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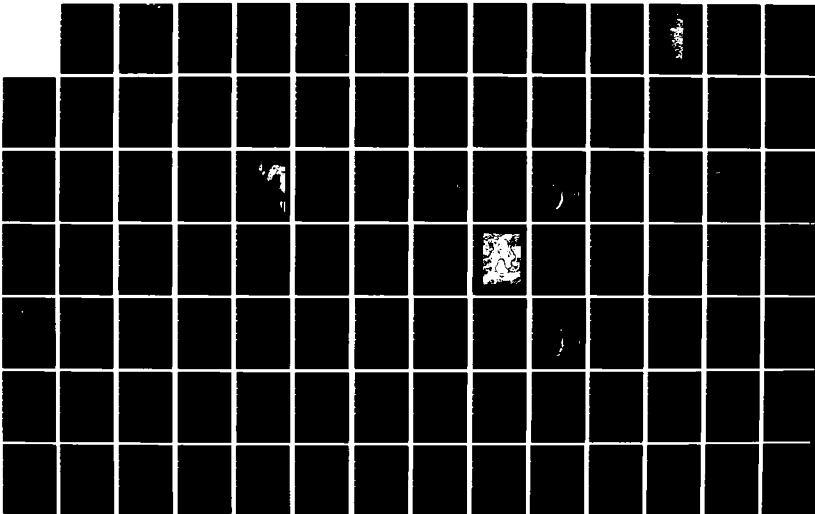

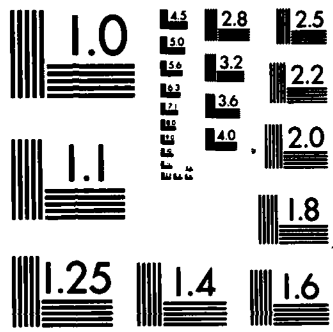

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Excavations in the Lubbub Creek Archaeological Locality

Volume I

of Prehistoric Agricultural Communities in West Central Alabama

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Prehistory	Lithics	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The excavations conducted in the Lubbub Archaeological Locality examined in detail a Mississippian period settlement located on the Tombigbee River, in Pickens County, Alabama. Work at the site was carried out by the University of Michigan between 1978 and 1979. Nearly 25,000 square meters of the site were excavated, uncovering a mound, Mississippian house sites, features, and post-holes. Detailed analyses were carried out on the lithic, ceramic, faunal, floral and human skeletal materials recovered from the site. Site community patterns

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20. are described and compared to other Mississippian period sites in Alabama.

EXCAVATIONS IN THE LUBBUB CREEK ARCHAEOLOGICAL LOCALITY

Volume I
of Prehistoric Agricultural Communities
in West Central Alabama

Investigations conducted by the University of Michigan, Ann Arbor, Michigan, under an agreement with the Heritage, Conservation, and Recreation Service, Interagency Archeological Services -- Atlanta, with funds supplied by the U.S. Army Corps of Engineers, Mobile District, in partial fulfillment of Contract Numbers C5861(79) and C5970(79). Christopher S. Peebles, Editor. 1983.

TO

David L. DeJarnette
who showed us the way;

Bennie C. Keel
and
Jerry J. Nielsen
who got us involved;

and

David M. Plawchan
who helped us make it happen.

And in his vision he saw the fabulous lost cities, buried in the drifted silt of the earth -- Thebes, the seven-gated, and all the temples of the Daulian and Phocian lands, and all Oenotria and the Tyrrhene gulf. Sunk in the burial-urn of the earth, he saw the vanished cultures: the strange sourceless glory of the Incas, the fragments of lost epics upon a broken shard of Gnossic pottery, the buried tombs of the Memphian kings, and imperial dust, wound all about with gold and rotting linen, dead with their thousand bestial gods, their mute unwakened ushabtti, in their finished eternities.

He saw the billion living of the earth, the thousand billion dead: seas were withered, deserts flooded, mountains drowned; and gods and demons came out of the South and ruled above the little rocket-flare of centuries, and sank -- came to their Northern Lights of death, the muttering, death-flared dusk of the completed gods.

But, amid the fumbling march of races to extinction, the giant rhythms of the earth remained. The seasons passed in their majestic processionals, the germinal Spring returned forever on the land -- new crops, new men new harvests, and new gods. (Look Homeward Angel, Thomas Wolfe, p.519.)

PREFACE

We came out of the field a few days before Christmas, 1979; we closed the field camp in March, 1980; we put the last words into the draft report in May, 1981. These are the bare facts. They are shorn of sweat and frustration as well as of pride and achievement. Since May, 1981, when I have had a chance for sober reflection--usually when looking out over the Singel Canal toward Amsterdam's central flower market--I am amazed and feel extremely proud of the accomplishments of the archaeologists who comprised the Lubbub Creek Archaeological Project. They, with some direction from me, and with sustained support and cooperation from a host of colleagues and friends, completed one of the largest archaeological projects in the Southeast since the days of the Great Depression. The field crew excavated almost twenty-five thousand square meters: most of it within the confines of a prehistoric, Mississippian settlement. From this area they processed almost two thousand cubic meters of deposit through one millimeter mesh. Much of this volume was excavated by hand; the remainder was dug with power equipment. The laboratory crew cleaned, measured, classified, and catalogued almost one million pieces of material. In the course of this work, only one field drawing was lost and only three small lots of artifacts were mixed. From excavation to final report, the archaeologists associated with this project conducted themselves with intelligence and diligence.

Merely being listed in the Acknowledgements to this report is not sufficient reward for the effort and skill they expended, but this litany and my thanks are all that I have to offer. Under the same terms, I also extend my thanks and gratitude to my colleagues at the Albert Egges van Giffen Instituut voor Prae- en Protohistorie, Universiteit van Amsterdam, for showing me that there is "life after Lubbub."

Christopher Spalding Peebles
1981/1983
Amsterdam and Evanston

ACKNOWLEDGMENTS

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Christopher S. Peebles	Project Director	I-IV
	Field Director	III

[1]Phase I Testing: October 1978-March 1979
Phase II Excavations: March 1979-August 1979
Phase III Excavations: September 1979-December 1979
Phase IV Analysis: March 1980-March 1981

Figure 1. Lubbub field crew, 20 December 1979.

Colleagues and Friends

U.S. Army Corps of Engineers: Mobile District, Mr. Jerry J. Nielsen, Mr. Ernie Seckinger; Pickensville Office, Mr. L.E. Bridges, Mr. Terry Jangula; South Atlantic Division, Dr. Marc Rucker.

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TABLE OF CONTENTS

Before these archaeologists there were others. Jerry Nielsen and Ned Jenkins from the University of Alabama combed these bottomlands off and on between 1970 and 1976 in order to document the importance of the archaeological remains buried within them. In fact, it was Jenkins's 1977 test excavations in the Lubbub Creek Cutoff that removed the project area from the Corps' roster which said "no additional work" to the one which said "significant historical remains present." Before them, just at the turn of the twentieth century, Clarence Bloomfield Moore docked the steamboat Gopher at a landing near Lubbub Creek and put a few "trial holes" into the mound that rose out of the center of the bottoms. He found little there to recommend further work, so he continued his archaeological odyssey up the Tombigbee to Columbus, Mississippi. Fifty years later the landowner bulldozed the mound because it got in the way of the hay harvest. Perhaps there were archaeologists in between, but they have left neither collections nor written records, so without either one or the other, they are not part of our encapsulated past.

That day in November, 1978 was filled with more than pastoral impressions. The previous work in the Lubbub Creek Archaeological Locality had been of the highest quality. The information which came from the analyses of these materials suggested that a large and important Mississippian period agricultural settlement lay buried within the project area. Furthermore, these materials suggested that there were some connections between this settlement and another Mississippian culture centered at Moundville, some 60 kilometers to the east. Moundville, and the archaeological phase and "culture" which bears its name, comprises a score of major settlements, the largest of which, Moundville, covers more than 100 hectares and has 20 large, truncated pyramidal earthen platform mounds. Thus on that day, and for almost three years thereafter, four problems would dominate the research in the Lubbub Creek Archaeological Locality. First, because the extent of any surface indications of the Mississippian community was masked by thick grass, and because some of the remains were buried beneath river sediments, the limits of this and any earlier archaeological components had to be delineated. Second, once the extent of the archaeological components were defined, the problem became: How can a preservation plan be drawn that will conserve, in situ, the maximum amount of these archaeological resources and, at the same time, how can a representative sample of remains be drawn from the areas that cannot be conserved? Third: How can archaeological research and analyses be structured so that questions about the evolution of this Mississippian community can be answered in detail? Fourth: What relationships can be established between this settlement and Moundville? Furthermore, how did this community fit into the later prehistory of the Southeast?

If we take the broad position that theory and expectation condition what we see as data, what we see as important, then contemporary anthropological archaeology can be seen as using a very broad net with very fine mesh to capture these data. Take Albert Spaulding's categorization of archaeological data as the best first approximation. His "dimensions of archaeology" are space, time, and form as measured over material remains. Space can be as simple as three-dimensional, Cartesian coordinates, as complex as the stratigraphy in a Medieval town, include archaeological features like structures and pits, and end with synthetic models of community plans and settlement systems. Time can be measured radiometrically, by calendars, remains: books, documents, artifacts, and the remnants of the natural world. These items and symbols form the testimony that historians turn into evidence and facts through a process of question, hypothesis, test, and critical evaluation. It is the preservation of this "encapsulated past" -- or at least a significant sample of it -- that is the justification for the excavations in the Lubbub Creek Archaeological Locality. This same justification can be applied to the words in this report -- which itself can be seen as both testimony and evidence. Thus this monograph stands here, clearly in the present, equipped with and guided by concepts and theories from the historical sciences, human biology, and ecology. Its authors employ propositions about the relationships among human populations, culture, and the natural world to give contemporary meaning to the materials abandoned on a piece of high ground overlooking the right bank of the Tombigbee River by sequent Native American populations over a span of seven thousand years. The set piece of this prehistory, however, is not the sum of the individual archaeological remains spread out over the millennia but a series of agricultural settlements -- the archaeologists would call them Mississippian -- which were inhabited between the tenth and seventeenth centuries of our era.

There are many time-lines and events that must be gathered together in this introduction. Perhaps the first should be a day early in November, 1978. On one of that month's cool, clear autumn mornings I stood on the crest of the bluffs just at sunrise and looked out over the bottomland. The scene was one of pastoral tranquility: one worthy of a Monet canvas. To the east, far beyond the Tombigbee, the pine forests on the Cretaceous hills were etched against an orange and gold band of sky. To the west, behind the barns and silos, the sky was black. Looking eastward again, the first light of dawn -- the false dawn of sailors and pilots -- brushed its light gently across dew-drenched, dusty green bermuda grass in the bottoms. Fog hung thickly, conformably, tenaciously over the surface of the river, and its edges were sharply sculpted by the shoreline. Almost as an act of defiance of the hydrodynamic order, an occasional patch broke away from the coherent ribbon above the water and drifted slowly among the sweetgum and magnolia trees that lined the banks. As the first part of the sun's white ball rose above the horizon, the ill-defined shapes in the bottoms became intelligible: masses low to the ground proved to be cows at rest; the large, dark floating masses suddenly were connected to the ground by thick trunks -- they were oak trees left for shade when the virgin floodplain forest had been cleared. Owls came to roost and hawks took up their vigil. Rodents and rabbits emerged ever so tentatively from their burrows. Deer browsed at the edge of the forest. Migratory birds awakened and continued their journey south.

In less than three weeks a score of archaeologists would invade this morningtime. They would drive their trucks and vans over the crest of the bluffs, follow the road down into the bottoms, open and close the innumerable gates that kept the cows in their pastures, and stop only when they were well within the confines for the project area. There they would unload field equipment -- transits, plane tables, cameras, stadia rods, shovels, and field desks -- and begin the day's work. The diesel engine on the backhoe and the smaller motors on generators and pumps would groove the silence. Fires for warmth and for coffee would fill the air with an oaken perfume. This workday ritual would be repeated Monday through Friday -- holidays excepted -- by as many as fifty archaeologists for the next thirteen months.

CHAPTER 1. INTRODUCTION TO THE RESEARCH IN THE LUBBUB CREEK ARCHAEOLOGICAL LOCALITY

Christopher S. Peebles

A series of high bluffs -- relics of the Pliocene, a geological epoch that ended some two million years ago -- are located just to the east of the small town of Cochrane, Alabama. These bluffs command mile on mile of the present course of the Tombigbee River. Just as the river reaches the northern end of these bluffs it turns abruptly from its southerly path, flows eastward for a few miles, doubles back on itself, flows westward for a few miles, then resumes its southerly course as it passes the bluffs once again. The line of bluffs and the banks of the river define the borders of a triangular tract of prime bottomland more than 1000 hectares in extent. As the river twists around the apex of the triangle -- at the point where Lubbub Creek flows into the Tombigbee from the east -- the bend tightens and describes a peninsula approximately 600 meters wide and over 1000 meters long. This tract of land is designated the "Lubbub Creek Cutoff" on U. S. Army Corps of Engineers construction maps for the Tennessee-Tombigbee Waterway. Their engineers viewed the obtuse angle of the bend as a major bottleneck in the orderly flow of barge traffic up and down the waterway. As a result, they planned to cut a canal across the peninsula, thus smoothing out the bend, and to build spoil areas on each side of the new channel to receive the materials dredged from the canal cut. From the vantage point of the engineer, the peninsula was seen as an obstacle which had to be overcome by sound design and construction. Government and academic historians and anthropologists on the other hand saw this tract of land as a natural repository for the material remains left by uncounted generations of Native Americans. There was evidence that it had been a stopping place for hunter-gatherer groups from the fifth millennium before Christ through the first millennium of our era, and that subsequent Native American populations had chosen the area for their agricultural fields and for permanent settlement. Thus for these scholars the project area was viewed as an anthropological archive which contained information about Native American prehistory and history that stretched over several millennia. Because of the extensive and comprehensive nature of the archaeological resources in the project area, it was designated the Lubbub Creek Archaeological Locality. It is the course of the anthropological and historical research in the Lubbub Creek Archaeological Locality that will be introduced in this chapter and narrated in the chapters and volumes that follow.

History and prehistory connote the past, but both are firmly rooted in the present. They are, in Collingwood's words, "the past encapsulated in the present." The threads which bind the past to the present are material

Chapter 9

Chapter 10

Chapter 6

Chapter 7

Chapter 8

List of Tables

Figures

through counting tree rings, and with minute but regular changes in the decoration and form of artifacts. Form encompasses direct measures of artifacts, and the measures chosen relate directly to the questions asked. Does similar form and edge angle in certain classes of lithic artifacts indicate the use to which they were put? Can similarity among artifacts be related to a common "mental template," to use James Deetz's terms, and indicate common cultural connections? Do differences in the decoration of pottery or any other class of artifacts serve to convey critical bits of symbolic information that mark cultural boundaries between groups? Can the size of seeds from certain species of plants be used as an indicator of their domestication? Can the assemblage of floral and faunal remains be used to measure the adaptation of a group? Can the level of strontium in human bone be used as a measure of plant food in the diet? Can human skeletal remains be used as a measure of the health and fecundity of the population? Can a combination of these families of dimensions tell us about the prehistory of a human population and their culture? Can we use these data to test propositions about the evolution of culture and society? By the time that we have come to the last of these questions, it is clear that two additional dimensions must be added to and must be seen to cross-cut Spaulding's original three. These are dimensions of precision of observation and measures of adequacy of sample.

Precision of measurement has become finer as the questions asked by archaeologists have become more specific and complex. For example, both edge-wear on lithic artifacts and wear on the facets of human teeth can be related directly to diet: what materials were cut and scraped by the tools; what categories of foods -- plants, leaves, seeds, meat -- were chewed with the teeth. Both measures can be taken best with the aid of a scanning electron microscope, and in these cases, this level of precision is necessary to answer questions about diet and use. The notion of sample is even more important. If the material remains left in the ground -- the encapsulated past -- are seen as the by-products of the operation of a cultural system through time, and if this operation is seen as spread out over space and time, then the materials from which prehistory is to be written must reflect the distribution and abundance of these materials in the contexts and in the approximate frequencies with which they were incorporated, through various taphonomic processes, into the archaeological record. Notions of these three primary and two secondary dimensions were central to the research design which guided work in the Lubbub Creek Archaeological Locality.

This metaphor which likens archaeologists to fishermen and research designs to fishing nets is very near the mark. As recently as twenty-five years ago, a few archaeologists still used sorting-boards rather than screens and saved only finished artifacts rather than all classes of materials used and discarded by human populations. Their mesh size was so large and their net was so limited that they missed the byproducts of day-to-day activities that were characteristic of cultural systems. Debitage from the manufacture and use of artifacts was dismissed as inconsequential, and the conceptual mesh let floral and faunal remains slip through completely, only to be reincorporated into the archaeological record in a new context. In short, materials for radiocarbon dating, direct evidence for diet, and indirect environmental indicators were discarded in favor of finished items and the material end-products of purposive acts. Only the marked elaboration of the questions asked by archaeologists has broadened our concepts of what constitutes "data" and the means we must employ to recover them. The use of fine-mesh water screens, flotation devices, and direct physio-chemical measures of *in situ* deposits have been some of the consequences of new problems and more specific questions. Likewise, the laboratory analyses of the materials which are recovered have gone far beyond usual categorization, derivative ideal types, and archaeological "cultures" drawn from an intuitive notion of similarity among material remains.

The notion of an adequate sample likewise can be brought within the boundaries of the fishing metaphor. If one desires a maximum yield of fish, then trawling over the Georges Banks with a wide mesh net is a wise choice. If, however, the goal is to estimate the density, distribution, abundance, and variety of fish in the oceans off the Maritime Provinces of Canada, then trawls with various mesh sizes set at various depths must be made at a sample of locations over Canada's eastern Continental Shelf. By the same token, if pretty artifacts are the goal, then looting a Mimbres site is a perverse but good choice. If, however, the prehistory of a settlement, time period, and region are the goals, then the former requires an adequate sample of remains from a bounded three-dimensional volume, a site, and the latter two require an adequate sample of sites from an even more extensive volume, a region.

The metaphor fails only in the end. If left to their own devices, fish will reproduce. Unfortunately, archaeological sites will not. All other things being equal, we get only one pass with our net through an archaeological site.

Precision of recovery and subsequent analysis of the materials from the Lubbub Creek Archaeological Locality generally presented few problems. The analytical net was set at a level of fineness and inclusiveness that was equal to the best archaeological research anywhere. Archaeological features --e.g., pits, burials, structures -- were divided into their constituent parts -- e.g., levels, postmolds, depositional events, rebuilding episodes --and each micro-context was treated as a separate and significant archaeological unit. Minimally the fill from each significant unit was screened through 1mm mesh, and for most units, a standard volume of deposit was put through a flotation machine (see Chapter 4, Volume I). All materials from the screens and flotation filters were saved, processed by the field laboratory, and eventually analyzed in detail (see Volume II). Throughout the process, from excavation, to analysis, to curation, a Management Information System was used to monitor the day-by-day progress of the field and laboratory work (see Volume III).

Sampling within the Lubbub Creek Archaeological Locality presented a challenge. Basically it required that the haystacks (the archaeological components) be identified first, and then a representative sample of needles (the remains) be recovered. Certain background information was available from which a sampling strategy could be built. The evidence in hand suggested that the Tombigbee River channel had migrated to the north and east of the project area, and relict terraces and channels were present in the eastern part of the

Locality, but most of the peninsula seemed to have been stable over the last several millennia. These data indicated that most archaeological components would be in situ rather than dislocated, rolled, and redeposited by the river. Much of the bend is blanketed by prime agricultural soils, the nearby floodplain, prairie, and upland habitats support dense animal populations, and the river itself supports productive fish and molluscan populations. The immediate area and region, therefore, would have been attractive to both hunter-gatherer and agricultural populations, and the sandy loams would be easy to excavate. Finally the archaeological data in hand showed that there was a major Mississippian (A.D. 900-1600) settlement as well as earlier Woodland (500 B.C.-900 A.D.) and Archaic (5000-500 B.C.) components present in the project area. The problem was that the project area covered more than 110 hectares (1 ha = 10,000 m^2; 110 ha = 1,110,000m^2; 110 ha = roughly 300 standard football fields), and archaeological survey and test excavations had covered less than one percent of it.

The research design, which was constrained only by the time available in which to complete it, was built around four phases of work. The first phase encompassed the excavation and analysis of an adequate sample of test units in the 110 ha project area. Once the density, distribution, and variety of archaeological components had been established, a preservation plan was drawn for the prehistoric and historic resources present in the project area. The second and third phases were designed to carry out the provisions of the preservation plan, and there was a formal review of the progress of the field work between these two phases. The fourth and final phase comprised the analysis of the materials recovered by the fieldwork, the preparation of this monograph, and the curation of the collections.

The Phase I sampling strategy was relatively straightforward. A one percent sample by volume was excavated in the parts of the project area either considered suitable for habitation or in which archaeological remains had been found in the past. In areas considered less suitable for habitation, a one percent sample by area was excavated. In areas subject to flooding on a regular basis, deep test units were excavated to prospect for buried sites, but no other work was conducted in these areas unless the deep tests proved to be positive. The number of features per unit area constituted the sample measures. From the test statistics produced, uncannily accurate predictions of the density and distribution of Mississippian components, and somewhat less accurate but acceptable estimates of earlier Woodland and Archaic components, were made. These data provided the foundation for a preservation plan (see Chapter 4, Volume I).

Phase I fieldwork began early in December, 1978, and ended early in March, 1979. During these three months, over one thousand test units were excavated, several hundred features were identified (but not excavated), and approximately fifty thousand artifacts were recovered. When the densities of features and diagnostic artifacts were plotted on a map of the project area, a solid outline of the distribution of archaeological components emerged. The earlier hunter-gatherer components, the Middle and Late Archaic (5000 B.C.-2500 B.C.) and the Gulf Formational (2500 B.C.-500 B.C.), were for the most part small, ephemeral scatters located in the extreme eastern part of the project area. Later hunter-gatherer remains, the Early and Middle Woodland components (500 B.C.-500 A.D.), were represented by even sparser scatters of material which seemed to have no clearcut spatial pattern. The Late Woodland (A.D. 550-900) components formed well-defined, separate sites and were located in the northern and eastern portions of the project area. The Mississippian components -- the remains of what seemed to be a large agricultural settlement of long duration -- were distributed in a dense arc in the center of the project area. As later analysis showed, these Mississippian components were arranged in a 100m-wide semicircle which was centered on the mound.

When sample statistics were generated from the Phase I data, the estimates for the total number of archaeological features in the Lubbub Creek Archaeological Locality were staggering. They predicted more than two hundred structures, more than one thousand burials, more than two thousand pits, and literally millions of artifacts. Prudence dictated that plans be made to preserve as much of these remains as might be possible. To that end, the eastern half of the project area was removed from any construction plans. Thus, in one decision, almost all the Archaic and Gulf Formational components, most of the Woodland sites, and the eastern half of the Mississippian settlement would be preserved. The whole eastern part of the Lubbub Creek Archaeological Locality would become an island in the Tombigbee River and it would be protected as an archaeological preserve. As a result of these decisions, all subsequent research would be focused on the western half of the project area. These twelve hectares contained a dense concentration of Mississippian materials plus whatever remained of the mound.

The research design for Phases II and III of the work called for a 20% random sample by area of the western components and complete excavation of the mound remnants. As with Phase I, the sampling scheme was relatively simple. Twenty 10m by 10m excavation units would be located randomly in each hectare that contained significant Mississippian remains. Each test unit would be stripped, cleaned, expanded to include the whole of any features or feature complexes present in the original unit, excavated, and then reexcavated until sterile soil was reached. Between early May and late December, 1979, more than 20,000m^2 were cleared and cleaned, mapped and excavated (Figure 1); more than 10,000m^3 were moved; and more than 2,000m^3 were sieved through 1mm mesh. More than 55,000 person-hours were expended on these excavations -- slightly more than one half of the 100,000 person-hours expended on the project as a whole (see Volume III).

The quality of the data produced by these excavations lies not in the superlatives that can be applied to them, but in their manner of recovery and in the nature of the sample from which they were produced. First, recovery was standardized across the site. Each feature was treated in the same way, and the fill from each was processed in the same manner. Flotation samples, for example, were taken from all features. Thus if a particular species of plant was present in one context but not in another, it was because it actually was present in one and not in the other, not because a sample from one was sent for flotation but someone forgot to send a sample from the other (see Appendices B and H, Volume III). Second, these data are an adequate sample of the western half of the Mississippian components. As such, sample parameters can be calculated, and comparisons among these measures across space and through time take on specific meanings and calculable potential for

Figure 1. Excavations in the Lubbub Creek Archaeological Locality, October 1979.

errors.

The principles which underly the presentation of the data are a continuation of Spaulding's "dimensions" set within questions about human organization and adaptation. The features and their contents have been grouped into archaeological components and, where possible, into archaeological "communities" based on their temporal and spatial contiguity. These communities are then cast in the contexts of their cultural and natural environments. The fundamental data are presented in Volume III and its nine Appendices. The fine scale analyses of these data are presented in Volume II: in Chapters on ceramics, lithics, floral, faunal, and molluscan remains. The narratives of the excavations, in the context of temporally bounded archaeological components and communities, are the subject of the remainder of this Volume.

The results of the fieldwork in the Lubbub Creek Archaeological Locality give only the briefest of glimpses into the hunter-gatherer populations who stopped there as part of their seasonal round. The few pits from the Woodland period indicate intensive use of a variety of plant and animal species, and in the latest Late Woodland features, corn (Zea mays) is present. Beyond these observations, there is no information on either the extent of their subsistence system, their settlements, or other activities which characterized their lifeways. In short, the data attest only to the presence, not to the detail, of these hunter-gatherer populations (see Chapter 5, Volume I).

What the Archaic and Woodland lack, the Mississippian components more than make up in volume and variety. These components can be divided into three sequent segments -- here labeled Summerville I (A.D. 950-1200), II-III (A.D. 1200-1500) and IV (A.D. 1400-1650) -- which generally correspond to Early, Mature, and Late Mississippian in the Southeastern cultural chronology (see Chapter 3, Volume I). In turn, these components can be assembled into three sequent Mississippian "communities" (see Chapters 6-10, Volume I). These settlements each seem to be independent, "jural" communities. They seem to have been neither a satrap of Moundville nor a subordinate of any other cultural system. Throughout the six hundred years of their span, these communities probably contained no more than a hundred or so persons at any one time. The inhabitants of these communities were agriculturalists, and their crops, especially corn, evolved through time (see Chapter 3, Volume II). Wild plants formed a part of their diet, but they were a minor component up to the Summerville IV, Late Mississippian period, when they assumed a major role. The animals in their diet were drawn from a variety of species, but, like other Mississippian groups, deer, bear, and turkey were the mainstays (see Chapter 4, Volume II). Throughout the span of the Mississippian, the general health of the population was comparatively good (see Chapter 6, Volume II). The evolution of these communities was bound up in the general Mississippian developments in the Southeast, but their evolution was tangential rather than central. Their system remained small, simple, and more-or-less independent, and it ended in the nascent European rivalries for the Southeast and its Indians and its natural riches.

CHAPTER 2. ENVIRONMENTAL BACKGROUND

Gloria Cole

The Lubbub Creek Archaeological Locality is within Township 24N, Range 2W, SW 1/4 Section 9, and is 7 miles southwest of Aliceville in Pickens County, Alabama (U.S.G.S. 1970, 7.5 minute series, Aliceville South Quadrangle, Alabama). Archaic, Woodland, and Mississippian occupations were represented within the archaeological zone of the project area. This Lubbub Creek Archaeological Locality covered 75 hectares and included several numbered archaeological sites. The Summerville Mound (1-Pi-85), a palisaded habitation area, and cemetery (1-Pi-83) are major features of the Mississippian occupation in this area. The spatial relationship of the Lubbub Creek Archaeological Locality to Moundville phase and other Mississippian mound sites in the area is shown in Figure 1. Since the principal components within the Lubbub Creek archaeological zone represent a Mississippian horticultural society that to a certain extent also practiced hunting and gathering, those features of the environment relevant to this mixed subsistence pattern are emphasized in this chapter.

Many writers have observed that Mississippian populations selected certain site locations over others (Ward 1965; Larson 1971; Jenkins, Curren and DeLeon 1975; Lafferty 1977; Smith 1975, 1978; and Peebles 1978). It has been stated that Mississippian sites typically are located within flood plain environments, specifically where the river flows from one natural area to another (Larson, 1971). It also has been observed that Mississippian sites are located within meander-belt zones (Smith 1975, 1978). Prime agricultural soils, as well as diverse biotic communities are concentrated within these environmental intersections. Larson (1972) has suggested that locations meeting these requirements were so rare that they were fortified against encroachment.

The Lubbub Creek Archaeological Locality is adjacent to the Tombigbee River flood plain, within a zone of natural physiographic transition, and, during the period of Mississippian occupation, would have been within a meander-belt zone. It is situated at a point where the Tombigbee River and its associated flood plain and terrace deposits form a transitional zone between the Alabama Coastal Plain uplands (Fall Line Hills) and the Black Belt. The Mississippian habitation area was, prior to a cutoff which occurred early in this century, adjacent to a meander which, probably since Pleistocene times, ranged east of the occupation zone. The flood plain soils in this area, due to the proximity of the river to an outcrop of the Selma Chalk, are intrinsically the most productive corn soils in the county. The Lubbub Creek area was fortified during some periods of the Mississippian occupation. Whether rare environmental resources were one reason for the construction of

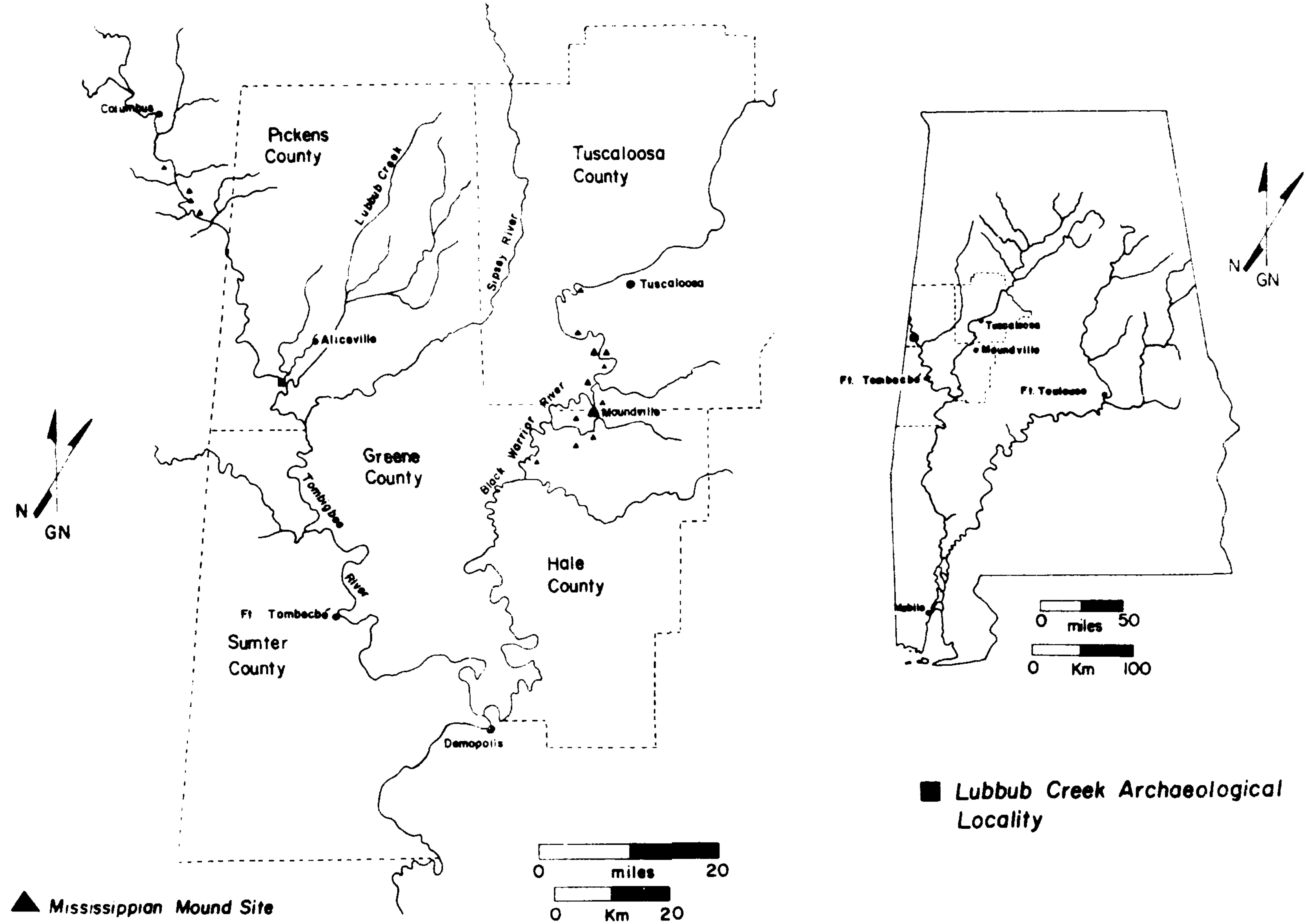

Figure 1. The Lubbub Creek Archaeological Locality in relationship to Moundville phase sites, other Mississippian mounds in the Tombigbee River valley and selected historic sites.

these fortifications is considered in this chapter.

The task of delimiting environmental variables relevant to the Lubbub Creek occupation is seen here as one of segmenting continua. The surface geology, soils, and vegetation described for the area have evolved from but are not necessarily the same as those which existed in the past. In the following sections, the extant environmental data, and the probable effect of continued modification by both man and nature, are evaluated so that the environmental conditions which may have prevailed in the Lubbub Creek area prior to A.D. 1500 can be reconstructed.

THE PHYSICAL ENVIRONMENT

Land forms, the course of stream and river channels, soils, vegetation, and fauna which develop in an area are ultimately related to the underlying geologic formations. All of these aspects of the environment are shaped by the prevailing climatic regime. The geology, climate, and formation of alluvial deposits, and the effect of these on stratigraphic profiles recorded during the Lubbub Creek excavations, are described in the following sections.

Geologic Formations

The geophysiography of west central Alabama was formed as Upper Cretaceous coastal seas receded and exposed a concentric series of old rock and marine deposits. The division between the Coastal Plain, which was the limit of the inland sea, and the Appalachian Highlands is marked by the Fall Line. Within Alabama, the Coastal Plain formations outcrop in a series of southeasterly trending arcuate bands supporting crescent-shaped hilly belts formed along the more resistant areas of the underlyir geologic formations (Figure 2). Upper Cretaceous deposits, which outcrop from northeast to southwest within Pickens County, are, from oldest to youngest, the Tuscaloosa, Eutaw and Selma groups.

The Tuscaloosa formation underlies that part of the country north and east of Carrollton where it supports a hilly upland with steep to precipitous slopes at elevations of 400 to 500 feet (O'Neal _et al_. 1917). This formation consists of irregular beds of sands, clays and gravels deposited by coastal streams. The maximum depth of the Tuscaloosa formation in western Alabama is 1000 feet.

The Tuscaloosa gravels differ in composition within the state and reflect the composition of ancient basement rocks in adjacent upland areas to the north. In eastern Alabama, the gravels contain a large percentage of quartz derived from pre-Cambrian crystalline rocks. In the western part of the Tuscaloosa outcrop there are large proportions of chert derived from Paleozoic upland formations (Stephenson 1926:233). This differential composition of chert and quartz is reflected in the lithic inventories of prehistoric sites found in these areas. Tuscaloosa gravels are the primary source of river gravels deposited along the Tombigbee River channel, and these gravels were one source of chert for prehistoric populations.

The Eutaw formation overlies deposits of the Tuscaloosa group and extends to the southwestern part of the county to the vicinity of Aliceville where it underlies the Selma Chalk formation and alluvial deposits of the Tombigbee

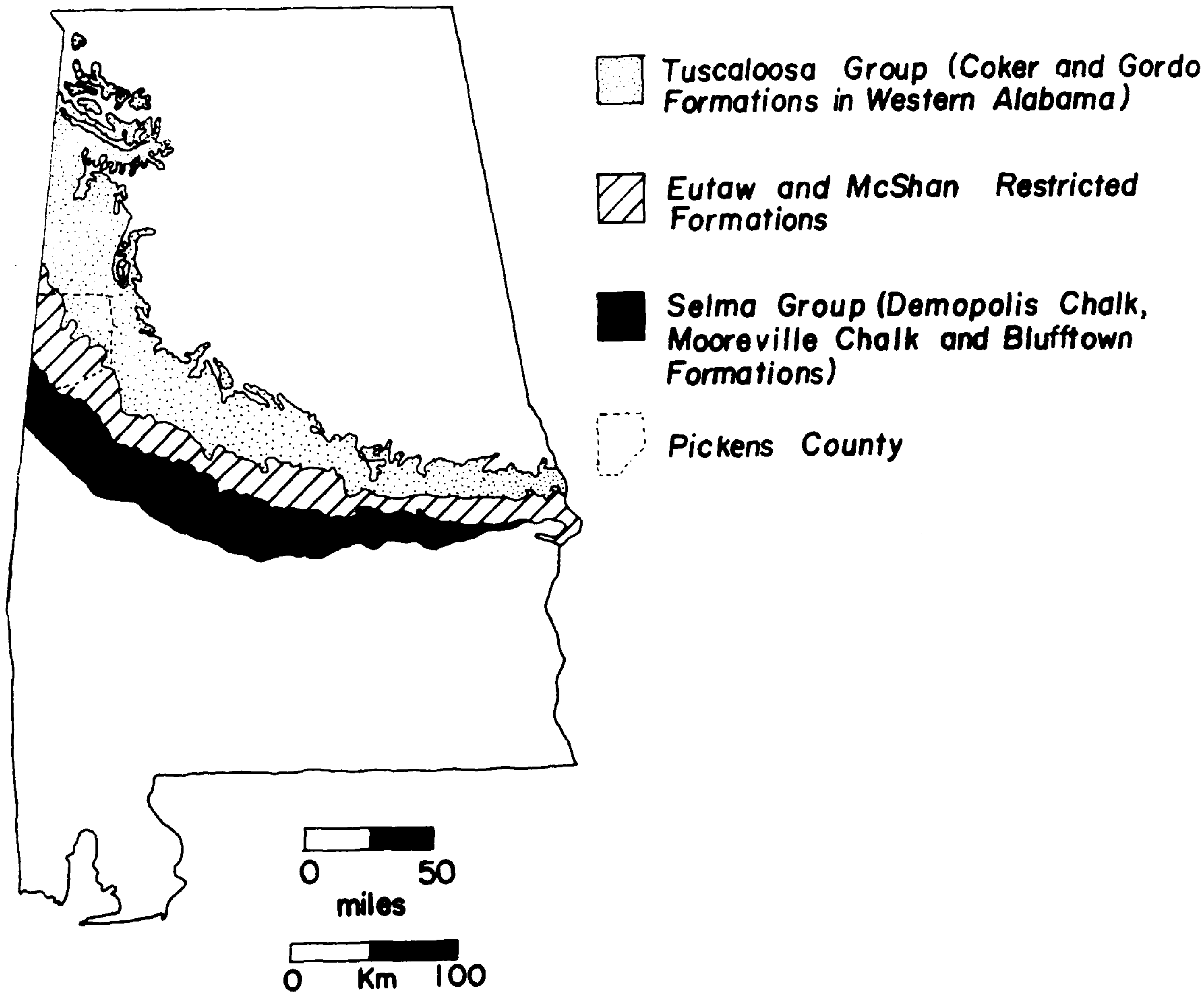

Figure 2. Major geologic formations of west-central Alabama. (Adapted from Copeland 1968, Plate I.)

River (Copeland 1968, Plate 2). The northern part of the Eutaw formation in Pickens County is called the McShan formation. Both formations were deposited in shallow marine waters and are composed of fine to medium grained glauconitic micaceous sand which extends to a depth of 400 feet in western Alabama. The upper 100 feet of the Eutaw formation (formerly called the Tombigbee Sand) consists of glauconitic sand indurated with beds of calcareous material. The sandy portions of the formation support a hilly topography, and the topography overlying the calcareous clay portion is gently rolling (Stephenson 1926:232).

The Selma Chalk formation--called "rotten limestone" in older publications--overlies the Eutaw sands and consists of chalky sands and clays containing shark's teeth, foraminifers, and fossil oysters which indicate its origin in shallow marine deposits. The depth of the Selma Chalk, which has been measured to 930 feet, supports a gentle to moderately rolling topography and produces the dark gray to black alkaline clays of the Black Prairie Belt. The Selma formation is 20 to 30 miles wide in western Alabama (Stephenson 1926).

The Selma formation has been subdivided into the Mooreville Chalk, which includes the Arcola Limestone Member in the upper portion, and the Demopolis Chalk, including the Bluffport Marl Member. The Mooreville Chalk overlies the Eutaw formation in southwestern Pickens County. The Demopolis outcrops in the extreme southwestern corner of the county and extends some 20 miles further south to form the major outcrop in- the northern half of Sumter County (Copeland 1968).

The Demopolis formation is 450 feet thick in western Alabama. The Mooreville Chalk deposit is 300 feet thick and is differentiated from the Demopolis in that it is a "uniform chalky marl," whereas the Demopolis is described "marly chalk" (Copeland 1968:19-20). Demopolis formation deposits contain up to 80 percent calcium carbonate at Demopolis, Alabama, where they are mined for the manufacture of cement.

In addition to the Upper Cretaceous deposits which outcrop along the northern margin of the Coastal Plain, old terrace deposits formed by an ancient Pliocene ancestor of the present Tombigbee River are interspersed among the Upper Cretaceous deposits in central Alabama along the highest divides. These ancient river deposits consist of alluvial gravels, sand, and red loam (Stephenson 1926:296). Second and third terraces, which were formed in the Pleistocene, stand 50 to 75 feet, and 100 to 160 feet, respectively, above the present river level. The first bottom, alluvial deposition from the present flood plain, is still in the process of formation.

Physiography

The northernmost physiographic division of the Coastal Plain is the Fall Line Hills. It is underlain in the north by the Tuscaloosa formation and further south by the Eutaw formation. The Fall Line Hills is a dissected upland; it ranges from elevations of more than 700 feet in northwestern Alabama near the fall line to 250 feet along the northern edge of the Black Belt. Valleys within the Fall Line Hills division range from 100 to 200 feet deep (Copeland 1968:11).

The Black Prairie Belt which lies south of the Fall Line Hills, is formed on the Selma Chalk. It extends from western Tennessee and northern Mississippi into central Alabama. Elevations along the northern border of the Black Belt rise to 250 feet. The Arcola Cuesta, a line of hills that rises 50 to 75 feet above the prairie floor, extends along the central portion of the Black Belt. The Arcola Cuesta trends southeastward from the Mississippi-Alabama border to southeast of Montgomery, Alabama. To the south, in Sumter County near the Mississippi-Alabama border, the Black Belt grades into the Flatwoods, the northeastern division of the Southern Red Hills section. The Flatwoods, a lowland developed on the Porter's Creek formation, is at an altitude of 200 feet. Further east, still within Sumter County, the Black Prairie Belt is bounded by the Ripley Cuesta of the Chunnennuggee Hills. The Ripley Cuesta, formed on the Ripley formation, rises from 100 to 200 feet above the prairie floor and continues eastward from Sumter County to Georgia (Copeland 1968).

Soils

Pickens County soils are derived from the underlying materials, and this parentage is reflected in the classification system used in this chapter (O'Neal et al. 1917). The Coastal Plain upland soils (Norfolk, Orangeburg, Ruston, Greenville, and Susquehanna series) which are developed on the Tuscaloosa and Eutaw formations, are distributed north and east of the Tombigbee River. The Selma Chalk soils (Sumter, Houston and Oktibbeha series) are distributed to the south of the Tombigbee. Alluvial soils, derived both from the Coastal Plain upland soils (Ochlockonee, Cahaba, Kalmia and Amite series), and from the Selma Chalk soils (Trinity clay) are deposited along the flood plain and terraces of the river and streams. The distribution of those soils which are within the 10 km radius resource catchment area circumscribing the Summerville Mound (to be discussed later in this chapter) is shown in Figure 3.

Coastal Plain upland soils are classed within the Ultisol order. Ultisols are characterized by a B horizon of clay that has less than 35 percent base saturation, which decreases with depth (Cotton et al. 1971:90). Soils within this order are further classified as Red (Ruston, Orangeburg and Cahaba series) and Yellow (Norfolk, Susquehanna and Kalmia series) podzolic soils. The color of the podzolic soils is due to the accumulated iron compounds in the subsurface horizons. These soils are subject to leaching of the surface layer which is a thin organic accumulation overlying a horizon which is friable, acid, high in silica and low in fertility (Wilson 1973:8).

Selma Chalk soils are classified as Grumusols, Vertisol order (Oktibbeha, Vaiden and Eutaw series) and Rendzinas, Mollisol order (Houston and Sumter series). The Grumusols, Vertisol order, have a brown surface horizon which develops vertical cracks under low moisture conditions and becomes plastic and tenacious under wet conditions (Wilson 1973:8; Cotton et al. 1971:90). The Rendzinas, Mollisol order, have a surface layer that is black, friable, organic and alkaline. The subsurface horizon contains a large percentage of calcium carbonate but no accumulated clay. Mollisols are formed under grass vegetation and have a thick, friable, dark surface layer, and a base saturation of more than 50 percent (Cotton et al. 1971:90).

Alluvial soils within Pickens County are distinguished by their elevation

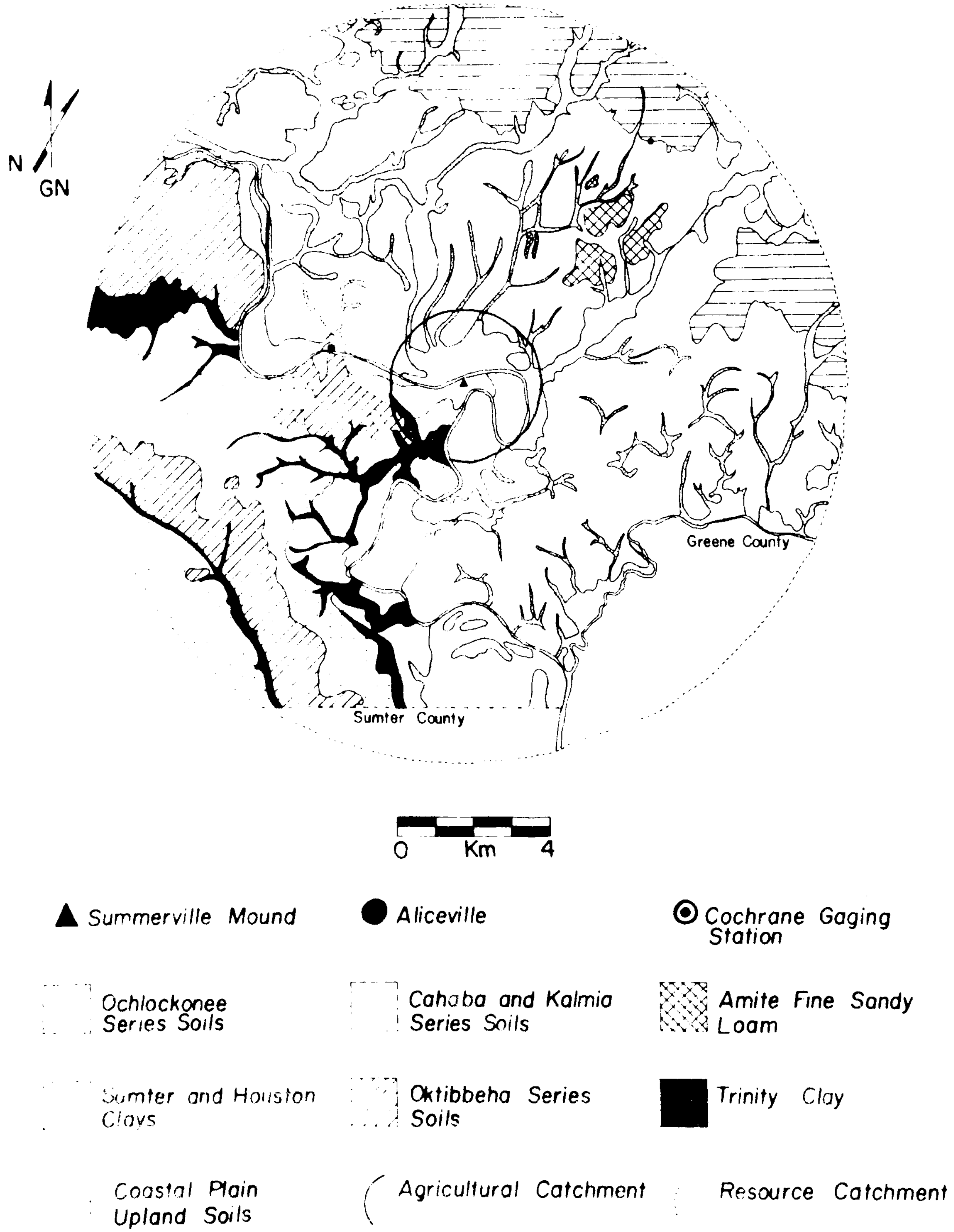

Figure 3. Distribution of soils within the Summerville Mound 2 km and 10 km radii catchments (adapted from O'Neal et al., 1917).

settlement systems. Time can be measured radiometrically, by calendars,

above stream level as well as the parent material from which they are derived. These soils, except for Trinity clay, are derived from the Coastal Plain upland soils and tend to have similar characteristics when they do not occur within the active floodplain zone.

The Ochlockonee series and Trinity clay are alluvial soils of the first bottoms. The Ochlockonee series soils, which consist principally of alluvium, are the result of overbank flow and extend to 20 feet above stream level. Trinity clay is an alluvium developed along the active flood plain of streams at elevations 6 to 8 feet above stream level. It is derived from the Houston, Sumter and Oktibbeha soils, and it occurs primarily south and west of the Tombigbee River in Pickens County.

The bottomland soils are recent deposits formed within the mean annual flood zone of the river and adjacent streams (see below). Although these soils are considered to be the best corn soils in the county, their productivity is limited by poor drainage at low elevations, susceptibility to stream overflow, and the clay bottom land soils often can be worked only under a narrow range of moisture conditions.

Cahaba series soils are occasionally flooded but normally lie at elevations above the annual flood zone. Cahaba clay, inundated only by very high water levels, occurs at elevations between 20 and 55 feet above river level. Cahaba fine sand and Cahaba fine sandy loam develop in areas flooded only by extremely high water levels and are between 35 and 55 feet above river level.

Terrace soils include Kalmia fine sandy loam and Amite fine sandy loam. Kalmia fine sandy loam, which occurs at elevations ranging from 25 to 55 feet above river level, has been inundated once, in the period of recorded floods, when water levels reached 140 feet (AMSL). Amite fine sandy loam is an inextensive ancient terrace remnant. Only a few small areas southwest of Aliceville are recorded at elevations above 150 feet (AMSL).

The Cahaba and Kalmia soils are derived ultimately from the Coastal Plain upland podzolic soils and tend to exhibit similar characteristics: they contain accumulated iron compounds and are acid, friable, and low in fertility. Profiles are developed, since these are older soils not directly influenced by annual floods, and they have leached surface horizons and sandy clay subsoils (Cotton _et al._ 1971:89; O'Neal _et al._ 1917). These soils may have been more fertile in the past; that is, prior to land clearing and modern cultivation practices which tend to deplete the organic composition of surface horizons. Still, the inability to retain organic matter is intrinsic to these soils and it is probable that they were always less productive than soils within the active flood zone.

All of the soils discussed above may be described further as zonal, intrazonal, and azonal, terms which describe the relative influence of normal developmental processes on intrinsic soil characteristics (Swenson 1941:76). The Coastal Plain upland soils are zonal; they were developed under normal effects of climate and vegetation. The Selma chalk soils are intrazonal; their profiles reflect the dominating influence of the parent material over weathering processes in their formation. The alluvial soils are azonal; they were formed by geomorphological processes specific to the floodplain and

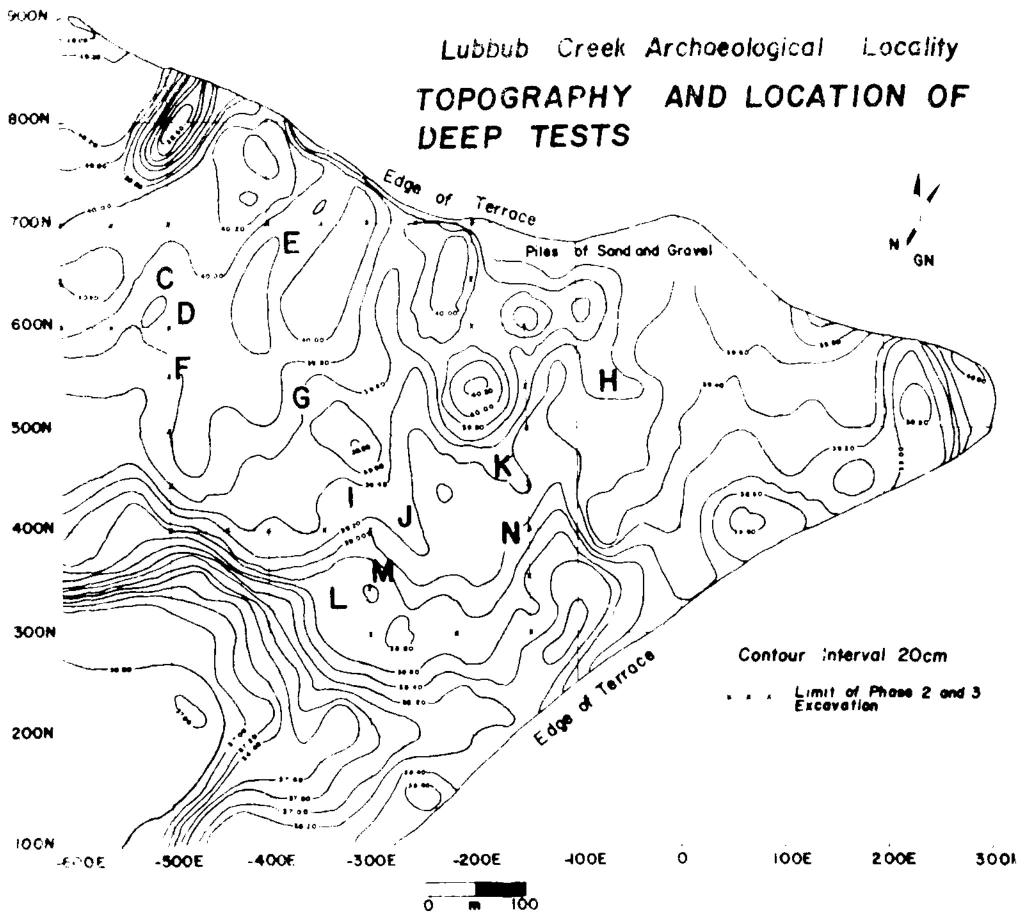

Figure 6. Plan location of deep test profiles. Location of units: C, 659N/-502E; D, 610N/-472E; E, 678N/-383E; F, 577N/-489E; G, 520N/-352E; H, 547N/-71E; I, 436N/-306E; J, 408N/-260E; K, 457N/-169E; L, 328N/-324E; M, 363N/-300E, N 364N/-175E.

Corps of Engineers construction workers, after archaeological excavations were concluded in December, 1979, revealed that in some areas the river gravels were as deep as 3 m below surface.

Soils north of the 400N line from -700E to 200E were sandy loam or loamy sand (Canaba fine sandy loam and Cahaba fine sand). Elevations in this area ranged from a maximum of 40.20 m (AMSL) at the apex of what remained of the Summerville Mound and along ridges to the northwest in Hectares 700N/-600E and 700N/-500E, to 39.00 m (AMSL) along the 400N line. River gravels were encountered in tests and excavations throughout hectares extending west of the -200E line. In Hectares 300N/-300E, 400N/-300E, and 400N/-400E river gravels occurred in the plowzone of units adjacent to the Ditch (Chapter 10), and elsewhere gravels which extended to a depth of 1 m were encountered in auger tests. East of the -200E line, filled relict river channels with few gravels were defined in Hectares 400N/-100E, 500N/000E, 500N/100E and 500N/200E and extended eastward to the river. Soils south of the 400N line were described as sandy clay or clay loam (Ochlockonee silt loam). Near the southern limit of the Phase I testing area, in Hectare 100N/-300E, soils were described as "black gumbo" (Trinity clay). Elevations south of the 400N line ranged from 38.60 m (AMSL) along the northern edge of Hectares 300N/-400E, 300N/-300E and 300N/-200E to 37.80 m along the northwestern edge of 100N/-300E (Figure 5).

Phase II and III excavations were confined to the area south of the 700 line from -200E to -600E and extended south to include Hectare 300N/-300E and a portion of Hectare 300N/-200E. Hectares 400N/-500E, 500N/-500E, and 600N/-600E formed the western limit of the excavation. Phase I tests (auger, 1 by 1 m test units, backhoe strips and deep tests) covered the entire occupation zone not previously tested by the University of Alabama (see Chapter 4). Stratigraphic profiles recorded from deep test pits cut prior to full-scale excavation in the project area are shown in Figure 6. The plan location of these profiles in relation to contour elevations is shown in Figure 5. Profiles A and B, from deep tests in Hectares 800N/-700E and 700N/-700E, respectively, are to the northwest of the area shown in Figure 5 and consequently are not represented in the figure.

Cultural materials recovered during the testing phase indicate occupations from Late Archaic through the Mississippian periods. Low densities of Late Archaic materials were found 60 to 80 cm below surface and were confined to the extreme eastern portion of the test area, east of Hectare 500N/-100E. Fiber tempered sherds, diagnostic of the Broken Pumpkin Creek phase of the Gulf Formational period were recovered 50 cm below surface. Major concentrations of materials of this phase were in Hectares 300N/-200E, 500N/000E and 500N/100E. Scattered evidence of Henson Springs phase, Miller I, Miller II and early Miller III periods were recovered throughout the excavation area north of the 300N line. The major components reflect some occupation of the area from Late Miller II through late Mississippian periods. Late Miller III components were concentrated in the hectares east of -300E and north of 200N, particularly in Hectares 500N/-300E and 600N/-300E. Mississippian components were concentrated in a 23 hectare area surrounding the Summerville Mound (1-Pi-85).

Cultural material generally was found in the first 50 cm below surface. In a few instances, at low elevations within Hectare 400N/-300E, early palisade trenches were encountered below a later occupation zone at 90 to 100

TABLE 3

Characteristics of Flood Plain and Terrace Deposits

	Vertical Accretion	Lateral Accretion	Channel Fill	Channel Lag	Splay	Colluvium
Type of deposit	Suspended load	Bed load, suspended load.	Bed load, suspended load.	Bed load.	Bed load	Slope wash, sheet erosion
[illegible]	Flood plain surface, may accumulate in levees along channel	Inside bank of channel bends.	Within channel.	On channel bed.	Near flood chutes, adjacent to the channel.	Junction of valley wall and flood plain.
Texture	Silt, often clay, including coarse sand near channel	Sand or gravel, may include silt or boulders.	Sand, silt and gravel. May include clay or boulders.	Sand, gravel, and boulders.	Sand, may include gravel or boulders.	Ranges from silty clay to boulders.
Interrelation	Overlies lateral accretion and channel deposits. Underlies or interbedded with splay and colluvial deposits	Underlies vertical accretion deposits. Overlies channel lag or channel fill deposits. May form stratum across entire flood plain.	Underlies vertical accretion deposits. Overlies channel lag deposits. Forms low winding ridges through flood plain.	Underlies channel fill, lateral and vertical accretion deposits. Either as a horizontal stratum, or in linear channel beds.	Scattered lenticular deposits. Overlies or interbedded with vertical accretion deposits.	Interfingers with fluvial deposits at borders of the flood plain.

Adapted from Happ, Rittenhouse and Dobson (1940:342, Table 4).

<u>Flood Plain and Terrace Deposits</u>. River valley deposits have been classified by Happ, Rittenhouse and Dobson (1940). These deposits, which may be encountered in flood plain and terrace stratigraphic profiles are summarized in Table 3. Typical deposits include: (1) vertical accretion deposits, (2) lateral accretion deposits, (3) channel fill deposits, (4) channel lag deposits, (5) flood plain splays, and (6) colluvial deposits.

Vertical accretion deposits are overbank deposits formed under flood conditions as sediment carried as suspended load is deposited over the flood plain adjacent to the river channel. As banks overflow, coarser material is deposited along the channel banks, building up sandy levees, while finer sediments are carried further and deposited over the entire flood plain. Lateral accretion deposits are formed as bed load material is deposited along the inner banks of the channel. These are normally covered by finer vertical accretion deposits as the channel shifts away from the slipoff slope. Lateral accretion deposits derived from the eroded outside bank of river bends, are generally coarser than vertical accretion deposits, but finer than channel fill or lag deposits. Channel fill deposits result from the net accumulation of fill which exceeds scour during flood stages. Under these conditions the accumulated fill results in aggradation of the channel bed. Abandoned aggraded channels may appear as low sandy ridges among other flood plain deposits. Channel lag deposits are the residual accumulation of sorted coarser material developed in a stream bed. Lag deposits are found in old buried channels, and are below the more recent cover of vertical and later accretion. Flood plain splays, appearing as fan-shaped sandy deposits, are relatively coarse sediments which have escaped from the channel through restricted low areas or breaks in natural levees. The constricted chute results in a localized sand accumulation rather than a generalized deposit over the entire flood plain. Flood chutes generating these sandy deposits are located along the northern edge of the Lubbub Creek excavation area. Colluvial deposits result as material from the valley walls is washed or erodes onto the surface of the flood plain. A large zone of Trinity clay, colluvium washed from adjacent Selma Chalk soils, extends along the southern boundary of the Lubbub Creek Archaeological Locality. This colluvial deposition may have been one of the more outstanding features of the area for prehistoric farmers, since the intrinsic potential of this soil for corn production is one of the highest in Pickens County (see below).

All of the alluvial deposits outlined above (except for evidence of aggradation) were encountered during tests and excavation of the Lubbub Creek Archaeological Locality. Deep test profiles included, in addition to channel lag deposits, sand splays and silt or clay lenses deposited by flood episodes. The stratigraphy of the project area as revealed in the deep test profiles is described in the following section.

<u>Stratigraphy</u>. Channel migration across the bend left a series of ridges and swales, tangible evidence of the bar and levee deposits along the former course of the channel. Some of these features now function as overflow chutes along the south bank of the present channel and appear at a series of elevations along the northern edge of the excavation area. These flood chutes are apparent in Figure 5 which shows the plan location of deep test profiles discussed in this section. River gravels were encountered in the one by one meter test units, auger tests, and within the plowzone of some units. In other areas channel lag deposits were well below the surface. Excavations by

The recently cut off meander adjacent to the Lubbub Creek Archaeological Locality is shown in Figure 4. The photograph was taken at relatively high water level in March 1942, on the day before the peak flood stages for that year (see Table 1). Meander scrolls formed by lateral migration of the river channel are visible in the photograph. The large meander scroll near the bottom right in the photograph, called "Dead River," indicates that the meander has migrated upvalley to its pre-1942 location.

Early attempts to date channel sequences have met with recent criticism. Phillips (Phillips, Ford and Griffin 1951) attempted to correlate ceramic sequences with Fisk's (1944) channel chronology for the Lower Mississippi River. Fisk's chronology was based on the assumption that levees with the highest elevation were those most recently formed. However, channel shifts by avulsion, where the channel assumes a former or entirely new location, rather than by the more orderly process of lateral migration, are typical of rivers in some situations. Thus, if the channel assumes a former course where levees had previously been formed, the relationship between channel sequences and levee formation is obscured. These channel shifts appear to be episodic rather than regular, and depend on many variables such as the development of gravel and sand bars in the channel and the relative resistance of the banks to erosion at any given locus (Happ, Rittenhouse and Dobson 1940:339). Saucier (1968,1971) has questioned many of Fisk's assumptions, particularly the assumption that channel movements occur with sufficient regularity to permit dating of channel sequences. The historical reconstruction of features within flood plains and terraces is essentially a problem of stratigraphic geology. Leopold et al. observe that:

> . . . Soils as marker horizons have proved of exceptional value, but like other markers they may be misused or inadequately treated. Particularly needed are criteria or tests to demonstrate that a supposed soil is indeed valid and to differentiate one soil from another (Leopold et al. 1964:468-469).

The Ochlockonee, Cahaba and Kalmia soils represent a developmental series; however, it is unlikely that, in the Lubbub Creek area, they represent a temporal series. An old remnant river channel (now an ephemeral stream) along the slopes west of the habitation area is at the southernmost limit of the river valley where it follows the relatively resistant outcrop of the Selma Chalk formation. Presumably this remnant channel was the location of the river prior to successive channel deposits encountered during the Lubbub Creek excavations. The presence of the meander to the east of the habitation area, which is mentioned in historical documents dating to 1832, indicates that the channel migrated eastward to the terrace wall at the 130 foot contour elevation on the eastern side of the valley. The exaggerated narrow-necked meander form appears to have developed after this eastward channel migration. The large meander scroll Dead River shown in Figure 4 is in Kalmia soil. If the river migrated from west to east within the valley bounded by the 130 foot contour elevations on either side, then the Dead River meander was developed later than the Cahaba soils in the habitation area.

The determinat [illegible] age of alluvial soils is a difficult problem and must be handled by a competent geomorphologist. Flood plain and terrace deposits, however, are formed by a limited number of processes which can be inferred as these deposits are encountered in archaeological profiles.

Figure 4. The Lubbub Creek meander and cutoff, March 22, 1942. The photograph is oriented south (upper edge) to north (lower edge).

deposits which characteristically accumulate on outside river bends; (7) backswamp deposits, fine sediments resulting from overflow accumulating between levees and the valley wall or terrace riser; and (8) sand splays, coarse sand, or sand and pebble flood deposits.

The flood plain of a river is formed primarily by two related processes: lateral migration of the river channel and overbank flows (1964:322). According to Leopold et al. (1964) a river characteristically migrates laterally downvalley by means of bankcutting toward the outside of river bends with concommitant deposition on the inside of river curves. Lateral migration takes place during flood episodes. In the early flood stages, fine detritus accumulates near the convex bank or inside of river bends. In succeeding periods of high water, the channel is enlarged, both by scour of bed material and by erosion of the concave or outside banks. As the river level returns to normal, deposition occurs both on the channel floor and on the inside bank. The degree of lateral movement made in this fashion depends on the erodibility of the outside bank material and the velocity of discharge during flood conditions, which determines the amount of deposition on the inside curves of the river bank (Leopold et al. 1964). When the volume of water entering the channel during increased discharge is not accommodated by both lateral increase in the channel and bed scour, overbank flow results. Suspended sediments are deposited along the river bank, where accumulated sediments become levees, and over the adjacent flood plain.

The formation of meanders, "S" shaped channel curves, is inherent in the process of lateral migration, and once established, meanders are persistent features of riverine morphology (Leopold et al. 1964:295). Meanders are commonly formed in laboratory rivers at some point downstream from the source of flow, particularly in the midvalley section (Friedkin 1945:280). The Tombigbee River in Pickens County flows south across old terrace deposits to a point just upstream from the Cochrane gaging station (see Figure 3, soils section this chapter). There is relatively little flood plain development and are only minor tendencies toward a meandering pattern along this stretch of river. West of Cochrane station the river channel turns sharply to the east and follows the northern border of the Selma Chalk outcrop. The Lubbub Creek meander was, prior to recent cutoff, formed at that point where the river channel again assumed a southerly course.

Cutoffs are not normally produced under laboratory conditions, and they are assumed to form when resistant banks prevent normal downvalley migration so that a narrow neck forms between the upper and lower arms of the meander (Friedkin 1941:176). The cutoff occurs when the river erodes through the narrow neck of the meander. Figure 4 shows the completion of this process for the Lubbub Creek Meander.

Both Russell (1936) and Fisk (1938) emphasize that downvalley migration of meanders on the Mississippi river is a limited process. Meanders on the Mississippi River characteristically migrate downvalley only a short distance, at which point a cutoff takes place, an oxbow lake is formed, and the river channel is straightened temporarily. In a short time, a new meander develops and the process is repeated. Although the lower limb of the meander may migrate downvalley a short distance, Chawner (1936:23-24) observes that ". . . the upper limb of the meander may move upstream."

TABLE 2

The Flood of March and April 1973
As Recorded at the Cochrane Gaging Station (0244500).

Date	Gage Ht. (ft)		Discharge (cfs)	Accumulated Runoff (in.)
	Above Datum[1]	AMSL		
3-12	22.32	112.17	24,800	0.00
3-13	22.82	112.67	24,900	0.15
3-14	23.05	112.90	26,000	0.31
3-15	23.23	113.08	26,900	0.48
3-16	27.00	116.85	35.200	0.67
3-17	31.00	120.85	43,200	0.91
3-18	34.75	124.60	55,600	1.23
3-19	40.55	130.40	96,000	1.67
3-20	46.13	135.98	160,000	2.57
3-21	47.35	137.20	160,000	3.59
3-22	46.39	136.24	130,000	4.47
3-23	44.65	134.50	99,400	5.16
3-24	43.10	132.95	78,700	5.69
3-25	41.48	131.33	62,000	6.12
3-26	39.75	129.60	50,000	6.46
3-27	38.35	128.20	44,500	6.75
3-28	37.10	126.95	40,100	7.00
3-29	35.83	125.68	37,000	7.24
3-30	34.87	124.72	37,100	7.47
3-31	35.12	124.97	38,400	7.71
4-01	34.66	124.51	36,600	7.94
4-02	34.04	123.89	34,800	8.16
4-03	32.70	122.55	32,000	8.36
4-04	30.67	120.52	29,000	8.55
4-05	28.06	117.91	25,300	8.72
4-06	24.44	114.29	20,000	8.86
4-07	22.06	111.91	23,000	8.99
4-08	21.39	111.24	25,000	9.14
4-09	21.00	110.85	23,800	9.29
4-10	20.33	110.18	21,600	9.44
4-11	18.92	108.77	18,400	9.56
4-12	16.27	106.12	15,700	9.66
4-13	13.68	103.53	13,000	9.75
4-14	12.39	102.24	10,900	9.83
4-15	11.57	101.42	9,500	9.89

[1] Datum: 89.85 ft. AMSL

[2] Source: Edelen 1976:146-147.

interval of more than 25 years. Despite such predictions, floods cresting at elevations of 135 feet or higher (1979, 1973, 1962, and 1949, Table 1) have occurred at least 4 times during the past 30 years. Flood levels which would submerge at least part of the Cahaba soils within the Lubbub Creek habitation area (those cresting at elevations of more than 125 feet at AMSL) have occurred 19 times in 32 years between 1939 and 1970 (Table 1); that is, such floods occur, on the average, every second or third year.

An increase in the frequency and magnitude of floods is an expected consequence of accelerated land clearing and an increase in the area under cultivation. However, the major reason that the Lubbub Creek habitation area Cahaba soils, which were formed under conditions of low flood susceptibility, now have been placed close to the annual flood zone, is that the meander which once ranged east of the habitation area was recently cut off (Figure 4). Bank erosion, particularly along the northern edge of the Lubbub Creek Archaeological Locality, and flood deposition along the eastern edge of the bend, are further evidence of the recent encroachment of the annual flood zone deposits which, prior to the cutoff, were rarely flooded. Flood plain deposits (Ochlockonee clay, Figure 3) are located well to the east of the Lubbub Creek Archaeological Locality, adjacent to the river banks at that time. Thus, the flood levels observed during the 1979 excavations were to some undetermined extent, a consequence of the cutoff, and should not be interpreted as a regular threat to the prehistoric inhabitants. Recent geomorphological changes primarily have modified the elevation and area included within the shifting flood zone. Although the annual flood zone has encroached on deposits normally formed under conditions of low flood susceptibility, the regular recurrence of floods in March and April, and the duration of maximum flood episodes such as the 1973 flood may be similar to past conditions, since the amount and duration of precipitation is dependent on climatic conditions rather than recent gemorphological changes. The role of geomorphological processes in flood plain formation is discussed in the following section.

Flood Plain Characteristics

A flood plain has been defined as " . . . that surface which is attained by floods with a recurrence interval, on the average of 1 to 2 years" (Leopold et al. 1964:468). A river terrace, by definition, is an abandoned flood plain (1964:459) and is formed by similar processes.

In the area of the Lubbub Creek, Tombigbee River confluence, the flood plain soils include the Ochlockonee series and Trinity clay. Terrace soils are the Kalmia soils and Amite fine sandy loam, the latter a very small and isolated remnant of an ancient river terrace. The Cahaba series soils, which comprise the habitation area of the Lubbub Creek Archaeological Locality, are transitional between the flood plain and the terrace soils. They are alluvial deposits which are neither within the active flood plain, nor yet completely within an abandoned flood plain.

Leopold et al. (1964:317) list the following as characteristic features of a typical flood plain: (1) the river channel; (2) oxbows or oxbow lakes, created as meander bends are abandoned; (3) point bars, deposits on convex (inside) river curves; (4) meander scrolls, formed by lateral migration of the channel toward the concave (outer) bank; (5) sloughs; (6) levees, overbank

As indicated in Table 1, similar discharge velocities do not necessarily produce similar gage height readings. This is due to channel scour, dispersion of water volume over the drainage area above bankful stage, and, perhaps, long term changes in the depth of the channel at the gaging station. In general, however, water levels for discharges of less than 60,000 cfs (Mean Annual Flood) have not exceeded 131.57 feet in the flood record, and discharge velocities less than 90,000 cfs (5 year flood) have not exceeded 131.85 feet. The maximum recorded water level at the Cochrane station was 136.75 feet (AMSL) in 1949 with a discharge velocity of 163,000 cfs. The 1892 flood level, estimated from reports made by local informants, was 140 feet (AMSL).

Maximum elevations for the Lubbub Creek Archaeological Locality range from 126 feet (AMSL) along the southeastern edge of the excavation area, to 130 feet (AMSL) along the northern edge. Elevation grades steeply to 110 feet, or less at the river bank. Thus the river banks adjacent to the Lubbub Creek Archaeological Locality are approximately 10 feet lower than bank elevation at the Cochrane gaging station. When bankful stage at 121.85 feet is reached at the Cochrane gaging station, banks downstream at 110 feet (AMSL) are below water level. This difference in elevation is reflected in the elevation ranges of flood plain and terrace soils in the Lubbub Creek area.

Flood stages and frequencies have a direct effect on the development of alluvial soils. Flood plain soils (Ochlockonee series) are formed within the mean annual flood zone, and in the area of the Lubbub Creek Archaeological Locality are developed at elevations of less than 120 feet (AMSL). The Kalmia terrace soils are above the 130 foot contour elevation and at some lower elevations where the topography has inhibited flooding. Cahaba series soils in the Lubbub Creek area are at elevations between 120 and 130 feet (AMSL)--the area flooded at recurrence intervals with frequencies less than the mean annual flood.

Cahaba soils are normally developed at elevations 35 to 55 feet above river level (O'Neal et al. 1917). Since river level (bankful stage) at the Cochrane Station is 121.85 feet (AMSL), but approximately 10 feet lower adjacent to the Lubbub Creek Archaeological Locality downstream (110 feet AMSL), Cahaba soils should be at elevations of 145 feet (AMSL) or higher. The Cahaba soils of the Lubbub Creek habitation area, however, are now between 125 and 130 feet--only slightly above the mean annual flood zone. This discrepancy in elevation suggests that the flood zone elevations were much lower when the Cahaba deposits were formed.

Table 2 shows the readings from the Cochrane station for one flood which took place in March and April, 1973. The 1973 flood is similar to that experienced in April 1979 when the Lubbub Creek excavations were halted by flood conditions for the entire month of April. As in April 1979, the bend was entirely submerged during the March and April 1973 flood. Gage height elevations from March 19 through March 25, 1973 were above maximum elevations for the excavation area. Water levels returned to below bankful stage by April 4. Although peak discharge occurred on March 21, accumulated runoff (the depth of water over the drainage area) did not recede to preflood levels until after April 15. Flood conditions and ground saturation which extend this late into the planting season can delay planting dates so that crops are exposed to early summer droughts. According to the predictions based on past flood occurrences, floods of this magnitude are rare and have recurrence

TABLE 1 (Continued)

Water Year[2]	Annual Peak Discharge (cfs)	Date	Gage Ht.	Elevation AMSL
1961	59,800	2/27/61	41.72	131.57
1962	122,000	12/22/61	45.78	135.63
1963	39,000	7/20/63	29.87	119.72
1964	50,600	4/18/64	37.93	127.78
1965	60,900	2/17/65	39.08	128.93
1966	43,200	5/02/66	31.96	121.81
1967	29,000	2/25/67	--[3]	-
1968	79,800	1/15/68	41.78	131.63
1969	66,000	4/20/69	41.45	131.30
1970	63,700	1/07/70	38.19	128.04

Source: Hains 1973.
[1]Aerial Parameters. Station No. 0244500. Drainage area, 5,990 m^2. Channel slope 1.2 ft./mi. Channel length 142 mi. Angle of main channel, 108 degrees. Gage datum 89.85 ft.(AMSL). Bankful stage, 32.0 ft. above datum (121.85 ft. AMSL). Bankful Discharge, 47,000 cfs. Cfs/m^2 at bankful stage, 7.8 cfs/m^2 (Discharge velocity/Drainage area). Nonrecording gage prior to 1939, 200 ft. downstream, same datum. (Hains 1973; Peirce 1954; Gamble 1965).
[2]Water year, October 1 to September 1.
[3]No gage height recorded at station.

TABLE 1

Annual Peak Discharge and Stage, Cochrane Gaging Station[1].

Water Year[2]	Annual Peak Discharge (cfs)	Date	Gage Ht.	Elevation AMSL
1892	-	4/92	50.20	140.05
1939	35,000	3/03/39	33.20	123.05
1940	42,600	7/08/40	36.30	126.15
1941	22,600	3/11/41	22.24	112.09
1942	22,400	3/23/42	23.38	113.23
1943	31,600	3/18/43	27.70	117.55
1944	108,000	4/03/44	43.70	133.55
1945	54,800	3/10/45	36.40	126.25
1946	92,800	2/15/46	42.80	132.65
1947	52,700	1/09/47	35.50	125.35
1948	107,000	2/19/48	44.50	134.35
1949	163,000	1/09/49	46.90	136.75
1950	76,500	1/12/50	41.20	131.05
1951	124,000	4/02/51	45.00	134.85
1952	37,700	12/28/51	29.40	119.25
1953	52,000	2/28/53	36.97	128.82
1954	30,200	1/28/54	25.2	115.05
1955	77,000	3/29/55	40.40	130.25
1956	37,000	3/18/56	-[1]	-
1957	59,700	2/09/57	37.7	127.55
1958	69,200	11/25/57	40.00	129.85
1959	35,100	2/20/59	28.10	117.95
1960	44,700	3/09/60	33.19	123.04

inches. Monthly averages for the months of December, January, February, March, April, and July were in excess of 5 inches with peak rainfall occurring in April (6.77 inches) and July (5.10 inches). Averages for May (3.89 inches) and June (3.72 inches) were considerably less. August through November are the driest months with precipitation averages of less than 3.4 inches for any month. The October average is 2.39 inches. Late summer droughts ranged from mild to severe. Droughts which affect crop yields but do not produce crop failure are expected on an average of 2 months for each year (Wooden 1971:92-93).

Flood conditions are produced by two types of storms. Broad cyclonic disturbances occur annually between November and April, and their associated precipitation results in flood conditions generally in March and April. Tropical hurricanes produce torrential rains between July and November. July storms, which produce peak summer rainfall, are generally thundershowers which may flood small watersheds (Peirce 1954:5). On a few occasions July rains have produced floods to elevations of 120 feet (AMSL) or more along the Tombigbee flood plain (Table 1). As indicated in a later section, scheduling spring planting so that maximum growth coincides with peak rainfall in July is critical to maximum production of certain crops such as corn.

Flood Magnitude and Frequencies

Flood data for the Lubbub Creek Archaeological Locality are recorded at the Cochrane gaging station approximately 3.5 km upstream from the Summerville Mound. Flood records begin for this station in 1892. However, no published data are available for the period from 1892 through 1938. Prior to 1930 a nonrecording gage was located 200 feet downstream. A recording gage was installed in 1939. The record of peak floods for water years (October 1 to September 1) from 1939 through 1970 is shown in Table 1 and data for the Cochrane station are listed in the note to the table.

The Cochrane gaging station measures discharge in cubic feet per second (cfs) and gage height above datum (89.85 feet AMSL). The recorded gage height has been converted to elevations in feet (AMSL) in the table for comparisons with contour elevations. Bankful stage at the recording station is 32 feet above datum or 121.85 feet (AMSL). Bankful discharge for the Cochrane station is 47,000 cfs. Recurrence intervals for floods of various magnitudes calculated from the Cochrane station flood record are: Mean Annual Flood, 60,000 cfs; 5 year flood, 90,000 cfs; 10 year flood, 115,000 cfs; 25 year flood, 155,000 cfs; and 50 year flood, 185,000 cfs (Gamble 1965:27, Figure 18).

A recurrence interval as applied to flood events is "the average number of years within which a given flood peak will be exceeded once" (Edelen 1976:16), or stated in terms of occurrence probability, is the reciprocal of the occurrence interval. A flood with a 25 year recurrence interval would have a 4 percent chance of being exceeded in any given year, while a 50 year recurrence interval would have a 2 percent chance of occurring in any given year. Recurrence intervals are calculated from the formula: (N-1)/M, where N is the number of years or record and M is the relative order of magnitude (Peirce 1954:7). The mean annual flood is, by definition, the flood magnitude of a 2.33 year recurrence interval (Peirce 1954:10). For the Cochrane station this is a flood having a discharge velocity of 60,000 cfs.

terraces.

The chalk and alluvial soils do, however, undergo evolutionary development due to the effects of climate and vegetation. Swenson (1941:79ff) has observed that the Black Belt prairie soils develop in series (from alkaline to acid) through weathering of the underlying chalk and the development of vegetation. The type of vegetation supported on these soils is associated with the degree of soil alkalinity and depth of the underlying chalk.

Sumter clay (white prairie soil) is alkaline and overlies the chalk. It has a white to gray surface layer and supports mainly prairie grasses. Houston clay (black prairie soil) has a dark gray to black leached surface layer due to the increased organic development which includes grasses, briars, canebrakes, and small shrubs. The A2 horizon is slightly acid. With increased acidity, which may be due to the development of vegetation, trees, principally post oak, appear. The Eutaw and Vaiden clays are deep, acid prairie soils which support a dense post oak forest. The Oktibbeha clay (red prairie or red post oak land) has a reddish dark brown clay loam surface layer and is an acid prairie soil developed under mixed forest vegetation and sedge grasses. Oktibbeha clay is the only forested prairie soil identified in Pickens County (O'Neal et al. 1917).

Climate

Climatic conditions, because of their role in shaping the surface of the earth, are one basis for major soil classifications. Soils in west central Alabama are classified as thermic and humid (FAO-UNESCO 1975:11). These soils are warm, never completely frozen and are never dry for more than 90 consecutive days. These climatic conditions result in a relatively long frost-free growing season. Late spring floods, rather than late frost are more likely to delay planting times, particularly in bottomland areas. Mild to severe summer droughts are the major threat to crops.

Weather information for the Lubbub Creek Archaeological Locality is taken for the most part from records for the 20 year period from 1946 to 1965 recorded at Greensboro, Alabama (Wooden 1971:Table 19). Alabama's climate is classified as either "humid subtropical" (Hays 1973:13) or temperate (Wooden 1971:91). Latest spring and earliest fall frosts recorded for the 20 year period at Greensboro were April 13 and October 28. Average early and late frost dates were March 25 and October 25 (Hays 1973:11-13). These figures give a minimum frost-free growing season of 198 days and an average of 214 days.

Temperature. The average annual temperature is 50 degrees F. Summers are long. Warm to hot weather begins in May and extends frequently through September. The average summer temperature (May-September) ranges from an average low of 66.8 degrees F to an average high of 87.6 degrees F. Winters are mild. Freezing temperatures occur on an average of 42 days per year but rarely last throughout the day.

Precipitation. Most precipitation is in the form of rain, but an average of 1.3 inches per year of snow was recorded for the 20 year period from 1946 to 1965 at Greensboro. The average yearly total precipitation was 53.15

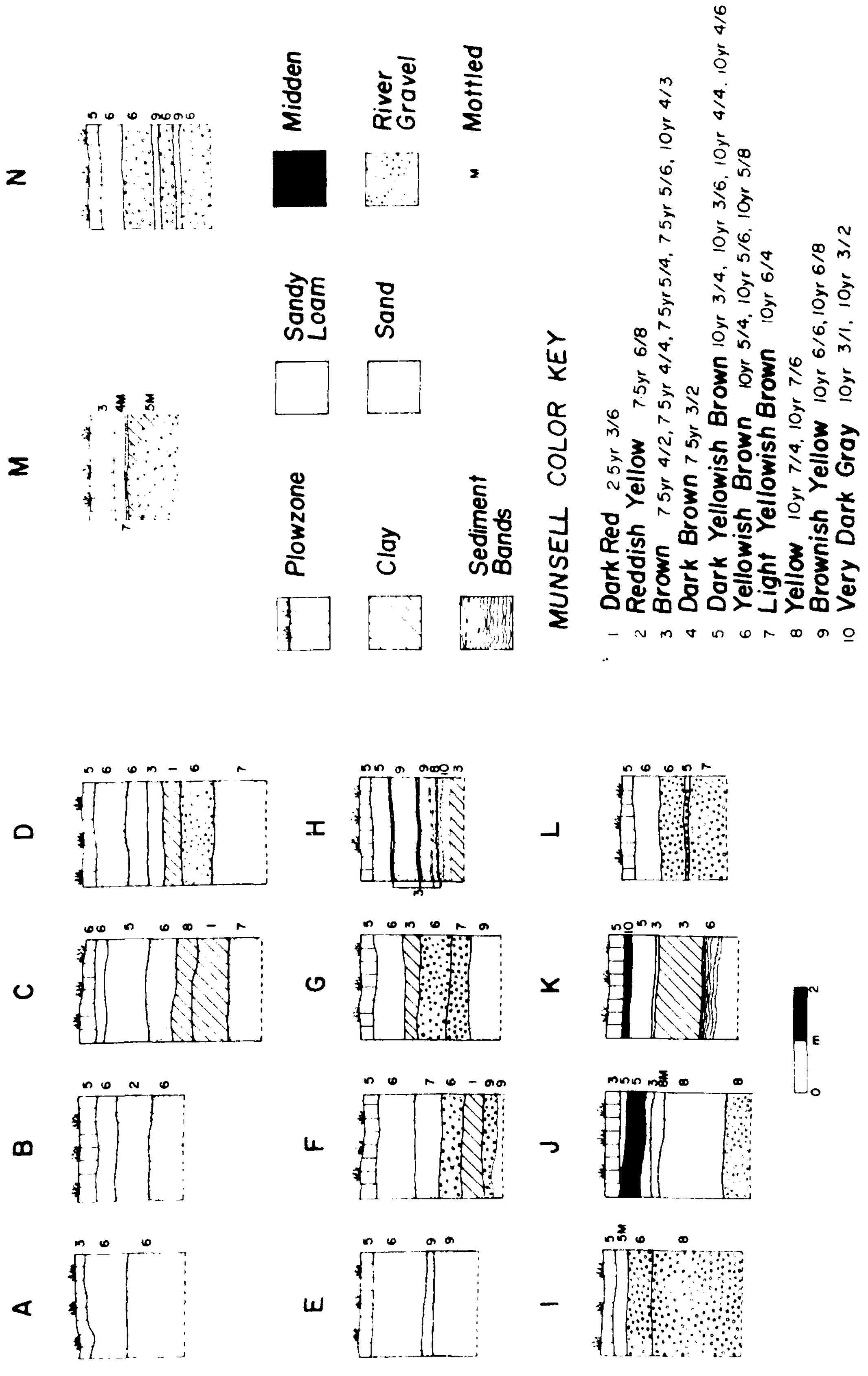

Figure 6. Stratigraphic profiles recorded from deep tests.

cm below surface. The plow-disturbed zone normally extended 25 to 35 cm below surface (see Figure 6). The plowzone was the upper portion of a sandy loam layer which often contained midden deposits. Below the plowzone, one or more strata of sandy loam or loamy sand extended to depths of 0.75 to 1 m below surface. Where this sandy loam zone included midden deposits, soil color ranged from dark yellowish brown to very dark grayish brown. Profiles which contained no midden were yellowish brown, dark yellowish brown, and dark brown. This sandy loam to loamy sand horizon graded to sand at 75 cm below surface or lower. In Hectares 600N/-500E, 600N/-400E, 500N/-500E, and 500N/400E (profiles D, E, F and G), however, this sand horizon was just below plowzone. The sand horizon normally graded to lighter coloring with greater depth, and ranged from yellowish brown in the upper levels, to brownish yellow, yellow, or light yellowish brown at the limit of the deep tests.

Intervening strata of clay and gravel deposits were observed above and within the sand horizon in some profiles. Gravel lenses are shown in profiles D, F and G, and gravel extended below the level of excavation in profiles I, J, L, M and N. Clay strata, ranging in color from yellow, to dark red, to dark yellowish brown, and brown, are shown in profiles C, D, F, H, K and M. These clay and gravel deposits were encountered in auger tests, which were excavated to depths of 1 meter below surface, throughout Hectares 300N/-200E, 300N/-300E, 400N/-100E, 400N/-200E, 400N/-300E, 400N/-400E, 400N/-500E, 500N/-200E, 500N/-300E, 500N/-400E, 500N/-500E, 600N/-400E and 600N/-500E. These deposits probably represent channel deposits of late Pleistocene age.

The successive deposition of extremely high flood waters is shown in profile H recorded for Hectare 500N/-100E, in an area slightly lower in elevation than the western portion of the project area. Sediment bands represented in profile K for Hectare 400N/-200E, which were ubiquitous throughout the lower sandy stratum, generally were not represented in the profiles. These lines appeared as a series of reddish brown wavy bands of iron oxide accumulations leached from upper horizons and often cut through features, such as the palisade wall trenches, which extended into the lower sand zone.

These profiles reflect both ancient geomorphological processes, which resulted in the formation of the Cahaba alluvial deposits, and flood episodes, which continue to the present time. River gravels encountered during the excavations were deposited during the eastward migration of the river channel from a position adjacent to the slopes to the west.

Bank erosion along the northern edge of the project area and flood plain deposition associated with the recent cutoff have encroached to some extent on the probable limits of the aboriginal occupation. Although recent flood deposits overlie archaeological deposits along the eastern limit of the project area near the river, archaeological deposits overlie channel deposits throughout the project area. This stratification indicates that the river channel by A.D. 800 to 1500 had migrated to a location well to the east of the project area. The developed Kalmia terrace soils at the location of the Dead River suggests that the meander system is quite old. Geomorphologists generally agree that meander systems are persistent features of riverine environments. The position of the meander may vary and cutoffs occur occasionally, but the meander, once established, reforms and ranges within a limited zone of the river valley. Aerial photographs indicate that the Lubbub

Creek meander has ranged between the Dead River location and its pre-1942 location, perhaps oscillating many times along the terrace wall. Two locations of the meander are clear: the Dead River meander, and the location shown on land plats drawn prior to 1835 and on the 1917 soil distribution map. The Dead River meander, judging from the terrace soils now developed at that location, was probably active prior to the Late Woodland and Mississippian occupation of the bend. The form of the meander depicted on the land plats, which is still evident in the 1942 aerial photograph (Figure 4), has probably undergone considerable modification since A.D. 1500. It is apparent that the Lubbub Creek occupation extended into the area within the meander zone, but the exact position of the meander has not been determined.

The Physical Environment: Summary

In April 1979, when excavations were halted due to severe flood conditions which inundated the entire project area, we wondered what the prehistoric Native American residents did in such situations. On reflection, severe flooding of the Lubbub Creek habitation area was probably rare. What does emerge from the discussion of the physical environmental setting is that the Mississippian population at Lubbub Creek selected a site location much like those chosen by other Mississippian populations. The Lubbub Creek Archaeological Locality is in a transitional zone: geologically it is between the Eutaw and Selma Chalk formations; physiographically it is between the Coastal Plain uplands and the Black Belt. The river which flows along and across this transition superimposes a flood plain which at Lubbub Creek broadens into a meander zone and broad flood plain before the river continues south across the Black Belt.

Given this geomorphological system, which creates an extensive zone of alluvial soils, a climate with few late frosts, and a long growing season, the setting for subsistence horticulture seems ideal. The scheduling of the planting on clay soils in the wake of late rains and floods appears to be the only strategic problem for an agricultural economy.

The flood data presented in this chapter show that flood levels now reach elevations which inundate at least part of the Mississippian habitation area every second or third year. The fact that Cahaba soils develop under conditions of low flood susceptibility and that the river previously ranged well east of its present location suggests that during the Mississippian occupation the residential areas were not flooded frequently. In the prehistoric past the annual flood zone was probably restricted to the area adjacent to the river banks at that time, which were well north and east of their present location.

The flood data in Table 1 show that peak floods occurred in April 5 times in 32 years, for an average of once every sixth year. These late floods, and the resultant ground saturation which continued well into the planting season, may have delayed planting dates on bottomland soils or required alternative planting strategies which utilized less productive soils at higher elevations. The productive capability of soils in the Lubbub Creek area is analyzed in the final section of this chapter. Biotic resources are discussed in the following section.

THE BIOTIC ENVIRONMENT

The physical environmental zones described in the previous section are here considered in terms of the vegetational and faunal systems they supported. The biotic environments defined in this section correspond closely to the distribution of soils. The 10 km radius catchment used to define the maximal exploitative area surrounding the Lubbub Creek Archaeological Locality is shown in Figure 3.

Meander-belt Zone Characteristics

Smith (1978) observed that Mississippian populations systematically selected the meander-belt zone of river valleys, not only for accessibility to flood plain soils, but more generally, site selection was a

> . . . function of the specific, complex adaptation by Mississippian populations to this habitat zone composed of linear bands of circumscribed agricultural land and concentrated biotic resources (Smith 1978:481).

The meander-belt zone of a river characteristically exhibits a higher biomass density than other flood plain and upland environments. This is a consequence of both consistent nutrient replenishment by regular flood recurrence intervals and complex topography characteristic of the meander-belt zone.

The meander-belt zone has been characterized as a "naturally subsidized solar powered ecosystem" (Odum 1975:18; Smith 1978:481). Waterborne nutrients supplement solar energy to support an exceptionally high biomass within a restricted area. Complex topography within the meander zone is created by lateral migration of the river channel which results in a series of levees and backswamp areas. This complex topography supports a variety of biotic communities which are not only "stacked in close vertical juxtaposition," but whose habitat areas are maximized by the curvilinear topography, creating long edge areas between adjacent communities (Smith 1978:482).

