

MUSEUM OF NEW MEXICO

OFFICE OF ARCHAEOLOGICAL STUDIES

**Prehistoric White Signal:
Archaeological Testing and Evaluation of Two Sites and Data Recovery
Plan for LA 83772 along N.M. 90, Southwest of Silver City, New Mexico**

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ADMINISTRATIVE SUMMARY

During July 9-12 (Phase I) and again during August 12-16, 1991 (Phase II), a team from the Office of Archaeological Studies, Museum of New Mexico conducted testing and evaluation of two prehistoric sites along NM 90 at White Signal, southwest of Silver City, Grant County, New Mexico. David A. Phillips, Jr. served as principal investigator; project supervisor was Regge N. Wiseman, assisted by William Sarracino (Phase I), Guadalupe A. Martinez (Phase II), and Timothy R. Bradley (Phases I and II). The proposed highway project will be restricted to the existing right-of-way in the vicinity of two archaeological sites.

LA 83772 lies on both sides of the existing pavement of NM 90 and extends beyond both right-of-way fences. All archaeological testing was restricted to the existing right-of-way. Intensive auger testing west of the pavement revealed indications of numerous subsurface cultural features. A large feature (pithouse?), human bones that may belong to a burial, and one or two small burned features were noted in the face of the west highway cut. Auger testing east of the highway was limited to the south end of the site where the proposed construction may necessitate cutting into the terrace. Evidence for subsurface features was noted in the augering. Limited surface collections were taken from both sides of the highway and from the main feature area of the site located to the west and outside of the right-of-way. These later collections were made with the permission of the private land owner, Mr. Bob Abercrombie of White Signal. The Highway Department proposes to place temporary fences on both sides of the highway at LA 83772. West of the highway, the fence will be placed at the top of the existing slope cut, leaving only the cultural features exposed in the cut face within the proposed construction zone. East of the highway, the fence will be placed along the top of the existing slope cut at the north end and in the center of the cut, but it will be set back about 5 m at the south end, leaving the tested area (and the subsurface features) within the proposed construction zone.

LA 85113 is west of the pavement of NM 90 and appears to lie almost totally within the existing right-of-way. Since the proposed highway work will relocate NM 90 eastward, away from LA 85113, auger testing was limited to a 6 m wide strip along the east side of the site. The tested area lies mainly within and just to the west of the west drainage ditch of the highway. Evidence for a subsurface cultural feature was found in the north end of line 9E. Cultural materials recovered from an auger hole on line 15E clearly indicate mixing of modern and prehistoric items. Limited surface collections were made. The NMSHTD proposes to build a temporary fence along the west edge of the existing drainage ditch west of the highway pavement. This will place the subsurface cultural feature outside the proposed construction zone. The east test that revealed the disturbed deposits will lie within the proposed construction zone. However, because of the disturbed nature of the deposits, we do not recommend further treatment at LA 85113.

MNM Project No. 41.510.

NMSHTD Project No. F-012-1(11).

Cultural Properties Review Committee Excavation Permit No. SE-69, as amended.

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Special thanks go to Stephen Lekson of the Laboratory of Anthropology and Lynne Sebastian of the Historic Preservation Division for permission to cite Lekson's draft overview of the prehistory of southwestern New Mexico.

INTRODUCTION

During July 9-12 (Phase I) and again during August 12-16, 1991 (Phase II), a team from the Museum of New Mexico conducted testing and evaluation of two prehistoric sites along New NM 90 at White Signal southwest of Silver City, Grant County, southwestern New Mexico (Fig 1, Appendix 1). David A. Phillips, Jr. served as principal investigator; project supervisor was Regge N. Wiseman, assisted by William Sarracino (Phase I), Guadalupe A. Martinez (Phase II), and Timothy R. Bradley (Phases I and II). The proposed highway project will be restricted to the existing right-of-way in the vicinity of the archaeological sites.

Natural Setting

The project area is located on the east terrace above Walnut Creek in White Signal, New Mexico. Walnut Creek is a major tributary of Cow Springs Draw, an intermittent, southeast-trending drainage that empties into the Deming Plain southwest of the town of Deming, New Mexico. White Signal is located in the eastern foothills of the Big Burro Mountains. Elevations range from 1,830 m at the sites, to 2,440 m at the top of the Big Burro Mountains (7.5 km northwest), to 1,370 m at the point where the Cow Springs Draw enters the Deming Plain 50 km southeast of White Signal.

Winters in the project area are mild (January mean of 3.3 degrees C), and summers are warm (July mean of 23.3 degrees C) (Gabin and Lesperance 1977). The frost-free period is long, averaging 200 days. The normal annual precipitation of 356 mm is slightly summer dominant.

The surface geology of the area includes Precambrian rocks (undivided), various igneous intrusives (laccoliths, dikes, and sills) of Late Cretaceous to Miocene(?) Age, and the Gila Conglomerate (Quaternary) (Dane and Bachman 1965). White Signal began as a mining settlement in the White Signal District where gold, silver, and other minerals were mined in the late 1800s (Northrup 1959).

The project sites lie within juniper-piñon woodland not far from pine-Douglas fir forest (Kuchler 1964). The association is dominated by one-seed juniper and piñon pine. The bottom along Walnut Creek supports a riparian community dominated by cottonwood and walnut trees. Plants noted on the archaeological sites include grama grass, oak, prickly pear, yucca, squawbush, and a single alligator-bark juniper. All but the grama in this last group of species could have been brought to the sites by prehistoric people.

Numerous species of animals useful to humans would have been common in the area in prehistoric times. These include deer, antelope, mountain lion, bear, peccary (javelina), jackrabbit, cottontail, squirrels, and a variety of woodrats, rats, and mice (Findley et al. 1975).

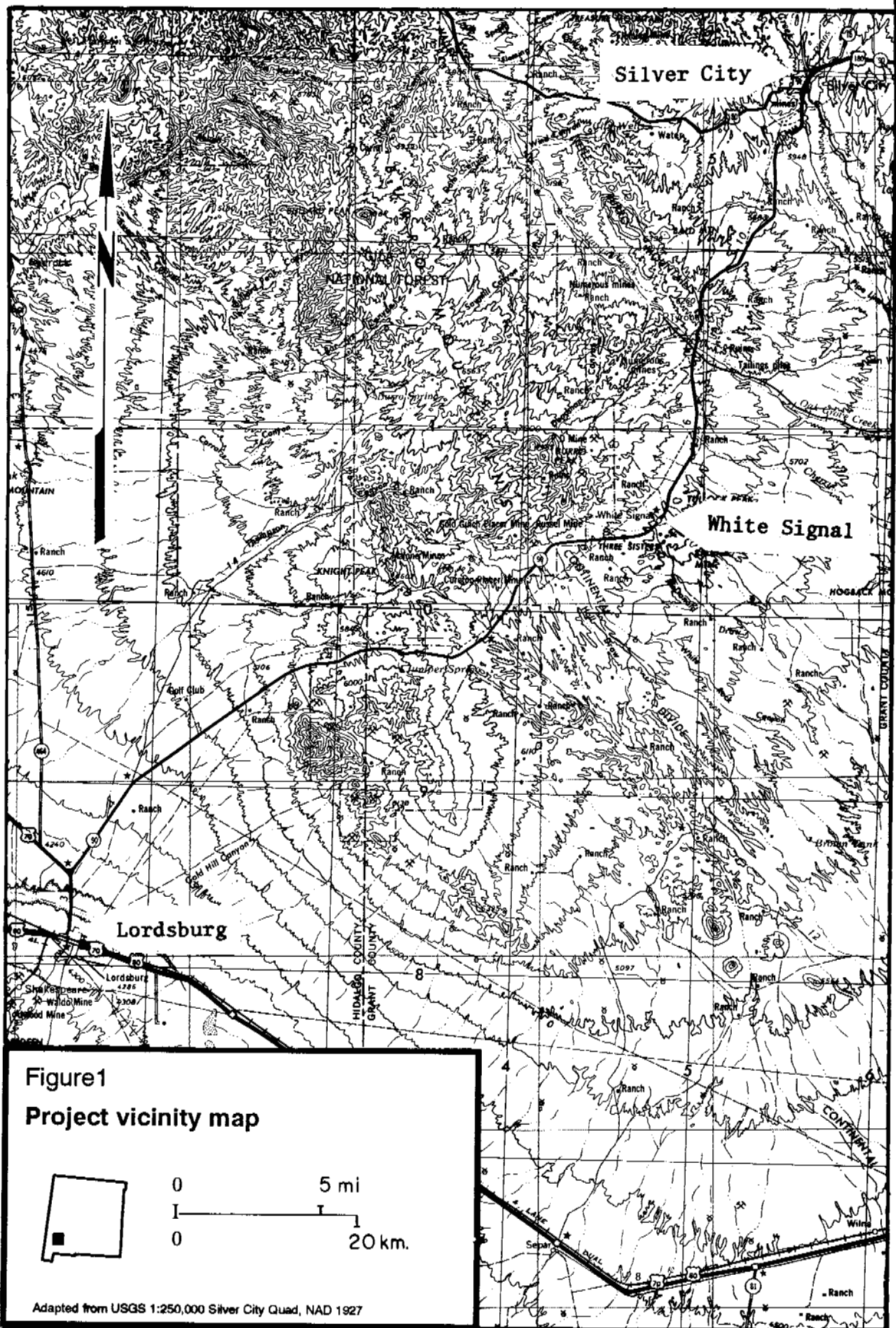
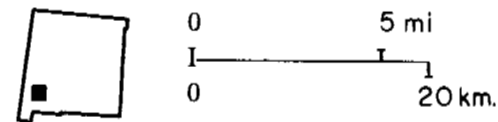


Figure 1
Project vicinity map



Adapted from USGS 1:250,000 Silver City Quad, NAD 1927

Cultural Setting

The project area lies within the Mimbres-Mogollon culture area. Several archaeological overviews have been written about this part of New Mexico, and the reader is referred to them for more details of the prehistory and history of the area beyond the few remarks offered below (Haury 1936; Wheat 1955; Danson 1957; Bullard 1962; LeBlanc and Whalen 1980; Stuart and Gauthier 1981; Fitting et al. 1982; Wilson 1985). The emphasis in this report is placed on the periods represented by the White Signal project sites.

People have been attracted to the wealth of natural resources of the Silver City region for at least the last 12,000 years. The earliest people, Paleoindians, followed a hunting and gathering lifeway that relied on now-extinct forms of elephants and buffalo.

The retreat of the glaciers about 8,000 years ago brought an end to the Pleistocene and resulted in a general climatic warming. In adjusting to the increasing aridity and the disappearance of the large Pleistocene animals, Native Americans turned to smaller animal forms such as deer and rabbits and began incorporating a larger share of plant foods in their diet. This cultural stages has been named the Archaic. At some point late in the Archaic period, maize horticulture and the construction of semipermanent houses were introduced. The stage was set for the Mogollon period.

The Mogollon period or culture, starting sometime in the first few centuries A.D., is characterized by the formation of villages. The first villages were usually small and located on high terrain well back from rivers and streams. Pithouses were the primary habitation structure, the production and use of pottery began, and the economy was based on hunting and gathering supplemented by the horticulture of maize, beans, and squash. However, there seems to have been little change in the form and function of most tool categories. Through time, village size and dependence on cultivated plants increased, and village locations shifted closer and closer to drainage courses.

Shifts in various aspects of the cultural configuration of the early Mogollon have been denoted by a series of period and phase names. The Early Pithouse period was composed of the Pinelawn (A.D. 250 to 550?) and Georgetown (A.D. 550 to 650?) phases; the Late Pithouse period was composed of the San Francisco (A.D. 650 to 850?) and Three Circle (A.D. 850 to 975 or 1000) phases. Some scholars believe that sufficient evidence exists to designate a fifth phase, the Mangus, that represents the end of the Late Pithouse period (see Lekson 1989:F-48-56).

The final phase in the Mogollon sequence of southwestern New Mexico is called Mimbres (A.D. 975 to 1150?). While many aspects of this phase are continuations of previous trends, three changes have caught the imagination of archaeologists. These are (1) the shift to above-ground dwellings (jacal and cobble pueblo-style rooms); (2) the formation of very large villages; and (3) the production of exquisitely painted pottery. The abandonment of the Mimbres villages and the disappearance of the Mogollon culture are currently the subject of much debate.

The Animas or Black Mountain phase (A.D. 1150 or 1175 to 1375 or 1400?) followed the Mogollon sequence. These sites are denoted by small to large adobe-walled pueblos, distinctive polychrome pottery, and an agricultural economy. Many archaeologists believe that

the Animas peoples were directly connected with, and perhaps colonies of, the Casas Grandes culture in northern Mexico (McCluney 1962:40). Other archaeologists believe that Animas sites are merely a continuation of the Mimbres-Mogollon occupation with a change in the pottery suite (Lekson 1989).

The Salado or Cliff phase (A.D. 1300? to 1450?) occupation may have temporally overlapped the Animas phase settlements. These sites are characterized by another series of distinctive polychrome pottery types, small to large adobe-walled pueblo villages, an agricultural economy, and a propensity for cremation of the dead. The geographic center of the Salado stretches from the Gila River west into Arizona.

Although the end dates of the Animas and Salado occupations are not well established, prehistoric occupation of southwestern New Mexico appears to have terminated by A.D. 1400 or 1450. Human use of the region between then and A.D. 1500 has not been documented.

By A.D. 1500, Apachean groups had entered southwestern New Mexico. Spanish settlement in northern Mexico, New Mexico, and Arizona in the late seventeenth and early eighteenth century brought the two groups into contact. Relations between the Apaches and the Spanish ranged from friendly to hostile. In the eighteenth century, numerous Spanish punitive expeditions penetrated southwestern New Mexico in pursuit of Apache raiders. Problems between the two groups increased with the discovery of the Santa Rita copper ore in the early nineteenth century. Spanish attempts to settle the area to mine the copper intensified Apache hatred because the Europeans had settled in the heart of Apache country.

Anglo-American acquisition of Texas, New Mexico, Arizona, and California in the mid-nineteenth century brought these peoples into contact, and ultimately into conflict, with the Apache. The lure of mineral wealth, grasslands for ranching, and good farm land brought a flood of settlers following the American Civil War. By the late 1880s, the Apaches were defeated and placed on reservations, leaving the Anglo-Americans in peaceful possession of southwestern New Mexico.

Research Objectives

The purpose and proposed field and laboratory program for the testing and evaluation of the White Signal Project sites (LA 83772 and 85113) are stated in a letter (as amended) to William L. Taylor, Environmental Project Manager from David A. Phillips, Jr. and Regge N. Wiseman. The section pertinent to the current document is quoted below.

Our purpose at [these sites] will be to determine whether [they contain] potential for yielding information important to our understanding of regional prehistory. The testing seeks information on site type, presence or absence of features, presence or absence of subsurface deposits, integrity of deposits and features, and presence or absence of pre-Mimbres occupations (especially pithouses and associated features). (Phillips and Wiseman 1991)

SITE DESCRIPTIONS, FIELD PROCEDURES, AND TEST RESULTS

LA 83772

Site Description

LA 83772 is a Mimbres phase habitation site measuring 130 m north-south and at least 75 m east-west. It lies on both sides of the highway and is both inside and outside of the existing right-of-way in both directions (Fig. 2). Field work was restricted to that portion of the site within the proposed project zone, the existing right-of-way. The owner of the tested area is the NMSHTD.

