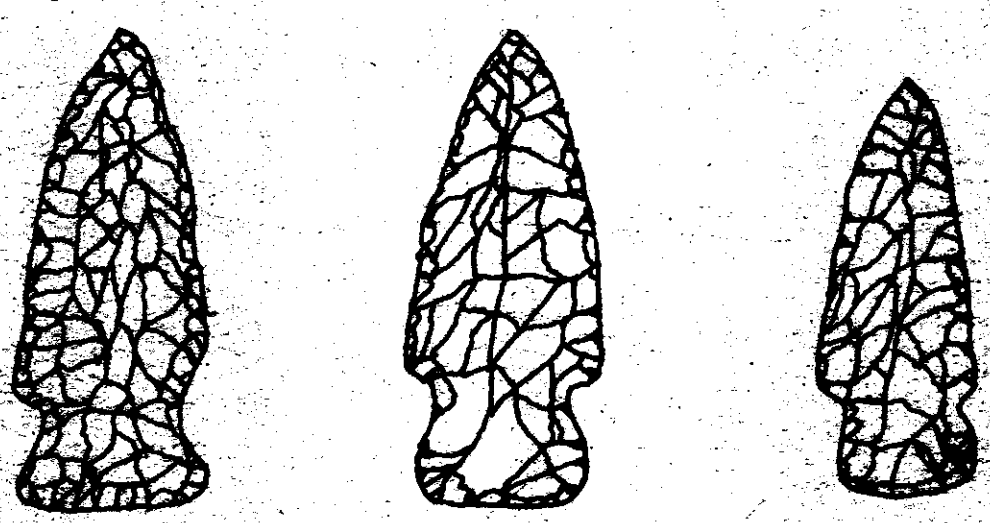
EXCAVATIONS AT SITE 41WH19, WHARTON COUNTY, TEXAS

by

L. W. Patterson, J. D. Hudgins, R. L. Gregg, W. L. McClure



REPORT NO. 4, HOUSTON ARCHEOLOGICAL SOCIETY
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TABLE OF CONTENTS

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TABLE LIST

FIGURE LIST

FOREWORD

Site 41WH19 is a major stratified prehistoric site in Wharton County, Texas. This report summarizes the results of excavations at this site by the Houston Archeological Society during 1983 and 1984. Because of the importance of this site, this became a major project of the HAS. The excavations and subsequent analyses represent a considerable amount of work by a large number of people, involving hundreds of manhours.

Individuals who participated in field work include: Dave Atherton, Jean Clark, Greg Dimmick, Gary Dinsmore, Alan Duke, Joan Few, Richard Gregg, Marcy Grubbs, Troy Herndon, Bill Hudgins, Joe Hudgins, Mike Johnston, Betty Kindall, Sheldon Kindall, Marene Maness, Ray McCausland, Bernard Naman, Tommy Nuckols, Pat Nesbitt, Lee Patterson, Stan Perkins, Gary Ryman, Carolyn Walker, and Mike Woods. Apologies are offered to anyone whose name may have been missed accidentally.

Support for this project has been given by the University of Arizona and the Smithsonian Institution to obtain radiocarbon dates. Appreciation is expressed to C. Vance Haynes of the University of Arizona and Dennis Stanford of the Smithsonian Institution for recommending that their respective institutions furnish radiocarbon dating services for this project. Appreciation is expressed to Timothy Jull of the University of Arizona and Robert Stuckenrath of the Smithsonian Institution for doing the radiocarbon dating.

The sections on fine screening and analysis of a human burial are written by Richard Gregg. The analysis of faunal materials is by William McClure. Studies on the details of stratigraphy were made by Sheldon Kindall, Dave Atherton, and Richard Gregg. Joe Hudgins and Sheldon Kindall made major contributions to the logistics and general arrangements for this work.

Responsibility for errors, omissions, and final interpretations remains with the senior author, L. W. Patterson.

INTRODUCTION

This is a detailed report on excavations at site 41WH19 in Wharton County, Texas by the Houston Archeological Society, during 1983 and 1984. This is a well-stratified prehistoric site with occupations starting in the Early Paleo-Indian period and continuing through the Late Prehistoric. It is the first site found in southeastern Texas with well-stratified Paleo-Indian and Early Archaic components. Due to the determination of relative chronology for several artifact types found at this site, some research problems can now be addressed where little data were previously available.

This site was discovered by J. D. Hudgins along a large eroded creek bank area, now referred to as Location "A". The large collection of artifacts from the disturbed surface of Location "A" is described in a separate section of this report. Extensive testing by the Houston Archeological Society in 1982 failed to locate any significant remaining cultural deposits in situ at this location.

In late 1982, some flint flakes were found on the surface of the creek bank, about 200 feet downstream of Location "A", in an area not subject to the same intense erosion as Location "A". A test pit immediately showed the existence of intact cultural deposits at this new location, and an excavation program was then started. This area is referred to as 41WH19 Location "B". The results of two seasons of excavations at Location "B" are the primary subject of this report. A preliminary report on the first excavation season has already been published (Patterson and Hudgins 1983a).

Site 41WH19 is important because of its deep stratification and the availability of radiocarbon dates. Roughly 10,000 years of prehistory can be studied at this single site. A number of sites are now known on the inland coastal plain of southeastern Texas with long occupation sequences (Patterson 1983, Patterson and Hudgins 1985a), but many of these are deflated sites with data only from surface collections. There is now a large body of data for this region that indicates a longtime stable settlement pattern, and a very early start for a broad-based Archaic hunting and gathering lifeway.

Some of the research problems that can be studied with data from Site 41WH19 include projectile point type sequences, lithic technologies employed in different time periods, ceramic technologies, lithic procurement patterns, and some types of subsistence activities. Considerable new data are available from this site on Paleo-Indian projectile point types and sequences. Both Plains and Eastern point traditions appear to be represented here during this time period. The Plains Tradition is represented by Folsom, Plainview and Angostura-like points, all in the expected stratigraphic sequence. The Eastern Paleo-Indian point tradition is represented here by a variety of notched point types,

starting as early as or earlier than Folsom. Some new data on Early Archaic projectile points are also available from this site.

GEOGRAPHIC AND ECOLOGICAL SETTING

Site 41WH19 is located on the east bank of West Bernard Creek in eastern Wharton County, about 50 miles from the Gulf Coast. It is in an ecological transition zone at the border of coastal prairie and woodland. Woodlands in this area are predominantly deciduous in nature. A variety of plant and animal food resources would have been available in this environmental situation. Animals available would have included deer, turtle, alligator, squirrel, rabbit, rat, and sometimes bison. A variety of waterfowl would have been available on a seasonal basis. From all indications, this site was used periodically as a seasonal campsite by nomadic foragers over a very long time period.

Even though excavations were made here on the edge of a steep creek bank, each prehistoric occupation event occurred on fairly level ground. This would have been a well-drained sandy area near a water source, which was the principle settlement strategy used by Indians for inland areas of this region.

The Holocene period geology here consists mainly of redeposited Pleistocene sands and clays overlying the Pleistocene-age Beaumont formation. This area has been known in the past for its large-scale flooding of river systems during periods of heavy rain. Surface geological maps place the site location at the interface between the Holocene and Pleistocene.

LOCATION "A" COLLECTION

Location "A" is a large section of creek bank that has undergone severe erosion. A large collection of artifacts has been made from the surface of this area. Results of continuing collecting here have been periodically published (Hudgins and Patterson 1983, Patterson and Hudgins 1981, 1983b, 1984, 1985b). Even early collections indicated a very long occupation sequence. Paleo-Indian point types found at Location "A" include Plainview, San Patrice, Meserve, Scottsbluff, and some new types of early side-notched, corner-notched and straight-stem points. A full range of dart points from all major subdivisions of the Archaic period has been found here, as well as dart points from later time periods, and arrow points from the Late Prehistoric.

In this collection, the Early to Middle Archaic is possibly represented by Carrollton and Bulverde dart points. The Middle to Late Archaic is represented by Pedernales, Travis, Nolan, and Williams points. Gary and Kent points found here seem to start in southeastern Texas sometime in the Middle Archaic period and continue through all later prehistoric periods (Patterson 1980). Dart points found here that are typical of the Late Archaic and Early Ceramic periods in southeastern Texas include Marcos, Darl,

Yarbrough, Palmillas, Morhiss, and Ellis. Arrow points found here from the Late Prehistoric period include Perdiz, Scallorn, and Catahoula types.

Projectile point typologies used in this report are consistent with Suhm and Jelks (1962) and Turner and Hester (1985).

Ceramic types found at Location "A" include Goose Creek Plain, Rockport Plain , and Rockport Asphalt Painted. The occurrence of small amounts of Rockport ceramics may indicate some contacts with Late Prehistoric Indians from the Gulf Coast margin.

Several San Patrice points were found here. Two Albany scrapers (Turner and Hester 1985:230) that have been associated with San Patrice lithic technology were also found (Patterson and Hudgins 1981).

One of the most notable things about Location "A" is the large number of Paleoindian points. This indicates that Paleoindians may have settled in this general area, rather than just occasionally passing through.

EXCAVATION DETAILS

Since Location "B" is at the edge of a steep creek bank, the first thing done during excavation work was to prepare the bank to allow vertical excavations in intact stratigraphy. This was done by making vertical cuts along the bank to remove erosional overburden, and thus arrive at physically undisturbed original deposits. Also, there is approximately 1.5 meters of dredge spoil on top of this site, placed there in the 1940's by creek dredging work. There is a very clear boundary between the dredge spoil on top and the first natural soil stratum. Proper identification of the boundary between dredge spoil and the first layer of regular soil has not been a problem, but removal of the thick dredge spoil overburden has involved considerable labor.

A plan view of the excavations is shown in Figure 1. Approximately 70 square meters of horizontal area have been excavated. A typical vertical profile of the excavations is shown in Figure 2. The overall thickness of layers containing cultural deposits is about 2.5 meters. Below this is sterile clay of the Pleistocene Beaumont formation. Originally, excavation levels were established according to natural stratigraphic levels. This was done during a period of dry soil. Later, in wetter weather, more natural stratigraphic levels became visible, but established excavation levels were not changed. A summary of the stratigraphy of the excavated portion of this site is given in Table 1, and a vertical profile of the front row of test pits is shown in Figure 3. Differences in excavated depths of each stratum result because natural stratigraphic levels were followed, according to differences in soil appearance. Each main stratum was divided into sublevels for excavation purposes.

Stratum 1B is the top excavation level, consisting of 30 to 40 cm of uniform brown silty sand, down to a buried "A" horizon paleosol. Later, it was found that some sections of Stratum 1B contained another thin "A" horizon at a higher level. Stratum 1B is entirely Late Prehistoric, as is evidenced by ceramics and typical arrow points types.

Details on geology given here are based on comments by Jack Crout, an experienced local soils consultant. He is in agreement with observations by others that this site contains uniform natural stratigraphy, with few signs of soil disturbance caused by erosion.

Stratum 1A is the next lower excavation level. It consists of brown silty sand with three "A" horizons, at the top, middle and bottom, having a total thickness of 30 to 40 cm. Excavations were made to follow the natural stratigraphy of the "A" horizons. Stratum 1A appears to be transitional between the Late Prehistoric and Early Ceramic periods, with arrow points found only in the upper half.

Stratum 2 has a thickness of 80 to 100 cm for various test pits. In dry weather, Stratum 2 appeared to be a rather uniform series of many depositional episodes. Under wetter conditions, an additional "A" horizon became apparent in the top 20 cm of Stratum 2, and some darker bands that might be leached remnant "A" horizons were also observed. This deep stratum was excavated in arbitrary levels of 20 to 25 cm, to obtain four sublevels. Exact depths were recorded for each diagnostic artifact that was found in situ. At first, Stratum 2 appeared to cover only the entire preceramic Archaic period. However, it was found that the top 20 cm of Stratum 2 contains ceramics and so encompasses the earliest portion of the Early Ceramic period as well. The matrix in Stratum 2 is a mixture of sand, silt and clay, which becomes very hard when dry.

At the bottom of Stratum 2, there is a sharp change to an off-white, light-colored silty sand, which is easy to screen under all conditions. This stratum is generally 40 cm thick, and is designated as Stratum 3. It appears to contain little clay or organic material. Artifacts found in Stratum 3 appear to be entirely within the Late Paleo-Indian period, with an Angostura-like point found just above at the bottom of Stratum 2, and a Plainview point found just below, at the top of Stratum 4.

At the bottom of Stratum 3, there is another sharp change in soil type continuing through Stratum 4. This soil change is consistent and easy to distinguish. Most of Stratum 4 consists of 40 cm of a uniform reddish-brown silty, clayey sand, overlying sterile red Beaumont clay. At the north and south ends (upstream and downstream) of the excavations, the Beaumont clay rises quickly and Stratum 4 is no longer present. Within the area of the site there are a few uneven places in the top of the Beaumont clay, where Stratum 4 goes down for another 20 cm, but only a few flakes have been found in these pockets. Folsom and Plainview

points found in Stratum 4 indicate that occupation of this stratum starts in the Early Paleo-Indian period and continues into the earliest portion of the Late Paleo-Indian period.

There are no plans to extend the excavation area north or south, because of the sudden rises in the surface of the Beaumont formation. Any future excavations should extend east, farther into the bank.

All excavated materials have been put through 1/4-inch mesh screens, with the aid of water from a small gasoline-driven pump. It appears that water screening has given superior recovery of small flint flakes and carbon samples, since these small size materials are easier to see during water screening. Fine screening was done for all levels in two test pits to obtain more complete recovery of small size materials, with results discussed in a later section. It is estimated that over 250 tons of soil were screened.

PROJECTILE POINTS

A summary of projectile points from excavations at this site is given in Tables 2 to 5. Illustrations of these points are shown in Figures 4 to 10. Three points from surface finds at Location "B" are also shown in Figure 4.

Points from Stratum 1B represent the Late Prehistoric period. There are Scallorn, Perdiz and unifacial arrow points, an Ensor dart point, and a Gary(?) dart point preform. As previously noted (Patterson 1980), both the spear and the bow and arrow were being used during the Late Prehistoric period on the inland portion of the coastal plain.

Stratum 1A represents a transition to the Late Prehistoric from the Early Ceramic period, with arrow points found only in the top half of this stratum. One Edwards arrow point and one Perdiz arrow point were found. Dart point types in Stratum 1A include Kent, Gary, Yarbrough, Ellis-like, and Travis-like specimens.

The upper 20 cm of Stratum 2 represents the transition to the Early Ceramic period from the earlier preceramic Archaic period, as indicated by a small amount of potsherds. Two Gary dart points and a miscellaneous lanceolate-shaped point were found in this excavation level.

The middle portion of Stratum 2 apparently represents the Middle and Late Archaic periods. Point types from this level include Bulverde-like, Travis-like, and Yarbrough specimens.

The lowest 25 cm of Stratum 2 may represent the Early Archaic period. Point types from this level include Angostura-like and Bulverde-like specimens, many with ground basal edges. It should be noted that a few later points also have ground basal edges.

Basal-edge smoothing on projectile points seems to have gradually gone out of use during the Early and Middle Archaic periods.

Stratum 3 and the top half of Stratum 4 seem to represent the Late Paleo-Indian time period. A surprising variety of projectile point types was found in these levels, showing that projectile point typology from this period has been poorly known previously. The San Patrice (Fig. 9I) and Plainview (Fig. 10B) specimens from these levels are the only types that have been previously reported from the Late Paleo-Indian period. A wide variety of other side-notched, corner-notched, and straight-stem point types were found in Stratum 3 and the upper half of Stratum 4. These types must now be recognized as being from the Late Paleo-Indian period. Most of these new point types have ground basal edges. One specimen (Fig. 9F) appears to be of the Big Sandy variety, which has not been reported previously this far south in eastern Texas. The tip of the Plainview point (Fig. 10B) has been retouched as a scraper.

The bottom half of Stratum 4 represents some portion of the Early Paleoindian period. A Folsom fluted point (Fig. 10E) was found at this level. This specimen is a manufacturing failure, broken during removal of the second flute. This split point type of manufacturing failure is common for Folsom points (Wilmsen and Roberts 1984:Fig. 102). It is not likely that this specimen was curated by later Indians. Other, non-fluted point types were also found at this level. It had not been previously reported that non-fluted points were found this early in this general region, except for Sellards' (1940) site somewhat farther west in Bee County. These other point types in the bottom half of Stratum 4 include side-notched (Fig. 10A), a slightly expanding stem (Fig. 10I), and a contracting stem or lanceolate basal fragment (Fig. 10N).

All projectile point specimens are made from local types of chert, except for the Folsom point which is made from Edwards Plateau flint. Photographic illustrations of points from Strata 3 and 4 have been given in a separate publication (Patterson and Hudgins 1985a).

CERAMICS

A summary of the ceramic specimens found during these excavations is given in Table 6. Pottery types used here are consistent with descriptions given by Suhm and Jelks (1962). Goose Creek sandy paste pottery is the predominant type, as is typical for inland sites on the southeastern Texas coastal plain. Minor quantities of Rockport Plain and bone-tempered ceramics were also found. The total amount of ceramics recovered is not large for this extensive an excavation. This would be expected for people following a nomadic hunting and gathering lifeway, as pottery is not very portable.

The diameters of pots, as calculated from measured potsherd radii, range from 9 to 55 cm. Some of the smaller diameters probably represent neck sections of pots. Only a few incised sherds were found. Incising generally consisted of a few parallel lines, with no complex patterns. A few rim sherds in Stratum 1A were notched.

CHRONOLOGY

For this report, the chronological periods used are ones that are common to the general literature of southeastern Texas (Patterson 1979). These periods are as follows:

Period	Years B.P.
Early Paleoindian	12,000 to 10,000
Late Paleoindian	10,000 to 7,000
Early Archaic	7,000 to 5,000
Middle Archaic	5,000 to 3,500
Late Archaic	3,500 to 1,900
Early Ceramic	1,900 to 1,400
Late Prehistoric	1,400 to 500

The general time placement of projectile point types in this report is consistent with previous publications by Patterson (1979, 1980). It should be noted that some projectile point types, such as Gary and Kent, have very long time ranges.

A large number of charcoal samples were recovered during these excavations. Most of these specimens are too small for conventional radiocarbon dating, but are probably suitable for dating by the atomic accelerator method. A few radiocarbon dates have been obtained for this site. Many more dates could be obtained if funding were available.

Three radiocarbon dates were obtained from the University of Arizona Accelerator Facility for small pieces of charcoal. A date of 9920 +/-530 years BP (AA-298) for the bottom half of Stratum 4 (20-40 cm) seems to be consistent with the presence of a Folsom point. A date of greater than 40,000 years (AA-300) for the bottom half of Stratum 3 is much too old. This specimen probably is

redeposited Pleistocene material, since all of the excavated strata were formed from redeposited Pleistocene soils. A date of 250 +/-200 years (AA-301) for the 0 to 20 cm level of Stratum 2 is much too young, as the top portion of Stratum 2 is the earliest pottery level and this should date about A.D. 100. This charcoal sample appears to be intrusive from a higher stratum, which could easily happen because of the small size of this specimen.

Eight charcoal samples were sent to the Smithsonian Radiocarbon Laboratory. Seven of these specimens were processed, and the fate of the eighth sample remains unknown because of the closing of this laboratory. After chemical treatment, five specimens were too small for conventional radiocarbon dating. A date of A.D. 1585 +/-80 (SI-6455) was obtained for Stratum 1B, which indicates that occupation of this site continued into early historic time. A date of 18,350 +/-580 BP (SI-6461) for Stratum 3 is much too old and appears to be another example of redeposited Pleistocene material in this stratum.

In summary, radiocarbon dates from the top and bottom excavation levels indicate an occupation sequence of at least 10,000 years for Site 41WH19. More charcoal samples are available to obtain dates for intermediate excavation levels, and this could be done if funding becomes available.

GENERAL LITHIC TECHNOLOGY

A summary of formal types of lithic artifacts, other than projectile points, from this site is given in Tables 7, 8, and 9. These specimens are illustrated in Figures 11 to 19. A few specimens are also shown in Figures 4, 5, and 8 with the projectile point illustrations.

Only a few formal tool types were found in upper Strata 1B and 1A. One large corner tang bifacial knife and one perforator were found in Stratum 1B (Figs. 4E,F). A large bifacial knife (Fig. 5A), two scrapers, and a denticulate were found in Stratum 1A. A possible drill (Fig. 5F) was also found in Stratum 1A. The large bifacial knives in Strata 1A and 1B may reflect the need for large cutting tools to process bison, which would have been occasionally available. It is also significant that large bifacial knives are only present in the upper levels of this site, when few large-size chert flakes from dart point manufacturing would have been available to use as casual tools. There are small utilized flakes in Strata 1A and 1B.

Of the 17 specimens representing formal types of lithic artifacts in Stratum 2, only 6 specimens represent functional tool types such as drills, scrapers and cutting tools. The remaining 11 are biface specimens that may all be dart point preforms. The small quantity of formal stone tool types over the entire Archaic period at this site results because utilized flakes were the dominant tool type during this time period. Large lithic flakes

would have been available in large quantities from dart point manufacture.

