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**ARCHAEOLOGICAL INVESTIGATIONS AT
FOUR OPEN AIR SITES IN
EL PASO, TEXAS**

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INTRODUCTION

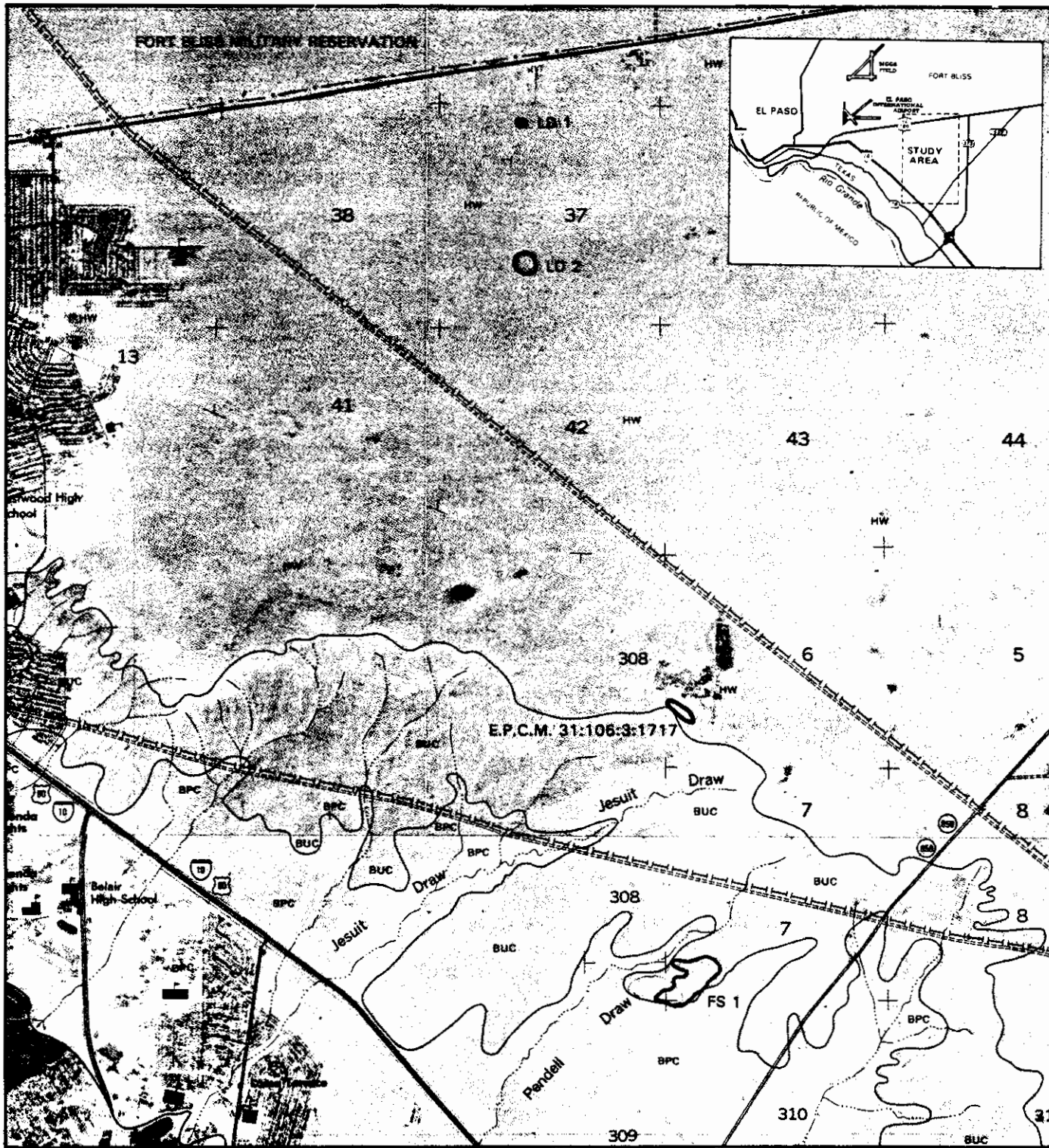
This paper summarizes archaeological investigations at four Jornada Mogollon open air sites located near El Paso, Texas. The fieldwork, by archaeologists from Commonwealth Associates, Inc., took place in February and May, 1978. The sites, designated LD1, LD2, FS1 and 1717, had been located during earlier surveys by archaeologists from the El Paso Centennial Museum (Gerald 1977) and New Mexico State University (Sudar-Murphy 1977a, 1977b). All four sites were located in the low desert environment of eastern El Paso (Figure 1) in areas of proposed government funded housing projects. Because of the Federal support for housing projects, Environmental Impact Statements were required (National Environmental Policy Act of 1969). The cultural resource EIS surveys directed by Rex Gerald (1977) and Toni Sudar-Murphy (1977a, 1977b) located a number of sites, and the four discussed here were considered significant enough to warrant further work. The U.S. Department of Interior, Interagency Archaeological Services-Denver let contracts for and reviewed all aspects of the subsequent investigations. The contract award itself was made after all submitted research proposals had been evaluated by IAS personnel.

The purpose of the fieldwork was to mitigate the impact of the planned construction to each site. The four sites, all surface artifact scatters, were located in the low desert of the Hueco Bolson. Two of the sites (FS1 and 1717) were at the extreme southwestern edge of the Bolson, just above the Rio Grande floodplain. The other two (LD1 and LD2) were in the westcentral portion, about eight miles northwest of the river. While a large number of open air sites have been discovered in the Hueco Bolson in recent years (e.g., Whalen 1977, 1978), these four are the first to be examined and reported in detail. An analysis of the internal structure and composition of each site is presented, together with a description of field methods. It is hoped that the analytical procedures employed here, and the field methods themselves, will prove useful in future work at low desert sites. This paper, it should be stressed, provides only an overview of the investigations. Detailed reports on the fieldwork and analysis discussed here have been completed and are available from the government (Anderson and Carter 1980; Anderson, Carter, and Farmer 1979).