Site features include two small pueblos (both located to the west, outside the existing right-of-way), a 4 to 5 m subsurface stain suggestive of a pithouse, a hearth and a second concentration of fire-broken rocks, and a possible human burial (all exposed in the west cutbank), and sherds, chipped stone debris, and artifacts scattered across the site surface (Fig. 3). The pueblos were constructed by the *cimiento* technique (wall bases of single rows of cobbles and walls of jacal or brush). The larger pueblo, now heavily disturbed by local diggers, had an estimated five to eight rooms. A local person stated that he encountered a floorlike surface below the Mimbres phase structures at a depth of 7 ft (2.13 m), indicating the presence of pithouses that predate that occupation. The smaller pueblo of about three rooms also shows signs of digging, though none are recent.

Field Procedures

The first activity at the site was to pinflag all cultural items within the existing highway right-of-way. Artifacts on the face of the west cutbank *were not* pinflagged because of the disturbed context. Artifacts on the surface of the east cutbank *were* pinflagged because gravel from a former stockpile and heavy vegetation between the cut and the east fence hid most artifacts.

Next, a grid of 3 m squares was established using the west right-of-way fence as the north-south baseline. The surface artifacts within the right-of-way west of the highway were inventoried by square. A total of 1,557 sq m of site surface was investigated, which included the south pueblo (540 sq m), the north pueblo (297 sq m), and east of the highway (720 sq m) on the cutbank face. The cultural items were counted by class and square and the numbers plotted on graph paper to permit visualization of distribution and density.

Three types of collections were made: (1) All diagnostic painted sherds from both the undisturbed surface and the cutbank and burned animal bone fragments were collected and bagged by square. (2) To obtain samples of the culinary pottery, sherds in 12 right-of-way squares (3 by 3 m) were collected. Collected squares were selected on the basis of density of items and proximity to the two pueblos and the area east of the highway. (3) With the knowledge and consent of the private landowner, select sherds were taken from the south pueblo.

The last activity on the site was boring 173 auger holes on 3 m centers. The auger results clearly demonstrate the presence of subsurface cultural features and therefore test pits were not excavated.

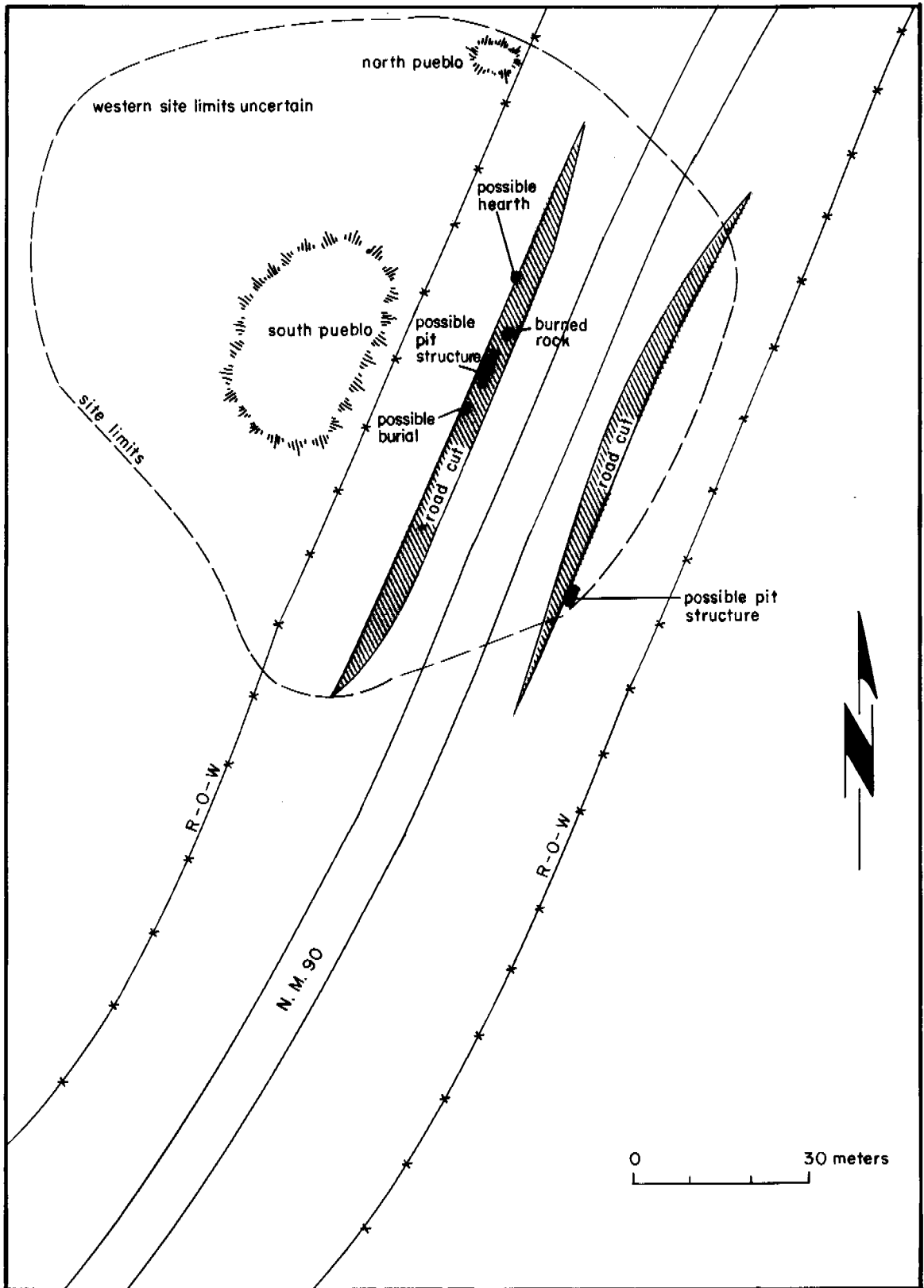


Figure 2. LA 83772 site map.

The human burial was mapped with the other site features but was not disturbed or collected. Because it will be dealt with in the proposed excavation phase, all activities regarding the excavation, handling, recording, analysis, and ultimate disposition of the remains are discussed in later sections of this report.

Results

A total of 624 artifacts were flagged and counted at the site (west side, $n = 413$; east side, $n = 211$). Surface artifact density (Figs. 3a, 4a) is assessed for three areas within the existing right-of-way--the area adjacent to the south pueblo (3S to 54N), the area adjacent to the north pueblo (93N to 111N), and the area east of NM 90 (30S to 99N). The artifact densities are: south pueblo, 0.72 items per sq m ($n = 370$); north pueblo, 0.067 items per sq m ($n = 24$); east side, 0.27 items per sq m.

Three artifact concentrations were defined. One on the west side is along the top of the cutbank ($n = 175$; density = 1.02) near the south pueblo. The other two concentrations are on the east side, one between 12N and 24N ($n = 33$; density = 0.92) and the other between 69N and 96N ($n = 78$; density = 0.96).

Surface collections from west of the highway include: 14 painted sherds from the undisturbed surface; 5 painted sherds, 2 white ware sherds, 43 utility sherds, and 7 flakes from the undisturbed surface within the right-of-way; 5 painted sherds from the highway cutbank; and 3 painted and 8 utility sherds from the south pueblo (private land). Surface collections from east of the highway include 1 white ware sherd, 29 utility sherds, and 2 flakes from the highway cutbank within the right-of-way.

The auger tests showed that soil depth varies depending on bedrock (Table 1; Figs. 3b, 4b). Several tests were stopped at shallow depths by rocks, requiring second and even third attempts. Two tests did not strike bedrock within the maximum capability of the auger (1.6 m). Organic staining was present in most tests but was confined to the uppermost 5 to 20 cm, indicating that the coloration is decayed vegetation. Sherds and flakes were recovered from many auger tests (Table 2; Fig. 5). Judging by the shallow depths (0-30 cm) of some artifacts, they probably represent refuse scattered across the prehistoric ground surface. Deeper finds--such as between 30N and 45N of line 3E; between 12N and 21N of line 6E; between 6S and 3N of line 42E; and between 24S and 12S of line 45E--suggest the presence of pithouses and storage pits.

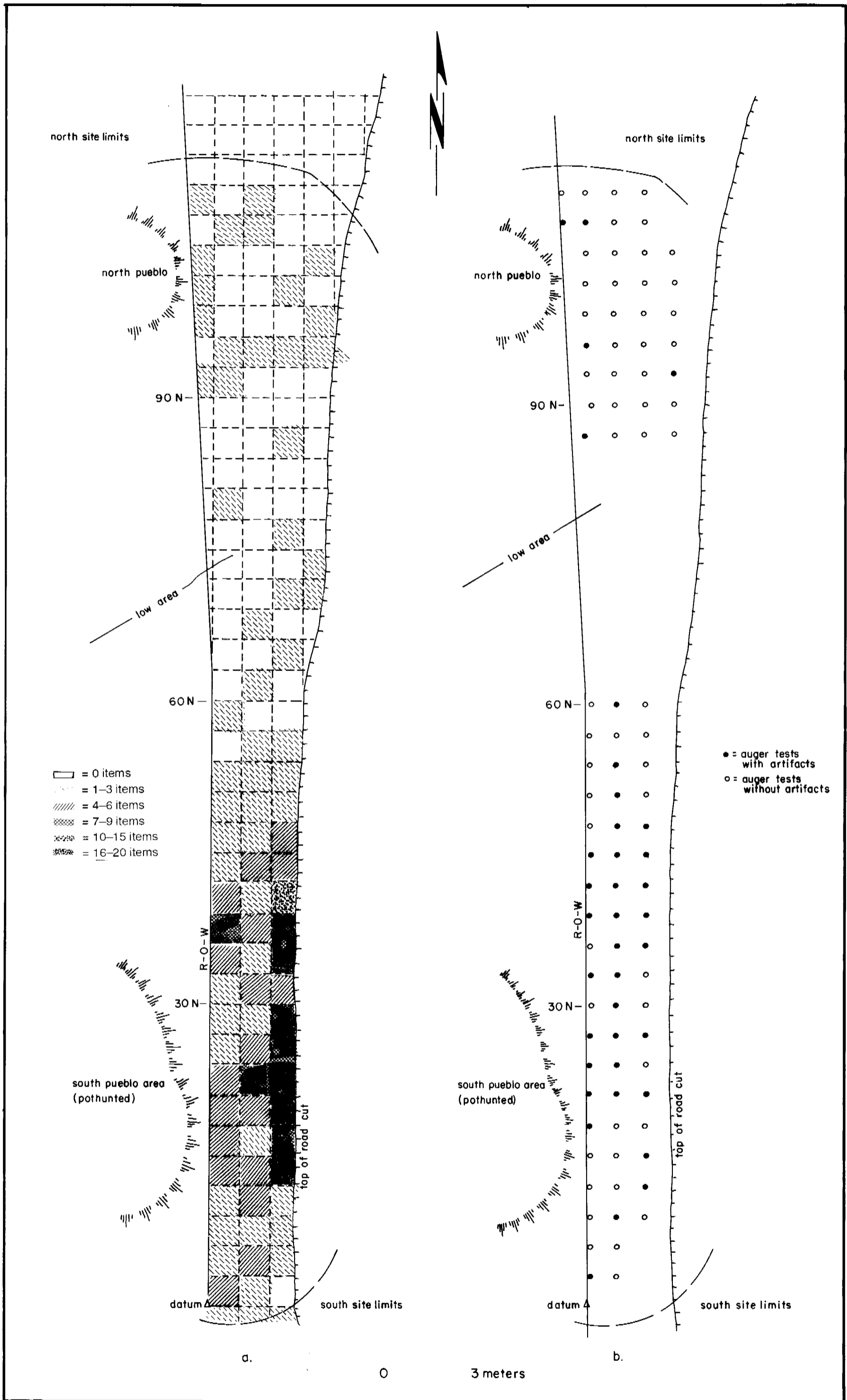


Figure 3. LA 83772, west side of highway: (a) Surface artifact density map; (b) Auger test pattern.

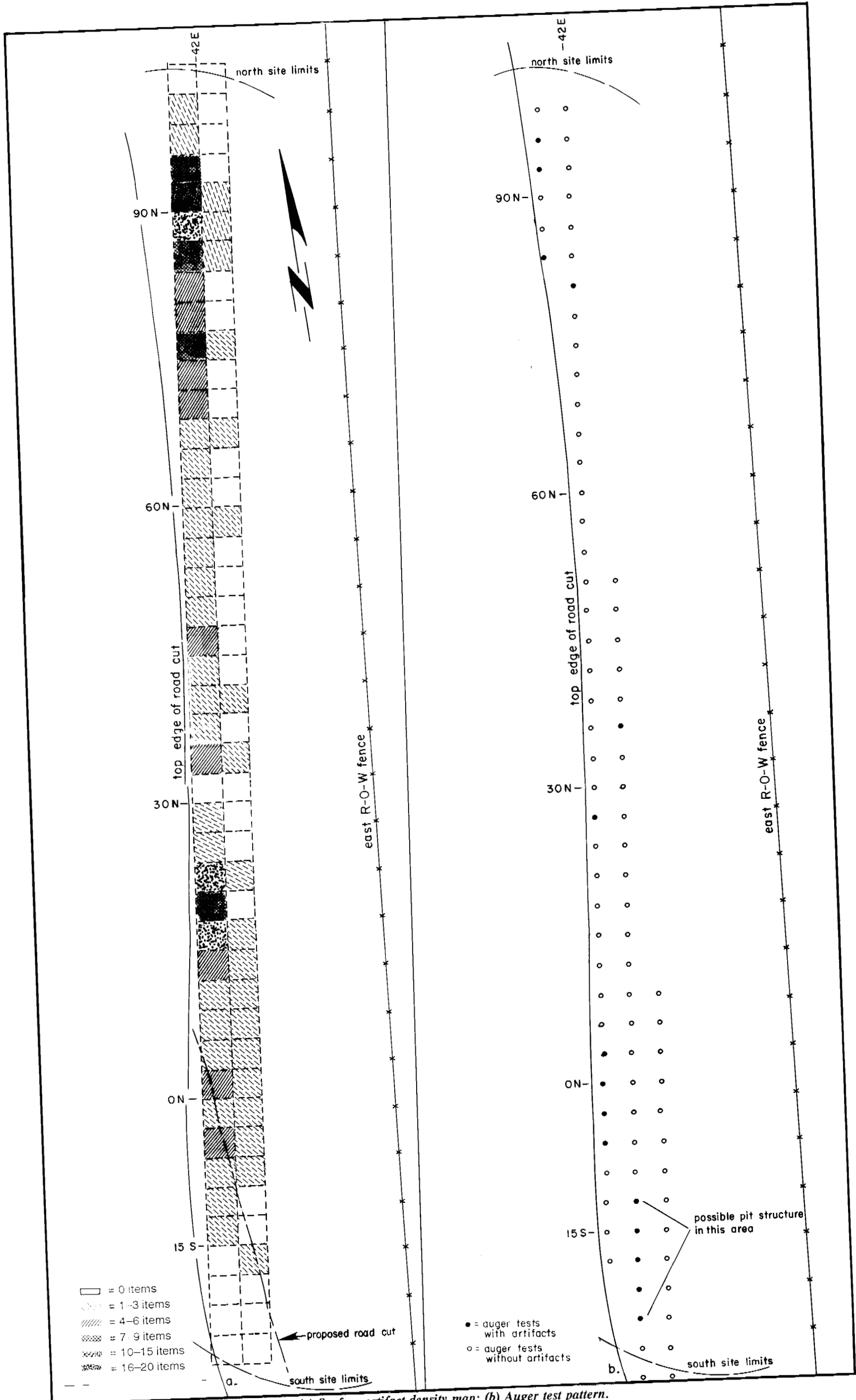


Figure 4. LA 83772, east side of highway: (a) Surface artifact density map; (b) Auger test pattern.