There are a number of large scrapers and scraper-gravers present in Strata 3 and 4. This is probably part of the Paleo-Indian tradition of the use of heavy tools and combination tools. Large utilized flakes are also present in these strata. It appears that significant use of large formal unifacial tool types was phased out at the end of the Paleo-Indian period, as the utilized flake became the dominant tool type in the Archaic period.

A complete Plains-type of Paleo-Indian lithic tool assemblage is not present at this site, as is present at some other sites in Texas (Patterson 1977, 1981). For example, there is no industry present at Site 41WH19 for the manufacture of large prismatic blades. One reason for this is that local chert cobble resources are not particularly suitable for the manufacture of large prismatic blades, because of the toughness of these materials and the limited cobble sizes available. Also, a different lifestyle was probably present at this site, compared to the Plains Paleo-Indian hunting of big game. Even the earliest level of this site reflects a broad-based Archaic lifestyle.

Table 10 summarizes miscellaneous lithic artifacts found in the various excavation levels. Thick chert pieces and cores are more common in Strata 3 and 4. This may show a change in lithic procurement strategy, which indicates the import of more trimmed and prepared lithic materials in later time, after the Paleoindian period. Red ochre seems to have been present only during the Paleoindian period at this site.

Table 11 summarizes lithic flake data. A total of 12,565 flakes were recovered. The use of heat treating of chert can be observed for specimens from all excavation levels, as indicated by reddish colorations, waxy luster, or potlid surface fractures on many specimens. There do not appear to be significant differences in the relative amounts of remaining cortex on flakes from various excavation levels. This possibly reflects the use of a single type of lithic resource (chert cobbles) over the entire time period of this site. Almost all of the lithic materials from this site are local types of chert, available within a 10 to 50 mile radius. Only a few pieces of exotic lithic materials, from the Edwards Plateau region, are present.

A summary of flake size distribution by excavation levels is presented graphically in Figure 20. There is a trend toward a higher percentage of smaller size flakes in later time. This may be caused by the manufacture of smaller projectile points and the import of more trimmed materials in later time. This is similar to the flake size distribution over a long time period for Site 41HR315 in Harris County (Patterson 1980: Fig. 19). It should be noted that flake size distributions over time for Sites 41WH19 and 41HR315 are smooth curves, with no sudden changes. This shows only

slow changes in lithic technology over time, which possibly reflects the continuity of the conservative Archaic lifestyle.

Much of the flint flake collection from this site represents bifacial reduction debitage, from the manufacture of projectile points. One indication of this is shown by the flake size distributions for each excavation level as given in Table 11. These flake size distributions each form exponentially shaped curves as usually results from bifacial reduction processes (Patterson 1982). All of the flake size distributions in Table 11 form straight lines on log-log graph paper to represent exponential curves forms.

An unusual lithic artifact was found near the top of Stratum 4 in Pit 5. It is a very large chert cobble that weighs 3.6 kg (8 pounds). It is 23 cm long, 16 cm wide and 6 cm thick. It has one somewhat pointed bifacially trimmed edge. This specimen would have been a good tool to break large bones for marrow extraction, but there is no evidence of megafauna remains at this site. Since this specimen is so large, considerable effort would have been necessary to carry it to this site. Chert materials of this size are generally found no closer than 25 miles from this site. One explanation is that this specimen is simply a large core for flake production.

Utilized flakes are identified by edge wear patterns. It is not surprising that the utilized flake was the dominant tool type for a long period of time in this region, when large quantities of byproduct flakes were commonly available at sites from the manufacture of dart points. Chert flakes can be used without modification for a number of functions, such as cutting scraping, sawing and planing.

FIRED CLAYBALLS AND HEARTHS

Fired clayballs are generally associated with prehistoric cooking activities at sites in southeastern Texas (Patterson 1976:183), especially when found in concentrations that could represent hearths. It has previously been determined from an excavation in Harris County that fired clayballs were in use over a very long time period, from the Late Paleoindian period through the Late Prehistoric (Patterson 1980: Table 5). This is also the case at Site 41WH19, where fired clayballs were found at all excavation levels.

A summary of fired clayball counts and hearth features is given in Table 12. Five definite concentrations of clayballs that represent hearths were found in situ. In addition, many other clayballs that probably are the scattered remains of other hearths were found throughout all of the excavation levels of this site. At the bottom of Stratum 2, a deer jaw was found on a hearth feature in Pit 5/8.

Fired clayball hearths may have been used for roasting of various food materials. This could have been done by heating the clayballs with a wood fire and then placing items to be roasted on the hot clayballs.

Most clayballs had diameters of 25 to 120 mm, with the average diameter probably about 40 mm. It has previously been noted (Patterson 1986) that most clayballs are rather evenly fired on all surface areas.

The use of fired clayballs on the Texas coastal plain is probably equivalent to the use of limestone pieces for hearths in Central Texas. Chert, which is about the only rock commonly available on the coastal plain, is not suitable for use in hearths, as it shatters under direct heat.

FINE SCREEN ANALYSIS

During the excavations of Pits 8 and 11, 15-liter volumetric samples, containing approximately 25 kg of soil, were taken at each level (except levels 1A and 1B of Pit 8) and wet-screened with meshes of 1/4-inch, 1/8-inch and window screen. This was done in order to examine, identify and quantify (1) the artifacts and bone which were not being caught in the 1/4-inch mesh screens, and (2) the larger sand grains and other larger constituents of the soil matrix. In addition, a few seeds were found. Tabulated values from the fine screen analysis are given in Tables 13 to 16; the findings are summarized here, except for the bone, which is discussed later in this report.

MATRIX: The sand particles of the soil matrix which were caught in the two smaller meshes are a mixture of rounded, presumably water-worn grains of rock and/or minerals. The most prevalent grain is quartz, with potassium feldspar next. There are some chert grains. The mixture of grains does not appear to change with depth, even though the soil changes considerably, particularly in color. Likewise, among the 17 pit/level samples taken, the weight of the matrix for the 1/8-inch screen varied only from 7.4 to 15.7 gm and for the window screen from 24.8 to 50.3 gm. This is not much residual material from original samples of roughly 25,000 gm.

ARTIFACTS: Totals of 30, 72 and 145 chert flakes were found in the 1/4-inch, 1/8-inch and window screens, respectively. As expected, the smaller flakes are more numerous. Also, the upper and middle levels have a somewhat higher density of flakes than the lower (Stratum 4), but not enough samples were taken to properly make a distribution analysis.

A few large clayballs were recovered from the 1/4 inch screen. This accounts for much of the large variation in weights of the 1/4-inch material. Clayball fragments were also a significant portion of the 1/8-inch screen material (see Tables 15,16), constituting about 12% of the total weight. The window screen

grains were too small to permit identification of clayball fragments.

SEEDS: A total of 97 seeds or seed/hull fragments were recovered from the screens, mainly in Strata 1 and 2; no seed was found below the upper sublevel of Stratum 3. The seeds were sent to Glenna Dean, Assistant State Archeologist, for identification. She reported that most of the whole seeds were bluebonnet (Lupinus sp.) seeds. The field adjacent to the site is filled with bluebonnet blooms every spring. There were no unusual seed types for the area. Only a few of the seeds or seed fragments exhibited carbonization, so it must be concluded that almost all, if not all, of the seeds are modern.

OTHER: A number of dark brown or black, basically spherical nodules were recovered from the smaller screens. About 6% of these are attracted to a magnet. These probably are iron oxide nodules which form naturally in the soil. Some of these nodules may be manganese compounds, but no tests were made to verify this.

No charcoal was found in the fine-screen samples.

CONCLUSIONS: The mixture of the larger constituents of the matrix is surprisingly constant with depth and the distribution of flakes appears to be relatively constant, whereas the bone content (discussed elsewhere) notably peaks from about the middle of Stratum 2 to the middle of Stratum 3. The vertical distribution of seeds and the fact that they are modern indicates some recent disturbance of the upper levels of the site.

STRATIGRAPHY IN THE VICINITY OF THE SITE

Several test pits and borings were made to aid in determining stratigraphy in the vicinity of the site. As shown in Figure 21, four test pits spaced at approximately 5-meter intervals were dug along the upstream bank. Test pits on the downstream bank were deemed inappropriate because of erosion and slumping of the bank. Four 2-inch diameter borings were taken to the northeast of the site, away from West Bernard Creek, at distances of 2, 5, 10, and 24 meters from the excavated area. At the farthest of these, Boring A, a core was taken by alternating, at 10 cm levels, use of a coring tube and the boring tool. However, the shaft of the coring tube broke at a depth of 3.20 meters, and so, for the last portion of this hole and all of the other three, only the boring device was used. Profiles for the four borings are shown in Figures 22 to 25.

The test pits and borings revealed that the stratigraphy changes rapidly in the vicinity of the site (but not within it). In fact, the test pits and borings were spaced too far apart to enable a proper tracking of the various layers. The bottom clay was the only layer traceable in all test pits and borings (except Borings C and D which did not penetrate to sufficient depths), its top varying from -1.00 to -1.90 meters (cf. Fig. 2).

Layering was evident at Test Pit 1 and Borings B, C, and D, but only major layers were discerned. At Test Pit 1, Strata 1B, 1A and 2 were present, although about 45 cm lower than in the excavated area. Strata 3 and 4 were missing, with the bottom clay being about 70 cm higher than in the excavated area.

Strata 1 and 2 were seen at Borings B, C, and D, with the interface between the two strata clearly evident at an elevation of about 0.00 meters (cf. Fig. 22). The thin, hard black layers which were so prevalent at the site, however, were evident only in boring D, and even there they were very faint and few in number (4). At Test Pit 2, just 10 meters from the edge of the excavated area, there was no indication of the distinctive layering, let alone any thin dark layers.

It is concluded that more samples are necessary to obtain reasonably precise stratigraphy in the immediate vicinity of the site. It is evident, however, that the distinctive layering seen in the excavated area extends at most a few meters upstream and a few meters back into the creek bank. Any downstream portion has been at least partially lost to erosion and slumping.

BURIAL SUMMARY

A human burial was found in Pits 13 and 17 at a depth of 30 cm below the top of Stratum 1B. There were no artifacts or red ochre with this burial. The bones were generally in a very poor state of preservation. Many of the bones of the upper portion of the body were missing, as were almost all hand and foot bones. A study of these remains yielded the following conclusions:

1. Type of burial: simple inhumation with body extended, supine, arms extended along the sides of the body, skull elevated about 10 cm above the level of the vertebral column and facing somewhat to the right.
2. Orientation: 16 degrees east (8 degrees magnetic)
3. Depth of burial and size of burial pit: unknown
4. Sex: male
5. Age: young adult
6. Stature: within normal height range
7. Evidence of disease, malformation or trauma: premortem loss of lower right first molar

No other human remains were found at this site; this appears to be an isolated burial.

SOME BURIAL DETAILS

The following is some detailed information from the skeletal analysis, including observations which led to some of the conclusions in the above summary:

Skull: Approximately 20% of the outer portions of the skull are present, primarily parts of the occipital and the parietals.

Long bones: All except portions of the femora and the right tibia are either in poor condition or are missing. The only extant epiphyses are portions of the femoral heads. The central part of the anterior crest of the right tibia has been extensively gnawed. The gnaw marks are extremely well matched by the upper incisors of the hispid cotton rat (Sigmodon hispidus) in the Houston Archeological Society comparative faunal collection.

Vertebral column: The vertebral column is so poorly preserved that it has been kept in the soil matrix. The cervical vertebrae are missing.

Hand and foot bones: Only one bone, a middle phalanx of the hand, was found.

Dentition: Of the 12 teeth recovered, 4 are premolars and 8 are molars. One of these molars and 3 premolars deteriorated postmortem so badly that only the portions of the roots deep in the alveoli remain. The mandible is fragmentary and very little of the maxillae remain.

Tooth wear is considerable for the first molars, moderate for the second molars (dentine 1/2 to 3/4 exposed) and very slight for the third molars (no dentine exposed). The right mandibular first molar was lost premortem, as indicated by resorption. The buccal part of the alveolar portion of the mandible in that region was also lost premortem; this was probably associated with the tooth loss.

Alveolae in surviving portions of the mandible indicate the existence at death of L1, R1 and R2 incisors, R canine and R2 molar, none of which were recovered.

Sex: The area around the sciatic notch of both innominates was fortunately well enough preserved to judge the individual to have been a male, the notches being relatively narrow. This conclusion is strengthened by observations that the nuchal crest is fairly prominent and the mandible is fairly robust.

Age: The presence of full-size third molars with little or no wear, plus moderate wear for the second molars and considerable wear for the first molars indicates that this was a young adult.

Stature: The stature cannot be accurately estimated because of the incompleteness of the long bones. Judging by the overall in-place measurements, a normal stature is estimated, at between 150 and 170 cm (about 5 feet 0 inches to 5 feet 7 inches).

Disease, malformation and trauma: Other than the premortem tooth loss discussed above, there is no evidence of disease, malformation or trauma. No periostitis is evident, even in the long bones where it is often manifested (Ortner and Putschar 1981). There were no caries.

THE BURIAL AND SITE STRATIGRAPHY

Perhaps the most important information supplied by the burial is in its contribution to the interpretation of the geologic stratigraphy of the site. In the upper levels of the site, Stratum 1B down through Stratum 2, relatively thick layers of tan or brown silty sand are interspersed with thin (typically 2-4 cm) layers of distinctly darker blackish-brown silty sand (see Figure 2). The thin dark layers are thought to be paleosols associated with the occupation of the site, particularly since they do not occur outside of the confines of the site. Both types of layers are generally horizontal but moderately undulating, and exhibit typical patterns for point bar deposits (Bernard, et al. 1970), including unconformities. However crossbedding, which is typical of point bar deposits (Lane 1963) and helps to determine the position within the point bar sequence, is not evident, apparently since the sands are too homogeneous in grain size. The dark layers are decidedly harder than the light ones.

It was surprising that during the first season's excavations no evidence of disturbance was found: no "contamination" of light

soil with dark or vice versa. This absence of contamination was taken as strong evidence of lack of disturbance of the site. During the second season, several open mammal burrows crossing through dark layers were found, but even there no visible contamination was present.

Observations during excavation of the burial, however, forced a re-evaluation of these views. The burial was discovered during excavation of Pit 13. There, only portions of the lower tibiae and fibulae were encountered, the major portion of the burial being in what was to become Pit 17. Examination of the vertical profile revealed that one of the dark layers described above, about 2 cm thick, was situated just above the level of the bones.

Excavation of Pit 17 was done very carefully because of the known presence of the burial. Particular attention was paid to attempting to delineate the burial pit, but none was found. In fact, the skull was completely above the dark layer while the rest of the bones were just underneath, but completely below the dark layer. Also, the layer draped over the leg bones; that is, with the upper light-colored layer removed, the location and general shape of the leg bones could be seen from the topography of the top of the dark layer, even though the leg bones were below the dark layer. The thickness of this layer over the bones is about the same as elsewhere. In addition, there was a slight depression in the dark layer just beneath and corresponding to the size of the skull. All of the dark layer in the vicinity of the burial was examined in detail for evidence of disturbance, among other things by feeling for soft spots (dark layers are much harder to the touch and trowel than the light colored layers). None was found; it was completely solid everywhere, including under the skull and over the rest of the skeleton. Unfortunately (or perhaps for a credible reason not yet ascertained), the bones of the upper body which would have been located within or through the dark layer were missing.

How can this situation come about? First thoughts were that this was not a burial; that the body washed in during a flood or that the person just died there in the open and then soil was deposited, draping over the bones. However, this does not explain the skull being above the dark layer. The skull certainly belongs with the rest of the skeleton since it was in the proper anatomical position. Furthermore, the body is straight with the arms at the sides and the head elevated as in many burials. It is highly unlikely that a body that washed in would assume such a position or that a body on the surface would escape disturbance by animals.

In light of this dilemma, there is a need to reconsider the above-expressed ideas concerning stratigraphy at this site. Could it be that the dark layers are not fixed, but particularly during times of flooding can be altered by groundwater moving through the highly porous and permeable sandy soil of the site? Perhaps such movement can "heal" burrows and disperse any dark soil which due to burrowing had penetrated into the light-colored layers. And

possibly the dark layers can move, with a layer above the burial moving downward past the skull but stopping at the level of the rest of the bones. (It is not suggested here that all of the material in the dark layer moves, just the silt-sized particles, which provide the dark appearance, and maybe the smallest of the sands.) Also, the relatively impervious clay cap of dredge spoil may have a significant influence on groundwater movement at the site.

Another bit of supporting evidence is that, during all of the excavations, a clustering of artifacts in a dark layer was never found, even though this would have been expected if these dark layers were paleosols. On the other hand, there were no clusters of lithic artifacts at all. However, the fired clayball features (Table 12) were definite horizontal clusters, and were not associated with dark layers.

The above suggested movement of the dark layers is obviously speculative. What is needed is a detailed investigation of the constituents of the layers (samples taken during excavation are available for study) and to consult with an expert on groundwater. As stated above, these dark layers only appear within the confines of the site.

FAUNAL MATERIALS

A few bones and bone fragments were found in disturbed positions at Area "A". At Area "B", where about 250 tons of soil were passed through 1/4-inch screens, about 1 kg of fragments of faunal material was recovered in stratified position. About 25 kg of soil from each level of two units were passed through fine mesh screens and fragments of bone were recovered (see section on Fine Screen Analysis). The amount of faunal material recovered is extremely small when compared to the amount of soil examined. However, this material does reveal useful information about the resources utilized by the habitants. Fine screening some of the soil added significant data that otherwise would have been lost and could have led to improper assumptions relative to diet.

Animals represented in the collection from Area "A" are:

Gar	*Lepisosteus* cf. *spatula*
Domestic cow	*Bos taurus*
Bison	*Bison* sp.
Horse	*Equus* sp.
Elephantid	Genus unknown

Animals represented in the collection from Area "B" are:

Fresh water clam	Genera unknown
Gar	*Lepisosteus* sp.
Bowfin	*Amia calva*
Largemouth bass	*Micropterus salmoides*
Sunfish	*Lepomis* sp.
Freshwater drum	*Aplodinotus grunniens*
Unidentified fish	Genera unknown
Rat snake	*Elaphe* sp.
Colubrid snake	Genera unknown
Unidentified snake	Genera unknown
American alligator	*Alligator mississipiensis*
Mississippi mud turtle	*Kinosternon subrubrum hippocrepis*
Pond turtle	*Pseudemys* sp.
Box turtle	*Terrsapene* sp.
Softshell turtle	*Trionyx* sp.
Unidentified turtle	Genera unknown
Attwater's pocket gopher	*Geomys attwateri*
Hispid cotton rat	*Sigmodon hispidus*
Unidentified rodent	Genera unknown
Rabbit	*Sylvilagus* sp.
Bison	*Bison bison*
White-tailed deer	*Odocoileus virginianus*
Unidentified animal	Genus unknown

SPECIES ACCOUNTS:

AREA "A"

Gar, Leisosteus cf. spatula is represented by one large scale. It could be modern.

Domestic cow, Bos taurus, is represented by a tibia fragment and two pairs of mandibles. These bones are of sub-adult individuals. They were probably discarded from recently butchered animals, as the collagen content is high.

Bison, Bison sp., is represented by the left metatarsal of a young adult. The distal condyle is unfused and missing. Collagen content is very low.

Horse, Equus sp., is represented by upper second and third molars. The enamel pattern is somewhat different from modern material and may indicate an extinct species.

Elephantid, genus unknown, is represented by a fragment of a leg bone. The radius of cross-section is 125 mm.

AREA "B"

Freshwater clam, genera unknown, are represented by several fragments of shells from Strata 1B and 1A, and the upper half of Stratum 2. None can be identified, and none show any indication of use or deliberate alteration.

Gar, Lepisosteus sp., is represented by several fragments of scales, fragments of head bones and two vertebrae. These were recovered in Strata 2 and 3. The scales were apparently fragmented by exposure to heat.

Bowfin, Amia calva, is represented by a fragment of a vertebra and a fragment of a head bone. These were recovered in Stratum 3.

Freshwater drum, Aplodinotus grunniens, is represented by a tooth and two tooth-bearing bone fragments, only one of which still had the teeth in the alveoli. These were recovered in the lower half of Stratum 2 and Stratum 4.

Largemouth bass, Micropterus salmoides, is represented by two right dentaries. The fish would have been about 20 cm in length. These were recovered in Stratum 2.

Sunfish, Lepomis sp., is represented by two pelvic spines. The fish would have been about 10 cm in length. These were recovered in the lower part of Stratum 2 and the upper part of Stratum 3.

Unidentified fish, genera unknown, are represented by head bone fragments, dorsal and anal spines, trunk vertebrae, caudal vertebrae and penultimate vertebrae. Most of these match Lepomis of 8 to 12 cm in length and Micropterus of 20 to 25 cm in length. These fragments were recovered in all strata.

Rat snake, Elaphe sp., is represented by one vertebra which was recovered in the lower part of Stratum 1A.

Colubrid snakes, genera unknown, are represented by three centra of vertebrae. They are complete enough to determine that they are of non-poisonous varieties. These were recovered in Strata 2 and 3.

Unidentified snakes, genera unknown, are represented by four centra of vertebrae and two zygosphenes of vertebrae. These were recovered in Strata 2, 3 and 4.

