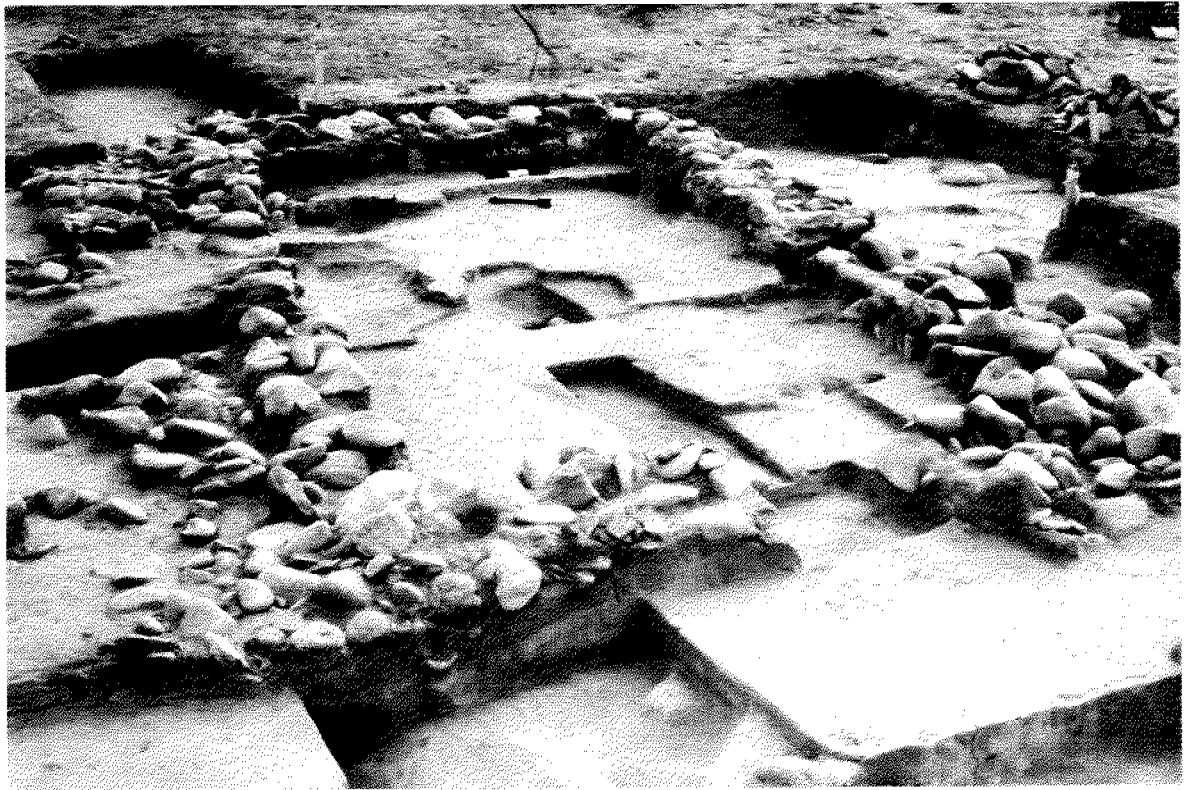


**THE COTTONWOOD ARROYO GROUP:
TESTING AND EXCAVATION
AT FIVE ARCHAEOLOGICAL SITES
ON THE LA PLATA HIGHWAY**

H. WOLCOTT TOLL
CHARLES A. HANNAFORD



MUSEUM OF NEW MEXICO
OFFICE OF ARCHAEOLOGICAL STUDIES
ARCHAEOLOGY NOTES 220
2000

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H. Wolcott Toll
with contributions by
Charles A. Hannaford

Submitted by
H. Wolcott Toll
Principal Investigator

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INTRODUCTION

The La Plata Valley is a permanently watered, wide, fertile oasis used as farmland for hundreds of years. Between A.D. 500 and 1300 hundreds of Pueblo families lived in the valley in settlements of varying sizes, in varying parts of the valley, taking advantage of this good agricultural setting. Archaeological research into this rich record has taken place since the early 1900s, most famously by Earl Morris (1939). When the New Mexico State Highway and Transportation Department (NMSHTD) embarked on a staged program to widen and improve the main highway through the valley, NM 170, it was evident that the archaeological aspect of the project would also be a major undertaking (Lancaster 1982a, 1983). Just how major became clear with an unexpected discovery during the first phase of construction at the south end of the valley. Here, completely obscured from surface visibility by an auto parts store, a multicomponent site ranging from early Basketmaker to Pueblo III was excavated by the Museum of New Mexico (Vierra 1993). With this cautionary discovery in mind, the NMSHTD contracted the Museum of New Mexico, Office of Archaeological Studies, to conduct further survey and testing, followed by excavation where warranted. This report covers results of excavation and testing in the southern end of the valley in the vicinity of Cottonwood Arroyo (Fig. 1).

In keeping with the presentation of data on sites within the La Plata Highway project in geographic groups, information from five sites toward the south end of the second phase of the La Plata Highway work is presented in this volume. Four of these sites were tested—LA 60741, LA 37626, LA 37588, and LA 37590—and two were treated in a data recovery program—LA 37589 and LA 37590. LA 37589 was also previously tested by Lancaster (1983). None of these sites has a large collection of material.

The valley in the vicinity of these sites is open and wide (Fig. 2). Unlike the valley in the vicinity of Jackson Lake and Barker Arroyo, no agriculture is presently practiced in this part of the valley, and there is less vegetation. Trees are few and small. On the hillsides and terraces the main plant form is grass, with greasewood and saltbush on the valley floor, and a strip of riparian vegetation (now mostly willows and tamarisk) along the river. In part this minimal vegetation is because less water makes it this far down the river under current water diversion regimens; in part it is because of the prevalence of soils derived from the Kirtland-Fruitland Badlands to the west of the river; lower elevation and less precipitation in this area are also factors. Modern settlement and industrial facilities are also much more abundant in this part of the valley than they are to the north, and have undoubtedly obscured archaeological materials in addition to clearing away large areas of vegetation. Further, the badlands that are farther to the west of the upper valley form the west side of the valley here, near its mouth.

Cottonwood Arroyo, a major drainage from the west, enters the La Plata Valley at the south edge of this group of sites. Cottonwood Arroyo is around 8 km long and drains an extensive area of badlands, with its head on Piñon Mesa. Its entry into the La Plata River is about 3 km above the La Plata River's confluence with the San Juan River. Substantial prehistoric occupation in this area shows that farming was practiced in this part of the valley then, in contrast with modern practice.

The Cottonwood Arroyo group is around 3 km south of the Jackson Lake Community (see Fig. 1). The sites in this area provided by the highway "sample" are more dispersed and smaller than the sites "sampled" in the Jackson Lake and Barker Arroyo areas (Fig. 3). Nusbaum's 1935 survey recorded 12 sites in the segment of the valley bottom ranging from 3 to 4 miles north of the confluence with the San Juan River. Ceramic collections from these sites show that a single sherd scatter on the east side of the river had a Basketmaker III ceramic component. The remaining 11 cobble structures on the west side of the valley had Pueblo II-Pueblo III ceramic components. The sites ranged in size from an estimated one-room to five- to six-room structures, and most structures were in the five- to six-room size category. The precise locations of these sites are unknown, but Nusbaum's descriptions suggest at least six sites should be in the immediate vicinity.

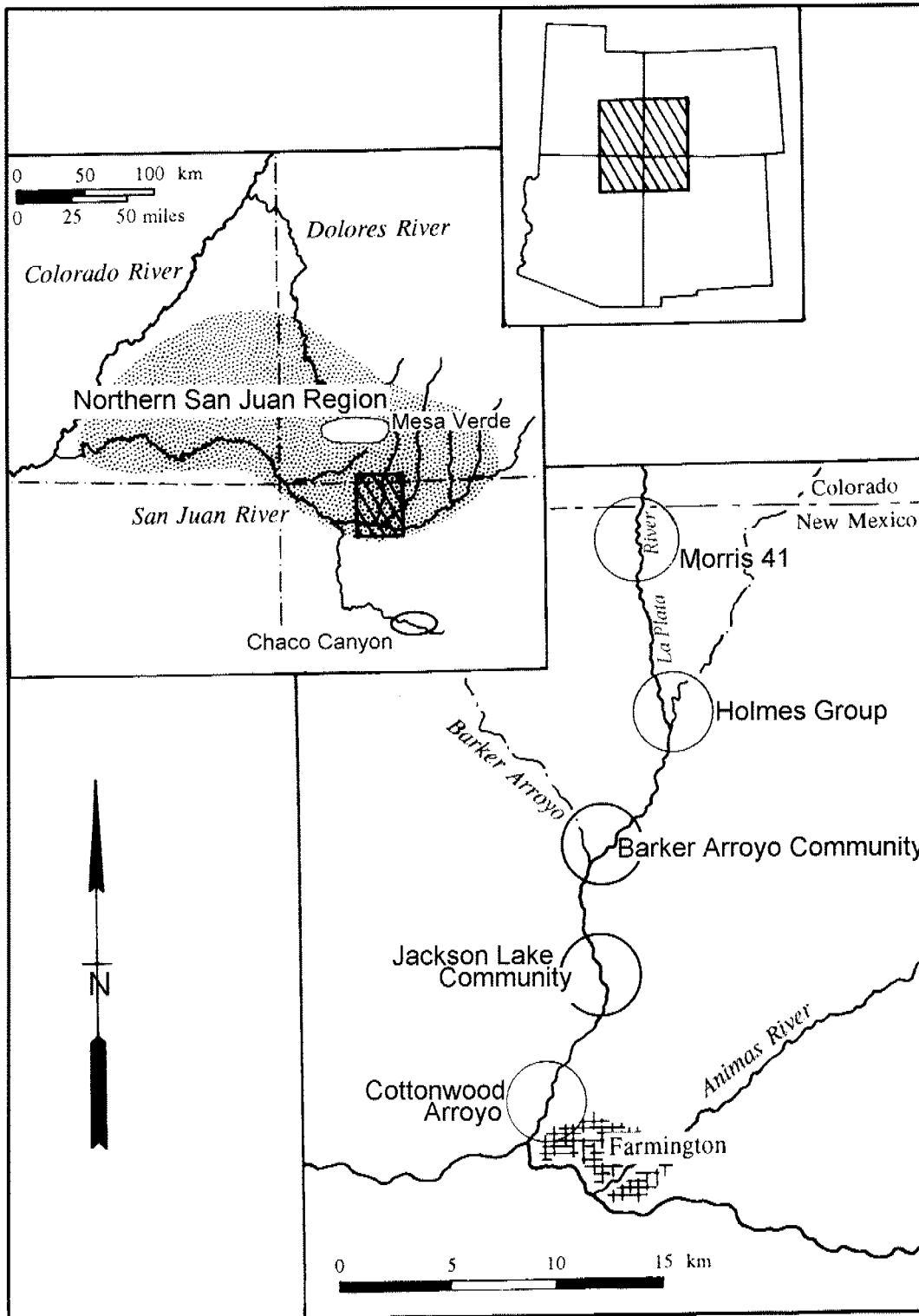


Figure 1. La Plata Valley location and communities. The shaded area in the intermediate location map is the northern San Juan ceramic region (Wilson and Blinman 1993).



Figure 2. Overview of LA 60741, looking southeast, showing topography and vegetation in Cottonwood Arroyo vicinity. Site located on the knoll on near side of highway with material extending out of frame to the right.

Jackson Lake and Cottonwood Arroyo residents were an hour's walk or less, but there appears to be enough of a break in site distribution that they were probably distinct communities. The area between the two apparent groups includes some large, level bottomland fields (currently irrigated and used for growing alfalfa), in which surprisingly little archaeological material has been observed (Lancaster 1982a; Toll and Hannaford 1997). It also contains Connor Arroyo, a major drainage from the west. Four of the sites reported here fall primarily into the Pueblo II period. They include structures ranging from one to around ten rooms, separated from their nearest neighbors within the sample by 50 m (LA 37590 and LA 37589) to 300 m (LA 37588 and LA 37626).

1987 Testing of Sites in the Jackson Lake Segment of the Highway Project

From August 24 through September 11, 1987, testing was conducted at five prehistoric archaeological sites within the expanded right-of-way of NM 170. Four (LA 37588, LA 37590, LA 37626, and LA 60753) are Anasazi sites, while the fifth (LA 60741) is a lithic site of Archaic or Anasazi origin. All of these sites except LA 60753 are located within the Cottonwood Arroyo segment of the valley. Discussion of results from LA 60753 may be found with the Jackson Lake site reports. Except for LA 60741 and LA 60753, these sites were located by archaeologists from the New Mexico State Highway and Transportation Department in 1981 and recorded by Museum of New Mexico archaeologists in 1982 (Lancaster 1982a). Lancaster's subsequent testing program (1982b, 1983) included the two data recovery sites, LA 37589 and LA 37590.

During testing, each site was systematically surface collected within the right-of-way, through piece-plotting or through placement of a movable 3-by-3 m grid, depending on which method seemed most time efficient; some sites were collected using a combination of the two techniques. Based on surface concentrations and inspection, 1-by-2 m test pits were then dug to a level below the base

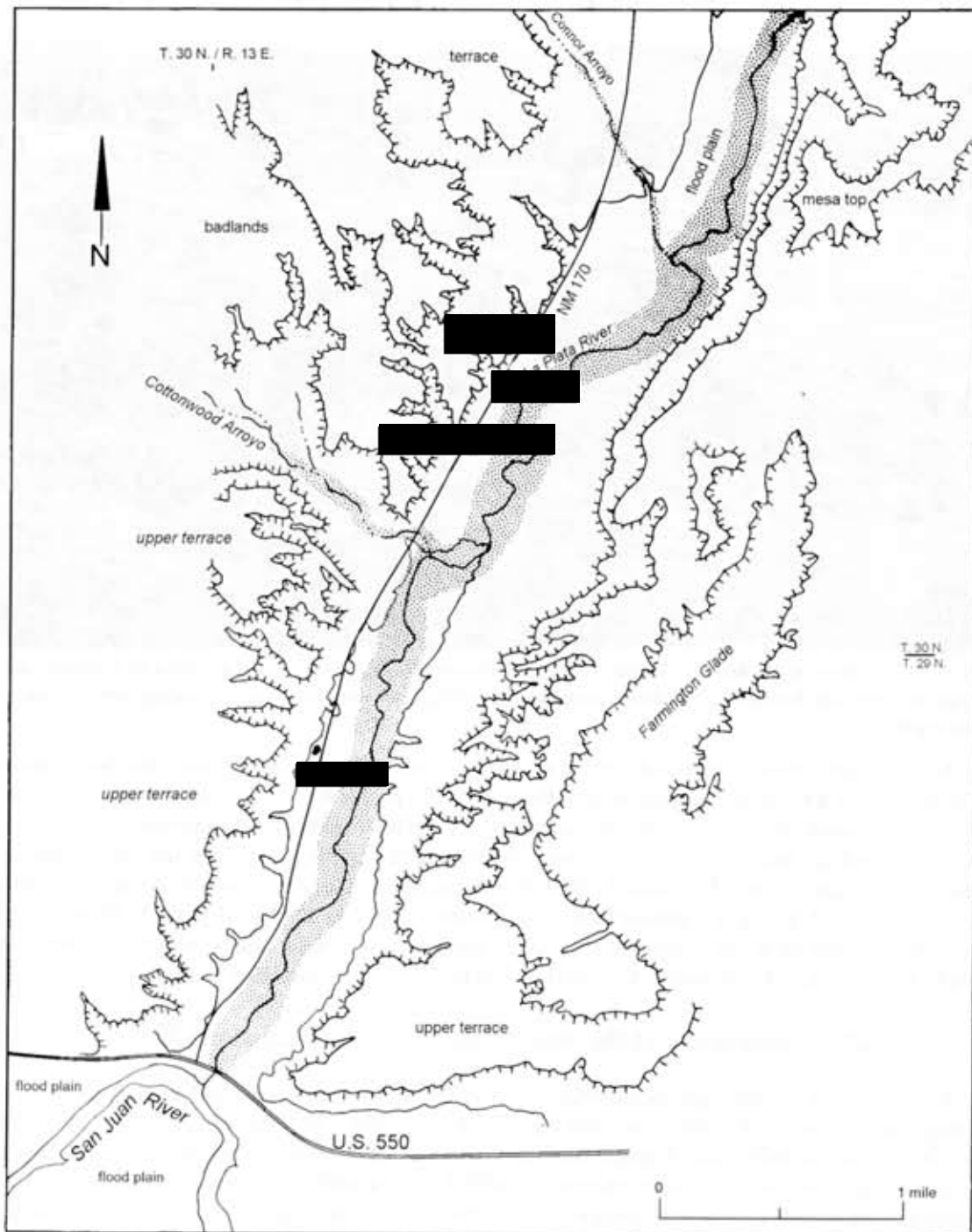


Figure 3. Cottonwood Arroyo sites.

of cultural deposits. In each case, coverage by test pits was an extremely small percentage of the total surface area of the site. The majority of levels were 10-cm arbitrary units, though in a few cases either natural units or 20-cm units were removed.

Testing procedures were affected by permit constraints and changes in land ownership as the Highway Department acquired the additional right-of-way. Major portions of three of these sites (LA 37588, 37589, 37590) were on private land at the time of the testing. Lacking the appropriate permit, power equipment could not be used in the testing on parts of sites that were still privately owned. During testing, backhoe trenches were placed on LA 60741 within the proposed right-of-way, and within the current right-of-way at LA 37590. Blading was performed on LA 37626 to follow up testing with hand trenches. On completion of testing, each site was mapped using a transit and stadia rod.

The testing was performed by staff of the Museum of New Mexico, Laboratory of Anthropology Research Section (now the Office of Archaeological Studies, Museum of New Mexico). During the first week five crew members were involved (C. A. Hannaford and H. W. Toll, supervisors, P. Y. Bullock and S. M. Moga, assistants, and A. E. Martinez, laborer); for the second and third weeks a crew of four was employed (less A. Martinez). Hannaford, Bullock, and Chris Eversen (known as Kalay Melloy on subsequent phases of the project) worked on the testing of LA 37626. A description of the findings at each of the sites follows.

1988 Excavations in the Cottonwood Arroyo Group

The data recovery phase for the second segment of the La Plata Highway project began in March 1988. Portions of two sites within the Cottonwood Arroyo area had been recommended for excavation: LA 37589 and LA 37590 (Toll and Hannaford 1997). The proposed right-of-way included a single-room structure and the areas surrounding it at LA 37589 that had been recommended for excavation by Lancaster's testing project and our survey. An intact feature discovered during the 1987 testing was the basis for recommending excavation at LA 37590, but the construction plans at that location were changed to avoid the feature. Instead, data recovery at LA 37590 focused on mechanical and hand trenching to be sure that intact cultural remains were not present within the newly restricted construction zone. Backhoe use took place within the proposed and existing rights-of-way during the excavation phase.

TESTING AT LA 60741: A LITHIC SITE

The surface indications for this site include an area of burned and fire-cracked rock with associated lithics, a very small and highly localized sherd area (nine sherds from at least three vessels inside of an area 2 m across), and some scattered lithics. The site is located on the north side of the mouth of an unnamed drainage, on a knoll at the base of the terrace slope (Fig. 4). This substantial drainage is the first one marked on the USGS quadrangle north of Cottonwood Arroyo. The drainage mouth is broad and sloping; the drainage itself is around 120 m south of the knoll where cultural material is concentrated. Pieces of chipped stone are scattered between the knoll and the drainage. The highway is at the base of the knoll on the east; the main concentration is within the new right-of-way but part of the scatter area is outside to the west.

This site was found in the 1987 resurvey of the right-of-way (Toll and Hannaford 1997), and no previous work had been done. We began the testing of this site by walking the area twice at 2-m intervals and flagging surface artifacts. The surface materials were then mapped and collected (Tables 1 and 2, Fig. 5).



Figure 4. Figure stands in area of concentrated material at LA 60741 at the base of the slope from the terrace. Note vegetation on terrace slopes and site itself.

Table 1. List of Point-Provenienced Artifacts from LA 60741

Lot	Artifact type	Artifact type (edge 2)	Material type	Weight (g)
1*	Retouched/ utilized debitage		Yellow-brown silicified wood	8
2*	Debitage		Light silicified wood	4
3	Debitage		Red chert	2
4	Debitage		Fine tan quartzite	4
5	Debitage		Dark red silicified wood	3
6	Debitage		Red siltstone	2
7*	Hammerstone	Retouched/ Utilized Core	Black siltstone	71
8*	Retouched/ Utilized debitage		Cream chert, brown cortex	131
9*	Core		Gray siltstone	305
10*	Debitage		Gray siltstone	6
11*	Retouched/ Utilized debitage	Retouched/ Utilized debitage	Green siltstone	118
12*	Retouched/Ut Core		Dark red mottled silicified wood	86
13*	Retouched/ Utilized debitage	Retouched/ Utilized debitage	Chalcedony with inclusions	5
[14*]	Debitage		discarded	--
15*	Debitage		Yellow brown silicified wood	1
16*	Debitage		Dark silicified wood	8
17*	Debitage		Black siltstone	59
18	Debitage		Brown siltstone	27
19	9 Sherds		3 PII-III carbon bowl 1 Cortez (?) Black-on-white bowl 1 PII-III mineral-on-white jar 4 white ware jar	
20	1 sherd		PII-III white ware jar	

*Items within the main area of artifacts and fire-cracked rock (41N-53N, 61E-71E)

After establishing a baseline, three 1-by-2-m test pits were dug. Two were on the top of the knoll adjacent to the concentration of burned rock, and the third trench was located down slope to the east (Fig. 5). Artifacts were rare in all of the tests. In spite of its proximity to the burned cobble area, Test 3 on the north side of the knoll top contained no charcoal and no artifacts. Tests 1 and 2 each had a surface layer containing charcoal and gravels. Test 2, on the slope, had a well-defined clay lens that appears to be the lower limit of charcoal in undisturbed deposits; this surface may have been the surface at the time of occupation. Tests 1 and 2 both showed charcoal at considerable depth, including in auger holes. The presence of this charcoal led to the decision to place a deeper and longer backhoe trench through the area to check for buried deposits. All grids were identified by the southwest corner.

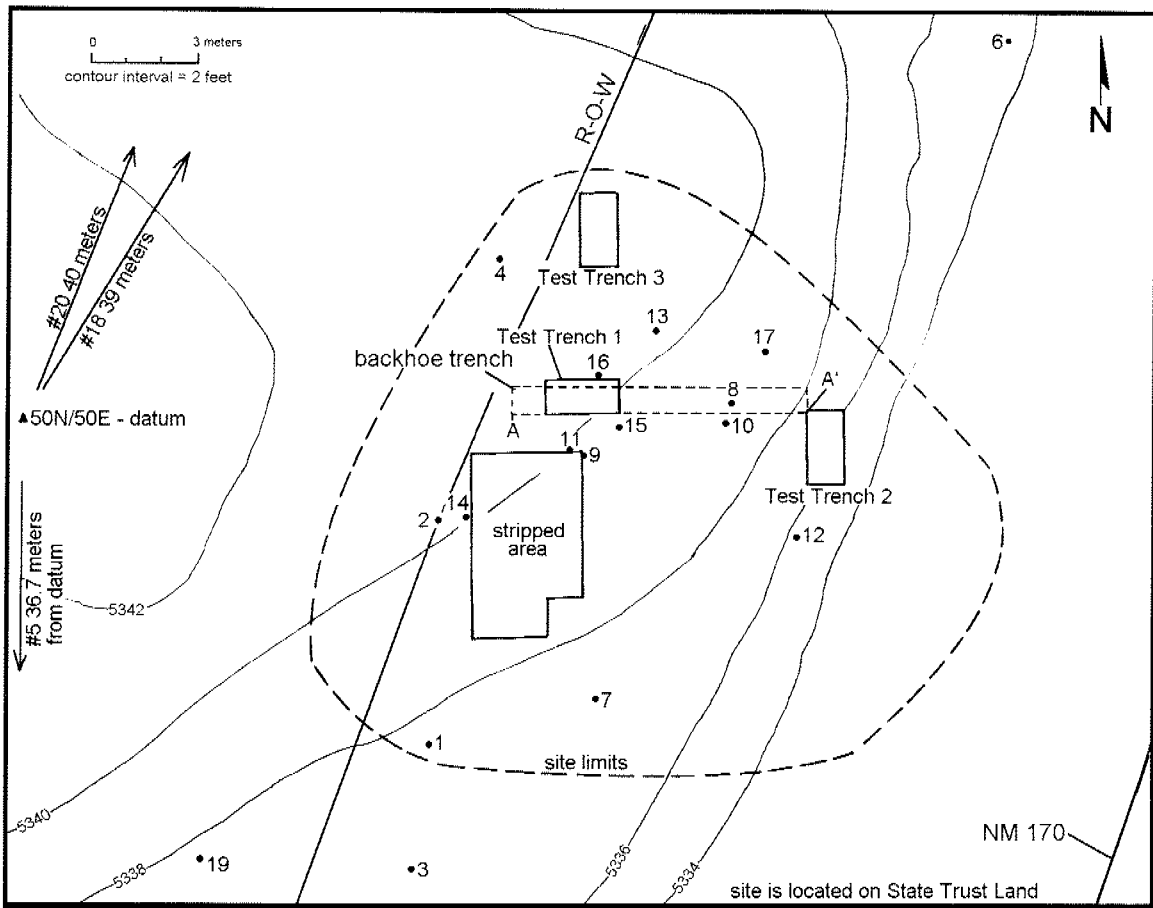


Figure 5. LA 60741 site plan showing point-provenienced artifacts. Numbers refer to Table 1.

Surface Material

Seventeen lithic artifacts were point located and collected in addition to a single concentration of nine sherds. This material was quite widely dispersed in that point-provenienced artifact (PP-)18 is around 70 m north of PP-5 (Fig. 5, Table 1), although 12 of the surface lithics were within a 10-by-13-m area on the southeast-facing slope of the knoll. This surface material is discussed with the rest of the collected material below. Another 20 pieces of chipped stone were observed on the site, west of the right-of-way, but were not collected. All of these items on the slope exhibit at least some dorsal cortex, and they probably represent raw material testing along the cobble-covered slopes. Flake materials (based on field identifications) include 3 pieces of siltstone, 11 pieces of chert (some may be siltstone), 3 pieces of silicified wood, 1 piece of quartzite, and 1 piece of chalcedony. A chert core was also observed outside the right-of-way.

Tests

Test Trench 1, 50N, 64E

This 1-by-2-m east-west test is on the top of the knoll within the cobble and lithic concentration. Three lithics were present on the surface within the grid, including a silicified wood flake used as a scraper and two core flakes. Artifacts were not recovered from subsurface contexts. Charcoal was present primarily near the modern ground surface, but had been introduced at greater depths by soil

cracking and rodent burrows. Some small and medium gravels were present to around 40 cm below the surface, decreasing to small gravels below that. The matrix is fine, tan, silty sand. An auger test of around 2 m was performed from the base of the test excavation, and no artifacts, rocks, or other cultural indicators were encountered.

Test Trench 2, 48N, 71E

This 1-by-2-m north-south trench runs across the slope below the top of the knoll. We selected the location for the test in part because of a possible rock alignment at the south end of the trench. The existing slope had been increased by the road cut, so that the dip of the layers exposed by the cut is not as steep as that of the present surface. The trench was excavated to 28 cm below present ground surface on the up slope side of the trench (Fig. 6). The 1-by-1-m grid at the south end of the trench was excavated an additional 35 cm. No artifacts were recovered from this excavation unit.

The surface of this test was characterized by sandy loam with rock ranging from pebbles to 15 cm cobbles. Three pieces of fire-cracked rock were present in the southeast corner of the grid. An ephemeral charcoal layer was observed 2 to 5 cm below the modern surface. This layer was mostly along the west edge of the test and seemed to follow the slope; it was intermittent, and could not be traced. Below the rock and loose sandy soil of the surface, the soil is compact, hard, sandy silt or clay with some calcium carbonate flecks. Lenses of increased clay/silt alternate with sandier lenses.