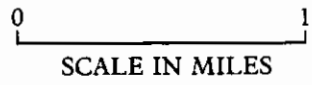
ARCHAEOLOGICAL BACKGROUND

Although contract archaeology is making substantial contributions to our knowledge of prehistory, most of the previous archaeological research in the west Texas area has been carried out by amateur or professional archaeologists working out of their houses or under the auspices of university teaching positions. In the El Paso area work of this nature has been carried out for over fifty years by members of the El Paso Archaeological Society and by researchers from local and surrounding universities. Previous research on prehistoric sites in and around El Paso has documented a 12,000 year record of human activity in the Hueco Bolson. This record has its beginnings in the late Pleistocene and continues through the Contact Era. Rather than a single, unbroken cultural tradition, a number of different societies with divergent adaptation systems occupied the area over time.

How and when the first human population arrived in the Southwest is unknown. The earliest human occupation of the New Mexico-Texas area dates to approximately 10,000 B.C. and is represented by the occurrence of distinctive projectile point types, such as Sandia, Clovis, Folsom and Plainview. These forms have been found in association with extinct Pleistocene fauna in the general region, although they are more commonly reported as isolated surface finds with little other evidence of habitation. The Paleo-Indian Era is thought to have been characterized by a highly mobile, hunting/gathering way of life. Remains from this period are common throughout much of North America with a moderate amount of evidence documenting the period in the Hueco Bolson and Tularosa Basin (Quimby and Brook 1971; Brook 1968; Krone 1975; Beckes 1977).



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 El Paso, Texas



Source:
 USDA Soil Survey of El Paso County, Texas
 By Hubert B. Jaco, 1971



- Legend**
- BPC Bluepoint Association, Rolling (W)
 - BUC Bluepoint Gravelly Association, Rolling
 - HW Hueco-Wink Association, Hummocky (W)
 - Pipeline
 - ~ Intermittent Stream
 - Soil Boundary and Symbol

FIGURE 1
SITE LOCATIONS AND SOIL CONDITIONS

The Archaic Period dates between 6000 B.C. and A.D. 200 in the Hueco/Tularosa area. The human occupation of the region during this period is little understood, although it is generally thought to represent a continuation of a hunting and gathering way of life, coupled with decreased group mobility and an increased role of plant food in subsistence. The early part of the period is a time of readaptation, as the widespread extinctions of Pleistocene megafauna necessitated some changes in hunting behavior. The end of the glacial era also brought substantial shifts in climate and vegetation, forcing changes in social patterns. A variety of site types have been dated to the Archaic Period, including burned rock loci, lithic scatters, isolated hearths, rockshelters and a few complex camps. All of these sites share a complete absence of ceramics (Cosgrove 1947; Lehmer 1948; Whalen 1977).

Around A.D. 200 there was a shift away from the culture patterns which defined the Archaic toward a more sedentary style of settlement, marked by the increasingly intensive cultivation of corn, squash and beans. The period, referred to as the Formative, has been divided into three phases in the general El Paso area: the Mesilla, Dona Ana and El Paso (Lehmer 1948:11). The discovery of charred remains of domesticated plant foods indicates that subsistence, while still somewhat dependent on hunting and gathering, had begun to include farming. The material culture complex of the period includes recognizable structures, projectile points of a size and shape indicating use of the bow and arrow, grinding tools and pottery. Increasing complexity in habitation sites is found as structures develop from single room pithouses early in the period to multistage pueblos later. Pottery styles progress from plain brownwares to polychrome painted vessels accompanied by an increase in imported styles (Beckes 1977:174-184; Smiley 1977:127-263; Whalen 1977). The four sites reported here appear, on the basis of recovered artifacts, to date to the Mesilla or later Phases.

The Formative Period ends about A.D. 1350-1400, when an abandonment of the sedentary way of life apparently occurred. It is generally theorized that a climatic shift toward a more arid ecosystem made farming untenable (Kelley 1952), although this is not well documented. During the late Prehistoric and early Historic Era, the El Paso area appears to have been occupied by small bands of nonsedentary hunters-gatherers.

ENVIRONMENTAL SETTING

The four sites under discussion are located in eastern El Paso, in and at the edge of the Hueco Bolson, a quaternary alluvium filled basin bounded on the east and west by the Hueco and Franklin Mountains respectively. Within the Bolson, the terrain is quite flat and featureless and slopes gently to the southwest from 10 to 15 feet per mile. At the edge of the Bolson the ground quickly drops some 300 feet through dissected terrain to the floodplain of the Rio Grande. Sites FS1 and 1717 are located at the extreme southwestern margin of the Hueco Bolson in an ecotonal area between the river floodplain and the low desert. Sites LD1 and LD2 are well within the low desert in the westcentral portion of the Bolson.