American alligator, Alligator mississipiensis, is represented by a tooth, the centrum of a vertebra and several dermal bones. One of these would have been at least 2.5 meters in length and one would have been much shorter.

Mississippi mud turtle, Kinosternon subrubrum hippocrepis, is represented by numerous fragments of plastron and carapace. Some are definitely of this species and the others are of this genus. The range of the other species of the genus does not include Wharton County and thus is not likely to be in the assemblage. Some of the fragments were recovered in all strata.

Pond turtle, Pseudemys sp., is represented by fragments of plastron and carapace. These were recovered in all strata except Stratum 2.

Box turtle, Terrapene sp., is represented by fragments of plastron and carapace. These were recovered in all strata other than the lower part of Stratum 1B.

Softshell turtle, Trionyx sp., is represented by fragments of plastron and carapace. These were recovered in all strata other than Strata 1A and 4.

Unidentified turtles, genera unknown, are represented by fragments of plastron and carapace. They could be any of the above types. These bones were recovered in all strata.

Attwater's pocket gopher, Geomys attwateri, is represented by a skull fragment with frontal, maxilla with both incisors, both mandibles with teeth, both humeri, femur and sacrum with both innominate fragments. These are from Stratum 1A of Pit 7 and all are undoubtedly from the same individual. In addition, in other pits, teeth were recovered from Strata 1B, 1A, and 2.

Hispid cotton rat, Sigmodon hispidus, is represented by a lower and two upper molars and an astragalus. These were recovered from the lower half of Stratum 2.

Unidentified rodents, genera unknown, are represented by fragments of incisors, molars, caudal vertebae and metatarsal. These all could be Sigmodon hispidus. They were recovered from the lower part of Stratum 2 and from Stratum 3.

Rabbit, Sylvilagus sp., is represented by a tooth from Stratum 1B and a possible femur fragment from Stratum 3.

Bison, Bison bison, is represented by molars, fragments of teeth, and fragments of leg bones. These bones could be of other bovids, but, as there were no others of the size of bison in the area during the time of the deposits, they are assigned to this species with some confidence. They were recovered in all strata above Stratum 4.

White-tailed deer, Odocoileus virginianus, is represented by teeth and numerous tooth fragments, fragments of mandibles with teeth, fragments of humeri, radii, ulna, tibias, metacarpal, metapodials, phalanges, astragali and calcaneus. There are also numerous fragments that probably are of this species. It is possible that some of these bones are of pronghorn, Antilocapra americana, but none are definitely of this animal. This material was recovered in all strata.

Unidentified animals, genera unknown, are represented by fragments in all strata. They could be any of the above as well as other varieties.

FAUNAL ELEMENTS RECOVERED ON FINE SCREENS, PITS 8 AND 11

FISH

Gar, Lepisosteus sp.

8-2A	scale fragments
8-2B	scale fragments
8-2C	scale fragment
8-3A	scale fragment
8-3B	scale fragment
11-2 (40-55)	head bone fragment
11-2 (55-70)	scale fragment
	2 head bone fragments
11-3 (20-40)	head bone fragment

Bowfin, Amia calva

8-3A	Head bone fragment
11-3 (20-40)	vertebra (diam. 3.6 mm)

Freshwater drum, Aplodinotus grunniens

8-4A	bone fragment with teeth missing
11-2 (40-55)	tooth
11-2 (55-70)	small bone with teeth

Sunfish, Lepomis sp.

8-2C	pelvic spine
8-3A	pelvic spine

Largemouth Bass, Micropterus salmoides

11-2 (20-40)	right dentary
11-2 (40-55)	right dentary

Unidentified fish

8-2A	caudal vertebra frag. (D.- 1.8 mm)

8-2B	2 vertebrae frag. (D. of one is 1.8 mm)
8-2C	dorsal or anal spine
	2 vertebrae (D.- 2.1 mm)
	penultimate vertebra (D. 1.8 to 1.1 mm)
	fragments
8-3A	2 caudal vertebrae (D.- 1.8 mm)
	dorsal or anal spine
	fragments
8-3B	trunk vertebra (D.- 1.8 mm)
	caudal vertebra (D.- 1.7 mm)
	3 vertebrae (D.- 1.8, 1.3, 1.5 mm)
	penultimate vertebra (D.- 2.0 to 0.8 mm)
	fragments
8-4B	vertebra (D.- 2.2 mm)
11-1A (bottom)	vertebra (D.- 1.8 mm)
11-2 (0-20)	vertebra
	dentary fragment
11-2 (20-40)	caudal vertebra (D.- 1.7 mm)
	2 trunk vertebrae (D.- 2.0, 1.8 mm)
11-2 (40-55)	trunk vertebra (D.- 2.0 mm)
	penultimate vertebra (D.- 1.9 mm)
	3 vertebrae (D.- 1.8 mm)
11-2 (55-70)	fragment
11-3 (0-20)	trunk vertebra (D.- 1.8 mm)
	caudal vertebra (D.- 2.3 mm)
	2 vertebrae (D.- 1.9, 3.2 mm)
	vertebra
	fragment
11-3 (20-40)	caudal vertebra (D.- 1.9 mm)

REPTILES

Colubrid snake (non-poisonous)

8-3A	2 vertebrae
11-2 (2-20)	vertebra

Unidentified snake

8-3A	vertebra centrum
8-4A	zygosphene of vertebra
8-4B	zygosphene of vertebra
11-2 (20-40)	2 vertebrae fragments
11-3 (0-20)	vertebra centrum

Softshell turtle, *Trionyx* sp.

11-3 (0-20)	fragment
11-3 (20-40)	fragment

Unidentified turtle

11-2 (40-55)	fragment

MAMMALS

Hispid Cotton rat, *Sigmodon hispidus*

8-2C		first lower left molar
11-2	(20-40)	second upper right molar
		third upper right molar
		left astragalus

Unidentified Rodents

8-3A		2 fragments of incisor
		2 fragments of molar
		caudal vertebra
8-3B		fragment of incisor
		caudal vertebra
8-2C		2 fragments of incisor
11-3	(0-20)	fragment of molar
11-2	(40-55)	proximal end of metatarsal
11-2	(55-70)	fragment of molar

Unidentified small mammal

8-2B		fragment of tooth

DISCUSSION OF FAUNAL MATERIALS

Preservation of bone in this site was only fair. Most are quite fragile. Only the smaller, dense bones are complete. Some of the fractures are from excavation and recovery but most of the bones were fragmented before excavation. A high proportion of the bones in all levels show obvious indications of exposure to heat, probably during cooking. The condition of the burned bones is better than others. The amount of faunal material is extremely small in relation to the amount of soil excavated. This discussion treats the site as a whole, with no consideration of horizontal position.

Bones were recovered at all levels of this site. About two-thirds of the bone material was recovered from Strata 1B and 1A, which comprise about one-third of the vertical profile. Amounts of bone recovered decreased with depth, with the least coming from Stratum 4. Lithic debitage does not reveal a marked lessening in numbers with depth as does the faunal material. This is probably due to loss of bone through decomposition rather than differing disposal practices during the various periods of occupation. This is confirmed by the uniformity of the faunal debris through the vertical profile.

Four bone fragments have chop marks that were made by the impact of stone tools. The distal 9 cm. of a deer tibia had a chert fragment imbedded in it. A few bones also had marks that probably were due to cutting actions. Gnawing by small rodents was also evident on one of the fragments.

The gopher bones from Stratum 1A represent a single individual that burrowed into the site and died there. Its presence suggests that some disturbance by gophers could have occurred during any period that the site was unoccupied. The distinct soil differences between strata should have indicated intrusions between major

depositional levels. Indications of intrusions by rodents and ants were limited to some of the test pits on the back rows of the excavation layout. The first 12 pits at the front showed no signs of intrusions. The signs of intrusions on the back pits, such as Pit 13, did not show any disturbances below Stratum 2.

All the animals that are represented in the assemblage are now in the area or were within recent times. The absence of birds and species that are woodlands-dependent, such as squirrels, may be due to preferences of the inhabitants or differential preservation of remains or perhaps may indicate the absence of woodlands in the neighborhood during past periods. The types of fauna present do not indicate any major climatic fluctuations during the life of this site.

CONCLUSIONS ON FAUNAL MATERIALS

The bone fragment of a member of the elephant family which was found at Location "A" may have come from the same stratum as the Paleoindian artifacts, either at this location or someplace upstream. This might place it in the same stratum as the large chert tool from Stratum 4 of Location "B". This is circumstantial evidence that man may have coexisted with mammoth or mastodon in this area.

Clams appear to have been part of the diet of the inhabitants only from the Early Ceramic through the Late Prehistoric. Small fish, turtles, snakes, and deer were used as food resources during the entire occupation sequence. Bison were included in the diet beginning in the Archaic period. The small animals were probably roasted and the bones of the larger animals were apparently processed for marrow.

These conclusions are somewhat different from those previously reported for this site (McClure 1983). An additional season of excavation and fine screen analysis of a small sample of the site caused the change.

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EXTERNAL RELATIONSHIPS

Wharton County, Texas appears to be in a geographic zone that is an interface between Plains and Eastern Paleo-Indian projectile point traditions. At Site 41WH19 and other sites in this county, the Plains tradition is represented by Folsom, Plainview, Scottsbluff, and Angostura-like points. The Eastern tradition is represented by San Patrice, Big Sandy, and a variety of other side-notched and corner-notched points, all with ground basal edges. There seems to be a very early and widespread Eastern notched point tradition. For example, some of the side-notched points from Site 41WH19 are similar to points found with San Patrice points at a site in Louisiana (Webb, et al. 1971). Early notched points can be found throughout the southeastern United States (Goodyear 1982, Coe 1964, Gardner 1974, Chapman 1985:Fig. 5.1) and on the eastern side of the Great Plains (Agogino and Frankforter 1960), some dating as early as Folsom points in the period of 10,000 to 11,000 years ago.

It would appear that the development of a wide variety of projectile point styles was well underway during the Paleo-Indian period, instead of starting in the Archaic period, as is so often cited. Some differences in projectile point styles may be explained as adaptations to different regional environments. It should be noted, however, that technological innovation is not always related to environmental adaptations, as technological change can occur for a variety of reasons. The very early stemmed points at Site 41WH19 do seem to be related to a broad-based Archaic hunting and gathering lifestyle. This fits well with Shafer's (1977:187) hypothesis "that the early lithic adaptations of the area between the southern high plains and the eastern woodlands was one of hunting and gathering and not which could be described as big game hunting". This should not be surprising. As Johnson (1977:65) notes, Paleoindians probably always did operate from a broad economic base. Also, it should be noted that hunting and gathering peoples must adapt rapidly to local resources in a new occupation area or perish.

A major question is how early did the non-fluted point tradition begin in southeastern Texas? Does this represent a technological tradition completely parallel in time with the fluted point tradition, or is it a development from the Clovis early fluted point tradition? Bryan (1977) notes the possibility of other point traditions parallel to the fluted point tradition. Very early stemmed points have been found in both western (Bryan 1980) and eastern (Fowler 1971, Peck and Painter 1984, McNett 1985:Fig. 6.8A) portions of the United States.

Shafer (1977:Fig. 3) has described an Early Lithic technological tradition without fluted points that is found throughout eastern Texas. This fits well into the concept of an Eastern Paleo-Indian tradition that is distinct from the Plains Paleoindian tradition. The Obshner Site (Crook and Harris 1955) near Dallas is a good example of this Early Lithic tradition in eastern Texas, where side-notched points were found together with

Scottsbluff Paleo-Indian points. Several side-notched points from the Obshner Site are similar to Late Paleo-Indian specimens from Site 41WH19.

Some of the early notched points found in the central Mississippi Valley from a time period of 9,500 to 9,000 B.P. (Morse and Morse 1983:Fig. 5.2) are similar to Late Paleo-Indian period points from Site 41WH19. Morse and Morse (1983:71) place Dalton points earlier, however. They also seem to imply that the Dalton point may be a technological evolution from the Clovis point (Morse and Morse 1983:72). Not all of the early notched points in this region are well-dated. Unless the central Mississippi Valley has a unique technological tradition, future research may find that some of the early notched point types are as early as Dalton. A side-notched point dated to 9416 B.P. was found below Dalton points at a site in northeastern Oklahoma (Wyckoff 1985). In any event, the central Mississippi Valley is another example of the early start of an Archaic hunting and gathering lifeway (Morse and Morse 1983:71).

Aside from Site 41WH19, there are now several sites in Texas with side-notched points earlier than Plainview. Watt (1978:Fig. 7) has shown a San Patrice-like point earlier than Plainview at a site in the central Brazos River Valley. Other excavations at this same site have yielded a side-notched point at the Paleo-Indian level that is similar to early side-notched specimens from Site 41WH19 (Forrester 1985:Fig. 2F). The Wilson-Leonard Site (Weir 1985), north of Austin, has several side-notched points earlier than Plainview. The Rex Rogers Site in the Texas Panhandle (Hughes and Willey 1978:Fig. 12) has side-notched points at least as old as Plainview, similar to Watt's specimen from central Texas. It should also be noted that there are some sites in Harris County, such as 41HR206 (Patterson 1976:Fig. 1A, B, C), that have early notched point types similar to those from Site 41WH19 in Wharton County.

The presence of side-notched and straight and contracting stem points at Site 41WH19 as early or earlier than a Folsom point supports the findings of Sellards (1940:1641) from a site in Bee County that is 100 miles west of Site 41WH19. The side-notched point found by Sellards (1940:pl. 1-6) below a Folsom point is very similar to the specimen from 41WH19 (Fig. 8A) that was found in the same stratum as a Folsom point. Sellards (1940:pl. 1-5) found a straight-stemmed point at the same level as a Folsom point, which may be similar to straight stem fragments (Figs. 8I,N) found in the same stratum as a Folsom point at Site 41WH19.

It should be noted that the coastal plain of southeastern Texas is probably a poor place to search for pre-Clovis remains. It seems to be common for sites in this region to have Paleoindian remains of 11,000 years or less directly overlying the Pleistocene Beaumont formation. Since the Beaumont formation has an estimated age of at least 30,000 years (Aten 1983:108), there seems to be a gap in the geological stratigraphy of this region of roughly

20,000 years. This may represent a severe erosional episode at the end of the Pleistocene epoch.

GENERAL DISCUSSION AND SUMMARY

Site 41WH19 is an additional site in southeast Texas with a very long occupation sequence, in this case at least 10,000 years, as previously noted (Patterson 1983). A broad-based Archaic hunting and gathering lifeway was followed during the entire time span of this site. The Paleo-Indian big game hunting tradition does not seem to apply to early occupations of this region. The long duration of a single lifestyle is supported by data on faunal remains and lithic technology. One reason for an early broad-based Archaic adaptation in this region is that there does not seem to have been a sharp environmental change from the Late Pleistocene into the Holocene epoch. The same general vegetational pattern seems to have existed at about 18,000 B.P. and in modern time, consisting of woodlands (Friedel 1987:Figs. 17,18).

Data from this site show that a wide range of faunal resources were exploited, as at other prehistoric sites in this region. The small amount of freshwater shellfish at this location is site-specific, as shellfish do not occur in a uniform manner in all reaches of streams in this area. Some other sites in this general area, such as 41FB34 (Patterson and Hudgins 1986), do have significant shellfish remains at all levels. The small amount of bison remains at this site seems to indicate that bison were only occasionally available.

There is an early diversity of projectile point types at Site 41WH19. Notched and stemmed points are now firmly placed in the Late Paleo-Indian period at this site and also appear to occur in some portion of the Early Paleo-Indian period. Data from this site support the temporal placement of the San Patrice point in the Late Paleo-Indian period by Webb, et al. (1971). Data from this site indicate the possibility of the evolution of notched and stemmed point types concurrent with the development of the Plains Tradition Paleo-Indian points of lanceolate types.

The presence of a few Rockport potsherds may indicate that Late Prehistoric Indians of the coastal margin may have occasionally traveled inland along major streams. One radiocarbon date indicates Early Historic occupation of Site 41WH19, but there is no evidence of early European contact.

The deeply stratified nature of this site furnishes valuable data on the chronological sequence of this region. Few well-stratified sites have been found in southeast Texas, especially for the Paleoindian and Archaic periods.

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TABLE 1

SITE 41WH19 STRATIGRAPHY

Pit	Stratum Thickness, cm					
	1B	1A	2	3	4	Total
3	35	40	80	40	20	215
4	35	40	85	40	20	220
5	35	40	85	40	40	240
6	35	40	70	40	20	205
7	35	40	85	40	40	240
8	35	30	85	40	60	250
5/8	40	40	100	40	40	260
9	40	40	80	40	30	230
10	40	40	80	40	20	220
11	30	40	70	40	20	200
12	--	--	80	40	--	--
13	40	40	100	40	30	250
14	40	40	100	40	40	260
15	30	30	100	40	30	230
16	40	40	100	40	30	250
17	40	40	100	40	40	260
18	40	40	100	25	40	245
19	40	40	100	60	40	280
20	30	30	100	60	40	260
Avg	37	38	94	44	33	246

Table 2

Site 41WH19 Projectile Points, Strata 1A, 1B

Type	Dimensions, mm			Fig.	Location		Pit
	L	W	T		Stratum	Depth,cm	
Kent	51.5	21.6	10.9	5B	1A	30	10
Ellis-like	43.0	26.5	7.0	5C	1A	btm.	5
Yarbrough	51.3	28.9	8.0	5D	1A	39	9
Kent		22.9	8.9	5E	1A	0-20	16
Perdiz	39.0	18.2	3.3	5G	1A	20	13
Edwards	31.8	18.4	4.3	5H	1A	15	8
Travis-like		17.5	8.1	5I	1A	15-30	15
Gary		23.6	8.2	5J	1A	0-15	15
Scallorn		15.2	4.4	4A	1B	0-20	5/8
Perdiz	23.5	11.6	2.7	4B	1B	20-40	11
Perdiz		12.1	2.2	4C	1B	0-20	10
unifacial arrow pt.		18.1	4.2	4D	1B	0-20	5
Gary (?) preform		16.4	6.6	4G	1B	20-40	16
Ensor	52.3	27.3	7.0	4H	1B	15	5
Scallorn-like	17.5	11.4	3.0	4I	1B	10	13
Kent	49.9	24.7	9.7	4L	N.P.		
Travis	52.3	21.3	8.7	4M	N.P.		
unclassified		23.7	7.9	4N	N.P.		

