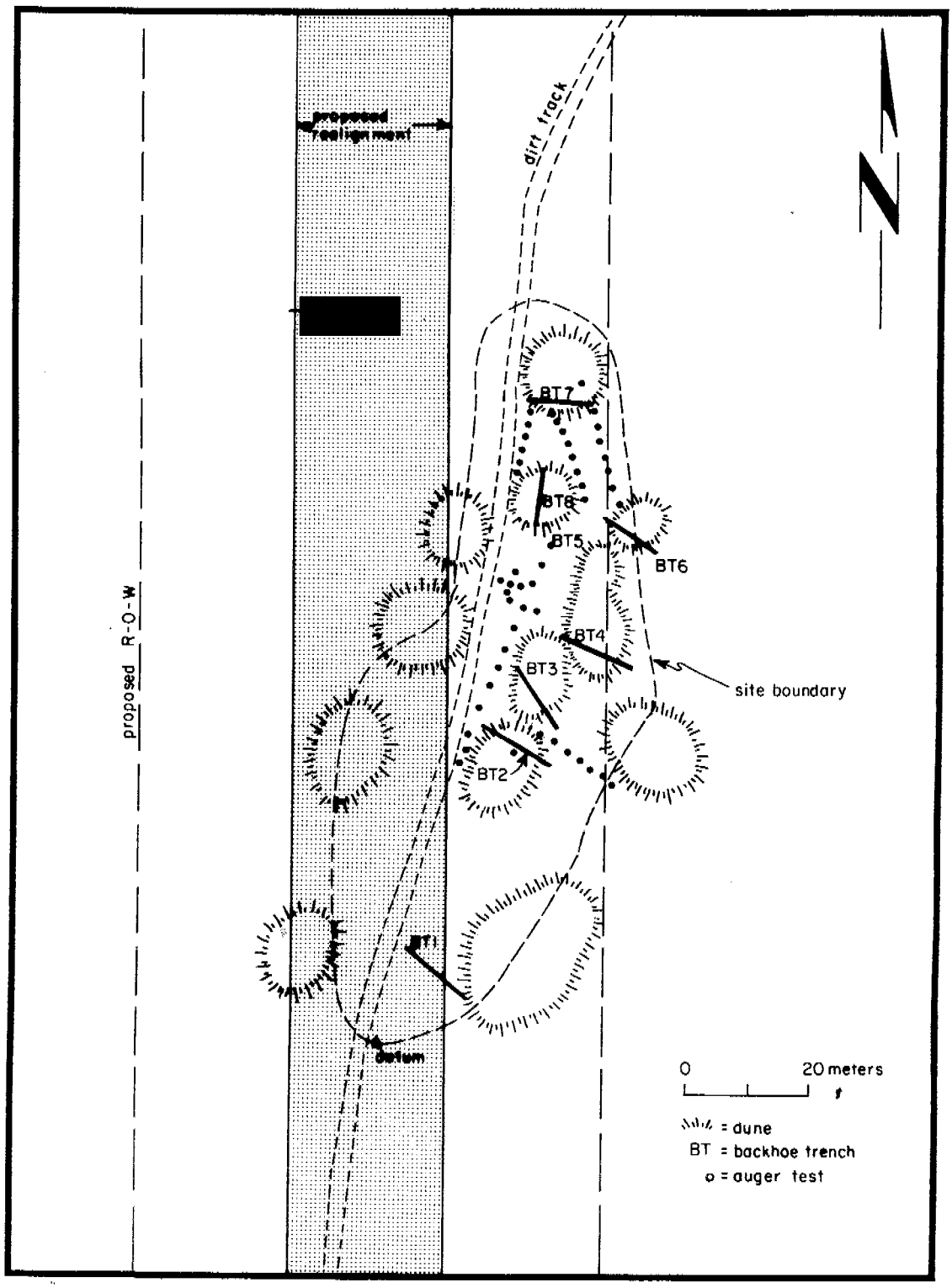

Figure 2. LA 49346 site map.

previously recorded Mexican pottery was found, supporting statements by U.S. Border Patrol officers that at least some surface artifacts had been collected from LA 49346 (personal communication, Officer Poulet, 1996). The elevation of the site is 1,252.7 m (4,110 ft).

A total of 106 artifacts (15 ceramics, 87 lithic artifacts, and 4 ground stone artifacts) was recorded from the surface at LA 49346. No subsurface artifacts were found. Forty-four auger holes were hand dug at LA 98732. Eight backhoe trenches were also mechanically excavated at the site.

Test Unit Descriptions

Eight backhoe trenches were mechanically dug at LA 49346. Dirt in each trench was mechanically removed in 10 cm levels to a depth of approximately 1 m. Two soil strata were present in all of the backhoe trenches. Stratum 1 was a tan eolian fine silty sand. Stratum 2 was a fine silty sand containing flecks of caliche. No cultural features or deposits were found in any of the backhoe trenches.

A total of 44 auger holes were hand dug at LA 49346 in a series of transects across areas of the site where artifacts were present. Auger holes were hand dug until cultural material or a depth of at least 30 cm was reached. No cultural features or deposits were found in any of the auger holes dug at LA 49346.

Cultural Features

No cultural features or deposits were found within any of the backhoe trenches or auger holes at LA 49346. The augering of two areas of stained soil originally recorded as hearths (Marshall 1996:8) showed them to be the result of decaying yucca root.

LA 113683

LA 113683 (Fig. 3) is a ceramic and lithic artifact scatter measuring 50 m north-south by 30 m east-west. The site is in a deflated area, with surface artifacts on caliche, within blowouts. No remaining site integrity exists at LA 113683. Coppice dunes and mesquite hummocks of redeposited sand characterize the site. The elevation of the site is 1,254.9 m (4,117 ft).

Artifacts recorded at LA 113683 totaled 137 (71 ceramics, 62 lithic artifacts, and 4 ground stone artifacts). Ceramic artifacts were collected. Lithic artifacts and ground stone artifacts were analyzed in the field and left in place. All of the artifacts recorded at LA 113683 were on the modern ground surface. Nine backhoe trenches were mechanically dug at LA 113683, and 46 auger holes were hand dug at the site.

Test Unit Descriptions

Nine backhoe trenches were mechanically dug at LA 113683. Dirt in each trench was mechanically removed in 10 cm levels to a depth of approximately 1 m. Two strata of soil were present in all of the backhoe trenches. Stratum 1 was a tan eolian fine silty sand. Stratum 2 was a fine silty sand containing flecks of caliche. No cultural features or deposits were found in any of the backhoe trenches.

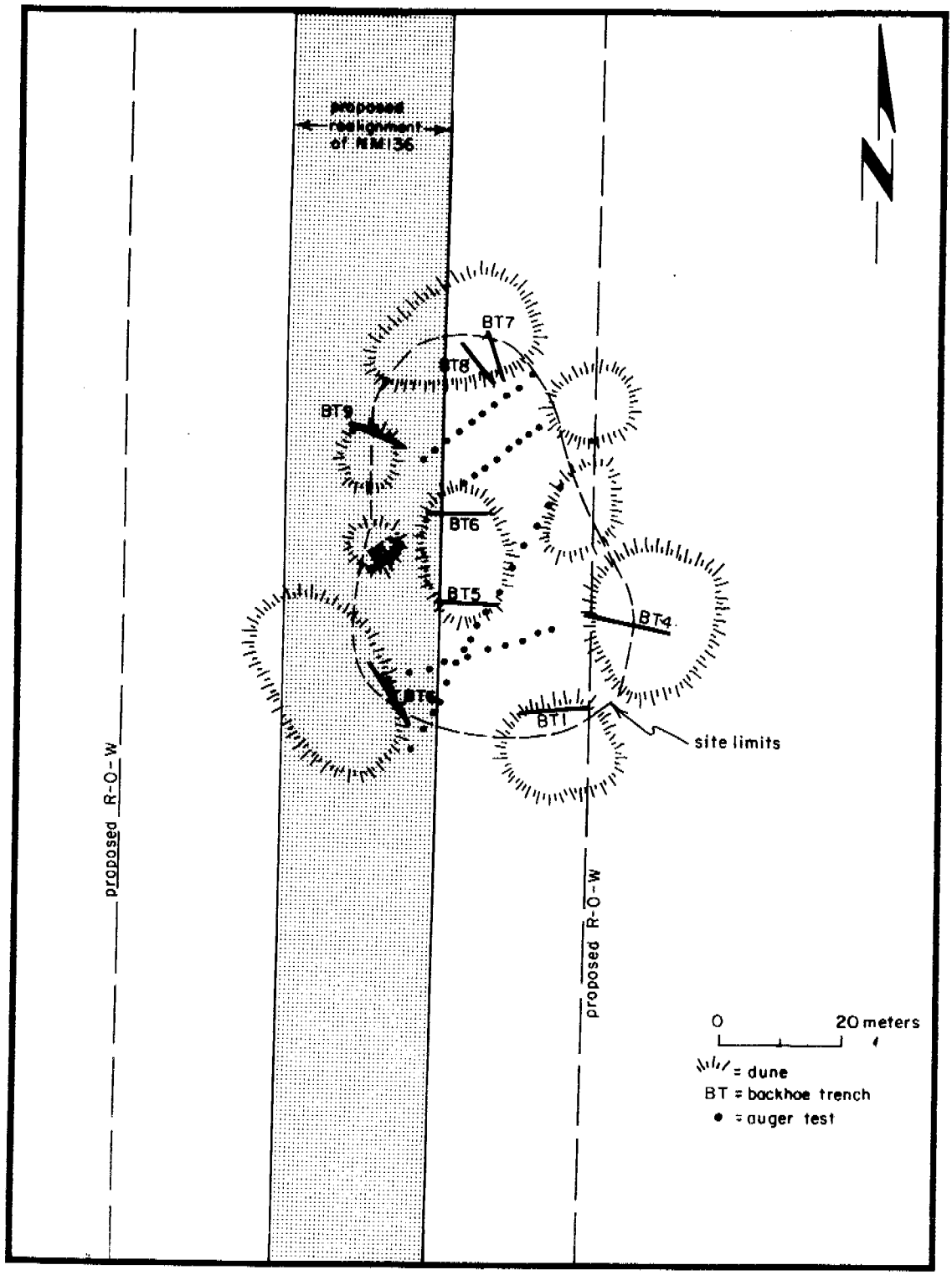

Figure 3. LA 113683 site map.