Six stratigraphic units were defined in the south and west faces of the trench. (1) On the surface down to 12 to 16 cm the soil is loose and sandy with gravels and cobbles of widely varying sizes. Flecks of charcoal are present. The base of the layer is quite irregular, probably because of slope wash. (2) Sharply distinct from the surface material, this stratum is very hard clayey sand that contains no rock and only rare gravels. Charcoal is present on a regular but rare basis. Small clay laminae suggest that this layer washed into place. Vertical fissures have developed in the profile, especially in this stratum (very pale brown 10YR 7/3-7/4). (3) This is a very well-defined 3 to 4-cm-thick clay lens containing more charcoal than the other layers, but less than the surface unit. (4) Hard clayey sand similar to Stratum 2. (5) Sandier and slightly darker than Strata 2 and 4. More calcium carbonate and gravel are present, and at the south end of the trench there is an alluvial sand, gravel, and cobble deposit. The cobbles and gravel are at the low point of this stratum. No charcoal appears to be present outside krotovinas (filled animal or insect burrows). This deposit appears to be a channel cut into (6), which is a homogeneous sandy layer.

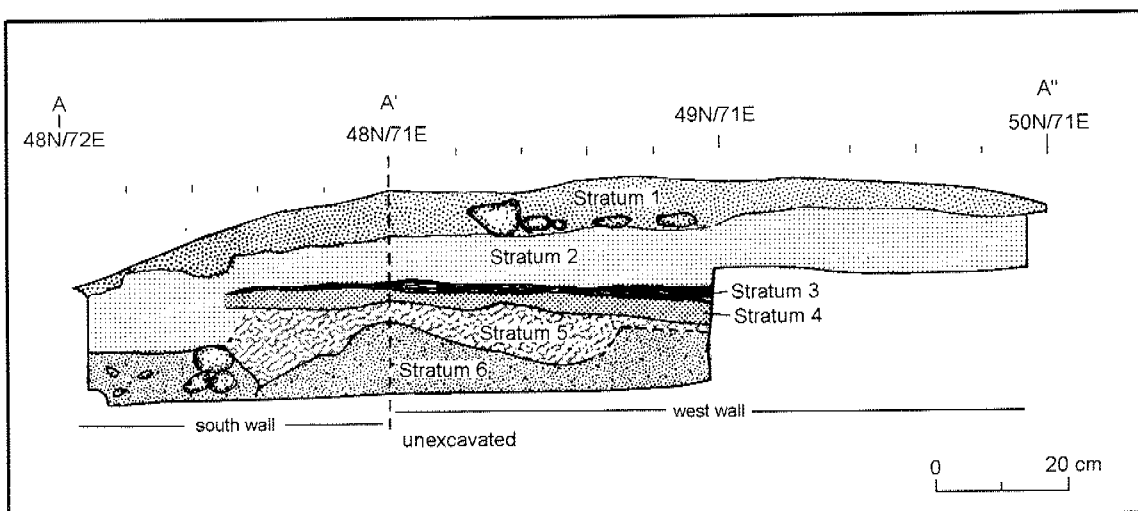


Figure 6. LA 60471, Test Trench 2 profile.

Table 3. LA 60741, Grouped Artifact Type by Provenience

	Debitage		Core		Retouched/ Utilized Debitage		Utilized Core		Bifacial Knife		Hammerstone		Total	
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	%
Point Provenienced	10	58.8	1	5.9	4	23.5	1	5.9			1	5.9	17	44.7
44N 62E									1	100.0			1	2.6
44N 63E	1	100.0											1	2.6
44N 62E	1	50.0	1	50.0									2	5.3
44N 64E	2	100.0											2	5.3
44N 63E	1	50.0			1	50.0							2	5.3
44N 64E			1	100.0									1	2.6
47N 62E					1	100.0							1	2.6
44N 62E	1	100.0											1	2.6
44N 63E	7	100.0											7	18.4
50N 64E test tr. 1	2	66.7			1	33.3							3	7.9
Group Total	25	65.8	3	7.9	7	18.4	1	2.6	1	2.6	1	2.6	38	100

Table 2. LA 60741, Chipped Stone, Showing Detailed (Jackson Lake System) Material Types by Platform

	Angular Debris	Core Flake	Platform Rejuvenation Flake	Single Platform	Double Platform	Multi- Platform	Thick Biface	Total
Chert-white miscellaneous		1						1
Wood-dark, dull		1						1
Wood-dark red cherty						1		1
Wood-white chalcedony		2						2
Wood-yellow brown	1	3						4
Wood-red Chinle		1						1
Chalcedony, misc.		1					1	2
Chert-cream yellow cortex		1						1
Chert-cream yellow-brown cortex		1	1					2
Chert-red		1						1
Chert-light tan/buff		4						4
Siltstone-green	1							1
Siltstone-black		5		1				6
Siltstone-green banded		1				1		2
Siltstone-red		1						1
Siltstone-brown		1						1
Siltstone-gray		3				1		4
Quartzite, gray, tan		2						2
Metabasalt					1			1
Group Total	2	29	1	1	1	3	1	38

Test Trench 3, 54N, 65E

This test was located north of the burned cobble area, 3 m north of Test Trench 1, at the north side of the top of the knoll. It was 1-by-2-m grid oriented north-south. The whole trench was excavated from 10-20 cm below present ground surface, and the south 1-by-1-m grid was excavated to a maximum of 35 cm below the surface. The surface layer is loose sand with cobbles interspersed; the sand becomes more compact with increased depth. A 5 to 8-cm-thick gravel lens was present below the surface layer in the southwest portion of the trench. Very little charcoal was present, and no artifacts were recovered. While cobbles were present on the surface, none appeared to have been burned. An auger hole 1.5 m past the base of the south test revealed continued loose sand with no gravel.

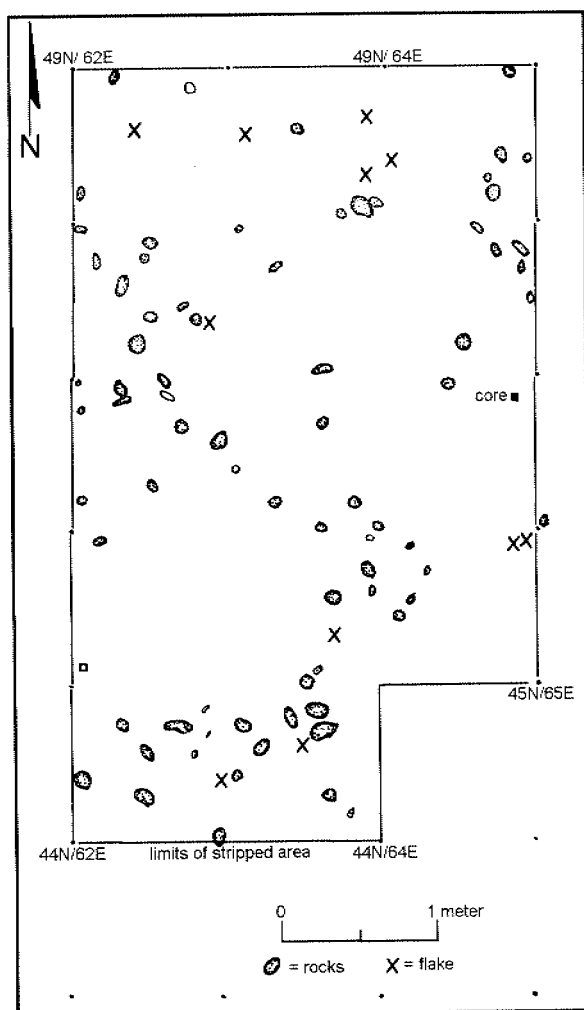


Figure 7. Surface-stripped area with chipped stone concentration.

Surface Stripping

Since the hand tests suggested that main deposits were on or near the surface, an area 14 m² (5 m north-south by 2-3 m east-west, extending from 44N, 62E to 48N, 64E) divided into 1-m-sq grids was surface stripped to encompass the burned rock area and to check for intact features. Stripping consisted of removing about 5 cm of loose surface sand from around the rock. This area extends from the top of the knoll down a gentle slope to the south and a gentle slope to the southeast (Figs. 7, 8). Charcoal was present mainly near the top of the knoll (the north part of the surface stripping area). No oxidized soil or charcoal concentration was noted, nor were any features defined; nine flakes and two core fragments, all probably local materials, were present within this area (Table 3). Cobbles within the area range from 10-by-20 cm down to fragments of 3-by-5 cm. Burned rock does not extend below the 5-cm stripping zone.

Subtests within Stripped Area

Deeper tests at the north edge of this area again show a surface layer with charcoal and mixture of charcoal into an ill-defined underlying layer. Three 1-by-0.5 m subtests were placed at 44.5N/62E (north-south), 48.5N/62E (east-west), and 48.5N/64E (east-west). These excavations were carried to a maximum of 25 cm below the

modern surface. None of these revealed oxidized or stained soil or any features. Auger tests revealed no deep deposits other than charcoal attributable to rodent activity. The stripping at 48N/62E revealed a 6-by-9-cm charcoal concentration in the northwest corner of the grid, with fire-cracked rock in the vicinity and an associated flake. The test below this area showed no further artifacts and the charcoal lens faded out except where present in krotovinas. East of this test, more charcoal was



Figure 8. LA 60741, surface-stripped area.

observed in 48N/64E. Stripping and subtesting produced a ^{14}C sample that ultimately proved to be too small to date.

Backhoe Trench

To address the question of deep charcoal deposits, a 7.5 m long, 1 m wide, 1-1.5 m deep trench was excavated with power equipment along the baseline, just north of the surface-stripped area (Figures 9, 10). The top two layers of the profile of this trench appear to be a single depositional unit, with the lower layer simply a compacted version of the upper. At the surface the layer consists of a loose, discontinuous surface layer with roots and some charcoal. This rests on a very compact layer also containing charcoal. Beneath these layers there are several layers containing sand, clay lenses, and gravel and cobble deposits, all of which are water- or water-and-wind deposited and which contain no cultural material. The important conclusion from this profile is that there is abundant rodent activity on this site in these relatively soft deposits. All of the definable rodent burrows, some at considerable depth, contain charcoal originating from the surface. It is nearly certain, then, that the unexplained charcoal from the hand tests is the result of rodent activity, and, to a lesser extent, root action. As is very clear in the backhoe profile and indicated in the other tests as well, the site surface has been subjected to considerable sheetwash through time. This sheetwashing has unquestionably had the effect of dispersing any features present.

Backhoe Trench Layer Description. The top root and cultural zone is very variable in thickness. This stratum disappears near the top of the knoll, 4.5 m from the east end of the trench. Plants on this surface include *Gutierrezia*, *Sporobolus*, and *Bromus*; off the line are *Sarcobatus* and *Oryzopsis*. Where not trampled and compacted this zone is fairly loose and contains some pebbles up to 5 cm in maximum dimension. Its color is light yellowish brown (10YR 6/4).

Layer 2 is a compact clayey sand with grayish tinge that contains fairly abundant charcoal especially toward the west end. This layer merges indistinctly with the surface layer (1), and is at



Figure 9. LA 60741, backhoe trench was placed at the break in slope; note backdirt to the right of the vehicle.

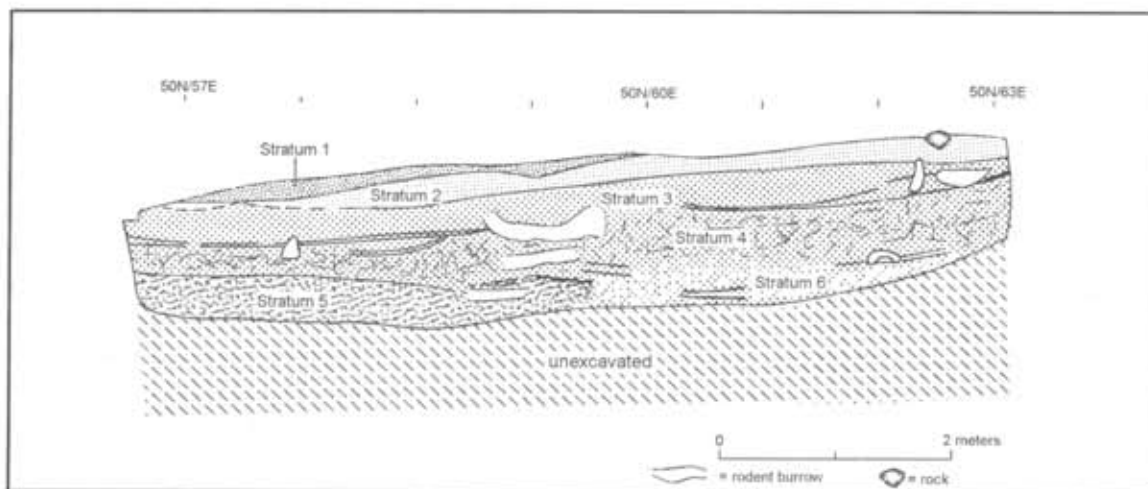


Figure 10. LA 60741, backhoe trench profile.

least in part a compact version of the surface layer. It is probable that all cultural material was originally deposited in this layer. The color is light yellowish brown (10YR 6/4), but with a grayish cast.

Layer 3 is a yellow (10YR 7/6) sandy stratum containing some clay laminae and calcium carbonate zones. Ranges from compact on the east to fairly loose on the west. At the west end of the trench there is a group of clay laminae defining a shallow 50-80-cm-wide drainage course filled with coarse sand and gravels. The water course appears to predate the cultural layer. The drainage has apparently been cut by a rodent burrow.

Layer 4 is a thick sandy layer with discontinuous sets of clay laminae. The sand is quite loose and unconsolidated, and may be eolian. It contains very little gravel and no charcoal; it is very pale brown (10YR 7/4).

Layer 5 is a very loose sand and gravel deposit containing coarse sand and mostly pebbles less than 2 cm in maximum dimension, though occasional larger ones and even cobbles are also present. This layer is clearly water-lain and is very pale brown (10YR 7/4). The gravels are present only in the west 4.5 m of the profile.

Layer 6 is the stratigraphic equivalent of Layer 5, but not distinct from it. This part of the stratigraphic unit contains clay peds and very loose sand, but no gravel.

Rodent activity is abundant in the profile as a whole, probably because the soil is loose and easily dug. Each rodent burrow contains grayish sandy fill and charcoal. Charcoal has been introduced down to 1.1 m below the present ground surface by these burrows.

Combined with the auger tests in the test units, the backhoe trench profile indicates that beneath the rock-strewn surface, the substrate of this part of the valley is largely sand and silt. The rock comes mainly from the gravel terraces, some from down slope washing and some from human transport.

Cultural Material

The only sherds recovered from the site were the small, localized group found on the surface. It seems possible that this small group of sherds resulted from recent sherd collection and discard rather than from prehistoric activity. Their distribution and composition do not suggest that they are related to the majority of the material on the site. Likewise, another isolated sherd on the slope above the main part of the site is unrelated to the primary site areas. A ¹⁴C sample was submitted to Beta Analytic, but there was insufficient carbon present to support a date estimate. Temporally diagnostic stone tools are also lacking. We therefore have no means of dating the site or even of assigning it to Archaic or Anasazi use.

The absence of pottery from all but one small area of the site raises the possibility that this is not an Anasazi site. In comparing the small assemblage of 38 lithics to the overall assemblage from the project, which is very heavily Anasazi, however, there are some differences (Tables 2, 4). Silicified wood makes up 24 percent of the material at LA 60741 but only 6 percent of the total assemblage; chalcedony is also more common at LA 60741 (5 percent as opposed to 1 percent). Chert is much less abundant (24 percent as opposed to 41 percent) and siltstone is slightly less common at LA 60741. These differences could be either temporal or functional, however. Differences in material use and greater use of retouchable materials may suggest the more formal lithic strategies of Archaic peoples. At the same time, even in Anasazi assemblages chalcedony and silicified wood are more common among utilized materials, and utilized flakes and cores and a single biface all form higher percentages at LA 60741 than in the whole project assemblage. This could also be, then, an Anasazi special-use site focused on activity involving stone working. Siltstone and quartzite are both present but in much lower frequencies than in other sites. Cottonwood Arroyo drainages head in the Piñon Mesa badlands, and users of the site had closer access to cherts and silicified woods than users of sites farther to the north in the valley. Although the assemblage from the site is small, the complement of materials is sufficiently diverse to suggest more than a single, short use. There are lithic materials from six major material categories, dispersed over 21 color groupings (Tables 2, 4).

A single formal tool is present in the assemblage, a 5-cm-long brown chalcedony thick biface recovered from within the surface-stripped area (Fig. 11). A number of small delicate flakes have been removed from this artifact, but there is a thick area on one face that has caused flake terminations. The edges are battered in some places. The surfaces and flake scars are somewhat weathered; whether this indicates merely surface weathering or antiquity is unclear. Seven utilized flakes are also present. A few pieces of possible ground stone tools were collected in the field, but

Table 4. LA 60741, Artifact Type by Grouped Material

	Chert		Chalcedony		Silicified Wood		Quartzite		Igneous		Siltstone		Total	
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Percent
Debitage	8	32.0			5	20.0	2	8.0			10	40.0	25	65.8
Core									1	33.3	2	66.7	3	7.9
Retouched or utilizeddebitage	1	14.3	1	14.3	3	42.9					2	28.6	7	18.4
Retouched or utilized core					1	100.0							1	2.6
Bifacial knife or scraper			1	100.0									1	2.6
Hammerstone											1	100.0	1	2.6
Total	9	23.7	2	5.3	9	23.7	2	5.3	1	2.6	15	39.5	38	100.0

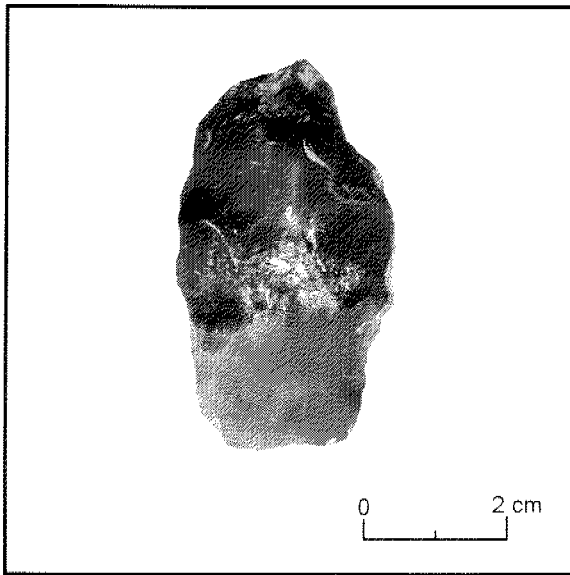


Figure 11. LA 60741, biface.

all were determined not to be artifacts during the analysis. The only faunal material is a single artiodactyl long bone fragment collected during surface stripping of the burned rock area.

Scant cultural materials, including fire-cracked rock were present within a restricted, 5-by-3-m area (Table 3), but no intact features survived until the time of excavation. Predictably, charcoal is more dispersed than the fire-cracked rock, and the two are not always in the same stratigraphic unit. This indicates considerable washing or other movement of surface materials and the susceptibility of charcoal being washed into rodent burrows and soil fissures. There may also have been more than one source of charcoal, including natural fires. The thoroughness of the dispersion of cultural materials—most are downslope from the main burned rock area—suggests greater antiquity of the

site (Archaic rather than Anasazi), but this is a tenuous dating criterion.

Based on these tests our opinion was that intact features were not present at this site, and that disturbance by highway construction would not cause significant loss of information.

Table 4. LA 60741, Artifact Type by Grouped Material

	Chert		Chalcedony		Silicified Wood		Quartzite		Igneous		Siltstone		Total	
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Percent
Debitage	8	32.0			5	20.0	2	8.0			10	40.0	25	65.8
Core									1	33.3	2	66.7	3	7.9
Retouched or utilizeddebitage	1	14.3	1	14.3	3	42.9					2	28.6	7	18.4
Retouched or utilized core					1	100.0							1	2.6
Bifacial knife or scraper			1	100.0									1	2.6
Hammerstone											1	100.0	1	2.6
Total	9	23.7	2	5.3	9	23.7	2	5.3	1	2.6	15	39.5	38	100.0

TESTING AT LA 37626: A PUEBLO II HABITATION

This site consists of a small house mound located on an alluvial fan that has formed north of the entrance of Cottonwood Arroyo into the La Plata Valley. The site is located on New Mexico State Trust land. The house mound is east of the highway, existing water lines, and the proposed right-of-way. Some possible rock alignments near the right-of-way fence and cultural material in the waterline and shoulder areas prompted us to test the area within the expanded right-of-way for intact deposits (Fig. 12). Small side drainages from the terrace to the west pass on either side of the site; the drainage to the south is larger and erodes the edge of the site, including the midden (Figs. 13, 14). The La Plata River is presently around 200 m to the east of the mound. The valley bottom is not now cultivated in this area; the vegetation is characterized by greasewood and grasses, with large areas of bare soil. The closest site in the project is LA 60741; the closest clearly Anasazi site is the Pueblo II structure at LA 37588. LA 37589 and LA 37590 are within 800 m to the northeast, and LA 37587, another PII-III site (Lancaster 1982b), is a little more than a kilometer to the southwest.

Lancaster's (1982a:34-35) 1982 survey record for this site notes that two trenches had been cut into the mound exposing intact walls, and that disturbance exposed a probable hearth. The Eastern New Mexico University San Juan Valley Archaeological Project (SJVAP) did considerable survey and testing work in the La Plata Valley. The SJVAP gathered data at at least four sites in the Cottonwood Arroyo area (ENM 7258, 7260-7262 [Whalley 1980:166-169]). They excavated two trenches in ENM 7258, which is near the mouth of Cottonwood Arroyo, and the ceramics from that site are Pueblo II types. It is quite possible that the trenches in LA 37626 were placed by the SJVAP. At the time we visited the site, our first impression was that the mound and the midden had been looted. The combination of failure to backfill and possible other pothunting gave the mound surface the appearance of being badly damaged (Fig. 15). The trenches observed by Lancaster were about 4-by-1 m, and a stake remains with each one. There are no records of this work in the New Mexico Cultural Resource Information System (NMCRIS), but the SJVAP results were not submitted there.

Lancaster observed several rock alignments, including one near the right-of-way fence, and possible walls within and north of the cobble mound. He also suggested the presence of a kiva depression. Lancaster (1982a:81) recommended the site for testing, and two trenches were excavated (Lancaster 1983:81-83). One test was within the highway shoulder and the other was placed next to the rock alignment by the fence. Lancaster made two surface collections from the site since the first collection was lost. His assessment of the pottery from the second surface collection was that occupation was Pueblo II-III in age. The only material recovered from his tests was a single piece of chipped stone, and no evidence of features or surfaces was observed in either trench. Both trenches were excavated to 50 cm below surface and one was augered to 1.5 m. He concluded that intact cultural features and deposits were not present in the right-of-way, and that the rock alignment by the right-of-way fence resulted from highway maintenance.

When we reevaluated sites in the second phase of highway improvement, we concluded that the rock alignment by the fence and the material present warranted further testing to lessen the risk of construction discoveries (Toll and Hannaford 1997). A Museum of New Mexico crew returned in September of 1987 to test remains within the proposed right-of-way. A surface collection of materials within the proposed right-of-way was conducted by positioning a 3-by-3-m portable grid along a baseline established with a transit. Whereas Lancaster did most of his work during testing within the existing right-of-way, most of the surface collection and testing in the 1987 phase took place in the 9-m-wide strip outside the existing right-of-way up to the edge of the proposed right-of-way. The grid contained 69 units, covering 621 sq m, from which 188 sherds and 170 pieces of chipped stone were collected. As with the other sites tested in 1987, the grid was established on a 0S/0W datum with northeast corner identification, and subsequently converted to a north-east orientation with

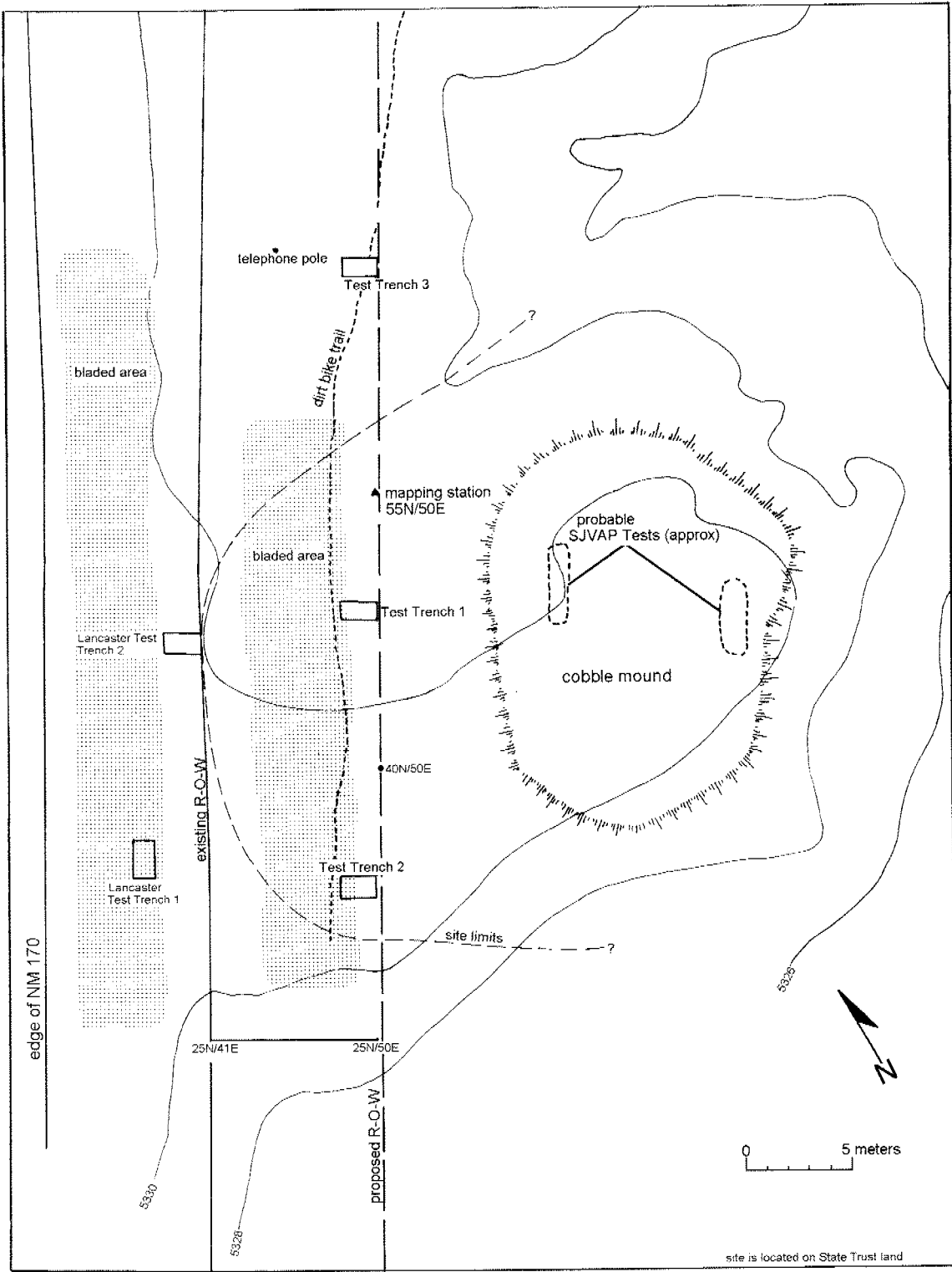


Figure 12. LA 37626, site plan. Stippled areas were scraped with a maintainer to search for buried features. SJVAP stands for San Juan Archaeological Project, a testing program conducted in the 1970s (Whalley 1980).



Figure 13. Overview of LA 37626, across highway, near vehicle; note the silty hard pan soil just above the floodplain in the site area.



Figure 14. Ground cover north of LA 37626 cobble mound and test trench.



