

**ADDITIONAL INVESTIGATIONS AT 41GV53
GALVESTON COUNTY, TEXAS**

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INTRODUCTION

This report gives the results of investigations by the Houston Archeological Society (HAS) at prehistoric site 41GV53 in Galveston County, Texas, and presents a summary of previous investigations at this site. HAS investigations include excavations and tabulation of three surface collections.

Site 41GV53 is a very large shell midden site on the coastal margin of Southeast Texas. This is the earliest shell midden found so far in this region, starting in the Early Archaic period (5000-3000 BC), with occupation through the Late Prehistoric period (AD 600-1500). Earlier coastal shell midden sites would have been submerged by rising sea level. There is also evidence from a surface collection of occupations at this site in the Paleoindian period, before the start of the shell midden, when this site was still in a freshwater environment at lower sea level. A Folsom point indicates start of occupation sequence in a time interval of 9000-8000 BC. Other projectile point types indicate a continued Paleoindian occupation sequence until about 5000 BC.

Site 41GV53 is located at Clear Creek near its entrance into Clear Lake. Rising sea level during the early Holocene period converted lower Clear Creek from a freshwater to a brackish water environment. This permitted the growth of Rangia shellfish. When shellfish became available, the shell midden at this site was started, with an earliest calibrated date of 4220 BC in the Early Archaic period (5000-3000 BC). As noted above, there is a Paleoindian occupation sequence at 41GV53. Other Paleoindian occupations are known along Clear Creek (McGuff and Cox 1973).

Because the shell midden at this site is well stratified, data from excavations can be used to study the development pattern for coastal margin adaptation to aquatic food resources and for cultural change. Technological changes include the introduction of pottery and start of the bow and arrow. In later time, after about 200 BC, there are indications of the development of social boundaries between groups on the coastal margin and their inland counterparts (Patterson 1993; Aten 1983:308).

Previous investigations at 41GV53 include two projects by Prewitt and Associates (Howard et al. 1991; Hines 1992) sponsored by the US Army Corps of Engineers. Additional investigations at this site by the HAS include excavations and tabulation of three surface collections of artifacts. The HAS project was organized and directed by Sheldon Kindall.

SITE DESCRIPTION

Site 41GV53 is a very large shell midden site located adjacent to Clear Creek near its entrance into Clear Lake. This site has been mapped by Howard et al. (1991:Figure 10), shown here in Figure 1. The site is bisected by a road that destroyed about one-third of the site. Area A on the west side of the road has an area of 4760 square meters (1.18 acres), and Area B on the east side of the road has an area of 3712 square meters (0.92 acres). The original site area was about three acres. The site actually extends beyond the mapped areas A and B to the edge of Clear Creek where many artifacts have been found.

With a shell midden depth of about 0.9 meter, this site contains many tons of shell, accumulated over a period of about 5700 years. After removal of shellfish bodies for food use, empty shells were not simply discarded in piles, but instead were used to make a rather uniform paving of the site area for an improved living surface. Some of the large

shell middens on the coastal margin of Southeast Texas contained enough shell that they were commercially mined in modern time for road stabilization material.

Much of the occupation area of this site is on a knoll or ridge three meters above the creek edge. However, there is evidence of site occupation at lower levels adjacent to the creek edge, in the form of Rangia shell, ceramic artifacts and stone artifacts eroding at the creek edge.

PREVIOUS INVESTIGATIONS

Prewitt and Associates have conducted two field investigations at 41GV53. Results of investigations in 1986 are given in a report by Howard et al. (1991). Results of investigations in 1992 are given in a report by Hines (1992).

The 1986 field work consisted of determining the geographic extent of the site, and doing some site testing. Site testing consisted of two 1.0x0.5 meter excavation pits in Area A, two 1.0x0.5 meter excavation pits in Area B, and some backhoe trenches.

Ceramic sherds recovered by the 1986 work included 1085 Goose Creek Plain, 15 Goose Creek Incised, 5 Goose Creek Red Filmed, 81 San Jacinto Plain with small to moderate amounts of grog temper, 3 shell-tempered, 1 Baytown Plain with abundant grog temper, and 3 Tchefuncte with contorted paste. Projectile points included 2 Perdiz arrow points, 1 Catahoula arrow point with asphaltum, 1 Kent dart point, and 6 biface fragments (dart point preforms?). Four small chert cores were recovered and 235 lithic flakes, most of sizes under 20 mm square. Lithic materials were 88% chert and 12% quartzite.

The shell midden samples were 97% *Rangia cuneata*, with a small percentage of oyster shell present. A total of 144 caliche nodules were recovered, but only of sizes under 6 mm. Four worked bone specimens were found. Faunal remains included fish, snake, turtle, rabbit, deer, and rodents. Bone was concentrated in the upper excavation levels (Howard et al. 1991:Table 21).

C13 corrected radiocarbon dates from 1986 work covered a range of 4240 to 1740 BP (calibrated 2880 BC-AD 260). Ceramics were estimated to start about 70 BC (Howard et al. 1991:79).

The 1992 field work consisted of excavation of a Late Prehistoric burial block and extensive backhoe trenches. C13 corrected radiocarbon dates covered a range of 5030 to 640 BP (calibrated 3900 BC-AD 1310), with the shell midden starting in the Early Archaic period (5000-3000 BC). Ceramics were estimated to start at about 185 BC (Hines 1992:51).

There were four burials representing five individuals, with small bone samples representing an additional four individuals. Grave goods included arrow points, bone tools, a shell pendant, a shell bead, asphaltum, sandstone, and red ochre. The cemetery at 41GV53 is part of a Late Prehistoric mortuary tradition located on the coastal margin around the Galveston Bay system. This mortuary tradition includes sites with cemeteries such as 41GV66 (Ricklis 1994), 41HR80 (Aten et al. 1976), 41HR581 (Gadus and Howard 1990:155), 41GV1 (Campbell 1957), and 41GV5 (Aten 1965).

Ceramic sherds from the 1992 work included 2322 Goose Creek Plain, 35 Goose Creek Incised, 10 Goose Creek Red Filmed, 46 San Jacinto Plain, and 9 Tchefuncte. Projectile points included 4 Perdiz arrow points, 1 Alba arrow point, 1 unclassified arrow point, 2

Kent dart points, and a San Patrice dart point. The San Patrice point indicates occupation before shell midden formation, in the Paleoindian period. One small chert core and 222 lithic flakes were recovered. Stone tools included 3 perforators and 1 scraper. There were 166 (576 gm) small caliche nodules.

Seventeen worked bone specimens were found, with 2 decorated, 2 socketed bone projectile points, 1 needle, 8 deer ulna tools, and 3 possible awls. The midden sample was 96% *Rangia cuneata* with a small percentage of oyster shell present. Faunal remains included fish, bird, alligator, snake, turtle, deer, rabbit, raccoon, and rodent.

HAS EXCAVATIONS

GENERAL COMMENTS

Excavations at site 41GV53 were conducted by members of the HAS in the spring of 2001. Work was made possible by permission from the landowner, Jeremy Davis of Houston, and through the courtesy of League City Parks and Recreation Department who are actively pursuing purchase of the property in order to create a city park.

Individuals who participated in the excavation work include: Beth Aucoin, Pat Aucoin, Richard Carter, Wanda Carter, Charles Boyle, C.R. Ebersole, Dick Gregg, Sue Hamblin, Marilyn Horton, Joe Hudgins, Sheldon Kindall, Tom Nuckols, Lee Patterson, David Pettus, Gary Ryman, Bob Shelby, Allen Soukup, and Roy Whitney. Excavations were directed by Sheldon Kindall, who also handled field records. Analysis of faunal remains was done by Bill McClure. Most of the artifact analysis was done by Lee Patterson. Beth Aucoin analyzed rim sherds and decorated sherds. Sheldon Kindall did site mapping, with the assistance of Charles Boyle and Beth Aucoin.

EXCAVATION DETAILS

HAS excavations at 41GV53 consisted of five one-meter square pits in Area B of the site. The location of these pits is shown in Figure 2. Four adjacent Pits A to D were excavated near the Prewitt and Associates datum at the highest elevation of the site. A fifth Pit E was done near the bottom of the steep slope toward Clear Creek. All datum depths given here are from 5 cm above the actual surface of the site. Pit A was excavated to the bottom of the shell midden at a datum depth of 95 cm, where soil type changed to clay. Pits B and C were excavated to a datum depth of 40 cm, and Pit D to a datum depth of 35 cm, to include the main strata that contained pottery. Pit E was abandoned after hitting clay at a depth of only 15 cm below the site surface.

All excavated soil was put through 1/4-inch (6mm) mesh screens. Soil samples for fine screening were collected at depth intervals of 5 cm, with datum depths of 5 to 20 cm from Pit C, 20-25 cm from Pit B, and 25-95 cm from Pit A. All excavations were done in arbitrary 5 cm depth intervals because there were few visual indications of stratigraphic differences.

RADIOCARBON DATES

Three C13 corrected radiocarbon dates were obtained on Rangia shell from HAS excavations. A radiocarbon date of 5340 +/-80 BP (GX-27753) was obtained at the bottom of the shell midden in Pit A at a datum depth of 90-95 cm. This gives a calibrated date of 4220 BC (Stuiver and Pearson 1993). Along with a previous calibrated date of 3900 BC (Hines 1992:Table 4), it is shown that the shell midden was started in the Early Archaic period (5000-3000 BC).

A radiocarbon date of 1690 +/-60 BP (GX-27963) was obtained from the 25-30 cm datum depth, which gives a calibrated date of AD 390. This depth was chosen to represent the possible start of standardized bifacial arrow point types; Perdiz, Alba, Catahoula, and Scallorn. As can be seen in Table 1, there is a Perdiz point at a lower datum depth of 30-35 cm which may or may not represent stratigraphic mixing with the next higher stratum. Therefore, the date of AD 390 is a conservative estimate for the start of bifacial arrow points at this site. Aten (1983:306) has given an estimate of AD 600 for the start of

bifacial arrow points in the Galveston Bay area, but Aten did not have C13 corrected radiocarbon dates. The new date of AD390 may be a better date for the start of bifacial arrow points in the Galveston Bay area.

A radiocarbon date of 1940 +/-60 BP (GX-27964) was obtained for the 35-40 cm datum depth, which gives a calibrated date of AD 80. This depth was chosen to represent the possible start of pottery at this site. A few sherds were found below a datum depth of 40 cm (Table 2) which may or may not represent stratigraphic mixing.

Previous investigations at this site have estimates of 185 BC (Hines 1992:51) and 70 BC (Howard et al. 1991:79) for the start of pottery. Aten (1983:297) has given an estimate of AD 100 for the start of pottery in the Galveston Bay area, but Aten did not have C13 corrected radiocarbon dates. Ricklis (1998:440) has recommended a C13 correction of an additional 300 years for Rangia shell radiocarbon dates. This correction would revise Aten's estimate for the start of pottery in the Galveston Bay area to 200 BC.

As may be seen in the above discussion, it is difficult to determine the exact dates for the start of pottery and the start of bifacial arrow points at shell middens in the Galveston Bay area. Reasonable current estimates would probably be 200 BC for the start of pottery and AD 300 for the start of bifacial arrow points.

PROJECTILE POINTS

Projectile points found by HAS excavations are shown in Table 1 and Figure 3. Five Perdiz points were found at a datum depth of 15-20 cm and one Perdiz point was found at a datum depth of 30-35 cm. An Alba arrow point was found at a datum depth of 25-30 cm. A dart point preform and a dart point fragment were also found at a datum depth of 25-30 cm. An arrow point preform was found at a datum depth of 20-25 cm.

A total of 16 gar scale arrow points were found, with some in all strata from 10 to 40 cm. It should be noted that gar scale arrow points appear to have been used throughout the Early Ceramic period before the start of bifacial stone arrow points. Not many gar scale arrow points have been previously published for Southeast Texas (Patterson 1994). Early use of the bow and arrow, before start of bifacial arrow points, is also known from inland Southeast Texas, where unifacial stone arrow points were used starting in the Middle Archaic period, 300-1500 BC (Patterson 1992).

A bone projectile point (Figure 3Q) was found at a datum depth of 30-35 cm. There is enough wrap-around in the slot of this point to have allowed a socketed haft. This specimen could have functioned as an arrow point or a small dart point.

It should be noted that the Perdiz arrow point found at a datum depth of 30-35 cm is another indication that the Perdiz point started much earlier in Southeast Texas than in Central Texas (Patterson 1995a:254, 1996:21).

WORKED BONE

Aside from the bone projectile point discussed above, several other worked bone artifacts were found. Three bone awl tips were found at a datum depth of 30-35 cm, with one in Pit A and two in Pit B. A long-bone implement fragment (Figure 3S) was found in Pit D (20-25 cm), with a single incised line. The tip of a long-bone implement (Figure 3T) was found in Pit A (55-60 cm). A miscellaneous worked bone fragment was found in Pit B (30-

35 cm). A bone joint with three parallel incised lines was found in Pit D (10-15 cm), which may have had some ritual significance.

CERAMICS

Many potsherds were found in the HAS excavations, including Goose Creek, San Jacinto, O'Neal Plain, Tchefuncte, and bone-tempered types. Goose Creek sandy paste pottery was the most abundant type, found throughout the Early Ceramic and Late Prehistoric periods. Analysis was done on sherds of sizes above 15 mm square.

Goose Creek body sherds are shown in Table 2, Goose Creek rim sherds are shown in Table 3, and Goose Creek sherds with lace holes are shown in Table 4. There are 1309 plain body sherds, 82 incised body sherds, 112 plain rim sherds, 47 incised rim sherds, and 14 with lace holes. Two Goose Creek Red Filmed sherds were found, one in Pit D (10-15 cm) and one in Pit B (30-35 cm).

San Jacinto body sherds with small to moderate amounts of Grog Temper are shown in Table 5, with 18 plain and 2 incised. Bone-tempered body sherds are shown in Table 6, with a total of 22. No San Jacinto and only one bone-tempered rim sherds were found. No Baytown pottery with abundant grog temper was found. San Jacinto and bone-tempered pottery occur at this site only in the Late Prehistoric period.

Only a few O'Neal Plain sherds with coarse sand temper, and Tchefuncte sherds with contorted paste were found. There are two Tchefuncte sherds, in Pit C at 30-35 cm and 35-40 cm. There are four O'Neal Plain sherds, with body sherds in Pit A (45-50 cm) and Pit B (35-40 cm), and a rim sherd and an incised sherd with a lace hole in Pit B (35-40 cm). All O'Neal Plain and Tchefuncte pottery occur at this site only in the Early Ceramic period. The chronological sequence of pottery types at 41GV53 is consistent with that given by Aten (1983:Figure 14.1) for the Galveston Bay area. The proportions of various pottery types from HAS excavations are similar to those from previous investigations.

Rather than illustrating a selected sample of sherds from this site, the illustrations, Figure 4-25, represent most, if not all, rim and decorated sherds recovered from each excavation pit. In addition, drawings begin at the upper levels and progress downward through each excavated level. Using this method, one can see the variety of sherds recovered from each pit.

A total of 224 sherds, representing Goose Creek, bone-tempered (including one incised and punctated sherd from Pit B), San Jacinto, O'Neal, Tchefuncte, and Goose Creek Red-Filmed were drawn and analyzed. Goose Creek pottery was the most abundant type present in this analysis. Eighty-three sherds (37.1% of those analyzed) were recovered from Pit B, followed by Pit D (61 or 27.3%), Pit C (44 or 19.6%), and Pit A (36 or 16.0%). The presence of asphaltum was noted on the exterior of three sherds, all from Pit A: two rims (one with a lace hole) recovered at 30-35 cm, and one body sherd recovered at 40-45 cm.

A total of eighty (80) rim forms were analyzed and classified: straight rounded (18), outflaring flat (14), outflaring rounded (13), straight pointed (9), incurving rounded (5), straight flat (5), outflaring pointed (2), and incurving flat (1). Included in the total are 13 sherds whose rims are distinctly angular, represented by an approximately 45 degree angle which slopes downward on the interior of seven sherds. Of these 13 sherds, one was found in Pit A, eight in Pit B, two in Pit C, and two in Pit D. The interior of the rim

profile is to the left in all illustrations, except where otherwise noted (IS=inside, OS=outside).

GENERAL LITHICS

No stone tools other than projectile points were found in the HAS excavations. A small chert core was found in Pit C (15-20 cm) with a maximum dimension of 30 mm. A chert pebble with a diameter of 20 mm was found in Pit C (25-30 cm).

Only modest amounts of lithic flakes were found in the excavations, as shown in Table 7. A total of 244 were recovered, with 84% of sizes under 15 mm square. The small number of lithic flakes probably reflects the dispersed nature of occupation events over a large site area.

Thirteen sandstone abrading tools were found at various excavation depths as shown in Table 8. Sandstone abraders would have been useful for the manufacture of worked bone items and gar scale arrow points, and to produce powdered red ochre.