The regular recurrence of flood plain inundation functions to inhibit climax development of vegetation. Flood plain environments are characterized by "attenuated seres" (Shelford 1963:88) where progression to climax species is arrested with greater frequency than in surrounding forests. These edaphic factors create an immature forest biome which contrasts with the succession to mature climax forests in surrounding areas. This differential succession is maximized within the meander-belt zone.

The topography of the meander zone creates a situation which is "environmentally circumscribed" (Smith 1978). Upland areas, separated from the meander zone by backswamp areas, are characteristically low in biomass and have soils low in fertility. This contrast between a spectacularly productive ecological situation within a larger area of low productivity provides an enclave of concentrated resources which were consistently exploited by Mississippian populations.

Resource Selection

Five major groups of plants and animals were important to Mississippian populations: (1) backwater fish, (2) migratory fowl, (3) white-tailed deer, raccoon and turkey, (4) nuts, fruits and berries (especially hickory nuts, walnuts, acorns, persimmons, cherries, plums and hackberries), and (5) seed-bearing plants (Polygonum and Chenopodium). In addition to these wild species, domestic cultigens included maize (Zea mays), beans (Phaseolus sp.), and squash (Cucurbita pepo), sunflower (Helianthus annuus), marsh elder (Iva sp.) and gourd (Lagenaria siceraria) (Smith 1978:483).

Botanical and faunal recoveries from the 1976 and 1977 Gainesville Reservoir Excavations (which included 1-Pi-33 within the Lubbub Creek Archaeological Locality) provided evidence for some of these cultigens and most of the wild species. Mississippian levels included corn, beans, hickory nuts, pine cones and seeds (Pinus taeda), acorns, and seeds of persimmon, grape, maypop or passion flower (Passiflora incarnata), chickweed (Stellaria cf. pubera), pigweed (Amaranthus) and goosefoot (Chenopodium sp.). Corn was present from the early Miller III period in this area, and was recovered in large quantities in "smudge pits" assigned to the Mississippian period at Sites 1-Gr-2 and 1-Pi-33. A few features other than "smudge pits" from Mississippian contexts where analyzed and in these features the percentage of hickory nut exceeded corn in the botanical inventories (Caddell 1979).

Very little faunal material was recovered from Mississippian levels in the Gainesville Lake Excavations, since most excavated Mississippian features were burial pits. Deer, turtle, unidentified bird and fish species were recovered from Mississippian contexts (Woodrick 1979). Species recovered from earlier occupation levels are shown in Table 4. The presence of mussel species adapted to stream and river channel sand beds and gravel bars, as well as the identification of base camps adjacent to mussel beds along the Tombigbee River (Jenkins and Curren 1975) suggests that the river channel, as well as backwater areas stressed by Smith (1978), was economically important for Mississippian and earlier populations in the Lubbub Creek area (see Woodrick, Chapter 5, Volume II).

Determination of Resources

Potential resource environments for the Lubbub Creek area were determined by plotting catchments (in the manner used by Vita-Finzi and Higgs 1970) at 2 and 10 km radii from the Summerville Mound on the Pickens County soil distribution map (O'Neal et al. 1917). A small portion of the 10 km radius catchment which extended into Greene and Sumter counties was excluded from the analysis (Figure 3). The proposed effective radius of agricultural exploitation is between a 1 and 2 km radius (Chisholm 1968:66; Peebles 1978). The agricultural potential of the 2 km radius catchment is discussed in the next section. The effective area of hunting and collecting exploitation is assumed to be approximately 10 km (Jarman, Vita-Finzi and Higgs 1972:63). Soils included within a 10 km radius of the Summerville Mound are grouped into major environmental divisions in Table 5.

A catchment, the "site exploitation territory" (Jarman, Vita-Finzi and Higgs 1972:63) may be considered analogous to the "home range" of primate species (Lee and DeVore 1968). The catchment circumscribes the area habitually utilized as a resource area. A 10 km radius, based on estimates of maximum ranges exploited by modern hunters and gatherers (Lee 1969), is the approximate distance covered in a two hours' walk. The purpose of catchment

TABLE 4
Faunal Species Recovered in the 1967-77 Excavations in the Gainesville Lake (1-Gr-1x1, 1-Gr-2, 1-Pi-33, 1-Pi-61).

Mammals	
Canis familiaris	domestic dog
Castor canadensis	beaver
Didelphis marsupialis	opossum
Felis concolor	cougar
Lynx rufus	bobcat
Mephitis mephitis	striped skunk
Odocoileus virginianus	white-tailed deer
Ondatra zibethicus	muskrat
Procyon lotor	raccoon
Scalopus aquaticus	common mole
Sciurus spp.	squirrel
Sylvilagus spp.	rabbit
Urocyon cinereoargenteus	gray fox
Ursus americanus	black bear
Birds	
Meleagris gallopavo	turkey
other	probably ducks and geese
Reptiles	
Chelydra serpentina	snapping turtle
Terrapene carolina	box turtle
Trionyx spp.	soft shelled turtle
Fish	
Amia calva	bowfin
Aplodinotus grunniens	freshwater drum
Ictalurus furcatus	blue catfish
Ictalurus punctatus	channel catfish
Lepisosteus spp.	gar
Micropterus cf. salmoides	large mouth bass
Freshwater mussels	
Amblema plicata	three-ridge
Elliptio crassidens	elephants ear
Elliptio dilatatus	spike
Fusconaia ebena	niggerhead
Lampsilis anodontoides	yellow sand shell
Obliquaria reflexa	three-horned warty back
Obovaria unicolor	---
Plagiola lineolata	butterfly
Quadrula metanevra	monkey-face
Quadrula pustulosa	pimple-back

Source: Woodrick 1979.

TABLE 5

Distribution of Soil Types within the Summerville Mound Resource and Horticultural Catchments

	County Total[1] (hectares)	10 km Radius Resource Catchment (hectares)	% of Resource Catchment Total	2 km Radius Horticultural Catchment (hectares)	% of Horticultural Catchment Total
<u>Flood Plain</u>					
Ochlockonee clay	4,532.64	2,759.00	9.53	103.00	21.39
Ochlockonee silt loam	13,235.31	1,096.22	3.79	80.29	16.58
Ochlockonee fine sandy loam	21,989.78	1,387.59	4.79	-	
Trinity clay	1,994.36	982.91	3.40	116.55	24.06
SUBTOTAL	41,752.09	6,225.72	21.51	300.44	62.03
<u>Slope and Terrace</u>					
Cahaba fine sand	1,165.54	677.29	2.34	59.57	12.30
Cahaba fine sandy loam	10,438.02	4,250.84	14.69	103.60	21.39
Cahaba clay loam	647.52	300.44	1.04	-	-
Kalmia fine sandy loam	14,892.96	8,490.67	29.34	-	-
Amite fine sandy loam	310.81	246.05	0.85		-
SUBTOTAL	27,454.85	13,965.29	48.26	163.17	33.69
<u>Black Belt</u>					
Uktibbeha fine sandy loam	569.82	304.33	1.05	-	-
Oktibbeha clay	7,744.34	2,461.80	8.51	20.72	4.28
Sumter clay[2]	4,921.15	2,117.33	7.32	-	-
Houston Clay	2,512.38	1,351.98	4.67	-	-
SUBTOTAL	15,747.69	6,235.44	21.55	20.72	4.28
<u>Coastal Plain Uplands</u>					
Norfolk silt loam	4,532.64	29.79	0.10		-
Orangeburg fine sandy loam	6,164.39	909.74	3.14	-	-
Ruston series	95,107.73	1,346.80	4.65		-
Greenville loam	906.53	228.57	0.79	-	
Susquehanna fine sandy loam	39,395.12	-	-	-	
SUBTOTAL	146,106.41	2,514.90	8.68	-	-
TOTAL	231,061.04	28,941.35	100.00	484.33	100.00

[1]O'Neal <u>et al</u>. (1917:17).
[2]The reported acreage of Sumter clay in O'Neal <u>et al</u>. (1917) was 1,216, less than the acreage of Sumter clay in the 10 km radius resource catchment. This figure was assumed to be a decimal recording error. The total count, acreage and percent of total for each soil type used in this analysis were adjusted accordingly (see Table 10).

analysis is intended to be a measure of energy expended:

> . . . for a single site at a single point in time, the field around a site can be viewed as a series of concentric effort-lines across which, as one leaves the center, effort increases; and beyond some point, subsistence activities fall off to zero. The task, then, is to analyze the catchment in terms of the potential it held for the population occupying the site within it (Peebles 1978:404).

The comparative study of catchment areas for Mississippian sites should also reveal factors of site selection: ecological resources closest to the site location were more important in the daily lives of the inhabitants than those restricted to the outer limits of the catchment.

The environmental zones circumscribed within the 10 km radius catchment of the Summerville Mound encompass most of the major ecological areas which have been distinguished within west Alabama. Four of seven major Alabama forest types (Thomas 1973) fall within the larger catchment area (Figure 7). These are (1) the oak-hickory-pine forest (Shelford's 1963, ecotone pineland), (2) the Black Belt forest, (3) the Southern mixed forest (Shelford's magnolia forest), and (4) the Southern flood plain forest. Dominant species of these forests are listed in Table 6.

Caddell (1979) described 10 km radii catchments for four sites along the Tombigbee River. One of these, 1-Pi-33, is within the Lubbub Creek Archaeological Locality. Caddell identified and classified species of trees reported in 1820, 1832, and 1834 surveys by the United States General Land Office by correlating species listed in the old land plat distributions with elevations from current U.S.G.S. topographical maps. Since the Land Office surveys were made prior to major agricultural development, species represented should reflect forest composition of the Lubbub Creek area at the time of European contact (Caddell 1979).

Four forest zones were defined in this study: (1) the upland forest, (2) the grassland or prairie forest, (3) the slope and terrace forest, and (4) the flood plain forest (Caddell 1979:18). Caddell's forest zones correspond approximately to the general classification of Alabama forests (Figure 7, Table 6) and to the soil classification (O'Neal _et al_. 1917) used in this chapter. Species composition of Lubbub Creek area forests constructed from the old land surveys, together with Caddell's species identifications, are listed in Table 7. Since forest and other floral species are specific to various soils, forest species predominating on Pickens County soils (Table 8) were used to supplement Caddell's classification.

For purposes of this study, biotic communities corresponding to major Pickens County soil classes, Caddell's forest zones, the general classification of Alabama forests (Table 6), and to Shelford's (1963) oak-hickory, magnolia and flood plain forests within the Southern temperate forest biome are referred to as: (1) the Coastal Plain uplands, (2) the Black Belt, (3) slope and terrace, and (4) flood plain environmental zones. The distribution of these environmental zones within the 10 km radius catchment circumscribing the Summerville Mound is shown in Figure 3.

Wildlife habitats within these zones are indicated only generally in this

TABLE 6

Dominant Species of West-Central Alabama Forests.

Oak Hickory-Pine Forest	Black Belt Forest	Southern Mixed Forest	Southern Flood Plain Forest
white oak	overcup oak	white oak	shumard oak
post oak	shumard oak	laurel oak	overcup oak
northern red oak	chinquapin oak	swamp chestnut oak	water oak
southern red oak	durand oak	turkey oak	willow oak
bitternut hickory	laurel oak	white hickory	swamp chestnut oak
mockernut hickory	nutmeg hickory	southern magnolia	swamp chestnut oak
pignut hickory	red cedar	cucumber tree	tupelo gum
loblolly pine		sweetgum	bald cypress
shortleaf pine		beech	pecan
		yellow poplar	swamp privet
		shortleaf pine	red bay
		loblolly pine	water elm
		longleaf pine	American elm
		southern white pine	cabbage palm
		ironwood	sugarberry
		red bay	rattan vine

Adapted from Thomas (1973:17).

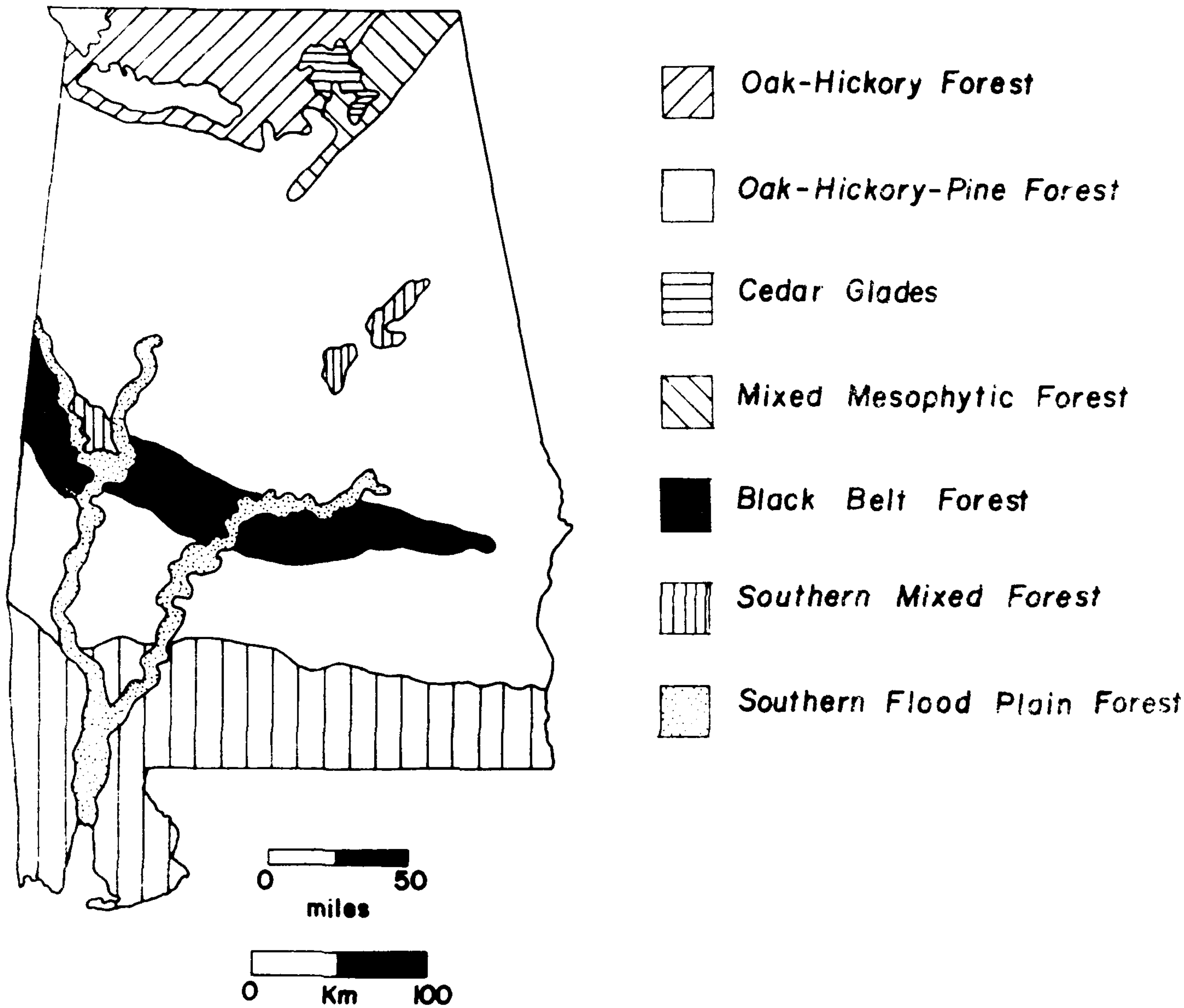

Figure 7. Distribution of Alabama forests.

TABLE 7 Species Composition of Forests in the Lubbub Creek Area

	No.	Percent		No.	Percent
[illegible]			Slope and Terrace Forest		
Hickory (Carya spp.)	83	16.40	Post oak (Quercus stellata)	56	17.34
Red oak (Quercus rubra)	49	9.68	Black oak (Quercus velutina)	46	14.24
Tupelo gum (Nyssa aquatica)	38	7.50	Hickory (Carya spp.)	45	13.93
Post oak (Quercus stellata)	33	6.52	White oak (Quercus alba)	37	11.46
Ash (Fraxinus spp.)	32	6.32	Pine (Pinus spp.)	36	11.15
Pine (Pinus spp.)	29	5.73	Red oak (Quercus rubra)	22	6.81
White oak (Quercus alba)	28	5.53	Blackjack oak (Quercus marilandica)	21	6.50
Hackberry (Celtis occidentalis)	23	4.55	Spanish oak (Quercus falcata)	12	3.72
Elm (Ulmus spp.)	22	4.35	Gum (Nyssa spp.)	12	3.72
Sweetgum (Liquidambar styraciflua)	21	4.15	Redbud (Cercis canadensis)	6	1.86
Spanish oak (Quercus falcata)	20	3.95	Water oak (Quercus nigra)	4	1.24
Maple (Acer spp.)	16	3.16	Maple (Acer spp.)	4	1.24
Willow oak (Quercus phellos)	16	3.16	Plum (Prunus spp.)	4	1.24
Black oak (Quercus velutina)	10	1.98	Persimmon (Diospyros virginiana)	3	.93
Hophornbeam (Ostrya virginiana)	7	1.38	Sweetgum (Liquidamber styraciflua)	2	.62
Bay (Magnolia spp., Persea borbonia)	7	1.38	Mulberry (Morus spp.)	2	.62
Linden (Tilia spp.)	6	1.19	Sassafras (Sassafras albidum)	2	.62
Sassafras (Sassafras albidum)	6	1.19	Ash (Fraxinus spp.)	2	.62
Sycamore (Platanus occidentalis)	6	1.19	Cedar (Juniperus virginiana)	2	.62
Cypress (Taxodium distichum)	6	1.19	Linden (Tilia spp.)	2	.62
Blackjack oak (Quercus marilandica)	6	1.19	Dogwood (Cornus florida)	1	.31
Birch (Betula nigra)	5	.99	Haw (Viburnum or Crataegus)	1	.31
Water oak (Quercus nigra)	5	.99	Sourwood (Oxydendrum arboreum)	1	.31
Mulberry (Morus spp.)	4	.79			
Persimmon (Diospyros virginiana)	4	.79			
Chinquapin (Castanea pumila)	3	.59			
Ironwood (Carpinus caroliniana)	3	.59			
Redbud (Cercis canadensis)	3	.59			
Dogwood (Cornus florida)	3	.59			
Chestnut (Castanea dentata)	2	.40			
Willow (Salix spp.)	2	.40			
Cottonwood (Populus deltoides)	2	.40			
Walnut (Juglans nigra)	1	.20			
Holly (Ilex spp.)	1	.20			
Laurel oak (Quercus laurifolia)	1	.20			
Locust (Gleditsia triacanthos)	1	.20			
Beech (Fagus grandifolia)	1	.20			
Swamp oak (Quercus spp.)	1	.20			
TOTAL	506	100.01		323	100.03

Caddell 1979 Tables, 2, 3, 4 and 5.

Table 7 (Continued)

	No.	Percent		No.	Percent
Upland Forest			Prairie		
Blackjack oak (*Quercus marilandica*)	117	30.15	Blackjack oak (*Quercus marilandica*)	19	57.58
Post oak (*Quercus stellata*)	109	28.09	Post oak (*Quercus stellata*)	10	30.30
Red oak (*Quercus rubra*)	47	12.11	Red oak (*Quercus rubra*)	2	6.06
Hickory (*Carya* spp.)	34	8.76	White oak (*Quercus alba*)	1	3.03
Black oak (*Quercus velutina*)	31	8.00	Black oak (*Quercus velutina*)	1	3.03
White oak (*Quercus alba*)	10	2.58			
Pine (*Pinus* spp.)	9	2.32			
Ash (*Fraxinus* spp.)	6	1.55			
Black gum (*Nyssa sylvatica*)	5	1.29			
Elm (*Ulmus* spp.)	4	1.03			
Sassafras (*Sassafras aloidum*)	3	.77			
Sweetgum (*Liquidamber styraciflua*)	2	.52			
Water oak (*Quercus nigra*)	2	.52			
Red Haw (*Viburnum* spp., or *Crataegus* spp.)	2	.52			
Persimmon (*Diospyros virginiana*)	1	.26			
Mulberry (*Morus* spp.)	1	.26			
Buckeye (*Aesculus* spp.)	1	.26			
Hackberry (*Celtis occidentalis*)	1	.26			
Redbud (*Cercis canadensis*)	1	.26			
Plum (*Prunus* spp.)	1	.26			
Hawbush (*Viburnum* spp. or *Crataegus* spp.)	1	.26			
TOTAL	388	100.02		33	100.00

Table 8 Characteristic Vegetation of Pickens County Soils.

	Forest Composition	Percent Uncultivated
Flood Plain		
Ochlockonee clay	Cypress, hickory, bay, cane	100
Ochlockonee silt loam	Hickory, gum, oak, bay, willow, holly, pine	85
Ochlockonee fine sandy loam	Gum, bay, pine, willow, water maple, oak, redbud, grasses	50
Trinity clay	Post oak, hickory, hackberry, cottonwood, sweetgum, yellow poplar, black walnut, oak[a]	15
Slope and Terrace		
Cahaba fine sand	Scant growth of shortleaf pine, gum, scrub oak. Broom sedge, and wild plum in disturbed areas	80
Cahaba fine sandy loam	Shortleaf pine, oak, dogwood, hickory and gum	25
Cahaba clay loam	Water oak, red oak, swamp pine, gum hickory, beech, ironwood	85
Kalmia fine sandy loam	Shortleaf pine, live, red, white and Spanish oak, maple, gum and hickory	15
Amite fine sandy loam	---	0
Black Belt		
Oktibbeha fine sandy loam	Oak, pine, wild plum, blackberry, broom sedge	50
Oktibbeha clay	Post and other oaks, hickory, ash, maple, dogwood, cedar, pine	-[b]
Sumter clay	Scattered hackberry and clumps of cedar, wild plum, blackberry	25
Houston clay	Scattered hackberry and clumps of cedar, wild plum	5
Coastal Plain Uplands		
Norfolk silt loam	Shortleaf pine, oak, dogwood, hickory, gum	5
Orangeburg fine sandy loam	Shortleaf pine, oak, dogwood, hickory, chestnut	15
Ruston series	Oak, hickory, pine, dogwood	-[c]
Greenville loam	---	0
Susquehanna fine sandy loam	Shortleaf pine, gum, oak, hickory, dogwood, cucumber	90

Source: O'Neal et al. (1917).

[a] These species are recommended for forest development of Trinity clay (Cotton et al. 1971). Characteristic vegetation is not listed in O'Neal et al. (1917) since most of this type is under cultivation.

[b] Primarily forested, used as woodland pasture (O'Neal et al. 1917:30).

[c] Ruston sandy loam and fine sandy loam are each 15 percent forested. The hilly phase is used for timber production (O'Neal et al. 1917:31).

analysis. A more exhaustive study would [illegible] the [illegible] habitats and [illegible] plant species [illegible] [illegible] [illegible] wildlife [illegible] [illegible] [illegible] [illegible] [illegible] and [illegible] [illegible] [illegible] of the [illegible] [illegible] opossum. [illegible] especially [illegible] [illegible] considered "game" species.

The Coastal Plain Uplands

The Coastal Plain uplands [illegible] comprise [illegible] km [illegible] and are [illegible] distributed [illegible] and northeast [illegible] (Figure [illegible]). The [illegible] bordered [illegible] vegetation [illegible] elsewhere [illegible] the oak-hickory-[illegible] forest [illegible] upland forest (Table 7). Prior to European development, this [illegible] corresponded to the post oak [illegible] of Shelford's [illegible] [illegible] the [illegible] pineland which Shelford (1963) believed was undergoing succession [illegible] broad leaved forest prior to A.D. 1600.

> . . . Succession in the ecotone area was probably making considerable progress in 1600 toward a broad leaved forest [illegible]. Magnolia forest [was] . . . extending up the stream valleys to meet the oak hickory forest in the upper portion of these valleys . . . In the upland between the streams, elements of the post oak [illegible] were probably present, with blackjack oak important. When fire occurred, there were, of course, fire subclimaxes, but had the pristine condition continued, climax forest would probably have been attained over a considerable part of the magnolia forest [illegible] (1963:88).

Land surveys reported blackjack oak [illegible] percent and post oak (28.09 percent) as the principal trees in [illegible] 1820. Hickory, red and black oak each constituted 9 to 12 percent, and the remaining species, including pine, comprised less than [illegible] percent each (Table 7, Caddell 1979). When subjected to fire or cultivation, dense stands of pine quickly cover disturbed areas of [illegible] (Thomas [illegible]). Neither mature hardwood nor dense pine forests [illegible] habitats. However, greater proportions of mature oak [illegible] significant differences in the [illegible] of deer and turkey [illegible] food resources for Mississippian [illegible] of white-tailed deer and turkey [illegible] 1971:64-65). [illegible]

[illegible] rabbit [illegible]

TABLE [illegible]

[illegible]

	[illegible]	[illegible]	Max[illegible] Reported [illegible]	Max[illegible] [illegible]	M[illegible]	[illegible]
Oc[illegible] clay	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ochlockonee [illegible] loam	8[illegible] 29	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Tr[illegible] clay	116 55	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cahaba fine sand	59.57	[illegible]		[illegible]	[illegible]	[illegible]
Cahaba fine sand. loam	103 60	255 93	[illegible]	8[illegible]	[illegible]	[illegible]
Oktibbeha clay	20.72	51 19	2[illegible]	[illegible]	[illegible]	[illegible]
TOTALS	484.33	1196.74				[illegible]

[1]Bushels per acre.
[illegible] available. Yield is assumed from estimates reported for Ochlockonee fine sandy loam

occur on the average of every sixth year, Ochlockonee silt loam may have been favored for early crops and the more moisture retentive clays could be planted later at some risk of exposure to summer droughts.

Management practices which included incorporation of organic residues from weeds, grasses, corn and bean crops, interplanting with legumes to increase nitrogen, and perhaps measures to correct soil acidity, are well within the limits of aboriginal technology. These practices may have [illegible] even better corn soils over the long term than current farming [illegible] clearing, the use of inorganic fertilizers, and the practice [illegible] clean cultivation have reduced the organic content of soils so that now [illegible] soils in Alabama are deficient in organic matter (Andrews n.d.:21). Romans [illegible] reported corn yields of 60 to 80 bushels per acre along the Tombigbee. Pickens County yields in 1917 of this magnitude were obtained only on Cahaba clay loam and Trinity clay, and only if management practices included incorporation of crop residues into the soil (O'Neal <u>et al</u>. 1917).

<u>Estimated Corn Yields under Aboriginal Conditions</u>

Mississippian horticulturalists, who specialized in corn rather than cotton production, who were sophisticated in land care, and who were not plagued by organic depletion of soils resulting from land clearing and mechanized cultivation, could have obtained the maximum yields reported by Pickens County farmers in 1917. However, the midpoint between the yield reported by Pickens County farmers in 1917 and the maximum estimated yield is probably a better estimate of the productive capability of soils within the 2 km catchment by Mississippian horticultural techniques. The projected maximum yields (Table 10) for soils within the catchment area essentially reflect soil capability where organic depletion has been corrected. The larger Pickens County yields reflect conscientious management under conditions of organic depletion. The midpoint estimates of productivity under aboriginal conditions approximate the 60 to 80 bushels per acre reported by Romans in 1775.

The total yearly production of corn which might have been obtained within the Summerville Mound 2 km radius catchment is shown in Table 11. Since no yields were reported for Ochlockonee clay, its yield value was assumed to be the same as the other Ochlockonee soils.

The estimated production for the Summerville Mound catchment in Table 11 exceeds estimates for all but three of the Moundville phase sites (Peebles 1978: [illegible], Table 13.6). Peebles' (1978:407, Table 13.5) estimates are based on the midpoint of average yields reported by Moundville area farmers in Rowe <u>et</u> [illegible] <u>al</u>. (1914). [illegible] assessed effect of soil depletion [illegible] and poor management practices and lack of [illegible] discussed above is correct, Peebles' estimates [illegible]

[illegible] acreage within [illegible] commercial fertilizers. The [illegible] fine sand.

Forest soils are characteristically acid. Oktibbeha clay, although it is derived from the Selma Chalk, requires lime since it is developed under forest vegetation. The flood plain and terrace soil pH values range from 4.5 to 5.5 indicating that all of the soils within the 2 km catchment with the exception of Trinity clay may range below critical values for maximum corn production. The pH values in Table 10 are from Greene County soils which may be more acid (with a lower pH value) than those in the Lubbub Creek area which are in close proximity to the Selma Chalk. However, pH values taken from Phase I auger tests in the habitation area (Cahaba fine sandy loam) ranged from 4.8 to 6.0 with an average value of 5.2. Cahaba fine sandy loam is normally an acid soil with a pH range of 5.1 to 5.5. The proximity of the Selma Chalk appears to have no significant effect on the pH value of this soil. Trinity clay in the Lubbub Creek area may be slightly less alkaline than the pH values given for Greene County, since it is in part colluvium derived from the acid Oktibbeha slopes. However, the headwaters of streams bordered by Trinity clay originate in alkaline Sumter and Houston clay soils above the Oktibbeha slopes to the west of the Lubbub Creek area. The exceptional productivity of Trinity clay derives from its flood plain properties without the concommitant disadvantage of an excessively low pH value. Correction of soil pH may have been an aboriginal concern and could have been accomplished by incorporating shell debris into the more acid soils.

Shallow cultivation during the growing season of corn not only controls weeds which usurp soil moisture, but also returns organic matter (the weed residue) to the soil. Shallow cultivation retains soil moisture by creating a level of surface tension along the cultivation line thereby reducing soil evaporation. Chang (1968:95) observed that shallow cultivation also serves to regulate soil temperature:

> By loosening the top soil and creating a mulch, tillage reduces the heat flow between the surface and the subsoil. Since the soil mulch has a greater exposed surface than the undisturbed soil and no capillary connection with the moist layers below, the cultivated soil dries up quickly by evaporation, but the moisture in the subsoil underneath the dry mulch is conserved (Chang 1968:95).

Local farmers normally cultivate corn crops two or three times prior to silking.

The practice of interplanting legumes to supply nitrogen helps to maintain organic levels within the soil as residues are reincorporated into the soil after harvest. It also accomplishes a "deep biological tillage" as roots penetrate to depths of 30 inches or more, improving soil drainage and aeration (Springfield 1955:349).

Clay soils such as Ochlockonee clay, and especially Trinity clay, can be cultivated only under a narrow range of moisture conditions without damage to the structure of the soil. These soils tend to clod and become compacted when worked under wet conditions. It is this characteristic which could delay planting when spring floods and soil saturation continue late into the spring planting season. Well-drained loams, on the other hand, can be planted only a few days after flooding. The greatest proportion of prime agricultural soil within the 2 km radius catchment is clay rather than loam. Under late flood conditions, which according to the flood data presented in an earlier section maintains the soil in a loose, crumbly condition. Organic matter improves the capacity of the soil to hold water, increases aeration and drainage, supplies nutrients, improves tilth or friability, and [illegible] crusting and erosion (Andrews n.d.:21). The amount of available moisture is contingent on rain, flooding (for the bottomland soils), and the waterholding capacity of the soil. The available moisture within the soil depends on soil texture and organic content. Adequate moisture during the silking and tasseling period is critical to maximum corn yields. This factor can be controlled to some degree by scheduling planting dates so that silking coincides with the period of maximum summer rains. Maximum summer rains--which may also result in flooding--occur in July. Planting dates for central Alabama (for varieties maturing in 110 to 130 days) are between April [illegible] and April 20. This time period coincides with the period of maximum flood levels (Table 1) so that planting times may be delayed by flood conditions, especially on bottomland soils. The maturation of some varieties of corn may have been earlier, 72 to 78 days for nonhybrid varieties still available (J. L. Hudson 1980:104). Early maturation would allow for later planting or succession planting to maximize the productive properties of different soils. Soil saturation and spring floods are more likely to delay planting in Pickens County than late frosts, which rarely occur after March 25.

Delay of planting postpones silking. Mangelsdorf (1929) found that silking (in Texas) was delayed one-half day for every day beyond the normal planting time. Delay of planting not only exposes the crop to summer droughts during critical growth periods; it also increases injury by insects and diseases (Stringfield 1955:360). Drought susceptibility is alleviated by maintaining a high level of organic matter within the soil.

Nutrients essential to corn development are nitrogen, phosphorus, potassium, calcium, and magnesium. Nitrogen is normally required in a relationship of two parts nitrogen to one part each of phosphorus and potash (Andrews n.d.). Unlike the other nutrients, which are normally supplied by the slow decomposition of organic material in the soil, nitrogen in corn soil is quickly depleted. However, nitrogen supplied by planting legumes on corn soils ". . . will supply all the nitrogen needed for corn under normal weather conditions" (Andrews n.d.:12). Some Pickens County farmers in 1917 obtained maximum corn yields "Indian fashion" by interplanting cowpeas, velvet beans, and peanuts between corn rows (O'Neal et al. 1917:12). The presence of beans in Mississippian contexts recovered in the Gainesville Lake excavations (Caddell 1979) suggests that nitrogen may have been supplied locally to corn fields in this manner.

The optimum pH value for corn production is between 6.5 and 7.0 (Stringfield 1955:347). Maximum corn yields were obtained on soils in Alabama having a pH value of 5.5 to 6.5 (Andrews n.d.:14). However, Adams (1969) found that yield response to liming varied with different soils to values between 5.5 and 7.0. Soils with pH values of 5.5 to 5.0 or less produce reduced yields. A soil which is too acid lacks pore spaces which permit movement of air, [illegible] nutrients through the soil (Stringfield 1955:347). Soil pH [illegible] corrected by liming, which not only improves soil structure, but supplies calcium. [illegible] legumes require an even less acid soil than corn, [illegible] would ensure that the soil pH is adequate for maximum corn production (Andrews n.d.:14; Adams 1969).

plantations ranged from 800 to 1500 acres. The northern one-half of the county was in smaller farms. The principal crop (62,184 acres in 1910) was cotton, totally exported and grown for cash. Corn was second in production (38,854 acres) and used primarily as stock feed and for grinding into meal. Not enough corn was produced for local consumption and quantities of this grain were imported. The use of commercial fertilizers was reported for 2174 (52.46 percent) of the 4144 farms in Pickens County in the 1910 census (O'Neal et al. 1917). O'Neal indicated that this represented a decline over previous years when commercial fertilizer had been used more extensively. Due to a recent increase in the price of potash, cottonseed meal, green, and barnyard manures were being substituted for commercial fertilizers.

Cotton production declined in the period between 1890 and 1910 because of boll weevil devastation of the cotton crop. , (In 1980, 52,651 acres planted to cotton yielded 17,283 bales. In 1910, 62,184 acres yielded only 14,000 bales; O'Neal et al. 1917:9.) Thus corn production was gaining greater emphasis in 1917, but still a shift from prime cotton to corn soils had not been made.

Local farmers recognized that the bottomland soils, especially Ochlockonee fine sandy loam and Trinity clay, when drainage was adequate, were the best corn soils (O'Neal et al. 1917:12). Other productive corn soils were not exploited. No yields were reported for Ochlockonee clay, potentially "one of the best corn soils of the county" (O'Neal et al. 1917:38). Only a small percentage of Ochlockonee silt loam and Cahaba clay was cultivated. Thus 1917 land use, production emphasis and farm management were qualitatively different from Mississippian horticultural practices. Mississippian populations exploited bottomland soils. Corn, rather than cotton, was the principal crop, and corn was a major subsistence staple rather than a subsidiary dietary item. The data in Table 10, however, can be used to project both aboriginal horticultural practices and production levels if the differences between farming practices in 1917 and those prior to A.D. 1500 can be delimited. Although the data in Table 10 reflect 1917 farming practices, the projected estimated yields, designated management practices and soil characteristics reflect the productive potential of each of these soils given the limitations of an aboriginal technology.

Prerequisites for Maximum Corn Productivity

Requirements for maximum corn yield now have been determined by agricultural experimentation. Critical factors include (1) soil structure, (2) moisture, (3) essential nutrients, (4) suitable pH value, (5) appropriate cultivation practices, and (6) a cropping system which includes either rotation or interplanting with legumes or grasses. All of these factors combine to provide water and nutrients to the plants during growth and maturation.

Soil structure is not an intrinsic characteristic. The total effect of the continuous use is to destroy soil structure (Stringfield 1955:349). Although bottomland soils are more resistant to this effect, they, too, are eventually depleted by continuous cropping (ibid:350).

The best corn soils are high in organic content, permeable, and both moisture retentive and well drained. The optimum soil texture is intermediate between sand and clay. Cultivation and replenishment of organic matter

TABLE 10

Pickens County Soils: Corn Yields and Management Requirements[1]

	Acres	% of Total	% Cultivated	Overflow Potential	Drainage	Reported Corn Yield	Projected Maximum Yield[2]	Management	pH[3]
Alluvial Soils									
Chiohokonee clay	11,200	2.0	-	a	e			7,8	-
Ochlockonee silt loam	32,704	5.7	15	a	e	40-50	-	7	
Ochlockonee fine sandy loam	54,336	9.5	50	a	e	40-50	90-100	1,7	4.5-5.5
Cahaba fine sand	2,880	0.5	20	a	a	-	-	6	-
Cahaba fine sandy loam	25,792	4.6	75	c	b	20-50	85	2,5	5.1-5.5
Cahaba clay loam	1,600	0.3	15	b	b	30-70	-	6	-
Kalmia fine sandy loam	36,800	6.4	85	d	e	10-25	30	1,7	-
Amite fine sandy loam	768	0.1	100	-	b	20-40	-	2,5	-
Trinity clay	4,928	0.9	85	a	b	30-65	85-100	1,7,8	6.6-8.4
Selma Chalk Soils									
Oktibbeha fine sandy loam	1,408	0.3	50	-	b	10-18	55	3,4	-
Oktibbeha clay	19,136	3.4	-	-	d	15-20	50	3,5	4.5-6.0
Sumter clay	12,160	2.1	75	-	d	15-30	50	1,3,8	7.4-8.4
Houston clay	6,208	1.1	95	-	e	15-55	-	2,4,8	7.8
Coastal Plain Upland Soils									
Norfolk silt loam	11,200	2.0	95	-	e	15-40	-	3,4	-
Orangeburg fine sandy loam	15,232	2.6	85	-	-	15-60	-	2	-
Ruston series	235,008	41.1	-	-	b	12-35	-	2	5.2
Greenville loam	2,240	0.4	100	-	b	30-50	-	1,3	-
Susquehanna fine sandy loam	97,344	17.0	10	-	d		-	1,3,6	-
Totals	570,944	100.0							

[1]Source: O'Neal et al. 1917.
[2]Cotton et al. 1971:58, Table 2. Estimated Average Yield of Corn under High Management.
[3]pH values reported for these soils in Greene and Sumter Counties (Cotton et al. 1971; Swenson 1941).

KEY: Overflow Potential: a. Mean Annual Flood; b. Occasional overflow; c. Seldom overflowed; d. Above overflow level.

Drainage: a. Excessive; b. Well drained; c. Moderately well drained; d. Poorly drained; e. Variable depending on elevation.

Management:

1. Low organic content. Requires return of crop residues.
2. Low fertility. Requires large amounts of nitrate fertilizer.
3. Three to six year crop rotation of legumes and grasses to each year of row crop.
4. Interplanting of legumes between corn rows to increase nitrogen.
5. Needs lime. Normal pH too low for maximum yields.
6. Subject to drought. Needs organic matter to increase moisture retentiveness.
7. Poorly drained at lower elevations.
8. Can be cultivated only under narrow range of moisture conditions without damage to soil structure.

meander zone. For the purposes of this study, the 1917 location of the meander is used as an approximation to the probable area of agricultural soils available to Mississippian populations in the Lubbub Creek area prior to A.D. 1500.

<u>The 2 km Radius Catchment</u>

Soils within the 2 km catchment area surrounding the Summerville Mound are Ochlockonee clay, Ochlockonee silt loam, Trinity clay, Cahaba fine sand, Cahaba fine sandy loam, and Oktibbeha clay. Only that area within the 2 km catchment which would have been conveniently accessible to agricultural development is included in the catchment analysis. The area across the river but within the 2 km catchment area was excluded from consideration. The soils, expressed as a percentage of the total 2 km radius catchment considered in this analysis, were Ochlockonee clay, 21.39 percent; Ochlockonee silt loam, 16.58 percent; Trinity clay, 24.06 percent; Cahaba fine sand, 12.30 percent; Cahaba fine sandy loam 21.39 percent; and Oktibbeha clay 4.28 percent (Table 5).

The greater part of the area within the meander zone was Ochlockonee clay. The Ochlockonee deposits to the south of the excavated area and along the bank of the river to the northwest in Figure 3 were Ochlockonee silt loam. As stated in the previous section, Ochlockonee silt loam characteristically has developed along the larger sluggish streams. The deposits of this type within the 2 km radius catchment were the only ones in the county along the river. The excavated mound and habitation areas were situated on Cahaba soils. A small area of Oktibbeha clay extended into the 2 km catchment from the extreme west. A large area of Trinity clay, colluvium washed from the Oktibbeha and Houston soils on slopes to the west, extended along the southern boundary of the catchment. This is the largest Trinity clay deposit adjacent to the river channel in the county (Figure 3). A review of the productive capability of these soils indicates that, given certain management techniques, the most productive corn soils in Pickens County are included within the 2 km radius catchment surrounding the Summerville Mound.

<u>Farm Management and Emphasis: Pickens County 1917</u>

Corn yields reported in O'Neal <u>et al</u>. (1917) for Pickens County soils are listed in Table 10. The higher yields reflect management practices which included but were not limited to the use of commercial fertilizers. Management requirements for the various soils are listed in the table. Estimated maximum yields and pH values given are those for soil types which occur in Greene county (Cotton <u>et al</u>. 1971). The projected estimated yields are those which could be obtained where soils are properly drained, if the specified management conditions are met.

Peebles (1978) devised a productivity model for Moundville phase sites based on early soil classifications for Hale and Tuscaloosa Counties (Rowe <u>et al</u>. 1912; Winston <u>et al</u>. 1914). Commercial fertilizers, according to those sources, were not in general use by Moundville area farmers. In Pickens County, farming emphasis was on the production of cotton as a cash crop and commercial fertilizers were used extensively.

In 1917, in the Black Belt section and around Aliceville, large

Georgia, and Mississippi observed that these sites were consistently located on seasonally flooded silt loams and fine sandy loams which were both friable and fertile. Peebles (1978) found that Moundville phase sites were located on seasonally flooded clay loams, silt loams, or fine sandy loams and were not only "located on the best perpetually river renewed, corn soils, but their catchments are also composed of these soils" (1978:405). Jenkins, Curren and DeLeon (1975:63) located 34 Mississippian sites within the Gainesville Reservoir survey area along the Tombigbee River. All of these sites were located on stream and river flood plain and terrace soils, which varied from sand, sandy loam, silt loam, and clay loam to clay. Twelve Mississippian farmsteads specifically were located on fine sand (n=5), clay loam (n=1), fine sandy loam (n=4), silt loam (n=1) and clay (n=1). The Lubbub Creek habitation area is situated on Cahaba fine sandy loam, a relatively poor corn soil. The area of agricultural potential and the soils relevant to estimating the resources of a given settlement, then, are not necessarily those on which the site is located, but those which are within the area of effective exploitation, i.e., those included within a 2 km radius of the site location (Peebles 1978).

To determine the agricultural potential of soils for the Lubbub Creek Archaeological Locality a 2 km radius catchment centered on the Summerville Mound was superimposed on the 1917 Pickens County soils distribution map (see Figure 3). The soil distribution map included the river meander which extended approximately 1.5 km east of the Summerville Mound where it formed a confluence with Lubbub Creek. Maps drawn by Government Land Office surveyors prior to 1835 indicated the meander in this same location. At that time, however, Lubbub Creek did not join the river but emptied into a large lake south of the confluence shown in Figure 3. In 1917 the area within the meander included some 141 hectares. This area was subsequently cut off when the channel shifted to form the bend which was tested and excavated in 1978 and 1979 (see Figure 4). The area circumscribed by the 1917 meander is the minimal area which would have been available for agricultural exploitation east of the Summerville Mound prior to A.D. 1500. It is possible, judging from meander scars in aerial photographs and the extent of the flood plain deposits, that the area within the meander could have included as much as 350 hectares during the Mississippian period. Such an area would have been available if the river migrated to the 130 foot contour which marks the eastern limit of the flood plain and the beginning of the Kalmia terrace deposits in the Lubbub Creek area.

Although the area of soil types may have been greater in the past, the relative proportion of soil types within the 2 km catchment during the Mississippian period should have been similar to that defined in 1917. One significant difference is that the annual flood zone was probably further east of the mound and habitation areas included in the 1978 and 1979 excavations. Cahaba fine sandy loam, which formed the major portion of the excavated area develops at elevations 35 to 55 feet above river level and is normally above ordinary overflow levels (O'Neal _et al_. 1917). The bend, subsequent to the meander cutoff, is now only 4 to 8 feet above bankful stage measured just upstream at the Cochrane gaging station and floods, on the average, every other year (Table 1). The annual flood zone, prior to A.D. 1500, judging from present flood plain development, probably extended inland approximately 1 km from the river bank at the lowest elevations and was probably more limited than the distribution of Ochlockonee soils shown in Figure 3 within the to 5 years for hickory species, 3 to 5 years for walnut (Juglans nigra), and from 1 to 10 years for various oak species (Caddell 1979:74, Table 6; Fowells 1965; U.S.D.A. Forest Service 1948).

Although most faunal species important to Mississippian populations are concentrated in flood plain environments (deer, cottontail rabbit, waterfowl, fish, and molluscs), turkeys are not listed for this zone. Some investigators (see Barry 1974:23) have suggested that turkeys may have avoided the flood plain where swamps and seasonal flooding were incompatible with nesting habits. Deer and cottontail rabbit were seen occasionally during the Lubbub Creek excavations. One large turkey ranged along the edge of the cleared area adjacent to the wooded river bank for several months. On one occasion a turkey nest with several eggs was found at the edge of the clearing in scrubby growth near the river bank. The dependence of deer, rabbit, and turkey on cutover areas suggests that these species would be abundant along the edges of cultivated fields.

Smith (1978) observed that meander-belt zones typically are circumscribed environments--highly productive islands surrounded by uplands of low fertility and biomass densities. This environmental contrast is modified in the Lubbub Creek area (1) by the broad terrace zone which extends north and east of the river, and (2) by the Oktibbeha forest developed on the Selma Chalk outcrop to the west and south of the habitation area. The prairie and upland environments were probably low in total biomass density compared to the meander-belt zone, but the Oktibbeha and terrace forests in the Lubbub Creek area provided a broad transitional zone of relative biotic abundance. The eastward deflection of the river by the Selma Chalk outcrop in effect created a 4.6 to 6.5 km wide "edge zone" of terrace soils which were transitional between the flood plain and upland soils. The Oktibbeha forest to the west provided a similar transition between the floodplain and prairie.

Potential environmental resources for the Lubbub Creek area were outlined in this section; the actual use of these resources by Mississippian and earlier inhabitants of the area is discussed in the chapters by Caddell and Scott. The agricultural potential of soils circumscribed by the 2 km radius catchment surrounding the Summerville Mound is discussed in the following section.

AGRICULTURAL POTENTIAL OF SOILS: CATCHMENT STUDY

The capability of soils for corn production within a 2 km radius catchment surrounding the Summerville Mound is analyzed in this section. Since maximum corn production is contingent on land management as well as on intrinsic soil characteristics, land management requirements for each of the soils represented within the catchment are presented in this section. Pickens County farming practices as described in O'Neal et al. (1917) are used as a base from which to project the yields and farming techniques which might have obtained under aboriginal technology.

Site-Soil Associatic

Peebles (1978) and others (Ward 1965; Larson 1972) have suggested a relationship between Mississippian site location and specific soil type. Ward (1965), in an analysis of 24 Mississippian site locations in Tennessee, there were extensive agricultural fields nearby.

Implications of Resource Distribution for Site Selection

In summary, most environmental zones which can be differentiated for west Alabama are included within the 10 km radius catchment surrounding the Summerville Mound. These are: the Coastal Plain uplands, the Black Belt (which includes the Oktibbeha forest and prairie subenvironments), the slope and terraces, the flood plain, and cutover woodland and cultivated zones.

If site location is associated with a "series of concentric effort-lines" (Peebles 1978:404), so that minimal effort is expended on procurement of the most important resources, the Lubbub Creek Archaeological Locality is situated for maximum exploitation of the meander zone at the confluence of the Tombigbee River and Lubbub Creek. Approximately 4.82 percent of the total flood plain area of the 10 km radius catchment, together with smaller amounts of the forests developed on Cahaba and Oktibbeha soils, is contained within the 2 km radius catchment. The concentration of most resources within this relatively small area suggests that the prairie and upland zones near the outer margins of the catchment area were exploited primarily on either a seasonal or intermittent basis.

The uplands, as suggested by Shelford (1963) and documented by early Government Land Office surveys, contained a larger percentage of oaks than other zones within the catchment prior to A.D. 1600. Although a mature oak-hickory forest with little understory development would provide few favorable habitats for most animal species, an abundant and concentrated acorn harvest would attract acorn-loving animals in the late fall. The prairie zone in the western part of the resource catchment may have also been seasonally exploited in early summer for its thickets of plums and berries. Mourning doves are concentrated in this area, where they nest and roost in the horizontal branches of cedar trees (Cotton et al. 1971).

These species were all available in the flood plain and terrace zones, but they would have been dispersed widely throughout the year. The return for energy expended (less than two hours' walk after crossing the river) to these relatively distant, seasonal biotic concentrations may have been justified for the exploitation of specific species.

Species composition of the forest developed on the Oktibbeha soils was not defined in the Government Land Office surveys. It is probable that this forest, like the upland forest, produced a considerable fall acorn and hickory crop. The relative proportions of nut-producing species, however, may have been different for this forest than in the more distant upland areas because of differences in forest succession (see Shelford 1963:103). As pointed out above, Oktibbeha soils are intrinsically less developed than Coastal Plain upland soils and consequently support a relatively immature forest. Although blackjack and post oak are dominant species in both upland and Black Belt forests, the composition of other oaks and hickory species is different. The Black Belt forest typically includes overcup, shumard, chinquapin, durand, and laurel oaks, and nutmeg hickory. In the upland forest, post, northern red, and southern red oaks, and bitternut and mockernut hickories are represented (Table 6). The frequency of abundant nut crops varies for different species of oak, hickory, and walnut, but on the average abundant crops vary between 1 clay soils consist of cypress, hickory, and bay. Ochlockonee fine sandy loam is developed along smaller streams in the upland and terrace zone. It is forested in gum, bay, pine, willow, water maple, red bud, oak, and "a luxuriant growth of native grasses" (O'Neal et al. 1917:37). Southwest of the river, where streams drain slopes composed of the Sumter, Houston, and Oktibbeha series soils, the flood plain forest is developed on Trinity clay. The forest directly to the west of the habitation area, developed on Oktibbeha clay, includes relatively large areas of Trinity clay developed along streams which flow onto the flood plain to the south of the habitation area. Vegetation characteristic of Trinity clay was not listed in O'Neal (et al. 1917), since the soil was largely in cultivated fields. However, cottonwood, sweetgum, yellow poplar, black walnut, and oak are species recommended for woodland development of Trinity clay (Cotton et al. 1971). A relatively large proportion of the Trinity clay catchment total falls within the 2 km radius catchment (Figure 3).

Caddell (1979:17) found that the distribution of forest species within the flood plain forest varies with elevation. Cypress and tupelo gum predominated around sloughs and swamps; cypress, tupelo gum, cottonwood, willow oak, maple, willow and sycamore characteristically grew on low banks and natural levees adjacent to the river channel. Sweetgum, water oak and water hickory occurred in the lower backswamp areas between ridges. Post, black, and white oaks were concentrated on low ridges formed along abandoned channels. These species, similar to those at higher elevations, were included as slope species in the slope and terrace zone by Caddell (Table 7). Various oaks, with red, post, white Spanish, willow and black oaks most numerous, comprised 33.4 percent of the flood plain forest. Hickory was more prevalent here than in other zones, forming 16.40 percent of the flood plain forest composition. Additional species have been observed in this forest biome: small trees, shrubs, and vines formed a well-developed understory and provided food and cover for many faunal species. Understory plants included dogwood, blackberry, persimmon, sparkleberry, wild grape, smilax, and honeysuckle (Cotton et al. 1971:64). Faunal species common within the flood plain forest were white-tailed deer, gray and fox squirrel, bobwhite quail, cottontail and swamp rabbit, beaver, bobcat, fox, muskrat, mink, skunk, and waterfowl (Cotton et al. 1971:64). In addition, channel and backwater fish species, as well as molluscs were found in the channels of the river and streams within this zone.

Cutover Woodlands and Cultivated Fields

In addition to the natural environmental zones just described, cutover areas, an equally natural consequence of human habitation and cultivation (see Binford 1972:314-326), provided favorable habitats for many animal species common in the larger catchment area. White-tailed deer are described as "a nuisance . . . likely to damage crops in small outlying fields" (Cotton et al. 1971:64). Bobwhite quail are attracted to abandoned fields and cutover woodlands. Cottontail rabbit, mourning dove, and turkey are also attracted to cutover areas. Young turkeys, according to Cotton et al. (1971:65) are dependent on grass seed and insects found primarily in openings, along roadsides, field edges, and cutover woodlands. These species, then, are to a certain extent symbiotic with human horticultural activity. It is of special significance that Scott (Chapter 4, Volume II) found the remains of numerous rabbits in the faunal sample from the Mississippian components in the Lubbub Creek Archaeological Locality. The abundance of this species suggests that

The Slope and Terrace Zone

The slope and terrace soils (Cahaba and Kalmia series), developed on old river deposits from a belt 4.5 to 6.5 km wide across the catchment north and east of the river. This zone comprised 48.26 percent of the catchment area. It is characterized by a greater diversity of forest species, shrubs, vines, and animal habitats than the Black Belt and Coastal plain upland zones.

Caddell's slope and terrace forest (Table 7) included some species found at higher elevations within the flood plain. Post oak, black oak, white oak, hickory, and pine were the principal species within this zone which is situated at elevations between 20 and 50 feet above river level. The Cahaba soils included within this forest zone are occasionally flooded. Cahaba fine sand, an excessively drained soil, supports only a scant growth of scrub oak, gum and shortleaf pine. Broom sedge, weeds and wild plum grow in disturbed areas. Cahaba fine sandy loam supported a forest of pine, oak, dogwood, hickory, and gum. Forests on Cahaba clay loam, used for timber production in 1917, included water oak, red oak, white oak, swamp pine, gum, beech, hickory, and ironwood (O'Neal <u>et al</u>. 1917).

The Kalmia soils, located to the south and southeast of the catchment between the confluence of the Tombigbee and Sipsey Rivers, fall within the Southern mixed forest zone (Table 6) or Shelford's magnolia forest. This is a relatively open pine-oak savannah, which in sandy areas develops a dense understory of shrubs, small trees and vines (Thomas 1973:16).

White-tailed deer, wild turkey, squirrel, beaver, wood duck, black duck, mallard, bittern, heron, egret, and warblers are characteristic species of terrace forests. Deer favor cutover areas, where browse plants are succulent rather than woody, and they thrive on acorns in the fall. Acorns, beechnuts, dogwood, wild grapes, blackberries, and mulberries support rather large turkey populations. Young turkeys are dependent on grass seed and insects found primarily in disturbed open areas. Beaver, bittern, heron, egret, and ducks favor streams, swampy areas, and ponds. Wood ducks, black ducks, and mallards spend the winter in the swampy areas of this zone (Cotton <u>et al</u>. 1971).

The Flood Plain Forest

The flood plain forest zone comprises 21.51 percent of the catchment. Approximately 5 percent of this zone is included within the 2 km radius catchment surrounding the Summerville Mound. The remainder is distributed along the river primarily to the south, and along streams which flow through the uplands, terrace, and Black Belt zones.

Four distinct flood plain soils are represented: Ochlockonee silt loam, Ochlockonee clay, Ochlockonee fine sandy loam, and Trinity clay. Ochlockonee silt loam is developed primarily along larger sluggish streams draining the uplands and terraces. However, one large area occurs along the Tombigbee River adjacent to the Lubbub Creek Archaeological Locality so that 7.32 percent of the Ochlockonee silt loam catchment total falls within the 2 km radius catchment. Ochlockonee silt loam supports a forest of gum, oak, bay willow, holly, hickory, and pine. Ochlockonee clay is developed along the river and large streams. Approximately 3.75 percent of the Ochlockonee clay catchment total is within the 2 km radius catchment. Forests on Ochlockonee

Except for flood plain fauna along the streams, and fall acorn and hickory harvest, the coastal plain upland appears as a relatively inhospitable resource area. Some early summer fruiting trees are listed for this zone (mulberry, plum), but these are more numerous in other areas of the catchment. The species distribution of the coastal plain upland suggests that this forest zone was attractive primarily in late fall when acorn-loving species would be temporarily attracted to the area. At this time, hunting of white-tailed deer, turkey, squirrel, and possibly migratory birds, beaver and raccoon favoring stream areas might be quite lucrative. A few persimmons and pine seeds would be available for collecting.

The Black Belt

Black Belt soils comprise 21.55 percent of the catchment area. Two distinct environmental zones are represented. The Sumter clay (white prairie) and Houston Clay (black prairie) comprise approximately 12 percent of the catchment and are distributed to the extreme west and southwest of the catchment (Figure 3). The Oktibbeha soils (red prairie) comprise 9.55 percent of the catchment area and extend over slopes to the west of the Lubbub Creek Archaeological Locality.

The Sumter and Houston clays support a prairie vegetation with a few scattered hackberry and cedar clumps, wild plum thickets, and blackberry vines. Typical prairie vegetation includes prairie sunflower, prairie cornflower, prairie rose, Cherokee sedge, tuberous milkweed, Torrey's rush, cutleaf verbena, and big bluestem grass (Thomas 1973:16). Mourning doves and many smaller birds are the principal species in this area. Doves roost and nest in cedar trees; they favor trees with horizontal limbs and which provide little cover. Cottontail rabbit and quail appear in this zone only seasonally, and they congregate along stream banks where there is sufficient food and cover (Cotton et al. 1971:65)

The prairie or grassland trees described in the old land surveys were principally blackjack and post oak. Only 33 trees were reported for 28 km^2 of grassland (Caddell 1979:18). Caddell suggests that few food plants would have been available within these grassland areas (1979:18). This forest density should approximate the original vegetation of the Houston and Sumter clays. The red prairie Oktibbeha clay soils, however, in 1917 were largely uncultivated and supported a forest predominately of post oak, other oaks, hickory, ash, maple, dogwood, cedar, and pine (O'Neal et al. 1917).

As described in an earlier section, the prairie soils developed in series from the alkaline Sumter and Houston clays, which supported mainly prairie grasses, to the Eutaw, Vaiden and Oktibbeha clays which developed from these soils under tree vegetation. In Pickens County in 1917, the Oktibbeha soils were utilized principally as woodland pasture (O'Neal et al. 1917). Recommended use of these soils, where sheet erosion precluded development due to sloping topography, was forestry for the production of cedar posts and as game preserves. Quail, wild turkey, and squirrel were listed as species (Swenson 1941:72) which would thrive on nuts, beggarweed seeds, native vetch, lespedeza, mulberry, dogwood, and other seeds in this vegetation zone. Deer could have been supported by cane and underbrush along streams.

TABLE 9

Wildlife Habitats.

Open Land	Woodland	Wetland
cottontail rabbit (1) (3)	white-tailed deer (1) (2)	beaver (1) (2) (3)
red fox (1) (3)	gray squirrel (1) (2)	mink (1) (3)
gray fox (1) (3)	fox squirrel (1) (2)	muskrat (1)
bobwhite quail (1) (3) (4)	raccoon (3)	bobcat(1)
meadowlark (4)	wild turkey (2)	skunk (1)
mourning dove (3) (4)	thrush (3)	black duck (2)
cardinal (4)	vireo (3)	wood duck (2) (3)
mockingbird (4)	tanager (3)	rails (3)
shrike (4)	woodpecker (3)	mallards (2)
sparrow (4)	warbler (3)	heron (2)
brown thrasher (4)		egret (2)
bluejay (4)		bittern (2)

Key: (1) Flood plain, (2) Terrace and occasionally flooded slopes, (3) Uplands, (4) Prairie.
Source: Cotton et al. (1971:64-66).

which is adjacent to the eastern part of the habitation area, had no reported yield for 1917, although 20 percent of this type was under cultivation at the time. This soil is described as unsuitable for agriculture due to excessive drainage. If used for corn production, this acreage would have been one of the least desirable corn soils within the catchment. If only the most productive corn soils were utilized (Ochlockonee clay, Ochlockonee silt loam and Trinity clay) farming acreage within the catchment would be 7[illegible].37 acres ([illegible].43 hectares) with an estimated yearly yield of 57,838 bushels.

Summary: Implications of Soil Distribution within the 2 km Radius Catchment

The productive capability of soils available for agricultural exploitation within the 2 km radius catchment were discussed in this section. Although some soils are better than others for corn production, the yields achieved are only partially dependent on intrinsic soil characteristics. For example, Trinity clay, clearly the most productive corn soil in Pickens County, has a maximum estimated capability of 100 bushels per acre. Yet some Pickens County farmers in 1917 obtained only 30 bushels per acre on this soil (Table 10). Analysis of the 2 km radius Summerville Mound catchment indicates that it strategically includes in combination the most productive corn soils concentrated within a minimum area. If prime corn soils were conscientiously selected, it is probable that land management included those practices which produce maximum yields on these soils.

Minimally, land management for maximum yields would include shallow cultivation, precautions to prevent organic depletion, the use of a supplementary legume crop to supply nitrogen, and, for the flood plain soils other than Trinity clay, perhaps additional measures to correct the intrinsically low pH value. Although flood plain soils receive an annual nutrient subsidy through the regular recurrence of spring floods, it is likely that Mississippian horticulturalists were aware of the destructive effect of continuous cropping of corn soils.

The concentration of a maximum area of prime corn soils within the 2 km radius catchment implies site selection for maximum agricultural productivity. The Summerville Mound catchment area is unique in that it includes (1) one of the largest areas of Ochlockonee clay north of the Tombigbee confluence with the Sipsey River; (2) the only deposits of Ochlockonee silt loam adjacent to the river channel; and (3) the largest deposit of Trinity clay adjacent to the river channel in Pickens County. It is furthermore the only location where all three of the productive flood plain soils are adjacent to a relatively large area of well-drained soil with low flood susceptibility suitable for habitation by a comparatively large population.

Larson (1971:21) observed that Mississippian sites are typically located in transitional areas, "where rivers flow out of one ecological zone into another." Based on Ward's (1965) analysis of Mississippian site locations Larson (1972) suggested that the occurrence of productive soils was so rare that fortifications were used to defend these geographically prized locations. Smith (1978) also observed that Mississippian sites tend to be "circumscribed." They are typically located in areas of maximum biotic density (meander-belt zones) which are surrounded by uplands of low biotic density and soils of low fertility.

The Lubbub Creek-Tombigbee confluence area is buffered from the uplands by a broad zone of terrace deposits. Vegetation within the terrace zone probably supported faunal communities at relatively high densities, although at densities considerably less than in the meander zone. The terrace soils, however, have low agricultural potential according to the data presented in this section. The 2 km radius catchment, then, is circumscribed by terrace and upland soils of low fertility. This asset may be part of the reason for the presence of fortifications during some periods of the Lubbub Creek Mississippian occupation (see Chapters 6 and 10).

The distribution of soils within the 2 km radius catchment suggests that cornfields were distributed over the countryside at some distance from the residential area, since the mound and habitation areas are on intrinsically poor corn soil. In years of late floods, the predominantly clay soils within the catchment may have been a problem, since they can be worked successfully only under a narrow range of moisture conditions. Ochlockonee silt loam provided a fairly well-drained alternative to cover this contingency. In excessively wet years, the Cahaba soils, if cropped only occasionally, would produce fair corn yields. In normal years, and especially under drought conditions the clay soils, which retain moisture if organic content is adequate, would have provided a definite yield advantage over the sandy loam and silt loam soils within the catchment. The different characteristics of soils within the catchment may have been maximized by planting strategies such as succession planting and perhaps by the use of corn varieties adapted to various soil and moisture conditions.

THE ENVIRONMENTAL SETTING: SUMMARY AND CONCLUSIONS

The environment as reconstructed in this chapter for the Lubbub Creek Archaeological Locality corresponded to the model of site location projected for Mississippian populations by previous observers. It was in a zone of transition geologically and physiographically between the Coastal Plain uplands and the Black Belt. The flood plain and terrace deposits superimposed on this transition, together with the meander, which in all probability ranged east of the excavated area during the Mississippian period, created a myriad of environments of extraordinary complexity.

The Lubbub Creek Archaeological Locality was furthermore the only point on the river where a meander-belt zone was developed within a zone of natural transition. If 10 km radii catchments were plotted either upstream or downstream adjacent to the 10 km radius catchment analyzed in this chapter, neither would have the productive potential of the Summerville Mound resource catchment. There was little flood plain development upstream since steep banks border the river on either side and the greater proportion of upland soils to the north provided only seasonal biotic resources. The relatively unproductive prairie and terrace soils would comprise the major part of any resource catchment to the south. The Lubbub Creek resource catchment then, may be considered a "circumscribed environment" in the sense which Smith (1978) described:

> A final point that should be made in reference to these meander-belt zones is that they are environmentally circumscribed . . . . These energy-subsidized linear bands of high quality, easily tilled soils that support high biomass levels of plants and animals are partially isolated

> from upland areas by parallel tracts of low backswamp areas. Beyond these backswamp areas, unsubsidized upland regions often contain less fertile soils that would be more difficult to clear and farm and would not be renewed by flood waters (Smith 1978:482).

The Lubbub Creek catchment data indicates that agricultural soils within the meander-belt zone were surrounded by soils of low fertility. Biotic resources within the meander-belt zone, however, were surrounded by a transitional zone of relatively high carrying capacity. The uplands and prairie soils, which would have provided resources only seasonally in this instance, were not adjacent to the meander-belt backswamps. Instead there was a relatively broad transitional zone of forests of varied composition developed on immature soils so that understory vegetation supported many faunal species.

The catchment study of biotic resources in the Lubbub Creek area suggested that three major concentric zones may have been differentially exploited by Mississippian groups: (1) the meander-belt zone and flood plain forests, (2) the slope and terrace forests, including the Black Belt forest, and (3) the upland forest and prairie zones. These three zones comprised 21.51 percent, 57.82 percent and 20.67 percent, respectively, of the total resource catchment (Table 5). Biotic resources were most concentrated within the meander-belt zone immediately adjacent to the Mississippian residential area. The effect of the meander was to maximize riverine and flood plain resources in a limited area so that fish, molluscs, waterfowl and small mammals, such as beaver and swamp rabbit, which favor flood plain habitats were readily available with little energy expended in transport time and effort. Flood plain environments extend along drainageways through all environmental zones within the resource catchment.

Vegetation which developed on the terrace and Oktibbeha clay soils adjacent to the habitation area was an open forest with a relative abundance of undergrowth which would have supported faunal populations such as deer, turkey, cottontail rabbit, and quail at a relatively high carrying capacity. Environments favorable to these species would have been enhanced by land clearing and cultivation associated with horticultural activity. In contrast, the distant Coastal Plain uplands, which supported a mature oak-hickory forest with little understory development prior to A.D. 1500, may have been a biotic wasteland for most of the year. The prairie soils near the west and southwest boundaries of the resource catchment also provided little food or cover to support faunal populations, other than the mourning dove, on a year round basis. Crops of nuts and fruits in these areas, however, may have attracted faunal species seasonally. At these times, hunting of faunal concentrations, which would otherwise be dispersed throughout the catchment, may have been quite productive.

The transitional forest zone, which surrounds the meander-belt zone in a belt ranging from 3 to 7 km wide, directly contributed to the botanic productivity within the resource catchment. Since the relative abundance of nut crops, and probably of other seeds and fruits as well, is cyclic, the differential succession of forests developed on various soils within the catchment may have provided many more options than projected by the "circumscribed environment" theory which limits maximum biotic productivity to the meander-belt zone.

The agricultural catchment captured one of the maximally productive combinations of bottomland soils within a limited area in the county. Moreover, these highly productive soils were adjacent to a large area of well-drained soil which would have been suitable for habitation except under extreme flood conditions. Although Ward (1965) found that most Mississippian sites were located on sandy loams or silt loams, the most productive corn soils within the 2 km radius Summerville Mound catchment were predominantly clay soils. The sandy loam soils in this area were intrinsically low in fertility, although they may have been more fertile in the past prior to the generalized soil depletion which accompanied modern agricultural practices. The moisture retentiveness of the bottomland clay soils, when properly managed to prevent organic depletion, provided a definite advantage since early summer droughts were a fairly consistent threat to crops. Trinity clay had an additional advantage in that it did not require lime which may have limited yields obtained on other flood plain soils.

The disadvantage of clay soils was that they could be worked only under a limited range of moisture conditions. Late April floods, which according to the Cochrane gaging station flood record occur on the average every sixth year in the Lubbub Creek area, could have delayed planting on bottomland soils so that crops planted late would be exposed to early summer droughts. The moisture-retentive capacity of the clay soils, however, would have ameliorated many of the effects of a prolonged drought. The frequency of late floods and the diversity of soils within the agricultural catchment suggests that Mississippian farmers may have developed planting strategies, such as succession planting, and perhaps selected corn varieties as well, which were adapted to these climatic and soil conditions.

It has been suggested that Mississippian site selection prerequisites were so rarely found in nature that these areas were defended against encroachment by the construction of strategically located fortified settlements (Larson 1972). The Lubbub Creek Archaeological Locality is unique in many respects. The Ochlockonee silt loam and Trinity clay soils, for example, were among the largest areas of these soils to be found adjacent to the river. Although access to these soils was probably considered an asset, it is unlikely that they were the only reason for the fortifications constructed around the Summerville Mound. The location of the habitation area adjacent to the meander-belt zone was in a strategically vulnerable position, since it exposed the settlement on three sides to possible encroachment from the river. It seems likely that the Lubbub Creek area was selected for the diversity of biotic and agricultural resources which it provided, and that fortifications were constructed later, for reasons other than defense of environmental resources.

CHAPTER 3. CULTURE AND CHRONOLOGY IN THE LUBBUB CREEK ARCHAEOLOGICAL LOCALITY

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INTRODUCTION

The cultural-historical framework for the Black Warrior and Tombigbee Valleys of western Alabama is (at least in outline) relatively secure at this point. A combination of diagnostic ceramic and lithic artifacts, stratigraphic sequences, and radiocarbon as well as paleomagnetic determinations are the elements from which this framework has been constructed. For the central Tombigbee Valley this chronology, both in detail and in outline, has been developed by Ned J. Jenkins. It is reported in various of the volumes subtitled <u>Archaeological Investigations in the Gainesville Lake Area of the Tennessee-Tombigbee Waterway</u> (see especially Jenkins 1979a). In addition, much of this cultural historical material is summarized in John Walthall's (1980) recent book on the archaeology of Alabama.

The first Native American inhabitants of Alabama were present in the state by 9000 B.C. These "fluted point" hunters of the Paleo-Indian period are witnessed by their distinctive lithic artifacts, especially their well made, lanceolate projectile points. Yet we know almost nothing more about these populations beyond that which can be garnered from surface finds of their tools. Presumably they were hunters, but unlike their contemporaries in the Western United States, they probably focused on medium-sized mammals rather than on the Pleistocene "megafauna" such as mastodon, mammoth, and the ancestor of modern bison.

The Paleo-Indian period is followed by the Archaic. This period is traditionally divided into Early, Middle, and Late segments on the basis of distinctive projectile point styles. As a whole, the Archaic begins in Alabama -- and in much of the Eastern United States for that matter -- at approximately 8000 B.C. and, depending on how one draws the line, ends at some point between 2500 and 1000 B.C. The Archaic period (or stage, as some archaeologists call it) is important because it encompasses the development of a number of regional hunter gatherer adaptations. In addition, throughout the 6000- to 7000-year span of the Archaic, there is a continent-wide trend for a greater number of plants and animals to be incorporated into the diet of the several local cultures. In effect, the cultural systems which constituted the Archaic not only become more closely adapted to their local biome, but they develop into ecological generalists -- broad-based foragers or collectors -- during this period. Given simultaneous changes in population, technology, and climate, the evolution of a broad-based subsistence system is to be expected.

At some point in time near to 2500 B.C. in some parts of the Southeast fiber tempered pottery is added to the Late Archaic technology. This event has been used to define a Gulf Formational Stage in Alabama. At the early end, this "stage" overlaps with the Late Archaic; at the late end, it merges with the Woodland period (stage). For some parts of Alabama, including the Tombigbee Valley, these fiber tempered ceramics are a good temporal marker. Given present knowledge, however, their addition to the tool kit does not signal major shifts in either settlement or subsistence on the part of the local Archaic populations.

The Gulf Formational Stage ends either with the appearance of sand tempered ceramics (at approximately 500 B.C.) or with the appearance of sand tempered, fabric marked ceramics (at approximately 100 B.C.). In west Alabama and northwest Mississippi, the latter event signals the beginning of the Miller sequence. The Miller framework begins with Miller I (100 B.C.-300 A.D.). As the surface finish of the sand tempered vessels shifts from fabric to cord marked, the Miller II period is signalled (A.D. 300-550). The use of clay ("grog") tempered, cord marked ceramics defines the Miller III period (A.D. 550-900). There is circumstantial evidence that fields (for agriculture?) were cleared during the Miller II period, and there is equally circumstantial evidence that one or more of the "weedy" annuals that make up the Eastern Agricultural Complex might have been cultivated. Clear evidence for plant domestication comes only with the Miller III period. Corn (Zea mays) forms a small but significant part of the diet in the later part of this period.

The final prehistoric period in Alabama, and in the Southeast as a whole, is called the Mississippian. In Alabama, as in much of the central part of the Southeast, the adoption of shell tempered ceramics at approximately 900 A.D., marks the beginning of the Mississippian. The several societies which are included in the Mississippian are, above all, sedentary agriculturalists. They are ecological specialists who focused their subsistence efforts on a few domesticated crops, notably corn, beans, and squash, and a limited number of animal species, especially deer, turkey, a few small mammals, birds, and fish (depending on local and seasonal abundance). Generally, Mississippian societies are more complex than their Woodland predecessors, and most but not all Mississippian social groups constructed truncated earthern mounds and plazas as a symbolic and material focus for their existence.

Generally, the Mississippian is divided into Early, Middle, and Late segments, although the term Middle Mississippian usually refers to a geographic rather than a temporal division. Therefore the terms used here will be Early, Mature, and Late. The Early Mississippian begins at a point around A.D. 900. It is a period in which the later, fully agricultural societies of the interior of the Southeast were formed. The Mature Mississippian, which runs from approximately A.D. 1000 to 1400 or 1500 (these endpoints vary from region to region in the Southeast) comprises the major growth and a period of relative stasis among these several cultures. The Late Mississippian, which also has been called the Mississippian "Decline," begins at approximately A.D. 1450 or 1500 and continues to the point at which the Native American societies of the Southeast have been subjected to major disruptions and dislocations by European settlers and traders.

Cultural chronologies which postdate the initial Spanish explorations of the Southeast can be constructed from European trade goods. As the volume of trade increases and as archaeologists become more familiar with the temporal position of various goods manufactured in Eur[illegible] divisions in the culture-history of the southeastern Native Americans can be drawn more and more finely. Unfortunately as the density of Euro-American traders and settlers increases through time, the number of Native Americans decreases. By A.D. 1840 all but a few Native Americans in the Southeast have been dispossessed: they have been moved to Oklahoma Territory. In the Tombigbee Valley of Alabama, almost all Native American lands were transferred by the Choctaw to the United States of America in 1816 under terms of the Treaty of St. Stephens.

Every cultural-historical period, except the Paleo-Indian and the earliest Archaic, are represented in the Lubbub Creek Archaeological Locality. In the easternmost portions of the project area several Phase I test pits located Archaic materials conformably stratified below Gulf Formational fiber tempered ceramics which, in turn, were situated below clearly separated Woodland and Mississippian ceramics. This type of stratification, however, is not typical of the project area. It is restricted to a small part of the bend that is criss-crossed by relict levees and channels. Throughout the remainder of the area, Woodland and Mississippian components are distributed throughout a 30 ha tract, all of which lies at an elevation above 38.6m MSL.

In general, within this tract of high ground, there is an east-to-west and north-to-south progression of archaeological components through time. The earliest components -- the Middle and Late Archaic and Gulf Formational -- are situated near the near eastern point of the bend. The Woodland components are located on the northern fringe of the high ground which overlooks the right bank of the Tombigbee River. The dense scatters of Mississippian materials, which cover almost 23 ha, are located near the center of the bend and are arranged in a semicircular arc around the mound. The western one-half of the area which contained Mississippian components was to be destroyed by construction, thus the excavations and subsequent analyses were concentrated on the Mississippian period in general and on these components in particular. It is not that earlier materials and cultures have been bypassed by the research and are slighted here. They are not. Instead they have been preserved <u>in situ</u> on what has become an island in the Tombigbee River.

Within the excavated area, the vast majority of Mississippian features were inclusive within the first 50 cm below the present ground surface. Almost all the Mississippian and later features had their origin within this stratum, most structures and pits were contained wholly within it, and only the burials were below it. Again, with a few exceptions, these Mississippian features were not stratified one above another, but were separated horizontally. As a result, a fine scale chronology of the Mississippian components could not be constructed from the superpositioning of features and building stages. There are one or two notable exceptions to this generalization. The structures in the premound ceremonial precinct, for example, can be arranged in a sequence of construction stages, and various of the palisades have later structures and middens built over their remains.

To confuse stratigraphic matters even further, the area, which is comprised of prime agricultural soils, has been plowed for more than 100 years.

Moreover, the landowner bulldozed the mound flat in the 1950s and used it to fill in and to smooth out various man-made and natural depressions. The net effects of modern activities in the Lubbub Creek Archaeological Locality have been: 1) to mix the topmost 20 cm of soil and to create a semi-homogenized plowzone deposit; 2) to truncate if not to destroy many of the later Mississippian and historic features; and 3) to reverse the stratigraphy in several man-made depressions -- e.g., the pits from which the mound fill came originally.

The attempt to use radiocarbon dating techniques on the Mississippian components proved even more frustrating than attempts to read microstratigraphy below the plowzone. Despite the fact that these components produced one of the largest and best documented collections of floral and faunal remains yet excavated in the Southeast, only 14 charcoal samples of sufficient bulk and from adequate contexts were judged suitable for analysis (see the Appendix to this chapter). Of these samples, the earliest acceptable dates were near A.D. 900: one for a Late Woodland pit, the other for an early Mississippian structure. The latest date, A.D. 1450, was for materials recovered from a Mature Mississippian structure. There was a good spread of dates for Early and Mature Mississippian features between these extremes. Not one sample, and not one date, however, came from either clear protohistoric (Late Mississippian) or historic contexts or periods. In retrospect, it seems as if a century of plowing and other earth moving activities has destroyed much of the integrity of most features from these periods.

Once microstratigraphy and radiocarbon had been eliminated as a major source of data from which to construct an internal chronology for the Mississippain components, only ceramics remained as a promising source of temporal information. The remainder of this chapter describes the manner in which a chronological framework for the Mississippian was constructed from a ceramic seriation.

MISSISSIPPIAN CERAMIC CHRONOLOGY

A ceramic chronology was one of the most important goals of the research in the Lubbub Creek Archaeological Locality, but only the Mississippian ceramics were sufficiently numerous for such an analysis. The Late Woodland ceramics, which numbered approximately 14,000 sherds, were represented by fewer than 100 "diagnostic" sherds. The Miller I and II ceramics numbered less than 2,000 sherds, of which fewer than 20 were suitable for further analysis. The Mississippian shell tempered sherds on the other hand numbered almost 200,000 sherds. Of this total, 1,751 sherds were suitable for analysis at the level of attributes and other measurements. One of the fundamental analytical strategies, the division of the Mississippian components, hinged on the ability to create a ceramic chronology and then to scale the various features and feature complexes in terms of this chronology.

The strategy used to create the chronology followed that used by Vincas Steponaitis (1980) in his work with the Moundville phase ceramics. Because the ceramics from Moundville are closely related to the Lubbub ceramics--the same type and variety descriptions cover both--Steponaitis' pioneering work provides an especially appropriate model. There are four steps associated with the production of a chronological seriation: 1) the choice of ceramic attributes; 2) the choice of a measure to express the relationship among attributes; 3) the choice of a numerical method to order the attributes and then to read that order as a chronological scale; 4) the choice of a visual and verbal method to present the chronology. We will deal with these topics, in the above order, in the context of the analysis of the Lubbub ceramics.[1]

The are seven sets of ceramic attributes that show chronological variation in the Moundville ceramic assemblage: 1) type and variety; 2) basic shape; 3) secondary shape features; 4) surface treatment and coloring; 5) number of handles; 6) nodes on the handles; 7) handle morphology. The application to the Lubbub ceramics of these several sets of attributes is discussed in great detail in Chapter I of Volume II and in the introduction to Volume III; it will not be be described here. Instead, only a very general sketch will be given.

The type-variety concept, at least in its application to the Moundville and Lubbub ceramics, produces only a monothetic set of divisions and a key diagram for sorting. At the level of type, temper, paste, surface finish, and type of decoration are sufficient for classification. A sherd is either shell tempered or shell and grog tempered; a sherd has either fine or coarse paste; a sherd has either a burnished or an unburnished surface; a sherd is either plain or decorated; if the sherd is decorated, then it is either incised or engraved. At the level of variety, specific sets of motifs and the location of motifs on the vessel are the defining characteristics. Therefore, all shell tempered coarse paste, unburnished, plain vessels are Mississippi Plain var. Warrior. All shell tempered, coarse paste, unburnished, decorated, incised vessels are either Moundville Incised or Barton Incised. If the decoration consists of serial arches on the shoulder, then it is Moundville Incised var. Carrollton; if the design is nested triangles on the neck, then it is Barton Incised var. Cochrane.

Basic shapes, such as jars, bowls, bottles, and plates cross-cut types and varieties. There are both Mississippi Plain and Moundville Engraved bottles. Secondary shape features such as beaded shoulders, folded rims, and notched lips also cross-cut types and varieties. Surface coloring, such as

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[1] There are two complementary approaches to chronological seriation of ceramics. One uses the abundance of ceramic types and varieties (usually percentages) per archaeological unit as data; the other uses the presence or absence of individual ceramic attributes (which may include types and varieties) per archaeological unit for data. In the case at hand, attributes rather than abundance were chosen. The reason for this choice is relatively simple. More than 90% of the more than 250,000 sherds recovered are various nondiagnostic types and varieties: plain and cordmarked, shell and grog tempered wares. Moreover, more than 96% of the 200,000 Mississippian shell [illegible], shell tempered, Mississippi Plain var. Warrior. If [illegible] abundance [illegible] had been taken, not only would the coarse, shell [illegible] correlation matrix with high similarity values, but [illegible] characterize Mississippi Plain var. Warrior [illegible] lost. For those who wish to cross-check the [illegible] ation, the abundance data (counts and [illegible] for [illegible] units are presented, in readily usable form, in Appendix [illegible] of this report.

red paint and deliberate blackening of the surface during firing are restricted to a few types, but they too are found on at least two types. Handle decoration, number, and morphology are independent of type and of one another. All three are, however, chronologically "sensitive."

In total, 55 attributes were measured for the collection of 1,751 sherds. The next step was to match sherds with their archaeological contexts and then choose only those from secure contexts for analysis. In the end, 41 contexts were selected which contained 681 sherds. These units included five structures, 15 pits, several 1 by 1 m by 20 cm levels from middens, and stratigraphic cuts made near the mound and other large features. At this point, the number of attributes was truncated to 47 ordinal scale measures. This yielded a 41 observation by 47 variable matrix. Next this matrix was transformed to a 41 by 47 incidence matrix. That is, whenever an attribute was present in a unit it was scored as "1" or present irrespective of how many times it occurred in that unit. If it was not present, then the score for that unit or that attribute was "0" or absent.

This incidence matrix was transformed into two matrices: 1) interattribute distances and 2) interunit distances. The measure used was 1-the Simple Matching Coefficient, i.e., 1-(A+D)/(A+B+C+D) where A,B,C, and D are the traditional cell designations in a four-fold table. The resulting matrices looked like the triangular matrix found at the bottom of a road map that tells you how far it is from Tampa to Miami or New York to Boston. But, instead of mileages, one matrix gave distances between attributes, the other distances between units. In essence they measured how many times attribute x was found with attribute y, and how close Structure 1 was to Structure 5 in terms of their ceramic content. Unlike road maps, which are constructed from two dimensions, these matrices were constructed from 47 and 41 dimensions, respectively. The task then was to attempt to reduce these matrices to two or fewer dimensions.

The technique used was non-metric multidimensional scaling; the program used was Lingoes MINISSA (Lingoes 1973). William Marquardt has presented an efficient description of the use of this numerical technique in chronological seriation:

> Several seriation techniques reported in the past few years have utilized one form or another of multidimensional scaling, sometimes called "proximity analysis." Speaking generally, multidimensional scaling techniques fashion a geometric representation of the pattern of a matrix of similarities such that the <u>rank-order</u> of geometric distance between points is the inverse of the rank-order of similarities between the units being analyzed. The geometric space (sometimes called a "hyperspace" when more than two dimensions are involved) necessary to represent n units in multidimensional space consists of n-1 dimensions. Often it happens that the rank-order of interpoint distances can be preserved, or nearly preserved, in fewer dimensions than the originally required n-1 dimensions. By means of an iterative procedure, the number of dimensions in which the data are represented [illegible] educed by 1, and a measure of "stress" is calculated that is proportional to the number of violations of the original rank-order. This process is repeated, expressing the data in fewer and fewer dimensions, until the calculated stress becomes too large for

> adequate representation of the rank-order of interpoint distances (Marquardt 1978: 278-279).

As it turned out, two was the fewest number of dimensions with which the Lubbub ceramics could be represented.

The original 47 attributes were reduced to two dimensions (figure 1). The "strain," here the Guttman-Lingoes Coefficient of Alienation, was 0.19337, and Kruskal's stress was 0.17865. The latter figure is sufficiently close to the magic figure of 0.15 to say that the two-dimensional solution is acceptable. The two dimensions in the final configuration represent two very different kinds of variability. The vertical dimension seems to be primarily temporal; the horizontal dimension represents the duration of an attribute. For example, Moundville Incised <u>var. Moundville</u> is the earliest type and was present only in a few units which were shown to be early by other means, e.g. radiocarbon analyses. Moundville Incised <u>var. Carrollton</u>, on the other hand, is found in units that are demonstrably early and late in the sequence. A "best fit" line was interpolated (by polynomial regression) through this scatter of points to give a single time line to the two dimensions.

The original 41 units likewise were ordered, this time in one dimension. Kruskal's stress was 0.24048, an expected result given the number of atemporal attributes used. Nonetheless, when the unit by attribute incidence matrix was printed in the unit order implied by the one-dimensional solution and in the two-dimensional attribute order, the results were surprisingly good. Figure 2, which has been "cleaned up" by removing the mixed proveniences and atemporal attributes does give clear trends in ceramic variability through time.

When the two orders are combined and divided into periods (see Figure 2), the attributes can be grouped into three periods: Summerville I, Summerville II-III, and Summerville IV (Table 1). The two part designation, II-III, was given in the hope that it could be further subdivided in the future.

The Summerville I period is characterized by the occurance of Moundville Incised <u>var. Moundville</u>, neckless jars, two nodes in the center of strap handles, and small loop handles.

The Summerville II-III period is characterized by all varieties of Moundville Engraved, Carthage Incised <u>var. Foster</u>, terraced ceremonial bowls, outslanting and restricted bowls, notched lips, and most configurations of nodes on strap handles.

The Summerville IV period is characterized by the occurrence of Alabama River Applique <u>var. Alabama</u>, ten or more handles on the jars, and several one-of-a-kind types not used in the seriation.

The few radiocarbon dates on features with a sufficient number of ceramics to be included in the seriation suggest the following calendrical dates for these periods:

Summerville I	A.D. 950 to 1200
Summerville II-III	A.D. 1200 to 1450 or 1500
Summerville IV	A.D. 1450 or 1500 to 1650 or 1700

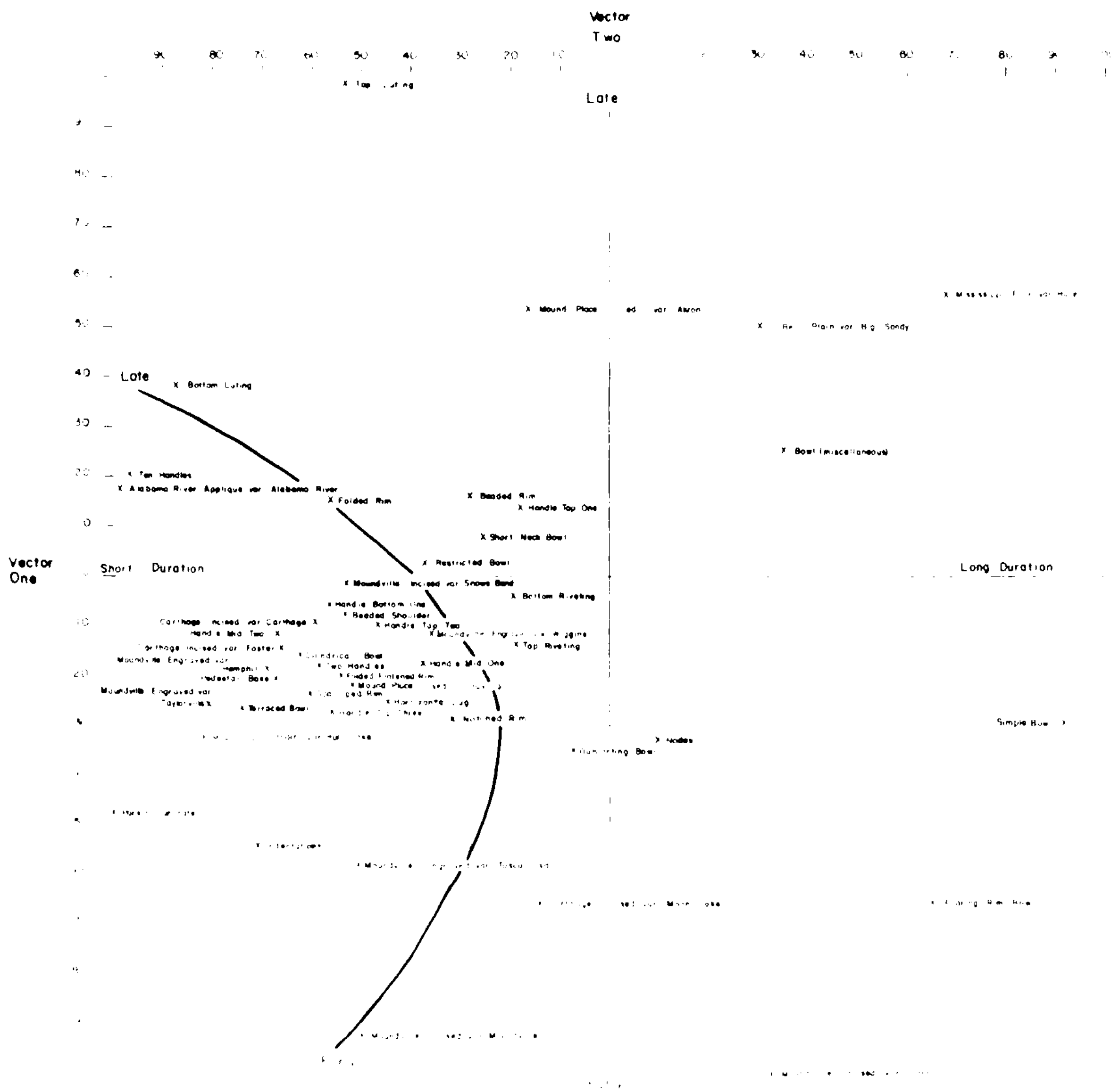

Figure 1. Ceramic attribute matrix.

Figure 2. Archaeological units in the chronological order implied by the seriation.