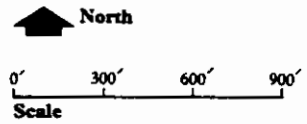
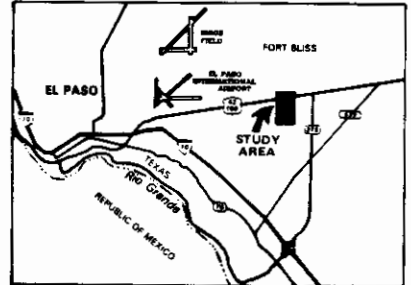
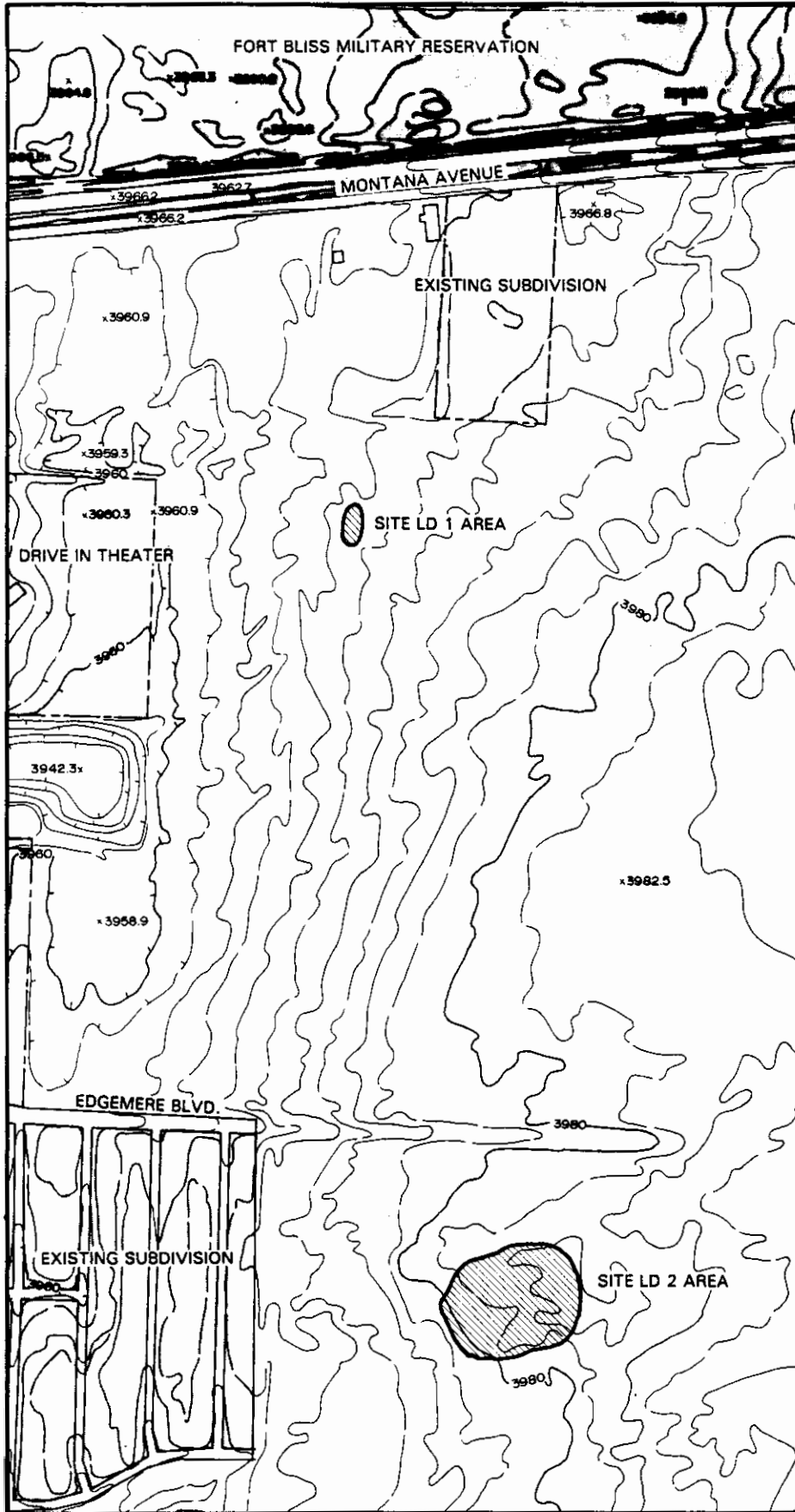
The Rio Grande floodplain is broad and moderately level in this area and is characterized by rich, fertile soils (Jaco 1971:13). It is well suited for both agriculture and game and was probably intensively exploited in the past. Whalen's (1977, 1978) surveys in the Bolson proper, away from the floodplain, noted that the large sites tended to occur at the base of the mountains, at least during later times. The lower elevations of the Hueco Bolson in the area of sites LD1 and LD2 were apparently less desirable areas for settlement than either the Rio Grande floodplain or the mountain slopes.

Sites LD1 and LD2 were located in a comparatively flat area, characterized by shrub stabilized sand dunes which give the terrain a hummocky appearance (Figure 2). The locality lies within Whalen's Low Desert Environmental zone (1977:4). That zone is characterized by flat terrain, calcareous (Hueco-Wink) soils and mesquite, yucca and snakeweed. Sites FS1 and 1717 were in areas quite similar in appearance; although below these sites the terrain is heavily eroded and drops off quickly to the Rio Grande. Both FS1 and 1717 were also located at the heads of prominent draws, which probably offered both seasonal standing water and ready access to the floodplain. The low desert sites, in contrast, were well away from the stream channels where water was only available in small pools after rains.