A total of 46 auger holes were dug at LA 11683. These were hand dug in a series of transects across areas of the site where artifacts were present. Auger holes were spaced 3 m apart and hand dug until cultural material or a depth of at least 30 cm was reached. No cultural features or deposits were found in any of the auger holes dug at LA 113683.

Cultural Features

No cultural features or deposits were found in any of the backhoe trenches or auger holes at LA 113683.

LA 35121/LA 86792

LA 325121/LA 86792 was recorded as a ceramic and lithic artifact scatter measuring 108 m north-south by 60 m east-west (Fig. 4). The site is in an area of active coppice dunes and mesquite hummocks. Heavily deflated, the site has no remaining integrity. Surface artifacts are redeposited from the original site surface and are concentrated in deflated areas and blowouts between the dunes. The elevation of the site is 1,254.3 m (4,115 ft).

A total of 34 artifacts were recorded at LA 35121/LA 86792 (33 lithic artifacts and one ground stone artifact). All of these artifacts were surface artifacts, analyzed in the field and left in place. No ceramics were found at LA 35121/LA 86792, although they were present on the site when it was originally recorded. This lack of ceramics supports reports (personal communication, Officer Poulet, U.S. Border Patrol, 1996) that artifacts had been collected from some of these sites. Ten backhoe trenches were mechanically dug at LA 35121/LA 86792. A total of 36 auger holes were also hand dug at the site.

Test Unit Descriptions

Ten backhoe trenches were mechanically dug at LA 35121/LA 86792. Dirt in each trench was mechanically removed in 10 cm levels to a depth of approximately 1 m. Two strata of soil were present in all of the backhoe trenches. Stratum 1 was a tan eolian fine silty sand. Stratum 2 was a fine silty sand containing flecks of caliche. No cultural features or deposits were found in any of the backhoe trenches.

A total of 36 auger holes were dug at LA 35121/LA 86792. These were hand dug in a series of transects across areas of the site where artifacts were present. Auger holes were spaced 3 m apart and hand dug until cultural material or a depth of at least 30 cm was reached. No cultural features or deposits were found in any of the auger holes dug at LA 35121/LA 86792.

Cultural Features

No cultural features or deposits were found within any of the backhoe trenches or auger holes at LA 35121/LA 86792.

LA 86779

LA 86779 is a lithic artifact scatter measuring 80 m north-south by 90 m east-west (Fig. 5). The site is in a deflated area among mesquite hummocks of redeposited sand. Surface artifacts are

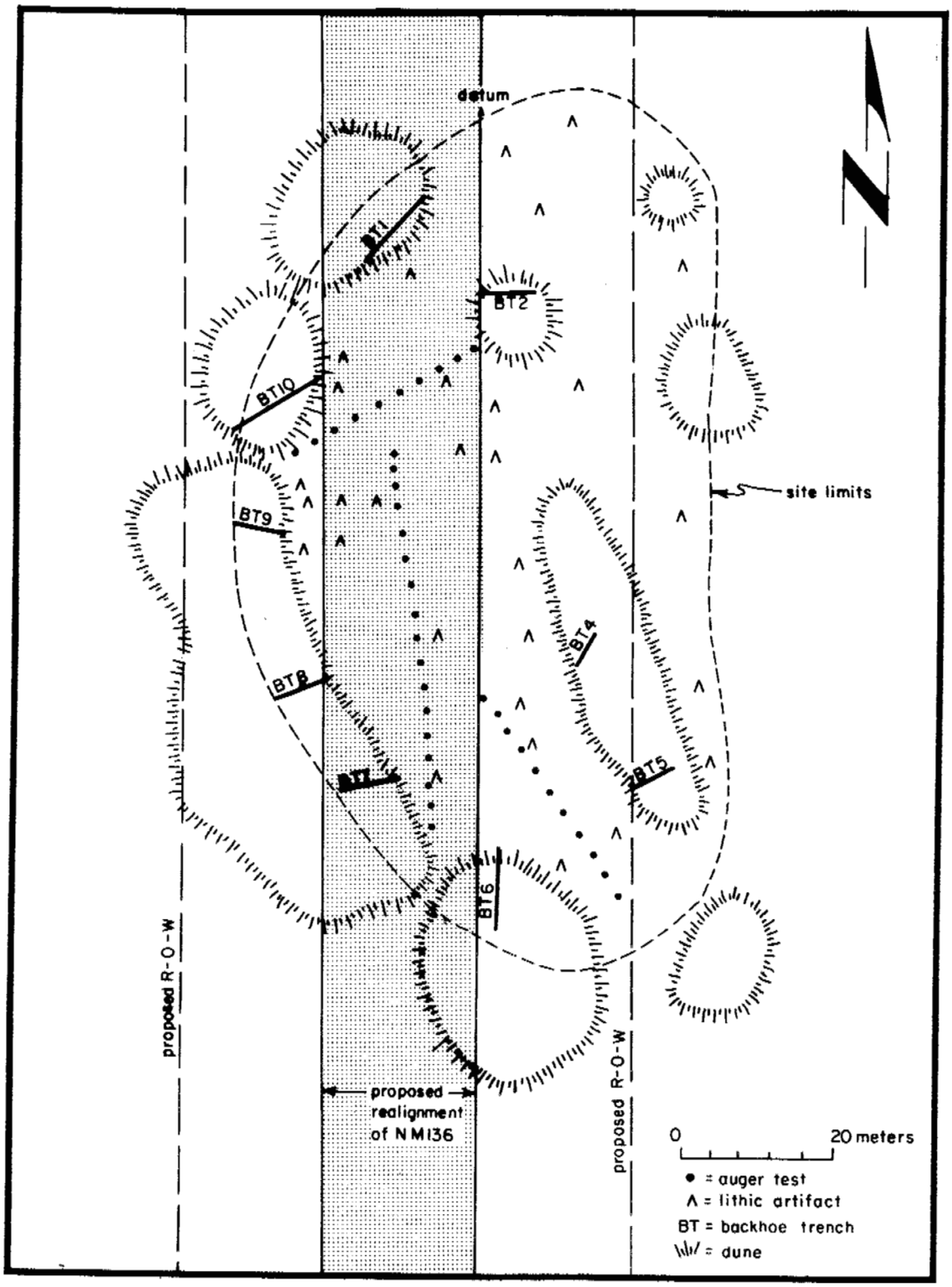

Figure 4. LA 35121/LA 86792.

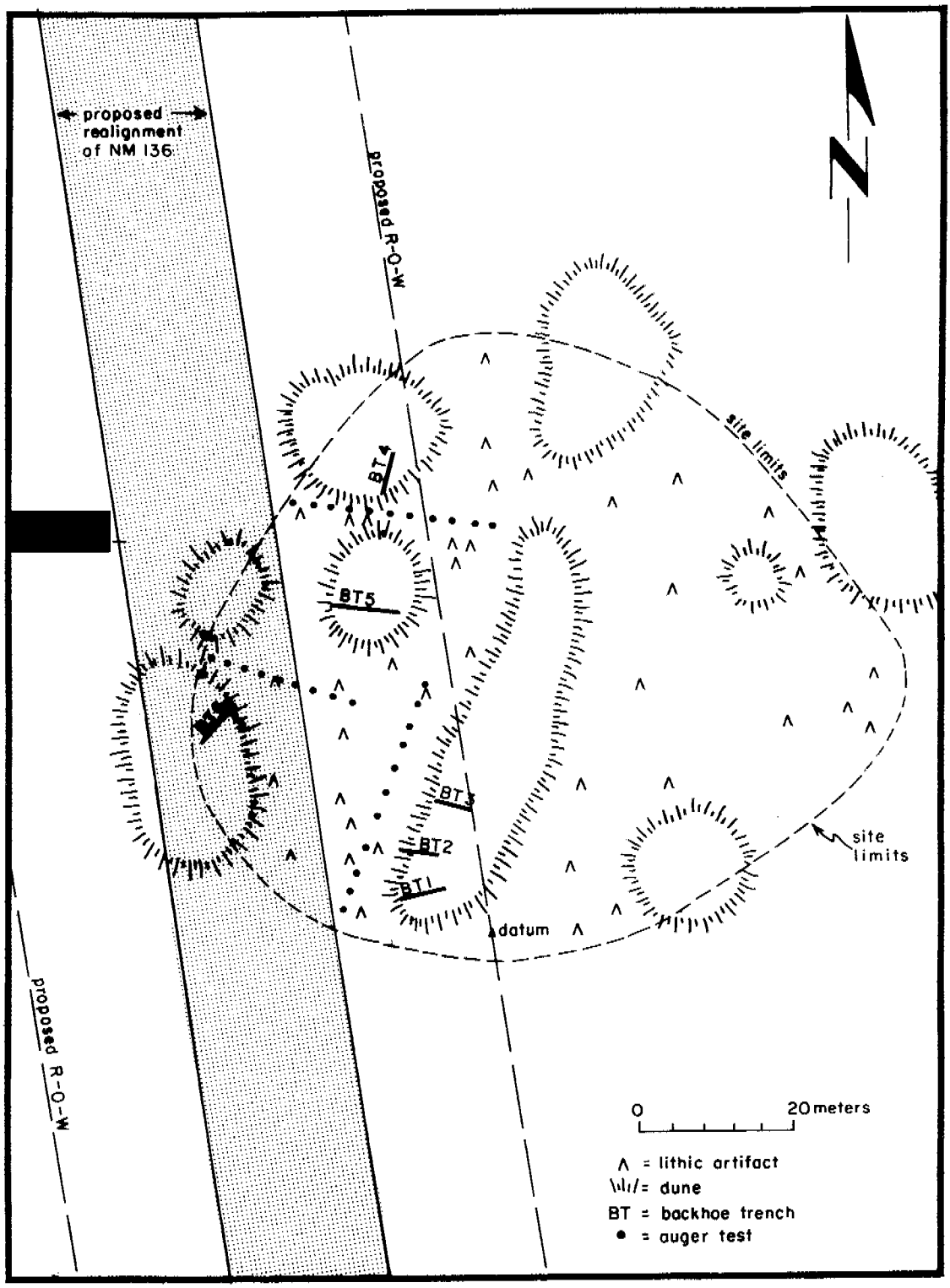

Figure 5. LA 86779 site map.

present on exposed caliche, redeposited from the original site surface. The elevation of the site is 1,252.7 m (4,110 ft).