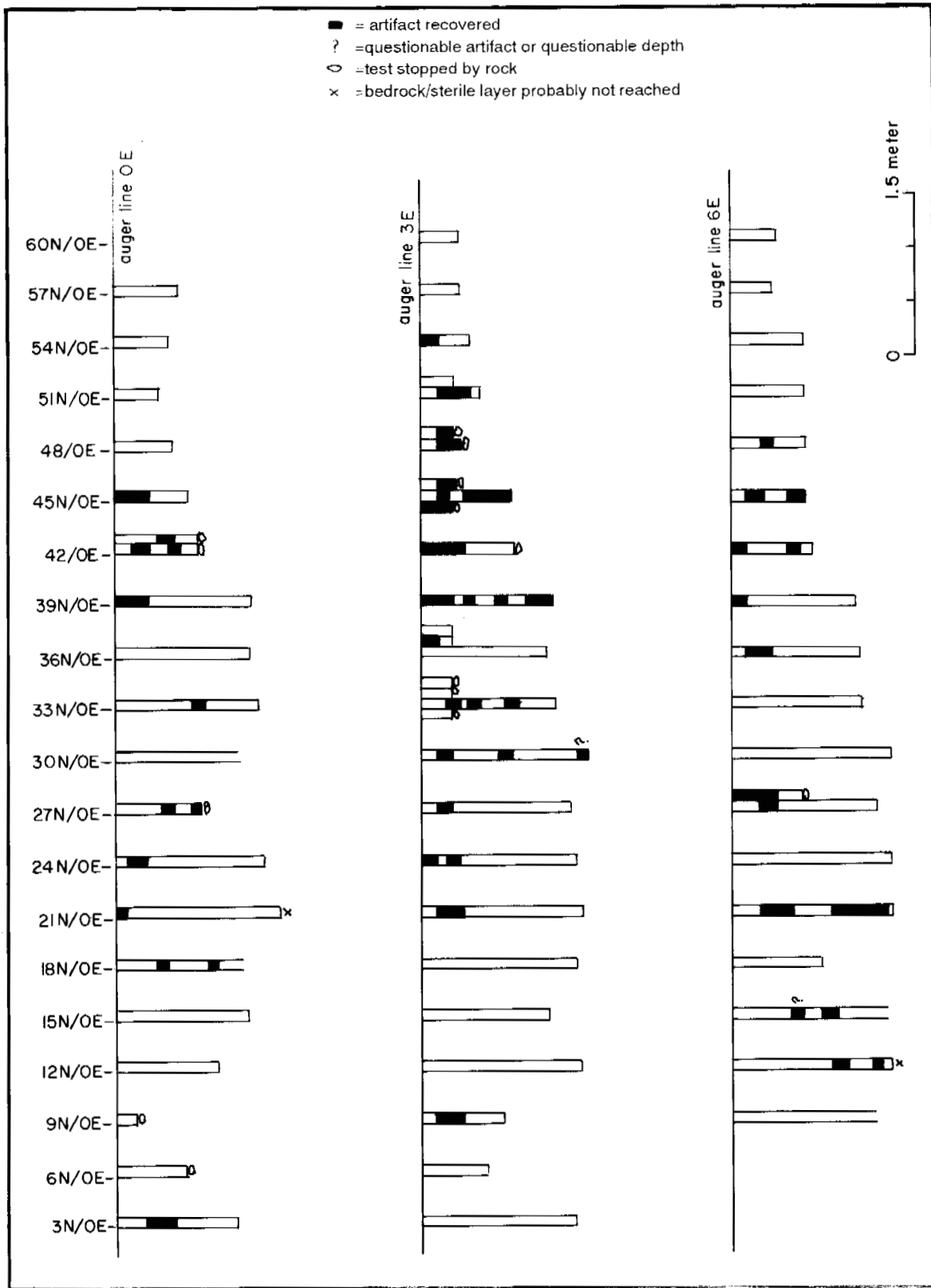


Figure 5a. LA 83772, west side of highway, south end of site: vertical distribution of artifacts in auger tests.

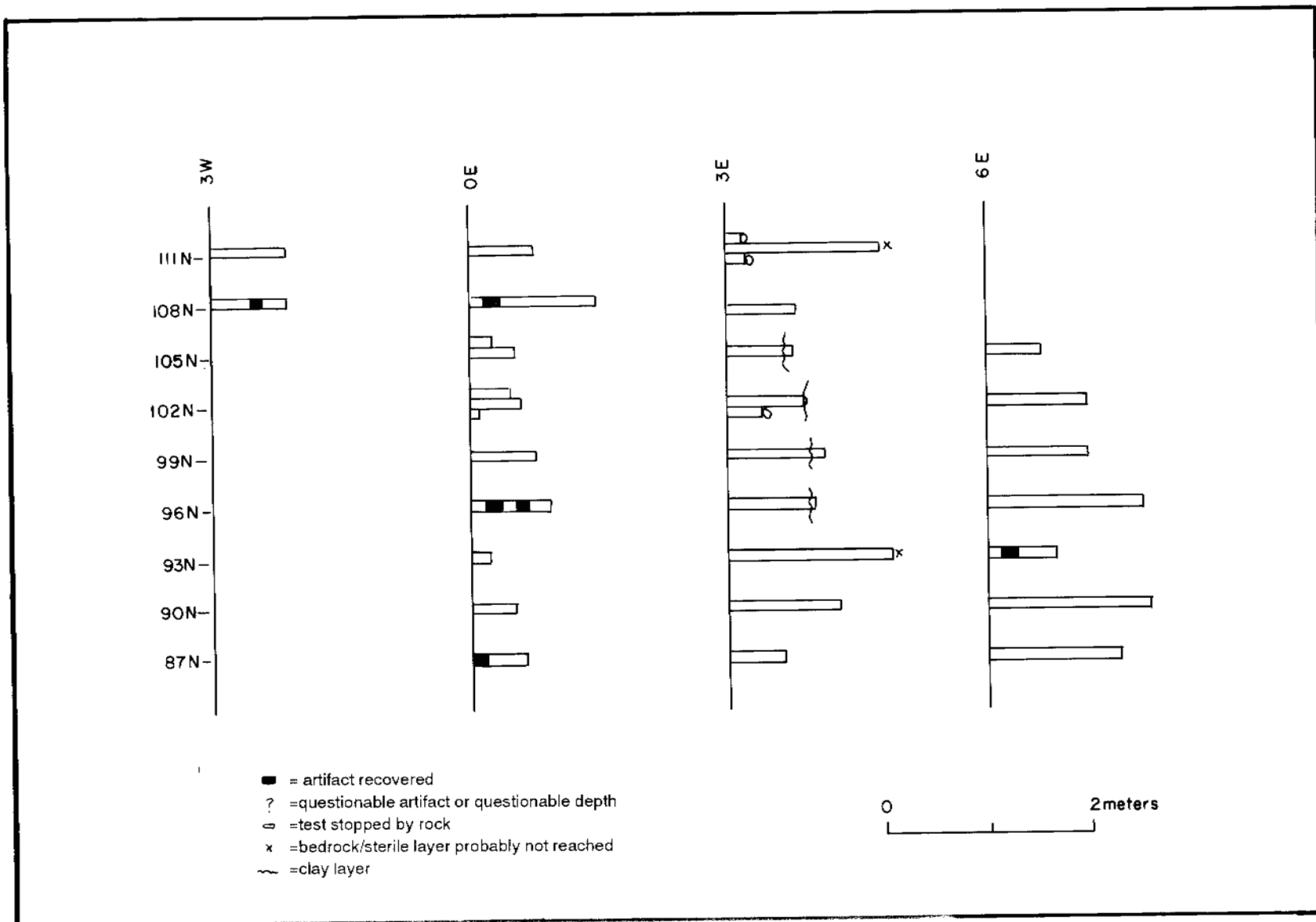


Figure 5b. LA 83772, west side of highway, north end of site: vertical distribution of artifacts in auger tests.

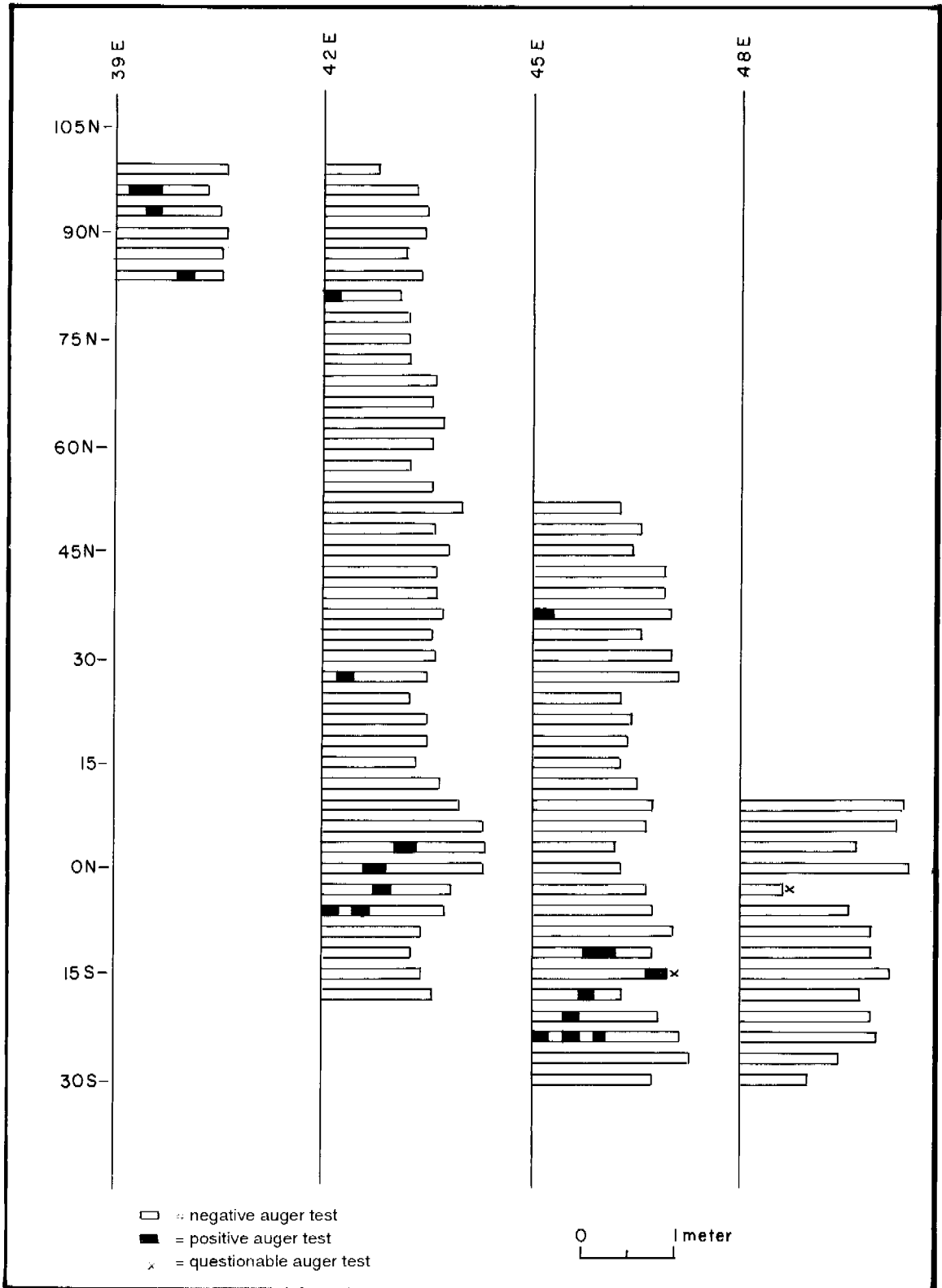


Figure 5c. LA 83772, east side of highway, total site: vertical distribution of artifacts in auger tests.

Table 1. Summary of Auger Test Results

	N	Range	Depth (cm)	
			Mean	S.D.
LA 83772 West				
All Tests	85	20-160	98.18	42.23
Artifact-Producing Tests	38	37-160	109.79	37.84
Artifacts Recovered	105	1-160	44.51	36.21
LA 83772 East				
All Tests	88	40-162	109.16	23.14
Artifact-Producing Tests	15	74-157	121.86	23.24
Artifacts Recovered	22	1-130	42.95	27.10
LA 85113				
All Tests	47	40-155	104.62	24.31
Artifact-Producing Tests	6	108-155	122.00	15.59
Artifacts Recovered	8	1-70	32.81	23.10

Table 2. Artifacts Recovered from Auger Tests

Artifact Class	LA 83772		LA 85113
	West	East	
Sherds	90	10	7
Flakes	12	10	1
Bones	3	2	0
Total	105	22	8

LA 85113*Site Description*

LA 85113 is a Three Circle phase habitation site measuring 65 m north-south and at least 35 m east-west. It lies west of the highway, mostly within the existing right-of-way (Fig. 6). Field work was restricted to that portion of the site within the proposed project zone, the existing right-of-way. The eastern boundary of the site has been obscured by the original construction of NM 90; surface artifacts and some subsurface data from the existing bar ditch indicate that the site extends to, and perhaps under, the highway. Ownership of the tested area is NMSHTD.

Site features include a thin sherd and chipped stone debris scatter across the site area and what appears to be part of a cobble wall exposed in a gopher hole.

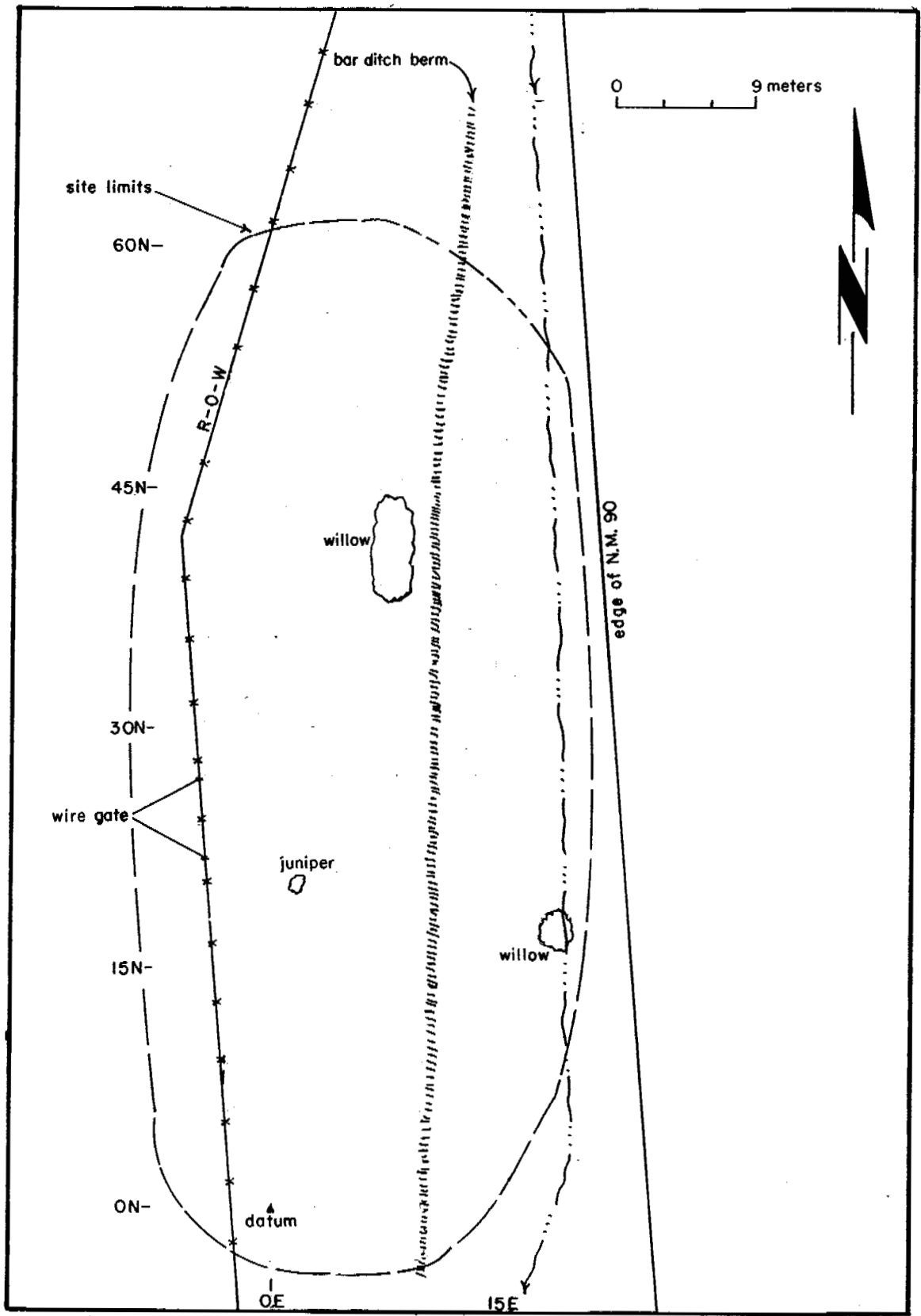


Figure 6. LA 85113 site map.