The Low Desert/Grassland environment would have been suited to both hunting and seed collecting activity. Valuable seed plants included mesquite beans and the seeds of annuals and grasses. These resources would have been available in the summer and fall and suggest exploitation of the sites at that time of the year (c.f. O'Laughlin 1977:188). Game animals present in the original environment included jackrabbit (*Lepus californicus*), cottontail rabbit (*Sylvilagus* sp.) pronghorn (*Antilocapra americana*) and

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**FIGURE 2
SITES LD 1 AND LD 2
IMMEDIATE
TOPOGRAPHIC
ENVIRONMENT**



4' Contour Interval

Source:
City of El Paso October 1977 Overflight
Stereophotogrammetric Map





FIGURE 3 The four person artifact piece-plotting team at work at FS1, in the proposed Golf Resort Joint Venture Subdivision, El Paso, Texas. It was possible to piece-plot 60 or more artifacts per hour with one person on the transit, one person recording angle and distance information, one person holding the stadia rod, and one person cataloging the artifacts. Over 90% of the 1129 artifacts piece-plotted in the FS1 assemblage were taped in; the distance to the remaining surface artifacts were determined by reading stadia. Use of a stadia rod permitted elevation determination at each artifact loci, facilitating site map preparation, as well as assisting aspects of the subsequent analysis focusing on possible post-depositional disturbance or spreading patterns.



FIGURE 4 Artifact piece-plotting activity at Site FS1, in the proposed Golf Resort Joint Venture Subdivision, El Paso, Texas. Using a transit, tape and/or stadia the locations of all observed surface artifacts and features were plotted on the site. Because of the extent of the scatter the transit was relocated several times. It is shown here at Datum 5 in the northeast corner of the site, in a rich pottery and lithic cluster. To the north and below the site may be seen the relatively flat, dune-covered terrain characteristic of this part of the Hueco Bolson.

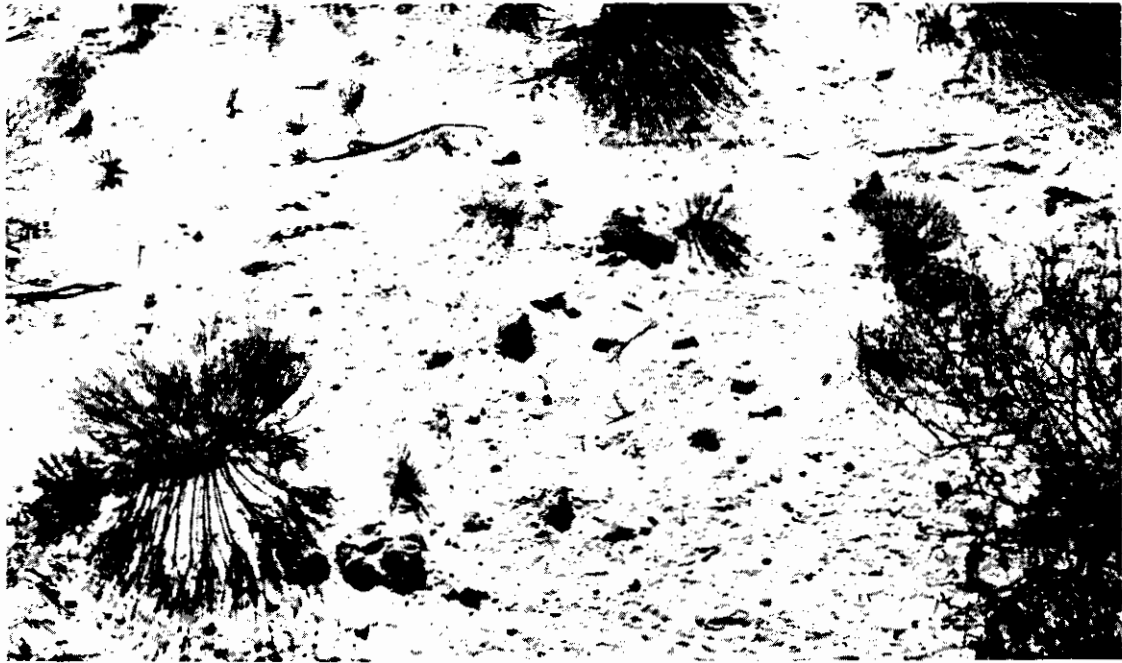


FIGURE 5 Possible hearth area located in the southwestern part of site FS1, in the proposed Golf Resort Joint Venture Subdivision, El Paso, Texas. Tight surface scatters of angular rock fragments such as this are uncommon in the Hueco-Wink soils of the area, and are frequently found, upon testing, to represent hearths. This cluster was found in close proximity to three El Paso brown body sherds and four unmodified fragments of debitage (Artifacts #996-1002). Upon testing, however, no subsurface artifacts or staining was noted, suggesting complete erosion/deflation, or else a natural formation. The presence of artifacts in the immediate area suggests that the feature was a hearth, and that charcoal staining, evidence for a hearth function, has probably eroded away.

