CAGLE SITE REPORT

Archaic and Early Woodland Period Manifestations

in the North Georgia Piedmont

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ABSTRACT

This report details investigations at the Cagle Site (9Ck123), a residential area and lithic workshop primarily associated with the Late Archaic and Early Woodland Periods. C-14 determinations indicate that a Savannah River Phase component dates to around 2,480 B.C. and that a transitional Savannah River/Kellog Phase component dates to about 600 B.C. The technological stages involved in manufacturing Savannah River Stemmed projectile points are discussed and manufacturing differences between the Late Archaic and transition phase are defined. It is argued that the Early Woodland Kellog Phase developed from a Late Archaic base in the northern Georgia Piedmont.

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PREFACE

The archaeological data recovery project presented in this report is the result of cultural resource management studies for the construction of an interstate highway bridge. Preliminary planning for the Interstate 575/Etowah Bridge crossing just north of Canton, Georgia in Cherokee County began in the early 1970's with intensive archaeological survey and testing taking place from January 7 to January 16, 1980.

The I-575/Etowah River bridge crossing project between the Etowah River and S.R. 5 consisted of the main line and two ramps joining S.R. 5. The desired right-of-way ranged from a width of 1400 feet at S.R. 5 to 500 feet at the river and encompassed approximately 25 acres. This tapering effect resulted from a diamond-shaped interchange which has since been constructed. Construction required primarily the filling of a large portion of the floodplain for purposes of spanning the river and S.R. 5.

The majority of the area affected by construction was under cultivation at the time of survey, with a strip of woods about 150 to 200 feet wide separating this area from S.R. 5 and the Etowah River. Hickory Log Creek follows along the northeastern border of the project area and a warehouse is situated in the southwest corner along S.R. 5. A small sand company operation existed near the proposed centerline along the river bank.

The intensive archaeological survey was geared toward addressing several basic research questions which were prompted by federal legislation and previous environmental and archaeological research. These questions were:

1) Will any archaeological resources be affected by the construction of the bridge and related interchange;

2) If any such resources are identified, are they eligible for inclusion in the National Register of Historic Places (NRHP);

3) Has the repeated flooding of the Etowah River resulted in deeply buried archaeological resources in the project area; and,

4) How do any archaeological resources identified within the project area relate to other resources located in the project vicinity?

The intensive survey led to the identification of a single archaeological site which was determined eligible for the NRHP. After completion of the Preliminary Case Report (PCR), a Memorandum of Agreement (MOA) was developed through consultation with the Federal Highway Administration, the Georgia State Historic Preservation Officer, and the Advisory Council on Historic Preservation. Based on the data presented in the PCR, the MOA stipulated a number of research questions and methods to be employed in data recovery. A contract was negotiated with West Georgia College to fulfill the stipulations set forth in the MOA. This report is a result of the fulfillment of that agreement. The Georgia Department of Transportation is pleased to publish this report as the second in its Occasional Papers in Cultural Resource Management series.

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ACKNOWLEDGEMENTS

The archaeological research reported here is the result of mitigation activities conducted under the auspices of the Federal Highway Administration and the Georgia Department of Transportation. The approach taken in structuring the mitigation plan was one of flexibility in research design and field methods. This flexibility allowed new information to be integrated into the research design, and also allowed unanticipated problems to be approached quickly and successfully in the field with only essential bureaucratic involvement.

I firmly believe that success in reaching the mitigation goal of retrieving the significant archaeological information available at the Cagle Site was made possible by the built-in flexibility of the research design. A debt of appreciation is due to officials and staff of the Georgia Department of Transportation and the Federal Highway Administration for their awareness that archaeological research, whether done as pure research or as cultural resource management, is a creative scientific process rather than a static contractual event. While specific legal requirements of mitigation are properly central to a mitigation investigation, the path of success is determined by an ability to shift the research focus and methods as field work progresses to more effectively reach the mitigation goal.

Investigations at the Cagle Site were improved by the concerned involvement of several individuals. Rowe Bowen, Pete Malphurs, and Toni Gardner, all of the Georgia Department of Transportation, are thanked for the advice, patience, and assistance they provided in various phases of the project. It is also largely through the efforts and commitment of Mr. Bowen that this report is published. I would also like to acknowledge the valuable imput of Lewis Larson, Georgia's State Archaeologist, in the field work and analysis phases of the research. His thought-provoking observations led to an examination of questions that would have not been otherwise pursued.

Production of the final report of the Cagle Site investigations was accomplished with the editorial and clerical assistance of Anita Immele and Nancy Steinen. Their help is greatly appreciated.

Finally, I would like to thank the field crew of the Cagle Site for their willingness to work hard and for their attempt to carefully follow instructions. The crew, composed primarily of Cherokee County residents, developed a sense of archaeology and Georgia prehistory that caused them to rethink many incorrect popular notions. Ultimately, Georgia archaeology will benefit from their direct involvement in the project.

INTRODUCTION

The Cagle Site (9CK123) is located in the Dahlonega Plateau section of the northern Georgia Piedmont about 25 km southeast of the Ridge and Valley Province and slightly more than 30 km south of the Blue Ridge Province (Figure 1). The 4-ha site is situated on a natural levee within the floodplain of the Etowah River just west of Hickory Log Creek. Physiographically, the surrounding environment is dominated by a moderately to sharply relieved landscape of hills and ridges dissected by small creeks and the winding course of the Etowah River. The Etowah floodplain is typically 100 m to 150 m wide on the inside of bends, but is restricted along the outside. The river course in this part of the Piedmont also is pinched and entrenched as it flows through occasional narrow valleys (Figure 2; Plate 1).

The climax forest of the upper Piedmont was dominated by species of oaks and hickories, along with chestnut at higher elevations (Braun 1950). There are indications that this basic forest cover and its associated animal species became characteristic of the area beginning around 3,000 B.C. (Delcourt 1980; Carbone 1983). Today, the succession forests are composed primarily of oaks, hickories, and pines. River and creek bottom lands also contain yellow poplar, elm, willow, beech, sweetgum, alder, and maple trees. Yellow poplar, sweetgum, dogwood and sourwood trees are common on terraces, hillsides, and hilltops (see U.S.D.A. 1973).

Soils in the vicinity of the Cagle Site are associated with the four basic landforms. Fertile alluvial soils of the Chewacla-Cartecay-Toccoa Association occur in bottom lands along the Etowah River and its feeder creeks. The Cagle Site is situated upon Starr Fine Sandy Loam and is surrounded by soils of the Toccoa Complex. Starr Fine Sandy Loam is noted as one of the best alluvial soils for modern farming. This medium to strongly acid soil is well-drained, although flooding for short periods usually occurs during the winter months. Terrace soils are usually of the Wickham-Masadar-Hiwasee Association, a group of fertile upland soils frequently used today for farming. Hillsides and slopes are commonly composed of soils of the Tallapoosa-Madison-Hayesville Association. These thin gravelly soils today are primarily under woodland management in very steep areas and are otherwise used for pulpwood or improved pasture. Hilltops and ridge tops usually contain soils of the Hayesville-Madison or Gwinnett-Hayesville-Madison Association. These well-drained soils are mostly covered with mixed stands of hardwood and pine (U.S.D.A. 1973).

Native fauna in the Piedmont are varied and abundant. Species of potential aboriginal importance include

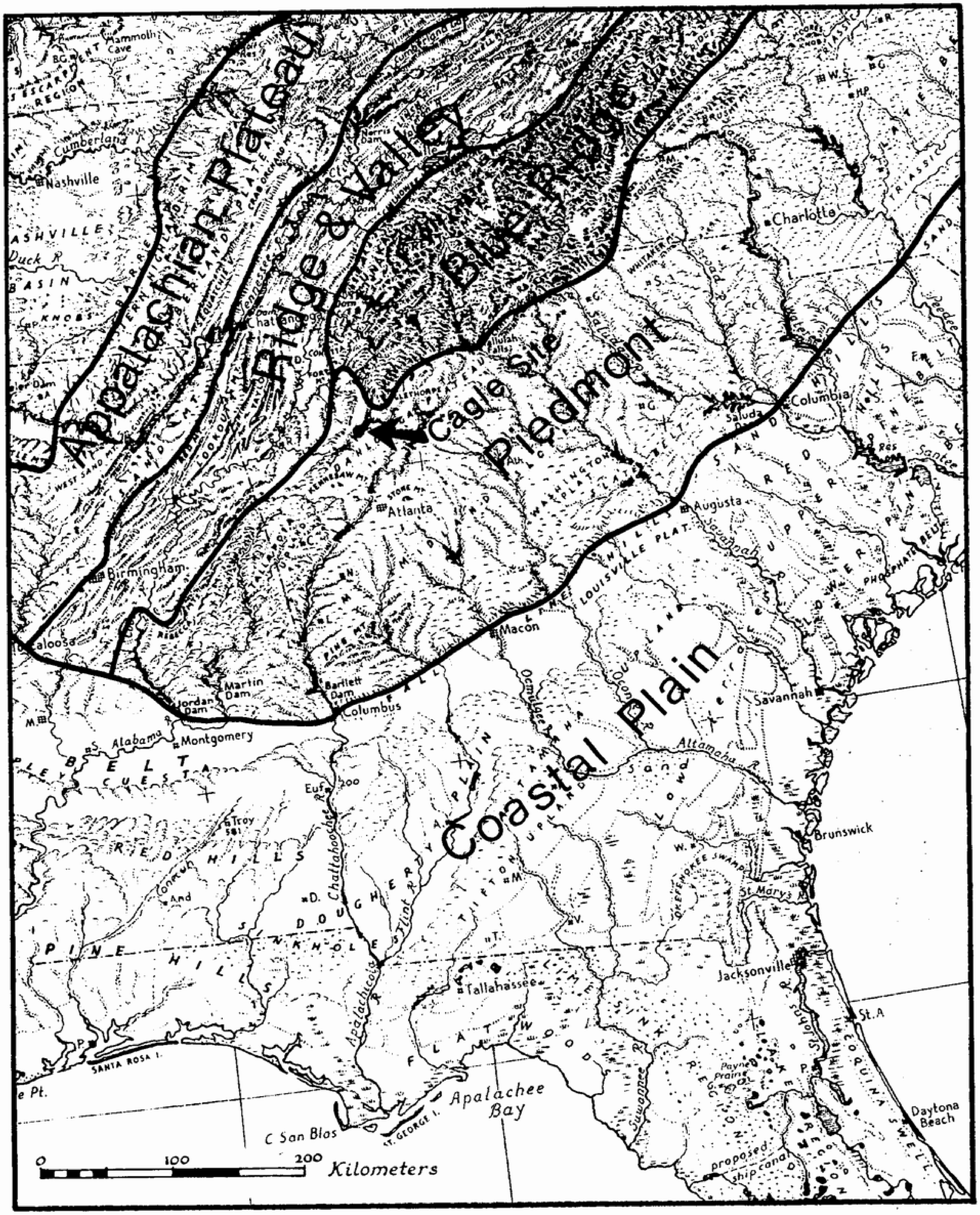


Figure 1
Physiographic Location of the Cagle Site
(adapted from Raisz 1957)

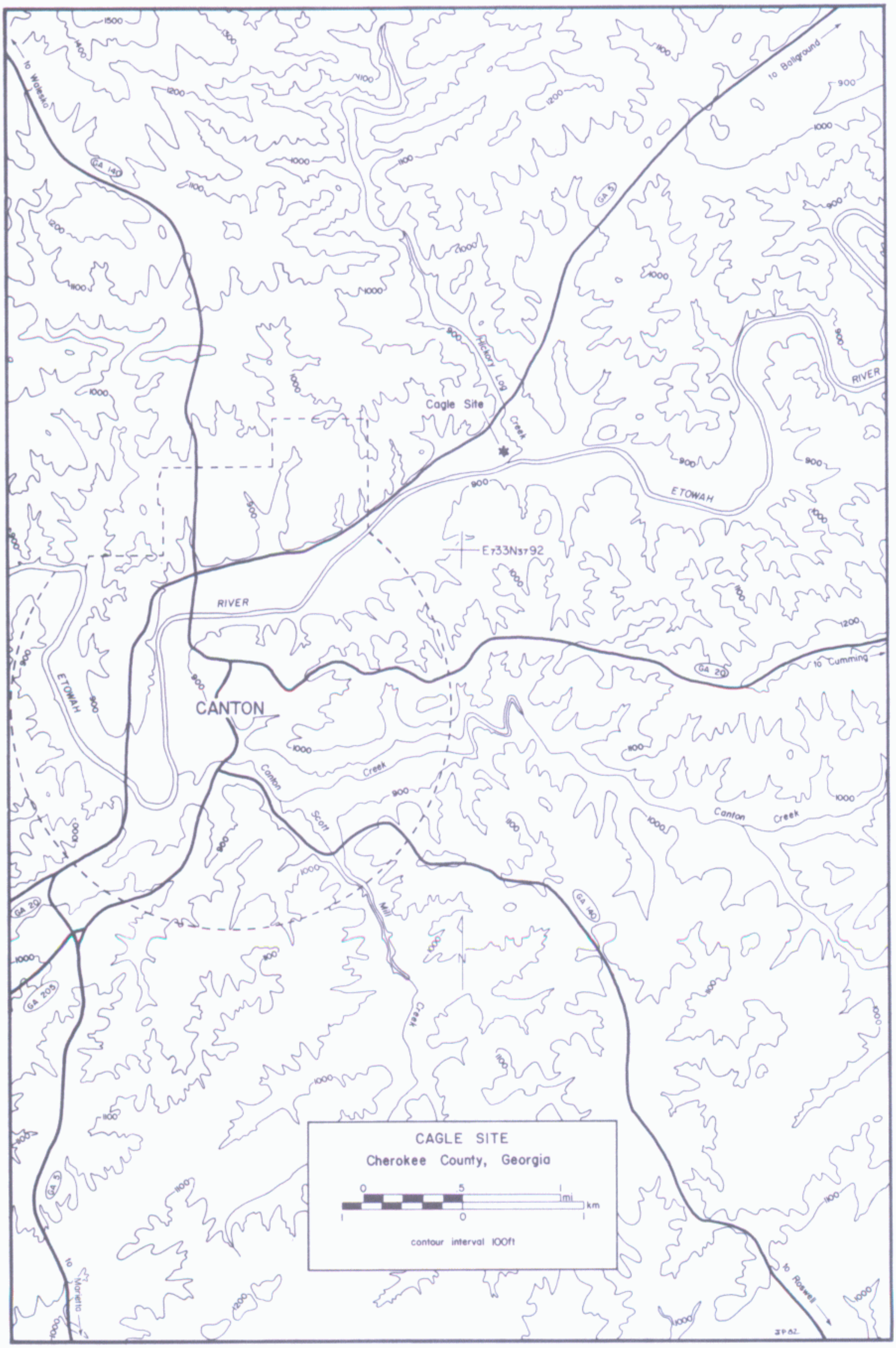


Figure 2
Topographic Map Showing Location of the Cagle Site
(compiled from U.S.G.S. Quadrangles)

white-tailed deer, black bear, turkey, raccoon, beaver, rabbit, and opossum, along with species of fish, such as large-mouth bass, small-mouth bass, white bass, blue gill, channel catfish, and walleye, commonly found in warmer Piedmont rivers such as the Etowah (see Golley 1962; Georgia Department of Natural Resources 1976).

The Cagle Site was first recorded during an archaeological survey of a proposed bridge crossing at the Etowah River for the I-575 highway project. Based upon random and controlled surface collection, auger testing, and formal excavation of four 1-m square test pits, the site was shown to contain surface artifacts and a thin buried cultural midden dating from the Late Archaic to Proto-historic Periods. The site was considered eligible for inclusion in the National Register of Historic Places, as it held the potential for yielding new information for a long segment of Georgia prehistory in the upper Piedmont. The proposed construction would have had an adverse effect on the integrity of the Cagle Site. It was concluded that this effect could be mitigated through systematic excavation at the site (Bowen 1980).

Two general problem orientations were set forth for archaeological investigation at the Cagle Site. First, information would be sought to determine intra-site socio-techno-environmental cultural adaptations and how these changed through time. Basically, this problem was to define how the various prehistoric inhabitants adapted to their specific environmental setting. Second, information would be sought concerning inter-site socio-techno-environmental cultural adaptations and how these changed through time. In simple terms, this problem was to define the place of the site within the broader settlement system of which it was a part. These problem orientations were designed to be flexible and general, with the goal of determining as much as possible about the internal and external structure and function of the Cagle Site through time.

The field methods employed at the Cagle Site were designed to gain the information required to successfully approach the general research problems. Field work was initiated on April 4, 1980 and concluded on June 13, 1980, with a crew composed of from four to six people. The field work was executed in two phases.

The objective of Phase I was to define and delimit the various archaeological components at the site. This objective was approached through the execution of four tasks. First, a detailed topographic contour map of the site area was prepared from transit readings taken at 15-m intervals throughout the floodplain. This map served to provide spatial control for excavations and presented a topographic model of the site.

Next, shovel tests (ca. 50 cm diameter) were excavated

to a depth of at least 1.25 m at 30-m intervals across the site area. The fill of each test was sifted through 1/4" x 3/4" expanded mesh screen to recover a standardized sample of artifacts, and the soil profiles of each test were recorded. This shovel-test information was used to define the limits of cultural midden and to divide the site into sampling strata based upon the density of artifacts. The shovel tests also served as stratigraphic sondages, providing the soil profiles required to construct a generalized subsurface map of the site.

The third task consisted of random testing within each of two density strata defined by the shovel tests. The high-density midden stratum, as defined by shovel tests containing three or more artifacts, was present over an area of 1.71 ha. Grid stations (N=76) previously established at 15-m intervals in this high-density stratum defined the universe of possible sample points. Twelve of these points were randomly chosen for controlled excavation, resulting in a sampling fraction of 15.8%. Similarly, four points of a total of 92 grid stations within the low-density midden stratum, as defined by those shovel tests containing less than three artifacts and showing a midden in profile, were randomly selected for excavation. This resulted in a sampling fraction of 4.3%. Each controlled test pit at these random points measured 2 m square and was designated by its northeast corner grid station. Plow zone and overburden were removed by hand to the surface of the cultural midden and excavation proceeded in 20-cm levels to sterile subsoil. The fill of each level was sifted through 1/4" x 3/4" mesh screen and a 20-liter soil sample from each level was gently water-screened through 1/16" mesh to recover a sample of the small fraction of cultural materials. The base of each excavation level was inspected for intrusive cultural features and soil profiles were recorded upon completion of the test pit.

Concurrent with beginning the random test pit excavation, a single non-random 3-m x 3-m test pit was excavated near the center of the high-density stratum to determine if deeper cultural middens were present at the site. This test pit was excavated to a depth of 1.5 m and yielded a relatively deep stratigraphic sequence.

The information gained through Phase I was assessed and more specific research problems that could be addressed in Phase II of the field work were formulated. At a meeting attended by the principal investigator, officials from the Georgia Department of Transportation, the Federal Highway Administration, and the Georgia Office of the State Archaeologist, it was agreed that two specific problem orientations were appropriate for the Phase II field work. It was agreed that an area appearing to be a lithic workshop of the Late Archaic and Late Archaic-Early Woodland Periods deserved intensive investigation for

information about the technological steps involved in manufacturing stone tools. Also, as the cultural remains at the workshop appeared to be stratigraphically distinct, the potential existed to examine changes in lithic technology over time.

Phase II field methods consisted of controlled excavation of contiguous 2-m squares defining a 4-m wide trench extending 26 m in length and positioned so as to provide a cross-section of the lithic workshop. Excavation proceeded using two different recovery techniques. Each of the 2-m squares along the eastern side of the trench were excavated in 20-cm levels beginning at the surface of the upper midden and extending to a variable depth beneath or near the base of the lower midden. The fill of each level was sifted through 1/4" x 3/4" mesh screen and, as with the random test pits, 20-liter samples were resifted through 1/16" mesh. Each unit along the western side of the trench was excavated in 10-cm levels from the top surface of the upper midden to the base of the upper midden in the northern portion of the strip, and to beneath the base of the lower midden in the southern portion. Each level within the western units was sifted through 1/4" mesh and a 20-liter sample was water-screened through 1/16" mesh. The eastern half of the trench was excavated first. The use of finer screening and thinner excavation levels for the western side was an attempt to recover a larger sample of small debitage and to gain more detailed stratigraphic control. In both sides of the excavation trench, arbitrary excavation levels were interrupted as changing soil strata were encountered.

A second task at the lithic workshop area consisted of clearing a section just east of the northern end of the trench excavation with a backhoe to expose features of an apparently associated structure visible at the base of the upper midden. After the backhoe removed the overlying midden, the exposed surface was shovel-skimmed to provide a uniform surface and observed features were plotted using an alidade and plane table. The post holes and features were profiled in cross-section and the fills of features were screened through 1/4" mesh and 1/16" mesh.

Analysis of excavated materials at the Cagle Site focused on acquiring information concerning temporal provenience, technological attributes, dietary components, and settlement pattern of each archaeological component represented at the site. Ceramics were analyzed by the author using comparative collections and published type descriptions. Lithic materials were sorted into groups of debitage and several preform categories to be discussed later. Metric attributes, form characteristics, and raw materials were recorded by provenience for each lithic category. Selected soil samples were analyzed for component grain sizes by Mr. Gary Jordan, a

Geology/Anthropology major at West Georgia college, in an attempt to determine fluctuations in river location at the site. Mr. Jordan also was responsible for accessioning the recovered materials and assisted in the lithic analysis.

Floral analysis and C-14 analysis were completed by consultants. Elizabeth Sheldon of Auburn University-Montgomery conducted the botanical analysis of samples from selected contexts. Ms. Sheldon also visited the site during field operations to provide advice about recovery techniques for the floral remains. Carbon samples from selected contexts were analyzed by Beta Analytic, Inc. under the supervision of Dr. Murray Tamers. The resulting C-14 ages were calculated using the Libby half-life of 5568 years and 95% of the activity of the NBS Oxalic Acid as the modern standard.

All materials and records resulting from this investigation at the Cagle Site are curated at the West Georgia College Archaeological Laboratory under Accession Number 15.

PHASE I INVESTIGATIONS

Systematic Shovel Testing

As previously outlined, shovel testing was conducted at 30-m intervals across the site area. Figure 3 shows the locations of these shovel tests on the site contour map. The artifacts encountered in these tests were infrequent and generally undiagnostic, typically consisting of small eroded potsherds along with a few chert flakes and quartz chips. Although little temporal control was possible with these data, the raw frequency of artifacts within the shovel tests provided information concerning the general intensity of cultural remains in various areas of the site. A zone of relatively high- density cultural midden dominated along the top of the natural levee, and a zone of relatively low density dominated in lower areas north of the levee (see Figure 3).

The shovel tests also provided soil profiles at 30-m intervals across the site. Characteristics of particular soil zones varied in relation to their distance from water, a natural consequence of the heavy, coarse soil fractions being deposited closer to the river and creek during flooding and fine, lighter fractions being deposited at greater distances. It was possible, however, to construct a generalized profile of soil strata at the site based upon the shovel-test profiles.

The shovel-test profiles, supplemented with profile data from other excavation units, were used to draw the interpolated subsurface cross-sections of the site presented in Figure 4. The profiles reveal a typical depositional sequence for river levees, where the river channel slowly aggradates, causing heavier sediment loads to be deposited repeatedly along its banks. Thus, both river channel and levee slowly build up over time (see e.g. Monkhouse 1966:124-127).

Southern regression of the Etowah River channel also is indicated in the cross-sections, as shown in the southern end of the north-south profile where there is considerable lensing and a steady decrease in slope angles from basal to upper levels. The lower soil strata are quite steep, having the appearance of old river banks. The Etowah River is now located approximately 70 m south of these old river banks.