Table 3

Site 41WH19 Projectile Points, Stratum 2

Type	Dimensions, mm			Fig.	Location		
	L	W	T		Stratum	Depth,cm	Pit
Bulverde-like	92.6	34.2	8.0	7A	2	57	10
Angostura-like		29.4	8.8	7B	2	71	7
Bulverde-like	98.3	36.5	8.3	7C	2	50	9
unclassified			8.5	7D	2	btm	3
unclassified		46.1	8.5	7E	2	70	11
unclassified	49.9	27.0	6.9	7F	2	61	9
unclassified	27.0	16.5	5.3	7G	2	50	9
Gary	34.0	21.0	7.7	6A	2	5	8
unclassified stem			5.5	6B	2	btm	2
unclassified stem			6.9	6C	2	40	6
unclassified stem			5.3	6D	2	50-75	13
Misc. lanceolate	38.7	18.6	8.2	6E	2	0-25	16
Travis-like		22.4	9.8	6F	2	41	9
Travis-like		21.5	10.2	6G	2	30	8
Travis-like		22.1	7.4	6H	2	25-50	19
Bulverde-like		36.2	8.6	6I	2	80	18
Bulverde-like	44.7	29.3	8.1	6J	2	45	8
Yarbrough	53.6	24.6	11.1	6K	2	34	4
Gary		30.1	6.7	6L	2	12	20

Table 4

Site 41WH19 Projectile Points, Stratum 3

Type	Dimensions, mm			Fig.	Location		
	L	W	T		stratum	depth,cm	pit
Early Corner-notched 1	48.4	27.2	7.1	9A	3	38	4
Early Corner-notched 2	39.0	24.4	6.9	9B	3	25	8
Early Corner-notched 3	43.7	22.5	6.6	9C	3	30	10
Early Side-notched 5	53.3	21.2	9.3	9D	3	37	8
Early Side-notched 5	59.2	25.5	11.9	9E	3	5	7
Big Sandy	75.0	29.7	10.4	9F	3	30	7
Early Side-notched 1	61.5	27.0	7.0	9G	3	0-20	8
Early Side-notched 4	49.0	26.8	6.8	9H	3	0-20	11
San Patrice		23.6	8.3	9I	3	25	3
Early Triangular	32.5		7.7	9J	3	25	6
Early Side-notched 5			9.5	9K	3	25	5
Early Side-notched 5			8.4	9L	3	0-20	11
Early Straight-stem	46.0	18.2	9.3	8C	3	30-60	20
Early Straight-stem		20.4	7.6	8D	3	btm	15
Early Straight-stem	48.2	22.0	8.1	8E	3	20-40	15
Early Corner-notched 4			7.5	8F	3	20-40	13
bullet shaped	33.5	12.2	9.5	8H	3	0-20	16
Early Straight-stem			5.5	8I	3	10	9
Early Side-notched 5			6.6	8J	3	20-40	13
Early Side-notched 5				15A	3	0-25	18

Table 5

Site 41WH19 Projectile Points, Stratum 4

Type	Dimensions, mm L	W	T	Fig.	Location stratum	depth,cm	pit
Early Side-notched 1	73.4	24.3	7.4	10A	4	25	7
Plainview		26.4	7.0	10B	4	1	5
Early Side-notched 5	69.7	31.4	11.0	10C	4	1	7
Early Side-notched 4	49.9	23.7	7.0	10D	4	2	4
Folsom			4.0	10E	4	20	11
unclassified Type 1		14.8	9.1	10F	4	10	5
unclassified Type 1		15.7	5.8	10G	4	15	7
Early Side-notched 2		15.0	6.9	10H	4	15	9
unclassified stem			6.5	10I	4	20-40	17
Early side-notched 3		17.9	8.8	10J	4	7	7
Early Side-notched 3			5.1	10K	4	0-20	16
Early Straight-stem			7.0	10L	4	0-20	8
Early Straight-stem			5.8	10M	4	0-20	14
Early Contract.-stem (A)			6.1	10N	4	15-30	13
unclassified Type 2		29.8	5.5	10O	4	10	8
dart point blade		21.8	6.0	19H	4	0-20	5
Early Side-notched 3 stem				19I	4	0-20	15

A- or lanceolate base

Table 6

Site 41WH19 Summary of Ceramics

Excavation Level	Goose Creek Plain			Goose Creek Incised		Rockport Plain			Bone Tempered	
		thk., mm			thk., mm		thk., mm			thk., mm
	no.	avg	SD	no.	avg	no.	avg	SD	no.	avg
Stratum 1B										
top	33	6.0	1.1			1	4.5		2	4.5
bottom	33	6.1	0.9	1	6.2	1	5.0			
unplaced	26	6.0	1.1			3	4.5			
total	92	6.0	1.0	1	6.2	5	4.7		2	4.5
Stratum 1A										
top	47	6.4	1.1	1	5.0	1	4.0		1	4.0
bottom	30	6.7	1.3	2	5.5	6	4.3	0.5		
unplaced	13	6.2	0.7	2	6.0					
total	90	6.4	1.0	5	5.5	7	4.2		1	4.0
Stratum 2	15	6.5	0.9							

Table 7

Lithic Artifacts, Strata 1A, 1B and 2

Item	Dimensions, mm			Fig.	Location		
	L	W	T		stratum	depth,cm	pit
biface	125.0	40.0	15.0	12A	2	30	10
biface	94.8	38.5	13.3	12B	2	55	11
biface frag.			13.4	12C	2	35	8
biface frag.		31.1	10.7	12D	2	10	6
preform frag.		31.9	5.8	12E	2		1
preform frag.		22.2	6.2	12F	2	55-70	5
preform frag.			9.2	12G	2	0-30	7
preform frag.			10.0	12H	2	40-60	9
backed blade	49.9	24.4	5.4	13A	2	20-40	10
turtleshell scraper	44.9	35.8	19.5	13B	2	25-50	5
preform	46.2	32.0	10.0	13C	2	50-75	6
drill	43.2	21.1	7.7	13D	2	15	8
scraper	43.6	24.1	13.5	13E	2	30-60	8
preform frag.		31.1	9.7	13F	2	75-100	18
preform frag.			7.1	13G	2	55-70	6
denticulate	46.6	17.7	4.3	13H	2	55-70	8
graver	26.0	22.8	3.0	13I	2	20-40	5
scraper	59.6	34.6	9.8	11A	1A		8
scraper-graver	58.1	23.1	6.3	11B	surface		
denticulate	23.6	15.1	4.6	11C	1A	20-40	18
scraper	48.4	24.4	10.0	11D	1A	0-20	6
bifacial knife	124.0	42.3	8.0	5A	1A	20	8
corner tang biface		63.4	9.6	4F	1B	btm	10

Table 8

Lithic Artifacts, Stratum 3

Item	Dimensions, mm			Fig.	Location	
	L	W	T		depth,cm	pit
scraper-graver	74.4	38.3	12.8	14A	23	7
scraper	70.7	51.2	13.6	14B		8
scraper	45.7	36.6	10.5	14C	20-40	10
preform frag.			13.0	14D	0-20	6
preform frag.			7.6	14E	20-40	5
preform frag.			7.0	14F	20-40	10
preform frag.			6.2	14G	15-30	8
graver	31.0	23.8	3.3	14H	0-20	15
steep side uniface	33.2	22.8	10.9	15B	40-60	19
bifacial tool	34.9	27.4	10.6	15C	20-40	6
preform frag.		28.7	7.8	15D	20-40	11
preform frag.			7.7	15E		7
scraper	63.3	31.4	8.7	15F	0-20	9
perforator	39.6	21.3	5.8	15G	0-20	8
graver	32.7	29.4	7.8	15H	25	3
scraper-graver	50.1	29.8	5.6	15I		6
beaked tool	78.3	32.1	16.5	16A	30-60	20
biface frag.			16.0	16B	40-60	19
biface	75.8	37.3	23.0	16C	20-40	13
preform frag.		24.8	9.0	16D	0-20	13
biface frag.		46.8	14.0	16E	0-20	13
biface frag.		39.0	8.5	16F	30-60	20
preform frag.		36.6	7.2	16G	20-40	13
scraper-graver	51.4	28.1	11.3	16H	20	8
preform frag.		27.5	9.5	16I	30-60	20
preform	85.8	40.2	10.7	8A	40-60	19
preform	57.5	29.9	10.1	8B	25	10
drill		8.3	5.6	8G	27	9

Table 9

Lithic Artifacts, Stratum 4

Item	Dimensions, mm			Fig.	Location	
	L	W	T		depth,cm	pit
biface	69.5	42.7	18.6	17A		8
biface	61.1	35.5	16.1	17B		7
scraper-graver	73.9	35.0	8.9	17C		9
scraper-graver	46.5	26.8	5.6	17D		9
biface frag.			17.2	17E		9
bifacial tool	34.8	32.7	11.8	17F		7
biface frag.			7.8	17G	0-20	11
scraper	30.3	29.4	6.2	17H		7
graver	23.1	21.4	5.9	17I		8
possible burin	27.7	27.0	6.4	17J		
denticulate	22.9	21.5	4.6	17K	10-20	
preform	49.5	27.0	7.2	18A	10	8
preform	58.4	35.5	10.0	18B	20	9
preform frag.		27.8	10.0	18C	0-20	
preform frag.		32.5	8.5	18D	35	7
preform frag.		32.0	9.0	18E	0-20	5
preform frag.			8.4	18F	30	5
preform frag.			8.1	18G	15	5
preform frag.			9.8	18H	0-20	9
scraper	47.5	40.4	10.5	18I	0-20	9
scraper	53.5	35.1	13.7	18J	0-20	9
scraper-graver	54.2	39.3	15.6	18K		9
preform	46.9	31.2	6.8	19A	0-20	14
preform frag.		38.7	7.9	19B	20-40	20
biface frag.		36.2	10.2	19C	20-40	20
biface	36.4	28.1	9.0	19D	20-40	20
scraper	56.5	39.6	10.5	19E	0-20	17
biface	48.3	35.1	18.3	19F	20-40	20
denticulate	37.4	26.5	5.3	19G	20-40	20

TABLE 10

MISCELLANEOUS LITHIC ARTIFACTS

Item	Stratum 1B	1A	2 top	2 mid	2 btm	3 top	3 btm	4 top	4 btm
chert cores	2	3				8	4	10	1
quartzite hammerstones	1			1		1			
biface fragments	1			3		2			
sandstone abraders	1								
whole chert cobbles		1		1		1		2	1
broken chert cobbles			2					6	
thick chert pieces		6	6	12	4	19	3	33	10
Edwards Plateau flint			1						1
red ochre						1	1	2	1

Table 11

Lithic Flake Summaries

Flake Size, mm sq.	Stratum 1B		Stratum 1A		Stratum 2 top		Stratum 2 mid.		Stratum 2 btm		Stratum 3		Stratum 4	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
under 15	778.0	81.0	675.0	73.7	585.0	68.8	1272.0	65.3	1295.0	61.3	2193.0	58.2	1001.0	49.9
15-20	124.0	12.9	165.0	18.0	181.0	21.3	445.0	22.8	515.0	24.4	952.0	25.2	556.0	27.8
20-25	39.0	4.1	47.0	5.1	50.0	5.9	146.0	7.5	171.0	8.2	359.0	9.5	222.0	11.1
25-30	6.0	0.6	12.0	1.3	23.0	2.7	57.0	2.9	96.0	4.5	147.0	3.9	128.0	6.4
30-35	11.0	1.1	13.0	1.4	8.0	0.9	17.0	0.9	24.0	1.1	89.0	2.4	66.0	3.3
35-40	3.0	0.3	4.0	0.4	3.0	0.4	8.0	0.4	6.0	0.3	22.0	0.6	21.0	1.0
40-50			1.0	0.1			4.0	0.2	5.0	0.2	8.0	0.2	9.0	0.4
50-60													2.0	0.1
60-70											1.0	ngl		
total	961.0	100.0	917.0	100.0	850.0	100.0	1949.0	100.0	2112.0	100.0	3771.0	100.0	2005.0	100.0
% over 20		6.1		8.3		9.9		11.9		14.3		16.6		22.3

Flake Type	Stratum 1B	1A	2 top	2 mid	2 btm	3	4
primary	6.0	3.1	3.4	3.5	4.4	4.9	5.6
secondary	25.7	28.6	22.6	19.7	21.3	23.7	27.1
interior	68.3	68.3	74.0	76.8	74.3	71.4	67.3

TABLE 12
SITE 41WH19 CLAYBALL AND HEARTH SUMMARY

CLAYBALLS

Stratum	Number (A)	Size Range, Diam., mm
1B	140	15-70
1A top	248	
1A btm.	537	
1A unplaced	54	
1A total	839	15-100
2 top	797	15-110
2 middle top	448	15-80
2 middle btm	370	15-80
2 btm.	498	15-100
2 total	2113	
3 top	434	
3 btm.	320	
3 unplaced	127	
3 total	881	15-100
4 top	331	
4 btm.	93	
4 total	424	15-70
SITE TOTAL	4397	

A- not counting some hearths below

HEARTHS

Stratum	Depth, cm	Clayballs	Pit
1A	btm.	(B)	8
2/3	interface	(B)	8
2	50-75	431	20
1A	N.A.	74	7
2	75-100	102	5/8

B- included in above table

Fine Screen Analysis -- count 41WH19 Pit 8									
Level/depth	flakes			bone		seeds		nodules	
	1/4	1/8	ws	1/8	ws	1/8	ws	1/8	ws
2A	0	3	4	1	22	6	17	4	10
2B	2	6	9	2	61	1	1	4	9
2C	1	5	16	3	87	1	0	4	13
3A	3	0	22	0	150	0	1	0	9
3B	3	5	14	4	115	0	0	1	25
4A	3	6	3	0	22	0	0	3	11
4B	1	0	6	0	6	0	0	4	8

Mesh sizes 1/4", 1/8", window screen
No bone, seed or nodule found in 1/4" mesh screen.

Table 13. Fine screen analysis, Pit 8 : flakes, bone fragments, seeds and hull fragments, and nodules by count

Fine Screen Analysis -- count 41WH19 Pit 11									
Level/depth	flakes			bone		seeds		nodules	
	1/4	1/8	ws	1/8	ws	1/8	ws	1/8	ws
1B	4	5	13	2	22	11	4	3	19
1A(top)	1	5	13	1	14	1	45	3	24
1A(bottom)	2	3	6	1	39	0	1	4	12
2 (0-20)	1	2	8	2	48	0	6	4	17
2 (20-40)	2	5	8	8	105	0	0	1	14
2 (40-55)	0	11	5	7	91	0	0	2	10
2 (55-70)	1	11	6	7	55	0	2	2	10
3 (0-20)	2	4	5	5	100	0	0	0	8
3 (20-40)	2	1	7	1	33	0	0	1	10
4 (0-20)	2	0	0	0	6	0	0	1	7

Mesh sizes 1/4", 1/8", window screen
No bone, seed or nodule found in 1/4" mesh screen.

Table 14. Fine screen analysis, Pit 11 : flakes, bone fragments, seeds and hull fragments, and nodules by count

Fine Screen Analysis -- weight in grams 41WH19 Pit 8									
Level/depth	1/4"				1/8"				ws
	clayb	flake	other	total	clayb	flake	other	total	total
2A	29.7	0.0	5.0	34.7	1.6	0.0	15.6	17.2	50.3
2B	6.7	0.0	3.3	10.0	0.6	0.0	11.6	12.2	42.8
2C	11.4	0.1	3.7	15.2	1.4	0.0	8.5	9.9	39.3
3A	29.9	0.7	14.1	44.7	0.0	0.0	11.6	11.6	43.0
3B	8.6	4.1	4.9	17.6	2.0	0.2	13.2	15.4	42.5
4A	24.5	1.2	7.1	32.8	0.7	0.4	15.7	16.8	39.8
4B	37.8	0.8	81.2	119.8	1.4	0.0	15.5	16.9	33.4

Mesh sizes 1/4", 1/8", window screen
Weight of flakes in window screen negligible part of total.

Table 15. Fine screen analysis, Pit 8 : clayball fragments, flakes and other items by weight

Fine Screen Analysis -- weight in grams 41WH19 Pit 11									
Level/depth	1/4"				1/8"				ws
	clayb	flake	other	total	clayb	flake	other	total	total
1B	1.2	0.5	1.7	3.4	1.9	0.4	7.4	9.7	40.0
1A(top)	128.4	0.1	4.4	132.9	2.4	0.2	7.5	10.1	36.7
1A(bottom)	103.7	1.8	3.9	109.4	3.9	0.0	12.4	16.3	34.3
2 (0-20)	20.7	0.2	12.0	32.9	3.8	0.0	15.2	19.1	41.6
2 (20-40)	1.4	0.8	1.5	3.7	1.3	0.2	10.5	12.0	32.5
2 (40-55)	4.0	0.0	3.1	7.1	0.8	0.0	10.4	11.2	26.7
2 (55-70)	13.3	2.3	1.6	7.2	2.2	0.3	7.4	9.9	24.8
3 (0-20)	8.7	4.8	6.4	19.9	0.8	0.1	13.9	14.8	33.7
3 (20-40)	32.7	0.2	5.2	38.1	0.8	0.1	8.9	9.8	31.5
4 (0-20)	0.5	1.3	17.2	19.0	0.1	0.0	10.8	10.9	26.0

Mesh sizes 1/4", 1/8", window screen
Weight of flakes in window screen negligible part of total.

Table 16. Fine screen analysis, Pit 11 : clayball fragments, flakes and other items by weight

FIGURE 1
SITE 41WH19 HORIZONTAL LAYOUT

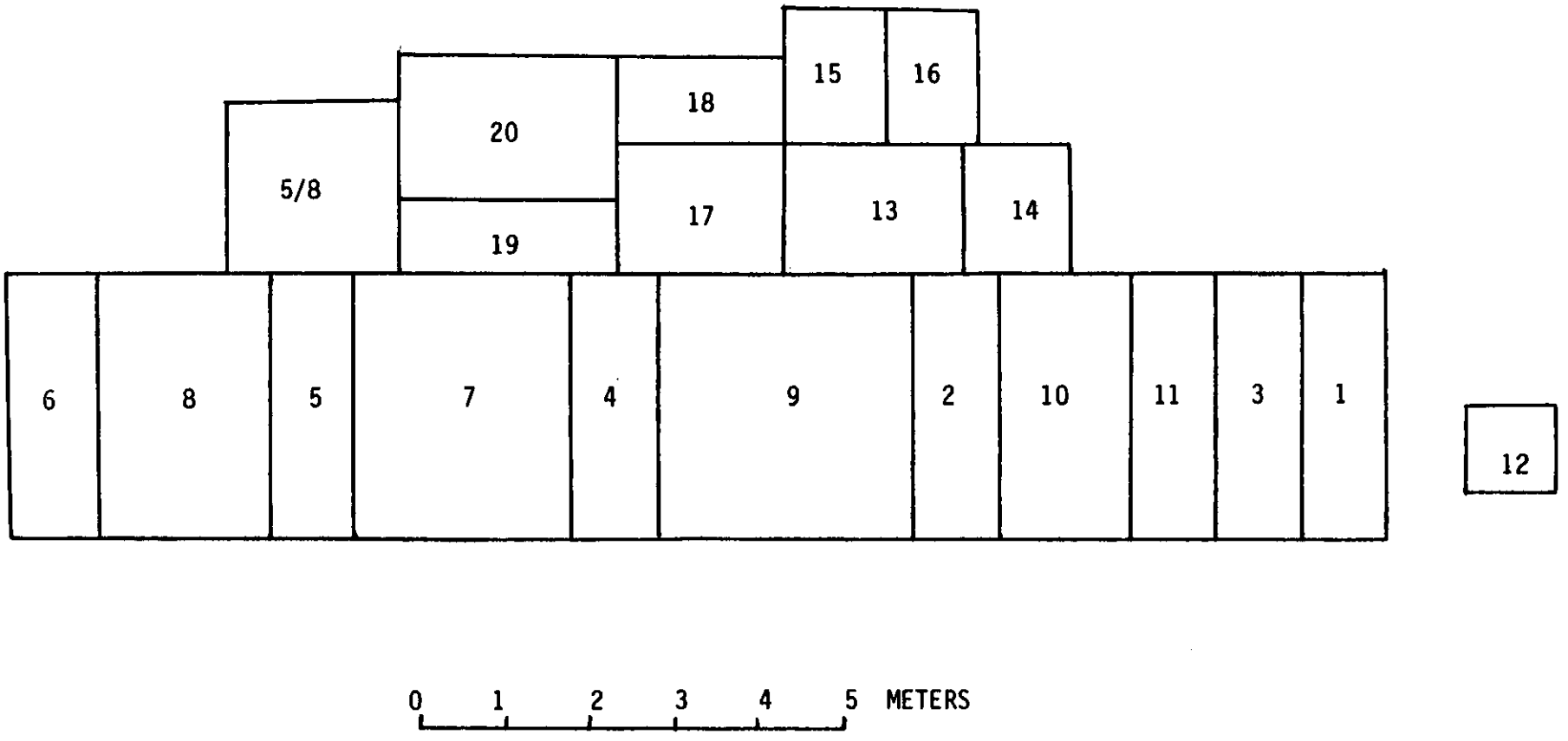
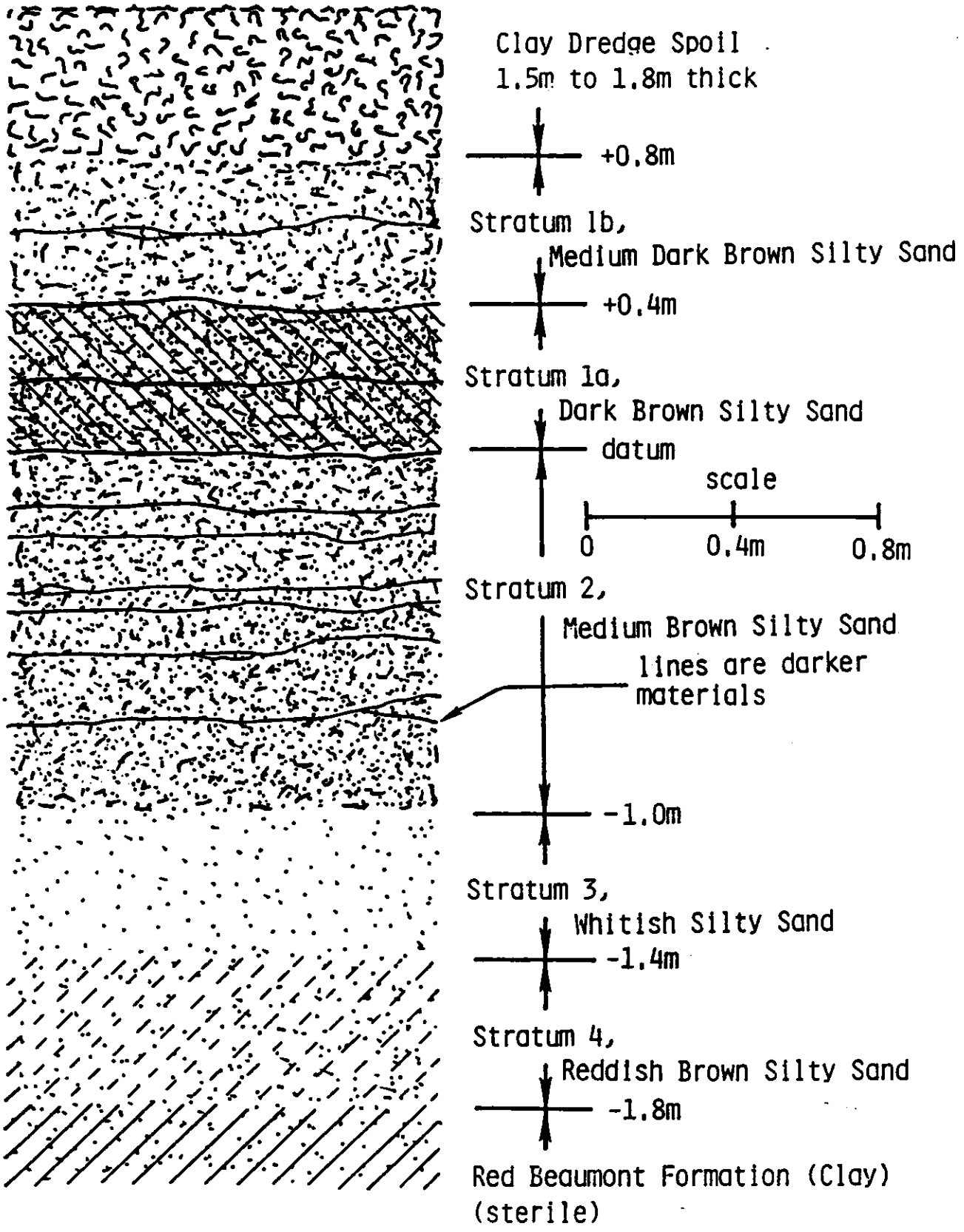