Although originally recorded as a ceramic and lithic artifact scatter (Marshall 1996:12-14), only lithic artifacts were recorded at the site. Officer Poulet of the U.S. Border Patrol (personal communication, 1996) reported that surface artifacts had been collected from this site. A total of 44 lithic artifacts (all surface artifacts) were recorded at LA 86779. Six backhoe trenches were mechanically dug at LA 86779. In addition, 29 auger holes were hand dug at the site to locate cultural features or deposits.

Test Unit Descriptions

Six backhoe trenches were mechanically dug at LA 86779. Dirt in each trench was mechanically removed in 10 cm levels to a depth of approximately 1 m. Two strata of soil were present in all of the backhoe trenches. Stratum 1 was a tan eolian deposited fine silty sand. Stratum 2 was a fine silty sand containing flecks of caliche. No cultural features or deposits were found on any of the backhoe trenches.

A total of 29 auger holes were dug at LA 86779. These were hand dug in a series of transects across areas of the site where artifacts were present. Auger holes were spaced 3 m apart and hand dug until either cultural material or a depth of at least 30 cm was reached. No cultural features or deposits were found in any of the auger holes dug at LA 86779.

Cultural Features

No cultural features or deposits were found within any of the backhoe trenches or auger holes at LA 86779.

LA 113684

LA 113684 is a ceramic and lithic artifact scatter measuring 50 m north-south by 20 m east-west (Fig. 6). The western portion of the site was scraped during the original construction of Artcraft Road. The site is heavily deflated, and artifacts were redeposited from the original site surface. Surface artifacts are on a caliche surface adjacent to a single small dune. The elevation of the site is 1,248.2 m (4,095 ft).

Twenty-eight artifacts were recorded at LA 113864 (13 ceramics and 15 lithic artifacts). Ceramic artifacts were collected, and lithic artifacts were analyzed in the field and left in place. All of the artifacts were found on the modern ground surface. Eleven auger holes were hand dug at LA 113684.

Test Unit Descriptions

No backhoe trenches were dug at LA 113684 because of the lack of subsurface material and the modified nature and small size of the site.

A total of 11 auger holes were hand dug at LA 113684 in a series of transects across areas of the site where artifacts were present. Auger holes were spaced 3 m apart and hand dug until

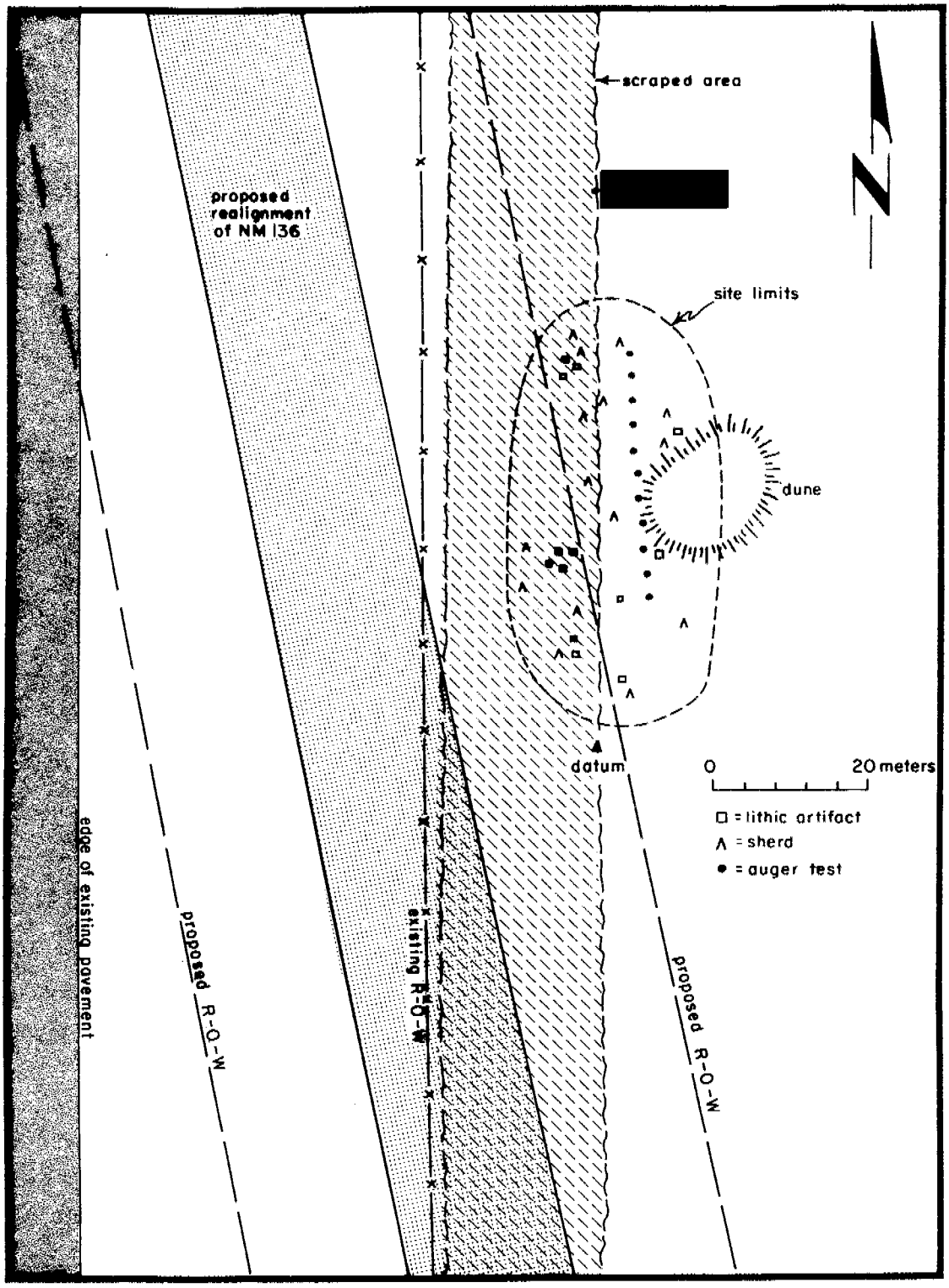

Figure 6. LA 113684 site map.

cultural material or a depth of at least 30 cm was reached. No cultural features or deposits were found in any of the auger holes dug at LA 113684.

Cultural Features

No cultural features or deposits were found within any of the auger holes at LA 113684.

Turn-Out Area Testing Results

A turn-out area (Fig. 7) extending from LA 35121/LA 86792 and LA 86779 west to Artcraft Road was also tested to locate possible cultural features or deposits. This triangular area measured 1,830 m north-south by 760 m east-west. The area is heavily deflated, with caliche exposed in numerous blowouts between coppice dunes and mesquite hummocks of redeposited sand. A dirt track crosses the turn-out area east to west. This area gradually slopes down toward the west and south. The elevation of the turn-out area ranged from 1,248.2 m to 1,254.9 m (4,095 to 4,117 ft).

No artifacts were recorded within the turn-out area. Thirty backhoe trenches were mechanically dug across portions of the turn-out area to locate possible cultural deposits and features. These backhoe trenches were placed in areas where sand remained in place and caliche was not exposed.

Test Unit Descriptions

Thirty backhoe trenches were mechanically dug across portions of the turn-out area. Dirt in each trench was mechanically removed in 10 cm levels to a depth of approximately 1 m. Two strata of soil were present in all of the backhoe trenches. Stratum 1 was a tan eolian fine silty sand. Stratum 2 was a fine silty sand containing flecks of caliche. No cultural features or deposits were found on any of the backhoe trenches.

Cultural Features

No cultural features or deposits were found in any of the backhoe trenches within the turn-out area.