RED OCHRE

A number of small pieces of red ochre (hematite) and a few larger pieces were found at various excavation depths as shown in Table 9. Red ochre in powdered form could have been used for body decoration, to make a colored slip for pottery, and for placement on burials. Red ochre was used for Late Prehistoric burials at this site (Hines 1992:Table 7).

CALICHE

Caliche pieces and fired clayballs were used as heating elements for earth ovens in Southeast Texas (Patterson 1995b). Some caliche pieces were found in HAS excavations as shown in Table 10. The fairly small number and weight of caliche pieces indicate that earth ovens may have been used at 41GV53 but not often. The same conclusion can be reached from previous excavations, where one report shows 166 pieces of caliche weighing 576 gm (Hines 1992:Table 14), and another report shows 488 pieces of caliche weighing 277 gm (Howard et al. 1991:Table 16). Previous excavations indicate that some fired clayballs may have also been used here for earth ovens, with a total of 127 clayballs weighing 178 gm.

Use of earth ovens at shell midden sites on the coastal margin of Southeast Texas was not common, especially after the introduction of pottery.

ASPHALTUM

A large piece of asphaltum was found in Pit A at a datum depth of 30-35 cm. Asphaltum pieces can be found on beaches in Southeast Texas. This material was used as adhesive for hafting projectile points and occasionally in this region to coat or decorate pottery.

INVERTEBRATE FAUNAL REMAINS

Site 41GV53 is a large shell midden, with hundreds of *Rangia* shell in each pit at each 5 cm excavation level. *Rangia* is a brackish water shellfish. However, there are a few remains of marine shellfish at various excavation depths. Table 11 gives summary of oyster shells found in HAS excavations. Most of the oyster shells (92%) were found at datum depths between 25 and 40 cm. This excavation interval may represent a time interval when there was less freshwater flow in Clear Creek. Several shell fragments of giant Atlantic cockle were also found, including two specimens at datum depth of 15-20 cm, two specimens at 20-25 cm, one specimen at 25-30 cm, one specimen at 40-45 cm, and one specimen at 70-75 cm.

There were 26 oyster shell tools found at various excavation levels as shown in Table 12. Four oyster shell tools are illustrated in Figure 26, with edge retouch indicating tool use. Most of the edge retouch patterns indicate use as scrapers, as illustrated by Aten (1983:Figure 13.2) and Patterson (1990:Figure 2E) for sites on the coastal margin of Southeast Texas. Some of the oyster shell tools may have been used for cutting (Aten 1983:264). The geographic distribution of oyster shell tools is confined to the coastal margin of this region (Aten 1983:Figure 16.1e). Fairly flat specimens of oyster shell were selected for tool use.

CHRONOLOGICAL DISTRIBUTIONS OF BONE

The distribution of bone at various excavation depths is shown in Table 13, with numbers and weights of bone increasing in later time. There is a significant increase in bone recovered beginning at the start of the Early Ceramic period at a datum depth of 40 cm or slightly deeper. This corresponds to a rapid population increase from the Late Archaic to the Early Ceramic periods (Patterson 1996:59). After the start of the Early Ceramic period, there may have been more people using this site for longer time intervals or more frequently. There may have also been some improvements in hunting and fishing technologies.

41GV53
FAUNAL ANALYSIS

In 2001, the members of the Houston Archeological Society excavated a few pits on Site No. 41GV53. Pit A was excavated from surface to sterile soil at depth of 100 cm. Work at Pits B, C, and D was terminated before reaching the bottom of the midden soil. Pit E ended at sterile soil at 15 cm. Pits were one meter square and were dug in 5-cm levels after the first level. Except for fine-screen samples, all soil was passed through 1/4-inch screens. Shells of bay clams dominated the matrix with some remains of oyster and other marine mollusks present. Bones of vertebrates were plentiful at all depths of the midden.

Samples of about 1/2 liter of un-screened soil matrix from Pits A, B and C were collected for fine screen analysis. The equivalent of one column for the entire depth of excavation was processed. The material from each of the bags was washed through a Number 20 sieve. Shells of clams and oysters were picked out using water from a pistol-grip nozzle so that all the soil stayed within the sieve. All remains of mollusks were retained for further analyses. The sieve was handled so that floating items were retained along with the heavier material. Ash was prevalent throughout except in the upper and lower levels. The sandy-silt soil passed through the Number 20 sieve except for a few stream-tumbled quartz grains and ferruginous nodules.

VERTEBRATE REMAINS

Vertebrate remains were identified to the extent possible by direct comparison with bones of known animals. Non-local varieties were not considered if the bones matched animals known to be from the area. The bones were greatly fragmented except for some of the smaller bones of the lower legs of the animals. None of the long bones were as much as half complete. Approximately 15% of the bones had obvious indications of being exposed to fire and nearly all were stained with ash. A great majority of the gar scales had been burned but were still recognized as such. Bones from the fine-screen effort are tabulated separately from the regular excavations except for those that are large enough to have been recovered on the 1/4-inch screens. Those larger bone fragments were tabulated with the bones from the regular excavations.

Fish, amphibian, reptile, bird and mammal bones are all represented in the assemblage. The numbers of bones from the general excavations reached a peak at 30 to 35 cm in Pit A and slightly closer to the surface in Pits B, C, and D. In the fine screen effort, the peak of bone numbers was also at 30 to 35 cm. In the general excavations, the number of bones of turtles, deer and deer-size mammals, rabbits, and fish are dominant in that order with much fewer of the other taxa. All parts of the bodies of these dominant animals are represented. Thus, whole animals were brought to the site for processing. A single bone fragment from Pit E at 15 cm is of the size and shape that could be from a cow or a bison-size mammal. In the fine screen effort, the numbers of bones of fish are dominant with other taxa being much fewer.

With the exception of the extinct vole (*Microtus ochrogaster ludovicianus*) and the possible bison, all the animals are known to range in the area today. The following table shows the variety of identified vertebrates from this effort and those reported by Prewitt and Associates in earlier excavations at the site, Howard et al, 1991 and Hines, et al, 1992.

Animal	Name	HAS 1/4	HAS 20	P&A 1/4	P&A 1/16
Unid. shark or ray	Chondrichthyes				P
Unid. fish	Teleost	P	P	P	P
Gar	<i>Lepisosteus</i> sp.	P	P	P	P
Catfish	<i>Ictalurus</i> sp.	P	P	P	P
Largemouth bass	<i>Micropterus salmoides</i>		P		
Drum	Sciaenidae	P	P	P	P
Red drum	<i>Sciaenops ocellata</i>	P	P	P	
Spotted seatrout	<i>Cynoscion nebulosus</i>	P	P	P	P
Black drum	<i>Pogonias cromis</i>			P	P

Freshwater drum	<i>Aplodinotus grunniens</i>			P	P
Sheepshead	<i>Archosargus probatocephalus</i>	P	P	P	P
Flounders, etc.	Pleuronectiformes			P	P
Salamander	<i>Ambystoma</i> sp.		P		
Frog or toad	Anuran		P		P
Toad	<i>Bufo</i> sp.		P		
Alligator	<i>Alligator mississippiensis</i>	P	P	P	
Unid. turtle	Testudinata	P	P	P	P
Mud turtle	<i>Kinosternon subrubrum</i>	P			
Slider turtle	<i>Pseudemys</i> or <i>Trachemys</i> sp.	P			
Eastern box turtle	<i>Terrapene carolina</i>	P		P	P
Softshell turtle	<i>Trionyx</i> sp.	P			
Lizard	Lacertilia		P		P
Green anole	<i>Anolis carolinensis</i>		P		
Ground skink	<i>Scincella lateralis</i>		P		
Unid. snake	Serpentes		P	P	P
Non-poisonous snake	Colubridae	P		P	P
Pit viper	Viperidae	P			
Unid. bird	Aves	P	P	P	
Unid. smaller mammals	Mammalia	P	P	P	P
Deer-size mammals	Mammalia	P		P	P
Bison-size mammal	Mammalia	P			
Opossum	<i>Didelphis virginiana</i>	P	P		
Eastern mole	<i>Scalopus aquaticus</i>		P		
Nine-banded armadillo	<i>Dasyus novemcinctus</i>				P
Rabbits or hares	Leporidae			P	P
Swamp rabbit	<i>Sylvilagus aquaticus</i>	P			
Eastern cottontail	<i>Sylvilagus floridanus</i>	P			
Rodent	Rodentia		P	P	P
Pocket gopher	<i>Geomys</i> sp.			P	
Hispid cotton rat	<i>Sigmodon hispidus</i>	P		P	P
White-footed mouse	<i>Peromyscus</i> sp.		P		P
Musk rat	<i>Ondatra zibethicus</i>	P			
Prairie vole	<i>Microtus ochrogaster</i>		P		
Unid. carnivore	Carnivora	P		P	
Raccoon	<i>Procyon lotor</i>	P		P	
White-tailed deer	<i>Odocoileus virginianus</i>	P	P	P	P

Discussion

The primary food consumption animals represented by this assemblage of bones in the order of volume of edible flesh are deer, rabbits and fish. The day to day diet may have included more fish than deer or rabbits. Because there are centuries of occupation condensed into a few centimeters and such a small fraction of the midden was excavated, I did not attempt to calculate the number of individual animals that would have produced the recovered bones. Since the fine screen sample represents less than 1% of the volume of the contents of the pit we could use numbers to show that hundreds of small mammals, lizards, snakes, frogs and thousands of fish were there for each rabbit or deer. It may have been so. The importance of these minor taxa would not have been revealed without the fine-screen effort.

SURFACE COLLECTIONS FROM 41GV53

GENERAL COMMENTS

Three surface collections from 41GV53 have been tabulated. All surface collecting was done at the edge of Clear Creek where there is tidal erosion. Surface collections were done by Gary Hartmann, Allen Soukup, and Jay Durel. These collections contain many more projectile points than found by the three excavation projects at this site. The Hartmann collection shows a Paleoindian occupation sequence before start of the shell midden, when lower Clear Creek still had a freshwater environment. Some of the artifacts in the Soukup collection are shown in Figure 27.

PROJECTILE POINTS

A summary of projectile points from the three surface collections is given in Table 14, including 164 arrow points and 40 dart points. The four major bifacial arrow point types of Southeast Texas are present, including Perdiz, Alba, Catahoula, and Scallorn. Other arrow point types include miniature, unifacial, unclassified, and gar scale. Some arrow points from the surface collections are shown in Figures 28 to 31.

An occupation sequence at this site in the Early and Late Paleoindian periods is shown by four projectile points (Figure 32) and an Albany scraper (Figure 36). A Folsom point is from the Early Paleoindian period in a time interval of 9000-8000 BC. An Early Side-Notched point could be from the same time interval as the Folsom point or from the early part of the Late Paleoindian period in a time interval of about 8000-7000 BC (Patterson 1997a). A San Patrice point is from the early part of the Late Paleoindian period in a time interval of about 8000-7000 BC. An Angostura point is from the latter part of the Late Paleoindian period in a time interval of about 6500-5000 BC (Patterson 1997b). The Albany scraper is most often associated with the San Patrice point in Southeast Texas (Patterson 1997a).

Other dart points in the surface collections are from time periods from the Middle Archaic through the Early Ceramic periods, after start of the shell midden. These dart point types include Pedernales, Kent, Gary, Ellis, Ensor, Palmillas, and Morhiss (Figures 34,35). The use of dart points with the spear and spearthrower ended on the coastal margin of Southeast Texas with the start of bifacial arrow points, at the start of the Late Prehistoric period (Aten 1983:306). However, use of the spear continued in the Late Prehistoric period in the inland part of Southeast Texas after the start of bifacial arrow points (Aten 1983:306; Patterson 1980). As noted above, the bow and arrow was used in Southeast Texas before the start of standardized bifacial arrow points, using unifacial arrow points, and is shown by HAS excavations here using gar scale arrow points.

STONE TOOLS

The surface collections from 41GV53 contain some stone tools. Unifacial scrapers include two in the Soukup collection and three in the Hartmann collection. Bifacial perforators include two in the Soukup collection and five in the Durel collection. The Soukup and Hartmann collection each contain one large utilized flake with edge-wear of the type formed by cutting. The Hartmann collection has an Albany scraper from the Late Paleoindian period (Figure 36).

LITHIC MANUFACTURING

Lithic manufacturing at this site is shown by lithic flakes, chert cores, and some evidence of quartzite hammerstones. Some chert flakes show evidence of heat treatment in the form of waxy luster and reddish coloration. All remaining cortex on flakes is of the weathered type typical of chert cobbles from the Brazos and Colorado River basins.

Both Gary Hartmann and Jay Durel report finding large quantities of lithic flakes. Jay Durel estimates that he has found enough lithic flakes to fill a five-gallon bucket. This is in marked contrast to the modest amounts of lithic flakes found by excavations at this site. Lithic manufacturing may have been more concentrated near the edge of Clear Creek, especially for dart points before the Late Prehistoric period. Lithic flake size distribution for the Soukup collection is given in Table 15. The fairly low percentage of flakes under 15 mm square is probably due to collecting bias.

The Soukup collection has three small chert cores, large enough to make flake blanks for arrow point manufacture, but too small to make flake blanks for dart point manufacture. As found for most inland sites in Southeast Texas, any dart points made at 41GV53 were probably made from imported flake blanks that were produced at lithic sources. For flakes over 15 mm square in the Soukup collection, there were 4.4% primary flakes (covered with cortex), 34.6% secondary flakes (partially covered with cortex), and 61% interior flakes (no remaining cortex). It appears that many flake blanks brought to this site had some remaining cortex. There is a quartzite flake (30 mm square) in the Soukup collection that may represent a hammerstone fragment.

BONE ARTIFACTS

There are only a few bone artifacts in the surface collections. There are two small bone awls in the Hartmann collection (Figure 37). There is a small bird bone in the Hartmann collection with a series of engraved rings (Figure 37). The Durel collection has a small piece of bone with an engraved grid pattern, similar to a specimen illustrated by Hines (1992:Figure 18i).

REPORT CONCLUSIONS

This report has given the results of HAS excavations at 41GV53, tabulations of three surface collections, and a summary of previous investigations at this site. Site 41GV53 is a large shell midden with an area of about three acres. Shell midden formation started about 4220 BC, based on a calibrated radiocarbon date at the bottom of the midden. The shell midden was started when the sea level increased enough for tidal flow to create a brackish water environment for lower Clear Creek, which permitted growth of Rangia shellfish.

There is evidence of a Paleoindian occupation sequence at this site before start of the shell midden, when lower Clear Creek still had a freshwater environment. This evidence includes Folsom, San Patrice, Early Side-Notched, and Angostura projectile points, and an Albany scraper. The Paleoindian occupation sequence covers a time interval of about 9000-5000 BC. During this time interval, 41GV53 was an inland site before rising sea level converted this location into a coastal margin site.

Site 41GV53 is a good site to study the development of the adaptation pattern for the coastal margin of Southeast Texas, which reached its full manifestation after the introduction of pottery. The shell midden occupation sequence at this site is from the Early Archaic (5000-3000 BC) through the Late Prehistoric (AD 600-1500) time periods.

The Early Ceramic period begins with the start of pottery and ends with the start of standardized bifacial arrow point types. Calibrated radiocarbon dates of AD 80 for the start of pottery and AD 390 for the start of bifacial arrow points were obtained by HAS investigations. It is noted above, however, that the exact time interval for the Early Ceramic period is difficult to determine from radiocarbon dates at shell midden sites. A time range of 200 BC to AD 300 seems to be a good estimate for the Early Ceramic period in the Galveston Bay area. A nominal time period of AD 100-600 has been used for the Early Ceramic period in Southeast Texas. It should be noted that the time interval for the Early Ceramic period is variable in Southeast Texas, because pottery did not start at exactly the same time in various parts of this region.

Data from HAS excavations show that gar scale arrow points were used at 41GV53 in the Early Ceramic period before the start of bifacial stone arrow points. Early use of the bow and arrow is also known in the inland part of Southeast Texas, where unifacial stone arrow points were used before standardized bifacial arrow point types (Patterson 1992). A Perdiz arrow point at a datum depth of 30-35 cm from HAS excavations is another indication that the Perdiz point started much earlier in Southeast Texas than in Central Texas (Patterson 1996:21).

There are indications that Indians of the coastal margin of Southeast Texas became more sedentary sometime during the Late Archaic period (1500 BC-AD 100). This corresponds to a high population growth rate from the Late Archaic into the Early Ceramic periods. Evidence for lower mobility includes much use of pottery, which is difficult to transport, and increasing concentrations of bone in upper excavation levels at this site, which may indicate longer occupation events.

The rate of shell midden depth buildup at this site is another indication of a more sedentary lifestyle with resulting higher use of the site. From the start of the shell midden at 4220 BC through the Late Archaic to AD 80, the shell midden depth buildup rate is about 1.3 cm per 100 years. From the start of the Early Ceramic period at AD 80 to the end of the Late Prehistoric period at AD 1500, the midden buildup rate is about 2.5 cm per 100 years. Thus, after introduction of pottery, the midden depth buildup rate is almost twice the earlier rate. The large area of this site is another indication that long-time occupation events occurred. These conclusions are consistent with Story's (1985:54) suggestion that growing population on the Texas coastal plain during later Archaic times resulted in smaller and more clearly defined group territories.