Field Procedures

The first activity at the site was to pinflag all cultural items on the surface between the highway and the west right-of-way fence. Most of the ground surface appeared to be undisturbed; the most obvious exception was the highway bar ditch. Next, a grid of 3 m squares was established using a north-south baseline located near the fence. The cultural items were counted by class and square; the numbers were then plotted on graph paper to permit visualization of distribution and density.

Two types of collections were made: (1) all diagnostic painted sherds on the surface were collected and bagged by square; and (2) in order to obtain samples of the culinary pottery, sherds in four squares (3 by 3 m) were collected. Squares selected for collection were chosen on the basis of density of items and distribution across the site, especially along the east side of the highway.

The last activity on the site was boring 47 auger holes on 3 m centers in the eastern part of the site (next to the highway). No test pits were excavated.

Results

A total of 221 surface artifacts were flagged and counted within the right-of-way of NM 90. The surface artifact density (Fig. 7) between 3S and 66N is 0.19 artifacts per sq m. Surface collections include 12 painted sherds, 21 utility sherds, and 2 flakes.

The auger tests showed that the soil is coarse, homogeneous, and deep; bedrock was never encountered (Fig. 8, Table 1). Cultural and organic stains are absent, and few sherds and flakes were recovered (Table 2).

Two areas defined by augering require discussion (Figs. 8 and 9). The first lies in the vicinity of a stunted willow "bush" located within the area bounded by 39N and 45N and by 6E and 12E. Auger tests 45N/9E and 48N/9E produced artifacts at depths of 0 to 20 cm and 55 to 70 cm. The final depths of both tests exceeded 1 m. However, nearby auger tests (33N and 36N of line 9E and 42N, 45N, and 48N of line 12E) all encountered shallow rocks, requiring two or three attempts each to attain acceptable depths. Of these five tests, only two ultimately reached 1 m; all others hit rocks at 35 to 60 cm below surface. Clearly, the presence of a pithouse is indicated, the shallow rocks representing detritus thrown out of the pit during its construction.

The second area is on line 15E at 30N. It should be noted that line 15E is located mid-slope of the bar ditch of NM 90. The completion of auger test 30N/15E required three attempts and produced at least two artifacts (in fragments). Although rocks were shallow (25 to 60 cm) at this and nearby locations, finding pieces of tin can at depths greater than the sherd indicates that these deposits were greatly disturbed by the original road construction. Thus, we believe that this location, unlike that just discussed, does not represent intact deposits.

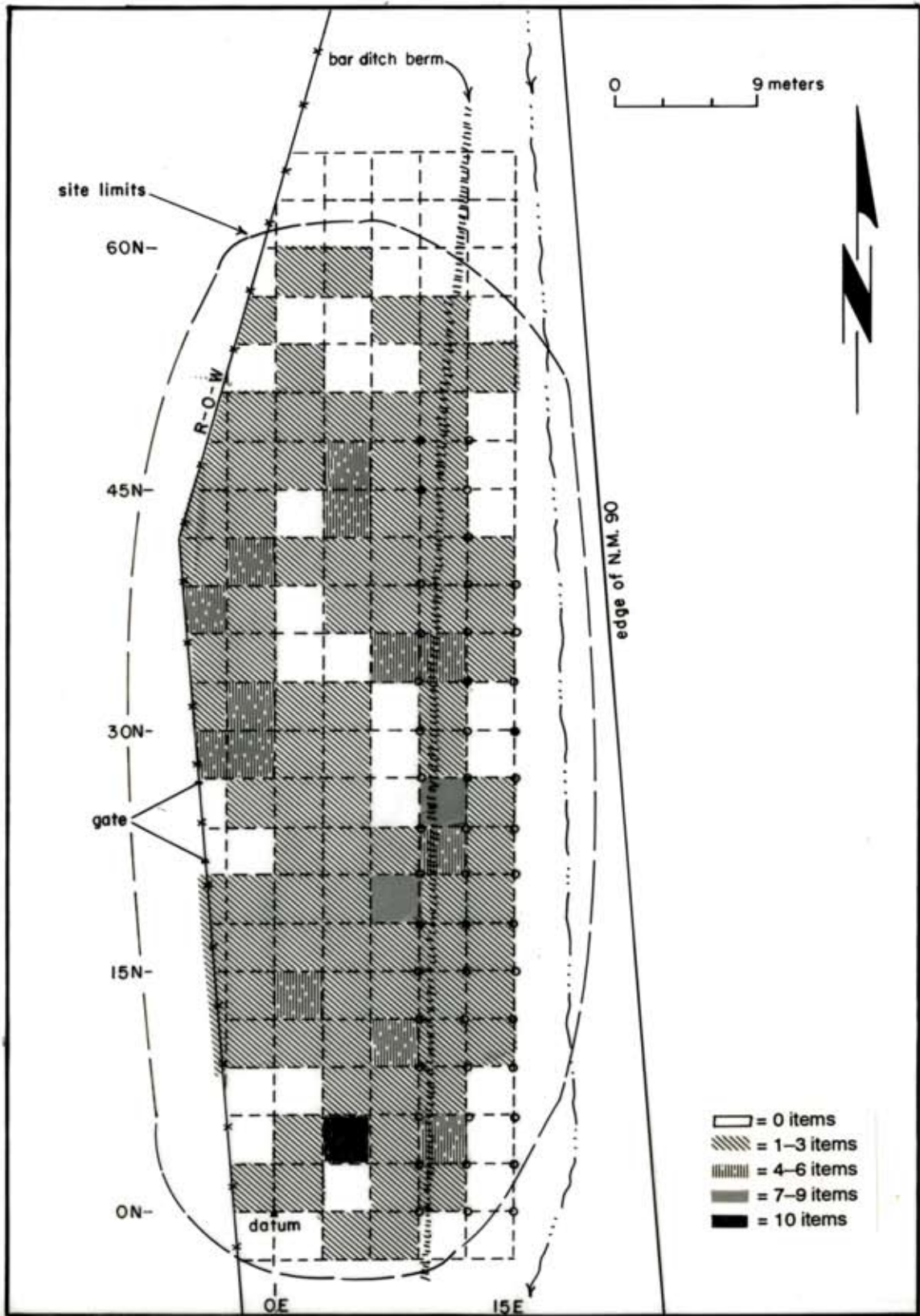


Figure 7. LA 85113 surface artifact density map.

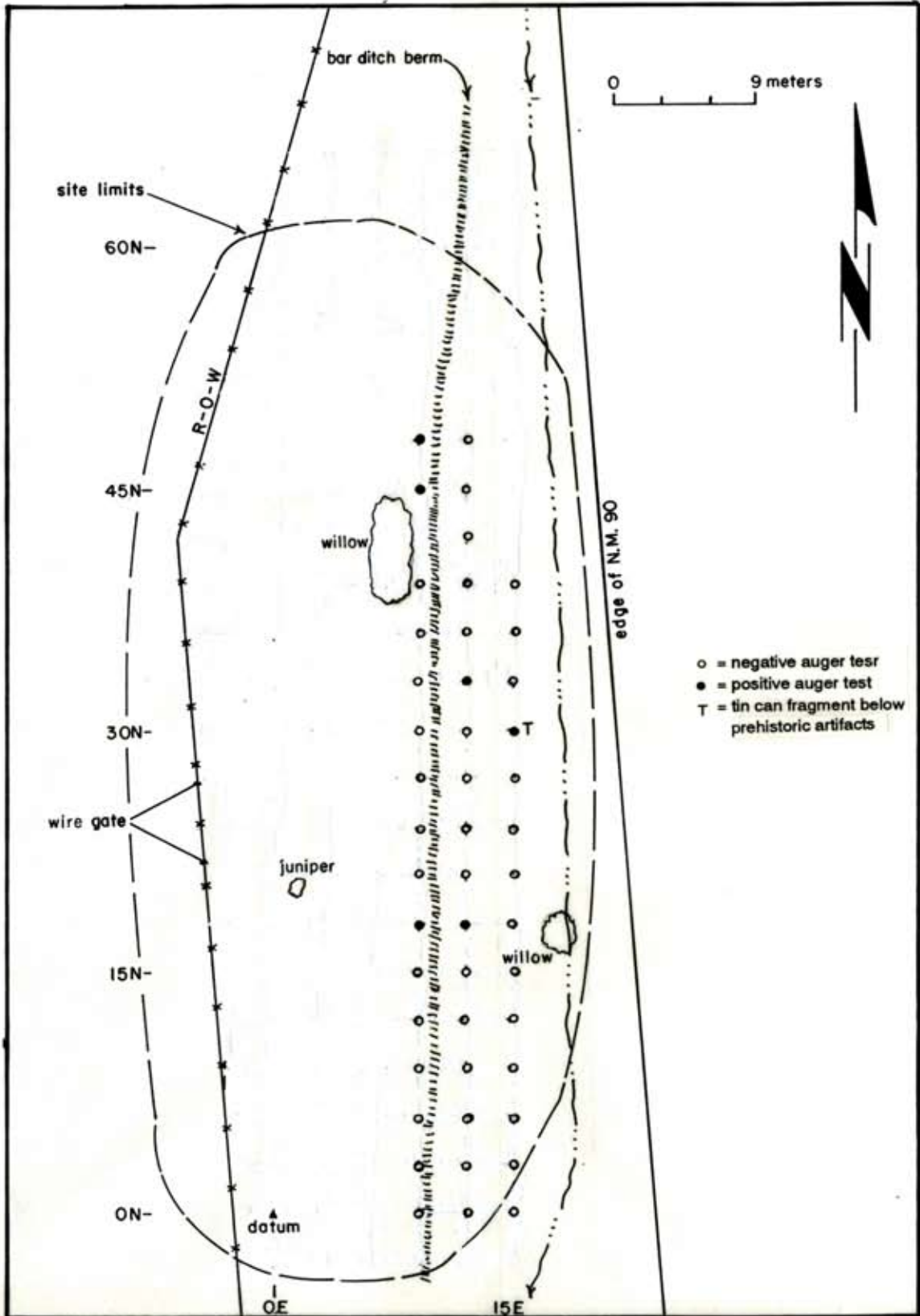


Figure 8. LA 85113 distribution of auger tests that produced artifacts.

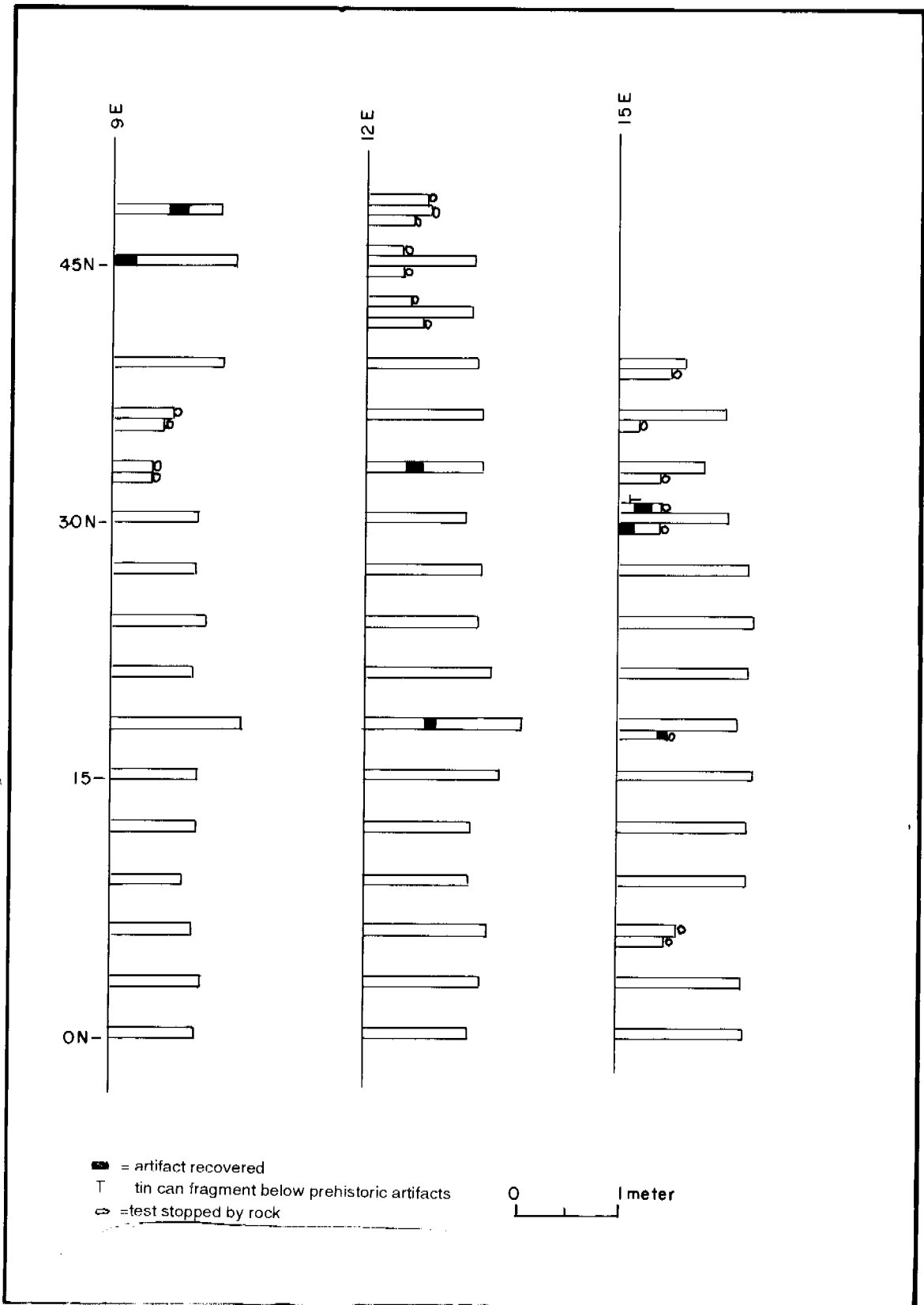


Figure 9. LA 85113 vertical distribution of artifacts in auger tests.