Figure 15. Disturbance in LA 37626 cobble mound outside of the right-of-way; trenching has exposed walls and many artifacts are on the ground surface.

southwest corner grid identification. Most of the chipped stone came from a single grid at the south end of the collection area near the cobble mound, where 119 pieces were collected.

Surface Material

Lithics and ceramics have rather different distributions on the surface of this site (Fig. 16). Ceramics were concentrated in two areas, one at the south end (around 30N) and the other about 50 m to the north at the east side of the proposed right-of-way. The concentration at the south end is adjacent to the mound and to the midden exposed by the wash. The lithic frequency map is dominated by an extreme concentration of material within two adjacent grid squares at the south end of the collection area. If this unusual concentration is artificially reduced to a density of one item per square meter for the most abundant collection unit, most of the lithic material still is concentrated at the southern end with no secondary concentration equivalent to that seen in the ceramic distribution map. Lithic artifacts are more sparsely distributed than ceramics over most of the site, so that the total artifact distribution map substantially mirrors that of the pottery.

The unusual concentration of lithic artifacts consisted of 126 pieces of chipped stone between the two grid squares. The field assessment of this material concentration was that it was a core reduction area, and this assessment is probably correct, although the assemblage contains a variety of materials and flake types. The material is 70 percent silicified wood, most of which is yellow brown, but some of which is red, white, and of varying texture. Chalcedony and chert are also present in several colors; there is a single piece of siltstone (normally one of the most abundant materials). Most (92 percent) of the material from these two grids occurs as core flakes, but there are also six platform rejuvenation flakes, a biface retouch flake, a tool flake, and a thin biface.

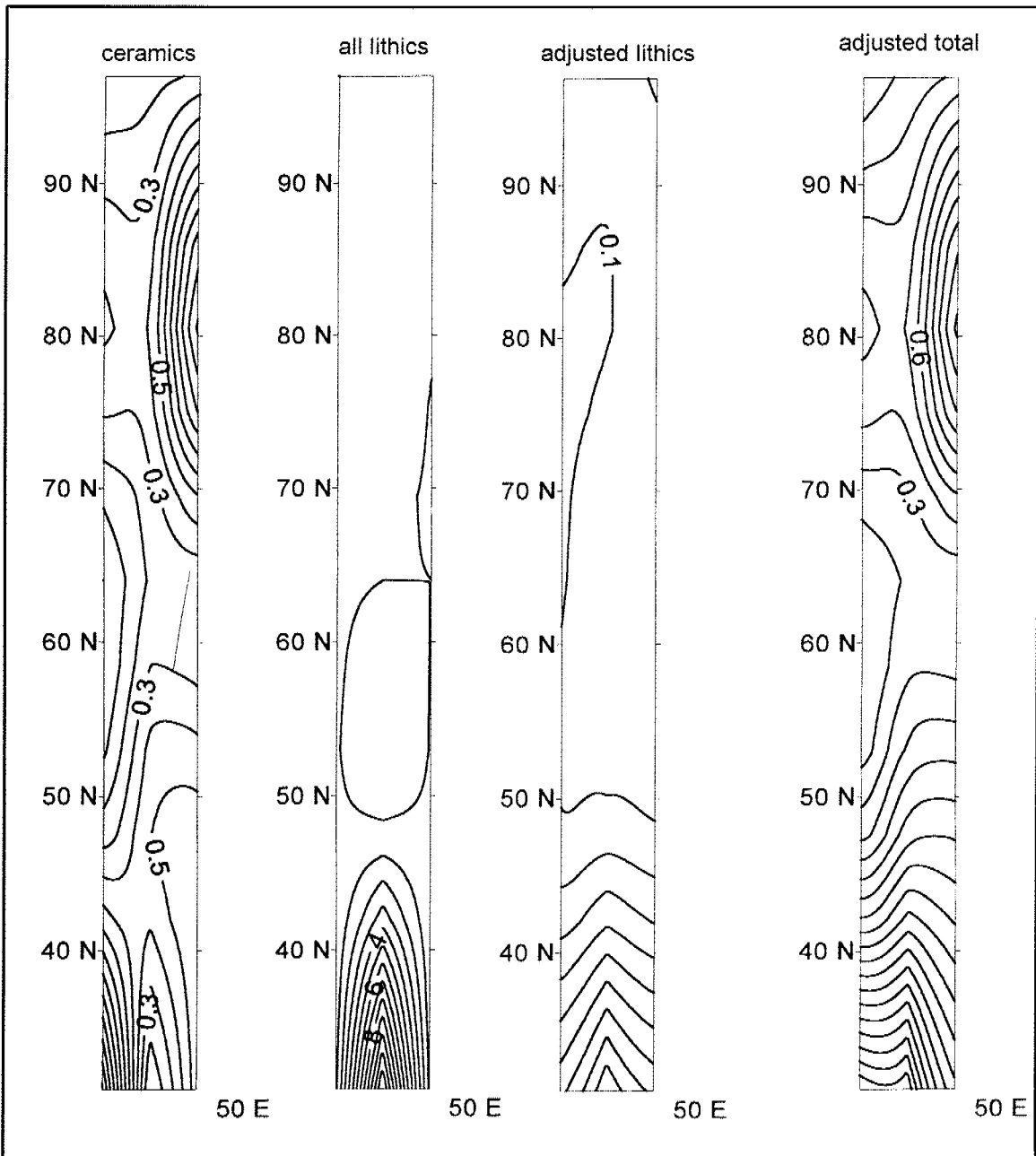


Figure 16. LA 37626 surface material map. All maps are in terms of artifact density per square meter. From left to right: ceramic densities contour interval = .1, all lithics, contour interval 1, lithic densities adjusting the flake concentration at the south end to a value of 1 (from 126), contour interval .1, and ceramics and lithics combined, with the concentration again adjusted to 1.

Tests

Lancaster excavated two 1-by-2-m trenches inside the existing right-of-way west of the cobble mound. One of these (Test Trench 1) was about 14 m west of the flake concentration located during our surface collection. The other (Test Trench 2) was 10 m to the north, at the edge of the cobble concentration along the right-of-way fence. Neither test revealed any subsurface materials, and the

cobble concentration appeared to have resulted from highway maintenance (Lancaster 1983b:82-83).

We (Hannaford, Bullock, Chris Eversen) tested the site with three further 1-by-2-m trenches in September 1987. These trenches were placed at the east edge of the new right-of-way, one at the south end (33N/48E) at the location of the surface lithic concentration, next to the mound (48N/48E), and one toward the north end of the site area (66N/48E).

1987 Test Trench 1 (48N/48E)

This trench was 5.5 m west of the cobble mound. The surface in this area was crossed by a dirt bike trail, and little vegetation was present. Within the first level only one sherd, a couple of burned cobble fragments, and some recent historic trash were present. The soil in all three 10-cm levels was tan, compact sandy clay, increasing in gravel content with depth. Charcoal and other cultural staining were virtually absent. This sterile soil was shown by augering to continue for another meter and a half below the bottom of the test.

1987 Test Trench 2 (33N/48E)

This trench was located on a gentle slope southwest of the mound, in the area of concentrated surface lithics. Gravels and another 57 pieces of chipped stone were present in the top level of the trench. The two main material types found on the surface (yellow-brown silicified wood and chalcedony with white inclusions) are the primary material types found in the first level as well. Other miscellaneous materials are present in differing frequencies in the two proveniences, but the immediately subsurface material is basically the same deposit as that exposed on the surface. Below the surface-associated materials, the soil was tan, fine sand with no charcoal, no artifacts, and some calcium carbonate. A natural gravel lens intersects the northeast portion of the test, probably from minor surface erosion. The test was reduced to a 1 m sq at 20-30 cm below surface, and a hole was augered to 180 cm below surface. The soil was consistently homogeneous sand, and calcium carbonate increased with depth. The only cultural deposits within this test area consisted of deflated material on and immediately below the surface.

1987 Test Trench 3 (66N/48E)

In contrast to the single concentration of surface lithics, there are two areas of increased ceramic density. One is at the south end near the mound and the midden, and the second is at the east edge of the study area, from about 79N to 88N. The third test was placed just south of this ceramic area. Although this 3-by-3-m surface grid contained only 2 sherds and no chipped stone, another 12 sherds and 2 lithics were present in the churned upper 5 cm of the test trench. No gravels or cobbles were present on the surface. Beneath the upper 5 cm, the tan sandy silt soil was especially hard, perhaps from compaction from the dirt bike trail that passed over the trench. The level from 10 to 20 cm below present surface contained a single flake, and the excavator suspected that some mixture with the overlying level was possible. The soil was otherwise sterile and the test was reduced to 1-by-1 m. As in the other tests, the soil continued to be tan silt-clay-sand with increasing calcium carbonate to 30 cm below present ground surface. An auger test showed no significant change with depth.

Blading

As a final check for subsurface remains, the area within the proposed right-of-way was bladed in November 1987 (Toll, Hannaford, Bullock). We bladed both in the existing and proposed rights-of-way. Within the existing right-of-way, the blade made five passes, cutting to 30 cm below modern surface. We observed no artifacts either in the spoil or on exposed surfaces. The total bladed area was

41.5 m long by 5 m wide, 3 m west of the fence. We could not see Lancaster's tests from four years earlier.

Moving to the area within the proposed right-of-way, the blade cut a swath 5 m wide, 30.5 m long to 35 cm below the surface, using about ten passes. Almost no cultural material was observed: no artifacts and only a few charcoal flecks. Outside of a small gravel-filled channel at the south end of the bladed area, the soil was consistently the clean tan soil observed in the test trenches.

The blading and tests demonstrate that no potentially significant cultural deposits, features, or surfaces were preserved in the proposed construction zone west of the room block. The high level of activity in the zone between the mound and the highway undoubtedly removed some shallow features and deposits, but no deep features such as cists or pit structures appear to have been present. Construction could proceed within the proposed right-of-way without affecting the information potential of the site. Intact features are clearly present outside of the new right-of-way.

Cultural Material

The surface material maps indicate that the site can be divided into two areas: Extramural Area 1, the southern area adjacent to the cobble mound and the midden which includes most of the lithics, and Extramural Area 2, an area toward the north end of the site (Fig. 16). The material tables are presented using that division. The collection contains no ground stone; there are nearly identical numbers of ceramic (n = 242) and lithic specimens (n = 240).

Ceramics

A total of 242 sherds were collected from LA 37626, not including the sherds collected by Lancaster. This count includes 40 sherds collected from looter's backdirt in the midden area (Table 5). Though decorated wares were generally scarce at the site, they were more abundant in the area around the mound and midden than in the northern area. Specimens with enough design present to be assigned to pottery types suggest a Pueblo II age for the site. We collected sherds and rock samples from backdirt by the mound because we suspected that pieces of the dark, friable igneous material was a distinctive gray ware tempering material present in some of the sherds. This collection contributed to the high gray ware count from the midden area.

Table 5. LA 37626, Ceramic Type by Provenience

	Extramural 1 (south)		Extramural 2 (north)		Midden Area (looted)		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	%
P II-III Corrugated	1	1.0					1	.4
Plain Gray	32	33.0	57	54.3	13	32.5	102	42.1
Corrugated Gray	37	38.1	32	30.5	21	52.5	90	37.2
Red Mesa Style Black-on-white	1	1.0					1	.4
Pueblo II Black-on-white	8	8.2	4	3.8			12	5.0
Polished white	18	18.6	11	10.5	6	15.0	35	14.5
Squiggle hatchure black-on-white			1	1.0			1	.4
Group Total	97	100.0	105	100.0	40	100.0	242	100.0

Table 6. LA 37626, Chipped Stone Artifact Type and Material Type by Provenience

	Extramural 1 (south)		Extramural 2 (north)		Concentration		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	%
Artifact Type								
Debitage	36	73.5	12	80.0	148	84.1	196	81.7
Core	1	2.0	1	6.7			2	.8
Retouched/Utilized Debitage	11	22.4	1	6.7	27	15.3	39	16.3
Retouched/Utilized Core	1	2.0					1	.4
Projectile Point					1	.6	1	.4
Hammerstone			1	6.7			1	.4
Group Total	49	100.0	15	100.0	176	100.0	240	100.0
Material Type								
Chert	14	28.6			23	13.1	37	15.4
Chalcedony	5	10.2	1	6.7	32	18.2	38	15.8
Silicified wood	14	28.6	2	13.3	120	68.2	136	56.7
Quartzite	3	6.1	1	6.7			4	1.7
Quartzitic sandstone			1	6.7			1	.4
Igneous			4	26.7			4	1.7
Siltstone	13	26.5	6	40.0	1	.6	20	8.3
Group Total	49	100.0	15	100.0	176	100.0	240	100.0

If this site is the one tested by the SJVAP and reported as ENM 7258, then there is a discrepancy in how the pottery types are distributed across the site. Whalley reports that the local white ware pottery from the two trenches in the rubble mound was attributable to Mancos Black-on-white, with the latter constituting from 36 to 44 percent of the classifiable white ware sherds (Whalley 1980:143). The abundance of the latter type would date the SJVAP collection toward the later half of the A.D. 1050-1130 period or later in the transition from the Pueblos II to Pueblo III periods. This date is significantly later than the ceramic date implied by the sherds collected from the right-of-way. The SJVAP collection also contained abundant trachyte-tempered pottery, about 7 percent of white ware sherds (Walley 1980:151, 156), and more than 12 percent of gray ware sherds from the trench collections (Whalley 1980:161). These are extremely high frequencies that are not reflected in any other La Plata Highway collections.

The right-of-way collection is earlier based both on pottery types (the absence of both McElmo Black-on-white and Pueblo III design styles) and on paint type distributions. The white ware sherds with paint (n = 14) were exclusively painted with mineral pigments, supporting a middle rather than late Pueblo II date. The potential temper material (a dark igneous rock) noted on the mound during the right-of-way work and the presence of a similar a dark mineral temper in some of the gray ware sherds (similar in appearance to, but not trachyte) could explain the high frequency of sherds classified as trachyte-tempered by Whalley. Either the site is not the SJVAP site, in which case the trenches in the mound would have to be the result of pot hunting, or the site was occupied from the middle Pueblo II through early Pueblo III periods, with debris from the latter component restricted to the immediate area of the roomblock.

Chipped Stone

The majority of chipped stone from this site came from a dense concentration of material near the southwest end of the room block. The materials from this site stand apart from most sites in the La Plata Highway sample because of a small percentage of siltstone and chert, and large percentages of silicified wood and chalcedony (Table 6). These skewed proportions are due to the materials in the concentration, while the small amount of material from outside the concentration area includes less silicified wood and is more like other collections with higher frequencies of siltstone and chert. Perspective on the sizes of items is provided by the weights of the materials. The total collection weighs 1.47 kg; nearly half of the weight is due to the 20 siltstone objects, and only 15 percent is attributable to the 136 pieces of silicified wood. Only 4 quartzite items (1.7 percent of the count) account for 16 percent of the weight. The high percentages of silicified wood and chalcedony may be attributed to several causes. The main reason is that our collection units encountered an area where these two high-quality materials were worked, resulting in a large number of flakes in a small collection. Proximity to the badlands where these materials were acquired increases the likelihood that such a reduction area would be encountered at this site rather than others in the project area. However, the small size of the flakes means that similar workshops could also have occurred a greater distance from the source. The maximum weight of any chalcedony artifact is 4 g, and 96 percent of the silicified wood items weigh 5 g or less.

Most of the few utilized flakes were found in the south extramural area outside of the concentration, and a single, silicified wood projectile point base was recovered from the vicinity of the concentration. Only three cores are present, none from the concentration area.

Given the small assemblage from the limited investigations at the site, there is an extraordinary occurrence of rare items. In addition to two pieces of Narbona Pass chert (included in chert, Table 6), the collections include one piece of turquoise and one piece of marine shell. Only nine pieces of turquoise and thirteen pieces of shell were recovered from the La Plata project as a whole.

The turquoise artifact is a delicate pendant (12-by-9-by-2 mm) with a tiny hole drilled at one edge. The hole is in one corner of the slightly trapezoidal shape; the wider base is opposite the hole, and the height of the trapezoid is greater than the long base. The corners are rounded. The turquoise is a very nice green-blue (7.5BG 6/6) with subtle veining of a slightly different color. One unpolished face retains some whitish and brown matrix; this face is unpolished and it was from this side that the conical hole was drilled. The piece of bivalve shell is the only item in the faunal assemblage from this site. It is a paper-thin, irregular pentagonal piece of white shell measuring 13-by-9.5 mm. It is basically flat, but undulates in cross section, and has shiny mother-of-pearl coloration on both faces.

TESTING AT LA 37588, THE DOZER SITE: A PUEBLO II HABITATION

A mostly intact house mound with kiva depression is present at this site. The house mound was excluded from the new right-of-way and is still present. Of the sites recorded and visited during highway surveys in the La Plata Valley, the pit structure and the structure are some of the most visible from the surface. This may be because of their location away from the terrace slope on the cobble-free soil of the fan. The rubble mound is distinct and relatively high, increasing the depression's visibility (Fig. 17). The visibility of the pit structure could also result from past excavation, but if digging occurred here it must have occurred a long time ago, as the structural portion of the site now looks undisturbed. The small structure at LA 37589, which was in use during the same general time as this larger structure, would have been easily visible to the north from this site.

In contrast to the apparent condition of the house mound, however, considerable other ground disturbance is present at LA 37588. Water lines passed through the site area between the mound and the existing right-of-way fence east of the highway, and a power line was constructed along the edge of the existing right-of-way. The parallel water lines were located within the new right-of-way in trenches around a meter deep and 75 cm wide in the late 1970s and early 1980s. A modern driveway extends from the highway to the house along the north side of the mound (Fig. 18). The yard around the mound is well used, with construction of a partially finished semisubterranean shop made of cinder blocks, a shallow utility trench probably for the shop, fencing, dirt bike tracks, and other soil-disturbing activities all having taken place. Very little cultural material is present west of the highway, but road-related activities and considerable slope wash are present there.



Figure 17. Cobble mound at LA 37588; note kiva depression within mound, right of center.

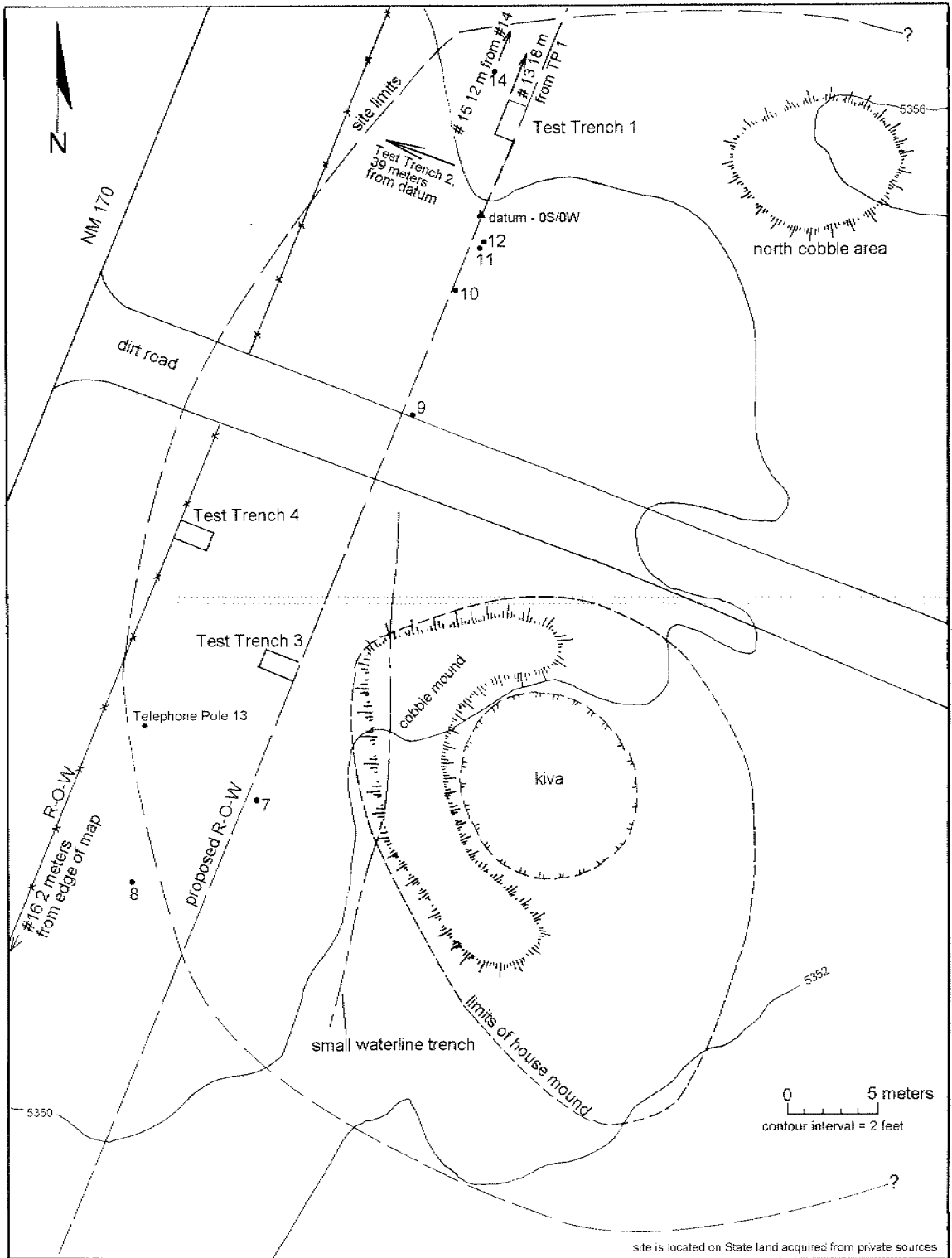


Figure 18. LA 37588 site plan.

In 1987 this site was under the formidable protection of a large German shepherd named Dozer. The purpose of testing in Dozer's front yard was to ascertain whether there were intact subsurface remains between the house mound and the highway and to investigate two cobble areas that would be affected by the highway construction. Although the site was recorded by Lancaster's survey work (Lancaster 1982a:35-36), it was omitted from his testing program (Lancaster 1983), so our tests were the first conducted at this site.

Vegetation on the site is dominated by greasewood (*Sarcobatus*) with some salt bush and snakeweed (*Atriplex*, *Gutierrezia*) and sparse grasses also present. Within the waterline area, cheat grass and Russian thistle (*Bromus* and *Salsola*) are abundant, with considerable areas of bare ground present (Fig. 17).

Methods

A baseline was established 9 m (29.5 ft) outside the existing right-of-way fence. While disturbance from waterline construction and dirt bikes has left much of the surface within this area clear of vegetation, there are considerable surface visibility problems along the fence because of increased vegetation and pushed road materials. There was little surface material within the existing right-of-way at the time of our work. Surface collection using a 3-by-3-m portable grid was conducted for the area within the fence for a total of 45 grids.

Unlike sites subsequently excavated on the project, surface grids were designated by meters south and west of a 0/0 datum, and grids were identified by their northeast corner. To enable computer coding of the grids and to make this site similar to the others in the project, the south and west grid coordinates have been converted to a north and east system with the datum numbered 50N/50E, and all grids are identified by the coordinate of the southwest corner. These changes are noted on the original notes as thoroughly as possible. The north and east coordinates of southwest grid corners appear in the data files and are used in this discussion.

Surface Collection

A total of 97 sherds and a relatively high 63 lithics were collected from the gridded surface area. Material shows a considerable concentration where the collection grids passed closest to the house mound—Grid 20N/47E contained 24 sherds and 11 lithics (Fig. 19). Twenty-eight of the 45 grids contained surface material, with surface densities ranging from .1 to 2.4 sherds per sq m in 21 grids and from 0.1 to 1.1 pieces of chipped stone in 22 grids. Lithic and ceramic densities follow similar patterns, with subconcentrations toward the north end of the site area, adjacent to some cobble concentrations there. In addition, increased lithic frequency is visible at the south end, where there is no corresponding sherd density increase.

Tests

Four 1-by-2-m tests were dug, three in the area west of the house mound and one across the highway near some possible cobble alignments. These tests were all excavated with hand tools in arbitrary 10-cm levels and screened through quarter-inch hardware cloth. The tests were intentionally (rather than randomly) placed based on surface manifestations.

Test Trench 1, 54N/49E

The presence of a rubble concentration to the north of the main rubble mound was the reason for placement of this test. The surface materials indicated that a disturbed feature might be present in this location. Cobbles were fairly abundant on the surface of the test area, and the tan to orange sandy soil

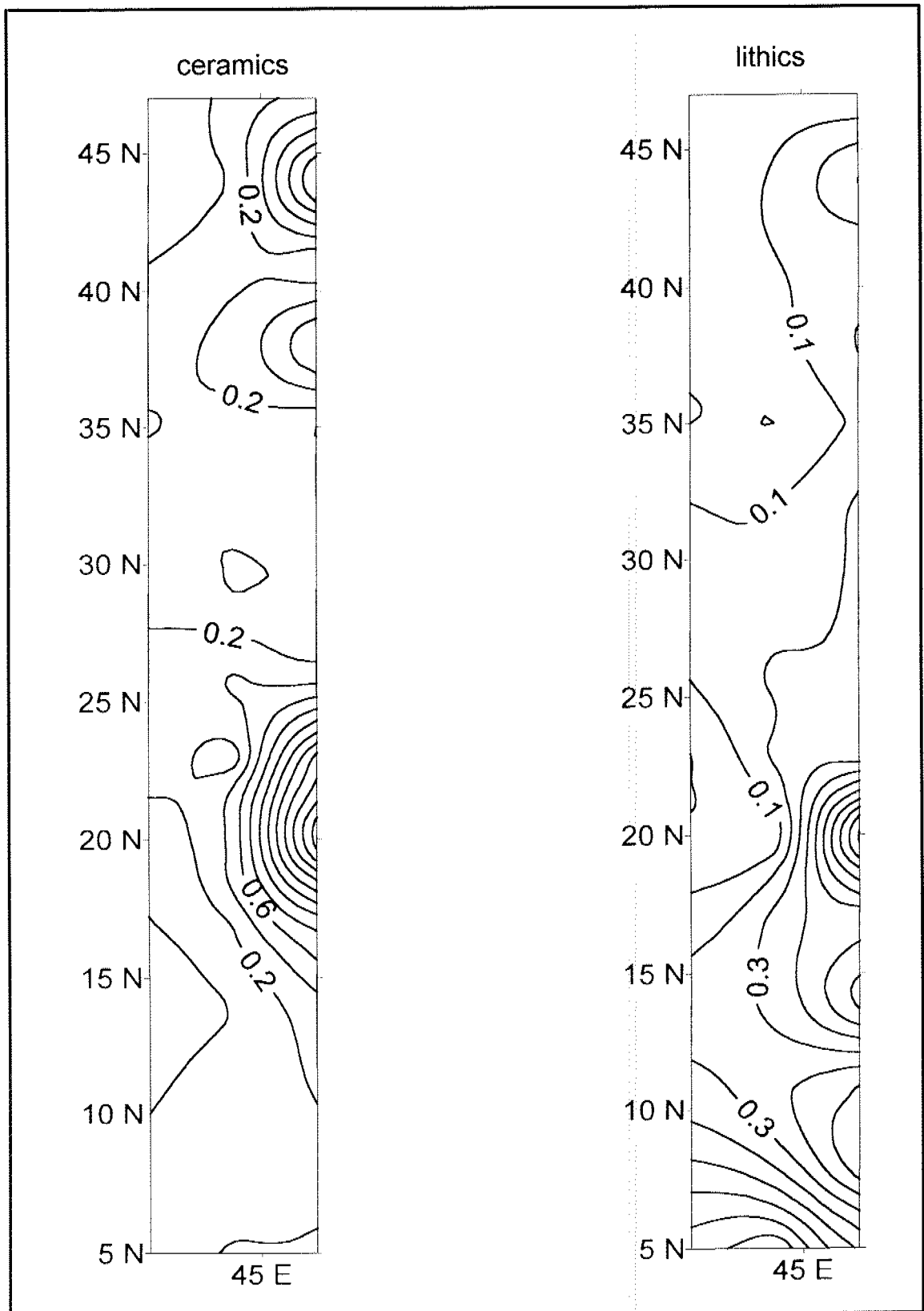


Figure 19. LA 37588 surface material densities in items per square meter. Ceramic density contour interval is 0.2 and lithic density contour interval is 0.1.

contains much gravel. None of the rock appears to have been oxidized. Most of the material from the test (11 artifacts) was recovered from the upper, loose material around the rock. Beneath the surface of the south half of the trench is mostly rock. In the third 10-cm level the trench was reduced to a 1-by-1-m unit in the north end of the trench (55N/49E). At the base of the test there is tan sand with much gravel (perhaps three-fourths of the fill is gravel). These gravelly deposits are alluvial in origin. The rubble concentration on the surface, then, was probably the result of water line trenching cutting an alluvial deposit.

