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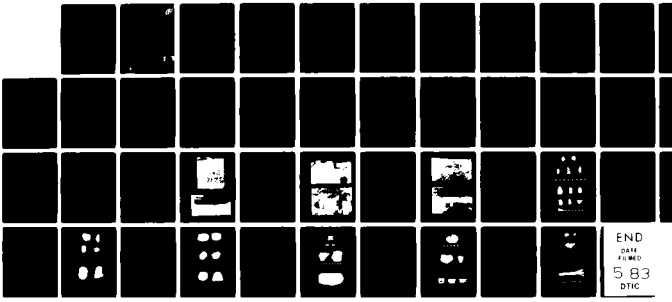

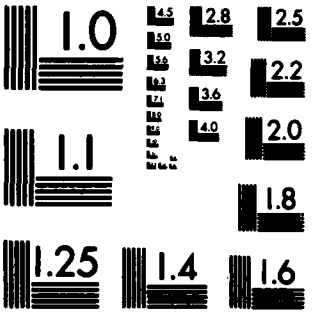

MICROCOPY RESOLUTION TEST CHART
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PRELIMINARY FIELD REPORT ON THE FINDINGS AND RESULTS OF THE EVALUATION OF THE CULTURAL AND HISTORICAL SIGNIFICANCE OF THE LAS CRUCES ARROYO LITHIC SITE (EPCM 32:105:10:3) IN LAS CRUCES, NEW MEXICO

Prepared by T. Weber Greiser
Field Archeologist
El Paso Centennial Museum
University of Texas at El Paso

31 May 1973

Rex E. Gerald, Project Director

1272-101

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15. Supplementary Notes

16. Abstract (Limit: 200 words)

The purpose of this evaluation was to evaluate the cultural and historical resources of the site and to make recommendations relative to their conservation prior to the destruction of the site as a resutl of the construction of the Las Cruces Dam. It was concluded that the evidence of occupation is quite shallow and sparcely distributed over the site and that further excavation is not warranted.

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b. Identifiers/Open-Ended Terms

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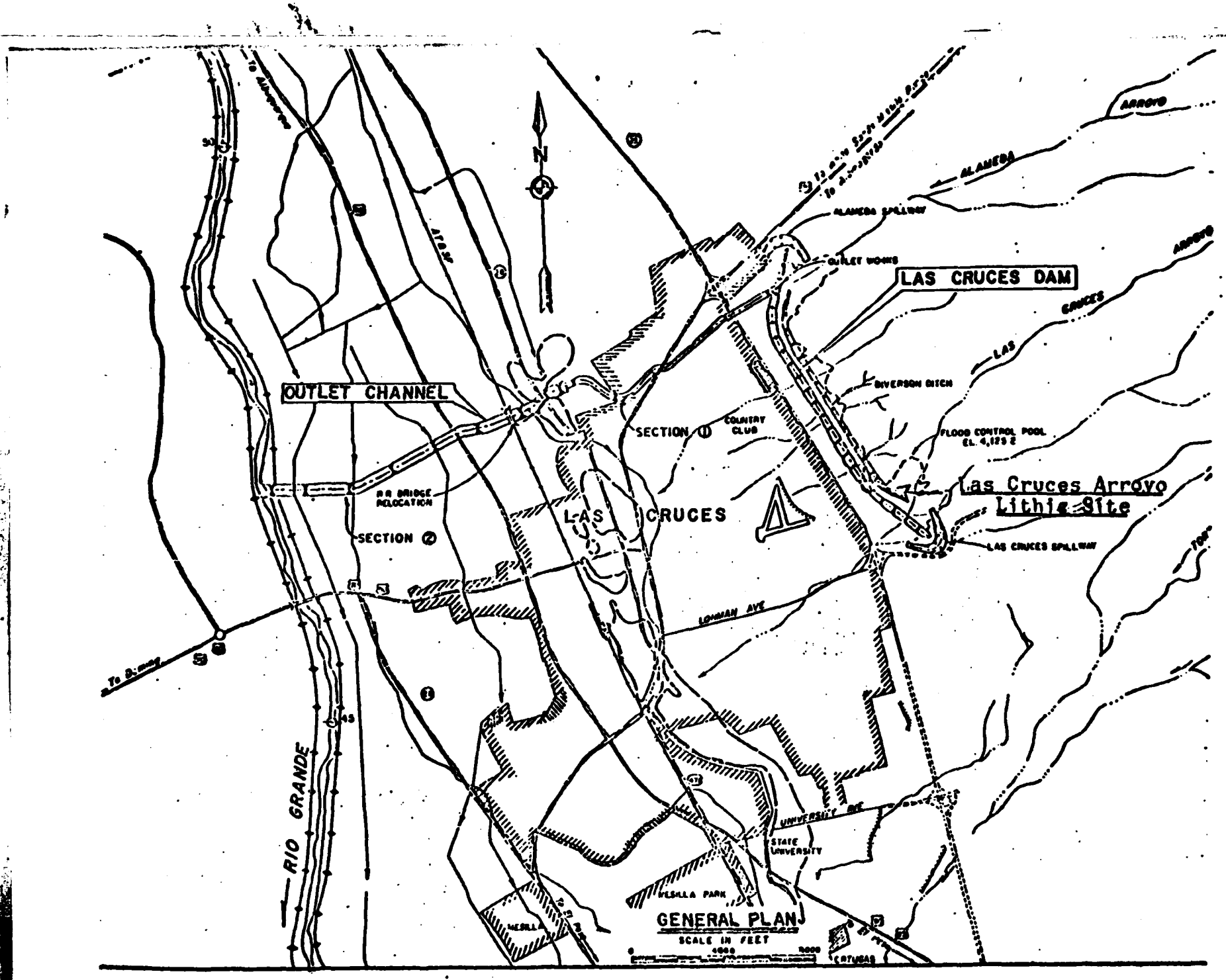
This preliminary field report is submitted to the National Park Service Southwest Regional Office in Santa Fe, New Mexico, in accordance with contract No. CX 700030165