Hickory Log Creek also would have influenced the depositional sequence at the site by both scouring and depositing sediments in eastern sections of the site. Within the eastern-most section of the site, present surface contours appear to reflect scars of the former meandering creek. An old channel is present south of the levee that probably marks another previous course for Hickory Log Creek, presumably active at a time following

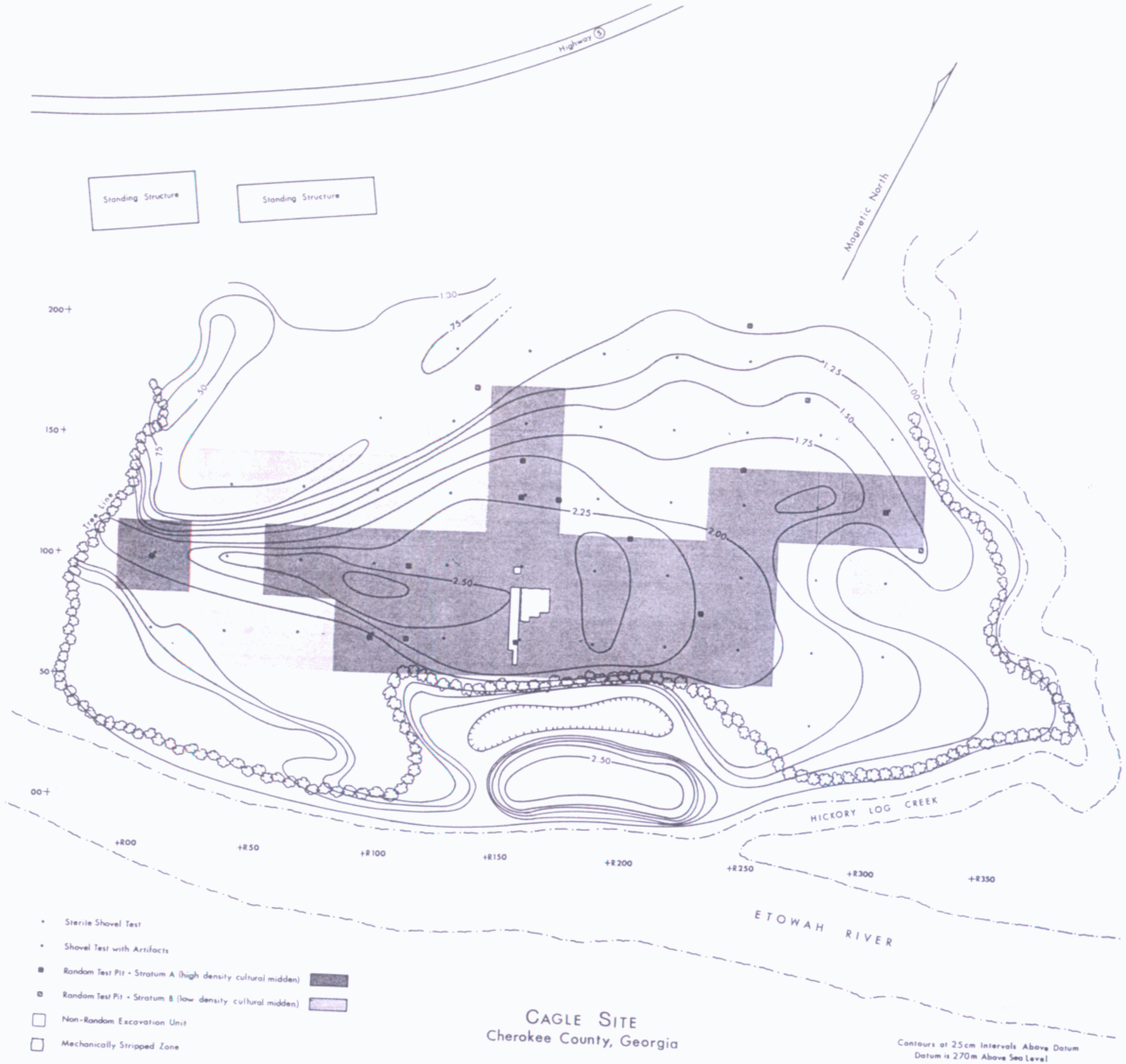
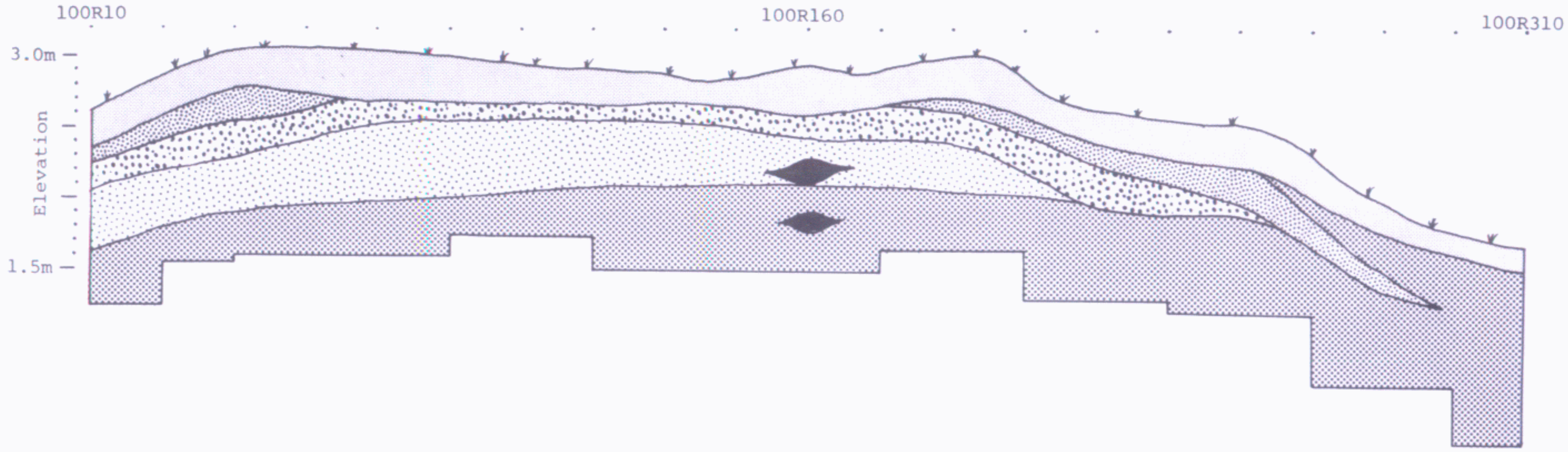
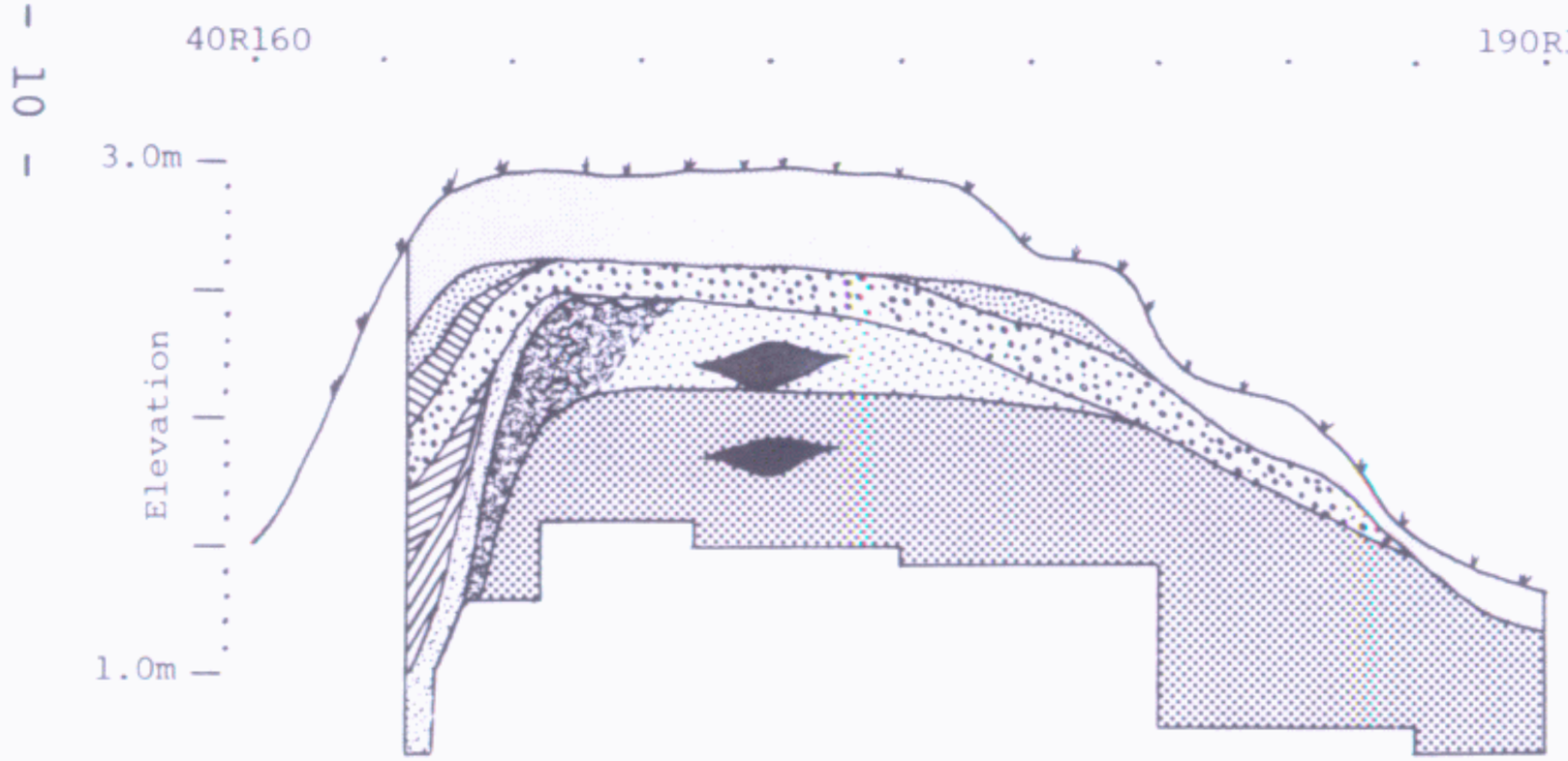


Figure 3
Archaeological Base Map

EAST-WEST SITE PROFILE



NORTH-SOUTH SITE PROFILE



KEY

- Stratum A - Overburden/Plow Zone
- Stratum B - Alluvial Sands
- Stratum C - Tan/Brown Mottled Sand
- Stratum D - Grey-Brown Sandy Clay Midden
- Stratum E - Tan/Brown Mottled Sand
- Stratum F - Brown Sandy Clay
- Stratum G - Light Brown Sand
- Stratum H - Brown Sandy Clay
- Stratum H* - Brown-Grey Sandy Clay Midden
- Stratum I - Red Sandy Clay
- Stratum J - Brown-Grey Sandy Midden
- Stratum K - Brown-Grey Sandy Midden

Figure 4
Interpolated Profiles of Site Cross-Sections

development of the river levee (see Figure 3).

The subsurface cross-sections show the three primary cultural strata within the levee deposition sequence. Stratum D, the upper and most recent cultural midden, is located beneath recent overburden and alluvial sands. This stratum covers the entire surface of the levee, continues north into the margins of the back-water area, and south down the upper-most relic river bank. An earlier cultural midden, designated Stratum I, is located within the brown sandy clay soil horizon beneath Stratum D. This cultural stratum is discontinuous, occurring as isolated lenses at the site. A physically separate but apparently associated cultural stratum is associated with the brown sandy soil horizon along a lower relic river bank. A third and still earlier cultural midden, designated Stratum J, is present within the sandy red clay beneath Stratum I. This cultural stratum also was discontinuous and restricted.

The shovel-testing segment of the field work provided basic information for intensive testing at the Cagle Site. First, it provided the artifact distribution and frequency information used to define zones of low and high density cultural midden for subsequent random testing. Second, it provided the data needed to construct a subsurface map of the site. This proved to be valuable not only for anticipating soil horizons during excavation, but also for interpreting the cultural materials later during analysis.

Random Test Pit Excavation

A total of 16 2-m square test pits were excavated at the Cagle Site. Twelve of these were randomly positioned within the high-density midden zone as defined by the shovel-test results, and four were randomly positioned within the area of low-density cultural remains. The locations of these test pits are shown in Figure 3.

This discussion of data recovered from the random test pits is organized by the natural and cultural soil strata defined in Figure 4. A quantitative summary of pottery associated with the various strata is presented in Table 1. This table excludes potsherd counts from test pit 70R160, as data from this random test pit are considered in later discussions dealing with the lithic workshop excavation. Data from this square is included, however, in the distribution maps of several pottery types that follow.

Stratum A at the Cagle Site was defined by a layer of reddish-brown sandy clay overburden extending from the present surface to an average depth of 35 cm. The base of this zone frequently showed plow scars. Stratum A was manually removed from each random test pit without screening. The few identified potsherds recovered from Stratum A consisted of plain, Woodstock Lined-Diamond Stamped, Dunlap Fabric Marked, and Cartersville Check

Stamped pottery (Table 1). No stone tools were encountered within the stratum, although there were occasional quartz chips and shatter. A chipped-stone hoe or axe (Plate 13e) was recovered from the surface of the site.

Feature 103 originated at the base of Stratum A in test pit 145R160. This feature was a roughly circular pit (ca. 25 cm in diameter) with irregular sloping walls and a rounded base that extended 25 cm into the underlying cultural stratum. The upper 2/3 of the brown sandy clay pit fill contained unfired clay lumps, some with reed impressions, and the base of the pit contained 10 fragments of a coarse-sand tempered and overstamped Wilbanks Complicated Stamped globular jar with a slightly restricted neck and a flaring rim (Plate 5a,b). Projections indicate the rim of the vessel was approximately 24 cm in diameter.

The original function of Feature 103 is uncertain. Although the pit fill was screened through 1/16" mesh, no faunal remains were encountered and floral remains were limited to a few carbonized-wood fragments. The unfired clay probably is daub originally associated with house construction. As this suggested that house remains were possibly located in the immediate vicinity, an area extending 4 m beyond the feature was manually stripped to the base of Stratum A. Neither post holes nor other features were recognized at the base of this stripped area.

Stratum B was defined by layers of alluvial sand at the base of Stratum A along the outer edges of the levee. No cultural remains were encountered in this zone.

Stratum D was defined by a 10-cm to 35-cm thick layer of grey-brown sandy clay cultural midden. This midden was situated beneath Stratum A and, when present, beneath Stratum B. Most of the cultural material recovered from the random test pits came from this zone.

A total of 212 identifiable potsherds were recovered from Stratum D. Dunlap Fabric Marked pottery was most common (Plate 5h,i,j,k), followed by plain, Mossy Oak Simple Stamped (Plate 5f,g), Woodstock Lined Diamond Stamped (Plate 5c,d), Woodstock Rectilinear Complicated Stamped, and Mossy Oak Cord Marked pottery (Table 1). All the sherds were sand tempered with micaceous paste.

The distribution of pottery types within Stratum D indicates that the location of occupation areas varied over time. The distribution of Dunlap Fabric Marked pottery exhibits the most interesting pattern (Figure 5). A dense linear zone is located along a rise adjacent to Hickory Log Creek in the eastern section of the Cagle Site, while a discrete sparse zone is located along the higher portion of the levee near the center of the site. Mossy Oak Simple Stamped pottery has a sparse distribution very similar to that of the sparse Dunlap Zone (Figure 6). Woodstock Complicated Stamped pottery (Lined Diamond plus Rectilinear designs) is sparsely distributed on top of the levee,

Table 1
Pottery Associated with Strata Encountered
in the Random Test Pits

POTTERY TYPE	ASSOCIATED STRATUM				Row Total	
	A	B	D	H	#	Col%
Unidentified						
Number	27	13	188	19	247	na
Dunlap Fabric Marked						
Number	1	0	106	17	124	48%
% Row	01	0	85	14		
% Column	05	0	50	94		
Mossy Oak Simple Stp.						
Number	0	0	11	0	11	04%
% Row	0	0	100	0		
% Column	0	0	05	0		
?Mossy Oak Cord Marked						
Number	0	0	1	0	1	.5%
% Row	0	0	100	0		
% Column	0	0	.5	0		
?Cartersville Check Stp.						
Number	1	0	0	1	2	01%
% Row	50	0	0	50		
% Column	05	0	0	06		
Sand-Tempered Plain						
Number	16	8	83	0	107	41%
% Row	15	7	78	0		
% Column	73	89	39	0		
?Woodstock Comp. Stp.						
Number	0	0	2	0	2	01%
% Row	0	0	100	0		
% Column	0	0	01	0		
Woodstock Lined Diamond						
Number	4	1	9	0	14	05%
% Row	29	07	64	0		
% Column	18	11	04	0		
TOTALS						
Number	22	9	212	18	261	100.5%
% Row	08	03	81	07		

Note: Unidentified sherds (tiny or eroded) are excluded from percentage calculations.

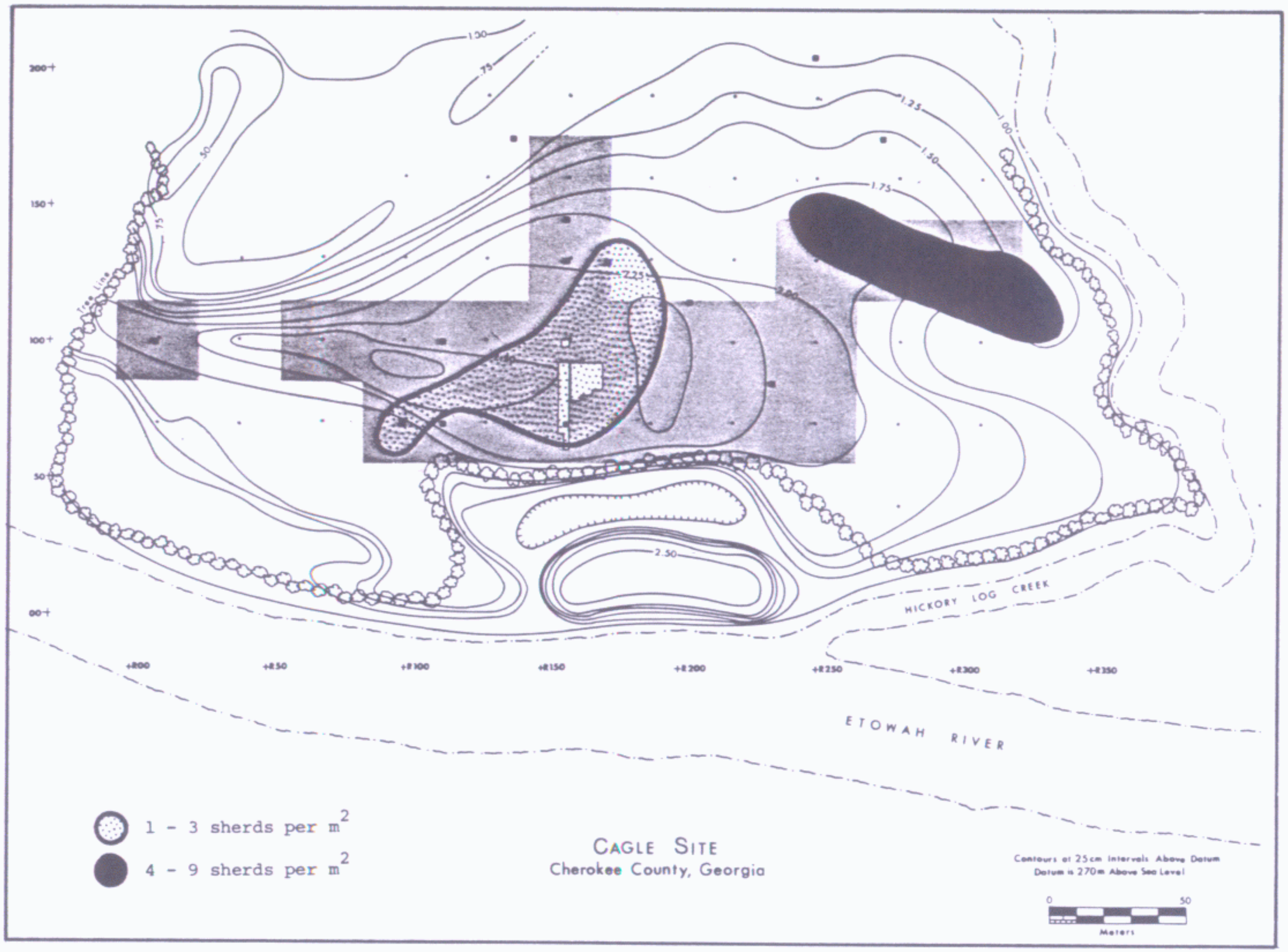


Figure 5
Density Distribution of Dunlap Fabric Marked Pottery

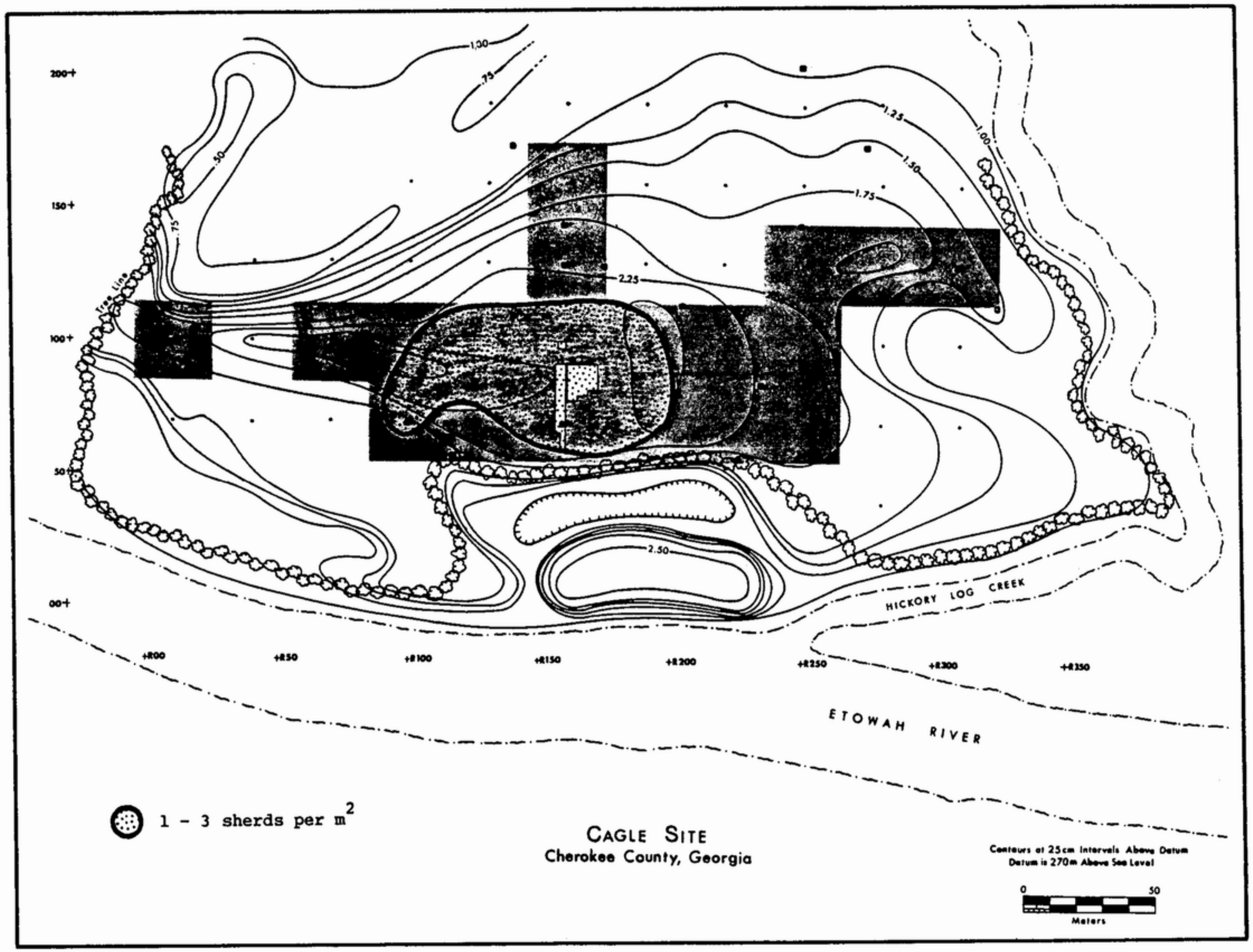


Figure 6
Density Distribution of Mossy Oak Simple Stamped Pottery

shifting eastward from the Dunlap and Mossy Oak patterns and extending off the levee north into a lower back-water area (Figure 7). Plain pottery has the widest distribution, extending from the levee to Hickory Log Creek (Figure 8). The sparse zone of plain pottery overlaps the dense Dunlap zone and, although less clearly, the sparse Dunlap and Mossy Oak zones. The dense plain pottery zone appears to correspond rather well with the sparse Woodstock zone.