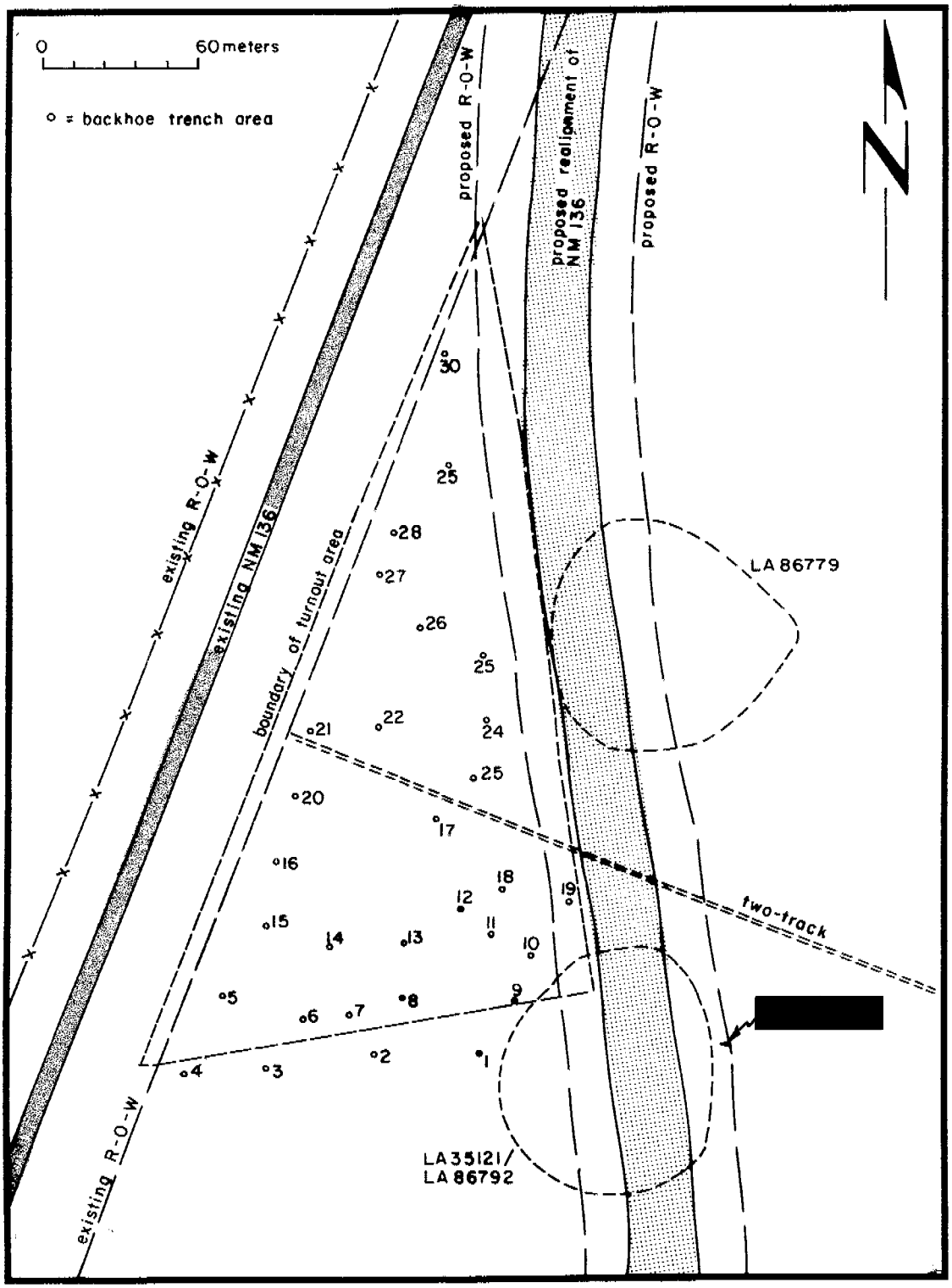

Figure 7. Turn-out area map.

LITHIC ARTIFACT ANALYSIS

A total of 241 lithic artifacts were recorded for the five sites. Attributes chosen for lithic analysis reflected the desire to achieve the greatest return of useful information within the available time. The guidelines and format of *Standardized Lithic Artifact Analysis* (OAS 1995) were followed.

The following attributes were included in analysis:

Material type codes are for general material groups unless the material is from a recognizable source. For example, although a wide range of chert occurs on these sites, all were classified as "chert." If a specimen was of a specifically named chert (such as Washington Pass chert), it was coded by the specific name.

Morphology (artifact type) is the characterization of artifacts by form.

Portion is the part of the artifact present. Flakes and tools may be whole or fragmentary. Angular debris and cores are whole by definition.

Dorsal cortex is estimated to the nearest 10-percent increment. For flakes this is the cortex on the dorsal surface. Cortex on the platform was not included. For other morphological types, the cortex on all surface is estimated and added together.

Flake platform is recorded for whole and proximal flakes. Some lateral flakes also have their platforms recorded if the platform is still present. The morphology of the impact area prior to flake removal or extreme modifications of the impact area caused by the actual flake removal is coded.

Size is recorded in millimeters.

Edge number. Artifacts can have one or more utilized edges. Each utilized edge on an artifact is given an edge number. Consecutive numbers are used for artifacts with more than one utilized edge. Each edge was analyzed separately for function and wear patterns.

Function describes and characterizes artifact use.

Wear patterns. Artifact modification caused by human use is coded as wear.

LA 49346

A total of 89 lithic artifacts were recorded at LA 49346. Rhyolite makes up the largest category of material types, 37.1 percent of the total (Table 1). Chert was the second most common material, 24.7 percent of the total. Limestone, quartzitic sandstone, and thunderbird rhyolite were also present in smaller amounts.

Core flakes make up the largest morphological group of artifacts (Table 2). Of the 89 lithic artifacts, 80 are core flakes (89.9 percent). Single-faceted flake platforms are the most numerous. The majority of flakes are whole. Based on the range of cortex present within the material types,

the large-scale reduction of lithic material includes all of the lithic materials present, with the exception of limestone (Table 3).

Lithic material was utilized as both formal and informal (or expedient) tools (Table 4). Secondary tool use, an indicator of mor intensive site use, is also present in this assemblage. Utilized lithic material reflects the materials present.

This site has the largest number of tool forms (both formal and expedient) within the project area. It also has the highest tool to total artifact ratio, 1:1.7. Formal tools include one chopper, one drill, one graver, and four scrapers. The high number of tools and limited range of lithic materials within this assemblage is common for prehistoric Puebloan sites and indicates that this site probably functioned as a short-term procurement area (Akins and Bullock 1992), where a variety of activities were pursued (Christenson 1987:77).

LA 86779

A total of 43 lithic artifacts were recorded at LA 86779. The largest material category is rhyolite, forming 37.2 percent (Table 5). At 30.2 percent, chert is the second most common material. Smaller amounts of thunderbird rhyolite and quartzitic sandstone are also present. Two artifacts of obsidian are in this assemblage. While the presence of obsidian is often considered evidence of trade (Findlow and Bolognese 1982), it is locally available in the general site area as nodules within the Pleistocene gravel deposits (Stin 1996; McAnulty 1967).

Core flakes make up the largest morphological group of artifacts, comprising 88.9 percent of the assemblage (Table 6). Single-faceted flake platforms are the most numerous, followed by cortical platforms. The majority of the flakes are whole. Based on the range of cortex present within material types in the assemblage, limited lithic reduction of rhyolite, thunderbird rhyolite, and chert took place (Table 7).

Lithic material was utilized as both formal and expedient tools (Table 8). Secondary tool use is also present, suggesting slightly more intensive site use. This site has the second highest tool to total artifact ratio in the project area (1:1.9). The utilized debitage suggests the production of expedient tools, while the lack of biface thinning flakes and tool resharpening flakes indicates a lack of formal tool production at this locale. The high number of tools in this assemblage indicates that the site is probably a short-term procurement area (Akins and Bullock 1992).

LA 335121/LA 86792

A total of 32 lithic artifacts were recorded at LA 335121/LA 86792. The largest percentage of these artifacts are rhyolite, 34.4 percent (Table 9). Chert is the second largest material category, 31.3 percent of the total assemblage. Thunderbird rhyolite and quartzitic sandstone are also present in smaller amounts.

Core flakes form the overwhelming majority of artifacts, 96.9 percent of the assemblage total (Table 10). Single-faceted flake platforms are the most numerous type at this site, followed by cortical platforms. The majority of the flakes are whole. Based on the range of cortex within material types, limited lithic reduction of rhyolite, thunderbird rhyolite, and chert took place (Table

11).

Tools in the lithic assemblage (Table 12) are limited to utilized debitage (expedient tools). No formal tools were recorded, but the presence of secondary use does suggest intensive site use. The ratio of tools to total artifacts was one of the lowest in the project area (1:2.6). The utilized debitage at this site suggest expedient tool production, probably associated with site activities. The site is probably a short-term procurement area.

LA 113683

A total of 64 lithic artifacts were recorded at LA 113583. Although this was not the largest assemblage, it did contain the largest variety of materials (Table 13). Rhyolite is the most common material (41.93 percent). The second most common material is thunderbird rhyolite (29.0 percent). Smaller amounts of chert, quartzite, quartzitic sandstone, and obsidian are also present in the assemblage. As mentioned in the discussion of LA 49346, obsidian is locally available in the Pleistocene gravels.

Core flakes, the largest morphological category, make up 85.5 percent of the assemblage total (Table 14). A majority of the flakes have cortical platforms, and single-faceted platforms comprise the second largest type. The majority of the flakes are whole. Based on the range of cortex precentages within material types, the limited lithic reduction of rhyolite, thunderbird rhyolite, and chert took place at the site (Table 15).

Lithic material was utilized as both formal and expedient tools (Table 16). Slightly more intensive site use is suggested by the added presence of secondary tool use. Formal tools in this assemblage are a spokeshave and a biface, possibly used as a knife. LA 113583 has the third highest range of tool types and a tool to total artifact ratio of 1:2.3

The high number of tools in this assemblage and the limited range of materials involved are common to prehistoric Puebloan sites and indicate that the site probably functioned as a short-term procurement area. The utilized debitage suggest the production of expedient tools. The low numbers of biface thinning flakes and tool resharpening flakes indicates a a lack of formal tool production at this locale.

LA 113684

A total of 15 lithic artifacts were recorded at LA 113684. Of these, 60.0 percent were rhyolite (Table 17). Chert is the second largest material category (33.3 percent). Thunderbird rhyolite is also present.

Core flakes make up the largest morphological category, 93.3 percent of the artifact total. Cortical flake platforms and single-faceted flake platforms occur in equal numbers (Table 18). A majority of the flakes are whole. Based on the range of cortex present within material types in this assemblage (Table 19), the limited reduction of rhyolite, thunderbird rhyolite, and chert took place.

Lithic material in this assemblage was utilized as expedient tools (Table 20). No formal tools were recorded. No secondary use is present on the expedient tools in this assemblage, suggesting

a low-intensity level of site utilization. The tool to total artifact ratio is 1:3.7. Although it should be possible to determine the types of activities pursued at this site, the assemblage numbers are too low for this to be done with any level of certainty. However, the utilized debitage does suggest the production of expedient tools took place at this site, which is probably a short-term procurement area.

Material Selection

Material use serves as an indication of the human decision-making processes with regard to the suitability of materials (Young and Bonnichsen 1985:128). The presence within a site assemblage of tested material or substantial numbers of core flakes exhibiting dorsal cortex can thus be presumed to illustrate the manner in which this material suitability is determined.

All of the lithic material at these sites is locally available as nodules within the Pleistocene alluvial deposits of the area or from erosional deposits in the Franklin Mountains. Thunderbird rhyolite is a form of reddish brown rhyolite containing biotite inclusions that is found locally in the Franklin Mountains.