ABSTRACT

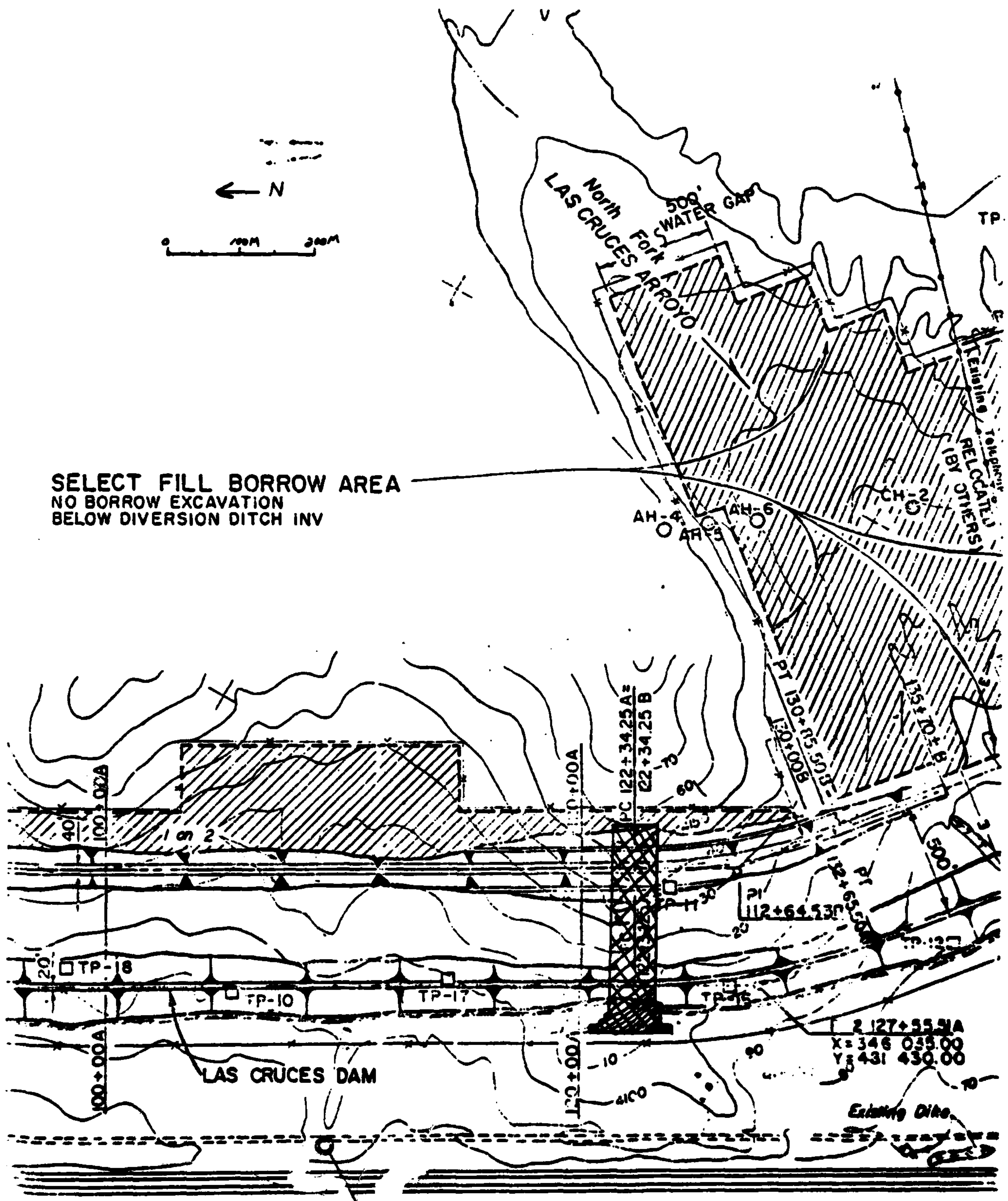
The purpose of this evaluation of the Las Cruces Arroyo Lithic Site, El Paso Centennial Museum number 32:106:10:3, has been to evaulate the cultural and historical resources of the site and to make recommendations relative to their conservation prior to the destruction of the site as a result of the construction of the Las Cruces Dam, a part of the Las Cruces Local Protection Project of the U.S. Corps of Engineers. As a result of the test excavations reported here it is concluded that the evidence of occupation is quite shallow and sparcely distributed over the site and that further excavation is not warranted.

Figure 1. Las Cruces Arroyo Lithic Site in relation to Las Cruces, New Mexico.

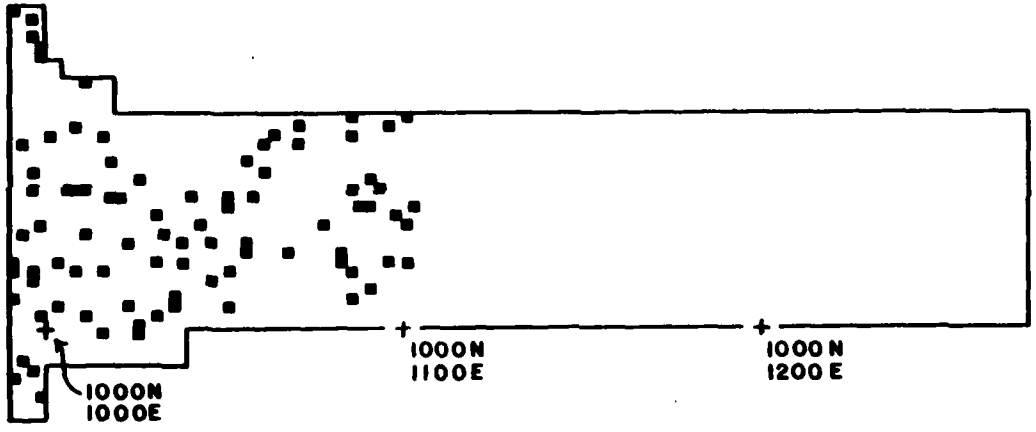


MAP 1: Las Cruces Arroyo Lithic Site

Figure 2. Las Cruces Arroyo Lithic Site in relation to proposed dam of Las Cruces Local Protection Project.



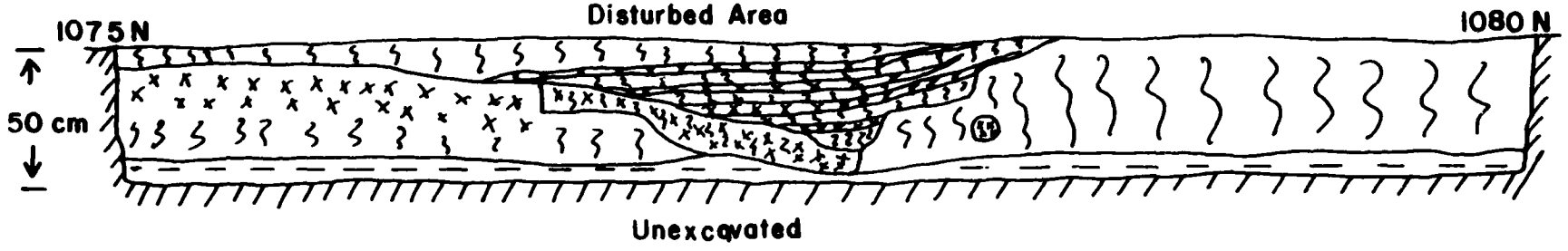
N
0 100M 200M
North Fork
LAS CRUCES ARROYO
500' WATER GAP
SELECT FILL BORROW AREA
NO BORROW EXCAVATION
BELOW DIVERSION DITCH INV
AH-4
AH-5
AH-6
CH-2
RELOCATED (BY OTHERS)
Existing Telephone
PT 130+05.50B
135+70±B
PC 122+34.25A=
122+34.25 B
100+00A
1 on 2
TP-18
TP-10
TP-17
PI 112+64.53
LAS CRUCES DAM
127+55.51A
X=346 035.00
Y=431 430.00
Existing Dike
344 000 X



LAS CRUCES ARROYO LITHIC SITE

Map of Randomly Sampled Squares

Figure 3



Legend

SAND CHARCOAL CALICHE

Figure 4

LAS CRUCES ARROYO LITHIC SITE

Profile: Trench 997.5 East (West Wall)

INTRODUCTION

Field work on the Las Cruces Arroyo Lithic Site, El Paso Centennial Museum number 32:106:10:3, began in early March of 1973 upon receiving approval from the Southwest Regional Office of the National Park Service in Santa Fe, New Mexico. An evaluation of the area became necessary when it was learned the area would soon be destroyed by the construction of a dam as part of the Las Cruces Local Protection Project. In May of 1972 (see Gerald 1972) a proposal to carry out such a study, that was subsequently approved, was submitted to the Arizona Archeological Center of the National Park Service in Tucson, Arizona, the office responsible for evaluating impact statements at that time.