Test Trench 2, 22N/48E

Test Trench 2 was placed in the surface grid with the highest concentration of surface material, 3.7 m west of the main rubble mound. The 1-by-2-m trench cuts from the east edge of the waterline into the waterline disturbance. In addition to being in the surface grid producing the most sherds, this test produced 101 subsurface sherds, accounting for much of the collection from the site. Four arbitrary levels were removed, to a depth of 32 to 41 cm below the present ground surface.

The surface of the test area contained six cobbles from 8 to 18 cm long, and gravels from 1 to 5 cm long. Several of the cobbles are possibly burned. A gray use surface was present from 1 to 5 cm below the ground surface. Artifacts are present above and below the gray surface, and materials from either side of the surface were kept separate. Although charcoal was rare, this gray material appears to be ash. Below the gray surface in the west half of the trench the soil is dark brown with more charcoal, and contains much rock. This soil is compact and difficult to dig. Artifact and charcoal content decrease with depth, until compact, but much less hard, fine sand was reached 20-30 cm below the modern surface. The basal sand was culturally sterile, although fissures from upper layers can be seen to introduce some charcoal to that level.

Profile Strata. At the surface, the soil is gray and is mixed with cobbles, charcoal, and fairly abundant artifacts. Brown 10YR 5/3. Stratum 2 has an irregular base. It is yellowish brown 10YR 5/6-5/8, very hard and clayey, containing calcium carbonate specks and charcoal flecks. Stratum 3 is not clearly distinguishable from Stratum 2, but is lighter than the upper part of that stratum. It is yellowish brown 10YR 5/6. Stratum 4 is a sandy layer that contains no artifacts and little charcoal. It is light yellowish brown 10YR 6/4.

Test Trench 3, West of Highway

Across the La Plata Highway and slightly up the base of the terrace talus, a dirt road ascends the talus. Within the erosion caused by this road a concentration of cobbles was visible, including at least one possible alignment. Although there were no artifacts in the area, we wanted to ascertain whether the concentration and the alignment was natural or cultural. A 1-by-2-m trench was excavated in two 10-cm levels. Removal of the gravelly surface material revealed more cobbles, some of which were calcium carbonate coated. We concluded that these cobbles were naturally deposited, and that no feature was present. No artifacts were recovered from this area.

Test Trench 4, 26N/41.5E

This 1-by-2 m, east-west test was located west of the main rubble mound, at the west edge of the waterline disturbance, and next to the right-of-way fence. The soil in this area is quite homogeneous and contains little cultural material—three lithics are reported from the surface, although they are not in the analysis file and were probably discarded as nonartifacts. The surface is characterized by clayey orange matrix (yellowish brown 10YR 5/6) with frequent cobbles ranging from 20-by-20 cm down to pebbles. Although rock decreases below the surface, a gravel lens was encountered at the base of the test, indicating that alluvial or colluvial events took place in this location. There is no sign

of the gray ashy surface present in Test Trench 2 to the east, and artifacts and charcoal are nearly absent.

Cultural Material

Materials from the testing and surface collection from LA 37588 were analyzed under two different schemes. Analysis procedures for ceramics and lithics were developed by W. Toll and P. Bullock for the 1987 testing materials and were carried out on the materials from this site. As the La Plata Highway Project proceeded, new procedures were developed for handling the large volume of material generated by the project. The lithics from this site were reanalyzed using the Jackson Lake analysis format, but the ceramics were not reanalyzed. The lithic analysis system was revised again for the Barker Arroyo phase of the La Plata Highway Project, and data were transformed to allow comparison of materials from all phases of the project. The lithic results reported here are based on the Jackson Lake analysis (which contains more information on material variety) and the standardized analysis (for comparability). The ceramic results are based strictly on the original testing analysis. For purposes of presentation the site has been divided into three different sized zones: north, which extends from the north border of the site around 57N to 29N; the mid portion of the site, adjacent to the house mound, from 20N to 29N; and the south end of the site from 5N to 20N. Even though the mid zone near the mound has the smallest area, it contains 70 percent of the chipped stone and 74 percent of the ceramics.

Ceramics

The hazards of being a potsherd on a heavily used surface are clear in this collection: the 213 sherds from this site fit in a small box. Over 95 percent of the sherds are less than 3-by-3 cm, and only one is greater than 5-by-5 cm. About half (n = 108) of the sherds are from the subsurface tests; these sherds are slightly larger (15 percent are 3-by-3 to 5-by-5 cm), but they are still small. Ceramic types indicate that this site was primarily occupied during the Pueblo II period. There are two neckbanded sherds, which hint at a Pueblo I component (Table 7), and a slightly elevated percentage of organic-painted sherds, which are more common in Pueblo III. The few earlier and later sherds suggest that this site saw a longer occupation than the others in the vicinity. Pueblo II corrugated and Mancos Black-on-white are the main formal types identified in the collection. Given the small size of the sherds, most sherds are classified only into generic groups, with over half of the sherds attributed to corrugated jars of unspecified temporal period (which requires observable rim forms). No sooting or other deposits are preserved on the pottery, once again indicating long surface exposure of the ceramics. One gray ware sherd was tempered with trachyte from the Chuska Valley; no red wares or other nonlocal sherds were identified.

Lithics

Chipped stone was relatively abundant at LA 37588: there are 155 pieces in the collection, most of which are, as with the sherds, from near the main rubble mound (Table 9). Retouched or utilized debitage is more generally distributed over the site and is more abundant than expected in the areas away from the mound. Most of the formal tools, however, are from near the mound, including a tan quartzite graver, a notch, and the midsection of a red silicified wood projectile point (Tables 9-12).

Siltstone is the most commonly used material at the site. The incidence of siltstone (47 percent) is similar to other Cottonwood Arroyo sites, as is the occurrence of chert (24 percent). The north zone of the site has a markedly higher percent of chert than the other two parts of the site. Because of the small sample size in the north area, the high percentage could have resulted from a single chert reduction episode. The color-based analysis reports 43 material categories within the assemblage;

Table 7. LA 37588 Ceramics: Type by Vessel Form

Type	Bowl		Tubular Ladle Handle		Jar		Indeterminate		Total	
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	%
Wide Neckbanded					1	100			1	.5
Narrow Neckbanded					1	100			1	.5
PII Corrugated					6	100			6	.8
Plain gray					3	100			3	1.4
Unidentified Corrugated					116	100			116	54.5
Chuskan					1	100			1	.5
PII-III M/w	2	16.7	1	8.3	9	75.0			12	5.6
PII-III C/w	4	80.0			1	20.0			5	2.3
Mancos Black-on-white	2	18.2	6	54.5	3	27.3			11	5.2
Unidentified M/w 2 sides	2	100							2	.9
Unidentified white ware	10	37.0			14	51.9	3	11.1	27	12.3
Indeterminate							28	100	28	13.1
Total	20	9.4	7	3.3	155	72.8	31	14.6	213	100

Table 8. LA 37588 Types and Forms by Portion of Site

Type	North		Mid/Mound		South		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	%
Wide Neckbanded			1	.6			1	.5
Narrow Neckbanded			1	.6			1	.5
PII Corrugated			4	2.6	2	11.1	6	2.9
Plain gray	1	2.9	2	1.3			3	1.5
Unidentified Corrugated	18	51.4	83	53.9	12	66.7	113	54.5
Chuskan Corrugated	1	2.9					1	.5
PII-III M/w	1	2.9	7	4.5	2	11.1	10	4.8
PII-III C/w	2	5.7	2	1.3			4	2.0
Mancos Black-on-white			11	7.1			11	5.3
Unidentified M/w 2 sides	1	2.9	1	.6			2	1.0
Unidentified white ware	4	11.4	21	13.6	2	11.1	27	13.0
Indeterminate	7	20	21	13.6			28	13.5
Total	35	100	154	100	18	100	207	100
Form								
Bowl	4	11.4	13	8.4	2	11.1	19	9.2
Ladle handle			6	3.9			6	2.9
Jar	23	65.7	112	72.7	16	88.8	151	72.9
Indeterminate	8	22.9	23	14.9			31	15.0
Total	35	16.9	154	74.4	18	8.7	207	100

Does not include five piece-plotted surface sherds.

Table 9. LA 37588 Point-Provenienced Items

PPJ	Jackson Material Type	Flake/Core/Biface	Tool Type 1 (J)	Second Tool Type	Weight (g)
1	Chert-yellow-brown miscellaneous	Core flake	Notch-spokeshave	Notch-spokeshave	11
2	Siltstone, black	Hammerstone flake	Hammerstone	Scraper-dorsal	263
3	Siltstone, black	Core flake	Scraper-dorsal	—	54
4	Siltstone, black	Core flake	—	—	2
5	Siltstone, black	Multiple platforms	Scraper-ventral	Scraper-ventral	134
6	Siltstone, green	Core flake	Scraper-dorsal	Scraper-ventral	13
7	Mineral on white, PII-III	Bowl			
8	Siltstone, black	Multiple platforms	Hammerstone	Scraper-ventral	316
9	Corrugated jar sherd				
10	Corrugated jar sherd				
11	Corrugated jar sherd				
12	Chert, yellow-brown miscellaneous	Core flake			
13	Mineral on white, PII-III	Ladle sherd			
14	Mineral on white, PII-III	Jar sherd			
15	Discarded				
16	Not listed in notes				
17	Not listed in notes				
18	Chert, yellow-brown, miscellaneous	Core flake			

obsidian is absent and there is a single piece of Narbona Pass chert. Black, green, and gray are the most common siltstone colors, and yellow-brown is the most common color in the cherts and silicified woods.

Neither ground stone nor faunal material was recovered in the work at this site.

Conclusion

Our tests at LA 37588 did not involve the house mound, being restricted to the area west of it. These tests indicate that while activity took place around the structure, it was clearly concentrated adjacent to it. Four test trenches were placed in areas identified during surface collection as either high activity based on artifact concentration (near the structure) or possibly containing features based on distribution of rock on the surface. Tests to the north of the rubble mound and across the highway near cobble concentrations revealed that the surface rock resulted from modern disturbance or from natural deposition. The third test, west of the mound at the edge of the existing right-of-way, showed that the use-surface did not extend that far, and that artifacts were uncommon at that distance from the mound. The test nearest the mound produced the greatest quantity of artifacts and revealed an ashy surface that was probably created by occupation of the structure. In spite of the presence of the use-surface, intact features were not encountered. Our test results, then, indicate that the area within

Table 10. LA 37588, Grouped Tool Type by Grouped Material Type

	Chert		Chalcedony		Silicified Wood		Quartzite		Quartzitic Sandstone		Igneous		Siltstone		Total	
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	%
Debitage	26	22.4	3	2.6	17	14.7	6	5.2	6	5.2	1	.9	57	49.1	116	74.8
Core													4	100	4	2.6
Retouched/Utilized	8	38.1			5	23.8			2	9.5			6	28.6	21	13.5
Debitage																
Retouched/Utilized									1	33.3			2	66.7	3	1.9
Core																
Graver							1	100							1	.6
Notch	3	100													3	1.9
Projectile Point					1	100									1	.6
Hammerstone							1	16.7			1	16.7	4	66.7	6	3.9
Total	37	23.9	3	1.9	23	14.8	8	5.2	9	5.8	2	1.3	73	47.1	155	

Table 11. LA 37588, Grouped Tool Type by Site Portion, Without Point Provenienced Artifacts

	North		Mid/North		South		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	%
Debitage	11	64.7	85	78.7	17	63.0	113	77.4
Core			2	2.0	2	7.4	4	2.7
Retouched/Utilized Debitage	4	23.5	10	9.8	5	18.5	19	13.0
Retouched/Utilized Core	1	5.9			1	3.7	2	1.4
Graver			1	1.0			1	.7
Notch			1	1.0	1	3.7	2	1.4
Projectile Point			1	1.0			1	.7
Hammerstone	1	5.9	2	2.0	1	3.7	4	2.7
Total	17	11.6	102	69.9	27	18.5	146	100.0

Table 12. LA 37588 Material Types by Site Portion

	North		Mid/Mound		South		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	Col %
Chert	8	47.1	19	18.6	7	25.9	34	23.3
Chalcedony			3	2.9			3	2.1
Silicified wood	2	11.8	16	15.7	5	18.5	23	15.8
Quartzite			7	6.9	1	3.7	8	5.5
Quartzitic sandstone	2	11.8	6	5.9	1	3.7	9	6.2
Igneous	2	11.8					2	1.4
Siltstone	3	17.6	51	50.0	13	48.1	67	45.9
Total	17	100.0	102	100.0	27	100.0	146	100.0

Nine point-provenienced pieces of chipped stone not shown.

the proposed right-of-way did not contain information likely to contribute to regional history or prehistory. For future reference, however, the house mound immediately outside the new right-of-way is clearly an important site.

The site consisted of a pueblo with perhaps ten rooms and a pit structure located south of the masonry rooms. The room block may have been laid out so that the pit structure was partially enclosed by rooms on the east and west. A substantial quantity of rock is present, suggesting that

construction of this building may have used more rock and less jacal or other material. The pottery present in the area west of the pueblo indicates that primary use of the location, certainly including the structure, was during Pueblo II. The presence of two neckbanded sherds suggests an earlier occupation, and the presence of some carbon-painted white wares suggests that the occupation may have been in later Pueblo II times. The site assemblage contains a relatively large number of chipped stone items, which are nearly all local materials.

EXCAVATION AT LA 37589, MEADOWLARK FIELDHOUSE:
A SINGLE-ROOM PUEBLO II STRUCTURE

Though Nusbaum probably did not record this site in his 1935 survey, he did record several in the vicinity of LA 37588 and 37626, as well as LA 37590. This small site differs from sites in the Barker and Jackson Lake complexes in not having nearby, contiguous neighbors. Most excavations performed for the La Plata Highway project took place in concentrations of sites, but LA 37589 is more isolated. This isolation is relative, however, since sites LA 37588, a Pueblo II-III room block, and LA 37590, part of a complex of Pueblo II-III and perhaps earlier sites are a couple of hundred meters to the south and north of LA 37589, respectively. Granting contemporaneity, this one-room structure was well within the Cottonwood Arroyo community.

The structure is on the broad first alluvial terrace, well removed from both the base of the slope leading up to the next terrace and from the drop off to the flood plain of the La Plata River (Fig. 20). The Pleistocene gravel deposits that characterize the slopes and top of the second terrace do not extend to the site area, so that the cobbles used in its construction stand out quite clearly from the surrounding collian and alluvial soils. The vegetation consists of short grasses and widely spaced greasewood (*Sarcobatus*). Throughout our April 1988 excavations, we were serenaded—or perhaps musically scolded—by a meadowlark. Clearly this was *his* archaeological site. It also belonged to Dr. John Anderson, who was kind enough to allow us to excavate it before the New Mexico State Highway and Transportation Department acquired it for the right-of-way.

LA 37589 was located by the highway archaeology survey in 1982 and was described by Lancaster (1982a:36-37) as a 3-by-4-m cobble concentration with only a few Pueblo II-III sherds. Lancaster (1983:24-26) also placed two test trenches in the site in 1982. One of Lancaster's tests



FIG. 20. Excavation site showing the meadowlark fieldhouse, with just in place. LA 37588 is to the right of the modern structure in the background.

indicated the presence of a cobble room. During re-evaluation, the presence of cobbles and a rise at the base of large greasewood suggested the possibility of a second structure (Toll and Hannaford 1997), but Lancaster's appraisal of one room proved to be correct. Lancaster's second trench was in an area with increased density of surface materials, but the test revealed no depth to the deposit. Our crew from the Museum of New Mexico returned to excavate the site in the spring (Fig. 21).

Meadowlark Fieldhouse consists of one sizable (4.5-by-2.6- m exterior) Pueblo II cobble room with some extramural activity evident (Figs. 22, 23). Floors for this room were very difficult to define; there were suggestions of surfaces within three levels, though no surface was heavily used. The room lacked a formal firepit and, for that matter, any indication of burning inside the structure. The quantity of artifacts associated with this structure is fairly small, contributing further to the interpretation that it probably had a seasonal function, perhaps as a fieldhouse. The total artifact inventory from this site is about 900 items (Tables 13-17).

Procedures

The material on present ground surface within the right-of-way was collected using a 3-by-3-m grid (Fig. 24). The great majority of work at LA 37589 was conducted by hand. This work included two 1-by-3 m trenches outside the cobble area, a series of excavation units that encompassed the entire structure, and an area up to 2 m immediately outside the structure. Rock from excavation units was piled and counted to allow volume estimates. Auger holes were used to confirm that sterile had been reached at test trench bottoms. After completion of all of the hand trenches, the area was bladed to search for further features. The blading revealed no additional features or artifact concentrations.



Figure 21. March snow storm during excavation of LA 37589 room.

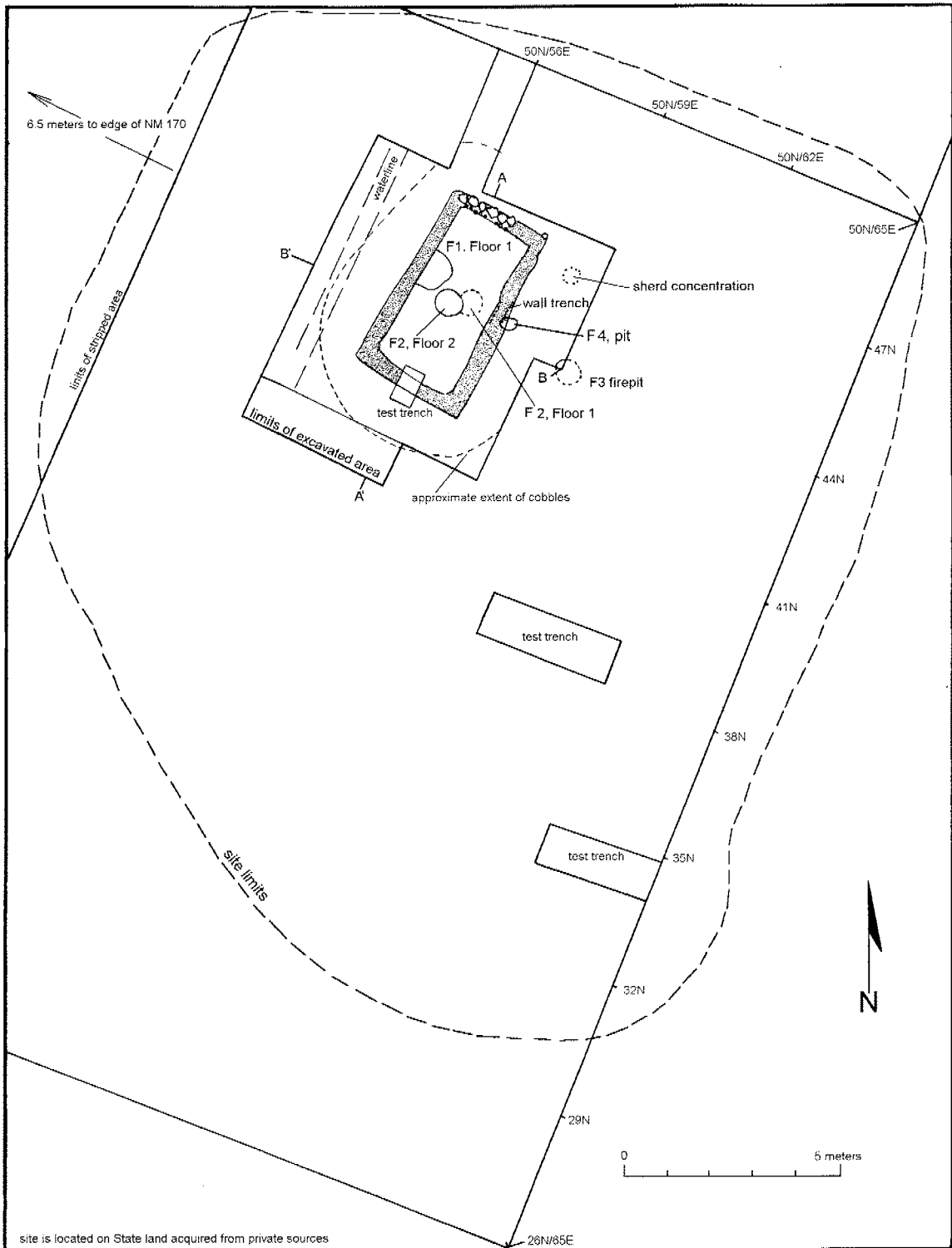


Figure 22. LA 37589 site plan.

Table 13. LA 37589 Ceramic Types by Major Provenience

	Room Gen		Room FI 1		Room FI 2		Extramural 1		Extramural 2		Extramural 3		Extramural 4		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	%
Plain Rim	1	.7													1	.2
Pueblo II Corrugated	5	3.3					1	1.0					2	1.4	8	1.2
Pueblo II-III Corrugated					1	.7									1	.2
Plain Gray	11	7.3	1	10.0			6	6.0	7	20.0	12	17.6	25	17.4	62	9.7
Corrugated Gray	85	56.7	5	50.0	134	99.3	69	69.0	19	54.3	36	52.9	108	75.0	456	71.0
Red Mesa Style Black-on-white							1	1.0							1	.2
Pueblo II Black-on-white	2	1.3													2	.3
Dogoszhi Style Black-on-white	4	2.7	2	20.0							1	1.5			7	1.1
Pueblo II-III Black-on-white	1	.7	1	10.0			1	1.0					2	1.4	5	.8
Pueblo III Black-on-white	1	.7													1	.2
Polished White	31	20.7	1	10.0			20	20.0	7	20.0	8	11.8	7	4.9	74	11.5
Polished Black-on-white	5	3.3					1	1.0	1	2.9	10	14.7			17	2.6
MV Deadman's Black-on-red	1	.7									1	1.5			2	.3
MV Black-on-red	2	1.3					1	1.0	1	2.9					4	.6
Reserve indeterminate smudge	1	.7													1	.2
Total	150	100	10	100	135	100	100	100	35	100	68	100	144	100	642	100

Table 14. LA 37589, Chipped Stone by Major Provenience Group: Grouped Materials and Tool Types

	Room 1 Gen		Room 1 Fl 1		Room 1 Fl 2		Exmur 1		Exmur 2		Exmur 3		Exmur 4		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %		
Material type																
Chert	13	19.7	1	25.0			6	16.7	2	20.0	10	27.8	24	38.1	56	25.6
Chalcedony	1	1.5											1	1.6	2	.9
Silicified wood	3	4.5					1	2.8			1	2.8	5	7.9	10	4.6
Quartzite							1	2.8			1	2.8			2	.9
Quartzitic sandstone	2	3.0			1	25.0	2	5.6			2	5.6	3	4.8	10	4.6
Siltstone	47	71.2	3	75.0	3	75.0	26	72.2	8	80.0	22	61.1	30	47.6	139	63.5
Total	66	100	4	100	4	100	36	100	10	100	36	100	63	100	219	100
Artifact type																
Debitage	60	90.9	4	100.0	3	75.0	34	94.4	9	90.0	26	72.2	58	92.1	194	88.6
Core	5	7.6			1	25.0	1	2.8	1	10.0	4	11.1	2	3.2	14	6.4
Retouched/Utilized Debitage	1	1.5					1	2.8			5	13.9	3	4.8	10	4.6
Hammerstone											1	2.8			1	.5
Total	66	100	4	100	4	100	36	100	10	100	36	100	63	100	219	100

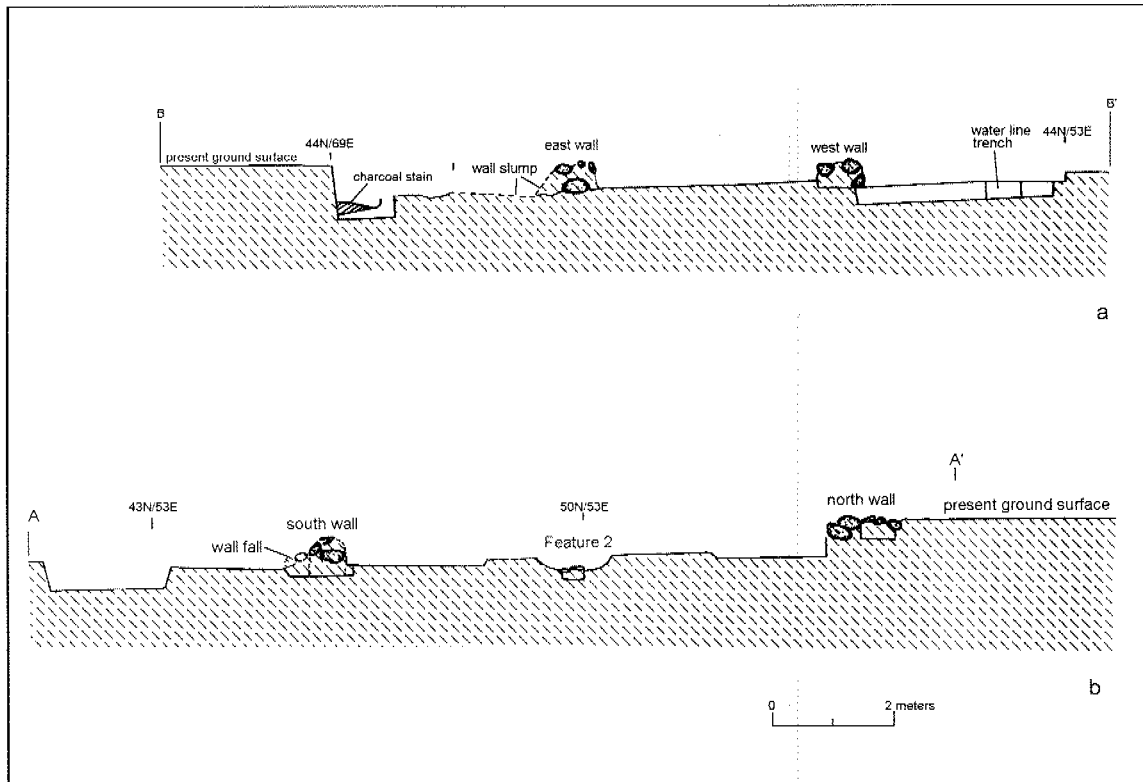


Figure 23. Schematic cross section of LA 37589.

A grid was established that ran parallel to the right-of-way fence, with the fence line being called 50E. The southernmost cultural material observed on the present surface was at 20N, which was used as the south edge of the formally laid out grid. The true north compass bearing of the grid is 8 degrees. Point 50N/65E, slightly outside the new right-of-way, was used for a site datum, and the 65E line was used as a baseline. Subdatums were established as necessary during excavation. Due to the rise caused by underlying topography and the mounding of building debris, many of the subdatum points were higher than the main datum, leading to excavated depths near the level of the site datum. Excavation depths were corrected to the site datum in the lab rather than in the field.

Excavation around the structure proceeded in 1-by-3-m trenches. As soon as wall alignments were fairly confidently identified, material from these trenches was collected separately and notes were made according to whether artifacts came from inside or outside the structure. Once the structure was defined, excavation efforts were concentrated inside the room, though exterior areas were cleared on all four sides of the structure, with the largest cleared area on the east.