In contrast, in the inland part of Southeast Texas there was an increase in mobility after rapid population growth rate (Patterson 1976, 1996:52). Apparently, abundant aquatic food resources on the coastal margin permitted higher population levels with lower mobility than possible for more limited food resources of inland parts of this region. Comments made here should not be taken to mean that coastal margin groups became completely sedentary in later time. This remained a hunter-gatherer lifeway with some mobility. Aside from a Late Prehistoric cemetery at 41GV53, there are few indications of increased social complexity that might be expected with a very sedentary lifeway.

Higher population levels in later time on the coastal margin of Southeast Texas with decreased mobility may have led to more rigid social boundaries between coastal and inland groups (Aten 1983:308; Patterson 1993). However, significantly higher use of

stone projectile points by coastal margin groups on the western side of the Galveston Bay system than by groups on the eastern side of the Galveston Bay system may indicate that the degree of rigidity of social boundaries between coastal and inland groups was variable in different geographic locations (Patterson 2000).

Three surface collections of artifacts from 41GV53 were tabulated. These collections have much higher numbers of arrow and dart points than found in all other investigations at this site. Excavations at a large shell midden usually find only modest numbers of projectile points, probably because of the dispersed nature of occupation events over a large site area. It should be realized that excavations at a large shell midden usually sample only a very small percentage of the total site area. If the artifact quantities found in the four square meters of HAS excavations at 41GV53 Area B were extrapolated to estimate artifact quantities in the Area B total of 3712 square meters, Area B could contain well over a million potsherds and several thousand arrow points.

HAS investigations at 41GV53 and previous investigations indicate that this was a major coastal margin site in the Galveston Bay area. The long occupation sequence of this shell midden provides significant data for the study of technological and cultural changes, and for the description of lifeways of coastal margin groups in Southeast Texas.

The settlement pattern of the earliest shell midden sites on the coastal margin of Southeast Texas may represent settlement by groups who were already familiar with coastal margin resources from prior occupation of coastal margin sites that have been inundated by rising sea level.

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Table 1
41GV53 Excavated Projectile Points

type	datum depth, cm	pit	dimensions, mm			Figure
			L	W	T	
dart pt. preform	25-30	A	59.4	24.3	7.8	3H
Alba	25-30	A	26.4	15.9	5.0	3G
dart pt. frag.	25-30	C				
Perdiz	15-20	D	18.4	13.5	4.8	3A
Perdiz	15-20	D	--	16.4	3.7	3B
Perdiz	15-20	D	--	--	3.2	3C
Perdiz	15-20	D	18.5	12.8	3.3	3D
Perdiz	15-20	D	--	15.7	3.8	3E
Perdiz	30-35	A	15.8	12.0	3.2	3F
arrow pt. preform	20-25	B	24.4	23.1	6.7	3I
bone	30-35	C	26.5	8.9	5.8	3Q
gar scale	10-15	C	19.2	8.8	2.3	
gar scale	15-20	D	29.5	12.7	3.3	3J
gar scale	20-25	D	24.3	11.0	3.6	
gar scale	20-25	D	19.9	11.5	2.9	3K
gar scale	20-25	B	16.8	9.6	2.5	
gar scale	25-30	D	32.6	16.0	3.5	3L
gar scale	25-30	C	20.1	9.1	3.2	
gar scale	25-30	B	20.8	9.5	3.0	3M
gar scale	30-35	A	20.3	9.3	3.4	
gar scale	30-35	B	19.0	7.6	2.1	
gar scale	30-35	B	21.3	8.3	2.2	
gar scale	35-40	C	20.3	12.1	3.1	3N
gar scale	35-40	C	18.5	7.1	2.2	
gar scale	35-40	A	20.1	10.4	3.3	3O
gar scale	35-40	A	19.6	12.9	3.2	
gar scale	35-40	B	17.7	7.2	2.7	

Table 2
Goose Creek Pottery, Body Sherds

datum depth, cm	pit			
	A	B	C	D
5-10	19	14	13(1)	9
10-15	9(2)	12	73(1)	35(4)
15-20	26(2)	46(3)	55(1)	191(11)
20-25	124(7)	156(11)	46(2)	68(9)
25-30	53(4)	79(5)	68(2)	19(4)
30-35	54(4)	51(5)	13	7(1)
35-40	22(1)	29	5	
40-45	6(2)			
45-50	5			
50-55	0			
55-60	2			
	<u>320(22)</u>	<u>387(24)</u>	<u>273(7)</u>	<u>329(29)</u>

Goose Creek Incised in parentheses ()
includes fine screen sample

Table 3
Goose Creek Rim Sherds

datum depth, cm	pit			
	A	B	C	D
5-10	1	1		1(1)
10-15	2(1)		8(4)	4(2)
15-20	3	5	6(1)	10(7)
20-25	9(3)	6(3)	9(4)	4(3)
25-30	7(1)	14(8)	6(3)	1(1)
30-35	2(1)	3(2)	1	3(2)
35-40	2	2	1	
40-45	1			
	<u>27(6)</u>	<u>31(13)</u>	<u>31(12)</u>	<u>23(16)</u>

incised sherds in parentheses ()

Table 4
Goose Creek Pottery with Lace Holes

<u>pit</u>	<u>datum depth, cm</u>	<u>no.</u>
C	15-20	1
D	15-20	2 (1 with 2 holes)
A	20-25	1
B	20-25	3
C	20-25	1
A	25-30	1
B	25-30	2
A	30-35	1
B	30-35	1
A	35-40	<u>1</u>
		14

Table 5
San Jacinto Pottery, Body Sherds

<u>datum depth, cm</u>	<u>pit</u>			
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
5-10				
10-15	2			
15-20	1		1	4
20-25	2	1(1)	4	
25-30		2		
30-35		<u>(1)</u>		<u>1</u>
	<u>5</u>	<u>3(2)</u>	<u>5</u>	<u>5</u>

incised sherds in parentheses ()

Table 6
Bone-Tempered Pottery, Body Sherds

datum depth, cm	pit			
	A	B	C	D
5-10	1	(1)		1
10-15		1		
15-20		1	2	6
20-25		4	2	1
25-30	1			
30-35		(1)		
	<u>2</u>	<u>6(2)</u>	<u>4</u>	<u>8</u>

incised sherds in parentheses ()

Table 7
Lithic Flakes

datum depth, cm	flake size, mm square				
	15	15-20	20-25	25-30	30-35
5-10	6	1			1
10-15	12				
15-20	44	7			
20-25	24	7	1	2	
25-30	36	8	2	2	
30-35	22	3			
35-40	13				
40-45	4				
45-50	4	1			
50-55	3		1		
55-60					
60-65	10				
65-70	4				
70-75	6				
75-80	6				
80-85	3				
85-90	5	1	1		
90-95	4				
	<u>206</u>	<u>28</u>	<u>5</u>	<u>4</u>	<u>1</u>

combined 1/4-inch and fine screen samples

Table 8
Sandstone Abraders

<u>datum depth, cm</u>	<u>pit</u>	<u>no.</u>	<u>size, mm square</u>
10-15	D	4	1 at 20, 1 at 40, 2 at 50
20-25	C	1	35
35-40	B	1	80
45-50	A	2	30
50-55	A	1	30
60-65	A	1	30
85-90	A	3	2 at 20, 1 at 45
		<u>13</u>	

Table 9
Red Ochre

<u>datum depth, cm</u>	<u>pit</u>	<u>no.</u>	<u>ochre pieces size, mm square</u>
10-15	D	2	20
15-20	D	5	3 at 20, 1 at 25, 1 at 50
20-25	D	2	under 15
25-30	D	2	1 under 15, 1 at 30
25-30	B	3	2 at 20, 1 at 25
30-35	B	1	under 15
30-35	D	13	10 under 15, 1 at 20, 2 at 25
30-35	C	5	2 under 15, 2 at 20, 1 at 30
35-40	B	1	20
35-40	C	5	2 under 15, 1 at 20, 2 at 25
45-50	A	5	3 under 15, 1 at 20, 1 at 50
55-60	A	2	under 15

Table 10
Caliche Pieces

<u>datum</u> <u>depth, cm</u>	<u>no.</u>	<u>wt., gm</u>	<u>size_range,</u> <u>mm square</u>
5-10	14	340	20-50
10-15	5	80	25-40
15-20	6	103	20-50
20-25	15	452	20-60
25-30	14	190	20-50
30-35	9	100	20-40
35-40	13	172	20-60
40-45	4	45	20-50
45-50	3	20	20-40
50-55	0		
55-60	3	190	50-60
60-65	1	50	50
65-70	0		
70-75	0		
75-80	0		
80-85	5	70	20-40
85-90	0		
90-95	0		
	<u>92</u>	<u>1812</u>	

Table 11
Oyster Shells

datum depth, cm	pit			
	A	B	C	D
5-10			2	2
10-15		2		
15-20			1	6
20-25	3	1	1	7
25-30	3	12		48
30-35	6	8	73	24
35-40	4	2	34	
40-45	1			
45-50	5			
50-55	3			
55-60	1			
60-65	1			
65-70	1			
70-75	0			
75-80	0			
80-85	0			
85-90	0			
90-95	0			
	<u>28</u>	<u>25</u>	<u>107</u>	<u>72</u>

Table 12
Oyster Shell Tools

<u>datum</u> <u>depth, cm</u>	<u>pit</u>	<u>no.</u>
20-25	D	1
25-30	B	1
25-30	D	2
30-35	A	2
30-35	B	1
30-35	C	9
30-35	D	3
35-40	A	1
35-40	C	5
60-65	A	<u>1</u>
		26

Table 13
Vertical Distribution of Bone

<u>datum</u> <u>depth, cm</u>	<u>weight, gm</u>			
	<u>pit A</u>	<u>pit B</u>	<u>pit C</u>	<u>pit D</u>
5-10	85	57	57	57
10-15	71	57	198	453
15-20	85	127	340	962
20-25	311	708	255	623
25-30	340	509	297	212
30-35	340	481	156	113
35-40	354	255	85	
40-45	170			
45-50	99			
50-55	13			
55-60	99			
60-65	10			
65-70	10			
70-75	3			
75-80	9			
80-85	57(A)			
85-90	3			
90-95	0			

A- antler
recovery from 1/4-inch screens

Table 14
Projectile Points from Surface Collections

<u>type</u>	<u>Hartmann</u>	<u>Soukup</u>	<u>Durel</u>	<u>total</u>
<u>arrow points</u>				
Perdiz	29	4	30	63
Alba	11		23	34
Catahoula		1	4	5
Scallorn	8	1	5	14
miniature	2		8	10
unifacial	2		2	4
unclassified		1	7	8
gar scale	2		23	25
preform	<u>1</u>			<u>1</u>
	55	<u>7</u>	102	164
<u>dart points</u>				
Kent	3	1	5	9
unclassified			7	7
preform	3	6	2	11
Gary	2	1		3
Ellis	2			2
Ensor	1			1
San Patrice	1			1
Early Side-Notched	1			1
Pedernales	1			1
Folsom	1			1
Angostura	1			1
Palmillas	1			1
Morhiss		<u>1</u>		<u>1</u>
	<u>17</u>	<u>9</u>	14	40

Table 15
Lithic Flakes in Soukup Collection

<u>size,</u> <u>mm square</u>	<u>no.</u>	<u>%</u>
under 15	47	25.7
15-20	80	43.7
20-25	37	20.2
25-30	11	6.0
30-35	4	2.2
35-40	2	1.1
40-50	2	1.1
	<u>183</u>	<u>100.0</u>

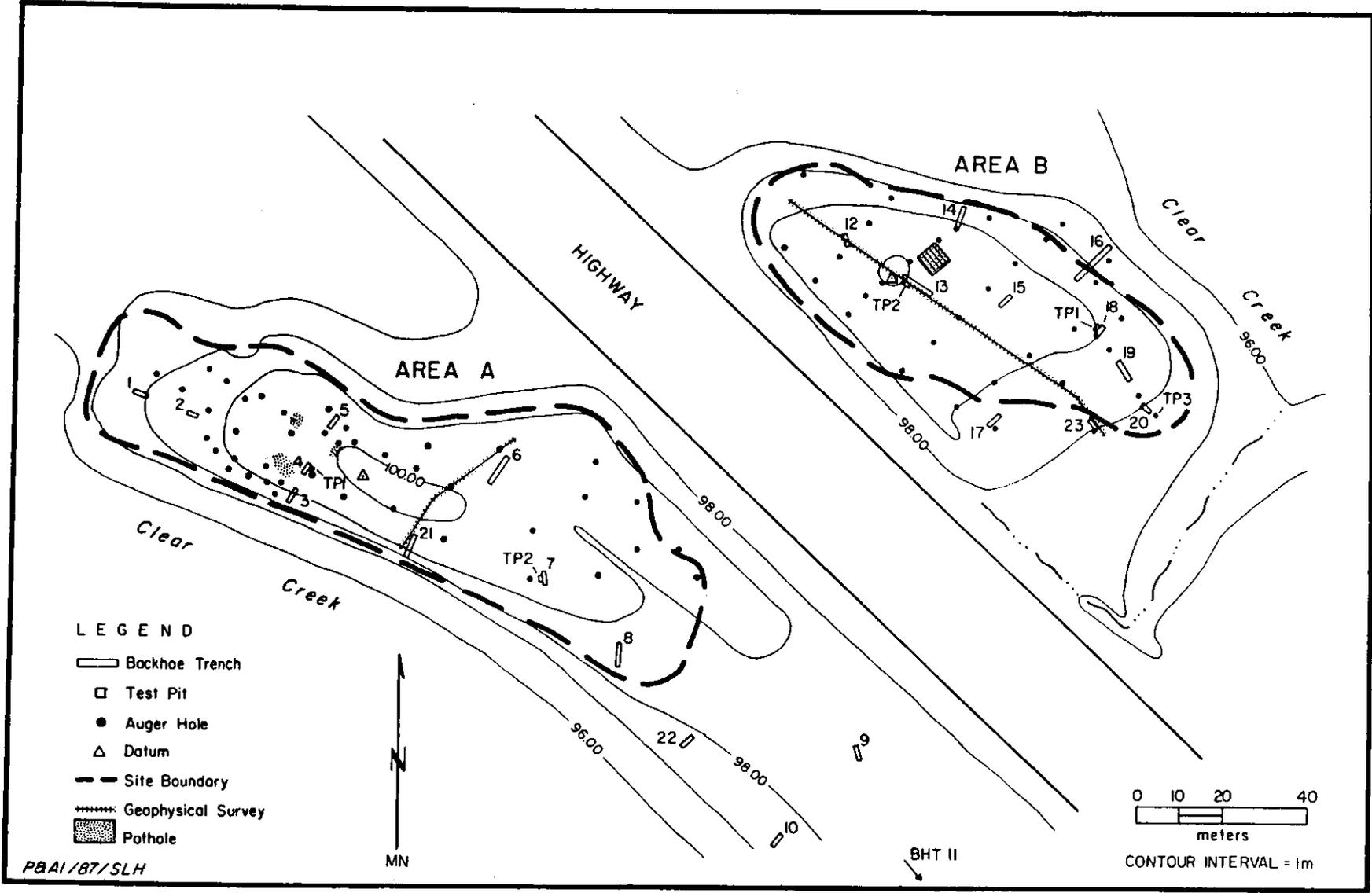


Figure 1. Site map, 41GV53.