This preliminary report is the result of the field work and laboratory analysis carried out by the El Paso Centennial Museum at the University of Texas at El Paso.

Evaluation of the Cultural and Historical Resources of the Las Cruces Arroyo Lithic Site

A. Field Work

Field work was begun on March 13, 1973 by the El Paso Centennial Museum of the University of Texas at El Paso on an archeological site lying within the proposed dam area of the Las Cruces Local Protection Project. Work on the site, designated the Las Cruces Arroyo Lithic Site and given the El Paso Centennial Museum site number 32:106:10:3, was under the direction of Rex E. Gerald, Director, El Paso Centennial Museum, with T. Weber Greiser as Field Archeologist.

Using voluntary labor--both skilled and semi-skilled (see Table 2)--a grid 5 meters by 5 meters was laid out over that portion of the site felt to lie within the proposed dam area. The grid covered a trapezoidal area 285 meters east-west by 115 meters on the west end and 60 meters on the east end. In all, there were 728 5 meter x 5 meter squares. For subsurface testing these squares were then divided into 4 equal sections of 2.5 meters by 2.5 meters--giving a total testable population of 2912 2.5 meter x 2.5 meter squares.

Surface collections were made from all 5 meter x 5 meter squares and the results of this collection are listed in Table 1. Also in Table 1 is a list of materials gathered from the surface of the area extending only as far east as the 1105 east line or 115 meters from the western edge of our grid. The figures listed in this column are also included in the figures for the "total

surface", but they do indicate how artifacts tended to cluster in the western portion of the site area.

Due to a series of logistics problems actual excavations began on April 16, after gaining a deadline extension from the Southwest Regional Office of the National Park Service in Santa Fe, and continued through April 30. A crew of nine University of Texas at El Paso students was hired to excavate test pits as well as operate rented excavation equipment, after surface collections had been completed. A total of 555 hours was put in by these student-laborers which proved to be very productive in the gathering of data; the project also enabled these students to gain actual field experience in archeology.

A sample of 190 squares 2.5 on a side was drawn from the total of 2912 in the site using the hard wired random numbers generator of a Wang Model 462 programmable calculator. A sample of this size was expected to give a 95$\pm$ 5% level of confidence. Difficulties in finding laborers and in getting the newly designed and constructed mechanical screen into operation delayed the progress of the excavation. Results obtained during the project indicated that a further expenditure of funds and time was not warranted, even though we were able to excavate only about half of the 2.5 meter squares. The original figures called for a 6.5% sample of 2912 squares 2.5 meters on a side and we excavated a 6.9% sample of the westernmost 1280 squares 2.5 meters on a side. It is believed that this sample is still adequate to evaluate that portion of the site sampled, i.e., the portion of the site west of the 1105 east line.

Pits were excavated to depths varying between 20 and 60 centimeters with several deeper test pits up to 120 centimeters. In all cases the depth of the holes indicated the depth at which caliche or the original terrace gravel was encountered.

However, once test excavation extended beyond 35 meters from the western edge of the site, cultural remains dropped off to the point where only 22% of the pits beyond this point yielded any cultural remains at all and in none of these were there any great concentrations of material.

An analysis of contemporary vegetation occurring on the Las Cruces Arroyo Lithic Site has been prepared by Tom O'Laughlin (Appendix A), Curator of Collections/Registrar, El Paso Centennial Museum. Other contributions by staff members of the El Paso Centennial Museum include Herbert C. Morrow, Curator of Exhibits; Dora Visconti, Secretary; Pete Marrujo, Laboratory Assistant; and David Leibson, Museum Photographer, who photographed all the artifacts as well as printed all the photographs used in the report. I appreciated the assistance of the University of Texas at El Paso students who were more than just laborers. The El Paso Archeological Society also made invaluable contributions to our efforts at the site.

Our field work was concluded on April 30 after completing maps of the area and plans of features encountered; photographing the site, workers and excavations; and collecting carbon flotation samples from possible hearth areas and two pollen columns.

B. Site Location and Environmental Setting

The Las Cruces Arroyo Lithic Site is located on the first

bench above the flood plain of the Rio Grande on the east side of Las Cruces, New Mexico. The site is located in a series of active sand dunes in some of which the sand has been blown out sufficiently to expose underlying gravels and caliche deposits. The Las Cruces Arroyo, for which the site was named, along with the Alameda Arroyo three miles to the north, rises in the Organ Mountains nine miles to the east and flows about 300 meters to the south of the site before joining the Rio Grande. These arroyos carry large amounts of water after thunderstorms in their watersheds and are the prime reasons behind the Las Cruces Local Protection Project, the main dam of which will cross the site under discussion.

As mentioned above, the entire site was covered with blown sand which tended to dune in areas. There were occasional areas of exposed gravels and caliche deposits on steep slopes where water erosion has been going on. The overlying sands vary in depth from 25 centimeters to undetermined depths greater than 120 centimeters in a saddle area at the eastern end of the tested portion of the site where apparently extreme deposition has occurred.

Surface vegetation occurs on both the sand areas and the exposed gravel-caliche areas of the site. Plants occurring on the site are creosotebush, mesa dropseed grass, mesquite, fluff grass, joint-fir and prickly pear cactus--the first three of these being the most common in occurrence on the Las Cruces Arroyo Site (Appendix A).

Cultural remains occurring on the site area came from the sand or were located on the surface of the gravel-caliche in those areas where it has been exposed.

C. Cultural and Historical Material Recovered from the Las Cruces Arroyo Lithic Site

Cultural remains from the Las Cruces Arroyo Lithic Site strongly suggest a pre-ceramic assemblage of Chiricahua to San Pedro Cochise period. The chronological parameters for this period are 4200 B.C. to 500 A.D., based on radio carbon dates obtained by Herbert W. Dick for Bat Cave (1965). The material obtained from the site would differ from the Hueco Phase set up by Donald J. Lehmer (1948) for this area with projectile points occurring nearly as often as manos and metates, as opposed to the comparative infrequency of points suggested by Lehmer. The data collected by the present research also sheds more light on the problems encountered by Laurens C. Hammack (1963) in his 1962 investigation of the same site. He found no projectile points or any ground tools, which the present investigator feels is in part due to local collectors who have easy access to the site due to its proximity to Las Cruces, New Mexico, and also in part due to sampling error.

Fine charcoal-sand mixtures were gathered for possible radio carbon dating which hopefully will give us a more definite temporal assignation.

All cultural and historical materials are shown in Table 1. The few historic remains simply indicate recent utilization of the site area. Three sherds of pottery (Fig. 15)--two El Paso Brown and one El Paso Polychrome--were also collected from the

site. However, based on this sparsity of sherds, particularly in relation to the high frequency of lithic materials, it may be suggested that there was either a short term ceramic period occupation somewhere in the vicinity of the site or the sherds may have been brought in from another site by some recent visitors to the area.

Table 1 is based upon the work of Frank J. Broilo and Dick Chapman in Broilo (1973) where they set up a lithic analysis form for possible adaptation by others working in the area. The form presented here is an abbreviated version adopted because of the abundance of material. Their form is specifically for use in site surveys which would involve smaller samples.