TABLE 3

Summary Chronology of Ceramic Types, Varieties, Vessel Shapes, and Other Attributes

	SUMMERVILLE PHASE		
	Periods		
	I	II-III	IV
Type and Variety			
Alabama River Appliqué var. Alabama River		(late?)	x
Alabama River Incised var. Unspecified			x
Bell Plain var. Big Sandy	x	x	x
Carthage Incised var. Carthage		x	x
var. Foster		x	
var. Moon Lake	x	x	?
Chickachae Combed var. Unspecified			x(historic)
Mississippi Plain var. Hale	x	x	x
var. Hull Lake		x	x
var. Warrior	x	x	x
Mound Place Incised var. Akron	?	x	?
var. Havana	?	x	
Moundville Engraved var. Hemphill		x(late?)	
var. Taylorville		x	
var. Tuscaloosa	x(late)	x	
var. Wiggins		x	
Moundville Incised var. Carrollton	x	x	x
var. Snows Bend		x	
var. Moundville	x		
Parkin Punctated var. Unspecified	x(late?)	x	x
Vessel Shapes			
Jar (miscellaneous)	x	x	x
Standard Jar			
Neckless Jar			
[illegible]			

AD-A155 047 PREHISTORIC AGRICULTURAL COMMUNITIES IN WEST CENTRAL ALABAMA VOLUME 1 EXC.. (U) MICHIGAN UNIV ANN ARBOR MI DEPT OF ANTHROPOLOGY C S PEEBLES 1983 C-5861(79) 2/5

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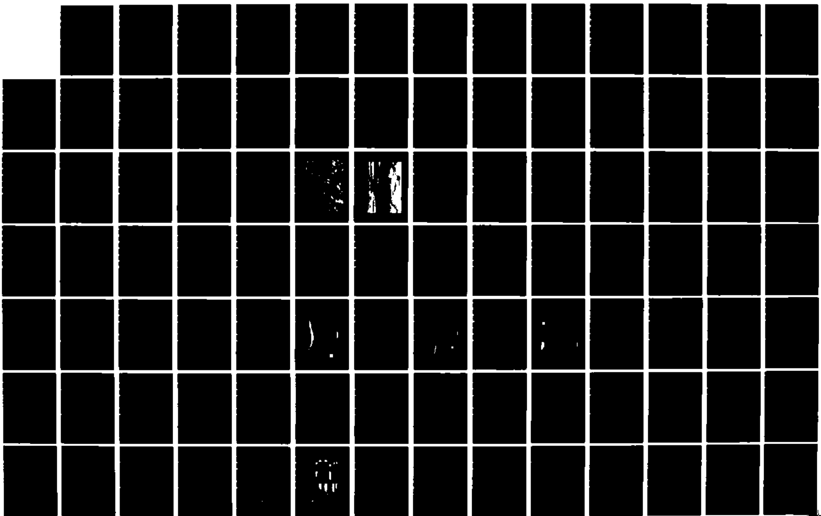

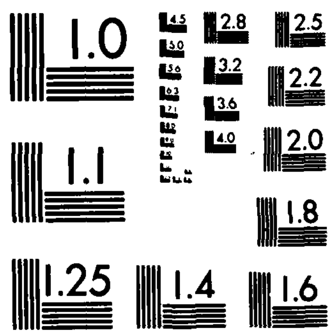

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963 A

Table 1 (continued)

	SUMMERVILLE PHASE		
	Periods		
	I	II-III	IV
Flaring Rim Bowl	X	X	X
Outslanting Bowl	?	X	
Restricted Bowl		X	
Short Neck Bowl		X	?
Simple Bowl	X	X	X
Terraced Ceremonial Bowl		X(early)	
Bottle	X	X	X
<u>Secondary Shape Features</u>			
Nodes (not on handles)	X	X	X
Beaded Rim		X	?
Beaded Shoulder	X	X	
Folded Rim		X	?
Folded Flattened Rim		X	
Horizontal Lug		X(late?)	X
Notched Rim		X	
Scalloped Rim	?	?	
Pedestaled Base		?	
Indentations	X	X(early?)	
Notched Lip		X	
Jar with 2 Handles	X	X	
Jar with 10 Handles		?	X

Table 1 (continued)

	SUMMERVILLE PHASE		
	Periods		
	I	II-III	IV
<u>Handle Nodes</u>			
Single Node at Top	?	X	
Two Nodes at Top		X	
Three Nodes at Top		X	
Single Node in Middle		X	
Two Nodes in Middle	X	X(early)	
Vertical Bar in Middle	?	X(early)	
Single Node at Bottom		X	

In large measure this scheme corresponds to the Moundville chronology. There are, however, several major differences between the two ceramic orders. At Moundville, decorated coarse wares cease to be made at the end of the Moundville I period. At Lubbub, only Moundville Incised _var. Moundville_ generally is limited to the Summerville I period; _var. Snows Bend_ is found in Summerville II-III features, and _var. Carrollton_ is found with Summerville IV features. The root cause of this difference is probably in the organization of ceramic production at the two sites. There is evidence that the fine ware tradition at Moundville was produced in a highly organized context. These fine wares, Carthage Incised and Moundville Engraved, supplanted completely the decorated coarse wares. At Lubbub neither ceramic tradition was conducted at a level of organization beyond the household. As a result, coarse ware continued to be decorated for the duration of the site. Moreover, the Moundville ceramic chronology was created from whole vessels found in "closed" mortuary contexts. This ceramic chronology then was cross-checked with sherd counts from stratigraphically controlled contexts and with radiocarbon dates. At Lubbub there were few intact vessels and most of the sherds are from domestic contexts.

FEATURE ASSIGNMENTS

Once the chronological framework had been constructed in outline, the remainder of the features not included in the seriation were given a "best-fit" position. In no case was this assignment automatic, and in several cases features were moved back and forth between two periods before they were placed finally into one or the other. In each case ceramic, stratigraphic, and horizontal associations were considered in detail. Generally, if a feature contained Moundville Incised _var. Moundville_ but no later ceramic varieties, and if other evidence was not contradictory, then it was assigned to the Summerville I period. If a feature contained either Carthage Incised _var. Carthage_ or _var. Fosters_ as well as any of the Moundville Engraved, and if the other evidence was not contradictory, it was placed in the Summerville II-III period. If either Alabama River Applique or Alabama River Incised were present then, all other things being equal, the feature was assigned to the Summerville IV period. In almost every case, the specifics of these assignments are discussed in detail in the chapters on the various Summerville communities (Chapters 5-11) which follow.

We are sympathetic with the positions of several of our colleagues who have said: this chronology is "too flexible" and "too rigid" and "too fine" and "not fine enough." We agree! It is, however, the best chronology that can be constructed from these data at this point in time. The context of ceramic production, the variability which results from this context, and the context of recovery are neither as clearcut nor as patterned as they are at Moundville. Therefore, although the Moundville types and varieties can be used to cover the Lubbub ceramics, they are in fact different ceramic assemblages with different underlying dimensions of variability. The two chronologies have been more or less brought into alignment, but they will never be brought into lock-step.

APPENDIX. RADIOCARBON DATES FROM THE LUBBUB CREEK ARCHAEOLOGICAL LOCALITY

Lab number Beta-	USN	Context	Date: Radiocarbon years	Comments
1104	9022	500N/-300E Structure 3.	500 ± 70	Summerville IV Structure
1098	4018	400N/-300E PM 333. Part of Structure 5 postmold pattern.	605 ± 90	Summerville IV Structure
1092	2415	400N/-400E Pit 42. Part of Structure 3 & 4 complex.	660 ± 65	Summerville II-III Complex
1094	2511	400N/-300E Pit.	660 ± 80	Perhaps Summerville II-III
1092	2286	400N/-200E "Hearth" over Urn Burial USN 2290.	690 ± 110	Context not clear. Fired clay cap plow-scarred and cut by rodent burrow.
1095	2973	400N/-300E Structure 2.	760 ± 80	Summerville I Structure
1101	7483	500N/-300E Structure 1.	825 ± 75	The Structure is assigned to Summerville IV. Either this date is too early or the assignment based on ceramic associations is too late.
1097	3636	500N/-400E Hearth (USN 3624) Associated with Structure 1.	880 ± 125	Summerville I
1099	4880	400N/-300E PM 654. Part of Structure 6 postmold pattern.	980 ± 120	Structure assigned to Summerville II-III.
1103	8968	500N/-200E Pit 13. Cut by Structure 5-A.	980 ± 90	Pre-Mound Surface. Good date for early ceremonial precinct.
1100	6847	400N/-300E Pit 123 intruded or was cut into by Palisade 1 postmold.	1010 ± 145	Palisade 1 date?

Lab number Beta-	USN	Context	Date: Radiocarbon years	Comments
1091	2012	300N/-300E Pit 32.	1040 ± 100	Good Miller III association.
1096	3598	500N/-400E Pit 4. Part of Structure 1 complex.	1050 105	Structure 1 assigned to Summerville I.
1102	7486	500N/-300E Structure 2.	1525 ± 90	Structure 2 is clearly assigned to the Summerville IV period on the basis of associated ceramics. Either the date is an aberration or the context has been misread badly.

CHAPTER 4. AN OVERVIEW OF RESEARCH IN THE LUBBUB CREEK ARCHAEOLOGICAL LOCALITY

Christopher S. Peebles

Presentation of the results from a project the size and complexity of the one undertaken in the Lubbub Creek Archaeological Locality demands that the substantive threads of the work be drawn together before rather than after the bulk of the descriptive and analytical narrative. This chapter, therefore, is designed to be both introduction and guide to the chapters that follow. It comes naturally after the three chapters which established the space and time frameworks for the research. Its goals are to give some content to these frameworks. The chapters and volumes which follow, however, must fill in the rich details.

This chapter begins with the history of archaeological research in the Lubbub Creek Archaeological Locality. The background to our work is important because of the seven years of effort on the part of the University of Alabama archaeologists that led directly to the excavations reported here. The next section summarizes the Phase I test excavations that defined the spatial distribution of archaeological components in the Locality. The testing program provided the information needed to conserve a great many of the archaeological remains and to choose others for excavation. A general overview of the Phase II and III excavations completes this introduction.

EXCAVATIONS 1901-1977

The core of the Lubbub Creek Archaeological Locality encompasses the easternmost and interior portion of Kearney's Bend that lies above 120 ft MSL. This area is essentially coterminous with the project area of the Lubbub Creek Cutoff and spoil areas G-15. It now includes Summerville Island, the portion of the bend detached by the canal. The Locality can be expanded to include all of the first terrace along the west bank of the Tombigbee from the St. Louis and San Francisco Railroad bridge in the north to a point opposite Dead River in the south. This sinuous ribbon of first terrace, which is up to one-half mile wide and five miles in length, contains a Mississippian mound and village in its center as well as a number of other Mississippian, Woodland, and even Archaic components scattered along its length.

The first archaeological excavations in the Lubbub Creek Archaeological Locality were conducted by the indefatigable Clarence B. Moore (1901). In what he described as an otherwise boring 1901 winter campaign, work at the Summerville Mound provided an interesting interlude. He tested the mound, found fired clay and "midden" in the units, and refilled his pits to prevent erosion. Almost 50 years later the mound was flattened by a bulldozer to facilitate the hay harvest.

Seventy years elapsed between the backfilling of Moore's testpits in the Summerville Mound and the next archaeological work in the Lubbub Creek Archaeological Locality. In 1970, in anticipation of the construction of the Tennessee-Tombigbee Waterway, an archaeological reconnaissance and subsurface exploration were carried out in the Locality over the subsequent seven years. These sequent small projects were testimony to the keen intuition and remarkable tenacity of two archaeologists from the University of Alabama, Jerry J. Nielsen and Ned J. Jenkins. Each time funds were available and the recalcitrant landowner had released a few more acres of pasture for survey, they returned to explore yet another part of the river bend. Their aim, in addition to discovering more sites, was to define the areal extent of the sites already located and to try, once again, to find the remnants of the Summerville mound (Nielsen and Jenkins 1973; Jenkins, Curren, and DeLeon 1975; Jenkins 1975; Jenkins n.d.a, n.d.b).

The first survey, which does not seem to have been reported formally, noted a discontinuous band of Woodland and Mississippian components distributed along the west bank of the river from the railroad bridge to a point opposite the mouth of Lubbub Creek. In 1972 Nielsen and Jenkins tested portions of five of these sites: 1-Pi-7,8,9,10, and 18. Each of these small sites were multicomponent; all were capped with Mississippian materials; and all lay just outside the western boundary of the project area.

Sometime after the initial survey, the landowner leased part of the project area to a sand and gravel company. The mining operation destroyed all of 1-Pi-11, which was just to the west of the project area, and digested parts of 1-Pi-12 and 13, which were within the project area. Jenkins tested the remains of these two sites during the summer of 1974. Although both were multicomponent sites, the deposit at 1-Pi-12 was for the most part Mississippian, and that at 1-Pi-13 was predominantly Late Woodland (Jenkins 1975: 4-35). Additional test excavations west of the project area at 1-Pi-14,15, and 18, yielded remains from the Archaic through Mississippian periods.

In 1975 Jenkins directed a more intensive survey of land in the Gainesville and Demopolis construction areas. During this survey he managed to get his crew into the center of the Lubbub Creek Cutoff project area and he found a large, dense Mississippian site, 1-Pi-33. Based on interviews with local residents, Jenkins believed that the Summerville Mound should be located nearby (Jenkins, Curren, and DeLeon 1975: 104-106).

In 1977 Jenkins returned to the Lubbub Creek Archaeological Locality yet again. This time he had access to most of the bend, and he intended to define the nature of the Mississippian component and to locate the mound. His intensive testing program located the mound and found a Mississippian cemetery and two structures (Jenkins n.d.a, n.d.b). After seven years of work, Jenkins concluded that the entire river bend could be viewed as one large multicomponent site of great historic and scientific value.

In the seven years between 1970 and 1977 Nielsen, Jenkins, and their crews had defined five sites in the project area: 1-Pi-11, 1-Pi-12, 1-Pi-13, 1-Pi-33, and the Summerville Mound, 1-Pi-85. During this period, and unbeknown to these archaeologists, sand mining had destroyed all of 1-Pi-11 plus portions of 1-Pi-12 and 1-Pi-13. The archaeologists had excavated 28 m^2 of 1-Pi-12 and 12 m^2 of 1-Pi-13. They had plowed through the thick mats of coastal bermuda grass and made surface collections from 5,100 m^2 of 1-Pi-33. They then excavated one of their collecting locations which encompassed 1,198 m^2. Finally, with one well-placed backhoe trench, they had located the northern edge of the Summerville Mound and one of its borrow pits. Yet in the end, it was apparent that they had only scratched the surface of the archaeological remains in the project area. Additional exploration and intensive excavation would be necessary.

Because Jenkins and the University of Alabama Office of Archaeological Research were committed fully to other projects, Jerry Nielsen--who by then had become the senior archaeologist with the Mobile District U.S. Army Corps of Engineers--and Bennie C. Keel, Chief of Interagency Archaeological Services, Atlanta, asked Christopher S. Peebles, who was then at the University of Michigan, to take on the project. The data developed by Jenkins demonstrated not only the importance of the several sites but the enormity of the problem. The project area as a whole covered 111.5 ha (over 1.1 million m^2). Even when the perennially flooded areas were eliminated, over 65 ha could have contained archaeological components. The initial surveys had defined sites that covered approximately 3 ha. Of this area only 1 ha had been documented by surface collections and only 0.12 ha had been excavated.

EXCAVATIONS 1978-1979: PROGRAM AND RESULT

A four-phase project was designed to identify, conserve, and excavate the archaeological remains in the Lubbub Creek Archaeological Locality. At each stage in the development of the research design, the archaeologists from the University of Alabama, the Corps of Engineers, and Interagency Archeological Services were consulted. In fact the project timetable was constructed to include two major external reviews of the progress of the research. As envisioned and ultimately carried out, the project encompassed: 1) an intensive testing program followed by a project review (Phase I); 2) extensive excavation in areas that contained components but could not be preserved (Phases II and III) with a project review between the two phases; and 3) a period for analysis and report preparation (Phase IV).

On the whole, the research environment was ideal. The level of funding was, by any standard, adequate. The senior laboratory and field staff were dedicated and knowledgeable. The field and laboratory crews worked hard at their respective tasks. The people of Aliceville were for the most part helpful and friendly, and the former landowner's foremen broke with past practice and did not impede access to the project area. The only resource in short supply was time, and even the ultimate demands of the construction timetable were not unreasonable or unworkable.

Phase I Summary

The Phase I research design had only one goal: to provide the information necessary to rationally and efficiently plan conservation efforts and excavation in advance of construction. As such, it was an exercise in sampling and the production of sample statistics for the density, distribution, and abundance of archaeological remains in the project area.

Time for this phase of the project was short. Initial planning took place in late October, 1978. Preparation of the site, which included building 1.5 miles of barbed wire fence to keep cattle out, and setting up the field camp began on 7 November 1978 and was completed on 11 December 1978. Fieldwork began on 12 December 1978 with a crew of 25 persons and was finished on 2 March 1979. The initial report on the Phase I research was presented on 15 March 1979.

The sampling design was relatively straightforward; it encompassed a stratified random sample of locations drawn from one hectare (1ha = 100 by 100 m) units. The metric grid system conformed to the grid established by Jenkins for his 1977 excavation. His grid point 900N/0E in the English units of measure became 500N/0E in the metric grid system (Figure 1). Jenkins oriented his grid base line to conform to the general shape of the river bend. His grid, and ours as well, were oriented 30 degrees west of north; that is, grid north is 330 degrees true.

The hectare, a 100 by 100 m area, was used as the basic unit for stratification and sampling. Each hectare--or partial hectare if a unit fell near the boundaries of the project area--was designated by the grid coordinates of its southwest corner. For example, Hectare 400N/-400E has its northwest corner at 500N/-400E, its northeast corner at 500N/-300E, and its southeast corner at 400N/-300E. Each hectare was scored in terms of its demonstrated archaeological potential and its average elevation AMSL. Five sampling strata resulted from the combination of these two dimensions: 1) hectares with high potential situated at the higher elevations that had been tested adequately by the University of Alabama; 2) hectares with high potential demonstrated by surface survey and which were located at the higher elevations, but which had not been tested; 3) hectares well above the floodplain, but which had not been covered by surface reconnaissance; 4) hectares with low potential which were subject to frequent flooding; 5) hectares flooded in all but the lowest of river stages.

Hectares from the first and last strata were eliminated from the sample universe. The perennially wet areas (46 ha) could not have been excavated without a cofferdam, and to retest the areas excavated by the University of Alabama would have been a needless duplication of effort at that point. For hectares in the remaining strata, the sampling strategy was adjusted to their archaeological potential.

In hectares with demonstrated archaeological potential (12 ha), a 1 percent sample by area was drawn. This sample comprised up to 100 randomly located 1 by 1 m units per hectare. Each test square was excavated in 20 cm levels, and a unit was terminated either when it encountered two sterile levels or when it hit intact features. In the latter instance, features were cleaned and mapped, but they were not excavated. All the deposit from each level was waterscreened through 1 mm mesh.

In hectares with high but undemonstrated potential (26 ha) a 0.6 percent sample by area was drawn. This sample consisted of 20 randomly located auger tests, each 25 cm in diameter and 1 m deep, and 2 randomly located transects, each 2 m wide, 15 m long, and 30 cm deep. The fill from the auger tests was screened dry directly back into the hole through 6 mm mesh. The transects were cleaned, features were mapped but not excavated, and a 0.9 m^3 sample of

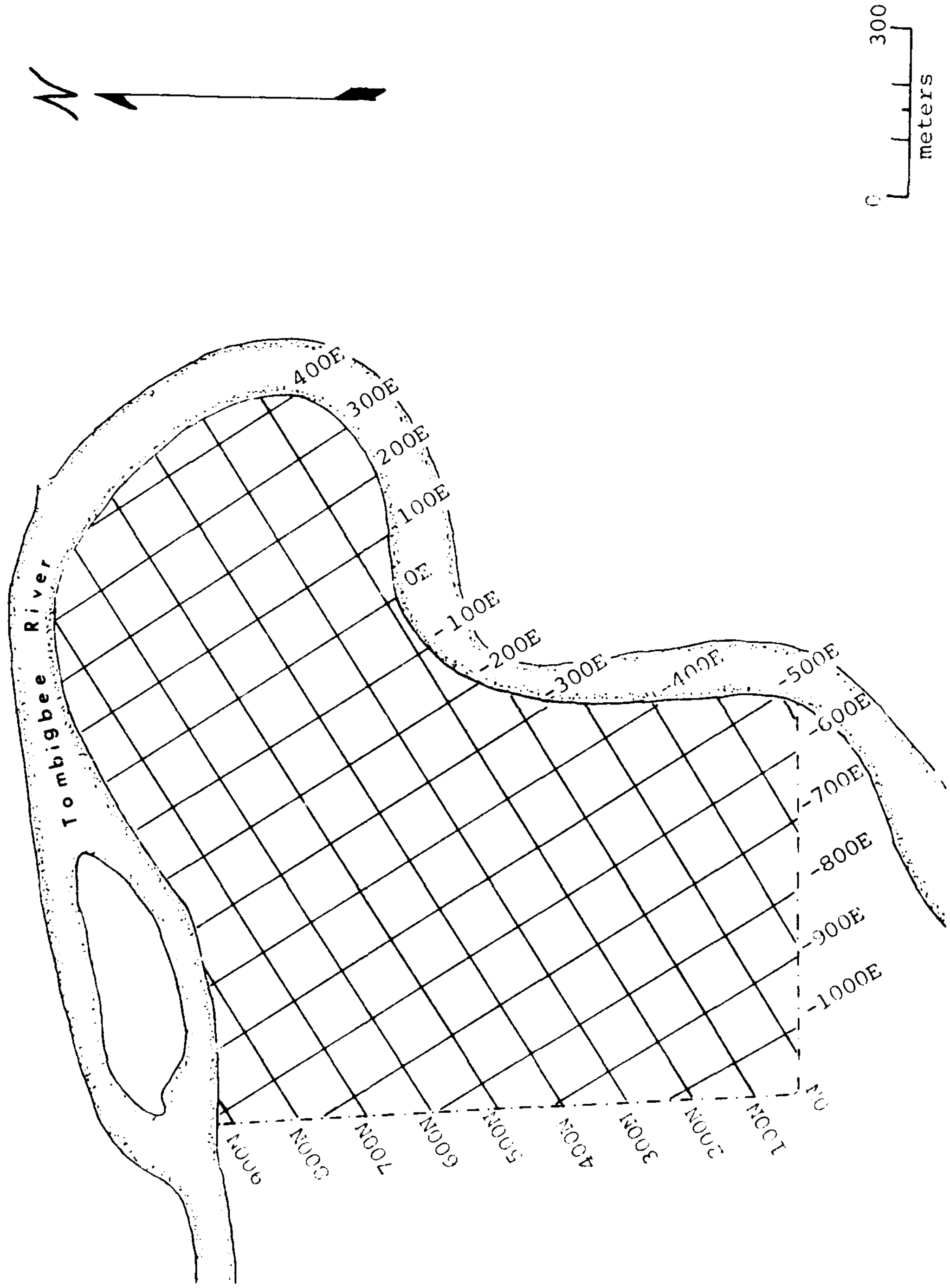

Figure 1. Metric grid system for the Lubbub Creek Archaeological Locality.

the fill was waterscreened through 1 mm mesh. In addition to the auger tests and transects, a deep test unit was excavated at the end of one transect in each hectare. This unit was used to prospect for deeply buried soil zones and was excavated to a depth of 4 m below the surface. Not one of these deep units discovered anything except relatively undisturbed, homogeneous fluvial deposits.

Finally, one deep test unit was excavated in each of the low-lying hectares that were subject to frequent flooding (35 ha). Like the deep test units excavated in higher ground, these tests yielded undisturbed profiles of sands and gravels. Unlike the other units at the higher elevations, they contained no archaeological materials in their upper levels.

Exclusive of the deep tests, 1097 units were excavated during Phase I. Included therein were 307 one meter squares (which comprised 653 individual 20 cm levels), 399 auger tests, and 45 transects. From these units approximately 200 m^3 of deposit was waterscreened through 1 mm mesh and approximately 20 m^3 was screened dry through 6 mm mesh. A total of more than 40,000 artifacts was recovered from these units.

During Phase I the hectares that were scheduled for a single deep test were located in the southwest one-third of the project area. They were bounded on the south and west by the federal property line and on the north and east by a line that ran from 500N/-700E to 400N/-700E to 400N/-400E to 300N/-400E to 300N/-300E and then to the river at a point near 0N/-300E. The test units in these 35 ha yielded neither archaeological remains nor buried soil horizons. This area contained no historical, geological, or paleontological materials except for riverine deposits and grass.

The hectare and partial hectare units that were above the active floodplain and that were not covered by the spoil piles left by the gravel and sand mine, were sampled by either 1 by 1 m test units or transects and auger tests, or in some cases, a combination of all three. The results of these test excavations will be sketched below. The topographic map of the eastern two-thirds of the project area (Figure 2) can be used for a guide. The discussion will proceed hectare by hectare, from north to south and from west to east. The summary statistics for the features and the most abundant categories of artifacts are presented for each hectare in Table 1.

A total of five 1 by 1 m units was excavated in Hectare 100N/-300E. Each of these units comprised a single 20 cm level, and, except for a low density of daub, all were sterile. In fact, the only artifacts found in this hectare were a few grog tempered sherds scattered on the surface of a remnant levee.

A total of five 1 by 1 m units was excavated in Hectare 200N/-300E. A few grog tempered sherds had been found eroding out of the river bank, but the single 20 cm levels in each of the test units produced only a low density of daub and Mississippi Plain ceramics.

A single, intuitively placed 1 by 1 m unit in Hectare 200N/-200E produced no artifacts.

Five 1 by 1 m units which comprised thirteen 20 cm levels were excavated

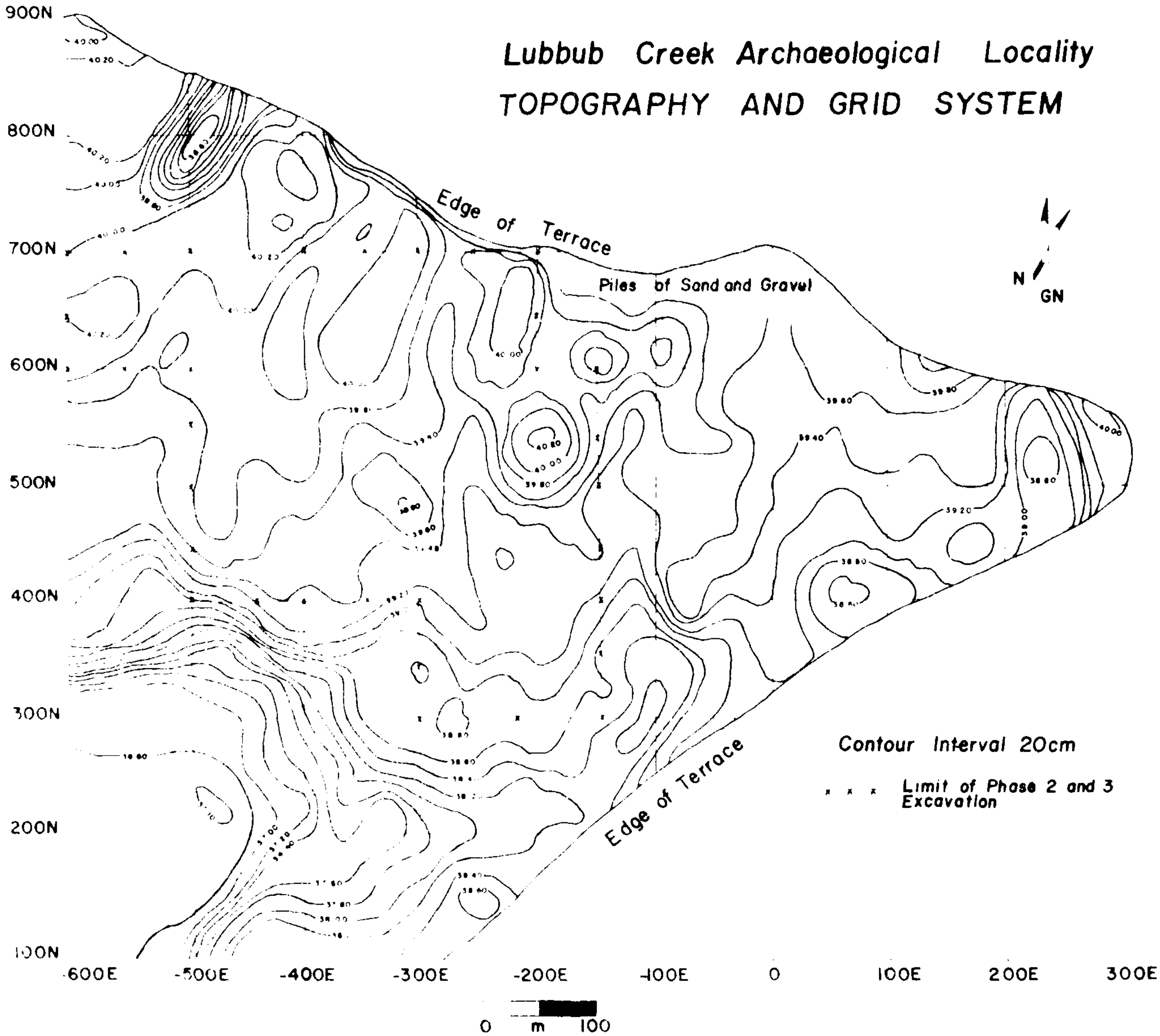

Figure 2. Topographic map of the eastern portion of the Lubbub Creek Archaeological Locality.

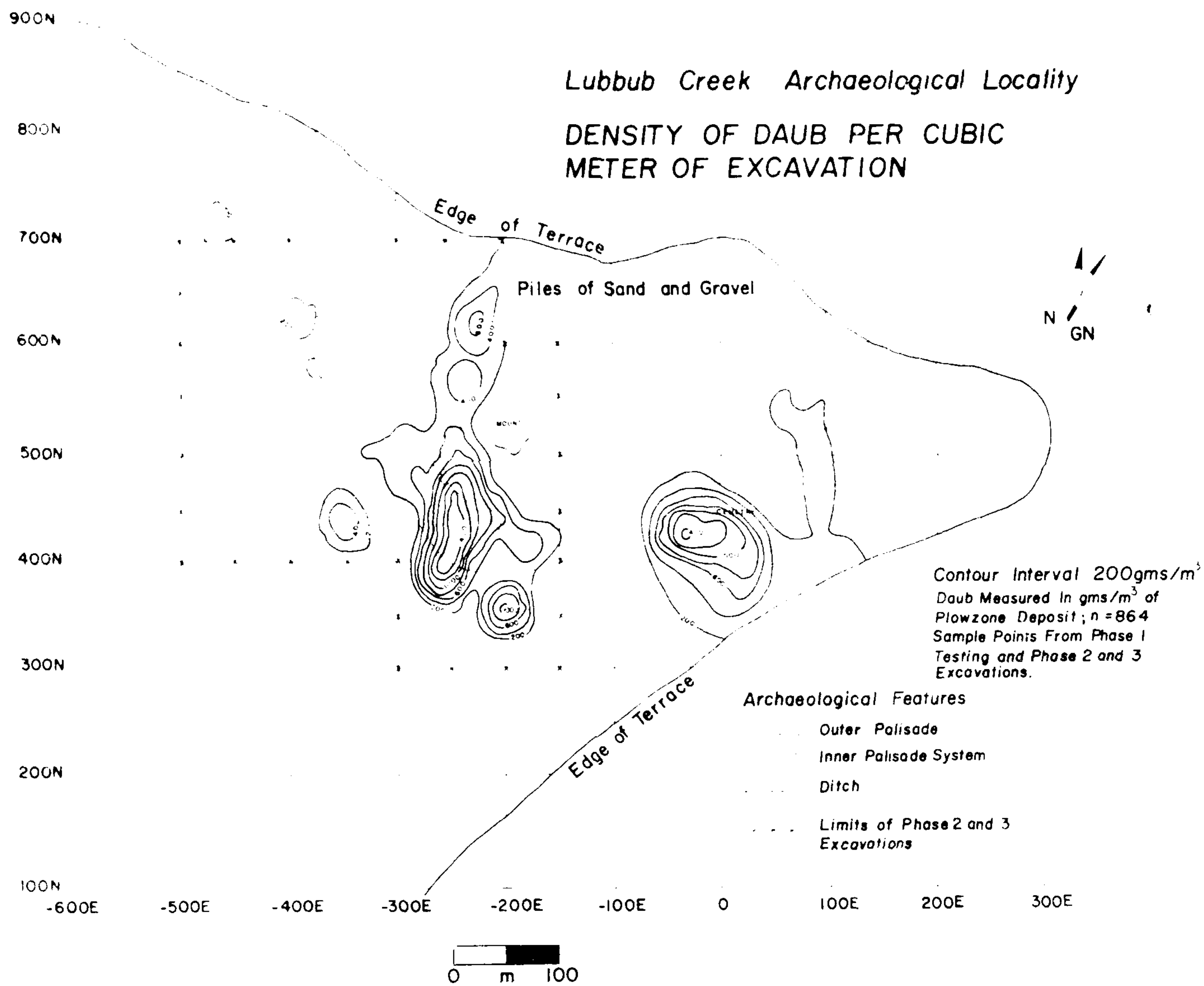

Figure 4. Density of daub per cubic meter of excavation.

The fundamental adequacy of the data and techniques used to construct this distribution map was demonstrated many times over during the Phase II and III excavations. A final set of maps based on small samples of deposit was produced from a combination of the initial 701 Phase I points and an additional 163 points from Phases II and III. This latter set of points comprised 1 m^3 samples taken from the plowzone that was stripped from 10 by 10 m excavation units. The sample statistics for these 864 points were: 1) daub, mean=101.89 g/m^3, sd=404.04 g/m^3; 2) Mississippi Plain var. Warrior, mean=92.96 g/m^3, sd=273.16 g/m^3; 3) Mulberry Creek Cordmarked var. Aliceville, mean=32.05 g/m^3, sd=126.42 g/m^3. (See also Table 5 below for Phase II and III sample statistics.)

These values and sample points were used to produce summary distribution maps for the Mississippian and Late Woodland periods in the Lubbub Creek Archaeological Locality. The isopleth maps for the three categories of material were constructed in the same manner as the Phase I maps. However, this time the contours were plotted on base maps that included the three major Mississippian palisade systems discovered during the Phase II and III excavations. As Figures 4 and 5 show, in the areas that were excavated extensively, the daub and Mississippi Plain ceramics are bounded by and associated with the palisades. That is, the markers of the boundaries of the Mississippian settlement also mark the limits of the debris from that settlement.

The distribution of the Late Woodland components changed slightly with the addition of the Phase II and III plowzone samples. A fourth very small component appeared on the north bank of the river. Another small component turned up southwest of the mound. The area designated 1-Pi-12 showed areas of high density of materials within the overall scatter that defined this site. If the gravel mine had not truncated 1-Pi-12, the site certainly would have extended eastward, perhaps to link up with 1-Pi-13.

The general model of settlement density and distribution was supported by the analyses of the soil samples for phosphates, and to a lesser extent by measurement of pH. A soil sample had been taken from a point 10 cm below the base of the plowzone in the auger tests and from every level in the 1 by 1 m squares. Determinations of pH and total phosphates were made for 440 samples. This total included all soil samples from the auger tests. Soil phosphates ranged in value from 200 to 1000 ppm. Where soils contained more than 600 ppm, features were present. Soil pH valued ranged from 4.6 to 6.2. Generally, if the soil pH was above 5.0, archaeological remains were present.

Sample statistics for the density of features--pits, burials, and structures--comprised the final group of Phase I data that was used to plan the conservation and excavation efforts. The sample statistics for the density of features in transects and 1 by 1 m squares are given in Table 3.

When projections were made for planning purposes, the figure of 23 ha was used as the maximum site area. If the mean measures are used, then in 23 ha there would be almost 1,000 burials, 230 structures, and 2400 pits. A comparison of the Phase I sample statistics with the same measures for the Phase II and III excavations, shows that the accuracy of the former is quite high: unnervingly close, in fact. The prospect of several hundred houses and several thousand pits was a major consideration in the plans for subsequent

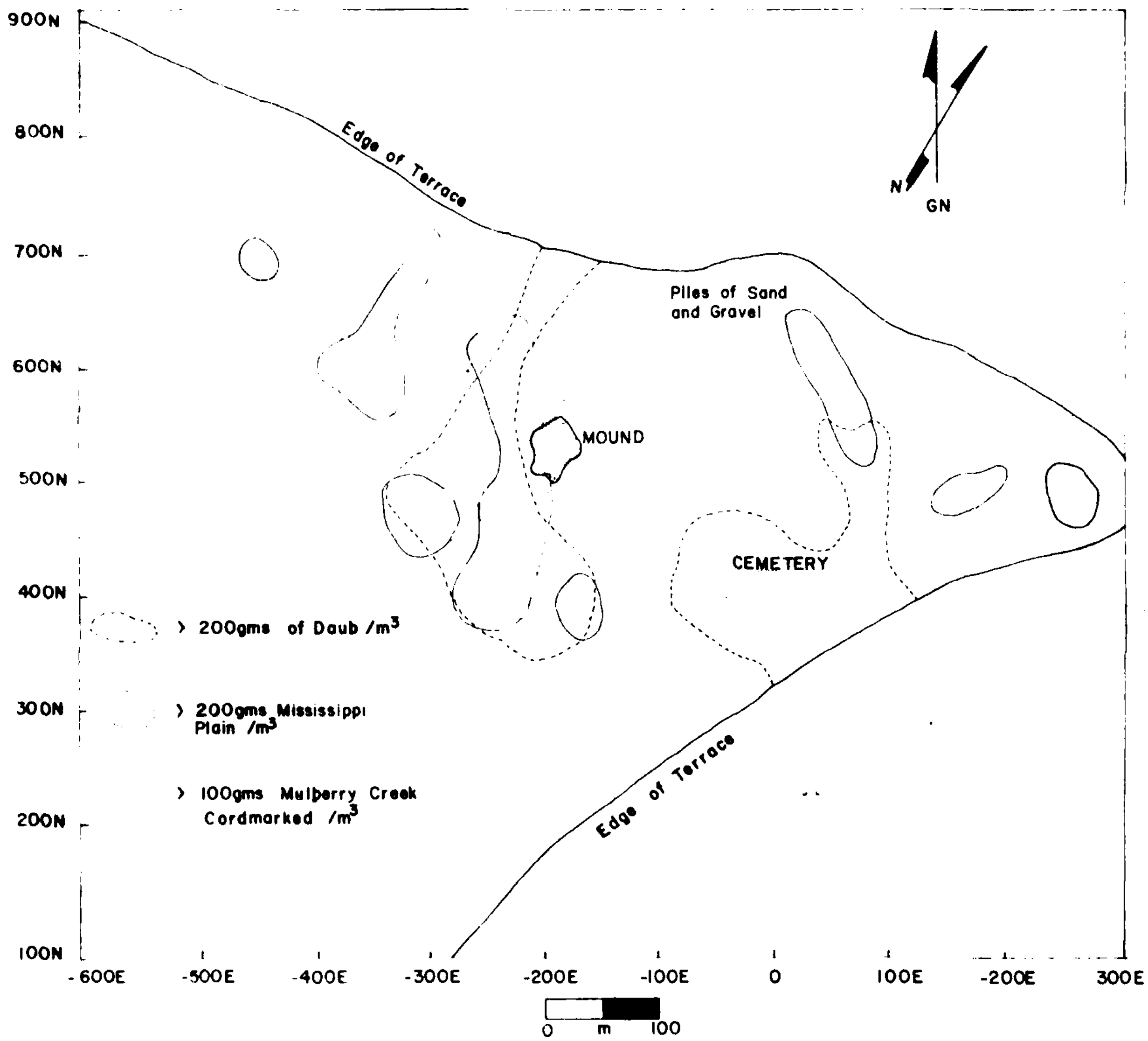

Figure 3. Contour maps of densities of daub and diagnostic ceramics.

south of 200N--that is, hectares below 38.60 m AMSL--contained no significant archaeological remains. The portions of the river bend above 38.60 m AMSL, however, were, as Ned Jenkins had pointed out on several occasions, <u>one large complex archaeological site</u>. Hence the accuracy of the name Lubbub Creek Archaeological Locality. There were small, ephemeral Archaic components buried in relict terraces in the extreme eastern portion of the bend. There were several hectares located along the 39.20 m AMSL elevation that contained well-defined sites of the Gulf Formational period. There were four groups of hectares that had Late Woodland components. Finally, Mississippian remains covered an arc of territory around the Summerville mound that was 23 ha in extent. Now a site 230,000 m^2 in extent creates problems merely because of its size. Nonetheless, the testing program had reduced the area of interest from 111 ha to 65 ha to 23 ha. The density of key artifact categories could be used to further define the Late Woodland and Mississippian sites.

The Archaic and Gulf Formational components were small and spatially compact; the Miller I and II materials were sparse and widely scattered. None would yield additional information without further excavation. The Miller III and Mississippian remains were ubiquitous and samples of their material from the test units were varied and numerous. To better come to grips with these latter two periods, contour maps were constructed from the densities of daub (clay plaster for houses) and two key diagnostic ceramic types that were abundant in the test units. Daub was chosen as a general indicator of the location of structures. Mississippi Plain <u>var. Warrior</u> was used to delineate the Mississippian settlement. Mulberry Creek Cordmarked <u>var. Aliceville</u> was used to trace the extent of the Late Woodland components.

These three categories of material, which came from transects, test pit levels, and auger tests, were standardized as counts/m^3 of excavated matrix. The sample statistics for all 1097 test units were: 1) daub, mean=64.96 g/m^3, sd=243.5 g/m^3; 2) Mississippi Plain, mean=81.67 g/m^3, sd=196.40 g/m^3; 3) Mulberry Creek Cordmarked, mean=32.95 g/m^3, sd=122.73 g/m^3. The values for each class of material were then used to create an isopleth (contour) map of their distribution over the site. There were 701 sample points and 3 values per point for the hectares east of -600E. The <u>Surface II Graphics System</u> (Sampson 1978) was used. A nearest neighbor search which used a weighted average of the 8 nearest data points to estimate the values at the unknown grid points was employed. The resulting matrix was smoothed to eliminate any "noise" in the data, and three contour maps were drawn. These maps have been combined to form Figure 3.

When daub and Mississippi Plain were plotted at 200 g/m^3 and Mulberry Creek Cordmarked at 100 g/m^3 (approximately the value of their respective standard deviations), the distribution of the several components was clear. The daub and Mississippi Plain <u>var. Warrior</u> formed almost a continuous band around the mound. It seems as though the Mississippian settlement was a "U" shaped community with the mound and a plaza in the center of the "U." The Late Woodland components in contrast evidenced a discontinuous distribution. The largest of these components, which is located northwest of the mound, is in the area identified as 1-Pi-12. The three smaller components in the eastern part of the bend can probably be lumped under the 1-Pi-13 identification. The fifth Late Woodland component, which had not been noticed earlier, is south of the mound.

TABLE 2

(Continued)

Hectare	Settlement Intensity[1]					Disposition[2]
	Mississippian		Miller III	Miller I and II	Gulf Formational	
	Artifacts	Features	Artifacts	Artifacts	Artifacts	
700N/-700E	Very Low	Low	Very Low	Very Low	Very Low	S
700N/-600E	Very Low	Moderate	Very Low	Very Low	Very Low	E,S
700N/-500E[4]	High	Moderate	Very Low	Very Low	Very Low	D
700N/-400E	Moderate	High	Very Low	Very Low	Very Low	E,D
700N/-300E	Very Low	Very Low	Moderate	Very Low	Very Low	D
800N/-700E	Very Low	Low	Very Low	Very Low	Very Low	S
800N/-600E[4]	Moderate	Low	Low	Low	Very Low	D

[1]Density Rank: High=First Quartile; Moderate=Second Quartile; Low=Third Quartile; Very Low=Fourth Quartile or None. Measures=grams or counts per m^3 or m^2.
[2]P=Preserved; E=Excavated during Phase II and III; D=Destroyed; S=Under Spoil Pile.
[3]Under Gravel Pile.
[4]Destroyed by flood of April, 1979

TABLE 2

Summary of Phase I Sample Units.

Hectare	Settlement Intensity[1]					Disposition[2]
	Mississippian		Miller III	Miller I and II	Gulf Formational	
	Artifacts	Features	Artifacts	Artifacts	Artifacts	
100N/-300E	Low	Very Low	Very Low	Very Low	Very Low	E,D
200N/-300E	Low	Low	Very Low	Very Low	Very Low	D
200N/-200E	Very Low	Very Low	Very Low	Very Low	Very Low	D
200N/-100E	Moderate	Low	High	High	High	P
300N/-400E	Low	Low	Moderate	Low	Moderate	D
300N/-300E	High	Moderate	Moderate	Low	Very Low	E,D
300N/-200E	Moderate	High	Moderate	Moderate	Low	E,D
400N/-600E	Very Low	Low	Low	Moderate	Low	S
400N/-500E	Very Low	Moderate	Low	Very Low	Very Low	E,S
400N/-400E	Moderate	Moderate	Moderate	Low	Very Low	E,D
400N/-300E	High	Moderate	Low	Very Low	Very Low	E,D
400N/-200E	Moderate	Very Low	Low	Low	Very Low	E,D
400N/-100E	High	High	High	Moderate	Very Low	P
400N/100E	Moderate	Low	Moderate	Moderate	Very Low	P
500N/-800E	Very Low	Very Low	Very Low	Very Low	Very Low	S
500N/-700E	Low	Low	Low	Very Low	Very Low	S
500N/-600E	Very Low	Moderate	Low	Very Low	Very Low	S
500N/-500E	Low	Low	High	Very Low	Very Low	E,S
500N/-400E	High	Low	Moderate	Very Low	Very Low	E,D
500N/-300E	High	High	High	Low	Very Low	E,D
500N/-200E	High	Moderate	High	Very Low	Very Low	E,D
500N/-100E	Low	Low	High	Low	Very Low	P
500N/000E	High	Moderate	Moderate	Low	Moderate	P
500N/100E	Moderate	High	High	Moderate	High	P
500N/200E	Moderate	High	High	High	High	P
600N/-800E	Very Low	Very Low	Very Low	Very Low	Very Low	S
600N/-700E	Moderate	Very Low	Very Low	Very Low	Very Low	S
600N/-600E	Low	Moderate	Very Low	Very Low	Very Low	E,S
600N/-500E	Low	Very Low	Very Low	Very Low	Very Low	E,D
600N/-400E	Moderate	Moderate	Low	Very Low	Very Low	E,D
600N/-300E	High	High	High	Moderate	Very Low	E,D
600N/-100E[3]	-	-	-	-	-	P

transect which was situated in the southeast corner of the hectare, it was a generally sterile area.

Ten auger tests and two transects were excavated in Hectare 700N/-600E. The transect situated in the center of the hectare contained eight postmolds. The transect located in the northeast corner of the hectare contained 15 postmolds and 3 pits. Other than a low density of Mississippian ceramics, no other materials were found.

Ten auger tests and two transects were excavated in Hectare 700N/-500E. The transect in the southeast quarter of the hectare contained three postmolds. The transect in the south central portion of the hectare contained 40 postmolds and one structure floor. All the test units in this hectare contained daub and Mississippian materials.

One transect and one deep test were excavated in Hectare 700N/-300E. The transect, which was located in the extreme southeast corner of the hectare, contained three postmolds. Artifacts were sparse in this unit.

One transect and one deep test were excavated in Hectare 800N/-700E. They were sterile.

A total of twenty-nine 1 by 1 m units which comprised sixty-one 20 cm levels was excavated in Hectare 800N/-600E. Both Mississippian and Late Woodland components were found on the remnant levee in this hectare. However, like several other hectares in the northern part of the Lubbub Creek Archaeological Locality, the flood of 1979 destroyed the archaeological deposits.

Phase I Analysis and Evaluation: The Basis for Conservation.

The 1079 test units--auger tests, 1 by 1 m tests, and transects--yielded an abundance of high quality data on the distribution of archaeological components in the Lubbub Creek Archaeological Locality. In addition, these data provided sample statistics on the density of archaeological features which, in the end, turned out to be amazingly accurate. Several indices were constructed from analyses of the contents of the test units. One such collection of summary measures took the simple sum of diagnostic artifacts per unit volume for each of the several cultural-historical periods, plus the overall count of features per unit area for the Mississippian period, and ranked each hectare on the basis of these densities (Table 2). A second technique focused on the statistical measures of the density of features and key material categories for each hectare (Table 1). Fine-scale distribution maps then were drawn to delineate the boundaries of the Mississippian and Late Woodland components. In addition to the analyses of the material remains, soil pH and phosphates were taken from a sample of units, for the most part from auger tests, and were used to cross-check the conclusions drawn from the distribution of artifacts and features. Together these several lines of evidence were used to construct a conservation and excavation plan for the project area.

The ranked indices of settlement intensity for each cultural-historical period for each hectare served to eliminate a large part of the project area from further consideration. For the most part all hectares west of -600E and the eastern portion of the hectare and a Mississippian period component was found in the center of the hectare. Low densities of Woodland materials were found throughout the test units.

Forty-two 1 by 1 m units which comprised ninety-six 20 cm levels were excavated in the terrace remnants that bordered the channel which cut through Hectare 500N/100E. Many of these units showed clear stratification of Mississippian materials above Late Woodland materials above Gulf Formational materials above Middle and Late Archaic materials.

Thirty-four 1 by 1 m units which comprised eighty-two 20 cm levels were excavated in Hectare 500N/200E. These test units were located on the same terrace remnant that traversed Hectare 500N/100E. The components recovered from these units ranged from the Mississippian to Middle Archaic periods. Like the test units in Hectare 500N/100E, the stratification of these components was clear and complete.

Ten auger tests were excavated in Hectare 600N/-800E. All were sterile.

Fifteen auger tests and one transect were excavated in Hectare 600N/-700E. The transect, which was situated in the southwest corner of the hectare, contained eight scattered postmolds. The units contained some dense daub concentrations but few other materials.

Fifteen auger tests, two transects, and one deep test were excavated in Hectare 600N/-600E. The transect in the northeast quarter of the hectare contained one pit; the second transect, also located in the northeast quarter of the hectare, contained four pits. A low density of daub and Mississippian materials was found throughout the hectare.

Twenty auger tests, two transects, and one deep test were excavated in Hectare 600N/-500E. A low density of daub and Mississippian materials was noted in all units.

Twenty auger tests, two transects, and one deep test were excavated in Hectare 600N/-400E. One transect, located in the northwest quarter of the hectare, was sterile. The second transect, located in the south central portion of the hectare, contained seven pits and thirty postmolds. Moderate amounts of daub and Mississippian materials were found in the units located in the southern half of the hectare.

Five 1 by 1 m test pits and one transect were excavated in Hectare 600N/-300E. All these units were located on the levee that was located in the eastern portion of the hectare. A well-defined Mississippian and Late Woodland midden was present in all the test units. The transect, which was situated in the southeast quarter of the hectare, contained 49 postmolds and one structure floor as well as midden deposit.

One transect was excavated south of the gravel spoil in Hectare 600N/100E. One burial and forty-five postmolds, as well as abundant Mississippian materials, were found in this hectare.

Fifteen auger tests, two transects, and one deep test were excavated in Hectare 700N/-700E. Other than six postmolds and one pit found in the

Twenty auger tests and one transect were excavated in Hectare 500N/-800E. All were sterile.

Twenty auger tests and two transects were excavated in Hectare 500N/-700E. Low densities of daub and grog tempered ceramics were recovered from the easternmost test units. Three postmolds were located in the easternmost transect.

Twenty auger tests and two transects were excavated in Hectare 500N/-600E. Three postmolds were found in each transect, and a very light scatter of daub and grog tempered ceramics was recovered from all the units.

Twenty auger tests, two transects, and one deep test were excavated in Hectare 500N/-500E. The transect in the northwest quarter of the hectare contained two small pits and one postmold. The transect in the northeast quarter was sterile. Sparse amounts of daub, Mississippian ceramics, and Late Woodland ceramics were recovered throughout the hectare.

Twenty auger tests, two transects, and one deep test were excavated in Hectare 500N/-400E. The transect in the south central part of the hectare contained a large pit and three postmolds. The transect in the north central part of the hectare contained a single pit. Small lenses of midden were observed in both transects and in the profiles of several auger tests. High densities of daub and Mississippian materials and a moderate density of Late Woodland artifacts were recovered throughout the hectare.

The remains of the Summerville Mound occupied the eastern half of Hectare 500N/-300E. Therefore, only the western half of the hectare was tested. Thirty 1 by 1 m units which comprised sixty-two 20 cm levels were excavated in that half. These units located midden deposits near the western margins of the mound and along the western boundary of the hectare. All the test units yielded copious amounts of daub, Mississippian materials, and Late Woodland materials.

The remains of the Summerville Mound occupied the western half of Hectare 500N/-200E. Therefore only the eastern half of the hectare was excavated. Thirty 1 by 1 m units which comprised seventy-three 20 cm levels were excavated in the portion of the hectare not covered by the mound. These test pits, especially those located near the mound, showed two superimposed middens below the plowzone and 60 cm of sterile sands. The contents of the test pits included high densities of daub, as well as Mississippian and Late Woodland materials.

Twenty auger tests, two transects, and 1 deep test were excavated in Hectare 500N/-100E. The transect excavated in the southwest quarter of the hectare was sterile, and the transect that was excavated in the southeast quarter contained only a single postmold. The fill of the various units showed a moderate amount of material from the Mississippian and Woodland periods but a very low density of daub.

The northern half of Hectare 500N/0E had been tested adequately in 1974 by Jenkins (Jenkins 1975). Fifty-one 1 by 1 m units which comprised one hundred and four 20 cm levels were excavated in the southern half of the hectare. A spatially well-defined Gulf Formational component was located in them.

Twenty auger tests, three transects, and one deep test were excavated in Hectare 400N/-300E. All the transects and most of the auger tests were packed with daub and Mississippian ceramics. The transect in the south central portion of the hectare cut into a large "pit" which, when excavated in Phases II and III, turned out to be a part of the ditch fortification system. The transect in the northwest quarter of the hectare contained 38 postmolds; the transect in the northeast quarter of the hectare contained more than 20 postmolds. This hectare encompassed part of the core of the Mississippian community.

Twenty auger tests, two transects, and one deep test were excavated in Hectare 400N/-200E. Both transects, one of which was located in the south central part of the hectare, the other of which was located in the northwest quarter of the hectare, contained no features. As a whole this hectare evidenced a low density of daub and Mississippian ceramics and very low densities of earlier materials.

The eastern half of Hectare 400N/-100E had been explored completely by the University of Alabama during 1977 (Jenkins n.d.a, n.d.b). Two of their recovery strips, five of their 5 by 5 ft test squares, and their excavation of a single late Mississippian structure all fell within that area. The recovery strips, which were 30 ft wide and ran almost the entire length of the hectare, had been plowed and then collected. The westernmost strip was then cleaned to the base of the plowzone by a road-grader. This strip was mapped and showed numerous pits, burial pits, and postmolds in plan view, but the weather and available time prevented excavation of any of these features. A single Mississippian house, however, was located near the north end of the easternmost recovery strip and it was excavated completely. A radiocarbon date for this structure was reported by Jenkins (1979a: 39) as A.D. 1410 ± 45. Except for this structure, the majority of the ceramics recovered from the eastern half of the hectare appeared to be associated with the early part of the Mississippian period (Summerville I in the chronology developed here).

Fifty 1 by 1 m units which comprised one hundred and six 20 cm levels were excavated in the western half of Hectare 400N/-100E. They contained dense concentrations of daub and Mississippian ceramics and lesser amounts of Woodland ceramics. They contained indications of several burials and pits. The vast majority of the units that contained exceptional amounts of daub were situated on the ridge that runs from south to north across the hectare.

Hectare 400N/0E was deleted completely from our sample. Four of the University of Alabama's recovery strips were located in this hectare. One of these recovery strips was excavated and it produced 18 burials, 5 pits, 1 structure, and many, many postmolds. Most if not all of the features can be assigned to the Summerville I or II periods, but there seems to have been a significant Late Woodland component in this area as well.

Five 1 by 1 m units, each three 20 cm levels deep, were excavated on the small segment of levee in the northern portion of Hectare 400N/100E. Recent alluvium capped all these units, and only low densities of daub and ceramics were recovered from them.

near the waterscreen station in Hectare 200N/-100E. Although no features were located, the density and diversity of artifacts from the test units showed a multicomponent, Gulf Formational through Mississippian midden near the river bank, The remains of an historic sugar furnace--bricks and metal--were found nearby.

Two transects, one deep test, and twenty auger tests were excavated in Hectare 300N/-400E. Overall, artifacts were rare and features absent in all these test units. A low density of ceramics from the Mississippian and Middle Woodland periods, and a moderate density of ceramics from the Late Woodland and Gulf Formational periods were found in units placed in the northern portion of the hectare.

Two transects, one deep test, and twenty auger tests were excavated in Hectare 300N/-300E. The transect that was situated in the southeast quarter of the hectare contained several postmolds, a large pit, and areas of deeply stained soil. The transect in the west central portion of the hectare contained no features and few artifacts. As a whole, Hectare 300N/-300E contained an abundance of daub and Mississippian sherds as well as lesser amounts of Late and Middle Woodland ceramics.

Based on surface indications, a total of twenty-one 1 by 1 m units which comprised forty-five 20 cm levels was excavated in the southwest quarter of Hectare 300N/-200E. A single transect and 20 auger tests were excavated in the remaining three quarters. The single transect, which was located in the northwestern quarter of the hectare, contained a midden which contained mussel shell, pits, and several postmolds. The artifacts recovered from the several test units show moderate levels of Woodland and Mississippian materials and a well-defined Gulf Formational period component.

Two transects, twenty auger tests, and one deep test were excavated in Hectare 400N/-600E. Both transects showed a moderate density of features. One transect, which was located midway along the 600E line, contained 10 postmolds, 4 pits, and two concentrations of gravel. The second transect, which was located in the northwest quarter of the hectare contained ten scattered postmolds and one pit. Sparse amounts of daub, Late Woodland ceramics, and Gulf Formational ceramics were found throughout the various units. A concentration of Miller I-II ceramics was located in the northwest quarter of the hectare.

Twenty auger tests, two transects, and one deep test were excavated in Hectare 400N/-500E. The transects in the southwest quarter of the hectare produced four scattered postmolds. The other transect, which was located in the southwest quarter of the hectare, was packed with features: 32 postmolds, 3 pits, and some large soil stains. The daub and artifact density, however, was quite low in this hectare.

Twenty-two auger tests, two transects, and one deep test were excavated in Hectare 400N/-400E. One transect, which was located in the southeast corner of the hectare, was packed with daub and shell tempered ceramics but contained only five postmolds. The second transect, which was located midway up the western boundary of the hectare, produced a small concentration of lithic debitage and a single postmold. Woodland ceramics were scattered lightly throughout all the units, but Mississippian materials dominated all of

TABLE 1

(Continued)

Hectare	Mean(x) Standard Deviation (s)		Artifacts (g/m²)					Features (Count/100 m²)		
			Daub	Mississippi Plain *var. Warrior*	Mulberry Creek Cordmarked *var. Aliceville*	Baldwin Place *var. Blubber Creek*	Wheeler Plain *var. Wheeler*	Burials	Structures	Pits
600N/-700E	n=16	x	125.0	1.0	0	0	0	0	0	0
		s	460.6	4.2	0	0	0	0	0	0
600N/-600E	n=18	x	2.8	11.7	0	0	0	0	0	0.9
		s	8.6	47.1	0	0	0	0	0	3.1
600N/-500E	n=23	x	6.1	30.9	0	0	0	0	0	0
		s	16.8	71.3	0	0	0	0	0	0
600N/-400E	n=23	x	29.1	60.3	3.6	0	0	0	0	1.1
		s	93.9	120.4	17.4	0	0	0	0	5.6
600N/-300E	n=11	x	666.8	585.6	543.8	6.8	0	0	0.3	0
		s	1266.9	609.9	529.3	13.5	0	0	1.0	0
600N/-100E	n=1	x	0	136.6	30.0	0	0	3.33	0	0
		s	0	-	-	-	-	-	-	-
700N/-700E	n=18	x	0	0.2	0	0	0	0	0	0.2
		s	0	0.8	0	0	0	0	0	0.8
700N/-600E	n=12	x	0	29.4	0	0	0	0	0	1.1
		s	0	71.1	0	0	0	0	0	2.9
700N/-500E	n=12	x	40.8	101.1	0	0	0	0	0.3	0
		s	129.1	147.8	0	0	0	0	1.0	0
700N/-400E	n=1	x	26.7	36.6	0	0	0	-	-	-
		s	-	-	-	-	-	-	-	-
700N/-300E	n=2	x	0	1.7	13.3	0	0	0	0	0
		s	-	-	-	-	-	-	-	-
800N/-700E	n=2	x	0	0	0	0	0	0	0	0
		s	-	-	-	-	-	-	-	-
800N/-600E	n=61	x	15.7	87.1	1.1	0.7	0	1.6	0	0
		s	47.4	199.6	4.2	4.3	0	12.8	0	0

TABLE 1

(Continued)

Hectare	Mean(x) Standard Deviation (s)		Artifacts (g/m²)					Features (Count/100 m²)		
			Daub	Mississippi Plain var. Warrior	Mulberry Creek Cordmarked var. Aliceville	Baldwin Plain var. Blubber Creek	Wheeler Plain var. Wheeler	Burials	Structures	Pits
400N/100E	n=15	x	17.1	53.1	4.3	11.7	0	0	0	0
		s	39.0	76.5	8.0	28.8	0	0	0	0
500N/-800E	n=21	x	0	0	0	0	0	0	0	0
		s	0	0	0	0	0	0	0	0
500N/-700E	n=22	x	22.7	0	0.5	0	0	0	0	0
		s	102.9	0	2.1	0	0	0	0	0
500N/-600E	n=22	x	0.2	0	4.5	0	0	0	0	0
		s	0.7	0	21.3	0	0	0	0	0
500N/-500E	n=23	x	7.1	13.3	43.9	0	0	0	0	0.1
		s	28.0	49.1	208.4	0	0	0	0	0.7
500N/-400E	n=23	x	102.8	84.2	14.5	0	0	0	0	0.1
		s	295.6	119.5	69.5	0	0	0	0	0.7
500N/-300E	n=62	x	120.6	201.3	77.5	2.3	0	0	3.2	3.2
		s	172.1	280.2	198.4	11.9	0	0	17.8	17.8
500N/-200E	n=73	x	71.2	124.7	53.5	0.8	0	0	0	1.3
		s	142.6	397.7	151.2	3.4	0	0	0	11.7
500N/-100E	n=23	x	3.8	23.5	40.1	2.9	0	0	0	0.1
		s	11.2	39.6	152.5	13.9	0	0	0	0.7
500N/000E	n=104	x	115.9	141.3	18.6	5.1	3.5	1.0	0	4.8
		s	195.8	133.7	40.4	14.4	15.2	1.0	0	21.5
500N/100E	n=96	x	16.1	82.8	19.9	7.8	12.7	6.3	0	9.3
		s	41.9	187.2	42.8	18.5	56.6	61.2	0	29.3
500N/200E	n=82	x	35.2	73.0	120.1	16.5	4.5	2.4	0	10.9
		s	120.2	119.6	191.7	31.1	20.8	15.5	0	31.5
600N/-800E	n=10	x	0	0	0	0	0	0	0	0
		s	0	0	0	0	0	0	0	0

TABLE 1

Phase I Test Units Sample Statistics.

Hectare	Mean(x) Standard Deviation (s)		Artifacts (g/m^3)					Features (Count/100 m^2)		
			Daub	Mississippi Plain var. Warrior	Mulberry Creek Cordmarked var. Aliceville	Baldwin Place var. Blubber Creek	Wheeler Plain var. Wheeler	Burials	Structures	Pits
100N/-300E	n=5	x	19.0	0	0	0	0.	0	0	0
		s	24.6	0	0	0	0	0	0	0
200N/-300E	n=5	x	1.0	2.0	0	0	0	0	0	0
		s	2.2	4.4	0	0	0	0	0	0
200N/-200E	n=1	x	0	0	0	0	0	0	0	0
		s	-	-	-	-	-	-	-	-
200N/-100E	n=13	x	37.7	22.7	71.9	63.1	7.3	0	0	0
		s	45.0	41.1	136.2	85.9	18.6	0	0	0
300N/-400E	n=23	x	17.2	1.4	4.6	1.4	3.5	0	0	0
		s	69.6	7.0	15.9	7.0	16.7	0	0	0
300N/-300E	n=23	x	204.8	55.9	12.2	8.1	0	0	0	0.3
		s	654.2	118.6	32.6	20.0	0	0	0	1.1
300N/-200E	n=67	x	22.0	20.9	7.7	4.8	2.0	0	0	1.5
		s	86.4	62.0	23.8	22.3	14.1	0	0	12.2
400N/-600E	n=23	x	3.3	0	2.9	15.8	0.6	0	0	0.7
		s	10.8	0	13.9	75.8	2.8	0	0	2.8
400N/-500E	n=23	x	0.7	1.4	7.8	0	0	0	0	0.4
		s	3.5	7.0	30.0	0	0	0	0	2.1
400N/-400E	n=25	x	73.3	21.1	6.3	4.3	0	0	0	0.3
		s	147.6	43.3	21.5	13.8	0	0	0	1.3
400N/-300E	n=24	x	191.4	76.8	0.5	0	0	0	0	0.1
		s	429.2	165.6	2.7	0	0	0	0	0.6
400N/-200E	n=23	x	37.2	49.3	0.1	1.4	0	0	0	0
		s	79.4	109.6	0.7	7.0	0	0	0	0
400N/-100E	n=106	x	135.4	154.4	39.1	8.5	0	0.9	0	1.8
		s	364.0	229.8	90.1	29.1	0	9.7	0	13.7

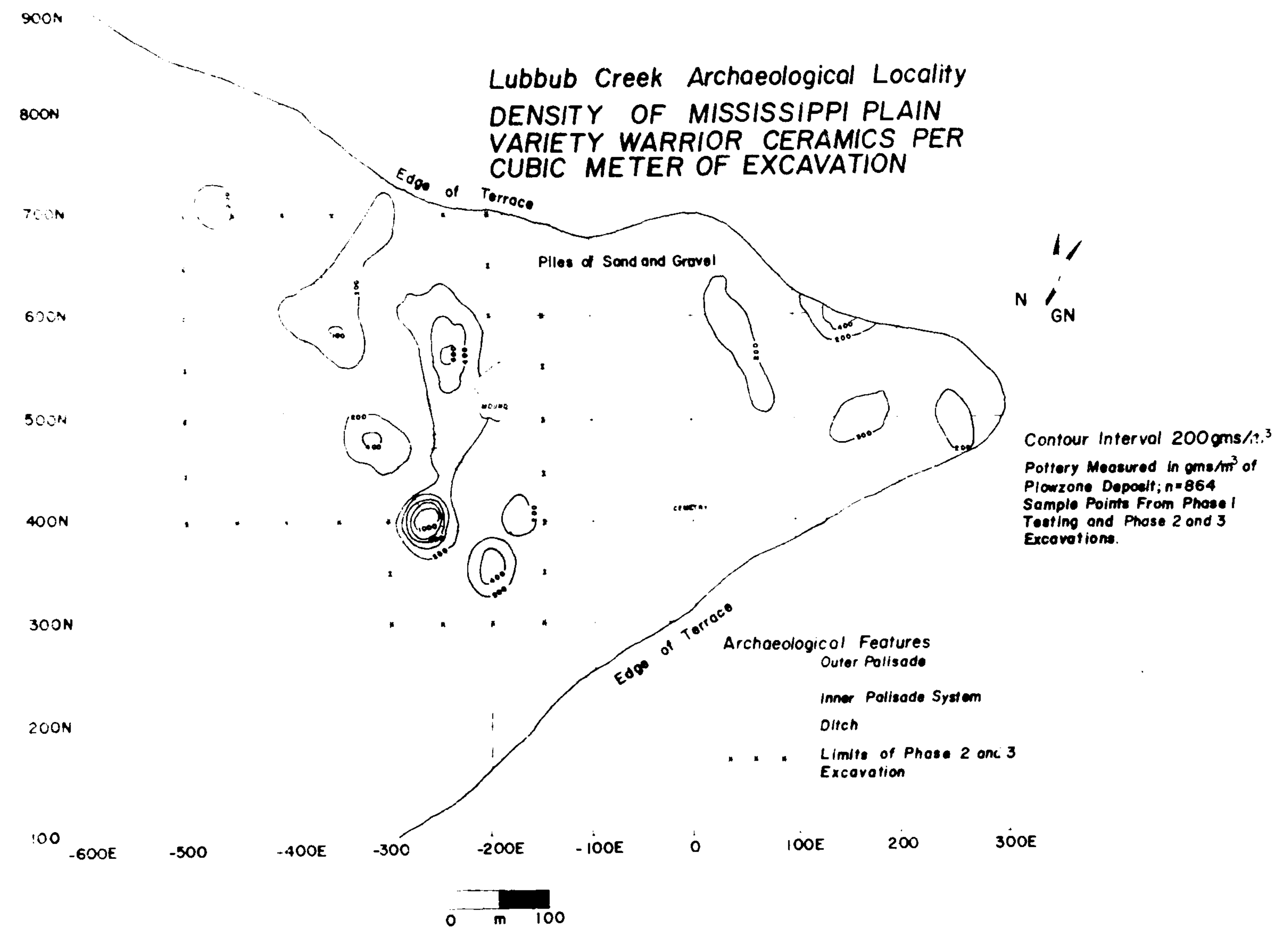

Figure 5. Density of Mississippi Plain var. Warrior ceramics per cubic meter of excavation.

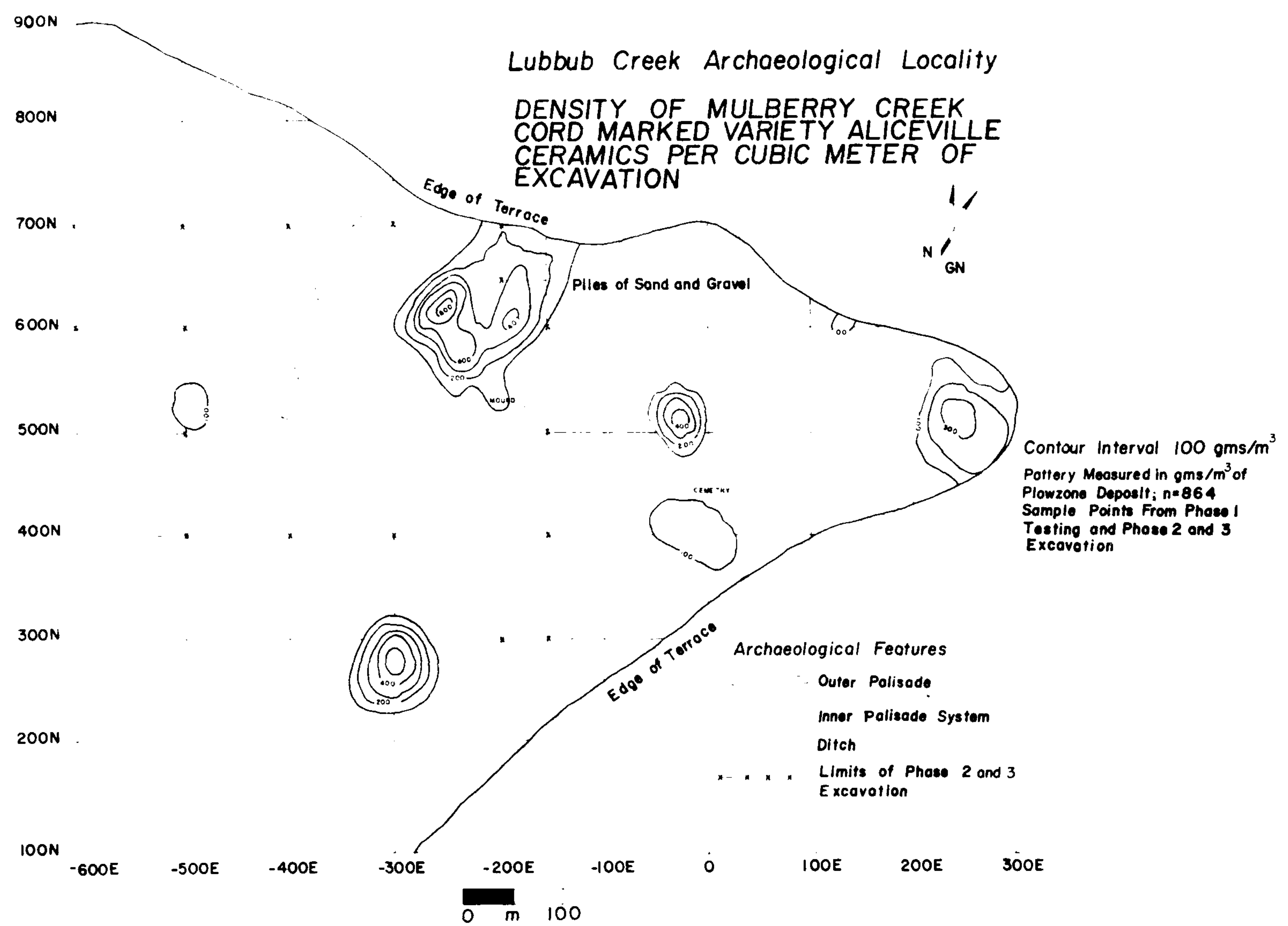

Figure 6. Density of Mulberry Creek Cordmarked <u>var.</u> <u>Aliceville</u> ceramics per cubic meter of excavation.

TABLE 3

PHASES I, II, III FEATURES SAMPLE STATISTICS

Features	Phase I		Phases II and III	
	Mean[1]	S.D.[1]	Mean[1]	S.D.[1]
Burials	0.42	1.23	0.39	1.19
Structures	0.10	0.53	0.06	0.08
Pits	1.03	2.42	1.15	1.21

[1]Count/100m^2

phases of research.

In the week that elapsed between completion of the Phase I report and the project evaluation, several alternate plans were developed for the conservation of archaeological remains in the Lubbub Creek Archaeological Locality. Each plan, or better, set of plans, had to recognize that time was limited but adequate, that funds were available but not unlimited, and that support from federal and state archaeologists was available and abundant. The research program and conservation plans finally agreed upon maximized preservation <u>in situ</u>, kept excavation to a minimum, albeit a large minimum, and kept destruction of archaeological remains to an absolute minimum.

The crucial element in the proposal was a change in spoil area G-15. The maintenance spoil bank had to be eliminated. Col. Charles Blalock, District Engineer, on the advice of Jerry Nielsen, District Archaeologist, agreed to this modification in the design of the Lubbub Creek Cutoff. The historic preservation plan had three elements: 1) conservation of all components in the area east of the -150E line; 2) excavation of a 20 percent sample, by area, of all hectares with significant archaeological remains; 3) no further work in the hectares south and west of the Mississippian settlement. As a result, the eastern portion of the bend would become an island when the canal was dredged. These 15 ha would contain the eastern one-half of the Mississippian settlement, a large percentage of the Late Woodland remains, and all deeply buried Archaic and Gulf Formational components. The sampling fraction of 20 percent for 12 ha would result in excavations that would encompass approximately 24,000 m^2. An excavation of this magnitude would yield one of the largest samples of Mississippian remains thus far recovered in the Southeast. Finally, at worst, only a very few, small components would be lost completely, and they would be under the spoil pile, not destroyed by the dredge.

<u>Phase II and III Excavations</u>

On the surface, the goals of the intensive excavation program in the

Lubbub Creek Archaeological Locality were deceptively simple: excavate, in the span of 9 months, a 15 to 20 percent sample of all hectares which, on the basis of the Phase I data, contained significant archaeological remains and which would not be preserved on the island east of the canal. Sober reflection produced a more realistic assessment: only 9 months to excavate approximately 20,000 m^3 spread over at least 12 ha and to excavate the remains of the mound completely. The opportunity to create the archaeological disaster of the decade had been presented on the proverbial "silver platter." Three factors, however, kept calamity away: 1) a good staff and crew; 2) generous support from federal and state archaeologists; and 3) an explicit but flexible research design.

The foundation of the research design was a sample of 10 by 10 m excavation units. A minimum of 5, usually 15, and as many as 20 of these units were randomly located in each hectare. The choice of a sampling fraction for each hectare was determined by Phase I information, by data from adjoining hectares, and by negotiation with federal archaeologists.

Each hectare was stripped to a depth of approximately 20 cm by the backhoe. A 1 m^3 sample of this plowzone was waterscreened. The floor of the unit was cleaned by hand, features were identified, Unit Serial Numbers were assigned to the features, and the floor was mapped. (See Volume III for a discussion of Unit Serial Numbers.) If any features or feature complexes were cut by the boundaries of the unit, then extensions were stripped until all units or complexes in the original unit were exposed, identified, numbered, and mapped. All features were excavated completely, and the specifics of their excavation were determined by the supervisor responsible for the hectare.

In general, pits were cut in half, and one half was taken out as a unit. If the pit was stratified, then the second half was taken out level by level. If it was not stratified, then the second half was taken out as a unit. In general, structures were divided into pie-shaped quarters as soon as the top of the ash and daub layer had been defined. Then, quarter by quarter, the daub and ash were removed and the "floor" was cleaned and mapped. Next, the floor was excavated, and finally the level below the floor was removed to check for additional features. Postmolds were sectioned, mapped in profile, and their fill was screened dry. In almost all other cases the fill of features was waterscreened through 1 mm mesh. Flotation samples (multiples of 3 liters) were collected routinely from all features or significant parts of features and from other units whenever the supervisor thought it was necessary.

Each supervisor decided what constituted a significant archaeological unit and therefore was to be given a Unit Serial Number (USN). The supervisor of the waterscreen crew, however, maintained control of these USNs. She passed out blocks of numbers, recorded in her log the nature and location of the unit, checked to make sure everything was in order when the deposit came to the waterscreen for processing, and made sure that deposits were never mixed during the process. On the busiest day 40 m^3 were processed through the waterscreens. In the entire project only 3 of almost 10,000 units were mixed inadvertently. Even in these 3 cases, the USNs of the units could be enumerated and the field laboratory could analyze the mixed bag.

The materials from the flotation units and waterscreens were tagged and sent to the field laboratory. There the materials once again were matched with the field records. Preliminary analyses were completed within a few days and the field and laboratory forms were sent to the project data clerk. He then entered the information into the project's computerized data base management system (see Volume III).

The flow of material was swift. A unit excavated on Monday could be processed by the laboratory on Thursday. If the data clerk received the forms on the weekend, the data would be entered by Monday and verified by Wednesday. Thus, only 10 days would have elapsed between excavation and instant access to the materials contained in the unit. Such were the average figures throughout the fieldwork.

In the end the project's accomplishments were substantial (Figures 7 and 8; Table 4). Almost 22,000 m^2 had been excavated; more than 10,000 m^3 had been moved; approximately 2,000 m^3 had been waterscreened. A total of 5,593 units had been catalogued. Among these units were 25 structures which comprised 41 floors; 43 burials, one of which contained 43 individuals; 425 pits; 3,984 postmolds; 55 artifact concentrations; and 451 "other" features. In addition, 852 three-liter flotation samples had been collected and processed. Several hundred thousand sherds and other artifacts had been catalogued; several million seeds and other botanical remains had been recovered (Table 5). In the 9 months 55,340 person-hours had been expended. The results of their labor will be sketched next, hectare by hectare.

<u>100N/-300E</u>

A total of 450 m^2 was excavated in Hectare 100N/-300E. All these units proved to be sterile and this hectare was abandoned midway through the fifth 10 by 10 m square.

<u>300N/-200E</u>

A total of 203 m^2 was excavated in Hectare 300N/-200E. The excavation units comprised two 10 by 10 m units and three slot-trenches (Figure 9). The northernmost 10 by 10 m unit proved to be sterile. It was set entirely within a deep gravel bed overlain by only a thin level of topsoil. Neither features nor more than a few artifacts were found in this unit.

The southernmost unit contained a thick, badly disturbed midden which overlaid and was inclusive with a welter of small pits and two burials. Only two levels were cut in the midden, and it was abandoned before the third level was completed. However, all features were excavated completely and only the lowest level of the midden was left in place because of weather and scheduling problems. Neither the midden nor the features contained ceramics that were diagnostic beyond their identification as Mississippian. Both burials, however, could be assigned to the Summerville I period.

Three narrow slot trenches were cut in the northern part of this hectare to trace the Summerville IV ditch fortification. All three trenches showed

Figure 7. Aerial view of the excavations, November 1978.

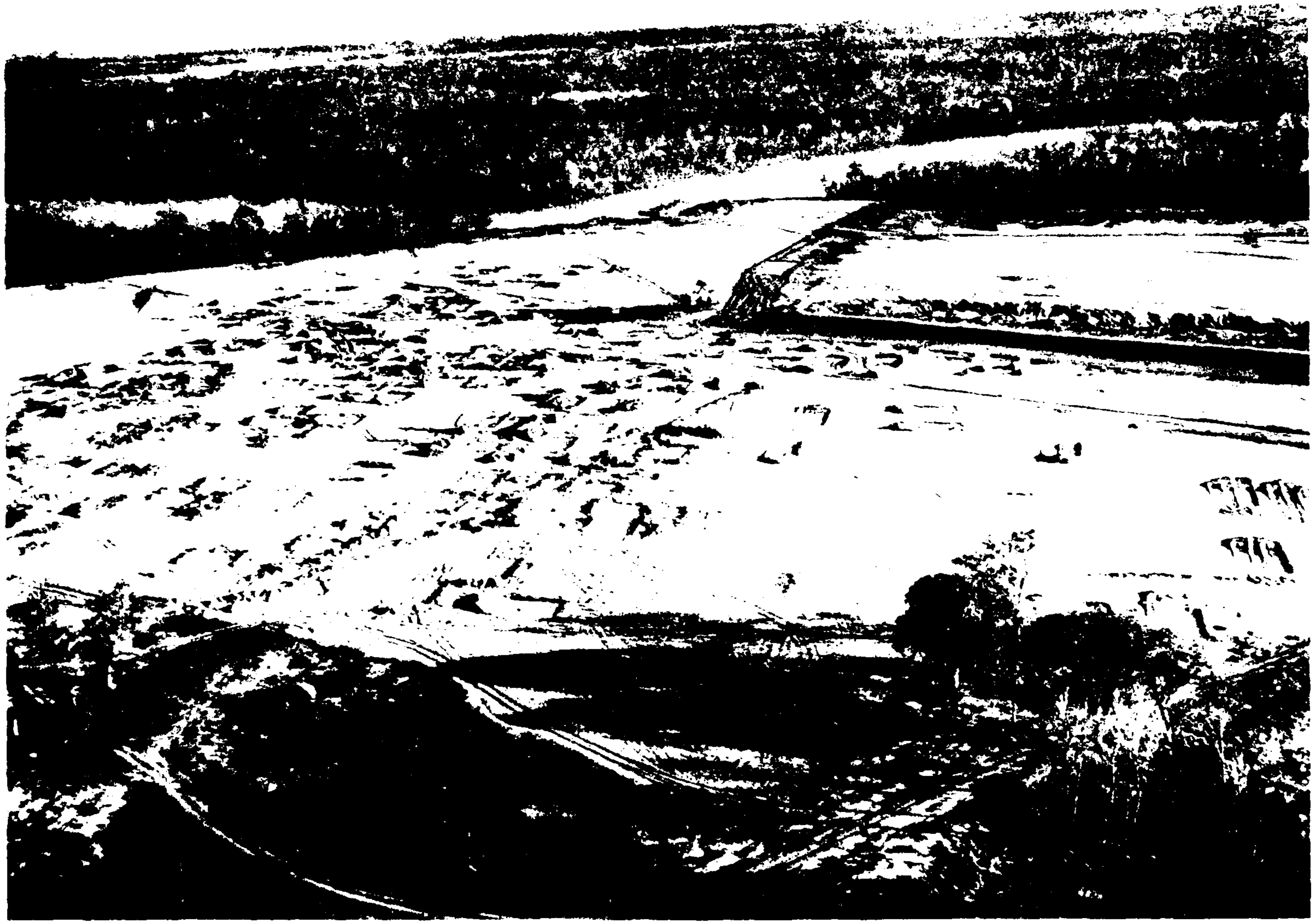

Figure 8. Aerial view of the excavations, November 1979.

TABLE 4

Distribution of Excavation Units and Selected Features by Hectare

Hectare	Sample 10 by 10m Units	Total Area Excavated (m^2)	Structures	Pits	Burials	Other Features	Remarks
100N/-300E	5	450	0	1	0	4	Abandoned midway into the fifth test unit
300N/-200E	2	203	0	32	2	100	Summerville IV ditch fortification.
300N/-300E	10	1,445	1	73	3	209	Summerville IV ditch fortification
400N/-200E	5	750	1	9	2	108	Both burials are urn burials.
400N/-300E	20	2,771	8	76	6	1,390	Inner palisade system; five palisade lines; Summerville IV ditch fortification.
400N/-400E	9	1,130	4	51	6	295	
400N/-500E	20	2,000	0	38	3	122	
500N/-200E Mound	-	4,260	6	5	1	462	All mound excavations by definition placed in the hectare.
500N/-300E	15	1,830	4	36	12	1,077	Burials include ossuary and one urn; Inner palisade system; Summerville IV ditch fortification.
500N/-400E	20	2,370	1	60	6	426	Outer palisade.
500N/-500E	5	500	0	0	0	0	
600N/-300E	10	1,006	0	1	0	12	Extensive Summerville I and Miller III midden; Summerville IV ditch fortification.
600N/-400E	15	2,006	0	43	2	313	Outer palisade.
600N/-500E	5	500	0	0	0	0	
600N/-600E	5	500	0	0	0	0	
700N/-400E	-	50	0	0	0	67	Outer palisade.
TOTALS	146	21,771	25	425	43	4,585	Three fortification systems: outer palisade, inner palisade, ditch fortification

TABLE 5

Phase II and III 10 x 10 m Sample Units Sample Statistics.

Hectare	Sample 10 x 10 m Units		Artifacts (g/m²) Daub	Mississippi Plain var. Warrior	Mulberry Creek Cordmarked var. Aliceville	Baldwin Plain var. Blubber Creek	Wheeler Plain var. Wheeler	Features (count/m²) Burials	Structures	Pits
100N/-300E	n=5	x	0	0	0	0	0	0	0	0.2
		s	0	0	0	0	0	0	0	0.5
300N/-300E	n=10	x	24.9	76.9	125.0	21.1	7.3	0.1	0.1	3.8
		s	41.4	84.7	336.6	36.5	11.9	0.3	0.3	7.2
300N/-200E	n=2	x	1393.5	785.5	93.5	248.5	0	4.5	0	0
		s	1970.7	847.8	27.6	205.8	0	6.4	0	0
400N/-500E	n=20	x	28.8	8.2	11.7	17.2	9.4	0.1	0	1.5
		s	91.2	9.5	17.7	36.7	27.1	0.5	0	1.5
400N/-400E	n=9	x	886.8	354.0	11.4	1.3	0	0.2	0.2	2.1
		s	2006.3	407.8	14.5	4.0	0	0.6	0.4	3.6
400N/-300E	n=20	x	814.5	321.7	16.5	12.1	7.4	0.1	0.2	1.5
		s	934.8	742.6	21.2	36.7	22.4	0.3	0.5	1.8
400N/-200E	n=6	x	532.5	204.8	61.8	11.7	0.	0	0.2	1.0
		s	441.8	190.4	60.1	17.0	0	0	0.1	0.9
500N/-500E	n=5	x	-	-	-	-	-	0	0	0
		s	-	-	-	-	-	0	0	0
500N/-400E	n=20	x	84.3	163.4	1.8	0.1	0	0.1	0.1	2.1
		s	133.4	222.5	6.1	0.4	0	0.3	0.3	3.9
500N/-300E	n=15	x	228.6	540.2	122.9	0.6	0	0.3	0.1	1.0
		s	333.4	880.8	323.6	1.9	0	0.6	0.3	3.0
500N/-200E	n=24	x	97.4	91.5	76.5	0	0	-	-	-
		s	226.3	178.6	123.4	0	0	-	-	-
600N/-600E	n=5	x	-	-	-	-	-	0	0	0
		s	-	-	-	-	-	0	0	0

TABLE 5

(Continued)

Hectare	Sample 10 x 10 m Units		Artifacts (g/m²)					Features (count/m²)		
			Daub	Mississippi Plain var. Warrior	Mulberry Creek Cordmarked var. Aliceville	Baldwin Plain var. Blubber Creek	Wheeler Plain var. Wheeler	Burials	Structures	Pits
600N/-500E[4]	n=5	x	-	-	-	-	-	0	0	0
		s	-	-	-	-	-	0	0	0
600N/-400E	n=15	x	163.2	311.3	2.2	0.4	0	0.1	0	2.5
		s	210.3	283.3	3.9	0.8	0	0.5	0	4.1
600N/-300E	n=10	x	22.9	214.8	310.7	3.7	0	0	0	0.1
		s	46.0	327.8	438.8	9.1	0	0	0	0.3
700N/-400E[3]	n=0	x	-	-	-	-	-	-	-	-
		s	-	-	-	-	-	-	-	-

[1]Not in sample. Excavated to check surface scatters revealed by 1979 flood.
[2]Not in sample. Mound excavation units.
[3]Not in sample. Excavation followed palisade line to river.
[4]No deposit screened

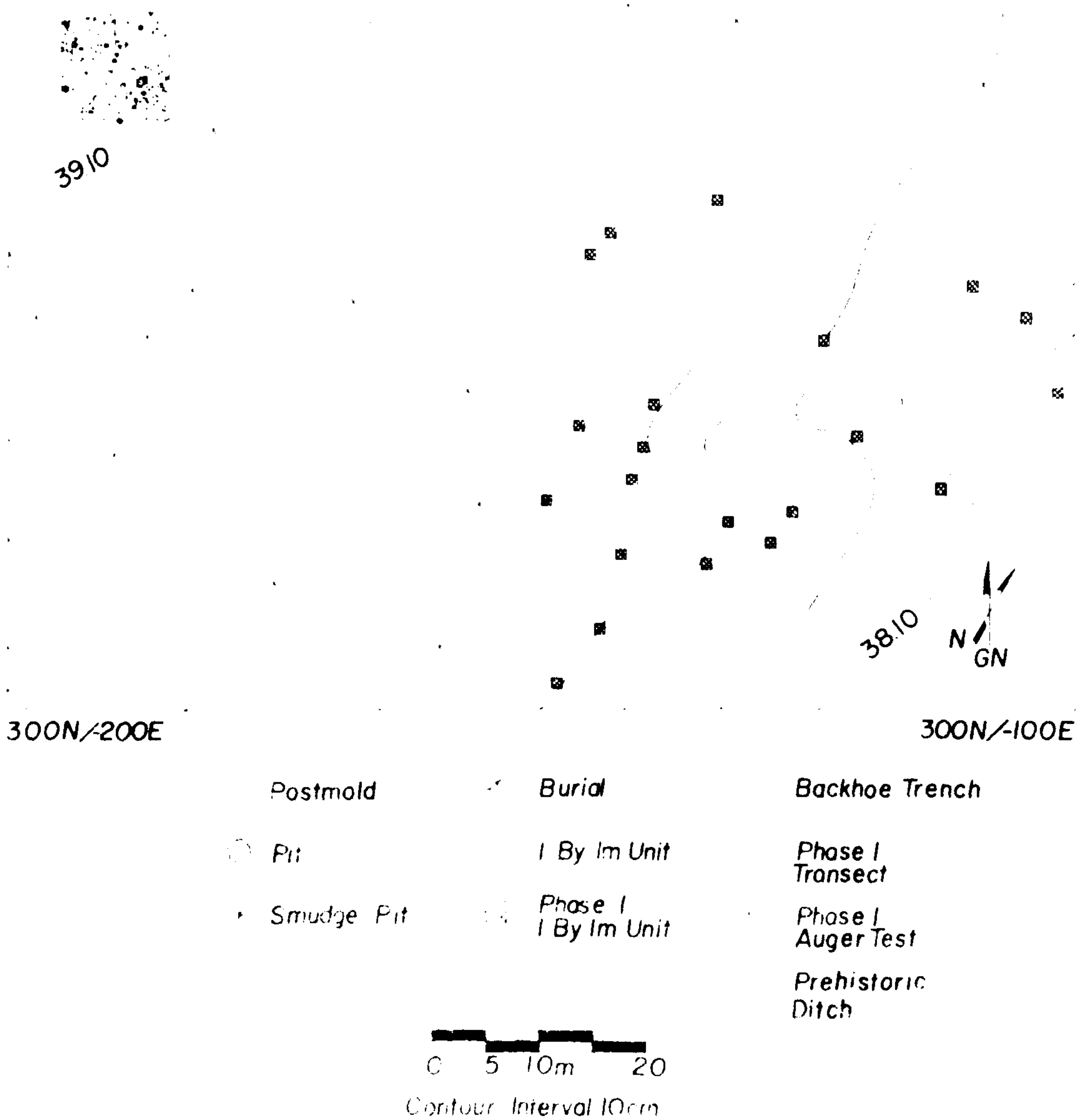

Figure 9. General excavation plan of Hectare 300N/200E.

the ditch in their profiles.

300N/-300E

A total of ten 10 by 10 m sample units and 1,445 m^2 in total was excavated in Hectare 300N/-300E (Figure 10). These units can be grouped into four major spatial clusters: 1) a southeastern trio which was generally sterile; 2) a southwestern unit with a dense collection of Miller III pits; 3) a central group of five units which had both Mississippian and Late Woodland features; and 4) a northern group of test units and trenches which contained protohistoric features including the ditch.

The three southeastern units, 301N/-250E, 302N/-227E, and 311N/-245E, were, with the exception of three postmolds, sterile. The southwestern unit, 303N/-287E, was packed with Late Woodland pits. The contents of these features included Baytown Plain, Mulberry Creek Cord Marked, Alligator Incised, and Withers Fabric Marked ceramics. There were significant quantities of unmodified lithic debris and unmodified rock in these pits.

The central group of units, which contained two burials, one of which could be assigned to the Summerville I period, and a midden in 345N/-273E and extensions thereto, evidenced both Late Woodland and Mississippian ceramics. However, the density of features in these units and the density of artifacts in the midden were very low.

The northernmost units, centered on 385N/-250E, which were excavated to define further the ditch discovered in the extreme southern portion of Hectare 400N/-300E, contained a highly visible, densely packed Summerville II-III and Summerville IV group of features. The ditch was excavated in plan and in profile and traced northward and eastward into adjoining hectares. At least in this area, the ditch had been filled with a compact collection of lithic debitage, Alabama River Applique, and Mississippi Plain ceramics, and what seemed to be burned timbers at the lowest level.

400N/-200E

A total of six 10 by 10 m units, five of which were part of the sample, and 780 m^2 was excavated in Hectare 400N/-200E (Figure 11). These excavations were clustered in the extreme western part of the hectare--the area that would be affected by construction of the canal. The three northwestern units contained a low density of Late Woodland and Mississippian ceramics. The southernmost contiguous set of units contained a Summerville IV structure (S-1) and two urn burials which had been intruded through a Late Woodland and Summerville I midden.