FIGURE 2

41WH19 Typical Stratigraphy



Profile of East Wall of Unit 5/8

FIGURE 3
FRONT VERTICAL EXCAVATION PROFILE
(FIRST ROW DF PITS)

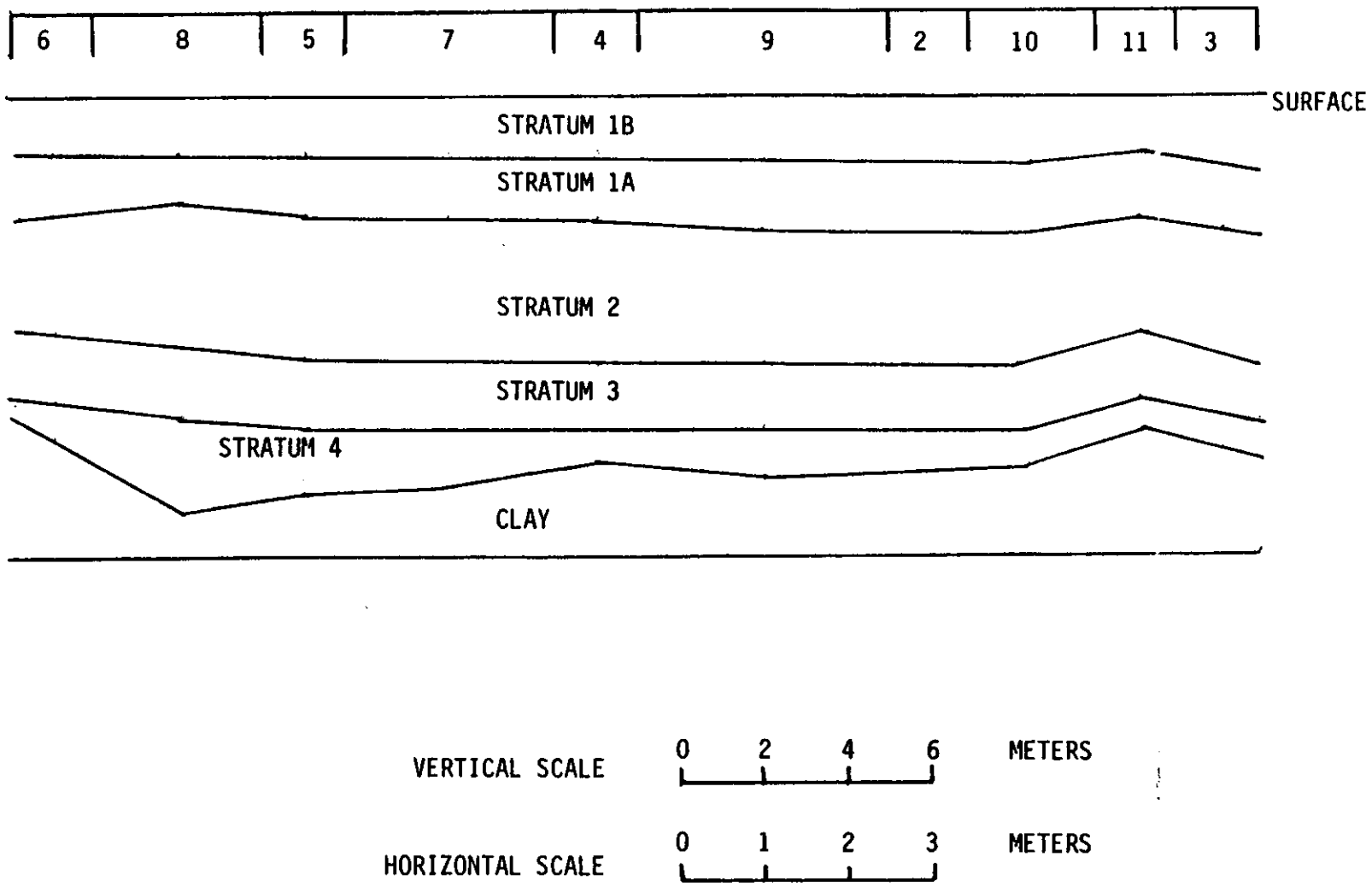
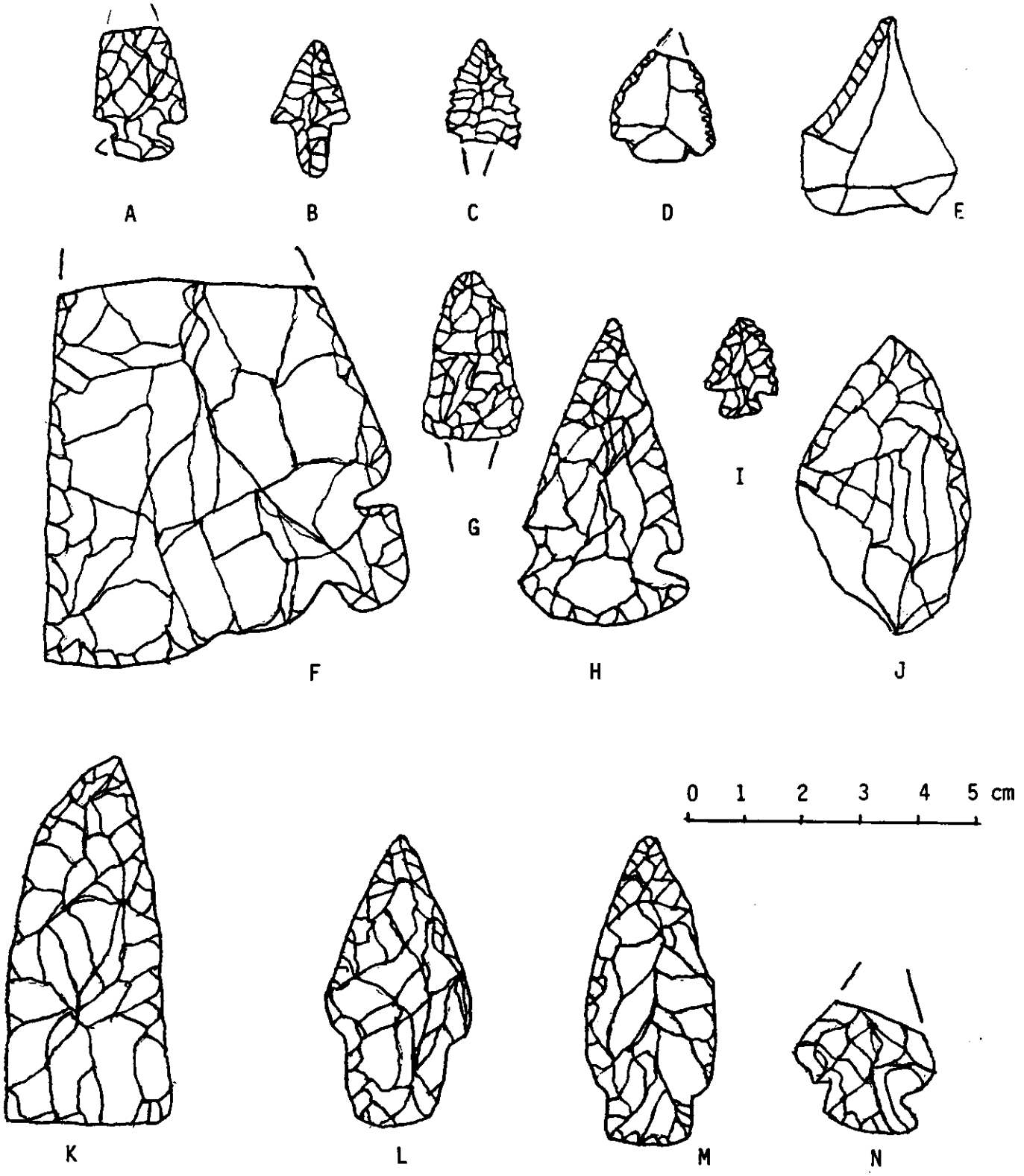


FIGURE 4
SITE 41WH19 LITHIC ARTIFACTS, STRATUM 1B AND UNPLACED

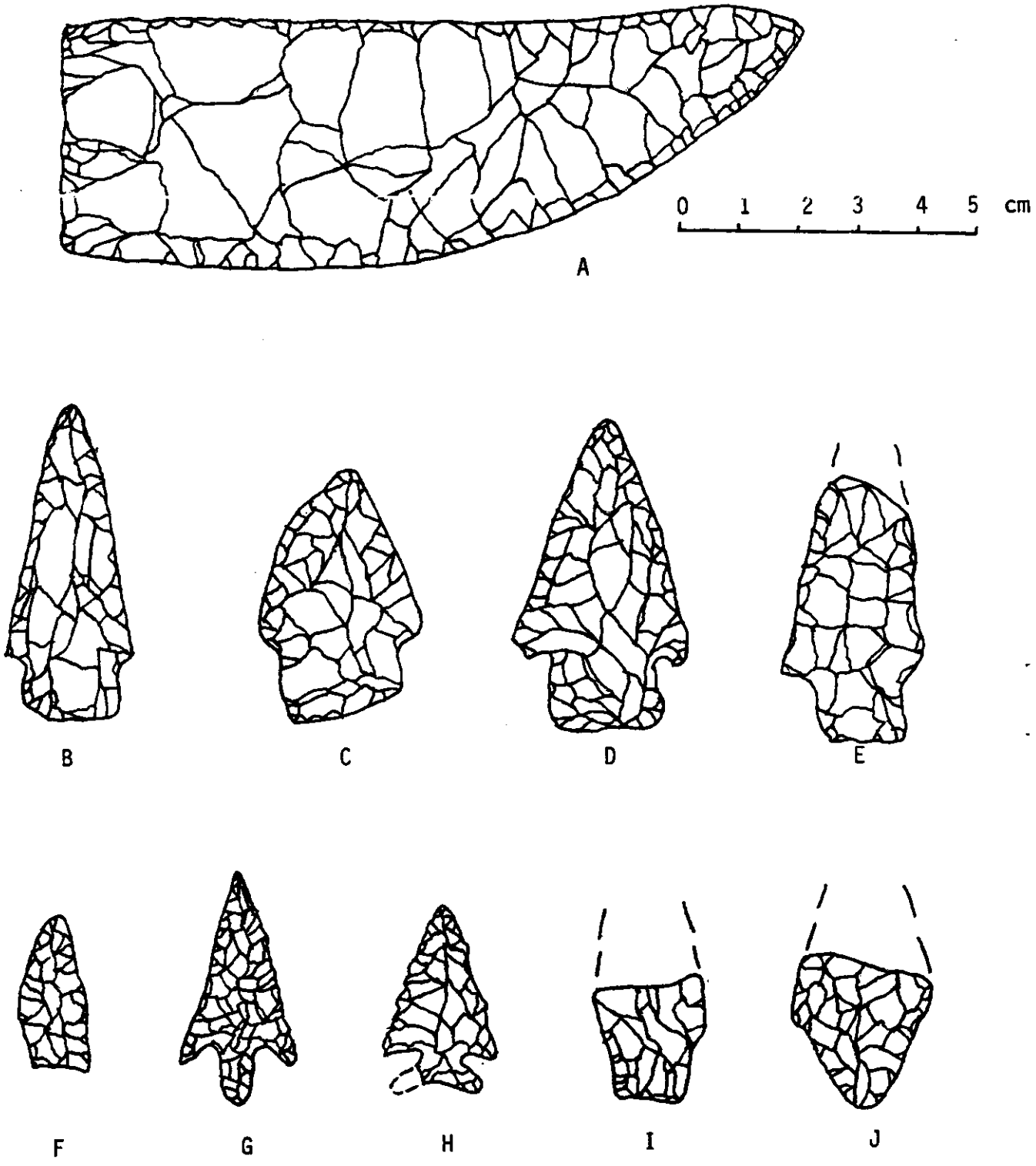


STRATUM 1B

A-Scallorn; B, C-Perdiz; D-unifacial arrow point; E-perforator; F-corner tang biface; G-Gary (?) preform; H-Ensor; I-Scallorn-like; J-preform

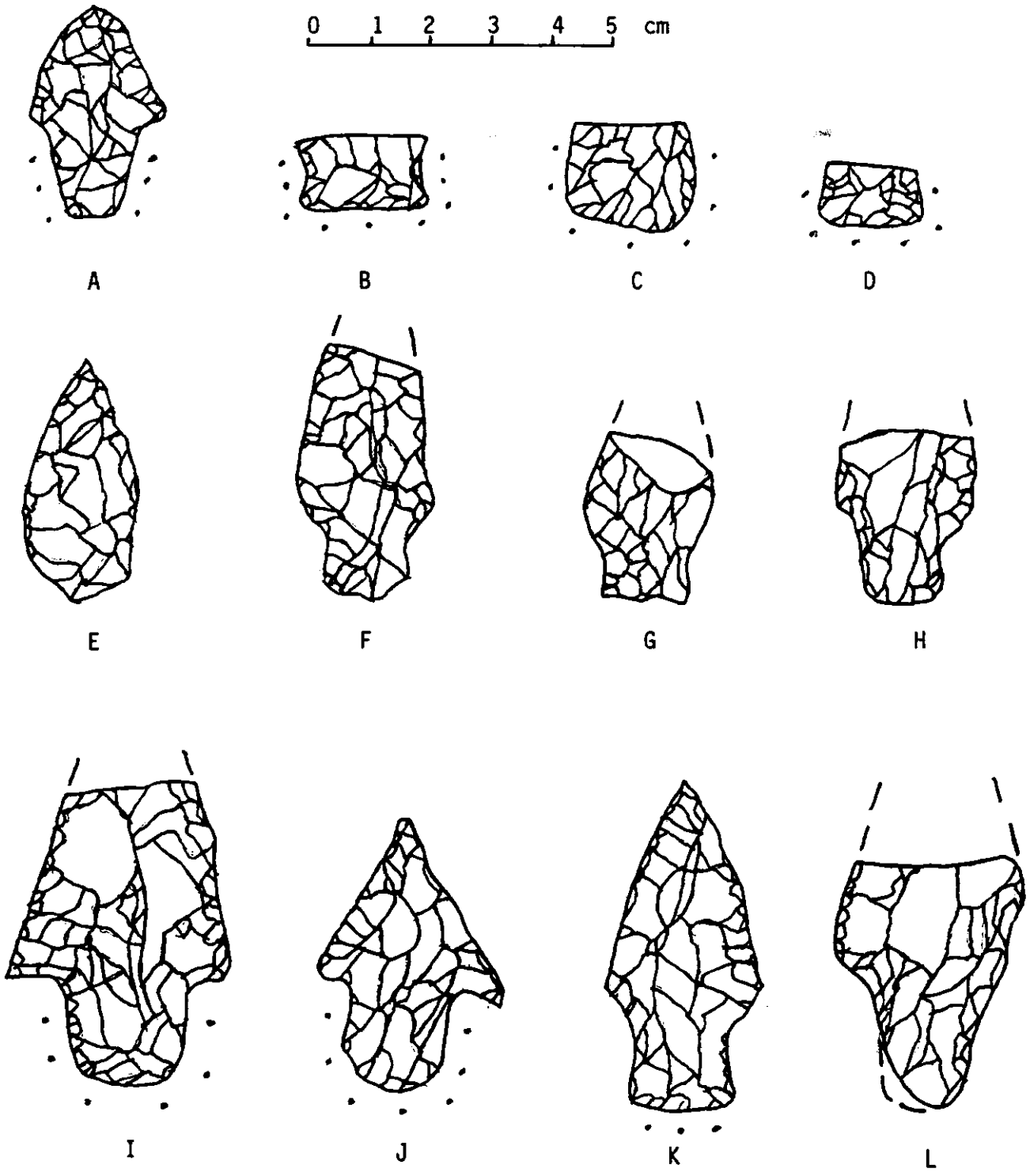
UNPLACED: K-bifacial knife; L-Kent; M-Travis; N-unclassified

FIGURE 5
SITE 41WH19 LITHIC ARTIFACTS, STRATUM 1A



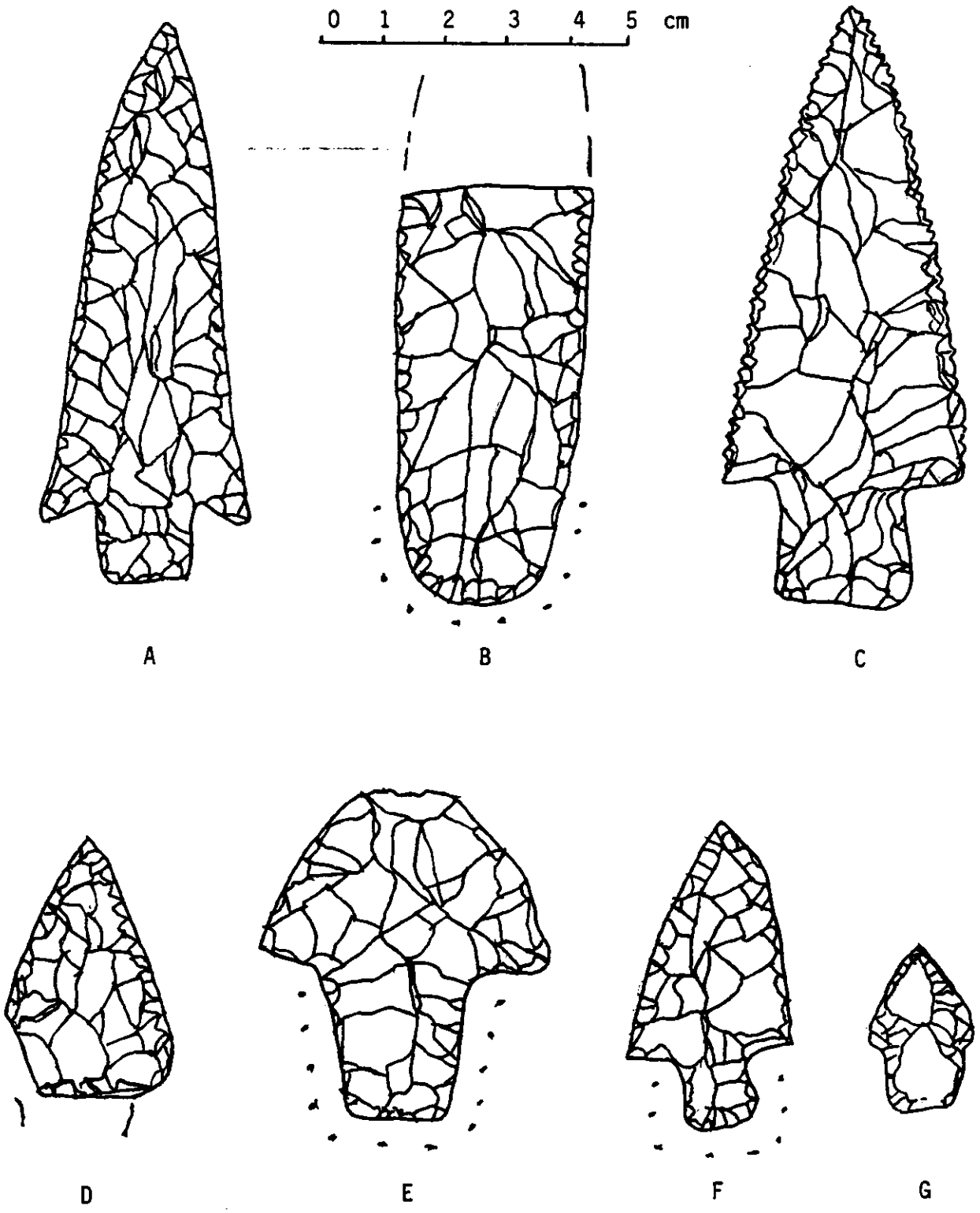
A-bifacial knife; B-Kent; C-Ellis-like; D-Yarbrough; E-Kent;
F-drill (?); G-Perdiz; H-Edwards; I-Travis-like; J-Gary