Figures 8 through 15 illustrate some of the different materials collected from the surface and excavated at the Las Cruces Arroyo Lithic Site. All the projectile points from the site are illustrated in Fig. 8a. The top row contains one bifacial obsidian diamond shaped point from the surface, which is quite similar to Dick's Augustin Point (1965, Fig. 22 l-r) and the base possibly from a point or a knife also from the surface. The bottom row of Fig. 8a contains three projectile points from the excavated portions of the Las Cruces Arroyo Lithic Site. The one on the left resembles Dick's Chiricahua Cochise Point (ibid, Fig. 21 g-h). The two points on the right are also reminiscent of Dick's San Pedro Cochise Points (ibid, Fig. 20 l-n & t-u). Tom O'Laughlin (1973), El Paso Centennial Museum, and Pat Beckett (1973), New Mexico State University, were helpful in both determining and confirming these conclusions, based on their intimate experience with lithic remains in this area.

Also illustrated are knives, scrapers, gravers, choppers, cores and ground stone. In the ground stone category are included one complete metate and two metate fragments (Fig. 13 b & c), as well as two complete manos and one mano fragment (Fig. 14 a & b).

Figure 14 a contains one of what has locally been labelled a "cruciform" (Phelps, 1966)--a flake of obsidian bifacially ground and then concavely flaked bifacially on all four sides--which was also collected from the surface of the site. There was nothing associated, therefore no definite cultural assignation is possible. Further research on these objects, particularly in situ, in this area and other areas where they occur, is definitely needed.

Raw materials for lithics used on the site were probably collected from the Las Cruces Arroyo--no more than 300 meters to the south--where the majority of the materials used on the site can be found today. Tom O'Laughlin (1973) pointed out one type of pinkish chert that is known to have been quarried some distance to the north of Las Cruces, New Mexico.

One large hearth area (Fig. 4) was excavated and produced samples for radio-carbon dating and pollen analysis. The hearth area itself was only recognizable by the darker area created by the presence of charcoal which has tended to migrate downward through the sand in rather fine particles.

D. Evaluation of Resources

Based on the one clearly identified, although diffused, hearth area that occurred in the excavated random sample, it can

be predicted that no more than 14.68, or 15, hearths will occur in the remaining unexcavated squares in the west half of the Las Cruces Arroyo Lithic Site, i.e., west of gridline 1105E. Only one other hearth was visible on the surface, near the one excavated, and it had been dug earlier, perhaps by Hammack. This, together with the diminution of all artifacts away from the west edge of the site suggests that evidence of occupation was not randomly distributed over the surface gridded, as was assumed for the purpose of testing, but was concentrated near the western edge; unfortunately, there has not yet been an opportunity to test this inference statistically.

The porosity of the blow sand on which this site is located together with its tendency to shift in the wind is presumably responsible for the absence of recognizable living surfaces, and this, together with the extreme shallowness of all occupation levels and general rareness of formalized artifacts, renders this site relatively uninformative. For these reasons it is recommended that no further funds be expended for archeological investigations on the Las Cruces Arroyo Lithic Site.

TABLE 1: Artifact Collections from Las Cruces Arroyo Lithic Site

	Total No.	Surface %	Surface (To 1105E) No.	%	Trenches No.	%
I. Cores:	140	5.62	95	4.84	76	3.13
Cortex: Present	131		90		74	
Absent	9		5		2	
Flaking: Unifacial	17				3	
Bifacial	26				24	
Multifacial	97				49	
Tools: Choppers	6				7	
Scrapers	21				16	
Hammerstones	6				1	
II. Unutilized Flakes:	2196	88.16	1763	89.86	2302	94.69
Cortex: Present	881		655		623	
Absent	1315		1108		1679	
Platform: Present	1579		1210		1839	
Absent	617		553		463	
Size: Small	1264		1087		1518	
Large	932		676		784	
III. Utilized Flakes:	40	1.61	28	1.43	13	.53
Cortex: Present	26		20		8	
Absent	14		8		5	
Platform: Present	39		27		10	
Absent	1		1		3	
Size: Small	5		1		3	
Large	35		27		10	
Edge Utilized:						
Distal	7				3	
Lateral	28				10	
Distal & Lateral	5					
Tools: Scrapers	2					
IV. Marginal Retouch:	48	1.93	25	1.27	14	.58
Cortex: Present	36		21		6	
Absent	12		4		8	
Platform: Present	37		20		8	
Absent	11		5		6	
Size: Small	4		2		1	
Large	44		23		13	
Edge Retouched:						
Distal	8				1	
Proximal	1				1	
Lateral	16				7	

TABLE 1 (Cont.)

	Total No.	Surface %	Surface (To 1105E) No.	%	Trenches No.	%
Distal & Lateral	16				3	
Proximal & Lateral	2				1	
Projected	5				1	
Tools: Scrapers	34				7	
Choppers	2					
Chopper-Scrapers	1					
Gravers	5				1	
Spokeshave-Scrapers					1	
Drills					1	
Miscellaneous					4	
V. Facial Retouch:	23	.92	17	.87	13	.53
Cortex: Present	7		7		2	
Absent	16		10		11	
Platform: Present	12		10		3	
Absent	11		7		10	
Unifacial	10		10		2	
Bifacial	13		7		11	
Tools: Points	1				3	
Point Bases	1		1		1	
Point Tips	1		1			
Knives	3		1		3	
Knife Tips	2		2		1	
Scrapers: End	1		1			
Side	6		4			
Combination	4		4		1	
Knife-Scrapers	1		1			
Cruciform	1					
Miscellaneous Fragments	2		2		4	
VI. Ground or Pecked	9	.36	8	.41	3	.12
Manos	1		1		1	
Mano Fragments	2		2		2	
Metates	1		1			
Metate Fragments	2		1			
Hammerstones	2		2			
Mano-Hammerstones	1		1			
VII. Miscellaneous	35	1.41	26	1.33	10	.41
Fossil Tooth Enamel	5		3			
Fossil Bone	2		1		2	
Volcanic Scoria	9		8		2	
Pottery: El Paso Brown	1				1	

TABLE 1 (Cont.)

	Total No.	Surface %	Surface (To 1105E) No.	%	Trenches No.	%
Pottery: El Paso Polychrome	1					
Historic	17		14		4	
Shell Fragments					1	
Totals:	2491	100.01	1962	100.01	2431	99.99

TABLE 2: Labor and Services Contracted for Under Contract No. CX 700030165 and Contributed by the El Paso Centennial Museum of the University of Texas at El Paso

A. Contracted Labor	Hours	Hourly Wage	Salary
T. Weber Greiser, Field Archeologist	392	$ 4.10/hr	$ 1607.20
Field Laborers, UTEP Students	555	2.07 "	1148.85
Front End Loader Rental	1.5 Wks	160.00 Wk	240.00
		Total	$ 2996.05

B. Institutional Contributions			
1. Salaries			
Rex E. Gerald, Project Director	1/6 time for 2-1/2 Mos.		500.00
Skilled Labor, EPCM Staff	259	3.25/hr	841.75
Dora Visconti, Secretary	1/6 time for 2-1/2 Mos.		192.50
Pete Marrujo, Lab. Asst.	28	1.65/hr	46.20
Semi Skilled Laborers:			
UTEP Anthropology Students	253.5	2.00/hr	507.00
EPCM Volunteers	24	2.00/hr	48.00
El Paso Archaeological Society Members	61	2.00/hr	122.00
2. Equipment			
EPCM Vehicle	2633 miles @ 8.5¢ mile plus $10/week insurance		323.81
		Total	$ 2581.26

APPENDIX A

VEGETATION OF THE LAS CRUCES LITHIC SITE

by Tom O'Laughlin

The description of the flora of the Las Cruces Lithic Site was approached from the standpoint of (1) species present and (2) the area covered by non-herbaceous perennials. Plants were recorded as being present if they occurred anywhere within the limits of the site, and the line intercept method was employed to ascertain the area covered by non-herbaceous perennials. The sample consisted of 10 randomly selected lines for a total of 585 meters. These line intercepts were parallel and traversed the site from south to north. Small herbaceous perennials and annuals were not measured, because their presence would fluctuate with season and rainfall. The data were obtained during the middle of April, 1973.