The majority of fill removal on the site took place in 10-cm arbitrary levels, though excavators were continually on the alert for natural breaks in the fill. While the vertical control was separate for each excavation unit, an attempt was made to stop levels on the same cultural surfaces in contiguous units. The division of areas into so many excavation units means that there is some discrepancy between units as to levels. The site surface slopes gently from northwest to southeast, with the northwest corner of the main site area about 50 cm higher than the southeast corner 20 m away. The highest portion of the site is at the north end of the room mound; there is around a 10-cm loss of elevation from the floor in the north end of the room to the south end. All excavated materials were put through quarter-inch mesh hardware cloth screens.

Table 15. LA 37589 Sherd Occurrence by Level and Grouped Context

	Room 1		Extramural		Total	
	Count	Col %	Count	Col %	Count	%
Surface			72	20.7	72	11.2
Level 1	52	17.7	100	28.8	152	23.7
Level 2	91	31.0	49	14.1	140	21.8
Level 3	16	5.4	26	7.5	42	6.6
Floor 1			46	13.3	46	7.2
Level 4	1	.3	33	9.5	34	5.3
Floor 2	134	45.6			134	20.9
Level 5			4	1.2	4	.6
Floor 3			4	1.2	4	.6
Subfloor fill			13	3.7	13	2.0
Total	294	100	347	100	641	100

Table 16. Chipped Stone by Level and Context

	Room 1		Extramural		Total	
	Count	Col %	Count	Col %	Count	%
Surface			45	31.0	45	20.7
Level 1	31	43.1	39	26.9	70	32.3
Level 2	33	45.8	17	11.7	50	23.0
Level 3	4	5.6	24	16.6	28	12.9
Floor 1			3	2.1	3	1.4
Level 4	4	5.6	12	8.3	16	7.4
Floor 3			3	2.1	3	1.4
Level 5			2	1.4	2	.9
Total	72	100.0	145	100.0	217	100.0

Table 17. LA 37589, Ground Stone

FS	Material	Function	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)
Extramural Area (35N/50E)						
14	Sandstone	Shaped slab	76	120	16*	500
14	Sandstone	Shaped slab	165	143	9*	550
Room 1, Floor 2, Feature 2						
141	Sandstone	Shaped slab	212	177	6*	350
141	Sandstone	Slab metate	191	134	52*	1300
141	Sandstone	Two-hand mano (2)	235*	127*	30*	1750*
141	Sandstone	Shaped slab	120	88	8*	200

FS	Material	Function	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)
Extramural Area 1						
137	Sandstone	Shaped slab	193	159	32*	1200
213	Sandstone	Abrading stone (2)	78	80*	32*	350
222	Sandstone	Two-hand mano	201*	94*	23*	900*

(2) indicates function identified twice; * = whole dimension

As noted, this site was the first excavated by the La Plata Highway Project. As such, procedures vary from what would become standard later in the project. Primary among these is that backhoe trenches to insure that we had not overlooked buried deposits or structures were not used. The remains at the rest of the site indicated that such features were unlikely. In retrospect, however, the added assurance of some trenches would have verified the supposition.

Proveniencing

The site consists primarily of extramural areas and a single room. As defined by material on the present ground surface, the site area extends considerably further south of the room than north of it. After excavation, the extramural portions of the site were divided into a large area south of the room (Extramural Area 4), the area on the east side of the room (Extramural Area 1), the area to the north (Extramural Area 2), and the area on the west and immediately to the south (Extramural Area 3). The room was excavated in nine subdivisions defined by the grid system. As trenches were concentrated in the area of obvious architectural remains, the upper levels of most initial trenches included areas that were both inside the room and outside of it. In the provenience grouping, the materials from those levels were included with the room rather than with the extramural area. After definition of walls within these excavation units, collections from inside the room were kept separate from those outside. The room has been divided into four unequal quadrants based on the grid system; the north-south midline is the 56E line, and the east-west line is 44N. The way in which the structure was dug would allow even more detailed division of the space, but the small quantity of material from the room makes that step superfluous. Although the amount of material within the quadrants is small and different activities do not seem to be indicated by the material distributions, the quadrant division is maintained in the tables.

Present Ground Surface Material Distribution

Lancaster (1982a:37) collected five "potentially diagnostic" sherds in a general grab sample from the surface of the site. In the 3-by-3-m gridded surface collection only 13 (24 percent) of the 55 units were found to have material on the ground surface. Quantities of material were small in all but one unit, ranging from one to six items (Fig. 24). A single unit 12 m south of the structure, Grid 32N/62E, contained 49 sherds and 22 lithics, giving an average density of 7.9 artifacts per square meter for this unit; this sherd count is inflated somewhat by the small size of the sherds, which indicates considerable surface breakage. Adjacent Grid 29N/62E contained the second highest surface artifact density of 0.67 per m² (three sherds and three lithics). In the immediate vicinity of the structure, only two lithics were found. There is an area of nine contiguous 3-by-3-m units including the high material density grid that contains at least some material. We detected no evidence that the site area had ever been cultivated, but that does not preclude this form of disturbance having occurred some time ago. Lancaster's and other collections throughout the years obviously depleted the surface material some, but the small amount of material recovered during excavation suggests that there was never much there.

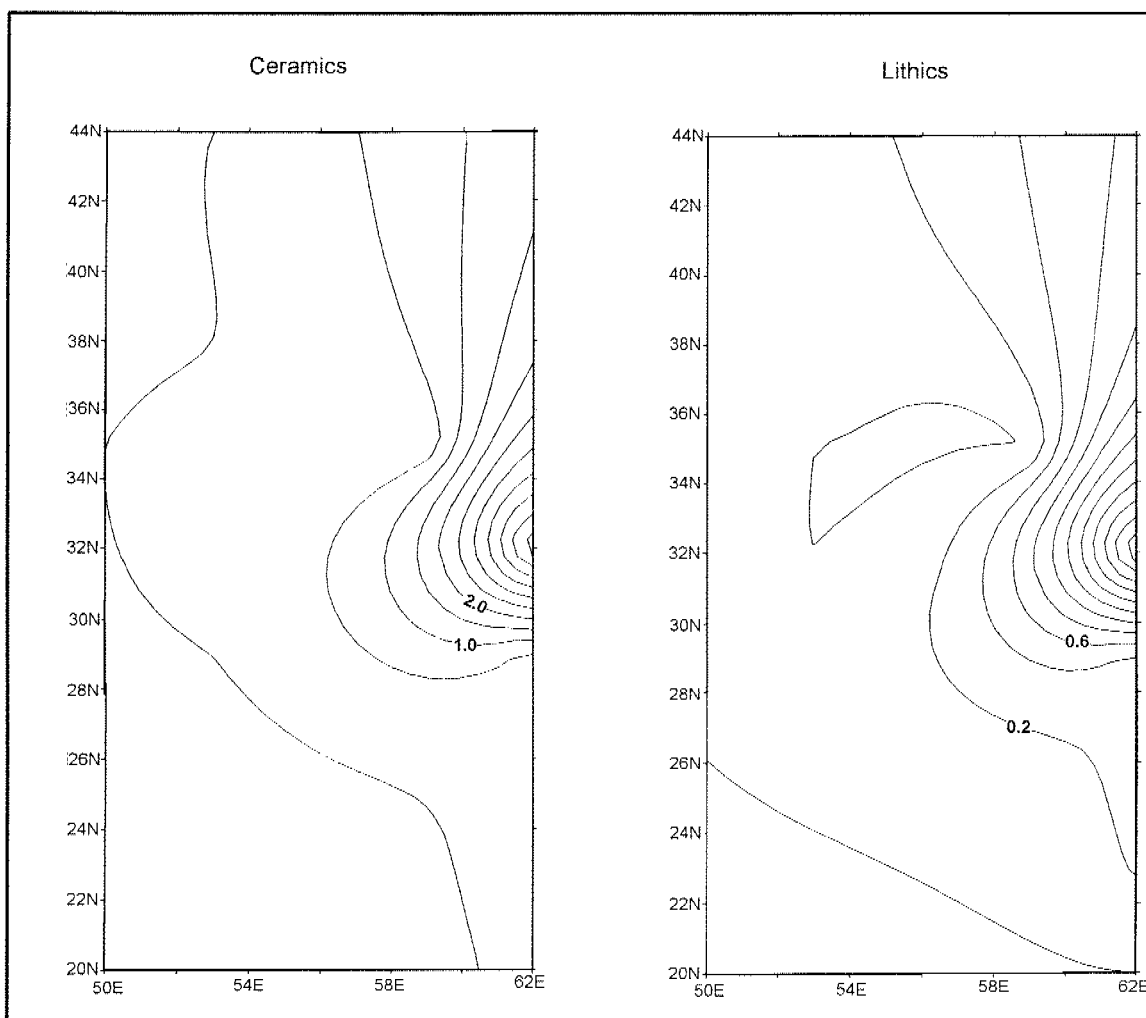


Figure 24. Surface material densities. Ceramic contour interval is 0.5, and lithic contour interval is 0.2.

Extramural Areas

Extramural Area 1: East (45-46N/56E, 41N/57E, 1-by-3 m)

All excavations in this area were contiguous with the east wall of the structure, and thus took place as a series of three east-west 1-by-3-m trenches (44N-46N/56E) at the north end of the room mound, and one 1-by-3-m north-south trench along the east edge of the mound (41N/57E). When the wall was defined in the northern trenches, material inside the room was collected separately from material outside the room, though the original grid identification was maintained. The upper level fill processed prior to wall definition has been included with the material counts from the room, although separation of material was begun early in the Extramural Area 1 grid excavations.

The best-defined prehistoric activity surface at the site was located in this area. It begins at the approximate elevation of the base of the east wall of the structure and the use zone within the structure and loses around 10 cm in elevation over 1.3 m to the east of the room (its fill is Level 4 in units 44-45N/56E; Table 18). This surface was characterized by the presence of sherds and a burned pit, as well as by color and texture changes in the soil. This activity surface quite clearly corresponds to the ground surface at the time of construction and occupation of the structure. An area of about 5.5 m² was exposed east of the structure, primarily at its north end, where excavation was

extended 1.5 m east of the wall. Some lensing of surfaces suggests that the activity in the area spanned at least some major precipitation events. Not enough of the walls remained to determine the locations of doors, but the greater activity evident on exterior of the east side of the structure suggests that entry was from that side. As the east side faces the river (and as the highway was 1,000 years in the future), the east side intuitively seems like the "front" of the building.

Increased activity in Extramural Area 1 is indicated by the relatively large number of artifacts from that area. Many of the sherds are on the use surface; they are from a corrugated jar that appears to have been oxidized. Bowl sherds are generally scarce at the site, but their frequency is slightly greater here than in other provenience groups; a ladle sherd is also present suggesting that some food service may have taken place as part of the activity in Extramural Area 1.

Features

Firepit (Feature 3). This feature is contained within a larger (.79-by-.95 m) stain area. Only about one-quarter of the feature was excavated. It probably represents an informal firepit that was used only a few times. The overall shape of the burn is irregular but more or less oval (Table 19), and the degree of burning of the sandy sides is light. Disturbance of the area and the feature is heavy: a large *Sarcobatus* had sent several substantial roots through the feature, and the adjacent use surface has been cut by several rodent burrows. The profile also contains an area of sand that appears to intrude into the charcoal-sand-ash fill in the main burn portion of the feature, suggesting a disturbance from the surface. The feature contained carbonized juniper twigs and, in descending order of abundance, unburned *Chenopodium*, *Amaranthus*, *Portulaca*, and Solanaceae seeds. In view of the disturbance, most or all of the unburned seeds are probably contaminants. A radiocarbon sample was collected from the pit fill, but was not submitted for dating.

Pit (Feature 4). This pit is located below the east edge of the east wall of the structure. The precise timing of its placement is unclear, but it was dug about the same time as the wall trench. The fill is sandy and contains a few flecks of charcoal, a sherd, a flake, and some bits of sandstone debris.

Table 18. LA 37589, Mean Maximum Depths of Excavation Levels, Separated into Areas Inside and Outside the Room

Level, Location	n	Mean Maximum Depth	Minimum Maximum Depth	Maximum Maximum Depth
Exterior level 1	7	-3	+18	-22
Interior/exterior 1	7	2	+10	-4
Exterior level 2	7	-15	0	-36
Interior/exterior 2	6	-10	0	-17
Exterior level 3	11	-22	-8	-47
Interior level 3	8	-4	0	-12
Exterior level 4	8	-31	-14	-58
Interior level 4	8	-13	-6	-20
Exterior level 5	5	-37	-17	-69
Interior level 5	2	-14	-13	-5
Interior level 6	1	-10		
Interior level 7	1	-14		

Table 19. LA 37589, Extramural Area 1 Features

Type	No.	Plan	Section	L	W	D	Fill
Firepit	3	oval?	hemisphere	0.6*	0.4*	0.15	ash, sand, charcoal
Pit	4	oblong irregular	irregular	0.44	0.21	0.37	sandy 1 Layer

*projected from partial excavation

The latter may be further evidence that the pit was dug close to the time of room construction. The sides of the pit show no preparation, and the shape is oblong; it seems possible that it was dug as some sort of borrow (perhaps for mortar?) during construction of the room, though it is small for such a purpose (Table 19). Given the location under the edge of the wall, and the similarity of the fill to the fill of the wall trench, it is more likely that the pit was dug before the wall was built.

Extramural Area 2: North

47N/55E, 3-by-1-m Trench. Placed at the margin of the cobble mound, this trench was intended to look for walls or features to the north of the room and to attempt to relocate Lancaster's 1982 trench. Rock fall stopped abruptly in this unit about 1 m north of the north wall of the structure. A sterile sand layer was present in the upper fill of the grid, probably the result of recent disturbance, perhaps waterline construction, or perhaps Lancaster's 1982 trench. A brownish sandy fill stratum rests on a more compact surface at the level of the base of the wall fall. No features and very few artifacts were present.

46N/53E and 46N/56E, 1-by-3-m Trenches. These trenches were placed along the outside of the north wall to define it. In this area the cultural level was defined primarily by a cessation of rock fall, which rests on a compact sandy deposit. Prehistorically used surfaces were not obvious. The eastern trench (46N/56E) was one of the first excavated and was used to try to define wall bases and surfaces. Levels 1 and 2 removed rock fall, which rested on a clayey layer that contained both charcoal and artifacts. This stratum extended below the base of the wall and below the level of Floor 1 inside the room, as well as below the use surface defined in Extramural Area 1. In keeping with the structure's location on a low natural rise, the base of this layer appeared to slope down to the east; it was defined as Layer 1, the only use of a layer designation on the site, but in tabulations it has been equated with Level 3. Two further levels were removed to a depth of 25 cm below site datum (Floor 1 ranges from 0-5 cm BSD). Artifacts were absent from Level 5, though some charcoal flecks were still evident; rodent disturbance or pre-Anasazi burns may account for this deeper charcoal.

Extramural Area 2 produced the smallest number of artifacts of any extramural area (Tables 13-17), but the material included the only animal bone from the site: two large mammal long bone fragments. This area had the smallest volume dug of any area, though the volume dug in Extramural Area 4 is nearly comparable. The indications are that far less activity took place on this side of the structure than on the east side, and that the collapse of the structure was such that cobbles were little displaced from the wall base. That is, gradual disintegration rather than massive collapses characterized the deterioration of the wall.

Extramural Area 3: West and Immediately South of the Room

The waterlines that were a perpetual problem in excavations on the east side of the highway passed to the west of Meadowlark Fieldhouse, and they were therefore less intrusive at this site than they were at other sites. It was, however, difficult to define a use-surface on the west side of the structure, and the waterlines may have played a part in that difficulty. Though they were within the area excavated, the waterlines were not within the area of wall fall, so it seems more likely that absence

of evidence for use resulted from lower levels of activity on the west side of the structure than on the east.

Material is relatively sparse in Extramural Area 3, though the lithics from the area make up 16 percent of the site total while the sherds are only 10 percent of the total ceramics (by count; see Tables 13 and 14). As discussed below (Material Distribution), there is some indication that early stages of lithic reduction may have taken place in this area, though only on a very limited basis.

Extramural Area 4: South

34N/62E 1-by-3-m Trench. The modern ground surface material distribution clearly showed that some activity had taken place south of the structure (Fig. 24). Lancaster placed a 1-by-2-m trench in this area of concentration (Test Trench 1), and we dug a 1-by-3-m trench in the same area (34N/62E). The surface in this area was washed hardpan rather than the grasses and loose sand prevalent on the site; the concentration of artifacts here probably resulted from deflation of a deposit close to the surface. Our trench was at the edge of the hardpan. The trench was excavated in arbitrary 10-cm levels; the first and second levels contained two natural strata. In the western end of the trench there was fine, loose sandy surface duff, almost entirely within Level 1, and only in the west end of the trench. Underlying this layer and corresponding largely to Levels 1 and 2, is a more compact, sandy stratum that contains some charcoal and occasional small pebbles. This layer meets the surface in the hardpan area on the east end of the trench, and underlies the surface duff on the west end. Within this stratigraphic unit a depression containing 50 to 75 cobbles 5 to 15 cm in diameter was encountered. A few sherds and lithics were mixed in with the rock. The rock was unmodified, and no organization was apparent. The source and significance of these cobbles is unknown. It is conceivable that they are in a filled drainage channel, but it seems equally likely that they were placed here by the site occupants. At around 20 cm below the present ground surface, the matrix becomes more compact, contains more calcium carbonate, and lacks charcoal except in rodent burrows. This stratum, interpreted as culturally sterile, corresponds more or less with the base of Level 2; the trench was reduced to 1-by-1 m in the west end, beneath the rock-filled depression.

Just what activity took place here is difficult to interpret. The location would be a common one for a trash dump, but the actual quantity of material is small, and the matrix looks clean. If it had been a midden area, it has long since deflated. The sherds at this location are on the whole very small: the mean sherd weight for the whole site is 6.1 g (st.d.=8.2), but the mean weight for this provenience is 2.5 g (st.d.=1.6), with a maximum weight of 6 g. This small size is likely to have resulted from having spent long periods on the ground surface. Debitage in this area is also smaller than average with a mean weight of 4.6 g (s.d.=8.0), compared with a mean of 9.0 g for the whole site (s.d.=28.1). All but one flake in the area'sdebitage is chert or siltstone. Slightly more than half thedebitage in the area is chert, though for the total site 64 percent of thedebitage is siltstone. The mean size for chertdebitage at the site is 4.8 g, while siltstone flakes average 10.8 g. Therefore, it is likely that the smaller size ofdebitage in Extramural Area 4 is due partially to behavioral factors relating to material use and activity, and partially to surface exposure, as with the ceramics.

38N/59E, 1-by-3-m Trench. This trench was placed midway between the cobble mound and the area of relatively high artifact density to look for deposits or features that might link the two areas. While grasses and loose surface sand were absent at 34N/62E, both were present at this trench location; no artifacts were collected from the surface of the 3-by-3-m grid that includes this trench. The trench was excavated in arbitrary 10-cm levels that revealed four stratigraphic units. The strata include loose, sandy modern surface material up to 8 cm thick, underlain by a more compact mixture of silt, clay, and sand containing some organic material. A stratum more purely composed of sand has an irregular interface with the overlying clayier unit. Rodent activity is abundant in this sandy matrix, and the irregularity of the interface is probably at least partially caused by krotovinas. The basal deposit is also sandy and contains a few pebbles. Sparse lithics and ceramics were recovered

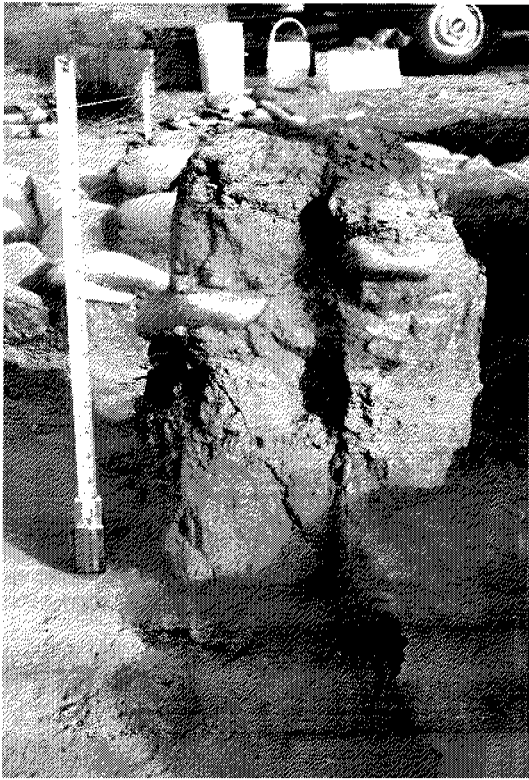


Figure 25. LA 37589 room fill stratigraphic balk in the north end of the room showing eolian fill around cobbles down to culturally sterile substrate (tape extended to 42 cm).

to a depth of 40-45 cm below modern surface, and the artifacts may be reasonably assigned to the second stratigraphic unit. This area of the site, then, appears to have seen little Anasazi use. The materials present show only light scatter probably resulting from reworking of materials.

Structure: Room 1

Time reduced the structure to a cobble concentration with very few intact courses (Figs. 20, 25-28, 30).

Fill

The fill of the structure is entirely materials from structural collapse, eolian deposition, and vegetal material. Its depth is variable across the room, reaching a maximum of around 40 cm in the north part of the room around the one large shrub growing on the structure. A balk left near the northwest corner of the room was composed as follows: 6-7 cm of root zone and vegetal material from the greasewood, underlain by 9 cm of rubble and further roots, resting on 12 cm of mixed sand and clay (presumably mortar), 6 cm of sandier fill, and, in the vicinity of the use-surface, 8 cm of very sandy material that is the

interface with the culturally sterile substrate (Fig. 25).

Within the area of structural debris, fill both inside and outside the room is generally the same. Quantities of clayier or siltier matrix interfinger with sandier areas. Presumably this variation represents the timing of deposition of mortar, either through collapse of sections of masonry or through erosion of the mortar. This process meant that fill hardness varied, and that occasional use-surface-like areas were encountered. Cobbles were of course most abundant near the walls (Fig. 26); vertically they were most abundant in the second level below ground surface.

The processes involved in the formation of these deposits are complex, even though the amount of fill and the differentiation in layers are small. Quite clearly, the sequence of deposition was construction, a relatively brief period of probably episodic use, followed by a somewhat longer period of structural disintegration, followed in turn by a much longer period of natural filling, nearly all through eolian deposition. The structural disintegration phase contributed an amount of fill disproportionate to its duration. Its duration would have been finite and relatively short because the structure would have fallen down to such an extent that it would have been stable.

Under a simple accumulation scenario, this sequence would produce a use level with refuse, a structural collapse level, and a natural fill level. The presence of artifacts in construction or on the roof would complicate this sequence somewhat. Artifacts are, however, on the modern surface as well as throughout the fill. Several factors could have contributed to this distribution: rodent activity is common at the site; sporadic use of the site could have taken place after disintegration of the structure had begun or even after the structure was fully collapsed; prehistoric or historic human disturbance may also have contributed to this distribution. Other than the abundant rodent disturbance, the only direct evidence for such subsequent uses is this mixed distribution of materials, which suggests that if they took place these uses were minor.

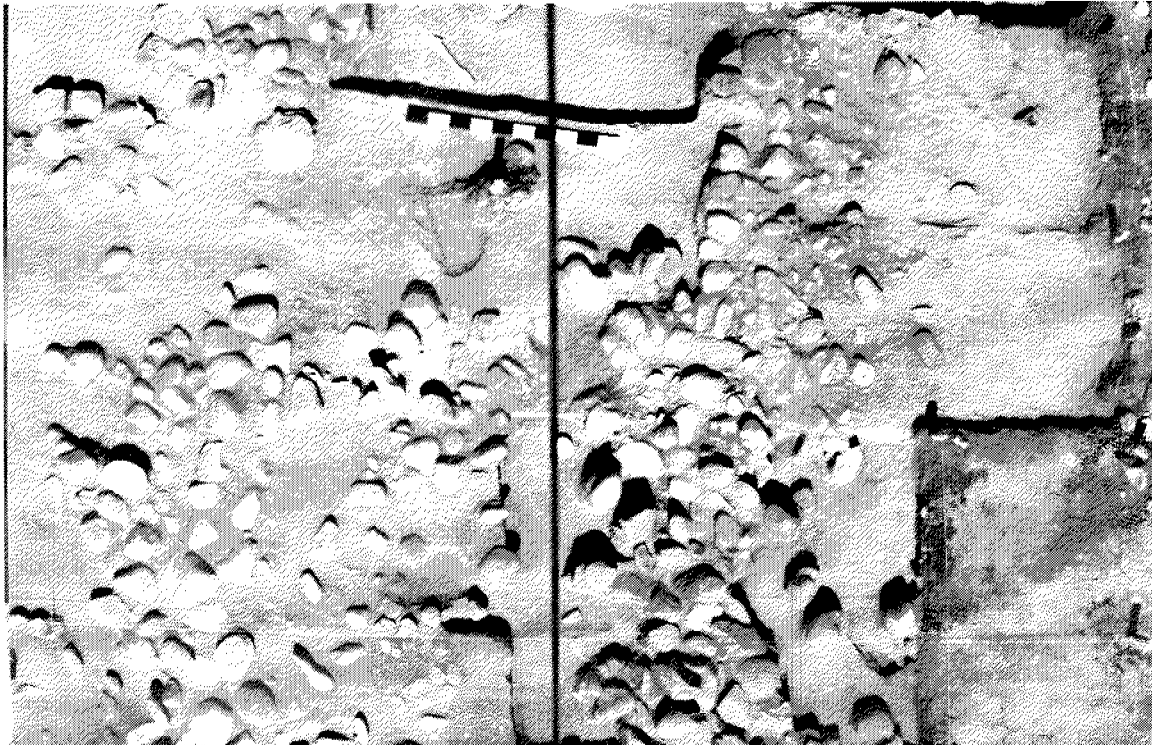


Figure 26. LA 37589 cobble distribution, bipod shot before removal of wall fall; east and west wall alignments are visible within more jumbled cobbles; east wall is near center of frame, right of the straight, thin shadow of the bipod leg.

The artificial levels at the site are of course not precisely comparable, but they do correspond roughly to depths below ground surface that in turn are more or less stratigraphically comparable. In the extramural areas the first level contains the greatest quantity of both ceramics and lithics, but in the room/mound contexts, the second level contains more material. Level 3, which corresponds approximately to the fill of the uppermost floor in the room and the base of which was defined as a stratigraphic change rather than a level, contains very little material of either kind. Levels 1 and 2 contained most of the rock around the structure, while Level 3 contained little. Level 2, then, probably represents an intermixture of lower wall fall and by-products of the use of the structure (*"de facto refuse"*). The absence of structural debris probably accounts for the shallower material occurrence away from the structure. Level 2 contained two pieces of eggshell, some of the only faunal material at the site.

Walls

The cobble walls of the structure are heavily reduced—all but the north wall have only the base course remaining in place (Table 20). There is, however, little question that the base course has been correctly identified, since it is clear from profiles that a single row of large cobbles was placed in a shallow trench, probably with some earthen buttressing (Fig. 27). No breaks in the wall for a door were found; presumably the room was entered by stepping over the bottom course or two.

Most of the base course of the room was built by arranging a row of cobbles in a rectangle in a shallow (varying in depth from 3 to 15 cm where recorded) trench (Fig. 28). The cobbles were placed such that the long dimension of most spanned the width of the wall; these are thus fairly large cobbles, as the walls range from 29 to 40 cm in width. At least in the base course, the rock is laid quite tightly; in some sections flatter cobbles are tipped up against one another like fallen dominoes (see Fig. 27). The base course of some sections of wall was formed by placing two cobbles side by

side, rather than by spanning the entire thickness of the wall with a single cobble. The largest maximum dimension recorded for a cobble is 36 cm, but the majority of cobbles are less than 30 cm. At least at the base course, it is likely that a coat of mortar/plaster extended the thickness of the walls several centimeters past the dimension of the rock. Table 20 gives the interior dimensions of the surviving walls and their thicknesses.