FIGURE 6
SITE 41WH19 PROJECTILE POINTS, STRATUM 2



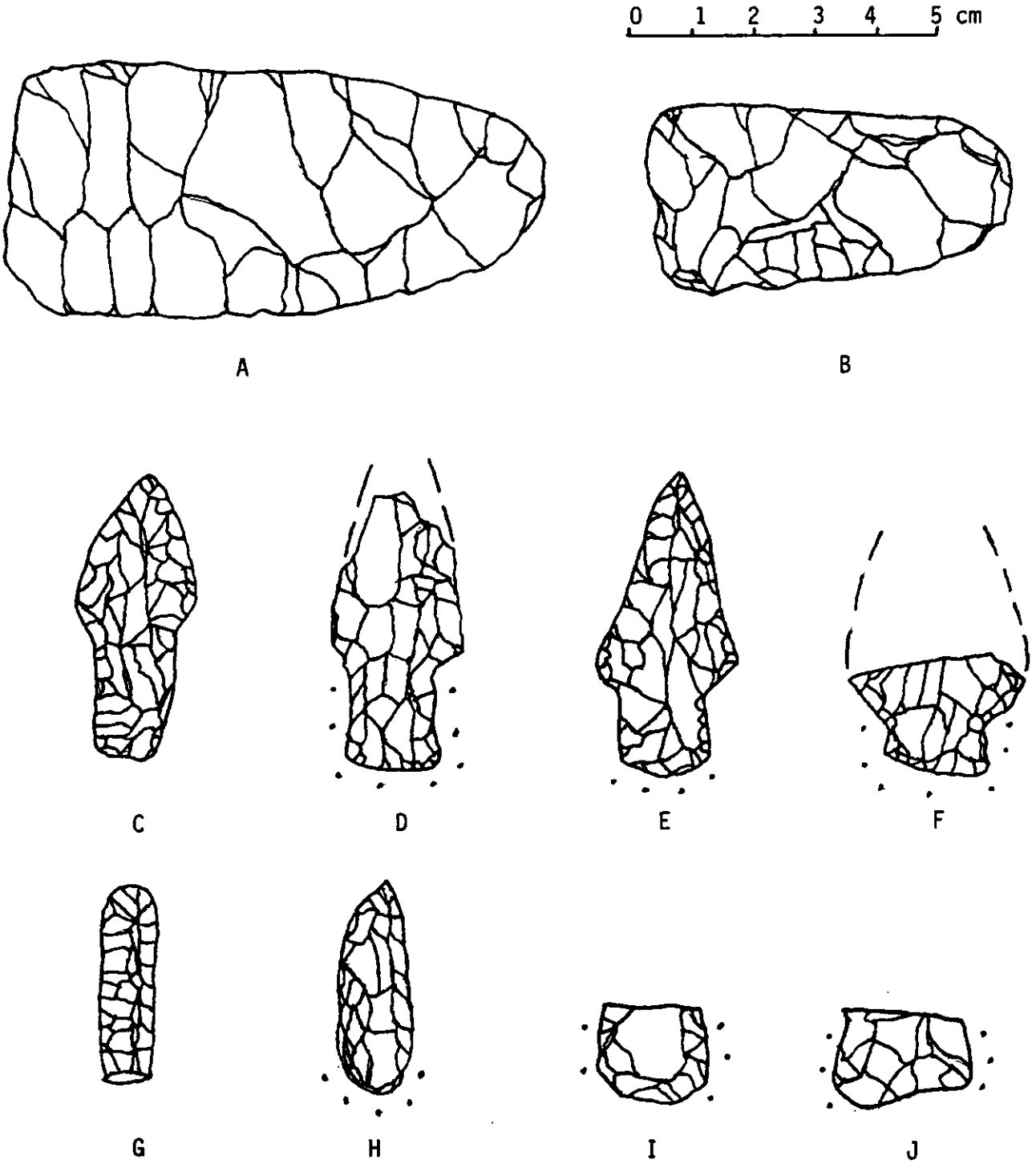
A-Gary; B, C, D-unclassified; E-misc. lanceolate; F, G, H-Travis-like; I, J-Bulverde-like; K-Yarbrough; L-Gary

FIGURE 7
SITE 41WH19 PROJECTILE POINTS, LOWER STRATUM 2



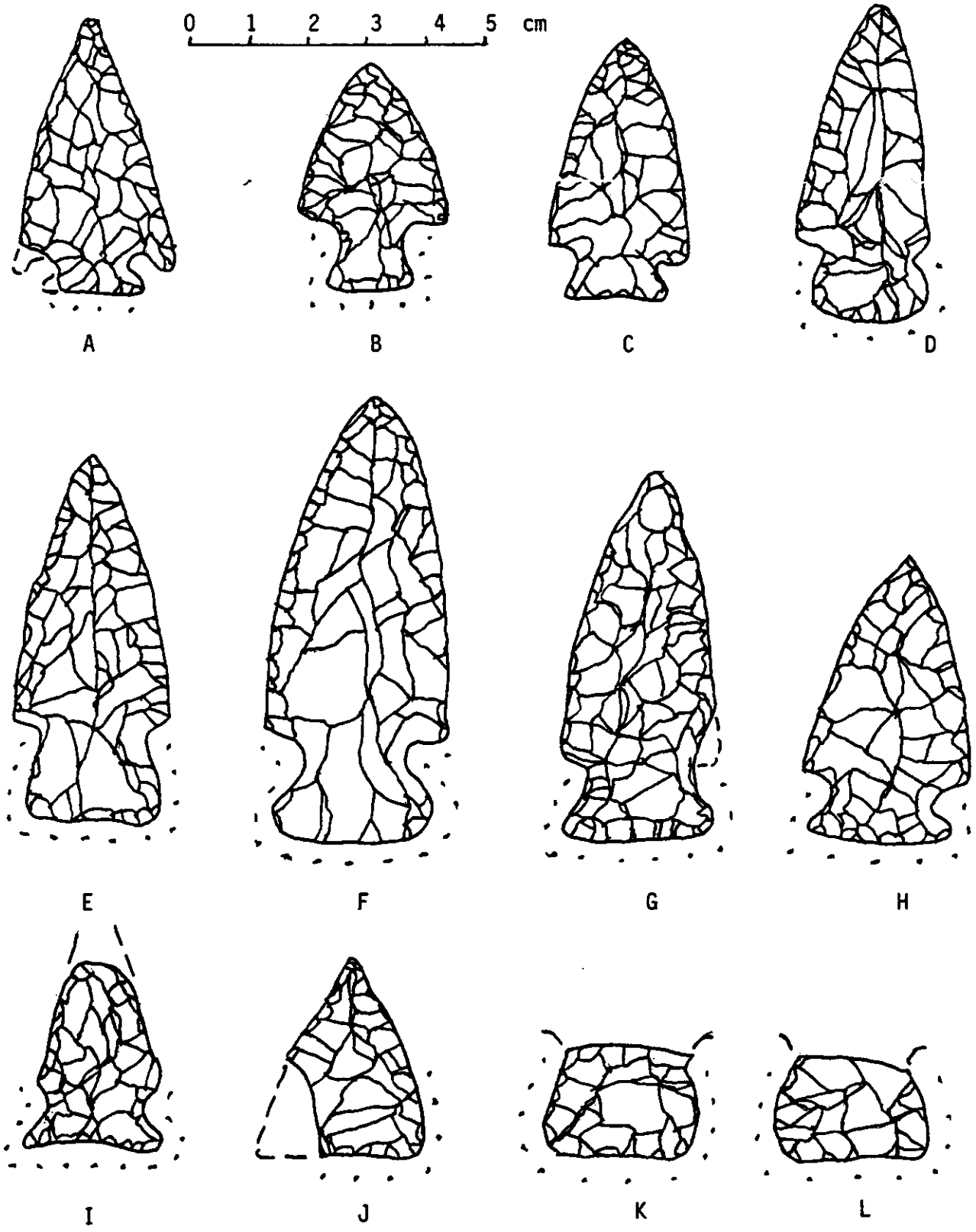
A-Bulverde-like; B-Angostura-like, C-Bulverde-like; D to G-unclassified
Dots show ground edges

FIGURE 8
SITE 41WH19 ARTIFACTS, STRATUM 3



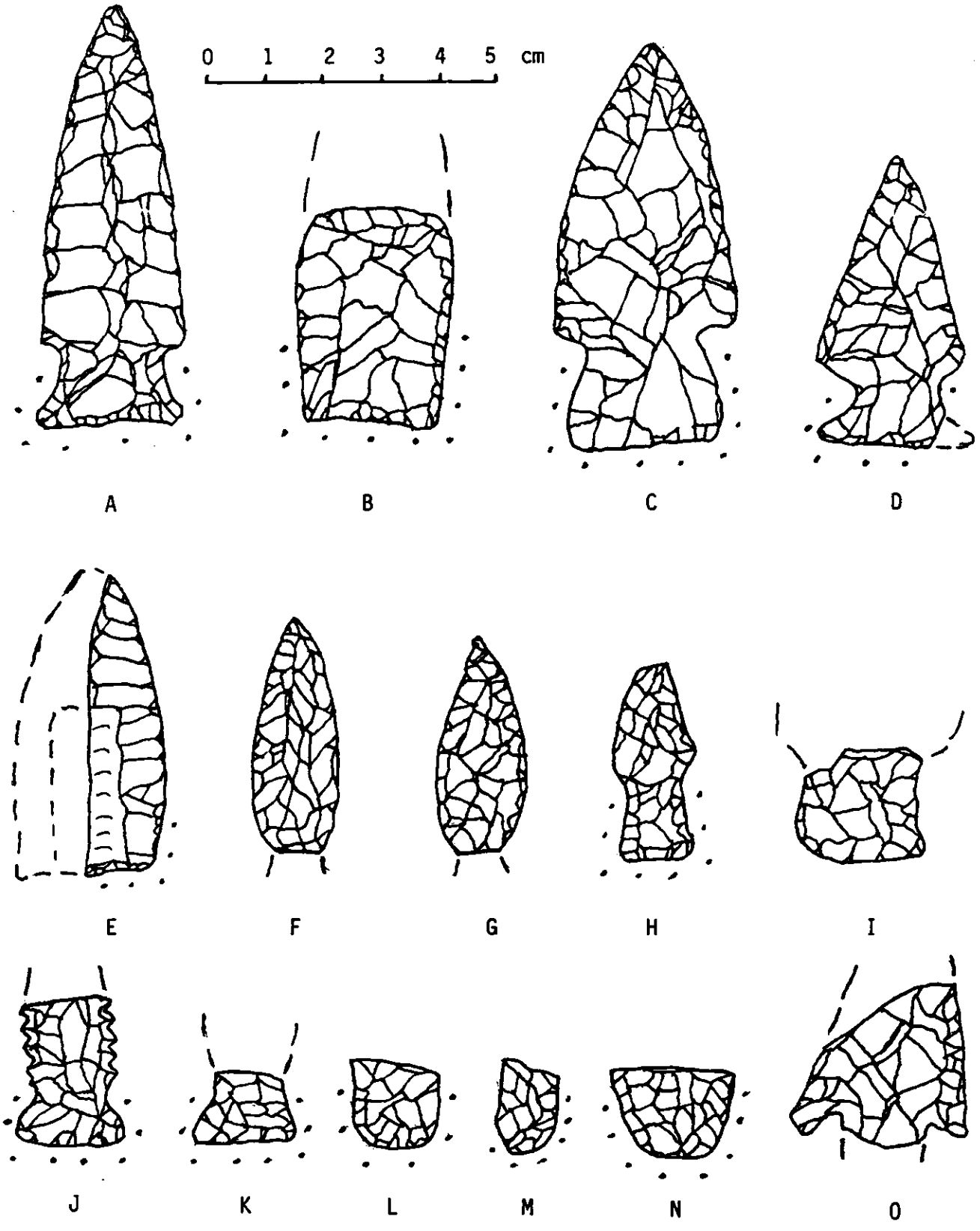
A, B-preforms; C, D, E-Early Straight-stem points; F-Early Corner-notched 4: G-drill; H-bullet shaped point; I-Early Straight-stem; J-Early Side-notched 5

FIGURE 9
SITE 41WH19 PROJECTILE POINTS, STRATUM 3



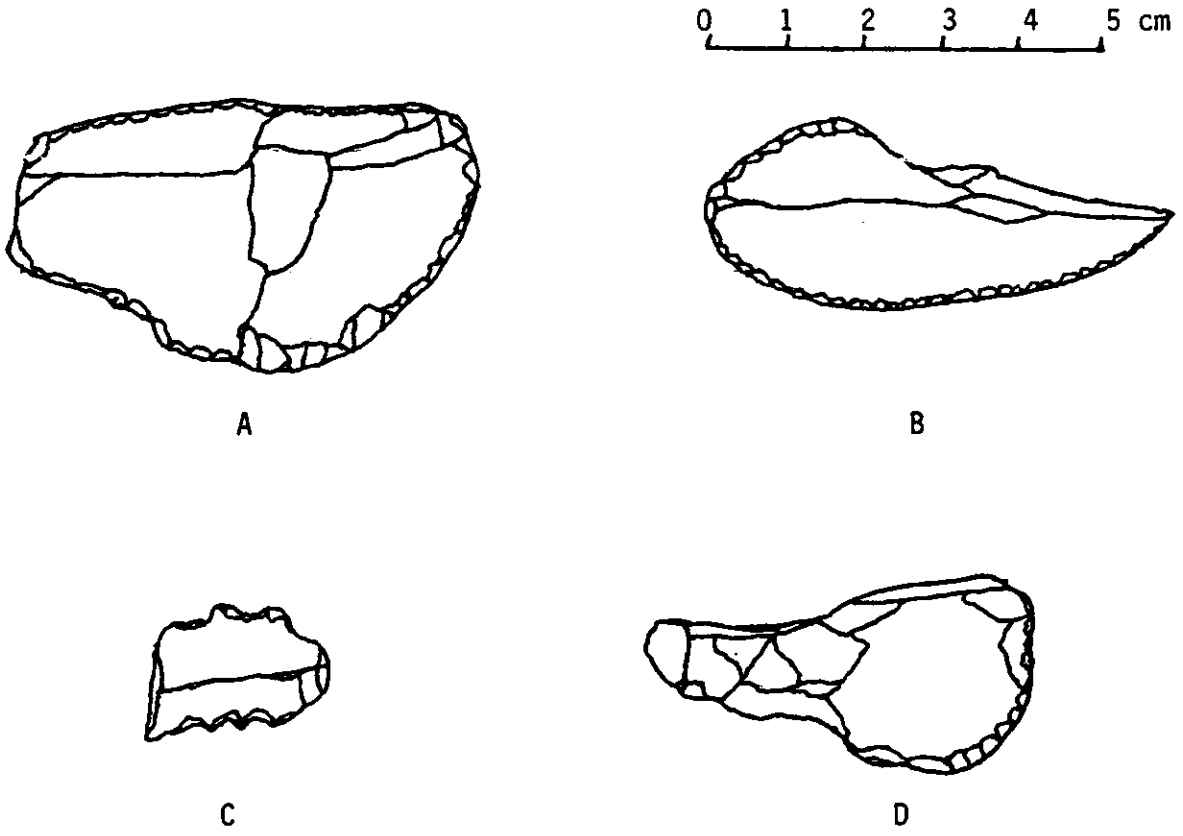
A-Early Corner-notched 1; B-Early Corner-notched 2; C-Early Corner-notched 3; D-Early Side-notched5; E-Early Side-notched 5; F-Big Sandy; G-Early Side-notched 1; H-Early Side-notched 4; I-San Patrice; J-Early Triangular; K, L-Early Side-notched 5; dots show ground edges

FIGURE 10
SITE 41WH19 PROJECTILE POINTS, STRATUM 4



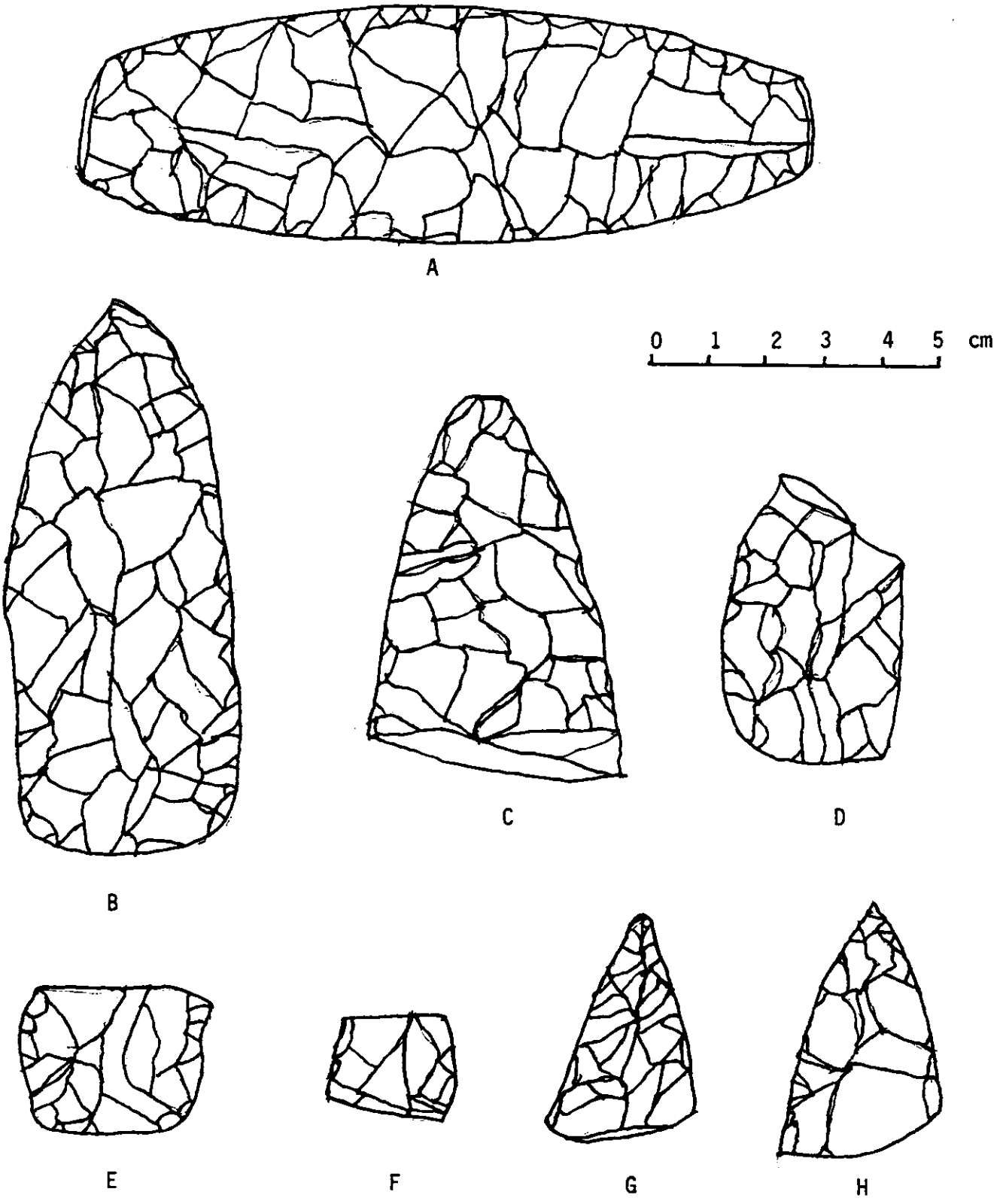
A-Early Side-notched 1; B-Plainview; C-Early Side-notched 5; D-Early Side-notched 4; E-Folsom; F, G-unclassified 1; H-Early Side-notched 2; I-unclassified stem; J, K-Early side-notched 3; L, M-Early Straight stem; N-Early Contracting stem or lanceolate; O-unclassified 2; dots show ground edges