1. Species present:

Baileya multiradiata - desert-marigold
Bouteloua barbata - sixweeks grama
Cassia bauhinioides - twin leaf
Cryptantha crassisepala
Cryptantha micrantha
Cucurbita foetidissima - buffalo gourd
Dalea sp. or Psoralea sp. - pea bush or scurf-pea
Descurainia pinnata - tansy mustard
Dithyrea wislizeni - spectacle pod
Ephedra trifurca - joint fir
Eriogonum abertianum - desert buckwheat
Larrea divaricata - creosotebush
Nama hispidum - nama
Opuntia engelmannii - prickly pear
Opuntia fulgida - cholla
Phacelia corrugata -
Prosopis juliflora - mesquite
Sphaeralcea incana - globe-mallow
Sporobolus flexuosus - mesa dropseed
Tridens pulchellus - fluff grass

2. Area covered by non-herbaceous perennials:

Larrea divaricata	17.78%
Sporobolus flexuosus	5.17%
Prosopis juliflora	1.15%
Tridens pulchellus	0.72%
Ephedra trifurca	0.09%
Opuntia engelmannii	0.01%

The dominant plant on this site, as well as for most of this area of New Mexico, is creosotebush. The observed cover of this plant is very comparable to that found by J. L. Gardner for hills and mesas bordering the Rio Grande from El Paso, Texas to Socorro, New Mexico (1). Mesquite is common in areas where sand is duning and, with creosotebush, supports a fairly dense understory of annuals and grasses. The grass cover is high for the area and suggests that it has not been grazed for some time.

There is a tendency for ecologists to include this area as part of the Chihuahuan Desert (1, 2). However, some suggest that creosotebush dominated areas represent a grazing disclimax and that grass was once the dominant vegetation of the mesa lands bordering the Rio Grande (1, 2). Early descriptions of the vegetation in this area, as well as land surveys, do seem to substantiate the idea that areas in southern New Mexico, and quite possibly this site, were covered by grass in the middle of the last century (1, 2, 3).

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Figure 5. a) View of Las Cruces Arroyo Lithic Site looking east from 1000 North-1000 East.

b) View of Las Cruces Arroyo Lithic Site looking north from 1000 North-1000 East. Las Cruces, New Mexico in background.

a

b

Figure 5

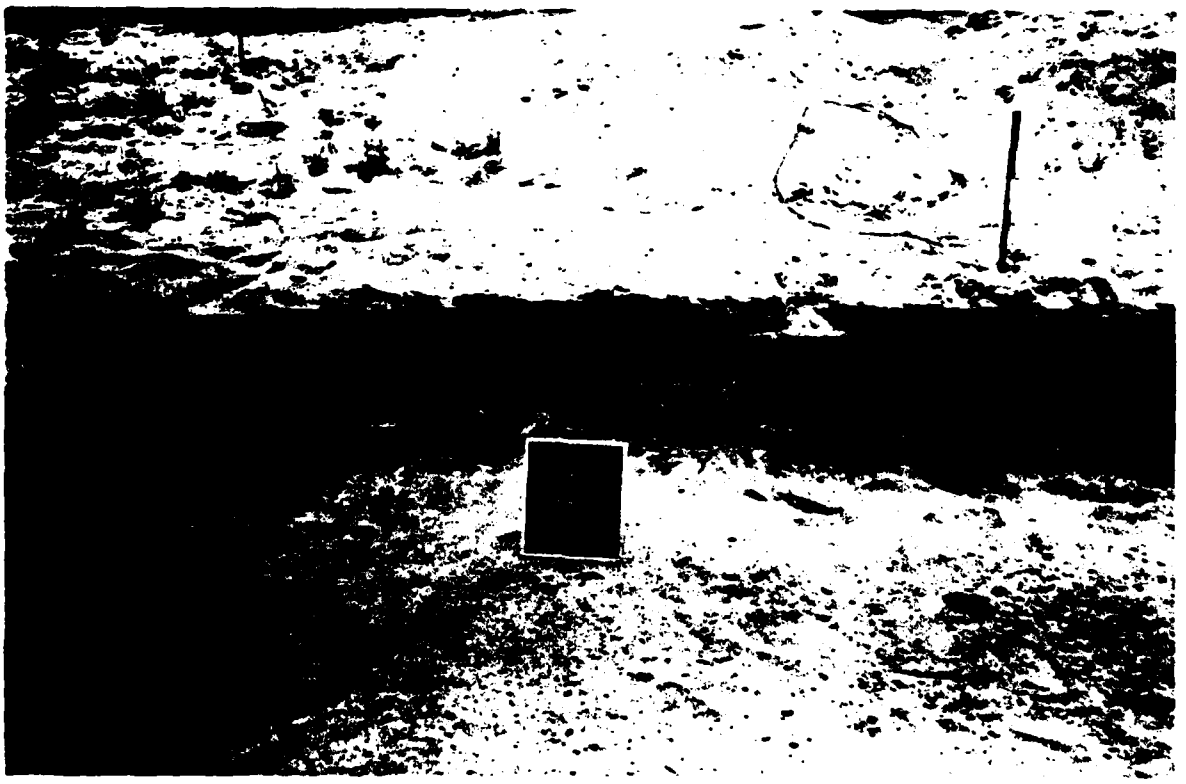
Figure 6. Using front end loader and vibrator screen.

Figure 6

Figure 7. a) Hand screening hearth area.

b) West wall of trench 1075-80 North-997.5 East with hearth and previously excavated area.