Rhyolite is the material of choice at all five of these sites. Rhyolite, or a combination of rhyolite and thunderbird rhyolite, dominate all five lithic artifact assemblages. Rhyolite comprises 37.1 percent of the assemblage at LA 49346, 37.2 percent at LA 86779, 34.4 percent at LA 335121/LA 86792, 41.93 percent at LA 113683, and 60.0 percent at LA 113684. Thunderbird rhyolite is the second most common material at LA 113683, comprising 29.0 percent of the assemblage. Chert is the second most common material at the other four sites, constituting 24.7 percent of the assemblage at LA 49346, 30.2 percent at LA 86779, 31.3 percent at LA 35121/LA 86792, and 33.3 percent at LA 113684.

Smaller amounts of other materials, including limestone, quartzitic sandstone, and quartzite, are also present. Three obsidian artifacts were found at LA 86779 and LA 11683. Although the presence of obsidian is often considered evidence of trade (Findlow and Bolognese 1982), it is locally available as nodules within the Pleistocene gravel deposits (Stain 1966: McAnulty 1967).

Artifact Morphology

Core flakes make up the largest morphological group of lithic artifacts at all five sites. Of 89 lithic artifacts recorded at LA 49346, 80 are core flakes (89.9 percent). Core flakes comprise 88.9 percent of the assemblage at LA 86779, 96.9 percent at LA 35121/LA 86792, 85.5 percent at LA 113683, and 93.3 percent at LA 113684. Other morphological types of lithic artifacts at the sites include hammerstone flakes, resharpening flakes, cores, and bifaces.

Single-faceted flake platforms are most numerous at LA 35121/LA 86792, LA 86779, and LA 49346, followed by cortical. Cortical flake platforms are the most common at LA 113683, followed by single-faceted platforms. Cortical flake platforms and single-faceted platforms occur in equal numbers at LA 113684. The overwhelming majority of flakes at all five sites are whole.

Based on the range of cortex present within material types in these assemblages, limited lithic reduction of rhyolite, thunderbird rhyolite, and chert occurred at LA 35121/LA 86792, LA 86779,

LA 113683, and LA 111684. This is in contrast to the large-scale reduction of lithic material at LA 98732, which also includes quartzitic sandstone.

Utilization by Material

Lithic material was utilized as formal and expedient tools at three of the five sites (LA 49346, LA 86779, and LA 113683), and as expedient tools at two sites (LA 35121/LA 86792 and LA 113684). Slightly more intensive site use is suggested by secondary tool use. This is indicated for LA 39346, LA 35121/LA 86792, LA 86779, and LA 113683. No secondary tool use is present at LA 113684. Utilized lithic material at each site reflects the material present within that specific assemblage. The similarities in utilized material between sites reflects the materials in the assemblages.

Formal tools were recovered at three of the five sites. Formal tools at LA 49346 included one chopper, one drill, one graver, and four side scrapers. The artifact assemblage from LA 113683 contained a spokeshave and a biface, possibly used as a knife, while the assemblage from LA 86779 contained one side scraper. Utilized debitage was recovered from all five sites. Unmodified cobbles utilized as hammerstones were recovered at all sites except LA 35121/LA 86792.

The occurrence of expedient and formal tools varies from site to site within the project area. LA 49346 has the largest range of tool forms (both formal and expedient tools), as well as the highest tool to artifact ratio, 1:1.7. LA 86779 has both the second highest range of tools and the second highest tool to artifact ratio within a site assemblage, 1:1.9. LA 113683 has the third highest range of tool types and a tool to artifact ratio of 1:2.3. No formal tools were found at either LA 35121/LA 86792 or LA 11684, although expedient tools comprised of utilized debitage and unmodified cobbles (used as hammerstones) were present. These two sites also had the lowest tool to artifact ratios (1:2.6 at LA 35121/LA 86792, and 1:3.7 at LA 113684).

The high numbers of tools within these assemblages and the limited range of lithic materials involved are common occurrences at Prehistoric Puebloan sites and indicate that these sites probably functioned as short-term procurement areas (Akins and Bullock 1992). This is supported by site size and the lack of cultural features, although both of these aspects could be the result of the heavy deflation of these sites.

It should be possible to determine, however roughly, the types of activities pursued at each of these sites (Christenson 1987:77). However, all of the assemblages are too small for this to be practical at the site level. Utilized debitage suggests the production of expedient tools. The low number of biface thinning flakes, uniface thinning flakes, and tool resharpening flakes also indicates a lack of formal tool production, while the large nonutilized debitage to tool ratio suggests short-term site use (Akins and Bullock 1992:27).

GROUND STONE ARTIFACT ANALYSIS

Nine ground stone artifacts were found at three of the five sites tested. Four ground stone artifacts were recorded at LA 49346, and four at LA 113683. A single ground stone artifact was also recorded at LA 35121/LA 86792. All of these artifacts were analyzed in the field and left in place.

Attributes chosen for ground stone analysis reflected the desire to achieve the greatest return of useful information within the available time. The guidelines and format followed *Standardized Ground Stone Artifact Analysis* (OAS 1994).

LA 49346

The edge fragment of a mano was found on the modern ground surface. Made of fine-grained sandstone, this mano was made from a cobble that had been partially shaped by pecking. Although it may have had a number of use-surfaces, only one is evident from this fragment. This use-surface is slightly convex. It is impossible to determine the form or size of the complete mano from what remains.

The other three ground stone artifacts from LA 49346 are edge fragments from basin metates. All three were constructed of fine-grained sandstone by flaking and pecking. Pecking on the use-surface of one fragment indicates that at least one resharpening episode (pecking the use-surface to make it rough) took place. This pecking is absent on the other two metate fragments. The deeply concave use-surfaces of all three artifacts suggest they were heavily used prior to being broken or discarded.

One metate fragment was reused as a one-hand mano. After being broken, the fragment was pecked into an oval shape. A single slightly convex mano use-surface is present, opposite the original metate use-surface. The slight convex shape of the use-surface, combined with the lack of pecking, suggests that the mano was not heavily used prior to being discarded.

LA 113683

Four ground stone artifacts were present at LA 113683 on the modern ground surface. Three of them are metate fragments. All three artifacts are small interior fragments constructed of fine-grained sandstone. All three fragments show evidence of having been burned (fire-reddening). Two of the fragments have slightly concave use-surfaces. The third metate fragment has a deeply concave use-surface. Although it is conceivable that these fragments are from a single metate, they do not articulate with each other. It is impossible to determine the form or size of the original metate(s) from these fragments.

The fourth ground stone artifact is the end fragment of a mano. Made from a sandstone cobble, this mano was shaped by pecking. A single heavily convex use-surface is present. The small size of the fragment makes it impossible to determine the original size of the mano.

The one ground stone artifact recovered from LA 35121/LA 86792 is an interior metate fragment found on the modern ground surface. This fragment is constructed from a fine-grained sandstone. The single use-surface is a smooth deep concave surface, implying that the metate was heavily used prior to being broken or discarded. Although the lack of pecking suggests that the metate was not resharpened, any evidence of this may have been ground away (as suggested by the extremely smooth use-surface). It is impossible to determine the original shape of the metate based on this single fragment.

The presence of ground stone artifacts on these three sites indicates food processing and is consistent with the occurrence of ceramics at LA 49346, LA 35121/LA 86792, and LA 113683. Although no features were found at any of these sites, the presence of ground stone artifacts suggests longer site use than at the other sites, where ground stone artifacts were absent.

CERAMIC ANALYSIS

C. Dean Wilson

One hundred sherds were recovered during the testing phase of the Borderland project. This study resulted in the analysis of 73 sherds from LA 113683, 13 from LA 113864, and 14 from LA 49346. Despite this small sample, the resulting data provides an opportunity to further examine ceramic trends associated with Jornada Mogollon occupation in this area, examined during several projects by OAS (Wilson 1996a, 1996b) as well as other investigations in this region (Anyon 1985; Hard 1983; Jennings 1940; Lehmer 1948; Mills 1988; Whalen 1994). Therefore, analysis approaches and categories used during earlier projects were utilized during the present study.

Descriptive Attributes

The recording of descriptive attributes reflecting resource use, technology, manufacture, decoration, vessel form, and postfiring modifications of vessels allows for the documentation of variation reflecting a variety of patterns. Attributes recorded for all sherds include temper, pigment, surface manipulation, wall thickness, paste profile, rim shape, vessel form, and modification.

Temper

Temper categories were identified by examining freshly broken sherd surfaces through a binocular microscope. All the sherds examined had very similar temper consisting of relatively large white angular fragments composed of quartz and feldspar. This material is a crushed granite, for which the nearest sources are the Franklin Mountains to the east (Hill 1996).

The single Mimbres Black-on-white sherd had fine volcanic particles, probably reflecting the use of self tempered clays derived from volcanic tuff deposits in the Mogollon Highlands, and was assigned to a *tuff* category. The presence of fine volcanic temper in pottery produced in this region may reflect inclusions commonly occurring in local pedogenic clays or the addition of fine volcanic rock as temper. Temper reflecting these sources generally contain a combination of reflective light colored igneous rocks, dull light color tuff, and sandstone particles derived from volcanic clastic formations.

Surface Manipulation

Surface manipulations were noted for both interior and exterior sherd surfaces, and refer to type and presence of surface textures and polishing. *Plain smoothed surfaces* refers to surfaces where coil junctures had been completely smoothed, but surfaces were unpolished, and is similar to Whalen's (1994:81) coarse finish category. *Plain polished surfaces* are those which have been intentionally polished after smoothing. Polishing implies intentional smoothing with a polishing stone to produce a compact and lustrous surface. This category appears to be similar to Whalen's (1994) fine finished category. *Smoothed and somewhat lustrous* refers to intermediate treatments that are either highly smoothed or lightly polished and is similar to Whalen's (1994) medium finished category.

Wall Thickness

Because previous studies indicate changes in wall thickness of Jornada Brown Ware vessels (Whalen 1994), sherd thickness was recorded to a tenth of a millimeter for all sherds analyzed. This measurement was made at an area of the sherd that appeared to be fairly typical of the overall thickness.