The pottery density distributions indicate that four cultural occupations were associated with Stratum D at the Cagle Site. A pure Kellog Phase (see Caldwell 1958:23-27) occupation area denoted by Dunlap Fabric Marked and plain pottery was present along a rise adjacent to Hickory Log Creek. A sparse Kellog Phase area was located on top of the levee. A sparse Mossy Oak Phase area (see Caldwell 1958:48) overlaps the sparse Kellog Phase area. The fourth occupation appears to have been associated with the Woodstock Phase (Caldwell 1958:48) and was denoted by Woodstock Complicated Stamped and plain pottery.

Lithic artifacts encountered in Stratum D consisted of 21 quartz flakes, 16 chert flakes, 2 soapstone vessel fragments, 1 small hammerstone, 4 quartz preforms, 5 quartz projectile points, and 2 chert projectile points. Those occurring in the dense Kellog Phase zone were 5 unfinished indented base triangular quartz points, 2 triangular quartz preforms (measuring in mm: L37xW17 and L47xW24), and 2 ovoid quartz preforms (L36xW22 and L42xW29), along with 5 quartz flakes and 1 chert flake. Three of the projectile points (L28xW23, L30xW14, and L?xW32) appear to be quartz forms of the Camp Creek type (Plate 6a,b,c), and two (L36xW22 and L23xW15) are perhaps quartz forms of the Nolichucky type (Plate 6d,e) (see Lewis and Kneberg 1956).

Lithic artifacts encountered within the overlapping sparse Mossy Oak and Kellog portion of the site consisted of 2 ovoid quartz preforms (L39xW27 and L39xW21). A single chert flake also was recovered from test pit 130R175, an area associated only with sparse Kellog Phase material. In test pit 100R115, where there was only Mossy Oak Phase material, lithic artifacts were more frequent, consisting of 6 quartz flakes, 3 chert flakes, and 1 soapstone vessel fragment. Feature 102, a small pit with sloping sides and a rounded bottom, was encountered at the base of Stratum D in this test pit. The feature was roughly circular, measuring 60 cm in diameter and 45 cm deep. The red and brown mottled sandy clay fill contained tiny charred-wood fragments along with 28 kg of cortical quartz shatter (ranging in size from 10 mm to 135 mm), .5 kg of non-cortical quartz shatter (5 mm to 70 mm), 8 quartz chips (10 mm to 40 mm), 2 chert chips (5 mm to 20 mm), and 2 small hammerstones.

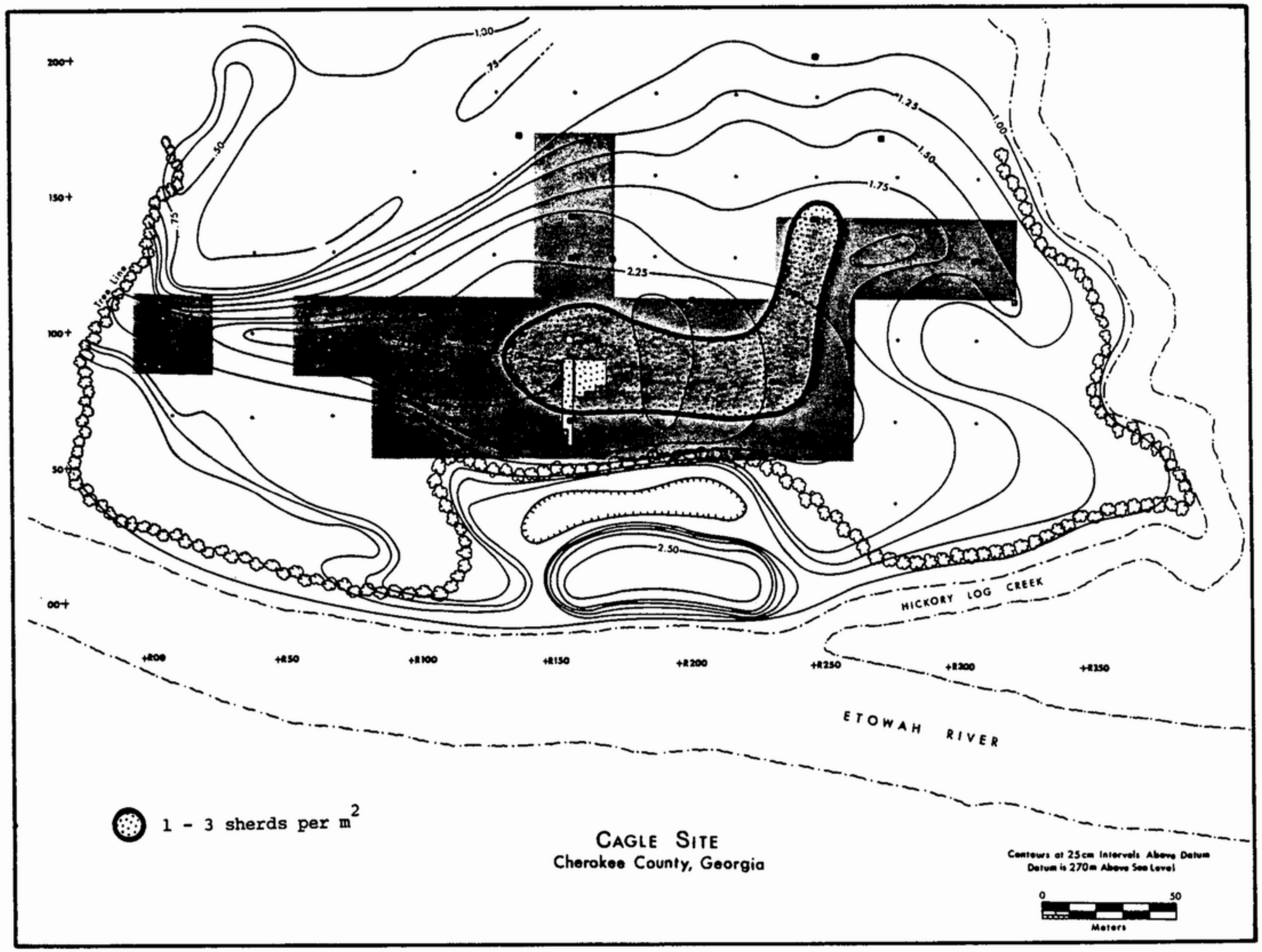


Figure 7
Density Distribution of Woodstock Complicated Stamped Pottery

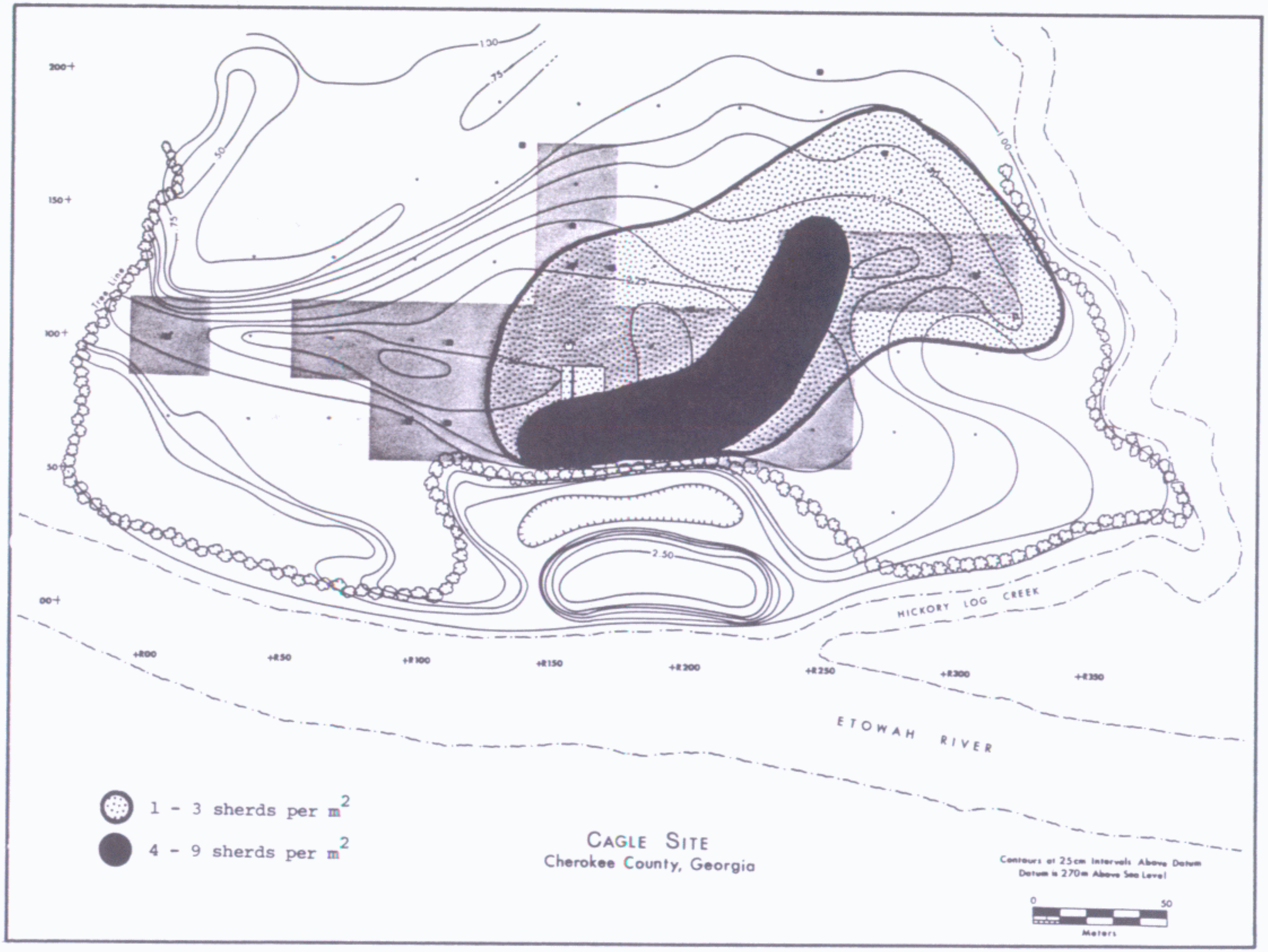


Figure 8
Density Distribution of Sand-Tempered Plain Pottery

Test pits 130R160 and 115R205, where Stratum D was associated exclusively with plain pottery, contained the basal portion of a Greenville type chert point (L?xW22) (Plate 6f) and a Nolichucky type chert point (L30xW14) (Plate 6g), along with 9 chert flakes, 1 quartz flake, and a soapstone vessel fragment.

Lithics from exclusive portions of the Woodstock Phase area were limited, consisting of a single chert flake.

Test pit 70R115, which lacked associated pottery, contained 1 ovoid quartz preform (L68xW38), 1 unfinished Savannah River Stemmed (see Coe 1964:44) quartz point (L50xW40) (Plate 6h), 9 quartz flakes, 2 chert flakes, and a single small hammerstone. A poorly defined basin-shaped pit (Feature 101), measuring ca. 65 cm in diameter and 30 cm deep, originated at the base of Stratum D in this test pit. The fill of the feature was brown and grey mottled sandy clay containing tiny charred-wood fragments. The pit held .9 kg of cortical quartz shatter (15 mm to 110 mm), .05 kg of non-cortical quartz shatter (15 mm to 50 mm), and 1 chert flake.

In summary, four occupation areas are evidenced within Stratum D at the Cagle Site. Two zones are associated with the Kellog Phase: 1) a dense zone containing Dunlap Fabric Marked and plain pottery, indented base triangular quartz projectile points, quartz preforms, quartz flakes, and a single chert flake; 2) a sparse zone containing, in exclusive areas, Dunlap Fabric Marked and plain pottery, along with a single chert flake. Another zone associated with the Mossy Oak Phase overlaps the sparse Kellog Phase zone. In exclusive areas it contains Mossy Oak Simple Stamped and plain pottery, along with quartz flakes, chert flakes, and a soapstone vessel fragment. The Woodstock Phase zone contained Woodstock Nested Diamond and Rectlinear Complicated Stamped pottery, plain pottery, and a single chert flake.

Features 101 and 102 were encountered at the base of Stratum D in adjacent test pits 70R115 and 70R100. These small quartz-shatter filled pits probably are the remains of facilities used in manufacturing stone tools. Several more features of this type were encountered during subsequent excavation in the lithic workshop area and will be discussed in more detail later.

Stratum H at the Cagle Site was defined by a layer of brown sandy clay extending from 20 cm to 50 cm beneath the base of Stratum D. Cultural material was present but rare within this stratum. Of the 18 identifiable potsherds recovered from the stratum, 17 were Dunlap Fabric Marked and 1 was Cartersville Check Stamped (Table 1). Lithic artifacts consisted of 36 quartz flakes, 2 chert flakes, and the basal portion of a Camp Creek type quartz projectile point (L?xW23) (Plate 6i). The material represented in Stratum H appears to be artifacts intrusive

from the overlying Stratum D and peripheral remains associated with Stratum J.

Stratum J was defined by isolated cultural middens located within Stratum H. One occurrence of this midden was evidenced in random test pit 115R205 and another was revealed in non-random test pit 100R160, to be discussed later. The midden within 115R205 was denoted by a 20-cm thick layer of reddish brown sandy clay containing occasional quartz cobbles. The stratum originated 60 cm below the present surface and was barely distinguishable from the brown sandy clay of Stratum H that extended 10 cm above it and the light brown sandy clay of Stratum K that extended 35 cm beneath it. Root disturbance was obvious in the upper portion of the midden. Cultural material within Stratum J consisted of 3 unfinished Savannah River Stemmed quartz projectile points with excurvate or rudimentary bases (L45xW32, L51xW28, and L71xW25) (Plate 6j,k,l), 1 unfinished triangular chert point (L35xW15) (Plate 6m), 14 quartz flakes, and 5 chert flakes. Root disturbances in the upper portion of the midden make the associations uncertain. However, the quartz artifacts may well be actually associated with the midden.

Stratum I was the basal excavation zone at the Cagle Site. It was defined by a zone of brown sandy clay originating at the base of Stratum H and extending to an unknown depth. No cultural material was encountered within this stratum during excavation of the random test pits.

Stratum K was defined by isolated middens within Stratum I. One occurrence of this midden was detected in random test pit 115R205 and another in non-random test pit 100R160, to be discussed later. The midden in 115R205 was denoted by light brown sandy clay containing occasional quartz cobbles. It originated 80 cm beneath the present surface at the base of Stratum J and terminated 115 cm below the present surface at the local upper surface of Stratum I. Based upon subsurface profiles from adjacent areas, the midden actually appears to have been formed within the top of Stratum I. Artifacts within the midden consisted of 10 quartz flakes, 1 quartz preform (L57xW47), the basal portion of an unfinished quartz projectile point with a broad stem and rounded base (L?xW26) (Plate 6n) resembling the Morrow Mountain II Stemmed type (Coe 1964:37, 39), and 2 triangular quartz points with a rounded bases (L42xW26 and L36xW24) (Plate 6o,p) closely resembling the Morrow Mountain Rounded Base type (Cambron and Hulse 1975:90).

In summary, the random test pit excavation at the Cagle Site documented the presence of three stratigraphically distinctive cultural middens. The earliest midden, Stratum K, was limited and had a discontinuous distribution. This midden was associated with Middle Archaic Period lithic forms. Another, more

recent, isolated midden was defined as Stratum J. This midden was associated with Late Archaic Period Savannah River projectile points. The upper-most and most recent midden at the site, Stratum D, was associated with occupations of the Savannah River Archaic, Kellog, Mossy Oak, and Woodstock Phases. The final occupation at the Cagle Site appears to have been associated with the Wilbanks Period, as indicated by a single feature that originated at the base of the plow zone.

This section has outlined and summarized cultural materials within each of the several strata represented in the random test pits. Faunal and floral remains are obviously missing from the inventory of associated materials. Faunal remains were absent from the excavated contexts, presumably because they had been destroyed by acidic soils at the site. Botanical remains were present in each of the strata and samples of these were recovered by fine-screening portions of each excavation level. These remain unanalyzed. A cursory inspection of the samples by the author shows that fragments of carbonized wood, hickory nut shell, acorn husks, and walnut shell are among the remains.

Stratigraphic Test Pit 100R160

As previously outlined, a single non-random 3-m x 3-m test pit was excavated on the levee near the center of the Cagle Site in an attempt to detect and document possible deeply buried cultural remains. This excavation was carried out concurrently with excavation of the random test pits. Each of the three primary middens identified in the random test pits also was encountered in 100R160 (Figure 9; Plate 2). A more comprehensive examination, including floral and geological analysis, of the associations of each strata in 100R160 was conducted than was possible for the random test pits.

The overburden/plow zone (Stratum A) in test pit 100R160 was sifted through 1/4" x 3/4" mesh screen. Recovered pottery consisted of 24 unidentifiable small eroded sherds, along with 16 plain, 4 Woodstock Lined Diamond Stamped, 1 Carterville Check Stamped, and 1 Dunlap Fabric Marked sherds. Lithic artifacts were 24 chert flakes and 1 quartz flake. Fine-screened samples from this zone were not submitted for analysis because of the possibility of modern contamination.

Midden #1 (Stratum D) contained 6 unidentifiable small eroded sherds, 3 Mossy Oak Simple Stamped sherds, a soapstone vessel fragment, an unidentifiable chert projectile point fragment, 3 chert flakes, and 3 quartz flakes. Floral remains identified in the 20-liter fine-screened sample from Midden #1 consisted of 2 acorn hull fragments, 0.7 gm of hickory nut shell fragments, 0.5

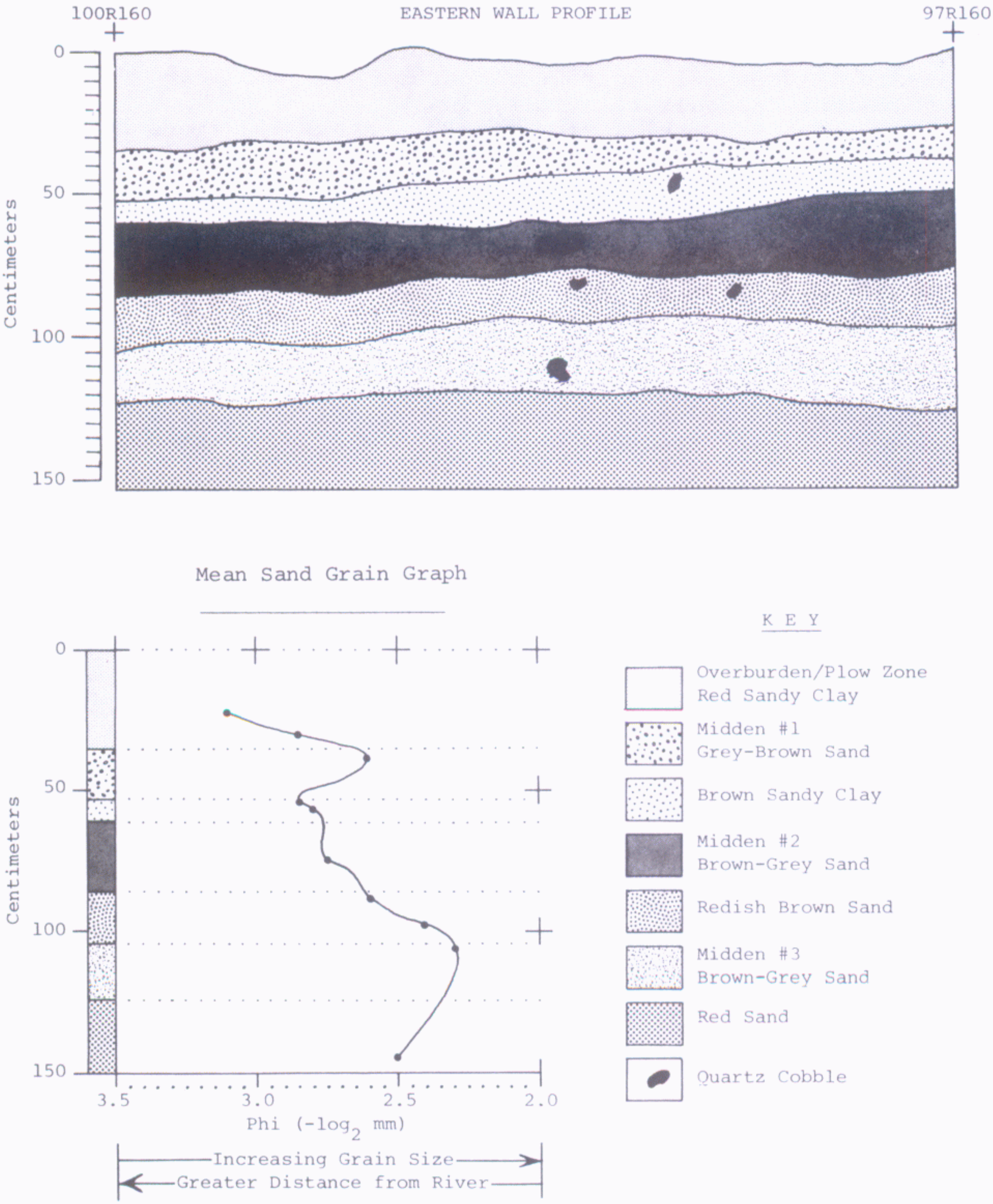


Figure 9
Profile of 100R160 and Associated Grain-Size Distributions

gm of walnut shell fragments, and 0.25 gm of carbonized wood fragments. The brown sandy clay soil (Stratum H) beneath Midden #1 contained occasional unmodified quartz cobbles but was culturally sterile.

Artifacts within Midden #2 (Stratum J) were rare and restricted to the base of the zone. The material consisted of 2 quartz preforms with rudimentary stems (L?xW40 and L52xW28) (Plate 7a,b), an unfinished quartz Savannah River Stemmed point with a straight base (L50xW33) (Plate 7c), and 2 quartz flakes. No identifiable floral remains were recovered from this zone. The reddish brown sand (Stratum I) beneath Midden #2 contained occasional unmodified quartz cobbles within its upper portion, along with 3 quartz flakes. No identifiable floral remains were recovered.