(with permission from Howard et al. 1991:Figure 10)

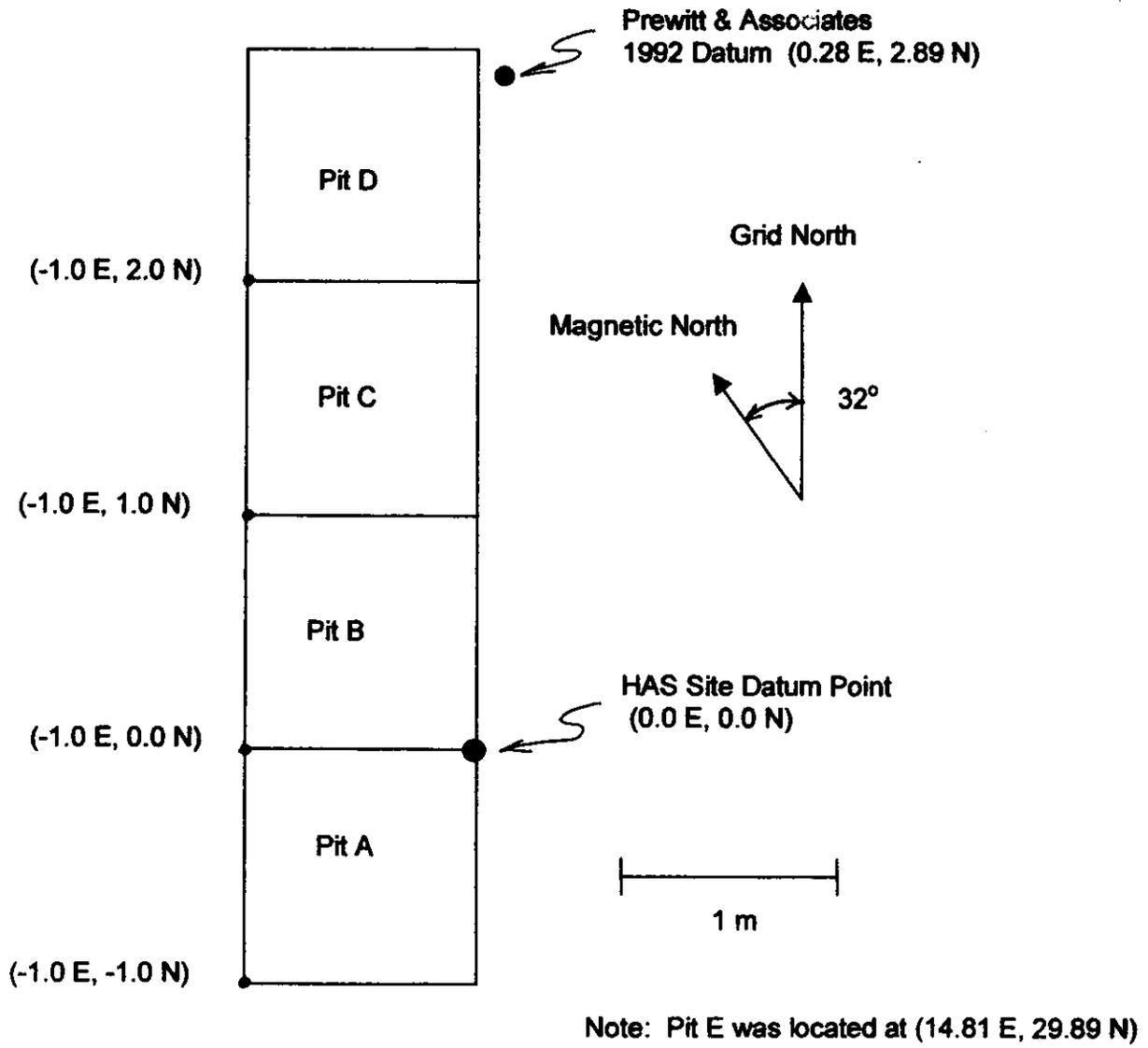


Figure 2 HAS Test Pit Locations

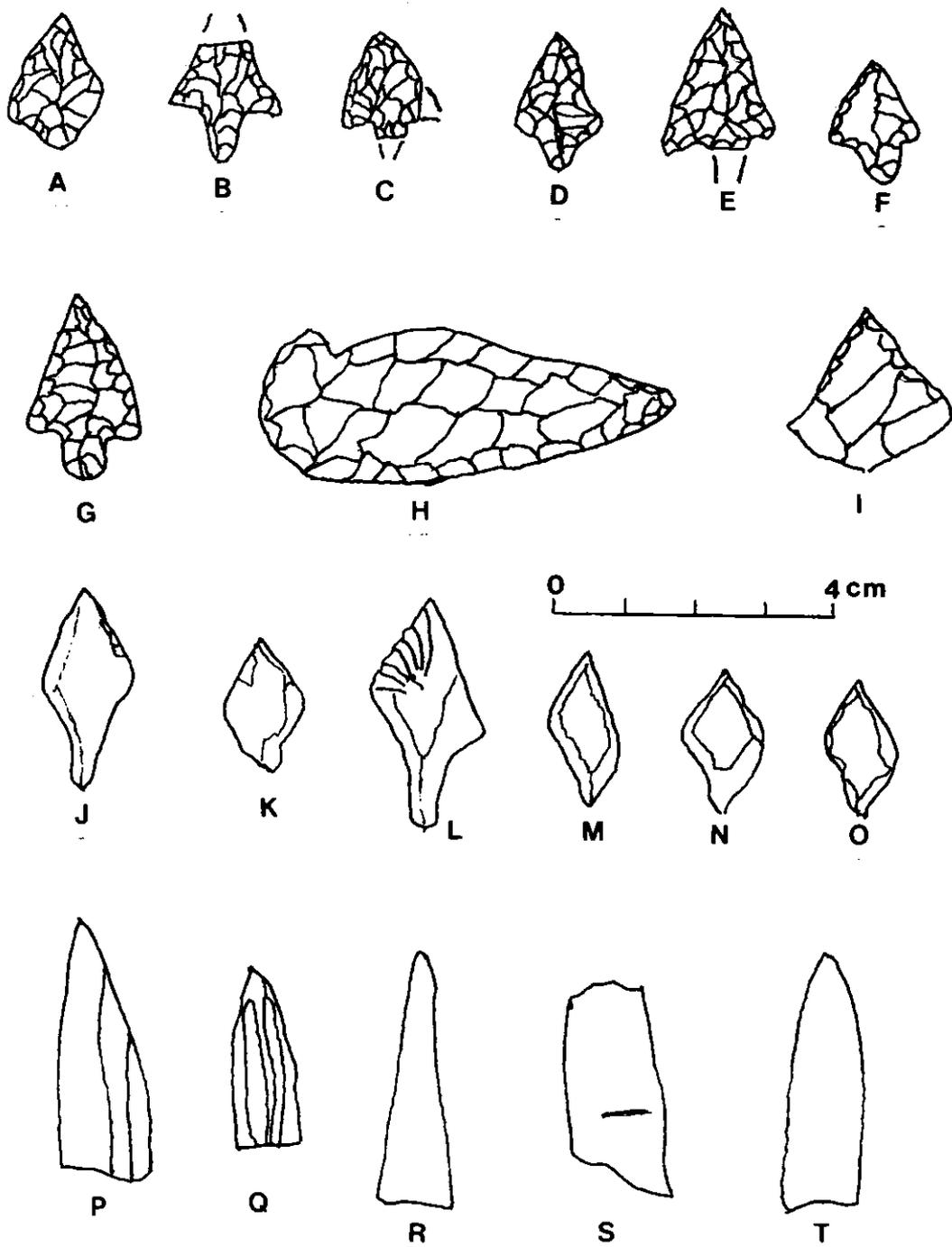


Figure 3: Projectile Points and Worked Bone

A to F- Perdiz points; G- Alba point;
H- dart point preform; I- arrow point preform;
J to O- gar scale arrow points; P,R- bone awls;
Q- bone point; S,T- long-bone implement fragments

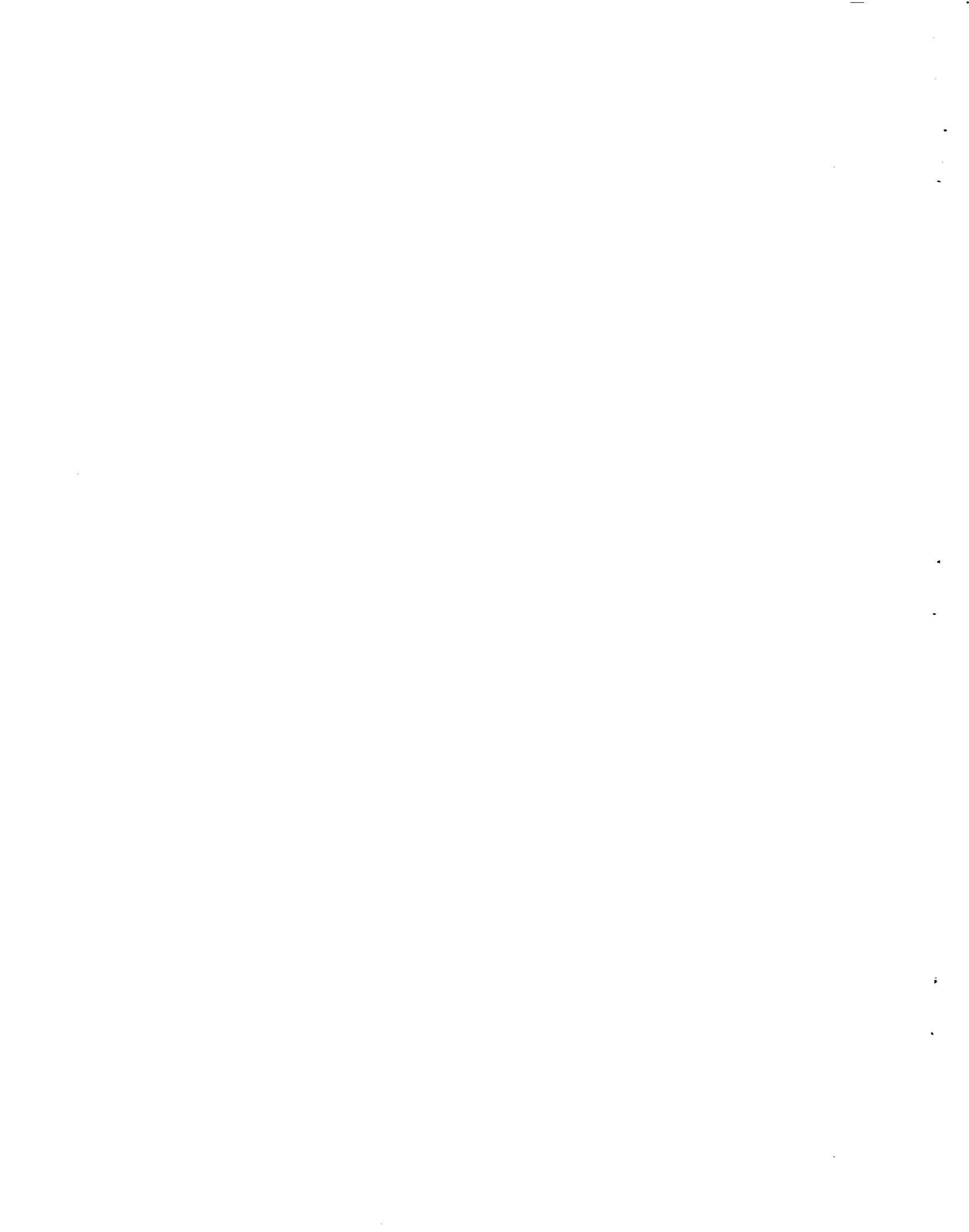




Figure 4: Goose Creek Pottery - Pit A

A - H, Q & R: Rim Sherds
 I - L & M - P: Body Sherds
 E & F: Notched Rims

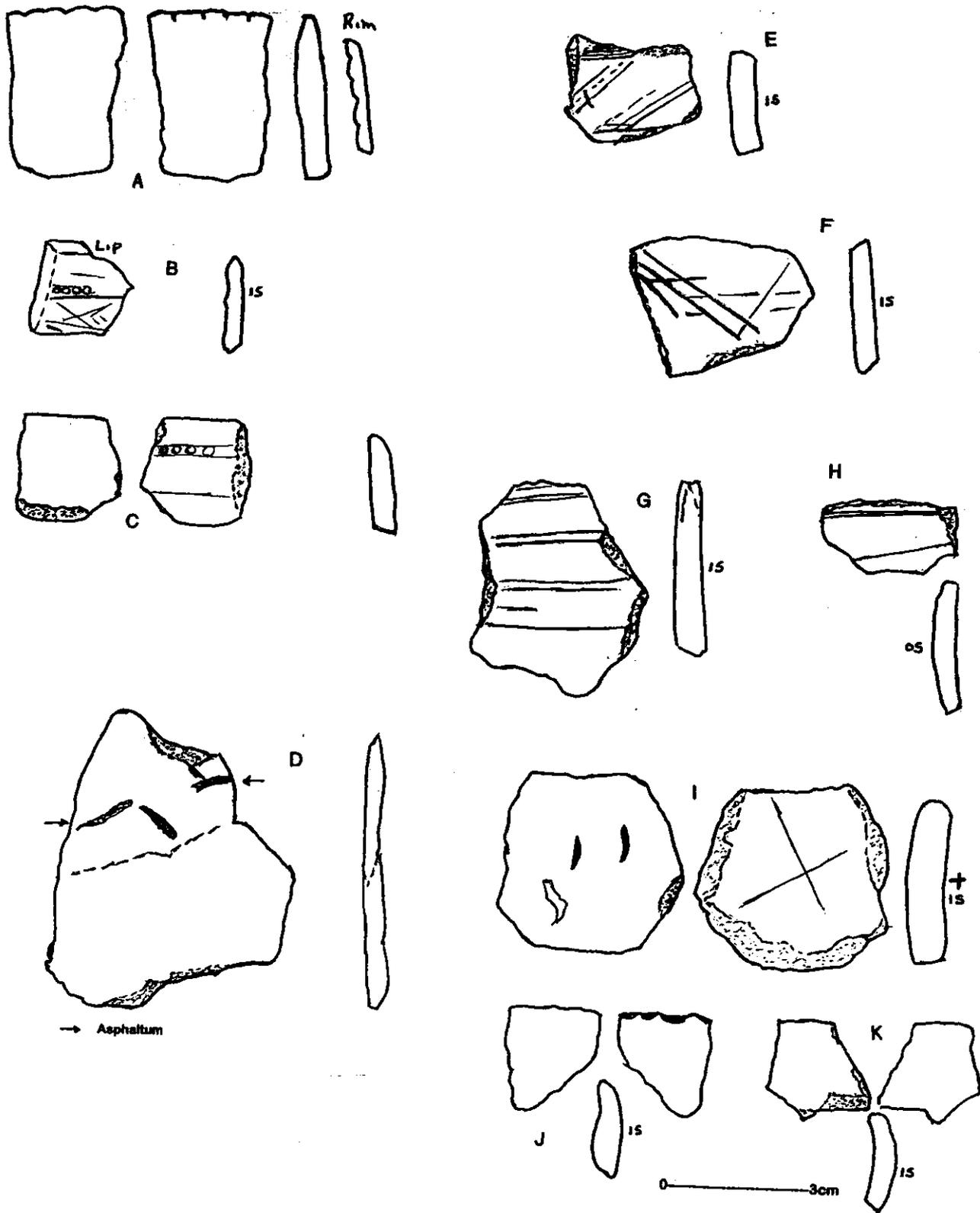


Figure 5: Goose Creek Pottery - Pit A

A - C & J - K: Rim Sherds
 D - I: Body Sherds

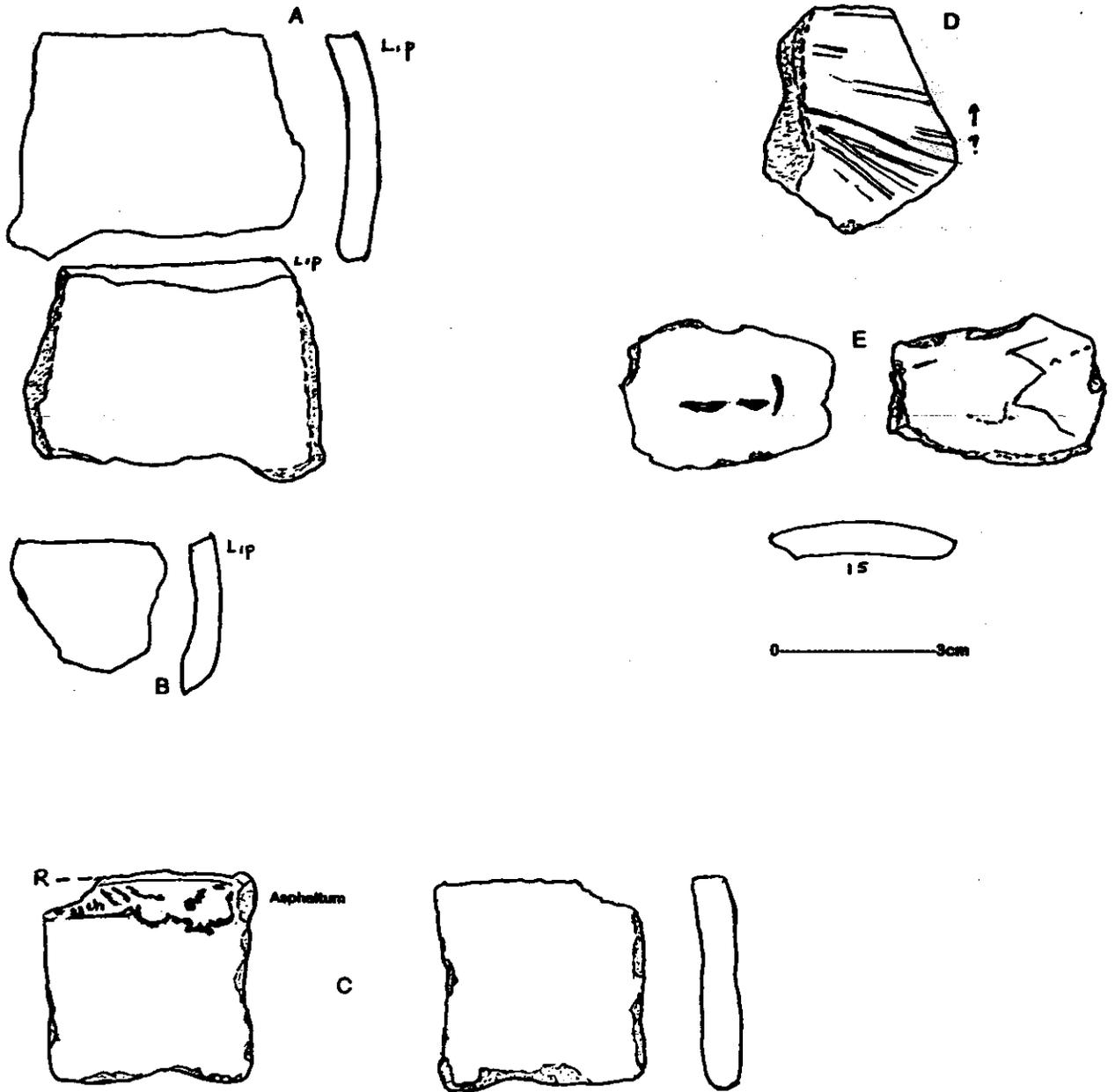


Figure 6: Goose Creek Pottery - Pit A

- A - B:** Rim Sherds
- C:** Rim with painted (?) asphaltum
- D - E:** Incised Body Sherds