a

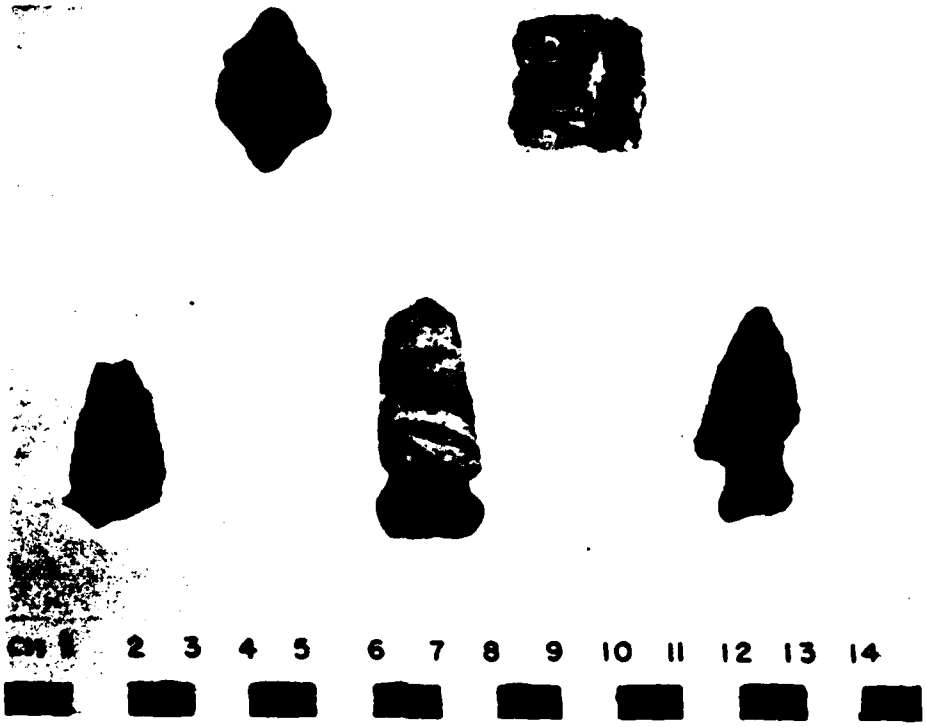


b

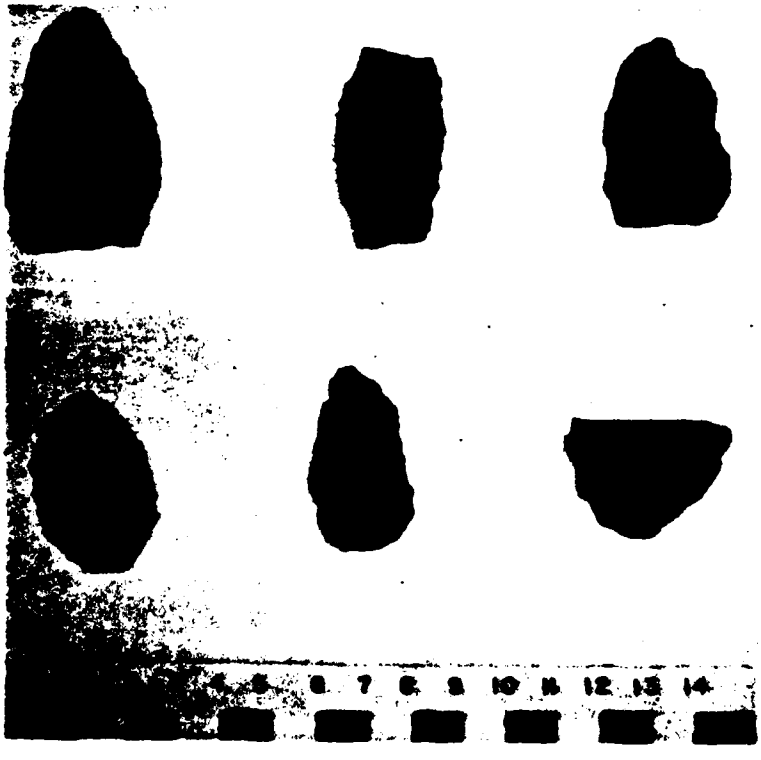
Figure 7

Figure 8. a) Top Row--Surface Artifacts
Left: Augustin Point
Right: Possible Point Base
Bottom Row--Excavated Artifacts
Left: Chiricahua Cochise Point
Two Points on Right: San Pedro Cochise

b) Top Row--Surface Artifacts,
Bifacial Knives
Bottom Row--Excavated Artifacts
Bifacial Knives, center artifact
may be a Preform



a

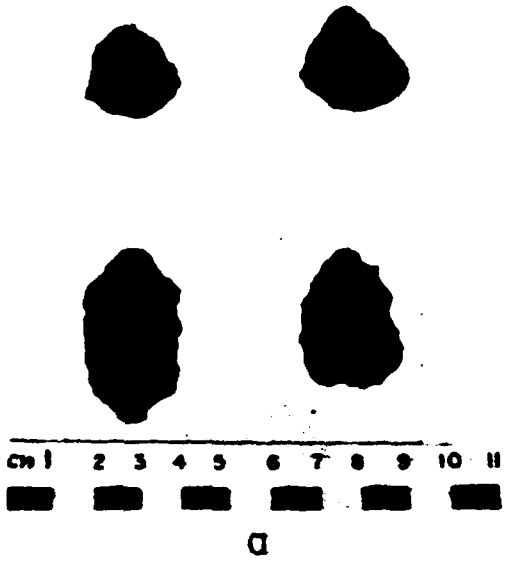


b

Figure 8

Figure 9. a) Unifacial Scrapers all from the surface

b) Unifacial Scrapers all from the surface



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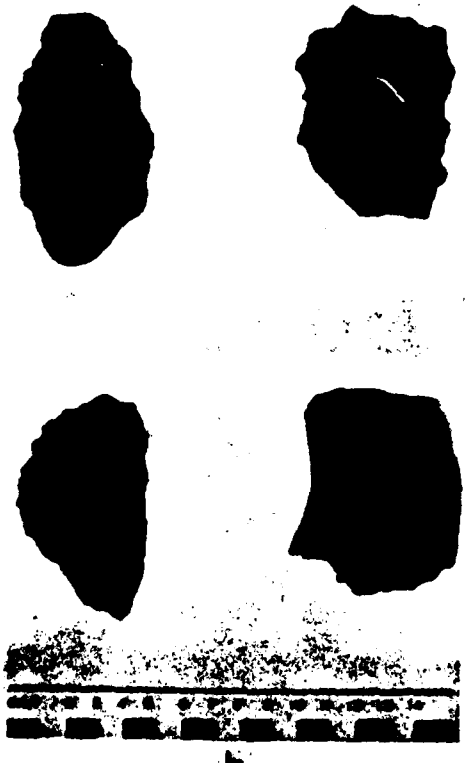
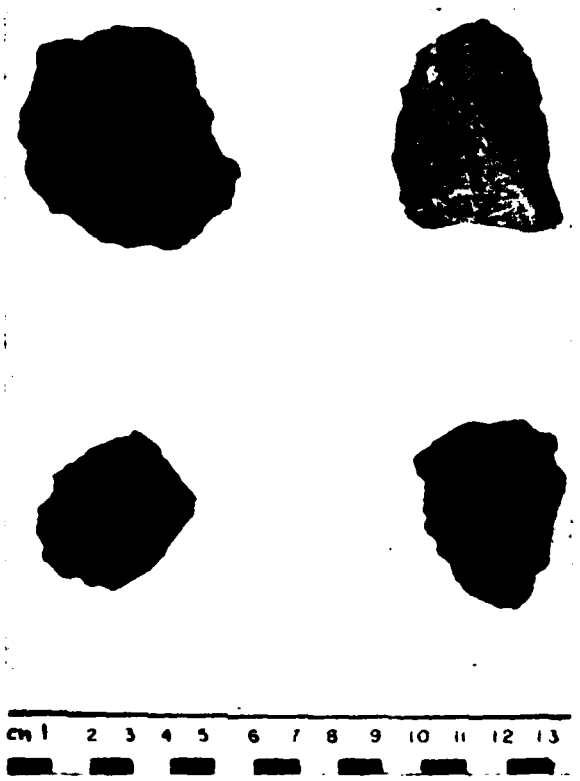