Midden #3 (Stratum K) contained 1 partial quartz preform with a rounded base (L?xW35) (Plate 7d), 1 quartz Savannah River Stemmed point with an unfinished base (L62xW39) (Plate 7e), 1 unfinished quartz stemmed point with a rounded base (L65xW39) (Plate 7f) resembling the Morrow Mountain II Stemmed type, 1 quartz cobble hammerstone, and 10 quartz flakes. A fine-screened sample recovered from 60 liters of the matrix was submitted for floral analysis. Fragments identified in this sample consisted of 1.6 gm of hickory nut shell and 0.35 gm of walnut shell. Miscellaneous carbonized-wood fragments (2.15 gm) were of pine and hardwoods. The red sand (Stratum I) beneath Midden #3 contained a single chert chip. Floral fragments identified from a 20-liter matrix sample were 0.3 gm of hickory nut shell, 0.25 gm of walnut shell, 0.85 gm of carbonized pine and hardwood, and an indeterminate seed from a gall or other aggregrate fruit.

A graphic presentation of the results of a grain-size analysis of soil samples from each of the strata in 100R160 is shown in Figure 9. Samples were sieved at .5 phi intervals to determine mean grain sizes. The various sample points and their associated average grain sizes are shown. The increasing and decreasing average grain sizes are interpreted as reflecting the changing distances over time of this location from the Etowah River. These shifts in distance must be viewed as approximate and relative rather than absolute. Many factors would influence deposition of sands and silts during flooding, including water current speed and the nature of the flow in Hickory Log Creek. All other things remaining equal, however, large sand grains would be deposited closer and small grains further away during flooding.

The grain-size analysis indicates an erratic trend of the River gradually moving further away from the levee. Samples from the overburden indicate the greatest distance from the river was reached in relatively recent times. Midden #1 was relatively closer to the river and its formation was preceded by a time when the river was further

away. Midden #2 marks the end of a gradual trend of increasing distance from the river that appears to have begun during the formation of Midden #3, when the river was nearest to this point on the levee. Prior to Midden #3, the river once more was further away.

In summary, the stratigraphic sequence observed in test pit 100R160 reflects generally the same associations represented in the random test pits excavated in other areas of the Cagle Site. Middle to Late Archaic Period cultural material is associated with Midden #3, Late Archaic Period artifacts are associated with Midden #2, and Late Archaic to Early Woodland Period cultural materials are associated with Midden #1. Each of the middens contains unfinished projectile points or preforms, indicating that the manufacture of stone tools was a recurrent activity during the various occupations at the site.

Discussion

Data from both 100R160 and the random test pits indicate that quartz was the primary material used for manufacturing projectile points during each of the occupations. It also appears that chert began to be used during the Early Woodland Period. However, as will be seen in the Phase II results, chert was used during earlier periods at the lithic workshop. Quartz was the only raw material used during the Middle to Late Archaic Period occupations represented in Stratum K and Midden #3. With a few possible exceptions, quartz also was exclusively used during the Late Archaic Period occupations represented in Midden #2 and Stratum J. The exceptions may be localized intrusions from upper strata. Chert and quartz projectile points and debitage are associated with the Early Woodland components at the site represented in Midden #1 and Stratum D, with chert being the most frequent in test pits exclusively associated with Mossy Oak and plain pottery.

The occurrence of soapstone vessel fragments and the occurrence of chert appears to be related. Soapstone is absent in Archaic Period Strata J and K, but is present in small amounts in areas associated with Mossy Oak and plain pottery.

Identified floral remains from 100R160 indicate that subsistence resources included hickory nuts and walnuts during the Middle to Late Archaic Periods, and that acorns were utilized in addition to these during the Late Archaic-Early Woodland Period. Identified floral remains were absent from the Late Archaic Period midden.

Rare artifacts and floral remains in some levels between the primary cultural middens suggests that occupation at the Cagle Site began before the formation of Midden #3 and continued between the occupations of Midden

#2 and Midden #1. These poorly evidenced occupations were apparently brief and sporadic.

The formation of Midden #2 (Stratum J) and Midden #3 (Stratum K) appears to have been the result of isolated intensive or repeated occupations within strata otherwise associated with transient occupations. That the two known occurrences of these two middens are located at the same two points (100R160 and 115R205) suggests that certain favored occupation areas on the levee persisted over time.

PHASE II INVESTIGATIONS

Introduction

The second phase of field work at the Cagle Site focused on intensive investigation of an area initially detected in test pit 70R160 of the random-testing phase. Within this test pit, two stratigraphically distinctive zones were encountered that contained dense quartz cobbles, quartz and chert debitage, and an array of unfinished projectile points. This proved to be a small part of an area situated along relic river banks that were locations of intensive lithic manufacturing activities during the Late Archaic and Late Archaic- Early Woodland Periods.

As outlined earlier, the lithic workshop area was investigated by excavating a series of contiguous 2-m x 2-m squares forming a trench measuring 4 m east to west and extending 32 m north to south. The southern portion of the trench, from grid north 66 to grid north 72 exposed the area defined by relic river banks. This portion of the trench was designated Zone 1. The southern section of the trench was extended 6 m further south with a backhoe to expose additional stratigraphic details. The northern portion of the trench, extending from grid north 72 to grid north 92, exposed the relatively level old ground surfaces of the natural levee above the old river banks. This portion of the trench was designated Zone 2.

The natural and cultural soil horizons encountered in the excavation trench are shown in Figure 10. Stratum A, the overburden/plow zone, was composed of sandy clay as elsewhere at the Cagle Site. The remaining strata, however, had noticeably greater sand content than was common in tested locations further back from the river.

Strata D and H were the distinctive cultural middens represented in the excavation trench (Plate 3). Stratum D was the late Archaic-Early Woodland Period midden encountered with great frequency at previously tested locations at the site. Stratum D was fairly uniform in Zone 2, where it averaged 20 cm in thickness. In Zone 1, the midden thinned to an average thickness of about 10 cm and was more variable. Stratum H corresponded in stratigraphic position to the nearly sterile brown sandy clay horizon found elsewhere beneath Stratum D. Along the river bank, however, Stratum H was defined by dense cultural midden (Plate 4). This deposit appears to have been an intensive manifestation of Stratum J, the isolated Late Archaic midden found at spots along the levee within Stratum H. Stratum H in the trench excavation averaged about 35 cm thick in Zone 1 and was more variable in Zone 2, where it ranged from 20 cm to 40 cm in thickness.

Stratum K, the isolated Middle to Late Archaic Period midden found elsewhere on the levee, was absent from the

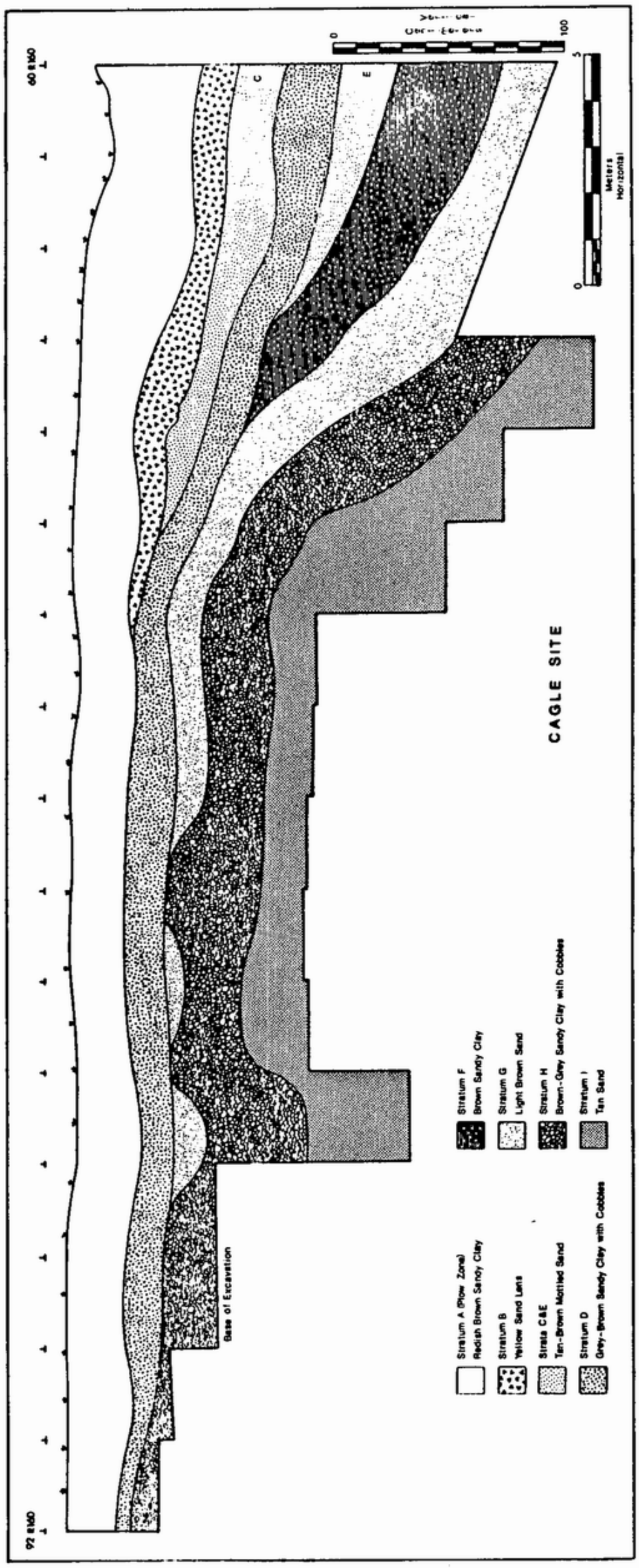


Figure 10
North-South Profile of Lithic Workshop Excavation Trench

trench excavation. However, infrequent remains that appear to be related to this cultural midden were encountered within Stratum I.

The remaining strata represented in the trench excavation were alluvial deposits showing successively decreasing slopes in the old river bank area. Three of these (Strata E,F,G) separate Stratum D from Stratum H, indicating that the Etowah River was rather quickly moving to the south during this time. Two alluvial deposits (Strata B,C) were formed above Stratum D, indicating that southward movement of the river continued after this midden was formed.

Although summarized earlier, the methods used in the trench excavation need to be described in greater detail to avoid confusion and to aid in interpreting the quantified analysis results. The east and west sides of the trench were excavated to varying depths. Also, it will be recalled that the east-side units were excavated in 20-cm levels and screened through 1/4" x 3/4" mesh, while the west-side units were excavated in 10-cm levels and screened through 1/4" mesh. As usual, 20 liters from each excavation unit was rescreened through 1/16" mesh to recover associated botanical samples. The final excavation depths of the east-side units are shown in Figure 10. The west-side units were excavated to the base of Stratum D between grid north 76 and grid north 92, and to the same depth as the eastern units between grid north 68 and grid north 76.

Thus a larger area of Stratum D was excavated than of Stratum H, and the relative percentages of Zone 1 and Zone 2 recovered from each stratum was different. A total of 20 cubic meters of Stratum D was excavated. Of this amount, 31% came from Zone 1 and 69% from Zone 2. A total of 19.2 cubic meters of Stratum H was excavated. Of this amount, 20% came from Zone 1 and 80% from Zone 2. Accounting for the two screen sizes used, 52% of Stratum D and 63% of Stratum H was sifted through 1/4" x 3/4" mesh.

Analysis of the lithic materials from Strata D and H focused on sorting and quantifying debitage and unfinished projectile points. After cataloging the artifacts, this task was approached by developing a classification system that appeared to distinguish the major morphological characteristics represented in the lithic assemblage.

Any classification system is artificial to the extent that it breaks a continuum into segments determined by the need to solve particular problems. In the present case, the need for answers to three basic problems guided the isolation of the characteristics used for classification: 1) What were the steps involved in making the projectile points? 2) What raw materials were utilized? 3) How do the represented forms relate to currently used projectile point typologies?

Debitage was sorted by raw material, form, and size. The debitage forms consisted of flakes and chips. Flakes were defined by a bulb of percussion and chips were defined by the same shape without a bulb of percussion. The maximum dimension of individual flakes and chips were sorted into size classes at 5 mm intervals.

Quartz cobbles and shatter associated with the smaller debitage was recovered en mass only from the western side of the trench excavation. This material was sorted into whole, cortical shatter, and non-cortical shatter groups. Each shatter group was divided into large [> 20 mm] and small [< 20 mm] classes, and the total weight of each class per excavation level was recorded in grams or kilograms. The frequency of whole cobbles was recorded per excavation level.

Unfinished projectile points were sorted into four preform classes reflective of successive manufacturing stages. Large and small examples from the trench excavation that are representative of each class are shown in Figure 11. Class 'a' is defined by preform blanks consisting of large unifacial flakes (Plate 8). Class 'b' is defined by preform blanks shaped and reduced by initial primary bifacial flaking (Plate 9). Class 'c' is defined by bifacial preforms exhibiting extensive primary flaking scars, infrequent secondary flaking scars, and initial preparation of a base. Class 'd' is the final preform stage defined by extensive secondary flaking scars around the edges and base. Preforms within each class also were sorted by raw material into groups of quartz, chert, and rhyolite. Quartz was usually the coarse granular variety and chert was usually dark grey to black in color. Milky quartz, clear quartz, and variegated chert occurred rarely. The forms represented in manufacturing classes 'a' and 'b' were divided into groups characterized by ovate, ovate-triangular, and triangular shapes. Those represented in classes 'c' and 'd' were divided into groups exhibiting rounded, incurvate, or stemmed (straight, rounded, excurvate, or incurvate) bases. The cross-section form along the length of each preform was categorized as either plano-convex, asymmetrical biconvex, or biconvex. Finally, when extant, the maximum length, width, and thickness of each preform was measured in millimeters.

Investigation Results

This presentation of the Phase II results is divided for convenience into three parts. First, the artifacts and floral remains encountered within each stratum represented in the trench excavation will be discussed. Second, a detailed discussion of the preform classes, debitage, and features associated with Stratum D within the trench excavation and the mechanically stripped area will be

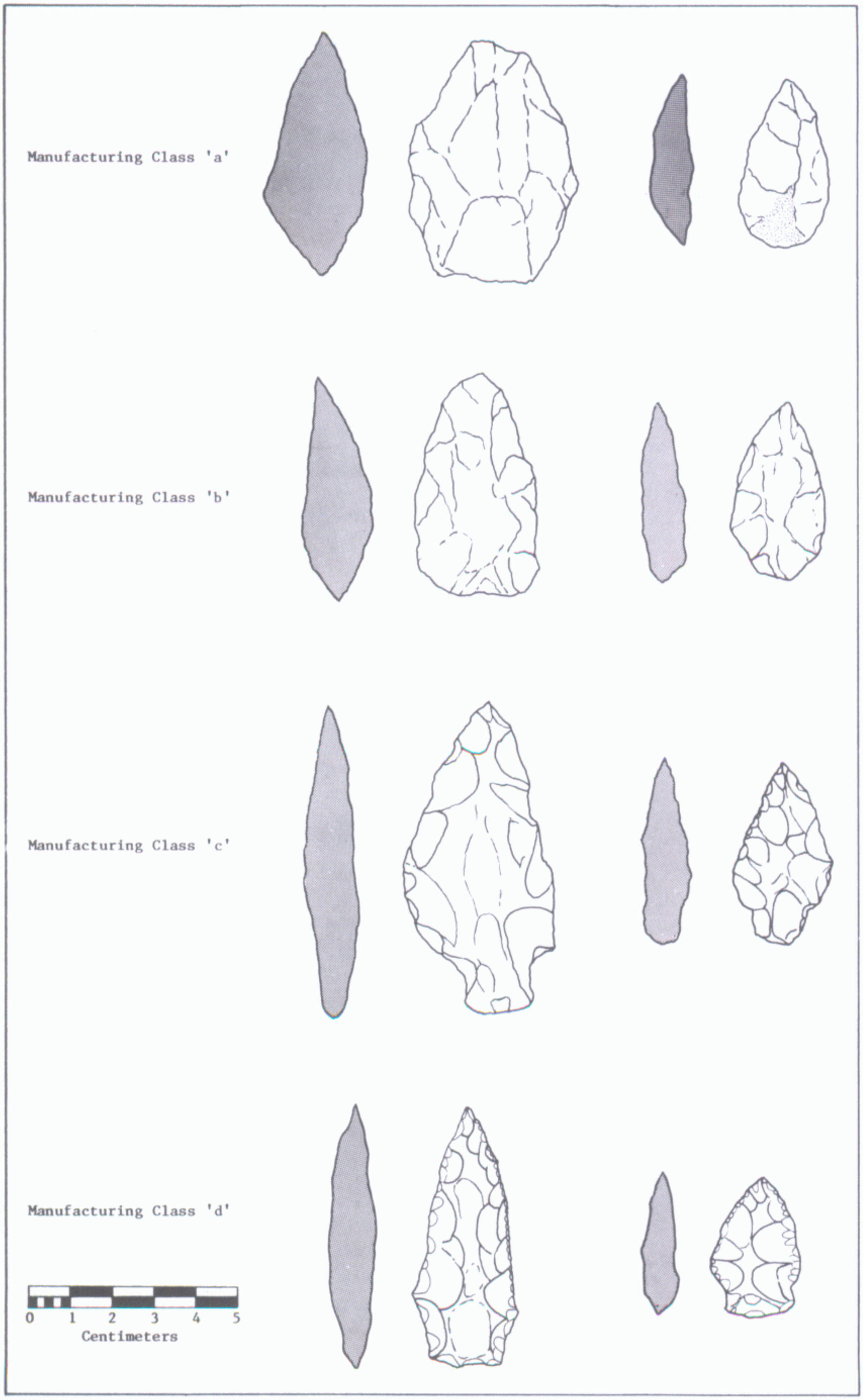


Figure 11
Manufacturing Classes of Lithic Reduction

presented. Third, a detailed discussion of the preform classes, debitage, and features associated with Stratum H will be presented.

As elsewhere at the Cagle Site, Stratum A in the excavation trench contained infrequent cultural material. Pottery within the stratum included small amounts of Stallings Island Plain, Dunlap Fabric Marked, sand-tempered plain, Woodstock Lined Diamond Stamped, and perhaps Etowah Complicated Stamped sherds (Table 2). The Late Archaic Period Stallings Island pottery was found only in this plow zone/overburden context at the Cagle Site.

Lithic artifacts recovered from Stratum A consisted of 3 small unfinished Savannah River Stemmed chert projectile points, the basal fragments of a side-notched chert point, a small cobble hammerstone, a crude chipped stone hoe or axe (Plate 13), and a fully grooved stone axe (Plate 14). Lithic manufacturing debris within the stratum consisted of quartz and chert flakes and chips, a class 'b' chert preform, a class 'a' quartz preform, and a chert core fragment. No botanical samples were analyzed from this disturbed stratum.

The alluvial deposits denoted by Strata B and C also contained infrequent cultural remains. Small amounts of Cartersville Check Stamped and sand-tempered plain pottery were recovered from both strata (Table 2). Occasional quartz chips and shatter also were present. Botanical material recovered in one fine-screened sample from Stratum B was analyzed. The sample contained .05 gm of hickory nut shell and .3 gm of charred hardwood fragments (Table 3).

Stratum D was a cultural midden containing cobbles and shatter, pottery, unfinished projectile points and other lithic artifacts, debitage, and plant remains. A 9-gm sample of charred wood fragments removed from the middle of the midden returned a C-14 age of 2550 +/- 60 B.P. (Beta #4352), indicating the stratum was occupied around 600 B.C.

A majority (62%) of the potsherds from Stratum D are sand-tempered plain. Early Woodland Period pottery types (Dunlap, Mossy Oak, Cartersville) account for 18% and Early Mississippi Period types (Woodstock) account for 19% of the identified pottery (Table 2).

Unfinished projectile points were frequent within Stratum D. Of concern here are those classified in manufacturing classes 'c' and 'd'. These define projectile points approaching final completion and are, therefore, the most diagnostic for relating the forms to current typologies in the area. Of the 51 unfinished points encountered in the trench excavation and in the mechanically stripped area, 98% were Savannah River Stemmed forms exhibiting incurvate (Plate 10b,c,d), excurvate (Plate 10e), or straight bases (Plate 11a). Excurvate bases were more common among class 'c' points, suggesting that some may represent an earlier stage in a manufacturing

Table 2
Pottery Associated with Strata Encountered in the Trench Excavation at the Lithic Workshop

POTTERY TYPE	ASSOCIATED STRATUM A	B	C	D	G	H	#	C1%
Unidentified								
Number	2	0	0	54	0	0	56	na
Stallings Island Plain								
Number	2	0	0	0	0	0	2	.5%
% Row	100	0	0	0	0	0		
% Column	07	0	0	0	0	0		
Dunlap Fabric Marked								
Number	1	0	0	20	13	1	35	15%
% Row	03	0	0	57	37	03		
% Column	03	0	0	12	50	100		
Mossy Oak Simple Stp.								
Number	4	0	0	6	1	0	11	05%
% Row	36	0	0	55	09	0		
% Column	14	0	0	03	04	0		
Cartersville Check Stp.								
Number	0	1	1	5	0	0	7	03%
% Row	0	14	14	71	0	0		
% Column	0	50	17	03	0	0		
Sand-Tempered Plain								
Number	19	1	5	107	11	0	143	61%
% Row	13	01	03	75	08	0		
% Column	66	50	83	62	42	0		
?Napier Complicated Stp.								
Number	0	0	0	1	0	0	1	.5%
% Row	0	0	0	100	0	0		
% Column	0	0	0	01	0	0		
Woodstock Incised								
Number	0	0	0	10	1	0	11	05%
% Row	0	0	0	91	09	0		
% Column	0	0	0	06	04	0		
?Woodstock Comp. Stp.								
Number	0	0	0	4	0	0	4	02%
% Row	0	0	0	100	0	0		
% Column	0	0	0	02	0	0		
Woodstock Lined Diamond								
Number	2	0	0	19	0	0	21	09%
% Row	10	0	0	90	0	0		
% Column	07	0	0	11	0	0		
?Etowah Comp. Stp.								
Number	1	0	0	0	0	0	1	.5%
% Row	100	0	0	0	0	0		
% Column	03	0	0	0	0	0		
TOTALS								
Number	29	2	6	172	26	1	236	101.5%
% Row	12	01	03	73	11	.5		

Note: Unidentified sherds (tiny or eroded) are excluded from percentage calculations.

Table 3
Identified Botanical Remains from Strata Encountered
in the Trench Excavation at the Lithic Workshop

CONTEXT	Sample Volume	Hickory Nuts /gm	Hickory Nuts mg/liter	Walnuts gm	Walnuts mg/l	Acorn #	cf. Persimmon #	Wood Fragments gm	Wood Fragments mg/l
Stratum B	20 l	.85	3	0	0	0	0	.30	15
Stratum D	280 l	6.35	23	.15	1	4	0	17.20	61
Stratum G	80 l	.35	4	0	0	0	0	1.70	21
Stratum H	520 l	20.15	39	.70	1	5	2	46.15	89
Stratum I	300 l	5.80	19	0	0	0	0	8.70	29

process leading to straight and incurvate bases. Considering raw materials, 52% of the stemmed points were made of chert, 46% of quartz, and 4% of rhyolite. The single triangular chert point with a rounded base from Stratum D exhibited only slight working of the basal area and is typologically indistinctive(Table 4).

Stone tools other than preforms were present in Stratum D. These consisted of 5 small cobble hammerstones, 3 nutting stones, 11 small fragments from soapstone vessels, and a crudely chipped stone hoe or axe fragment. Lithic manufacturing debris within the stratum consisted of numerous quartz and chert flakes and chips, 3 quartz biface fragments, 3 chert core fragments, and 15 small chips of soapstone. Quartz cobbles and shatter were common throughout the midden.

Samples resulting from fine-screening 280 liters of Stratum D were submitted for botanical analysis. Charred wood fragments, including specimens from pine and ring-porous hardwood, were the most common identified botanical material. These fragments occurred at a rate of 61 mg per liter of sampled midden. Hickory-nut shell fragments occurred at a rate of 23 mg per liter, while acorn and walnut shell fragments occurred more sporadically (Table 3).

Strata E and F were defined primarily within the mechanically excavated southern extension of the Phase II trench. No cultural remains were encountered in either stratum.