Table 20. Standing Wall Measurements

Wall	Courses		Width	Height		Thickness	
	Min	Max		Min	Max	Min	Max
North	3	3	1.81	.22	.35	.31	.36
East	1	2	3.75	.23	.34	.29	.40
South	1	2	1.90	.28	.33	.33	.36
West	1	2	3.65	.16	.27	.31	.36

North Wall. As the most nearly intact wall in the structure, this wall *probably* gives the best idea about original construction of the room. The wall is constructed of a row of large cobbles approximately at ground/floor level, probably sitting in a shallow wall trench (inferring from the east wall), with a second course of larger cobbles on top. At the level of the top of the bottom course there is a row of much smaller cobbles that runs the width of the interior of the room (see Fig. 27). This row of smaller cobbles is somewhat problematic in that it overhangs the level of interior "floors," being 12-15 cm above floor level, and overhanging 3-5 cm. At first glance it might seem that our floor levels were over-excavated by 12-15 cm, but there was no indication of an occupation level at the elevation of the small rocks. It therefore seems more likely that the walls had some form of earthen buttress at the base that had a row of small rock set into it at the north wall. This pattern was repeated at the north end of the exterior of the east wall. The buttress was not detected elsewhere during excavation and therefore was either not present or was simply earth (rather than mortar) without small cobbles placed in it.

East Wall. The east wall retained the second course in some areas but was primarily one course at the time of excavation. Dissection of a 1-m section of the east wall showed six full cobbles and parts of two others at either end of the meter. The cobbles in the base course are similar in size and shape, ranging from 22 to 24 cm in length, 8-13 cm in width, and 6-8 cm in thickness. Unweathered mortar is very hard and clayey and appears to extend outside the area of the masonry, perhaps as a part of the buttress suggested above. The shallow wall trench is clearly indicated here (Fig. 28).

South Wall. The south wall incorporated a few larger cobbles than the norm in the other walls. It was otherwise quite similar, though definition of the exterior of the southwest corner of the room was somewhat difficult. The larger cobbles could have served as a threshold for a door, but there was no further indication of a door.

West Wall. The west wall contains some segments of parallel-laid cobbles in the base course. Again, while some coursing survives, most of this wall was also a single course high at the time of excavation.

Corners. Both the materials and the reduced state of the walls make determinations of abutment difficult. Since this is a single room and based on what *is* visible, it is highly probable that the walls were all built at the same time and simply bonded with mortar rather than any form of masonry bonding (Fig. 29). Since the corners were not dissected and the southwest corner was somewhat jumbled, our knowledge of the construction of the corners at the basal course is not complete; from what is known, the corners seem nothing more than changing the direction of the wall.



Figure 27. Construction of Room 1, north wall; note row of small cobbles placed at wall base at interior floor level.



Figure 28. Foundation of the east wall of Room 1, LA 37589; cobbles have been placed in a shallow trench.



Figure 29. Southwest corner masonry and subfloor test, Room 1, LA 37589.

Volume of Rock. This structure could have had full height cobble walls or a combination of masonry at the base with a jacal superstructure. Since this is a single room, calculation of rock volumes allows an educated inference concerning this question. D. A. Breternitz (pers. comm. 1988) and others have suggested that the walls were composed of a masonry base with jacal superstructure, based on eyeball estimates of the quantity of rock at the site. No posts or other evidence survive in the intact portion of the north wall to support that opinion, but an effort to calculate volume of rock at the site does lend support to the less-than-full-height wall idea. The room has 14.2 linear meters of wall; using an average thickness of .30 m and a height of 1.75 m (5 ft 9 in) the total volume of the walls would have been about 7.45 cu m. If about a third of the volume was mortar, the volume of cobbles would have been about 5 cu m if the walls were masonry for the full height. Measurement of rock taken from excavation and those lying on the modern surface came to a total of around .85 cu m, not counting the rock in the intact walls. Though our volume measurement is very rough, it is unlikely to be off by a factor of five. Therefore, it seems that either the walls were very much shorter than 1.75 m or, more likely, that they incorporated a substantial quantity of perishable material. The mortar estimate is also of course important. Though heavy use of mortar is likely or even essential given the use of cobbles, the intact sections of wall in the room suggest that one-third mortar is a reasonable estimate. My perspective as someone clearing and carrying the rock in this structure was that it was quite a bit of rock—perhaps enough to build a full height room, but the measurements, crude as they are, convince me, that full height masonry probably was not present.

Fallen rock outside the structure suggests masonry less than 1 m high (Fig. 30), but rock also fell in the interior. The greatest quantity of wall fall is to the east of the southeast portion of the room, suggesting that a major collapse may have taken place in that direction.

Because we know nothing of the upper walls, we know nothing of the room's roof. No postholes, fallen beams, or other roofing materials were detected.



Figure 30. View of Room 1 to the northeast with excavations and subfloor testing complete.

Floors

Prepared floors were not found at LA 37589. While a use surface could be identified east of the room, the structure's interior "surfaces" are best characterized as use zones with only occasional patches of identifiable use-surface. The lack of preparation, the sandiness of the soil, the shallowness of the deposits, the presence of root, rodent, and insect disturbance, and the apparently light use of the structure all meant that attempting to identify floors was slow and frustrating work. We identified three levels we termed floors inside the structure. These were identified as floors based on subtle changes in color and hardness, on the presence of flat-lying artifacts, on the level of wall bases, and on the presence of features. Of these, Floor 2 is the most confidently identified, but none of the "floors" is continuous across the entire room, and the floors probably do not represent a straightforward sequence of room use.

Rodent disturbance was worse inside the south half than the north half of the room. The substrate of the room was a little higher in the north than the south, and it appeared that the floor level had been raised somewhat in the south. Perhaps this fill was more prone to rodent disturbance than the undisturbed substrate of the north.

After hearing our complaints about the difficulty of finding use-surfaces, Tim DeWitt of the New Mexico State Highway and Transportation Department conducted some nuclear densimeter (an instrument used to gauge compaction during road construction) tests at several locations on the site. Though we have no other such data from archaeological sites with which to compare his results, the results were interesting. Predictably, the areas we cleared as use-surfaces were considerably more compact than unexcavated areas. More tantalizingly, the apparatus, which can take readings to an accuracy of a hundredth of an inch (.025 cm) did show zones of increased compaction within the

room. Readings in the north part of the room suggest greater compaction than in the south end, but two zones of compaction about 5 cm apart were detected in the south end. Possibly, this difference represents the filling below the south end floor mentioned above. Compaction of the sterile level below our floors and of the undisturbed substrate of the north end of the site was considerably less than that of the floor. Again, we do not know enough about this machine or its archaeological use to evaluate these results, but it seems possible that the machine could have archaeological applications.

Dimensions of the room are shown in Table 20. Averaging the two sides the total outside area of the structure is 10.76 sq m, and the inside area is 6.40 sq m. Assuming that Pilles used interior dimensions, this size places it among the larger Sinagua fieldhouses he reports (Pilles 1978:122, 125), but within the less than 7 sq m he discusses for the majority of Sinagua fieldhouses.

Floor 1 (Fill is Level 3). The identification of this floor is based on the presence of Feature 1 and a change in stratigraphy. The use surface is characterized by mottled clay and sand and scant charcoal flecking. There is a definite possibility that this surface marks a stage in the decomposition of the walls immediately postdating the use of the room. The base of Level 3, which corresponds to the excavators' best estimates of where a break occurred, was remarkably similar in elevation, ranging from 0 to 5 cm below the site datum, and forms the *de facto* definition of Floor 1. Sherds and lithics are few from Level 3, but it is likely that a few sherds from the concentration of corrugated sherds in Level 4 were associated with Floor 1.

Subrectangular Pit (Feature 1). This feature is a fairly large unburned pit in the northwest part of the room (Table 21). One side of the pit is formed by the west wall (see Fig. 22). The fill is similar in color to that of the structure, and consists of sand with some charcoal and calcium carbonate specks and a few small cobbles. The excavator noted that it was perhaps somewhat softer than the general fill of the room. A 3-cm-thick zone of sand was defined on the top, underlain by 9 cm of clay-sand mix; the base is formed by compact clay and sand, probably culturally undisturbed substrate. Rodent disturbance complicated understanding the feature somewhat, and as the pit contained only a single corrugated sherd and one piece of burned sandstone, artifactual clues to the feature's function are scant. Storage and construction seem the two best possibilities. The lack of preparation and the absence of evidence for any means of closing the pit support the interpretation that the pit was construction-related, though the pit was apparently not sealed by a use-surface. A scan of the flotation material from this feature revealed borage, cheno-am, and *Echinocereus* seeds, all unburned. The cheno-ams and the borage are likely to be contaminants, especially since borage is unpalatable and promiscuous, whereas the hedgehog cactus seed is more likely to represent use at the site (M. Toll, pers. comm.).

Floor 2 (Fill is Level 4). A darkened soil area and a concentration of sooted corrugated sherds were discovered a very short distance (0.5 to 3 cm) beneath the surface cleared as Floor 1 near the center of the room. These signs of use made it clear that while Floor 1 was somewhat tenuous, this underlying stratum was quite definitely a use-surface. The area of best definition was around the north side of Feature 2. Initially collected as part of a level within the room, the sherds from around Feature 2 were later determined to be associated with the feature. Thus, about a fifth of the sherds from the site come from the area attributed to Floor 2.

Table 21. Room 1, Floor Features

Type	No.	Plan	Section	L	W	D	Fill
Floor 1 Pit	1	rectangular	rectangular	0.90	0.66	0.14	sandy, 3 layers
Floor 2 Pit	2	circular	hemispherical	0.61	0.60	0.23	sandy, 2 layers

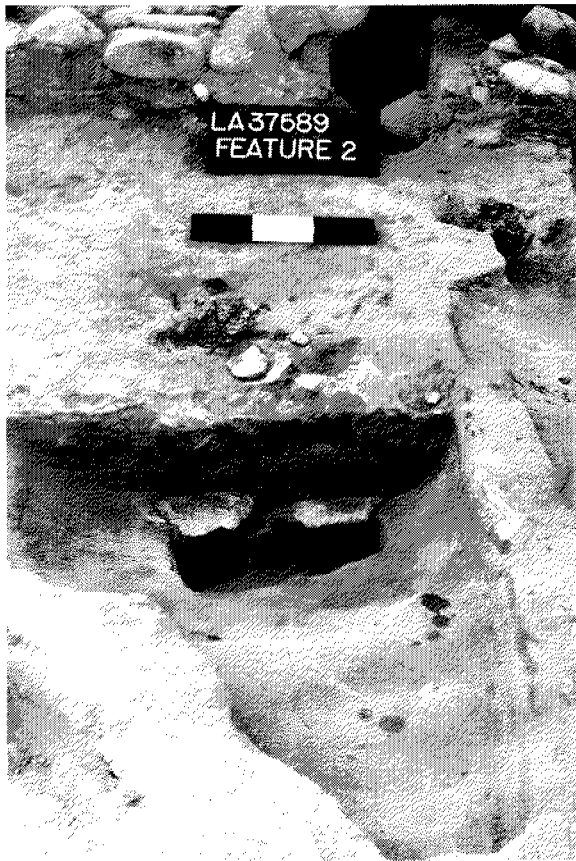


Figure 31. Feature 2, central basin profile, showing ground stone plastered into base of pit.

Central Basin (Feature 2). The basin-shaped pit at the center of the room is regularly shaped and obviously intentional (Table 21; Fig. 31). Morphologically this pit looks like an unlined firepit, but the feature itself lacks any evidence of having been burned, and the fill contained only a little charcoal. The darkened soil mentioned above may well have resulted from a small fire, but this fire was either in the fill of, or adjacent to, the pit. The pit contains a carefully shaped, well-made two-hand mano with one pecked and ground face, a metate fragment, and 133 sooted, corrugated sherds. The mano is unburned and appeared to have been plastered into place. The sherds vary widely in size and represent a large piece of a sizable vessel, but not the whole vessel. Though the mano and the metate fragment suggest that grinding activity was associated with the feature, the only conceivable function for the pit as part of a grinding complex would be as a catch basin, for which it seems large (60 cm in diameter). Unburned basins at the centers of rooms have also been found at sites LA 37592, LA 37599, and LA 37606. As appears to be true here, these pits are found below the latest floor. It has been suggested (S. Schlanger, pers. comm.) that such pits may have been part of the construction

process, perhaps for mixing mortar, though it is also possible that they had a storage function (M. Charles, pers. comm.). The careful placement of an intact, still-useful mano in the bottom center of the feature suggests either tool storage or closure of the feature and perhaps the room. A flotation sample from this feature produced only burned juniper twigs.

Floor 3 (Fill is Level 5). The evidence for the existence of this floor is scant. There is a fill change below the level of Floor 2, and there are a few artifacts. If this change does represent a floor, that floor was very clean, and the only feature present would have been Floor 2, Feature 2. The association of the feature with the floor is tentative due to poor definition of both floors and the small amount of fill between them. Rather than a room use-surface, this fill change probably represents the surface exposed at the beginning of room construction. Given the postulated raising of the level of the south end of the room, this surface would have been covered prior to any use of the room.

Material Distribution

Relative to most archaeological excavation collections, the assemblage from Meadowlark Fieldhouse is very small: a total of 642 ceramic items were collected, along with 219 lithic items, 10 pieces of ground stone, 2 long bone fragments, and 2 pieces of eggshell. The ceramic and lithic collections total only 3-4 kg each.

In general, materials are distributed by area very close to the statistically expected distribution as defined by overall occurrence of various categories on the site (expected determined as row total multiplied by column total, product divided by the table total giving the cell expected). Of the 642

sherds in the site collection, 45 percent were recovered from wall fall and room context, the remainder being from extramural areas (Table 13). When subdivided into types, many ceramic categories are too small to be meaningfully compared. The one item that stands out as an exception is that plain gray sherds are far more abundant in the extramural areas than they are in association with the room, where they are scarce and none are in floor contexts. When broken down further by extramural area, Extramural Areas 3 and especially 4 show somewhat greater than the expected occurrence of plain gray. The average size of the plain gray sherds (2.5 g) is much smaller than the average sherd size for the site, and the same as the sherd size in the sherd concentration in Extramural Area 4. Almost all the plain gray sherds come from the present ground surface and half of the extramural plain gray is from the concentration area in the south part of Extramural Area 4. These areas south of the room, then, could include a contribution from an earlier component, but that contribution is in the form of very small sherds, and is mixed with other materials since the plain gray is from the surface and upper two levels. Given the absence of any early decorated types, it is also possible that this plain gray represents normal gray ware variation within a Pueblo II assemblage (Tables 22-25).

Decorated wares are far more common in the room than in the extramural areas. Bowl sherds are unusually few at the site. The bowls present are markedly concentrated in the room fill (Table 24). The even-greater-than-usual emphasis on closed forms such as cooking and storage jars at this site is further indication of its special use. Within the room there are some differences in material distribution, and the presence of some sherd concentrations suggests that remnants of some behavioral patterning may have survived. More material was recovered from the east side of the room. Bowl sherds, which are relatively rare, occur mainly in the east side, concentrated in the southeast. The concentration of jar sherds in association with the room's central basin feature, are in the north portion of the room, though they are tabulated with the general room fill. Debitage is evenly distributed in the room quadrants, but cores occur only in the east half of the room.

Substantial portions of three recognizable vessels were retrieved from within the room: a corrugated jar associated with the central basin (Feature 2), a Mancos Black-on-white olla found in several large pieces near floor level, and a single sherd representing around a third of a polished-smudged interior, corrugated exterior, brown ware bowl. This last vessel, from the southeast part of the room within the use level zone, is an import from the Mogollon area, and it is a type seen in no other La Plata Highway site assemblage. Given that the surrounding area was intensively excavated, the fact that only a single large sherd was found is intriguing. It may be that this unusual sherd was collected or heirloomed prehistorically and brought to this site rather than that this unusual vessel was used and broken here.

Of the 143 sherds examined for temper, almost all of the gray and red ware contains igneous temper (Table 25). The gray wares are probably local, the red wares probably are not. There are five sherds tempered with trachybasalt, making up 3.5 percent of the sample analyzed for temper. In the overall sample, only 0.5 percent is this Chuskan temper. In addition to trachybasalt, the majority of the white ware sherds examined contain sherd temper, especially unmixed sherd temper, indicating that some may be nonlocal. Examination for temper was undertaken to determine possible imports rather than to establish an overall temper profile.

Other than a couple of concentrations of sooted gray ware sherds in the center of the room and on the contemporaneous Extramural 1 use-surface east of the room, and the likelihood that the white ware olla represents water storage in the room, material distributions give little indication of locations and types of activities that took place at the site. Well over half by count (Table 24; also by weight) of all the sherds recovered are from closed forms. Though only a single burned feature was excavated at the site, sooting of gray ware vessels is present, suggesting either that cooking took place at some distance away from the structure or that cooking vessels were brought to the site from elsewhere. The dominance of closed forms also suggests an emphasis on storage rather than on serving food.

Table 22. LA 37589, Ceramic Types by Room Quadrant

	Northeast		Southeast		Southwest		Northwest		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	%
Plain Rim	1	5.9							1	1.3
Pueblo II Corrugated	1	5.9	1	3.1	1	4.6			3	3.9
Pueblo II-III Corrugated										
Plain Gray										
Corrugated Gray	13	76.5	17	53.1	16	72.7	5	83.3	51	66.2
Red Mesa Style Black-on-white										
Pueblo II Black-on-white	1	5.9								
Dogoszhi Style Black-on-white	1	5.9			3	13.6	1	16.7	5	6.5
Pueblo II-III Black-on-white					1	4.6			1	1.3
Pueblo III Black-on-white										
Polished White			9	28.1	1	4.6			10	13.0
Polished black-on-white			3	9.4					3	3.9
MV Deadman's Black-on-red										
MV Black-on-red			1	3.1					1	1.3
Reserve Indeterminate smudged			1	3.1					1	1.3
Total	17		32		22		6		77	

Table 23. Artifacts Found in Features

Material	Feature 1 Rectangular Pit	Feature 2 Central Basin	Feature 3 Burned pit	Feature 4 Pit
PII-III Corrugated		1		
Corrugated Gray	1	132		
Polished White				1
Debitage				1
Ground Stone		4		
Pollen and Flotation		juniper twigs	juniper twigs 25 seeds	

Chipped stone raw materials and artifact types follow overall expected distributions by provenience even more closely than do ceramic types. Expected frequencies of artifact type are controlled by the unutilized debitage category that constitutes 89 percent of the 219 chipped stone items. Distributions proportional to occurrence are also clearly visible in raw material frequencies

Table 24. LA 37589 Provenience by Vessel Form

	Room Gen		Room FI 1		Room FI 2		Exmur 1		Exmur 2		Exmur 3		Exmur 4		Total		
	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	%	
Bowl rim	4	2.7										1	1.5			5	.8
Bowl body	22	14.7					4	4.0	3	8.6	1	1.5	5	3.5	35	5.5	
Olla rim	1	.7	2	20.0											3	.5	
Cooking, storage rim	10	6.7			1	.7	1	1.0			2	2.9	7	4.9	21	3.3	
Cooking, storage neck	1	.7	1	10.0			3	3.0							5	.8	
Necked jar body	9	6.0	2	20.0	28	20.7	6	6.0	2	5.7	1	1.5	5	3.5	53	8.3	
Jar body	81	54.0	3	30.0	106	78.5	85	85.0	30	85.7	62	91.2	127	88.2	494	76.9	
Bowl or jar body	16	10.7	1	10.0											17	2.6	
Ladle bowl	1	.7					1	1.0							2	.3	
Group Total	150	100	10	100	135	100	100	100	35	100	68	100	144	100	642	100	

Table 25. LA 37589, Tempering Materials

	Gray Ware		White Ware		Red Ware		Brown Ware		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %
Igneous	104	96.3	6	21.4	5	83.3			115	80.4
Igneous and sand	1	.9			1	16.7			2	1.4
Sherd			14	50.0					14	9.8
Igneous and sherd			1	3.6					1	.7
Quartz and sherd							1	100.0	1	.7
Quartz sand, sherd			5	17.9					5	3.5
Trachybasalt	3	2.8	1	3.6					4	2.8
Trachybasalt, sherd			1	3.6					1	.7
Group Total	108	100.0	28	100.0	6	100.0	1	100.0	143	100.0

Table 26. LA 37589 Lithic Material by Form (Count and Weight)

	Debitage		Core		Retouched		Hammerstone		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	%
By Count										
Chert	48	24.7	5	35.7	3	30.0			56	25.6
Chalcedony	1	.5	1	7.1					2	.9
Silicified wood	8	4.1	1	7.1	1	10.0			10	4.6
Quartzite	1	.5					1	100.0	2	.9
Quartzitic sandstone	10	5.2							10	4.6
Siltstone	126	64.9	7	50.0	6	60.0			139	63.5
Total	194	100.0	14	100.0	10	100.0	1	100.0	219	100.0
By Weight										
Chert	231	13.2	134	9.8	137	32.9			502	13.1
Chalcedony	1	.1	15	1.1					16	.4
Silicified wood	43	2.5	27	2.0	5	1.2			75	2.0
Quartzite	3	.2					290	100.0	293	7.6
Quartzitic sandstone	115	6.6							115	3.0
Siltstone	1362	77.6	1198	87.2	274	65.9			2834	73.9
Total	1755	100.0	1374	100.0	416	100.0	290	100.0	3835	100.0

within artifact categories (Table 26). Material types are dominated by siltstone and chert (63 and 26 percent respectively). Only *minor* deviations from the expected are present in material types: more siltstone and less chert than expected occur in General Room 1 and Extramural Area 1, and more chert and less siltstone in Extramural Areas 3 and 4. S. Larralde points out that although debitage to core ratio seems relatively high (13.9), the occurrence of hammerstones is remarkably low (only 1 hammerstone and 14 cores).

The debitage from the area west and immediately south of the room (Extramural Area 3) is on average larger than the debitage elsewhere on the site. The number of cores and utilized or retouched

debitage is also somewhat higher than might be expected given other materials and area excavated, and the only hammerstone recovered is from that area as well. This distribution suggests some preliminary lithic reduction took place outside the room in this area, though no activity area was recognized during excavation. The amount of material is such that this reduction could have been a one-time event rather than repeated use of the area for flaking. The fact that half the utilizeddebitage comes from this area also points to a lithic activity area west of the structure.

Given the small quantities of other classes of material, ground stone seems abundant at nine pieces. Over half of these are shaped slabs, three of which were found both inside and outside the room in its immediate vicinity and two of which were southwest of the room on the modern surface. The slabs are broken into a number of pieces, and are on the whole quite thin. They may have been architectural elements, but look more like they were used for vessel, door, or cist covers. The other half are grinding tools, including two manos, an abrading stone, and a piece of a slab metate. The manos are complete, two-hand manos. One, from within the central basin, is a nicely shaped tool with one heavily ground, pecked face and one lightly ground face. Also present in the central basin were two ground slab fragments and the only metate fragment from the site. The other mano, from Extramural Area 1, is complete and is probably a recycled piece of a trough metate. Although we may not be able to say much about the activities that took place at this site, the presence of multiple grinding tools shows that plant food processing did take place there.

Except for the central basin in the room (Feature 2) few materials were found in the site's features (Table 23). As noted in the discussion of the feature, the sherds from Feature 2 constitute a fifth of the sherd count from the site and they probably represent a single vessel.

Evidence for faunal use is nearly absent. The shallowness of the site provided poor conditions for bone preservation—we did not recover rodent bones in spite of the abundant evidence of their post (human) occupational use of the site. Thus, the absence of bone does not mean that no fauna was ever present. The presence of eggshell could mean that turkeys were kept here, but the quantity of shell is extremely small. Two large mammal long bone fragments were found in the upper fill of Extramural Area 2, and the eggshell was found in the fill of the room.

While not random, the material distribution suggests that post-occupational factors have obscured clear locations of particular activities. Once again, some of those factors are probably disturbance, but they are also likely to result from just enough use at just enough different times that the remains of single activities became "averaged" across the site. In sum, then, the material from this site seems to confirm a pattern of light usage, but usage that had some duration. The evidence is not clear, however, whether the duration was a question of sequential short uses or one somewhat longer use. The presence of two floors, however indistinct, suggests that uses may have been spread over a longer time, perhaps with longer periods of disuse.

Material from Testing

Lancaster's tables indicate that his two trenches at LA 37589 yielded 26 sherds and 5 lithics. Of the sherds, he found only three identifiable: two Mancos Black-on-white and one "La Plata" (Deadmans) Black-on-red. The remainder were 16 corrugated body sherds, 3 plain gray sherds, and 4 unidentifiable white wares. The lithic materials include 2 chert flakes, 2 "basalt" flakes, and one basalt angular debris fragment. Basalt is in fact uncommon in the La Plata Valley, and it is likely that these items are black metamorphosed siltstone, the most common lithic material recovered during excavation.

Dating

Chronological placement of this site relies strictly on ceramic dating. No tree-ring specimens were recovered and an archaeomagnetic sample was not taken from the single burned feature due to the sandiness of the feature, the nature of the burn, and disturbance. A radiocarbon sample was

extracted from the fill of the feature but was not processed. We were certain that a more reliable date estimate could be obtained from ceramics. The ceramic types present confirm the impression given by the stratigraphic and architectural evidence: this site appears to have been used for a short period. The types present unambiguously place the site in the Pueblo II period. Most of the gray wares are corrugated, but there is a substantial group of plain gray sherds that may have derived from neck corrugated or filleted vessels or plain gray vessels, or perhaps even from overall indented corrugated pots. No clear instances of neck-decorated vessels are present and no early decorated wares are present, suggesting that an early component is unlikely, but the meaning of these plain gray sherds is ambiguous. Corrugated rims are vertical in eight of nine instances, which conforms to placement in Pueblo II, whether neck or overall corrugated. A single sherd with Red Mesa style design is present, and what few other decorated white wares are present are Mancos Black-on-white, the majority of which have hatchured design. The presence of a few sherds with organic paint suggests that the occupation may have been toward the latter part of Pueblo II (late 1000s). All six red ware sherds are from the San Juan series, and the two classifiable red ware sherds present are Deadmans Black-on-red. Tsegi Orange Ware types are absent; they were introduced and begin to replace San Juan Red Ware in the mid-eleventh century.

This distribution of types indicates that the site was in use between A.D. 1025 and 1075 (C.D. Wilson, pers. comm. 1990). Based on the amount of material and the level of apparent use, even the 50-year span indicated by the ceramic types is sure to be too long. Were finer dating resolution possible, the use-span probably would fit within a decade. With the possible exceptions of a very poorly represented earlier component in the vicinity or minimal later visitation, then, the material from this site may be considered an unmixed Pueblo II assemblage.

Due to the shallowness of the site and rodent activity, internal mixing is present. The briefness of use means that this mixing affects only reconstruction of activity at the site, with no effect on its usefulness for comparison with other components. Thus in preparing the provenience files for this site, all proveniences have been assigned an age of middle Pueblo II. The proveniences have been placed in three components: surface material, extramural proveniences, and within Room 1. Because of the low potential for component mixture, most proveniences are coded as being "relatively unmixed" or "unmixed." Though the same is likely to be true for material from the modern surface, this material has been coded as extremely mixed. Any deposit that was considered to be a cultural deposit was coded as unmixed. Some deposits which are either mixtures of natural and cultural deposits or natural deposits, and which might normally be classified as extremely mixed or partially mixed are classified as relatively mixed.

Conclusion

The presence of an isolated one-room structure occupied during Pueblo II before A.D. 1075 gives us a glimpse of a settlement type not seen in other excavations, and raises several questions. Does the brief occupation of this site correlate with the apparently brief uses of larger sites from the same period, or does it represent a use when other occupation of the valley was low? If this site was in fact seasonally used, where was the habitation? Was the habitation the closest contemporaneous Pueblo II site, or was the main habitation for the builders of Meadowlark Fieldhouse farther away? If the structure was in fact a house built for tending the fields, were those fields on this fan, perhaps using the flows in the arroyo that formed it, or were they on the flood plain, or in both locations?