b

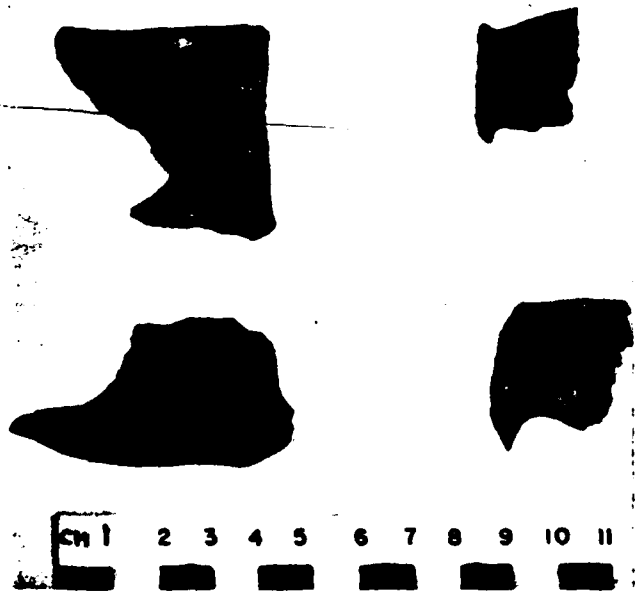
Figure 9

Figure 10. a) Unifacial Scrapers all from the surface

b) Marginally retouched Gravers
Top two from the surface
Bottom two from excavations



a

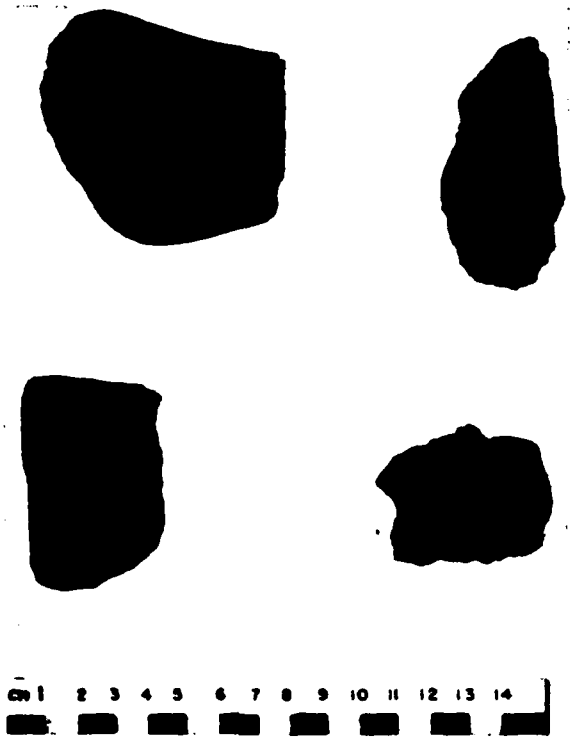


b

Figure 10

Figure 11. a) Marginally retouched Scrapers from the surface

b) Left: marginally retouched Chopper Scraper from the surface
Right: marginally retouched Scraper from the surface



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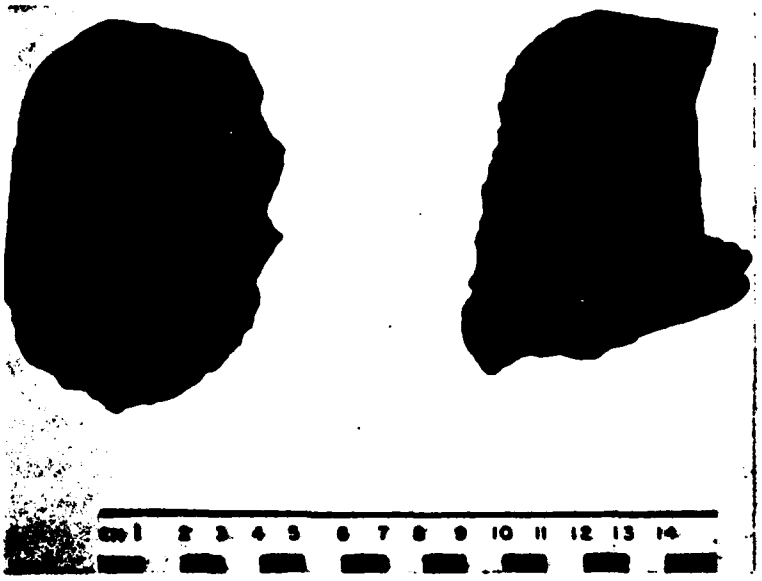


b

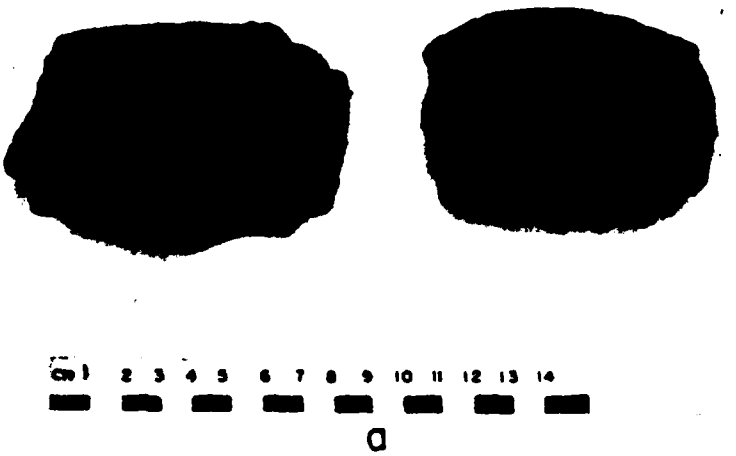
Figure 11

Figure 12. Core tools from the surface

a) Choppers

b) Scrapers

c) Hammerstones



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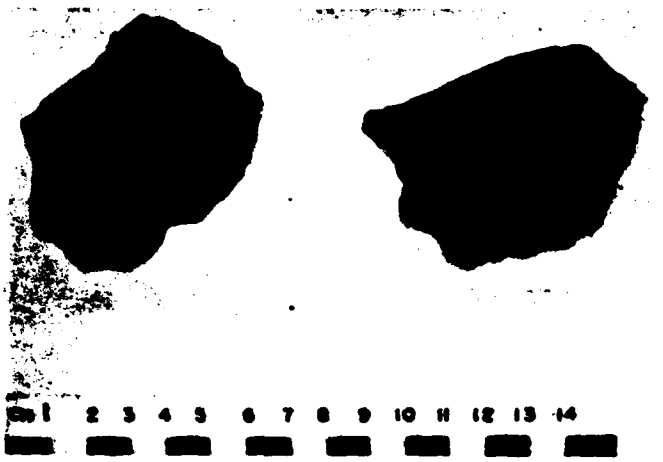