Stratum G consisted of a light brown sandy horizon of variable thickness located beneath Stratum D in most areas of the trench excavation. Of the small amount of pottery present, Dunlap Fabric Marked and sand-tempered plain sherds were most common (Table 2).

Diagnostic lithic artifacts also were rare, consisting predominately of unfinished quartz Savannah River Stemmed projectile points with straight or excurvate bases, along with one side-notched chert point (Plate 12a) (Table 4). A broken 2-hole greenstone gorget (Plate 14) was recovered in situ within the stratum. Other lithic tools were a quartz bifacial flake knife or scraper and a small cobble hammerstone. Manufacturing debris consisted of occasional quartz and chert flakes and chips, 3 class 'a' quartz preforms, a chert core fragment, and a quartz biface fragment. Quartz cobbles and shatter were infrequent within the stratum.

Botanical remains identified from Stratum G consisted of a small amount of hickory nut shell and charred wood fragments (Table 3).

Stratum H was a second dense cultural midden containing unfinished projectile points, other stone tools, debitage, and plant remains. A single Dunlap Fabric Marked sherd, apparently an intrusion from above , was recovered

Table 4
Unfinished Projectile Point Forms Associated with
Strata in the Trench Excavation at the Lithic Workshop

ASSOCIATED STRATUM AND MANUFACTURING CLASS	PROJECTILE POINT FORM												Total #	Percent per Stratum
	RB #	RB Row%	TI #	TI Row%	SS #	SS Row%	SR #	SR Row%	SE #	SE Row%	SI #	SI Row%		
STRATUM D	1	02%	0		17	33%	0		17	33%	16	31%	51	100%
Class 'c'	1	03%	0		12	32%	0		14	38%	10	27%	37	73%
Quartz	0		0		5		0		3		5		13	25%
Chert	1		0		7		0		11		3		22	43%
Rhyolite	0		0		0		0		0		2		2	04%
Class 'd'	0		0		5	36%	0		3	21%	6	43%	14	27%
Quartz	0		0		4		0		3		3		10	20%
Chert	0		0		1		0		0		3		4	08%
STRATUM G	0		0		3	50%	0		3	50%	0		6	100%
Class 'c'	0		0		3	60%	0		2	40%	0		5	83%
Quartz	0		0		2		0		2		0		4	67%
Chert	0		0		1		0		0		0		1	17%
*Class 'd'	0		0		0		0		1	100%	0		1	17%
Quartz	0		0		0		0		1		0		1	17%
STRATUM H	8	14%	2	03%	16	28%	4	07%	21	36%	7	12%	58	100%
Class 'c'	8	24%	0		11	32%	1	03%	10	29%	4	12%	34	59%
Quartz	7		0		9		1		6		2		25	43%
Chert	1		0		2		0		4		2		9	16%
Class 'd'	0		2	08%	5	21%	3	13%	11	46%	3	13%	24	41%
Quartz	0		2		4		3		6		3		18	31%
Chert	0		0		1		0		5		0		6	10%
STRATUM I	2	50%	0		1	25%	0		1	25%	0		4	100%
Class 'c'	2	50%	0		1	25%	0		1	25%	0		4	100%
Quartz	1		0		1		0		1		0		3	75%
Chert	1		0		0		0		0		0		1	25%

*also one side-notched chert point with excurvate base

Key: RB = Triangular with Rounded Base
TI = Triangular with Incurvate Base
SS = Stemmed with Straight Base
SR = Stemmed with Rounded Base
SE = Stemmed with Excurvate Base
SI = Stemmed with Incurvate Base

from the midden. Charred wood fragments (7 gm) taken in the field from the midden returned a C-14 age of 4430 +/- 90 years B.P. (Beta #4351), indicating that occupation of the midden occurred around 2480 B.C.

Unfinished projectile points within Stratum H were made of quartz (74%) and less often of chert (26%). Savannah River Stemmed points with straight (Plate 11b,c,d) and excurvate (Plate 10f,g) bases account for 64% of the assemblage, while incurvate bases account for another 12%. Morrow Mountain II Stemmed (Plate 11e,f,g) and Rounded Base point types comprised 21% of the assemblage. In addition, one partial and one complete medium-sized triangular quartz point were recovered from the midden. The complete specimen (Plate 12b) was recovered in situ. Points of this specific form and size were encountered only within Stratum H at the Cagle Site. They appear to be similar to the Paint Rock Valley type (Cambron and Hulse 1975:100), a form thought to be associated with Morrow Mountain and Early Archaic Period projectile points in Alabama.

A variety of lithic implements other than unfinished projectile points were present in Stratum H. Small cobble hammerstones were the most common (Plate 15). Sixteen specimens were encountered. Other implements were 3 nutting stones, 2 small chert bifacial flake knives or scrapers, a similar small quartz bifacial knife or scraper, a stemmed chert scraper (Plate 12f), a stemmed chert drill form (Plate 12a), a soapstone vessel fragment, and a soapstone atlatl weight fragment. Lithic manufacturing debris consisted of quartz and chert flakes and chips, a quartz biface fragment, and a chert core. Quartz cobbles and shatter were common.

Samples resulting from fine-screening 520 liters of Stratum H were submitted for botanical analysis. Charred wood fragments, including specimens from pine and ring-porous hardwoods were the most common identified material. The wood fragments occurred at a rate of 89 mg per liter and hickory nut shell fragments at a rate of 39 mg per liter, while acorn and walnut shell fragments occurred sporadically. Two seeds, probably from persimmon, also were identified (Table 3).

Stratum I was the basal soil horizon encountered in the trench excavation. This stratum was defined by tan sand beneath Stratum H. Cultural material was relatively rare and appeared to be restricted to the upper 30 cm of the stratum.

Four unfinished projectile points were encountered. Two were Morrow Mountain Rounded Base type points, one of chert (Plate 12d) and the other of quartz (Plate 12c), and two were Savannah River Stemmed varieties (Table 4). Other implements recovered from the stratum were 6 small cobble hammerstones, a quartz awl (Plate 12e), and a quartz bifacial flake knife or scraper (Plate 12h). Infrequent

manufacturing debris consisted of quartz and more rarely chert flakes and chips. Quartz cobbles and shatter also were rare but present within the stratum.

Botanical samples from fine-screening 300 liters of Stratum I were submitted for analysis. Charred-wood fragments occurred at a rate of 29 mg per liter, while hickory nut shell fragments occurred at a rate of 19 mg per liter within the sampled matrix (Table 3).

The above discussion of the associations of various strata encountered within the trench excavation indicates sequential sporadic and intensive use of the old river bank location over a long period of time. The features and lithic debitage associated with the most intensively used strata (D and H) clearly indicate that lithic manufacturing was an activity central to the occupation of the area during the Late Archaic and Late Archaic-Early Woodland Periods. The distribution and nature of the debitage and features within the strata also indicate that particular tasks were performed at specific locations along the old river bank.

Stratum D Debitage and Features

Diagnostic cultural materials from Stratum D indicate that the midden was primarily formed during the Late Archaic and Early Woodland Periods, probably during the time of transition between the two periods. Less frequent later materials from the Early Mississippi Period also were recovered from Stratum D; however, the absence of distinctive point types suggests that lithic manufacturing was of little importance at this time in the area.

The distribution of features, post holes, and quartz cobble concentrations recognized at the base of Stratum D is shown in Figure 12.

Zone 1, south of grid north 72, exhibited a sheet of quartz shatter along the base of Stratum D. It should be recalled that the thickness of the stratum was quite variable in this area. Within the midden as a whole, cobble shatter was sparse within Zone 1. Large cortical shatter occurred at a rate of .2 kg per cubic meter, small cortical shatter at .01 kg per cubic meter, large non-cortical shatter at .2 kg per cubic meter, and small non-cortical shatter at .01 kg per cubic meter.

Among the shatter here there were two quartz point tips, an unfinished Savannah River Stemmed chert point with excurvate base, 3 chert core fragments, 3 nutting stones, 2 small hammerstones, and a soapstone vessel fragment.

The frequency and sizes of the quartz and chert debitage within Zone 1 are shown in Figure 13. Adjusting for excavated volume, quartz chips and flakes occurred at a rate of 36 per cubic meter and chert debitage at a rate of 21 per cubic meter. Chert flakes and chips were usually

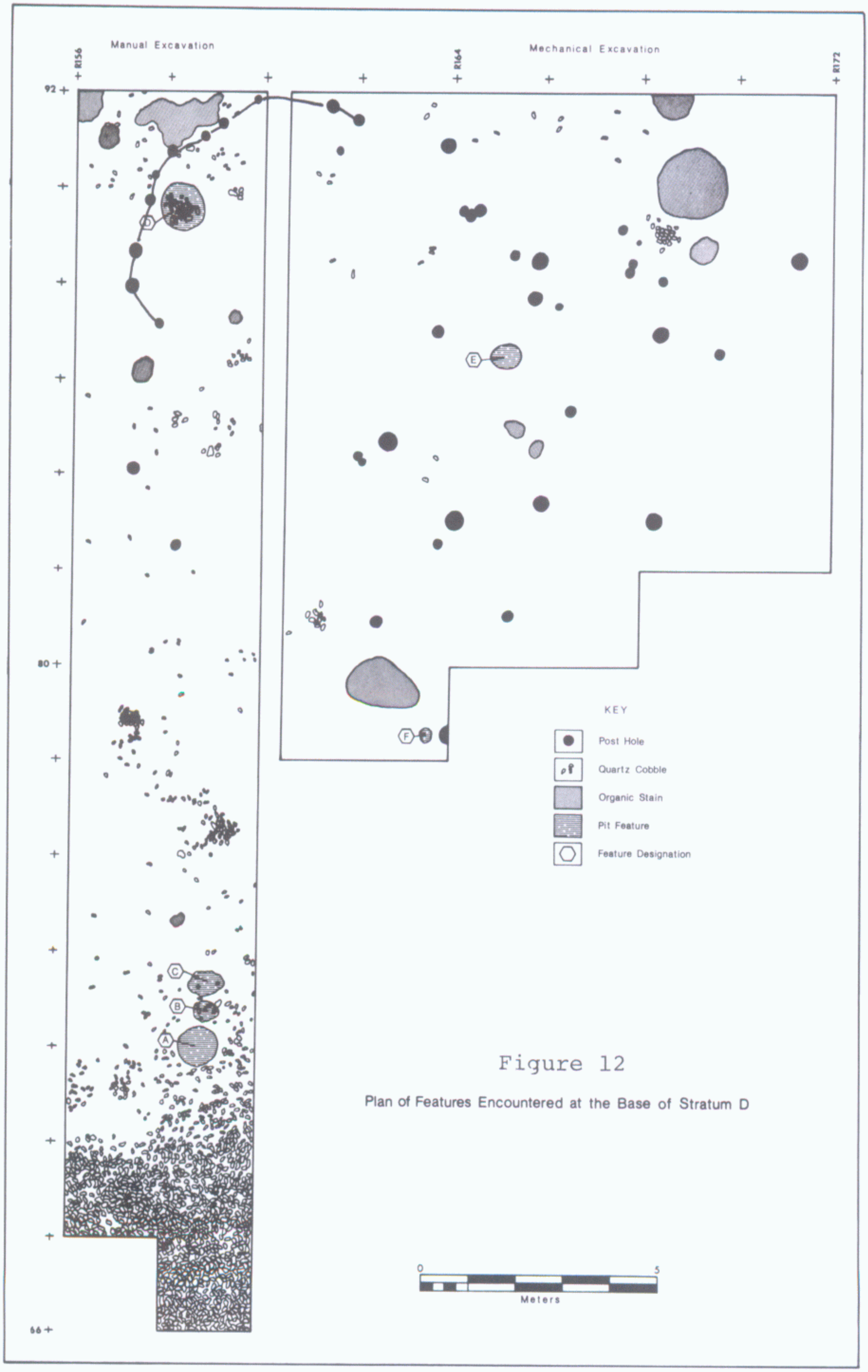


Figure 12

Plan of Features Encountered at the Base of Stratum D

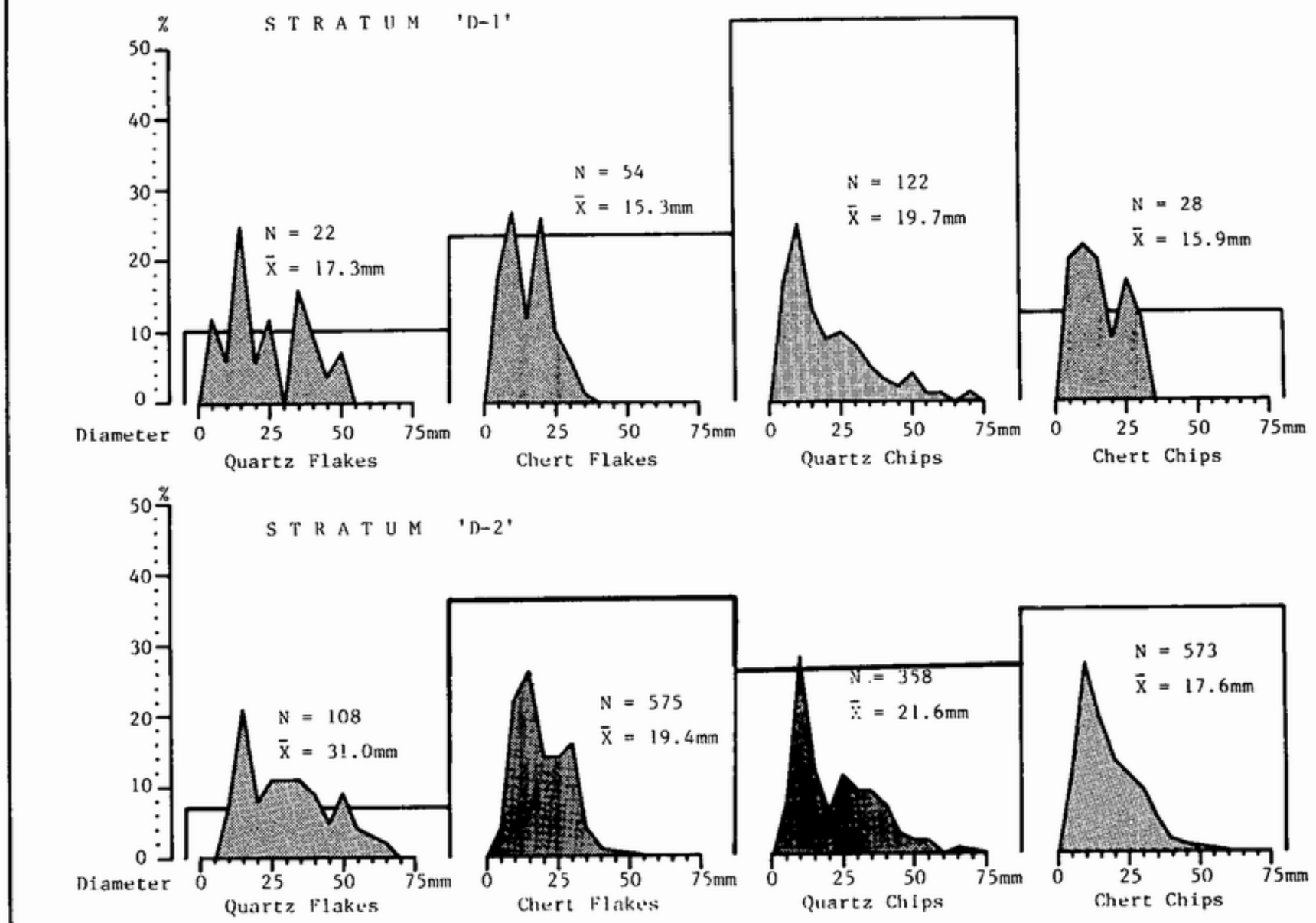


Figure 13
Frequency and Size of Debitage in Strata D and H

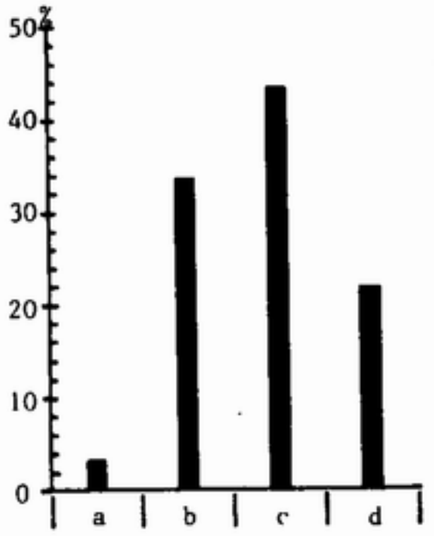
small, with an average size between 15 mm and 16 mm. Quartz flakes and chips tended to be larger and exhibited a greater range in size, presumably due to decreased control in chipping the coarse material. Preforms and other chipped stone tools were rare in Zone 1, the occurrences being restricted to the unfinished chert point and two quartz point tips.

Within the base of Stratum D in Zone 2, the level surface above the old river bank, there were several small concentrations and a sparse scattering of cobbles and shatter. Within the Zone 2 midden as a whole, but excluding features and recognized concentrations, cobbles and shatter were more dense than in Zone 1. Whole cobbles occurred at a rate of 10 per cubic meter, large cortical shatter at 0.1 kg per cubic meter, large non-cortical shatter at 0.6 kg per cubic meter, and small non-cortical shatter at 0.6 kg per cubic meter.

The frequency and sizes of quartz and chert debitage within Zone 2 are shown in Figure 13. Adjusting for excavated volume, quartz chips and flakes occurred at a rate of 29 per cubic meter and chert debitage at a rate of 72 per cubic meter. Chert chips and flakes were, on average, smaller than their quartz counterparts. The overall size range and average size of the zone 2 debitage was greater than that of debitage from Zone 1. In addition, there was a marked increase in the density of chert debitage in Zone 2. These factors indicate that manufacturing activities in the two areas were dissimilar. Other than flakes and chips, debitage in Zone 2 included 3 chert core fragments, 3 chert biface fragments, and a quartz biface fragment.

That activities were different in the two zones also is indicated by the occurrence of frequent unfinished projectile points in Zone 2. The frequencies and attributes of the various manufacturing classes are shown in Figure 14. Few Class 'a' preforms were present within the zone. Classes 'b' and 'd' were most commonly represented by quartz forms, while class 'c' forms were most often of chert. Classes 'a' and 'b' exhibited the greatest range of thicknesses, while classes 'c' and 'd' were generally thinner and less variable. The widths and lengths represented among the manufacturing classes are shown in Figure 15. The most evident pattern shown in the scattergram of these measurements is that preforms denoting initial manufacturing stages tend to be longer and wider than more finished forms. The length, width, and thickness measurements indicate a reduction process in which the lateral edges, thickness, and ends of preform blanks and class 'b' preforms were chipped to the desired form represented in class 'c'. Additional flaking refined the projectile point, but affected overall dimensions only slightly.

STRATUM 'D-2'

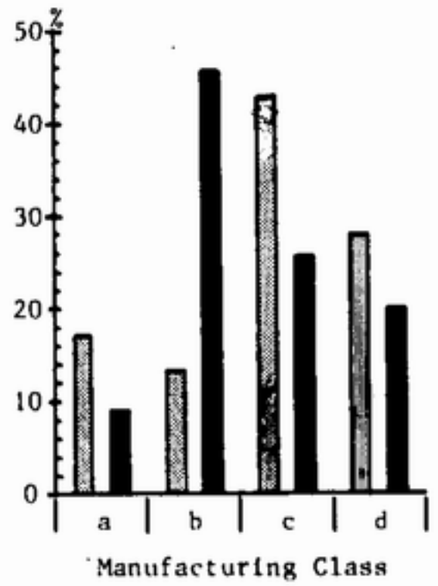


Class	%	%	%	%	%	%	%
a N=2	100		50				50
b N=19	68	32	21	58	16	5	
c N=26	27	65*	69	31			
d N=13	77	23	46	54			
	Quartz	Chert	6-10	11-15	16-20	21-25	26-30
	Material		Maximum Thickness (mm)				

*also 8% Rhyolite

Class	%	%	%	%	%	%	%	%	%	%	%	%
a	100				50	50						
b	32	68		26	42	32						
c	27	73					4	31		35	31	
d	8	92						31		23	46	
	PC	AB	BC	O	O/T	T	RB	SS	SR	SE	SI	TI
	Longitudinal Cross Section			Form								

STRATUM 'H'



Class	N	%	%	%	%	%	%	%
a	8 / 5	100 / 100		40	38 / 20	25 / 20	38 / 20	
b	6 / 25	100 / 96	4	33 / 44	67 / 44	4	8	
c	20 / 14	75 / 71	25 / 29	40 / 71	50 / 29	10		
d	13 / 11	77 / 73	23 / 27	28 / 50	72 / 50			
		Quartz	Chert	6-10	11-15	16-20	21-25	26-30
		Material		Maximum Thickness (mm)				

Class	%	%	%	%	%	%	%	%	%	%	%	%
a	75 / 100	25		38 / 40	63 / 60							
b	50 / 60	50 / 40		83 / 64	28	17 / 8						
c	60 / 36	35 / 64	5				10 / 43	40 / 21	5	30 / 29	15 / 7	
d	8 / 36	69 / 64	23					23 / 18	23	30 / 64	23	18
	PC	AB	BC	O	O/T	T	RB	SS	SR	SE	SI	TI
	Longitudinal Cross Section			Form								

Zone 1

Zone 2

1 / 2
Zones

Manufacturing Classes

'a' = Preform Blank (unifacial)

'b' = Preform I (primary bifacial flaking)

'c' = Preform II (extensive primary bifacial flaking, minor secondary flaking, initial base shaping)

'd' = Preform III (extensive secondary flaking)

Form

'O' = Ovate
'O/T' = Ovate-Triangular
'T' = Triangular
'RB' = Rounded Base
'SS' = Stemmed, Straight Base
'SR' = Stemmed, Rounded Base
'SE' = Stemmed, Excurvate Base
'SI' = Stemmed, Incurvate Base
'TI' = Triangular, Incurvate Base

Longitudinal Cross Section

'PC' = Plano-Convex
'AB' = Asymmetrical Biconvex
'BC' = Biconvex

Figure 14
Preform Attributes in Strata D and H

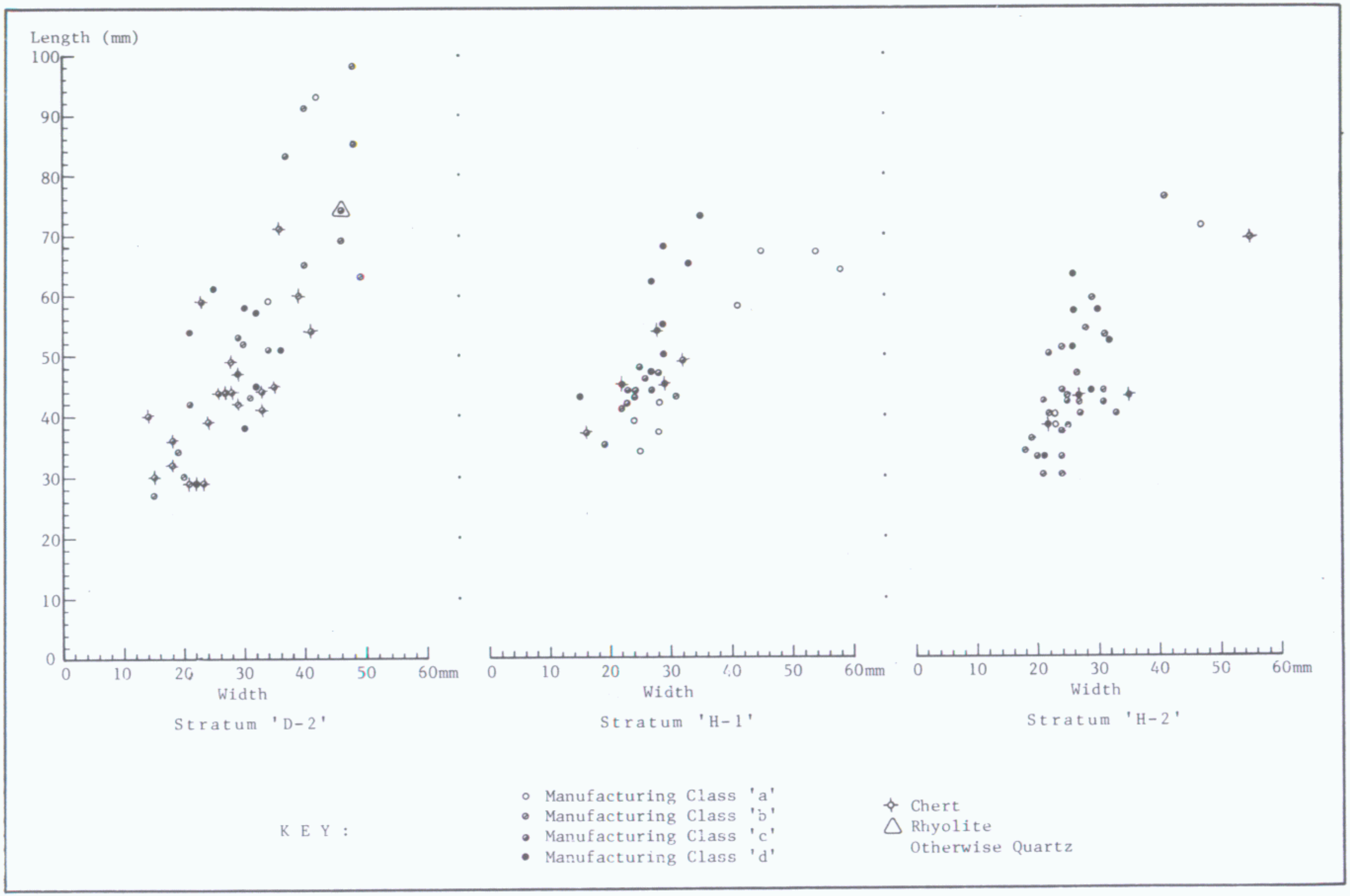


Figure 15
Preform Lengths and Widths in Strata D and H

As with the preforms and debitage, other lithic artifacts and manufacturing debris were more common within Zone 2. Three hammerstones were encountered, along with 10 soapstone vessel fragments, 15 soapstone chips, a crude chipped stone hoe or axe, and a nutting stone.