Figure 7: Goose Creek Pottery - Pit B

A - K: Rim Sherds
 L - X: Body Sherds



Figure 8: Goose Creek Pottery - Pit B

A - J: Rim Sherds
 K - R: Incised Body Sherds
 C, D, G, & H: Incised Rim Sherds

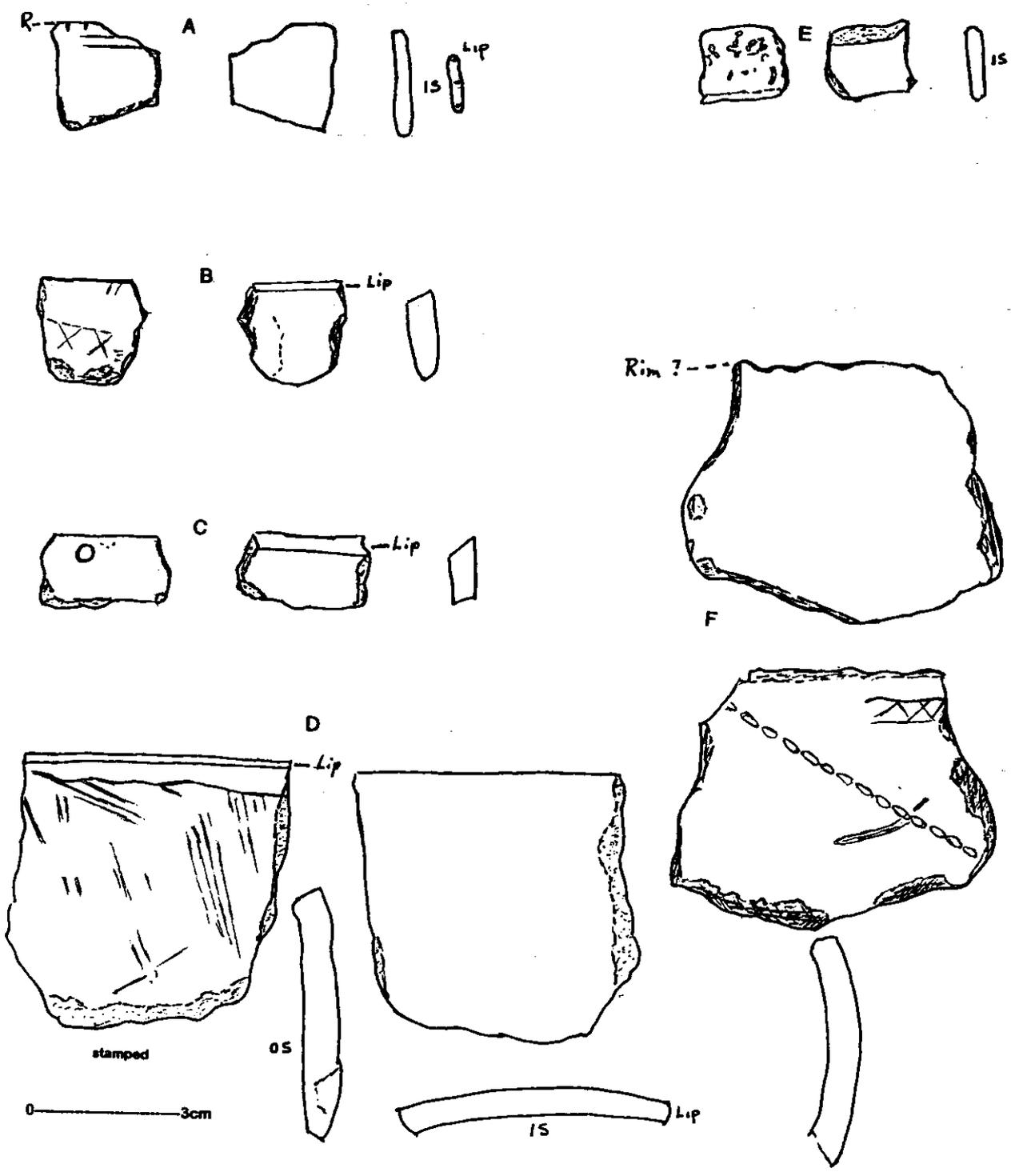


Figure 9: Goose Creek Pottery - Pit B

A - B: Incised Rim Sherds
C: Rim (red ochre ? can be seen inside circle)
D: Stamped Rim Sherd
E: Body Sherd: exterior very worn; red ochre?
F: Rim? Sherd: incised & punctated interior

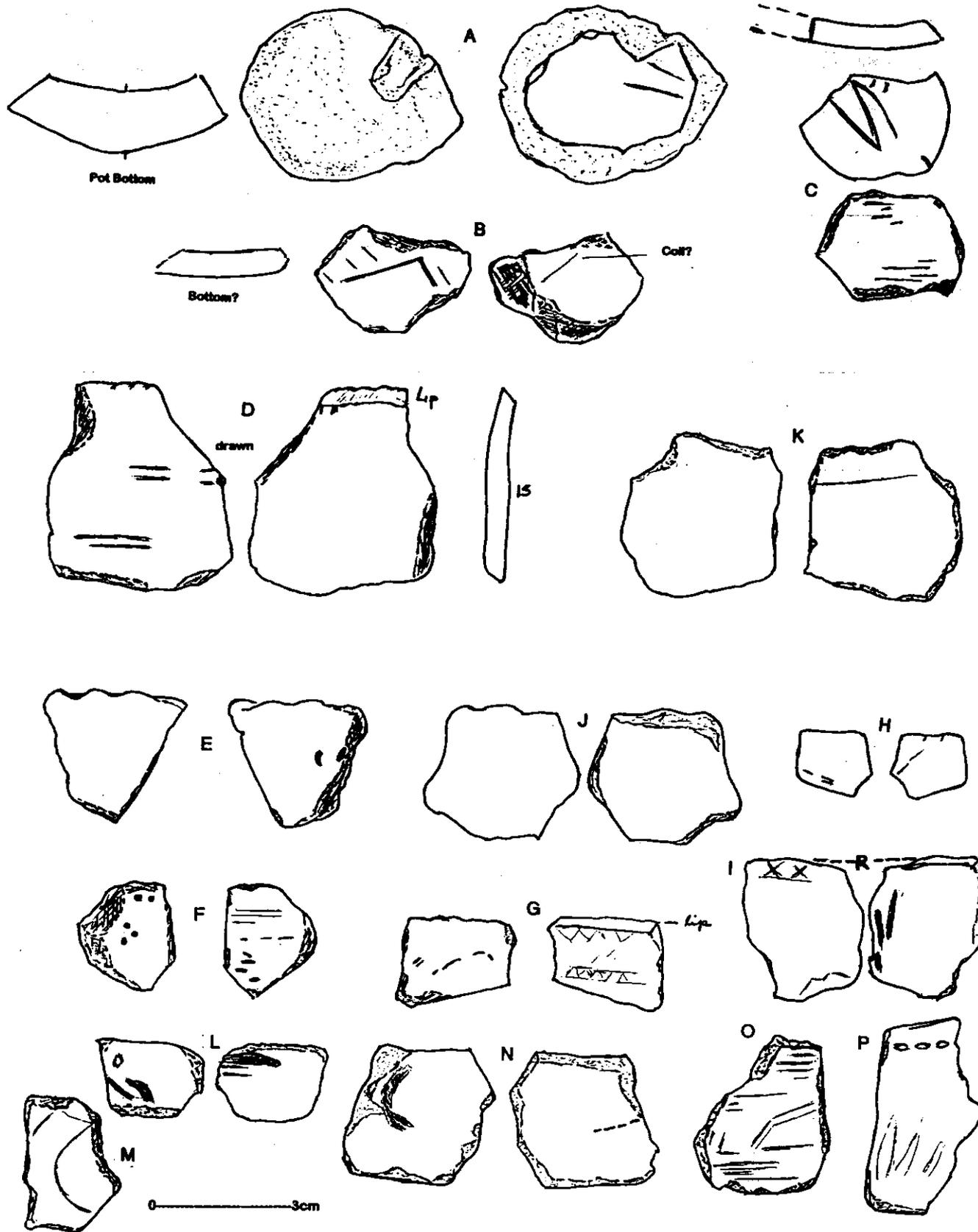


Figure 10: Goose Creek Pottery - Pit B

- A:** Pot Bottom - incised interior
- B:** Pot Bottom - incised exterior
- C:** Pot Bottom ? - incised exterior
- D - I:** Rim Sherds
- J:** Rim ? Sherd
- K - P:** Incised Body Sherds
- N:** Appears to be lightly brushed with red ochre

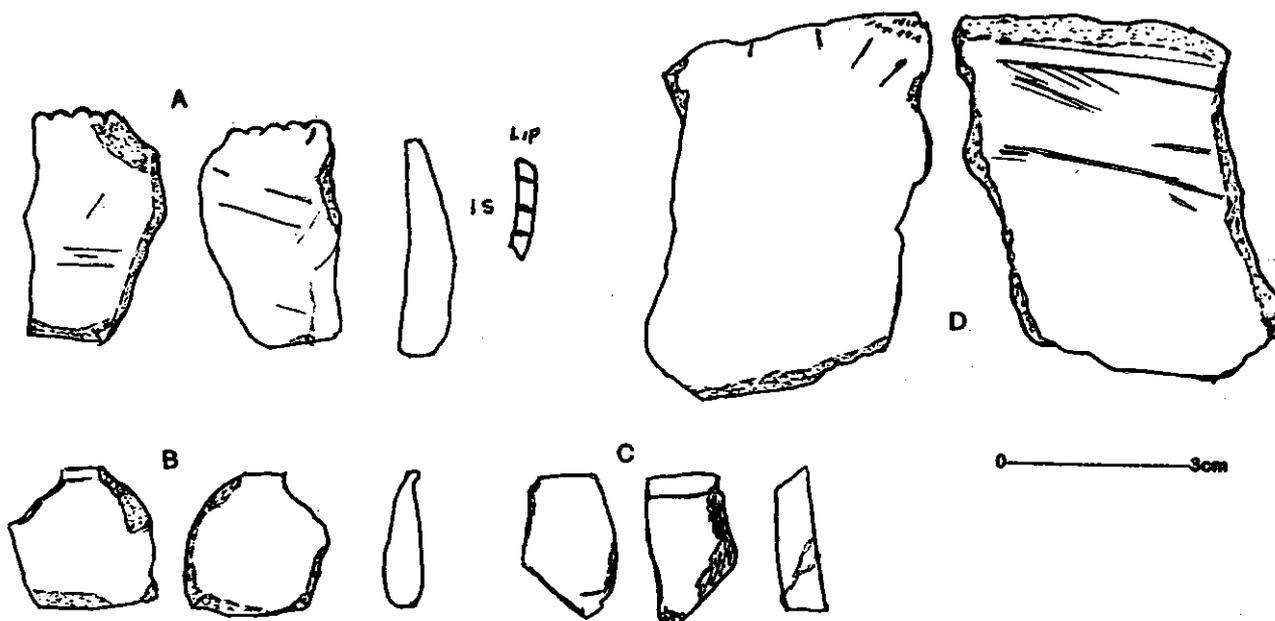


Figure 11: Goose Creek Pottery - Pit B

- A:** Notched Rim Sherd
- B - C:** Rim Sherd
- D:** Incised Body Sherd

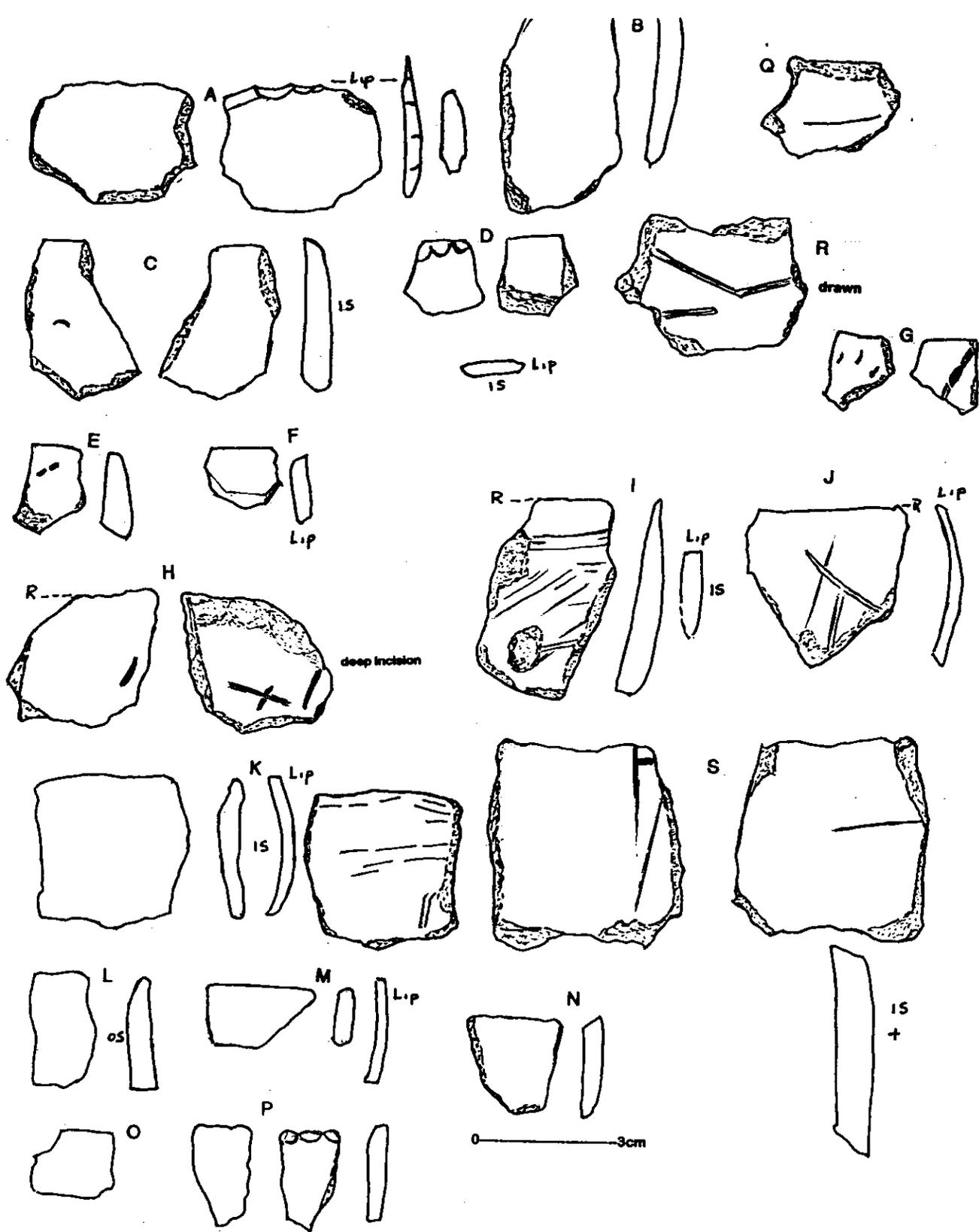


Figure 12: Goose Creek Pottery - Pit C

- A - P: Rim Sherds
- C - E, H - K, P: Incised Rims
- Q - S: Incised Body Sherds



Figure 13: Goose Creek Pottery - Pit C

- A - M: Rim Sherds
- N: Possible Rim Sherd - incised interior
- D - E, H, L & M: Incised Rim Sherds
- I: Notched Rim Sherd
- O: Pot Bottom?
(interior appears to be newly marked)
- P: Incised Body Sherd