400N/-300E

Hectare 400N/-300E, which was located just southwest of the mound, 1-Pi-85, contained the most complex archaeological deposits found in the Lubbub Creek Cutoff (Figure 12). Three palisade lines--one of which was bastioned--ran from the southeast to northwest quadrants of the hectare. Two of these lines of fortification showed distinct stages of repair and rebuilding, and after they were abandoned, at least three structures were built over the remains. There were perhaps two additional palisade lines northeast of the

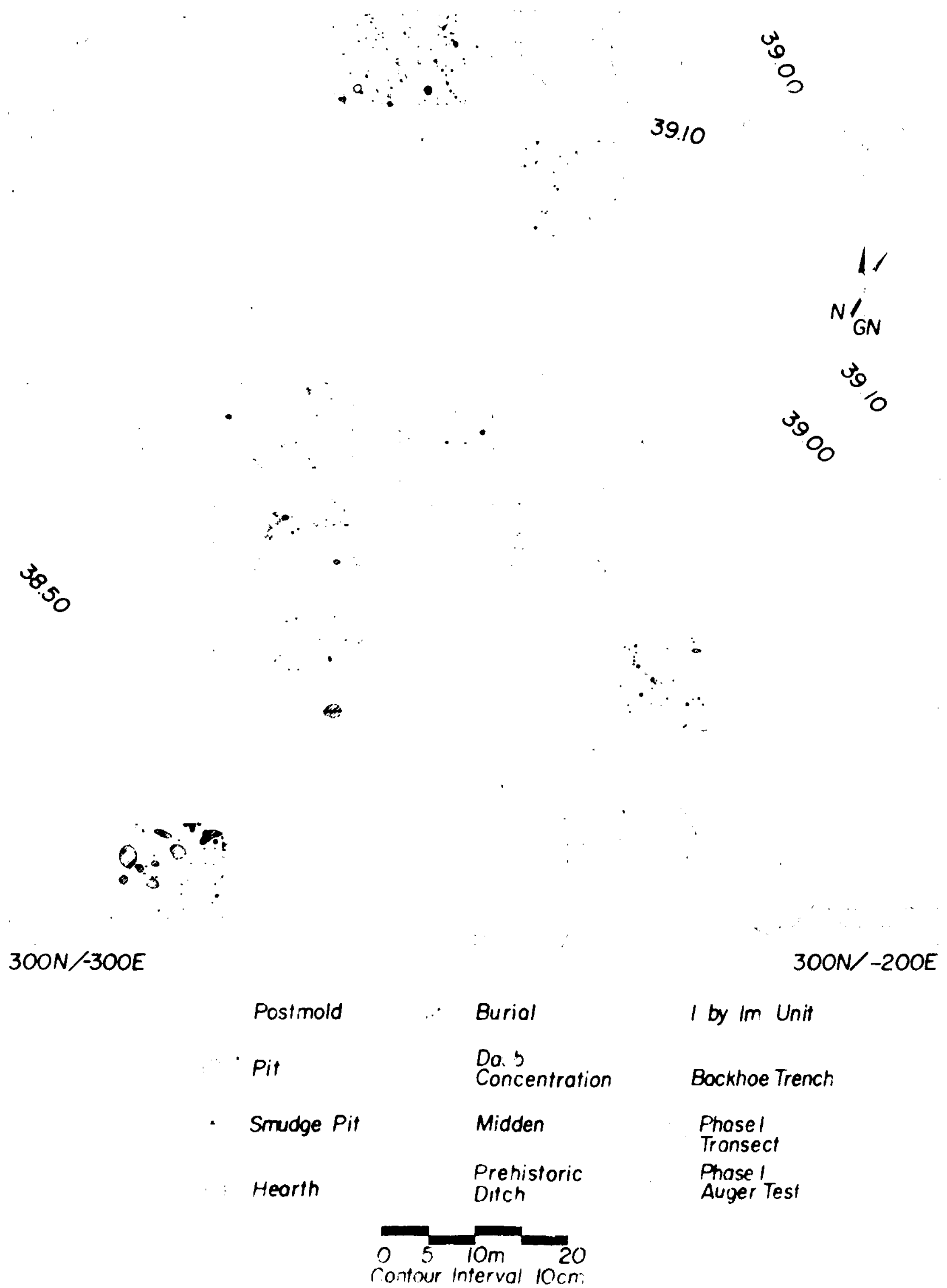

Figure [illegible] excavation plan of [illegible]

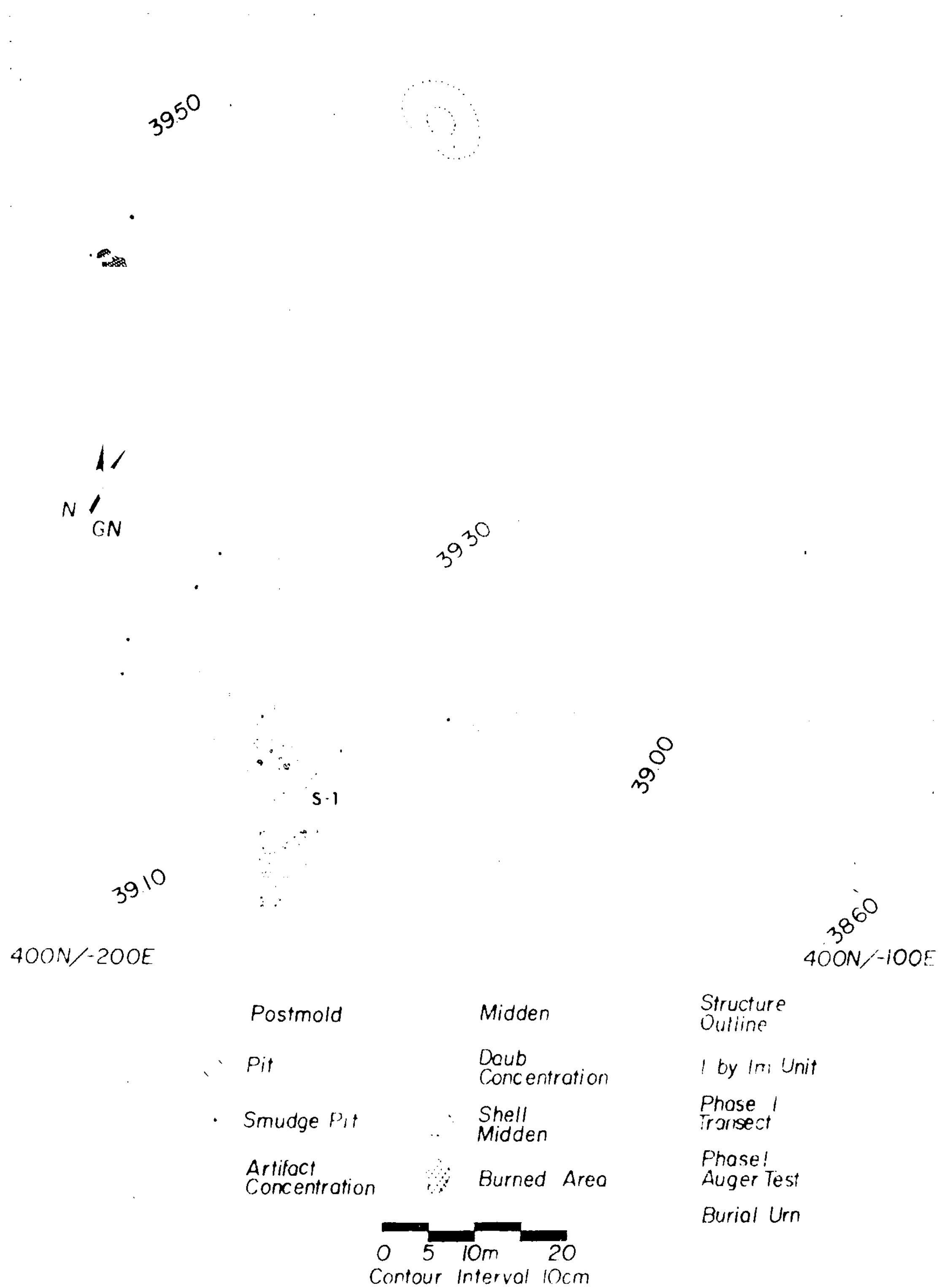

Figure 11. General excavation plan of Hectare 400N/-200E.

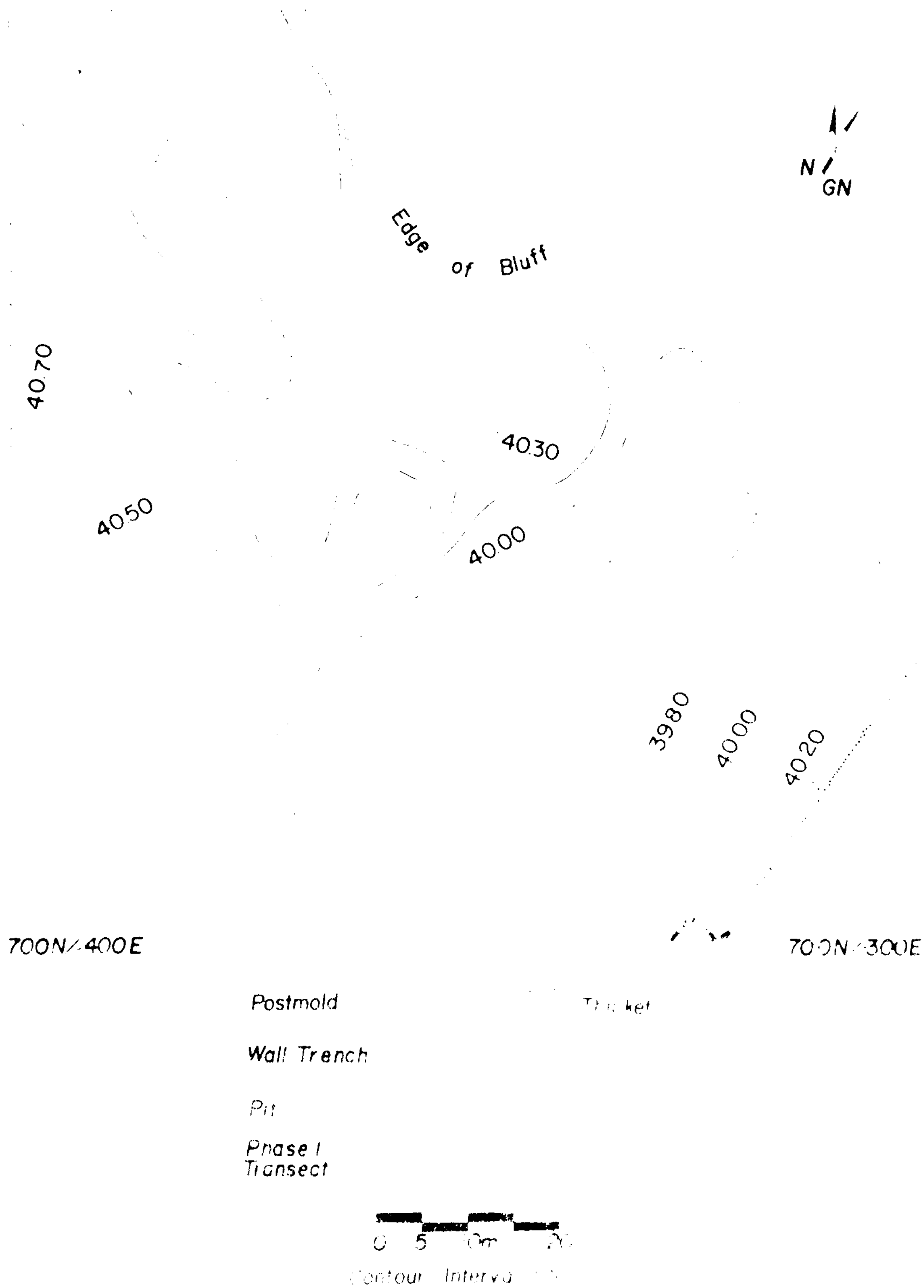

Figure [illegible]. Excavation of [illegible]

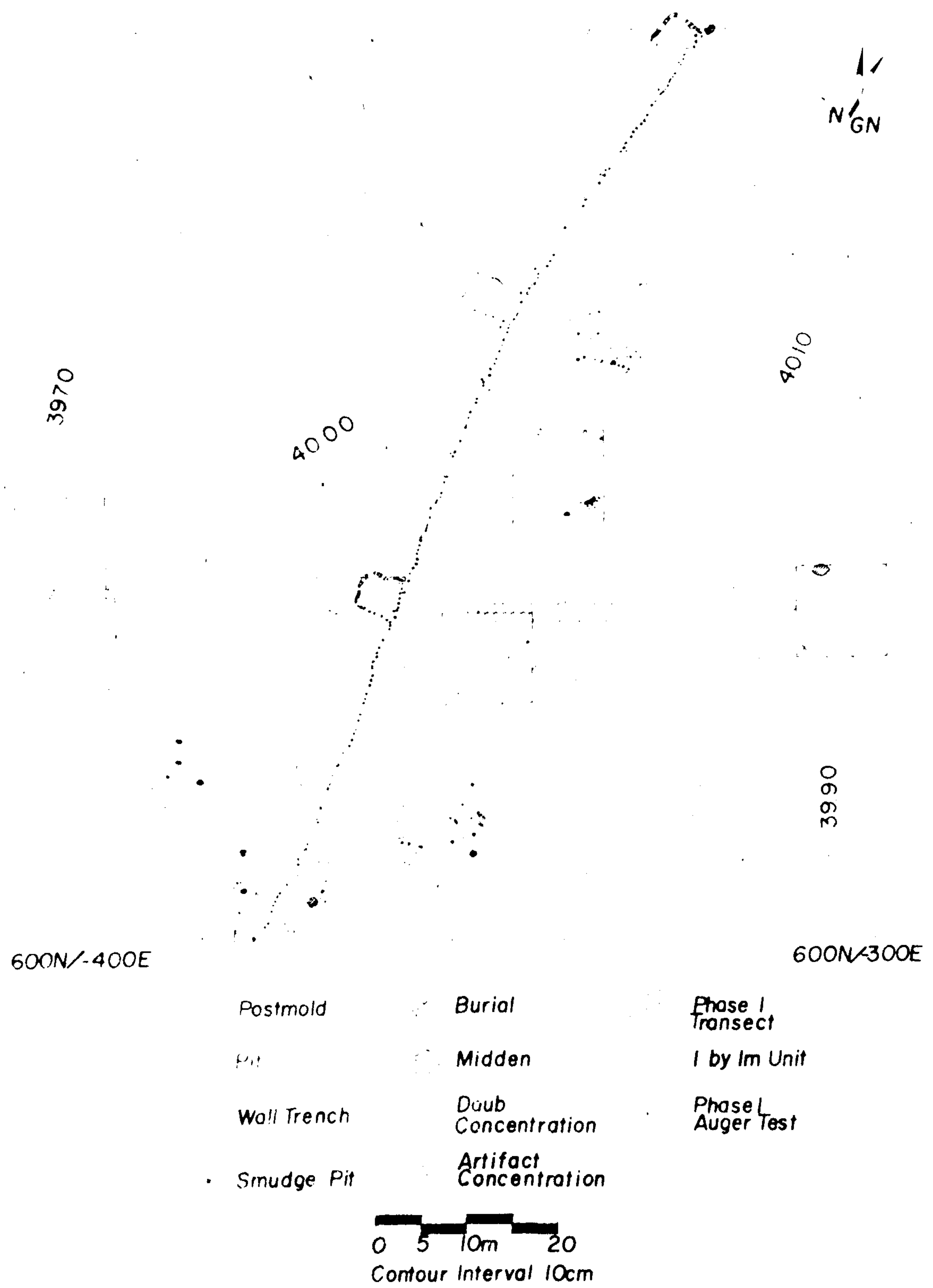

Figure 19. General excavation plan of Hectare 600N/-400E.

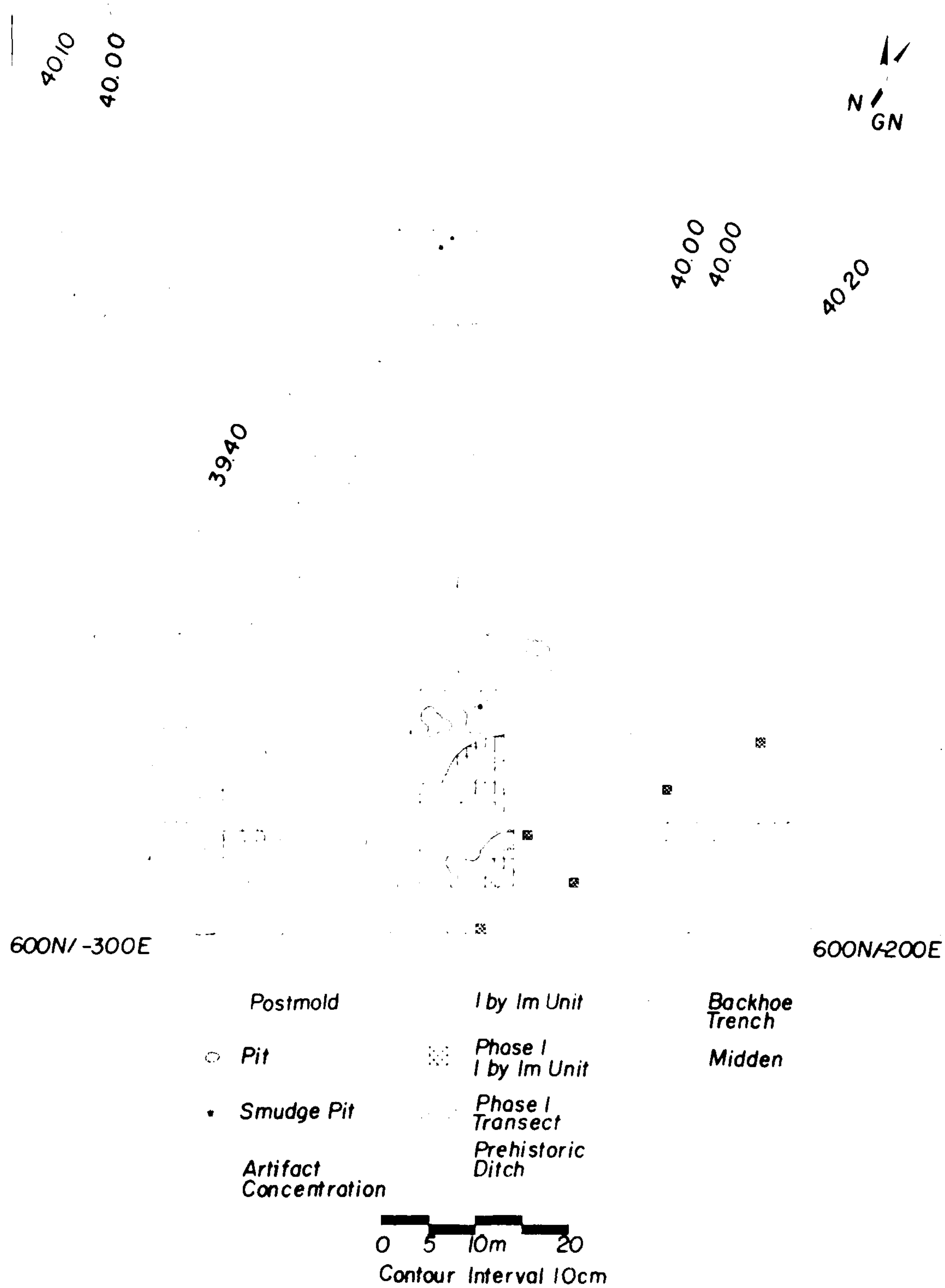

Figure 18. General excavation plan of Hectare 600N/-300E.

A large, complex, multicomponent midden covered parts of the palisade. This midden, which seems to have extended throughout much of the northwest corner of Hectare 500N/-400E, was encountered by two excavation units. A mixed shell and organic midden filled the 10 by 10 m unit, 579N/-398E, and the organic portions of the midden extended southward at least to the excavation unit placed around the bastion located at 570N/-384E. The ceramics associated with this midden span all of the Mississippian period, from Summerville I to the protohistoric.

500N/-500E

Five 10 by 10 m units were excavated in this hectare. All five proved to be sterile.

600N/-300E

A total of ten 10 by 10 m units and two stratigraphic trenches was excavated in Hectare 600N/-300E (Figure 18). All but the four southeastern units proved to be sterile. These four units contained elements of an extensive midden--which was probably contiguous with the midden north of the protohistoric component in Hectare 500N/-300E--and the deeply buried remains of the ditch that surrounded the protohistoric component.

A total of 1,006 m^2 was excavated in this hectare.

600N/-400E

A total of sixteen 10 by 10 m units, one extension, and a trench 110 m long and up to 5 m wide which encompassed the palisade were excavated (Figure 19). Other than the palisade itself and a few units near the palisade in the southern portions of the hectare, there was little evidence of prehistoric human activity in the hectare. A midden and daub deposit near the palisade in Unit 600N/-375E can be assigned to the Summerville I period, and a scatter of pits just west of the palisade in Unit 614N/-388E were of Summerville II-III vintage. A Mississippi Plain jar found in the bottom of a postmold associated with the northernmost bastion in this hectare has handles that clearly indicate a Summerville I period date for the palisade.

A total of 2,060 m^2 was excavated in this hectare.

600N/-500E and 600N/-600E

Five 10 by 10 m units were excavated in each of these hectares. All ten units were sterile.

700N/-400E

Most of Hectare 700N/-400E was dissolved by the 1979 spring flood. One segment of the palisade traversed part of this hectare, and it was excavated up to the point at which it crossed the river bank (Figure 20).

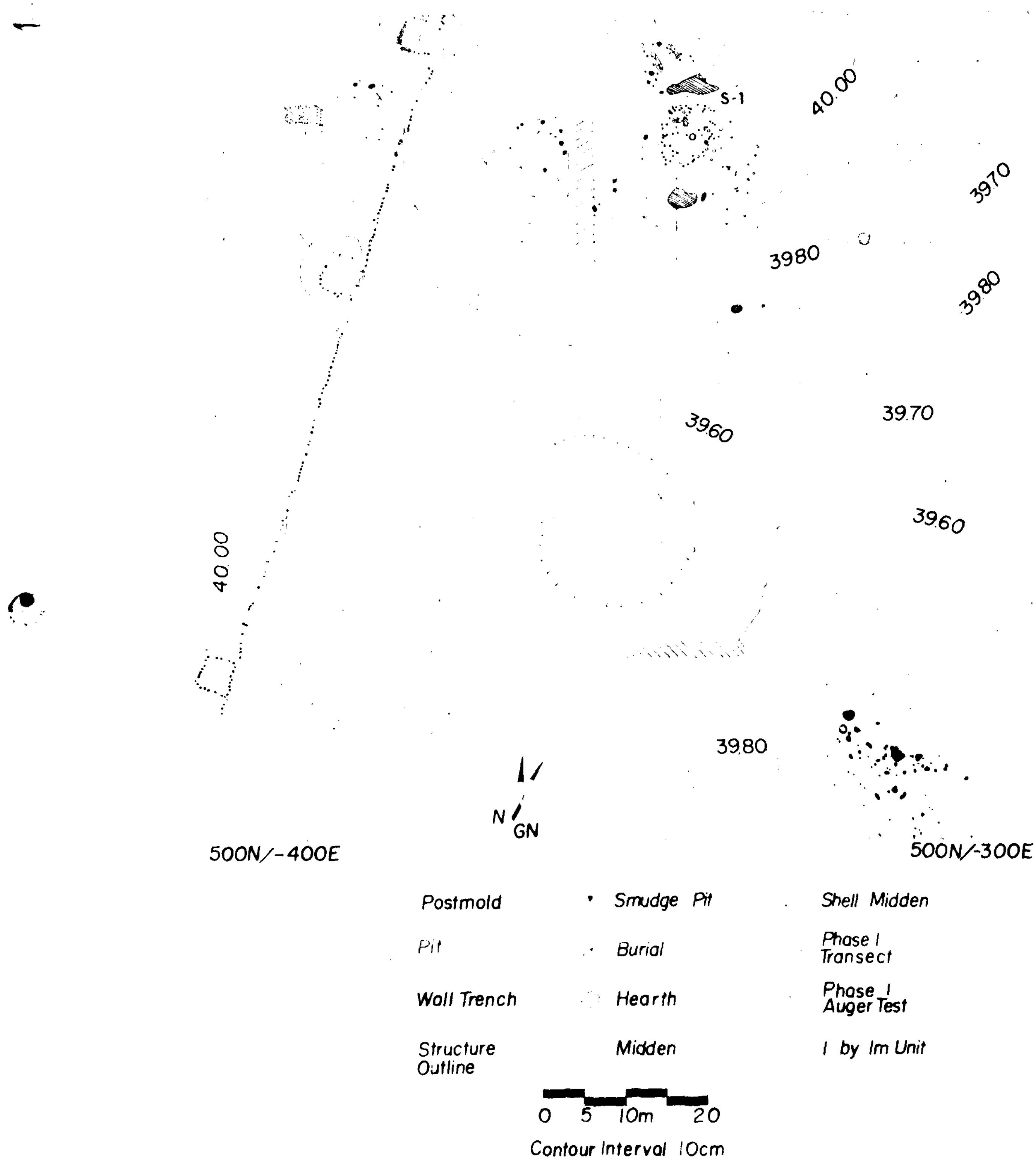

Figure 17. General excavation plan of Hectare 500N/-400E.

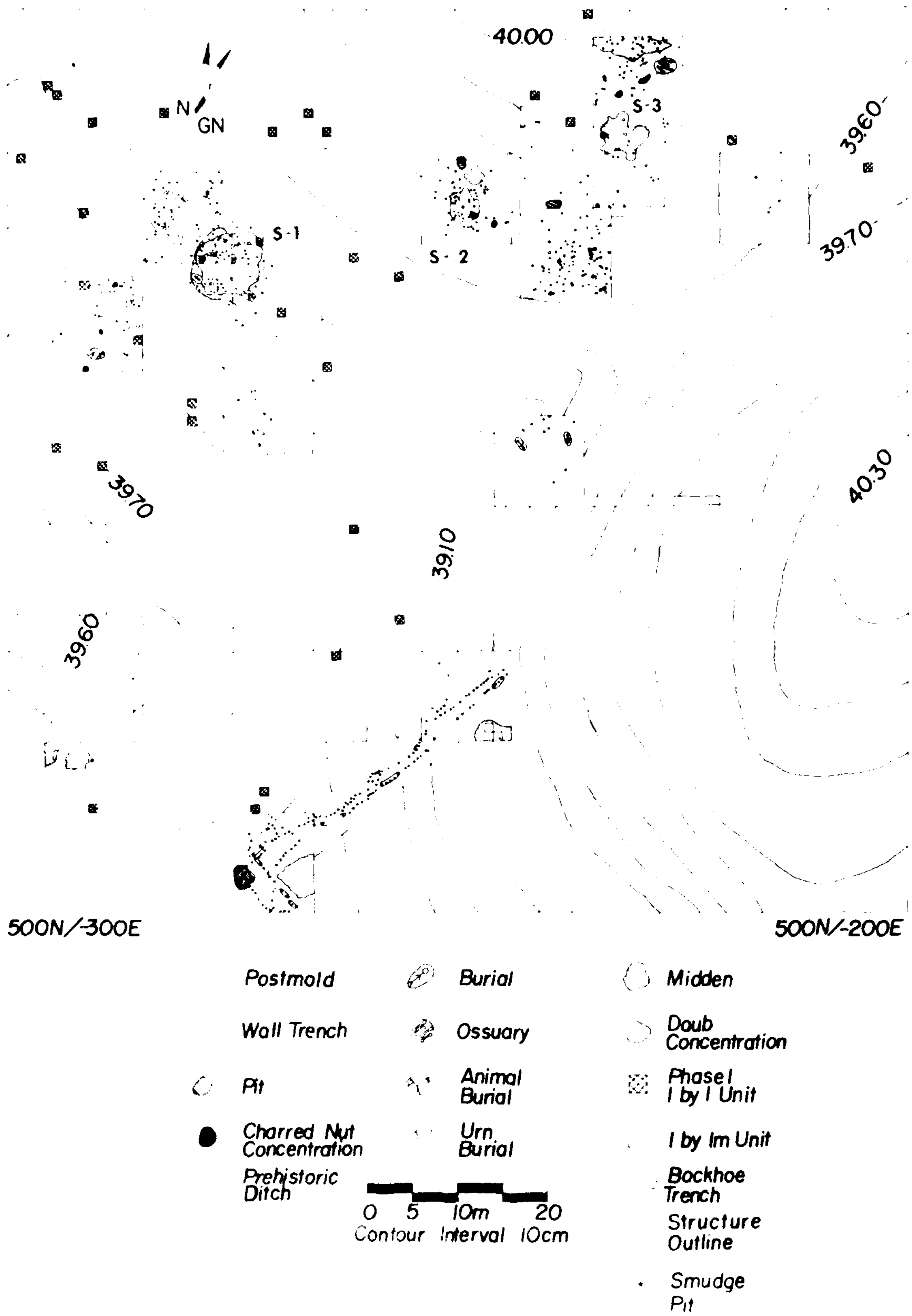

Figure [illegible]. General excavation plan of Hectare 500N/-300E.

a Summerville I palisade segment in the southwest corner; a midden near the mound; and an extensive Summerville IV component in the northeast corner of the hectare.

Two superimposed structures and six burials, several pits, and scattered postmolds were located in units centered on point 566N/-280E. All these features can be placed in the Summerville I period except the daub cap over S-1 which must be assigned to the Summerville IV period.

A thirty-five meter segment of the interior palisade cut across the south central portion of this hectare. This palisade changed course from west to north just as it crossed the boundary between 400N/-300E and 500N/-300E. Based on the data at hand, this palisade seems to have enclosed the mound.

A complex, stratified midden and superimposed buried soils were located near the flanks of the mound. Two burials were found in the upper zone of this deposit. A deep stratigraphic test trench was cut through this midden and was carried eastward into the margins of the mound.

A major protohistoric component was located in the northeast quadrant of the hectare. Two amorphous, ill-defined structures (S-2 and S-3) and several pits were the major elements in this component. An urn burial was associated with the easternmost building (S-2), and an ossuary was located approximately 5 m northeast of this structure. At least 43 individuals were interred in this pit.

<u>500N/-400E</u>

Twenty 10 by 10 m test units, four extensions, and a trench 85 m long and up to 8 m wide which encompassed the palisade and three bastions were excavated in this hectare (Figure 17). A total area of 2,370 m^2 was excavated. Several of the 10 by 10 m units, especially those in the center of the hectare, proved to be sterile. The remaining units can be divided into four groups: 1) a multicomponent midden in the northwest corner of the hectare; 2) the palisade and three bastions in the western part of the hectare; 3) a structure and several large pits in the north central part of the hectare; and 4) a concentration of small pits in the southeast corner of the hectare.

The scatter of pits near the border of Hectare 400N/-400E all have ceramics that suggest a Summerville II-III date. Furthermore, they seem to be associated with the Summerville II structure and burials in the northeast corner of Hectare 400N/-400E.

A single large circular structure (S-1) flanked by two large pits was located in a 400 m^2 area in the north central part of the hectare. The ceramics associated with the structure gave a Summerville I chronological assignment; the ceramics found in the large pits can be placed in the Summerville II and IV periods. No artifacts were associated with any of the three burials in this complex.

An 85 m segment of the outermost palisade cut across the western portion of this hectare. This palisade was clearly of Summerville I vintage.

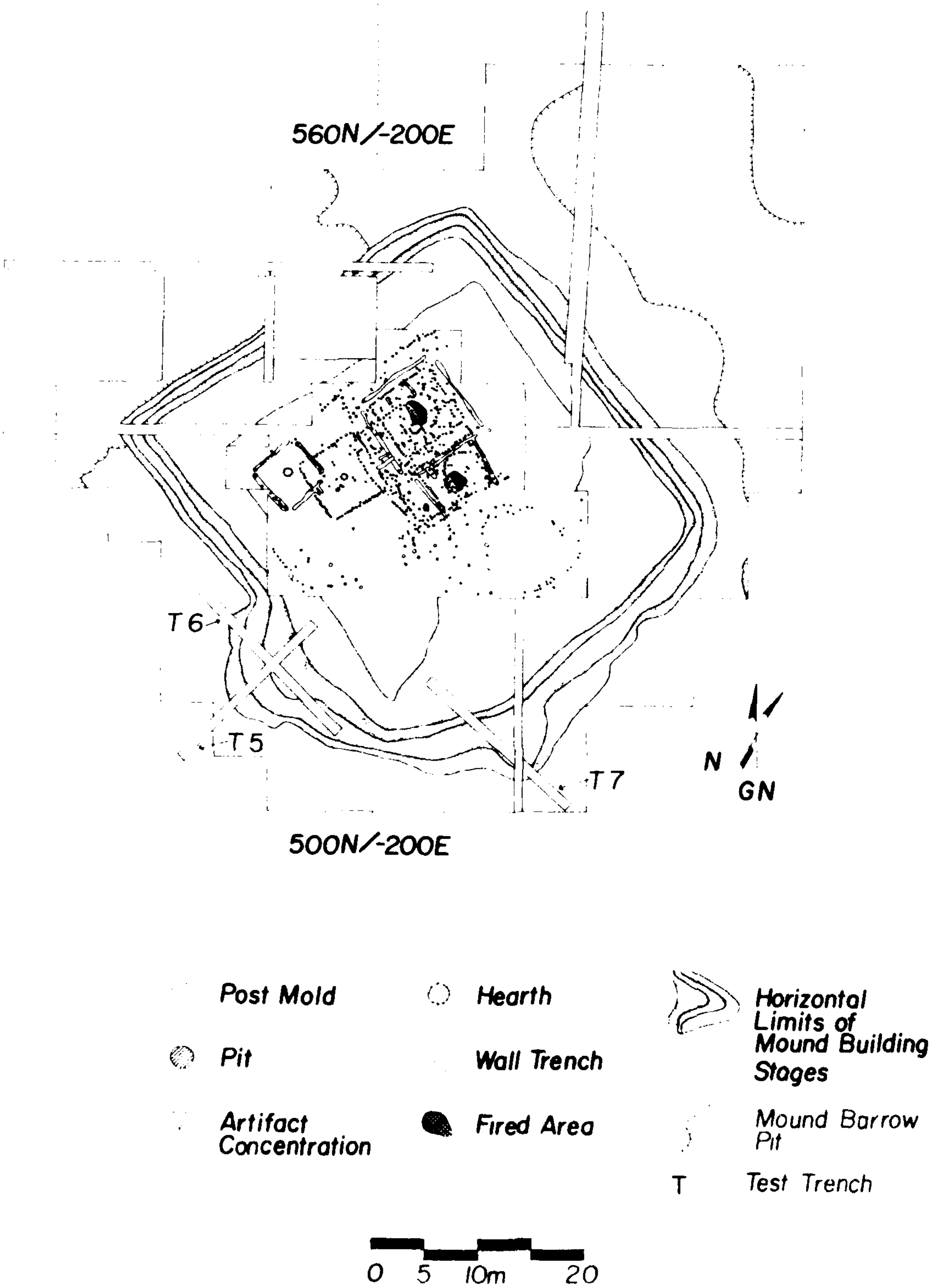

Figure 15. Structures in the pre-mound surface.

the outlines of two ramps stood out in sharp relief. The alternate bands of sand and clay, of fill and floor, show that the mound grew in three distinct stages. However, only the basal portion of the first stage escaped the bulldozer, and only a few features within this layer survived the leveling. It also became apparent that there were two borrow pits associated with the mound, and it was into these depressions that the mound fill was redeposited in the 1950s.

Once the remnant of the first mound stage had been mapped, it was removed almost completely. Approximately 1 m below this fill a yellow clay layer was encountered. As it turned out, this layer was a clay cap placed over part of a pre-mound complex of buildings (Figure 15). Below this cap there were three or perhaps four structures. In addition, there were two other buildings outside the area covered by the cap but which were clearly part of the pre-mound complex of structures.

The 630 m^2 of excavated area in the pre-mound level encompassed at least six buildings and vestiges of what seem to have been screens or fences around these structures. The stratigraphic relationships among the postmolds, wall trenches, and floors of the structures were sufficiently clear to place them in chronological order. The earliest buildi gs were a small, ca. 4 m diameter structure constructed of single-set posts, wholly contained in a later set of wall trenches, and a 5 m square clay floor bounded by single-set posts and covered by all but one of the later structures. These two buildings may have been contemporary. The next buildings to be constructed were the square, 5 by 5 m wall trench patterns in the westernmost part of the excavation, and the large, 14 by 9 m building, outlined by wall trenches and showing single-set posts as interior supports, which was located in the eastern part of the excavation. These two structures were, like the earlier pair, probably contemporaries. The final building to be constructed was the 5 by 5 m square structure outlined by single-set posts, as well as a rebuilding of the large structure with single-set posts. All of these structures contained ceramics that place them in the Summerville I period. It was at some point during this period that the large structures were capped with a layer of yellow clay, and the construction of the mound began.

The information from excavations along the peripheries of the mound clarified the chronological relationships among the several building stages. Two sets of trenches were cut along and across each ramp, and the stratigraphies in these cuts have confirmed the number of building stages of the mound as a whole. In addition, a large, 5 by 10 m test was excavated across all the building stages and into the borrow pit. The ceramics in each fill and mound face showed that the mound was used throughout the Summerville II-III period.

A total of 4,260 m^2 was excavated to expose the mound and pre-mound surfaces.

<u>500N/-300E</u>

A total of fifteen 10 by 10 m test units, and 1,830 m^2 was excavated in the portions of this hectare not covered by the mound (Figure 16). These excavations can be broken down into four areas: a Summerville I component covered by a Summerville IV component in the northwest corner of the hectare;

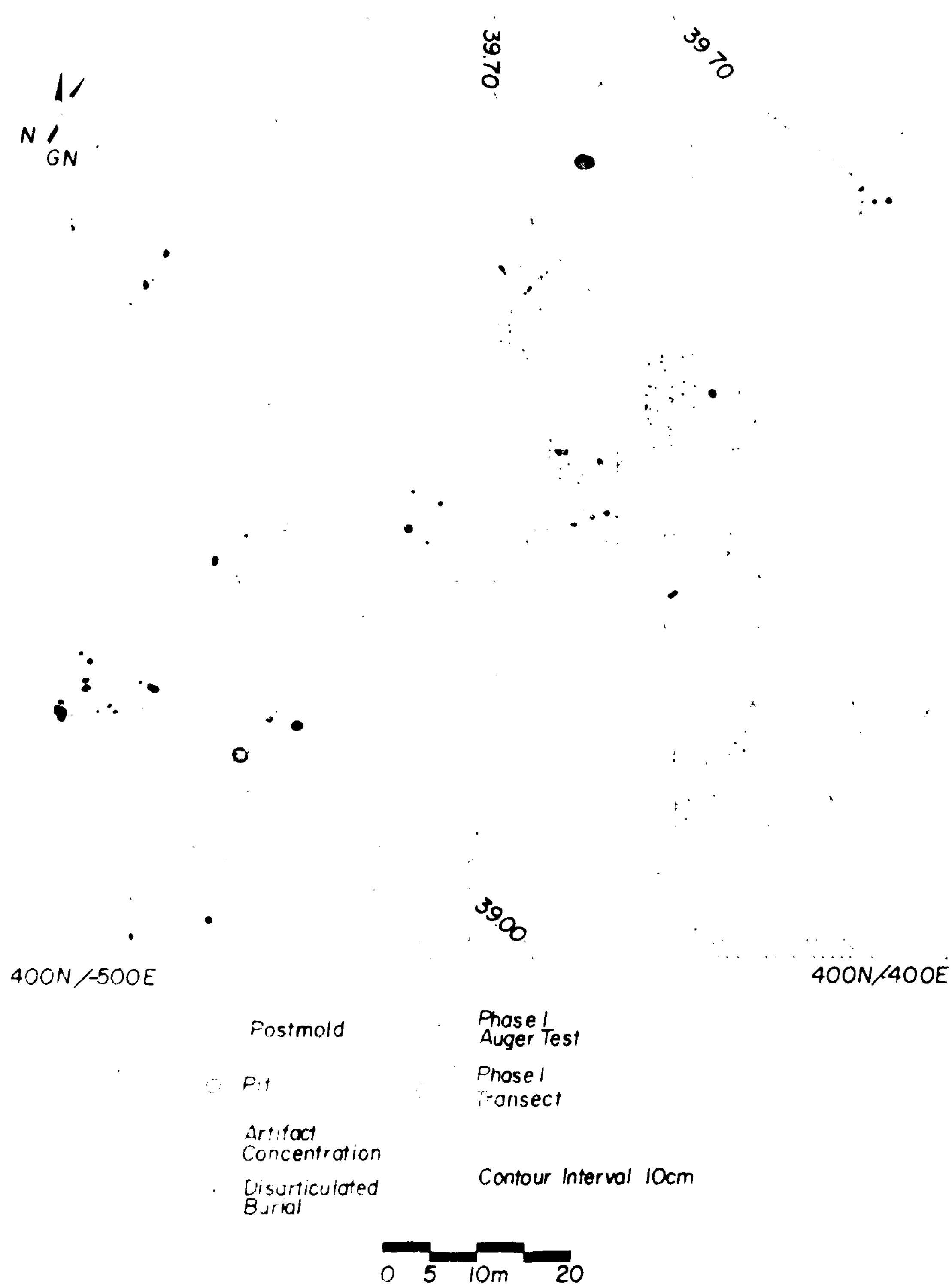

Figure 14. General excavation plan of Hectare 400N/-500E.

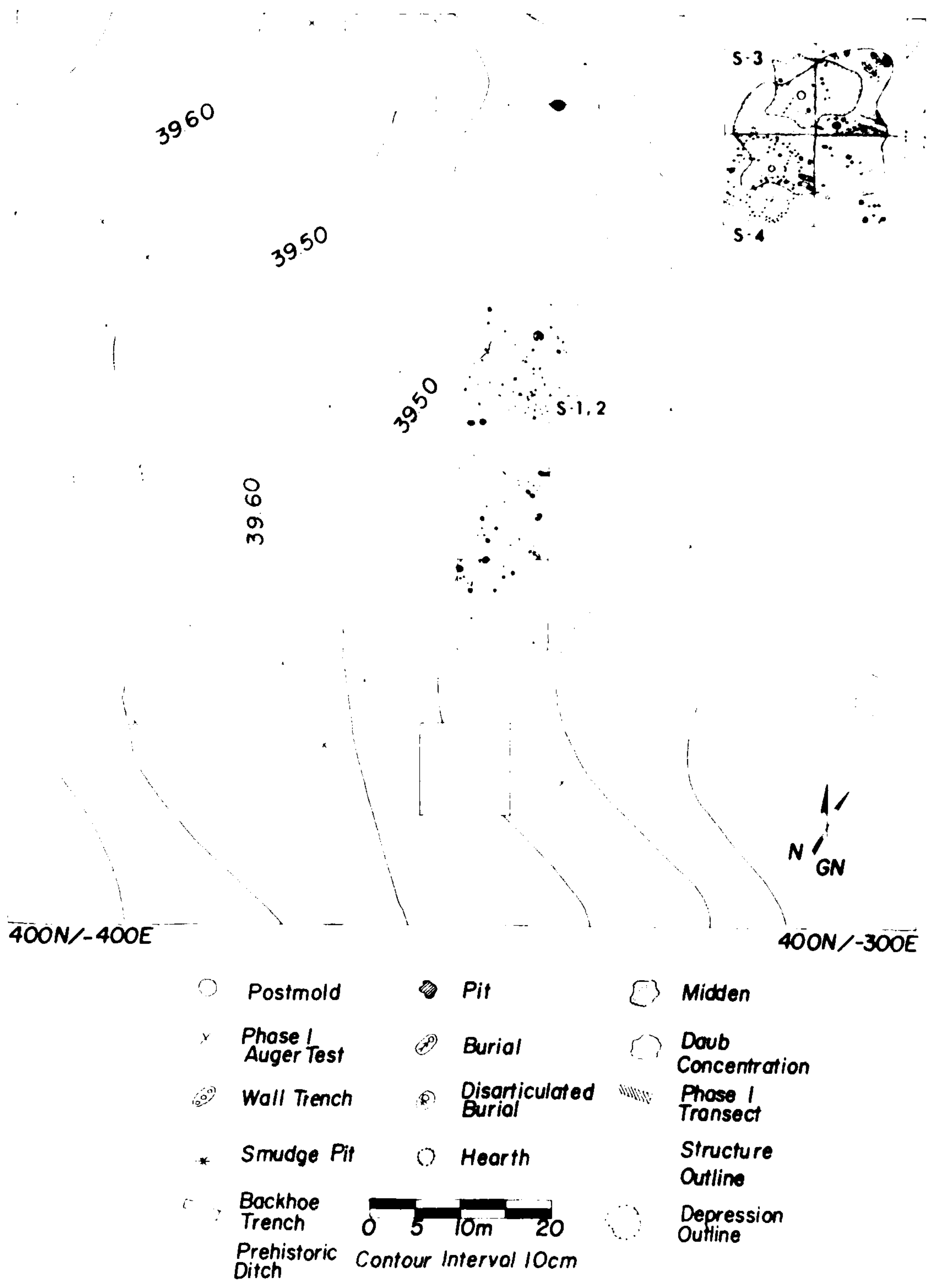

Figure 13. General excavation plan of Hectare 400N/-400E.

Creek Cutoff. It is of note that the building clusters in this hectare were separated by sterile areas devoid of features. It is of additional interest that both structure complexes in this hectare were [illegible]ring the early part of the Summerville phase: all can be placed in the early part of the Summerville II-III period.

The earliest of the structure complexes was composed of a pair of superimposed generally rectangular buildings constructed of single-set posts (S-1,2). These features were located in the center of the hectare, in Unit 458N/-351E. The ceramics associated with the uppermost of the two buildings included Mississippi Plain, Moundville Incised var. Moundville and var. Snows Bend, Mound Place Incised var. Havana, plus Baytown Plain var. Roper, Mulberry Creek Cord Marked var. Aliceville, Solomon Brushed var. Fairfield, and Withers Fabric Marked var. Gainesville. The ceramics in the sub-floor levels of the lower structure, although vastly reduced in number and variety, generally were consistent with the types and varieties found in the level above. A cluster of burials and pits was located about 5 m south of this complex, and the ceramics in these pits were of generally the same types and vintage as those in the structures.

The second structure complex was contained within a 400 m^2 area in the extreme northeast corner of the hectare. Two structures and two burials made up this complex. One structure (S-3) which was irregular in outline, had four center posts set around a fire basin. The other structure (S-4) was a rectangular building outlined by single-set posts which had, in addition, an entryway outlined by two short, parallel protruding wall trenches. Neither structure contained chronologically diagnostic ceramics. However, one of the two burials within the midden that encompassed these structures had a square terraced bowl, a clear indicator of the Summerville II period.

400N/-500E

Twenty 10 by 10 m test units were excavated in this hectare (Figure 14). Several of these units were completely sterile, and only a few had more that a light scatter of features. One unit, 424N/-494E, had a small, dense scatter of Alexander Pinched and Baldwin Plain sand tempered sherds. In addition, several small pits, one of which was packed with almost 1 kg of fire-cracked chert and rock, were found in this unit. Another unit, 478N/-444E, had a Mississippian pit within its borders. Yet another unit, 418N/-464E, contained two Miller III pits. Three burials were found in Hectare 400N/-500E: a skull cap in a small pit in 444N/-445E, an infant in a small pit and an extended adult burial in 464N/-448E. In summary, the level of human activity in the hectare was very low.

A total of 2,000 m^2 was excavated in this hectare during Phases II-III.

500N/-200E and 500N/-300E, 1-Pi-85, the Summerville Mound

After several attempts to explore the remains of the Summerville Mound by stratigraphic cuts, the decision was made to return to the original strategy of exposing the intact portion of the mound in horizontal plan. To that end, the plow zone was removed from the general area of the mound, and 3,475 m^2 were cleaned by hand and mapped. The results were well worth the time expended. The extent and number of building stages were clearly visible, and

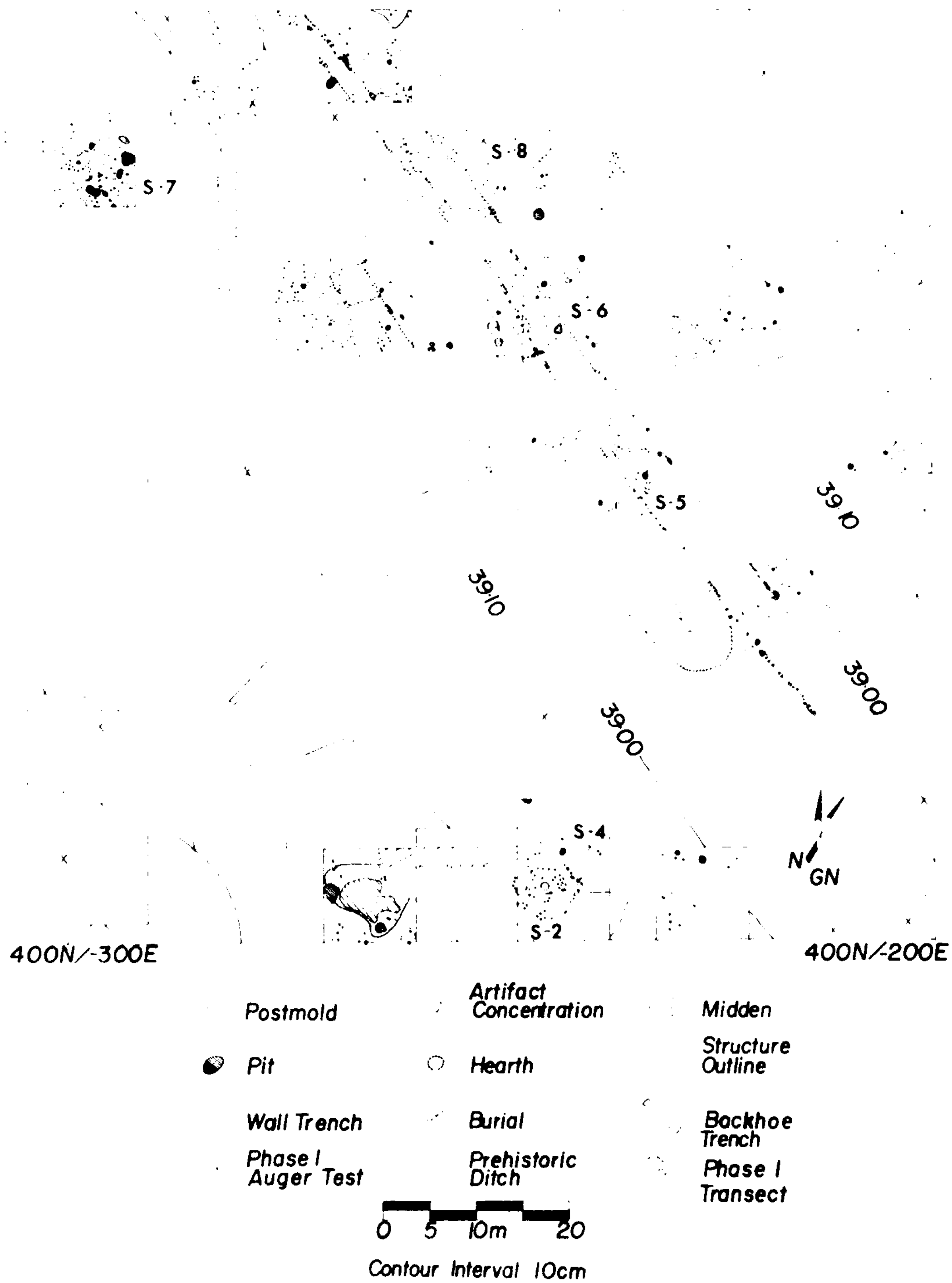

Figure 12. General excavation plan of Hectare 400N/-300E.

main system of fortification, and the protohistoric, Summerville IV ditch was located approximately 50 m southwest of this system. Between the ditch and palisades, three additional structures were located. For the purposes of a brief discussion the hectare can be divided into three areas: the single structure in the northwest corner, the palisade sequence in the center, and the ditch and nearby structures in the southcentral portion of the hectare.

A poorly-defined, assymetrical postmold pattern (S-7) covered by ash and daub was located in test unit 479N/-296E. The remains of a pit of heat-treated chert were found adjacent to this house, and pits with ceramics broadly diagnostic of the Summerville II-III period were found within and nearby the structure.

The palisade system that cross-cuts the hectare from southeast to northwest can be grouped into as many as seven lines. The westernmost, which was built of single-set posts and has at least one bastion (in Unit 463N/-271E) was exposed only along 25 m of it course. The next pair of palisades, which were excavated for almost 100 m of their course, were constructed with a combination of entrenched and single-set posts. There were at least two episodes of rebuilding associated with this fortification system, and four sets of wall trenches can be seen in Unit 477N/-261E. At least one and probably two more lines of posts showed up in profile and in plan about 10 m east of this pair of palisades, in Unit 461N/-229E, but there was no time to trace them through their course. At least the central pair of palisades, and perhaps all of these fortifications turn to the east near the boundary of Hectare 500N/-300E. Thus, at least the palisades built in wall trenches enclosed and were parallel to the southern and western sides of the mound.

At least two, and probably three structures were constructed over the paired palisade line sometime subsequent to its demolition. The two southernmost structures, in Units 446N/-240E (S-5) and 463N/-246E (S-6) were large, irregular, generally round buildings. Both had inclusive pits, and one had inclusive burials. The northernmost structure (S-8) which was more or less rectangular, had an entrance marked by small wall trench segments, but the remainder of the building, like the other two, was constructed of single-set posts. The southernmost structure (S-5) which comprised three superimposed structures, 5A, 5B, and 5C, can be assigned to the Summerville IV period. The other two structures (S-6 and S-8) can be placed in the Summerville II-III period.

The pair of structures in the southern portion of the hectare (S-2 and S-4) can be grouped into a Summerville I period complex. The Summerville IV ditch is located just south of these structures. This ditch was traced westward by a series of slot trenches.

A total of twenty-two 10 by 10 m units, twenty of which were part of the sample, and 2,771 m^2 were excavated in Hectare 400N/-300E.

400N/-400E

A total of [illegible] 10 by 10 m units, nine of which were part of the sample, and one extension were excavated in this hectare (Figure 13). A total [illegible] m^2 was [illegible] excavated. [illegible] this area of excavation, Hectare [illegible]-400E had [illegible] density of burials and structures in the [illegible]

CHAPTER 5. PRE-MISSISSIPPIAN COMMUNITIES

John H. Blitz

The earliest human occupation of the Lubbub Creek Archaeological Locality is identified by lithic debris associated with the Late Archaic Period. The distinctive lanceolate projectile points of the Paleo Indian Period have been discovered as surface finds at several locations in eastern Mississippi and western Alabama, but no such component has been found in the Lubbub Creek Archaeological Locality. It was recognized at the beginning of the research project that the earliest components might be deeply buried beneath the sandy loam alluvium. For this reason, a random sample of deep backhoe excavations throughout the project area was a necessary site testing strategy (Peebles et al. 1979).

No intact Paleo Indian or Archaic deposits were found. On several occasions, a few late Archaic projectile points were recovered as surface finds eroding from the river bank. The negative results of the deep tests permit the conclusion that small groups of hunter-gatherers made sporadic, short-term use of the site during the Archaic Period.

The emergence of the Woodland Period in western Alabama is marked by the appearance of fiber tempered pottery of the Wheeler series. This period of initial ceramic development in the central Tombigbee Valley has been labeled a Transitional Archaic-Woodland Period and the local manifestation defined as the Broken Pumpkin Creek phase (Jenkins, Curren, and DeLeon 1975). Other investigators, citing the almost total lack of knowledge about the settlement system and chronological position of the fiber tempered pottery makers in this area, have argued that the designation of a cultural phase would be premature (Blakeman, Atkinson, and Berry 1976).

An early chronological position for the Wheeler series in the central Tombigbee Valley has been demonstrated at 1-Gr-2, a multicomponent site that contained this ware in the lowest ceramic-bearing stratum (Nielsen and Jenkins 1973; Jenkins 1975). Depression Era excavations on the Tennessee River shell middens first identified the Wheeler series as the initial ceramic ware in northern Alabama (Webb and Dejarnette 1942). A tentative temporal position of 1000 B.C. for the emergence of this ware in central Tombigbee Valley has been proposed by Jenkins (1975). At Lubbub Creek, Wheeler sherds were present over a wide area of the site but concentrated in Hectares 400N/-500E, 400N-300E, and the extreme eastern tip of the bend. However, only one intact feature was discovered that contained fiber tempered sherds (Pit 1, USN 1937).

The sand tempered Alexander series was also present at Lubbub Creek. The spatial settlement and temporal distribution of the people who manufactured this ware are as poorly known as the Wheeler series. In the Tombigbee area, the local manifestation of this ware is the Henson Springs phase (Dejarnette, Walthall, and Wimberly 1975; Jenkins et al. 1975). Although during this phase the Alexander series became the dominant ware, the Wheeler series continued to be manufactured for a short time thereafter. It has been noted that Wheeler sherds are almost always found on major Alexander sites, and the hypothesis has been proposed that indigenous fiber tempered pottery manufacturers in west Alabama adopted the Alexander series as the result of diffusion rather than a population movement or replacement (Dejarnette, Walthall, and Wimberly 1975).

This is an interesting idea, when considering that the distribution of Alexander sherds recovered at Lubbub Creek appears to be similar to the Wheeler distribution. Artifact Concentration 1 (USN 1953) was the only intact Alexander (Henson Springs phase) feature located on the bend. Little else can be said about these Early Woodland components other than that they seem to represent a widely scattered, perhaps seasonal occupation by a small population. There is a possibility that clusters of Early Woodland features exist intact in the extreme eastern portion of the site.

Sometime after 100 B.C., the inhabitants of the central Tombigbee Valley began making sand tempered, fabric impressed, and cord marked pottery. Whereas the preceding Wheeler and Alexander series had southern origins from the Gulf of Mexico, the new fabric impressed and cord marked wares represented a northern influence (Caldwell 1958; Walthall and Jenkins 1976).

The appearance of these ceramics initiated the Miller cultural sequence of west Alabama and east Mississippi. The Miller I phase is characterized by Saltillo Fabric Impressed, Furrs Cord Marked, and Baldwin Plain (Jenkins 1979). These people began the construction of mortuary mounds and participated in the long distance trade networks that occurred in much of the Eastern United States at this time (Cotter and Corbett 1951). During this phase, the plain and cord marked wares increased substantially and almost replaced the fabric marked pottery (Jenkins 1979). While all of these ceramic types were found at Lubbub Creek, the sample is very small compared to the succeeding Miller III phase. No intact Miller I or II phase features were discovered.

The largest pre-Mississippian group to occupy the river bend at Lubbub Creek was the Late Woodland Miller III people. The Miller III phase is defined by the appearance of grog (clay) tempered cord marked and plain pottery representing a local manifestation of the Baytown Period. The principle ceramic types present were Baytown Plain var. Tishomingo and var. Roper, Mulberry Creek Cord Marked var. Aliceville, and Withers Fabric Marked var. Gainesville (Jenkins 1979). For a detailed analysis of the ceramic chronology at the Lubbub Creek Archaeological Locality, the reader is referred to Chapter 3, Volume I.

The subsistence strategies, temporal position, and spatial extent of the Miller III phase are better known than those for preceding phases. The Late Woodland Period in the central Tombigbee Valley was a time of dramatic population increase, a change from earlier settlement patterns, a different strategy in the exploitation of natural resources, and the earliest substantial evidence for the cultivation of corn (Jenkins et al. 1975; Blakeman et al. 1976; Caddell 1979).

DESCRIPTION OF THE PRE-MISSISSIPPIAN FEATURES

The following descriptions provide a brief examination of the pre-Mississippian features in Hectares 300N/-300E and 400N/-500E. Most of these features were moderate to large pits which presumably functioned as food storage facilities. In Chapters 3 and 4, Volume II, the faunal and botanical contents of these pits are analyzed and provide an insight into seasonal subsistence strategies. The excavated features are summarized by provenience in Table 1.

Hectare 300N/-300E

Two 10 by 10 m units in the southwestern portion of Hectare 300N/-300E had the highest concentration of Woodland features found on the site. Plowzone samples from Units 325N/-272E and 303N/-287E contained high percentages of grog tempered ceramics. The presence of a few shell tempered Moundville Incised var. Moundville sherds and the absence of the later Mississippian engraved wares indicated that the Mississippian occupation in this location was early (Summerville I) and not as intensive as in other areas of the bend.

After the plowzone had been removed from Unit 325N/-272E, several postmolds were found, but no structure pattern could be defined. The most significant Woodland feature was Pit 9 (USN 1397). It was circular, 2 m in diameter, and 80 cm deep. The walls of the pit sloped at the top but became more vertical to form a basin shape with a flat bottom. The pit was stratified into three distinct zones. The uppermost zone was a dark loamy soil filled with grog tempered sherds. The middle zone was a thin sandy soil with little organic content. The bottom zone was a dark organic soil similar to the first zone. The associated ceramic material was typical of the Miller III component.

The densest concentration of Woodland features was found in Unit 303N/-287E. A ceramic sample from the plowzone of this unit revealed a majority of grog tempered sherds. A few shell tempered plain and incised sherds indicative of the initial mature Mississippian community, Summerville I, were also present. After removal of the plowzone, 11 large circular pits and two dozen postmolds were exposed. The postmolds did not form any discernible pattern and varied in size and depth. The pits were filled with a highly organic soil that contrasted sharply with the lighter surrounding matrix. Several of the pits intersected each other in a manner that demonstrated that not all pits were in use at the same time.

The ceramic sample recovered from these pits consisted of grog tempered wares associated with the Late Woodland Miller III phase in the Tombigbee Valley. The dominant types are Baytown Plain var. Tishomingo and var. Roper, Mulberry Creek Cord Marked var. Aliceville and var. Tishomingo. A minority type, Withers Fabric Marked var. Gainesville, occurred in several pits (USN 1397, 1598, 1599, 1610) with the dominant types. Most of the refuse deposits in the pits had large quantities of mussel shell, fish, reptile, and mammal bones. The most common botanical remains were carbonized hickory nut (Carya sp.) and acorn shells (Quercus sp.). In addition to the mast crops, tiny bits of corn (Zea mays) were present in two of the pits.

TABLE 1

Summary of Major Woodland Features by Provenience and (USN). Postmolds, 1 by 1 m Tests, and Plowzone Samples Excluded.

Hectare	
300N/-300E	400N/-500E
Pit 9 (1397)	Pit 1 (1937)
Pit 20 (1598)	Pit 25 (2161)
Pit 21 (1599)	Pit 28 (2163)
Pit 22 (1600)	Artifact Concentration 1 (1953)
Pit 23 (1601)	
Pit 24 (1602)	
Pit 25 (1603)	
Pit 26 (1802)	
Pit 27 (1605)	
Pit 28 (1751)	
Pit 29 (1607)	
Pit 30 (1608)	
Pit 31 (1609)	
Pit 32 (1610)	
Pit 33 (1610)	
Pit 34 (1612)	

Pit 20 (USN 1598) was a large circular feature 157 cm in diameter and 50 cm deep. In profile view the pit had straight sides and a flat bottom (Figure 1). Pit 20 was a typical Miller III storage pit. The pit was stratified into four distinct zones. The uppermost layer was Zone A, a dark soil mixed with grog tempered sherds, burned mammal and turtle bone, two triangular projectile points, and a few lithic flakes. Very little mussel shell or charcoal was present. Underlying Zone A was Zone B. This zone was a layer of loamy sand that contained little cultural material. Zone C consisted of a layer of whole and carbonized hickory nuts and acorn shells, sherds, fire-cracked pieces of sandstone, animal bone, and mussel shell. Zone D was a layer of sandy soil with few artifacts.

Pit 21 (USN 1599) was an oval feature 105 by 85 cm and 40 cm deep. In profile view the pit had straight sides and a flat bottom. The upper western portion had slumped inward creating an irregular profile. No stratification was visible within the pit fill. Numerous grog tempered sherds, a sandstone abrader, and a fragment of deer mandible were present. Also recovered were bits of hickory nut and acorn shells.

Pit 22 (USN 1600) was a flat-bottomed, straight-sided, oval pit. It measured 125 by 130 cm and 45 cm deep. The pit was stratified into three clearly defined zones. The uppermost layer, Zone A, was a dark organic soil filled with grog tempered sherds, bits of fired clay, animal bones, and a moderate amount of mussel shell. Zone B, the middle layer, was an ash lens with small pieces of fired clay mixed with sherds, fire-cracked sandstone, and fish and animal bones. Both Zones A and B contained minute quantities of hickory nut shells and acorns. Zone C was a tightly concentrated mass of mussel shell in a dark loamy sand. Most of the pit fill appears to be refuse, presumably deposited after the use of the pit for food storage. The ash and bits of fired clay suggest that the pit either contained a fire at one time or received the secondary debris from a fire. A careful examination of the pit wall failed to find evidence of heating.

Two small pits, Pit 34 (USN 1612) and Pit 23 (USN 1601), were intersected by a later intrusion, Pit 30 (USN 1608). All three were unstratified pits filled with small amounts of grog tempered sherds and debris. Pit 23 contained bits of hickory nuts and acorns.

Pit 31 (USN 1609) was an unusual oblong feature, 203 by 80 cm and oriented along an east to west axis. In profile view the pit had gently sloping sides and a flat, shallow bottom 12 cm deep. The pit fill was a uniform loamy sand. The only contents were a shell tempered Mississippi Plain sherd, a deer bone fragment, and a few lithic flakes. The shell tempered sherd and the extreme shallowness of the feature suggest this was a Mississippian feature partially destroyed by the plow.

Pit 32 (USN 1610) was the largest Woodland feature discovered on the site. It was an oval pit 2.20 by 1.97 m and 45 cm deep. The pit had steep sides, a flat bottom and exhibited a complex internal stratigraphy of eight distinct zones (Figure [illegible]). The uppermost layer, Zone A, was composed of charcoal, mussel shell, fired clay, and fish and animal bones mixed within a dark organic matrix. Zone B was a sandy layer with small quantities of fish bone and mussel shell. Zone [illegible] was beneath Zone A but did not extend across the entire pit. Zone [illegible] contained much of the same material as Zone A but did

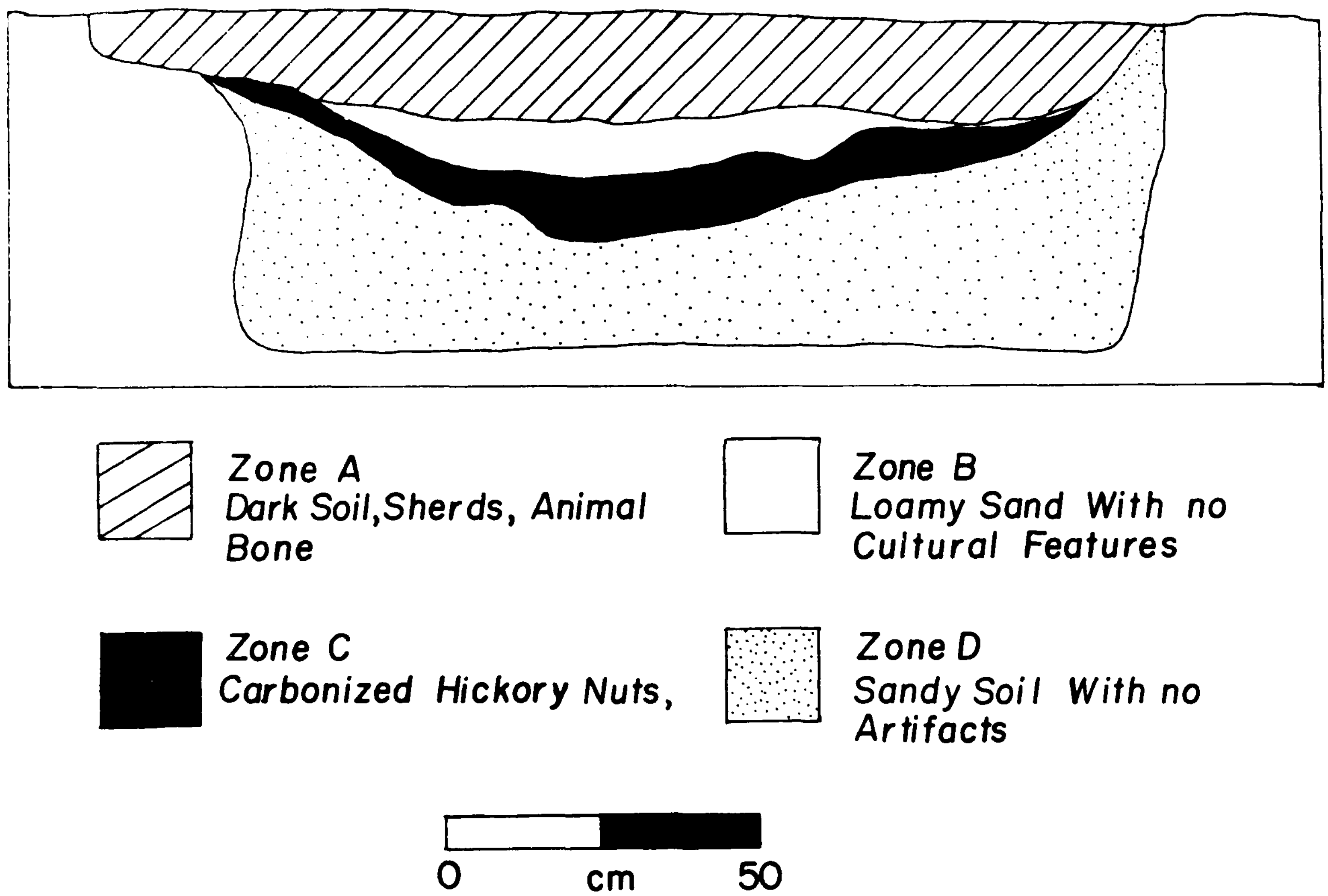

Figure 1. Profile of Pit 20 (USN 1598).

not cover the entire pit. Zone F was a thin deposit of ash, sherds, and burned mussel shell. Beneath Zones C and F were two adjoining strata, Zones G and H. Zone G, a sandy soil with sparse cultural material, was similar in color and texture to Zone B. Zone H was filled with mussel shell mixed with a loamy soil. Zones D and E were the lowest strata. Both contained animal bone mixed with grog tempered sherds.

These various strata undoubtedly represent individual episodes of dumping debris, but the events involved in the deposition remain poorly understood. All zones except Zone C contained small quantities of carbonized hickory nut shell and acorns. At two locations within Zone D were fragmentary pieces of split cane matting. A radiocarbon sample taken from Zone C has dated this feature to A.D. 910 (1040 $\pm$100 radiocarbon years, Beta 1091). This date is consistent with previously published radiocarbon dates for the Miller III phase in the central Tombigbee Valley (Blakeman *et al*. 1976; Jenkins 1979). This pit contained a typical Miller III ceramic sample of grog tempered plain and cord marked sherds and a minor amount of fabric marked sherds.

Another large feature was Pit 33 (USN 1611). This pit was circular, 95 cm in diameter and 70 cm deep. The sides of the pit were vertical at the top but sloped inward at the base to form a flat bottom. Three distinct strata could be identified within the pit fill. Zone A was a dark greasy deposit of mussel shell, sherds, animal bone, and a few lithic flakes. Underlying Zone A was Zone B, a layer of sand devoid of cultural materials. The bottom deposit was Zone C, which contained mussel shell, sherds, and other debris. Zones A, B, and C contained small bits of hickory nuts, walnuts, acorns, and bark. A single cupule of corn (*Zea mays*) was recovered from Zone B.

Hectare 400N/-500E

Another intensively excavated area of Woodland occupation at the Lubbub Creek Archaeological Locality was the southern portion of Hectare 400N/-500E. Plowzone samples from twenty 10 by 10 m units yielded Early Woodland, Late Woodland, and Mississippian pottery. The principal fiber tempered ceramic type present was Wheeler Plain *var. Wheeler*.

One small pit discovered in Unit 402N/-487E was the only intact Wheeler feature excavated on the site. Pit 1 (USN 1937) was a circular mass of clay 76 cm in diameter. The red clay contrasted vividly in color and texture with the surrounding soil. In profile view the pit was egg shaped with one vertical side and one gently sloping side. Beneath the clay was a distinct zone of sand, ash, and gray clay clumps. Several sherds of Wheeler Plain *var. Wheeler* were found at the interface of the red clay and the underlying ash and sand layer.

Apparently this feature did not serve as a food storage pit. The feature may have been a fire hearth from which all evidence of charcoal has been leached. Red clay is not naturally present in the Lubbub Creek Archaeological Locality, but the local yellow clay turns a vivid red when heated. However, the clay was soft and wet in contrast to the hard brick-like consistency of other observed hearths. The function of this feature remains unknown. It is not clear if this feature was ever associated with a structure, but a few random postmolds were found at this level in the surrounding area.

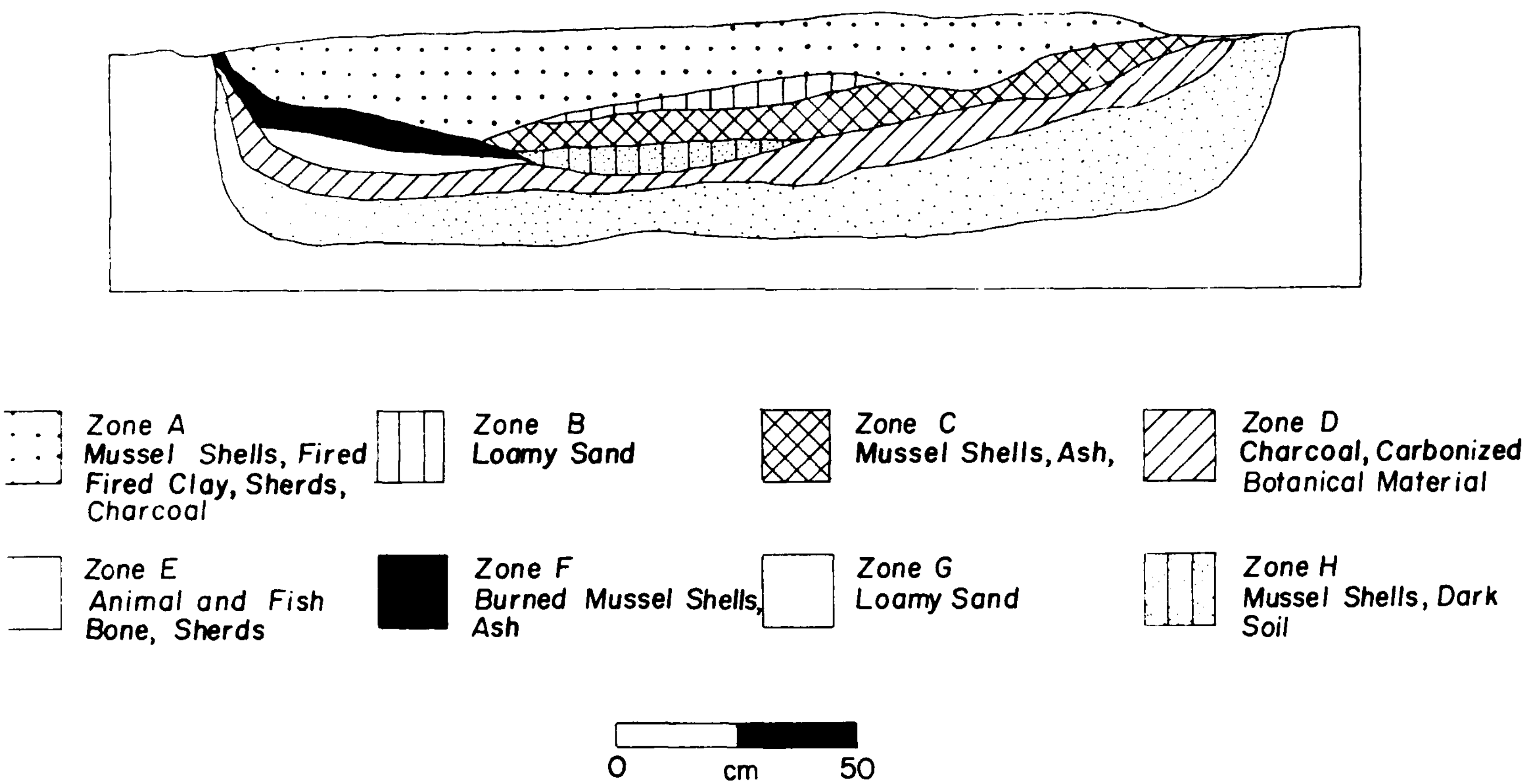

Figure 2. Profile of Pit 32 (USN 1610).

The only intact Henson Springs phase feature excavated was Artifact Concentration 1 (USN 1953) in Unit 424N/-494E. This feature was a fragmented portion of a sand tempered Alexander Incised vessel. The vessel was found on a very shallow stain from which bits of hickory nut shell were recovered. Cultural debris was quite sparse within the unit. Several other small pits in the 10 by 10 m area were recognized by light stains barely perceptible to the eye. They contained a few chert flakes, fire-cracked pebbles and sandstone but no pottery. Eight postmolds were found at this level, but they contained no artifacts. The plowzone sample from this unit revealed an absence of midden or other deposits that would indicate an intense occupation. There were only a few shell tempered or grog tempered sherds. Fiber tempered Wheeler sherds were present, as were a few sherds of Alexander Incised.

Two significant Woodland features were uncovered just beneath the plowzone in Unit 418N/-476E. Pit 25 (USN 2161) was a large Miller III pit. It was circular, 182 cm in diameter and 60 cm deep. The pit was stratified into four zones. Each zone was filled with grog tempered sherds, mussel shell, and three zones contained carbonized hickory nut shells.

Pit 28 (USN 2168) was a large oval pit 130 by 107 cm and 170 cm deep. The pit presented a complex internal stratigraphy of seven distinct zones (Figure 3). Zone A was a dark loamy sand filled with mussel shell. Zone B was a concentrated mass of mussel shell mixed with grog tempered sherds. Zone C had few artifacts. The bottom portion of this zone had intruded into a natural gravel stratum 80 cm below the ground surface. Zone C appeared to be intersected by a later depositional event, Zone B. Zone D was an organic fill with mussel shell and sherds. Zone E contained similar debris. Zones F and G were filled with a small amount of chert, fire-cracked sandstone chunks, and sherds.

The fill in all zones had minute pieces of carbonized botanical remains, particularly hickory and acorn nutshells. Corn kernel fragments were recovered from Zone D. Large quantities of faunal remains were also present. The most numerous vertebrates were deer, squirrel, fish, and turtle. The amount of molluscs recovered from each zone varied widely, with thousands of pieces associated with Zones B and E, while Zones A and G had only one piece each.

SUMMARY

The preceding discussion has described the principal late Woodland features on the Lubbub Creek Archaeological Locality: the large circular trash-filled storage pits. After the removal of the plowzone from the sample units, these pits were easily defined for excavation. The dark organic pits contrasted sharply with the lighter surrounding soil. The pit contents consisted of mussel shell, fish and animal bone, grog tempered sherds, and carbonized hickory nutshells deposited in distinct layers. These layers were formed by individual episodes of refuse dumping, deposited after the pit had served its primary purpose as an underground storage facility for autumn nut crops. This interpretation is based on the faunal and botanical analysis of the pit contents (Chapters 3 and 4, Volume II) and knowledge of Late Woodland subsistence strategies from previous survey and excavation.

The faunal analysis suggested that the pit debris must have originated in

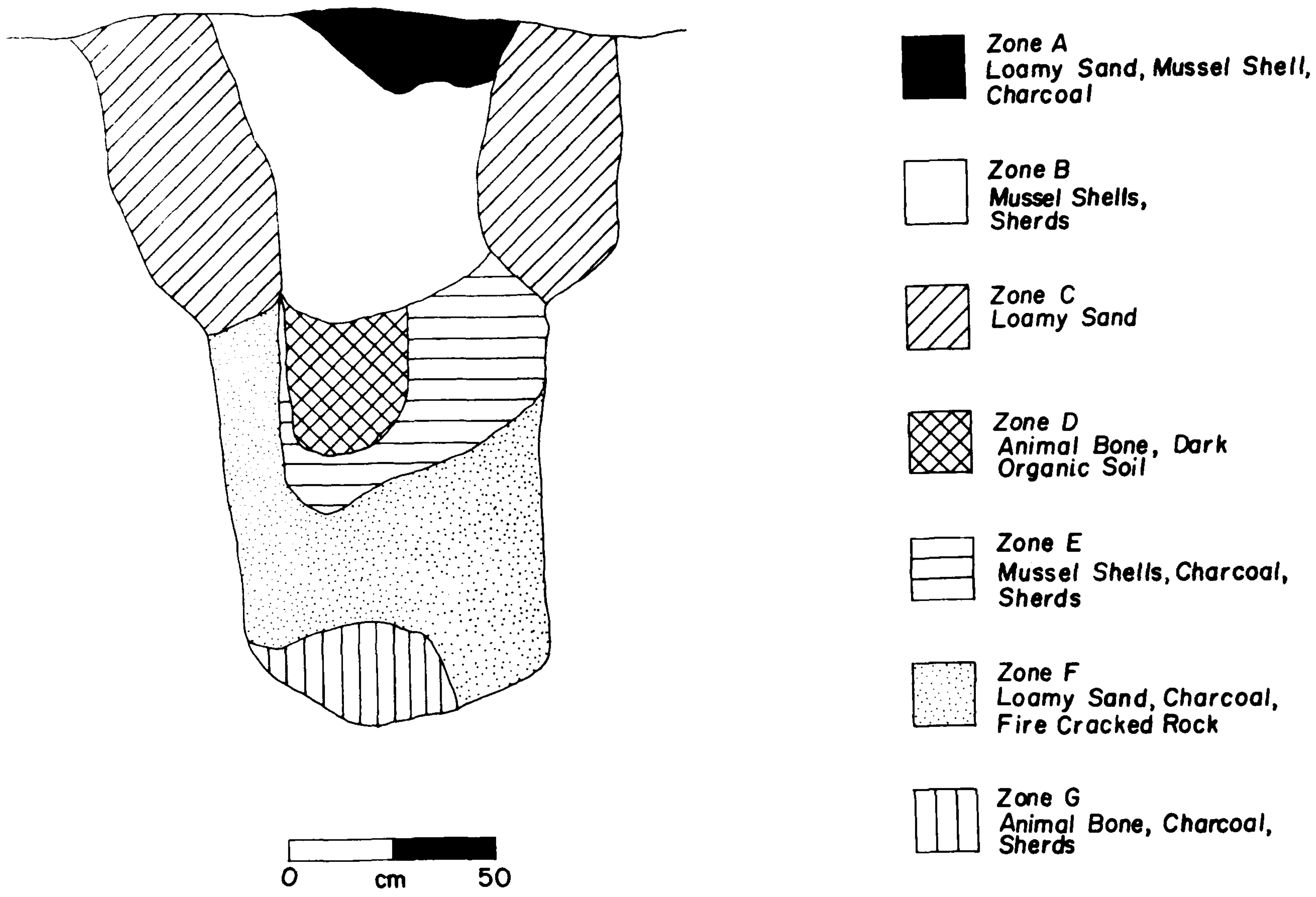

Figure 3. Profile of Pit 28 (USN 2168).

the warmer months of summer and early fall. Warm weather species, such as certain seasonal birds, turtles, and other reptiles, were well represented in the sample.

All large Miller III pits contained small quantities of carbonized hickory nutshells. Black walnut (Juglans nigra) and acorn shells (Quercus sp.) were present in some of the samples. This material may represent a residue of stored nut foods, but since the majority of the nuts recovered from the pits were not whole but carbonized shells, it would appear that this material was deposited into the empty pits along with the mussel shell, sherds, bone, and other trash. One possible reason why the pits contained none of the faunal species normally exploited during the cold months is that this was precisely the time when they were utilized for their primary purpose as storage facilities for nut crops. Later, in the warmer months, the empty pits became convenient receptacles for the remains of meals and other garbage.

It is not known whether any of these pits were used repeatedly from year to year. Several pits (USN 1397, 1611, 1598, 2168) had thin layers of clean sand separating episodes of garbage deposition. Whether this separation resulted from intentional modification for re-use or was a consequence of erosion is difficult to determine.

The contents of the Miller III pits at Lubbub Creek are similar to other Miller III pits in the Tombigbee Valley (Blakeman et al. 1976; Caddel 1979). Indeed, large circular pits are a common feature at many Woodland sites in the Eastern United States. There is little ethnographic information on underground food storage in the Southeastern United States, but underground food storage is widespread in the Middle East, Africa, and Europe (Hall, Haswell, and Oxley 1956). No less an authority than the USDA has recommended a method for storing hickory nuts underground over the winter (USDA 1948:110).

Two pieces of cane matting were recovered from Pit 32 in Unit 303N/-287E. One piece was woven of strips of split cane 1/8 inches wide and the other woven strips of 3/8 inches wide. Similar fragments of cane matting or basketry were recovered from a Miller III storage pit at the Cofferdam site in east Mississippi (Blakeman et al. 1976:72). The cane matting may have been dumped into the pit along with the other garbage or it may have served to protect the nut foods from the moist sides of the pit. The practice of lining the sides of the pit with matting is common in other areas of the world today (Hall, Haswell, and Oxley 1956). Certainly, containers such as cane baskets would have been essential in transporting the gathered nut foods to the site.

Several pits intersected each other. This indicates that not all of the pits were in use at the same time. Although tests indicated that grog tempered ceramics were widespread across the site, the large storage pits were confined to an area in Hectares 400N/-500E and 300N/-300E. Another group of Miller III pits was in Hectare 400N/-0E (1-Pi-33), an area excavated by the University of Alabama in 1977 (Jenkins 1979). The pits clustered along a slightly elevated area on an old terrace. A possible reason the pits were located in these places may have been the soil texture. All of the large Miller III pits were dug in sandy loam soils with a moderate clay content. Soils that were too sandy would not retain the desired pit shape, and those built in clay would retain water. Coles (1973:44) reported the results of pit storage experiments in Britain. The most satisfactory medium for pit construction was sandy loam. Pits dug in clay experienced flooding during the winter.

Little is known about Miller III domestic dwellings. A light to moderate density of postmolds was found near the pits, but no structure patterns could be defined. A possible Miller III structure was discovered in 500N/-300E. A few grog tempered sherds were present in the surrounding soil but not in direct association with the postmolds (see Chapter 7, Volume I). At other Miller sites in Alabama and Mississippi (Cotter and Corbett 1951; Jenkins 1979), large, circular structure patterns without associated daub have been found. Perhaps Miller III structure patterns at Lubbub Creek were obscured by the later building activities of the Mississippians.

During the Late Woodland Period in the central Tombigbee Valley, important changes were taking place in subsistence and settlement patterns. The first appearance of corn (_Zea mays_) in the archaeological record implies a developing agricultural orientation. A new technological achievement, the bow and arrow, indicated by the first appearance of the small triangular projectile point, provided a more efficient hunting weapon. Analyses of faunal remains at other sites along the Tombigbee River have noted a wider variety of species associated with Miller III features than in earlier occupations (Curren 1975; Woodrick 1980).

Site survey along the river has demonstrated that during the Miller III Phase, the number and size of sites substantially increased with a corresponding change in settlement which favored sandy loam soils (Jenkins, Curren, and DeLeon 1975). The largest sites cluster near freshwater mussel beds. Mussels were probably gathered during the late summer and fall when the water level was lowest. In the winter and spring, annual floods would have made collection difficult. If the evidence is accepted that the Miller III people were engaged in rudimentary agriculture, this practice would have demanded their presence on the site for planting in the spring or early summer and the fall harvest. If the large circular pits were utilized for the storage of nut foods to be consumed during the late fall and winter, then the Miller III groups remained at the site through most of the year.

The Late Woodland people's adaptive response to their rich environment had two major emphases: the intensified use of selected natural resources, and the creation of new food producing environments through the cultivation of plants. By the combination of the nutritious autumn nut harvest with the added reliability of cultivated foods, these people gained a greater economic security. These changes in resource exploitation are reflected in the archaeological record, whether as cause or result, by increased population, new settlement patterns, and technological innovation.

The Lubbub Creek Archaeological Locality meets all of the requirements for this type of subsistence base and consequently, it is one of the largest known Miller III sites in the Gainesville Lake. By 1000 A.D., the indigenous peoples of the central Tombigbee Valley were an expanding population, committed to an increasingly sedentary lifestyle that provided a basis for the emerging Mississippian tradition.

CHAPTER 6. SUMMERVILLE I-II FORTIFICATIONS

Gloria Cole and Caroline H. Albright

INTRODUCTION

The Mississippian components in the Lubbub Creek Archaeological Locality had a multi-faceted system of defensive networks. The earliest systems comprise two major wooden palisades. These two systems, which can be assigned to the Summerville I and perhaps the early part of the Summerville II period, have been divided into two spatially separate entities for purposes of discussion: the inner or easternmost palisade system and the outer or westernmost system. Another equally important defense work, a large fortification ditch or "dry moat," which enclosed the Summerville IV community, is discussed in Chapter 10.

This chapter focuses on the inner and outer palisade systems; it will emphasize the description, chronological placement, construction technique, models for calculating total height and length, as well as estimates for post spacing, and functional significance of these systems. It will begin with an in-depth discussion of the inner palisade system, which was composed of five and possibly seven palisade lines located just south and west of the mound. Following this presentation will be a shorter discussion of the long, outer palisade system that was traced in the western portion of the site.

THE EASTERN PALISADES

Introduction

Five palisade lines composed of a continuous series of postmolds and walltrenches, plus ephemeral evidence for two additional palisades, were recovered by the excavations in Hectare 400N/-300E. These palisades, which were parallel to one another and spaced at a distance of 1 to 25 m apart, extended southeast to northwest across the hectare. The location of these palisades, numbered in order of their discovery, is shown in Figure 1.

Two of the palisades (Palisade I and Palisade V) were traced across the hectare boundary to Unit 500N/-291E where both turned sharply to the northeast. The post pattern indicated that the palisades formed a series of rectangular walls which enclosed the Summerville Mound near its northern periphery. These palisades outlined a large plaza-like area which measured more than 135 m on its western side. Assuming that approximately one-fourth of the northern wall was mapped and that the plaza area was symmetrical, the area enclosed by these palisades was approximately 15,500 m^2. Such an

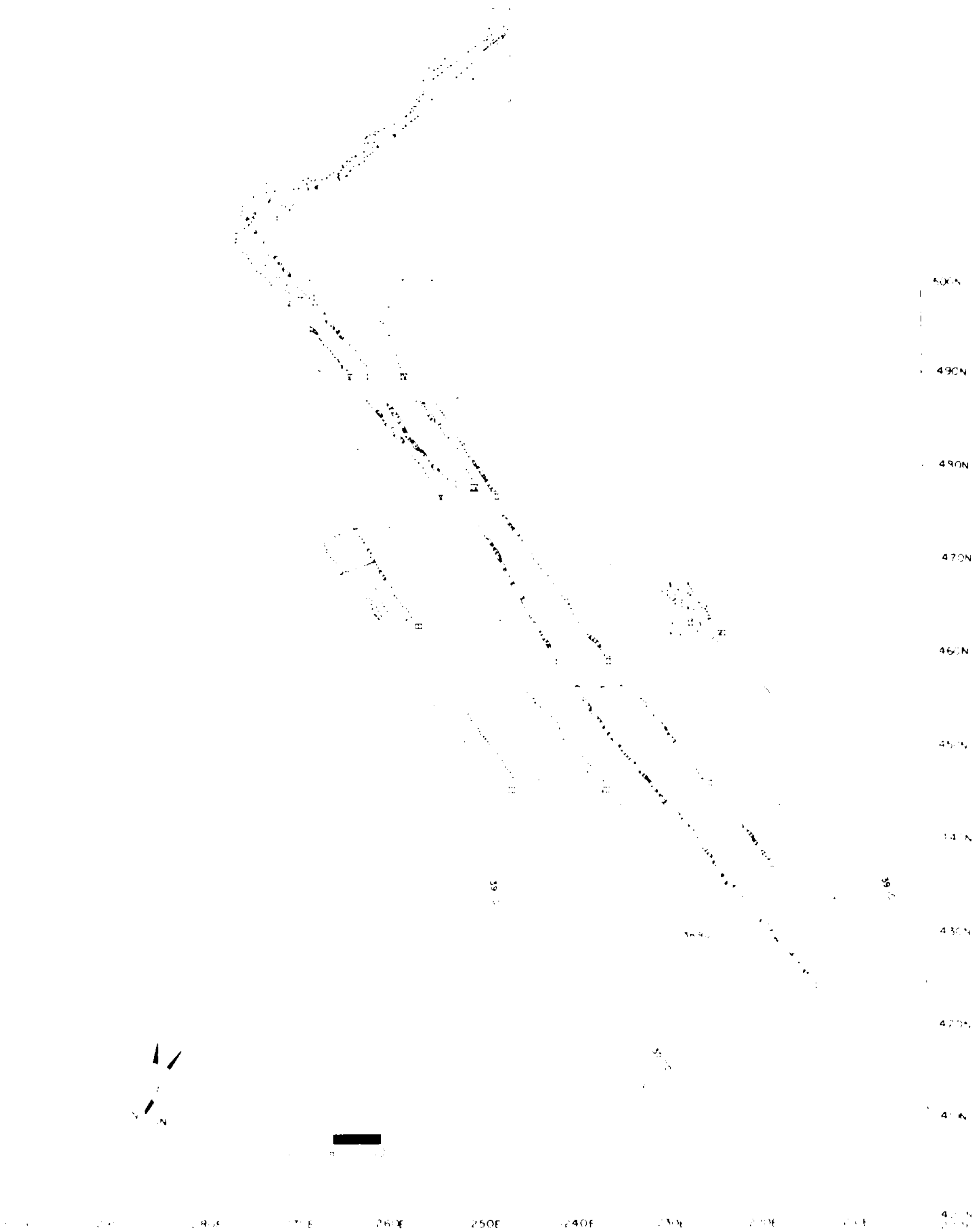

Figure 1. The Eastern Palisades.

surface elevations were compared to beginning elevations for the extreme northern and southern posts to estimate the original surface slope of each of the palisades. The estimated original slope for each of the palisades should reflect the degree to which the topographic depression (shown in Figure 1) influenced the vertical range of the postmold base elevations listed in Table 2. If the vertical range of the postmold base elevations for any palisade is much greater than the estimated original slope, then other factors in addition to the topographic depression may have contributed to the vertical dispersion of the base elevations.

The difference between the vertical span of the postmold base elevations for each of the palisades and the estimated slope should provide an index to the normal base elevation ranges (vertical dispersion) independent of topographic influences, and this measurement should be similar for each of the palisades.

The vertical difference between the minimum and maximum postmold base elevations (from Table 2) and the estimated palisade slope (from Table 1) for Palisades I, II, III, IV, and V is shown in Table 4. The residual difference is the remaining vertical distance spanned by the postmold base elevations independent of the estimated slope. As indicated in Table 4, the vertical span of postmold base elevations, corrected for topographic influences, was 13 cm for Palisade IV, 14 cm for Palisade III, 25 cm for Palisade V, 35 cm for Palisade I, and 38 cm for Palisade II. Two major variables could account for the greater vertical distance spanned by base elevations of Palisades I, II, and V relative to that spanned by Palisades III and IV. First the sample size of Palisades III and IV is relatively small compared to the sample size of Palisades I, II, and V. Second, a greater number of walltrenches were recorded for Palisades I, II, and V than were recorded for Palisades III and IV. The significance of the walltrenches within the palisade postmolds series is described in the following section.

<u>Comparison of Single Set and Wall Entrenched Postmolds</u>

As shown in Table 2, 39 walltrenches were recorded for Palisade I, 12 for Palisade II, 2 for Palisade III, 1 for Palisade IV, and 3 for Palisade V. Comparative data for single set and postmolds set in walltrenches for Palisades I through V are listed in Table 5.

The data in Table 5 show that the mean base elevation for postmolds set in walltrenches was slightly lower (by approximately 10 cm) than the mean base elevation for single set posts in both Palisades I and II. This slightly lower mean base elevation of postmolds set in walltrenches reflects the effects of the topographic depression. All of the Palisade I postmolds which extended into the topographic depression were set in walltrenches, and all of the Palisade I postmolds set in walltrenches which had lower base elevations than the single set posts were in Unit 433N/-220E and within the topographic depression (see Figure 1).

Within Palisade I, base elevations for single set posts (N=43) ranged between 37.97 m and [illegible] m with a mean of 38.16 m AMSL (s=0.13 m). Palisade I single set postmolds spanned a vertical distance of 40 cm. Base elevations for Palisade I postmolds which were included in walltrenches (N=112) ranged between 37.57 m and 38.55 m, and the mean was 38.05 m (s=0.22 m). Palisade I posts extended over terrain slightly upslope from Palisade VII, and the Palisade I postmolds were slightly downslope from Palisade VII, the base elevation comparison does show that Palisade VII and Palisade III base elevations were similar and that both of these constructions appear to be relatively later than Palisade I in the sequence of events within the palisade zone of Hectare 400N/-300E.