FIGURE 11
STRATUM 1A AND SUFACE LITHIC ARTIFACTS



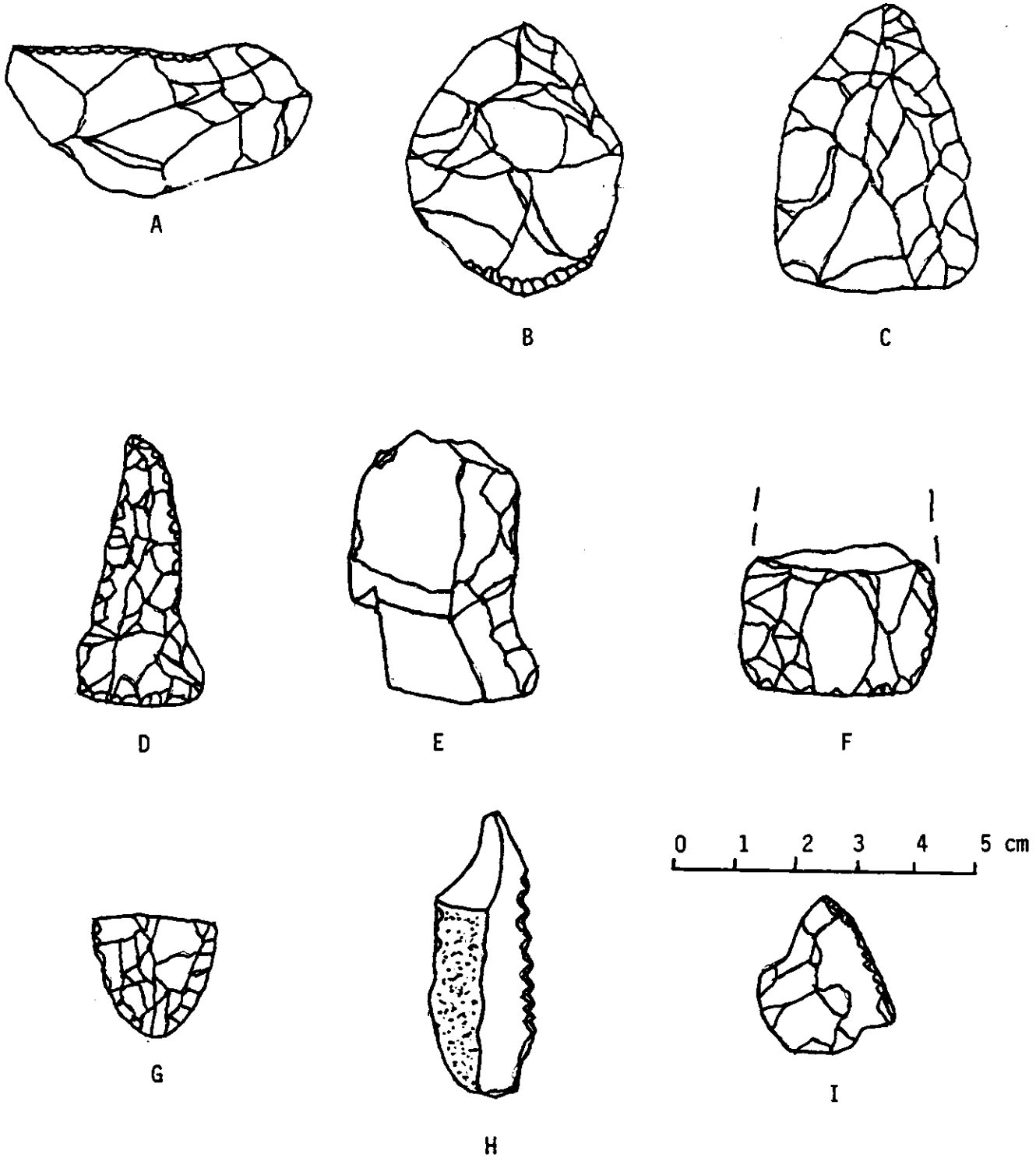
A-scraper; B-scraper-graver; C-denticulate; D-scraper

FIGURE 12
STRATUM 2 LITHIC ARTIFACTS



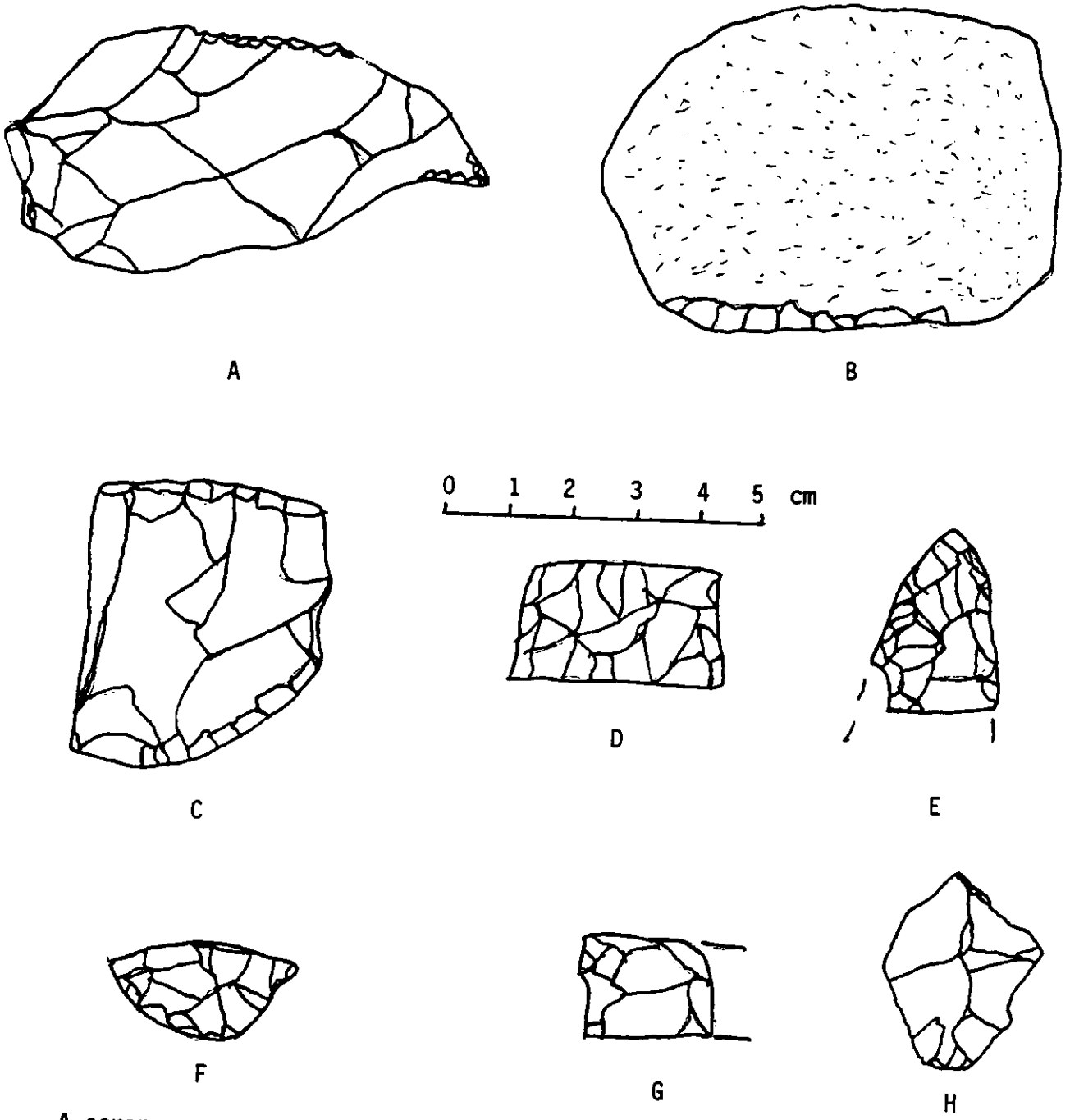
A, B-bifaces; C to F-biface fragments; G, H-preform fragments

FIGURE 13
STRATUM 2 LITHIC ARTIFACTS



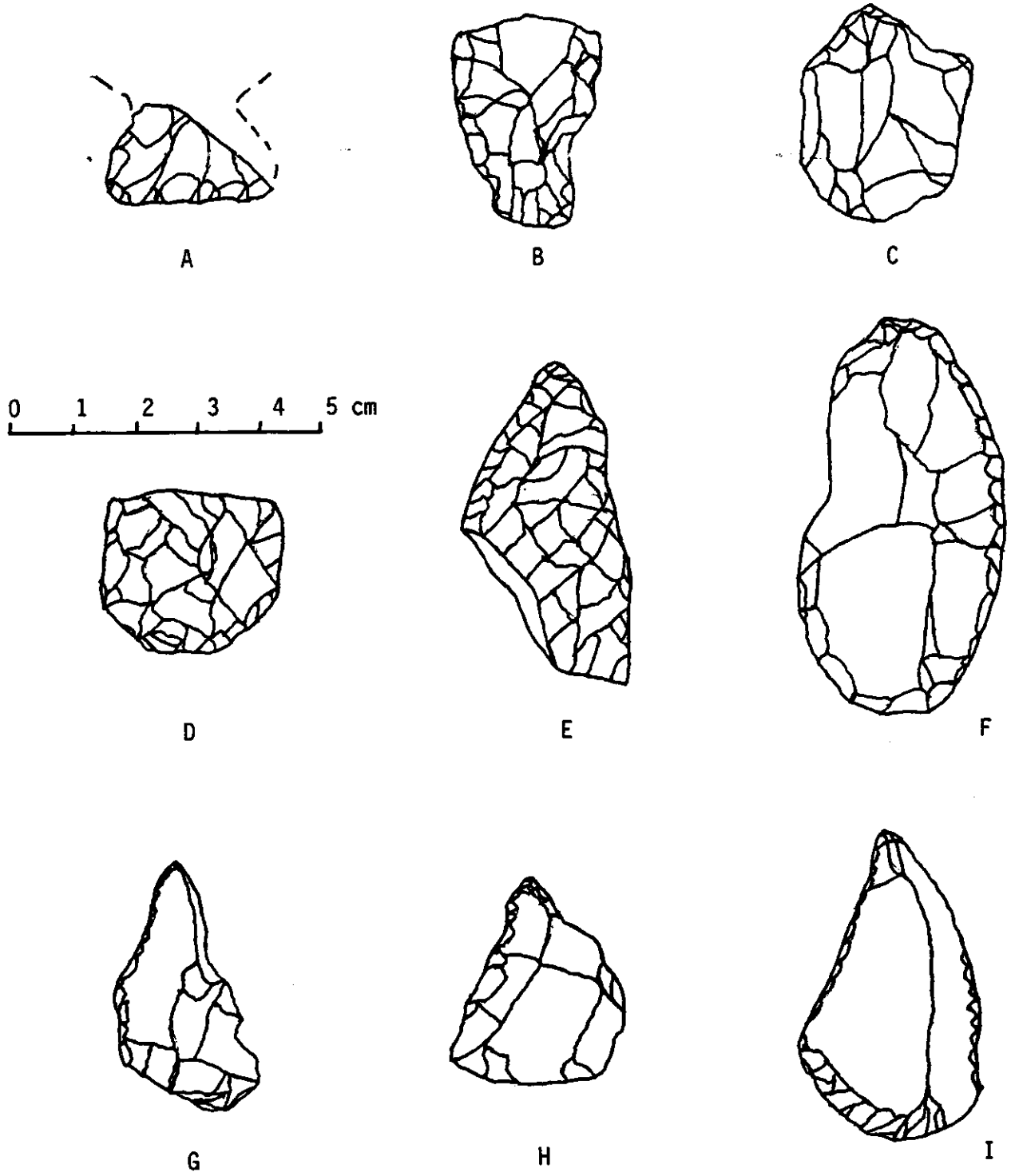
A-backed blade; turtleshell scraper; C-preform; D-drill; E-scraper; F, G-preform fragments; H-denticulate; I-graver

FIGURE 14
STRATUM 3 LITHIC ARTIFACTS



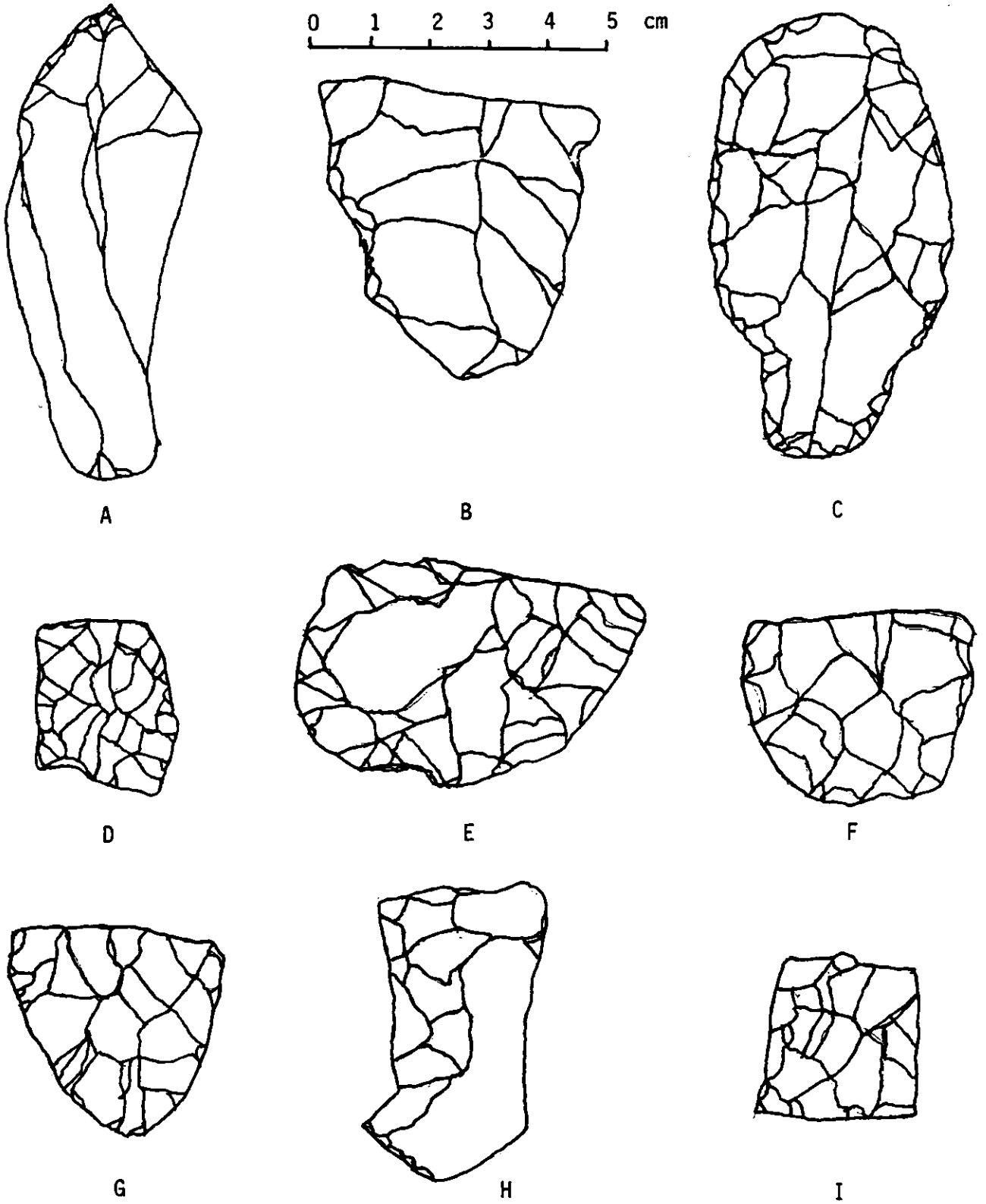
A-scraper-graver; B, C-scrapers; D to G-preform fragments; H-graver

FIGURE 15
STRATUM 3 LITHIC ARTIFACTS



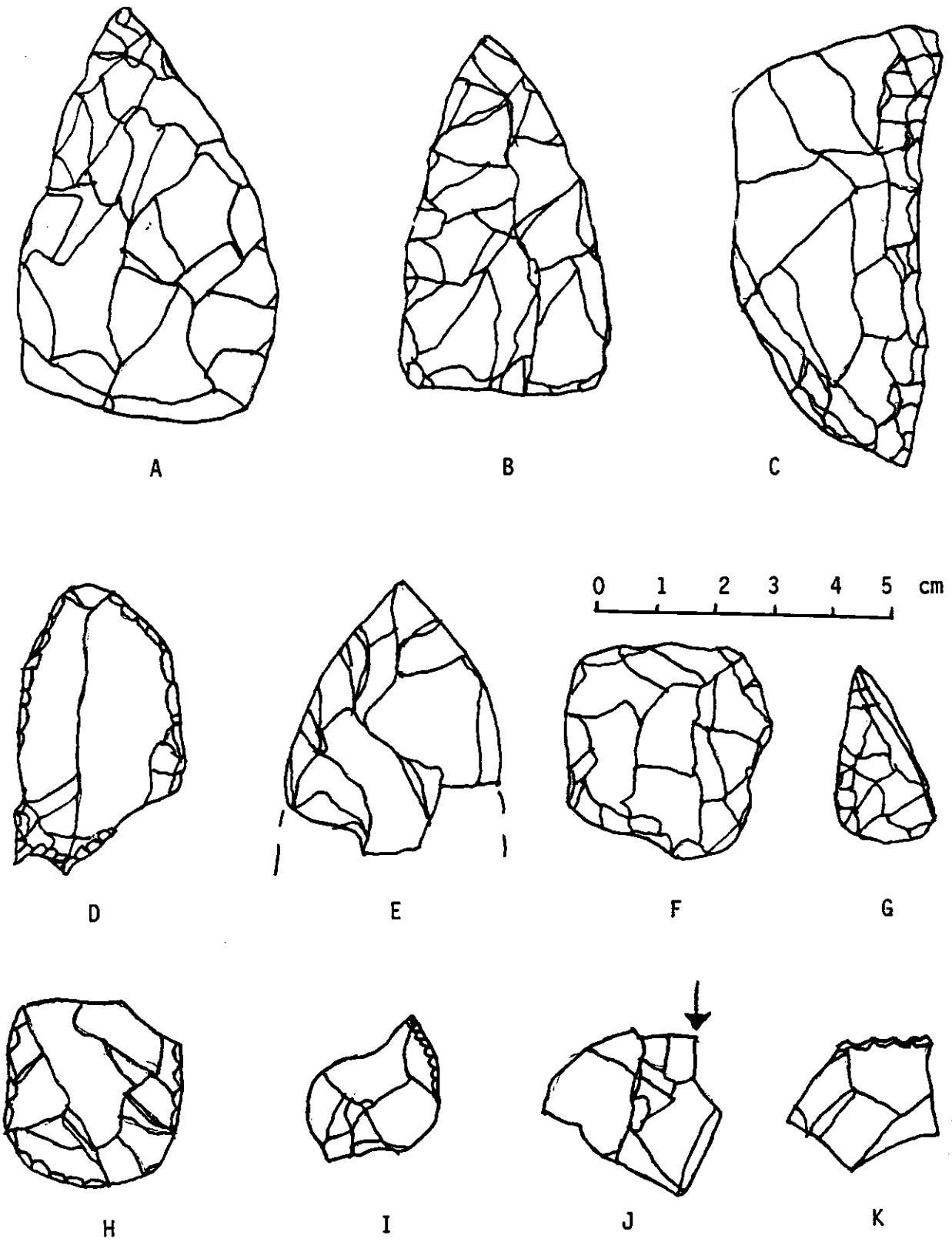
A-point stem; B-steep side uniface; C-bifacial tool; D, E-preform fragments; F-scraper; G-perforator; H-graver; I-scraper-graver

FIGURE 16
STRATUM 3 LITHIC ARTIFACTS



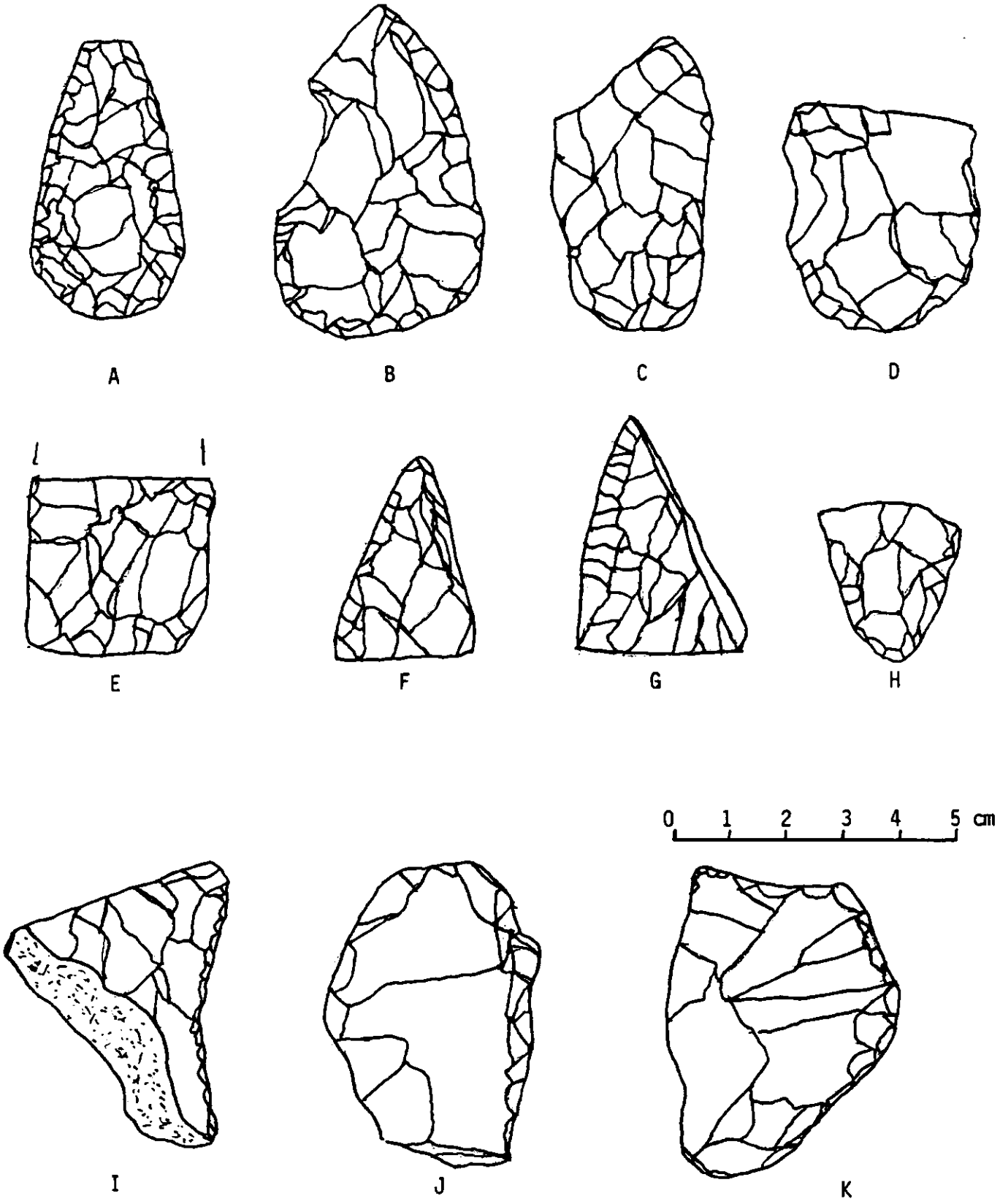
A-breaked tool; B-biface fragment; C-biface; D to G-biface fragments; H-scraper-graver; I-preform fragment