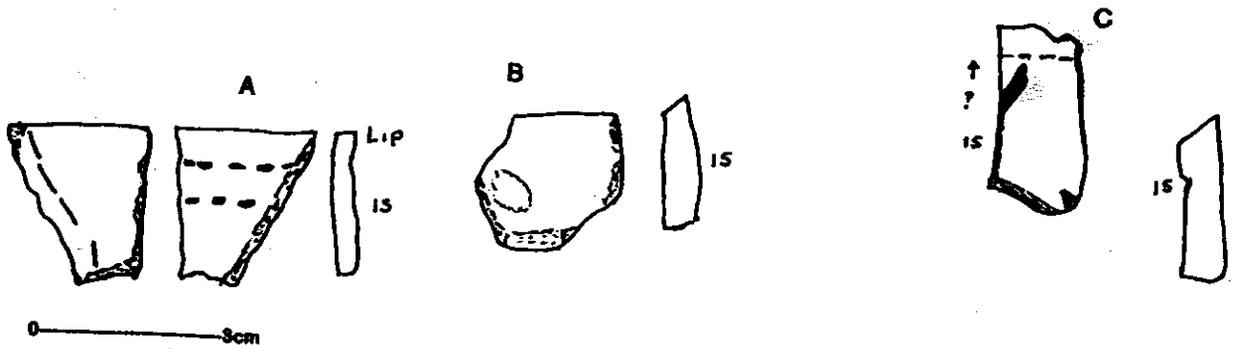
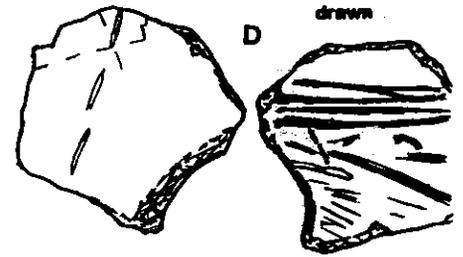


Figure 14: Goose Creek Pottery - Pit C

- A - B:** Rim Sherds
- C:** Body Sherd: 1mm deep incision
- D:** Incised Body Sherd



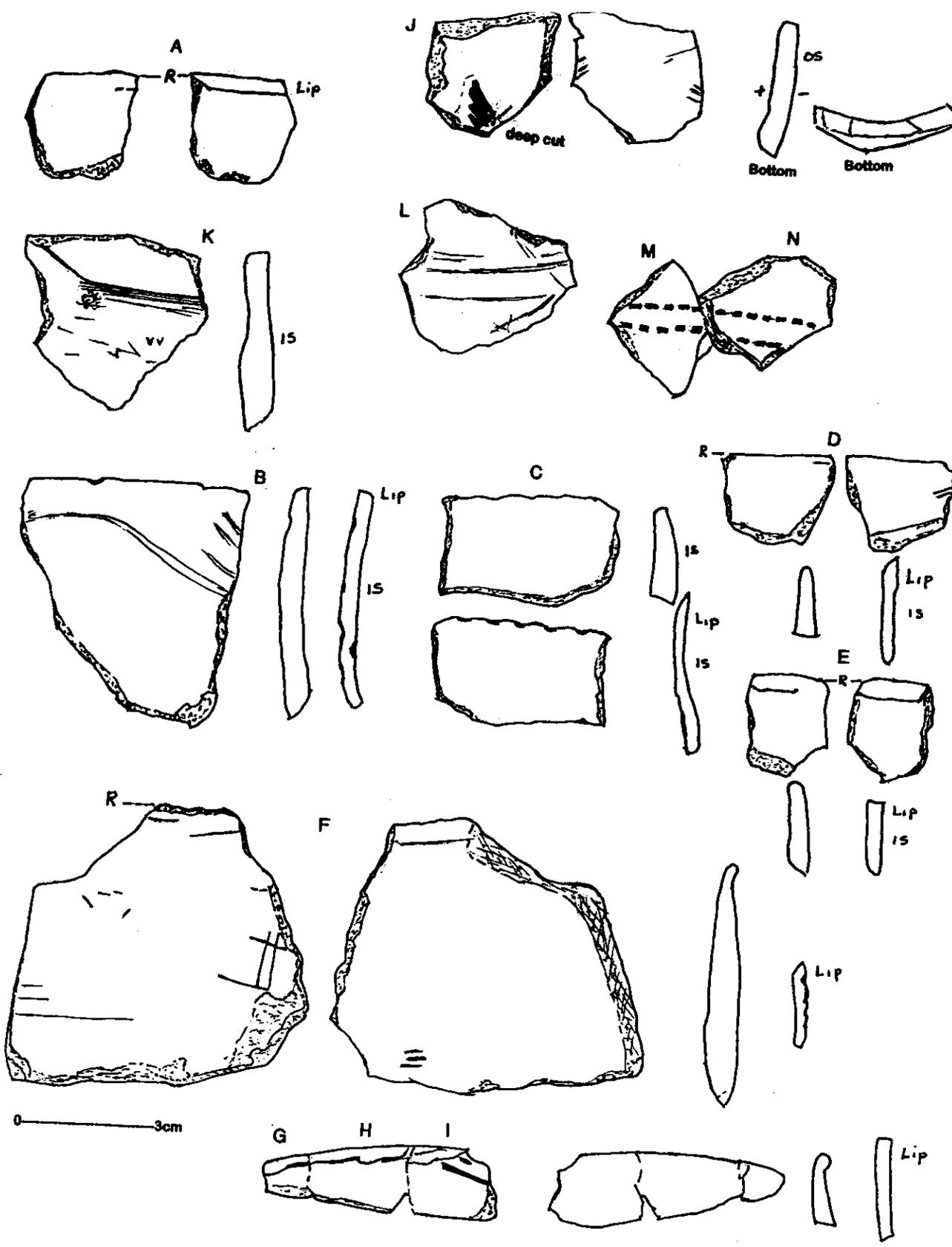


Figure 15: Goose Creek Pottery - Pit D

A - I: Rim Sherds
 J - N: Incised Body Sherds

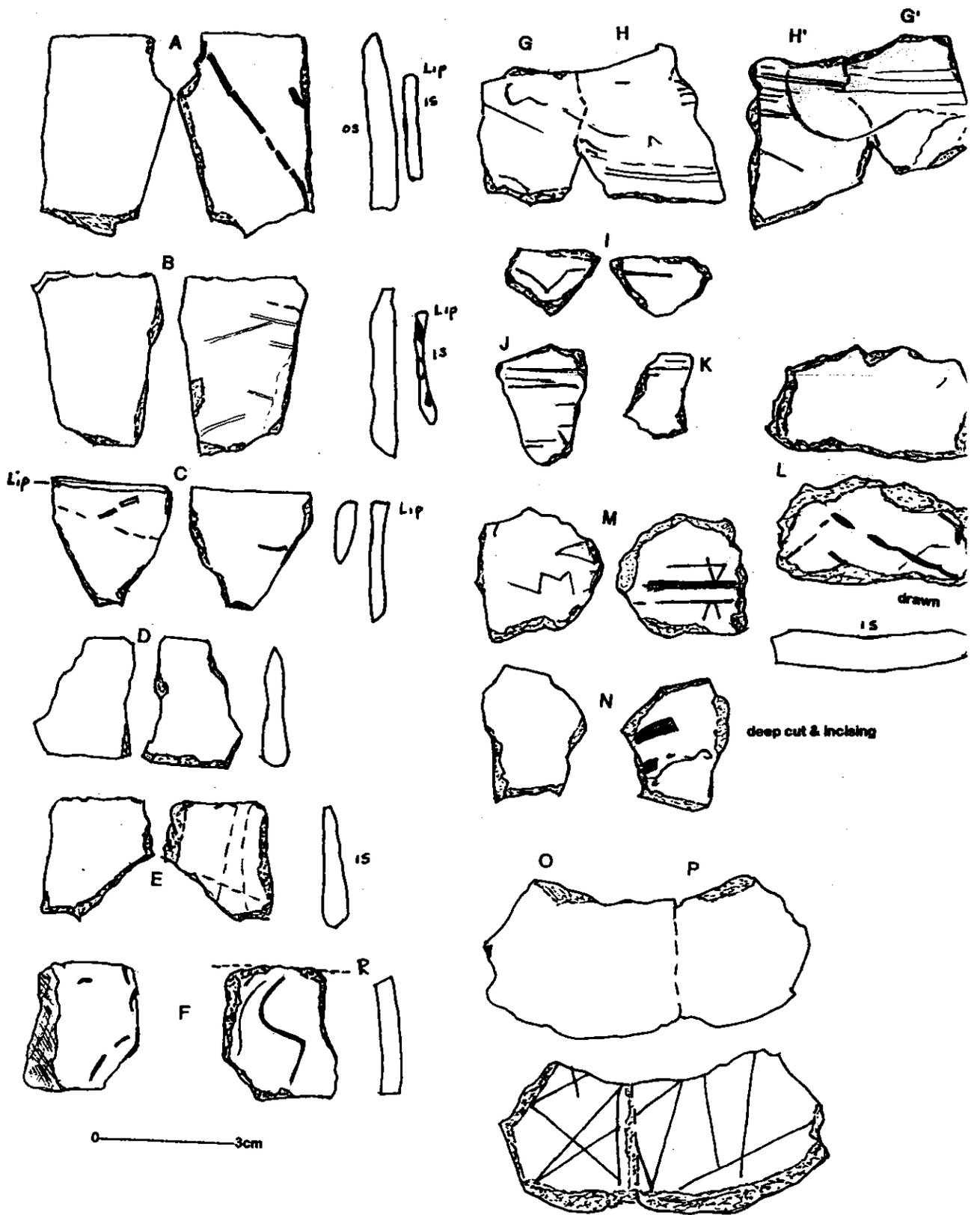


Figure 16: Goose Creek Pottery - Pit D

- A - F:** Rim Sherds
- G - P:** Body Sherds
- G' & H':** Semi-circular/wavy area appears to be painted with red ochre over incising
- B:** Very fine, very faint incising
- F:** deep incising

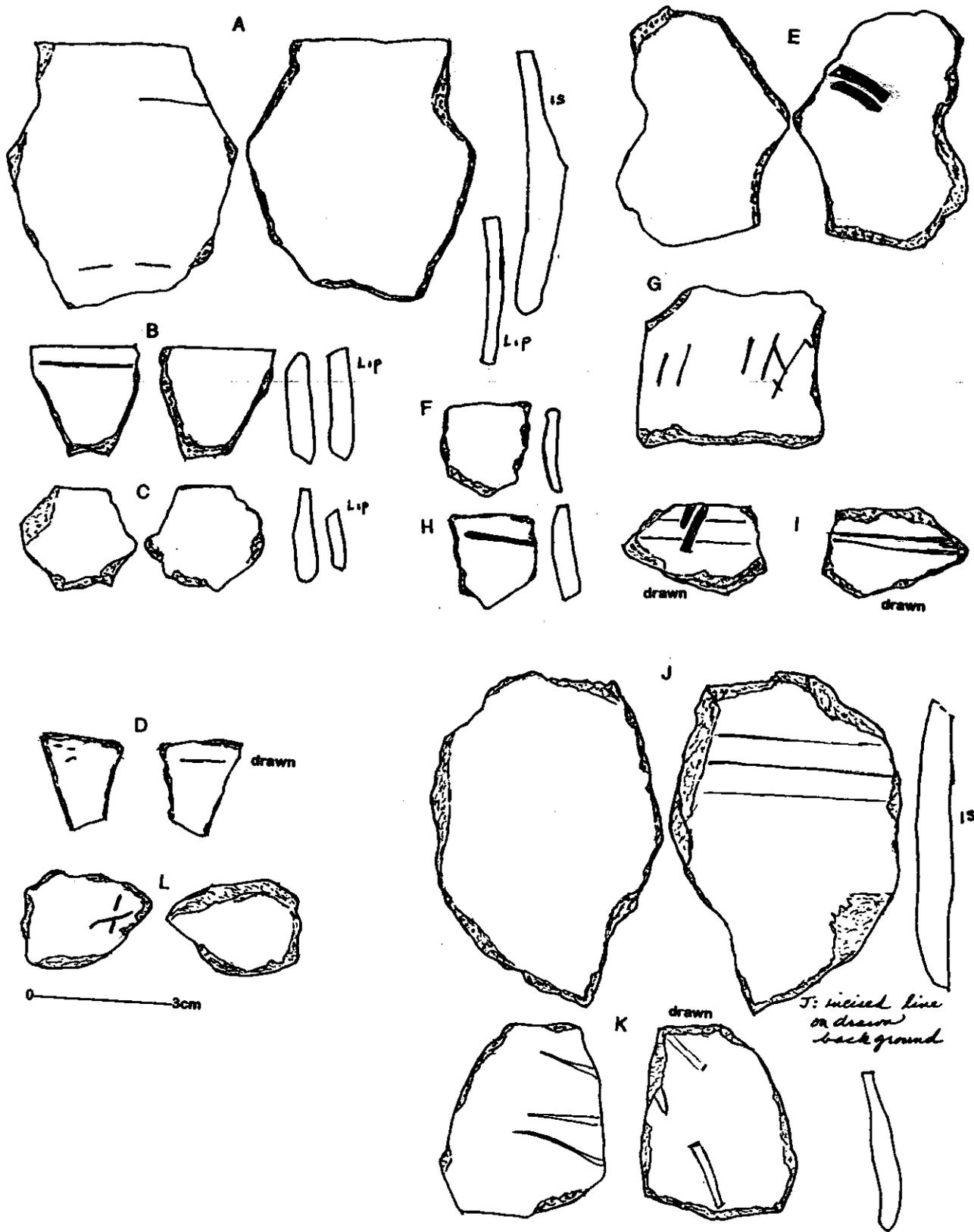


Figure 17: Goose Creek Pottery - Pit D

- A - D: Rim Sherds
- E - L: Body Sherds
- K: exterior markings appear to be new

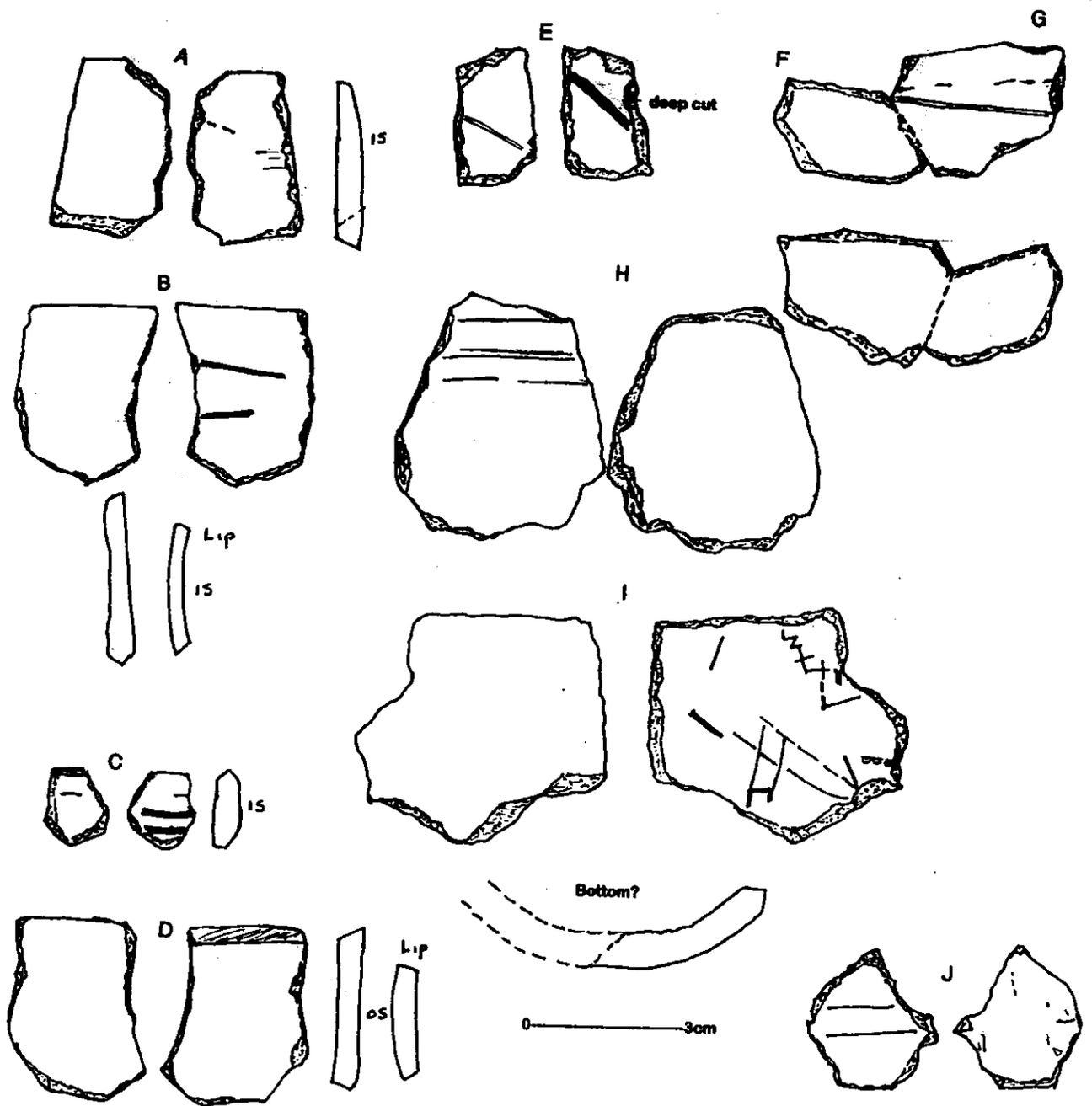


Figure 18: Goose Creek Pottery – Pit D

- A – D:** Rim Sherds
- E – J:** Body Sherds
- I:** Bottom/Base?
- B:** Markings appear to be new