Several observations can be made with the data outlined in this section. First, walltrenches were present in all of the excavated palisades, but no palisade consisted entirely of posts set in walltrenches. Second, the mean postmold depths, which ranged from 19 cm for Palisade IV to 39 cm for Palisade [illegible], reflect no apparent consistency for the various post series, and this inconsistency in the recorded depths suggests that the depths reflect preservation and land modification, rather than the original depth of intrusion of the palisade posts. Third, Palisade III was the only one of the Eastern Palisades for which a bastion was defined, and there was some evidence of a gate or entryway near the curtain wall just south of the bastion. The presence of the gateway and bastion could indicate that Palisade III was functionally distinct from the other palisades which had no bastions associated along their excavated courses.

The base elevations described in this section suggested a sequence of construction from Palisades I and II, to Palisades IV and V, to Palisade III. There was little difference in the base elevations of Palisades I and II, or between Palisades IV and V, but these appeared to form distinct sets of earlier and later constructions. The mean base elevation of Palisade III postmolds was higher than Palisades IV and V, but at least some of this difference is probably due to the construction of Palisade III at a higher elevation than the other palisades. The palisade status of Palisade VII is uncertain because of the small sample and because approximately half of the postmolds assigned to this palisade were residual shallow postmolds which did not conform to the Structure 5A post pattern and only vaguely suggest a series in the Structure 5 area (Figure 1). The data for Palisade VII postmolds, however, provided a link for the comparison of Palisade III with the remaining Palisades in Hectare 400N/-300E. Because Palisade VII posts in Unit 446N/-250E were encountered at the same level as Palisade III posts in the same unit, and because the mean base elevations of Palisade III posts were slightly higher (by 7 cm) than the Palisade VII postmolds, Palisade III would appear to belong to the later series of palisade constructions. The comparison of Palisade III base elevations with Palisade I base elevations for [illegible] between [illegible] and [illegible] also indicated much higher base elevations for [illegible] relative to Palisade I postmolds.

The [illegible] model of palisade sequences will be reevaluated as local [illegible] palisade [illegible] are compared with base elevations of structure [illegible] section. In the following section, factors which may [illegible] on the base elevations, used here as primary data, are discussed in greater detail.

Evaluation of Method

Because base elevations were used as a primary source of data in the analysis of the Eastern Palisades, it is important to delimit the factors which influence variability in these data. In an earlier section, present

TABLE 3

Postmold Base Elevations and Depths, Palisades I and II, Unit 519N/-354E.

	N	Range	Mean (m)	s (m)
Palisade I				
Base elevation	10	38.28-38.66	38.50	0.14
Depth	10	0.23-0.67	0.43	0.13
Palisade II				
Base elevation	17	38.59-38.87	38.71	0.43
Depth	17	0.10-0.36	0.21	0.07

to the initial definition of Palisade V in Unit 477N/-261E (see Figure 1).

Within Hectare 400N/-300E, the mean base elevations of Palisades IV and V postmolds were less than the mean base elevation of Palisade II postmolds (8 cm less for Palisade IV and 4 cm less for Palisade V), and as a group the base elevations of Palisades III, IV, and V appear as a distinct set in comparison to Palisade I and II base elevations. In addition to the base elevations of Palisade III postmolds which were higher than Palisade IV and V postmolds, the depth below the modern ground surface at which postmolds were detected for the three palisades gives some further indication that Palisade III may be later than Palisades IV and V. Palisade III postmolds were encountered at the base of the plowzone within Level 1 at 38.78 m AMSL in Unit 446N/-250E, 25 cm below surface, and at 38.87 m AMSL in Unit 463N/-261E, 30 cm below surface. Within Unit 477N/-261E, Palisade IV postmolds were found at 38.66 m AMSL, 46 cm below surface, and Palisade V postmolds in the same unit were found at 38.72 m AMSL, 40 cm below surface.

Evidence for the existence of Palisade VI (Figure 1) consisted of 47 postmolds encountered within the 6 by 6 m area encompassed by Unit 462N/-229E (Extension 14, USN 8181). These postmolds were adjacent to a single postmold within the stratigraphic trench cut perpendicularly to Palisades I and II. Some of the postmolds in Unit 462N/-229E appeared to be in series, and they were parallel to the previously excavated palisades (Figure 1). The postmolds in Unit 462N/-229E were encountered at 38.72 m AMSL, at a depth which was 38 cm below the present surface. Because none of the Palisade VI posts were excavated, base elevation data was not obtained. The surface in the area adjacent to the mound, where Unit 462N/-229E was located, had been bulldozed during the land leveling which took place prior to the Lubbub Creek excavations. Therefore, the depths of the postmolds below the present ground surface in this area may be considerably less than if measurements had been made prior to this modification.

Eighteen postmolds were assigned to Palisade VII and appeared to form a continuous series over a distance of 12 m in Units 446N/-240E and 446N/-250E parallel to previously defined Palisades I and III. Palisade VII postmolds within Unit 446N/-250E were encountered at the same level as Palisade III postmolds in the same unit. Base elevations of Palisade VII postmolds ranged between 38.36 m and 38.62 m AMSL, and their mean base elevation was 38.45 m AMSL. Palisade VII postmolds intruded to an average depth of 10 cm below the base of plowzone. Surface elevations above Palisade VII ranged from 38.89 m AMSL at 446N/-234E near the southernmost post assigned to this palisade, to 39.05 m AMSL at 456N/-240E near the northernmost post, which indicates that the disturbed zone above Palisade VII was 60 cm deep near the southern limit and 44 cm deep near the northern limit of posts assigned to this palisade. This area was apparently filled during the surface modification of the project area prior to the Lubbub Creek excavations, and it was clear that the disturbed zone was exceptionally deep in this part of the site.

The Palisade VII postmold series was parallel to Palisades I and III at a distance of 3.5 m and 7 m respectively. The mean base elevation of Palisade VII postmolds was 49 cm above the mean base elevation of Palisade I postmolds over the distance between 446N and 456N (see Table 5), and 7 cm less than the mean base elevation of Palisade III postmolds which extended from 446N to 473N. Although the topography in this area would indicate that Palisade III

Palisade V included 67 postmolds, 15 of which were within walltrenches. Two walltrenches were excavated and a third intruded into the west wall of Unit 490N/-266E (Figure 1). Palisade V postmold base elevations ranged between 38.27 and 38.60 m, and the mean was 38.48 m AMSL (s=0.07 m), only 4 cm higher than that of Palisade IV postmolds, but 42 cm above the mean base elevation of adjacent Palisade I postmolds. The mean depth of Palisade V postmolds was 19 cm (s=0.07 m).

At the time of excavation, Palisades IV and V appeared to be rebuilding episodes of Palisades II and I because all four palisade lines were encountered at the same level in Unit 477N/-261E. The base elevations, however, indicated that Palisades IV and V represented distinct and later episodes of palisade construction relative to Palisades I and II. When the mean base elevations for Palisades I, II, IV, and V were computed for the restricted area between 477N and 487N to determine their sequential relationship to Structure 8, its post pattern was also encountered at the same level as the four palisades. (This analysis is discussed in a later section.) The comparison of palisade postmolds between 477N and 487N indicated a mean base elevation of 38.16 m AMSL (s=0.11 m) for Palisade II, 38.22 m AMSL (s=0.09 m) for Palisade I, 38.45 m AMSL (s=0.03 m) for Palisade IV, and 38.47 m AMSL (s=0.07 m) for Palisade V. Thus there was a 29 cm difference between the mean base elevations of Palisades II and adjacent Palisade IV postmolds, and a 25 cm difference between Palisade V and the adjacent Palisade I postmolds. Since this difference is much greater than the difference between any comparison of the base elevation means for Palisades I and II, which clearly represent a distinct series, the interpretation of contemporaneity between Palisades II and IV, and Palisades I and V must be abandoned.

The course of Palisade IV north of 486N could not be determined during the excavations, and Palisade II also was not found north of 486N. Palisade V, however, was excavated west of and parallel to Palisade I in all sample units north of Unit 477N/-261E, the point at which Palisade V was first defined. Both Palisades V and I changed direction to the northeast in Unit 500N/-281E and were traced by means of backhoe trenches to Unit 519N/-254E. Unit 500N/-281E and the palisades within the backhoe trenches were mapped but not excavated. Two palisades were excavated in Unit 519E/-254E independently by a different crew from that which excavated the palisade series in Hectare 400N/-300E. The two palisades in Unit 519N/-254E were labeled Palisade I (USN 9559) and Palisade II (USN 9560). The base elevations and depths of Palisades I and II in Unit 519N/-254E are shown in Table 3. The base elevations of Palisade I postmolds in Unit 519N/-254E ranged between 38.28 m and 38.66 m, and the mean was 38.50 m AMSL (s=0.14 m). The mean depth of Palisade I postmolds in this unit was 43 cm (s=0.13 m). The base elevations of Palisade II postmolds in Unit 519N/-254E ranged between 38.59 and 38.87 m, and the mean was 38.71 m AMSL (s=0.43 m). The mean depth of Palisade II postmolds in this unit was 21 cm (s=0.07 m). The difference between the mean base elevations of Palisades I and II in Unit 519N/-254E was 21 cm, which was similar to the difference between Palisade I and V postmolds (25 cm) within Unit 477N/-261E in Hectare 400N/-300E. The base elevations and depths of Palisade I postmolds in Unit 519N/-254E indicated that this palisade was a continuation of Palisade I in Hectare 400N/-300E, and the same data for Palisade II in Unit 519N/-254E indicated that this palisade is continuous with Palisade V in Hectare 400N/-300E. Thus the post pattern of Palisade V was located west or north of Palisade I in all sample units excavated subsequent

Palisade II was represented by 83 postmolds and 12 walltrenches, and 44.6 percent (N=37) of the postmolds were set in walltrenches. Base elevations were obtained for all the postmolds within this palisade (N=83). The base elevations ranged between 37.40 m and 38.48 m, and the mean base elevation was 38.07 m AMSL (s=0.22 m). The average depth of Palisade II postmolds was 39 cm (s=0.11 m). The mean base elevation of Palisade II postmolds was not significantly different from the mean base elevation of Palisade I postmolds. Like Palisade I, Palisade II was built over terrain which extended into the topographic depression, but within the depression Palisade II postmolds may have been originally on slightly higher ground than Palisade I postmolds (see Figure 1).

Palisade III, in Units 463N/-261E and 463N/-271E, consisted of uniformly spaced single set posts (N=66) which outlined one bastion and a curtain wall. A parallel series of 18 postmolds, which may be the remnants of a gate or entryway, was mapped just west of the Palisade III curtain wall in Unit 463N/-261E (Figure 1). Base elevations were obtained for 42 of the Palisade III postmolds, and the remainder were mapped but not excavated. Two walltrenches were recorded and one was excavated for this palisade. The excavated walltrench included four postmolds. No postmolds were discerned in the remaining walltrench in the southwest corner of the bastion (Figure 1). The base elevations of Palisade III postmolds ranged between 38.34 m and 38.68 m, and the mean base elevation was 38.52 m AMSL (s=0.07 m), 46 cm above the mean base elevation for Palisade I postmolds. The average depth of Palisade III postmolds was 24 cm (s=0.05 m).

The post line of Palisade III is located between the 39.00 and 39.10 m AMSL surface contour elevations and probably was constructed on higher ground than the sections of Palisade I and II which extended into the topographic depression. To correct any discrepancies in the comparison of base elevations due to topographic differences, Palisade III base elevations were compared with the restricted section of Palisade I postmolds between 459N and 475N, a location where the original surface elevations for both palisades should have been similar. The base elevation of Palisade I postmolds between 459N and 475N ranged between 37.97 and 38.34 m, and the mean base elevation was 38.13 m AMSL (s=0.12 m). For this restricted comparison, which was intended to correct for the topographic differences between Palisades I and Palisades III, the mean base elevation of Palisade III postmolds (38.52 m AMSL, s=0.07 m) was 40 cm above the mean base elevation of the Palisade I postmolds between 459N and 475N. Provided that the depositional history along the two post lines was similar, a difference of 40 cm or more between the mean base elevations of Palisades I and III should indicate that the Palisade III postmolds were set much later than those of Palisade I. No cultural features were encountered above Palisade III postmolds, and a substantial history of subsequent activities has been documented subsequent to Palisade I.

Twenty-two postmolds were recorded for Palisade IV, five of which were included within a single walltrench. Postmold base elevations for Palisade IV ranged between 38.38 m and 38.51 m, and the mean was 38.44 m AMSL (s=0.04 m), 38 cm above the mean base elevation of Palisade I postmolds and 45 cm above the mean base elevation for Palisade II postmolds which were directly adjacent to Palisade IV on the east (Figure 1). The mean depth of Palisade IV postmolds was 17 cm (s=0.04 m).

TABLE 2

(Continued)

	N	Range (m AMSL)		Mean (m)	s (m)
Palisade IV: Walltrenches	1				
Discovery elevation	1	38.59	-	-	-
Base elevation	1	38.44	-	-	-
Depth	1	.15	-	-	-
Length	1	1.00	-	-	-
Width	1	.32	-	-	-
Palisade V: Postmolds	67				
Radius	67	.06	.15	.09	.02
Discovery elevation	67	38.63	38.87	38.72	.07
Base elevation	42	38.27	38.60	38.48	.07
Depth	42	.08	.46	.19	.07
Palisade V: Walltrenches	3				
Discovery elevation	2	38.64	38.66	38.65	.01
Base elevation	2	38.36	38.46	38.41	.07
Depth	2	.18	.30	.24	.08
Length	2	1.10	3.15	2.12	1.45
Width	2	.32	.34	.33	.01
Palisade VI: Postmolds	47				
Discovery elevation	-	-	-	38.72	-
Palisade VII: Postmolds	18				
Radius	18	.05	.12	.07	.02
Discovery elevation	18	38.49	38.69	38.58	.07
Base elevation	14	38.36	38.62	38.45	.07
Depth	17	.09	.16	.11	.03

TABLE 2

Palisades I through VII: General Data.

	N	Range (m AMSL)		Mean (m)	s (m)
Palisade I: Postmolds	163				
Radius	161	.05	.20	.09	.02
Discovery elevation	163	37.91	38.88	38.47	.26
Base elevation	133	37.57	38.55	38.06	.21
Depth	133	.10	.65	.33	.12
Palisade I: Walltrenches	39				
Discovery elevation	36	37.94	38.87	38.38	.20
Base elevation	32	37.50	38.50	37.99	.29
Depth	32	.10	.55	.32	.12
Palisade II: Postmolds	83				
Radius	69	.05	.15	.10	.02
Discovery elevation	83	37.86	38.67	38.44	.19
Base elevation	83	37.40	38.48	38.07	.22
Depth	83	.12	.68	.39	.11
Palisade II: Walltrenches	12				
Discovery elevation	12	37.91	38.66	38.37	.28
Base elevation	12	37.86	38.51	38.11	.32
Depth	12	.10	.47	.26	.11
Length	12	.58	2.65	1.42	.60
Width	12	.18	.30	.26	.06
Palisade III: Postmolds	66				
Radius	66	.07	.14	.11	.01
Discovery elevation	66	38.56	38.91	38.78	.10
Base elevation	42	38.34	38.68	38.52	.07
Depth	42	.15	.35	.24	.05
Palisade III: Walltrenches	2				
Discovery elevation	2	38.80	38.94	38.87	.10
Base elevation	1	38.63	-	-	-
Length	2	1.07	1.28	1.18	.15
Width	2	.31	.52	.42	.15
Palisade IV: Postmolds	22				
Radius	22	.05	.13	.09	.02
Discovery elevation	22	38.55	38.66	38.61	.03
Base elevation	22	38.38	38.51	38.44	.04
Depth	22	.10	.25	.17	.04

TABLE 1

Estimated Slope of Original Palisade Surface: Hectare 400N/-300E.

	Grid Point	Surface Elevation	Palisade Elevation[1]	Depth Below Surface (m)	Palisade Length (m)	Surface Slope[2] (m)	Palisade Slope[3] (m)
Palisade I							
From	424.40N/-213.10E	38.86	38.12	0.74			
To	505.98N/-272.50E	39.20	38.75	0.45	100.91	0.34	0.63
Palisade II							
From	437.14N/-217.30E	38.86	37.86	1.00			
To	486.96N/-252.92E	39.08	38.56	0.52	61.24	0.22	0.70
Palisade III							
From	466.10N/-244.50E	39.03	38.64	0.39			
To	472.78N/-261.30E	39.12	38.84	0.29	18.08	0.09	0.20
Palisade IV							
From	481.65N/-250.25E	39.12	38.64	0.48			
To	495.36N/-258.43E	39.16	38.64	0.52	15.96	0.04	0.00
Palisade V							
From	477.32N/-252.20E	39.12	38.64	0.48			
To	504.22N/-273.90E	39.20	38.87	0.33	34.56	0.08	0.08
Palisade VII							
From	445.72N/-234.90E	38.89	38.49	0.40			
To	453.40N/-253.13E	39.05	38.86	0.37	19.78	0.16	0.19

[1]Elevation (AMSL) first observed.
[2]S2-S1
[3]P2-P1

of the Palisade V postmolds, the elevation of the corner post was estimated from adjacent Palisade V posts which were not truncated by the Level 1 pit.

As shown in Table 1, for Palisade I there was a 63 cm vertical difference over a distance of 100.91 m between the recorded elevations of the southernmost and northernmost corner post of the palisade. The present surface elevation difference over the same distance was only 34 cm. Similarly, over a distance of 61.24 m for Palisade II, the difference in elevation between the extreme posts was 70 cm, but the difference in the present surface elevation over the same distance was only 22 cm. This comparison between the estimated slope of the original surface and the slope of the present surface reflects the approximate degree of surface modification by bulldozer activities prior to the Lubbub Creek excavations. The northern part of the hectare adjacent to the Summerville Mound, and a significant portion of the mound as well, were leveled, and the southeastern part of the hectare, particularly within the topographic depression, was filled. The large midden accumulation in Unit 433N/-234E shown in Figure 2 was apparently deposited during this operation since historic ceramics similar to those recovered from the mound were recovered also at the base of this midden.

Because the surface of the hectare had been modified and because the palisades were constructed on a surface only tenuously related to the present surface, below surface measurements could not be used for analytical purposes. Beginning elevations recorded for features presented a similar problem because the plowzones of excavation units were stripped by backhoe to a uniform depth below the present ground surface. Under normal circumstances comparison of below surface elevations for the various elements within each of the palisades should have reflected the relative sequence of construction. Due to these surface disturbances, however, analysis of the vertical relationship of palisades and structures within the eastern palisade area is based primarily on the base elevations of the constituent postmolds. Although the base elevations of a postmold series are subject to a wider range of variation than the origin elevations for the same series, base elevations should, on the average, reflect relative sequences of construction. In the following sections, base elevations for Palisades I through VII and for Structures 5 through 8 are used as primary data to determine the relative sequence of events within the palisade zone of Hectare 400N/-300E.

Palisade Composition and Base Elevations

The composition of each of the palisades, postmold base elevations, and depths are described in this section. General measurement data for the palisades excavated within Hectare 400N/-300E are listed in Table 2. These data will be used as a reference for the following discussions.

Thirty-nine walltrenches and 163 postmolds were recorded for Palisade I, and 73.6 percent (N=120) of these postmolds were set in walltrenches. Base elevations were obtained for 133 of the postmolds recorded for Palisade I. The base elevations ranged from 37.57 m to 38.55 m and the mean was 38.06 m AMSL (s=0.21 m). The mean depth of Palisade I postmolds was 33 cm (s=0.12 m). The vertical range of Palisade I postmold base elevations (1.04 m) reflected, in part, the effects of the topographic depression illustrated in Figure 1. Other factors contributing to the vertical dispersion of palisade postmold base elevations will be discussed in a later section.

pattern of the structure. The shallow postmolds in Unit 446N/-240E formed a continuous series with seven additional equally shallow postmolds which had been excavated in the adjacent unit to the west, Unit 446N/-250E. The 18 postmolds assigned to Palisade VII, all of which intruded to a depth of less than 15 cm below surface, formed a continuous but poorly defined series over a distance of 12 m between 446N and 456N. This post series, tentatively defined as Palisade VII, was parallel to the Palisade I post pattern and was located at a distance of 3.5 m from it. Palisade I postmolds, however, were defined at a much lower elevation than the postmolds assigned to Palisade VII. Palisade VII was also parallel to Palisade III at a distance of 7 m. Palisade III postmolds were defined at approximately the same elevation as Palisade VII postmolds in Unit 446N/-250E. Unlike Palisades I through IV, all of which were defined and excavated as palisades, Palisade VII cannot as certainly be identified as a palisade because it was discovered during analysis of the excavation records and because its continuity was not observed in units other than 466N/-240E and 446N/-250E.

Stratigraphy and Topography

The stratigraphic trench (USN 8109), which led to the discovery of Palisade VI, indicated that Palisades I, II, III, and VI evidenced a common elevation within the hectare. There was no evidence of either Palisade IV or Palisade V, which had been excavated within Level 2 units further north, nor was there evidence of Palisade VII, which was almost totally contained within the plowzone. Consequently, if Palisades IV and V extended into the area intersected by the trench, they must have been contained either within the upper levels of already excavated units or within the plowzone.

There was no evidence of occupation levels earlier than Palisades I, II, III, and VI in the part of the hectare cut by Trench 8109. Palisades I, II, III, and VI were set in a sterile loamy sand which graded to coarse sand in the lower levels. The coarse sand was underlain by river gravels in some places. In Unit 433N/-220E and in the adjacent backhoe trench, Palisade I and Palisade II postmolds intruded into a zone of river gravel.

Trench 8109 verified that a topographic depression (indicated in Figures 1 and 2), which was represented by a 35 cm difference in surface elevation between 423N and 465N in the area of the palisades, was a natural phenomenon, probably the remnant of an ancient river channel. Both prehistoric activities and recent land leveling had modified the surface relief along this natural depression in the span of time since the palisades were constructed. As indicated by intrusions of palisade postmolds into the underlying river gravels, the original constructions of Palisades I and II, at least in the southeast part of the hectare, followed the slope of this abandoned river channel.

To estimate the original degree of slope for the palisades, the elevations at which each of the palisades were detected were compared with surface elevations for the grid points which mark either end of each of the palisades (Table 1). Because Palisades I and V extend into Hectare 500N/-300E and then turn sharply to the northeast, the corner post of Palisade I and a nearby post for Palisade V were taken as ending points for purposes of this comparison. The corner posts of Palisade V were truncated by a large pit which had been excavated in Unit 500N/-281E. Since this pit destroyed several postmolds and a 1 by 1 m test pit, which presumably had been cut during previous excavations by the University of Alabama. Unit 477N/-261E was hand cut to 38.69 m AMSL, 43 cm below surface, and four palisades were mapped and excavated. Two of these post lines were continuous with Palisades I and II; two new palisade post patterns were labeled Palisade IV and Palisade V. In addition, a number of postmolds appeared in this unit; they could not be affiliated with any of the palisades and appeared in a confusingly random pattern. To define the possible relationship of these random posts to the newly encountered palisades, the unit adjacent and to the east (477N/-251E) was cut to the level of the palisades in Unit 477N/-261E. The upper portion of Unit 477N/-251E was an undifferentiated midden with no distinguishable features. At the base of this midden a few random postmolds, several pits, and two anomalous walltrenches were identified. These walltrenches in Unit 477N/-251E were oriented east-to-west and were adjacent to the southeast-to-northwest oriented palisade posts and walltrenches of Palisades II and IV. As Unit 477N/-251E was mapped, it became apparent that the east-to-west walltrenches were positioned at the margin of a large circular structure pattern (Structure 8) which extended westward into Unit 477N/-261E and intersected Palisades I, II, IV, and V (see Figure 2). Postmolds in Unit 477N/-266E not clearly within the palisade post patterns were evaluated and a few of them were assigned to the Structure 8 post pattern. The sequential relationships between Structure 8 and Palisades I, II, IV, and V, all of which were discovered at the same level of excavation, are discussed further below.

Limited evidence of still another palisade, Palisade VI, was indicated by a postmold in the southeast wall of a stratigraphic trench (USN 8109). This trench (Figure 1), which extended from 448.20N/-254.00E to 465.00N/-215.00E, was cut perpendicularly to Palisades I, II, and III. It was excavated a few days before the conclusion of the Lubbub Creek excavations in December 1979. The profile of this trench therefore provided no information for the upper levels of the units which had been excavated previously. To explore the possibility that the postmold in Trench 8109 represented an additional palisade not evident in previously excavated sample units, a 6 by 6 m extension was cut at 462N/-229E (USN 8181) to the level of the postmold at 38.72 m AMSL, 38 cm below surface. As shown in Figure 1, a number of postmolds which appeared to be oriented in a southeast-to-northwest direction were found in this unit, but no clear post pattern could be defined and no and no walltrenches were evident. The postmolds in this unit were, however, similar to those of Palisade II in that they contained clay which smeared against the coarser sandy soil as the unit was shovel skimmed. Unit excavated, and the postmolds recorded for the unit are interpreted as potential representatives of the easternmost palisade to be identified within Hectare 400N/-300E.

The postmold series labeled Palisade VII in Figure 1 was discovered during the analysis of Structure 5. Some of the postmolds assigned to Palisade VII were included with the Level 1 excavation of Structure 5 in Unit 446N/-240E, and the other postmolds were excavated within Level 1 of the adjacent unit, Unit 446N/-250E.

During the analysis of Structure 5, a series of postmolds trending in a southeast-to-northwest direction were distinguished from the Structure 5A post pattern both by their orientation and by their uniformly shallow depth, a depth which was much less than that of the postmolds which formed the post

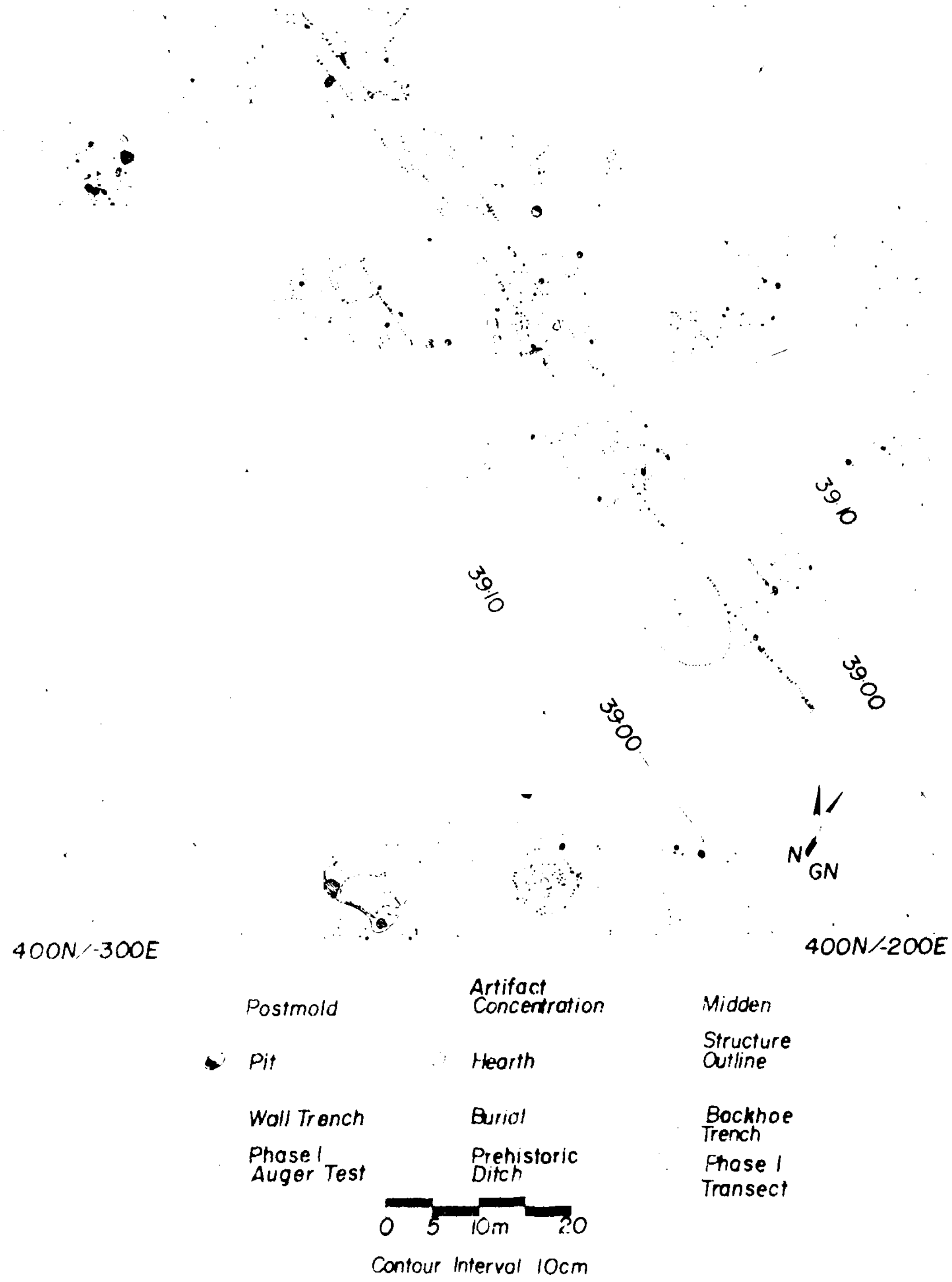

Figure 2. Plan of Hectare 400N/-300E.

interpretation is supported by aerial photographs (HS-2P-87 and HS-2P-88, 1/30/55). The evidence presented in the following sections suggests that all of the palisade lines were part of the pattern visible in these aerial photographs. Palisade I was traced throughout the sample area. The apparent discontinuity of the remaining palisade lines represented in Figure 1 was either due to limitations imposed by the sample area, or by recovery conditions which limited observation of the palisade postmolds.

Palisade I was discovered in Unit 446N/-240E during the excavation of Structure 5, a complex of three discrete structure patterns, all of which were superimposed above the walltrenches of the palisade. Palisade I was traced southeastward from Unit 446N/-240E through Units 446N/-234E, 433N/-234E, and, by means of backhoe trenches, to 424.40N/-213.10E, near the access road which marked the limit of the archaeological excavation area. The area to the south of the access road had been cleared for construction in July of 1979, and the backhoe trench could not be taken into this area. Continuation of Palisade I in a southeasterly direction was indicated by a walltrench over 50 cm below the surface in the southeastern profile of the southernmost backhoe trench. Palisade I was traced to the northwest across the hectare and into Hectare 500N/-300E, into Unit 500N/-281E where the palisade post pattern turned sharply to the northeast. The path of Palisade I and adjacent Palisade V was estimated to fall within Unit 519N/-254E. This unit was stripped and excavated. The two palisades were traced by backhoe trenches westward to Unit 500N/-281E.

The post pattern of Palisade I was beneath (from south to north) Structure 5, Structure 6, and Structure 8, as shown on the hectare plan of 400N/-300E (Figure 2). The relationship between these structures and the palisades is discussed more extensively below.

Palisade II was discovered upon completion of Level 1 excavations in Unit 433N/-220E. The southeastern limit of Palisade II within that excavation unit could not be defined due to the extremely sandy soil. Palisade II postmolds in the southern part of the hectare normally showed little color differentiation from the matrix soil and were evidenced by slight traces of [illegible] gray [illegible] which [illegible] against the coarse loamy sand as the units were [illegible]. [illegible] traced from 437.14N/-217.30E to the northern edge of [illegible] 400N [illegible] not found in sample units north of this point. [illegible] to and approximately 1 m from the eastern [illegible] of Structure 5 [illegible] the earliest component of the Structure 5 complex, and beneath Structure 6 and Structure 8.

Palisade III was discovered just below the plowzone, between 25 and 30 cm below surface in Unit 446N/-240E. Because this palisade was not encountered in later sample units, a 10 by 5 m extension was cut at 463N/-261E (USN 7771) to define it further. Another 10 x 10 m extension was cut at 463N/-271E (USN [illegible]) to define the bastion which had been discovered within the first extension. These extensions were mapped but not excavated. The bastion and a [illegible] gateway [illegible] with Palisade III is shown in Figure 1. There was no evidence of [illegible] aboriginal activity above Palisade III.

Palisade [illegible] discovered in Unit 477N/-261E after completion of [illegible] excavation [illegible] of this unit contained only a few random

TABLE 4

The Effect of Topographic Differences on Base Elevation Measurements.

	N	Range (m)	Mean (m)	s (m)	Vertical Span (m)	Estimated Slope	Residual Difference[1]
Palisade I	133	37.57-38.55	38.06	.21	.98	.63	.35
Palisade II	83	37.40-38.48	38.07	.22	1.08	.70	.38
Palisade III	42	38.34-38.68	38.52	.07	.34	.20	.14
Palisade IV	22	38.38-38.51	38.44	.04	.13	.00	.13
Palisade V	42	38.27-38.60	38.48	.07	.33	.08	.25

[1]Estimated vertical distance between palisade postmold elevations due to factors other than topography.

TABLE 5

Comparison of Palisade Postmolds Set in Walltrenches and Single Set Postmolds: Base Elevations and Depths.

	N	Range (m AMSL)		Mean (m)	s (m)
Palisade I: Total Postmolds	163				
Single Set Postmolds	43				
Base elevation	21	37.97	38.37	38.16	.13
Depth	21	.19	.65	.42	.10
Postmolds in Walltrenches	120				
Base elevation	112	37.57	38.55	38.05	.22
Depth	112	.10	.59	.31	.12
Palisade II: Total Postmolds	83				
Single Set Postmolds	46				
Base elevation	46	37.80	38.48	38.11	.16
Depth	46	.12	.58	.37	.10
Postmold in Walltrenches	37				
Base elevation	37	37.40	38.34	38.01	.28
Depth	37	.17	.68	.41	.11
Palisade III: Total Postmolds	66				
Single Set Postmolds	62				
Base elevation	38	38.34	38.68	38.52	.07
Depth	38	.15	.35	.25	.05
Postmolds in Walltrenches	4				
Base elevation	4	38.48	38.57	38.54	.04
Depth	4	.22	.31	.26	.04
Palisade IV: Total Postmolds	22				
Single Set Postmolds	17				
Base elevation	17	38.38	38.51	38.44	.04
Depth	17	.10	.25	.17	.04
Postmolds in Walltrenches	5				
Base elevation	5	38.43	38.48	38.44	.03
Depth	5	.10	.17	.14	.03
Palisade V: Total Postmolds	67				
Single Set Postmolds	52				
Base elevation	27	38.30	38.57	38.48	.07
Depth	27	.08	.36	.20	.07
Postmolds in Walltrenches	15				
Base elevation	14	38.42	38.59	38.51	.05
Depth	14	.10	.20	.16	.03

wall entrenched postmolds spanned a vertical distance of 98 cm.

Within Palisade II, base elevations of single set postmolds (N=46) ranged between 37.80 m and 38.48 m, and the mean was 38.11 m AMSL (s=0.16 m). Palisade II single set postmolds spanned a vertical distance of 68 cm which reflects the location of some of these within the topographic depression. Palisade II postmolds which were set in walltrenches (N=37) ranged between 37.40 m and 38.34 m, and the mean was 38.01 m AMSL (s=0.28 m). Palisade II wall entrenched postmolds spanned a vertical distance of 94 cm.

Single set postmold base elevations for Palisade III (N=38) ranged between 38.34 and 38.68 m, and the mean was 38.52 m AMSL (s=0.007 m). The single set postmold base elevations of Palisade III spanned a vertical distance of 34 cm. The four Palisade III postmolds set in walltrenches were included within a single walltrench. The base elevations of these postmolds ranged between 38.48 m and 38.57 m, and the mean base elevation was 38.54 m AMSL (s=0.04 m). The vertical distance spanned by the base elevations of Palisade III postmolds was not significantly greater than expected for the estimated original surface slope for this palisade.

Palisade IV postmold base elevations for single set posts (N=17) ranged between 38.38 m and 38.51 m, and the mean was 38.44 m AMSL (s=0.04 m). Palisade IV posts set in walltrenches (N=5) ranged between 38.42 m and 38.48 m, and the mean was 38.44 m AMSL (s=0.03 m). The vertical range spanned by the Palisade IV postmolds does not appear to be greater than expected from normal variability.

The excavated sample of Palisade V included only three walltrenches, but over 20 percent (N=15) of the Palisade V postmolds were included within these walltrenches. Palisade V base elevations for single set posts (N=27) ranged between 38.30 and 38.57 m, and the mean was 38.48 m AMSL (s=0.07 m). The single set postmold base elevations for Palisade V spanned a vertical distance of 27 cm. Base elevations of Palisade V postmolds which were included in walltrenches (N=14) ranged between 38.42 m and 38.59 m, and the mean was 38.51 m AMSL (s=0.05 m). The Palisade V wall entrenched postmolds spanned a vertical distance of 17 cm.

The vertical range for single set postmold base elevations within Palisades I and II could be a consequence of the original topography in addition to either the normal variation to be expected from differences in setting the posts or to the variation due to excavation error. The much greater vertical range of the wall entrenched postmold base elevations indicates that some additional variable influenced the vertical disposition of the posts which were set in walltrenches.

As shown in Figures 3 and 4, there was some evidence that the walltrenches were constructed to repair sections of deteriorated posts within the stockade wall, so that the vertical range of base elevations for the postmolds set in walltrenches may reflect a functional difference betw[illegible] single set and wall entrenched postmolds (see Lafferty 1973:105).

Figure 3 shows the plan and profile views of Palisade I Walltrench 1-A (USN 4417) in Unit 446N/-240E. As shown in the profile, a later walltrench, which contained slightly darker soil, intruded into an earlier one. The sediment bands shown in this profile were typical of the sandy soil in this part of the hectare and represented leaching of iron oxides which accumulated in striations within the soil even after aboriginal disturbance. In this instance the sides of the walltrench were sufficiently distinct to distinguish the second walltrench through the sediment bands which cut through the feature.

Palisade I Walltrench 31 (USN 7654) in Unit 477N/-261E is shown in Figure 4. In the first profile section (A to A') two walltrenches which were not apparent in the plan definition of the feature were encountered. The second section (Profile B to B') revealed the profile of the walltrench which was defined in plan view.

These examples indicate that walltrenches may have been employed to stabilize sections of the palisades where previously set posts had deteriorated, and that subsequent repairs were made using the walltrench technique for setting the posts. If the walltrenches represent repairs made subsequent to the original construction of a palisade wall built by the single set post technique, then the slightly later construction of the walltrenches could have resulted in the wide vertical dispersion reflected in the recorded base elevations for the postmoids which were set in walltrenches as shown in Table 5. The vertical dispersion of the postmold base elevations was most apparent in Palisades I and II where a relatively large proportion of the excavated posts were set in walltrenches.

If single set posts represent the original construction of a palisade wall, and the postmolds within walltrenches represent later repairs, then the mean base elevation of Palisade II single set postmolds, which was 5 cm less than that of Palisade I, could mean that Palisade II was constructed slightly earlier than Palisade I. Palisade II single set posts within the topographic depression in Unit 446N/-234E may also have been constructed on slightly higher ground relative to Palisade I, so that the base elevation differences between the two palisades would be greater if they had been constructed over a flat ground surface. The fact that only 43 percent of the Palisade II postmolds were set in walltrenches (compared to 83.6 percent of the posts in Palisade I which were set in walltrenches) may reflect a relatively shorter span of use and earlier construction for Palisade II, and correspondingly, a relatively longer span of use for Palisade I.

Analogously, since only two walltrenches were represented in the sample portion of Palisade III, the greater proportion of single set postmolds within this palisade could reflect a relatively short span of use compared to Palisades I and II. Palisades IV and V would also appear to have been relatively short lived constructions compared to Palisades I and II.

Local informants who were asked about the life span of fence posts in the Cubbu Creek area responded that most fence posts would last 20 years, after which time some of the posts would need to be replaced. One local resident offered the additional information that the life span of a fence post depends on the type of tree from which it was cut and on the time of year the tree was felled. Trees cut in the fall and winter were said to last longer than those cut in spring and summer when the sap of the tree is up. Posts made from cypress or 'bodoc' (<u>Bois d'Arc</u> or Osage Orange) would last "indefinitely."

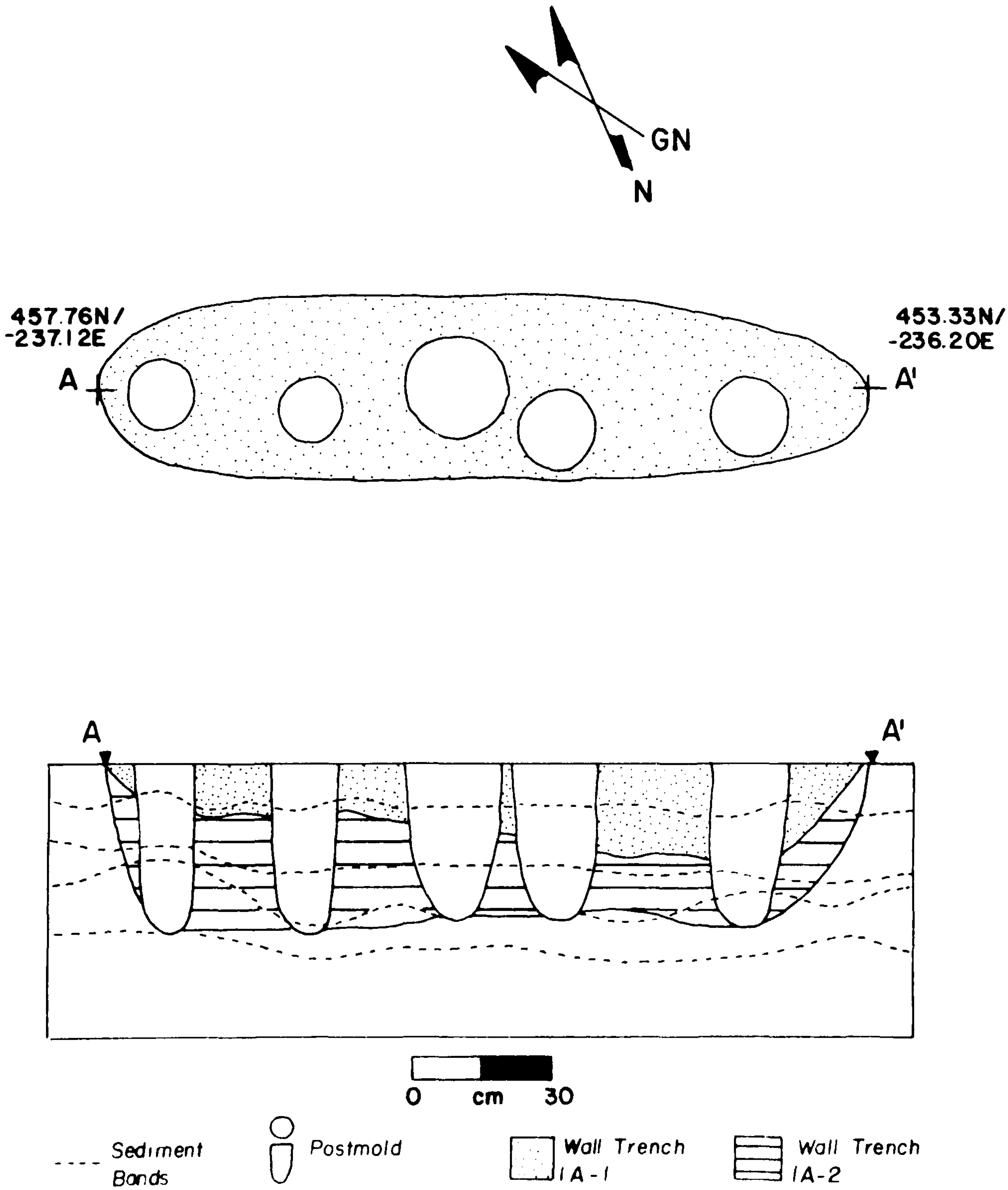

Figure 3. Palisade I Walltrench 1-A (USN 4417).

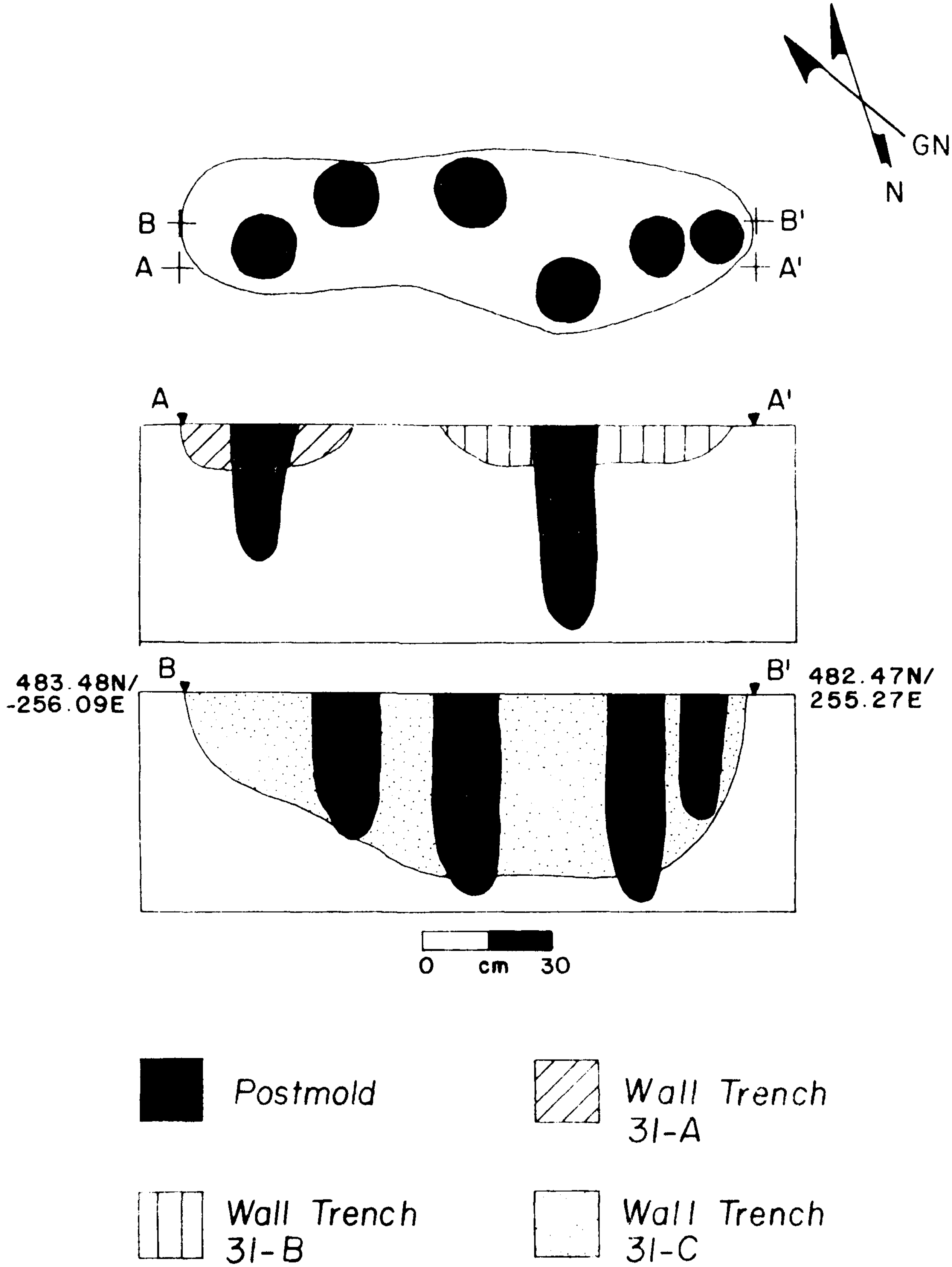

Figure 4. Palisade I Walltrench 31 (USN 7654).

The 20-year life span of posts given by our informants is the same as that Larson (1972) obtained from the telephone company on the life span of telephone posts which were treated with cresote. In addition, Lafferty (1973) estimated a 15 to 20 year life span for palisade posts in the fortification systems he analyzed. Unfortunately, no botanical information was obtained for the wood composition of the Lubbub Creek palisade posts because no identifiable charcoal was recovered from the postmolds. Osage orange, however, does not appear to be indigenous to the Lubbub Creek area (Caddell, personal communication), but cypress was locally available in the flood plain forest (see Chapter 2, this volume). The flood plain forest, however, was varied in composition so that one would expect that posts used for palisade construction were also cut from various forest species in addition to cypress.

Since local informants specified that untreated fence posts would last 20 years under local conditions, this period probably can be taken as the minimum longevity for palisade posts. If the posts were of varied composition and cut at different times of the year, it follows that not all of the posts in a palisade wall would need to be replaced at the same time. If single set posts were replaced by posts set in walltrenches, then the presence of one walltrench would indicate a 40 year minimum span of use for any given palisade. A double walltrench, such as those excavated within Palisade I (Figures 3 and 4) then would indicate a minimum 60 year life span for a single palisade wall.

In addition to the palisade life span which can be inferred from the relative number of walltrenches represented within the excavated sample of a palisade wall, there was some evidence that the palisade walls may have been further preserved by either coating the posts with clay or, more likely, by applications of clay over withers woven between the posts.

Lafferty (1973:102ff) discusses the distribution and advantages of this type of stockade construction. As mentioned previously, the slight traces of clay observed as units were skimmed at palisade level and were sometimes the only surface indications of the palisade postmolds. Clay traces were observed in association with Palisade II postmolds in Unit 446N/-239E, Palisade III postmolds in Unit 463N/-261E, Palisade VI postmolds in Unit 463N/-229E, and Palisade I and V postmolds in Unit 500N/-281E. All of these clay traces associated with palisade postmolds were observed in areas where the palisade posts were predominantly single set posts. No clay traces were observed in association with postmolds set in walltrenches.

The clay utilized in palisade construction was apparently transported to the palisade area from local sources outside of the palisade zone of Hectare 400N/-300E. There were no clay deposits, other than those found in association with cultural features, within this hectare.

The use of clay in palisade construction could have extended the life span of posts (Lafferty 1973). Lafferty also suggested that the use of clay in stockade construction would have made the walls less vulnerable to fire damage. Although the use of clay in palisade construction could have extended the life span of the posts, it also implies a regular schedule of maintenance. It is unlikely that an unfired clay wall would remain intact throughout the rainy season in this area.

Postmold Spacing

The distance between palisade postmolds was estimated for Palisades I through V, and these measures are shown in Table 6. Because identification of palisade posts varied with soil conditions, leaching, and the degree of subsequent aboriginal disturbance for any given palisade section, only those palisade segments where the regular spacing of postmolds indicated relatively good recovery conditions were used for this analysis.

The postmold centerpoints and the distance between these points which were selected for this analysis are listed in Table 6. To estimate the postmold spacing for a given palisade, the centerpoints of postmolds at either end of selected postmold series were recorded and the distance between the centerpoints was measured. The total distance for the selected postmold series, divided by the total number of postmolds within each of the postmold series for a particular palisade, gives the average distance between postmold centerpoints. The average distance between postmold centerpoints for these selected posts may be considered typical of the entire palisade. To estimate the spacing between postmolds, the mean postmold diameter for all postmolds recorded for the entire palisade (from Table 2) was subtracted from the estimated distance between the postmold centerpoints for that palisade.

As indicated in Table 6, the estimated distance between palisade posts ranged from 16 cm for Palisade III, to 37 cm for Palisade I. The greater estimated distance between Palisade I and II posts may reflect the proportionately greater number of postmolds set in walltrenches in these palisades, or, since these palisades are early in the sequence, the estimated distances between the posts may reflect subsequent aboriginal disturbances which limited identification of the postmolds.

Lafferty (1973:105) noted that nearly all Mississippian stockade posts which were set in walltrenches had spaces between the posts. By his definition, all of the palisades within Hectare 400N/-300E fall within his class of 'spaced palisade post' stockades (ibid:101). The postmold distances estimated for Palisade III (16 cm) were comparable to the median scores (15 to 17 cm) which Lafferty (ibid:104, Figure 8) reported for the Kincaid, Matthews and Getman sites. The estimated post spacing for Palisade II (28 cm) and Palisades IV and V (24 cm) were comparable to the median scores (27 cm) Lafferty reported for post spacing at the Bates site, and the estimated distance between Palisade I posts (37 cm) was similar to those at the Bessemer Site (burial mound stockade), as well as those at the Garoga and Arzberger sites (34 cm). The relatively closer spacing of Palisade III posts could reflect a functional difference since it is the only postline which included a bastion. As previously suggested, the spaces between the palisade posts in Hectare 400N/-300E may have been filled with withers which were then covered with clay. Clay traces were associated with at least some of the single set posts of Palisades I, II, III, and V.

Estimated Height of Palisade Posts

Larson (1972:3[illegible]) observed that the Southern Bell Telephone Company installed telephone poles to a depth of one-fifth of the post length. From this figure, he estimated that aboriginal posts used in fortification constructions were probably rarely buried more than one-fourth of the above

TABLE 6

Spacing of Palisade Postmolds[1]

	Postmold Centerpoints		Distance (m)	n	D/n[2] (m)	Diameter[3] (m)	Estimated Post Spacing (m)
	From	To					
Palisade I	437.56N/-223.70E	464.56N/-237.05E	30.20	46			
	478.36N/-251.42E	486.22N/-257.76E	10.10	24			
	501.14N/-268.84E	490.64N/-260.14E	13.64	29			
			53.94	99	0.55	0.18	0.37
Palisade II	437.14N/-217.30E	440.52N/-220.00E	4.33	10			
	446.06N/-224.40E	455.10N/-231.05E	11.15	24			
	458.90N/-234.40E	474.40N/-245.56E	19.10	34			
	477.38N/-246.70E	482.84N/-250.22E	6.50	15			
	484.66N/-251.30E	486.96N/-252.92E	2.81	6			
			43.89	89	0.49	0.21	0.28
Palisade III	446.10N/-244.50E	453.76N/-249.88E	9.36	27			
	463.46N/-255.66E	472.80N/-261.60E	11.07	27			
			20.43	54	0.38	0.22	0.16
Palisade IV	482.70N/-251.30E	486.74N/-254.28E	5.02	12	0.42	0.18	0.24
Palisade V	498.52N/-269.24E	503.40N/-273.56E	6.52	12			
	490.22N/-262.40E	494.20N/-265.80E	5.23	14			
	477.32N/-252.20E	486.68N/-260.08E	12.24	31			
			23.99	57	0.42	0.18	0.24

[1] Spacing measured between postmold centerpoints for selected palisade segments.
[2] Average distance between postmold centerpoints.
[3] Mean diameter of postmolds recorded for the entire palisade (from Table 2).

ground post height. Using the telephone pole model, Lafferty (1973:99, Figure 7) estimated post heights for stockade walls at a number of Mississippian sites. The estimated post heights, obtained by multiplying four times the recorded postmold depths, ranged from 2 ft for the Bates and Getman sites to 25 ft for the Aztalan site.

Table 7 shows the estimated post heights for Palisades I through V within Hectare 400N/-300E. Estimated heights in this table are given for the entire palisade line and calculated separately for single set and wall entrenched postmolds. Estimated heights were calculated both for the ranges and means of postmold depths which were listed in Table 2. For this analysis, extreme maximum depths for Palisades I and II were disregarded.

Since postmold depths reflect the distance between the elevation at which the postmold was identified and the base elevation, the data in Table 7, unfortunately, reflect to a large degree those factors which influenced observation of the postmolds rather than the original depth to which the posts were buried. Post heights estimated from the mean postmold depths ranged from 0.56 m (1.8 ft) for Palisade IV postmolds set in walltrenches, to 1.7 m (5.6 ft) for Palisade I single set postmolds. Major factors which influenced the depth of the postmold and thereby the height of the post were: (1) plow and bulldozer disturbances of the hectares surface, (2) aboriginal disturbances of earlier contexts, and (3) soil conditions. Both accumulated midden and leaching of feature outlines in the coarse sandy soil, together with striations of iron oxide accumulations, such as those shown in Figure 4, influenced the identification of postmolds. Consequently, the data in Table 7 reflect these recovery conditions.

Post heights estimated from maximum depths were greater for postmolds set in walltrenches than for single set postmolds in both Palisades I and II. The post heights estimated from the mean depths of postmolds set in walltrenches for Palisade I, however, were less than those estimated for single set posts within Palisade I. If walltrenches were constructed later than single set posts to repair deteriorated sections of the palisade wall, one would expect slightly greater preservation for the postmolds set in walltrenches. These postmolds which were included within the walltrenches, however, would in turn be vulnerable to disturbance by subsequent aboriginal construction. The relatively shallow mean depth of Palisade I postmolds which were set in walltrenches may reflect the superposition of the Structure 5 complex over a relatively large proportion of the Palisade I walltrenches. Relatively few posts were identified within the Palisade I walltrenches under Level B of Structure 6 (Figure 2).

Palisade III postmolds were observed first at the base of the plowzone, and their shallow depths indicate that they probably originated within the plowzone. Palisade IV and V postmolds were encountered at the base of Level I excavations, and the subsequent aboriginal activities within Level I apparently obscured the original upper elevations of these postmolds.

Given the function of palisades, one would expect the above ground height of a post series to be approximately the same as the upright height of an adult. This measure would give an approximate post height range of 1.5 m to 1.8 m (5 to 6 ft), and, correspondingly, postmold depths would range between 0.38 and 0.45 m. (See Lafferty 1973 for constructions which would not follow

TABLE 7

Estimated Post Heights for Palisades I through IV: Hectare 400N/-300E

	N	Range[a]	Mean	Maximum Height		Mean Height	
				(m)	(ft)	(m)	(ft)
Palisade I	133	.10-.52	.33	2.08	6.8	1.32	4.33
Single Set Postmolds	21	.19-.52	.43	2.08	6.8	1.71	5.62
Wall Entrenched Postmolds	112	.10-.59	.31	2.36	7.7	1.25	4.10
Palisade II	83	.12-.57	.39	2.28	7.5	1.54	5.05
Single Set Postmolds	46	.12-.52	.37	2.08	6.8	1.48	4.85
Wall Entrenched Postmolds	37	.17-.57	.41	2.28	7.5	1.62	5.31
Palisade III	42	.15-.35	.24	1.40	4.6	0.96	3.15
Palisade IV	22	.10-.25	.17	1.00	3.3	0.66	2.17
Single Set Postmolds	17	.10-.15	.17	1.00	3.3	0.68	2.23
Wall Entrenched Postmolds	5	.10-.17	.14	0.68	2.2	0.56	1.83
Palisade V	42	.08-.46	.19	1.84	6.0	0.76	2.49
Single Set Postmolds	27	.08-.36	.20	1.44	4.7	0.78	2.56
Wall Entrenched Postmolds	14	.10-.20	.16	0.80	2.6	0.64	1.10

[a]Extreme maximum depths for these post series were disregarded for purposes of this analysis.

this rule such as breastworks and catwalks.) The postmold depths of Palisade III, IV, and V appear to be too shallow to be an adequate measure of post heights. The mean and maximum depths for Palisades I and II could approximate the original depths of intrusion for these palisades. From the mean and maximum depth measurements, the estimated post height for Palisade I would have been between 1.7 m (5.6 ft) and 2.3 m (7.7 ft), and Palisade II posts would have been between 1.6 m (5.3 ft) and 2.28 m (7.5 ft). These estimates of the post heights for Palisades I and II approximate those obtained by Lafferty (1973:99, Figure 7) for the Bessemer site (SP 12 and Burial Mound Stockade) and the Matthews, Castle Creek, Cahokia (F 27), Mooney Bend (interior two walls), Hiwassee Island and Citeco sites.

The Relationship of Structures to Palisades: Base Elevations

Three structures were located either above or at the same level as the palisades in Hectare 400N/-300E (Figure 2). Although the structures appeared to be later than Palisades I and II, their relationship to the remaining palisades was not apparent during the excavations.

The basal elevations and depths for postmolds which comprised each of the structure post patterns and the local palisade sections which lay beneath the structures are given in Tables 8, 9, and 10. Table 8 includes data for postmolds between 446N and 456N for Palisade I and II and for Structures 5A and 5C. Table 9 presents the data for postmolds recovered between 459N and 475N from Palisades I and II and Structure 6. Table 10 describes postmolds associated with Palisade I, II, IV, and V between 477N and 487N within Unit 477N/-261E and postmolds associated with Structure 8 in Unit 477N/-251E.

Structure 5 (Table 8) comprised three superimposed structures, all of which overlay Palisade I. The lowest of these structures, Structure 5C, was rectangular in form and its east wall was parallel to Palisade II at a distance of 1 m. The post pattern of Structure 5B (not considered in this analysis) was also rectangular and superimposed over the northwest portion of the Structure 5C post pattern. The post pattern of Structure 5A which was circular in form was superimposed over the southwestern portion of Structure 5B. The base elevations of Palisades I and II and Structures 5A and 5C are summarized in Table 8. For palisade postmolds between 446N and 456N, the mean base elevation of Palisade I was slightly lower than that of Palisade II postmolds by 4 cm. The mean base elevation of the postmolds assigned to Structure 5C was 27 cm above those in Palisade I and 23 cm above those in Palisade II.

The relatively shallow average depths for Structures 5A and 5C reflect [illegible] of the slope and subsequent bulldozer activity in the Structure 5 area. Leveling operations skimmed the northernmost postmolds of the structure but the southernmost postmolds of the structures were left relatively intact.

Structure 6 (Table 9) was excavated as two distinct zones, but later analysis indicated that all of the posts within the Structure 6 post patterns originated within the upper stratigraphic level (Zone A). Random postmolds [illegible] Zone B were not associated with a definable structure pattern. Zone A (Structure 6 proper) and Zone B were above both Palisades I and II between [illegible] and 475N (Figure 2). No later palisades were discerned in this section.

TABLE 8

Comparison of Postmold Base Elevations and Depths, 446N to 456N: Palisades I, II, Structure 5A, and Structure 5C.

	N	Range (m AMSL)		Mean (m)	s (m)
Postmold Base Elevations[1]					
Palisade I	22	37.79	38.11	37.96	0.08
Palisade II	23	37.80	38.22	38.00	0.12
Structure 5A	22	38.21	38.47	38.33	0.07
Structure 5C	23	38.13	38.33	38.23	0.05
Postmold Depths[2]					
Palisade I	22	.12	.47	.34	0.09
Palisade II	23	.17	.58	.40	0.11
Structure 5A	22	.07	.32	.14	0.06
Structure 5C	23	.09	.33	.21	0.08

[1]Base of feature.
[2]Depth=Beginning-end elevation.

TABLE 9

Comparison of Postmold Base Elevations and Depths, 459N to 475N: Palisades I, II, and Structure 6

	N	Range (m AMSL)		Mean (m)	s (m)
Postmold Base Elevations[1]					
Palisade I	24	37.97	38.24	38.13	0.12
Palisade II	29	37.96	38.30	38.13	0.09
Structure 6	22	38.59	38.77	38.70	0.05
Postmold Depths[2]					
Palisade I	24	.10	.52	.35	0.15
Palisade II	29	.24	.52	.36	0.08
Structure 6	22	.02	.13	.09	0.04

[1]Base of feature.
[2]Depth=Beginning-end elevation.

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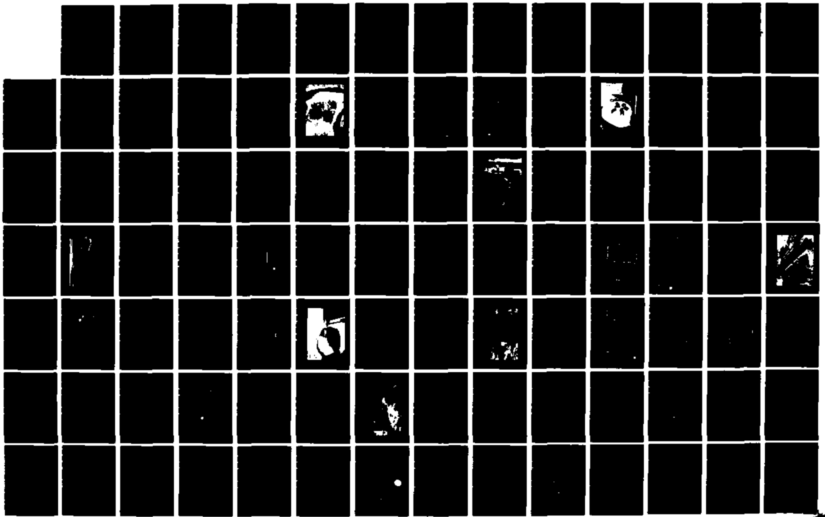

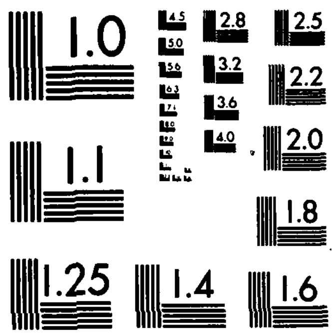

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TABLE 10

Comparison of Postmold Base Elevations and Depths, 477N to 487N: Palisades I, II, IV, V, and Structure 8.

	N	Range (m AMSL)		Mean (m)	s (m)
		Postmold Base Elevations[1]			
Palisade I	24	38.06	38.37	38.22	0.09
Palisade II	15[3]	37.90	38.34	38.16	0.11
Palisade IV	15	38.38	38.51	38.45	0.03
Palisade V	28	38.30	38.57	38.47	0.07
Structure 8	26	38.31	38.46	38.40	0.04
		Postmold Depths[2]			
Palisade I	24	.29	.59	.43	0.09
Palisade II	15	.29	.68	.46	0.11
Palisade IV	15	.10	.20	.15	0.03
Palisade V	28	.10	.36	.20	0.06
Structure 8	24	.14	.27	.24	0.05

[1]Base of feature.
[2]Depth=Beginning-end elevation.
[3]Postmolds set in walltrenches only.

The upper level of this area above Palisades I and II was an undifferentiated midden which extended from 459N northward to 487N and several meters east and west of Structure 6. The midden extended downward to the base of Zone B to elevations which ranged between 38.75 m and 38.62 m AMSL.

Structure 6 appeared within the large midden area as a localized daub scatter. The shallow depths of the Structure 6 postmolds reflect their origin within the upper part of this midden zone which itself originated within the plowzone. Zone A of the Structure 6 excavations was distinguished from Zone B only in that Zone A had inclusions of daub and ash.

As shown in Table 9, the mean base elevation of Structure 6 posts was 57 cm above that for Palisade I postmolds and 56.5 cm above Palisade II postmolds. Within the Structure 6 area, there was no significant difference between Palisade I and II mean base elevations or depths.

Because Palisades IV and V were discovered in the sample units directly north of Structure 6, but no evidence of them was detected during the excavation of Structure 6, the mean base elevations obtained for Palisades IV and V between 477N/-261E and 477N/-251E (Table 10) were compared with those of Structure 6 (Table 9). The mean base elevation of Structure 6 postmolds was 24.5 cm higher than Palisade IV postmolds and 22.5 cm higher than Palisade V postmolds. The mean elevation at which Palisade IV and V postmolds were identified was 38.61 m and 38.72 m AMSL respectively. The surface elevation of Zone B, beneath Structure 6 ranged from 38.80 m to 38.75 m AMSL. Palisade IV and V posts, then, if they were present in the Structure 6 area would have been included within the undifferentiated midden of Zone B below this structure and may have been further obscured by the subsequent construction of Structure 6.

The post pattern of Structure 8 and of Palisades I, II, IV, and V in Units 447N/-261E and 477N/-251E was discovered at the same level following the excavation of the upper level features within 477N/-261E. Consequently the origin of each of the distinct constructions was not apparent at the time of their excavation. Table 10 lists the mean base elevations and depths for the postmolds of the four palisades and Structure 8 in these two units.

For the area between 477N and 487N, the mean base elevation of Palisade II postmolds set in walltrenches was 6 cm less than the mean base elevation of Palisade I postmolds, 24 cm less than the mean base elevation of Structure 8 postmolds, 29 cm less than Palisade IV postmolds, and 31 cm less than Palisade V postmolds. One of the Structure 8 postmolds (USN 7706) intruded into Walltrench 32 (USN 7655) of Palisade I.

The mean base elevation of Structure 8 postmolds was 5 cm less than the mean base elevation of Palisade IV postmolds and 7 cm less than the mean base elevation of Palisade V postmolds. Lafferty (1973:101) observed that, as a general rule, palisade posts were set deeper than structure posts but that ranges between the two types of constructions tended to overlap. No good empirical test for this assertion was presented by the recovery conditions within Hectare 400N/300E. This observation, however, affects the present interpretation because it could mean that the temporal span between Structure 8 and the palisades was even greater than indicated by the small distance between the mean base elevations of each postmold group.

The palisade sequence within Units 477N/-261E and 477N/-251E replicates the sequence indicated by the general comparison of palisade base elevations. The base elevations do not show a strong sequential difference either between Palisades I and II or between Palisades IV and V. There was slight evidence for a priority of Palisade II over Palisade I, and for Palisade IV over Palisade V. The analysis does show that Structure 8 is later than Palisades I and II and that it could be earlier than Palisades IV and V.

To summarize the results of the analysis discussed in this section, the base elevation comparisons indicated that the relationship of structures to palisades within Hectare 400N/-300E is as follows: Structure 5 (which includes Structures 5A, 5B, and 5C) was later than Palisades I and II. Structure 6 was later than Palisades I and II and probably later than Palisades IV and V as well. Structure 8 was later than Palisades I and II, but could be earlier than Palisades IV and V.

In addition to the relationship between structures and palisades, the local comparison discussed in this section presented some evidence that Palisade II may be earlier than Palisade I, a conclusion which was also suggested by the comparison of single set posts for Palisades I and II (Table 5). This same evidence suggests that Palisade IV may have been slightly earlier than Palisade V.

To establish the relationship between the sequence of events inferred from the base elevation and the ceramic chronology which has been established for the Lubbub Creek Archaeological Locality (Chapter 3, this volume), the distribution of shell tempered ceramics recovered from the palisade zone of Hectare 400N/-300E will be examined.

<u>The Relationship of Structures to Palisades: Ceramic Contexts</u>

The association of shell tempered ceramic types and varieties with archaeological features was examined for three areas that cut across the course of the palisades. Section A covers the area between 423N and 456N and includes Structure 5. Section B extends from 459N to 475N and includes Structure 6. Section C extends from 477N to 510N and includes Structure 8 and Level 1 excavations in Units 490N/-261E and 500N/-281E (see Figure 2 and Table 11).

The association of ceramic types with particular cultural features within each of these sections will be considered in detail in the following sections. Only shell tempered ceramics are considered in this analysis. It should be noted, however, that sand and fiber tempered sherds were recovered from plowzone samples throughout the area, from Zone B of Structure 6, and from the postmolds within Structure 5. Grog tempered sherds, predominately Baytown Plain <u>var. Roper</u> and Mullberry Creek Cordmarked <u>var. Aliceville</u>, were present throughout the area and together totaled 739 grams, or approximately 75 percent of the total gram weight of Mississippi Plain <u>var. Hale</u> present in the same area. Mississippi Plain <u>var. Warrior</u> and <u>var. Hale</u> were ubiquitous throughout the inner palisade area.

In the following sections, the distribution of shell tempered ceramics within the Eastern palisade area is discussed in terms of (1) the association of types and varieties with cultural features within Sections A, B, and C, (2) the distribution of major ceramic types throughout the palisade area, and (3) the temporal implications of ceramic associations. A model of the probable sequence of events within the palisade area is presented in the latter section.

Ceramic Association by Section

In the following discussion, features within each of the arbitrary palisade zone sections are identified and briefly evaluated for their integrity and their ceramic contents. Shell tempered ceramic types identified for features and structures in all units which contained palisade elements are listed in Table 11. Sections A, B, and C in Table 11 correspond to the arbitrary sections of the palisade area.

Cultural features within Section A (Table 11) included Pit 69, Structure 5, and Palisades I, II, and III. Pit 69 (USN 4601, 4625) was encountered 28 cm above the walltrenches of Palisade I at 431.34N/-291.18E in a backhoe trench cut to define the southern limits of Palisade I within the excavation area (see Figure 2). Structure 5, a complex of three superimposed structures comprised Structures 5A, 5B, and 5C. All three of these structure patterns overlie Palisade I. Palisade II was located parallel to the earliest of the Structure 5 elements, Structure 5C, but apparently predates it since there was a 23 cm difference between the mean base elevations of Structure 5C and Palisade II postmolds (Table 5). Palisade III was encountered at the base of the plowzone in Unit 446N/-250E and cannot be associated with either of these structures.

Disturbances within Section A resulted from both plowing and bulldozing. The effects of the bulldozer were to level the area to the north, including the Summerville Mound, and to deposit fill within the topographic depression shown in Figure 1. Nearly two-thirds of Unit 433N/-234E (Figure 2) consisted of redeposited midden which extended to a depth of 1.31 m (37.59 m AMSL) below surface. Shell edged ceramics found at the base of a trench (USN 4402) cut through this midden deposit were similar to those recovered from a recent historic building site on Summerville Mound.

In addition to the disturbances resulting from mechanical operations within Section A, aerial photographs (HS-2P-87 and HS-2P-88, 1-30-55) indicated that the topographic depression was wooded before the area was bulldozed. Although trees helped to protect the cultural deposit from plow disturbances, tree root intrusions were excessive, particularly in the area of Structure 5. In addition to these factors, the close vertical juxtaposition of aboriginal events within Section A no doubt served to further displace ceramic associations from their original contexts.

Ceramic associations in Pit 69 and Level 1 of Structure 5 of Section A (Table 11) included Alabama River Applique and Carthage Incised, Mississippi Plain var. Warrior and var. Hale. Structure 5, Level 1 corresponded to Structure 5A and included the southern one-half of Structure 5B. The Carthage Incised sherds which were associated with Structures 5A and 5B included var. Foster, and those associated with Pit 69 were identified as var. Carthage. Parkin Punctated sherds were recovered from a plowzone sample and from Pit 40 (USN 3997), a complex feature disturbed by tree root and rodent activity. The fill of this feature also contained a small amount of

TABLE 11

Shell Tempered Ceramics from the Eastern Palisade Area.

Context	Ceramic Types (grams)[1]															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
SECTION A: 423N-456N																
Unit 423N/-223E																
Pit 69 (USN 4601, 4625)	22			61		49		8								
Unit 446N/-240E																
Walltrench 1-C (USN 4419)													5			
Unit 446N/-234E																
Postmold 601 (USN 4699)											4					
Structure 5, 449.90N/-236.10E																
Level 1, Cut 1 (USN 3453)						161		5	6							
Level 1, Cut 3 (USN 3455)	15		1			706		81							6	
Level 1, Cut 4 (USN 3456)	3		1			309		54								
Level 2, Cut 3 (USN 3459)						275		6	3						5	
Pit 40 (USN 3997,3998)	1					397		10	4							3
SECTION B: 459N-475N																
Unit 463N/-256E																
Pit 108 (USN 5717)	13					62										
Structure 6, 468N/-243E																
Zone A, Cut 1 (USN 4858)		24		1	27	1029		61	1					6		
Zone A, Cut 2 (USN 4859)		21	1		10	1637		91	1	7					12	
Zone A, Cut 3 (USN 4860)		9				678		6								
Zone A, Cut 4 (USN 4861)		17				580		2								
Zone B, Cut 1 (USN 5550)	2	1				1084		78					23		12	
Zone B, Cut 2 (USN 5551)		1			7	1154		102							4	
Zone B, Cut 3 (USN 5549)						343		45				3				
Zone B, Cut 4 (USN 5528)		1				379		18					8			
Unit 469N/-246E																
Postmold 725 (USN 5174)															4	
Pit 93 (USN 5180)						56		25	28							
Pit 97 (USN 5522)						34		1						2		
Pit 99 (USN 5526)	2	10				205		41								
Pit 100 (USN 5527)	25					315		165								

TABLE 11

(Continued)

Context	Ceramic Types (grams)[1]															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
SECTION C: 477N-510N																
Unit 477N/-261E																
Pit 122 (USN 6818)		2														
Unit 477N/-251E																
Walltrench 51 (USN 9229)		15				1										
Pit 131 (USN 8107)		15				93		2							5	
Unit 490N/-266E																
Pit 123 (USN 6847)						8										
Pit 124 (USN 6848)						66		6	5							
Unit 500N/-281E																
Pit 1 (USN 4702,4703,4704)					20	1089	4	26				2	3		3	12
Total Number of Occurrences	8	11	3	2	4	24	1	21	7	1	1	2	4	2	8	2
Total Grams	83	113	<1	61	64	10710	4	833	46	7	4	5	39	8	51	15

[1]KEY:
A. Alabama River Applique *var.* Alabama River
B. Bell Plain *var.* Big Sandy
C. Carthage Incised *var.* Foster
D. Carthage Incised *var.* Carthage
E. Carthage Incised *var.* Moon Lake
F. Mississippi Plain *var.* Warrior
G. Mississippi Plain *var.* Hull Lake
H. Mississippi Plain *var.* Hale
I. Mound Place Incised *var.* Akron
J. Mound Place Incised *var.* Havana
K. Moundville Engraved *var.* Wiggins
L. Moundville Engraved *var.* Tuscaloosa
M. Moundville Incised *var.* Moundville
N. Moundville Incised *var.* Snows Bend
O. Moundville Incised *var.* Carrollton
P. Parkin Punctate

Alabama River Applique ceramics. Pit 40 probably originated within Structure 5A and is located near the southern periphery of that structure's post pattern. Mound Place Incised var. Akron and Moundville Incised var. Carrollton sherds were recovered from Level 2 of Structure 5. This excavation sample cuts the southwest corner of Structure 5C.

Diagnostic ceramics occurred in direct association with palisade elements only in Section A. Moundville Incised var. Moundville (a clear Summerville period indicator) sherds were recovered from the fill of Walltrench 1-C (USN 4419) of Palisade I. This walltrench is near the double walltrench of Palisade I shown in Figure 3 and may be one of the more recent walltrenches of Palisade I. Moundville Engraved var. Wiggins sherds were recovered from the fill of Postmold 601 (USN 4699), Palisade II. This postmold may be cut by the rim of an adjacent small pit (USN 10,111). The order of intrusion was inferred from a slight color differentiation between the two features. The inferred order of intrusion implies that the postmold is later than the pit into which it intrudes and that the ceramics recovered from the postmold should be either contemporaneous with or earlier than the postmold itself. Both the postmold and the pit were encountered at the same elevation, however, so that the close proximity of this pit makes the association of the Moundville Engraved var. Wiggins sherds with Palisade II somewhat problematical at best. No ceramics were obtained either from Palisade III postmolds or from features which can be related to that palisade.

Structure 6, Zones A and B, the area immediately adjacent to Structure 6, and Palisades I and II were included in Section B (Table 11). The postmold pattern of Structure 6 was extremely shallow, and that portion of the structure floor which was not within the plowzone was entirely contained within Zone A. Deep plow scars cut into Zone B, the area beneath the floor of Structure 6. Both Palisades I and II were encountered in the lower levels of the excavation beneath Zone B.

Structure 6 (Zone A) was indicated by a localized daub scatter within an undifferentiated midden which extended northward to encompass the Structure 8 area and extended in depth to the base of Zone B. Structure 8 walltrenches in Unit 477N/-251E (Section C) were detected at the base of this midden.

Alabama River Applique sherds in Section B were restricted to pits -- Pit 99 (USN 5526), Pit 100 (USN 5527), and Pit 108 (USN 5717) -- which originated within the plowzone and which were not associated with a defined structure pattern. Two grams of Alabama River Applique were recovered from Zone B of the Structure 6 excavation, and a small amount of the type Carthage Incised var. Moon Lake was also recovered from this level. The presence of these types within Zone B was apparently due to the plow which cut into this level.

Carthage Incised sherds within Structure 6, Zone A included var. Carthage, var. Moon Lake, and var. Foster sherds. In addition to the Carthage Incised ceramics, Mound Place Incised var. Akron and var. Havana appeared to be restricted to the context of Structure 6, Zone A and to Pit 93 (USN 5180).

A large amount of plain ware (Bell Plain, Mississippi Plain var. Warrior and var. Hale) was recovered from Structure 6. The concentration of Bell Plain ceramics in the area which encompasses Structures 6 and 8 gives some indication that these sherds may be derived from Zone B which was stratigraphically continuous with Structure 8. Moundville Engraved and Moundville Incised ceramics occur both within Zone B and later contexts. Of these, the Moundville Incised var. Carrollton and Moundville Engraved var. Tuscaloosa ceramics may either represent Zone B or earlier contexts, and the Moundville Incised var. Moundville sherds may be displaced from the underlying level of Palisade I.

Section C (Table 11) of the palisade zone includes Structure 8 in Units 477N/-251E and 477N/-261E, Level 1 features within Unit 490N/-266E, and Level 1, Pit 1 (USN 4702) in Unit 500N/-281E. Palisade elements include Palisades I, II, IV, and V, all of which were encountered at the same level as the Structure 8 walltrenches in Units 477N/-251E and 477N/-261E. Palisade II was not encountered north of 487N, and Palisade IV was not recognized north of 496N. Palisades I and V continue northwestward into Unit 500N/-281E where both turn sharply to the northeast.

Bell Plain ceramics within Section C were restricted to Units 477N/-251E and 477N/-261E. The post pattern of Structure 8 extended into both of these units. Bell Plain and Mississippi Plain var. Warrior sherds were recovered from the fill of one of the Structure 8 walltrenches; Pit 131 (USN 8107), in the southeast corner of Unit 477N/-251E, contained Bell Plain as well as Moundville Incised var. Carrollton ceramics. This pit was not within the Structure 8 post pattern but was encountered at the same level as the structure, 4.7 m southeast of the Structure 8 walltrenches. Within the inner palisade area, Bell Plain is restricted locally to the Structure 8 area and to the midden stratigraphically continuous with it which includes Zone B of Structure 6.

Palisades I and V continue northwestward from the Structure 8 area and were found below Level 1 in the southwest one-half of Unit 490N/-266E. Two pits in the southeast corner of Unit 490N/-266E were directly above Palisades I and V and contained Mississippi Plain sherds. One of these, Pit 124 (USN 6848), also included Mound Place Incised var. Akron sherds. Charcoal recovered from the other pit, Pit 123 (USN 6847) yielded a date of 1010 ±145 radiocarbon years (A.D. 940, Beta 1100). This pit may have cut into a postmold (PM 1144, USN 6850) at elevation 38.76 m AMSL which appeared to be the source of the carbon from which the date was determined. This postmold was one of a series of four directly adjacent to and at the same level as Palisade I walltrenches.

Palisades I and V continue northwestward into Hectare 500N/-300E where between 504N and 508N both post lines turn sharply to the northeast and were traced in this direction west of the Summerville Mound. A large pit, (Pit 1, USN 4702) was excavated at Level 1 within Unit 500N/-281E. It was directly above the corner posts of Palisade V. Six of the Palisade V postmolds, which were found directly beneath this pit, had beginning elevations 6 to 10 cm lower than other Palisade V postmolds in this unit. The truncated Palisade V postmolds and the base elevation of Pit 1 indicated that the pit cut into the earlier Palisade V construction level. Ceramics recovered from Pit 1 included Mississippi Plain var. Warrior, var. Hale, and var. Hull Lake, Carthage Incised var. Moon Lake, Parkin Punctated, Moundville Engraved var. Tuscaloosa, and Moundville Incised var. Moundville, and var. Carrollton. Some of these types may be derived either from Palisade V, which the pit cuts into, or indirectly from Palisade I.

Distribution of Ceramics within the Eastern Palisade Zone

The distribution of ceramic types for the entire palisade zone of Hectare 400N/-300E is outlined in this section. To provide an overview of ceramic recoveries for the inner palisade zone, the distributions by count and weight for Sections A, B, and C are listed in Table 11. The various types of ceramics represented within the inner palisade area were not evenly distributed. Distinctive ceramic "assemblages" were associated with structures and pits. Some types occurred throughout Sections A, B, and C: Alabama River Applique, Mississippi Plain var. Warrior and var. Hale, Mound Place Incised var. Akron, and Moundville Incised var. Moundville and var. Carrollton. Other than the relatively small representation of Moundville Incised var. Moundville which had been associated with Palisade I, there was no evidence of a persistent ceramic continuity throughout the area in contexts which would correspond to the observed continuity of the palisades.

Alabama River Applique ceramics (11 occurrences) were recovered from Units 423N/-223E (Pit 69), 446N/-240E (Structure 5A), 463N/-256E (Pit 108), and 469N/-246E (Pits 99 and 100). Major occurrences of this type were within pits originating within or just below the plowzone and the greatest proportions of this type were within Sections A and B.

Carthage Incised var. Foster was represented in Sections A and B. Nearly all of the Carthage Incised var. Carthage sherds were in Section A, but none of the var. Moon Lake sherds were recovered from features within Section A. Carthage Incised ceramics were associated with Alabama River Applique in some contexts: Pit 69 (var. Carthage) and Structures 5A and 5B (var. Foster). Carthage Incised var. Foster sherds were found in Structures 5A and 5B and in Structure 6. Carthage Incised var. Moon Lake sherds were among the ceramics recovered from Structure 6 and from Pit 1 in Unit 500N/-281E.

Mississippi Plain var. Warrior (37 occurrences) and var. Hale (32 occurrences) were widely distributed throughout contexts above Palisades I and II, and the greatest proportion by gram weight was concentrated between 459N and 475N in Section B. Mississippi Plain var. Hull Lake (2 occurrences) was restricted to Pit 1 in Unit 500N/-281E and to the plowzone of Unit 490N/-266E. Bell Plain var. Big Sandy (13 occurrences) appeared to have a restricted distribution within the area which included Structure 6, Zones A and B, and Structure 8. The Bell Plain ceramics recovered from Structure 6 may be derived from Zone B. The undefined activity area beneath the floor of Structure 6 was stratigraphically continuous with the Structure 8 area, and this continuity appeared to be reflected in the local concentration of both Bell Plain and Mississippi Plain ceramics.

Mound Place Incised ceramics were concentrated in Section B between 459N and 475N. Minor amounts of var. Akron were recovered from Section A within the Structure 5 complex and from Section C from the fill of Pit 124 and the plowzone of Unit 490N/-266E. Within Section B, Mound Place Incised var. Akron and var. Havana were recovered from Zone A of Structure 6, and var. Akron was associated with Pit 93. There were 8 total occurrences of Mound Place Incised var. Akron and one of var. Havana within the palisade zone.

Moundville Engraved ceramics were found for the most part in Section B. Two grams of Moundville Engraved var. Tuscaloosa were recovered from the fill of Pit 1 in Unit 500N/-281E, a feature which cut into several Palisade V postmolds. The remaining Moundville Engraved var. Tuscaloosa sherds were included in the fill of Zone B of Structure 6. Moundville Engraved var. Undetermined sherds were recovered from plowzone contexts, from Pit 99 (USN 5526) which originated within the plowzone, and throughout Structure 6, Zones A and B.

The greatest percentage by gram weight of the Moundville Incised ceramics was within Section B, between 459N and 475N. Smaller amounts of Moundville Incised were recovered within Sections A and C. Moundville Incised var. Moundville ceramics (4 occurrences) were represented in Sections A, B, and C and were recovered from the fill of Palisade I Walltrench 1-C, Zone B of Structure 6, and from Pit 1 in Unit 500N/-281E. There were two occurrences of Moundville Incised var. Snows Bend within the entire palisade zone, and these were in Pit 97 in Unit 469N/-246E and within Zone A of Structure 6. Moundville Incised var. Carrollton ceramics (9 occurrences) were associated with Structure 5C; Structure 6, Zones A and B; Postmold 725 (USN 5174) northeast of Structure 6; Pit 131 near Structure 8; and Pit 1 in Unit 500N/-281E.

Parkin Punctated sherds (4 occurrences) were recovered primarily in disturbed contexts in Unit 446N/-250E and from the plowzone. Parkin Punctated sherds were recovered from the fill of Pit 40 (USN 3507), a disturbed pit probably originating at the level of Structure 5A, and from Pit 1 in Unit 500N/-281E.

This ceramic inventory of the Eastern palisade zone reflects local events; it does not, however, directly date the palisades which were excavated in the units discussed in these sections. The paucity of ceramic evidence would tend to verify Lafferty's (1973) observation that ceramics were not used in palisade construction and would tend to indicate that ceramic types which may be contemporaneous within any particular sequence would be in complementary distribution with the palisade itself. In other words, the greatest proportion of Moundville Incised var. Moundville, which has been associated with Palisade I, would be found with the domestic features of that time period elsewhere within the Lubbub Creek Archaeological Locality. The overview just presented shows that Moundville Incised var. Moundville is minimally represented within the palisade zone: only 4 occurrences totaling 39 grams were recovered from the entire palisade zone.

The temporal significance of this ceramic inventory of cultural features within the inner palisade zone, together with radiocarbon dates, sequences of events implied by superposition of features, and the base elevation comparisons presented in this chapter, are presented in the following section.

Ceramic Associations and Temporal Implications

The temporal significance of ceramic type varieties for the Lubbub Creek Archaeological Loca[illegible] s discussed in Chapter 3, and the temporal position of structures excavated within Hectare 400N/-300E is discussed in Chapters 9 and 10. The sequence of events within the palisade zone of Hectare 400N/-300E is outlined in Table 12. This sequence is inferred from the base elevations nd superposition of cultural features which were analyzed in this chapter. he temporal placement of features is indicated where these have been letermined, according to the Summerville ceramic chronology for the Lubbub reek Archaeological Locality as a whole, or where other evidence implies a emporal association relative to the Summerville chronology.

The major cultural features excavated within the Eastern palisade area re listed in the left-hand column of Table 12. The evidence for the temporal osition for each of these cultural features is discussed below.

Palisade I was assigned to the Summerville I period on the basis of the loundville Incised var. Moundville ceramics recovered from Walltrench 1-C (USN 419). A radiocarbon date of A.D. 940 (1010 ±145 radiocarbon years, Beta 100) was obtained from Pit 123 (USN 6847) in Unit 490N/-266E which could ndirectly date Palisade I. Pit 123 intrudes into Postmold 1144 (USN 6850) which was encountered at the base of the pit and at the same level as adjacent alisade I postmolds (elevation 38.76 m AMSL). Postmold 1144 (USN 6850) was he source of charcoal from which this date was obtained. Postmold 1144 is ne of a series of four postmolds (USNs 7831, 7994, 7830, and 6850) which were 10 to 20 cm east and parallel to Palisade I Walltrenches 40 (USN 7883) and 41 (USN 7884). The date obtained for Postmold 1144 (USN 6850) would place it and he adjacent Palisade I walltrenches at the beginning of the Early lississippian, Summerville I period. This radiocarbon determination is onsistent with the temporal placement of Palisade I inferred from the loundville Incised var. Moundville sherds recovered from Walltrench 1-C (USN 419), 52.7 m southeast of Postmold 1144 (USN 6850).

From the base elevation analysis, the relative depths of intrusion for alisades I and II postmolds appeared to be very similar and there was some vidence that Palisade II postmolds, on the average, were slightly lower than alisade I postmolds. The two palisades, then, appear to be approximately of he same time period, with some indication that Palisade II may be slightly arlier than Palisade I.

Base elevation comparisons for features within Units 477N/-261E and 77N/-251E (Table 10) indicated a sequence beginning with Palisade II (mean levation 38.16 m AMSL), to Palisade I (mean base elevation 38.22 m AMSL), to structure 8 (38.40 m AMSL) and then, perhaps, to Palisades IV (38.45 m AMSL) and V (38.47 m AMSL). The Bell Plain and Moundville Incised var. Carrollton eramics recovered from the Structure 8 area and from Zone B of Structure 6, which is stratigraphically continuous with Structure 8, are not temporally liagnostic. The house form of Structure 8 is, however, typologically estricted to the Summerville II time period at the Lubbub Creek rchaeological Locality. Zone B of Structure 6 has been placed within the ummerville II time period in Table 10 because of its stratigraphic and eramic continuity with Structure 8. The Moundville Engraved var. Tuscaloosa eramics recovered from Zone B of Structure 6 would place this activity area in the earlier part of the Summerville II-III time period. Because the mean ase elevation of Palisade II postmolds in Units 477N/-261E and 477N/-251E was 24 cm lower than that for Structure 8 and slightly lower than Palisade I ostmolds, a temporal position of Summerville I is indicated for Palisade II.

The temporal placement of Palisades IV and V within the Summerville sequence could not be determined by direct ceramic associations. These

TABLE 12

Sequence of Events Palisade Zone of Hectare 400N/-300E.

Cultural Unit	Ceramic Association	Cultural Assignment	Radiocarbon Dates
Palisade II	?	Summerville I	
Palisade I WT-12 (USN 4419)	Moundville Incised *var. Moundville*	Summerville I	A.D. 940
Structure 6, Zone E	Bell Plain *var. Big Sandy*, Moundville Engraved *var. Tuscaloosa*, Moundville Incised *var. Carrollton*	Summerville II-III	
Structure 5	Bell Plain *var. Big Sandy*, Moundville Incised *var. Carrollton*	Summerville II	
Palisade IV		Summerville I-II	
Palisade V		Summerville I-II	
Pit 124 (USN 6848) Level 1, 480N/-266E	Mound Place Incised *var. Akron*	Summerville II-III	
Pit 1 (USN 4702) Level 1, 500N/-281E	Carthage Incised *var. Moon Lake*, Mississippi Plain *var. Hull Lake*, Moundville Engraved *var. Tuscaloosa*, Moundville Incised *var. Moundville* and *var. Carrollton*, Parkin Punctated	Summerville II-III	
Structure 5C	Moundville Incised *var. Carrollton*, Mound Place Incised *var. Akron*	Summerville II-III	
Structure 5B	Carthage Incised *var. Foster*	Summerville II-III	A.D. 1345
Structure 6, Zone A	Carthage Incised *var. Foster*, *var. Carthage*, and *var. Moon Lake*, Mound Place Incised *var. Akron* and *var. Havana*	Summerville II-III	
Structure 5A, Pits 69 (USN 4601) 99 (USN 5526), 100 (USN 5527) and 108 (USN 5717)	Alabama River Applique	Summerville IV	

?=Contextual association is problematical; PM=postmold; WT=wall trench

The flood plain area, which is normally developed in a forest characterized by shrubby undergrowth, may have been cleared partially for agricultural development. This environmental situation, rather than functioning as a deterrent to a surprise attack, on the contrary would appear to be exceptionally vulnerable to surprise attack.

The terrace riser above the flood plain, however, may have provided a natural barrier for any attack from the flood plain which surrounded the settlement to the north, east, and south. Because defense was not apparently the primary consideration in the selection of the Lubbub Creek meander loop for settlement, the construction of artificial barriers to forestall enemy attack would seem a functional prerequisite of community security -- at least during periods of uncertain alliance with neighboring communities. It is perhaps significant that the outer palisade was constructed along the western boundary of the settlement, where no natural obstacles, such as a terrace rise, were present.