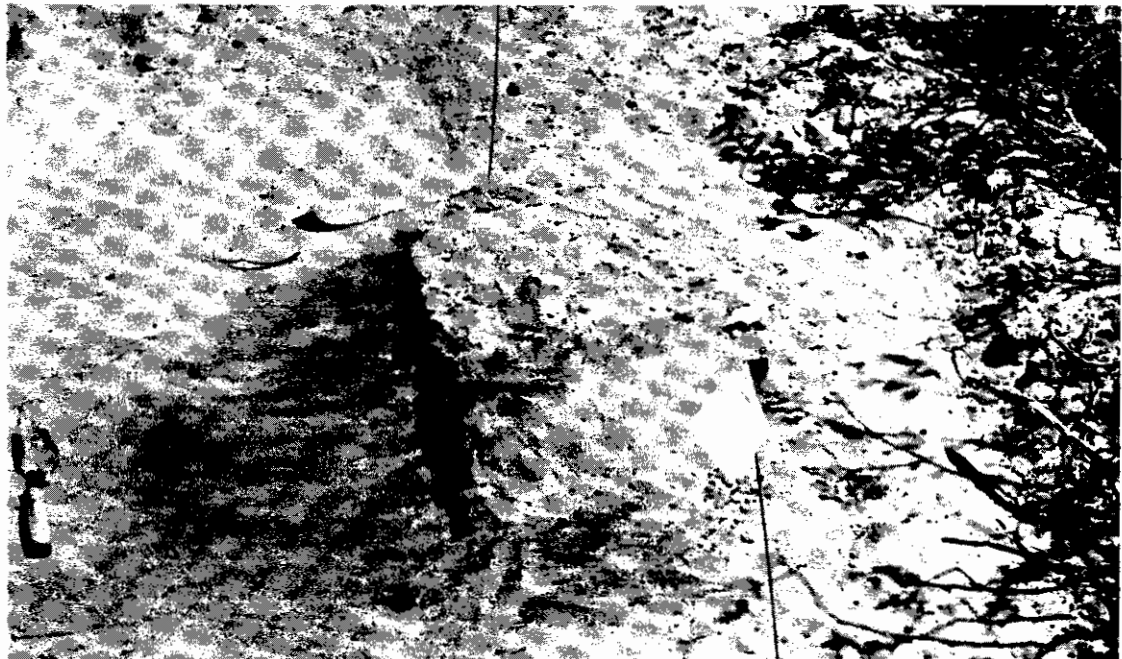


FIGURE 6 Hearth 4, upon exposure and sectioning, in the proposed Golf Resort Joint Venture Subdivision, El Paso, Texas. The hearth was roughly 80 cm in diameter and basin shaped extending to 12 cm below the modern ground surface. The base of this feature was characterized by a compact, reddish colored sand, a condition probably brought on by the firing. Approximately 3 kilograms of burned rock was present in the fill, together with a number of small charcoal flecks, and one small piece of chert debitage. No artifacts were observed on the surface in the immediate vicinity, which is surprising since another recognizable hearth (#5) was detected only 1.5m to the northwest.

Suspected hearths were characterized by tight surface scatters of angular rock fragments, usually burned caliche (Figure 5). During the intensive surface collection, suspected hearth areas were flagged. Seven discrete clusters of burned rock were located at FS1, one of which was found to contain two hearths upon excavation. At each suspected hearth cluster, the locations of all rock fragments were recorded. The area of the scatter was then shovel skimmed and if subsurface rock fragments, charcoal staining or artifacts were encountered, a series of one meter squares were laid out over the area and then excavated. All fill from these units was passed through ¼ inch mesh; soil samples were retained if subsurface charcoal staining or fired clay lenses were encountered (Figure 6). Individual fragments of caliche were also observed in a number of locations, particularly at the north end of the site, suggesting that the number of hearths originally present on FS1 may have been somewhat higher. Given the sparse vegetation cover and deflated terrain over much of the site, it is probable that some hearth stains may have weathered away.

ANALYSIS RESULTS

Site FS1 (E.P.C.M. 31:106:7:25)

Site FS1 extended over approximately 80,000 square meters, along the crest and upper slopes of an eroded ridgeline (Figure 7). The scatter was not continuous, but instead was found to consist of at least 12 separate clusters that varied considerably in both size and content (Figure 8). A fair number of isolated artifacts were also noted over the area. The majority of the assemblage occurred at the northern and eastern margin of the ridge defining the scatter, in level areas overlooking erosional channels or dropoffs. Several clusters were also located away from the edge of the crest and southern slope of the ridge; but these were considerably smaller and had fewer artifacts than those on the ridge margin.

A total of 1286 prehistoric artifacts were recovered at FS1 in 1978: 148 potsherds, 102 flaked stone tools, 1028 pieces of debitage and core fragments and eight pieces of ground stone. Five hammerstone fragments were included in the debitage total since all were recycled cores. Of the total, 1129 were pieces plotted to exact provenience and the remainder came from test units or from disturbed areas.

Twelve separate clusters were recognized within the general scatter and most appeared to be generally undisturbed (Figure 8). Much of the site assemblage, in fact, appears to consist of primary refuse (c.f. Schiffer 1976:30) or artifacts lost or disposed at or near their place of use. Two approaches were used in the analysis and interpretation of the site assemblage. First, the entire scatter was viewed collectively as a single assemblage to delimit and evaluate its general properties. Second, individual concentrations within the scatter were examined on the assumption that these clusters reflected specific component or activity areas.