Paste Profile

The color combinations of a sherd cross section reflects clay iron content and the firing conditions to which a vessel was exposed. Reddish or buff profiles indicate final oxidation atmospheres. Black or dark gray profiles result from reduction atmospheres. Color categories recorded for sherd cross sections included *not recorded*, *brownish or red throughout*, *brownish or reddish exterior with dark gray or black core*, and *dark gray or black throughout*.

Vessel Form

Vessel form categories were assigned based on observed shapes of rims or the presence and location of polish and painted decorations on sherds. While it is often possible to identify the basic form (bowl versus jar) of body sherds from many southwestern regions by the location of polishing, such distinctions may not be as easy for Jornada Brown Ware types. For example, in contrast to many Southwest pottery traditions, Jornada Brown Ware bowl and jar sherds are often polished or smoothed on either side. Such observations result in a reluctance to assign brown ware sherds to specific vessel form categories. While the location of surface polishing may convey relevant information, caution must be employed in the resulting interpretations. Therefore, body sherds were not assigned to specific vessel form categories, but were placed in a series of categories reflecting the presence and location of surface polishing. Categories recorded for body sherds included *both sides unpolished*, *both sides polished*, and *exterior side polished*. The only nonrim sherds assigned to more distinct form categories are *jar neck* sherds, as identified by the presence of distinct curves. *Jar rim* refers to rim sherds exhibiting straight necks and relatively wide rim diameter. *Bowl rim* refers to sherds exhibiting inward rim curvature indicative of bowls.

Modification and Wear

Evidence of postfiring modification and wear of sherds was limited to a single sherd with a drilled repair hole. *Repair drill hole* refers to the presence of purposely drilled holes presumably used in the mending of vessels through the lacing together of drilled sherds.

Refired Paste Color

Clips from 35 sherds were also fired to controlled oxidation conditions at a temperature of 950 degree C to standardize ceramic pastes. This provides a common comparison of pastes based on the influence of mineral impurities (particularly iron) on paste color and may used to identify sherds that could have originated from the source. The color of each sample was recorded using a Munsell Soil Chart.

LA 49346

Thirteen sherds were recovered from LA 49346. While 12 of the 13 are El Paso Brown Ware sherds. A single Mimbres Classic sherd was also present. This sherd allows us to date the site to the Late Mesilla phase and indicates an occupation in the late eleventh or early twelfth century.

LA 113683

All of the 73 sherds recovered at LA 113683 are from El Paso Brown Ware vessels. This site is assigned to the Mesilla phase based on these ceramics. The absence of sherds derived from El Paso Polychrome or other decorated types makes any finer dating impossible.

LA 113684

A total of 13 sherds were recovered at LA 113684. All of these ceramics are El Paso Brown Ware. The site has been assigned to the Mesilla phase based on these ceramics. This assemblage is too small to determine the specific range of occupation within the Mesilla phase.

Type Categories

Ceramic types represent convenient groupings incorporating information about spatially and temporally important trait combinations. Ceramic items are assigned to typological categories based on a series of observations. First, an item is placed into a spatially distinct ceramic tradition based on temper, paste, and technological traits. Next, it is assigned to a particular ware group based on technological and surface attributes. Finally, a sherd is placed into a type category based on temporally sensitive surface textures or design styles.

All the utility ware sherds analyzed during the present project represented Jornada Mogollon Brown Ware types. Jornada Mogollon brown wares dominate ceramic assemblages at sites spread over large areas of southern New Mexico, west Texas, and northern Mexico. Most of the pottery from sites along the Rio Grande near the Texas–New Mexico border and the Tularosa Basin are assigned to El Paso Brown Ware types. These ceramics seem to differ from other Jornada Brown Ware sherds solely by the presence of a coarse angular temper of local origin (Anyon 1985; Hard 1983; Jennings 1940; Lehmer 1948; Whalen 1994). It is often not possible to distinguish El Paso Brown Ware sherds from other Jornada Brown Ware types without careful characterization of the associated temper. Thus, the various El Paso Brown Ware types are best considered a regional variant of Jornada Brown Ware (Whalen 1994).

Most Jornada brown wares from sites in the El Paso area exhibit plain surfaces that may be rough to polished. Most El Paso Brown Ware sherds lack distinct surface textures (Jelinek 1967; Jennings 1940; Lehmer 1948). Surface colors are gray, brown, or red, and cross sections range from brown to black, with various combinations of exterior and core colors. El Paso Brown Ware sherds can be further divided into types based on the presence of painted decoration or surface texture. El Paso Brown Ware types identified during the present analysis include the following.

El Paso Brown Rim, as defined here, is identical to ceramics previously classified as El Paso

Plain Brown (Mills 1988). This type refers to smoothed and unpainted El Paso Brown Ware rim sherds. Unpainted rim sherds are assigned to a different type from body sherds, because temporally diagnostic El Paso Polychrome vessels are often undecorated in the lower portion of the vessel only. Thus, the likelihood that unpainted brown ware sherds originated from earlier unpainted vessels is much more likely in the case of rim sherds than in the case of body sherds.

El Paso Brown Body is similar to the category defined by others as Unspecified El Paso Brown (Anyon 1985; Hard 1983; Mills 1988). This category includes sherds in which attributes such as paint and rim, most commonly used to distinguish El Paso Brown from El Paso Polychrome vessels, were absent.

Mimbres Classic Black-on-white represents the most recently produced type of the Mimbres White Ware series. Sites of this series exhibit brown ware pastes, covered with white slips, and decorated with a black mineral paint. Characteristics used to identify Mimbres Classic sherds include the use of fine, regularly spaced hatchure bordered by thin lines, and the presence of framing lines near the rim. The single Mimbres sherd recovered during investigations of the Borderland project appears to reflect exchange with Mimbres Mogollon groups residing in areas to the northwest.

Ceramic Patterns

Although the very small sample size of the assemblages examined during the present study limits interpretations, the examination of this data does provide some information concerning the dating of these sites and associated ceramic trends. All but one of the sherds recorded were brown wares exhibiting similar pastes and tempers, and were assigned to types based on rim form and surface treatment (Tables 21-23). The exception to this was a single Mimbres Classic sherd from LA 43946. All the plain ware sherds examined were tempered with crushed granite temper (Table 24), exhibited similar high iron pastes, and fired to red colors in oxidizing atmospheres. This indicates that all the ceramics recovered could have been produced utilizing the same ceramic sources. The single Mimbres Classic sherd exhibited tuff temper. The great majority of the sherds that are unpolished appear to have originated from jars. A few sherds polished on the interior could have originated from bowls (Table 25). Rim sherds from both jars and bowls were present.

Dating of Sites

It is difficult to assign precise dates to these sites given the small assemblage size, the very conservative nature of ceramic change in the Jornada Mogollon region, and the general absence of independently dated sites. The conservative nature of Jornada Mogollon ceramic technology is reflected by the very long dominance of El Paso Brown sherds with similar ranges of paste, temper, and surface textures. Dating studies in the Jornada Mogollon region have relied on low frequencies of better-dated intrusive types and local painted brown wares such as El Paso Polychrome (Lehmer 1948). Given the small number of intrusive and painted types normally recovered from sites in this region, the reliable dating of an assemblage requires large sample sizes.

The ceramic occupation of the southern Jornada Mogollon area is usually divided into a three-phase chronology (Lehmer 1948) that includes the Mesilla (A.D. 1 to 1100), Doña Ana (A.D. 1100 to 1200) and El Paso (A.D. 1200 to 1400) phases. The earliest ceramic period (the Mesilla phase)

is associated with pithouse occupations and begins with the introduction of plain brown ware ceramics at about A.D. 0 to 500 and ends at about A. D. 1100 with the introduction of local painted types (Lehmer 1948; Whalen 1994). Pottery is often rare at Mesilla phase components and is sometimes even absent. Some studies have documented chronological changes during the long-lived production of El Paso Brown vessels by lumping these sherds into a series of finer defined subtypes distinguished by combinations of paste and surface characteristics or through the independent recording and monitoring of potentially sensitive attributes for El Paso Brown Ware types (Whalen 1981; 1994). These examinations indicate gradual changes in Jornada Brown Ware pottery, which may include a decrease in temper size and an increase in fineness of surface finish and hardness through time (Whalen 1994).

Plain ware vessels appear to have been gradually replaced by painted vessels during the Doña Ana phase (Whalen 1977). El Paso Polychrome appears during this period, although early examples may exhibit painted decorations in one color only and retain a number of El Paso Brown traits (Whalen 1981). The Doña Ana phase is thought to date between A.D. 1100 and 1200, and is often characterized by a mixture of ceramic types or attributes defined for the Mesilla and El Paso phases (Carmichael 1985; Lehmer 1948). This may result in difficulties in distinguishing Doña Ana phase assemblages mixed assemblages. It is sometimes assumed that a shift toward the almost exclusive production of El Paso Polychrome vessels occurred by the beginning of the El Paso phase. It is likely, however, that the production of some unpainted El Paso Brown vessels continued into the early El Paso phase (Seaman and Mills 1988).

The absence of El Paso polychromes at any of these sites and the presence of El Paso Brown rim sherds could indicate a Mesilla phase occupation. This may be further supported by the absence of polishing on most brown ware sherds, which appears to be an early characteristic (Whalen 1994). In addition, the average thickness of brown ware sherds appears to be consistent with thicknesses associated with Mesilla phase sites. Finally, the presence of a Mimbres Classic sherd at LA 49346 indicates an association sometime during the eleventh or early twelfth century. This appears to indicate an occupation during the late Mesilla or early Doña Ana phase at this site.

DISCUSSION

The five sites in the NM 136 Borderlands project have been assigned to phases based on their associated pottery (Wilson, this volume). Two of the sites (LA 35121/LA 86792 and LA 85779) could not be dated because of their lack of ceramics and diagnostic lithic artifacts.

The ephemeral nature of these sites suggest that they are the result of short-term limited activity areas. Limited-activity sites are defined by Adams (1978) as "sites containing a limited range of actions present within that specific culture, and are generally involved in the exploitation of resources located at a distance from residential area." Short-term limited activity sites usually involve the procurement of seasonally available plant or animal resources (Adams 1978:105). They may also involve the procurement of other materials in short supply, such as clay or specific types of stone (Adams 1978:106). In most areas of the Southwest, short-term limited-activity sites are present as small structureless ceramic and lithic artifact scatters. Long-term occupational sites are therefore defined as sites containing residential structures and a range of features resulting from long-term use of the area. These may include hearth areas, storage pits, and specialized activity areas.