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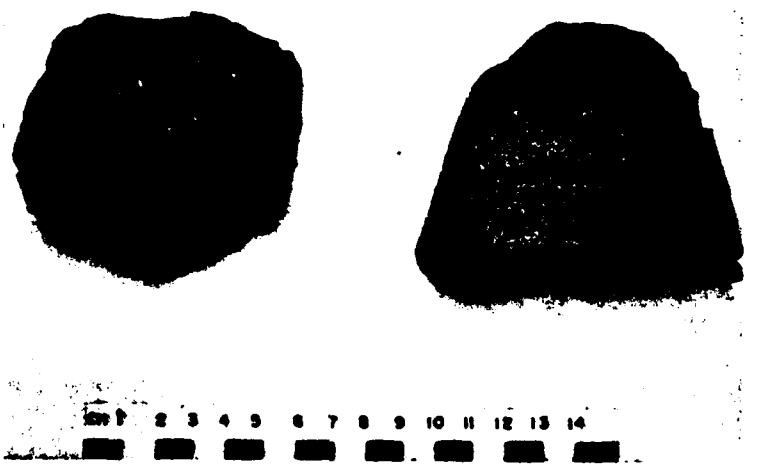


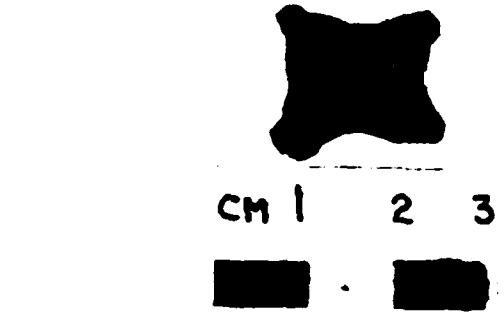
c

Figure 12

Figure 13. a) "Cruciform" from the surface

b) Metate fragments from the surface

c) Metate from the surface



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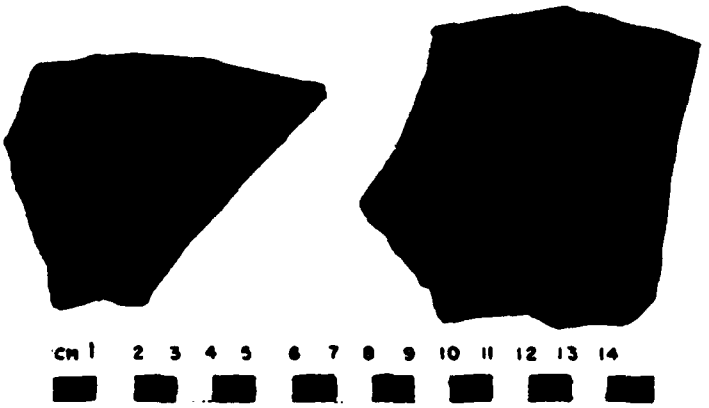

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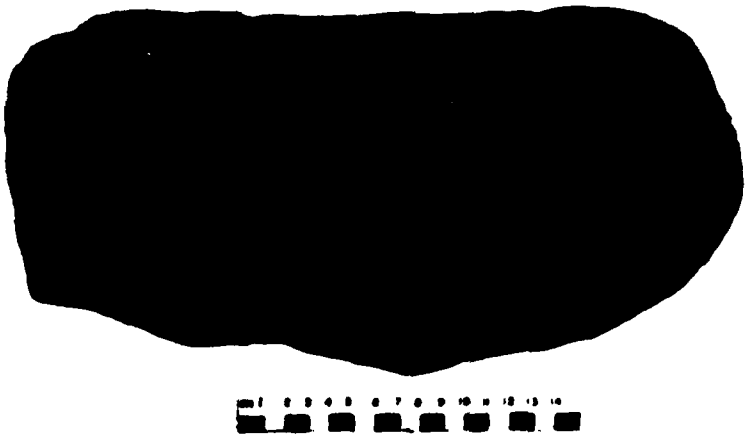


c

Figure 13

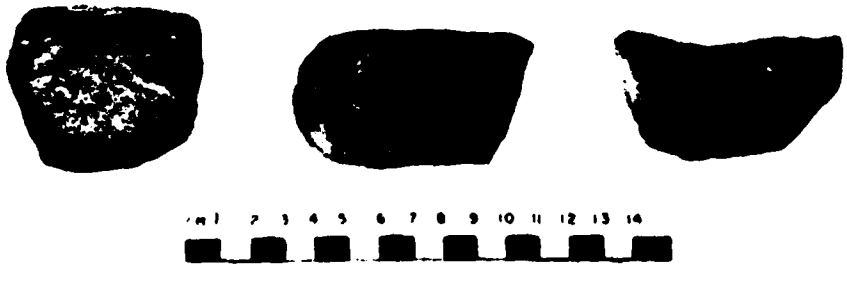
Figure 14. a) Mano from the excavations

b) Mano and fragment from the surface

c) Hammerstones from the surface

a

b



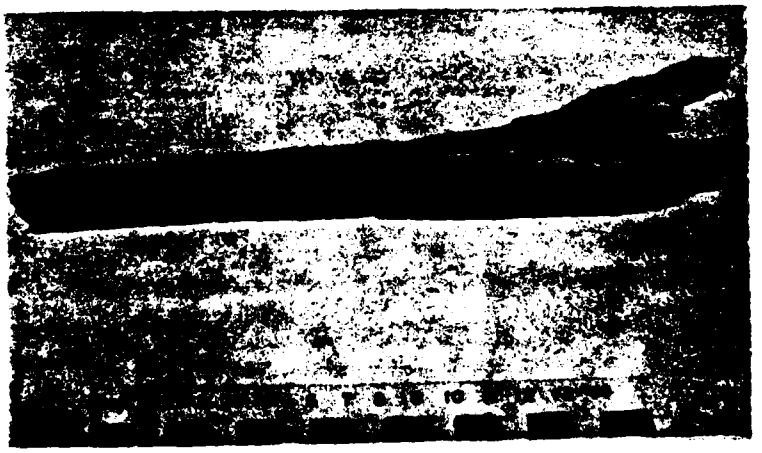
c

Figure 14

Figure 15 a) Top: left, El Paso Polychrome
right, El Paso Brown
both from surface
Bottom: El Paso Brown from excavations

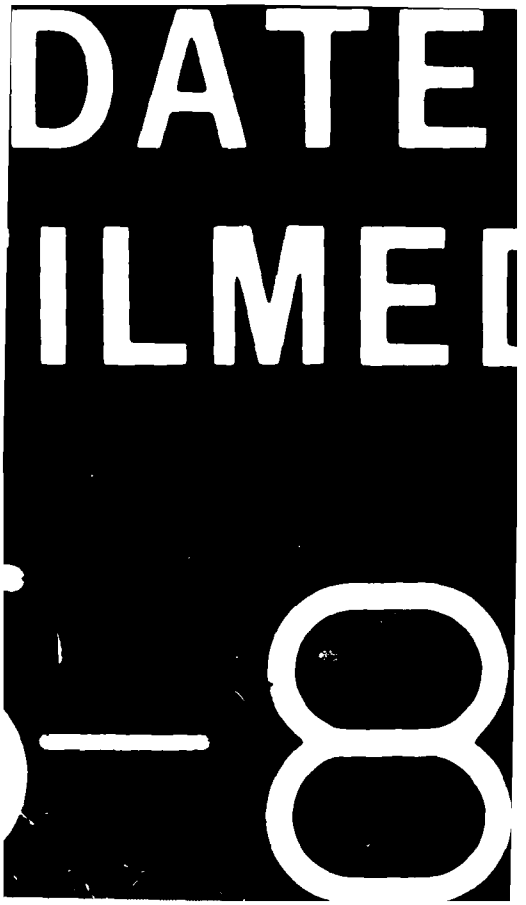
b) Fossilized long bone fragment from the surface

a



b

Figure 15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