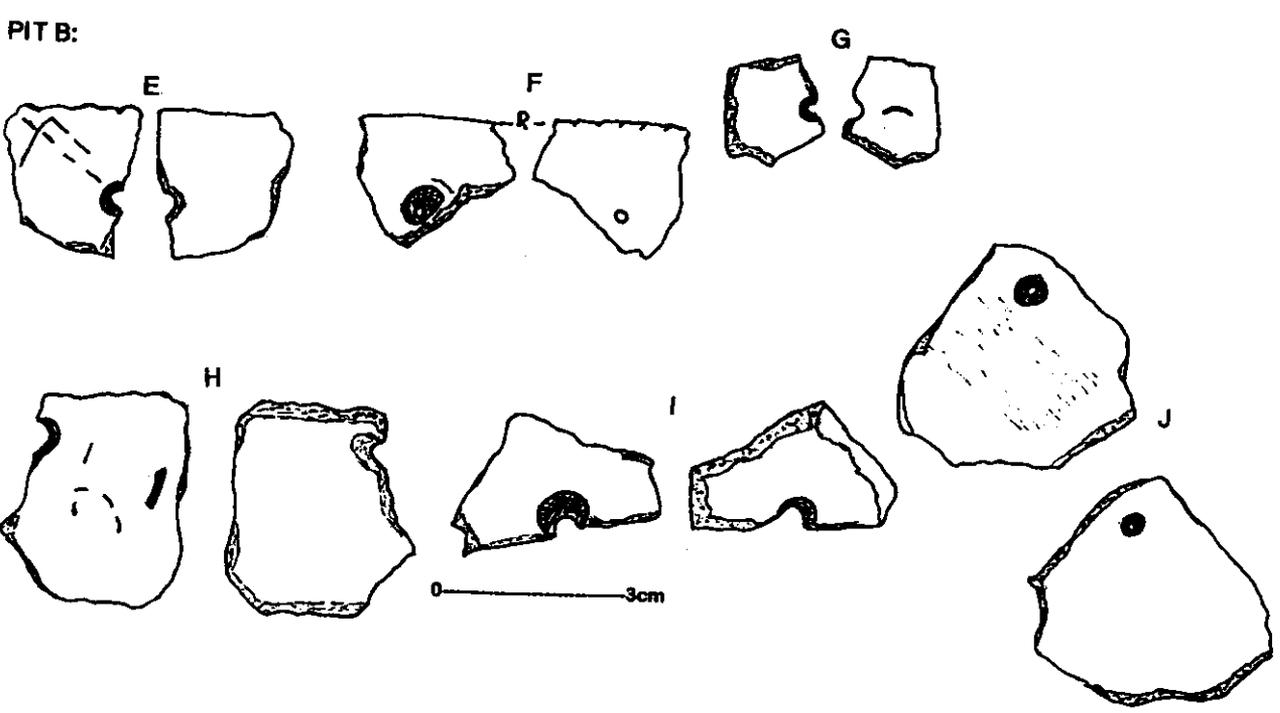
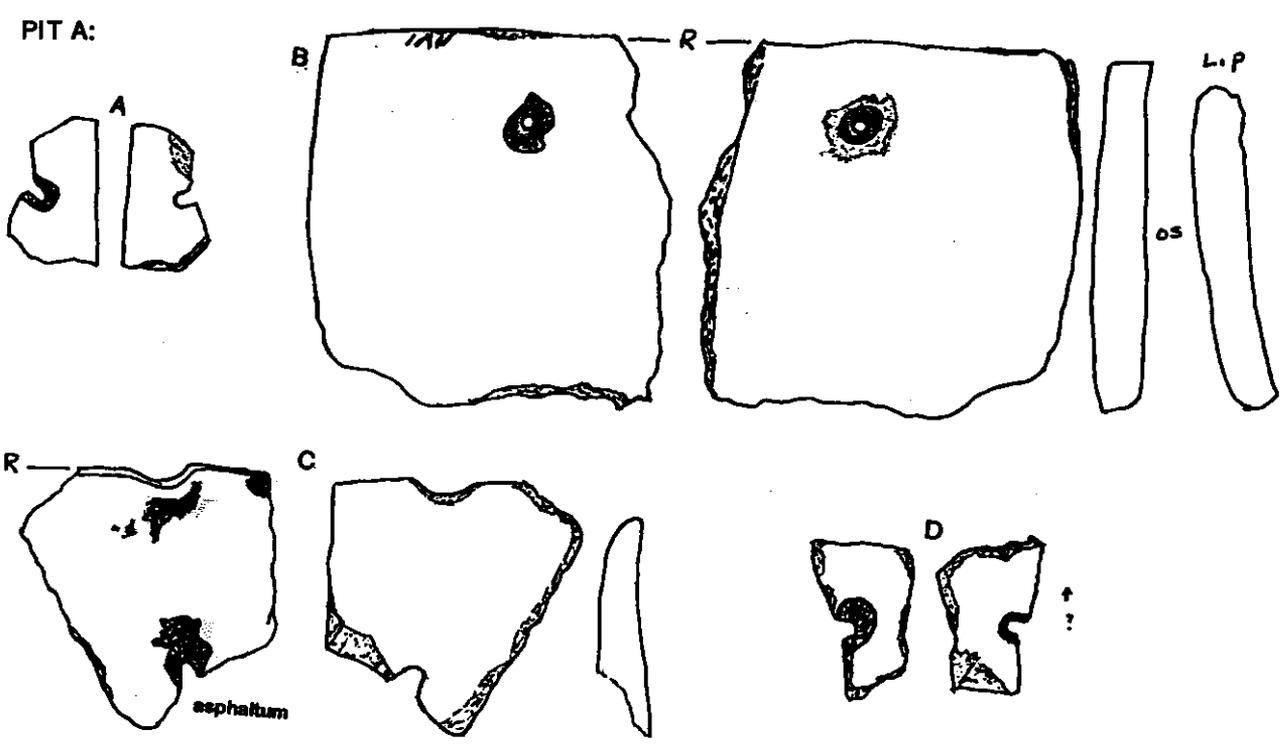


Figure 19: Goose Creek Pottery with Lace Holes

A - D: Pit A
 C: Asphaltum on exterior; none on lace hole
 E - J: Pit B

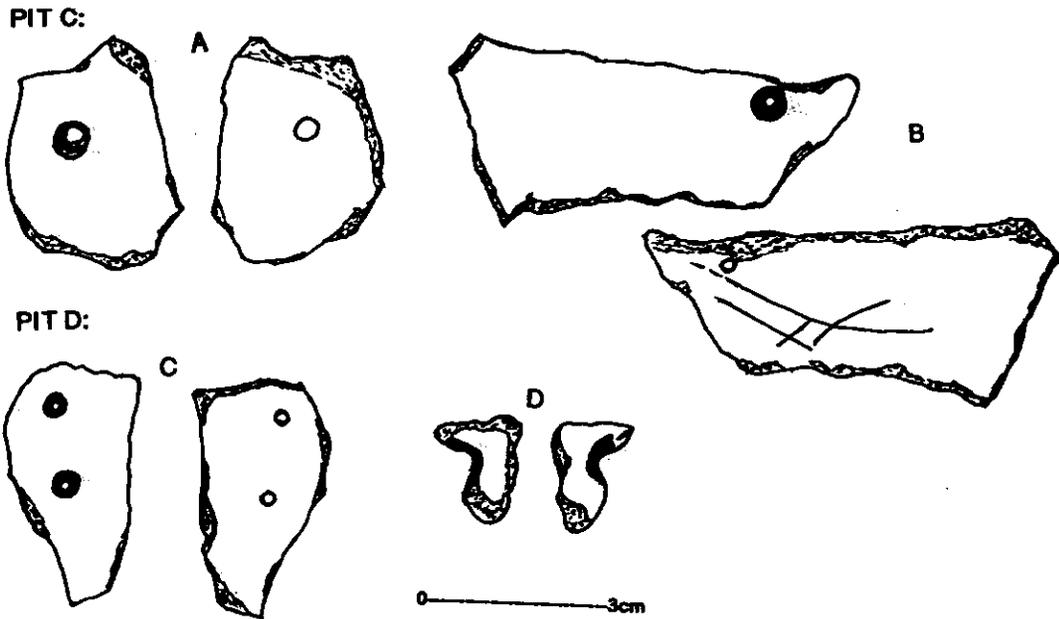


Figure 20: Goose Creek Pottery with Lace Holes

A - B: Pit C
 C - D: Pit D

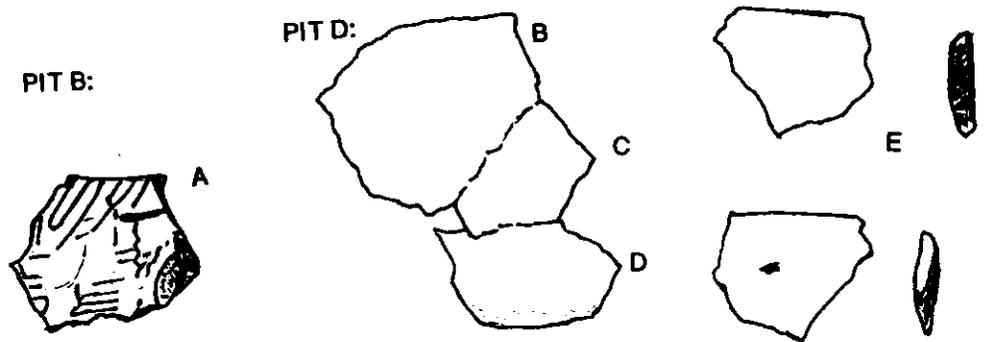


Figure 21: Bone-Tempered Pottery

A: Pit B: Incised and Punctated Body Sherd
 B - D: Pit D: Body Sherds
 E: Pit D: Rim Sherd

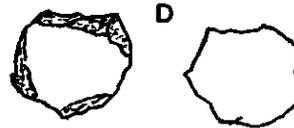
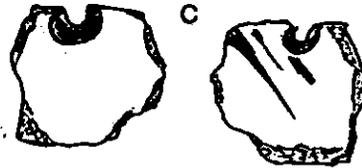
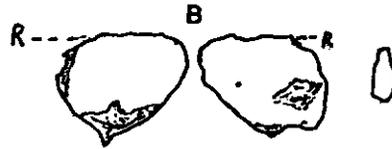
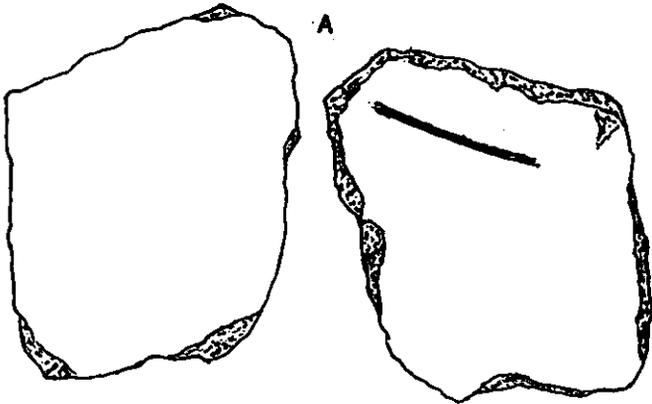
Figure 22: San Jacinto Pottery

A: Pit A: Pot Bottom
B - C: Pit B: Incised Sherds



Figure 23: O'Neal Pottery

A: Pit A: Incised Body Sherd
B: Pit B: Rim Sherd
C: Pit B: Body Sherd with Lapse Hole
D: Pit B: Body Sherd



0 ————— 3cm

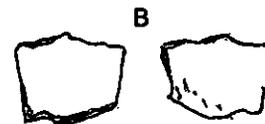
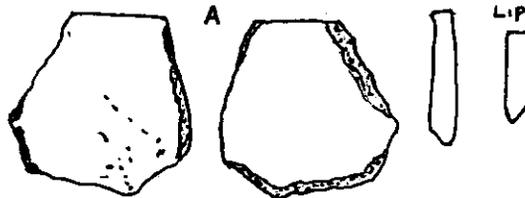