MATERIAL CULTURE AND OTHER REMAINS

Laboratory Procedures

The collected items were analyzed for artifact type, material type (chipped stone and ground stone only), and size (chipped stone and ground stone) (Appendixes 2 and 3). Detailed attribute analysis of the chipped stone debitage was not undertaken at this time because few pieces were recovered to permit meaningful analysis; they will be analyzed with the excavation phase lithic materials, however. The collections were then placed in the Archaeological Repository, and all paper and photographic records were placed in the Archaeological Records Management System.

LA 83772

Projectile Point Preform

Even though a number of projectile points have been collected from the site surface over the past several decades, only a single projectile point preform was recovered by the project at LA 83772 (Fig. 10a). It measures 35 by 22 by 6 mm, weighs 3.7 g, and is made of coarse gray chert. The provenience is the surface of Square 0N/45E.

Ground Stone Artifacts

Two items of ground stone were collected from the site surface and surface of the highway cut east of NM 90. Several other pieces of ground stone were collected with the permission of the landowners from the surface of the south pueblo.

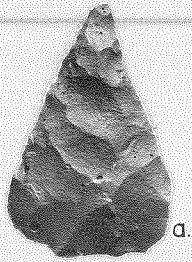
Manos. All three small, oval one-hand manos are complete and made of small river cobbles (Fig. 10c-d, f; Appendix 2). Each has a single, well-used grinding surface, but shaping of the cobbles is minimal. The materials are rhyolite, aplite, and white granite.

Two two-hand mano fragments are end pieces from specimens having single grinding surfaces. Modification of the remainder of each cobble is minimal to none. The materials are white sandstone and white granite.

Metates. One complete specimen is a basin metate from the surface of the east highway cutbank (Fig. 10e). The white, fine-grained sandstone slab is unmodified other than the grinding basin. The slightly used grinding area is oval and measures 12.4 by 9.0 cm.

Two fragments fit together to form approximately half of a second basin metate. Estimated original basin size is 30.0 by 17.0 by 3.3 cm. The rest of the stone, a 4.5 cm thick slab of white granite, shows little or no modification.

0 3 cm.



a.

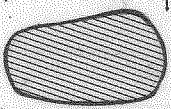
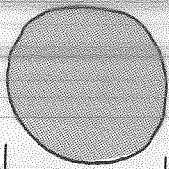
83772-0-125



b.

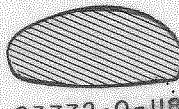
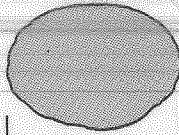
85113-0-1

0 16 cm.



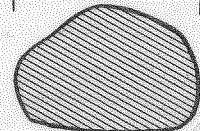
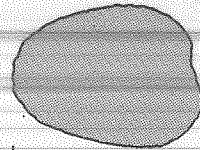
c.

83772-0-130



d.

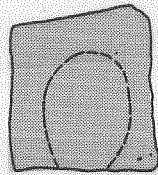
83772-0-118



f.

83772-0-119

0 15 cm.



e.

83772-0-129

Figure 10. Chipped and ground stone artifacts from LA 85113 and LA 83772.

Two other metate fragments are either trough or possibly basin in type. The black vesicular basalt specimen was edged-chipped to shape. The granite specimen shows no other modification other than the grinding surface.

Flakes

Few flakes were noted on the surfaces of the site, and even fewer were collected. Collection activities yielded 19 flakes, 7 from the surface and 12 from auger tests.

All flakes are interior core flakes (lack cortex). Because of the small sample size, only material types were recorded (Appendix 2). Flake sizes are generally small; the largest ones are only 4 cm long.

Five material type categories are present--rhyolite, chalcedony, chert, silicified siltstone (siltite), and other/unidentified. Rhyolite is the most common specific material and is represented by two varieties: gray and brown and gray banded. Chalcedony is next and also comes in two varieties, off-white and red-yellow-gray mottled. Gray chert and dark gray siltite are represented by one example each.

Minerals

A small lump of red hematitic ochre was found that shows no faceting or other direct evidence of use. However, it was almost certainly brought to the site by the occupants. It measures 1.7 by 1.4 by 1.2 cm and weighs 2.2 g.

Pottery

The pottery assemblage is characterized by utility wares and small amounts of painted pottery (Fig. 12; Appendix 2). Because an effort was made to collect all painted sherds with intact designs, the ratios of utility to painted sherds in the collection are not an accurate reflection of the ratios at the site. During the analysis, Dr. Stephen Lekson of the Laboratory of Anthropology, Museum of New Mexico was asked to take a brief look at the sherds. Several notes are appropriate on the assemblage because of minor differences in perception between Lekson and the writer.

Utility Ware. The utility pottery includes both plain and textured varieties. Two aspects of the plain pottery are of interest here. Nearly all of the sherds are either light brown or slightly reddish because of the firing atmosphere. While this is not unusual in itself, the surfaces of one sherd from Sleeve 2 of Auger Test 21N/6E are so red that they appear sliplike (similar to the type San Francisco Red). Microscopic examination indicates that the sherd is not slipped because the temper grains, both large and small, plainly show on the surface. The other aspect is that a few sherds of plain brown are intentionally smudged black on the interior surfaces. Again, while this is not particularly unusual, it was monitored in this analysis because of the similarity to Reserve-Mogollon pottery.

Distinguishing between indented corrugated and clapboard corrugated sherds proved to be a major problem. Lekson, based on his brief viewing of the White Signal sherds, suggested

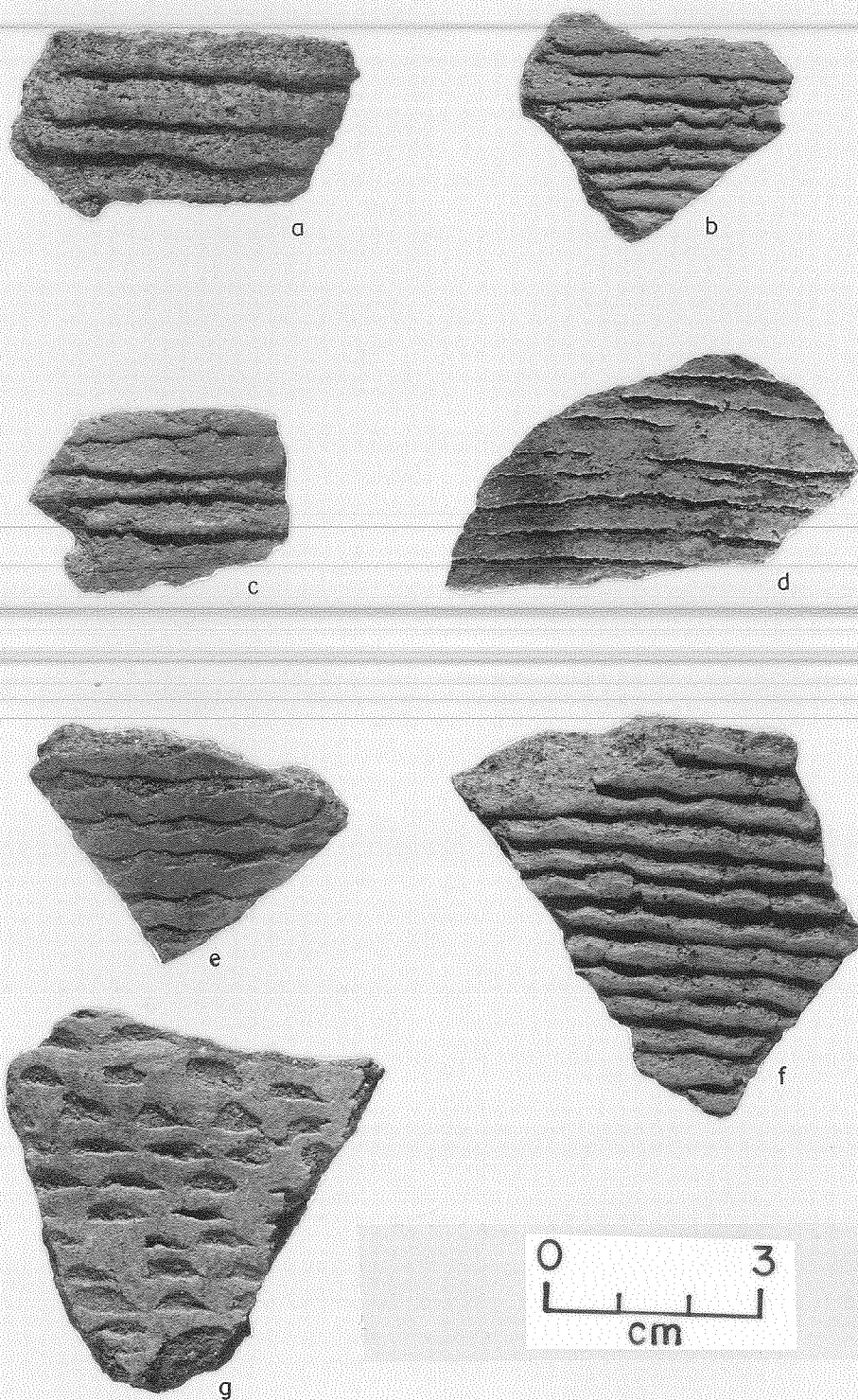


Figure 11. Utility pottery; (a-b) Mimbres Clapboard Corrugated, (c-g) Mimbres Indented Corrugated.

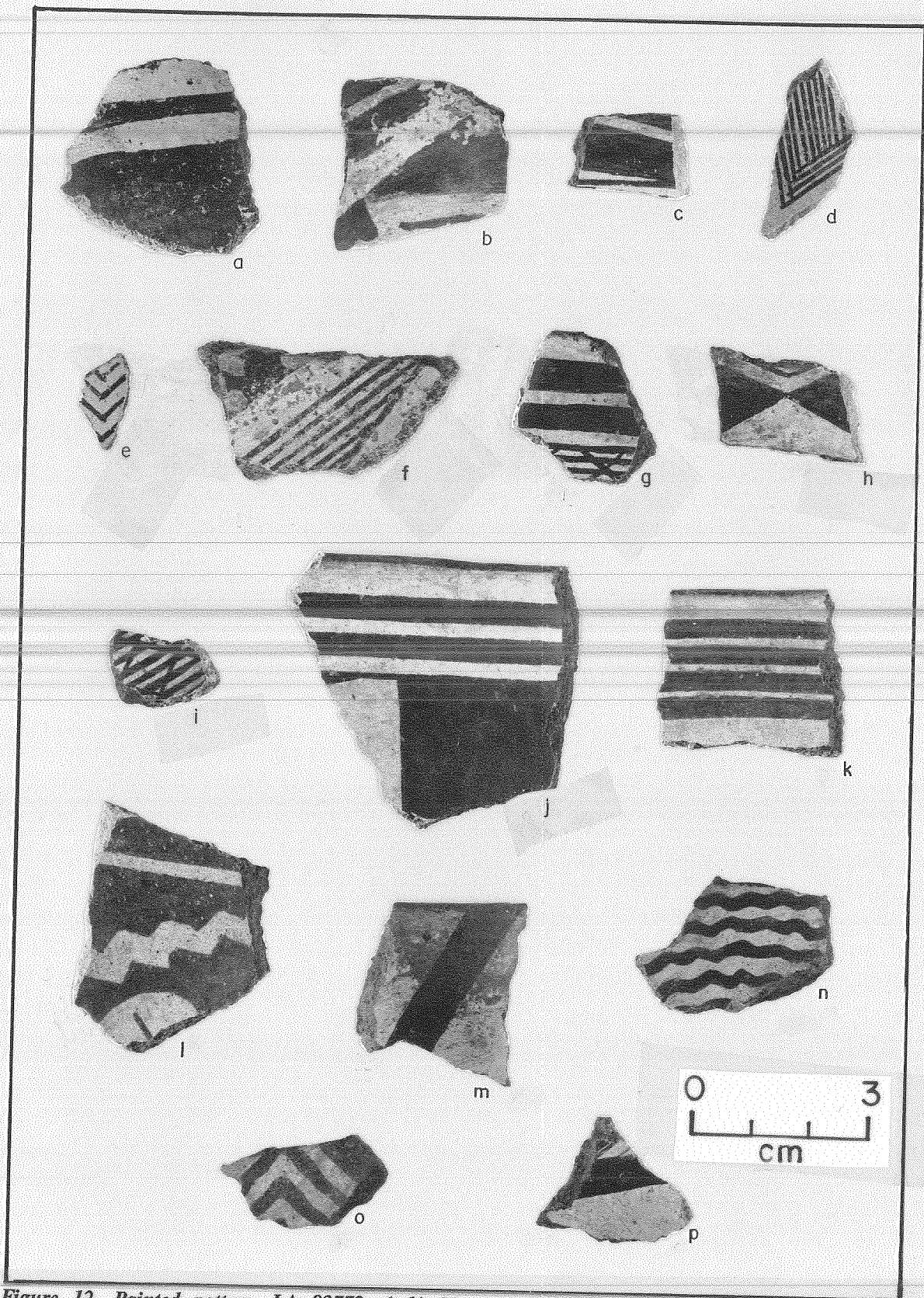


Figure 12. Painted pottery. LA 83772: (a-b) Mimbres Bold Face Black-on-white, (c) Mimbres Transitional Black-on-white, (d) Unidentified black-on-white, (f-l) Mimbres Classic Black-on-white; LA 85113: (e) Kiatuthlanna Black-on-white, (m-o) Mimbres Bold Face Black-on-white, (p) Mimbres Transitional Black-on-white.

that most of the sherds would be classified as the clapboard style by Mimbres Foundation analysts. While Lekson would not presume to speak for the Mimbres Foundation, his comments do highlight a perceptual difference between that position and the one taken by this writer.

On the basis of Pueblo III and Pueblo IV Rio Grande Anasazi utility pottery (especially the smeared indented pottery), the writer is inclined to assign the majority of White Signal Project textured pottery to the indented corrugated variety. Like the Rio Grande sherds, the White Signal sherds show uneven width of the coils, shallow indentations on many sherds, and the tendency for the clay to smear across the coils. Some sherds are polished across the coils. While partial obliteration of the coils during smearing and polishing may not have been intentional, distinguishing between purely indented and purely clapboarded forms is virtually impossible in many instances.

Painted Pottery. The painted pottery from LA 83772 (Fig. 12) is dominated by Mimbres Classic Black-on-white. All have geometric designs, though at least two sherds from picture bowls came from the site (C. M. Jones Collection). One sherd each of Mimbres Bold Face Black-on-white (from the south pueblo) and Mimbres Transitional Black-on-white (from the surface of Square 18N/9E) were also recovered. The proportions of the different types are questionable because of heavy collecting activities.

Animal Bone

Seven small fragments of animal bones were recovered from five auger tests (Appendix 2). Burning, tanning, and polishing on four of the fragments indicate cultural derivation. Although the three pieces of cancellous bone from the same animal show no cultural modification, these bones were probably also cultural in origin. Only one fragment is identifiable to genus level, and that is a burned jackrabbit (*Lepus*) scapula.