The associated implements and debitage indicate that the gently sloping river bank was the location of a narrow range of activities and that a more diverse set of activites occurred on the level ground above the river bank. The greater range of activities also is reflected in the features and structural remains encountered at the base of Stratum D in Zone 2. Features consisted of amorphous areas defined by organic stains with charred wood flecks, concentrations of shattered river cobbles on the surface and within shallow pits, and perhaps a larger pit filled with refuse.

Feature A was the associated refuse pit. The feature was about 1 m in diameter at its opening, and had sloping walls and a rounded base. It was located along the crest of the old river bank and originated at the base of Stratum D. The pit fill consisted of dark brown sandy clay containing charred wood and nut shell fragments, along with occasional quartz cobbles and shatter. The southern half of the feature first was encountered during excavation of unit 72R160 and, unfortunately, was recognized only after its upper southern half and a portion of its lower southern half had been excavated along with the surrounding matrix of Stratum H. To complicate matters further, continued excavation mixed the lower southern portion of Feature A with the upper portion of Feature G, a second feature located immediately below the first. Some information was, nevertheless, retrieved by recording the feature profiles shown in the north wall of the excavation unit (Figure 16). A bad situation worsened, however, for the remaining northern portion of both features, along with portions of Strata D and H that were visible in nearby profiles, were vandalized the evening after profiles were recorded. The remaining pieces of Feature A were water-screened and matrix samples were recovered for laboratory processing. Material within the salvaged fill consisted of cortical and non-cortical shatter, quartz and chert chips and flakes, 6 sand-tempered plain potsherds, and an unfinished Savannah River Stemmed point made of sandstone. The fill also contained the unquantified charred remains of wood, hickory nuts, walnuts, and acorns. A 7-gm sample of charred wood and hickory nut shell fragments was submitted for C-14 analysis and returned an age of 1200 +/- 90 B.P. (Beta #4353), or 750 +/- A.D. Very little confidence can be placed in the associations and date for Feature A. The secure data of the profile and field observations do indicate that the feature was a refuse pit containing charred wood and nut shell fragments, and that it

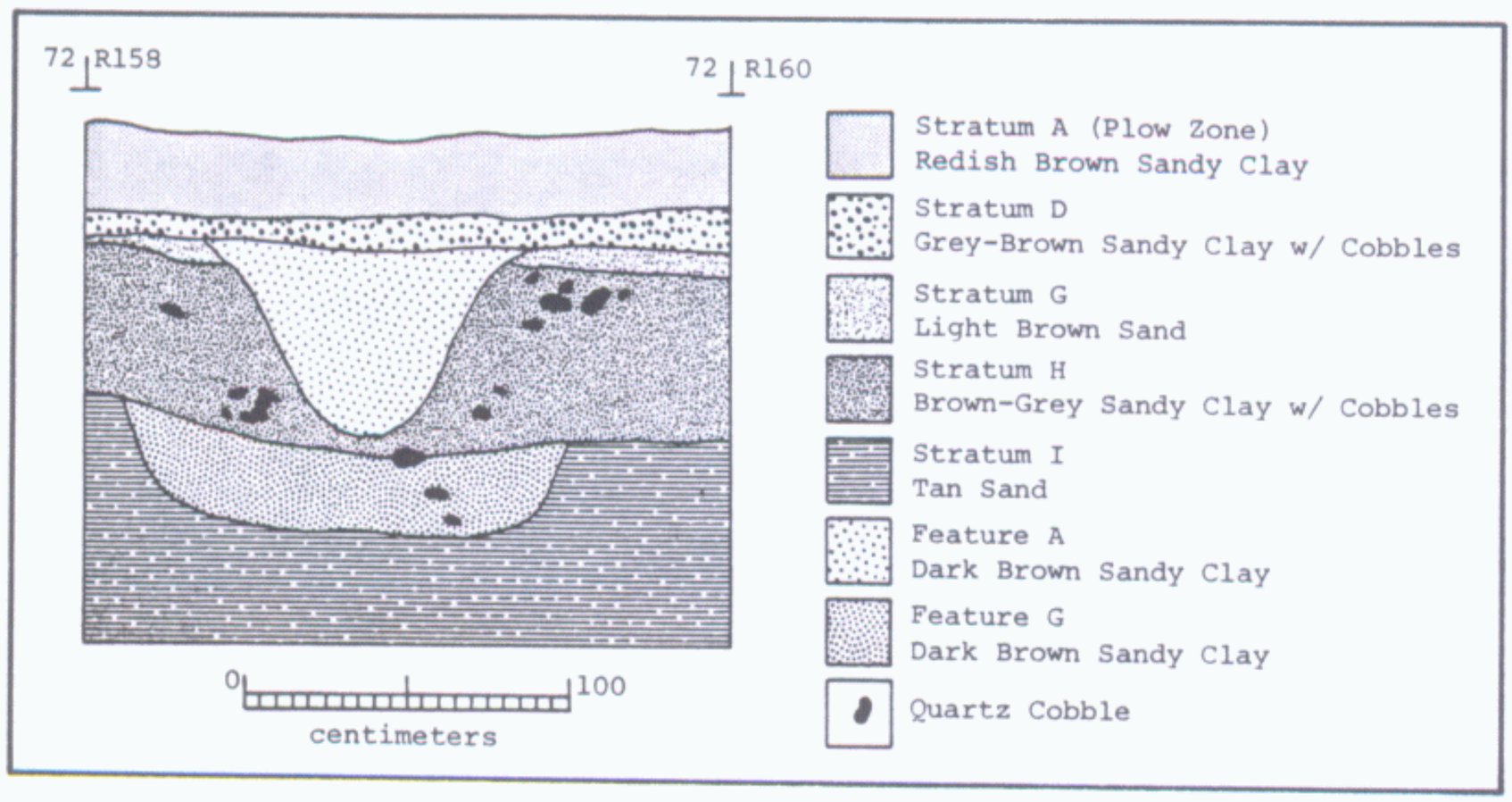


Figure 16
Profile of 72R160 Showing Features A and G

originated at the base of Stratum D.

Features B and C were two irregularly shaped shallow pits located immediately north of Feature A. The fill of each was defined by dark brown sand containing charred wood flecks along with quartz cobbles and shatter. The basin-shaped features had sloping walls and indefinite rounded bases that extended 15 cm to 25 cm deep. The fill of Feature B contained 32 small quartz cobbles (9.1 kg), 10.3 kg of cortical shatter, 9.5 kg of non-cortical shatter, 31 quartz chips (5 mm to 30 mm), 3 chert chips (5 mm to 15 mm), 1 quartz flake (10 mm), and 2 chert flakes (10 mm to 20 mm). The fill of Feature C contained 3.4 kg of cortical shatter, 0.4 kg of non-cortical shatter, 45 quartz chips (5 mm to 20 mm), 23 chert chips (5 mm to 20 mm), and 10 chert flakes (5 mm to 20 mm). Plant remains were limited to tiny fragments of charred wood.

Feature D was a similar, roughly circular pit located in the extreme northern portion of the trench excavation. The fill was defined by dark brown sand containing charred wood flecks along with quartz shatter. The basin-shaped feature had sloping sides and an irregular base that extended 9 cm to 12 cm deep. The fill contained 1.1 kg of cortical shatter, .07 kg of non-cortical shatter, 5 chert flakes (20 mm to 30 mm), and 4 chert chips (15 mm to 65 mm). Once again, plant remains were limited to tiny fragments of charred wood.

Features E and F were two small pits located at the base of Stratum D within the mechanically stripped area of Zone 2. Both basin-shaped features were roughly circular with sloping walls and rounded bases that extended 10 cm to 15 cm deep. Both were sterile, containing neither quartz shatter nor charred wood fragments.

The concentrations of cobbles and shatter in the base of Stratum D appear similar in content to Features B, C, and D. Two of the concentrations were isolated for careful examination. The concentration located about 3 m north of Feature C, at 76.50R159.25, contained 16.4 kg of cortical shatter and 3.2 kg of non-cortical shatter, along with flecks of charred wood. A second concentration located just to the northwest at 78.75R157.25 contained 2 small whole cobbles (0.7 kg), 9.2 kg of cortical shatter, 2.2 kg of non-cortical shatter, a large quartz flake (35 mm), and a chert biface fragment.

The organic stains encountered at the base of Stratum D generally lacked integrity or associations. They were patches of brown sand containing charred flecks, and were only slightly darker than the surrounding matrix. None of the patches had distinctive edges or showed any trace of a pit outline in profile. They appear to represent stains caused by activities conducted in the midden immediately above their locations. A concentration of cultural

material was found immediately above one of the stains within the mechanically excavated area at 79.40R162.50. This material consisted of 1.4 kg of cortical shatter, 0.2 kg of non-cortical shatter, 16 chert flakes (15 mm to 25 mm), 5 chert core fragments (20 mm to 55 mm), 6 quartz chips (15 mm to 40 mm), and a quartz flake (15 mm).

Structural remains were evidenced by post holes recognized at the base of Stratum D in Zone 2. These were marked by their dark brown sandy fill and ranged between 10 cm and 35 cm in diameter. The post holes extended from as little as 5 cm to as much as 12 cm below the base of the stratum, and had straight sides and slightly rounded to flat bases. A semi-circular arrangement of post holes in the northwest corner of the excavation is the only clear pattern. These post holes seem to be the remains of an open structure, perhaps simply a wind break, with its 6-m wide open side facing the southeast. Other post holes located to the south and east indicate that additional structures or facilities were present, but their forms are not discernable.

In summary, the Late Archaic-Early Woodland Period activities within Stratum D focused on manufacturing Savannah River Stemmed projectile points. The distribution of debitage, quartz cobbles, quartz shatter, and unfinished points indicates that initial reduction of cobbles for suitable preform blanks sometimes occurred along the gently sloping river bank, where broken cobbles and shatter were left to litter the ground surface. Chert debitage indicates that preforms of this material were brought to the river bank location to be worked, perhaps also during initial reduction stages. Some food preparation seems to have occurred here as well, as indicated by the nutting stones and nut fragments identified within the midden. The small hammerstones encountered along the river bank may have been used for quartz and chert knapping, and also in conjunction with the nutting stones.

The level ground surface above the river bank was devoted to more diverse activites. This appears to have been a temporary living area where quartz preform blanks brought from the river bank and elsewhere were reduced to finished forms. Chert debitage was more common here than along the river bank, and most of the chert preforms recovered were in final manufacturing stages, indicating that production of chert blanks and initial forms occurred at another location. Fairly numerous soapstone chips and fragments indicate that vessels of this material were made in the living area. Food preparation activities are indicated by the nutting stones and nut fragments in the midden. Once again the cobble hammerstones could have been associated with both knapping and food preparation. Food gathering activities are probably indicated by the chipped stone hoe or axe. A small and simple wind break type of

shelter is represented among the structural remains, indicating that at least one of the occupations in the area was short-term and associated with a small residential group. The nut remains recovered from the midden indicate that fall occupations were common. The refuse pit (Feature A) containing charred wood and nut fragments, along with the nut remains in the midden, indicate that the gathering of hickory nuts, walnuts, and acorns was an important subsistence activity. The nuts also indicate that occupation occurred during the fall of the year when the mast crop was available.

The cobble-filled pit features located within the living area appear to have been directly related to lithic manufacturing. Although their exact function is far from obvious, an explanation may be proposed. The pits could have served to hold cobbles and chert that were heated, then shattered and tempered by pouring water into the pit. Flakes and chips among the shattered cobbles indicate that initial chipping of the shattered pieces occurred near the pit, some of the debitage falling back into the hole along with the rejected shatter. This explanation accounts for the charred flecks, shatter, and debitage within the shallow pits. The concentrations of cobbles and shatter at nearby locations, as well as the organically stained patches, may represent the remains of the reduction process when cobbles were heated and shattered directly on the ground surface rather than within a pit.

The presence of charred flecks within the shatter-filled pits, surface scatter concentrations, and organic stains is the only evidence that a fire was associated with use of the features. The shattered material itself appears identical to shatter from the sloping river bank area, and neither showed distinctive signs of being heated. However, heated shatter may well be visually indistinguishable from unheated, especially in the case of quartz, if relatively low temperatures were involved in the process.

Stratum H Debitage and Features

Cultural material encountered in this midden indicates that the stratum was primarily formed during the Late Archaic Period, some 2000 years earlier than Stratum D. A few Middle Archaic Period Morrow Mountain projectile point types accompanied the Savannah River Stemmed points within the midden. As with the later occupation of Stratum D, activities focused on manufacturing projectile points during the occupation of Stratum H. There were, however, significant differences in the arrangement of activities and the reduction methods associated with the two occupations.

The steeper old river bank was covered with cobbles,

shatter, and unfinished projectile points in densities much greater than those present in Zone 1 of Stratum D. Whole cobbles occurred at a rate of 13 per cubic meter, large cortical shatter at 28 kg per cubic meter, small cortical shatter at 0.5 kg per cubic meter, large non-cortical shatter at 5 kg per cubic meter, and small non-cortical shatter at 1 kg per cubic meter. The sizes and frequencies of debitage encountered in Zone 1 are shown in Figure 13. Correcting for excavated volume, quartz flakes and chips occurred at a rate of 187 per cubic meter and chert debitage at 52 per cubic meter. Quartz chips and flakes tended to be larger and more variable in size than their chert counterparts. Other debitage encountered in Zone 1 consisted of a quartz biface fragment and a chert core.

The frequencies and attributes of the various preform classes recovered from Zone 1 are shown in Figure 14. Unfinished points in their final manufacturing stages account for 70% of the preforms, while 30% of the preforms represented initial stages of manufacture. Preforms in the initial stages were all made of quartz, while 24% of the points in the final stages were made of chert. Preforms in manufacturing class 'a' were commonly much thicker than preforms in the final three manufacturing classes, indicating that final preform thickness usually was achieved in class 'b'. The individual lengths and widths represented in the manufacturing classes are shown in Figure 15. The apparent pattern shown in the scattergram is that preforms in initial manufacturing stages tend to be wider than more finished preforms of similar length.

Considering length, width, and thickness measurements, it appears that the initial length of the preform blank frequently defined the finished length of the projectile point. Final thickness of the preform seems to have been achieved during the next stage of manufacture, when chipping also occurred along the lateral edges to obtain the desired shape. Additional chipping successively decreased the average width of the preforms represented in the initial manufacturing stages.

Lithic artifacts in Zone 1 other than preforms consisted of a quartz bifacial flake knife or scraper, 2 nutting stones, 3 cobble hammerstones, and a perforated bi-pennate atlatl weight fragment made of soapstone. The ends and curving edges of the hammerstones were intensively battered. As in Stratum D, the hammerstones may have been multi-purpose implements used for knapping and with the nutting stones. The nutting stones, along with the hickory nut, walnut, acorn, and persimmon remains within the midden, indicate that food preparation activites occurred at the river bank location.

Zone 2 of Stratum D contained a similar assemblage of cobbles, shatter, debitage, preforms, and other artifacts. Cobbles and shatter were, however, less common within this

zone of the midden. Whole cobbles occurred at a rate of 4 per cubic meter, large non-cortical shatter at 1 kg per cubic meter, and small non-cortical shatter at 0.3 kg per cubic meter.

There was a corresponding reduction in the density of debitage in Zone 2. The sizes and frequencies of flakes and chips in Zone 2 are shown in Figure 13. Quartz flakes and chips occurred at a rate of 44 per cubic meter and chert debitage at a rate of 19 per cubic meter. The quartz flakes tended to be larger in Zone 2 than in Zone 1, but otherwise the size distribution of the classes in the zones appear similar, allowing for small variations due to the different sample sizes. The increased percentage of large quartz flakes suggests that relatively more primary flaking of quartz occurred in Zone 2.

The preform classes associated with Zone 2 are shown in Figure 14. As with shatter and debitage, there is a reduction in the density of preforms in Zone 2. Unfinished points in their final stages of manufacture account for 45% of the preforms, while 55% represent initial manufacturing stages. Quartz preforms within the initial manufacturing class 'b' alone define 44% of all preforms. The preforms in initial stages of manufacture are predominately made of quartz, while 28% of the points in final stages are made of chert. Initial-stage preforms also are commonly thicker than those in final manufacturing stages. Final preform thickness usually appears to have been achieved in class 'b'. The individual lengths and widths represented among the classes are shown in Figure 15. Aside from three initial-stage preforms that are obviously longer and wider than the others, the sizes among the remaining classes are dispersed without obvious patterning.

The preform classes and the various measurements indicate that manufacturing activities in Zone 2 of Stratum H resulted in many class 'b' preforms of variable size, along with final-stage preforms of equally variable size. Relatively few preform blanks in the assemblage indicates that blanks were being made elsewhere and brought into the area to be worked into finished forms. The variable sizes represented among the final preform stages suggests that the size of the finished points also was quite variable.

Lithic artifacts other than preforms in Zone 2 consisted of 3 hammerstones, 2 chert bifacial flake knives or scrapers, a nutting stone, and a soapstone vessel fragment. These indicate that food preparation activities as well as lithic production activities were associated with use of the area.

Features were encountered rarely within Zone 2. Feature G originated at the base of the midden along the top of the old river bank. This feature had sloping walls and a rather flat bottom that was 50 cm deep (Figure 16). In outline the pit appeared to be rectangular with broad

rounded corners. It extended 1.75 m along its east-west axis and approximately .75 m along its north-south axis. Most associations of this feature, as previously discussed, were lost because of excavation errors and vandalism. The vandalized fill was, however, screened and found to contain cortical and non-cortical quartz shatter, quartz flakes and chips, 2 Woodstock Incised sherds, and a plain sand-tempered potsherd. A 23-gm sample of charred wood and hickory nut shells wre submitted for C-14 analysis and returned an age of 1070 +/- 50 B.P. (Beta #4354), or 880 A.D. As with Feature A, little confidence can be placed in the associations or date from Feature G. Both the date and ceramics recovered from the vandalized fill are far too young to be truly associated with the feature and probably reflect carbon contamination and sherds disturbed from their position in upper strata in the excavation. The reliable information from Feature G, based upon field observations and the profile, is that the feature originated at the base of Stratum H and that it contained dense amounts of charred wood and hickory nut shell fragments.

A second feature was encountered within Zone 2 about 11 m north of Feature G at 83.25R159.30. This feature was defined by a small concentration of quartz cobbles and shatter, measuring 30 cm in diameter, that originated 10 cm beneath the upper surface of Stratum H and terminated 25 cm below the upper surface. No pit outline was discernable and the concentration appeared similar to shatter concentrations previously encountered at the base of Stratum D. Materials associated with the feature were 2 quartz cobbles, 2.7 kg of cortical shatter, 2 quartz chips (10 mm to 15 mm), and a chert flake (15 mm). Charred flecks were present within and adjacent to the concentration.

In summary, the Late Archaic Period activities within Stratum H focused on manufacturing Savannah River Stemmed and Morrow Mountain projectile points. The dense cobbles and shatter along the old river bank contained preforms and debitage which indicate that initial reduction of quartz and sometimes chert frequently occurred here. The actual activity area was probably on the top of the steep river bank; the activity remains were discarded along the slope. Final stages of preform manufacture occurred less frequently in this location. Those final forms represented were thinner and probably narrower than the initial forms, but blanks and final forms were about the same length. It appears that when blanks of ideal length and shape were struck from cobbles, chipping was continued and final preforms were produced. Remains indicative of other activities, including food preparation, also occurred along the river bank.

The level ground surface above the river bank was the

location of similar food preparation activities, but a different set of lithic production activities. Cobble shatter, debitage, and preforms were less dense here. However, proportionately more large quartz flakes, chert preforms, and other debitage were present than in the river bank area. The preforms and debitage indicate that the level ground was primarily the location of chipping activities involved in the final reduction of quartz and chert preforms. Of the initial stage preforms present, most were class 'b' quartz forms. Thus, it appears that both chert and quartz preforms in initial stages of manufacture were brought to the level ground of Zone 2 for processing. The large quartz flakes are probably primarily flakes resulting from chipping class 'b' preforms from the class 'a' blanks produced along the river bank. The great variability in size exhibited among the preform classes indicates that the initial-stage preforms used in the reduction process were less than ideal in size and shape. Comparing these with the patterned assemblages found along the river bank, it seems likely that preforms in Zone 2 were those that could not be chipped quickly or easily at the initial reduction location. They were, therefore, brought to the level ground of Zone 2 for additional knapping.

SUMMARY AND DISCUSSION

Investigations have shown that occupations occurred at the Cagle Site during the Middle to Late Archaic, Late Archaic, Late Archaic-Early Woodland, Early Woodland, Early Mississippi, and Late Mississippi Periods.

The Middle to Late Archaic component at the site was defined by Morrow Mountain and Savannah River Stemmed projectile points. The Late Archaic component, dating to around 2,480 B.C., was defined by Savannah River Stemmed projectile points. The Late Archaic-Early Woodland component was defined by Savannah River Stemmed projectile points, along with Dunlap Fabric Marked and plain pottery. The association of Savannah River Stemmed points and the pottery was exhibited most clearly in Stratum G of the trench excavation, an horizon located immediately below a dense Late Archaic-Early Woodland midden. This dense Late Archaic-Early Woodland midden, Stratum D, dated to about 600 B.C. Pottery from later periods also was represented in this stratum, but none of these later components was associated with lithic production.