The bastion constructions associated with Palisade III in Hectare [illegible] N-3 [illegible] and those associated with the outer palisade imply that these functioned as fortification systems. No bastions, however, were found [illegible] with the remaining palisades which were excavated within Hectare [illegible]. Although the presence of bastions may have been obscured by [illegible] construction, it is possible that the interior palisades were [illegible] distinct from the outer defensive palisades.

[illegible], a fortification would enclose that which it was designed to protect. The interior palisades enclosed the Summerville Mound and an area which may have been a central plaza. There is little evidence of structures within this plaza area which would have been enclosed by the interior palisades constructed prior to Palisade III. The outer palisade and Palisade III, on the other hand, enclosed an area which must have included domestic structures which were contemporaneous with these palisades.

The density and distribution of ceramics and daub -- the most sensitive indicators of domestic loci within the project area -- indicated that the greatest percentage of domestic activities were either within the mound area proper, or outside of the space enclosed by the interior Palisades I, II, IV, V, or VI at any given time, but not within the intervening space.

The distribution of ceramics and daub relative to the interior palisades suggests that in addition to any defensive function, Palisades I, II, IV, V, and [illegible] VI also served a symbolic function of separating social space within the community. The construction, reconstruction, and repair of the [illegible] palisades indicated that this division of social space, which was [illegible] and reemphasized by the rebuilding and repair of the interior palisades, was an important fact of community life throughout a portion of the [illegible] occupation.

The [illegible] of the interior palisades presented in this chapter [illegible] palisade was [illegible] Palisades I, II, IV, and VI through [illegible] period and perhaps into the Summerville II period. The [illegible] of Palisade III was not determined. From the base elevation [illegible], however, Palisade III appeared to be later than Palisades I, II, IV, or V. If Palisade III was in fact later than the remaining eastern

Summary

Based on the Early Mississippian vessel recovered from a postmold and on the fact that a Summerville II-III midden overlaid one of the bastions, the outer palisade at the Lubbub Creek Archaeological Locality is thought to have enclosed and protected the Summerville I community. Judging from the excavations and by studying old aerial photographs, the palisade must have stretched from north-to-south on either side of the river's bend. The palisade was built predominately out of large single set timbers, which averaged 24 cm in diameter and were evenly spaced approximately 33 cm apart. The height of the outer palisade was estimated to be 1.57 m. Six bastions, spaced 30 m apart, were located in the excavated one-third (240 m) of the palisade's estimated length. Two of the bastions may have incorporated large trees that served as lookouts. The palisade may have been coated with a plaster-like material, because most of the postmolds, especially in their upper portions, were filled with a distinctive clay loam. There is no evidence that the outer palisade ever underwent any sequence of rebuilding. Since the posts used in the outer palisade were larger than the ones used in the inner palisade system, this fact is thought to indicate that the outer palisade was built before the inner palisade system. If larger trees were selected before smaller ones, then the supply of closely accessible large trees would most probably have decreased in size through the years, and this decrease in the size of nearby trees would have resulted in smaller timbers being used for the construction of later palisades.

Unfortunately, time did not allow full excavation of the outer palisade, but it seems realistic to conclude that this defensive work continued to the other side of the bend and thus formed an impenetrable fortification system for the Summerville I community sometime between A.D. 1000 and A.D. 1100.

SUMMERVILLE I AND II FORTIFICATIONS: SUMMARY AND CONCLUSIONS

Mississippian palisades have been viewed primarily as fortification systems (Lafferty 1973; Larson 1972). As observed in Chapter 2, the Mississippian settlement at Lubbub Creek was in a vulnerable location. The settlement was surrounded on three sides by low river banks and on the fourth side by gently sloping prairie. The total bank area adjacent to the Lubbub Creek Archaeological Locality prior to the meander cutoff was 4.25 miles and may have been greater in the past (O'Neal et al., 1917 Soil Distribution Map of Pickens County).

The soils which were developed along the river banks prior to the recent meander cutoff (Ocklockonee series) develop between 0 and 20 ft above river level (O'Neal et al. 1917) within the mean annual flood zone (see Chapter 2, Volume I). At the time of the Lubbub Creek excavations, the flood plain on the west bank of the river which was present on the 1917 soil distribution map for Pickens County had been displaced by the meander cutoff. As a result of the cutoff, the river bank adjacent to the Lubbub Creek Archaeological Locality in 1979 was a steep, 20 ft, sandy slope which developed as the river cut westward against the resistant terrace wall. It is unlikely, however, that this steep slope was present along the river bank during the period of the Mississippian settlement. Instead, the settlement would have been located on the relatively higher ground on the terrace adjacent to a broad expansive flood plain circumscribed by four or more miles of relatively low river banks.

structure complex which possibly lay under the unexcavated ground just west of the midden area. The data which supports the existence of such a complex consisted of a large, isolated daub concentration (USN 5212) found 2 m north of the midden (see Chapter 8, Volume I for feature discussion) which may have been part of a structure. Nevertheless, the midden did lay over a segment of the bastion and probably was created later in time.

Bastion 4 (USN 7188) and Midden A (USN 7189)

Bastion 4 was formed by a square pattern of 18 single-set posts projecting westward from the outer palisade in Hectare 500N/-400E. Size and depth measures taken on 17 of the postmolds showed that they ranged in radius from 7 to 20 cm (mean=12.71 cm, s=3.24 cm), and in depth from 10 to 98 cm (mean=51.94 cm, s=24.14 cm). Bastion 4 lay beneath a midden deposit which may have been contemporaneous with the bastion.

Midden A, found directly under the plowzone, was a roughly circular organic deposit which measured 7 by 9 m across. The deposit comprised two distinct zones. The upper zone, 5 to 10 cm thick, consisted of lightly compacted loamy sand which was very dark grayish brown (10YR3/2) in color. This zone was high in organic material and contained very little cultural material. Because this area was situated on one of the lowest spots in the hectare, the upper zone deposit is thought to have been the result of slope wash. The lower zone averaged 10 to 20 cm in depth, and the soil consisted of highly compacted clay loam which was dark yellowish brown (10YR3/4) in color. The fill of this midden zone was very similar to the fill in the postmolds of Bastion 4. The midden, however, contained a higher percentage of cultural materials than did the bastion postmolds. Very few faunal remains were found, possibly due to the high clay content of this midden. The ceramics recovered from Midden A included Carthage Incised var. Undetermined, Mississippi Plain, Moundville Incised var. Carrollton, and a few unclassified "interior incised" sherds. Judging from the ceramics recovered, a late Summerville I or early Summerville II occupation is indicated for the midden.

Bastion 5 (USN 7257)

Bastion 5, which formed a 3.6 m^2 enclosure of 29 individually placed posts, was located at the southernmost end of the excavated portions of the outer palisade in Hectare 500N/-400E. The postmolds consisted of dark yellowish brown clay loam and ranged in radius from 8 to 18 cm (mean=11.48 cm, s=2.63 cm). The bastion was cleaned, photographed, and mapped, but the postmolds were not excavated due to the lack of field time.

Bastion 6 (USN 7258)

Bastion 6, found in Hectare 600N/-400E, contained 19 single set posts which formed a square pattern, 4.5 by 5.0 m. The bastion projected westward from the curtain wall. The postmolds consisted of dark yellowish brown clay loam and ranged in radius from 6 to 24 cm (mean=13.74 cm, s=4.34 cm). However, like in Bastion 5, time did not permit the full excavation of each postmold, but the bastion was cleaned, photographed, and mapped.

Figure 9. Groundstone Artifact Cache (USN 5232) found near the westernmost exposed edge of Midden 1 (USN 5211) in Hectare 600N/-400E.

consisted of dark yellowish brown (10YR3/6) loamy sand. The radii of the postmolds in Bastion 1 (N=22) ranged from 5 to 23 cm (mean=12.68 cm, s=3.58 cm); the depths (N=23) ranged from 12 to 84 cm (mean=48.61 cm, s=20.69 cm).

A small, circular smudge pit (USN 7169) which contained carbonized corn and wood was found in the northeastern corner of the bastion. The pit measured 25 cm in diameter and was 16 cm in depth. Also worthy of mention was a large tree root in the very center of the bastion which measured 1.5 m in diameter. It is possible this bastion had been built around such a tree for added use as a tower or look-out. Oddly enough, Bastion 3 further south also contained a large root in its center.

Bastion 2 (USN 7184)

Bastion 2, located in the northeastern quadrant of sample unit 630N/-366E (USN 5050), formed a square enclosure which projected westward from the curtain wall. Bastion 2 was the first bastion encountered that was constructed with a combination of walltrenches and single set posts. Five walltrenches, the longest of which contained six postmolds, were present; these walltrenches averaged 1.4 m in length and .35 m in width. Fifteen single set posts were recorded, all of which consisted of dark yellowish brown clay loam. Size and depth measures taken on the 32 postmolds in Bastion 2 showed the radii ranging from 6 to 15 cm (mean=10.38 cm, s=2.11 cm); depths ranged from 13 to 65 cm (mean=32.81 cm, s=13.52 cm).

Bastion 3 (USN 7185) and Midden 1 (USN 5211)

Bastion 3, located in Hectare 500N/-400E, projected westward from the curtain wall. It comprised a 4 m^2 area formed by 12 single set posts and 2 walltrenches which contained 14 posts. All 26 postmolds contained clay loam fill and ranged from 7 to 25 cm in radius (mean=12.08 cm, s=3.78 cm); postmold depths ranged from 17 to 84 cm (mean=48.46 cm, s=17.81 cm). Like in Bastion 1, a large tree root which measured 1.3 m in diameter was found in the center of Bastion 3.

Bastion 3 lay beneath Midden 1 which overlapped the western one-half of the bastion. The midden was traced northward and covered an area of approximately 30 square meters; however, the full areal extent of this midden was not determined. Composed of dark yellowish brown (10YR3/4) sandy loam, the midden averaged 10 to 15 cm in depth. Mississippi Plain *var. Warrior* and untyped shell tempered sherds were recovered from the general midden sample; a 1 by 1 m test (USN 5235) placed within the midden yielded Mississippi Plain *var. Warrior* and Moundville Incised *var. Undetermined* ceramics.

A unique cache of groundstone artifacts (USN 5232) was found in the western exposed edge of the midden deposit. Resting in a shallow pit, six large hand tools had been deliberately stacked upon a sandstone slab. The tools in this feature comprised 1 polished piece of hematite (possibly an anvil), 2 large quartzite cores, 2 whole quartzite cobbles, 1 piece of ground sandstone, and 1 large slab of sandstone which may have been used for grinding (Figure 9).

Based on the ceramic recovery from the midden, it is believed that the bastion and midden were not contemporary. The midden may have been part of a

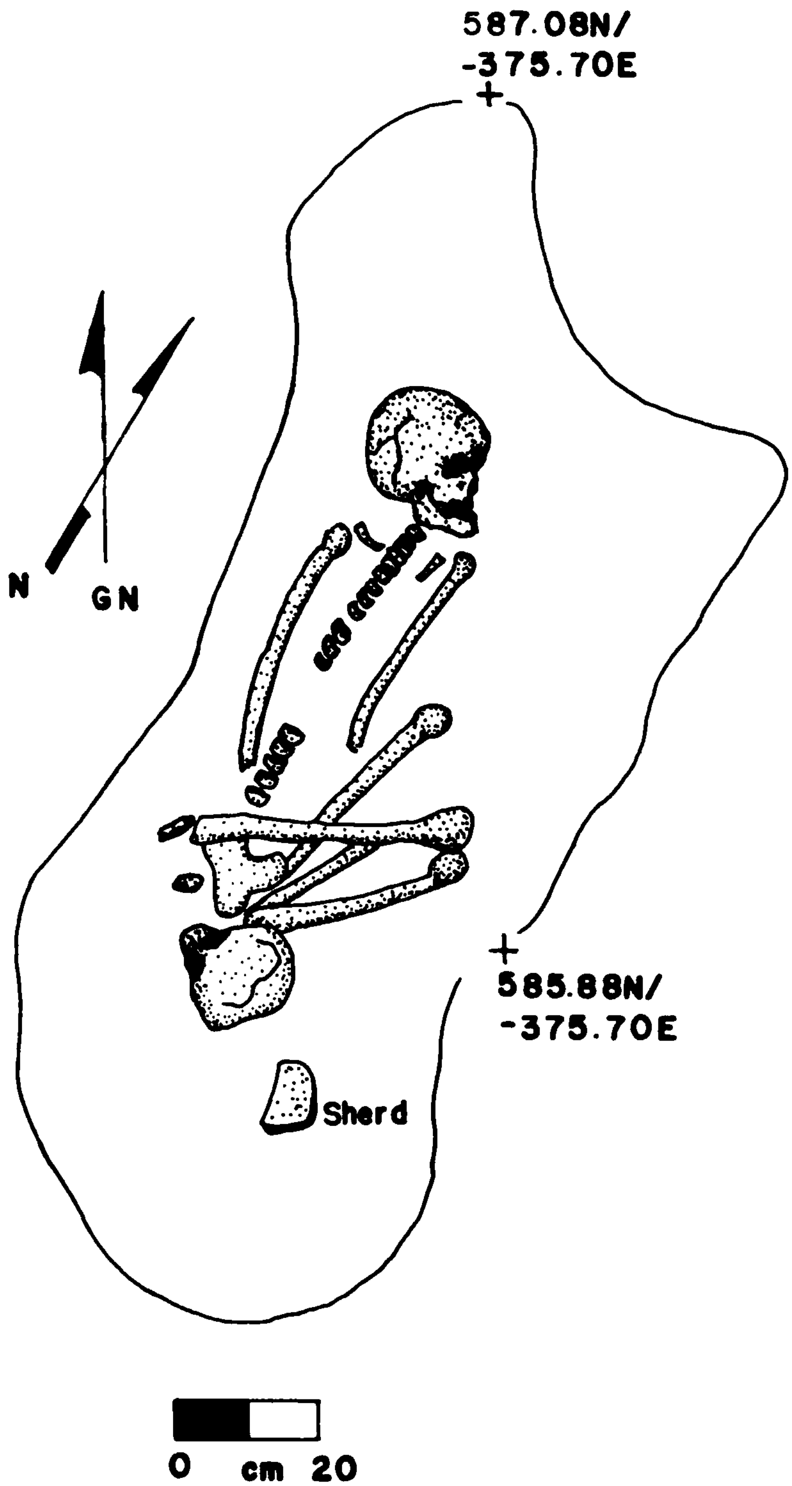


Figure 8. Burial A (USN 7261).

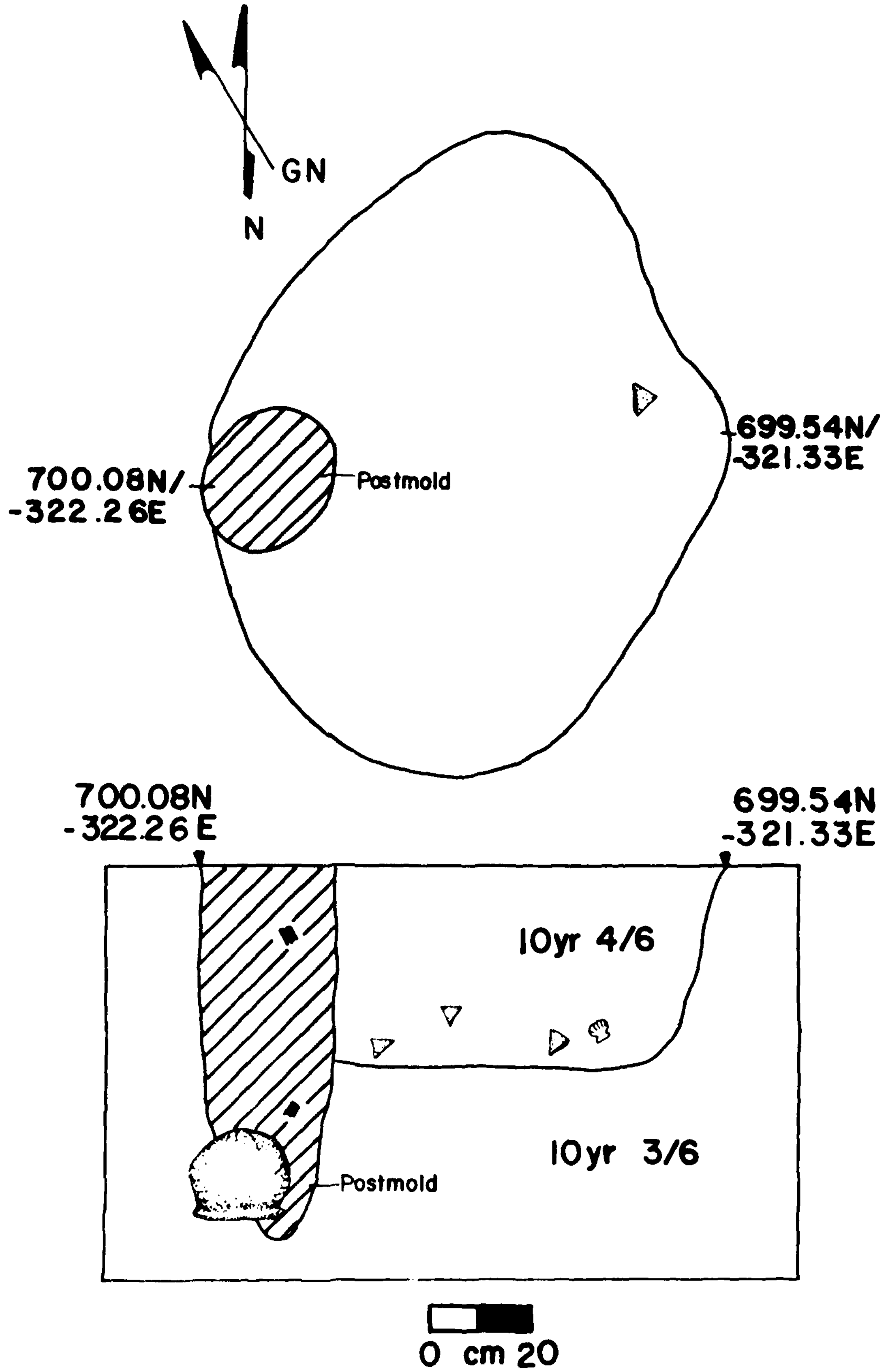


Figure 7. Diagnostic Summerville I vessel (USN 7186) at base of postmold (USN 6297) in Outer Palisade. The postmold cut a large pit (USN 7187).

Features in Curtain Wall

The sole diagnostic artifact for dating the outer palisade lay at the very bottom of Postmold 323 (USN 6297); it was a whole, "Early Mississippian" vessel (USN 7186). This "closed find" marked the Summerville I period and thus established a firm date for the palisade as a whole. Postmold 232, located one meter north of Bastion 1 in Hectare 600N/-400E, continued the long line of postmolds that made up the curtain wall. This particular postmold was 74 cm in depth and 28 cm in diameter. The postmold cut the western edge of Pit 105 (USN 7187) which must have predated the postmold (Figure 3). Pit 105 measured 1.0 by 1.3 m across and was 40 cm deep. The pit was composed of dark yellowish brown sandy loam; the postmold was slightly darker than the pit and had a higher clay content. The pit contained a few flakes, 1 ground piece of hematite, and a few Mississippi Plain var. Warrior sherds. Nothing was recovered from the postmold other than the ceramic vessel, which oddly was inverted.

Burial A (USN 7261) was a primary burial of two articulated individuals: a flexed female adult oriented north-south and a small child deposited at the southern end of the pit (Figure 8). The burial, which appeared to be contemporaneous with the outer palisade, was discovered when following out the palisade line in Hectare 500N/-400E by backhoe trenching. The adult cranium suffered damage from the machine. The oblong pit, which was approximately 0.7 by 1.7 m in size, lay 20 cm east of and just inside the curtain wall. The pit fill, which consisted of dark yellowish brown (10YR3/4) clay loam, was very similar to the fill of the neighboring palisade features. The pit was 20 cm deep and contained Mississippian ceramics: Mississippi Plain var. Warrior, 106 g, and Moundville Incised var. Carrollton, 3 g. In Chapter 6, Volume II, Burial A was classified as "Mississippian," but if it is considered to be contemporary with the outer palisade, it can be safely said that the event took place during the Summerville I occupation.

Midden B (USN 7259) apparently overlay a portion of the outer palisade in Hectare 600N/-400E and was not considered to be contemporaneous with it. Judging from the ceramics, this midden may have been a Summerville II-III feature. The midden measured 4.0 by 5.0 m across and contained a single distinct zone of deposition that averaged 16 cm in depth. The stratigraphic nature of the deposit was revealed in an arbitrarily placed 1 by 1 m test unit (USN 7260). In profile the midden appeared to be an even, dark yellowish brown (10YR3/4), moderately compacted loamy sand which stood in sharp contrast with the lighter (10YR5/8) underlying loamy sand. Because of the lack of field time, Midden B was not stripped away to check for underlying features. The sample screened from Midden B showed a mixing of ceramic types which included Mississippi Plain varieties, Mound Place Incised var. Havana, Moundville Incised var. Carrollton, and Baytown Plain var. Roper.

Bastion 1 (USN 7166)

Bastion 1 was the northernmost bastion recorded in the outer palisade; it overlapped the boundary line of Hectares 600N/-400E and 700N/-400E. The pattern formed by the 23 postmolds, 12 of which were part of a large curved walltrench, made a square construction which measured 5 by 6 m and protruded west of the main palisade line. The majority of the single set postmolds contained clay caps; those within the walltrench were considerably deeper and

Figure 6. Aerial photograph taken of the bend in 1942 (ASCS 1942). Arrows point to line which may be the vestige of the outer palisade. The photograph is oriented north (upper edge) south (lower edge).

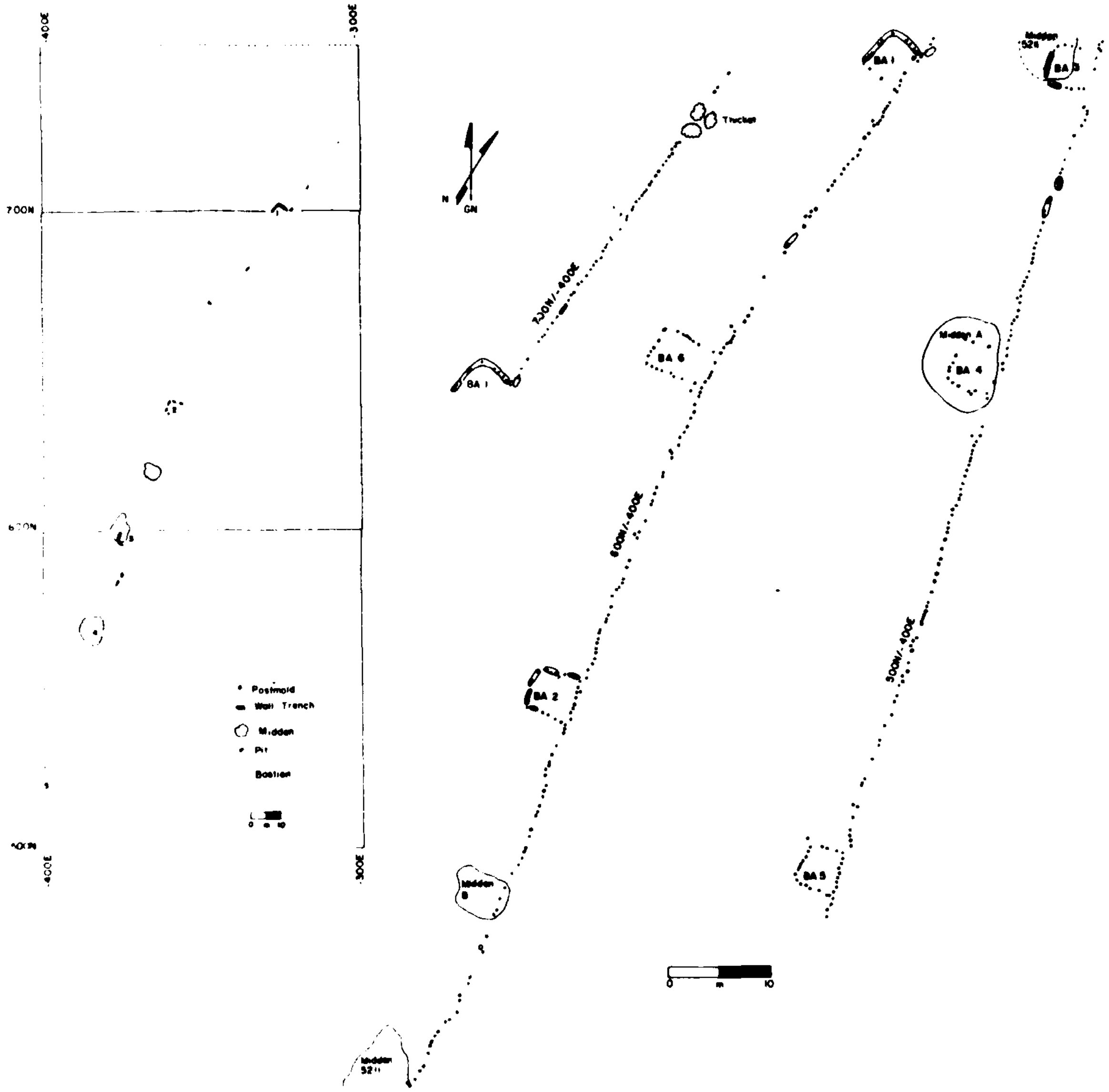


Figure 5. The Outer Palisade (USN 6300). The insert shows the palisade in its entirety; the three sections to the right of the inset correspond to the three hectares.

southernmost section of the outer palisade finally was exposed, it and two bastions (Bastions 5 and 6) were, for the most part, cleaned, photographed, and mapped, but went unexcavated.

Figure 5 illustrates the plan view of each major section of the outer palisade, and the inset shows the palisade in its entirety. An arrow placed on an aerial photograph taken of the bend in 1942 (Figure 6) points to a line which possibly traces the course of the palisade. The discussion which follows begins with a description of the main line of posts which formed the curtain wall. The major features found in association with this line are included in this section. Each bastion then is described in sequential order. These descriptions are followed by a summary of the outer palisade as a whole.

General Description of Outer Palisade

Lafferty (1973:189) defined the term "curtain wall" as "the section of wall on a bastion stockade between the bastions. The front of a curtain wall is usually covered by cross fire from the bastions." At the Lubbub Creek Archaeological Locality the portion of the exposed curtain wall of the outer palisade contained 293 postmolds (this number does not include the bastions). All of these were single set posts with the exception of those set in walltrenches. The walltrenches had been placed far apart from each other (one found per hectare) and fell in direct line with the curtain wall. Approximately one-fifth (21.76 percent) of the curtain wall postmolds were excavated. The 293 postmolds ranged from 60 to 36 cm in radius (mean=12.11 cm, s=3.65 cm); the 64 postmolds for which depths were recorded ranged from 3 to 83 cm (mean=39.44 cm, s=20.40 cm). Judging from these figures, it is obvious that the timbers used in construction of this palisade were quite large, ca. 24 cm in diameter. The postmolds were evenly spaced (approximately 33 cm apart) and, for the most part, were filled with dark yellowish brown clay loam. According to Larson (1972:387), "It does not seem unreasonable to infer that the posts were probably buried no more than one-quarter of their total length." He supports this conjecture by noting that telephone poles are usually buried to a depth of one-fifth their total height (ibid:387). By using Larson's model to figure hypothetical heights for the palisade, the mean depth (39.44 cm) of the outer palisade was multiplied by four. Therefore, the estimated height of the outer palisade was 1.57 m, or approximately 5.22 feet.

Six bastions, evenly spaced 30 m apart, were found projecting westward from the curtain wall. Each formed a 4 m^2 enclosure, and each contained approximately 30 postmolds. Three of the bastions had a combination of walltrench and single set post construction.

The 1942 (HS-3C-48 ASCS 1942) aerial photograph (Figure 6) helped to establish the proposed direction of the palisade. It is believed to have veered eastward at some point near the point where the excavations were terminated and then to have continued to the south side of the bend. It thus would have enclosed the landward side of the Summerville I community. The single diagnostic artifact in direct association with the outer palisade, a Summerville I period plain, shell tempered vessel, was found at the base of a deep curtain wall postmold in Hectare 600N/-400E.

conditions which influenced the elevation points at which the posts were observed. Post heights estimated from the mean and maximum depths of Palisade I were between 1.7 m and 2.3 m (5.6 ft and 7.7 ft) and between 1.6 m and 2.28 m (5.3 ft.and 7.5 ft) for Palisade II. These estimates could mean that the palisade walls were between 5 and 7 ft in height.

In conclusion, five palisade lines were excavated within Hectare 400N/-300E. The palisades circumscribed a large plaza-like area which included the Summerville Mound near its northern wall. Domestic structures appear to have been excluded from the plaza area prior to construction of Palisade III. Palisade III appeared to be functionally distinct from the remaining interior palisades, because it had a bastion and an entrance. The remaining palisades appear to have functioned to demarcate social space. They separated activities in the mound and plaza areas from domestic activities outside the palisade walls. This social division of space appears to have been present throughout the Summerville I and perhaps the earlier part of Summerville II periods of the Mississippian occupation.

THE OUTER PALISADE (USN 6300)

The possibility that a palisade was located on the western periphery of the Lubbub Creek Archaeological Locality first became evident when several postmolds which contained similar fill fell in line in Unit 630N/-366E (USN 5050). These postmolds consisted of dark yellowish brown clay loam and were markedly different from the nearby postmolds, which were filled with sandy loam. A walltrench found in association with these clay loam postmolds prompted the search for bastions. When looking back at earlier field notes and maps, this tentative palisade line matched a line of several more clay-loam filled postmolds found to the south which had been excavated several months before.

The backhoe was used to follow out this proposed line of posts, and this technique proved to be highly effective. A two meter wide area was mechanically stripped and then shovel-skimmed to expose the features. More and more postmolds showed up which contained the greasy clay-loam fill. The curtain wall was traced in a 240-meter line from the southeastern edge of Hectare 700N/-400E to the southwestern edge of 500N/-400E, and six evenly spaced bastions were discovered protruding westward from the curtain wall.

The numbering system used for the outer palisade was divided into three major sections, each of which corresponded to one of the three hectares which the palisade crossed. The middle section which corresponded to Hectare 600N/-400E was the "Master USN" (USN 6300) assigned to the outer palisade. The northern section (USN 7164) corresponded to the portion in Hectare 700N/-400E; the southern section (USN 7165) corresponded to the portions in Hectare 500N/-400E. Every feature associated with the outer palisade was referenced to one of these three sections or hectares in which the feature occurred and appears as thus in the data bank in Volume III.

Approximately every third postmold which lay in the curtain wall in Hectare 700N/-400E was excavated fully. All postmolds which fell within 10 x 10 m sample units were excavated completely. However, as time became short and the palisade became more immense, it was necessary to decrease the number of features actually excavated, especially the number of postmolds. When the

The Eastern Palisades: Summary and Conclusions

The Eastern Palisades enclosed the Summerville Mound and a large plaza-like area, the outlines of which can be seen in aerial photographs. All of the excavated palisades probably contributed to this pattern. Apparent discontinuities in the palisade series could be the result of disturbance, poor visibility, and other factors rather than due to actual discontinuity of the palisade walls. The limitations imposed by these recovery conditions were circumvented to some extent by the use of base elevations to determine sequences of events within the hectare.

The sequence of events determined by the base elevation comparisons indicated that Palisades I and II were early, with some evidence that Palisade II was earlier than Palisade I. The base elevation comparisons indicated that Palisades IV, V and III were later than Palisades I and II, with some evidence that Palisade IV might be slightly earlier than Palisade V. All comparisons of base elevations with Palisade III postmolds indicated that this palisade was the most recent in the series.

The relationship of the structures to palisades was determined by the same method of comparing postmold base elevations. The analysis indicated that the Structure 5 complex, Structure 6, and Structure 8 were later than both Palisades I and II, and that Palisades IV and V could be later than Structure 8, but were definitely earlier than Structure 6. Finally, the sequence of events derived from the base elevation comparisons was related to the Summerville ceramic chronology by analyzing the distribution of shell tempered ceramics within the palisade zone of the hectare. The ceramic analysis indicated that the events within the palisade zone of the hectare spanned the Mississippian occupation from the Summerville I period (Palisades I and II) into the Summerville IV period (represented by Structure 5A, several pits, and possibly Palisade III).

Although analysis of the sequence of events within the palisade zone of Hectare 400N/-300E was the major focus of discussion in the preceding sections, several characteristics of palisade construction were noted. It was suggested that the walltrenches which were included in all of the excavated palisades were not contemporaneous with the single set posts. The base elevation ranges of postmolds included within walltrenches were much greater than the ranges of single set posts and much greater than the expected effect of the hectare's topography. At least two instances of later walltrenches intruded into earlier ones were recorded for Palisade I. The walltrenches appear to be a technique for repairing sections of single set posts or earlier walltrenches in the palisade wall. There was some evidence in the estimated distances between palisade posts and the traces of clay associated with the single set posts of Palisades I, II, III, V, and VI, that at least the original constructions of these palisades were treated with clay. The clay, perhaps, was applied as a preservative measure, as suggested by Lafferty (1973) and may have been applied over withers which were woven in the spaces between the posts.

The post heights of the palisades were estimated from the postmold depths according to the formula suggested by Larson (1972). The postmold depths of Palisades IV, V, and III, however, did not reflect heights that would function adequately as a palisade wall. Instead, the depths reflected recovery palisades were later than Structure 8 according to the base elevation analysis, and Palisade V was earlier than Pit 124 (USN 6848) in Unit 490N/-266E and Pit 1 (USN 4702) in Unit 500N/-281E. Pit 124 was above Palisade V postmolds, and Pit 1 intrudes at least six of the Palisade V corner posts in Unit 500N/-281E. The fill of Pit 124 contained Mound Place Incised var. Akron sherds which are not temporally diagnostic. The fill of Pit 1 included Carthage Incised var. Moon Lake, Mississippi Plain var. Hull Lake, Moundville Engraved var. Tuscaloosa, Moundville Incised var. Moundville and var. Carrollton, and Parkin Punctated sherds. The ceramic assemblage of Pit 1 typologically belongs to the Late Summerville I and Early Summerville II time periods. The presence of some of these types probably resulted from the intrusion of Pit 1 into Palisade V level posts, or indirectly from adjacent Palisade I posts. If the ceramic inventory of Pit 1 includes a significant portion of sherds derived from Palisade V, the ceramic content of this pit could mean that Palisade V belongs temporally to the Summerville II period.

Palisades IV and V were not encountered in the Structure 6 area. Base elevation comparisons of Palisade IV and V postmolds with Zone A of Structure 6 (Structure 6 proper), however, indicated that these palisades would have been positioned below the postmolds of Structure 6. Structure 6 (Zone A) was assigned to the Summerville II-III time period on the basis of included ceramics (i.e., Carthage Incised var. Foster). All of these indirect lines of evidence suggest that Palisade V and Palisade IV should be assigned to either the late Summerville I or Summerville II periods. They might be later than Structure 8 and Zone B of Structure 6, but are certainly earlier than Structure 6, Pit 124, and Pit 1.

Because the post patterns of Structures 5A, 5B, and 5C were isolated analytically in the laboratory, the excavated levels correspond only approximately to the structures which were constructed from the postmold patterns. Level 1, however, corresponds generally to Structures 5A and 5B, and Level 2, corresponds to Structure 5C. Structure 5A has been assigned to the Summerville IV time period on the basis of the Alabama River Applique ceramics recovered from the Level 1 cuts of this structure complex. A radiocarbon date of A.D. 1345 (605 $\pm$90 radiocarbon years, Beta 1098) was obtained from Postmold 333 (USN 4018) within the Structure 5B post pattern. This radiocarbon date would place Structure 5B in the later part of the Mature Mississippian, Summerville II-III. Postmold 333 (USN 4018) of Structure 5B was 24 cm above the Palisade I walltrenches. Structure 5B was superimposed on the northwestern portion of the post pattern of Structure 5C. The Moundville Incised var. Carrollton and Mound Place Incised var. Akron sherds recovered from Structure 5, Level 2, Cut 3, which would have included Structure 5C, are not temporally diagnostic. The structure is however, by its position within the Structure 5 complex, earlier than Structure 5B (A.D. 1345) and later than Palisade I (A.D. 940) and could belong to the Summerville II or earlier part of the Summerville III time periods.

No ceramic associations were recovered from contexts that would allow placement of Palisade III within the Summerville chronology. Base elevation comparisons of Palisade III postmolds with the remaining palisades were somewhat problematical because of the 11 m distance of Palisade III from Palisade I and because of variation in surface relief which had been extensively modified.

palisades, its parallel construction relative to the earlier palisades suggests that it continued to function as did the earlier palisades. The bastion was simply added to a previously established type of construction. The temporal assignment of the outer western palisade to the Summerville I period and of Palisade I within the inner palisade system to this same period suggests that at this time the inner and outer palisades were functionally distinct.

Construction techniques for the inner palisades and the outer palisade appear to have been similar. Both were constructed of spaced posts. The western palisade posts were spaced approximately 33 cm apart and the posts averaged 24 cm in diameter. Estimated spacing of the interior palisades ranged from approximately 16 cm for Palisade III to 37 cm for Palisade I, which suggests a trend toward more closely spaced posts though time. The post diameters of the eastern palisades were slightly less than the average posts of the outer palisade. Eastern palisade average post diameters ranged from 22 cm for Palisade III to 18 to 20 cm for the non-bastioned palisades. The presence of larger posts in the palisades with bastions suggests that larger posts may have been selected for defensive purposes.

Traces of clay were noted in the fill of single set posts for all of the interior palisades and for the outer palisade postmolds as well. These clay traces could be remnants of a clay cover applied over withers woven between the spaces which separated the palisade posts.

Both the inner palisades and the outer palisade consisted of series of single set posts with the inclusion of several walltrenches. It was suggested that the relatively large number of walltrenches in the earlier palisades represented repairs as the original single set posts in the stockade wall deteriorated. The walltrenches within Palisade III and the outer palisade, however, appear to be associated with the bastion constructions. In both palisades which had bastions, the curtain wall was composed primarily of single set posts.

In conclusion, the eastern palisades appear to have formed a series of rectangular walls around a large plaza-like area which included the Summerville Mound and excluded most contemporaneous domestic activities. This division of social space appears to have been present during Summerville I and extended into the Summerville II period. During this time period, independent constructions such as the western palisade were employed for defensive purposes. Although the temporal position of Palisade III is not clear, it appears to combine the social separation functions of the other eastern palisades, which may be earlier, and the defensive function of the earlier western palisade. The western palisade was clearly designed for the purpose of defending the community which it enclosed with a series of bastions on its vulnerable western side.

CHAPTER 7. THE SUMMERVILLE MOUND

John H. Blitz

The most visible feature left by the late prehistoric Native Americans in the Lubbub Creek Archaeological Locality was a large truncated earthen pyramid, 1-Pi-85. The Summerville Mound dominated the central portion of the river bend around which much of the settlement was located. Our knowledge about the development of mound ceremonialism at this site was derived from the early mature Mississippian ceremonial complex discovered on the undisturbed premound surface. The upper portion of the mound could not be directly investigated because it had been bulldozed away in the 1950s. Despite this destruction, our excavations demonstrated that even the remnants of mounds are capable of yielding valuable information.

In the winter of 1901, Clarence B. Moore of the Academy of Natural Sciences of Philadelphia explored the Tombigbee River in his steamboat, The Gopher. His efforts constituted the first archaeological investigation of the site at Lubbub Creek and his observations are quoted below:

> Mound at Summerville, Pickens County, Ala.
>
> In a great cultivated field, about one-half mile in an easterly direction from the landing, on property of James B. Summerville, Esq., of Stone, Ala., is a mound roughly circular in outline, rising about 11 feet above the general level, though, from excavations near the base, whence material for the mound came, it seems much higher. It is circular in outline, 172 feet across the base, with a diameter of 100 feet on the summit plateau. This mound, of great value to the owner, to pen stock in time of freshet, was entrusted to us with a courtesy that marked so many mound proprietors of Mississippi and of Alabama. As excavations on the sides, though refilled, would leave the mound subject to wash when exposed to water, trenches were dug on the summit plateau only. A number of these showed the mound to be of clayey sand with here and there fire-places and refuse material. This mound, like others of its class, was erected, doubtless, as a living site and a place of refuge (Moore 1901:504-505).

The mound did not again attract the attention of archaeologists until the 1970s when the University of Alabama conducted surveys of the area as part of the Tennessee-Tombigbee Waterway Project (Nielsen and Moorehead 1972; Nielsen and Jenkins 1973; Jenkins, Curren, and DeLeon 1975). One edge of what remained of the mound was located in 1977 by Ned J. Jenkins, and his work assured that the mound would be included as an important part of the University of Michigan's research program.

Many physical changes had occurred at the site in the seventy-eight years since Moore's visit. The USDA Soil Conservation Service's aerial photographs of 1936, 1942, and 1955 show that the mound and portions of the site were covered with trees. According to Mr. Red Martin, the former land owner, the timber was cut and the mound was bulldozed down to make room for crops sometime in the 1950s. A 1959 aerial photograph showed the flattened mound in plan, but a 1965 aerial photograph showed that the mound was no longer visible. The bend was used for agriculture until the late 1960s when bermuda grass was planted for cattle grazing, and a gravel operation had dredged away portions of the river bank within 150 meters of the mound. By 1979, the Summerville Mound was visible only as a slight rise in the surface relief of the site, and in other circumstances it might well have gone unnoticed.

Because only the general location of the mound was known, the mound excavation was undertaken in three distinct stages: (1) Test trenches were cut to define the extent of the _in situ_ deposit. (2) The plowzone was stripped and the mound dimensions were mapped. (3) The premound surface was extensively excavated. The crew responsible for the initial exploration and subsequent excavation of the mound consisted of one field supervisor, one field assistant, and four crew members, one of whom operated a backhoe equipped with a front-end loader. This machine proved excellent for all trenching and other heavy excavation tasks and made excavation of the mound by a small crew an efficient and realistic goal. Excavation began in August, 1979, and was completed on December 21, 1979.

TEST TRENCHES

When the University of Michigan began systematic test excavations in the Lubbub Creek Locality, it was determined that the low rounded mass tentatively identified as the remains of the Summerville Mound was spread across a 3600 square meter area. This locus was contained within Hectares 500N/-200E and 500N/-300E of the grid system that had been used since the beginning of the Phase I investigations. The mound was excluded from the 1 by 1 m, 2 by 15 m, and power auger test units used in the initial site sampling program because these techniques were inadequate for determining the mound dimensions. It was decided instead that the University of Alabama 1977 test trench should be reopened and extended several meters to the south. Based on the inspection of this profile, the mound then could be cross-sectioned with a series of shallow backhoe trenches for the purpose of removing the thick sod and plowzone to determine the nature and extent of the _in situ_ deposit, if, indeed, any portion of the mound still survived intact.

Test Trench 1

Test Trench 1 was originally 33 meters in length when excavated by the University of Alabama in 1977. This trench was reopened to a depth of [illegible] meters, was expanded to 80 cm in width, and was extended 6 meters beyond the original 1977 limits, which gave it a total length of 39 meters. Although the trench was not perfectly aligned with the grid system, since it had been originally excavated prior to this grid, it roughly paralleled the grid north to south. It began at 575N/-179E and extended south to 536N/-181E. After excavation, the east profile was carefully troweled, and discrete strata were identified, drawn, and photographed.

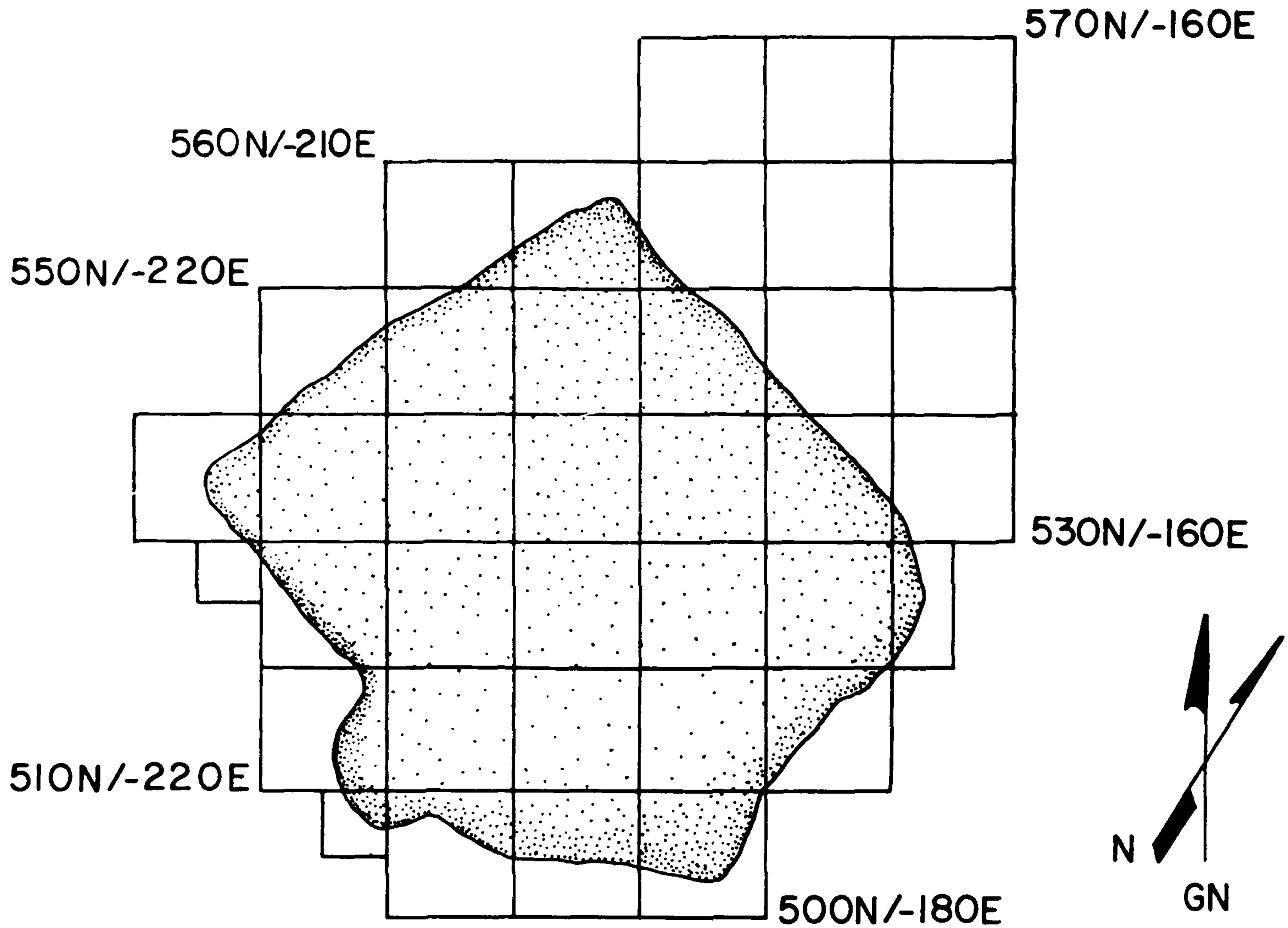


Figure 1. General grid system superimposed over the remnants of the Summerville Mound, 1-Pi-85.

This profile presented a confusing array of mound redeposition and wash. The trench exposed a 14 m section of a deep depression filled with sandy soils, heavy clays, daub, charcoal, and scattered sherds. This feature proved to be an aboriginal borrow pit from which the earth used to construct the mound had been removed. It was this area into which the bulldozer operator had pushed the upper portion of the mound when he flattened the edifice in the 1950s. This redeposited mound fill (Zone B) rested above a 10 cm thick stratum of charcoal and humus which marked the old pre-1950s sod line (Zone C). The good preservation of grasses and other organic material indicated that the redeposition was a recent episode and the presence of charcoal was the result of this modern land clearing and burning. Prehistoric daub, sherds, and bone, as well as pieces of iron, round and square nails, and historic ceramics and glass, were mixed throughout the redeposited material.

Heading south along the profile, between the edge of the borrow pit and the base of the mound, a 9 m section of profile showed a 20 cm thick plowzone (Zone A) and a 30 to 40 cm thick layer of sandy soil (Zone D) containing ceramic sherds, bone, and charcoal flecks. This zone was deposited by erosion of the flanks of the mound. This erosion wash overlaid another distinct layer of wash that began approximately 60 cm below the ground surface and averaged about 10 cm in thickness (Zone E). This zone was quite similar to Zone D except that it was darker brown in color and probably represented the wash from an earlier stage. These two layers of wash were deposited over the original ground surface (Zone P). Zone P was a brown loamy sand 20 cm thick. No postmolds or pits were discernible. The original ground surface sloped down from the mound at an angle of from 10 to 15 degrees and terminated at the edge of the borrow pit.

The remaining 10 m profile showed that Test Trench 1 had intersected the mound at a perpendicular angle and exposed three clay construction stages composed of alternating sand fill deposits. These complex construction stages will be examined in detail below. From the profile it was clear that the main portion of the mound extended south and west of the test trench for an unknown distance.

Test Trench 2

With the aid of the backhoe, a 80 cm wide trench was excavated along the east-west grid, perpendicular to Test Trench 1. The total length of this trench was 75 meters (Figure 2). A 22 m section of this trench, from 536N/-160E to its intersection with Test Trench 1 at 536N/-182E, was dug to a depth of approximately 3 m. The remaining 53 m of the trench west of the 536N/-182E junction was excavated to a depth of 30 to 40 cm. This shallow cut removed only the thick plowzone and protected the undisturbed portion of the mound. The western terminus of Trench 2 was at 536N/-253E.

If the trench is examined from west to east along the north profile from 536N/-160E, the strata show that along a 7 m section it had intersected the large borrow pit filled with redeposited mound material. Between this borrow pit and the mound was a 6 m section of the profile which showed the mound wash Zones D and E. At , 536N/-182E, Test Trench 2 intersected the mound for 7 m and revealed the same alternating series of clay and sand construction stages observed in Test Trench 1.

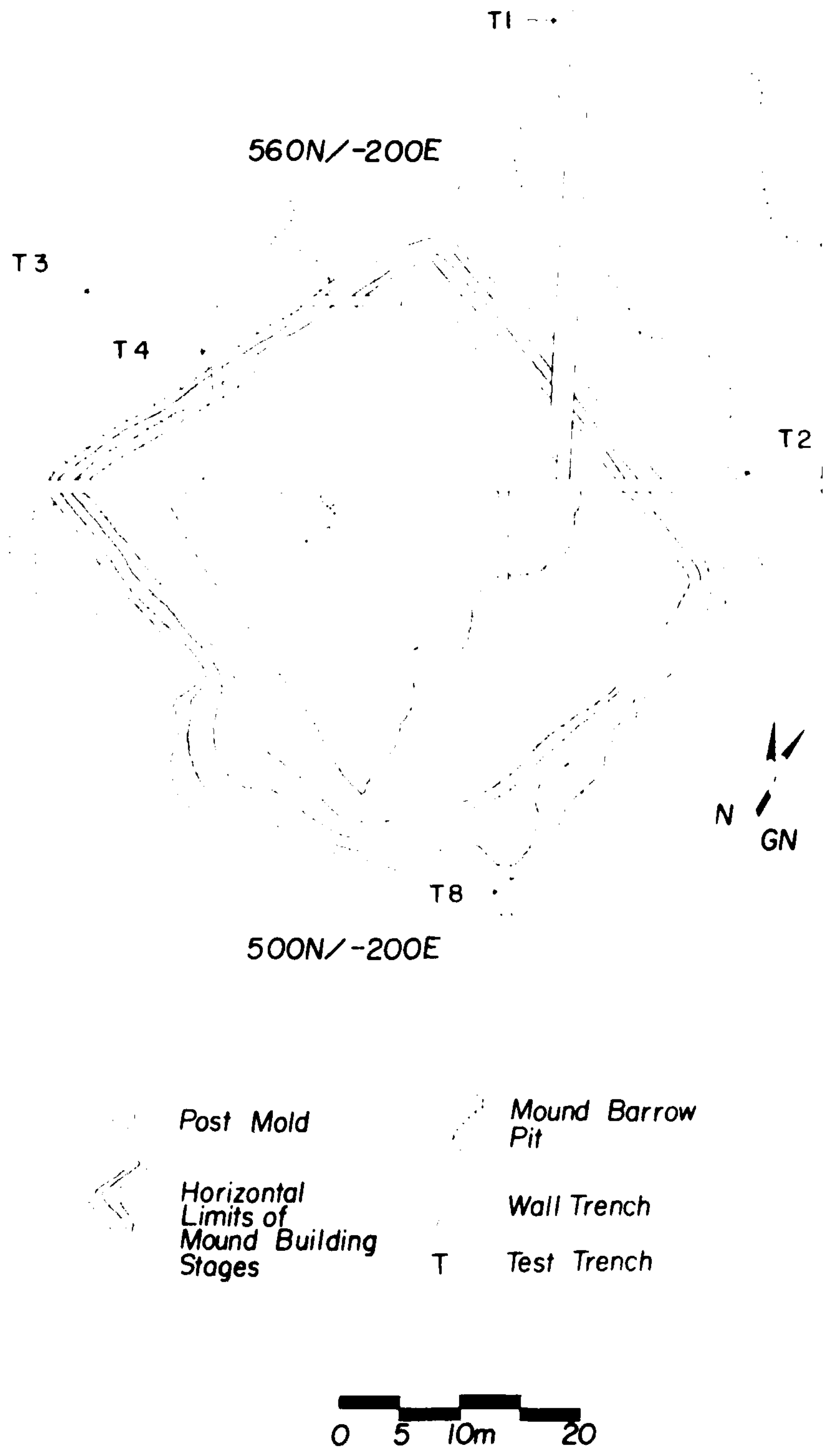


Figure 2. Location of Test Trenches 1, 2, 3, 4, and 8 in relation to the Summerville Mound, 1-Pi-85.

Careful examination of the shallow 53 m section of Test Trench 2 indicated that one or more clay construction stages had been uncovered on the floor of this unit at 536N/-225E, and a concentration of mussel shells crossed the floor of the trench parallel to these clay zones. These features were interpreted as the western edge of the mound.

Test Trench 3

This trench was located 14 m north and parallel to Test Trench 2; it was cut 40 m long and 80 cm wide. As in Test Trench 2, this unit was quite shallow, and only 30 to 40 cm of plowzone was removed. No profile was drawn, but the floor of the trench was inspected for clues that would identify the perimeter of the mound. Heavy gray clay and mussel shells crossed the floor of the unit at 550N/-202E, and fire-hardened clay and daub to the west of this location seemed to represent redeposited material similar to that encountered in the borrow area. The presence of the mussel shell was seen as the same depositional event as the shell located in Test Trench 2.

Test Trench 8

An 80 cm wide trench was cut northward 35 m from 500N/-186.80E to intersect Test Trench 2 at 535N/-186.80E. The trench was dug only deep enough to remove the plowzone so that the undisturbed surface below could be examined. Amorphous concentrations of clay were noted on the floor of the trench, but the nature of the mound deposition in this unit remained unclear.

The four trenches--Test Trenches 1, 2, 3, and 8--had been cut to define the perimeters of the mound and the extent of the undisturbed deposit. Test Trenches 1 and 2 had been cut 3 m deep and had exposed alternating clay and sand construction stages. Test Trench 3 provided evidence that the mound extended north of this location an unknown distance. Test Trench 8 suggested the possibility that the mound continued at least 35 m south of Test Trench 2. These exploratory cuts were cautiously shallow to minimize destruction of *in situ* features. The fill from Test Trenches 1 and 2 was spread in an adjacent field, and after they were washed by rains, a collection of artifacts was taken from their surface. This material was assigned a general mound provenience.

HORIZONTAL STRIPPING

The four test trenches had shown that a portion of the base of the mound remained intact. They provided some clues to establish rough boundaries for the deposit, but little other useful information could be obtained therefrom. Trenching as a method of mound excavation has many limitations. Although it provides a means to evaluate the stratigraphy as seen in profile, exploratory trenches can be very destructive. Even when long trenches are excavated by levels, which is extremely time consuming, the horizontal extent of various construction stages and the spatial relationships of features encountered on these stages cannot be defined. After the trenches were completed, the following major questions remained unanswered: (1) What was the shape and extent of the borrow pit, and was there more than one such feature? (2) What was the horizontal extent of the various mound construction stages? (3) Were the clay and sand zones encountered in different trenches identical construction stages? As a result of the foregoing considerations, it was decided to horizontally strip away the plowzone over the entire mound.

Excavation Procedure

The mound was staked in 10 by 10 m sample units, and the plowzone was stripped from these units. This technique was identical to the method used in the village excavations. Prior to the stripping operation, the survey crew had recorded elevations at 10 m intervals for the entire mound area. Working in sample units of this larger size provided the archaeologist with a greater ability to recognize spatial relationships between individual features and at the same time control over provenience remained as strict as that obtained in smaller units.

The excavation procedure was essentially the same for each of the 35 10 by 10 m units. First the unit was marked with string to provide guides for the backhoe. Then, using a specially built backhoe bucket without teeth, the operator stripped off the plowzone and sod to expose the undisturbed surface. A person acting as a monitor aided the operator in determining the depth of the cut. The back-dirt was piled up beside the unit until it could be removed to another part of the site with the front-end loader. After the mechanical stripping, the crew shovel skimmed or troweled the surface of the unit clean, and features or horizontal bands representing the various construction stages could be defined.

This clean surface was photographed with both color and black and white film. Defining features for photography had to be done quickly. The hot sun baked the floors into a hard pan rapidly, and the differences in soil color, which were apparent when the surface was moist, were obscured when it was dry. Aluminum gutter spikes marked with colored plastic tape enabled us to color code various construction stages and features as they were traced across the floor of one unit to the next.

The order in which each sample unit was stripped had to be chosen carefully because the backhoe had to maneuver so as not to cross any units already exposed. As work progressed the back-dirt began to pile up, and the backhoe had to spend valuable time removing this dirt to another part of the site. The problem of what to do with the back-dirt was solved by renting an eight cubic yard dump truck and parking it adjacent to the area being stripped. The backhoe could then dump dirt directly into the truck, the truck could cart it away, and valuable time was saved. This dirt was then spread in another area, surface collected after rains, and any artifacts that were found were assigned a general mound provenience.

First the area east of Test Trench 1 was cleared (Figure 3). Once cleaned, the floor of this area showed that the borrow pit was quite large--in some places more than 20 m wide--and was parallel to the north side of the mound. One sample unit, which was contained entirely within the borrow pit area (SW corner 560N/-180E) was excavated with the backhoe in order to obtain a sample of the redeposited material. The material was removed down to the old pre-1950s sod line. A 5% sample of this redeposited fill was waterscreened and the rest was spread and collected in the manner described above. This unit revealed that the depth of the borrow pit was 1.40 m; however, the profile drawn in Test Trench 1 showed that the borrow pit had filled with some 30 to 40 cm of sediment between the time it was excavated for

Figure 3. The area of the Summerville Mound, 1-Pi-85, east of Test Trench 1 after the plowzone had been removed. The borrow pit is visible to the right rear of the cleared area; mound building stages are visible in the center left portion of the cleared area.

mound fill and the time the mound was bulldozed back into it.

The stripping operation continued west, then south, and finally northeast in a circular manner, working from the center of the mound outward to the edges. Usually the crew had no difficulty in keeping pace with the backhoe. Sometimes the backhoe was required at another part of the site and at other times it experienced maintenance problems, but even with these delays, an area of 3675 square meters encompassing the entire mound was stripped and mapped in 30 work days.

MOUND CONSTRUCTION STAGES

After the horizontal stripping and mapping was finished, a much more complete picture of the mound emerged. What remained of the base of the mound, which was composed of alternating zones of clay and sand, contrasted sharply with the surrounding soils. This mapped surface represented the cleavage plane from which the bulldozer had sliced away the upper portion of the mound in the 1950s, and it revealed the mound construction stages in a manner similar to concentric growth rings exposed when a tree is cut.

These remnant stages showed that the Summerville Mound was a pyramid which had sides of roughly equal length that formed a square base with sharp angular corners. The dimensions at the base of the final construction stage were 39 by 40 m, and these figures can be translated into a basal "diameter" of 131.2 feet. When C. B. Moore measured the mound at the base in 1901, he found it had a diameter of 172 feet. The difference in the two measurements can be explained by the fact that Moore described the mound as "roughly circular in outline" (1901: 505). Since the horizontal surface map showed that the mound was definitely pyramidal, it was apparent that by 1901 heavy erosion had added to the basal dimensions by washing soil from the summit and had created the rounded shape seen by Moore. In prehistoric times, therefore, the height of the final stage must have been greater than the 11 feet recorded by Moore.

Most of the major mound construction stages were clearly visible on the stripped surface, and although portions of the southeastern edge were quite faint, the stages were traced easily around the entire circumference. A second concentration of redeposited fill from the destroyed upper portion of the mound was found within a depression that adjoined a 30 m segment of the western side of the mound. The total configuration and extent of this depression is not known, but the profile of Test Trench 4 showed the deposit had a depth of 1.20 m. It is probable that this depression is a borrow pit similar to the one described earlier.

In two places along the sides of the mound the line of heavy clay that represented the final construction stage made an abrupt turn perpendicular to the side of the mound, looped around in a semicircular manner, and rejoined the mound. This phenomenon marked the location of one and possibly two ramps that provided access to the summit.

Test Trench 4

After the horizontal stripping of the plowzone was completed, it was possible to correlate the zones defined in vertical profile with the various parallel bands of clay and sand plotted on the horizontal maps. Until this point in the excavation, no sample of artifacts had been collected from the mound except from back-dirt surface collections.

It was necessary to obtain an adequate sample of cultural material associated with each visible mound construction stage. A 10 by 10 m sample unit, 540N/-110E, was chosen for this purpose. First, the backhoe cut a north-south trench 10 m long, 80 cm wide and 1.50 m deep so that a profile could be drawn of the unit to be sampled. The visible zones in Test Trench 4 were drawn, photographed, and soil samples taken (Figure 4). This vertical control enabled us to judge the depth and configuration of each zone and prevented any chance of any accidental mixing of the zones. Then a crew member carefully removed a percentage of each zone in the sample unit. Since all zones were not of a uniform thickness, the percent sampled was a subjective judgement for each zone. In each case, the actual volume of sample was recorded and the sample was waterscreened through 1/4" hardware cloth.

TABLE 1

Volume of Soil Screened from Mound Zones

Zone	Wheelbarrow Loads	Cubic Meters	Percent of Zone Waterscreened
H	5	.30	90%
N	15	1.00	20%
I	5	.30	20%
J	15	1.00	20%
K	5	.30	50%
L	5	.30	10%

DESCRIPTION OF THE MOUND CONSTRUCTION STAGES: ZONES A-N

As an integral part of the recording system used. each individual entity, whether feature, analytical unit, or stratum was given a Unit Serial Number (USN). It was necessary to give a feature or stratum a more descriptive designation as well. For this reason, each stratum associated with the mound was given a lettered zone. These designations were assigned as each stratum was uncovered or defined. The list of zones should not be read as a strict progression from surface to subsoil, but simply used as a means to order their description.

Zone A: Plowzone

The plowzone which covered the mound area averaged about 20 cm deep. Auger tests through the entire bend showed that all areas had been in cultivation, but that rarely had the plow cut to a depth of more than 25 cm. The deepest [illegible] of plowzone occurred on the lowest portions of the bend;

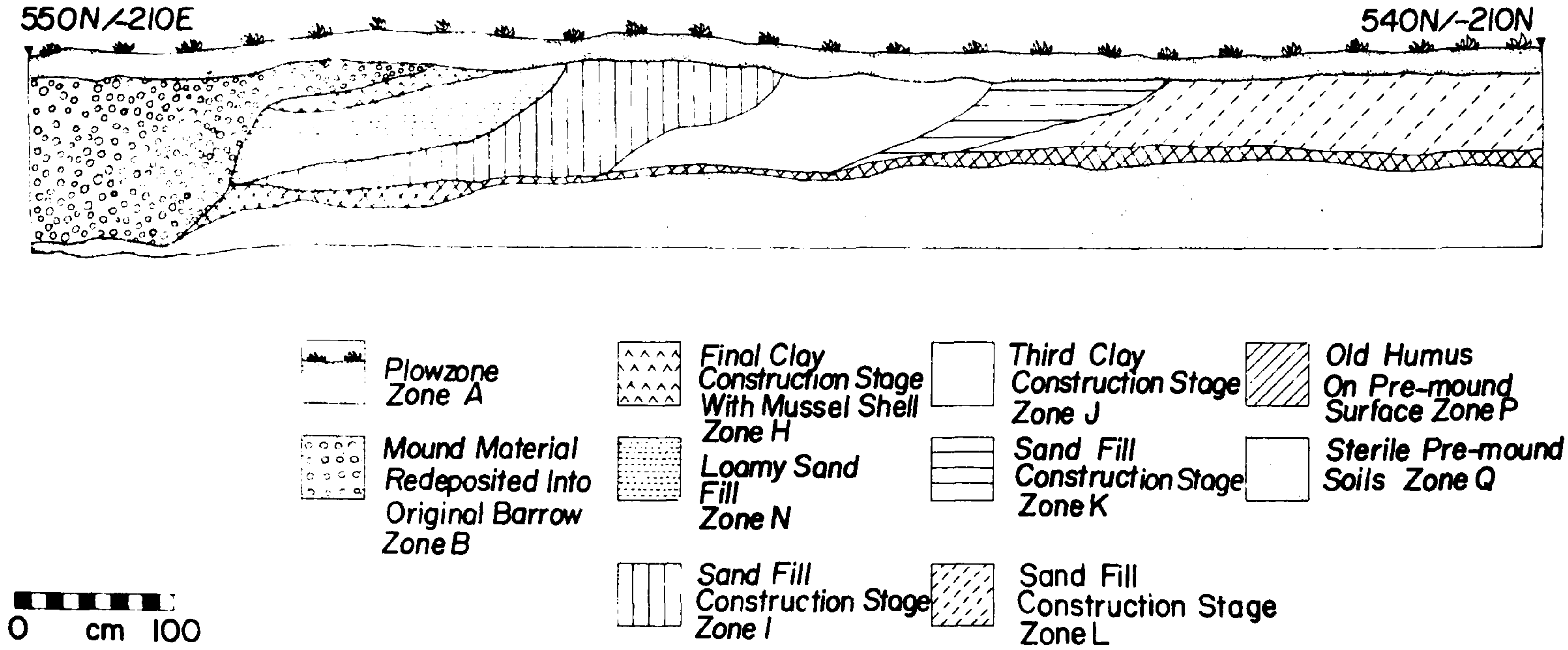


Figure 4. Profile of the east wall of Test Trench 4.

that is, in those areas subject to frequent flooding. Unlike the rest of the bend, the mound area had been plowed for only twenty years. Despite the brevity of this period, concentrations of daub and other debris from the destroyed mound were spread widely through this zone around the perimeter of the mound as well as over the borrow areas.

Zone B: The Redeposited Mound Fill

This zone encompassed all of the mound redeposited into the original borrow pits in the 1950s. Daub, shell tempered ceramics, chalk, small sandstone chunks, historic ceramics, round and square nails, barbed wire, and green and brown glass were present in this zone. The maximum depth of Zone B, which was measured in the Test Trench 1 profile and in excavation of 560N/-180E, was 1.40 m. Test Trench 4 cut through a portion of the western borrow area and showed that Zone B at this location was 1.20 m deep.

Zone C: Pre-1950's Sod Line

This zone was evidenced by a 10 cm thick stratum of humus which marked the old surface at the bottom of the borrow pit. The good preservation of grasses and other organic material showed that the redeposition was a recent result of modern land clearing.

Zone D: Mound Wash and Erosion

This sandy zone was deposited by soils that had washed down from the sides of the mound and had left a distinctive wide band of sediments around the entire perimeter. The depth of this band was variable: from 8 to 10 cm along the sides, to much thicker deposits around the ramps and at the corners where erosion was heaviest. It was quite easy to trace this zone horizontally except along the western side of the mound where the borrow pit directly adjoined the mound. A few scattered shell tempered sherds and small bits of daub were the only artifacts associated with this zone.

Zone E: Minor Erosion

This was a sandy layer of soil that underlay Zone D. It occurred in an 8 m long band in sample Units 540N/-180E and 540N/-190E, but it was not found at other places around the mound. This stratum may actually be the same as Zone D and the darker color of Zone E may have been due to the leaching of organic material from above and its greater moisture content. No artifacts were recovered from this zone. Test Trench 1 showed this wash zone to be 20 to 30 cm thick.

Zones F and G: Redeposition Episodes

These minor zones were exposed as a narrow band of fired daub and clay on the north side of the mound. In profile these deposits rested one over the other, and each had a maximum thickness of 10 cm. These zones were contained under the wash Zones D and E and were directly above the final mound construction stage, Zone H. These zones represented a limited concentration of debris deposited on the steep flank of the mound after the final mound stage was completed but before the onset of heavy erosion from the summit. The presence of large amounts of fired daub indicated that this debris was redeposited from some other location, probably the mound summit.

Zone H: Final Clay Construction Stage

This final construction stage was composed of a dense grey clay that easily could be traced around the exposed edges of the mound. This zone, which formed a rectangle 39 by 40 m, was a thin mantle of clay that varied from 30 to 50 cm thick and represented the final form of the mound at the time of its abandonment. The northern and western corners of Zone H formed sharp angles (Figure 6), whereas the southern and eastern corners were more rounded. This difference possibly was due to ramp construction at the southern and eastern corners. Although a few random sherds were present everywhere in this zone, concentrations of broken vessels were encountered only on the western side where the borrow area paralleled the mound for 29 m. Heavy concentrations of freshwater mussel shells and small amounts of animal bone were also present at this location. This debris appeared to be kitchen garbage dumped down the exposed mound slope. It probably came from the summit, since the open borrow pit would have restricted an approach from the village. It is not known whether this final clay stage supported buildings, but large amounts of thick daub in the redeposited material indicated the presence of structures on some stage of the destroyed upper mound.

Zone I: Sand Fill Construction Stage

This light colored sand contrasted sharply with the dark clay of Zone H. It was composed of the same sandy alluvial soil that covered the entire village area. This soil was dug from the borrow pits and was used to build up the mound between the third clay construction stage, Zone J, and the final clay construction stage, Zone H. It varied in thickness from 1.30 m to 1.80 m and contained very little cultural material. When examined in vertical profile, this zone was quite homogeneous in nature, and no individual episodes of basket loading were visible.

Zone J: Third Clay Construction Stage

Zone J appeared as a broad band of hard packed grey clay of a similar color and texture as Zone H. This heavy clay formed a nearly perfect square, [illegible] m across at the center. Sharp corner angles were quite clear and accentuated the mound's pyramidal form. This zone contained large amounts of mussel shell, sherds, and smaller amounts of animal bone, all of which were thoroughly mixed within the heavy clay. This debris was concentrated, as was the case for Zone H, on the western side of the mound parallel to the borrow area. The grey clay varied from 1.0 to .20 m in thickness. No daub was found in association with this zone, but it must be kept in mind that the area was examined represented the perimeter of the mound's base and that *in situ* material on the summit had long since been destroyed.

Zone K: Sand Fill Construction Stage

This minor band, which was a layer of fill between Zone J and Zone L, was very homogeneous in texture and color. Although it was a distinct fill zone, it was difficult to trace completely around the mound, and in several areas it tended to blend with Zone L. It varied from .30 to 1.0 m in thickness and contained almost no cultural material.

Figure 12. Structure 1 (center) and Structure 2 (right) on cleaned premound surface.

stain as illustrated in Figure 11. A small bowl-shaped pit dug 25 cm into the floor contained minute charcoal flecks. The floor area was slightly lower than the surrounding surface and this appearance was accentuated by a 15 cm thick mass of clay that had been packed against the outside walls on three sides. This mass lay in 25 cm wide strips along two opposite walls but increased in width to 1.50 m on each side of the vestibule entrance. Although subsequent activity may have reduced the original height and shape of this clay, it perhaps functioned as an elevated platform or bench for special activities.

The vestibule entrance consisted of two parallel wall trenches dug perpendicularly to the structure wall. They averaged 35 cm deep, and no postmolds were visible in their fill. Between these two trenches was a passageway 40 cm wide and 2 m long. The floor of this entrance was packed with a dense white clay, and the center of the passage was elevated slightly above the two ends. This slight rise may have prevented water from seeping into the building. Similar wall trench entrances were associated with domestic dwellings in the village area, but none of these entrances had prepared clay floors.

A circular fireplace, Hearth 1, had been placed in the center of the building. It was constructed by digging a pit 10 cm deep and 65 cm in diameter. This pit was packed with yellow clay and molded to form a shallow basin with a rim raised just above the level of the floor. Fine grey ash with charcoal flecks filled the basin, but neither bone nor shell nor other artifacts were encountered in this fill. The interior of Structure 1 was completely free of debris, in marked contrast to the floors of the domestic structures in other areas of the site.

Structure 1 was excavated in the same manner as other structures on the site. Balks 20 cm wide divided the building into four quarters, and the floor in each quarter was excavated and waterscreened separately. Features and artifact concentrations were mapped and excavated. After the floor was excavated, the interior was cut to a depth of 10 cm below the floor to reveal features obscured by the dark stained floor.

Structure 2 and Associated Features

This structure was a rectangular wall trench building that predated Structure 1. The wall trenches were not strictly equal in length but formed a square enclosing a 30.25 square meter floor area. The wall trenches were 60 cm deep and 30 to 40 cm wide. It was not always possible to isolate individual postmolds within the trench fill, but those which were discovered averaged 10 to 1[illegible] cm in diameter and were spaced closely together. These posts did not protrude below the bottom of the trench and there was no indication that any horizontal braces had been used. Two short parallel trenches protruded 90 degrees from the eastern wall trench. This feature was contemporary with the structure, but its function was not determined. Two of the corners had been closed by posts, and the building was probably entered through one of the remaining open corners. No interior postmolds were found, and the entire floor, which showed no special preparation, was remarkably free of bone, shell, ceramics, and similar debris. No daub was found on top of the floor, and there was no indication that the building had burned.

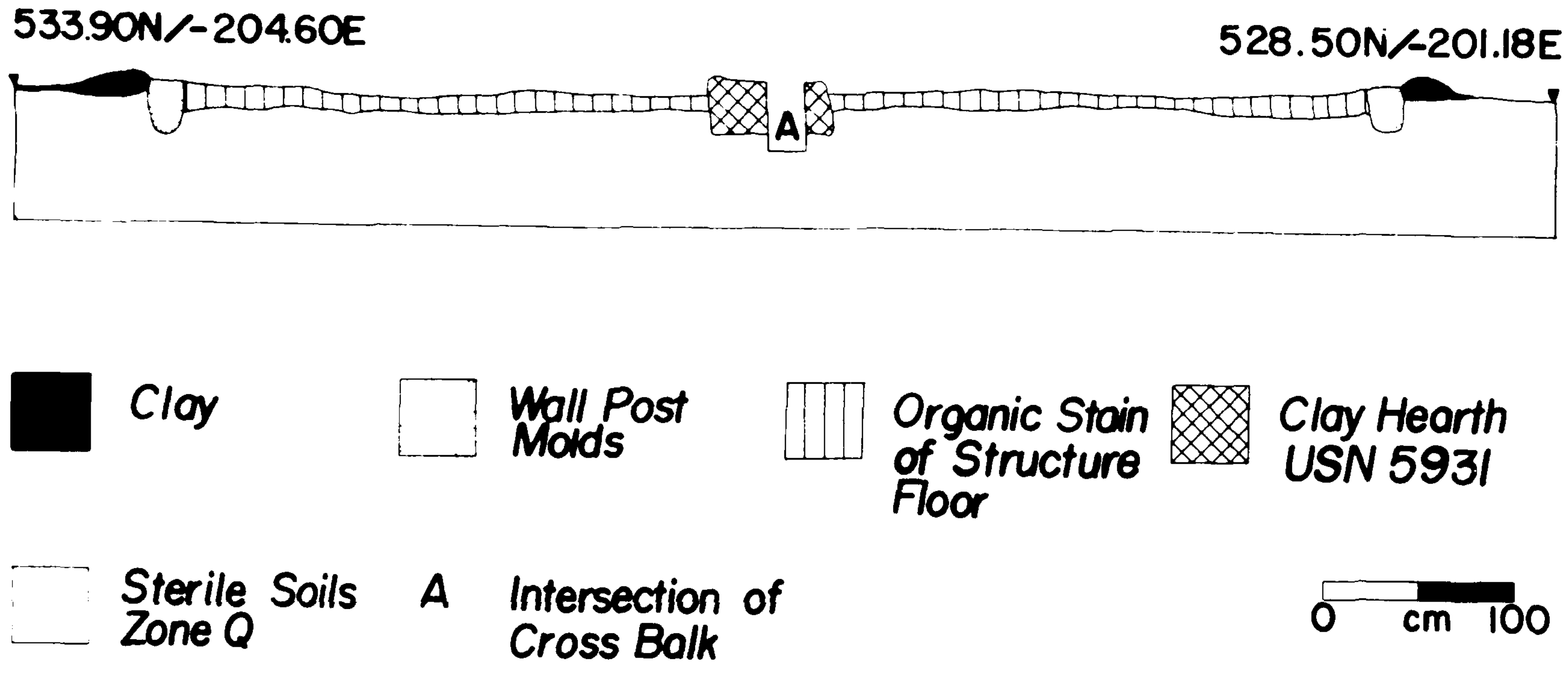


Figure 11. Profile of Structure 1.

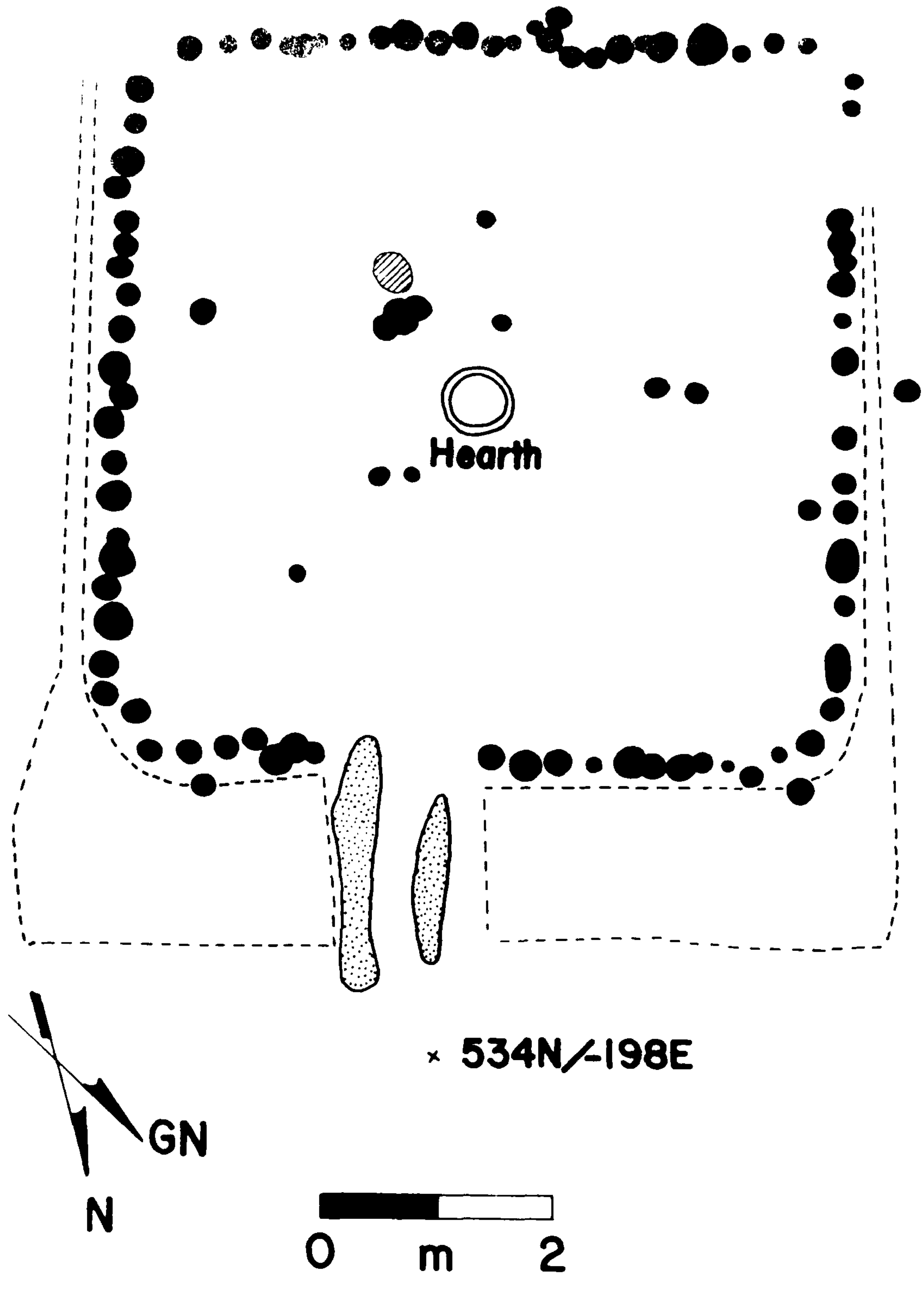


Figure 10. Structure 1 floor plan. The dotted line indicates the limit of the clay embankment.

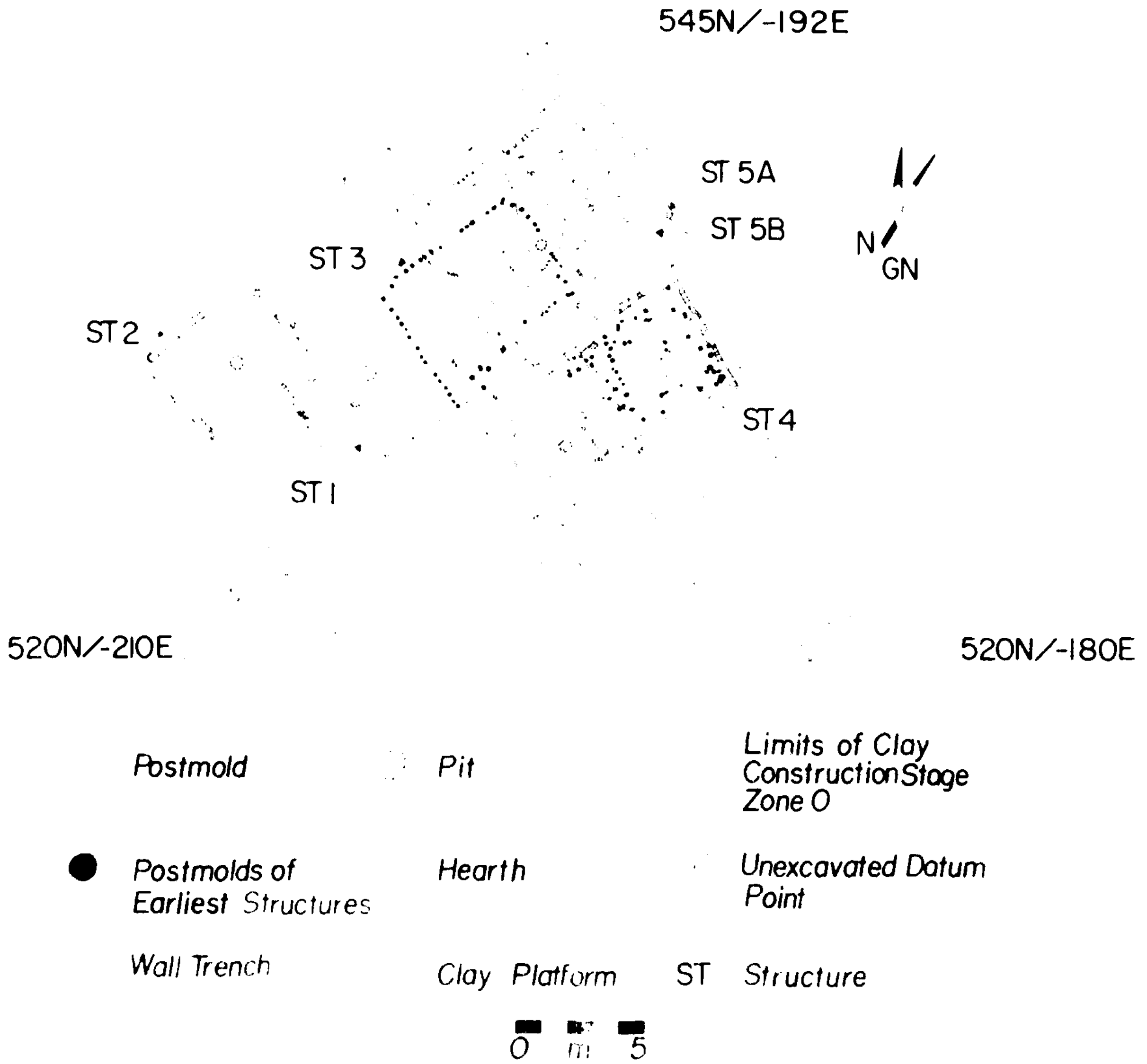


Figure 9. Structures 1, 2, 3, 5, 5A, and 5B and the limits of yellow clay cap, Zone 0, which overlaid the Structure 5 complex.

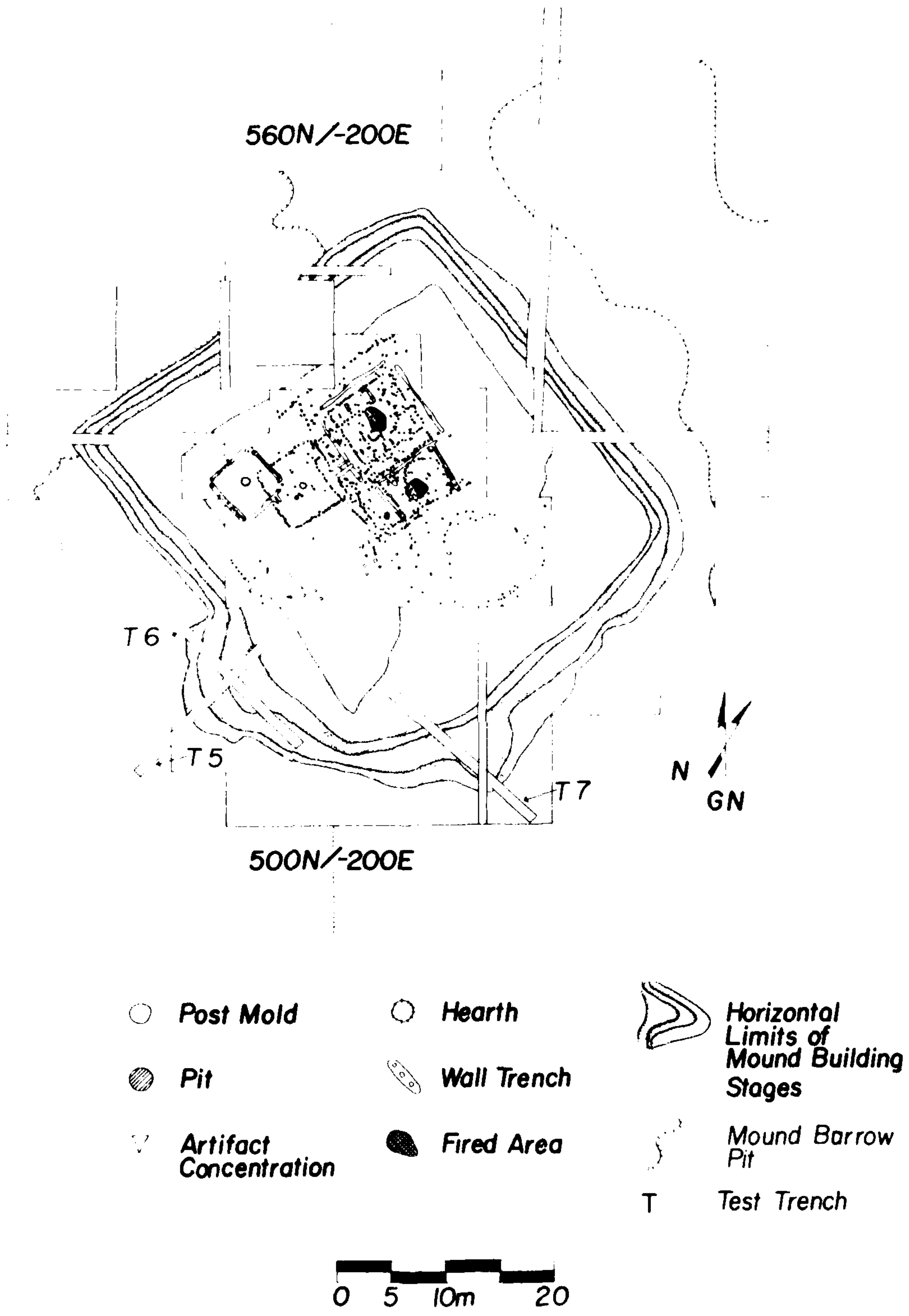


Figure 8. Composite plan of the features in the premound zone.

TABLE 3

Artifact Content of Mound Zones.

Zone	Mussel Shell	Faunal Remains	Lithic Debris	Ground Stone	Fired Daub
A			X	X	X
B	X	X	X		X
C					
D			X		X
E					X
F					X
G					X
H	X	X	X	X	X
I					
J	X	X	X	X	X
K					
L					
M					X
N			X	X	X
O					
P		X	X	X	X
Q	Sterile Soils	Sterile Soils	Sterile Soils	Sterile Soils	Sterile Soils

TABLE 2

Soil Content of Mound Zones.

Zone	Soil Texture	Soil Munsell Color
A	Sandy Loam	10 YR 3/4 Dark Yellowish Brown
B	--	--
C	--	--
D	Loamy Sand	10 YR 4/6 Dark Yellowish Brown
E	Loamy Sand	--
F	Loamy Sand	--
G	Clay/Sand	--
H	Clay	10 YR 3/2 Dark Grayish Brown
I	Sand	10 YR 3/6 Dark Yellowish Brown
J	Clay	10 YR 3/3 Dark Yellowish Brown
K	Sand	10 YR 4/6 Dark Yellowish Brown
L	Sand	10 YR 4/4 Dark Yellowish Brown
M	Clay/Sand	10 YR 5/6 Yellowish Brown
N	Clay/Sand	10 YR 3/4 Dark Yellowish Brown
O	Clay	10 YR 5/8 Yellowish Brown
P	Loamy Sand	10 YR 2/2 Very Dark Brown
Q	Sterile Soils	Sterile Soils

subsequent mound building took place. There was no evidence of any structures on the surface of this zone and there were no cultural materials except for a few shell tempered sherds in its fill. Five wheelbarrow loads or .30 cubic meters of Zone O were sampled for waterscreening.

Zone P: Premound Ground Surface

This zone designated the ground surface upon which Zone O was built. Ultimately, six different structures were encountered on this surface. In Test Trenches 1 and 4 this zone appeared as a 10 cm thick dark brown organic layer that contained a thin, sparse lens of carbonized flecks. These inclusions seemed to indicate the possibility that the original ground surface had been burned off, but no evidence of this could be detected on the floor of the premound excavation area. Due to the sparse distribution and leached nature of this charcoal in Zone P, no carbon sample could be taken. The soil texture was a loamy sand and there was no humus development around the structures. The lack of humus and artifacts was probably the result of continuous sweeping and cleaning that kept the area clear of both debris and vegetation.

Zone Q: Sterile Soils

The sandy soils beneath Zone P were utterly devoid of cultural material and had a very low organic content. The break between Zone P and Zone Q tended to be rather indistinct in the central area of the mound.

As can be seen in Tables 2 and 3, the physical and material contents of the mound were varied and complex. Table 2 presents the soil composition and Table 3 shows the artifact content of the mound zones.

On the surface of Zone P, six different postmold patterns were discovered, and these patterns represented a succession of wall trench and single post structures built over a long period of time. In turn, these structures were surrounded by log partitions that demarcated this special area. The structures and their associated features are described below in the order of their excavation. The chronological, spatial, and cultural interpretations of these buildings will be discussed in detail later in this chapter.

Structure 1 and Associated Features

Structure 1 was a perfectly square pattern of single set posts which enclosed an area of 36 square meters. Postmolds were quite similar in size, 15 to 20 cm in diameter, and set closely together. The walls were carefully constructed and the posts were sunk as much as 50 cm deep. The postmold fill contained few cultural materials; almost no daub was associated with the building; and there were no signs that the building had burned. Several postmolds were randomly distributed on the interior floor, but because these postmolds were shallower than the wall posts, they seemed to be incidental occurrences rather than major roof supports.