LA 85113

Projectile Point

The one arrow point was collected from the surface of Square 27N/3E (Fig. 10b). It is side notched, light gray rhyolite, measures 21 by 13 by 4 mm, weighs 0.8 g, and has a minimum stem width of 5 mm. The shape is similar to those frequently recovered from pottery period sites.

Flakes

Few flakes were noted on the surfaces of the site, and even fewer were collected. Collection activities yielded three flakes, all from auger tests. All flakes are interior core flakes (lack cortex). Because of the small sample size, only material types were recorded (Appendix 2). Flake sizes are generally small; the largest one is less than 4 cm long.

Two material type categories are present--rhyolite and chalcedony. Two flakes are rhyolite, one is gray and brown and the other purple-gray. The chalcedony flake is off-white.

Pottery

The notes concerning the utility pottery at LA 83772 apply to the LA 85113 assemblage as well. The identifiable painted pottery from LA 85113 (Fig. 12) is dominated by Mimbres Bold Face Black-on-white. Mimbres Transitional Black-on-white and Mimbres Classic Black-on-white are present in smaller numbers.

Two small sherds of Kiatuthlanna Black-on-white represent the only identifiable intrusive type. However, both are tempered with crushed rock containing white feldspar, mica, and other minerals rather than the prominent rounded quartz grains of "typical" Kiatuthlanna.

Animal Bone

A single animal bone, the tibia of a jackrabbit, was recovered from Auger Test 48N/9E, Sleeve 4 (55-70 cm). It is unburned, lacks butchering marks, and is of unknown temporal affiliation.

Human Bone

Several large fragments of human long bones were noted eroding out of the west roadcut. The fact that they are tightly grouped suggests that they may be part of an interment. The bones were left in place and will be dealt with during the next phase of the project.

Dating the Sites

The only means for dating the sites at this time is through the pottery. The presence of Mimbres Bold Face Black-on-white at LA 85113 places the occupation in the A.D. 900s (Anyon et al. 1981).

LA 83772 produced numerous sherds of Mimbres Classic Black-on-white, a type dating to the A.D. 1000s and early 1100s (Anyon et al. 1981). The single sherds of Mimbres Bold Face Black-on-white and Mimbres Transitional Black-on-white suggest occupation during the A.D. 900s. Three clues suggest the presence of Early Pithouse remains (A.D. 200-550; Anyon et al. 1981)—a pithouse profile(?) in the highway cutslope; a floor located 2 m below the ground surface in the south pueblo area (Jones, pers. comm. 1991); and a high percentage of plain brown pottery.

LA 85113 produced several sherds of Mimbres Bold Face Black-on-white and a sherd or two each of Mimbres Transitional Black-on-white and Mimbres Classic Black-on-white. Primary occupation during the A.D. 900s and early 1000s is indicated.

SUMMARY

Two sites near Silver City, New Mexico were tested for their potential to yield information on local prehistory. Portions of the sites lie within proposed highway improvement zones. At both sites, a grid was laid out, surface counts of artifacts were made, arbitrary samples of artifacts were collected, and auger tests were made. Permission was granted by a private land owner to make limited grab-sample collections from the main area of LA 83772. All archaeological work, except as noted, was restricted to the existing right-of-way of NM 90. No new right-of-way will be acquired for this project.

LA 83772

LA 83772 is a habitation site with architecture. Prior to our investigations, most of the structures could be seen on private property just outside the existing right-of-way. Within the right-of-way, the profile of a pit structure and a possible human interment were observed. Otherwise, the only obvious cultural remains within the right-of-way were sherds and chipped lithic debris.

To augment our information about the site, we received permission from the private landowner to selectively collect sherds and ground stone artifacts from the surface of the south pueblo. We also borrowed his collection of projectile points from the site to measure and photograph.

Surface artifacts within the existing right-of-way were inventoried by means of 3 by 3 m squares located in three concentrations that totaled 1,557 sq m. Artifact densities ranged from 0.067 to 0.72 items per sq m. All diagnostic artifacts and artifacts in arbitrarily selected squares were collected to document site content and dating.

A total of 173 3-inch bucket auger tests were bored at 3 m intervals to determine soil depth and presence or absence of subsurface cultural features and deposits. Depth to culturally sterile sediments varied from 55 to 162 cm except in structure locations. Sherds and flakes were recovered from many tests west of the highway. Some of these artifacts probably represent refuse scattered on the prehistoric ground surface, but others are deep and probably mark the locations of pithouses and pits. Tests east of the highway produced few artifacts. Most of the finds were clustered at the south end of the site and occurred at depths indicative of pithouses and pits.

Mimbres Classic Black-on-white pottery indicates that the majority of the occupation west of the highway belongs to the Mimbres phase, A.D. 975-1150. East of the highway, numerous plain brown sherds, the near absence of painted and corrugated pottery types, and the presence of pithouses suggest an Early Pithouse period occupation.

LA 83772 is likely to yield important information on the Early Pithouse period structure types, artifact and pottery assemblages, subsistence behavior, and the seasonality of the early

occupations; and the nature of ceremonial architecture during the Mimbres phase, subsistence behavior, settlement system, and geographic relationships with peoples of the Mimbres and/or Gila valleys, and whether or not this late occupation was seasonal.

LA 85113

LA 85113 is a habitation site with probable architecture. The only obvious cultural remains are a thin sherd and lithic artifact scatter. Some information suggests the presence of structures: the pottery assemblage, the site location on a knoll above the creek, the exposure of one cobble on top of another in the side of a rodent burrow, and the report by a local rancher that a cobble alignment was at one time observable on the site surface. This alignment cannot be seen today, probably because of large accumulations of dirt brought to the surface by rodents.

Surface artifacts within the existing right-of-way were inventoried by means of 3 by 3 m squares totaling 1,206 sq m. Artifacts occurred mostly on the high areas of the knoll; overall density was 0.19 per sq m. All diagnostic artifacts and artifacts in arbitrarily selected squares were collected to document site content and dating.

A total of 47 3-inch bucket auger tests were bored at 3 m intervals along the edge of the highway to determine soil depth and presence or absence of subsurface cultural features and deposits. No auger tests were placed within the central part of the site. Depth to culturally sterile sediments varied from 65 to 130 cm. Sherds and flakes were recovered from six tests. A sherd recovered at a depth of 55 to 70 cm and rocks encountered at shallow depths in adjacent tests indicate the presence of a pithouse.

The predominance of Mimbres Bold Face and Mimbres Transitional Black-on-whites and a minor presence of Mimbres Black-on-white pottery indicate that the occupation of LA 85113 belongs to the Three Circle phase (ca. A.D. 850-975) and possibly the beginning of the Mimbres phase (A.D. 975-1150).

LA 85113 is likely to yield important information on the validity of the concept of a Mangus phase; subsistence behavior; settlement system and geographic relationships with peoples of the Mimbres and/or Gila valleys; and whether or not this late occupation was seasonal.

RECOMMENDATIONS

The proposed highway improvements will be restricted to the existing highway right-of-way in the vicinity of LA 83772 and LA 85113.

LA 83772

LA 83772 is a habitation site with surface structures, pithouses, and low to moderate density of surface artifacts. The surface structures lie outside the existing right-of-way. Pithouses and other subsurface features are exposed in the west highway cut, and auger tests indicate that structures or other features are present in the undisturbed portions of the site lying within the existing right-of-way on both sides of the highway.

A temporary fence will be installed at the top of the existing highway cut west of NM 90 to protect surface and subsurface remains between the cut and the right-of-way fence. Features exposed in the west face of the highway cut are within the proposed construction zone, and we recommend that data recovery be undertaken.

East of NM 90 the proposed improvements will require cutting back the existing bank at the south end of LA 83772 for a distance of 6 m (20 ft). Auger testing indicate the presence of pithouses or other subsurface features in this area. A temporary fence will be installed along the edge of the construction to protect that part of the site between there and the right-of-way fence. We recommend that data recovery be undertaken to expose and document the archaeological features in the area of the proposed new cut.

LA 85113

LA 85113 is a habitation site with a low-density surface artifact scatter and evidence for subsurface pithouses and other features. The main structures and other features of the site lie within the existing right-of-way but *outside the proposed construction area*. A temporary fence will be put up to protect this part of the site during construction.

The proposed construction at the site will be limited to the existing drainage ditch along the west edge of NM 90. This area was excavated and contoured during construction of the highway in the 1930s. Auger test holes and limited surface collections document the disturbed nature of the surface and subsurface deposits and the absence of intact remains in this part of the site. We therefore recommend that no further archaeological work be undertaken within the drainage ditch at this site.

DATA RECOVERY PLAN

Background

Two areas of LA 83772 require further treatment. We are not certain, however, about the dating of either area. The structure exposed in the existing face of the west highway cut could belong to the Pithouse period or, given its location immediately east of the south pueblo, it could be a Mimbres phase ceremonial structure. This pattern is common in the Anasazi Culture of the Four Corners region, but it has only recently been proposed for the Mimbres-Mogollon region (S. Lekson, pers. comm., 1991).

The features located at the south end of the site and east of the highway may belong to the Early Pithouse period; if so, they represent some of the earliest pottery period remains known in the Mimbres-Mogollon region. Because of these uncertainties, this data recovery plan discusses problems and approaches for both the Early Pithouse period and the Mimbres phase. Lekson's draft overview (1989), the most recent statement on the prehistory of southwest New Mexico, is the primary document followed here.

Early Pithouse Period

We know less about the Early Pithouse period than any other prehistoric pottery period in southwestern New Mexico (Lekson 1989:F-38ff). There are three reasons for this. Early Pithouse period remains are difficult to recognize because archaeologists have tended to concentrate on the large, late, multicomponent Mimbres phase sites. Later site occupants tend to dispose trash in low places (such as the depressions of earlier structures), leading archaeologists to believe that such structures are later because of the pottery assemblages.

Second, some archaeologists, in discussing settlement patterns, categorically state that Early Pithouse period sites are found on high mesas set back from streams and not on terrace edges overlooking arable land. Thus, Early Pithouse period sites are not sought, or found, on terraces.

Third, Early Pithouse sites can be difficult to recognize, especially when surface depressions, signifying the presence of pithouses, are absent. By appearing to be simple sherd scatters, such sites are easily mistaken for limited activity locales rather than habitation sites.

We know that Early Pithouse habitation sites have pithouses of variable sizes, shapes, and interior features (such as the numbers and placement of storage pits, roof-support post holes, and hearths), but we do not know if significant patterns are present. We know that the subsistence economy included cultigens, wild animals, and wild plants, and that the relative contributions of each source shifted through time. However, we do not know how important each component was (collected versus cultivated) to the overall diet at any given time, nor when and why the shifts in emphasis took place.

One of Lekson's more provocative ideas is that the Mimbres-Mogollons of the Early and Late Pithouse periods had a seasonal subsistence round, even though they built pithouses in the Mimbres country. He believes the seasonal round involved large territories, that the Mogollons, like the later Apaches, spent the summer and fall in the Mimbres area and went south well into Mexico for the winter. In Mexico, they subsisted on wild plants and hunted animals into the spring. They would move back north to southwestern New Mexico in time for planting.

However, when the Casas Grandes culture and its attendant high population arose, the region was denied to the Mogollons. Then, hypothesizes Lekson, storable cultigens grown by means of ditch irrigation in the Mimbres country became the dominant food source, causing the Mogollons to reside year-round in southwestern New Mexico. This series of events set the stage for the development of the Mimbres phase, with its pueblo-style buildings, irrigation agriculture, and exquisite pottery.

The key to solving the problems of the Early Pithouse period and investigating the first part of Lekson's hypothesis is the accurate identification of sites; thorough sampling, excavation, and collection of the floral and faunal materials; obtaining good dates; and looking for evidence of seasonal occupation. Single-component sites and multicomponent sites on which the early components lie away from the later components are the best sites for these investigations.

Mimbres Phase

Our current understanding of the Mimbres phase comes mainly from the excavation of several large sites along the Mimbres River and its tributaries. Minor investigations have also taken place at Mimbres sites in the Rio Grande and Gila River valleys. With few exceptions, the investigated sites are multicomponent, usually having remains that both pre-date and post-date the Mimbres phase. This presents a number of problems, including the fact that large sites are not the typical Mimbres village size as some authors have suggested. Additionally, since the Mimbres people frequently built their sites along small drainages, our understanding of their culture is incomplete until we study these sites.

The study of small Mimbres sites on minor drainages is important on several analytical levels. On the regional level, Lekson (1989:E-20) asserts that the Mimbres built villages on the smaller drainages late in the Mimbres phase to relieve population pressures in the more central areas. It should be mentioned in this context that certain cultural developments did not occur concurrently in the large and small drainages.

On the individual settlement level, one aspect of small Mimbres sites is a combination room block and "pit structure." The small pueblos have long been recognized, but the interpretation of square pit structures as possible ceremonial structures or "kivas" is relatively new (Lekson, pers. comm., 1991). This situation is due mainly to the nature of large, multicomponent Mimbres sites where structures of different components are usually interspersed, even superimposed. Lacking sufficient temporal control, contemporaneity of structures is difficult or impossible to establish. Small sites, like the Dinwiddie site (LA 6783; Hammack et al. 1966) and possibly LA 83772, are simpler and allow easier recognition of contemporary structures. Small sites, then, can provide the remains that belong to discrete occupations, and the data for

further investigations.

The shift of habitations to small drainages has implications for the subsistence base. Most scholars agree that hunting and gathering, supplemented by gardening, provided the mainstay of the Pithouse period diet. Although authorities do not agree when the shift to a heavier reliance on cultigens took place, all seem to agree that it had occurred by the beginning of the Mimbres phase. Lekson (1989:F-90) further believes that ditch irrigation was an integral part of Mimbres agriculture. Did those Mimbres people who moved to small drainages change their agricultural practices or shift back to a greater reliance on wild plant and animal foods? We are talking about differences of degree rather than of kind. To obtain the answers, we must attempt to make accurate determinations of the relative importance of hunted and gathered foods versus agricultural products to the Mimbres diet.

M. Nelson (1984) has provided one of the more novel attempts to assess the question of relative importance of wild versus domestic foods through her analysis of chipped lithic debris. Her recorded attributes included material types, cortex, flake size, edge angles, retouch, and frequency of biface thinning flakes. These attributes, and her assumption of how they indicate differentiation of plant-related from animal-related activities, are provocative and merit testing with new data.

Data Recovery Questions and Data Requirements

We are not certain about the dates of the two areas of LA 83772 requiring further treatment, and therefore we outline and discuss data recovery questions and data requirements pertinent to those cultural periods most likely represented by the remains--the Early Pithouse period and the Mimbres phase. It should be understood that these questions can be addressed if and only if remains of the appropriate time periods are recovered. For instance, if the pit structure exposed in the west cutface dates to the Pithouse period, we will be unable to address the questions posed for the Mimbres phase.

Early Pithouse Period

1. What structures, other features, and artifactual remains constitute an Early Pithouse period site?

Few sherds dating later than the Early Pithouse period were recovered from east of the highway at LA 83772, and it is likely that the buried features at the south end of the east side of the site belong to the Early Pithouse period. The situation approximates a single-component site, rendering the opportunity to look at this early time period in a pure context. This is especially important as LA 83772 is located on a terrace, contrary to the current view that such sites occur only in high elevations away from drainages.

Data collection will include the thorough documentation of all features and artifactual remains associated with an Early Pithouse period site. Structures, extramural pits, hearths, and associated remains within the proposed highway improvement areas will be located, excavated,

recorded, and photographed. Artifacts, datable materials (C14 samples and tree-ring specimens), soil samples (for the recovery of floral materials), and other cultural and natural items will be collected and analyzed to confirm the proper cultural and temporal placement of the remains and to document the activities carried on in this area of the site.