While short-term limited-activity areas with features have been documented that can be assigned to the Jornada Mogollon (Hard 1983; O'Laughlin 1979, 1980; O'Laughlin and Gerald 1977; Whalen 1980, 1994), few habitation sites have been excavated west of the Rio Grande (Moore 1996; O'Laughlin and Gerald 1977; Whalen 1994; Zamora 1993). No intact features or any other evidence of habitation were found within the project area.

The importance of wild plant and animal resources to the Jornada Mogollon has become increasingly better understood. Use was made of a wide range of wild plants, despite the cultivation of maize and other domesticated crops (Whalen 1994:116). This combination of farming, with the collection of wild plants, has been shown to be especially adaptive to hot, dry desert conditions (Whalen 1994:116-117). Fluctuating crop yields are a common phenomenon in the difficult farming environment of the Southwest, where crop failure is common. The maintenance of a hunting and gathering component within a farming-based subsistence system is an effective coping mechanism in this type of environment.

Ethnographically, this mixture of farming with hunting and gathering has been recorded by Bohrer (1970) among the Pima Indians of southern Arizona. The Pima collected wild plants in inverse proportion to their harvest, although some wild plants were always collected. Hunting, as opposed to plant collecting, is less dependent on farming results.

Differentiating between activities through use of the archaeological record can be challenging. The lithic assemblages from these five sites suggest limited plant rather than animal processing, an activity discounted by the lack of faunal remains. Ground stone artifacts would be indicative of domesticated maize, wild seed, or possibly mesquite bean collection. Within the project area, ground stone artifacts were recovered from LA 49346 and LA 113683.

Of particular importance is the position of these sites within the West Mesa environmental zone (O'Laughlin 1980: Fig. 5). This zone is a relatively homogenous area characterized by sandy soils, coppice dunes, and shallow playas. Historic descriptions of the area indicate that the West Mesa zone supported an abundant cover of grasses (black grama and dropseed) until the late nineteenth

century. Grass seed would have been an important food resource, harvested in the summer or fall. Yucca and mesquite, although believed to have been important food crops, had a much more restricted range than at present (O'Laughlin 1980:19).

Habitation sites generally occur in ecological edge areas, the areas of contact between different biotic communities. These are generally where physical changes are present in the landscape. Ecological edge areas are "the most convenient locations for proximity to the widest variety and stability of resources" (Epp 1985:332). Correlations have been demonstrated between site location and ecological edge areas for sites dating from the Paleoindian (Thurmond 1990) and the Archaic (Reher and Winter 1977) to the Protohistoric periods (Epp 1985). Settlement patterns based on the correlation between environmental zone and site location for the Jornada Mogollon in the El Paso area have been developed by O'Laughlin (1980:27-31).

Although it has been argued that the constraints imposed by the unpredictability of the wild plant crops are incompatible with a sedentary lifestyle (Whalen 1994:132), Thurmond (1990:17) suggests that these biotic borderlands maximize both density and diversity of both available faunal and floral resources. This increased availability of resources should result in a larger range of short-term activities occurring in increased frequency in these ecological edge areas. Inversely, the more limited range of resources within a single environmental zone should result in a smaller range of short-term activities.

The repeated use of an area should occur as different plant (and possible animal) resources become available throughout the year (O'Laughlin 1980:230), allowing the degree of exploitation needed to support a sedentary population.

The ecological zone of the site locations may also reflect the types of faunal procured. O'Laughlin and Gerald (1977) developed a model of Jornada Mogollon hunting strategies based on site location. Sites were divided by their locations in the landscape. Highland sites utilized a hunting strategy based on deer. Lowland sites utilized a rabbit-oriented strategy. A riverine hunting strategy formed the third type. This was essentially a lowland rabbit-based hunting strategy with the addition of migratory water fowl, fish, and riverine mammals (O'Laughlin and Gerald 1977). These sites represent the lowland hunting strategy. No faunal remains were recovered from any of these sites.

As an increasing number of sites are recorded in this general area, a more complete picture of site frequency, location of occurrence, and site structure will enable us to make more refined interpretations of these site data.

ASSESSMENTS AND RECOMMENDATIONS

Information derived from the surface mapping and test excavations at LA 35121/LA 86792, LA 49346, LA 86779, LA 113683, and LA 113684 combined with analysis of the recovered artifact assemblages provides insight into site function and aids in the interpretation of those portions of the sites within the proposed project area.

LA 35121/LA 86792

LA 35121/LA 86792 is a lithic artifact scatter. The lack of diagnostic artifacts makes it impossible to date the site. The site is in an area of active dunes and is heavily deflated. All of the artifacts present are redeposited. No intact cultural features or deposits were found.

Archaeological testing within the proposed project area at LA 35121/86792 did not reveal any cultural features or deposits likely to yield important information on the prehistory of LA 35121/LA 86792 or of the region. No further archaeological investigations are needed.

LA 43946

LA 43946 is a ceramic and lithic artifact scatter. This site has been assigned to the late Mesilla or Doña Ana phase based on ceramics present (see Wilson, this volume). This site has been severely deflated, and the artifacts have been redeposited. No intact cultural features or deposits were found.

Archaeological testing within the proposed project area at LA 43946 did not reveal any cultural features or deposits likely to yield important information on the prehistory of LA 43946 or of the region. No further archaeological investigations are needed.

LA 86779

LA 86779 is a lithic artifact scatter. The lack of diagnostic artifacts makes it impossible to assign a date to this site. The site is heavily deflated, and the artifacts have been redeposited. No intact cultural features or deposits were found.

Archaeological testing within the proposed project area did not reveal any cultural features and deposits likely to yield important information on the prehistory of LA 86779 and the region. No further archaeological investigations are needed at LA 86779.

LA 113683

LA 113683 is a ceramic and lithic artifact scatter. Based on the ceramic assemblage (see Wilson, this volume), this site has been assigned to the Mesilla phase. The site has been severely deflated, and the artifacts have been redeposited. No intact cultural features or deposits were found.

Archaeological testing within the proposed project area at LA 113683 did not reveal any cultural features or deposits likely to yield important information on the prehistory of LA 113683 or of the region. No further archaeological investigations are needed.

LA 113684

LA 113684 is a recorded ceramic and lithic artifact scatter. This site has been assigned to the Mesilla phase based on the ceramics recovered (see Wilson, this volume). The site is heavily deflated, and the artifacts have been redeposited.

Archaeological testing within the proposed project area at LA 113684 did not reveal any cultural features or deposits likely to yield important information on the prehistory of LA 113684 or of the region. No further archaeological investigations are needed.

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APPENDIX 2: TABLES

Table 1. Artifact morphology by material type, LA 49346

	Chert		Rhyolite		Limestone		Quartzite Sandstone		Thunderbird Rhyolite		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Core flake	20	90.9	31	93.9	2	66.7	14	100.0	13	76.5	80	89.9
Resharpening flake					1	33.3					1	1.1
Hammerstone flake	1	4.5	2	6.1					2		5	5.6
Biface, first phase									1		1	1.1
Unmodified cobble									1		1	1.1
Drill	1	4.5									1	1.1
Total	22	100.0	33	100.0	3	100.0	14	100.0	17	100.0	89	100.0

Table 2. Flake type by platform, LA 49346

Platform Type	Absent		Cortical		Single		Multiple		Crushed		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Core flake	1	100.0	29	100.0	49	100.0			1	100.0	80	93.0
Resharpening flake							1				1	1.2
Hammerstone flake					5			100.0			5	5.8
Total	1	100.0	29	100.0	54	100.0	1	100.0	1	100.0	86	100.0

Table 3. Cortex by material type, LA 49346

Percent of Cortex	Chert		Rhyolite		Limestone		Quartzitic Sandstone		Thunderbird Rhyolite		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
0	9	40.9	13	39.4			3	21.4	5	29.4	30	33.7
10	4	18.2	4	12.1	1	33.3	1	7.1	1	5.9	11	12.4
20	2	9.1	6	18.2							8	9.0
30	1	4.5	2	6.1			1	7.1	2	11.8	6	6.7
40					1	33.3	2	14.3			3	3.4
50			1	3.0					1	5.9	2	2.2
60			2	6.1			3	21.4	1	5.9	6	6.7
70	2	9.1	2	6.1	1	33.3	2	14.3	1	5.9	8	9.0
80	2	9.1	1	3.0					2	11.8	5	5.6
90	1	4.5	1	3.0			2	14.3	2	11.8	6	6.7
100	1	4.5	1	3.0					2	11.8	4	4.5
Total	22	100.0	33	100.0	3	100.0	14	100.0	17	100.0	89	100.0

Table 4. Lithic artifact function by material type, LA 49346

	Chert		Rhyolite		Thunderbird Rhyolite		Total	
	N	%	N	%	N	%	N	%
Utilized debitage	5	45.5	6	75.0	1	20.0	12	50.0
Hammerstone	1	9.1	1	12.5	3	60.0	5	20.8
Chopper					1	20.0	1	4.2
Drill	1	9.1					1	4.2
Graver			1	12.5			1	4.2
Scraper (side)	4	36.4					4	16.7
Total	11	100.0	8	100.0	5	100.0	24	100.0
Function 2								
Utilized debitage	2	100.0			2	100.0	4	100.0
Total	2	100.0			2	100.0	4	100.0

Table 5. Artifact morphology by material type, LA 86779

	Chert		Rhyolite		Quartzitic Sandstone		Obsidian		Thunderbird Rhyolite		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Core flake	10	76.9	14	87.5	4	100.0	2	100.0	8	100.0	38	88.4
Hammerstone flake	1	7.7	2	12.5							3	7.0
Multifaceted core	1	7.7									1	2.3
Unmodified cobble	1	7.7									1	2.3
Total	13	100.0	16	100.0	4	100.0	2	100.0	8	100.0	43	100.0