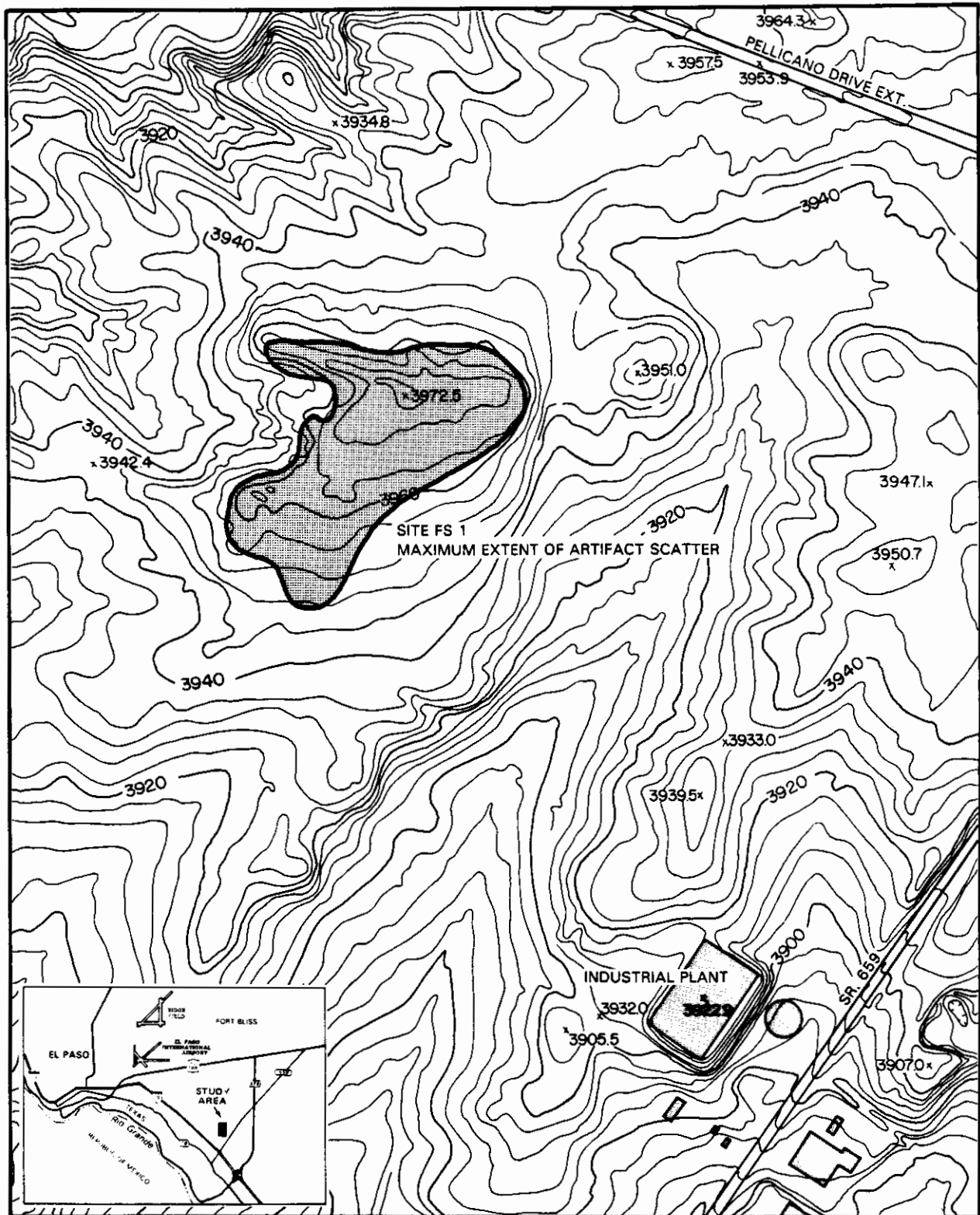
One hundred forty-eight potsherds were recovered at FS1, the majority (N=133, 89.8%) in cluster 2 in the northeast corner of the site. The remaining sherds (N=15, 10.1%) were scattered singly or in twos or threes in other areas. Cluster 2 was the only pottery concentration noted at FS1 and may well be the source of at least some of the isolated sherds found on other parts of the site.

All of the sherds found at FS1 were fragments of plain El Paso Brown vessels. The assemblage was identical to the type description for El Paso Brown provided by Whalen (1977:154) for sherds from the Hueco Bolson. The entire ceramic assemblage from the site weighed approximately one kilogram, about the weight of a single small jar. Pottery use at FS1 does not, therefore, appear to have been particularly extensive and it may have been restricted to one or a few periods of site use, as suggested by the localized distribution. A number of sherds had dark grey exterior surfaces suggesting use in a fire, possibly in cooking or seed parching. The presence of sherds with darkened interior surfaces suggesting use in a fire, possibly in cooking or seed parching. The presence of sherds with darkened interior surfaces or both darkened exterior and interior surfaces that fit with lighter-colored sherds, however, also argues for at least some accidental (post-breakage) firing.

It is probable that any of several different functions may have characterized the use of the site vessels:

These vessels were probably used for many different purposes, including water carriers, containers for long- and short-term storage of dry goods and liquids and food preparation (Smiley 1977:61).

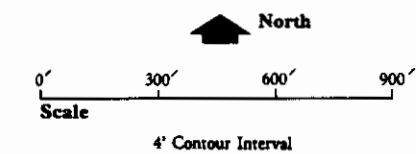
Given the absence of nearby permanent water, pottery jars might have been used for water storage; alternatively, they may have been used to carry, store or prepare food.