2. What foods were eaten by the Early Pithouse period people? Were wild plant and animal foods eaten, and if so, what species? Were domesticated plants eaten? What proportions of wild to domesticated species were consumed? What proportions of plant to animal foods were eaten?

The data collected to address these questions include the systematic collection of faunal remains, floral remains, soil samples, and artifacts from the excavations. Microremains (including pollen) will be extracted from the soil samples. Analysis of these materials will focus on species identification, the relative proportions of species, and the documentation of residues obtained from the surfaces of artifacts, specifically from grinding stones. We will also look at the ratios of artifact classes (grinding stones to hunting paraphernalia). For a variety of reasons, dietary mixes cannot be derived from simple, direct comparison of ratios of plant species, animal species, or artifact classes. Instead, we will have to make *qualitative* estimates based on the data at hand, comparison with samples reported in the literature, taphonomic considerations, and experience of the specialists. If human remains are recovered and the requisite consultations permit such studies, isotope analyses (C12/C13, N14/N15, and Sr) and pathology studies will be conducted to determine the subsistence mix and general health of the population.

3. Were Early Pithouse period habitation sites seasonal occupations?

This question relates directly to the idea that Early Pithouse period subsistence was based primarily on hunting and gathering supplemented by limited agriculture. Evidence for seasonal occupation will be sought through the acquisition of subsistence data (both plant and animal remains). While it is sometimes possible to find evidence of occupation during a specific season (for example, the presence of fetal or newborn animals), it is usually difficult to show that the other seasons were not also represented.

For the Early Pithouse period, we should find warm weather indicators (wild and domestic plants indicative of the growing and harvesting seasons) and a clear absence of winter and early spring indicators (such as animals killed during these periods). This would support Lekson's postulation of occupation during the summer and fall months and open the possibility that the people lived elsewhere during the cold season. Lekson postulates that the people moved south into northern Mexico where they could take advantage of perennial food species such as cacti, agave, and sotol during the cold months.

We sometimes find evidence that is tangential to, but may inform upon, the seasonality question. One such example is finding several superimposed floors where each floor was riddled by rodent activity; the rodent burrows were then plugged with rocks and chunks of adobe before the next floor was laid (Wiseman 1980:135-137). Another possibility is pottery. Although early Mexican (pre-polychrome) pottery types such as those described by DiPeso, Rinaldo, and Fenner (1974) have not yet been recovered in early Mogollon sites in southwestern New Mexico (see Anyon and LeBlanc 1984), we must be aware of the possibility. Their presence would

demonstrate contacts between the two regions and strengthen the connection proposed by Lekson. Thus, all lines of evidence will be sought that provide perspective on the nature of LA 83772 occupations. By acquiring several pieces of evidence, we gain confidence in our interpretation.

Mimbres Phase

1. Is the pit structure exposed in the west face of the highway cut a ceremonial structure? How does it compare with structures believed to be ceremonial structures at the Dinwiddie site (LA 6783; Hammack et al. 1966) near Cliff, New Mexico?

Kivas or ceremonial structures in Anasazi sites have long been identified on the basis of placement in the village, shape, and distinctive floor and wall features (but see Lekson 1988 and Wilshusen 1989 for recent divergent opinions). Such easily identified structures are generally lacking in the Mogollon area except for the category of large or great kivas. In his review and discussion, Smith (1952) finds this problem is common to most Southwestern cultures. He concludes that ceremonial structures may be defined on the basis of any, some, or all criteria, including placement with respect to other structures at the site, size, shape, and interior features.

In effect, the definition of a ceremonial structure is largely judgmental, though the archaeologist must present the data in a clear and concise manner. We intend to follow Smith in assessing the structure at LA 83772. We will not be excavating Mimbres surface rooms on this project, and therefore we will have to glean comparative data from published sources to render an opinion.

The data required to answer these questions include architectural details, floor contact artifacts, and soil samples from the floor features and floor contact situations. The soil samples will provide pollen and other plant remains that can be indicative of ceremony or healing uses, especially if found in quantity. Architectural plans, artifacts, and possibly pollen samples from the Dinwiddie site are available for comparison at the Museum of New Mexico.

2. What foods were eaten by the Mimbres phase people? Were wild plant and animal foods eaten, and if so, what species? Were domesticated plants eaten? What proportions of wild to domesticated species were consumed? What proportions of plant to animal foods were eaten?

The data required to address these questions include the systematic collection of faunal remains, floral remains, soil samples, and artifacts from the excavations. Microremains (including pollen) will be extracted from the soil samples. Analysis of these materials will focus on species identification, the relative proportions of species, and the documentation of residues obtained from the surfaces of artifacts (specifically from grinding stones). If corn remains (cobs and kernels) are recovered in quantity, specialists will examine the growth characteristics (size, degrees of homogeneity) to assess whether the plants may have been irrigated. The ratios of artifact classes (grinding stones to hunting paraphernalia) will also be examined. If human remains are recovered and the requisite consultations permit such studies, isotope analyses (C12/C13, N14/N15, and Sr) and pathology studies will be conducted to determine the subsistence mix and general health of the population.

3. *Did the people of LA 83772 come from or belong to the populace of one of the large river systems (the Gila, for instance)?*

Data required to address this include samples of pottery and lithic materials. Other materials and items found in the excavations will be evaluated for the potential to address the question. Clay collection trips will be made to the site area and to the Mimbres and the Gila valleys to obtain comparative materials. Pottery temper and designs will be compared with samples from other areas, especially the Gila and Mimbres river systems, to establish the degree of similarity. Where possible, lithic materials from White Signal will be related to source areas. Collections housed at the Museum of New Mexico, documentation in the literature, and information gained from consultations with replicative potters, such as Paul and Laurel Thornberg, will be used in this comparative study.

4. *What age are the remains at LA 83772?*

To answer this question, datable materials such as tree-ring specimens, radiocarbon samples, and archaeomagnetic samples will be collected. Since cultural and social developments in the Mimbres region did not occur simultaneously across the region (Lekson 1989), it is necessary to obtain good dates in order to investigate why, where, and when the changes took place. Examples of nonsynchronous cultural developments include: (1) the shift from pithouses to pueblos as the main habitation form; (2) the manufacture dates of all painted pottery types to establish which are sequent and which are contemporary; and (3) population shifts from one valley to another at different times.

5. *Was the occupation at LA 83772 seasonal, and if so, in what season(s) was it occupied?*

Archaeological data that can provide information on seasonality include remains of fetal or newborn animals, the annular rings of fish scales and freshwater mollusc shells, migratory waterfowl, flowering parts of plants, and certain annual plant species that have woody (lignified) parts. Although these indicators are occasionally found in sites, interpretation of seasonality is usually ambiguous because more than one seasonal indicator is present. The trick is to find sites that produce seasonal data restricted to one or two discrete seasons. These situations are rare (Toll 1983).

Although we do not anticipate finding restricted seasonal data at LA 83772, we will monitor it. If seasonal data are found, we will compare and contrast them with the expectations implied by Lekson (1989). For the Early Pithouse period, we should find warm weather indicators (growing and harvesting seasons) and a clear absence of winter and early spring indicators. This would confirm Lekson's postulation of occupation during the summer and fall months and open the possibility that the people lived elsewhere during the cold season. Lekson postulates that the people moved south into the Chihuahua Desert of northern Mexico where they could take advantage of perennial food species such as cacti, agave, and sotol.

For the Mimbres phase, we will need to find evidence of winter and spring seasons to demonstrate occupation during cold weather. Winter and especially spring indicators include fetal and new-born animals of species that normally bear young in the winter and spring months and

plants that have been documented as being spring foods of ethnographic groups. Winter/spring indicators will support an interpretation of year-round occupation of the region and lend confidence to Lekson's model, assuming that summer/fall indicators such as agricultural products and late maturing plant species are also present.

Field Strategy

The field work for this project will have two parts--the excavations at LA 83772 and clay collection trips in the Silver City area. The field work will gather the data needed to answer the questions posed above. During the excavation of LA 83772, photographs, drawings, and notes will be taken as needed for full recording of all features and details uncovered during the work. Maps will be prepared and will include all artifact collection points or units, features, and excavation units. The centerline stakes and other highway planning markers will be placed on the maps to tie in the proveniences of the testing phase.

Excavations will be conducted both east and west of the present highway. Those west of the highway will be restricted to the probable pit structure, possible burial, possible hearth, and burned rock feature exposed in the road cut. Excavations east of the highway will be restricted to the area of the possible pit structure at the south end of the site. While initial excavation will focus on the possible pit structure, the work will expand outward in all directions by means of trenches and excavation units (1 by 1 sq m, 1 by 2 sq m, 2 by 2 sq m) to search for extramural hearths, pits, and any other features that might be found within the proposed new road cut. Up to 150 sq m of site area will be excavated in the vicinity of the structure.

The grid established during the testing phase will be used during the excavation phase to insure provenience control for all project activities. Three 1 by 1 m and two 1 by 2 m, hand-dug excavation units will be used to excavate the five subsurface features (two possible pit structures, one possible burial, one possible hearth, and one burned rock concentration) located during testing. These units will permit the assessment of the nature and depth of the fills. Arbitrary levels of 10, 15, or 20 cm will be used for the initial excavations; the depth of excavation and thickness of the levels will be determined by the nature of the fill. Once the bottoms of features are located, the profiles will be examined for stratigraphy, and cross sections will be drawn.

The nature of the fill of each feature will determine to a large degree how it will be removed. If cultural stratigraphy is present, the fill will be removed by stratigraphic unit, not by grid square. If a stratigraphic unit is thicker than 30 cm, it will be subdivided horizontally to segregate earlier from later materials within the unit. Noncultural stratigraphic units (wind-filled sand, for instance) will be removed in 20 to 30 cm levels as considered appropriate at the time of excavation.

Selected soil samples for flotation analysis will be collected to retrieve minute plant, animal, and artifactual remains. Pollen samples will be collected from each stratigraphic unit and from the point of contact between adjacent units. Charcoal samples suitable for tree-ring and radiocarbon dating will be collected and packaged separately. All fill will be screened through ¼-inch wire mesh to recover materials missed during shoveling and troweling.

Feature fill lacking stratigraphy and cultural materials will be excavated in arbitrary 30 cm units. Screening will be done selectively, based on the situation, such as encountering a small trash lens. In these events, flotation and pollen samples may also be collected. Otherwise, the bulk of these fills will not be screened. Areas outside of the features will be explored by means of 2 by 2 m hand-dug units that are expanded outward as necessary to locate, expose, and document associated features. The final exploratory activity, if necessary, will be the judicious use of a backhoe to excavate trenches and pit units to ensure that all cultural information within the proposed highway project zones is located and documented.

Dean Wilson of the OAS staff will collect clay samples in the vicinity of LA 83772 and at selected locations in the Gila and Mimbres valleys. Each collection locality will be identified, documented, and sampled. Back in the laboratory, the clays will be assessed for their pottery-making qualities, samples will be formed into test tablets and fired, and the tablets will be visually compared with the pottery recovered from LA 83772.

Human Remains

One human burial is exposed in the west face of the highway cut. The jumbled position of the exposed bones suggest that they were dug out at and then thrown back into the hole. The timing and conditions of discovery are unknown.

The exposed burial and any other burials that might be discovered during the course of the proposed project will be excavated using standard archaeological techniques. These include defining the burial pit, using hand tools to expose skeletal materials, mapping and photographing the position of the skeleton and any grave goods, and collecting soil samples for pollen and parasite analysis. Soil samples will *not* be collected from the disturbed grave because of contamination.

Field treatment of human remains and other sensitive cultural materials will be based on the HPD Rule 89-1 ("Regulations for the Issuance of Permits to Excavate Unmarked Human Burials in the State of New Mexico"), and MNM Rule 11, as amended April 2, 1991 ("Collection, Display, and Repatriation of Culturally Sensitive Materials"). The Office of Archaeological Studies holds Burial Excavation Permit No. ABE-056 (expiration date December 31, 1992) issued by the Historic Preservation Division, Office of Cultural Affairs for the State of New Mexico (Appendix 4). Human remains or other sensitive materials identified and recovered will not be handled or photographed in the field except as part of scientific data recovery efforts by authorized persons. Photographs of human remains and other sensitive materials will not be allowed to be taken by nor released to the news media, the general public, or other unauthorized persons.

Laboratory Study

All artifacts will be washed and sorted in preparation for analysis and eventual curation. Exceptions are animal bone and human bone; these items will be dry brushed but not washed.

Chipped Stone Debitage

The chipped stone will be analyzed to derive two basic types of information. The primary analysis will follow that used by M. Nelson (1984) for the Mimbres Foundation. Her analysis focused on a series of attributes that distinguish between assemblages derived from hunting activities versus plant-associated activities as they pertain to subsistence practices. She then used this method to look for, and assess, changes in subsistence through the southwestern New Mexico cultural sequence. Although results of her analysis were not in total agreement, they did suggest that the subsistence practices in the Late Pithouse period and the Mimbres phase focused more on plant foods than during the preceding Early Pithouse period and the later Cliff and Black Mountain phases.

The purpose in following Nelson's analysis is to evaluate the utility of her approach. If her expectations are met in the White Signal analysis, then we will use them to address the research questions on the nature of the subsistence activities during the Early Pithouse period and the Mimbres phase and changes in those activities between the two periods.

The attributes from Nelson's study that we will monitor include material types (grouped into categories of coarse versus fine), cortex, flake size (by weight, and by length, width, and thickness), edge angle (in three groups of degrees--19-40, 41-60, and 61-90), retouch, and frequency of biface thinning flakes.

A second analytical focus will be to identify lithic materials known to be from areas outside the White Signal vicinity. If found, these materials should allow us to assess the research questions regarding the relationships with peoples along the Mimbres and Gila rivers. The presence of materials such as Antelope Wells obsidian, from near the international boundary in southern Hidalgo County, would also bring data to bear on Lekson's model of Early Pithouse period population movements between southwestern New Mexico and northern Mexico.

Formal Artifacts

Formal artifacts, such as projectile points, drills, manos, metates, and ornaments, will be analyzed in traditional morphofunctional terms. The goal of the analysis will be to broadly define the types of activities carried on at the site. For instance, projectile point hafting element fragments can be used to infer hunting equipment maintenance. Medial and tip fragments of projectile points, depending on their fracture characteristics, can be used to infer breakage during manufacture or the butchering, processing, and consumption of game (as point fragments lost in the meat at the time of the kill).

Pottery

The pottery analysis will have two major aspects. The first will focus on the assignment of traditional type names (typology), determination of vessel forms, and determination of minimum numbers of vessels represented. These data will permit us to date the occupation(s); define activities relating to food storage, cooking, and consumption at the site; and to discover exchange relationships with other regions.

The second part of the analysis will include clay sourcing, temper analysis, and design study to define manufacture locales and permit examination of the research questions regarding intraregional social and economic relationships. For example, if some of the pottery recovered from White Signal can be shown to have been made in the Gila Valley and not the Mimbres Valley, then it will be reasonable to infer that the occupants of White Signal were related to, or perhaps part of, the population along the Gila and vice-versa. If none of the White Signal pottery was made in the Gila or the Mimbres, we must then consider the possibility that the White Signal people were part of a third group not recognized by archaeologists thus far.