The Early Woodland component at the Cagle site was defined by pottery of the Kellog and Mossy Oak Phases. The Kellog Phase was denoted by Dunlap Fabric Marked and plain pottery, along with small indented-base triangular projectile points. The distribution of Mossy Oak Simple Stamped pottery overlapped significantly with a sparse zone of Dunlap Fabric Marked pottery, possibly reflecting a slightly later occupation when both pottery types were produced.

The most intensive occupation was associated with the Late Archaic and Late Archaic-Early Woodland Periods. Isolated areas of occupation debris were associated with the Middle to Late Archaic Period. Somewhat larger areas of occupation debris were associated with the Early Woodland and Early Mississippi Periods. The Late Mississippi Period occupation was poorly evidenced at the site and appears to have been quite limited.

The settlement forms reflected in the varying distributions and densities of material associated with each of the periods indicate temporary, and probably repeated, occupations by relatively small groups. The size of the residential group appears to have been quite small, perhaps no more than three or four members of a nuclear family or a small hunting party, during the Middle to Late Archaic and Late Archaic Periods. Size of the residential group appears to have increased during later periods and may have been defined by a few related nuclear families or, perhaps, single extended families.

The Cagle Site was occupied for both general

subsistence and specific extractive purposes. Living areas along the levee indicate no more than temporary occupations and the surviving remains are limited to potsherds, a few unfinished projectile points and debitage, and charred nut shells. The exact function of the occupations are poorly reflected; however, it seems clear that they were associated with hunting and gathering activities that included the harvest of oak-hickory forest resources and the manufacture of projectile points.

In contrast to these general exploitative occupations, the site was occupied specifically for the manufacture of projectile points. Food gathering activities, again involving oak-hickory forest resources, appears to have supported the speciality occupations. The river banks were the focus of lithic manufacturing activities during the Late Archaic and Late Archaic-Early Woodland Periods, with readily available quartz river cobbles providing the raw material for many of the projectile points. A significant number of points also were made of chert. Local informants insist that there are infrequent chert outcrops in the general area, and these may have been known to the early aborigines. Otherwise the nearest extensive chert outcrops occur 35 km to the west in Paleozoic sediments of the Ridge and Valley Province (see Georgia Department of Mines, Mining, and Geology 1969). It may be significant that few if any chert forms were encountered in the general occupation zones along the levee in Archaic strata. It is tempting to suggest that those occupants simply were unaware that nearby chert sources existed, while others more intensively involved in manufacturing activities knew of the resource and exploited it along with the river cobbles.

The first intensive use of chert among the general occupations along the levee began during the Kellog Phase of the Early Woodland Period. Projectile points typical of this period were found only in habitation areas along the levee and the old lithic workshop appears to have been ignored as a manufacturing location.

The associated components and physiographic setting of the Cagle Site are essentially the same as many other sites known to occur in Cherokee County along the Etowah River and its tributaries. A total of 122 other sites are recorded in the Georgia Archaeological Site Files. Information for most, however, is incomplete and of variable quality. The most complete information remains Wauchope's report of survey and testing conducted 40 years ago (Wauchope 1966).

Known sites in Cherokee County are recorded mainly from along the Etowah River and, less frequently, along larger tributaries of the river. Of a total of 31 sites recorded during the Wauchope survey, over half are multi-component and contain Kellog Phase and Woodstock

Phase occupations. The Mossy Oak Phase is less frequently represented, occurring at only four of the sites. Of the 16 sites associated with Kellog Phase pottery, 11 also contained stemmed quartz projectile points. Keeping in mind that most of the information results from surface collections, this mildly suggests an association between the Savannah River projectile points and the Kellog Phase.

Three lithic manufacturing stations also were recorded during the Wauchope survey. The Hickory Log site (9Ck9) was recorded just across the creek from the Cagle Site (Wauchope 1966:290-292). Occupations were indicated during the Savannah River, Kellog, Cartersville, Woodstock, Etowah, Wilbanks, and Lamar Phases. From the inventory of projectile point forms presented, it appears that substantial numbers of Savannah River Stemmed and Early Woodland indented-base triangular points were being produced. Both chert and quartz forms were represented. It appears, therefore, that intensive manufacturing activities may have been restricted to the east side of Hickory Log Creek shortly after Late Archaic-Early Woodland Period use of the Cagle Site.

The Ingram Farm Site (9Ck12) was a second village site / lithic manufacturing station (Wauchope 1966:315-316). This site was located along Long Swamp Creek, about 18 km northeast of the Cagle Site, and was associated with occupations during the Savannah River, Kellog, Cartersville, Woodstock, Etowah, Wilbanks, and Lamar Phases. Again, lithic manufacturing appears to have resulted in both Late Archaic and Early Woodland forms in quartz and chert.

The final lithic station, 9Ck28, was located along the Etowah River about 16 km downstream from the Cagle Site (Wauchope 1966:278-279). Surface collections from this site suggest that it may have been occupied during the Late Archaic, Early Woodland, and Early Mississippi Periods. Both Late Archaic and Early Woodland projectile point forms in chert and quartz are represented.

It appears from this brief review that only the Cagle Site was used intensively as a lithic manufacturing station exclusively during Late Archaic and Late Archaic-Early Woodland times. The remains represented at the Cagle Site, therefore, should more clearly reflect the range of forms associated with these periods than would be the case at manufacturing stations used for longer periods of time.

There is other evidence to indicate that Savannah River Stemmed projectile points continued to be made well into the Early Woodland Kellog Phase. Continued use of the large stemmed form as a spear or atlatl dart point appears likely, probably supplementing the new use of small incurvate-base triangular forms that were presumably used as arrow points. Excavations at 9Ck(DOT)7, located along Noonday Creek in southern Cherokee County, exposed features

and artifacts primarily associated with the Kellog Phase. Savannah River Stemmed projectile points were included in the fill of a refuse pit (Feature 61) containing the remains of hickory nuts, an Amelanchier sp. fruit, an ?indented-base triangular chert point, chert and quartz debitage, and Dunlap Fabric Marked pottery (Bowen 1982:46-47). A stemmed chert point, also apparently a Savannah River form, was recovered from another refuse pit (Feature 30) containing an ?indented-base triangular point, a biconcave mortar, and Dunlap Fabric Marked pottery, along with the remains of hickory nuts and an unidentifiable fruit. This feature was C-14 dated to 245 +/- 125 B.C. (Bowen 1982:42-43).

In his review of the Kellog Phase, Bowen (1982) summarizes available carbon dates. These dates indicate a time range beginning no earlier than 700 B.C. and perhaps ending just after 200 B.C. The Late Archaic-Early Woodland date of 600 B.C. from Stratum D at the Cagle Site fits well into the earliest part of the Kellog Phase time span.

The Cagle Site has provided new information concerning Late Archaic and Early Woodland Period manifestations in the north Georgia Piedmont. The data also indicate that revised interpretations are required concerning the transition between the two periods. Caldwell suggested that the Kellog Phase marked an intrusion of Early Woodland hunters and gatherers into the deciduous forests of northern Georgia, possibly from eastern Tennessee. In support of this contention, he pointed to a hiatus between Late Archaic and subsequent Kellog Phase styles. Caldwell (1958:23) proposed that, "no culturally intermediate site has been located, and there has been sufficient survey of the area to suggest that should any sites be found, they will be rare."

Such sites indeed may be rare, but at least one exists. Data from the Cagle Site indicate that Kellog Phase manifestations were built directly upon a Late Archaic base. It appears that Dunlap Fabric Marked pottery was adopted, probably through diffusion from areas north of the Georgia Piedmont, late in the Savannah River Phase. Subsequently, the occurrence of large stemmed projectile points was surpassed by smaller indented-base triangular points. A transition, perhaps rapid, rather than a hiatus and abrupt change is indicated.

The important question is why pottery and then smaller projectile points were incorporated into the Savannah River Phase cultural system. The likely answer is that they provided an important adaptive advantage to the Piedmont natives. Pottery often is viewed as reflective of a sedentary existence. As true as this may be, the observation conceals the fact that pottery vessels must have provided some real adaptive advantage to account for its widespread acceptance and use.

It may be argued that pottery vessels provided Late Archaic cultural systems with a technology capable of extracting a greater amount of energy per capita from the environment than was possible without ceramics. The use of pottery vessels in food processing would have allowed vegetable foods to be processed more efficiently, while their use also would have expanded the range of prepared foods in the diet.

This topic deserves detailed discussion; however, a rather cursory treatment must suffice here. It is adequately documented that subsistence during the Late Archaic Period in southeastern deciduous forests included acorns, hickory nuts, and walnuts as important resources. Prior to pottery, the nuts presumably would have been processed by cracking the harder shells with nutting stones and parching the acorns in pits, causing the shells to separate from the meats. Acorns from certain species (e.g. red oaks) then had to be leached to remove bitter tannin. This involved placing ground acorn meats in shallow pits and pouring water over them several times to remove the tannic acid.

Another way to process the nuts would have been by boiling. Hickory nuts and walnuts still require cracking to expose the meats, and the hulls of acorns need to be removed. Tannic acid in the acorns then could be removed by successive boiling and pouring off the stained water. The boiling process takes about one hour, then the meatus could be removed and made into a dried meal. Boiling hickory nuts and walnuts efficiently sorts shells from meats and renders oil. Shell fragments fall to the bottom of the pot, meats become suspended, and oil floats to the surface (see Walthall 1980:109).

It seems clear that less energy would be required to process nuts by boiling than by the leaching process. It would be possible, of course, to process the nuts by stone-boiling in lined pits or baskets, or directly in steatite vessels. However, stone-boiling would be relatively cumbersome and time consuming, while more time and energy would have been involved in manufacturing steatite vessels than pottery vessels. Also, as clay is a much more plastic medium and lighter than steatite, a greater variety of shapes and larger sizes would have been possible.

The great number of pits containing nut shell fragments at Kellog Phase sites probably is directly related to the more productive method of processing nuts in ceramic pots. Many of these pits may have been used for parching acorns prior to boiling, the large number of pits indicating that far more nuts were being processed than in preceding periods.

In summary, it may be argued that the acceptance and use of pottery vessels provided the cultural system with

more energy capture per capita than was possible without the technology, thus providing an important adaptive advantage. Increased energy capture also would have resulted from the addition of new food preparation techniques related to the use of pottery vessels. Nut oil already has been mentioned as an important dietary addition. With the use of pottery vessels, cooking stews containing a variety of vegetables and meats also becomes practical. This would have substantially increased dietary possibilities, providing a greater overall caloric output for the subsistence system.

Viewed from the perspective of the adaptive advantage of pottery use, it seems reasonable that pottery rather than the bow and arrow was incorporated first into the indigenous cultural system. While pottery vessels would have had primary impact upon food processing and preparation, the adaptive advantage of the bow and arrow would have been in hunting. One advantage was probably that its effective killing range was greater than that of the atlatl in the woodland environment. It also would have been more accurate within its range and would have provided an effective poison-delivery system to the hunting technology. It appears, however, that the use of large stemmed projectile points continued well into the Kellog Phase. The atlatl seems to have supplemented use of the bow and arrow in hunting. While the bow and arrow may have had greater accuracy within a greater range, the force of an atlatl dart may have remained important for close-range killing.

As a final comment on the Cagle Site, the preforms associated with the lithic workshop and elsewhere indicate that caution is required in assigning point types to lithic material commonly found in Piedmont areas of Georgia. Initial manufacturing stages of the quartz preforms, particularily class 'b', could easily be mistaken for Middle Archaic Morrow Mountain forms. Recognition of associated reduction stages are difficult in quartz, and was possible at the Cagle Site only because of the quantity and variety of unfinished projectile points encountered. Recognition of manufacturing stages and associated types would be difficult in smaller collections such as those commonly found at deflated lithic scatters in interfluvial upland areas of the Piedmont.

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Plate 1
Aerial Photograph Showing Approximate Limits of the Cagle Site
(courtesy of the Georgia Department of Transportation)

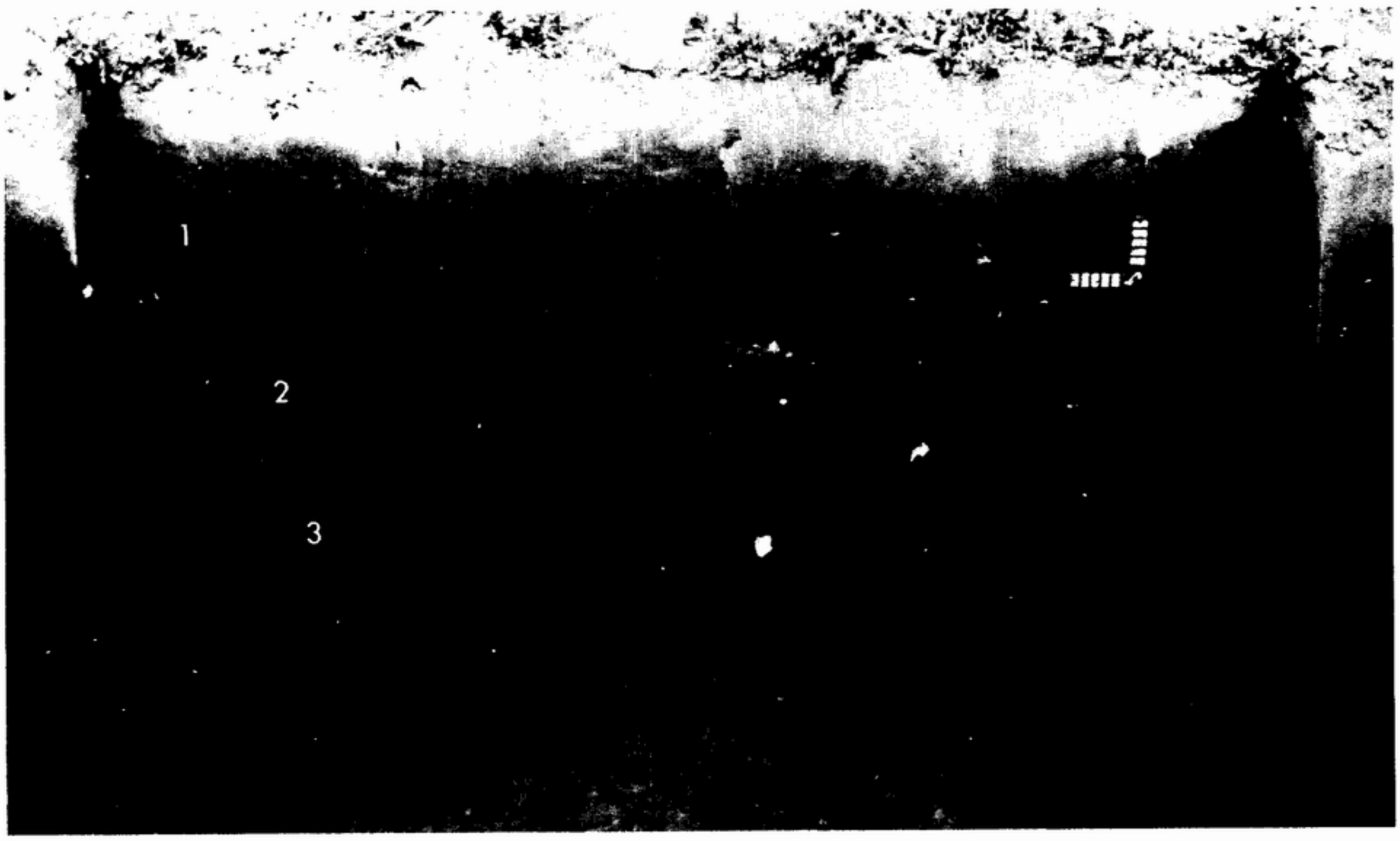

Plate 2
North Wall of 100R160 Showing Middens #1, #2, and #3

Plate 3
Cleaning Eastern Wall of the Trench Excavation
at the Lithic Workshop.
(Stratum D is the visible dark midden layer)

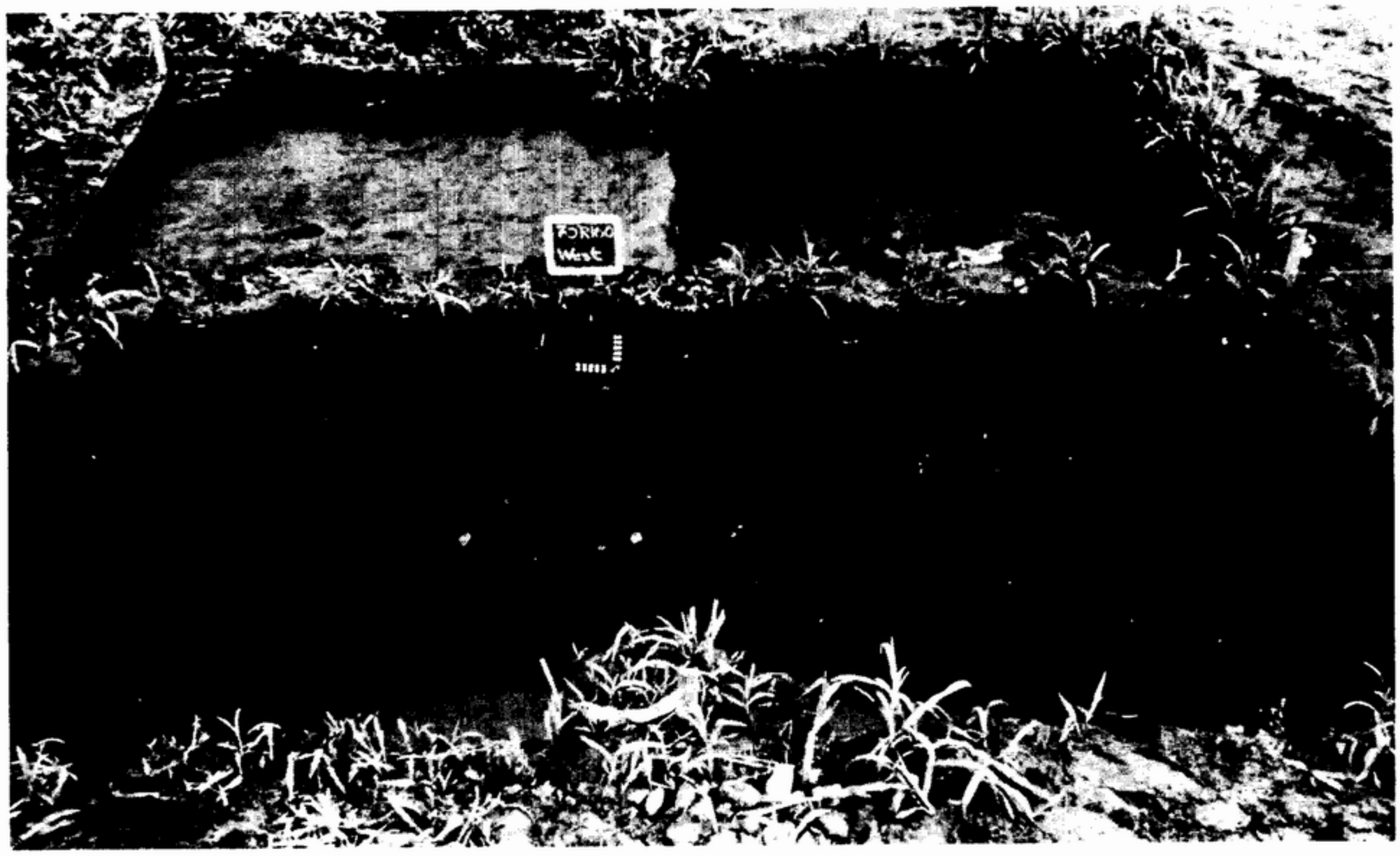

Plate 4
Western Wall in Trench Excavation Extending from 68R158 to 72R158
(An old river bank and Stratum H is indicated by
the dark zone with cobbles)

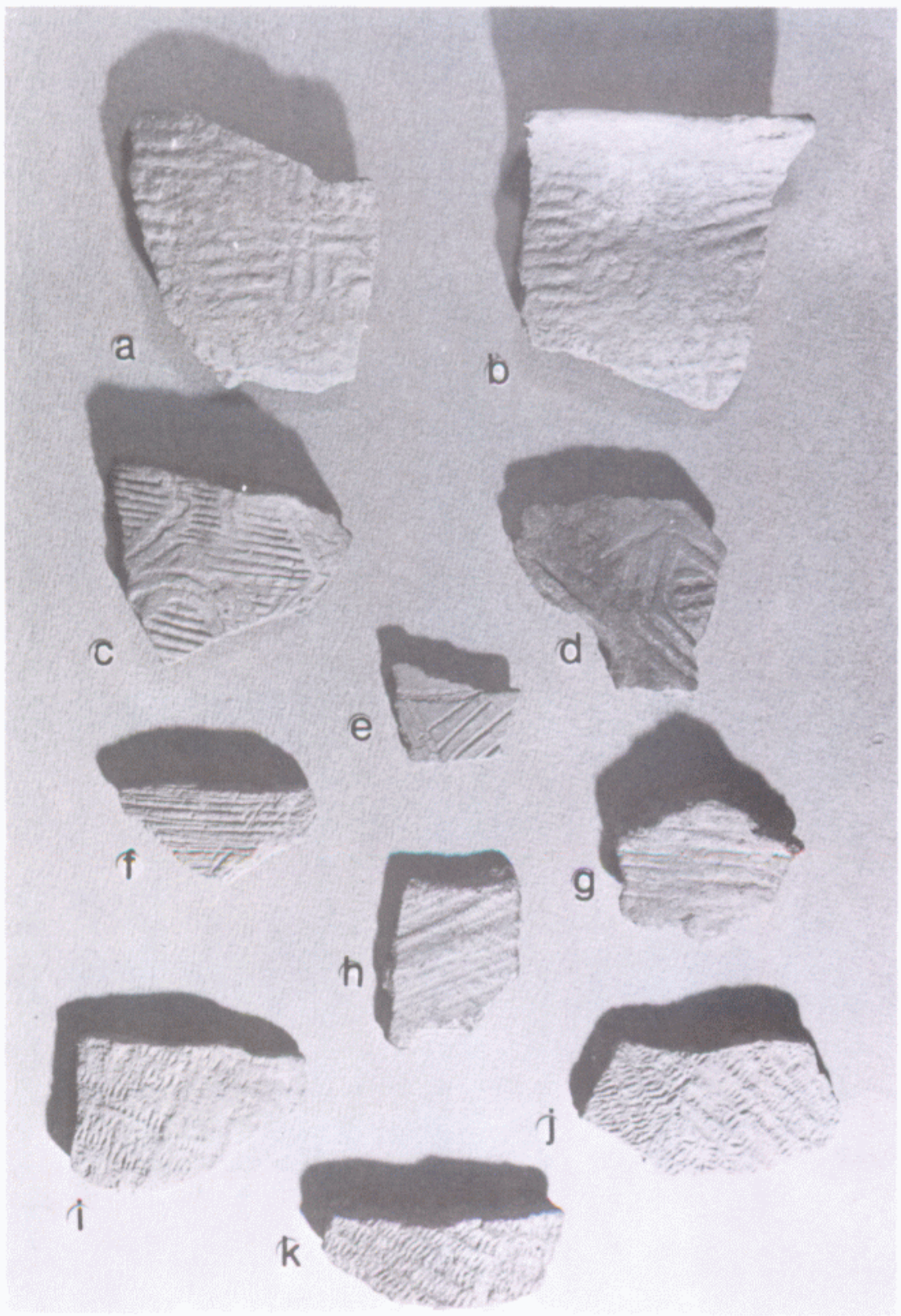

Plate 5
Pottery Types Represented at the Cagle Site
a-b: Wilbanks Complicated Stamped
c-d: Woodstock Lined Diamond Complicated Stamped
e: Woodstock Incised
f-g: Mossy Oak Simple Stamped
h-k: Dunlap Fabric Marked

Plate 6
Projectile Point Forms Encountered
in the Random Test Pits
a-h: Stratum D
i: Stratum H
j-m: Stratum J
n-p: Stratum K