Figure 24: Tchefuncte Pottery

A: Pit D: Body Sherd
B: Pit C: Incised Body Sherd
C: Pit C: Body Sherd

Figure 25: Goose Creek Red-Filmed Pottery

A: Rim Sherd - Pit B
B: Body Sherd - Pit D

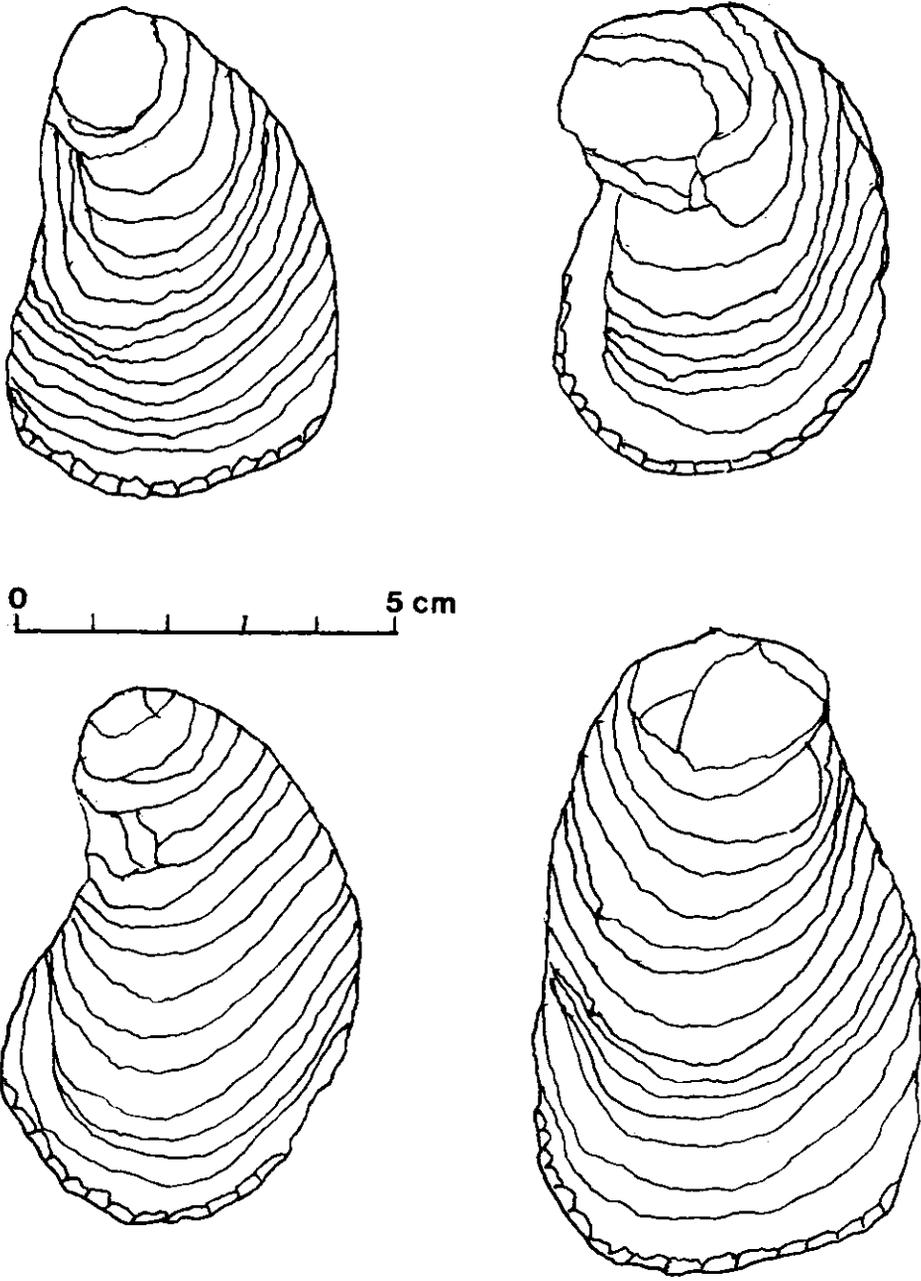


Figure 26: Oyster Shell Tools

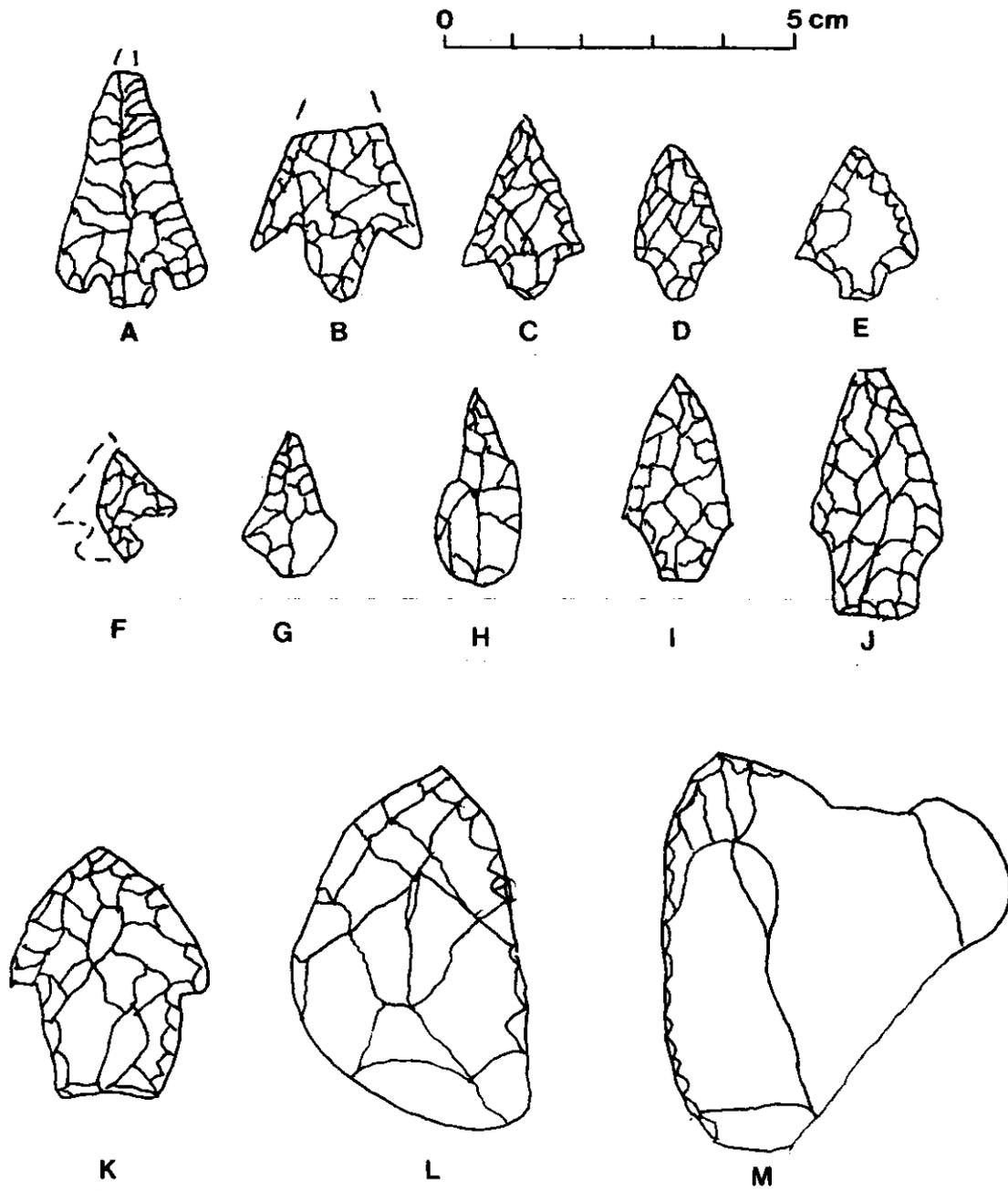


Figure 27: Soukup Collection Artifacts

A- Catahoula point; B to E- Perdiz points;
 F- Scallorn point; G,H- bifacial perforators;
 I- Gary point; J- Kent point; K- Morhiss point;
 L- bifacial knife; M- unifacial scraper

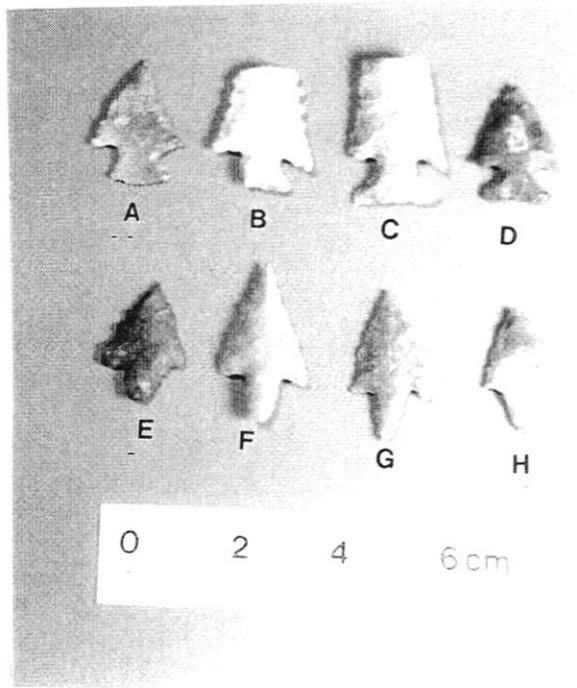


Figure 28: Arrow Points, Hartmann
 A to D- Scallorn, E to H- Perdiz

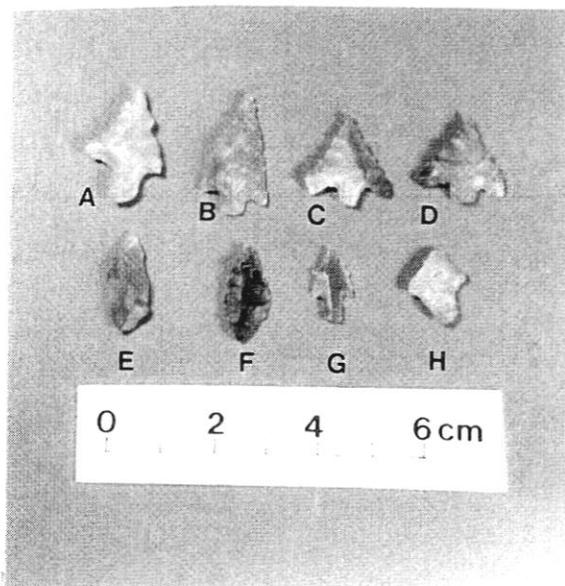


Figure 29: Additional Arrow Points, Hartmann
 A to D- Alba; E, F- unifacial; G, H- miniature

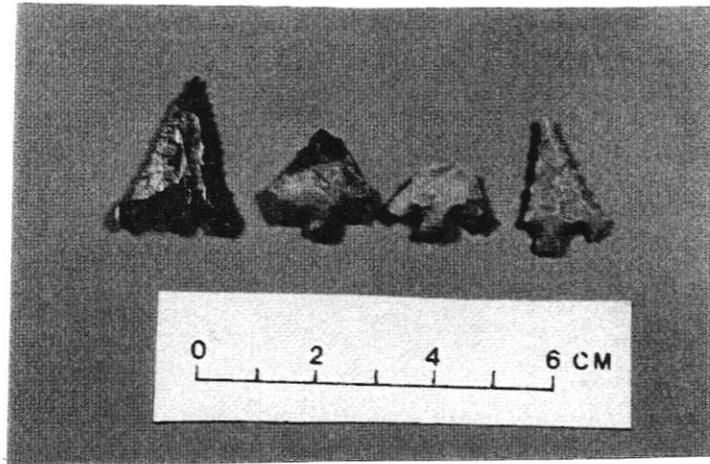


Figure 30: Catahoula Arrow Points, Durel

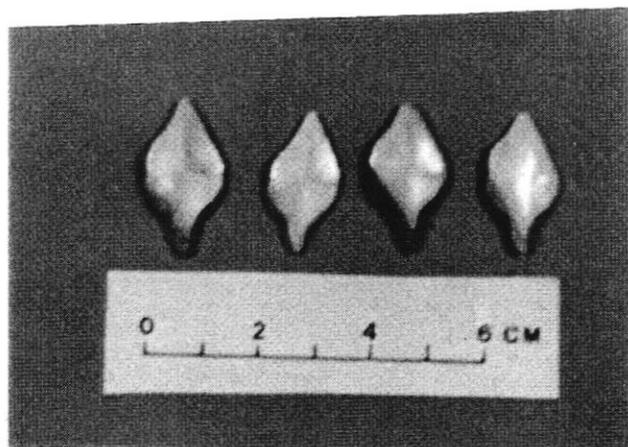


Figure 31: Gar Scale Arrow Points, Durel

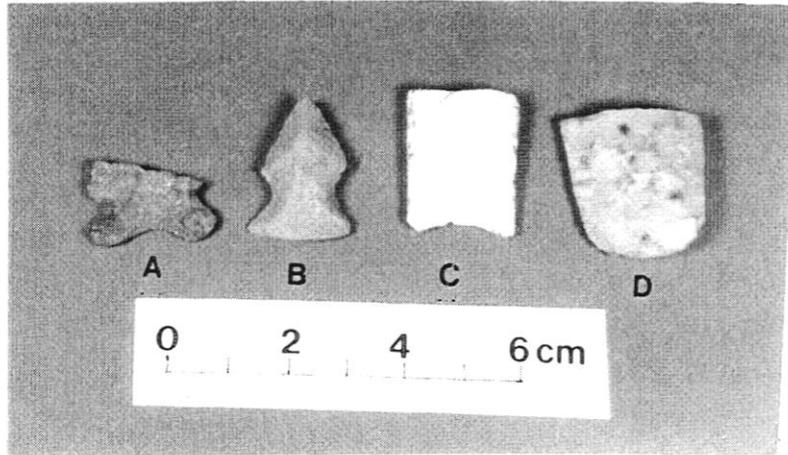


Figure 32: Paleoindian Points, Hartmann
A- San Patrice, B- Early Side-Notched,
C- Folsom, D- Angostura

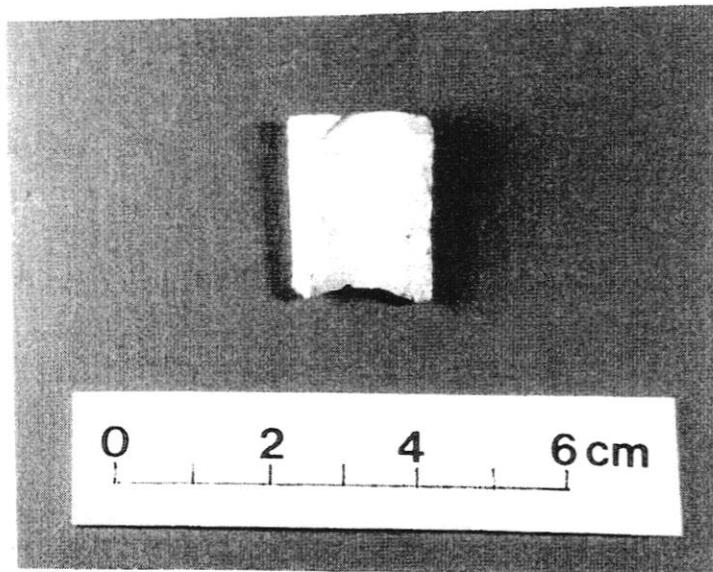


Figure 33: Folsom point, Hartmann

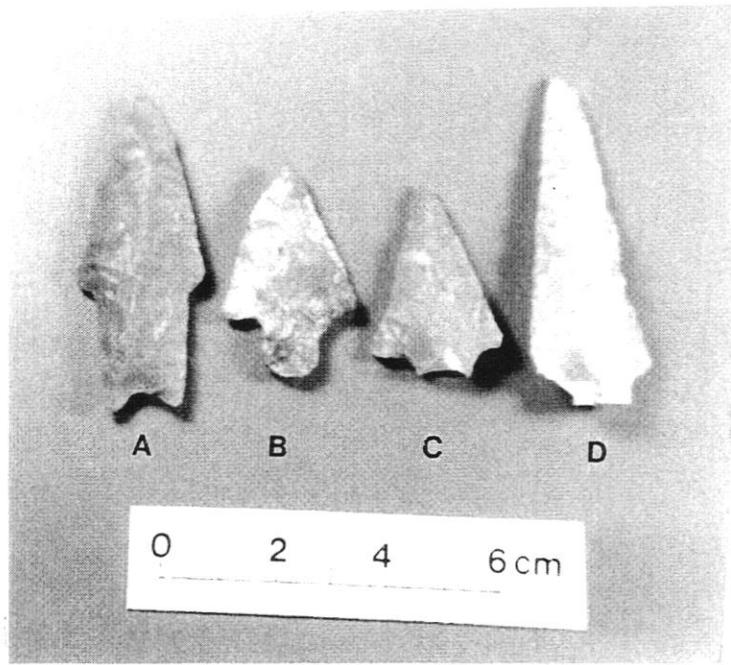


Figure 34: Dart Points, Hartmann
A- Pedernales; B- Kent; C,D- Gary

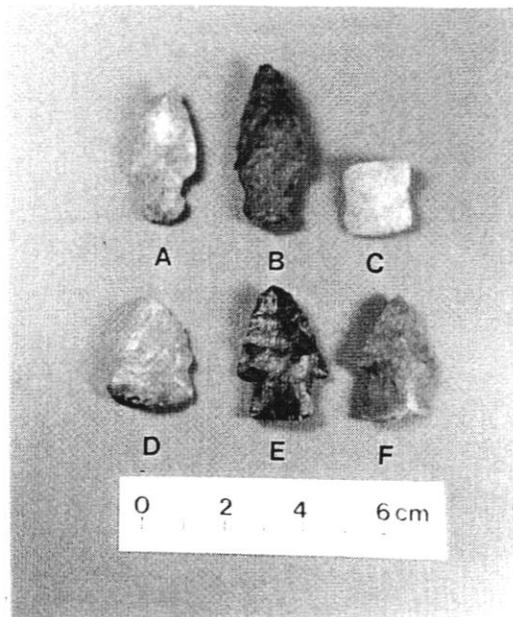


Figure 35: Additional Dart Points, Hartmann
A- Palmillas; B,C- Kent; D- Ensor; E,F- Ellis

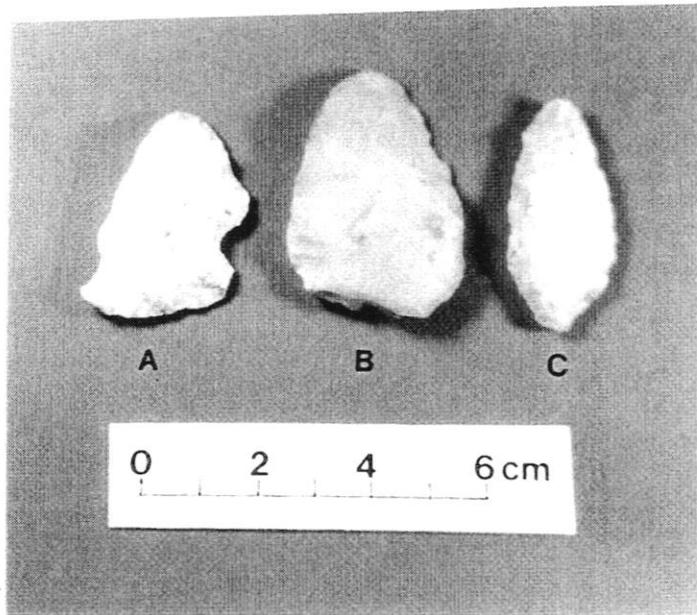


Figure 36: Bifaces, Hartmann

A- Albany scraper; B,C- dart point preforms

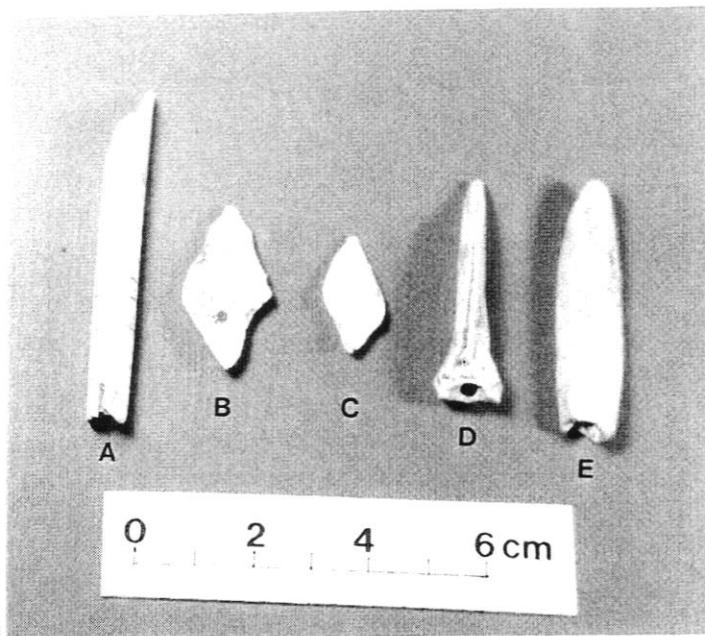


Figure 37: Non-Lithic Artifacts, Hartmann

A- engraved bone; B,C- gar scale points; D,E- bone awls