The clay sourcing study endeavors to identify localities where the White Signal people collected their clays for making pottery. This study will tell us which pottery types were made locally and which were imported. It will be expanded on a limited basis to include collection of clays from the Gila and Mimbres valleys and to select pottery sherds from a few Gila and Mimbres valley sites. The sherds will come from collections in the Archaeological Repository at the Laboratory of Anthropology, Museum of New Mexico.

Consultation with Paul and Laurel Thornberg should expand our information on clays and sources to include the areas known to and collected by them. The Thornbergs have successfully replicated some aspects of Mimbres pottery making by using naturally available clays, tempering materials, slips, and paints; by constructing and painting pots using traditional Native American techniques; and by firing the vessels under primitive conditions. Their research is ongoing, far reaching, and intensive, and provides an extremely valuable resource to the study proposed here.

A synthesis of the information collected through Wilson's efforts and gleaned from the consultants should allow us to address several of the research questions posed earlier. Identification of some of the manufacture areas for the White Signal pottery will help us determine which were made locally and which were not. We should then be able to identify specific sherds in the White Signal assemblage that will permit us to address relationships, or the lack of them, between White Signal and the Mimbres and Gila valleys, as discussed above.

Sherds identified from much further afield, such as northern Mexico, will be useful in assessing Lekson's model of Early Pithouse period seasonal transhumance between southwestern New Mexico and northern Mexico and the purported changes in this system at the beginning of the Mimbres phase brought on by the rise of Casas Grandes.

Plant Remains

Flotation and pollen samples will be processed and submitted to specialists for examination. Emphasis will be on economic uses of plants for food, fuel, and construction. Particular attention will be given to types and ratios of edible species used as a reflection of human diets and the shifts in emphasis through time. Both cultural and natural aspects of the species present and their ubiquity will be taken into consideration when interpreting the results. The results of these analyses will inform on the subsistence and seasonality questions posed in an earlier section of this document.

Animal Remains

Faunal remains will be analyzed for species, taphonomy, and evidence of butchering and cooking. An attempt will be made to determine which species were used by man and which were post-occupational intrusives. Determination of economic uses (food, tools, clothing, ornaments) and seasonality of kill/capture will be emphasized. The results of these analyses will inform on the subsistence and seasonality questions posed earlier.

Human Remains

Laboratory treatment of human remains and other sensitive cultural materials will be based on the HPD Rule 89-1 ("Regulations for the Issuance of Permits to Excavate Unmarked Human Burials in the State of New Mexico"), and MNM Rule 11, as amended April 2, 1991 ("Collection, Display, and Repatriation of Culturally Sensitive Materials"). The OAS holds Burial Excavation Permit No. ABE-056 (expiration date December 31, 1992) issued by the Historic Preservation Division, Office of Cultural Affairs for the State of New Mexico (Appendix D).

Human remains or other sensitive materials identified and recovered will not be handled or photographed in the laboratory except as part of scientific data recovery efforts by authorized persons. Photographs of human remains and other sensitive materials will not be allowed nor released to the news media, the general public, or other unauthorized persons.

Subject to consultation, the following observations and studies will be conducted on human remains recovered by the excavations: standard anthropometrics, gender, age, pathologies, and isotopic studies. These techniques will yield information on stature, gender, health, nutritional status, diet, and genetic relationships to regional and extraregional peoples. These results can then be used to evaluate the subsistence questions posed earlier.

Data Integration and Interpretation

Once all of the analyses have been completed, the results will be given comprehensive integrative and interpretive treatment, including comparison with appropriate sites and cultures in the archaeological literature. Interpretations and discussions will address the questions posed in earlier sections of this data recovery plan.

Publication of Findings and Curation of Records and Collections

The final report will be prepared and published in the *Archaeology Notes* series of the Office of Archaeological Studies, Museum of New Mexico. All paper records will be submitted to the Archaeological Records Management System (ARMS), Historic Preservation Division, and the collections will be submitted to the Archaeological Repository of the Museum of New Mexico for permanent curation. Disposition of human remains, unless otherwise determined through consultation with the appropriate Native American group(s), will also be placed in the custody of the Archaeological Repository.

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APPENDIX 2. Inventory of Items Recovered from LA 83772

Collected Ground Stone Artifacts, White Signal Testing and Evaluation Project

Provenience	Artifact Type	Material	Dimensions (mm, g)				Remarks
			Length	Width	Thick.	Weight	
99N/39E 130	one-hand mano	blue-white rhyolite	84	83	37-48	511	Small cobble with one grinding surface; complete
24N/42E 129	grinding slab or basin metate	fine-grained white sandstone	166	154	33-42	-	One oval grinding area (125 by 92 mm) with little wear; complete

**Artifacts Collected from the Surface of the South Pueblo
(Private Land--Collected with Permission)**

Field Catalogue Number	Description
FS #0-117	Small lump of hematitic red ochre; 17 x 14 x 12 mm; weighs 2.2 g.
FS #0-118	One-hand mano with single grinding surface on an otherwise unmodified aplite cobble; complete--93 x 68 x 41 mm; weighs 349 g.
FS #0-119	One-hand mano with single grinding surface on an otherwise unmodified, fine-grained white granite cobble; complete--104 x 72 x 65 mm; weighs 657 g.
FS #0-120	Two-hand(?) mano with single grinding surface on an otherwise unmodified white granite cobble; end fragment.
FS #0-121	Two-hand mano with single grinding surface and a shaped opposing surface; white sandstone cobble; end fragment.
FS #0-122	Trough or possibly a basin metate fragment of black vesicular basalt; edge chipped to shape.
FS #0-123	Trough or possibly a basin metate fragment of reddish granite.
FS #0-124	Basin metate of white granite; two fragments that fit together to make about one-half of the original artifact.

Collected Chipped Stone Debitage

Provenience	Rhyolite		Chalcedony		Chert, Gray	Siltite, Dark Gray	Other	Totals
	Gray	Brown/Gray Banded	Off-White	Red/Yellow /Gray				
Surface West of NM 90								
24N/9E 14	1							1
96N/9E 19			1					1
96N/12E 21		1						1
105N/9E 25	1			1				2
112N/0E 30							1	1
115N/3E 31	1							1
Auger Tests West of NM 90								
12N/6E s14				1				1
15N/6E s5	2 pieces of fire-cracked rock, discarded							
18N/0E s8					1			1
27N/6E s2		1				1		2
30N/3E s2							1	1
30N/3E s12	1							1
39N/0E s1-3	1?							1?
39N/3E s11							1	1
42N/3E s1							1	1
45N/0E s2	1							1
54N/3E s1			1					1
111N/3E s1							1	1
Total, West Side	6	2	2	2	1	1	5	19
Surface East of NM 90								
87N/42E 133					1		1	2
Auger Tests East of NM 90								
24S/45E s1	1							1
24S/45E s3					1			1
21S/45E s3							1	1
3S/42E s4			1					1
0N/42E s3							1	1
81N/42E s1							1	1

Provenience	Rhyolite		Chalcedony		Chert, Gray	Siltite, Dark Gray	Other	Totals
	Gray	Brown/Gray Banded	Off-White	Red/Yellow /Gray				
84N/39E s5						1		1
93N/39E s3							1	1
96N/39E s2						1		1
96N/39E, s2 (2nd)					1			1
Total, East Side	1	-	1	-	3	2	5	12

Note: All items are interior flakes.

Key to Provenience Symbols: In *surface* proveniences, the numbers following the square designations are the field catalogue numbers; the prefixes "0-" have been omitted here for simplification. In the *auger tests*, the "s" numbers refer to sleeve number starting from the surface.

Collected Pottery

Provenience	Mimbres Black-on- white ^a		Mimbres Corrugated ^b		Plain Brown		Other	Total
	Bowl	Jar	Ind.	Clap.	S	U		
Surface West of NM 90								
South Pueblo Area 116	2	1	4	3	1		Unid. B/w 1	12
Cutslope 1	4	1						5
3N/3E 2	1							1
9N/6E 3	1							1
15N/3E 4	1							1
18N/9E 5	2							2
24N/9E 6	1							1
24N/9E 13			7	3		15	White ware 2	27
27N/9E 7	2							2
33N/9E 8	1							1
39N/3E 9		1						1
45N/3E 10	1							1

Provenience	Mimbres Black-on-white ^a		Mimbres Corrugated ^b		Plain Brown		Other	Total
	Bowl	Jar	Ind.	Clap.	S	U		
48N/3E 11	1	1						2
48N/9E 12	1							1
93N/0E 15			1					1
93N/3E 16						1		1
96N/3E 17			1					1
96N/6E 18			1					1
96N/12E 20			2			1		3
99N/12E 22						2		2
102N/0E 23			2			1		3
105N/0E 24					1			1
105N/12E 26			1					1
108N/3E 27				1			Utility 1	2
112N/0E 29			1			1		2
Auger Tests West of NM 90								
3N/0E s3				2				2
3N/0E s4							Unid. B/w 1	1
3N/0E s5		1						1
9N/3E s1			1					1
9N/3E s3	1							1
12N/6E s10						2		2
15N/6E s8							White ware 1	1
21N/0E s1						1		1
21N/3E s2							White ware 1	1
21N/3E s3			1					1
21N/6E s3			2					2
21N/6E s4						1 ^c		1

Provenience	Mimbres Black-on-white ^a		Mimbres Corrugated ^b		Plain Brown		Other	Total
	Bowl	Jar	Ind.	Clap.	S	U		
21N/6E s9			1			1		2
21N/6E s10						1		1
21N/6E s11			1					1
21N/6E s12					1?			1
24N/0E s2							White ware 1	1
24N/3E s1	2 ^d							2
24N/3E s3						2		2
27N/0E s5-6						2		2
27N/0E s8						1		1
27N/3E s2							rock ^e	
27N/6E(1) s1						3		3
27N/6E(1) s3						1		1
27N/6E(2) s3						1		1
30N/3E s2							Utility 1	1
30N/3E s6						1		1
33N/0E s9						1		1
33N/3E s3						1		1
33N/3E s9			1			1		2
36N/3E s1						1	Utility 1	2
36N/6E s2			1			1		2
36N/6E s3						1		1
39N/0E s1-3				1		1	Unid. B/w 1	3
39N/3E s1			1					1
39N/3E s4			1					1
39N/3E s9			1					1
39N/3E s10			2					2

Provenience	Mimbres Black-on-white ^a		Mimbres Corrugated ^b		Plain Brown		Other	Total
	Bowl	Jar	Ind.	Clap.	S	U		
39N/6E s1			1					1
42N/0E(1) s2			1					1
42N/0E(1) s5			1			1		2
42N/0E(2) s3						1		1
42N/3E s2			1					1
42N/3E s3	1					1		2
42N/6E s1			1					1
42N/6E s5			1					1
45N/0E s1						1		1
45N/3E(1) s1				1				1
45N/3E(1) s2						1		1
45N/3E(2) s2	1							1
45N/3E(3) s2				1				1
45N/3E(3) s4					1			1
45N/3E(3) s5						1		1
45N/3E(3) s6						1		1
45N/6E s2							White ware 1	1
45N/6E s5						1		1
45N/6E s6			1					1
48N/3E(1) s2						1	Utility rim 1	2
48N/3E(2) s2			1			2		3
48N/3E(2) s3			1				White ware 1	2
48N/6E s3			1					1
51N/3E(2) s2			1		1			2
51N/3E(2) s3						1		1
87N/0E s1						1		1

Provenience	Mimbres Black-on-white ^a		Mimbres Corrugated ^b		Plain Brown		Other	Total
	Bowl	Jar	Ind.	Clap.	S	U		
93N/6E s2							Utility 1	1
96N/0E s2			1					1
96N/0E s4			1					1
108N/3W s4			1					1
108N/0E s2							Utility 1	1
Total, West Side	23	5	47	12	5	58	16	166
Surface East of NM 90								
21N/42E 131						15		15
39N/42E 126				1				1
48N/42E 127							White ware 1	1
69N/42E 128			1					1
87N/42E 132						12		12
Auger Tests East of NM 90								
24S/45E s5			1?					1
18S/45W s4					1			1
15S/45E s8						1		1
12S/45E s4			1					1
12S/45E s5				1				1
6S/42E s1				1				1
6S/42E s3			1?					1
3N/42E s5						1		1
27N/42E s2						1		1
36N/45E s1						1		1
Total, East Side			4	3	1	31	1	40

Key to Provenience Symbols: In *surface* proveniences, the numbers following the square designations are the field catalogue numbers; the prefixes "0-" have been omitted here for simplification. In the *auger tests*, the "s" numbers refer to sleeve number starting from the surface.

^a All sherds are Mimbres Classic (Style III) except for one sherd of Mimbres Style II from the surface of Square 18N/9E and one sherd of what may be Mimbres Bold Face (or Mangas or Style I) from the South Pueblo.

^b The distinction made here between indented and clapboard in this group of sherds is difficult and perhaps misleading. See comments in text.

^c Paste and both surfaces fired a bright red (not slipped).

^d Two fragments of the same spindle whorl.

^e Noncultural; discarded.

Collected Animal Bone

Provenience (Auger Tests)	Number	Description
18N/0E s4	1	Small mammal long bone fragment; discolored (tan).
39N/3E s7	1	Large mammal long bone fragment; burned.
45N/3E(1st) s2	1	<i>Lepus</i> sp. scapula fragment; burned.
6N/48E s3	3	Medium mammal cancellous tissue.
96N/39E s3	1	Small mammal long bone shaft fragment; polished (probably an artifact fragment).

Key to Provenience Symbols: s = sleeve number starting from the surface.

APPENDIX 3. Inventory of Items Recovered from
LA 85113

Collected Chipped Stone (Surface)

Provenience	Rhyolite		Chalcedony	Total
	Purple/Gray	Brown/Gray Banded	White	
SQ 6N/6E 10		1		1
SQ 57N/12E 13	1			1
AT 18N/15E s4			1	1
Total	1	1	1	3

Note: All items are interior flakes.

Key to Provenience Symbols: The numbers following the square designations are the field catalogue numbers; the prefixes "0-" have been omitted for simplification.

Collected Painted Pottery

Provenience	Mimbres Black-on-white Styles					Kiatuthlanna Black-on-white	Total
	I		II	III	Unknown		
	B	J	B	B	B		
Surface							
6N/6E 9					1 ^a		1
27N/12E 2			1?				1
27N/12E 11	1?						1
39N/6E 3	2						2
42N/3W 4					1		1
42N/6E 5				1?			1
42N/9E 23					1 ^b		1
42N/12E 6		1					1
45N/6E 7						1	1
48N/12E 8			1				1
57N/12E 14					1		1
Auger Tests							
30N/15E s1						1?	1
Total	3	1	2?	1?	4	2?	13

Collected Utility Pottery

Provenience	Mimbres Corrugated ^a		Plain Brown		Total
	Indented	Clapboard	Smudged	Unsmudged	
Surface					
6N/6E 9	4		5		9
27N/12E 2			1		1
27N/12E 11	1	2		4	7
54N/12E 12	1			2	3
57N/12E 14				1	1
Auger Tests					
18N/12E s5				2	2
30N/15E s3		1			1
33N/12E s4				1	1
45N/9E s1			1	1	2
Total	6	3	2	16	27

Key to Provenience Symbols: In *surface* proveniences, the numbers following the square designations are the field catalogue numbers; the prefixes "O-" have been omitted here for simplification. In the *auger tests*, the "s" numbers refer to sleeve number starting from the surface.

^a May be polychrome.

^b Worked sherd.

^c The distinction made here between indented and clapboard sherds is difficult and perhaps misleading. See comments in text.