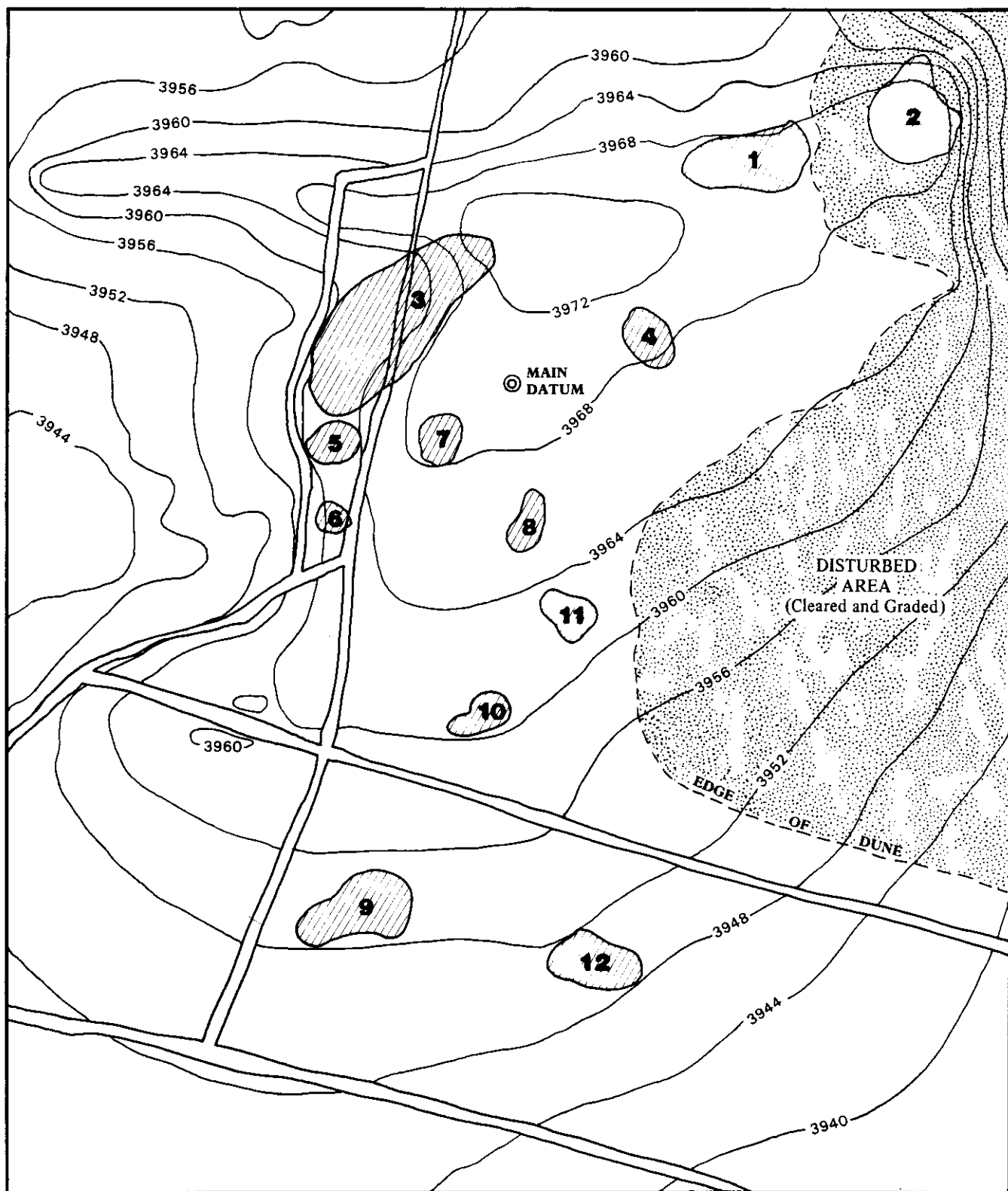
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FIGURE 7
SITE FS 1 IMMEDIATE TOPOGRAPHIC ENVIRONMENT

COMMONWEALTH ASSOCIATES, INC.




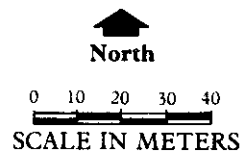
Source:
 City of El Paso October 1977 Overflight Stereophotogrammetric Map



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 El Paso, Texas

FIGURE 8
SITE FS 1 PRIMARY ARTIFACT CLUSTERS
 (E.P.C.M. 31:106:7:25)

Legend
 Cluster Area



The flake tool and debitage assemblage at FS1 were predominantly cherts with minor amounts of eight other raw material categories (Table 1). Slightly over half of the total assemblage was characterized by adhering cortex, and many of the primary cores and secondary flakes were large enough to permit accurate reconstruction of the original raw material masses (prior to reduction). Much of the FS1 debitage assemblage appeared to derive from the hard hammer reduction of small gravels and cobbles weighing approximately 100 to 200 grams.

The entire debitage and flake tool assemblage at FS1 appears to represent expedient, opportunistic reduction (c.f. Binford 1973:242-243), that is, the manufacture, use and discard (with no evidence for curation) of stone tools at one location with raw materials found at that location. The majority of the surviving archaeological record at FS1 points to this kind of lithic technology, both in terms of debitage (reduction of debris from local cobbles) and tools (predominantly unifaces with minimal effort expended in manufacture). The nature of the industry, focusing on the reduction of small cobbles and gravels, suggests that some or all of the site assemblage may derive from local outwash deposits.

One hundred ten stone implements were recovered at FS1: 102 flake tools (including five hammerstones and hammerstone fragments) and eight ground stone fragments. The entire tool assemblage was crude with few well made tools present; the latter were usually teardrop endscrapers or biface fragments (Figure 9). Tool manufacture and use on the site appears to be highly expedient with most selection directed towards larger flakes. Raw material selection for flaked tools at FS1 did not appear to differ from the selection evident with the debitage assemblage.

Functional analysis of individual flake tools focused on overall artifact morphology, working edge angle and edge damage. Few formal tool types were recognized, such as "teardrop" endscrapers or hafted spokeshaves. Much of the tool assemblage, in fact, occurred on otherwise undistinguished fragments of debitage. The majority of the flaked tool assemblage (N=193, 91.2%) was characterized by unifacial retouch. One intact biface and two biface fragments were recovered, together with six pieces of debitage with bifacially worn edges.

The remaining nonflaked stone tools recovered at FS1 were hammerstones and hammerstone fragments (N=5) and ground stone tool fragments (N=8). All of the hammerstones appear originally to have been quite small, under 100 gr in weight (Figure 10). All also have had one or more flakes detached from their surface, indicating that the raw material had been tested or used for a core. The eight ground stone artifacts were all small fragments and all but one were found in the northeast corner of the site in or near Cluster 2, where most of the pottery was also found. Functional interpretation is difficult to ascribe, but use of the ground stone in plant processing appears possible. It should be noted that a similar association of pottery and ground stone was also observed at site LD1.