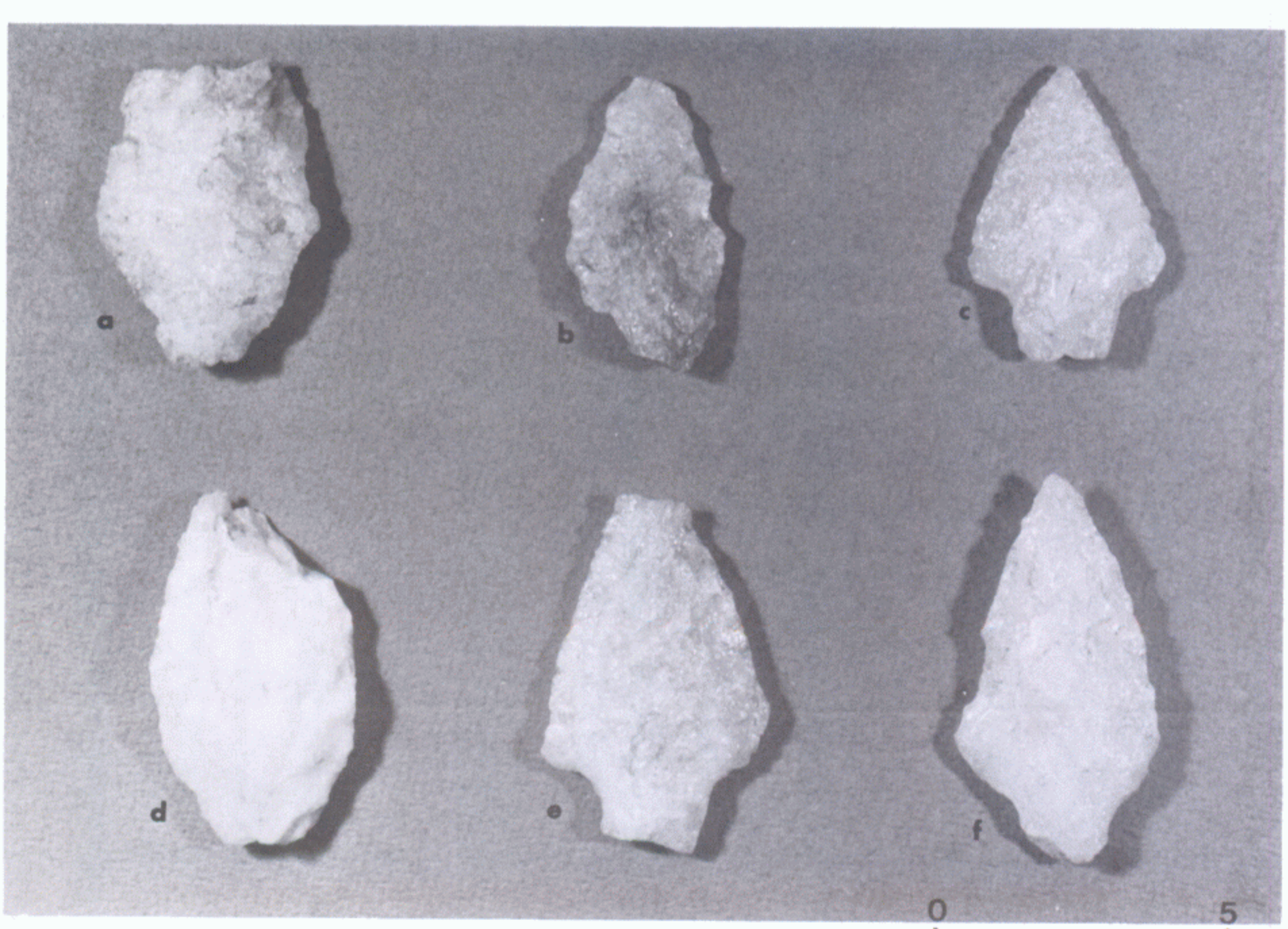

Plate 7
Projectile Point Forms Encountered in 100R160
a-c: Midden #2
d-e: Midden #3

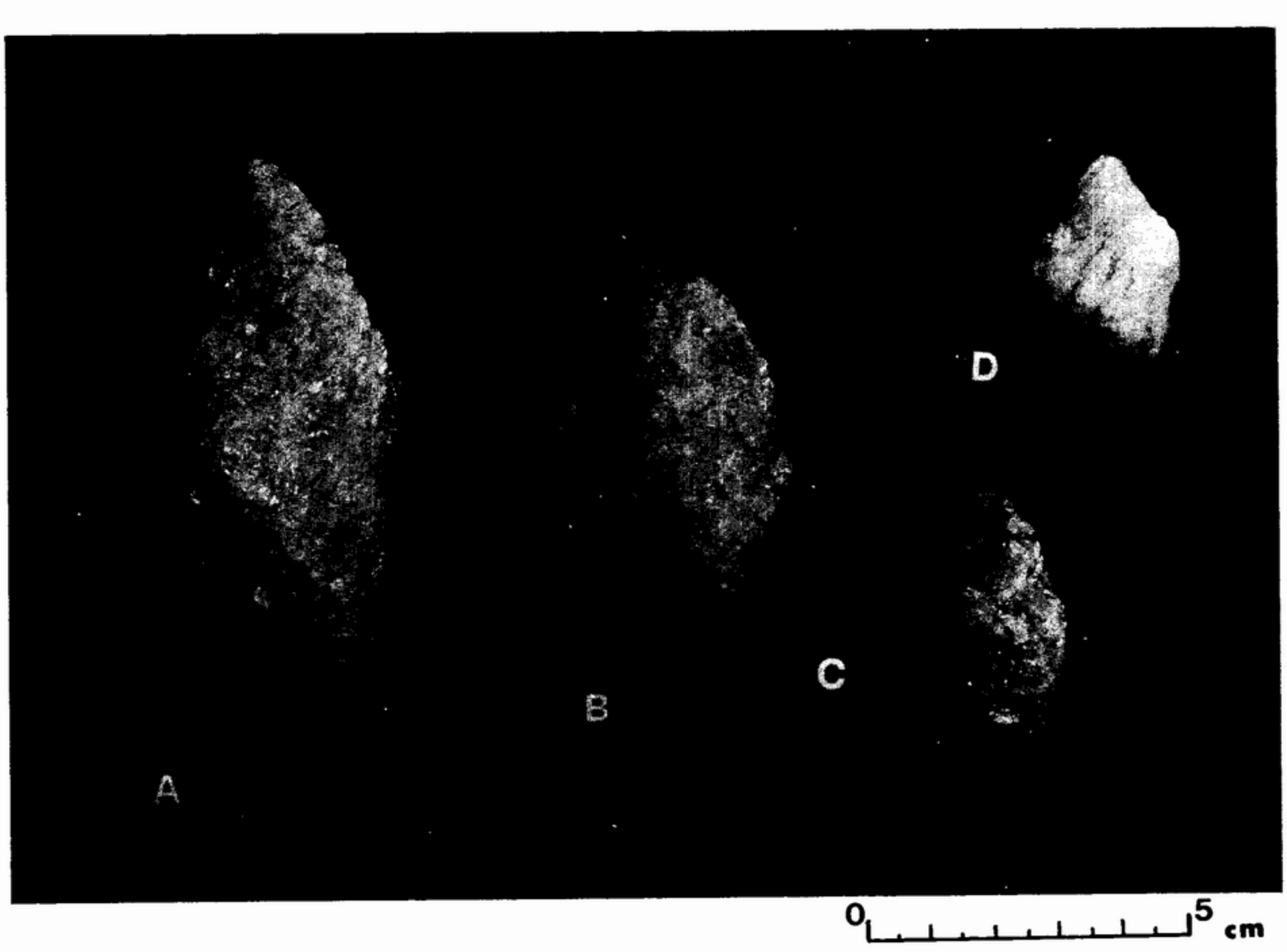

Plate 8
Examples of Class 'a' Preforms

Plate 9
Examples of Class 'b' Preforms

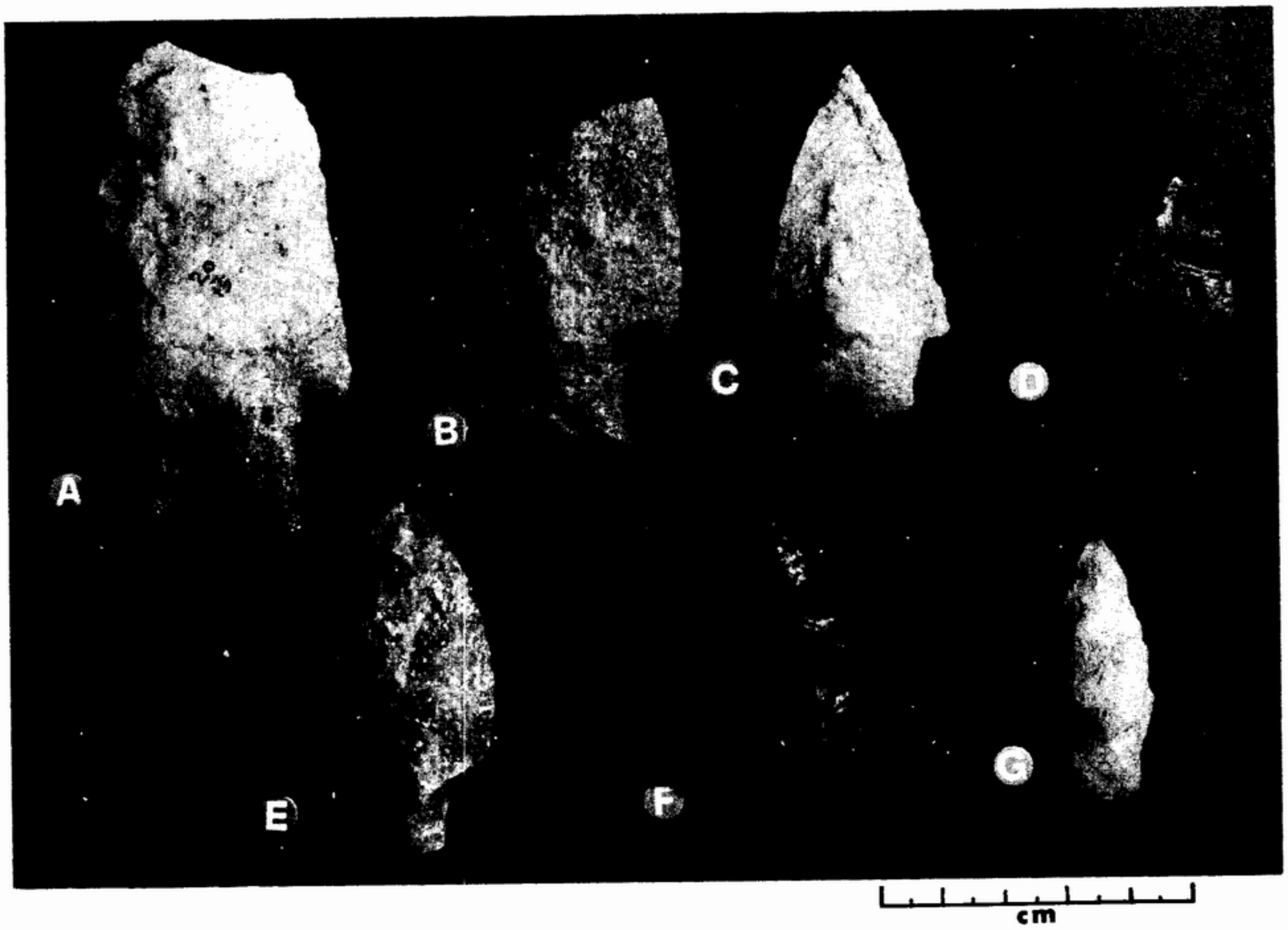

Plate 10
Savannah River Stemmed Projectile Points
b-e: Stratum D
a, f-g: Stratum H

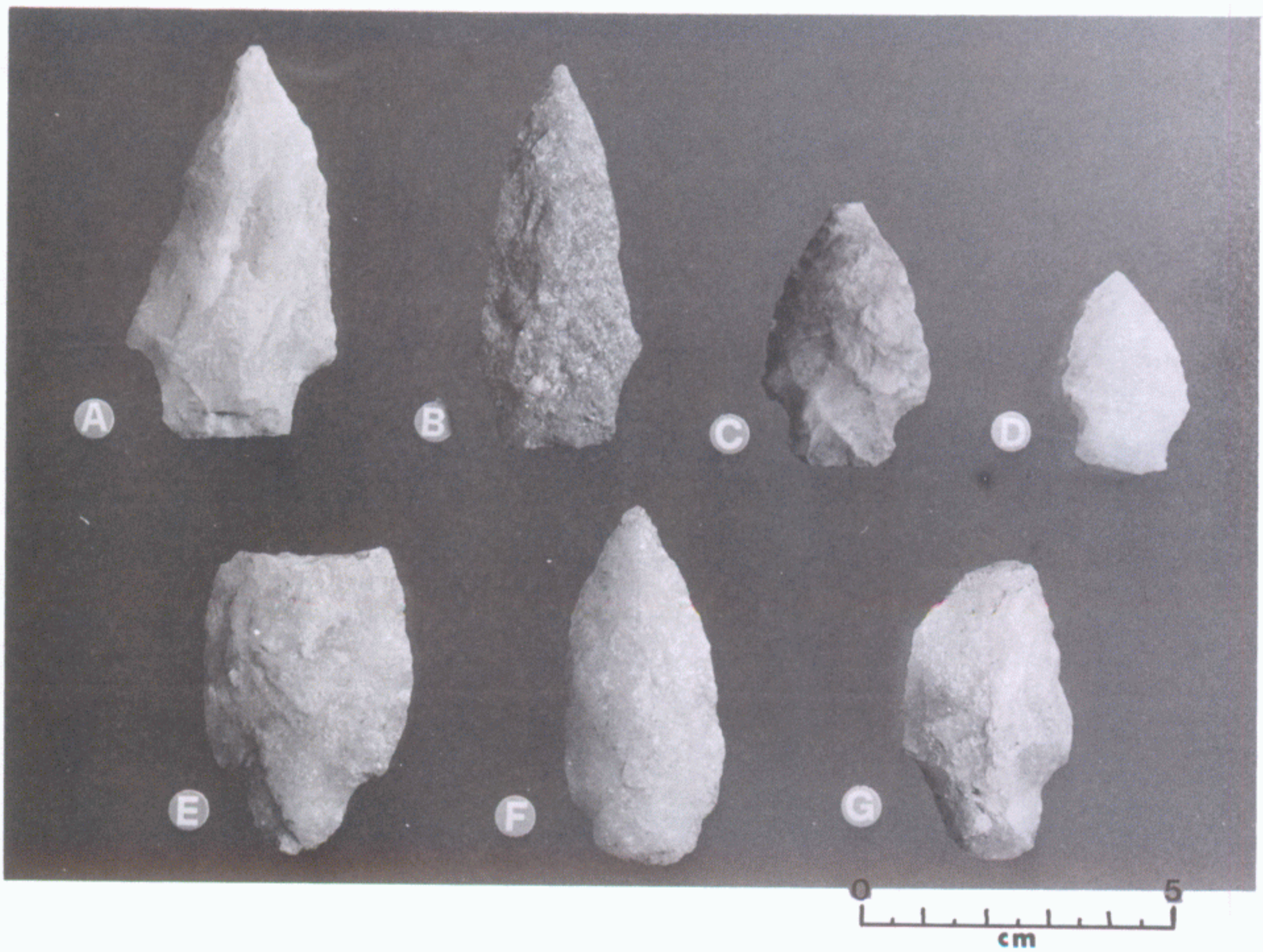

Plate 11
Savannah River Stemmed and Morrow Mountain
Projectile Points
a-d: Savannah River
e-g: Morrow Mountain

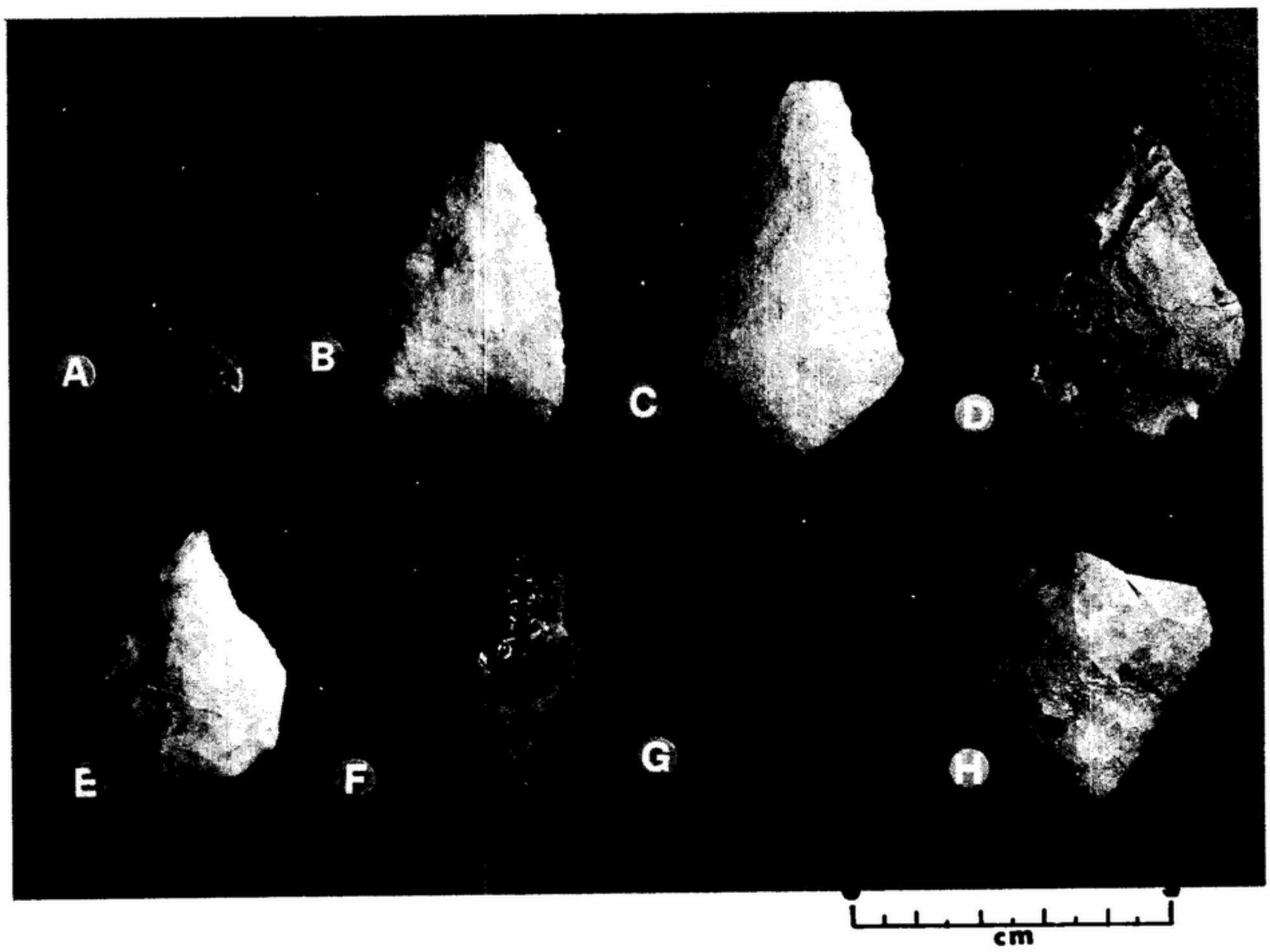

Plate 12
Other Projectile Points and Bifaces from the
Lithic Workshop Excavation
a: Stratum G
b,f,g: Stratum H
d,d,e,h: Stratum I

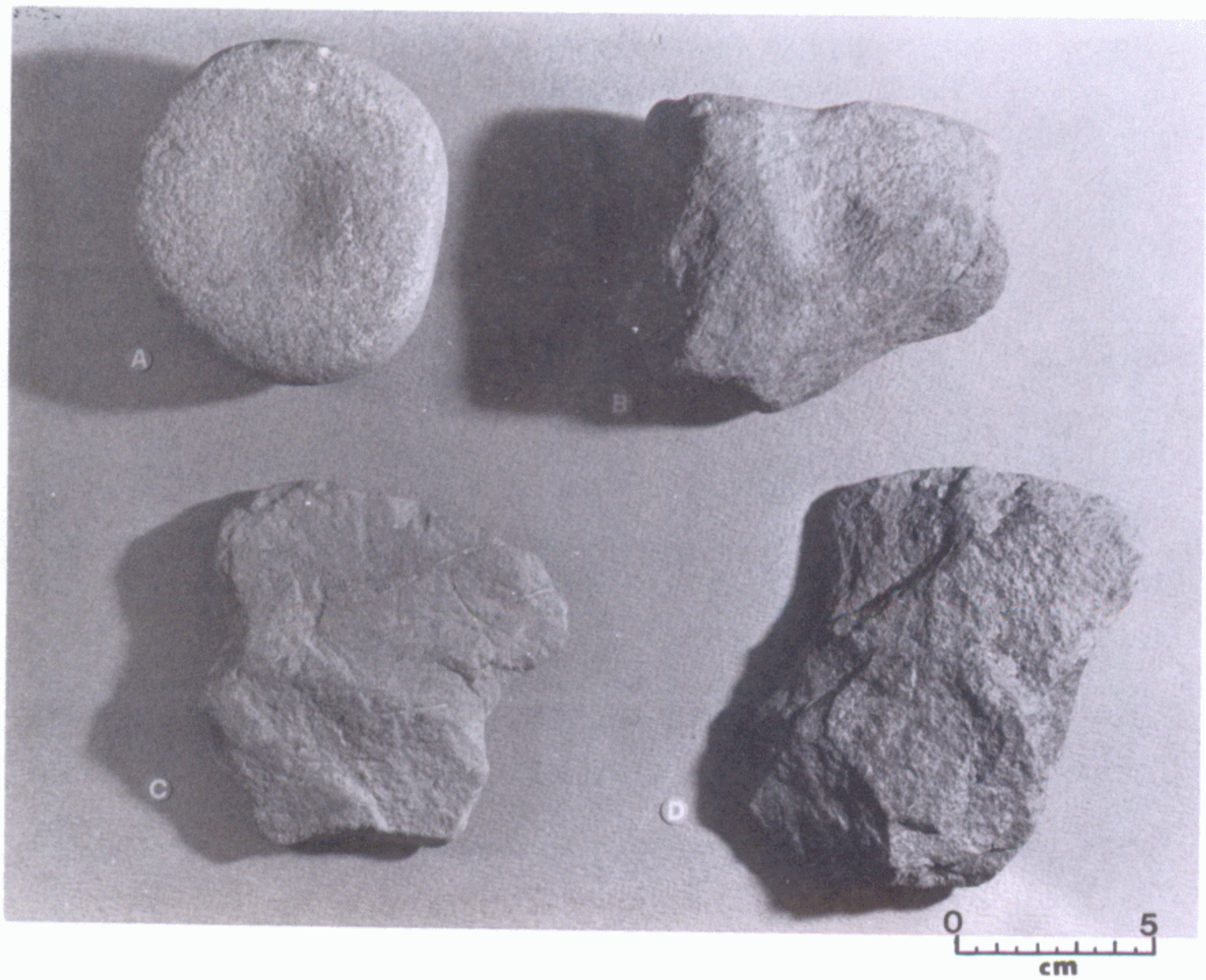

Plate 13
Nutting Stones and Chipped Stones, Hoes or Axes
a,b: Stratum H
c: Surface
d: Stratum A

Plate 14
Ground Stone Artifacts
a: fully grooved axe from Stratum A
b: 2-hole gorget from Stratum G

Plate 15
Cobble Hammerstones from Stratum H
at the Lithic Workshop