FIGURE 17
STRATUM 4 LITHIC ARTIFACTS



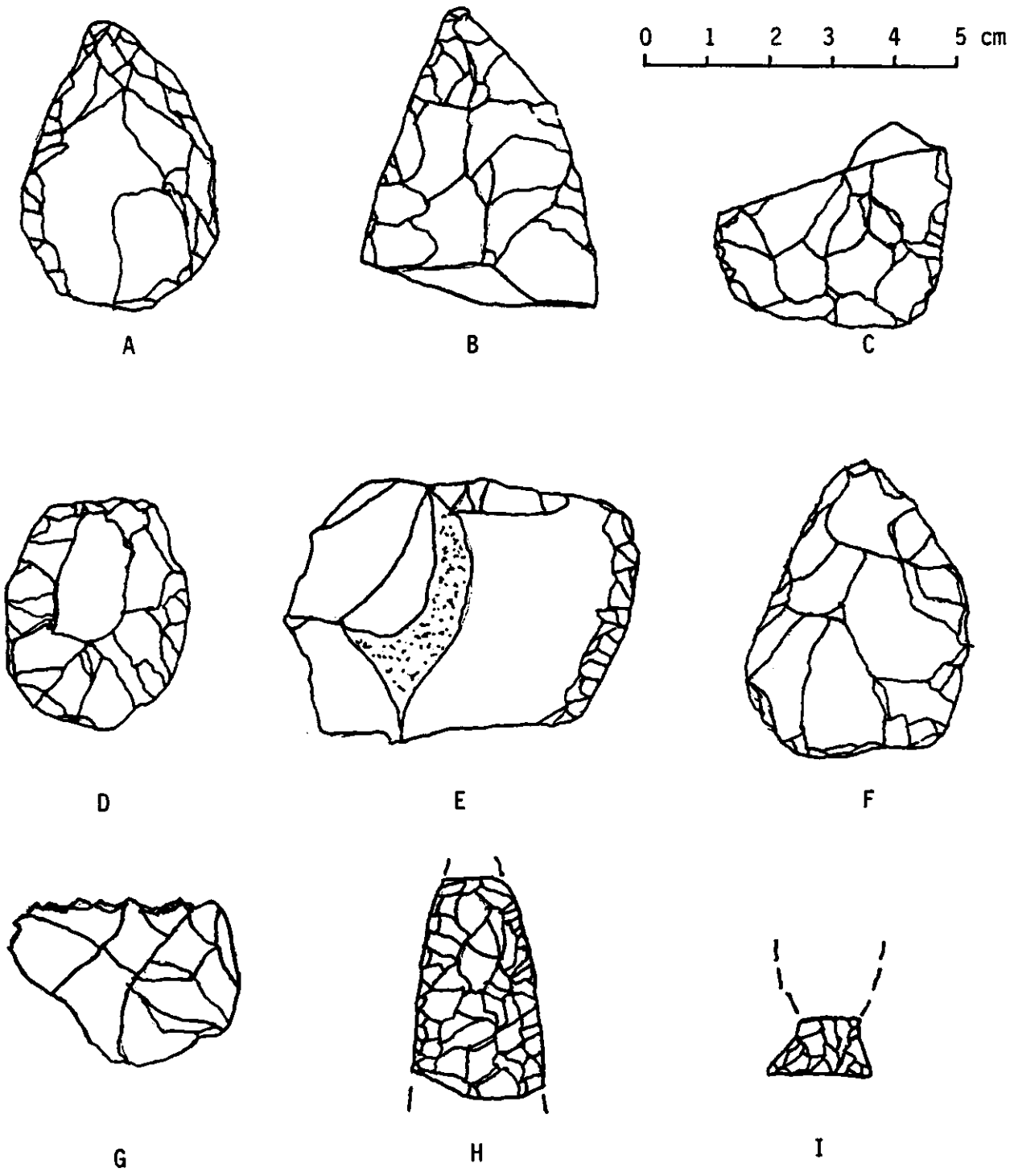
A, B-bifaces; C, D-scraper-gravers; E, G-biface fragments; F-bifacial tool; H-scraper; I-graver; J-possible burin; K-denticulate

FIGURE 18
STRATUM 4 LITHIC ARTIFACTS



A, B-preforms; C to H-preform fragments; I, J-scrapers; K-scraper-graver

FIGURE 19
STRATUM 4 LITHIC ARTIFACTS



A-preform; B-preform fragment; C-biface fragment; D, F-bifaces;
E-scraper; G-denticulate; H-point fragment; I-point stem

FIGURE 20
FLAKE SIZE DISTRIBUTION

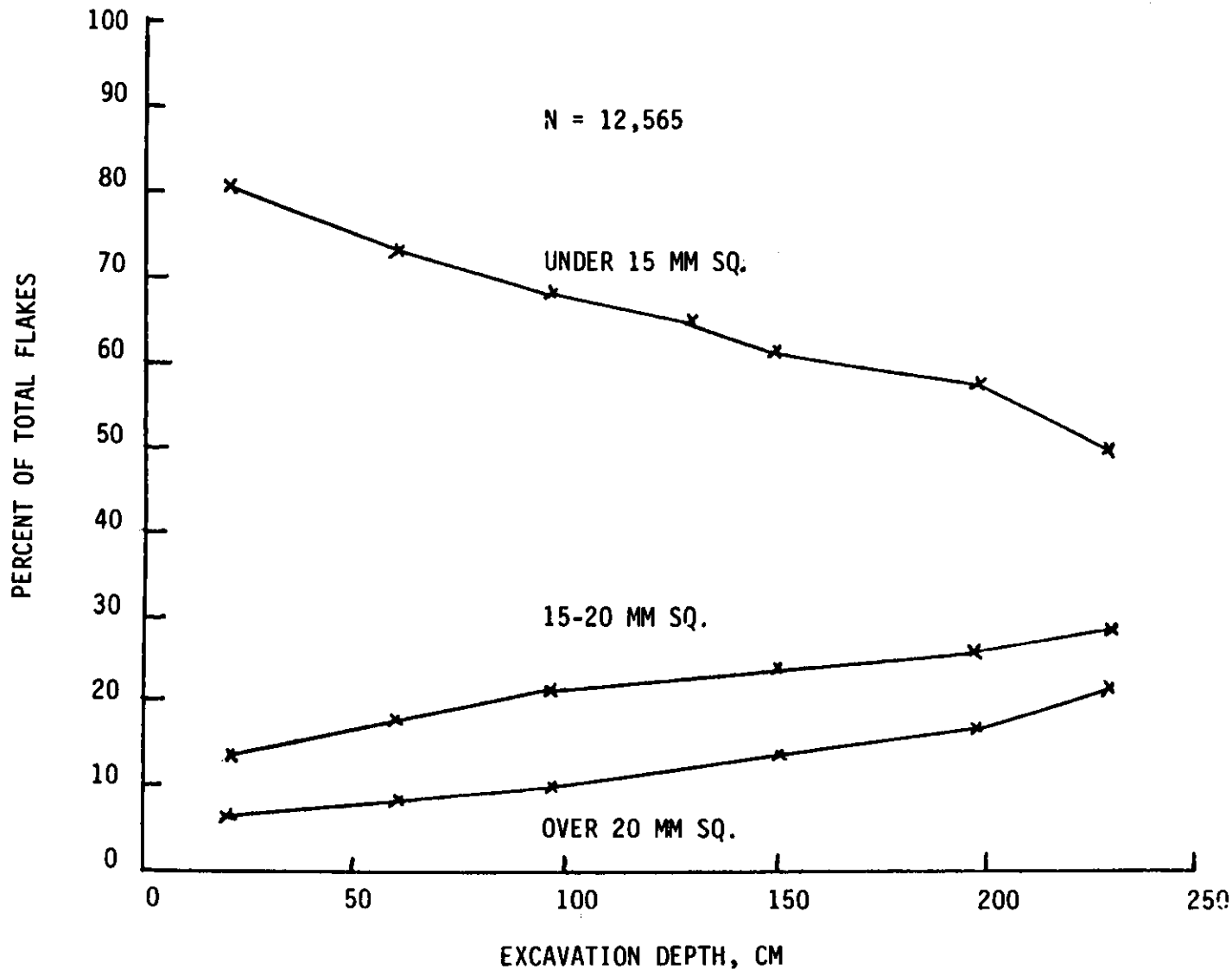


Figure 21. Plan View of Excavations, Test Pits and Borings at 41WH19

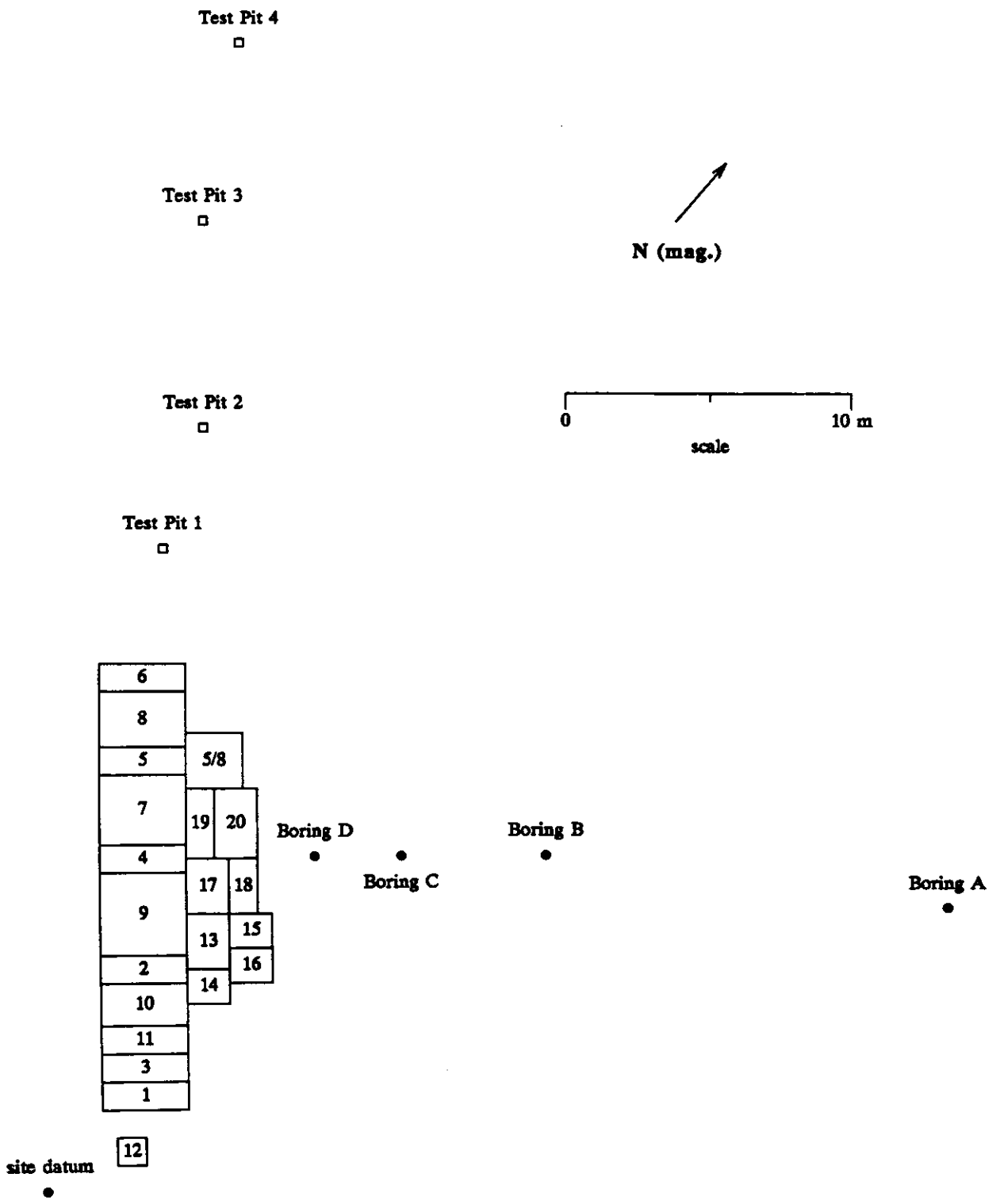
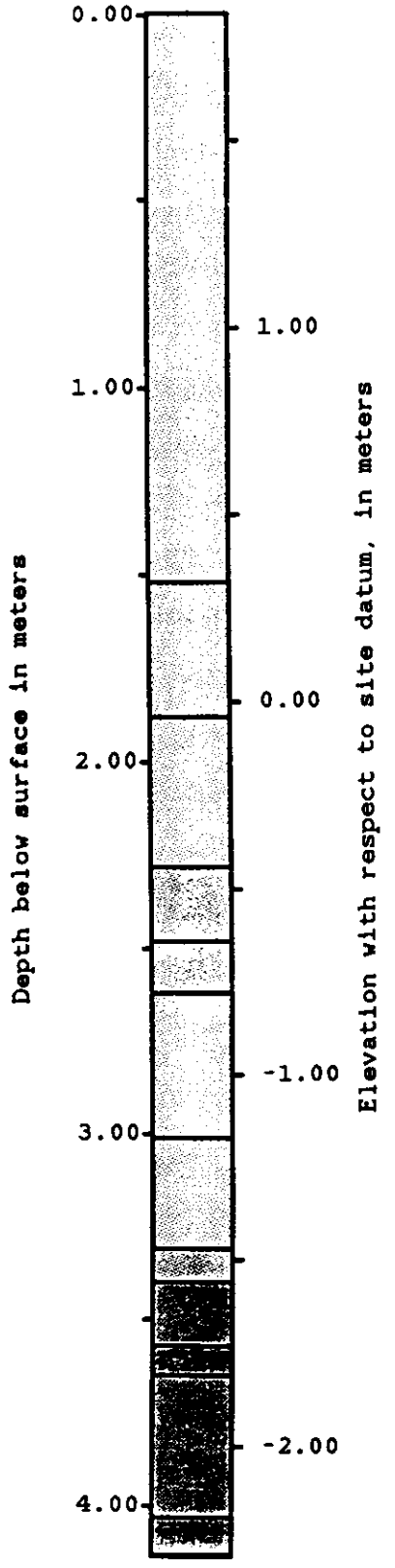


Figure 22. 41WH19: Boring A



medium brown silty fine sand

light medium brown silty sand
very moist

light medium brown silty sand
orangish 2.10-2.15

orangish light brown silty clayey sand
somewhat coarser sand

mixed orangish light brown silty clayey sand
and very light brown silty sand

very light brown silty sand

orangish brown silty sand (coarser sand)

mixed orangish brown silty sand (coarser sand)
and gray clayey sand

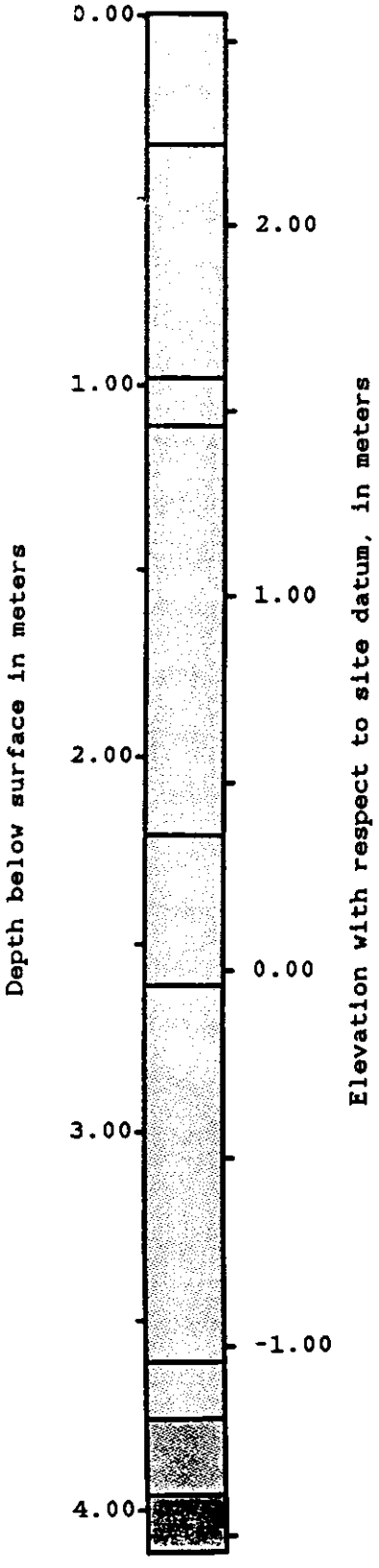
orangish brown clayey sand with a little
gray clayey sand

gray clay with some slight reddish brown sandy inclusions

slight reddish brown clayey sand with some
gray clay inclusions

mixed gray and reddish brown clay

Figure 23. 41WH19: BORING B



light brown silty sand with some large reddish brown and black clay inclusions

whitish brown sand with a little silt and a few gray clay inclusions near the top

very moist light gray silty very fine sand with some large, light reddish brown inclusions

dark blackish brown silty sand

color transition

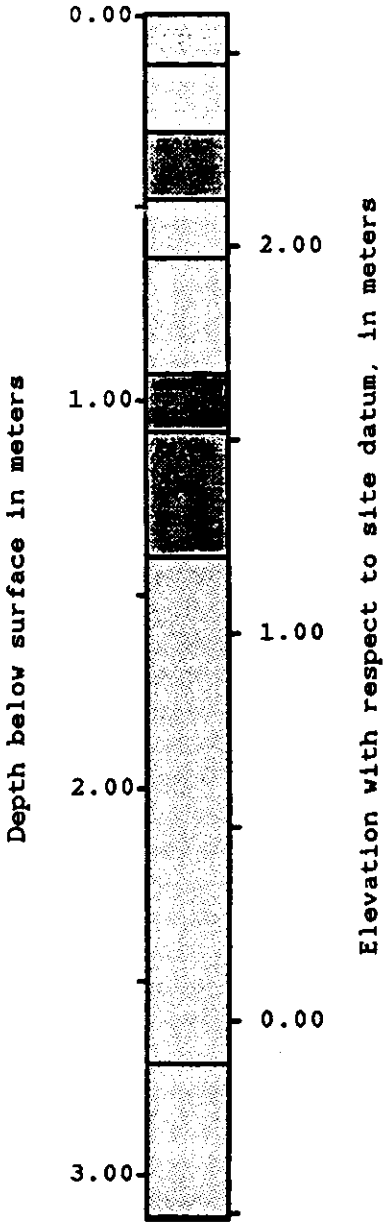
medium brown silty sand; bone frags at 2.78; color transition; hard from 3.30

reddish light brown silty sand

reddish light brown clayey silty sand

slightly mottled reddish light brown and light orangish light brown (rusty) sandy clay

Figure 24. 41WH19: BORING C



blackish brown silty sand with reddish brown clay inclusions

whitish tan sand with a little silt

mottled light and dark gray sandy clay and clay with thin brown streaks

whitish tan sand with a little silt and a few gray clay inclusions

brownish dark gray silty sand

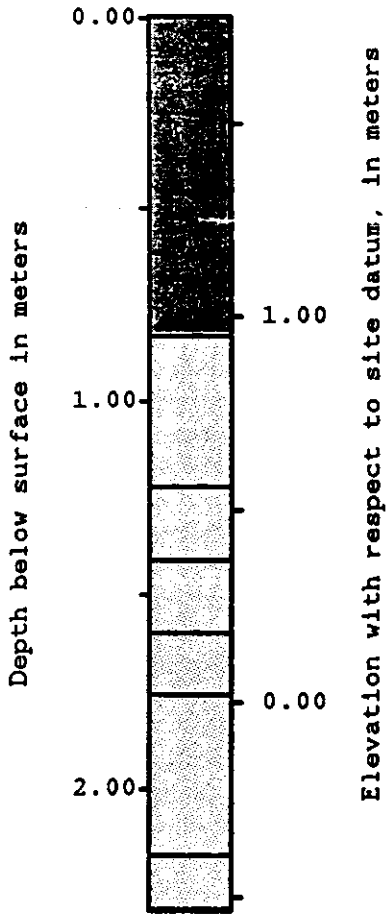
mottled light gray clay and dark gray sandy clay

mottled orangish brown and pinkish gray sandy clay

blackish brown silty sand; color transisition; small friable bone frag at 2.36

medium brown silty sand

Figure 25. 41WH19: BORING D



dredge spoil

blackish brown silty sand; thin darker and harder layers barely seen at the lines shown