Relative temporal placement of the FS1 assemblage may be inferred from the nature of the artifact assemblage. The ceramics, which were largely restricted to Cluster 2, consisted entirely of El Paso Brown sherds. The undecorated neck, smooth finish and flattened lips on these sherds are all characteristic late Mesilla Phase attributes (Whalen 1979, personal communication). The absence of distinctive or painted (El Paso Polychrome) rims also argues against later site use (Whalen 1977:153). Whalen (1977:145) has also suggested that sites characterized by diverse lithic assemblages with materials of a quality similar to that noted at FS1 (fine-grained with good knapping potential) are more typical of Mesilla than El Paso Phase sites. Given this line of reasoning, the FS1 assemblage, and most of its constituent subclusters, may reflect Mesilla Phase use. It should be cautioned, however, that lithic procurement and use patterns have not been examined in detail between El Paso, Mesilla and other period sites in the area. Use of lithic raw material quality as a method for dating, therefore, must be viewed as only a tentative procedure.

A single well made "teardrop" endscraper (Figure 10:p) was found isolated in the northeastern part of the site and may date to the Archaic Period. The care expended in its production makes it almost unique on the site and the general form is reported from Paleo-Indian and Archaic assemblages in the area (e.g., Quimby and Brook 1967; Beckes 1977), although they also occur in later periods as well (Wheat 1955:136). One intact arrow point and one arrow point fragment were also recovered on the site (Figure 9:g,r) from Clusters 3 and 6. These were typologically unidentifiable, although almost unquestionably of post Archaic age. Several periods of site use dating to the Mesilla Phase are suggested by the data, with earlier or later components probably present as well.

Table 1. Incidence of raw material types by cluster and over the entire scatter, Site FS1, flake tools and debitage.

Raw Material										
Cluster	Chert	Agate	Obsidian	Quartzite	Chalced.	Sandstone	Siltstone	Basalt	Rhyolite	TOTAL
1	30/3 (66.7)	3 (6.7)	6 (13.3)			2 (4.4)	1/1 (2.2)		3/1 (6.7)	45/5 (100%)
2	140/8 (77.3)	6 (3.3)	10/1 (5.5)	3 (1.7)	6 (3.3)	4 (2.2)	1 (0.6)	9 (5.0)	2 (1.1)	181/9 (100%)
3	189/19 (73.2)	8 (3.1)	17 (6.6)	10/1 (3.9)	5 (1.9)	7/1 (2.7)	1 (0.4)	11/1 (4.3)	10/2 (3.9)	258/24 (100%)
4	18/3 (81.9)	1 (4.5)				2 (9.1)			1 (4.5)	22/3 (100%)
5	65/8 (76.5)	5 (5.9)	3 (3.5)	6 (7.1)	3 (3.5)			3 (3.5)		85/8 (100%)
6	35/7 (60.4)	7/1 (12.2)	2/1 (3.4)	2 (3.4)	1 (1.7)	9/1 (15.5)	1 (1.7)	1 (1.7)		58/10 (100%)
7	25/1 (54.3)		1/1 (2.2)	4 (8.7)		3 (6.5)		12 (26.1)	1 (2.2)	46/2 (100%)
8	24/1 (70.7)	3 (8.8)	3 (8.8)	1 (2.9)				2 (5.9)	1/1 (2.9)	34/2 (100%)
9	11 (61.1)		4 (22.2)			1 (5.6)		2 (11.1)		18/0 (100%)
10	28 (65.1)	6 (13.9)			2 (4.7)	4 (9.3)	1 (2.3)	2 (4.7)		43/0 (100%)
11	28/7 (71.8)		2 (5.1)	2 (5.1)	1/1 (2.6)	2 (5.1)	1/1 (2.6)	2 (5.1)	1/1 (2.6)	39/10 (100%)
12	16/1 (64.0)		2 (8.0)		2 (8.0)	2 (8.0)		3 (12.0)		25/1 (100%)
Artifacts Outside of Clusters	195/22 (70.7)	21/1 (7.7)	13/2 (4.7)	13/0 (4.7)	5/0 (1.8)	11/1 (4.0)	3/1 (1.0)	11/1 (4.0)	4/0 (1.4)	276/28 (100%)
Site Total	804/80 (71.2)	60/2 (5.3)	63/5 (5.6)	41/1 (3.6)	25/1 (2.2)	47/3 (4.2)	9/3 (0.8)	58/2 (5.1)	23/5 (2.0)	1130/102 (100%)

(percent of total)
 Number of Flakes/Number of Tools
 Number of Tools = 102
 Number of Cores and Nonretouched Debitage Fragments = 1028



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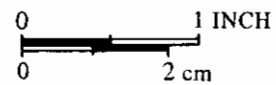


FIGURE 9
 Flake stone tools from site FS1 (E.P.C.M. 31:106:7:25).

Artifact provenience/catalog numbers:

(a) 43 (b) 20 (c) 36 (d) 13 (e) 412 (f) 347 (g) 1279 (h) 608 (i) 596 (j) 658 (k) 803 (l) 595 (m) 834
 (n) 806 (o) 833 (p) 839 (q) 786 (r) 842 (s) 830 (t) 841 (u) 815.



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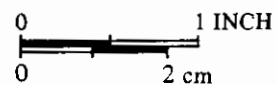


FIGURE 10
 Flake stone tools and hammerstones from site FS1 (E.P.C.M. 31:106:7:25).

Artifact provenience/catalog numbers:

(a) 911 (b) 932 (c) 966 (d) 975 (e) 1107 (f) 1094 (g) 1073 (h) 1104 (i) 1099 (j) 1101 (k) 1093 (l) 1096 (m) 1089 (n) 1109
 (o) 1127 (p) 335 (q) 987 (r) 1280 (s) 505 (t) 326.