The floor area showed no special preparation and differed from the surrounding matrix only by its dark organic stained color. The occupation floor was delineated by the horizontal and vertical extent of this organic

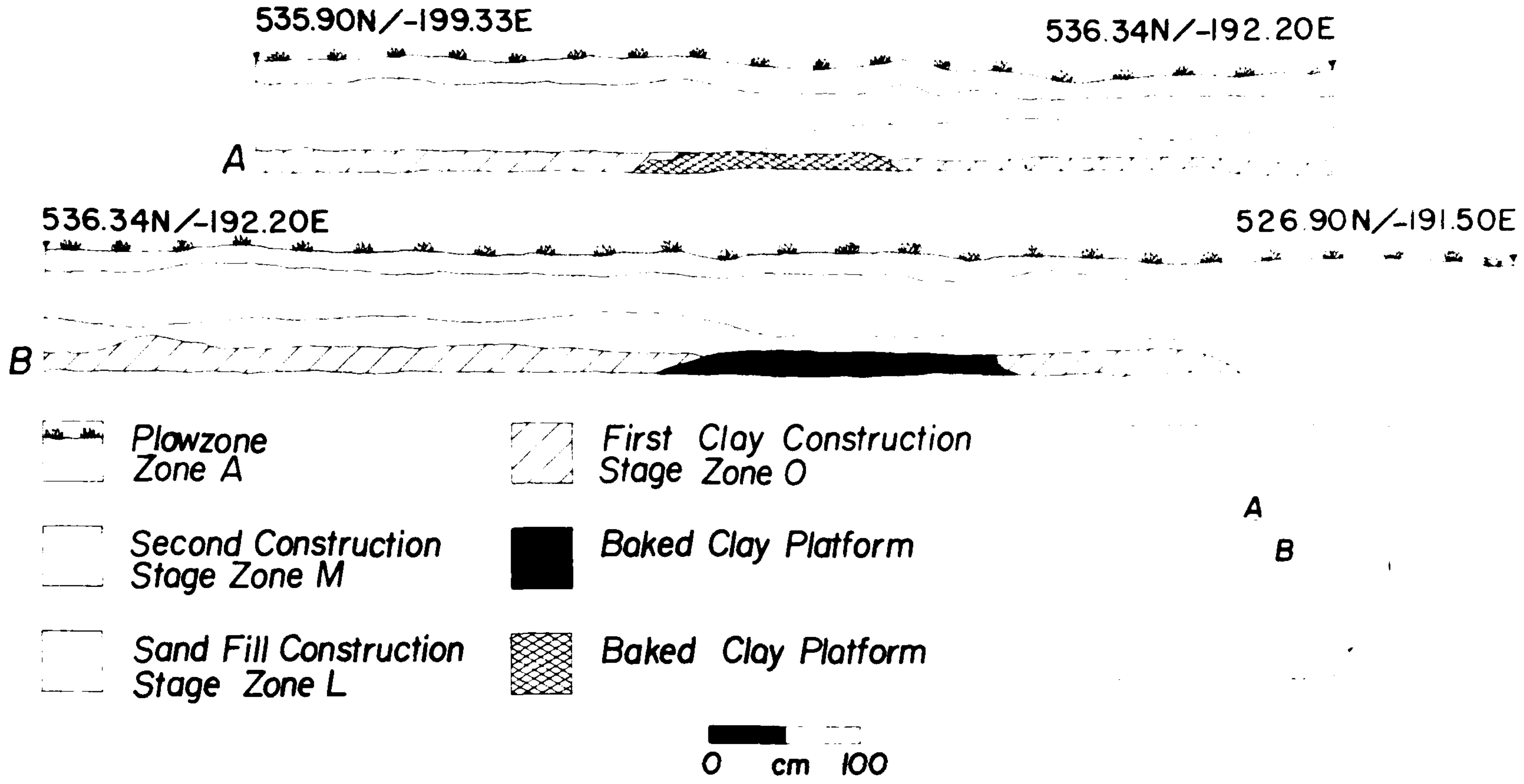


Figure 7. Profile of Test Trench 3.

layers of clay and sand one on top of the other for a long period of time. The three clay zones, H, J, and M, were the surfaces upon which important buildings were constructed. This assumption is supported by the abundant daub and ceramics in Zones H and J, as well as Wall Trench 1 and assorted postmolds on the surface of Zone M. Zones I, K, L, and N were major and minor layers of sandy fill used to increase the height and horizontal dimensions of the mound. There was no evidence that the sand fill zones had ever been used as stages upon which to erect structures.

THE PREMOUND SURFACE

After all portions of the mound exposed in the horizontal plowzone stripping were mapped, sampled, and described, we decided to use the backhoe to cut down through Zone M in order to examine the old ground surface that had existed prior to mound construction. It was felt that a careful investigation of the premound surface might provide an insight into the development of mound ceremonialism at Lubbub Creek.

Excavation Procedure

An examination of the profile of Test Trench 4 showed that the intact base of the mound covered the old ground surface to a depth of 60 cm. In order to understand the deposition in the center of the mound, the backhoe was used to increase the depth of a 10 m section of Test Trench 3. A bright yellow clay, designated Zone O, was encountered at 50 cm below the surface of Zone M. This initial test unit began in the western half of the mound at 520N/-210E, and the backhoe worked east removing the overburden in a 10 by 16 m area. A 17 m long profile was drawn of the west wall and a portion of the north wall of this unit (Figure 7).

Once it was clear that substantial premound features were preserved, the crew size was increased to seven members. Features were mapped and elevations taken in the manner previously described. New extensions of the excavation unit were made as excavations in previously uncovered areas were completed. In sequence, work progressed from the western side of the mound toward the eastern side. The guiding principle of this excavation strategy was to examine as much of the premound surface as possible but at the same time to uncover only as much area as was necessary to examine relationships between features. The premound unit expanded east to 520N/-180E and north to 545N/-192E until a total surface area of 580 square meters was excavated.

Description of Zones O, P, and Q

When the results of the excavation of the premound surface were combined with the vertical profiles illustrated in Figure 7, it was possible to understand the remaining building sequence of the mound.

Zone O: First Clay Construction Stage

Zone O was a 15 to 20 cm thick rectangular platform of compacted yellow clay which rested directly on the premound surface. The sides of the platform, which measured 14.50 by 13.50 m, covered 195.75 square meters and exactly paralleled the orientation of the later construction stages, here designated Zones H, J, and M. This zone was the primary stage upon which all

Zone L: Sand Fill Construction Stage

Together with Zone K, this stage was a major fill zone composed of sandy soil of different hues and tones. Viewed on the surface, this zone appeared as numerous brown swirled bands within a lighter brown matrix. Although it was possible to map this zone horizontally around the mound, it was highly variable and at times tended to blend with Zone K. This "mottled" appearance was probably the result of individual episodes of basket loading. Profiles A and B revealed that Zone L was built out from the sides of Zone O to provide a prepared base for Zone M (Figure 7). Zone L contained very little cultural debris, and there was no evidence that this zone served any purpose other than building up the height of the mound in preparation for the construction of Zone M.

Zone M: Second Construction Stage

This was a clay and sand zone built over Zone O and portions of Zone L. The surface of this stage contained the only in situ features encountered in the mound. After horizontally stripping off the plowzone, Zone M was revealed to be 18 m across at its center and roughly rectangular in shape. The southern portion of Zone M had been obliterated by the bulldozer in the 1950s when the operator had cut that area slightly deeper. For this reason it was not possible to obtain exact measurements for this stage, but Zone M exhibited the same orientation and angularity as did Zones H and J that preceded it.

The surviving surface of this stage represented the cleavage plane between bulldozed and undisturbed portions of the mound. Large amounts of daub had been scraped up by the machine and redeposited along the boundaries of the zone. In one area of soft clay the tracks from the bulldozer treads were still visible. Most of this surface had been disturbed, but the center of the mound was slightly more elevated than the sides and here a section of wall trench and several postmolds survived (Figure 2).

Wall Trench 1, which was a 44 cm wide trench, paralleled the side of Zone M and extended west 4.80 m until it was cut by Test Trench 2. Twenty-one postmolds had been closely set together within this trench and clay had been packed around them. These posts averaged about 20 cm in diameter. It was obvious that much of the upper portion of the wall trench had been removed along with the rest of the structure pattern. The maximum depth of the trench was 21 cm. Eight single set postmolds were clustered just to the east of the trench. No other features were discovered.

Zone N: Loamy Sand Fill

Although this zone did not extend completely around the mound, it did appear as a distinct stratum in several areas in the northern perimeter of the mound. It was a dark, yellowish brown, loamy sand with inclusions of pebbles and scattered sherds. In Test Trench 4 (Figure 4), Zone N differed from Zone H in that the former was more sandy in texture and contained no shell. This zone was a minor fill of limited dimensions used to extend the north part of the mound prior to the addition of Zone H.

As shown by the horizontal juxtaposition of the several zones, the mound was not built as a single event but was constructed by piling up alternating

Figure 6. Remnant building stages of the Summerville Mound, 1-Pi-85, are visible on the cleaned floor of the excavation. One corner of the mound is evident in the lower left quadrant of the photograph.

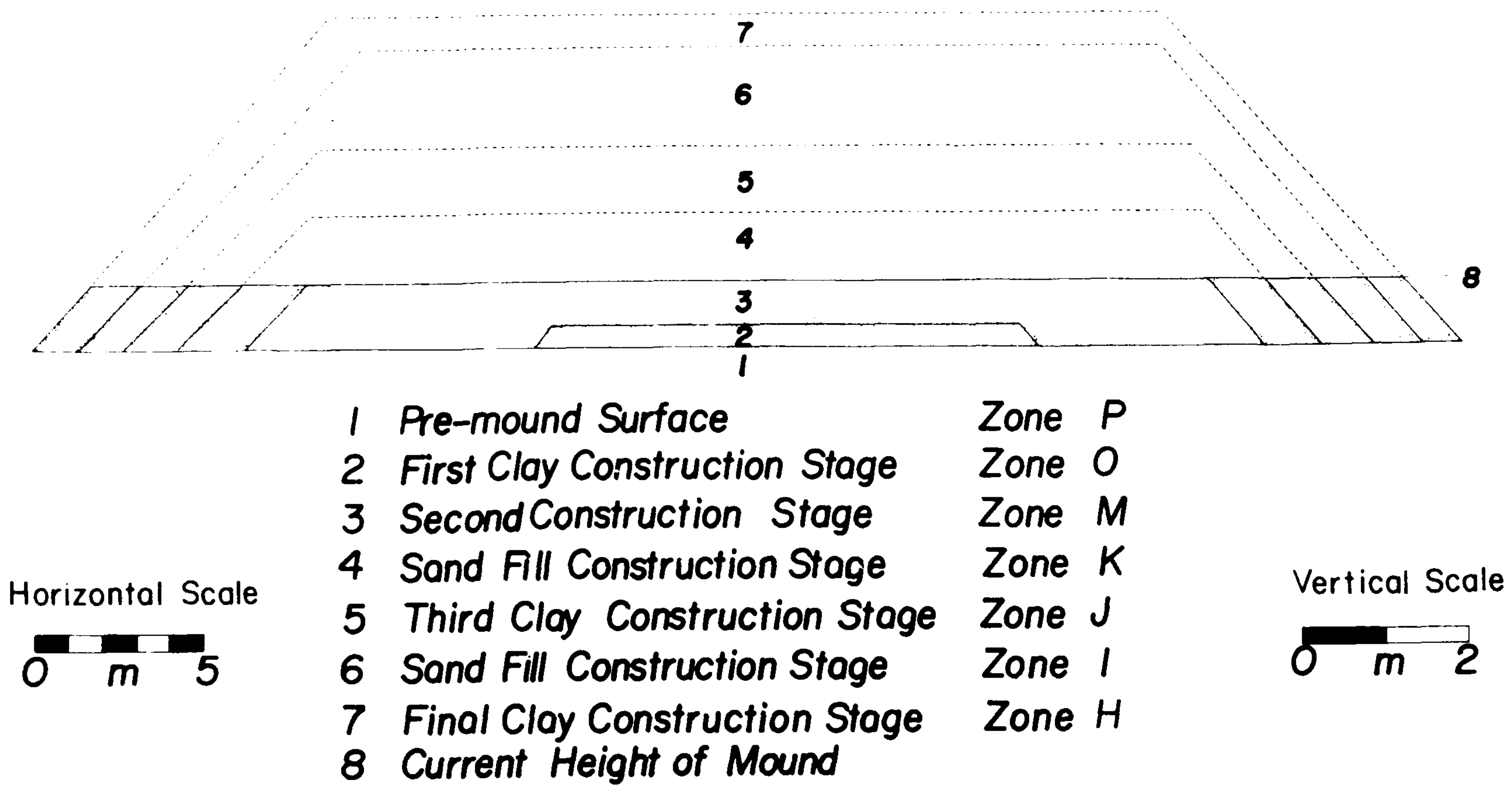


Figure 5. Major remnant and reconstructed mound building stages of the Summerville Mound, 1-Pi-85. Zone L included as part of Zone K.

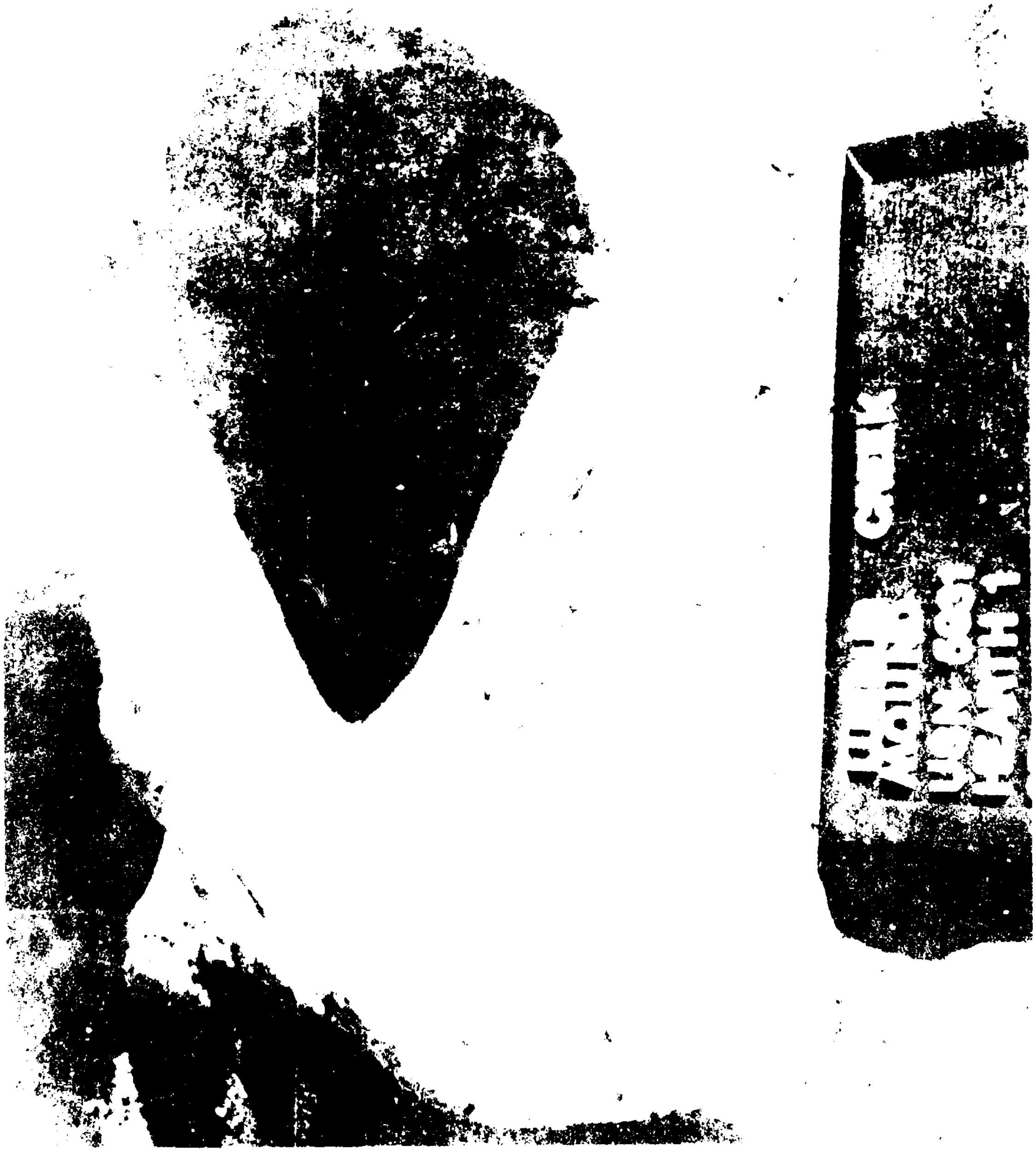


Figure 13. Hearth 1, Structure 1.

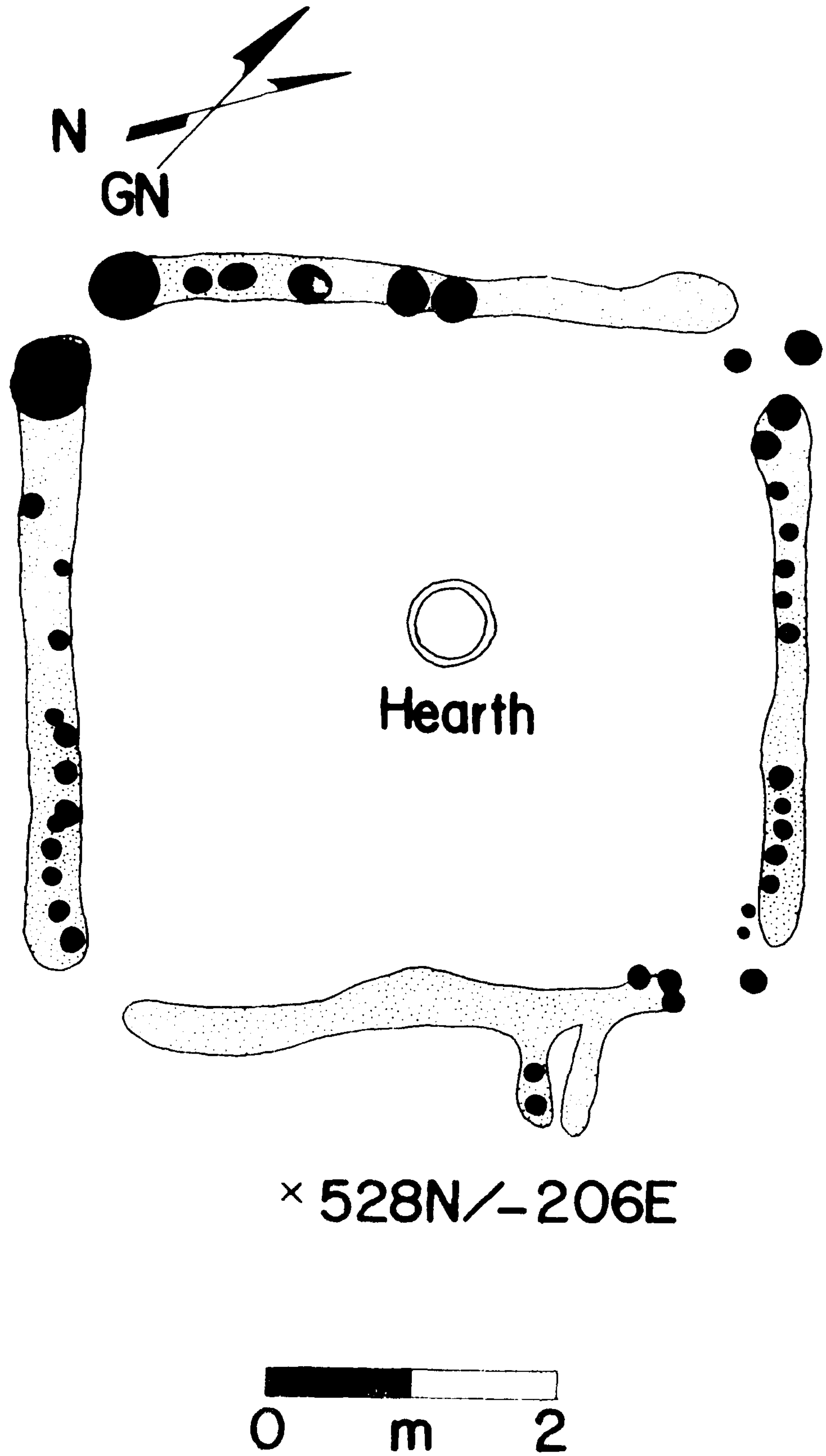


Figure 14. Structure 2 floor plan.

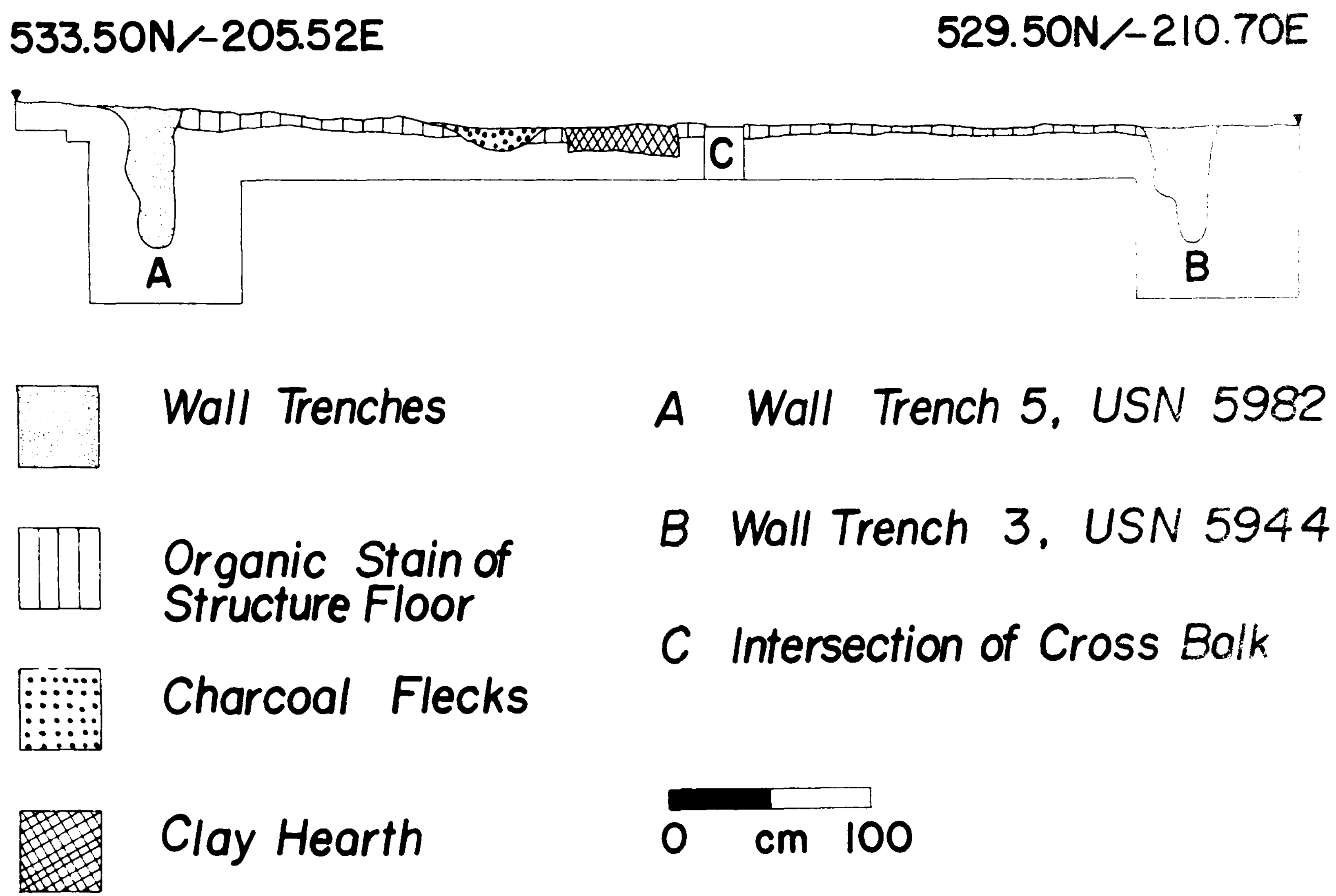


Figure 15. Structure 2 profile.

A single fireplace, Hearth 2, had been constructed in the center of the building. Yellow clay had been packed into a depression dug in the floor to form a circular basin 50 cm in diameter and 7 cm deep; a molded rim around the basin had been raised 2 cm off the floor. Though this basin was filled with fine ash and charcoal flecks, the amount of charcoal was inadequate for a radiocarbon sample. The profile was drawn along the axis of the 20 cm balks into which the structure had been divided prior to its excavation.

Structures 5A, 5B, and Associated Features

Structures 5A and 5B encompassed two distinct buildings. The first structure, 5A, consisted of six wall trenches. This structure was abandoned and later a single post structure, 5B, was built superimposed over the area where 5A had previously stood. These two buildings will be described separately at this point, and the chronological development and cultural relationships of the premound buildings will be discussed in detail at the end of this chapter.

Structure 5A was a large, complex building consisting of two compartments. Four wall trenches defined a 9 by 9 m room. Two other wall trenches extended south from this room, forming an open-ended structure or portico, 6.90 by 4.80 m. Together these two rooms formed a building 13.60 m in length. The depth of the wall trenches which defined this building varied from 35 cm to 50 cm and contained a light brown fill. Individual postmolds in this fill had faded from view. Several posts had stood in the interior of the larger compartment, and were clustered around the open corners. Apparently the open-sided smaller compartment never had posts in the floor area, and there was not any indication that the open side had ever been closed off. Like the other premound buildings discussed previously, there was an almost total lack of household debris on the floors, although they had been stained darker than the surrounding matrix.

In the center of the larger compartment was a circular depression, 20 cm deep and 50 cm in diameter, which contained ash, bone, and bits of fired clay. The depression had been scorched by intense heat. This hearth may have been carefully molded at one time, but subsequent building activity associated with Structure 5B had altered its original appearance.

Structure 5B was a two-room building of single set posts. This postmold pattern was found superimposed over, and parallel to the earlier wall trenches of Structure 5A. Both buildings were similar in plan and orientation. The larger room of Structure 5B measured 7.40 by 6.70 m and the smaller room measured 4.80 by 6.70 m. Together these two compartments gave the building an overall length of 12.20 m. Posts 18 to 20 cm in diameter had been set 40 to 60 cm into the ground and reflected the great care and effort taken in the construction of this building. The smaller room was similar to the portico in Structure 5A except that it was enclosed at the end by a wall rather than left open. No entrance could be identified, but gaps occurred at several places in the wall pattern.

The smaller room contained two large clay features. A large circular platform of packed clay 2 m in diameter and raised 20 cm off the floor dominated the room. The exposed surface had been baked to a red brick-like consistency by intense heat. There was neither charcoal, daub nor other

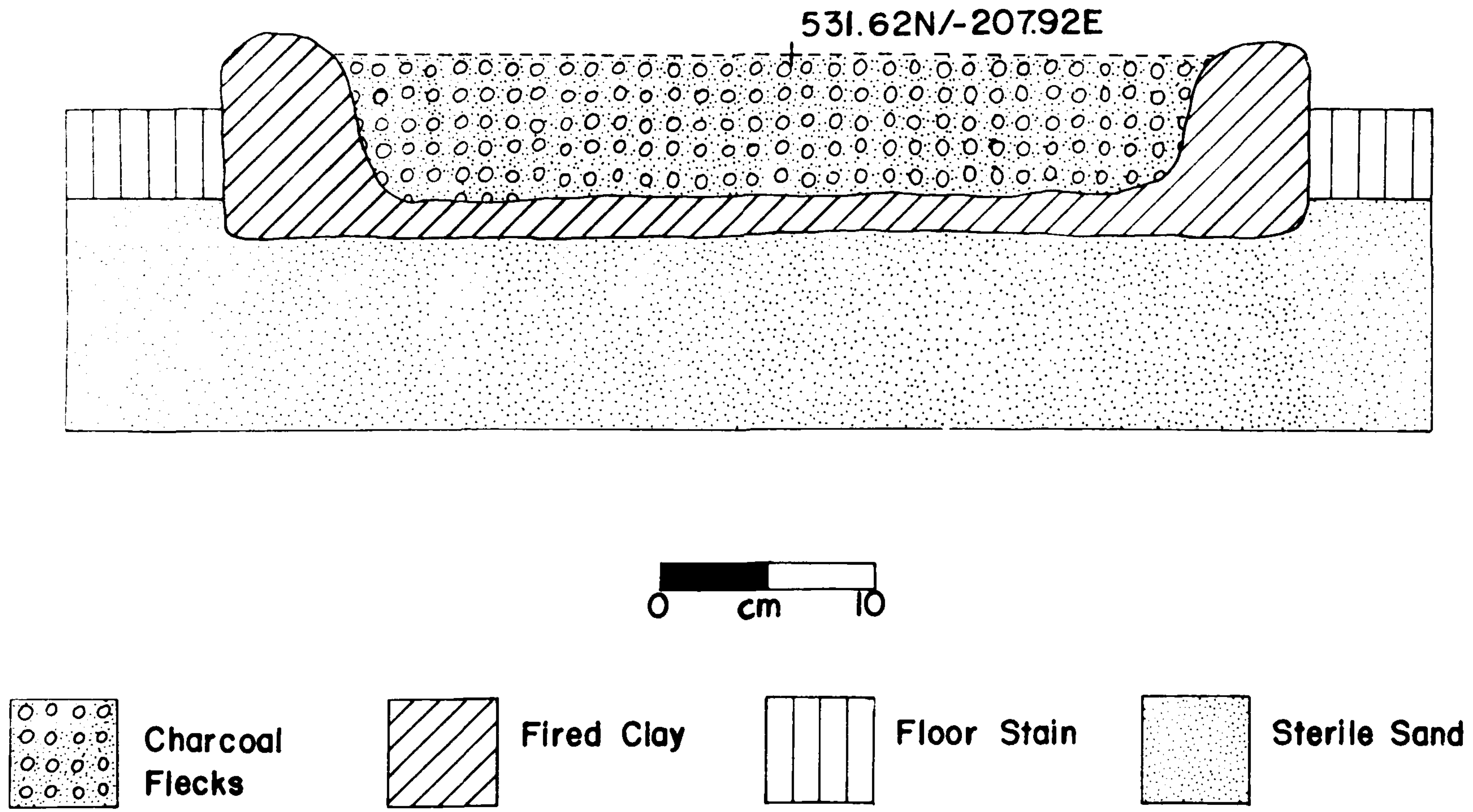


Figure 16. Profile of Hearth 2, Structure 2.

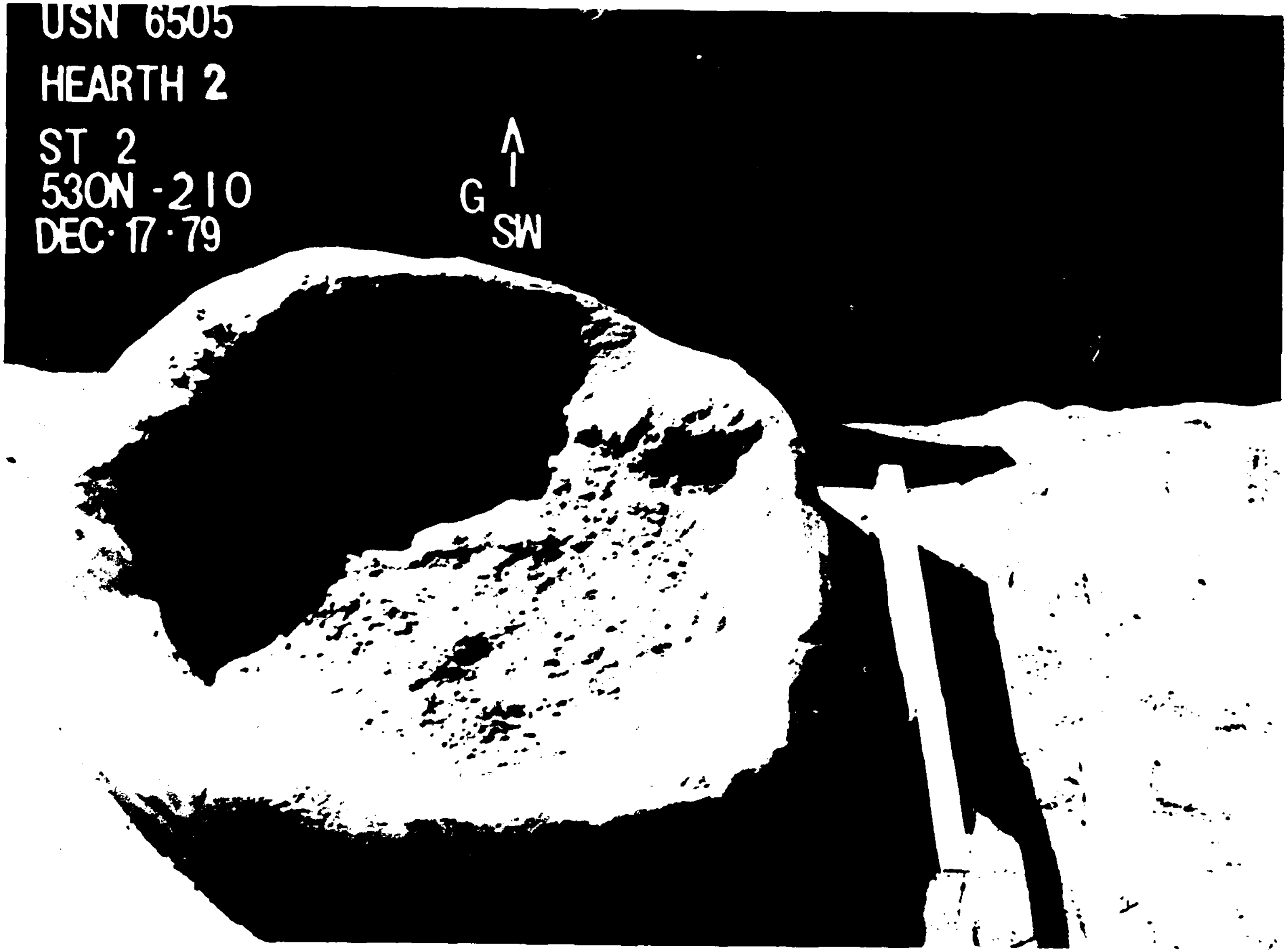


Figure 17. Hearth 2, Structure 2.

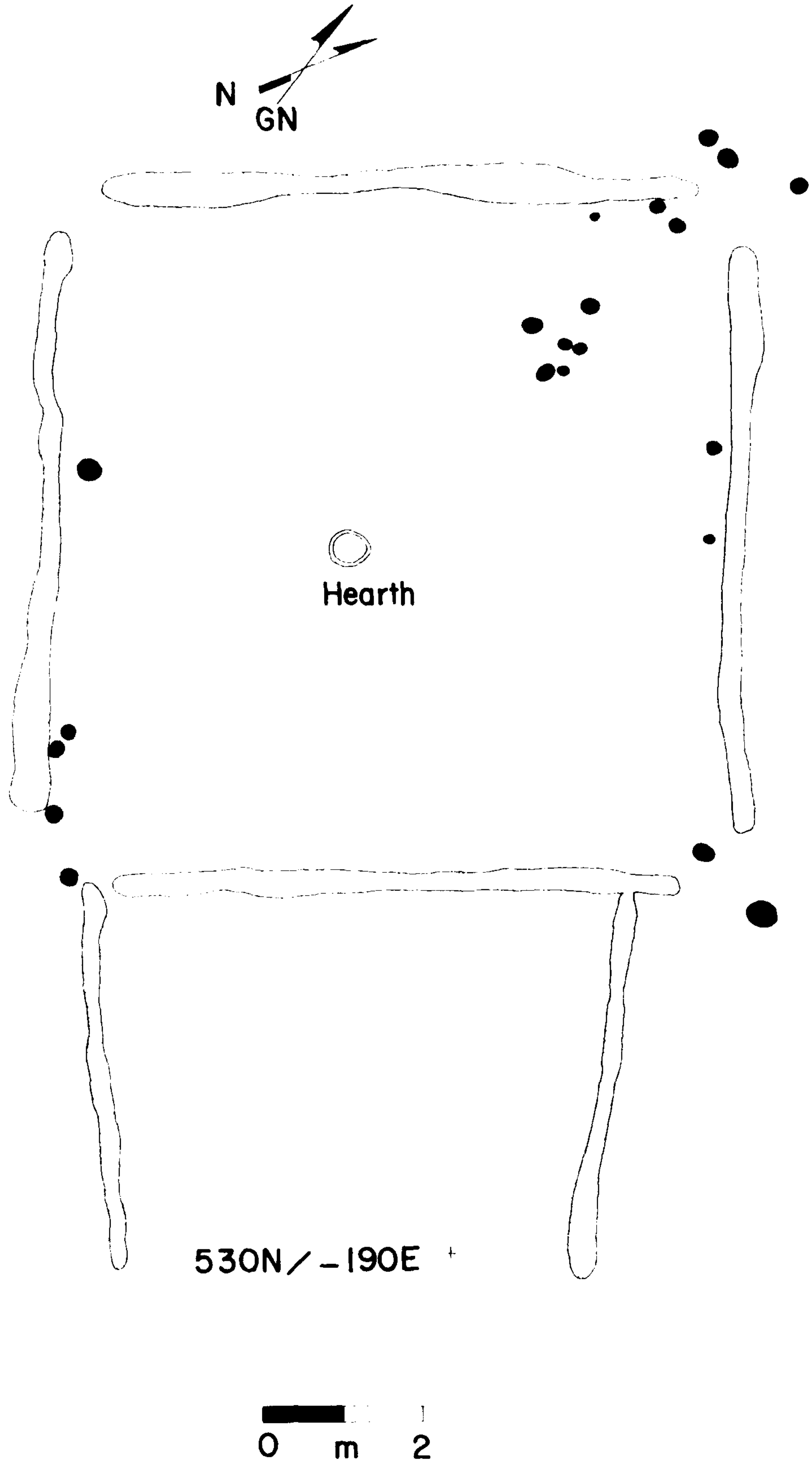


Figure 18. Structure 5A floor plan.

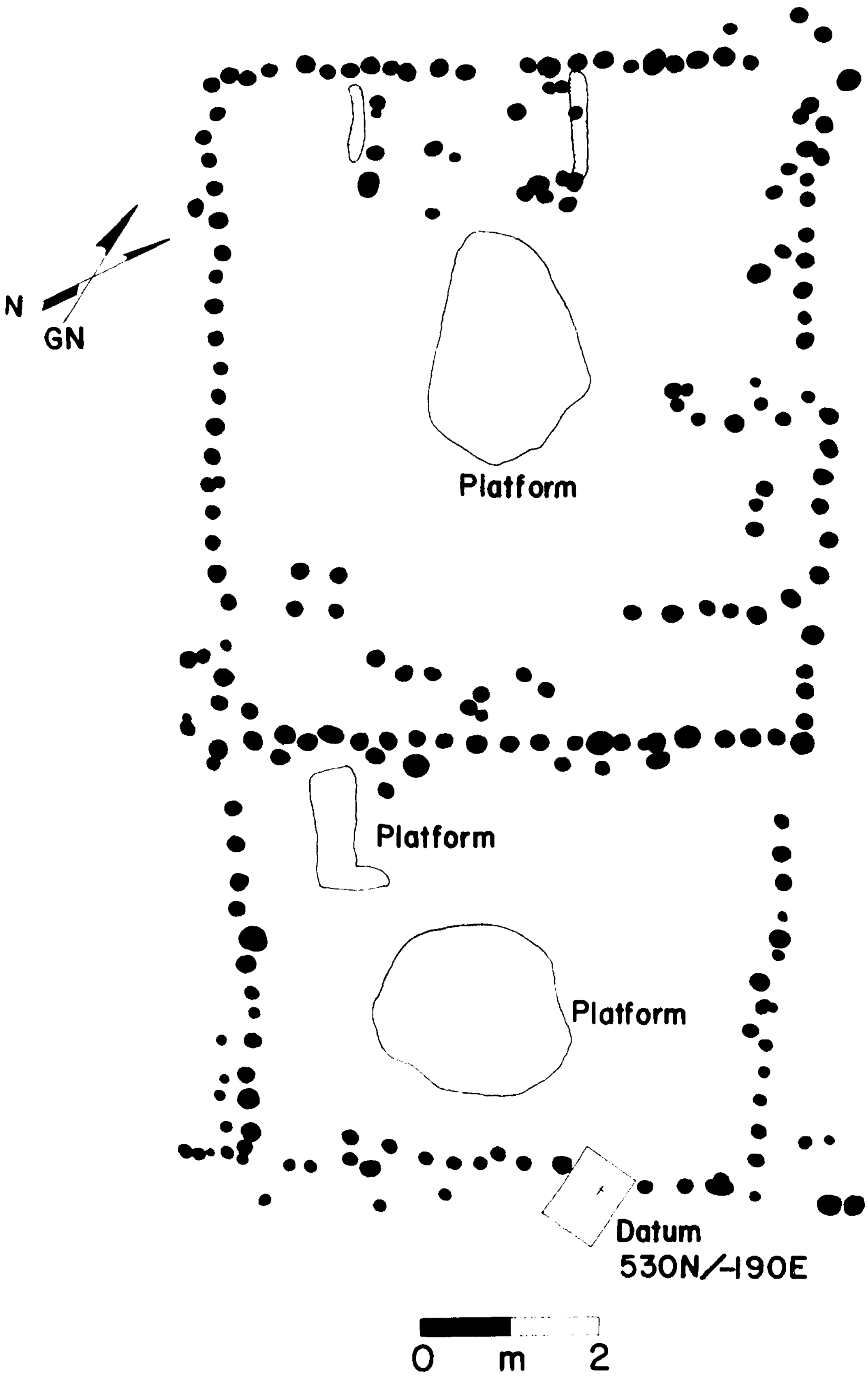


Figure 19. Structure 5B floor plan.

Figure 20. Cleaning floor of Structure 5 complex. Crew, clockwise from the extreme foreground: Mary Ellen Foggarty, Ken Russell, Patricia Bridges, Mark Brasner, and Michael Wilson.

evidence to indicate that this building had burned, so it appears that this platform had been intentionally fired. This may have been done to harden the clay or resulted from prolonged use as a raised fireplace. The second feature in the room was a low rectangle of grey, unfired clay, 1.40 by .50 m, which was raised 8 cm above the floor. The angular shape gave the impression that it had been carefully constructed, but its precise function could not be determined.

There was no special floor preparation for either room and few associated cultural debris on either floor. The smaller room contained no interior postmolds, save those that seemed to be associated with the interior wall. However, the larger room contained several clusters of postmolds that suggested partitions or furniture. Two short parallel wall trenches extended perpendicularly from the end wall into the interior of the room, and these features defined a rectangular area 2.50 by .70 m. In addition to these features, the larger room had a baked clay platform very similar to the one in the smaller room. It was oval in shape, 1.30 by .85 m in extent, and it was raised 18 cm above the floor. It, too, had been baked to brick by extreme heat.

The unique character of Structures 5A and 5B demanded some alteration in our usual excavation technique. These structures first appeared as a single large rectangular stain, making it impossible to determine how many structures were present. For this reason we divided the rectangle in half with a 20 cm wide balk placed lengthwise (longitudinally) through the center (Figure 21). Two other balks were placed to divide the area into ten sections. Because no deposition of debris had occurred between the abandonment of 5A and the building of 5B, individual floors could not be assigned to the two separate buildings. Instead the two floors had been consolidated into a 8 to 10 cm deep organic stain. To maintain further control of the excavations, a datum point, 530N/-190E, was pedestaled and left unexcavated.

Structure 3 and Associated Features

This structure was defined by a rectangular pattern of closely set postmolds and a prepared clay floor. Individual postmolds were smaller than those of other premound structures, and they averaged 10 to 15 cm in diameter. Most of these postmolds were set 45 to 55 cm into the ground and formed a pattern 6.50 m by 4.00 m. A prepared floor of puddled clay 5 to 10 cm thick had been heated to a hard, smooth surface. This material could not be confused with daub deposited from walls because of its smooth compactness and complete lack of cane impressions. It could not be determined whether this clay floor had been fired intentionally to create a concrete-like consistency or had resulted from burning the structure. If the building had burned, however, then any evidence of such destruction had been removed by the subsequent building activity of Structures 1, 5A, and 5B. This later activity had also disturbed the floor area in several places and made it impossible to map the postmold pattern completely. No entrance way could be identified, and no evidence of a hearth could be found. Like the other buildings on the premound surface, artifact debris was scarce on the floor of Structure 3.

Structure 4 and Associated Features

This pattern of postmolds was discovered after Structures 5A and 5B had

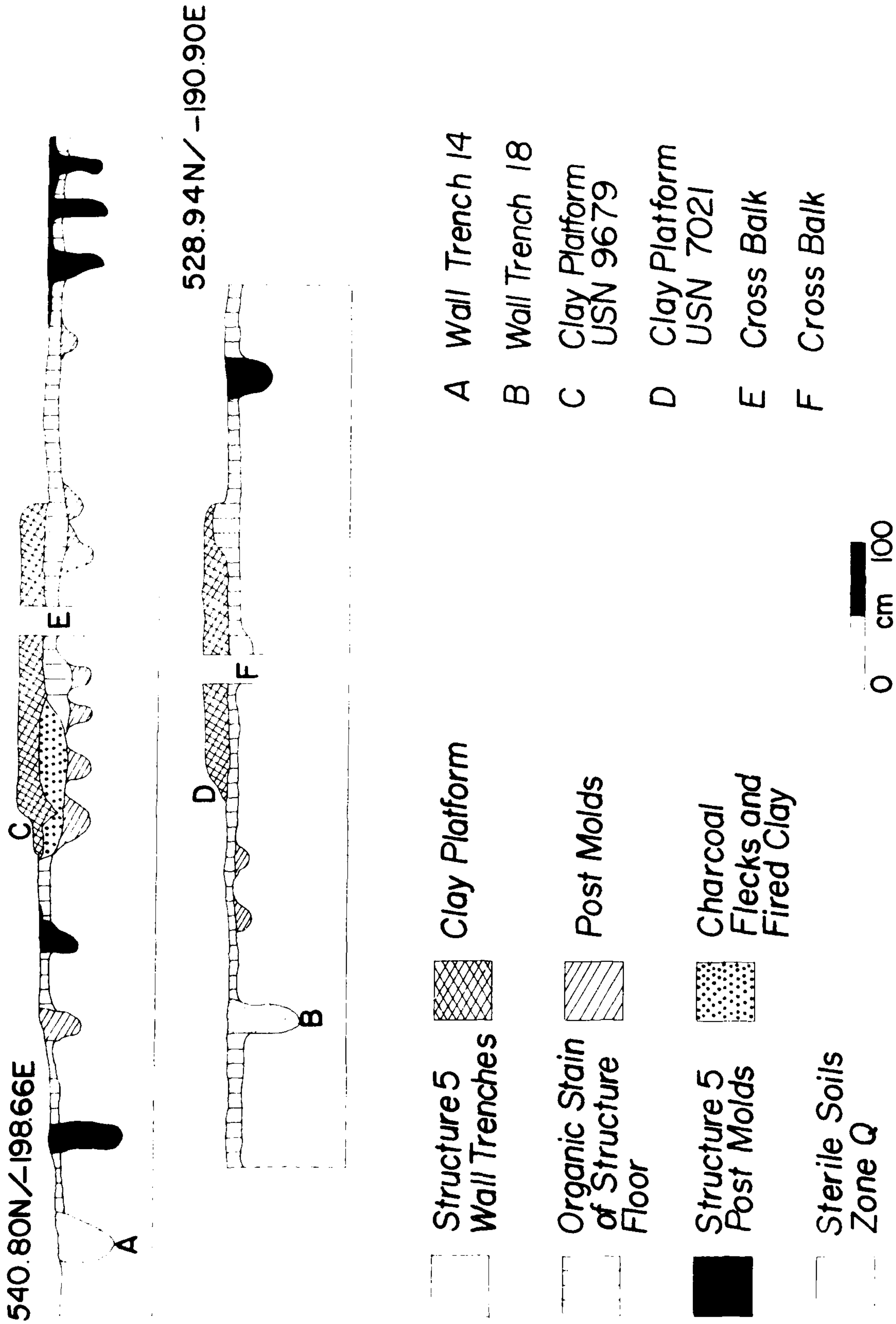


Figure 21. Profile of Structure 5 complex.

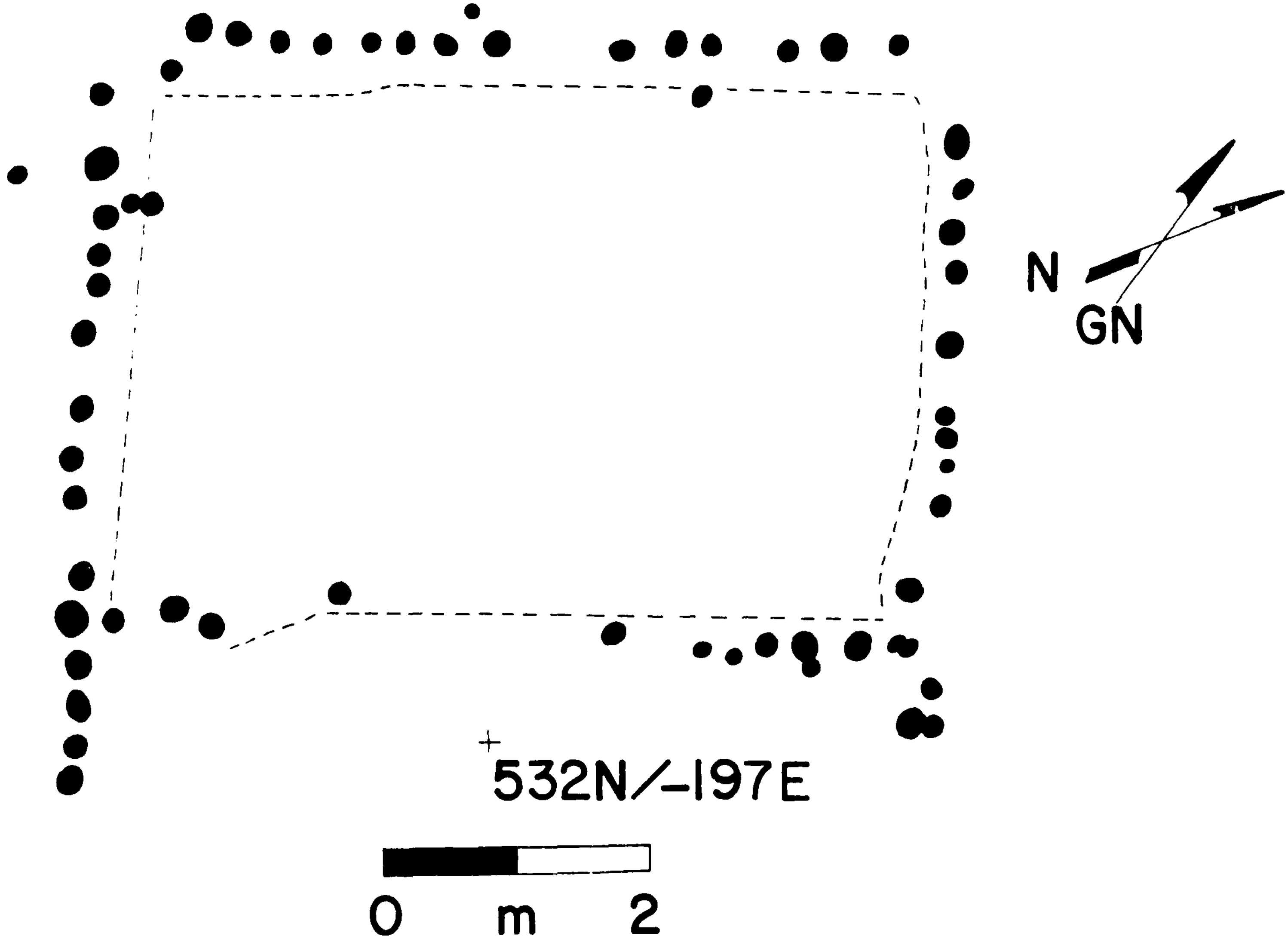


Figure 22. Structure 3 floor plan. The dotted line indicates the extent of the prepared clay floor.

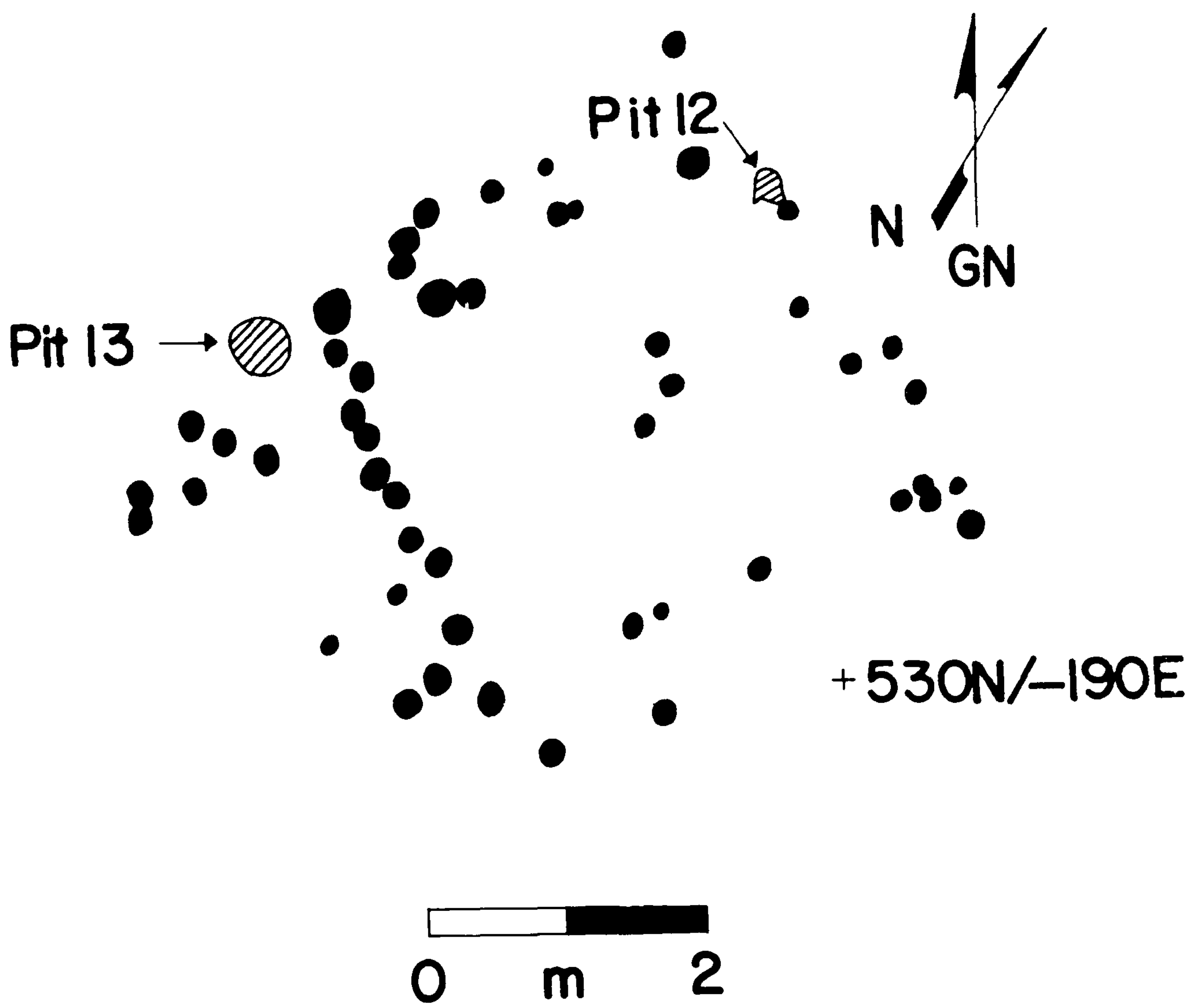


Figure 23. Structure 4 floor plan.

n excavated completely. When the level of this excavation unit was taken m 10 cm below the level of the floor, the surface below revealed a cluster postmolds that suggested a small circular building approximately 3.50 m in imeter (Figure 23). The area encompassed by this structure was not stained anically like the other buildings had been. Because this pattern was found the last day of excavation, only a few postmolds were examined, and the a was not excavated. Neither evidence of a hearth nor any daub was found. ause the postmolds were not tested thoroughly, the conclusion that this tern represents a structure or building must remain untested.

Two shallow basin-shaped pits, Pit 12 and Pit 13, were associated with ucture 4; both were filled with carbonized pine cones and corn cobs. A iocarbon sample was taken from Pit 13 and a date of 980 ± 80 radiocarbon rs (A.D. 970, Beta 1103) was obtained.

titions or Fences

Patterns of linearly aligned postmolds were discovered around the imeter of the premound excavation unit. These postmold lines surrounded premound structures in a manner that strongly implies partitions or fences gure 9). At the northern edge of the premound excavation unit a line of 27 ge postmolds extended 13.20 m to the southwest. These posts ranged from 15 30 cm in diameter and were placed 30 cm or more into the ground. Another tion in the southwest corner of the excavation unit extended 4.80 m in a thwest to southeast direction and consisted of 12 postmolds of similar nensions. Several short patterns of postmolds occurred between Structure 1 d Structure 5A. Some of the postmolds contained clay, possibly to help abilize posts. A group of postmolds limited to the area from 530N/-190E uthward to 520N/-190E and east to 520N/-180E were revealed on the last day excavation. As can be seen in Figure 9, these postmolds seem to form a ge circular pattern. However, this is a coincidental illusion since this tern is composed of postmolds of different shapes and sizes. Careful face observation and limited testing with the hand auger suggested that ese posts were sections of partitions or screens rather than elements in a ngle building. These postmolds were mapped but not excavated. A summary of emound structures and associated features is presented in Table 4.

und Ramps

After the horizontal limits of mound construction stages had been mapped, areas were identified as possible mound ramps (Figure 8). In order to termine the depositional nature of these areas, the backhoe was used to dig ree test trenches.

Tw [illegible], Test Trench 5 and Test Trench 6, were placed in the uthw [illegible] the mound. Test Trench 5 extended from 517.90N/-205.80E uthwest [illegible] N/-218.60E. Test Trench 6 began at 520N/-216.40E, [illegible] to 527N/-203.40E where it intersected Test Trench 5. [illegible] e illustrated in Figure 24.

The [illegible] show the correlation of several building stages of mound, [illegible] responding wash deposits from erosion, and the ramp ges. Much of the upper portion of the ramp is gone, but the remaining es indicate that the ramp was built and extended as the mound grew in size.

:58; Schnell, Knight, and Schnell 1979:198). Blanket mantles cover the r surface with a very thin deposit while the substructural mound stages appreciably to the height and dimensions. At ochechobee site on Chattahoochee River, blanket mantles occur in both mortuary and elite cture contexts. The investigators believe this phenomenon represented purification and renewal as well as marking a death and symbolizing stor veneration (Schnell, Knight and Schnell 1979:198-202).

What occasions the application of both kinds of mound additions remains ure. Waring's hypothesis that blanket mantles represent an annual ritual stral to the historic Muskhogean busk is plausible. In light of the fire-deity beliefs of the Natchez, the death of a high-status individual seems obvious stimulus to mound construction. Both are reasonable but partial anations. Unfortunately, the presence of the blanket mantle phenomenon at Summerville Mound could not be ascertained due to modern destruction.

Hopefully some insight into prehistoric ritual has been gained by an nination of the ethnohistoric accounts. The assumption here has been that principal elements of the historic religion originated in the prehistoric .. Although this belief system was manifested in a variety of different als throughout the Southeast, most writers have been impressed with the asiveness of the fundamental concerns of life and death passage, purity balance, pollution and renewal (Hudson 1976:120-183). It has not been writer's intention, however, to imply a direct cultural link between the ub Creek people and any historic group.

In considering artifacts associated with the mound occupation, the most king fact is the small amount of material found. The premound buildings been kept free of all debris. This dearth of material in early issippian platform mounds has been noted by other investigators (Lewis and urg 1946:54-55; DeJarnette and Wimberly 1931:34). The lithic material was ined to a minute amount of debitage and several well-made unretouched ngular points. Whole and broken greenstone celts were found in the zone during the stripping operation. More celts were found in the general d provenience than anywhere else on the site save the cemetery excavated he University of Alabama in 1977 (Jenkins 1980). Fragments of a ground stone disk were found on the floor of Structure 5B. The edge of this disk notched and incised with concentric circles. Ground stone disks with hes, circles and elaborate engravings of Southeastern Ceremonial Complex fs have been found most often at Moundville either in the mounds or in e burials (Webb and DeJarnette 1942: 287-291). Also found in Structure near one of the raised clay platforms, was a large rock weighing 10 kg. dified introduced rock included large chunks of chalk, hematite, limonite, breccia. These minerals are capable of producing white, red, and yellow ents. Petrified wood and ferrogenous sandstone were also present. One b-nail size piece of mica was recovered from a wall trench of Structure Some of the faunal material recovered from the mound represented several ies of birds found nowhere else on the site (Chapter 4, Volume II).

NTATION OF MOUND ARCHITECTURE

An important aspect in the development of the mound is the striking larity in architectural orientation. With the exception of Structure 4, premound structures were rectangles with sides oriented about 26 degrees insufficient light (Swanton 1911:162).

It has been argued for many years, first by Swanton (1928) and Waring (1968) and later by Howard (1968) and Hudson (1976), that historic Muskhogean religious ritual had its origin in prehistoric Mississippian mound ceremonialism. Waring (1968:54-56) tried to demonstrate that compound buildings atop platform mounds are a prototype of the Creek square-ground. He cites Bartram's impression that the square-ground prototype was originally under one roof. A Creek word <u>Tcoko-thalako</u> or "big house" was used to describe the historic square-ground. The most important activity conducted in the square-ground was the busk or "green corn ceremony," an annual summer ritual of renewal and purification. Perhaps the cycle of destruction and rebuilding evident in the superimposed rectangular postmold patterns and successive stages of Mississippian mounds reflects this phenomenon. The Creek square-ground consisted of four enclosures or "beds," oriented to the four cardinal directions and situated around a rectangular plaza containing a communal fire. The <u>Miko</u> (village chief) and his clan occupied the western structure known as the White Bed (peace), and the northern building was the Red or War Chief's Bed.

Within the White Bed was a special room or compartment in which the most sacred objects were kept. Waring (1968: 54-56) uses the Hiwassee Island structures as archaeological examples to argue that rear compartments of compound buildings represent this "holy of holies," the store house for ceremonial paraphernalia. He goes on to speculate that the duplicate structures that existed on the mound summit reflect the Red and White dualism of the square-ground. He concludes this line of reasoning by stating:

> It seems a definite possibility that the destruction and rebuilding of the fire pit, the replastering of the Red and White Cabins, the rebuilding of the arbor over the fire pit and the re-covering of the seats may well have been the survival of more extensive earlier practices. It would take little elaboration of the known compulsive behavior pattern to imagine these Indians destroying the buildings themselves and placing old polluted surfaces under a thin seal of clay. Such a practice would be all very well under the excitement of a relatively new ceremonial and while the mound remained small, but as the mounds grew, it is easy to see how they might have outgrown the available labor supply in the midst of harvest time. The expedient of replastering the walls, recovering the seats and replacing the fire pits would have been an understandable substitution. Even to put a three-inch mantle on the Etowah Mound at its present size would indeed be a formidable undertaking (Waring 1968:58).

In considering the cycle of purification and renewal, it is worth repeating that mound ceremonialism began at Lubbub Creek with structures built on the original ground surface. The final buildings were destroyed and then covered with the first clay construction stage, Zone 0. There were no structures built upon the surface of Zone 0, which implies that its purpose was to cover up a structure rather than serve as a substructure or foundation for an elite building.

Two different types of mound additions have been recognized: "blanket" mantles and substructural mound stages (Lewis and Kneberg 1941:22-23; Waring

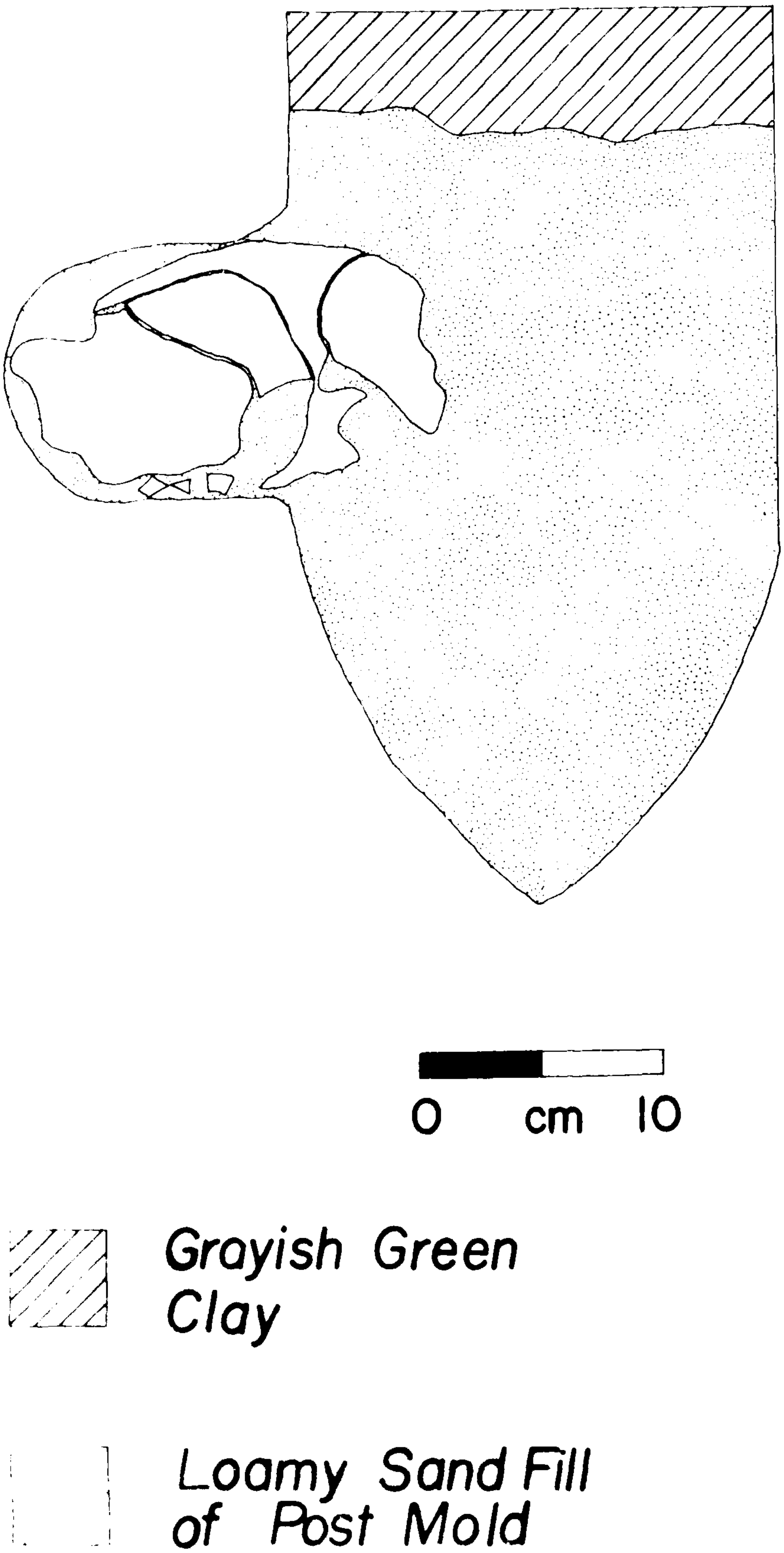


Figure 37. Profile of infant cranium in postmoid.

wall trench structures (except for vestibule entrances) found at Lubbub Creek. Structure 1 is similar in plan to domestic structures found in the village area except that it was more carefully constructed with deeply set posts, it had a small clay platform or embankment along the front wall, and it had a vestibule entrance with a clay walkway. The prepared clay floor and small postmolds are the distinguishing features of Structure 3. Prepared clay floors are known from Moundville and Bessemer but are associated with wall trench rather than single set post construction. All of these buildings exhibit unique characteristics that are found nowhere else on the site and suggest that the premound surface was a special activity area long before the mound construction began.

Only one human burial was found in association with the Summerville Mound. The fragmentary cranium of a child was found in the postmold pattern of Structure 5B. It appeared that the cranium was placed in a post hole prior to the introduction of a post (Figure 27). An alternative interpretation is that the feature is not a postmold but a pit dug solely for the interment. An unusual amount of greenish clay was contained in the fill. It is interesting to note that in the examples of structures most similar to the Lubbub Creek buildings (Hiwassee Island, Bessemer, prehistoric levels of Mound C at Fatherland) none contained burials. However, infants were used as ritual artifacts in mound construction and mortuary practices at Seven Mile Island and Moundville. Interments at these sites were associated with vessels engraved with Southeastern Ceremonial Complex motifs, but this kind of material was not present on the premound surface at Lubbub Creek.

The raised clay platforms of Structure 5B are like others found in a similar context at some of the sites mentioned above. The two large circular examples showed intense heating, perhaps to achieve a brick-like consistency or through use as a raised hearth. This type of feature has sometimes been called a "dais," although there is little evidence to suggest that it functioned as such. The small unfired rectangular platform that is situated against the inner wall is the kind of feature referred to as a "seat" at Moundville, Bessemer, and Hiwassee Island.

The interior details of large buildings placed upon the mounds by the Natchez are provided by Le Petit (Swanton 1911:102-103), Gravier (Swanton 1911:158) and Charlenoix (Swanton 1911:159-161). However, the comments by Le Page du Pratz are the most detailed:

> The interior of the temple is divided into two unequal parts by a little wall which cuts it from the rising to the setting sun. The part into which one enters may be 20 feet wide and the other may be 10, but in this second part it is extremely gloomy, because there is only one opening, which is the door of the temple itself, which is to the north, and because the little communicating door is not capable of lighting the second part.
> There is nothing remarkable inside of the temple except a table or altar about four feet high and six feet long by two broad. On this table is a coffer made of cane splints very well worked, in which are the bones of the last great Sun. The eternal fire is in this first part of the temple. In the other and more secluded part nothing can be distinguished except two planks worked by hand on which are many minute carvings (plusieurs minuties) which one is unable to make out, owing to the

evolving into one of the major elements of the agriculture based fire-sun-deity belief system (Waring 1968:30-69).

At this point it may be more productive to resist any temptation to pigeon-hole the premound structures at Lubbub Creek into "chief's home," temple, or charnel categories. Trying to reconcile these postmold patterns with specific historic references across time and space invariably leads to frustration. At the well-documented Fatherland site, Neitzel (1965) was disappointed in his effort to match Du Pratz, Charlovoix, and Penicaut's descriptions of the historic Natchez temple to archaeological evidence uncovered on Mound C. On this problem Neitzel advises caution and states:

> The foregoing attempt to correlate historical and archaeological information pertinent to the general form and size of the temple is disappointing in several respects. There are interesting and detailed ethnological data which appear to be very informative until examined closely. A trial judge in a court of law would probably not be unfamiliar with the character and substance of the testimony of the historical witnesses (Neitzel 1965:75-76).

Few large compound or subdivided buildings similar to those found on the premound surface at Lubbub Creek have been excavated. The plan of the prehistoric structures found on Building Level 1, Mound C at the Fatherland site (Neitzel 1965:33) is nearly identical to Structure 5A at Lubbub Creek. Another similar example was excavated at the Bayou Gola site in Louisiana (Quimby 1956:108). The French describe compound buildings in the lower Mississippi Valley (Swanton 1911:275). At Hiwassee Island in Tennessee rectangular buildings with porticos were found on successive stages of the large mound, Unit 37. Buildings 27, 30, 41, 44, and 46 (Lewis and Kneburg 1946: Plates 16, 17, 18) show both single set post and wall trench construction. Because the porticos or "porches" were built upon elevated platforms, these buildings differ slightly from the ground level Structures 5A and 5B at Lubbub Creek.

In Alabama, C. B. Moore (1905, 1907) excavated units in all of the mounds at Moundville but failed to record any architectural details. Multi-room wall trench structures, interpreted as "elite" residences, have been found in other areas of the site (Peebles 1979) but do not resemble the Lubbub Creek buildings. Several large superimposed wall trench patterns were found within the "domiciliary" mound at the Bessemer site in Alabama, although it is not clear if they represent compound buildings (DeJarnette and Wimberly 1941:25-45). In northern Alabama at Seven Mile Island, several large rectangular single set post structures were found within the mound and on the premound surface (Webb and DeJarnette 1942:43-49). Both Bessemer and Seven Mile Island have material traits that indicate a strong connection with Moundville. However, none of these examples are sub-divided or compound structures.

Structures 1, 2, and 3 at Lubbub Creek seem to have a developmental relationship to each other. Structure 2 was perhaps the prototype for Structure 1 and shared a similar function. Structure 2 is very similar to domestic wall trench structures common to Moundville and many other Mississippian sites except for the extremely deep (60 cm) wall trenches. Structure 2 is contemporary with Structure 5A and together these are the only

> high places, and at least the houses of the lords and caciques are so situated even if the whole village cannot be. But since all of the land is very flat, and elevated sites which have the various other useful conveniences for settlement are seldom found, they build such sites with the strength of their arms, piling up very large quantities of earth and stamping on it with great force until they have formed a mound from twenty-eight to forty-two feet in height. Then on the top of these places they construct flat surfaces which are capable of holding the ten, twelve, fifteen, or twenty dwellings (!) of the lord and his family and the people of his service, who vary according to the power and grandeur of his state. In those areas at the foot of this hill, which may be either natural or artificial, they construct a plaza, around which first the noblest and most important personages and then the common people build their homes. They make an effort not to be far distant from the site upon which the dwelling of their lord is located.
> In order to reach the house of the Curaca, the Indians build two, three, or more streets, according to the number that are necessary, straight up the side of the hill . . . . All the rest of the hill is cut like a wall, so that it cannot be ascended except by the stairs, for in this way they are better able to defend the houses of the lord (Varner and Varner, eds. 1951: 170-71).

Years later Le Page du Pratz gives some indication of the local variability of these structures:

> All peoples of Louisiana have temples, which are more or less cared for according to the ability of the nation, and all, as I have said, put their dead in the earth, or in tombs within the temples or very near them, or in the neighborhood. Many of these nations have only very simple temples, which one would take for private cabins . . . . The cabins of the Natchez Suns have, in truth, posts like those of the temples, but their temple was very easy to recognize in accordance with the description I have given it. Besides, near these little temples some distinctive marks are always to be seen, which are either small elevations of earth or some little dishes which announce that in this place there are bodies interred, or one perceives some raised tombs, if the nation has this custom (Swanton 1911: 167).

Most archaeological discussion of religion in the prehistoric Southeast has been concerned with the physical evidence associated with mortuary ritual (Sears 1961; Waring 1968; Brown 1977). Several important excavations provide examples of the temple or charnel mound on Mississippian sites (Fairbanks 1956; Black 1967; Larson 1971; Peebles 1971; Brown 1971; Fowler 1974; Schnell, Knight, and Schnell 1979). It seems reasonable to conclude that the primary criterion for deciding whether a postmold pattern found in association with a mound represents a charnel house is the presence of burials. However, the reverse situation need not be true; a structure could have served as a charnel house even if interments were absent. Sometimes interment in the charnel house was a temporary stay on a raised platform or in wooden chests before eventual reburial in another location. The primary source of information on the complex functions of the historic Southeastern temple or charnel structure can be found in the works of Swanton (1911, 1922, 1931, 1946). This phenomenon was so widespread it is believed to have great antiquity, originating in the Woodland burial mound complex (Reed 1977:38-39) and

The artifact content of Zone I was negligible but Zone H contained abundant ceramic material. It was also in this final form that we found evidence for one and probably two mound ramps.

Sometime after the completion of the final mound stage, a large amount of sherds, mussel shell, and bone was deposited in the apex of an angle formed by the south ramp and the south edge of the mound. This material had the appearance of having been dumped from the summit, and it was thoroughly mixed in an ashy matrix which contained small chunks of daub. It was difficult to determine the limits of this deposit, but it paralleled the south edge of the mound in a thin sheet and had its heaviest concentration in the right angle formed by the mound ramp.

There are two possible explanations for this deposit. The debris may have been dumped from the summit by the occupants or pushed down as a result of the modern mound destruction. The lack of stratification indicates deposition was a rapid event. No historic European material was found. Most of the sample falls late in the ceramic chronology as would be expected for the final stages of the mound. Without being able to demonstrate the fact, the writer believes this deposition resulted from modern disturbance.

THE DEVELOPMENT OF MOUND CEREMONIALISM

When Hernando De Soto and his violent band of glory seekers marched through the Alabama area in 1540, his scribes recorded the adventure in a manner properly suited to an audience of Spanish nobility. These observers were quite sensitive to the political organization of the groups they encountered. They detailed acts of social deference and indications of rank and status, and commented on native religious ritual and ceremony with the bemused disgust indicative of 16th Century Catholicism. Taking their ethnocentrism into account, these records provide our most important glimpse of Late Mississippian societies, and recently have been used to elucidate archaeological analysis with encouraging results (Phillips, Ford, and Griffin 1951; Brain, Toth, and Buckingham 1972; Smith 1976; Lankford 1977).

By the late 17th Century only the Natchez and a few of their neighbors in the lower Mississippi Valley still retained an ascriptive, hierarchically ranked society similar to the complex agricultural chiefdoms of De Soto's day. Throughout the Southeast this "Mississippian" culture had been replaced by the more egalitarian historic tribes engaged in rapid acculturation with the European colonists. Despite obvious biases and flaws, the French observers of the Natchez and the 16th Century Spanish chronicles provide the best ethnohistoric clues for interpreting mound ceremonialism at Lubbub Creek.

At least two different terms were used to describe buildings erected upon the mounds: the "Chief's home" and the temple or charnel house (Waring 1968:55). Some early observers do not make it clear to which building they referred. Although the Spaniards and French noted both types of buildings in many towns, this duality was not always discussed. Both types were large buildings of a semi-public nature, and they often formed the multiple mound and plaza arrangeme[illegible] community pattern at Osachile was commented upon in detail by Garcilaso de la Vega, 1605:

You may know therefore that the Indians of Florida always try to dwell on

Figure 26. Aerial view of mound excavations: Structure 5 complex is in the foreground. The excavation of Structures 1 and 2 is in progress.

Soon after the abandonment of Structure 3, the two wall trench buildings, Structures 2 and 5A, were erected. As with other structures below the mound, little cultural material was present on their floors or in their fill. This fact suggests a conscious attempt to keep the floors and surrounding area free of garbage. Mississippi Plain, var. Warrior constituted the majority of the ceramic material found. A small sherd of Moundville Incised, var. Moundville was located in a wall trench of Structure 2. The wall trenches of Structure 5A that cut into Structure 3 were filled with chunks of the prepared clay floor. Structures 2 and 5A were probably contemporary since both occurred at the same elevation, displayed the wall trench construction technique, and obviously postdated Structures 3 and 4 but predated Structures 1 and 5B.

Apparently these buildings were razed prior to the construction of Structures 1 and 5B. There was neither daub nor burnt timber to indicate the buildings had burned. Whatever method was used in their destruction, all debris was carefully removed. This activity resulted in a consolidation of the floors when Structure 5B was superimposed over Structure 5A. It should be emphasized that most of the evidence that allows us to place the premound buildings in proper chronological order is the result of logical stratigraphic observations rather than a dependence on ceramic chronology.

Structures 1 and 5B were the last buildings constructed on the premound level. Both appear to be contemporary with each other. The majority of the ceramics associated with both structures are Mississippi Plain, var. Warrior and Hale. A few sherds of Moundville Incised, var. Snows Bend were located in Structure 1 postmolds and a fragment of a frog effigy vessel was recovered from the floor of Structure 5B. An aerial view of the premound surface is shown in Figure 26.

These final two buildings were razed just as Structures 2 and 5A had been before. Once again all debris was carefully removed. There was no attempt to destroy the raised clay platforms. Next, the yellow clay of Zone O was packed down upon this newly cleaned surface, and it formed a rectangular platform that covered all of Structure 5B and part of the Structure 1 postmold pattern. This zone initiated the first stage of mound construction. Zone O was not exposed for very long before being covered by Zones L and M, because neither was there evidence of erosion, nor was there any indication that it had functioned as a foundation for buildings. Instead, Zone O was quickly covered by Zone M which supported a wall trench structure upon its summit. No diagnostic ceramics were recovered from this zone. The presence of large amounts of fired daub indicated that this building may have burned, but this conclusion cannot be stated with certainty.

With the termination of occupation on Zone M, the mound was again increased in size with the application of sand fill, Zone K. The lack of erosion in Zone K indicated that it was rapidly constructed and capped over with the clay stage, Zone J. Not surprisingly, Zone K was nearly devoid of cultural material. However, a one cubic meter sample of Zone J produced a large amount of shell tempered sherds. This material was concentrated on the western side of the mound parallel to the borrow pit.

The mound stood at this height for some time, and presumably it supported an important building. Next the mound was expanded once more with the addition of sand fill, Zone I, and a final clay construction stage, Zone H.

TABLE 5

The Order of Appearance of Type and Variety in the Summerville Mound Ceramic Sample.

Provenience	Type and Variety	Chronological Position
Mound Zone H and General Mound Provenience	Mound Place Incised *var.* *Havana*	Summerville II-III
	Mound Place Incised *var.* *Akron*	
	Carthage Incised *var.* *Carthage*	
	Moundville Engraved *var.* *Tuscaloosa*	
	Moundville Engraved *var.* *Wiggins*	
	Moundville Engraved *var.* *Hemphill*	
Mound Zones M and J	Moundville Engraved *var.* *Undetermined*	
	Moundville Incised *var.* *Undetermined*	Summerville I
Premound Structures	Carthage Incised *var.* *Moon Lake*	
	Moundville Incised *var.* *Moundville*	
	Moundville Incised *var.* *Carrollton*	
	Moundville Incised *var.* *Snows Bend*	
	Mississippi Plain *var.* *Warrior & Hale*	
Premound Surface Zone P	Mulberry Creek Marked *var.* *Aliceville* Baytown Plain *var.* *Roper*	Late Miller III

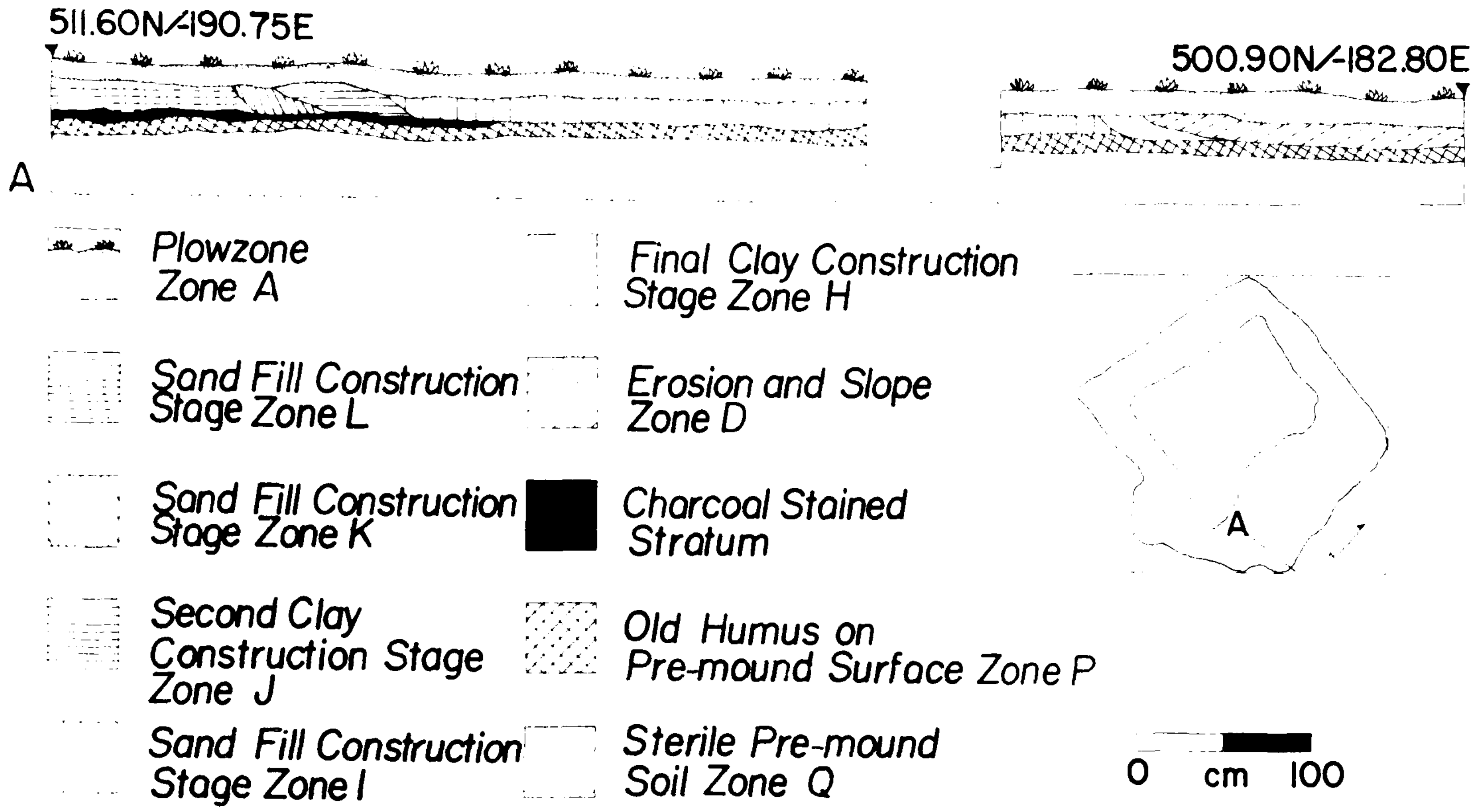


Figure 25. North Profile of Test Trench 7 which shows the remnants of the southeastern mound ramp.

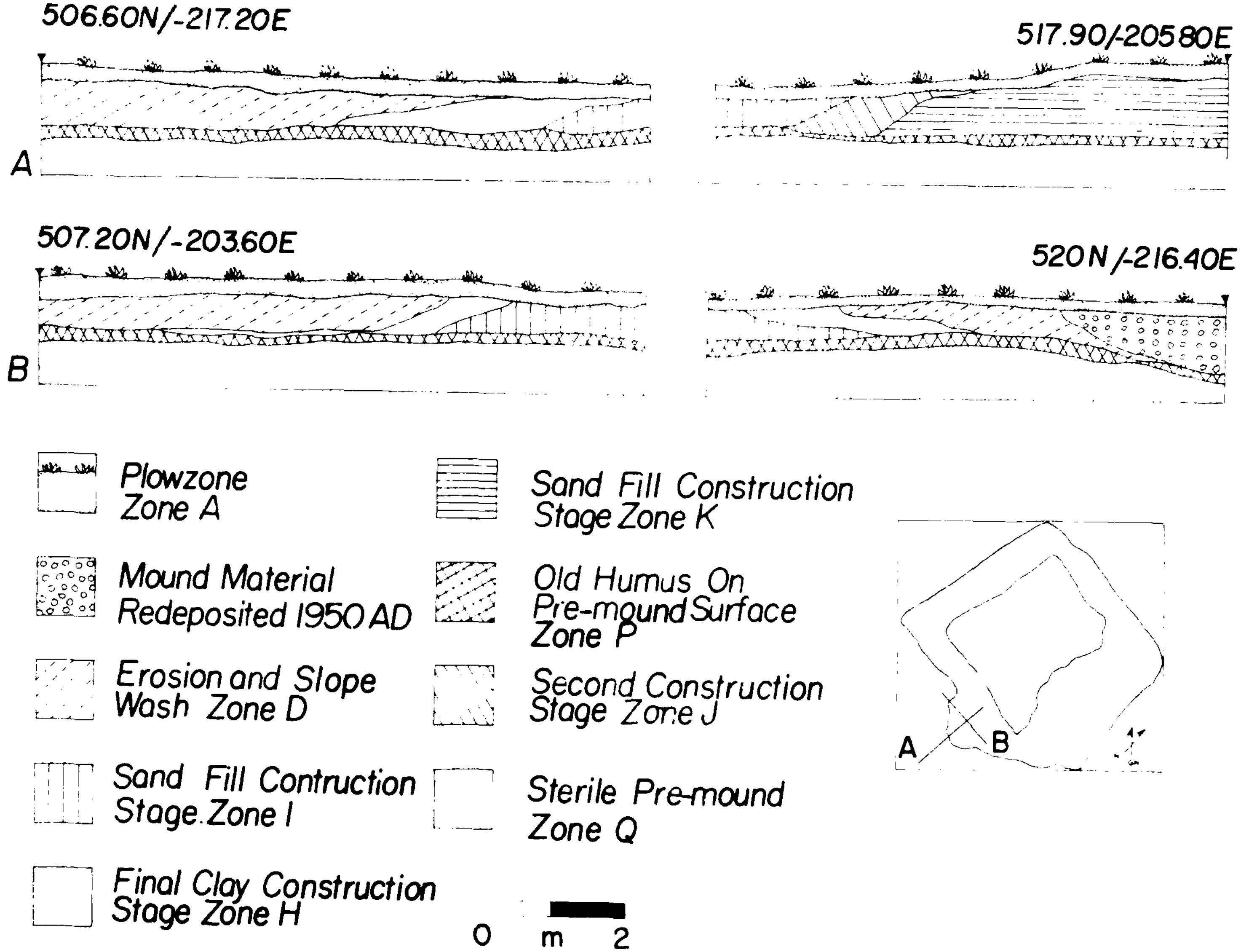


Figure 24. Profiles of Test Trenches 5 and 6 which show remnants of the southern mound ramp.

The ramp in its final form is represented by Zones H and I, which extended 6 m out from Zone J. Zone J bulged out from the side of the mound in a manner that suggested a ramp at this location, but evidence for this ramp remained obscure. No further architectural details could be detected because so little of the ramp remained intact.

A second possible mound ramp was tested by Test Trench 7. This trench was cut from 512.00N/-195.10E to 500.20N/-182.00E and the 16 m long profile is shown in Figure 25. Unfortunately, the shallow nature of the undisturbed portion of the mound in this area makes interpretation difficult, but this profile seems to indicate the same sequence of construction observed in Test Trenches 5 and 6. As with the other ramp, the expansion occurred with Zones I and H. Therefore, at least in the later stages of the mound construction, there was one ramp oriented east and another facing south. The earlier mound construction stages showed no evidence of ramps.

SUMMARY OF MOUND CHRONOLOGY

In the previous discussion of features associated with the Summerville Mound, the physical characteristics of the various structures and mound zones have been described in detail. Before continuing on to a more subjective interpretive statement, it is necessary to summarize the development of premound buildings and mound construction stages, and to examine the evidence that allows us to place these events in their relative chronological order. A summary of the Summerville Mound ceramic sample is presented in Table 5.

Prior to the mound construction, the old ground surface, Zone P, contained a scattering of grog tempered sherds typical of the Late Woodland Miller groups. The dominant wares present, Mulberry Creek Cord Marked, var. Aliceville and Baytown Plain, var. Roper, were strongly indicative of the Miller III occupation in the central Tombigbee Valley. Bits of grog tempered sherds were mixed in the fill of the deeper wall trenches and postmolds and were a result of the fact that these later features were cut down into the earlier ground surface.

The first buildings constructed on the premound surface were Structures 3 and 4. Structure 4 was mapped but, except for Pits 12 and 13, not excavated. These two shallow "smudge" pits appeared to be contemporary with the Structure 4 postmold pattern. Both pits contained charred corn and pine cones but no ceramics. Pit 13 was radiocarbon dated at A.D. 980. This identifies with Middle Miller III, estimated to date from A.D. 800 to 900 (Jenkins 1979:268-270; Chapter 3 this volume).

The question of the contemporaneity and cultural affiliation of Structures 4 and 3 remains obscure due to the possible mixing of Miller material from the surrounding matrix, disturbance from subsequent building activity, and the overall negligible amount of cultural debris present in their fill. Two factors indicate that Structure 3 is the later building. The postmolds of Structure 3 occur nearly 10 cm higher in elevation than those of Structure 4, and the prepared clay floor of Structure 3 implies a sophistication in architecture not known from Miller III. Structure 3 probably represents the initiation of a more elaborate architecture that began during the Late Woodland to Early Mississippian transition.

TABLE 4

Premound Structures and Associated Features.

Structure	Wall Trench	Single Post	Prepared Floor	Rectilinear	Undetermined Shape	Corner Entrance	Vestibule Entrance	Clay Platforms	Compound or Subdivided	Wall Embankment	Hearth
1		x		x			x			x	x
2	x			x		x					x
3		x	x	x							
4		x			x						
5-A	x			x		x			x		x
5-B		x		x				x	x		x

south of true east. Later, each new and larger clay construction stage retained this orientation. This development can be compared to a series of nested boxes. That such a conformity could have resulted by chance is unlikely. If the hypothesis that mound stages were constructed to cover old "polluted" surfaces (Waring 1968:48) is considered, a kind of uniformity may have resulted from using the old surface as a model for the alignment of the new stage.

A recent examination of 131 principal mounds in the Southeast revealed that their location was a consequence of their relationship to the plaza and environmental setting rather than a celestial orientation (Reed 1977:31-41). The majority of principal mounds were located to the west of their plazas with ramps facing east. The Summerville Mound's eastern ramp faced an area of very low daub and ceramic density that may indicate a plaza. The south ramp exited toward a series of palisade sequences. Further speculation on factors governing the mound orientation moves beyond the boundaries of physical evidence.

Because the mound was destroyed prior to any detailed measurements of the original configuration, no accurate estimates of the total volume can be made. The only value of a volume measurement would be to hypothesize the man-hours of work involved in the construction. Highly problematical calculations are not necessary to realize that the builders of the Summerville Mound had the power and skill to organize large groups of people to complete complex tasks.

CHAPTER 8. THE SUMMERVILLE I COMMUNITY

John H. Blitz

For centuries the central Tombigbee Valley supported an indigenous population which maintained an efficient hunting and gathering strategy for exploiting the rich natural environment. During the late Woodland Period, the number and size of sites increased substantially and there was a corresponding change in settlement patterns. From the earliest part, the Mississippian Period sites were located near expanses of loamy sand soils. It has been suggested that this soil preference may indicate the practice of horticulture (Jenkins, Curren, and DeLeon 1975). Recent studies have documented the presence of corn (_Zea mays_) in the central Tombigbee Valley as early as the Early Miller III subphase, but concluded that the subsistence strategy continued to rely primarily on wild plant foods (Caddell 1979; Chapter 3, Volume II, below). Also at this time, a more diverse range of faunal resources, especially freshwater mussels, was successfully exploited (Woodrick 1980; Chapter 5, Volume II, below).

Soon after 1000 A. D., a more complex society appeared in the Tombigbee Valley and in the Lubbub Creek Archaeological Locality. This cultural system was characterized by an increased reliance on maize agriculture, sophisticated shell tempered ceramics, wattle and daub houses, specialized use of exotic raw materials, and, perhaps, a more complex form of social organization. Architecture became more elaborate and there was a distinction between residential dwellings and buildings of community or religious significance. These buildings and the initial mound construction stages became the focal point around which the community was located. An important concern was defense against attack as evidenced by the construction of a bastioned palisade across the bend. A series of inner palisades without bastions circumscribed the mound area. These changes marked the beginning of the "Mississippian stage" in the Tombigbee Valley and the Summerville I period in the Lubbub Creek Archaeological Locality.

The Summerville I period, like all the temporal subdivisions of the Summerville Phase, is defined by the presence of certain ceramic types and varieties. In this case the occurrence of Moundville Incised _var. Moundville_ serves to define and delimit the period. The exclusive use of only one variety of Moundville Incised contrasts strongly with the ceramic chronology at Moundville where all three varieties of Moundville Incised -- Carrollton, Snows Bend, and Moundville -- are used to define the Moundville I period (Steponaitis 1980). In the Lubbub Creek Archaeological Locality, all three varieties begin in the Summerville I period, but _var. Carrollton_ extends throughout the entire sequence, that is, through the Summerville IV period, and _var. Snows Bend_ lasts well into the Summerville II-III period. When the radiocarbon dates and comparative ceramic chronologies at Moundville and Lyons Bluff (Marshall 1977) are taken into consideration, the Summerville I period extends from ca. A.D. 1000 to 1200. This chronological range is roughly comparable to the Moundville I period in the Black Warrior River Valley (Steponaitis 1980).