Table 6. Flake type by platform, LA 86779

Platform Type	Absent		Cortical		Single		Total	
	N	%	N	%	N	%	N	%
Core Flake			14	93.3	24	88.9	38	90.5
Hammerstone flake	1	100.0	1	6.7	3	11.1	4	9.5
Total	1	100.0	15	100.0	27	100.0	42	100.0

Table 7. Cortex by material type, LA 86779

Percent of Cortex	Chert		Rhyolite		Quartzitic Sandstone		Obsidian		Thunderbird Rhyolite		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
0	7	53.8	9	56.3	2	50.0	1	50.0	3	37.5	22	51.2
10			1	6.3					2	25.0	3	7.0
20			3	18.8					1	12.5	4	9.3
30												
40			2	12.6							2	4.7
50												
60	1	7.7							1	12.5	2	4.7
70	1	7.7	1	6.3							2	4.7
80	1	7.7			1	25.0					2	4.7
90							1	50.0			1	2.3
100	3	23.1			1	25.0			1	12.5	5	11.8
Total	13	100.0	16	100.0	4	100.0	2	100.0	8	100.0	43	100.0

Table 8. Lithic artifact function by material type, LA 86779

	Chert		Rhyolite		Quartzitic Sandstone		Thunderbird Rhyolite		Total	
	N	%	N	%	N	%	N	%	N	%
Utilized debitage	5	100.0	2	50.0	1	100.0	1	100.0	9	81.8
Hammerstone			1	25.0					1	9.1
Scraper (side)			1	25.0					1	9.1
Total	5	100.0	4	100.0	1	100.0	1	100.0	11	100.0
Function 2										
Utilized debitage	2	100.0	1	100.0					3	100.0
Total	2	100.0	1	100.0					3	100.0

Table 9. Artifact morphology by material type, LA 35121/LA 86792

	Chert		Rhyolite		Quartzitic Sandstone		Thunderbird Rhyolite		Total	
	N	%	N	%	N	%	N	%	N	%
Core flake	9	90.0	11	100.0	2	100.0	9	100.0	31	96.9
Hammerstone flake	1	10.0							1	3.1
Total	10	100.0	11	100.0	2	100.0	9	100.0	32	100.0

Table 10. Flake type by platform, LA 35121/LA 86792

Platform Type	Absent		Cortical		Single		Crushed		Total	
	N	%	N	%	N	%	N	%	N	%
Core flake	1	100.0	9	100.0	19	95.0	2	100.0	31	96.9
Hammerstone flake					1	5.0			1	3.1
Total	1	100.0	9	100.0	20	100.0	2	100.0	31	100.0

Table 11. Cortex by material type, LA 35121/LA 86792

Percent of Cortex	Chert		Rhyolite		Quartzitic Sandstone		Thunderbird Rhyolite		Total	
	N	%	N	%	N	%	N	%	N	%
0	6	60.0	6	54.5	1	50.0	3	33.3	16	50.0
10			1	9.1			1	11.1	2	6.3
20	1	10.0					2	22.2	3	9.4
30			2	18.2					2	6.3
40										
50										
60	1	10.0							1	3.1
70			2	18.2			1	11.1	3	9.4
80	2	20.0			1	50.0			2	6.3
90									1	3.1
100							2	22.2	2	6.3
Total	10	100.0	11	100.0	2	100.0	9	100.0	32	100.0

Table 12. Lithic artifact function by material type, LA 35121/LA 86792

	Chert		Rhyolite		Total	
	N	%	N	%	N	%
Utilized debitage	2	100.0	3	100.0	6	100.0
Total	2	100.0	3	100.0	6	100.0
Function 2						
Utilized debitage	1	100.0	1	100.0	2	100.0
Total	1	100.0	1	100.0	2	100.0

Table 13. Artifact morphology by material type, LA 113683

	Chert		Rhyolite		Quartzite		Quartzitic Sandstone		Obsidian		Thunderbird Rhyolite		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Core flake	10	90.9	25	96.2	1	100.0	5	100.0	1	100.0	11	61.1	53	85.5
Resharpening flake			1	3.8									1	1.6
Hammerstone flake	1	9.1									3	16.7	4	6.5
Biface, second phase											1	5.6	1	1.6
Multifaceted core											2	11.2	2	3.2
Unmodified cobble											1	5.6	1	1.6
Total	11	100.0	26	100.0	1	100.0	5	100.0	1	100.0	18	100.0	62	100.0

Table 14. Flake type by platform, LA 113683

Platform type	Absent		Cortical		Single		Multiple		Crushed		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Core flake			26	96.3	25	100.0			2	100.0	53	91.4
Resharpening flake							1	100.0			1	1.7
Hammerstone flake	3	100.0	1	3.7							4	6.9
Total	3	100.0	27	100.0	25	100.0	1	100.0	2	100.0	58	100.0

Table 15. Cortex by material type, LA 113683

Percent of Cortex	Chert		Rhyolite		Quartzite		Quartzitic Sandstone		Obsidian		Thunderbird Rhyolite		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
0	5	45.5	15	57.7	1	100.0	4	80.0			3	16.7	28	45.2
10	2	18.2	4	15.4							1	5.6	7	11.3
20	1	9.1	2	7.7			1	20.0			1	5.6	5	8.1
30			2	7.7							1	5.6	3	4.8
40	1	9.1	1	3.8							2	11.1	4	6.5
50											2	11.1	2	3.2
60														
70	1	9.1									2	11.1	3	4.8
80											2	11.1	2	3.2
90											3	16.7	3	4.8
100	1	9.1	2	7.7					1	100.0	1	5.6	5	8.1
Total	11	100.0	26	100.0	1	100.0	5	100.0	1	100.0	18	100.0	62	100.0

Table 16. Lithic artifact function by material type, LA 113683

	Chert		Rhyolite		Quartzitic Sandstone		Thunderbird Rhyolite		Total	
	N	%	N	%	N	%	N	%	N	%
Utilized debitage	3	100.0	4	100.0			3	60.0	10	76.3
Spokeshave					1	100.0			1	7.9
Hammerstone							1	20.0	1	7.9
Biface							1	20.0	1	7.9
Total	3	100.0	4	100.0	1	100.0	5	100.0	13	100.0
Function 2										
Utilized debitage			2	100.0					2	100.0
Total			2	100.0					2	100.0

Table 17. Artifact morphology by material type, LA 113684

	Chert		Rhyolite		Thunderbird Rhyolite		Total	
	N	%	N	%	N	%	N	%
Core flake	5	100.0	8	88.9	1	100.0	14	93.3
Unmodified cobble			1	11.9			1	6.7
Total	5	100.0	9	100.0	1	100.0	15	100.0

Table 18. Flake Type by Platform, LA 113684

Platform type	Cortical		Single		Total	
	N	%	N	%	N	%
Core flake	7	100.0	7	100.0	14	100.0
Total	7	100.0	7	100.0	14	100.0

Table 19. Cortex by material, LA 113684

Percent of Cortex	Chert		Rhyolite		Thunderbird Rhyolite		Total	
	N	%	N	%	N	%	N	%
0	1	20.0	2	22.2	1	100.0	4	26.7
10	1	20.0					1	6.7
20								
30			1	11.1			1	6.7
40								
50								
60								
70								
80								
90								
100	3	60.0	6	66.7			9	60.0
Total	5	100.0	9	100.0	1	100.0	15	100.0

Table 20. Lithic artifact function by material type, LA 113684

	Chert		Rhyolite		Total	
	N	%	N	%	N	%
Utilized debitage	1	100.0			1	50.0
Hammerstone			1	100.0	1	50.0
Total	1	100.0	1	100.0	2	100.0

Table 21. Ceramic type distribution by site

	LA 49346		LA 113683		LA 113684		Total	
	N	%	N	%	N	%	N	%
El Paso brown body	12	85.7	71	97.3	13	100.0	96	96.0
El Paso brown rim	1	7.1	2	2.7			3	3.0
Mimbres Classic	1	7.1					1	1.0
Total	14	100.0	73	100.0	13	100.0	100	100.0

Table 22. Interior manipulation of ceramic wares, distribution by site

	LA 49346				LA 113683		LA 113684		Total	
	Brown Ware		White Ware		Brown Ware		Brown Ware		N	%
	N	%	N	%	N	%	N	%		
Plain smoothed	11	84.6			72	98.6	12	92.3	95	95.0
Plain polished	2	15.4	1	100.0					3	3.0
Plain and striated					1	1.4			1	1.0
Smoothed and lustrous but unpolished							1	7.7	1	1.0
Total	13	100.0	1	100.0	73	100.0	13	100.0	100	100.0

Table 23. Exterior manipulation of ceramic wares, distribution by site

	LA 49346				LA 113683		LA 113684		Total	
	Brown Ware		White Ware		Brown Ware		Brown Ware		N	%
	N	%	N	%	N	%	N	%		
Plain smoothed	13	100.0	1	100.0	68	93.2	11	81.8	93	93.0
Smoothed and lustrous but unpolished					5	6.8	2	18.2	7	7.0
Total	13	100.0	1	100.0	73	100.0	13	100.0	100	100.0

Table 24. Temper distribution by site

	LA 49346				LA 113683		LA 113684		Total	
	Brown Ware		White Ware		Brown Ware		Brown Ware		N	%
	N	%	N	%	N	%	N	%		
Angular quartz and feldspar	13	100.0			73	100.0	13	100.0	99	99.0
Tuff			1	100.0						1.0
Total	13	100.0	1	100.0	73	100.0	13	100.0	100	100.0

Table 25. Ceramic form distribution by site

	LA 49346				LA 113683		LA 113684		Total	
	Brown Ware		White Ware		Brown Ware		Brown Ware		N	%
	N	%	N	%	N	%	N	%		
Body (both sides unpolished)	10	76.9	1	100.0	67	91.6	13	100.0	91	91.0
Body (exterior polished)	2	15.4			3	4.2			5	5.0
Jar neck					1	1.4			1	1.0
Bowl rim					1	1.4			1	1.0
Jar rim	1	7.7			1	1.4			2	2.0
Total	13	100.0	1	100.0	73	100.0	13	100.0	100	100.0