Answers to these questions are beyond our grasp with the data at hand. What we can say about this site is that a substantial structure was constructed with cobbles probably transported to the location from the terrace above and to the west. Some question remains about the height of the walls and whether they contained a jacal component, though some perishable portion is likely if the walls were over 1.5 m in height. Activity at the structure was fairly limited and did not involve a formal hearth, a pattern also recognized for fieldhouses in Arizona (Pilles 1978:125). A full range of ceramic types and forms is present, but the overall quantity of material is relatively small and is skewed

toward storage functions. As is generally true of Anasazi sites in the valley, chipped stone materials are probably mostly local and exhibit little retouch or use. Manos are present, but whole metates are absent, a pattern also observed at more heavily used sites.

Although the artifactual record suggests light use, this room represents more than a negligible amount of labor. Transporting this quantity of rock from the terraces would have taken a few people several days, and acquiring material to roof it would also have been an effort. The resulting room was large comparable to many pueblo rooms: 6.7 sq m, suggesting that it was used by several people at a time. If its purpose was tending fields, several workers could have used the structure, whether from a single habitation, or two or three. The presence of more than one use level indicates use over a number of years, though all within the eleventh century.

Acknowledgments

In approximate order of time spent on the site, the excavation crew at Meadowlark Fieldhouse consisted of R. K. Bradley, C. J. Bunker, A. J. Willmer, J. B. Johnson, S. M. Moga, R. S. North, P. Y. Bullock, J. Fine, and C. A. Hannaford. Analysis of ceramic materials was directed by C. D. Wilson, lithic materials by D. W. Cushman and subsequently by S. L. Larralde (who also reviewed a draft of the report), and faunal remains by L. Mick-O'Hara. S. H. Schlanger's critical reading of an earlier draft of this report was helpful in reducing inconsistencies.

TESTING AND EXCAVATION AT LA 37590: THE GARAGE SALE SITE

Charles A. Hannaford

Introduction

The Garage Sale site, LA 37590, is a probable habitation site consisting of scattered cobbles and artifacts situated on a terrace overlooking the La Plata flood plain to the east. The site is located in the lower La Plata Valley about 3 miles north of the confluence with the San Juan River. The Garage Sale site as a whole includes a substantial occupation including cobble surface structures, but the integrity of cultural material within the construction zone was affected by multiple mechanical blading and plowing episodes associated with use of the locality as a private sales yard fronting the highway. The site name was derived from the "garage sale" character of the locality.

Site testing encountered an intact subsurface cist containing a human burial, and the project right-of-way was modified to avoid this feature. A single extramural firepit was encountered during investigation of the remaining site area in the right-of-way. Collected ceramics suggested a Middle Pueblo II component dating from A.D. 1000 to 1075 for this poorly preserved section of the site.

The site area outside of the right-of-way is on private land owned by L. E. Phillips and Rust Tractor at the time of investigation. Site testing was initiated by a crew of four from September 7 to 11, 1987, with a labor expenditure of 20 person-days. Supplementary investigations of the modified right-of-way from July 18 to 21, 1988, added an additional labor expenditure of 6 person-days. Office of Archaeological Studies personnel involved in the excavations at various times included C. Hannaford and W. Toll (crew chiefs) assisted by P. Bullock, J. Johnson, and A. Martinez, and S. Moga.

Environmental Setting

The Garage Sale site is located on the lowest and geologically youngest terrace on the west side of the valley bottom (Surface 3 of Wells and Enzel 1990; Fig. 32). The steep-sided cobble-covered Jackson Lake Terrace is immediately west of the highway, and the lower flood plain and active channel of the La Plata River are 30 to 40 m to the east. The site is set on the edge of Terrace Surface 3 at an elevation of 1,634 m (5,360 ft). Local alluvial soils include compact sandy clay, laminated fine sand, and natural lenses and deposits of gravel and cobbles. The site surface is almost completely bare with the exception of bindweed plants. Local resources available to the site inhabitants included the close proximity of water and arable land, and a variety of plant, animal, and lithic resources concentrated along the nearby terraces and riparian valley bottom (Fig. 32). An unnamed side drainage cuts through the Jackson Lake Terrace from the west, and it may have provided additional farmland in the form of a sheltered rincón along the terrace edge. Cottonwood Arroyo is a more substantial side drainage about 1.6 km south, and it would have been another close source for various resources.

Archaeological Setting

New Mexico Cultural Resource Information System (NMCRIS) map records show LA 1901 positioned near the Garage Sale site. This is one of the sites recorded by Nusbaum (Chaco 4-75; see Dykeman and Langenfeld 1987; Hannaford 1993), but the accuracy of the map designation is questionable. The site is described as a unit pueblo consisting of a four- to five-room cobble structure, a pit structure 4.5 m (15 ft) in diameter, and a refuse mound. Ceramic collections from the site suggest a Pueblo II ceramic component dating from A.D. 925 to 1025. Surface features are no longer visible at this location because of modern habitation and earth moving. It is likely but not

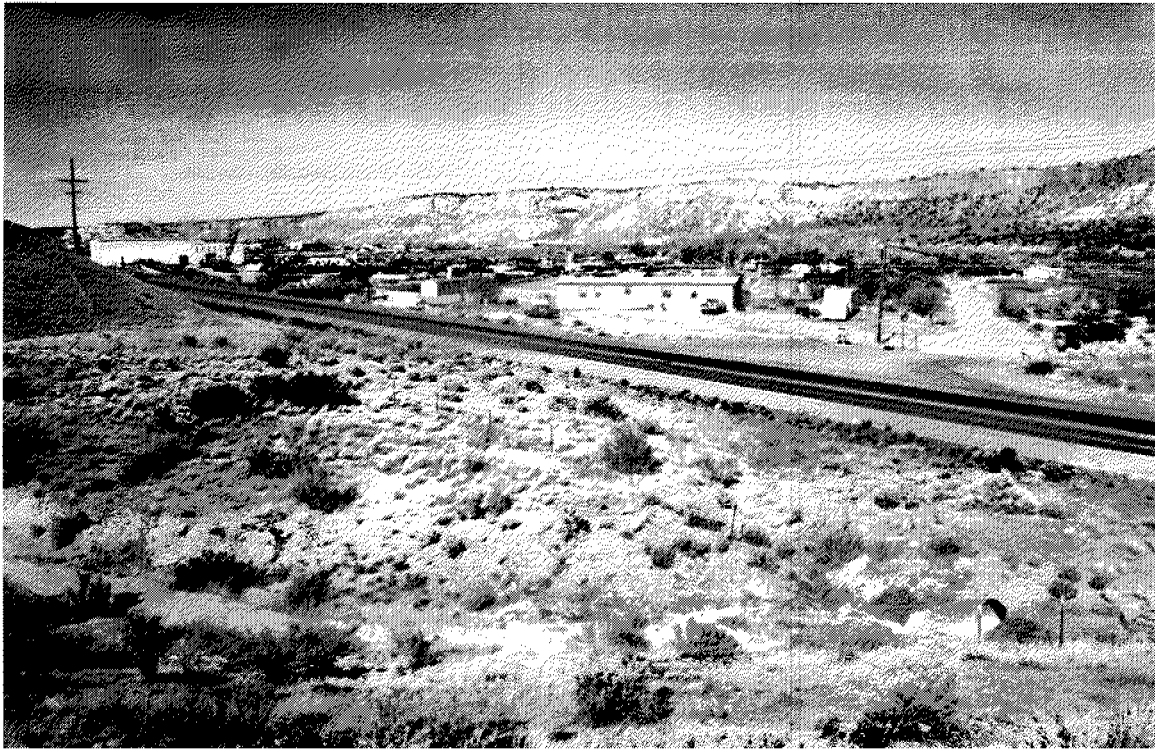


Figure 32. LA 37590 in 1996 after testing and road construction; large trailer at center is located on the site.

provable that LA 37590 relates to the site recorded by Nusbaum.

Site LA 37590 is the northernmost of the site group designated by this project as the Cottonwood Arroyo Group. Residents of houses next to the highway a little less than 1 km to the north of LA 37590 reported finding artifacts when digging a well. Other nearby sites along the highway right-of-way include LA 37589 and LA 37588. Meadowlark Fieldhouse (LA 37589) is located about 40 m south of the arroyo designating the south boundary of the Garage Sale site. Ceramics from this excavated one-room cobble fieldhouse indicate a middle Pueblo II ceramic component dating from A.D. 1025 to 1075. LA 37588 (see above) is about 300 m south of the Garage Sale site, and contains the remains of three cobble room blocks.

Previous Site Recording

Lancaster (1982a:37-38) recorded the Garage Sale site during the original highway survey. He reported a high density of cobbles and artifacts, and the areal extent (75-by-50 m) suggested a fairly large site. However, the site area within the right-of-way was not considered intact, and Lancaster recommended no further data collection.

Toll and Hannaford (1997) increased the areal extent of the site to 110-by-70 m since it was clear that archaeological materials extended to the east of the right-of-way. Testing was recommended because of the quantity of observed cultural material. Subsequent testing verified the presence of intact subsurface material represented by a cist containing a human burial. Right-of-way modifications preserved this feature outside of the construction zone, and further backhoe trenching and surface blading were recommended for the remaining portion of the site in the project area.

Site Condition

Several modern land-altering activities have affected the integrity of the portion of the site within the right-of-way. Close proximity with roads has exposed the site to long-term maintenance activities along both NM 170 and San Juan County Road 1550 branching eastward across the site. Various utility trenches including phone, gas, and waterlines parallel the east side of the highway, and extend through the length of the site. The most severe land alteration has resulted from mechanical leveling of the terrace surface for use as a sales yard. The landowner recalled no mounds in the area before the leveling, but soil pushed over the north terrace edge appeared to contain cultural material derived from this mechanical activity. Two storage sheds were built on the site (one on a concrete slab), and a multitude of sales items was placed at the locality. Repeated episodes of blading and plowing associated with the sales yard have tended to both spread and churn artifacts.

Field Methods

The primary site datum was established at 50N/50E with an arbitrary elevation of 0.00 m (Fig. 33). The north-south baseline extending from this datum was aligned with the highway right-of-way, and does not designate magnetic or true north. The edge of the originally proposed right-of-way extended along the 50E line; the new right-of-way was subsequently realigned along the 46E line to avoid the human burial encountered in Test Trench 3. The edge of the right-of-way measured 20 m east of the existing pavement edge.

The surface area within the right-of-way was collected using 3-by-3-m grids provenienced from the northeast corner. This grid identification system (also used at LA 37588) is contrary to the remainder of the project, and did not comply with the computer coding for the project. The files have been modified such that the datum is now 50N/50E, and grids are identified and coded by the southwest corner (for example, the 3-by-3-m grid identified as 3S/6W in the original system is now 44N/41E, and the grid that was 36N/9W is now 83N/38E). An additional 19 artifacts from around the edges of the grid system were individually plotted (Table 27).

Subsurface investigations were initiated during the testing phase by the excavation of four judgmentally placed 1-by-2-m trenches. Trenches 1 and 2 were located in areas of artifact concentration, and Trenches 3 and 4 were spaced between these trenches (Fig. 34). The grid-oriented excavation units were excavated manually in arbitrary 10-cm levels, and fill was screened through quarter-inch mesh. The test units established that subsurface cultural fill was shallow and mixed. However, the testing program successfully verified the presence of an intact subsurface burial and cist below the severely altered surface material.

Subsurface investigations continued with the excavation of three backhoe trenches across the site. Backhoe Trenches 1 and 2 were not placed in reference to the grid system. They were positioned at the north and south ends of the site and were oriented east-west between the edge of the highway and the right-of-way fence. The trenches were both about 4 m long, and were dug to a depth of 60 cm below the surface. No subsurface cultural material was encountered by these trenches.

Backhoe Trench 3 was a 59 m trench dug across the main site area, with an additional 15 m segment south of CR 1990. Backhoe Trench 3 was 90 cm wide, and was dug to an average depth of 1.50 m below the surface. The trench encountered only a single extramural firepit. The firepit was excavated by hand, and the fill screened through quarter-inch mesh.

Archaeological investigations concluded with the mechanical blading of the site surface within the right-of-way. The various excavation units confirmed that cultural material was shallow, and that any subsurface features should be apparent within 10 to 20 cm below the surface. The site was bladed in 5-cm levels to a depth of 25 cm below the surface, and no additional features were encountered.

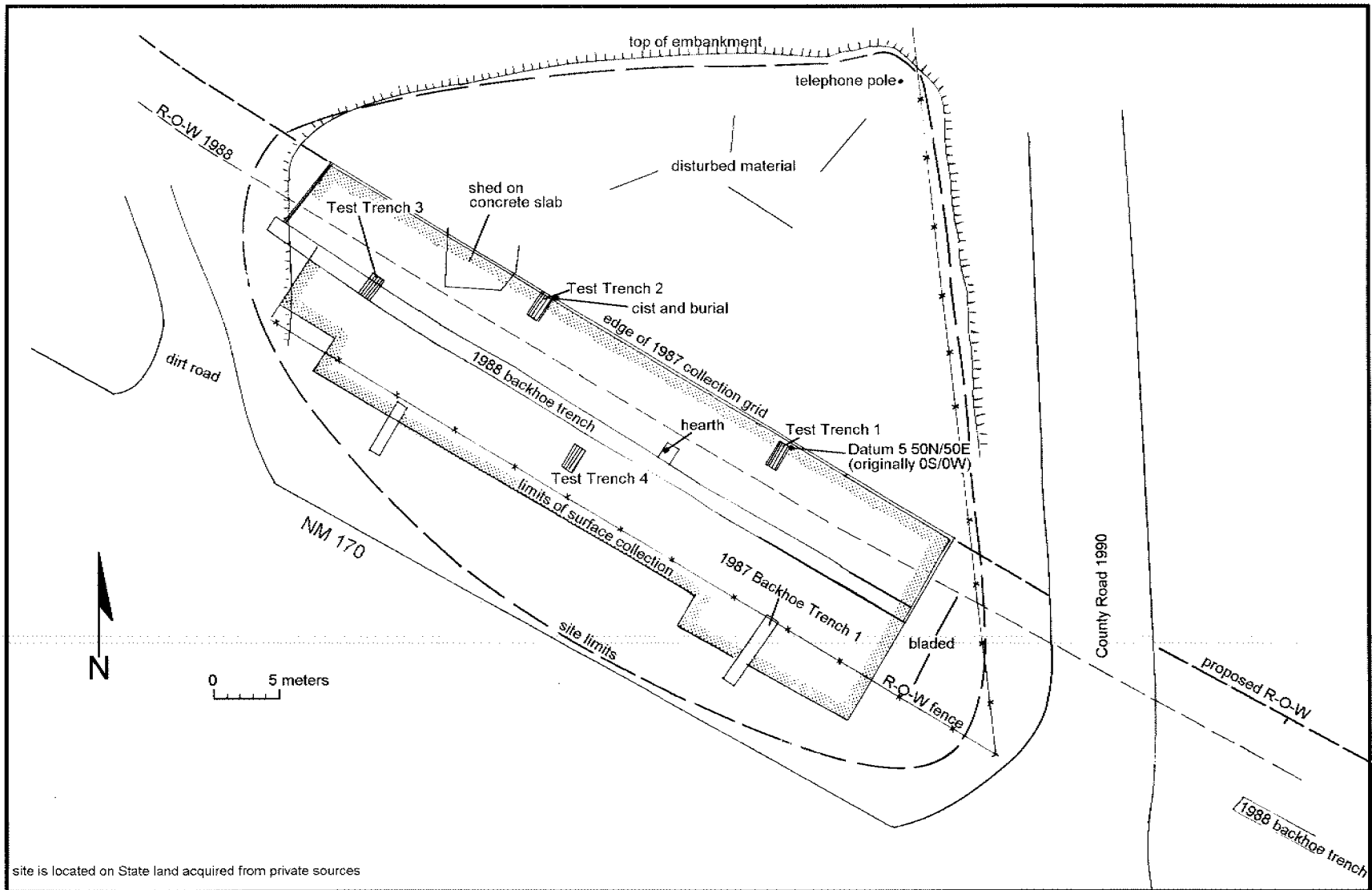


Figure 33. LA 37590 site plan.

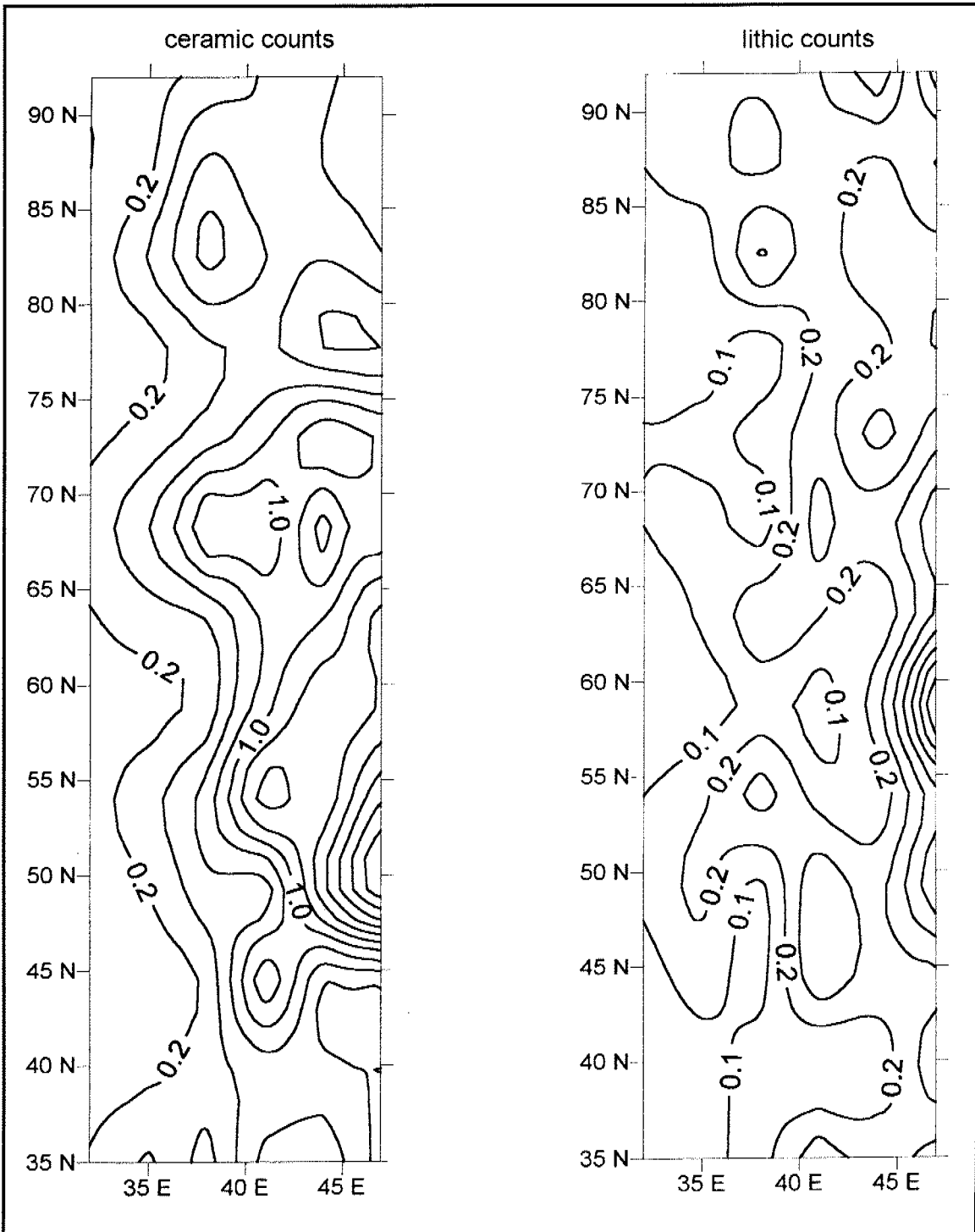


Figure 34. LA 35790 surface material densities. Ceramic contour interval is 0.2 and lithic contour interval is 0.1.

Stratigraphy

The hand-dug excavation units and the backhoe trenches encountered similar soil profiles across the site. Layer 1 contained the cultural material associated with the prehistoric occupation. The layer extended from the surface to a depth of 20 to 30 cm below the surface. The soil matrix was a hard

compact brown sandy clay associated primarily with alluvial fan deposition from the nearby Jackson Lake Terrace. Subsurface cultural material was typically sporadic charcoal flecking, and infrequent sherds and chipped stone.

The cultural layer was followed in Backhoe Trench 1 by a natural alluvial deposit composed of mixed sand, gravel, and cobbles of various sizes. The deposit extended from 15 cm below the surface to the termination of the trench at a depth of 60 cm below the surface. The deposit was probably associated with discharge from the drainage mouth immediately west of the highway.

The cultural layer in the other excavation units was positioned over a massive layer of fine- to medium-grained alluvial sand without gravel or cobbles. This sandy deposit extended to a depth of at least 1.50 m below the surface in Backhoe Trench 1.

Table 27. LA 37590 Point-Provenienced Artifacts (FS 10098, 10099, 10121)

PP#	Ceramic type/Lithic Material	Form	Count or Weight
1	Travertine	Bead	<1g
2	Pueblo II Black-on-white	Bowl body	1
3	Plain Gray	Jar body	6
4	Pueblo II Black-on-white	Bowl body	1
5	Corrugated Gray	Jar body	1
6	Squiggle Hatchure Black-on-white	Jar body	1
	Siltstone	Core	62 g
7	Corrugated Gray	Necked jar body	1
8	Pueblo II Black-on-white	Bowl rim	1
9	Siltstone	Ret/Ut Core	215 g
10	Siltstone	Debitage	14 g
11	Corrugated Gray	Jar body	1
12	Siltstone	Core	103 g
13	Corrugated Gray	Jar body	1
14	Polished White	Jar body	1
16	Corrugated Gray	Jar body	1
17	Pueblo II Black-on-white	Bowl rim	1
18	Siltstone	Two-notched Axe	300 g
19	Tempering material?		

Excavation Results

Extramural Area 1

Cobble and artifact concentrations along the terrace edge outside of the right-of-way define a fairly extensive occupation including structures, but this privately owned site area was not systematically surveyed to record the entire range of site elements. The poorly preserved site area within the right-of-way, marginal to these more visible manifestations, is arbitrarily designated Extramural Area 1.

Surface Collection. The site surface was highly visible because of repeated blading, but there were no visible surface features within the right-of-way. Several charcoal-stained areas were noted, particularly around the permanent shed; however, these charcoal-stained areas may have resulted from repeated episodes of weed burning on the site.

The surface collection covered about a 59-by-18-m area (Figs. 33, 34), and the surface of 102 grids was examined. Compensating for partial grids, the surface collection covered about 907 sq m. Artifact frequencies ranged from no material in five grids (especially common along the highway shoulder) to a high of 35 artifacts. The majority of the artifacts were sherds, and the blading of the surface had obviously increased their numbers by decreasing their size. The average number of sherds per grid was 6.1 (23 maximum). Chipped stone artifacts averaged 1.5 (8 maximum) per grid. The maximum sherd density is 2.6 sherds per square meter (Grid 50N/47E); the maximum chipped stone density is .9 pieces per square meter (Grid 59N/47E). Ninety-five grids contained sherds and 65 grids contained chipped stone. Twenty-one grids contained burned rock in some form, but the burned rock was not collected. In addition to grid-provenienced artifacts, 18 sherds, 4 chipped stone artifacts, and 2 ground stone artifacts were point provenienced from around the edges of the grid collection area. The surface collection composed of the combined artifacts from grid units and point proveniences totals 588 sherds, 149 chipped stone artifacts, and 3 ground stone artifacts (Tables 28-31).

Higher surface counts are apparent along the east project boundary because of higher artifact concentrations situated between the right-of-way and the terrace edge (Fig. 34). In general, the surface collection is considerably mixed and not amenable to fine-grained study of intact artifact distributions. The edge of an artifact concentration centered around the site datum at 50N/50E was the impetus for the location of Test Trench 1, and Test Trench 3 was positioned to investigate higher artifact counts around the 85N line at the north end of the site. The trenches encountered no subsurface depth to the concentrations.

Cultural Layer. Subsurface artifacts collected from the various hand-dug excavation trenches are combined within the fill deposits designated the cultural layer. These artifacts are associated with the Anasazi occupation, and the stratum is identical with Layer 1 of the stratigraphic soil profile. The majority of the artifacts were encountered within the initial 10 cm below the surface. The shallow cultural layer is considered very mixed, and recent refuse was noted throughout the layer. The artifact assemblage included 246 sherds, 75 chipped stone artifacts, and 3 mano fragments (Tables 28-31).

Cist and Human Burial. The edge of an intact extramural cist with a human burial was encountered by Test Trench 2 during the testing phase. The trench was located south of the permanent shed and was provenienced in 1-by-1-m grids, 72N/48E and 72N/49E (23N/1W and 23N/0E in the original system). The surface around the shed was characterized by a higher artifact concentration and slightly charcoal-stained soil. The mouth of the cist was defined at a depth of about 20 cm below the present surface. The circular mouth was 44 cm in diameter, and the fill consisted of brown sandy clay with charcoal flecks and sparse artifact content. The cist was unlined, and exhibited no evidence of burning or oxidation. The south under-cut edge of the cist was followed down to a depth of about 1 m below the surface. At this point, the shafts of an articulated human ulna and radius were partially exposed, and a fragment of a vertebra was brushed loose. The bone is associated with a probable human adult burial, and testing was halted at this point given the intact nature of the burial and cist. Subsequent right-of-way modification preserved the burial outside of the construction zone, and the burial and cist received no further investigation.

Table 28. LA 37590 Ceramic Types by Primary Proveniences

	Surface Collection		Cultural Layer		Cist (Feature 2)		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	%
Pueblo II Corrugated			2	.8			2	.2
Plain Gray	89	15.0	22	8.8	2	28.6	113	13.3
Corrugated Gray	334	56.5	153	61.0	1	14.3	488	57.5
Mud ware			11	4.4			11	1.3

	Surface Collection		Cultural Layer		Cist (Feature 2)		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	%
Red Mesa Style B/w	1	.2					1	.1
Pueblo II B/w	67	11.3	24	9.6			91	10.7
Dogoszhi Style B/w	9	1.5	4	1.6			13	1.5
Chaco Style B/w			1	.4			1	.1
Pueblo I-II B/w			1	.4			1	.1
Pueblo II-III B/w	3	.5	4	1.6			7	.8
Polished White	82	13.9	23	9.2	4	57.1	109	12.9
Squiggle Hatchure B/w	2	.3	1	.4			3	.4
Indeterminate Red	2	.3	1	.4			3	.4
Pueblo II Red	1	.2	1	.4			2	.2
Pueblo II-III Red	1	.2	2	.8			3	.4
Plain Smudged			1	.4			1	.1
Total	591	100.0	251	100.0	7	100.0	849	100.0

Table 29. LA 37590 Chipped Stone Material by Provenience

	Present Ground Surface		Extramural Fill		Features		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	Col %
Chert	46	30.9	30	37.0	1	33.3	77	33.0
Chalcedony	2	1.3	1	1.2			3	1.3
Silicified wood	10	6.7	3	3.7			13	5.6
Quartzite	10	6.7	2	2.5			12	5.2
Quartzitic	4	2.7	2	2.5			6	2.6
Sandstone								
Igneous	6	4.0	3	3.7			9	3.9
Rhyolite	2	1.3			1	33.3	3	1.3
Siltstone	69	46.3	40	49.4	1	33.3	110	47.2
Total	149	100.0	81	100.0	3	100.0	233	100.0

Table 30. LA 37590, Chipped Stone Form by Provenience

	Present Ground Surface		Extramural Fill		Features		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	Col %
Debitage	114	76.5	72	88.9	3	100.0	189	81.1
Core	8	5.4	3	3.7			11	4.7
Retouched, utilized debitage	18	12.1	5	6.2			23	9.9
Retouched, utilized core	5	3.4					5	2.1
Graver			1	1.2			1	.4
Bifacial knife, scraper	2	1.3					2	.9
Hammerstone	1	.7					1	.4
Chopper, plane	1	.7					1	.4
Total	149	100.0	81	100.0	3	100.0	233	100.0

Table 31. LA 37590, Ground Stone by Provenience

	Surface Collection		Cultural Layer		Total	
	Count	Col %	Count	Col %	Col %	Count
Shaped slab	1	33.3			1	16.7
Mano			3	100.0	3	50.0
Two-notch Axe	1	33.3			1	16.7
Bead	1	33.3			1	16.7
Total	3		3		6	

Slab and one mano are sandstone; two manos are igneous; axe is siltstone; bead is travertine

The discovery of this intact burial and cist verified that subsurface features remained at LA 37590 below the zone of mechanical blading. The prehistoric inhabitants dug the cist into a surrounding natural layer of cobbles and gravel. Complete feature measurements were not obtained because of the partial excavation, but assuming that the burial is within 20 cm of the floor, the vertical dimension of the cist is an estimated 1 m. The undercut base also probably measured about 1 m in diameter. Whether the feature functioned originally as a storage cist and secondarily as a burial chamber was not determined by the partial excavation.

The sparse artifact sample from the feature fill included seven sherds and two pieces of chipped stone debitage (Tables 28, 30, 31). The undiagnostic sherds provide little dating information, but I assume the burial is associated with the middle Pueblo II ceramic component dating from A.D. 1000 to 1100. Surface staining and higher artifact density in the area from the permanent shed on the eastern edge of the terrace suggest that additional subsurface features may be preserved along the edge of the site.

Firepit (Feature 1). This extramural firepit was discovered in the east profile of Backhoe Trench 3, and appeared as a lens of charcoal flecks at a depth of 8 cm below the surface. A 1-by-1.6-m excavation unit (58N/44E) was placed over the area to examine the charcoal lens. The removal of about 5 cm of mixed sandy clay overburden exposed the outline of the firepit. The circular firepit had a basin-shaped profile, and measured 64 cm in diameter by 15 cm deep. The unprepared edges exhibited faint oxidation, and fill consisted of ash-stained sand and charcoal flecks.

No artifacts were recovered from the fill, but two flotation samples were processed. A full-sort sample from the north half of the firepit fill (FS 119) contained some carbonized corn cupules and unidentifiable weed seeds, along with some modern grass florets. Charcoal in this feature was approximately one-third juniper, and the nonconiferous component was made up of saltbush, greasewood, and cottonwood/willow (Table 35). The south half of the firepit fill (FS 120-scanned) also contained charred corn cupules and unidentifiable weed seeds, as well as burned ricegrass caryopses (or seeds; Table 35). The absence of diagnostic artifacts precludes temporal disignation, but the charred corn cupules are consistent with other evidence of middle Pueblo II occupation from this site.

Material Culture

The collected artifact assemblage from the investigated portion of the site includes 849 sherds, 233 chipped stone artifacts, and 6 ground stone artifacts. Flotation samples from the extramural firepit were examined for the presence of botanical remains. The interpretive value of the artifact assemblage is constrained by the severe mixing associated with the mechanical site modification. The collection is best viewed as a whole site assemblage.

Ceramics

The assemblage of 849 sherds reflect a middle Pueblo II ceramic component dating between A.D. 1000 and 1075. Corrugated gray body sherds dominate the assemblage, and Pueblo II black-on-white is the most common diagnostic white ware (Tables 28, 32). The ratio of gray wares to white wares

Table 32. LA 37590 Vessel Form by Ware by Provenience

	Surface Collection		Cultural Layer		Cist (Feature 2)		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	%
Gray Ware								
Bowl body			11	4.4			11	1.3
Cooking, storage rim	26	4.4	10	4.0			36	4.2
Necked jar body	39	6.6	15	6.0	1	14.3	55	6.5
Jar body	358	60.6	152	60.6	2	28.6	512	60.3
White Ware								
Bowl rim	18	3.0	4	1.6			22	2.6
Bowl body	56	9.5	22	8.8	2	28.6	80	9.4
Seed jar rim			1	.4	1	14.3	2	.2
Cooking, storage rim	1	.2	1	.4			2	.2
Necked jar body	10	1.7	1	.4			11	1.3
Jar body	77	13.0	27	10.8	1	14.3	105	12.4
Ladle bowl	2	.3	1	.4			3	.4
Open gourd dipper			1	.4			1	.1
Red Ware								
Bowl rim			1	.4			1	.1
Bowl body	2	.3	1	.4			3	.4
Necked jar body			1	.4			1	.1
Jar body	2	.3	1	.4			3	.4
Brown, smudged ware								
Bowl body			1	.4			1	.1
Total	591	100.0	251	100.0	7	100.0	849	100

Table 33. LA 37590 Ceramic Paint Type by Provenience

	Surface Collection		Cultural Layer		Cist (Feature 2)		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	%
None	83	50.6	24	41.4	4	100.0	111	49.1
Organic	3	1.8	1	1.7			4	1.8
Mineral	78	47.6	33	56.9			111	49.1
Total	164	100.0	58	100.0	4	100.0	226	100

is 2.7:1. In addition, six red ware sherds are San Juan Red Wares imported from southeastern Utah, two are matching parts of a Tusayan Black-on-red jar from northeastern Arizona, and one tuff-tempered Reserve Smudged sherd was imported from the Mogollon region to the south. Classification of the Tusayan Black-on-red sherd was somewhat difficult, since it contains sand, sherd, and some ferromagnesian minerals. The sand is not the typical clean, rounded sand seen in Tsegi Orange Wares, but we felt that this series was the most appropriate assignment. The majority (n = 111) of the decorated sherds is painted with mineral pigment, while only four sherds have organic paint. The assemblage is dominated by jar sherds, even in the white wares. Somewhat less than half of the white ware sherds are from bowls, as are all but one of the red ware sherds. Ladles are only other vessel form present, represented by four sherds. Pueblo II black-on-white is the most common white ware and reflects the widest range of vessel forms.

Chipped Stone

The chipped stone assemblage consists of 233 artifacts amounting to 3.47 kg of material. The assemblage includes eight grouped raw material types, or 58 color and texture groups. Almost all are locally available in the form of alluvial cobbles (Table 34). Nearly half of the raw material is siltstone, primarily black and gray, followed by chert and quartzite. Quartzite and chert are the most common materials with observable utilization traces, and these materials encompass the broadest range of artifact types. A single piece of Narbona Pass chert was present, a partial flake which has multiple used edges but no intentional shaping (32-by-22-by-8 mm).

The recovered assemblage is composed of debitage (81.1 percent), cores/utilized cores (6.8 percent), and utilized items (12.0 percent). The artifacts portray core reduction activities associated primarily with the initial stages of material reduction. Tools are mainly in the form of expediently utilized debitage, and tools with formally retouched edges are uncommon. No diagnostic formal tools were recovered from the site. The assemblage is typical of generalized Anasazi use of abundant nearby lithic resources, where reduction efficiency was not very important, and debitage was expediently utilized for a variety of activities.

Ground Stone

Ground stone artifacts are not well represented in the artifact assemblage (Table 31). The six recovered artifacts include three two-hand mano fragments, a two-notch axe, a shaped sandstone slab fragment, and a travertine bead. The artifacts exemplify standard refuse associated with an Anasazi occupation, and the three two-hand mano fragments suggest that grinding/milling was a site activity. The bead and axe were piece plotted on the site surface (PP 1, 17); their presence is unusual since the entire project assemblage contains fewer than 20 beads and 150 axes of all types.

Faunal Material

Only two proveniences contained animal bone, and in both cases the bone was clearly modern. In the ash lens in Test Pit 3 there were a number of elements from a toad. The bone is very fresh and there is no doubt that the animal burrowed into this location and died. The other bone, from Level 1 of Test Pit 2, is a fragment that shows marks from a modern meat saw. These materials were not retained in the collection.

Table 34. LA 37590 Chipped Stone Form by Material Type

	Chert		Chalcedony		Silicified Wood		Quartzite		Quartzitic Sandstone		Igneous		Rhyolite		Siltstone		Count
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	
Debitage	62	32.8	3	1.6	8	4.2	10	5.3	6	3.2	8	4.2	3	1.6	89	47.1	189
Core	4	36.4			2	18.2									5	45.5	11
Retouched, utilizeddebitage	8	34.8			2	8.7	2	8.7			1	4.3			10	43.5	23
Retouched, utilizedcore	2	40.0													3	60.0	5
Graver															1	100.0	1
Bifacial knife, scraper	1	50.0			1	50.0											2
Hammerstone															1	100.0	1
Chopper, plane															1	100.0	1
Total	77	33.0	3	1.3	13	5.6	12	5.2	6	2.6	9	3.9	3	1.3	110	47.2	233

**Table 35. LA 37590 Flotation Full-Sort (FS 119) and Scan (FS 120)
Results from Extramural Firepit (Feature 1), LA 37590**

	Full Sort FS 119	Scan FS 120
Cultural		
Annuals:		
Unidentifiable seed	4.7	+
Grasses:		
<i>Oryzopsis</i> ricegrass		+
Cultivars:		
<i>Zea mays</i> corn	+	+
Total Cultural Seeds [Taxa]	4.7 [2]	[3]
Noncultural		
Grasses:		
Gramineae grass family		+

Plant remains classified as cultural are carbonized specimens of economically useful taxa. Cultural seed counts are given as frequency per liter of the original soil sample; this figure takes into account both subsampling, and soil sample volume. Cultural plant parts other than seeds, all non-cultural plant remains, and results from scan samples are expressed as abundance measures: + = 1-10 items, ++ = 11-25 items, +++ = >25 items.

Summary

The investigated portion of the Garage Sale site is interpreted as a poorly preserved extramural area marginal to more substantially occupied areas along the east terrace edge. The site as a whole includes the remains of at least one surviving small-sized (less than ten estimated rooms) cobble structure along the southeast terrace edge. Stained soil and higher artifact concentrations along the northeast terrace edge suggest the bladed remains of another possible architectural element. The intact subsurface cist and burial were encountered in this area of the site, and other intact features are expected below the initial zone of disturbance.

Our subsurface investigations established that the principal cultural manifestations are confined primarily along the terrace edge and do not extend west toward the highway and the base of the higher Jackson Lake Terrace. However, shallow features may have been bladed away prior to our work. Demographic information from osteological analysis is preserved at the site with the unexcavated human burial and cist, but this area is threatened by continual improvements on the privately owned land. A trailer has currently been placed over, or very near the area of the burial.

The ceramic assemblage is the largest and most diverse artifact sample, and it is considered representative of the range of ceramic types observed on the site surface as a whole. The assemblage indicates a strong middle Pueblo II period of use, contemporaneous with increasing settlement at the community centers in the valley. Sherds with organic paint suggesting a later component were rarely observed.

The Garage Sale site is related to agricultural exploitation of the lower La Plata Valley. The site is an example of Anasazi settlement removed from the more concentrated community centers, although there was still considerable settlement in the lower valley. Recovered artifacts are not

reflective of the entire range of site activities, but several observations concerning site function and use can be advanced. The rather substantial density of artifacts accompanying the surviving structural remains is suggestive of full-time occupation. In addition to artifact density, the interpretation of full-time occupancy is supported by the presence of the human burial, imported red wares and brown wares in the ceramic assemblage, the presence of manos for the grinding and processing of corn, and the presence of harvested corn cupules with the firepit. A formal refuse midden was not observed, and no pit structure depression was visible. However, I conjecture that future excavation would encounter a pit structure associated with the southeast structure remains.

THE COTTONWOOD ARROYO COMMUNITY

H. Wolcott Toll and Charles A. Hannaford

The relatively small artifact samples from these five sites are presented in Tables 36-42. The materials from the Cottonwood Arroyo area make up a very small part of the total La Plata Highway sample. Numerically, the most abundant artifact class is the ceramics—there are over twice as many sherds as lithics. Materials are distributed differently across the sites—while almost half the sherds come from LA 37590, lithic counts are much closer to equal at the other pueblo sites.

Ceramic type distributions are on the whole unremarkable. All site assemblages are dominated by gray wares, with LA 37589 having especially abundant corrugated sherds. White wares with organic paint are more common at LA 37588, less common at LA 37590, and absent at LA 37626, suggesting an early-to-late sequence of LA 37626, LA 37590, LA 37589, and LA 37588 (remembering the small samples at LA 37588 and LA 37626). In keeping with the suggestion that LA 37589 was a special function structure, it has a low frequency of bowl sherds, especially as compared to LA 37590. Although we did not excavate structural portions of LA 37590, LA 37588, or LA 37626, all three sites have surface indications of permanent habitations, different from the single room at LA 37589. Sites LA 37589 and LA 37590 contain the only truly exotic pottery in the group each having a few red wares and two pieces of polished smudged bowls. The presence of these rare sherds is less consistent with the limited, special use of LA 37589 suggested by other evidence, but is consistent with the larger collection from a habitation site such as LA 37590.

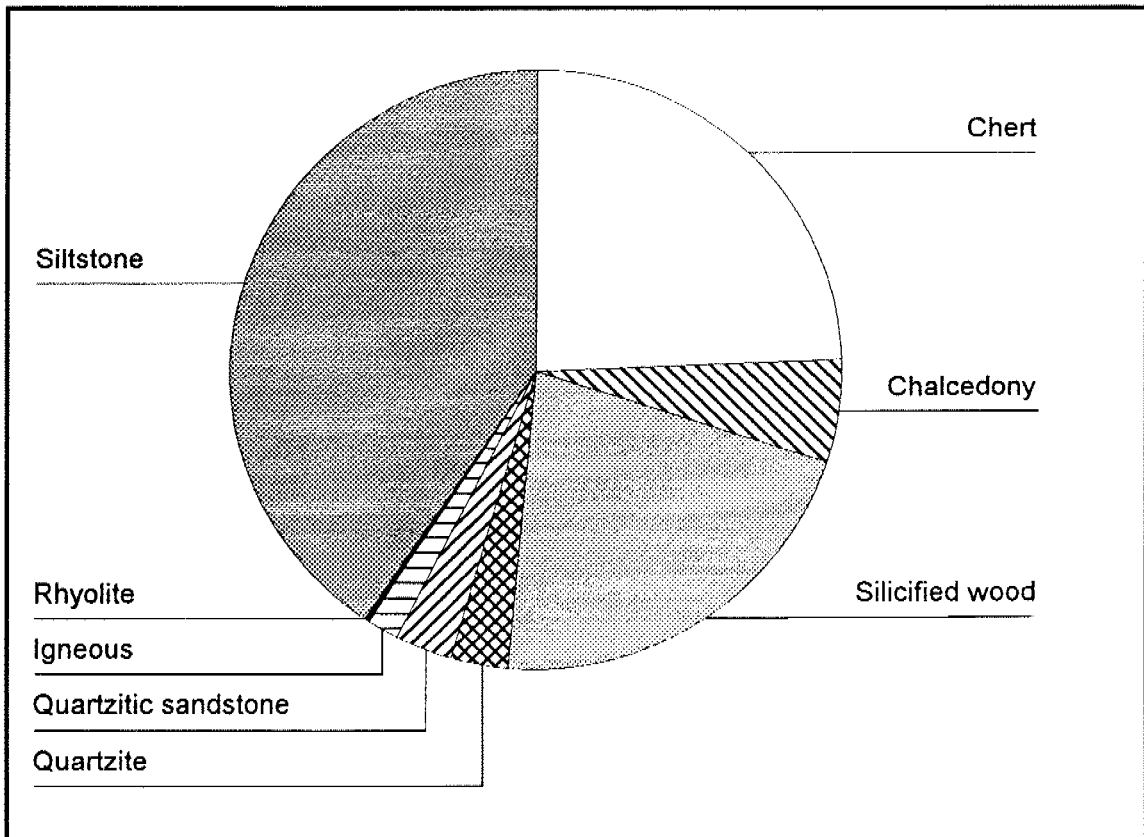


Figure 35. Cottonwood Arroyo lithic material types.

Table 36. Cottonwood Arroyo Ceramics by Site

Pottery type	LA 37588*		LA 37589		LA 37590		LA 37626		Total	
	Count	Col%	Count	Col %	Count	Col %	Count	Col %	Count	%
Plain Rim			1	.2					1	.1
Wide banded	1	.5							1	.1
Narrow banded	1	.5							1	.1
Pueblo II Corrugated	6	2.8	8	1.2	2	.2			16	.8
Pueblo II-III Corrugated			1	.2			1	.4	2	.1
Plain Gray	3	1.4	62	9.7	113	13.3	102	42.1	280	14.4
Corrugated Gray	117	54.9	456	71.0	488	57.5	90	37.2	1151	59.1
Mud ware					11	1.3			11	.6
Red Mesa Style Black-on-white			1	.2	1	.1	1	.4	3	.2
Pueblo II Black-on-white	25	11.7	2	.3	91	10.7	12	5.0	130	6.7
Dogoszhi Style Black-on-white			7	1.1	13	1.5			20	1.0
Chaco Style Black-on-white					1	.1			1	.1
Pueblo I-II Black-on-white					1	.1			1	.1
Pueblo II-III Black-on-white	5	2.3	5	.8	7	.8			17	.9
Pueblo III Black-on-white			1	.2					1	.1
Polished White	27	12.3	74	11.5	109	12.8	35	14.5	245	12.6
Polished Black-on-white			17	2.6					17	.9
Squiggle Hatch Black-on-white					3	.4	1	.4	4	.2
Indeterminate Red					3	.4			3	.2
Pueblo II Black-on-red					2	.2			2	.1
Pueblo II-III Black-on-red					3	.4			3	.2
Plain Smudged					1	.1			1	.1
MV Deadmans Black-on-red			2	.3					2	.1
MV Black-on-red			4	.6					4	.2
MO Reserve Indeterminate smudged			1	.2					1	.1
Indeterminate	28	13.1							28	1.4
Group Total	213	10.9	642	33.0	849	43.6	242	12.4	1946	100

Table 37. Cottonwood Arroyo Vessel Forms by Site

	LA 37588*		LA 37589		LA 37590		LA 37626		Total	
	Count	Col%	Count	Col %	Count	Col %	Count	Col %	Count	%
Indeterminate	31	14.6	7	1.1					38	2.0
Bowl rim			5	.8	23	2.7	3	1.2	31	1.6
Bowl body	20	9.4	35	5.5	95	11.2	15	6.2	165	8.5
Seed jar rim					2	.2			2	.1
Olla rim			3	.5					3	.2
Cooking storage rim			21	3.3	38	4.5	16	6.6	75	3.9
Cooking storage neck			5	.8					5	.3
Necked jar body	27	12.7	53	8.3	67	7.9	31	12.8	178	9.1
Jar body	128	60.1	494	76.9	620	73.0	177	73.1	1419	72.9
Bowl or jar body			17	2.6					17	.9
Ladle bowl			2	.3	3	.4			5	.3
Open gourd dipper					1	.1			1	.1
Ladle handle	7	3.3							7	.4
Group Total	213	11.0	642	33.1	849	43.4	242	12.5	1946	100.

*LA 37588 forms and types recorded on different system

Table 38. Cottonwood Arroyo Paint Type by Site

	LA 37588		LA 37589		LA 37590		LA 37626		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	%
None	27	47.4	72	70.6	111	49.1	35	71.4	245	56.5
Organic	5	8.8	6	5.9	4	1.8			15	3.5
Mineral	25	43.9	24	23.5	111	49.1	14	28.6	174	40.1
Group Total	57	13.1	102	23.5	226	52.1	49	11.3	434	100.0

The lithic sample is small enough that the single concentration of silicified wood at LA 37626 has an impact on the material distribution in the site group, elevating the silicified wood percentage to 22 percent as compared to 6.5 percent in the total sample (Fig. 35). This high percentage is based on the frequencies, however, and accounts for very little silicified wood by weight. As in the total sample, siltstone is over 40 percent of the community lithic count, but chert is 5 percent by weight instead of 40 percent by count. Trace quantities of Narbona Pass chert (four pieces) and Brushy Basin chert (one piece) are present. Obsidian is absent, but obsidian is such a small fraction of collections from the valley that this absence is not surprising. Chipped stone tool types are similar to the overall project distribution, although there is more utilized debitage in the Cottonwood group than in the collections as a whole, and fewer hammerstones and unutilized flakes.

Even with large excavation samples, it is difficult to assess community relationships. Our sample from this part of the La Plata Valley is quite small: an excavated single-room structure and tests in three areas adjacent to larger structures. What we do know of sites in this area, however, indicates that considerable use of the area during the A.D. 1000s was likely. All of the Anasazi materials encountered by the project center on the Pueblo II period. Judging from occurrence of organic paint,

Table 39. Cottonwood Group Lithics by Site

	LA 37588		LA 37589		LA 37590		LA 37626		LA 60741		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %
Chert	37	23.9	56	25.6	77	33.0	37	15.4	9	23.7	216	24.4
Chalcedony	3	1.9	2	.9	3	1.3	38	15.8	2	5.3	48	5.4
Silicified wood	23	14.8	10	4.6	13	5.6	136	56.7	9	23.7	191	21.6
Quartzite	8	5.2	2	.9	12	5.2	4	1.7	2	5.3	28	3.2
Quartzitic ss	9	5.8	10	4.6	6	2.6	1	.4			26	2.9
Igneous	2	1.3			12	5.2	4	1.7	1	2.6	19	2.1
Siltstone	73	47.1	139	63.5	110	47.2	20	8.3	15	39.5	357	40.3
Group Total	155	17.5	219	24.7	233	26.3	240	27.1	38	4.3	885	100.0

Table 40. Chipped Stone Artifact Type by Site

	LA 37588		LA 37589		LA 37590		LA 37626		LA 60741		Total	
	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %
Debitage	116	74.8	194	88.6	189	81.1	196	81.7	25	65.8	720	81.4
Core	4	2.6	14	6.4	11	4.7	2	.8	3	7.9	34	3.8
Ret/Ut Debitage	21	13.5	10	4.6	23	9.9	39	16.3	7	18.4	100	11.3
Ret/Ut Core	3	1.9			5	2.1	1	.4	1	2.6	10	1.1
Graver	1	.6			1	.4					2	.2
Notch	3	1.9									3	.3
Bf Knife/Scraper					2	.9			1	2.6	3	.3
Projectile Point	1	.6					1	.4			2	.2
Hammerstone	6	3.9	1	.5	1	.4	1	.4	1	2.6	10	1.1
Chopper/Plane					1	.4					1	.1
Group Total	155	100.0	219	100.0	233	100.0	240	100.0	38	100.0	885	100.0

Table 41. Cottonwood Arroyo Grouped Lithic Material by Tool Type, Pueblo Sites Only

	Chert		Chalcedony		Silicified wood		Quartzite		Quartzitic Sandstone		Igneous/Rhyolite		Siltstone		TOTAL	COL %
	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %		
Debitage	168	81.2	41	89.1	142	78.0	20	76.9	23	88.5	15	83.3	286	83.6	695	82.1
Core	9	4.3	1	2.2	3	1.6					1	6.7	17	5.0	318	3.7
Ret/Ut Debitage	24	11.6	4	8.7	34	18.7	3	11.5	2	7.7	1	6.7	25	7.3	93	11.0
Ret/Ut Core	2	1.0							1	3.8			6	1.8	9	1.1
Graver							1	3.8					1	.3	2	.2
Notch	3	1.4													3	.4
Bf Knife/Scraper	1	.5			1	.5									2	.2
Projectile Point					2	1.1									2	.2
Hammerstone							2	7.7			1	6.7	6	1.8	9	1.1
Chopper/Plane													1	.3	1	.1
Group Total	207	100.0	46	100.0	182	100.0	26	100.0	26	100.0	18	100.0	342	100.0	847	100.0

Table 42. Cottonwood Arroyo Ground Stone Function by Site

	LA 37589		LA 37590		Total	
	Count	Col %	Count	Col %	Count	%
Abrading stone	1	11.1			1	6.7
Shaped slab	5	55.6	1	16.7	6	40.0
Mano			3	50.0	3	20.0
Two-hand mano	2	22.2			2	13.3
Slab metate	1	11.1			1	6.7
Two notch axe			1	16.7	1	6.7
Bead			1	16.7	1	6.7
Group Total	9	100.0	6	100.0	15	100.0

The axe is siltstone, the bead is travertine, and two of the undifferentiated manos are igneous; all other items are sandstone.

sites LA 37588 and LA 37589 may be somewhat later, and LA 37590 and LA 37626 earlier, although the sample of painted pottery from LA 37626 is very small (Table 36). Excavations by Vierra (1993) closer to the confluence with the San Juan, indicate both earlier (Sambrito, A.D. 500s) and later (post 1100) uses as well, but the majority of construction and occupation took place in the 900s and 1000s there as well. Temper information is available only from LA 37589; over 80 percent of a sample of 143 sherds contains crushed igneous rock. Another 10 percent contains sherd temper, and 3.5 percent contains trachyte temper. This is a relatively high occurrence of trachyte-tempered Chuska Valley sherds compared to the remainder of the La Plata collection. This elevated occurrence may result from the site's location being somewhat closer to the Chuska Valley than the sites up the valley, or it may be merely a sampling error.

The Badlands surrounding Cottonwood Arroyo itself may have provided some specific raw materials—clay exposures, perhaps, and possibly cryptocrystalline lithic materials. Biotic resources were probably at best thin. The gravel terraces of the La Plata Valley, and the much larger ones of the San Juan contain abundant building material, stone tool material, and ceramic tempering material. Again, although supporting considerably more vegetation than the badlands, the terraces now contain mostly grasses, which may periodically have provided seed crops, and would have supported some herbivores. Access to the Farmington Glade with its somewhat better tree cover and biodiversity is easier from the Cottonwood area than it is farther up the La Plata Valley. The first terrace above the floodplain was apparently a preferred building location. Agriculture would have probably been possible there, but soil moisture is less than on the bottomland. Irrigation, of course, would have been far easier on the bottomland. The bottoms of Cottonwood and Connor arroyos could have provided diversified field locations.

Today this part of the valley is the lowest, hottest, and driest of the entire valley, and the La Plata River is often dry (due only partly to irrigation diversions). On the other hand, the San Juan, unlikely to ever run dry, is only about 6 km from LA 37590, the site farthest upstream in this sample. Aside from resources provided by proximity to the San Juan, such as permanent water, driftwood, and whatever other flotsam it happened to gather, and more extensive and varied riparian environments, what other resources were available to residents of the Cottonwood Arroyo area? Compared to the area around Morris 41, there were surely fewer natural resources such as fuel, game, piñon, and immediate permanent water (Fig. 1). Compensating somewhat for fewer resources would have been a longer frost-free period than farther up the valley. The elevation at Morris 41 is 6,000 ft (1,829 m), while at LA 37590, the elevation is 5,360 ft (1,634 m). Especially in the vicinity of LA 37590, there is extensive bottomland, although the valley floor narrows considerably for about the last 3 km before

the confluence with the San Juan.

Historically, homesteaders in the lower valley suffered water shortages because of seasonal fluctuations, compounded by heavy irrigation farming in the upper valley. These early homesteaders reused a number of probable prehistoric ditches, and water shortages in the lower valley may be a long-lived phenomena considering the prospect for similar prehistoric irrigation practices. The lower valley may have experienced increasing water stress as the growing Pueblo II population, possibly accompanied by an expanding irrigation system, harvested greater quantities of water from the river. How farming in the lower valley was affected by the contemporaneous farming communities in the upper valley, especially during the Pueblo III occupation, is an interesting question. Addressing this question will require more information from both parts of the valley, but especially from the lower valley. Known site densities suggest less frequent Pueblo III exploitation of the lower valley, and ceramics from the Cottonwood Arroyo pueblo sites indicate little use during Pueblo III times. As an analogy, the nearby Mormon farming community of Jackson was abandoned at the turn-of-the-century because of water shortages related to upper valley irrigation competition. Similar circumstances may have been experienced by the prehistoric farmers. Remaining sites preserve important information that may be used to more fully understand these questions of valley settlement including the intensity of use, and how these dispersed sites were integrated within the community settlements.

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