The Summerville I community may have been the most spatially extensive settlement that occurred on the bend. The pre-Mississippian Late Woodland components were moderate sized, perhaps seasonally variable, and widely dispersed. In contrast, the Summerville I components represented a large fortified village that extended from the western palisade east to the point of the bend, and the most densely occupied area was between Palisade I in Hectare 500N/-400E and the cemetery in 400N/0E. The distribution of Moundville Incised var. Moundville ceramic debris, which is used to outline the community, is concentrated along an arc from the palisade, to the mound, and along the 500N line east to the river (Figure 1).

Description of the Summerville I Community

The following sections provide a detailed examination of the important Summerville I period features and stratigraphy in each hectare. These features represent a wide range of human activity and include 3 structures, 6 pits, 9 human burials, numerous "smudge" pits, and several midden deposits. Table 1 summarizes the features by provenience. Postmolds, 1 by 1 m, and 10 by 10 m sample units are not listed. These features were found in six hectares. The palisade sequence and the initial mound stages, which were the most complex features constructed during the Summerville I occupation, are described in Chapters 7 and 8 of Volume I.

Hectare 300N/-200E

Only two 10 by 10 m units were excavated in Hectare 300N/-200E. Unit 387N/-199E was devoid of features, but in 355N/-195E a large midden deposit was uncovered. This stratum was designated Midden 1 (USN 2674) and extended across the entire floor of the sample unit. This deposit was a 10 to 25 cm thick layer of mussel shell, animal bone, fire-cracked sandstone, and pottery sherds contained in a dark organic soil. A total of twenty 1 by 1 m units were used to sample the midden which contained Mississippi Plain and Moundville Incised var. Moundville sherds. This would indicate a Summerville I association for the deposit. A dense profusion of postmolds was intruded into this midden. Unfortunately no structure patterns could be defined from this seemingly random distribution of postmolds.

Two human burials were discovered in the northwest corner of Unit 335N/-195E. Burial 1 (USN 2765) was the fully extended skeleton of an infant interred in a small round pit 50 cm in diameter, and 30 cm deep. The cranium was badly crushed, but the skeleton was in correct anatomical position. One small sherd of Moundville Incised var. Moundville was retrieved from the pit fill.

Burial 2 (USN 2943) was located 1 m south of Burial 1. The grave was slightly oval, 85 by 55 cm in plan and 21 cm deep. A single infant had been placed in a supine, extended position with the left leg flexed outward from the body. The cranium was crushed, but the bone preservation was excellent.

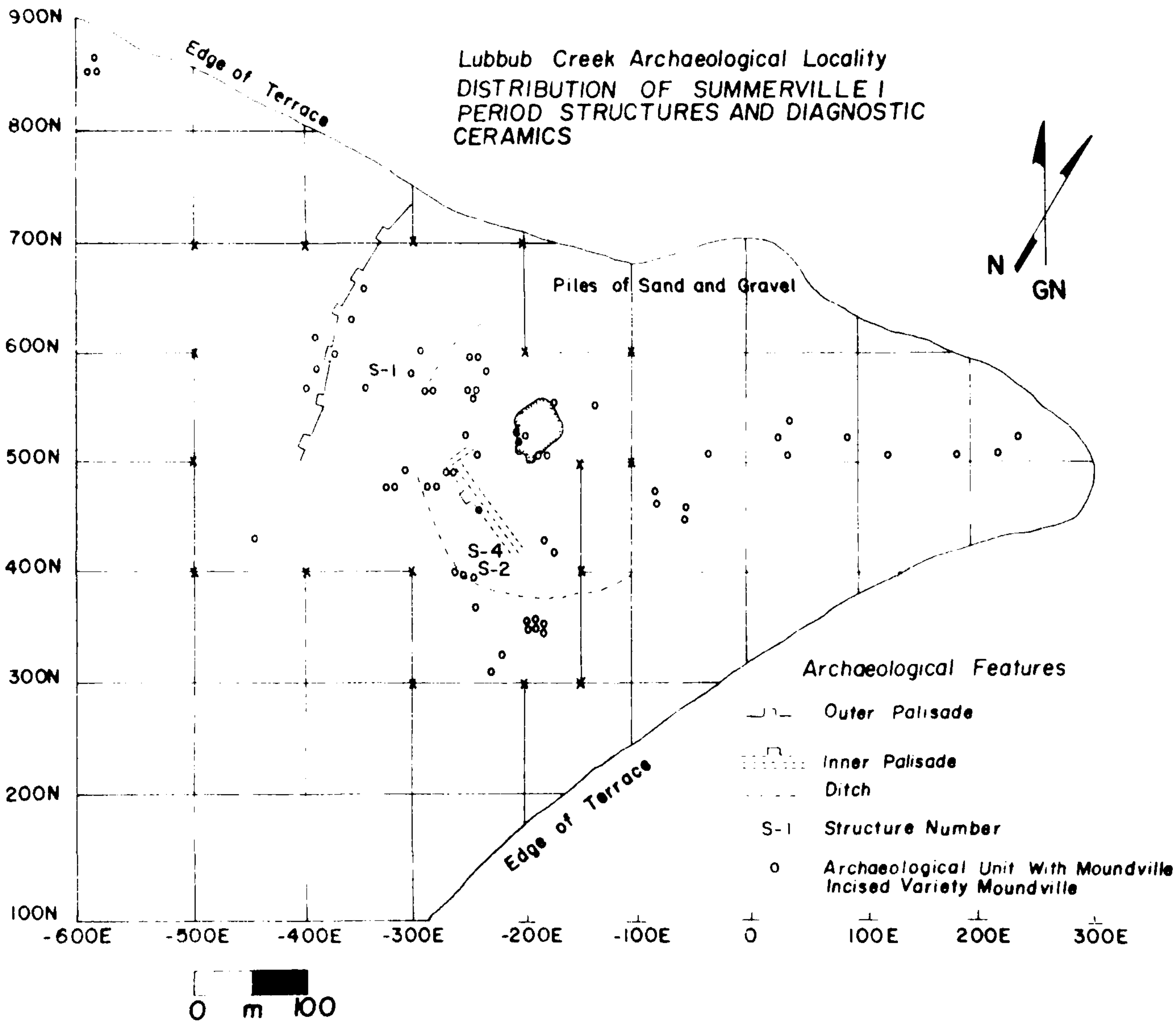


Figure 1. Distribution of Summerville I period structures and diagnostic ceramics.

TABLE 1

Summary of Summerville I Features by Provenience and (USN). Postmolds, 1 x 1 m tests, Mound, and Plowzone Samples Excluded.

HECTARE					
300N/-200E	300N/-300E	400N/-300E	500N/-300E	500N/-400E	600N/-400E
Burial 1 (2765)	Burial 1 (1381)	Pit 4 (2520)	Burial 1 (4742)	Structure 1 (3889)	Daub Concentration 1 (5212)
Midden 1 (2674)	Pit 14 (1456)	Midden Deposit 2 (9832)	Burial 3 (5457)	Hearth 1A (3675)	
		Structure 2 (2542)	Burial 4 (5458)	Hearth 1B (3676)	
		Structure 4 (2543)	Burial 5 (5488)	Pit 9 (3619)	
			Burial 6 (5613)	Pit 11 (3911)	
			Burial 7 (5630)	Burial 1 (3958)	

The grave fill consisted of charcoal flecks, bits of fired daub, a small amount of mussel shell, and plain shell tempered sherds. Similar debris was present in the surrounding midden deposit (Figure 2).

Hectare 300N/-300E

Burial 1 (USN 1381) was discovered just below the plowzone in Unit 345N/-172E. The grave appeared on the floor of the excavation unit as an oval stain 150 by 85 cm. The long axis was oriented east to west, and the edges of the grave outline were vague and difficult to define. The grave formed a shallow 20 cm deep depression which contained a very poorly preserved, supine adult. So little of the bone remained that it was impossible to tell if a complete skeleton had been interred originally. A large feature, Pit 4 (USN 1213), had cut into the western edge of the burial pit. The grave fill contained a few plain shell tempered sherds, two pieces of fire cracked sandstone, and a small sherd of Moundville Incised var. Moundville.

Another grave, Burial 2 (USN 1405) was uncovered in Unit 355N/-263E. This burial was located directly south of Burial 1. The grave was an oval, shallow depression, 120 by 83 cm in plan and 25 cm deep. An adult cranium and fragments of humeri were the only skeletal material recovered. There were no cultural associations other than plain shell tempered sherds. However, the close spatial and depositional relationship to Burial 1 would suggest a Summerville I association.

The third burial in Hectare 300N/-300E was located in the northeast corner of Unit 355N/-273E, 14 m north of Burials 1 and 2. The grave was a shallow round pit approximately 85 cm in diameter and 30 cm deep. The arrangement of the fragmentary remains indicated a tightly flexed burial. Unfortunately, there was no associated cultural debris with the grave.

The extent of the Summerville I community in Hectare 300N/-300E was outlined by the presence of Moundville Incised var. Moundville in the plowzone samples from most of the 10 by 10 m units sampled. The isolated pits and postmolds encountered in these units contained mostly plain shell tempered sherds. Typical of these units was 323N/-235E, which yielded Moundville Incised var. Moundville sherds from several postmolds and Pit 14 (USN 1456). This pit was an oval, deep depression filled with organic debris and a small ground sandstone discoidal.

Hectare 400N/-300E

The major Summerville I period feature in Hectare 400N/-300E was Structure 2. This structure (USN 2542) first appeared as a large oval mass of fired daub uncovered 20 cm below the surface of Unit 400N/-245E. The structure was divided into four quarters by two 20 cm wide balks placed in alignment with the grid axes. The daub layer varied in thickness from 4 to 9 cm and was troweled from each quarter of the structure to expose an irregular, oval postmold pattern 6.50 m across the center (Figure 3). The forty-eight postmolds ranged from 4 to 20 cm in diameter (radius: mean=8.6 cm, s=3.0 cm, n=44) and 3 to 43 cm deep (mean=14 cm, s=7 cm, n=48).

The structure had been consumed by fire, which preserved sections of charred timbers and wall posts beneath the daub. A charcoal sample from one

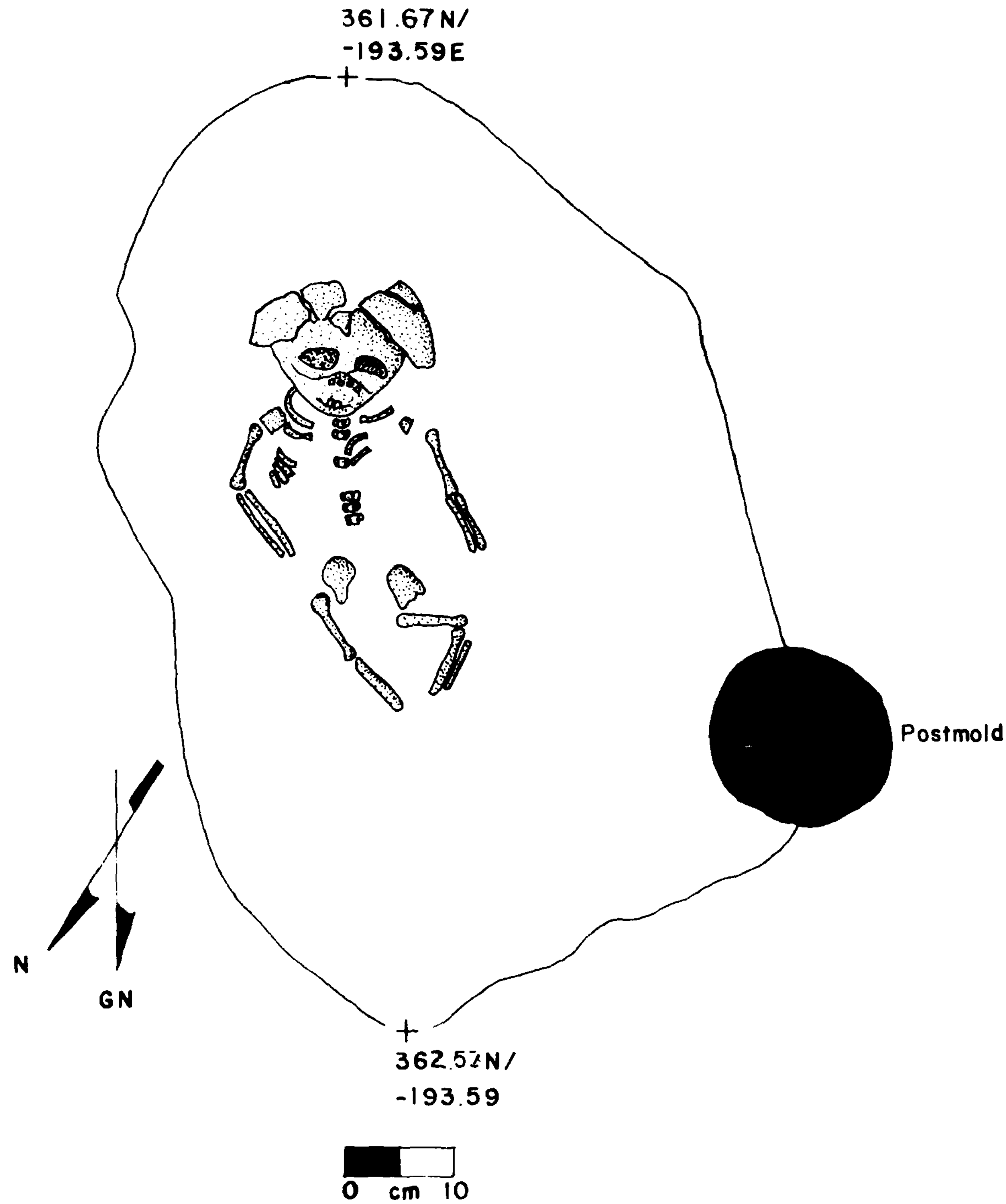


Figure 2. Burial 2 (USN 2943), Hectare 300N/-200E.

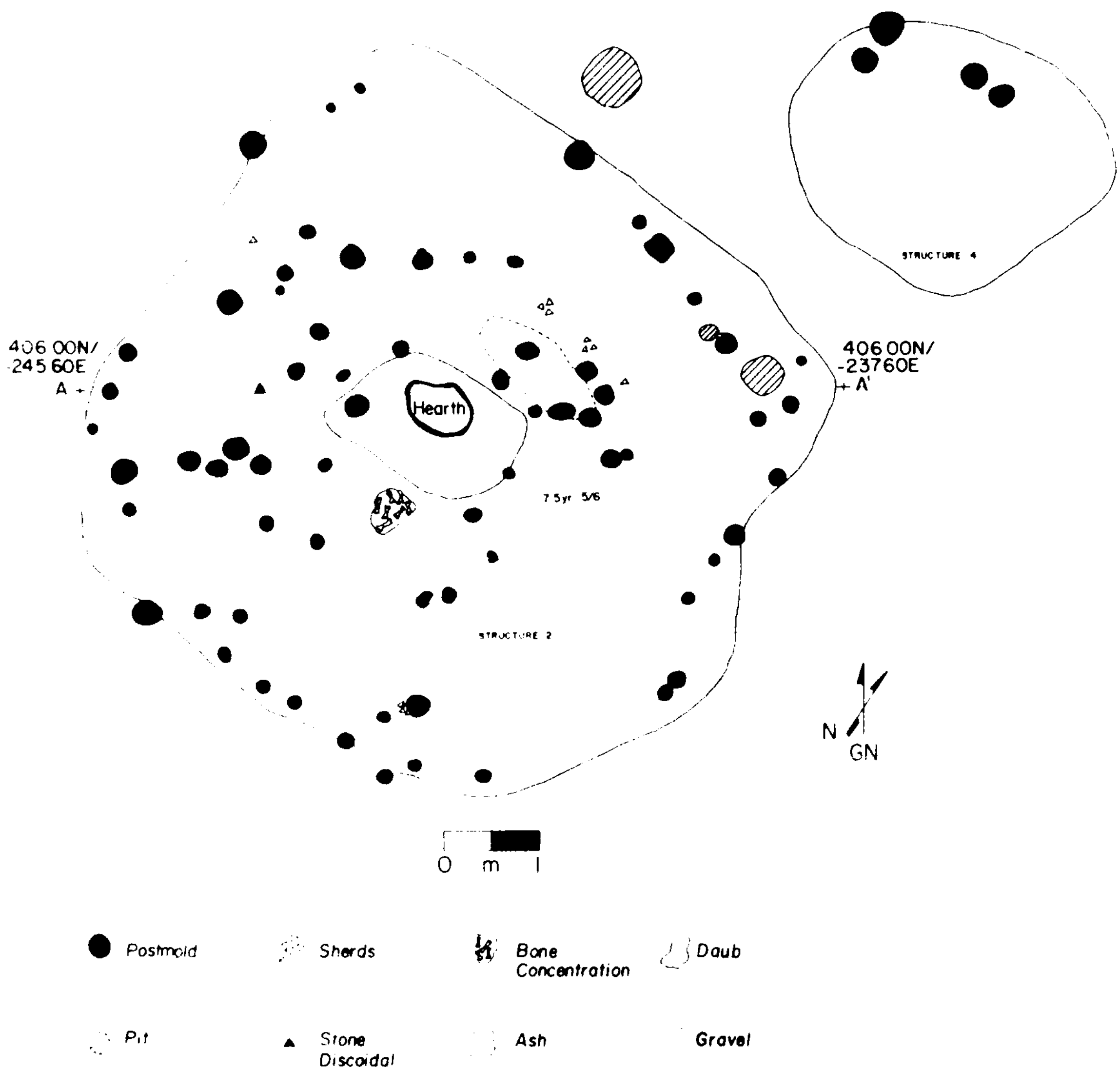


Figure 5. Structure 2 (USN 2542) and Structure 4 (USN 2543), Hectare 400N/-300E.

of these timbers yielded a corrected date of A. D. 1190 (760±80 radiocarbon years, Beta 1095). This date is in accord with the estimate of the initial florescence of the Mississippian tradition at Lubbub Creek.

Impressions in the fired daub suggested that a sheathing of whole cane had been applied to the wall posts, although the exact method of construction could not be determined. The floor of the structure was identified as the surface within the boundaries of the postmold pattern directly below the plow scarred daub layer (Figure 4). No special preparation of this surface could be identified, but the entire floor had been organically stained to a depth of several centimeters. Several clusters of Mississippi Plain var. Warrior, and one sherd of Moundville Incised var. Undetermined were mapped in situ on the floor. Two sherds of Carthage Incised var. Undetermined and Mound Place Incised var. Akron were associated with the daub layer. These sherds may have been introduced from the plowzone; if not, their presence would demand a somewhat later chronological position for Structure 2.

A small depression or pit had been dug 8 cm into the floor of the northeast quarter of the structure and filled with charred corn cobs. Beside this feature was a larger pit which contained only charcoal flecks. A third pit found in the floor was a shallow oblong depression filled with gravel. Because of the absence of organic staining, the edge of this feature was defined as the limit of the gravel. No artifacts were found in this pit, and the purpose of this feature could not be determined. A large layer of ash containing burned animal bone covered the center of the structure. Beneath the ash deposit an oval clay hearth, 75 by 54 cm, which had been dug 10 cm below the level of the floor was found.

Small amounts of unmodified limonite, sandstone, chalk, hematite, and chert flakes were recovered from Structure 2. Three microliths were found on the northeastern floor. Two small abraders and a round hematite object interpreted as an unfinished discoidal were uncovered in the floor area. Another small discoidal of ground sandstone was discovered at the bottom of a postmold.

Two meters north of Structure 2, in Unit 405N/-245E, a circular deposit of fired daub 3.30 by 2.80 m was found beneath the plowzone. Because the feature appeared to be distinct from Structure 2, we decided to excavate it as Structure 4 (USN 2543). Four large postmolds were discovered beneath the 5 cm thick daub, but there was neither organic staining nor special preparation to indicate a floor. At least two postmolds had burned and contained minute amounts of wood charcoal. Samples of charred botanical material were taken from directly beneath the daub, and were identified as hickory nut and corn kernel fragments. One small sherd of Carthage Incised var. Carthage was recovered from the plow scarred daub layer. Although this may be an intrusion from the plowzone, the presence of this type would indicate a chronological position later than Summerville I for Structure 4. Small amounts of plain shell tempered pottery and a few minute chert flakes were discovered beneath the daub layer (Figure 3).

Structure 4 was similar to a few isolated daub concentrations in other hectares, some of which did not have associated postmolds. Several possible interpretations can be applied to this feature. Perhaps Structure 4 was the same depositional event as Structure 2. The daub may have been dumped in the

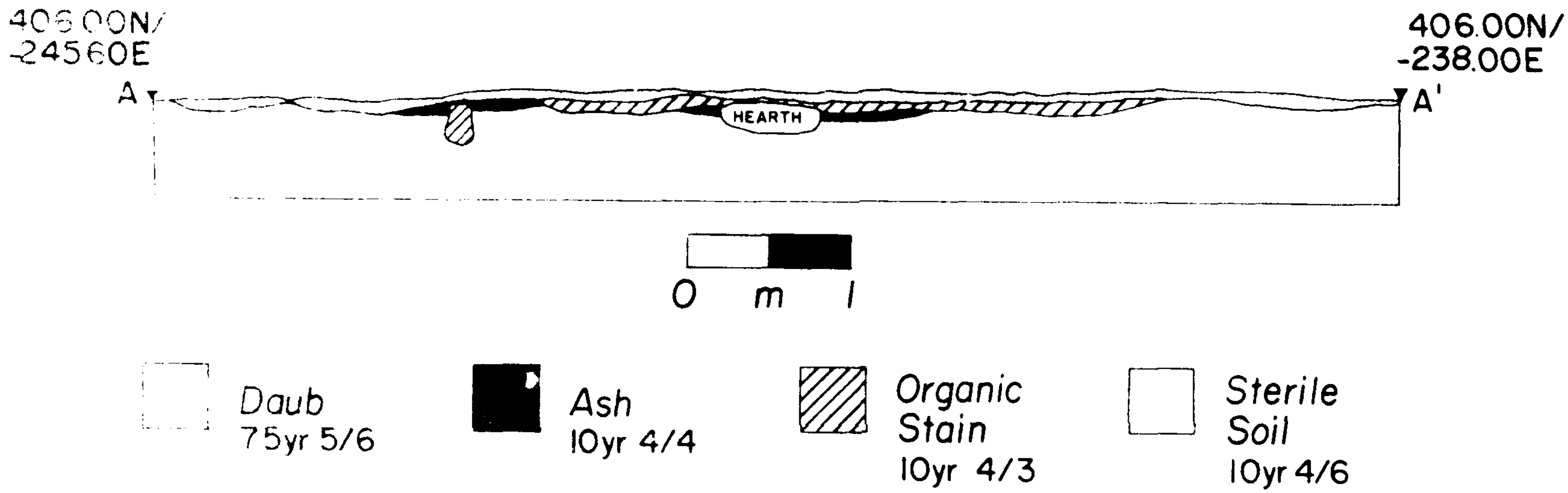


Figure 4. A profile view of Structure 2 (USN 2542).

process of repairing and rebuilding elsewhere. The daub and postmolds may be part of a special purpose structure such as a granary on piles. Unfortunately there is little physical evidence to support any of these interpretations.

The spatial relations and depositional content of several small pits in Unit 400N/-230E suggests their contemporaneity with the Structure 2 and 4 complex, but these could not be assigned to a specific temporal position because of the lack of diagnostic artifacts. Most of the Moundville Incised var. Moundville sherds clustered around Structures 2 and 4, the five palisade sequences, and the northwestern portion of the hectare.

A midden area (USN 9832) in 490N/-266E produced some sherds indicative of the Summerville I occupation. This stratum was similar to the redeposited mound fill located in some of the mound test trenches in Hectare 500N/-300E. Similar deposits were also found in Units 498N/-271E and 519N/-254E. These deposits defined the western extent of mound redeposition that resulted from modern land clearing.

Hectare 500N/-300E

The major features of the Summerville I community in this hectare were the inner palisade sequence (see Chapter 8) and the initial stages of the Summerville Mound 1-Pi-85 (see Chapter 7). Other Summerville I features, which included six burials, were clustered in the northwestern portion of the hectare in Units 572N/-285E and 564N/-275E. This area had been intensively occupied by the later Mississippian communities as well. As a result, many of the smaller features that lacked diagnostic artifacts, such as random postmolds, could not be assigned a specific temporal position. It is fair to assume, however, that many were the result of Summerville I activities.

The stratigraphic and mortuary contexts of the six Mississippian burials are described below, and the bioanthropological analysis is presented in Chapter 6, Volume II. All of these burials were primary interments oriented along an east to west axis. An early chronological position for these burials is inferred from their stratigraphic context. However, a definite temporal position cannot be assigned to Burials 1, 4, 6, 7 because of the absence of diagnostic ceramic types. Only Burials 3 and 5 contained the type Moundville Incised var. Moundville.

Burial 1 (USN 4742) was encountered just below the plowzone in the middle of Unit 560N/-295E. The pit was an oval, 157 by 133 cm, with sides that sloped down to a depth of 50 cm. The darker soil of the pit was well defined against the lighter surrounding matrix. A single supine adult was found with the legs flexed and the arms across the rib cage. An incomplete shallow bowl, Carthage Incised var. Moon Lake, had been placed east of and slightly above the cranium. A large pedestaled water bottle, Mississippi Plain var. Hale, was placed just west of the head. A large abrader made of petrified wood was discovered close to the left elbow. Charcoal was present as scattered minute flecks. The burial pit fill contained a small amount of plain shell tempered sherds, lithic debris, unmodified mussel shell, and a fragment of deer mandible. This type of refuse was scattered throughout the 10 by 10 m unit.

Burial 3 (USN 5457) was found at the western edge of Unit 572N/-285E in an area of abundant fired daub and numerous postmolds. The grave was an oval

6 by 96 cm, with a sloping basin shape filled 44 cm deep with an organic il. A single adult had been placed in a semi-flexed supine position with e head turned on the right cheek and the knees bent toward the south. The dy was oriented along an east to west axis (Figure 5). Slightly to the rtheast of the skull was a Mississippi Plain *var. Hale* bowl, portions of ich were missing and not in the grave fill. The fill contained small ounts of Moundville Incised *var. Moundville*, unmodified mussel shell, lithic akes, hematite, and sandstone fragments, all of which were also abundant in e surrounding matrix. A fragment of deer mandible was discovered 7 cm above e skull. The only charred organic material consisted of tiny charcoal ecks in the sandy fill.

Burial 4 (USN 5458) was uncovered in the northern half of Unit 2N/-285E. The burial pit appeared as a dark oval stain easily discernible om the surrounding soil. It measured 221 by 126 cm, and was a sloping [illegible]-shaped [illegible] 58 cm deep. A single adult was found in a fully extended, [illegible] position with the cranium resting on the occiput and the arms slightly [illegible] (Figure 6). A small globular jar with strap handles, [illegible], was placed 25 cm east of the cranium and 15 cm [illegible] the skeleton. [illegible] debris mixed in the pit fill included small [illegible] mussel shell, animal bones, chert flakes, and plain [illegible] tempered sherds.

Burial 5 (USN 54[illegible]) was discovered in Unit 564N/-275E beneath the utheastern floor of Structure 1 (USN 4776). The interment was found 25 cm low the floor level and was not contemporary with the building (see Chapter). Later postmolds from the subsequent construction of Structure 1 had truded into the burial. The grave was an oval basin shape, 185 by 100 cm, d was filled with a brown loamy sand. The burial pit was shallower than her examples from the surrounding area. A single adult had been placed in a pine, extended position with the arms slightly flexed, hands over the lvis, and the cranium turned slightly on the right cheek (Figure 7). A all jar, Mississippi Plain *var. Warrior*, had been positioned on the right de of the head. Unmodified mussel shell, animal bone, and Moundville cised *var. Moundville* sherds were present in small quantities in the grave ll.

Burial 6 (USN 5613) first appeared as a large stain in Unit [illegible]N/-280.5E, beneath the southwestern section of Structure 1 (USN 4776). e burial was found 85 cm below the floor level and was not contemporary with e building. The grave was an oval basin, 155 by 125 cm. A single adult was und in a semi-flexed, supine position with the cranium turned on the right de. The knees were bent to the north in a manner that aligned the body ong an east to west axis (Figure 8). A broken short-neck bowl with strap ndles, Mississippi Plain *var. Warrior*, was placed just to the northeast of e cranium. The grave fill contained small amounts of plain shell tempered erds, [illegible] mussel shell, and bits of hematite and sandstone.

Burial 7 (USN 5630) was the third burial found beneath Structure 1 (USN [illegible]) and, like the other two, was not contemporary with the building. Sherds [illegible] beneath the floor [illegible] date Structure 1 to the Protohistoric [illegible] [illegible] the density of [illegible] indicated [illegible] [illegible] the grave was a basin [illegible] cm, [illegible] cm deep. [illegible]

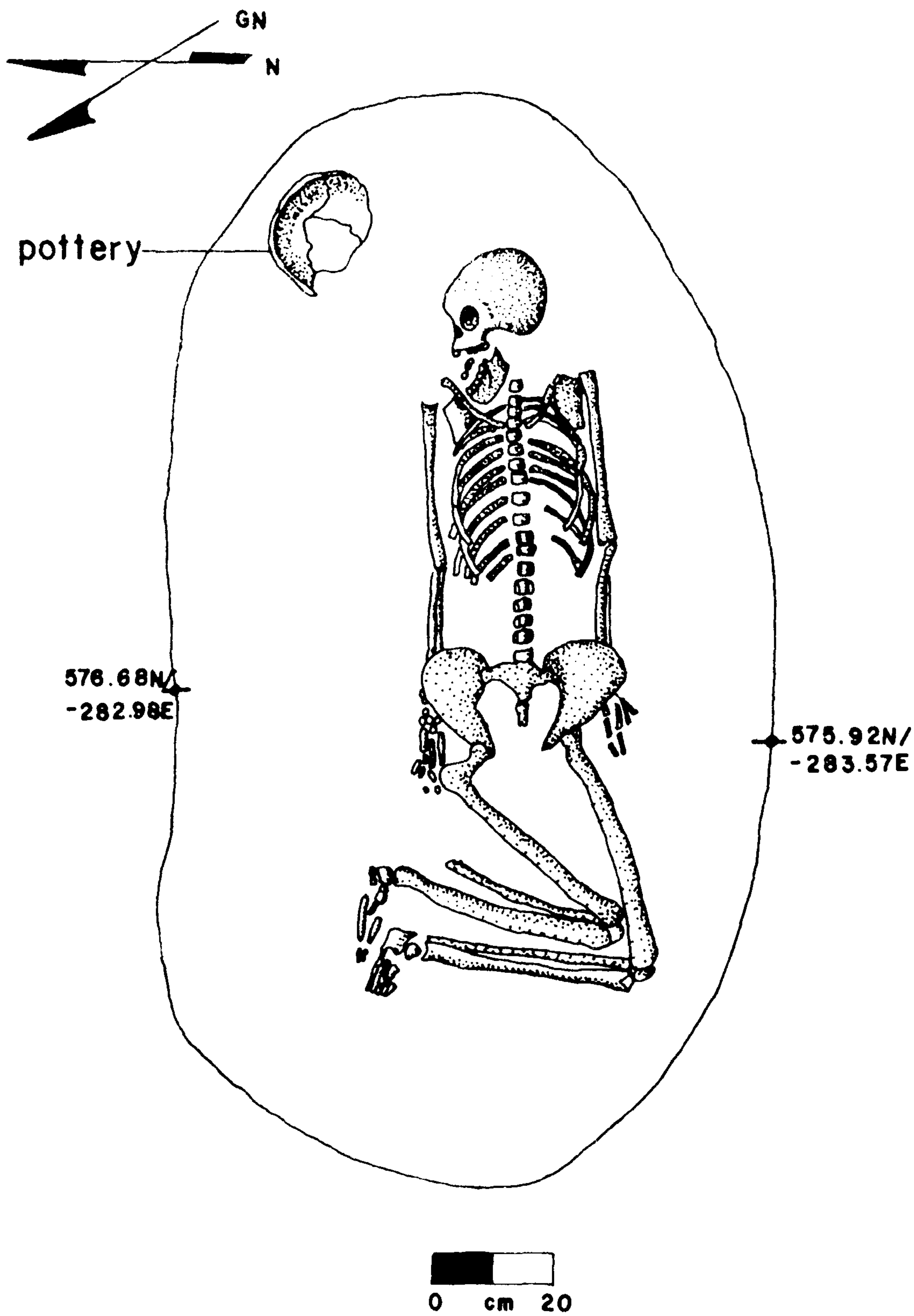
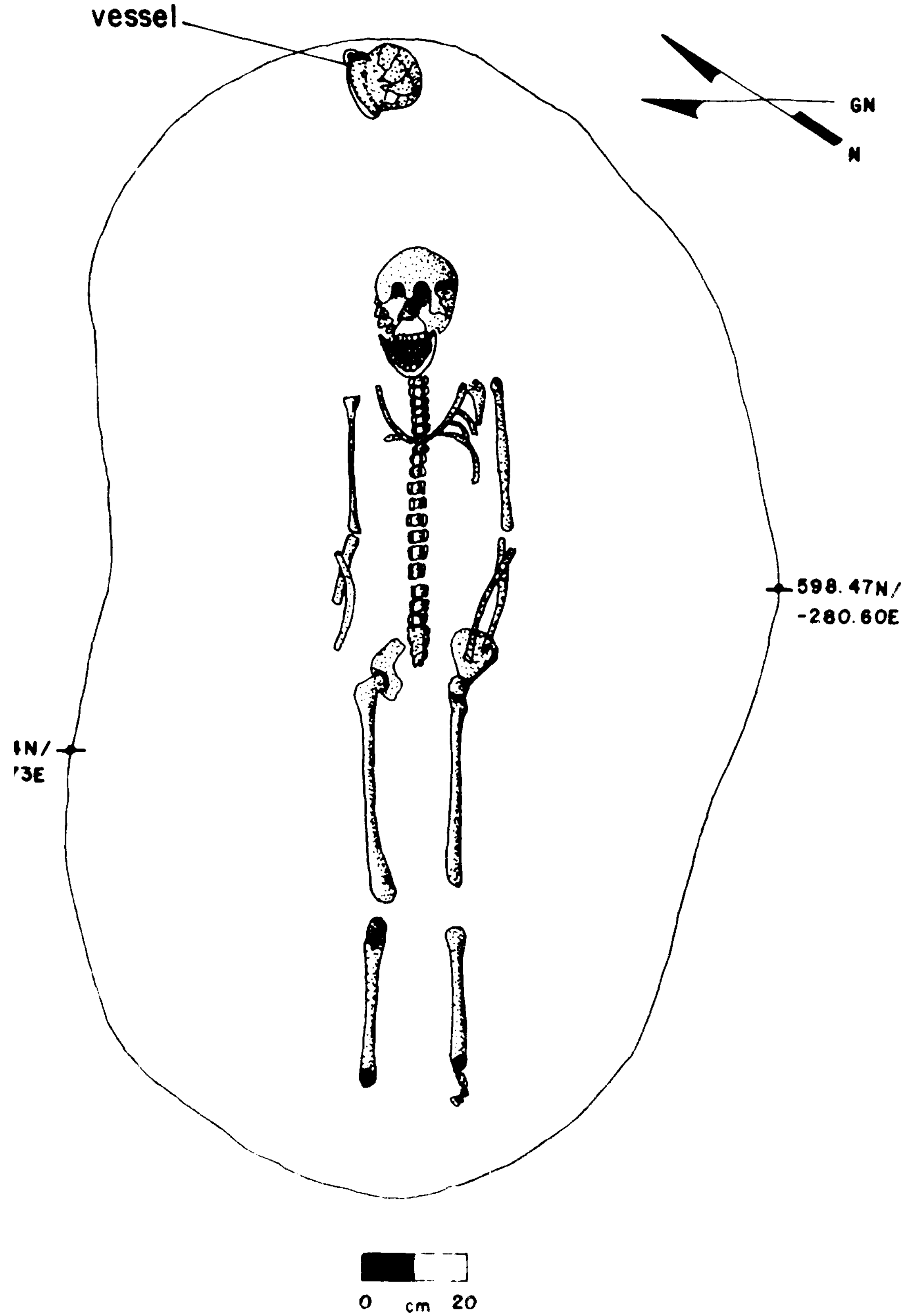


Figure 5. Burial 3 (USN 5457), Hectare 500N/-300E.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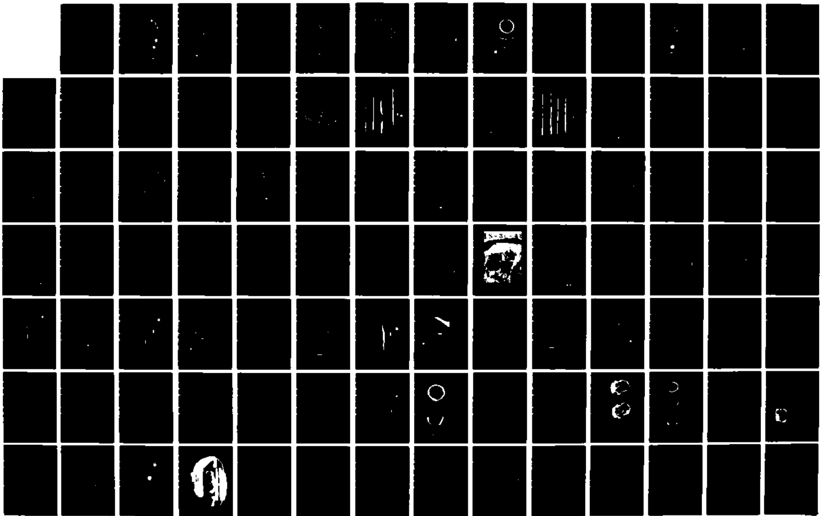

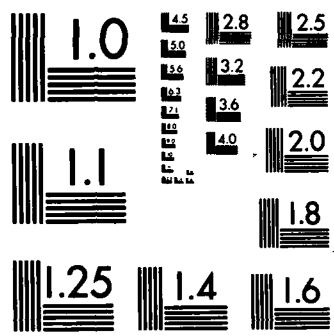
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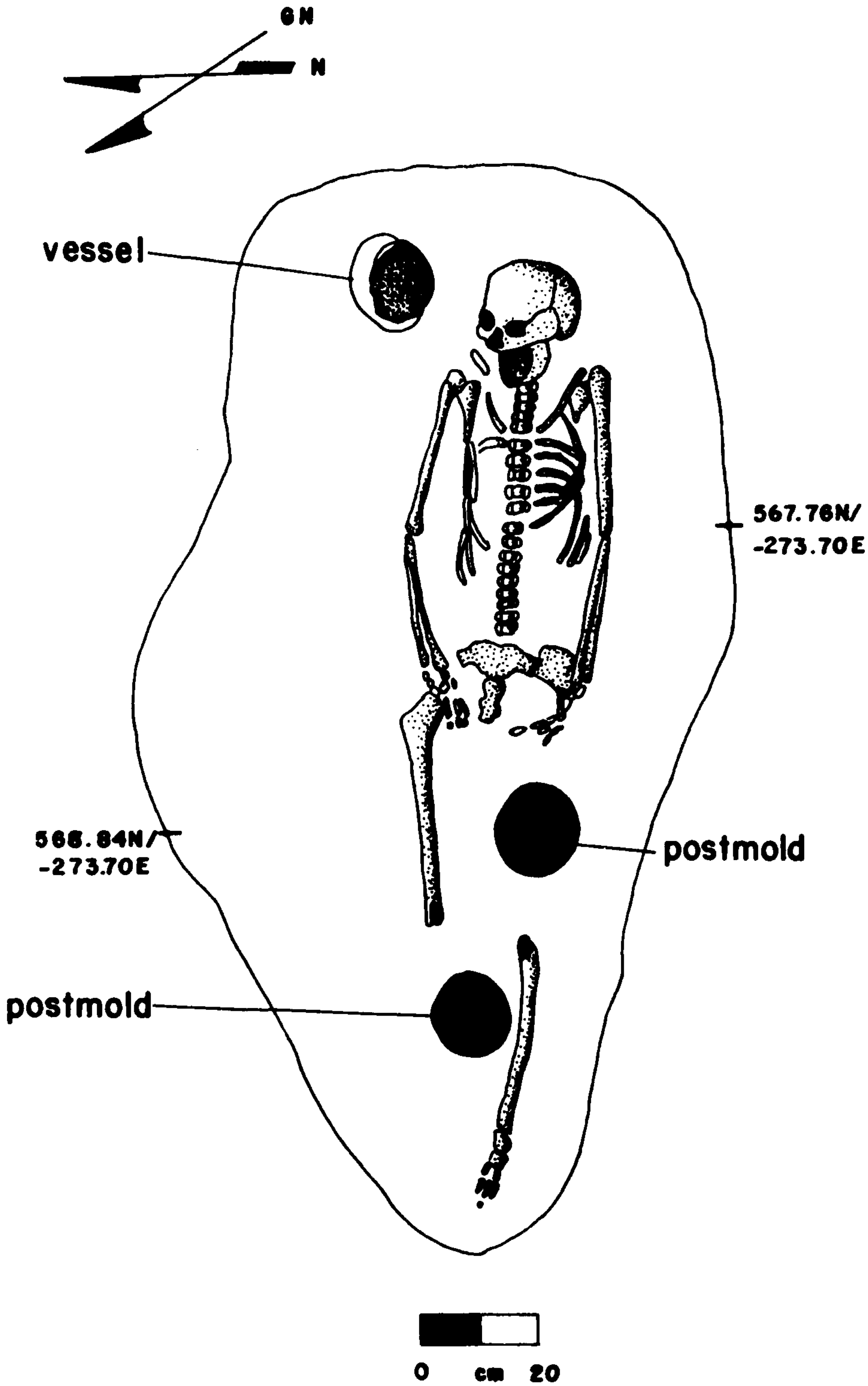


Figure 7. Burial 5 (USN 5488), Hectare 500N/-300E.

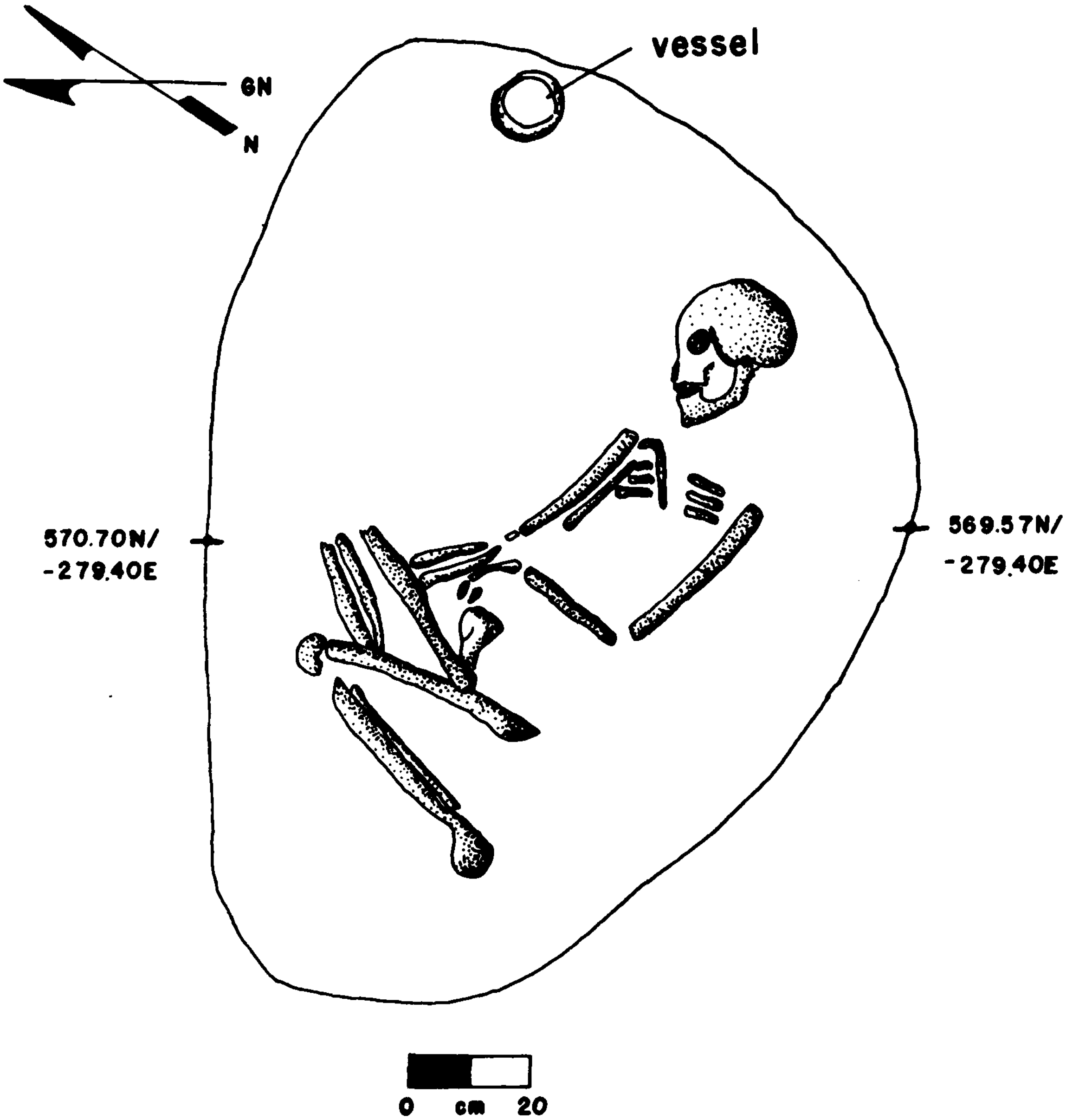


Figure 8. Burial 6 (USN 5613), Hectare 500N/-300E.

supine, semi-flexed adult with the cranium tilted forward, the legs bent to the left side, and the arms extended in anatomical position (Figure 9). There was evidence of intrusive postmolds from the subsequent building activity. The pit contained shell tempered sherds, mussel shell, and similar debris introduced at the time of interment from the surrounding matrix. One large sherd of Mississippi Plain, var. Warrior was found just southeast of the cranium.

Hectare 500N/-400E

With the exception of Palisade I (USN 7165), an extensive fortification that transected the western portion of the hectare (see Chapter 6), the principal Summerville I feature in 500N/-400E was Structure 1 (USN 3880). It appeared in Unit 500N/-347E as an irregular mass of gray clay that covered an area roughly 5.0 by 3.50 m. Two 20 cm wide balks were used to divide the clay mass into four quarters. When the 5 cm thick clay layer was removed with trowels, a circular postmold pattern 7 m in diameter was discovered. Apparently the clay was unfired daub that had been deposited over the center of the structure when the building collapsed (Figure 10). Beneath the clay layer, plain shell tempered sherds and faunal debris were well preserved. The "floor" of the structure was defined as the interface between the unfired daub and the loamy sand matrix for two reasons: (1) the central hearth was directly beneath the clay layer; and (2) the postmolds first appeared at this interface. Two large areas on the floor contained fired clay and ash (Figure 11).

The central hearth was a complex feature that appeared to have been destroyed and rebuilt at least once. Hearth 1A (USN 3675) was a circular clay lined depression 65 cm in diameter and 6 cm deep. The clay had been molded to form a 3 cm high rim. The interior of the hearth contained charcoal, ash, animal bone, and a few plain shell tempered sherds. A radiocarbon sample of the charcoal provided a tree ring corrected date of A.D. 1070 (880 ± 125 radiocarbon years, Beta 1097). Beneath Hearth 1A, an oval basin-shaped feature (USN 3676) 102 by 75 cm was found. This feature was filled with charcoal, ash, bone, and bits of fired clay to a depth of 10 cm below Hearth 1A. This soil had been intensely heated. It is possible this feature represents an earlier hearth or series of hearths that existed prior to the construction of Hearth 1A (Figure 12).

The postmolds of Structure 1 varied from 6 to 30 cm in diameter (radius: mean=8.4 cm, s=4.4 cm, n=63) and 20 to 50 cm deep (mean=24 cm, s=17 cm, n=63). Only a few small postmolds were found in the central floor area. Debris discovered in the fill of some postmolds included Mississippi Plain, Moundville Incised var. Moundville, Moundville Incised var. Carrollton, mussel shell, sandstone, animal bone, shell tempered sherds, fired clay, chert flakes, and wood charcoal. Two lines of parallel postmolds formed a possible vestibule entrance on the eastern side of the building.

Two pits were discovered within the floor area of Structure 1. Pit 9 (USN 3619) was 2 m north of Hearth 1A and appeared as a dark stain 103 by 60 cm. The pit was 73 cm deep and filled with a loosely compacted, dark brown soil. Large amounts of mussel shell, animal bone, and charred botanical material were found in this pit. Artifacts contained in the fill included plain shell-tempered sherds, Moundville Incised var. Carrollton, fired clay,

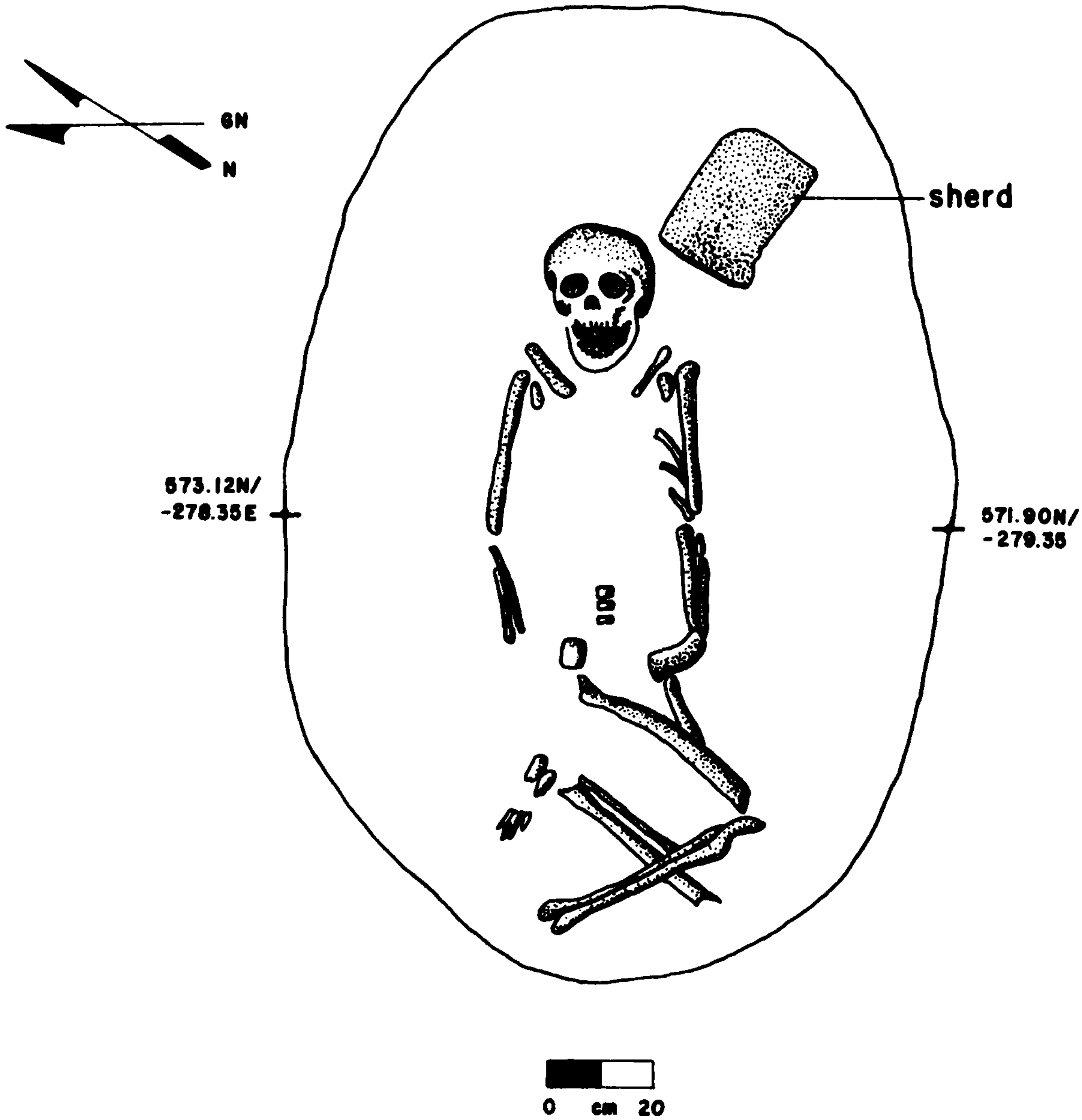


Figure 9. Burial 7 (USN 5630), Hectare 500N/-300E.

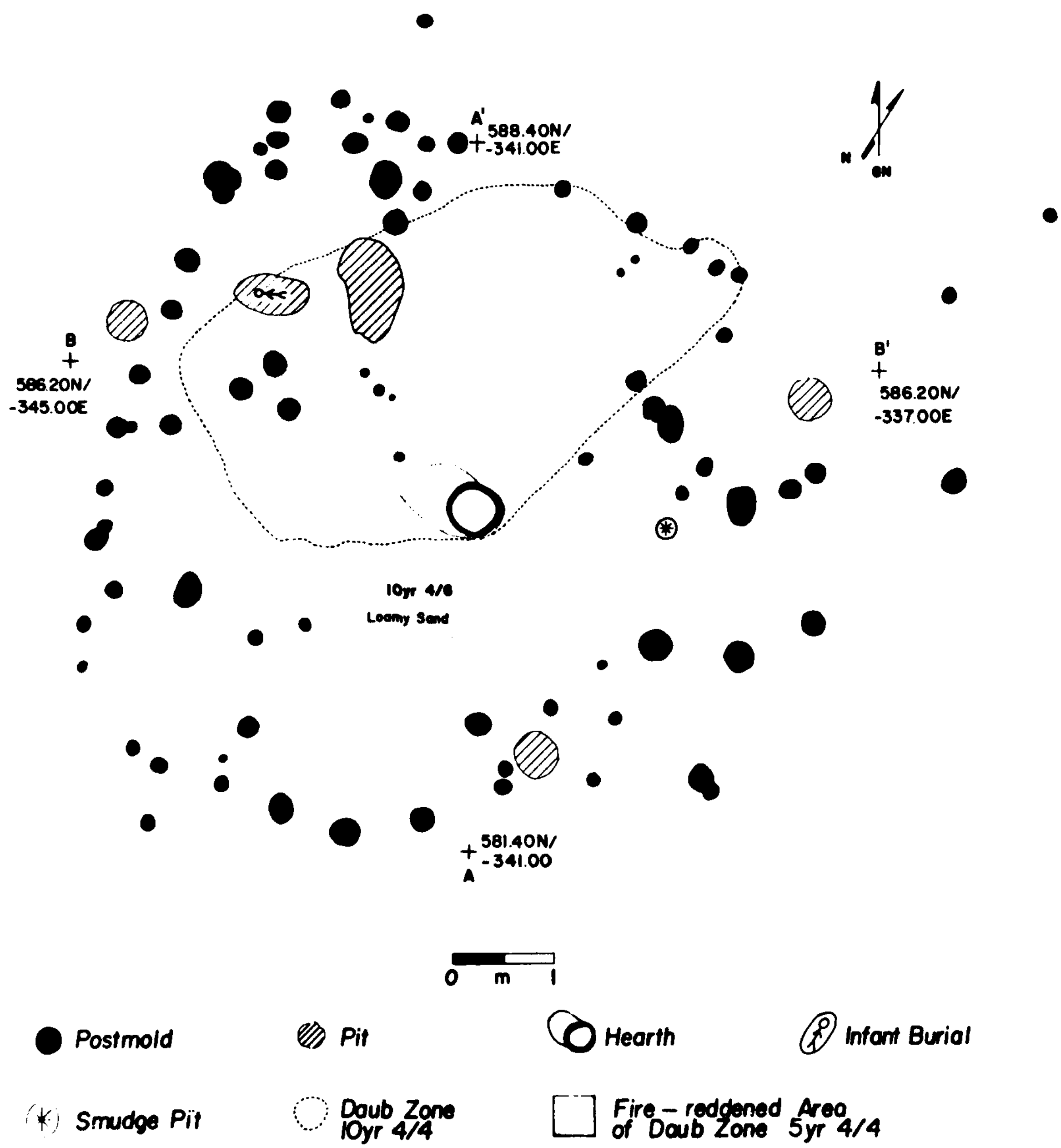


Figure 10. Structure 1 (USN 3880), Hectare 500N/-400E.

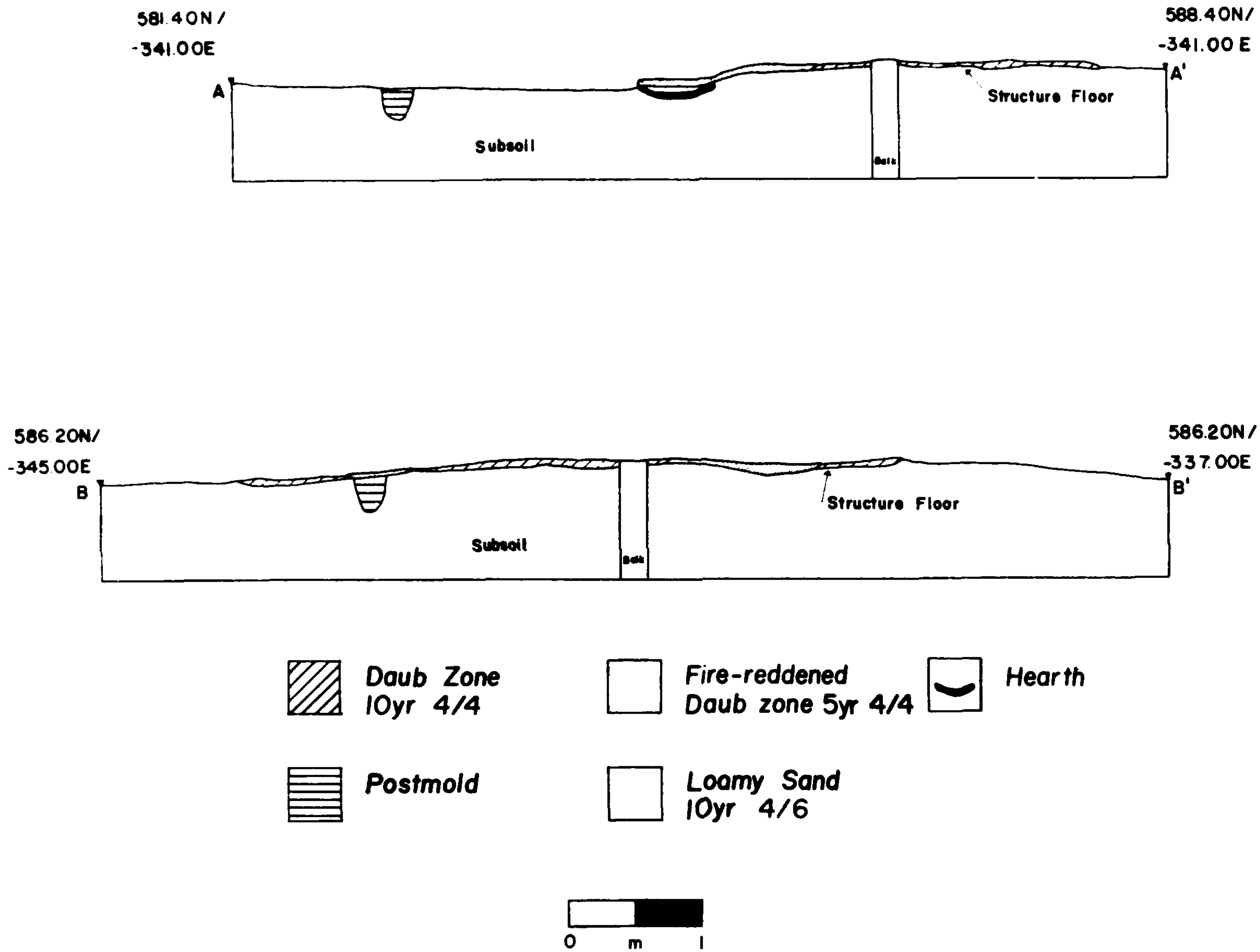


Figure 11. Profile view of Structure 1 (USN 3880).

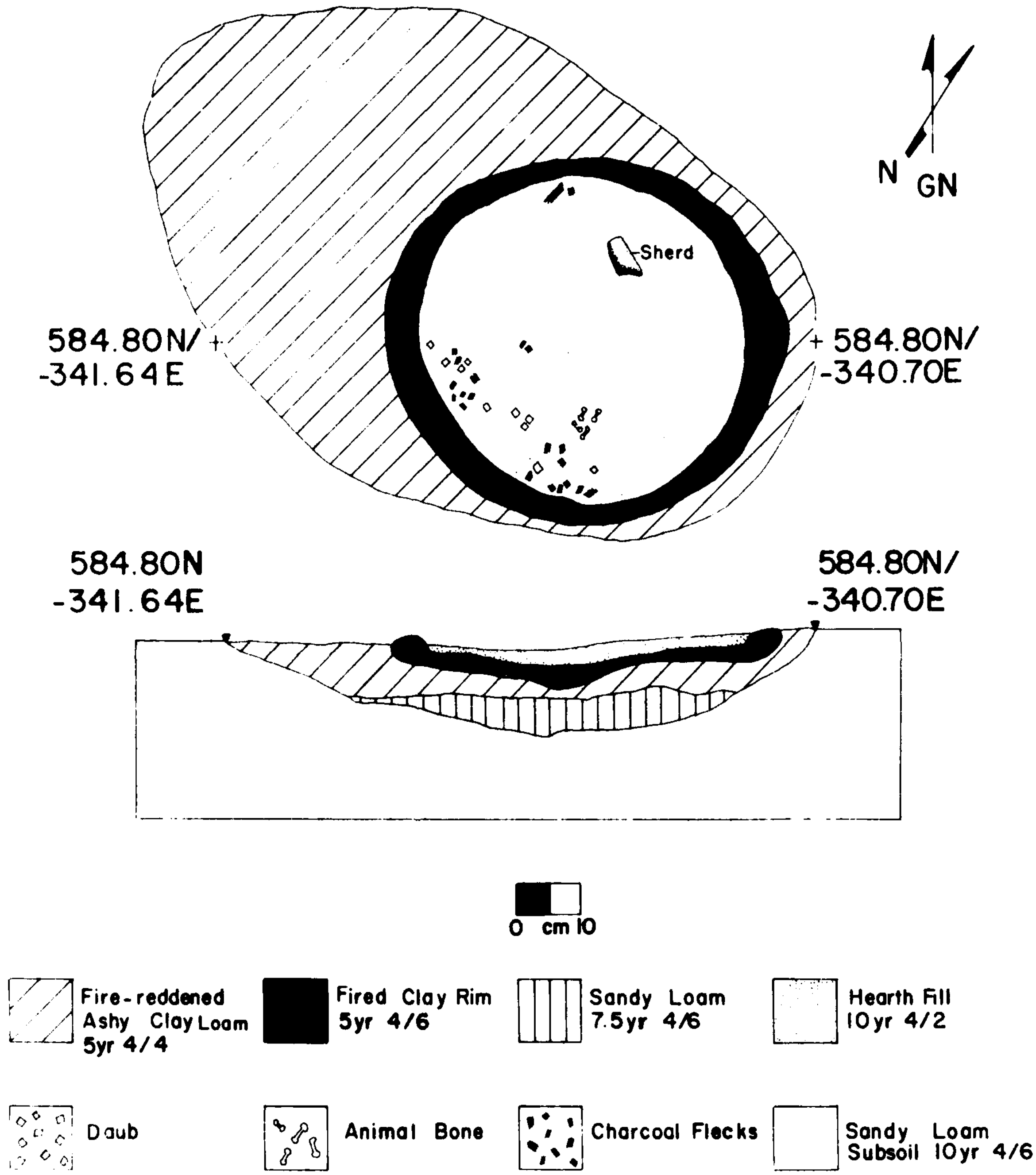


Figure 12. Hearth 1A (USN 3675, 3676), Structure 1.

several shell tools, lithic debris, and unmodified sandstone chunks.

Pit 11 (USN 3911) was an oval pit 74 by 41 cm located west of Pit 9. It contained a slightly darker soil than the surrounding matrix. The skeleton of an infant (Burial 1, USN 4088) was encountered 40 cm below the surface (Figure 13). The pit may have been dug primarily for the interment instead of serving a domestic storage function. The paucity of artifacts and organic debris was in contrast to the abundant material in Pit 9. The lack of dark staining in the pit fill suggests that organic material was not present for very long, if at all.

A small "smudge" pit (USN 3958) was excavated 2 m east of Hearth 1. This circular basin-shaped depression was 20 cm in diameter and was filled to a depth of 6 cm with charred corn cobs and other botanical material (See Chapter 3, Volume II). Dozens of similar features have been excavated on the site, both within and outside of structure boundaries.

<u>Hectare 600N/-400E</u>

In the southern portion of the hectare, Unit 600N/-375E contained a large round mass of fire hardened daub adjacent to a bastion in the western palisade. This deposit was designated Daub Concentration 1 (USN 5212) and measured 2.40 m in diameter. It contained bits of chalk, animal bone, Mississippi Plain and Moundville Incised <u>var.</u> <u>Moundville</u> sherds. No postmolds were found beneath this deposit. Cane impressions were clearly visible in the daub. The depositional circumstances for this daub are difficult to interpret. A detailed description of Palisade I (USN 7165) is presented in Chapter 8.

A series of four 10 by 10 m sample units that paralleled the length of the palisade across Hectare 600N/-400E all contained the Moundville Incised <u>var.</u> <u>Moundville</u> ceramics in plowzone samples. Later ceramic types were either rare or absent from most samples. Units 608N/-375E and 662N/-339E had numerous postmolds and smudge pits. Fired daub was conspicuously absent.

Two human burials were found in Unit 608N/-357E. Burial 1 (USN 5247) was an oblong pit, 114 by 47 cm in plan and was filled with a dark organic soil 12 cm deep. A single, primary, articulated child had been placed in a supine flexed position with the knees drawn up tight to the body. The arms were extended. The cranium was resting on the right cheek and oriented east. The bone preservation was extremely poor. The fill within the grave contained small amounts of mussel shell, lithic flakes, and plain shell tempered sherds (Figure 14).

Burial 2 (USN 5046) was 50 cm north of Burial 1. The skeleton was uncovered by the backhoe blade as it removed the plowzone overburden. This action removed most of the upper portion of the grave which had originated within the plowzone. The body was undamaged but in a poor state of preservation. A single articulated child had been in a supine tightly flexed position similar to Burial 1. Very little remained of the skeleton except the cranium and the long bones. Several sherds of Mississippi Plain were found directly to the right of the cranium (Figure 15).

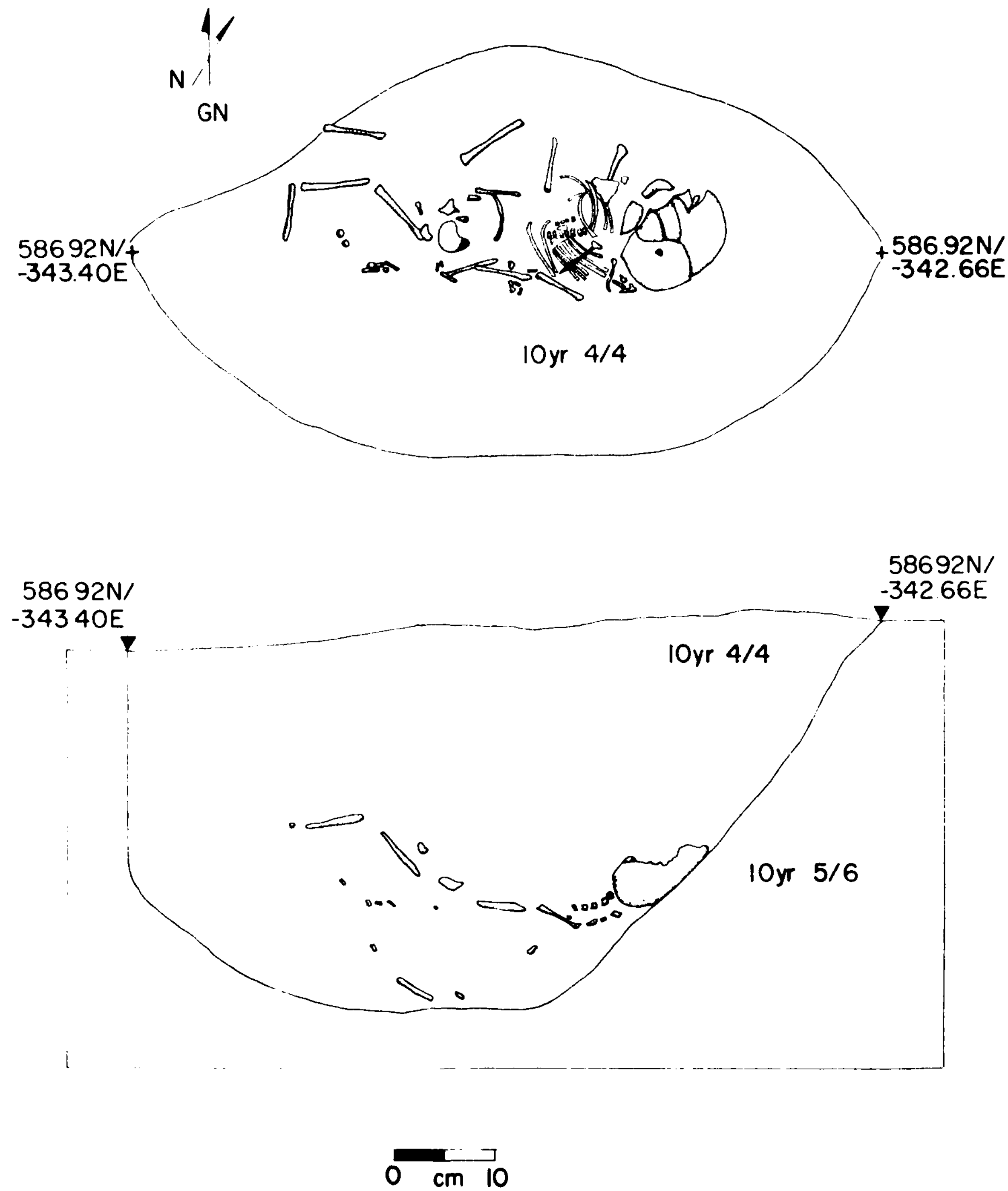


Figure 13. Pit 11 (USN 3911) with Burial 1 (USN 4088), Hectare 500N/-400E.

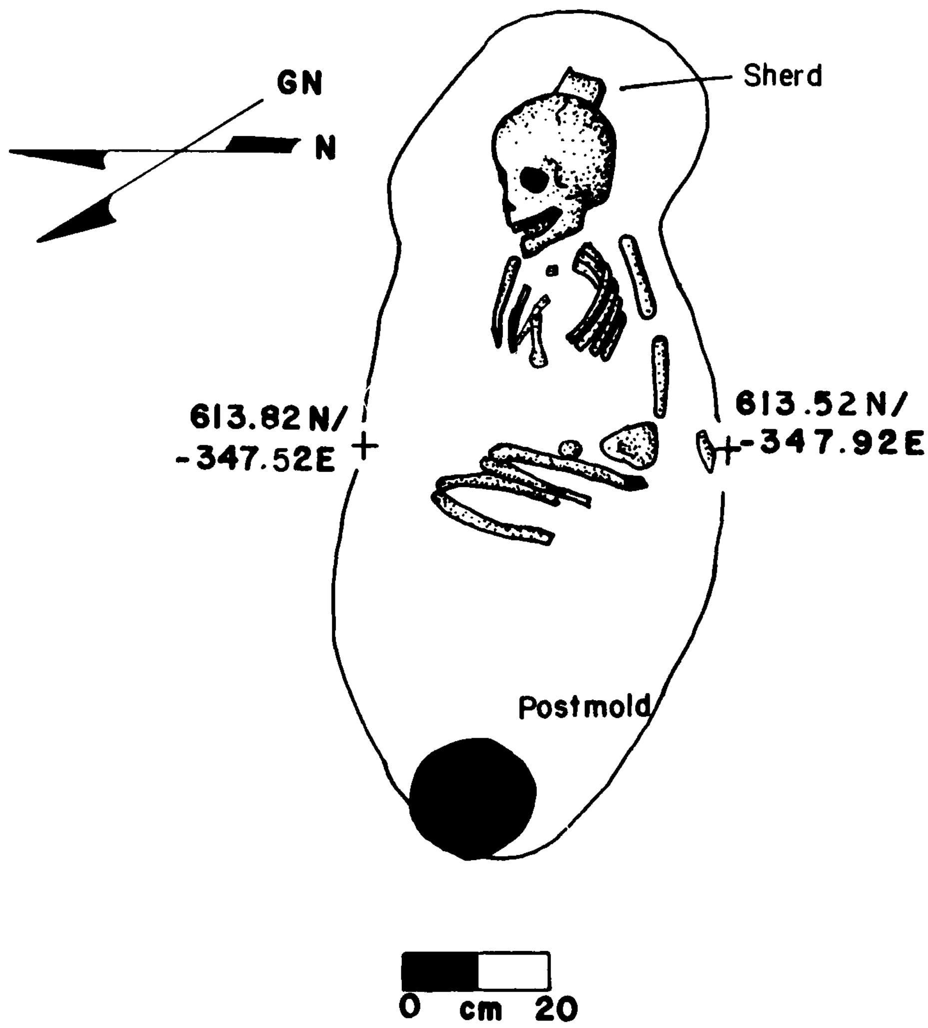


Figure 14. Burial 1 (USN 5247), Hectare 600N/-400E.

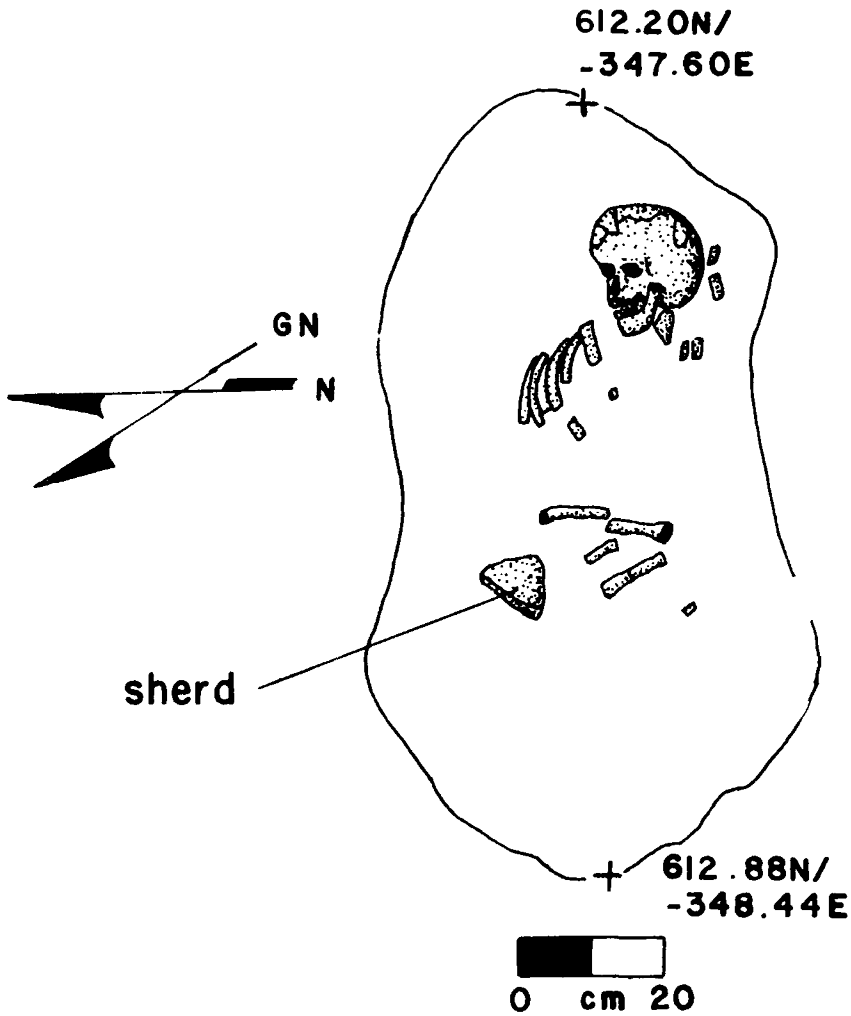


Figure 15. Burial 2 (USN 5245), Hectare 600N/-400E.

Summary

The Summerville I community was the first mature Mississippian occupation in the Lubbub Creek locality. This community was defined by the presence of a diagnostic ceramic type, Moundville Incised _var._ _Moundville_. The diverse nature of the excavated features and the widespread midden deposits have provided evidence of a sedentary agricultural population. There are certain social and behavioral implications in the distribution of artifacts across the site. In this case, the spatial patterning of architecture is interpreted as reflecting the social differentiation in Mississippian society.

In Chapter 7 we emphasize the striking regularity in architectural orientation of the mound. Each important building constructed on the premound surface retained an orientation identical to its predecessor. This conformity could also be seen in the screen or fence that was built around the premound Structure 5 complex. Later, each mound construction stage had a similar orientation.

An examination of the spatial relationships of the inner palisade sequences to the mound suggests the mound's central position influenced the settlement plan of the Mississippian community. The south mound ramp exited toward a sequence of palisades which paralleled the south and west sides of the mound. These palisade sequences lacked the bastions that characterized Palisade I to the west. All evidence indicates that Palisade I and at least one of the inner palisades were contemporary. It is possible that the inner palisades may not have been constructed primarily for defence but instead served to circumscribe the mound into a discrete entity socially separate from the village area.

The only structures found within the inner palisades were the specialized premound buildings that served a community or religious function. No domestic dwellings were discovered between the mound and the inner palisades. The mound's eastern ramp faced an area of very low daub and sherd density that may indicate a plaza. Diagnostic ceramic debris was present south of the possible plaza area in the southern portions of Unit 400N/-200E, and the distribution of these ceramics continued east from the cemetery in 400N/0E along the 500N line to the tip of the bend. This fact may indicate that a large portion of the early settlement was located in the eastern tip of the bend, beyond the area of intensive excavation. The distribution map for Moundville Incised, _var._ _Moundville_ supports this hypothesis.

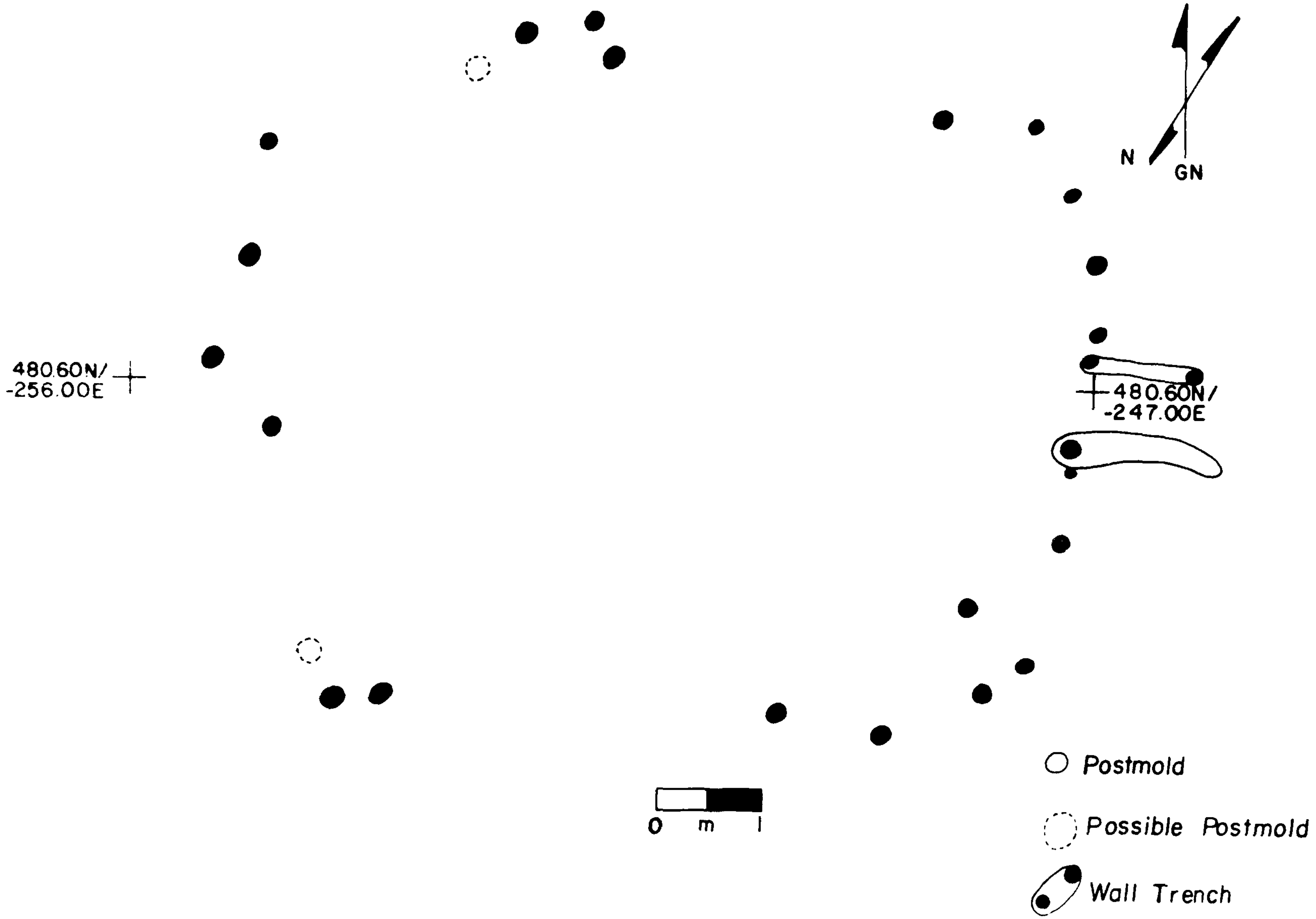


Figure 7. Structure 8, Hectare 400N/-300E.

have apparently obscured the western portion of the Structure 8 post pattern (Figure 7).

The 24 postmolds of Structure 8 ranged from 10 to 20 cm in diameter (radius: mean = 8.5 cm, s = 1.4 cm) and to 14 to 37 cm in depth (mean = 24 cm, s = 5.2 cm). Two parallel wall trenches intersected the wall post pattern at a right angle to form a vestibule entrance oriented east. No hearth or pits were found, and the only artifacts associated with the building were plain shell tempered sherds recovered from the two parallel wall trenches.

In the center of the hectare, a 44 m test trench (USN 8109) was excavated from northeast to southwest across Units 446N/-250E and 446N/-240E. The purpose of the trench was to provide a profile to explicate the nature of the deposition in the palisade area. Intensive excavation had been completed in both units. However, 5 m southwest of 446N/-250E the backhoe cut into Burial 6 (USN 8123). Hand excavation revealed a vague pit outline 200 cm long and 95 cm wide. It contained two primary extended adults placed in a supine position. Skeleton 1 had the right hand over the pelvis and the left hand beneath the Skeleton 2 pelvis. The arms of Skeleton 2 were extended alongside the body, the right arm overlapped the left arm of Skeleton 1, and the ankles were crossed. There were no cultural associations.

At the southern edge of Hectare 400N/-300E, a large oval stain of dark soil and fired daub was discovered beneath the plowzone in Unit 400N/-266E. The stain was sectioned into quarters and each quarter excavated in arbitrary 10 cm levels. The only indication of stratification within the feature was the fired daub scattered in the first 10 cm. The stain was then reduced to about half the size it was before trowelling. After Level 1 was removed the feature measured 6.5 by 5.0 m (Figure 8). The feature was designated Pit 0 (USN 2491). At this level no postmolds were visible and we began to suspect that this was not a structure but a deep, dense midden. Pit 0 was 30 cm thick and was filled with mussel shells, ceramics, lithic flakes, and animal bones. To further complicate the interpretation of Pit 0, a section of the Protohistoric ditch was uncovered 1 m to the east. The construction of this ditch cut down through the earlier Woodland component, redepositing it on the surface and over Pit 0.

Some evidence of redeposition and mixing from the ditch construction could be detected in the eastern portion of the deposit, and therefore the contextual integrity of this feature is questionable. The ceramic sample yielded many portions of bottle, jar, and bowl vessels from the following types: Mound Place Incised var. Havana, Moundville Incised var. Snows Bend and Carrollton, Parkin Punctate var. Undetermined, Moundville Engraved var. Tuscaloosa and Hemphill. Several lithic tools, including abraders, a metate, scrapers, and triangular projectile points, were recovered. The presence of a wide variety of Woodland sherds indicated redeposition from the Protohistoric ditch. In all Pit – probably represents either a dwelling similar to Structure 3 (USN 2832) in Hectare 400N/-400E that has been altered due to subsequent building activities or a midden deposit of refuse disturbed by later intrusions. The lack of postmolds or a hearth would tend to support the latter interpretation.

After skimming the surface of Extension 12, three distinct soil areas were exposed in plan view. The southern one-third of the unit was a very compact midden which was assumed to be the northern extension of the Structure 6 (USN 4857) stain. The northeast and eastern one-third of the extension was a loamy sand characteristic of the unit to the east, and the western two-thirds of the unit was a loosely compacted sandy loam. A profile cut in the northwest corner of Extension 12 yielded this stratigraphic information:

Plowzone	39.08 - 38.83[1]	10YR4/4	dark yellowish brown sandy loam
Zone A	38.83 - 38.63	10YR4/6	dark yellowish brown sandy loam
Zone B	38.63 - 38.28	10Y 3/4	dark yellowish brown sandy loam
Zone C	38.41 - 38.28	10YR5/6	yellowish brown sandy loam
Zone D	38.28 - 38.15	10YR5/6	yellowish brown loamy sand
Zone E	38.15 - 38.03	10YR5/8	yellowish brown loamy sand
Zone F	38.03 - 37.88	10YR7/6	yellow sand

[1] mAMSL

Zone A was a dark organic soil often associated with the stained floors of structures. Zones B and C represented the midden associated with the Palisade II level, and Zones D, E, and F occurred beneath Palisade II. Within Extension 12, the structure post pattern appeared at the same level as Palisade II, and the western portion of the post pattern barely could be discerned from the posts that are associated with Palisades I, II, IV and V. The only clue that Structure 8 was later than Palisade II was the fact that the post pattern for the eastern section of the structure was not obscured by the palisade construction. Near the southern limit of the palisades, in 433N/-234E and 433N/-220E, profiles showed an intervening 10 to 20 cm sterile zone between the palisade level and the later occupation zone.

Structure 8 was defined as an oval pattern approximately 8 m in diameter. An analysis of the depth of intrusion of the postmolds (from an assumed elevation of 38.70 m) was used in an attempt to separate palisade from structure postmolds. The wall trenches of the structure and the palisade intruded to depths of 28 cm below the assumed surface. The palisade posts intruded to a depth that was approximately 20 cm lower than the structure posts, possibly indicating that the structure posts may have originated at a higher level than those of Palisade II but were obscured within the Level 1 midden. The average depth of intrusion of the Structure 8 posts was 14 cm above depths of intrusions for Palisade I posts, slightly below or the same level as Palisade IV postmolds, and 6 cm below Palisade V postmolds. The postmolds and occupation debris associated with the latter two palisade lines

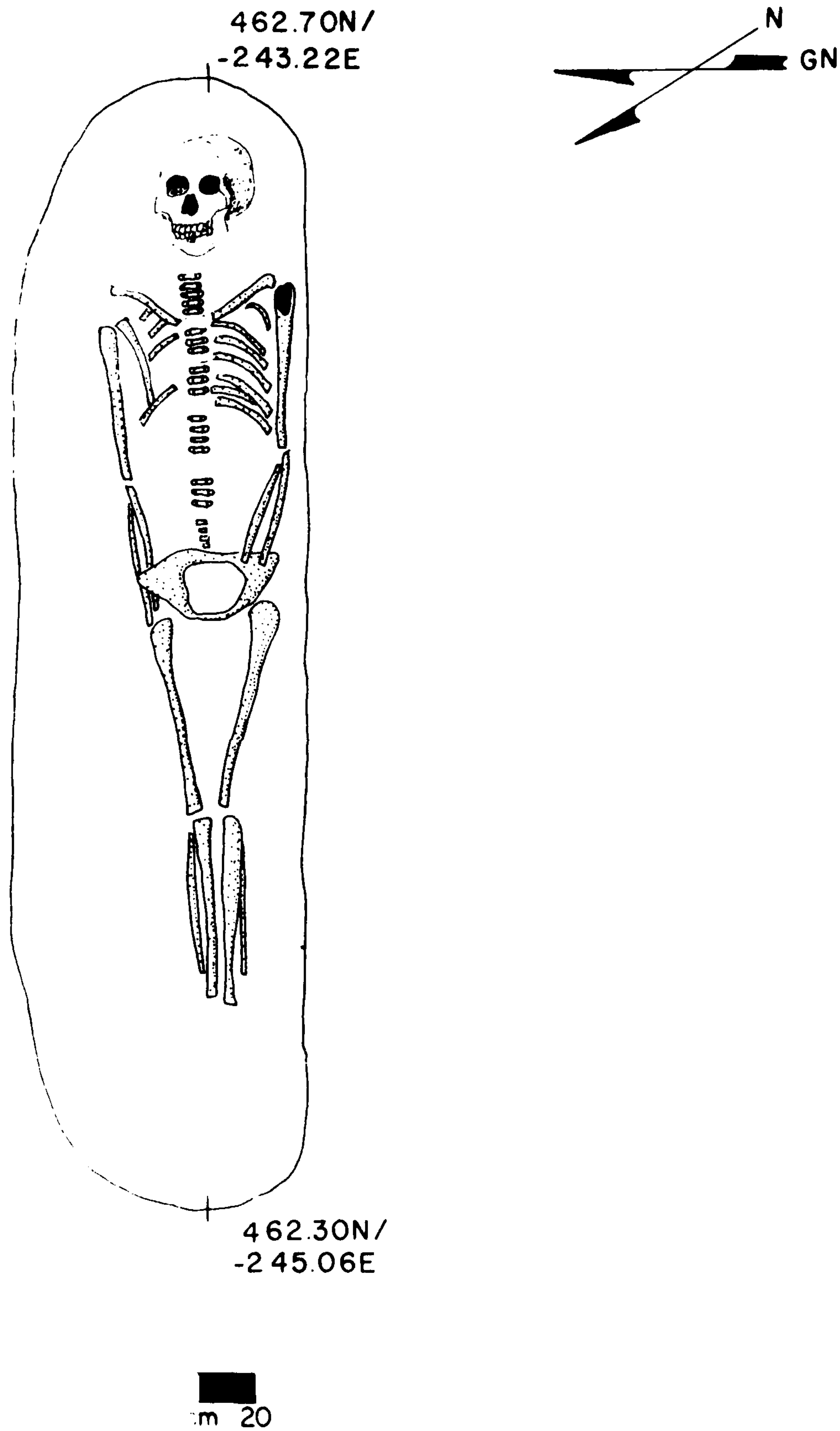


Figure 6. Burial 4 (USN 5564), Hectare 400N/-300E.

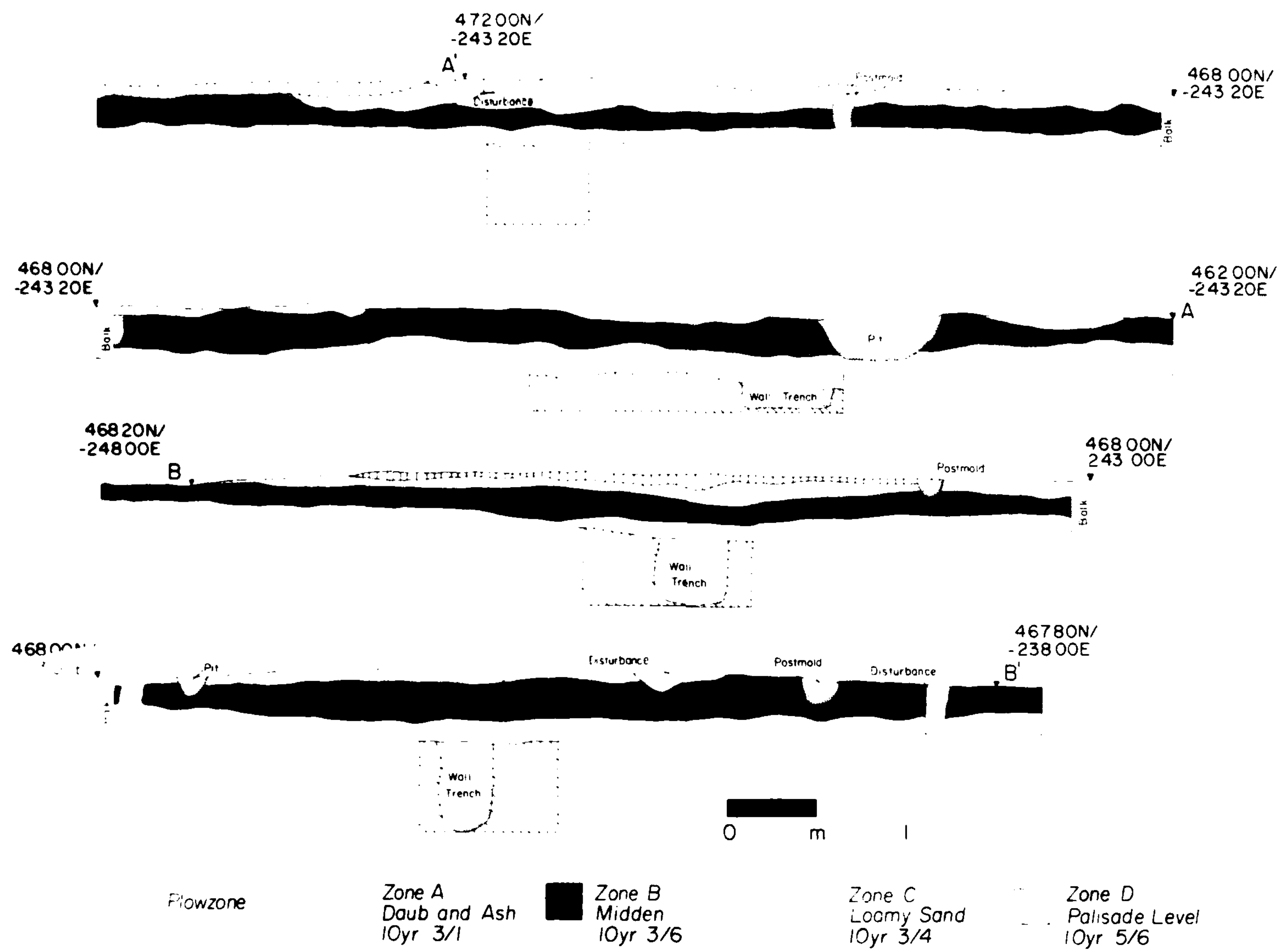


Figure 5. Structure 6 (USN 4857) profile view.

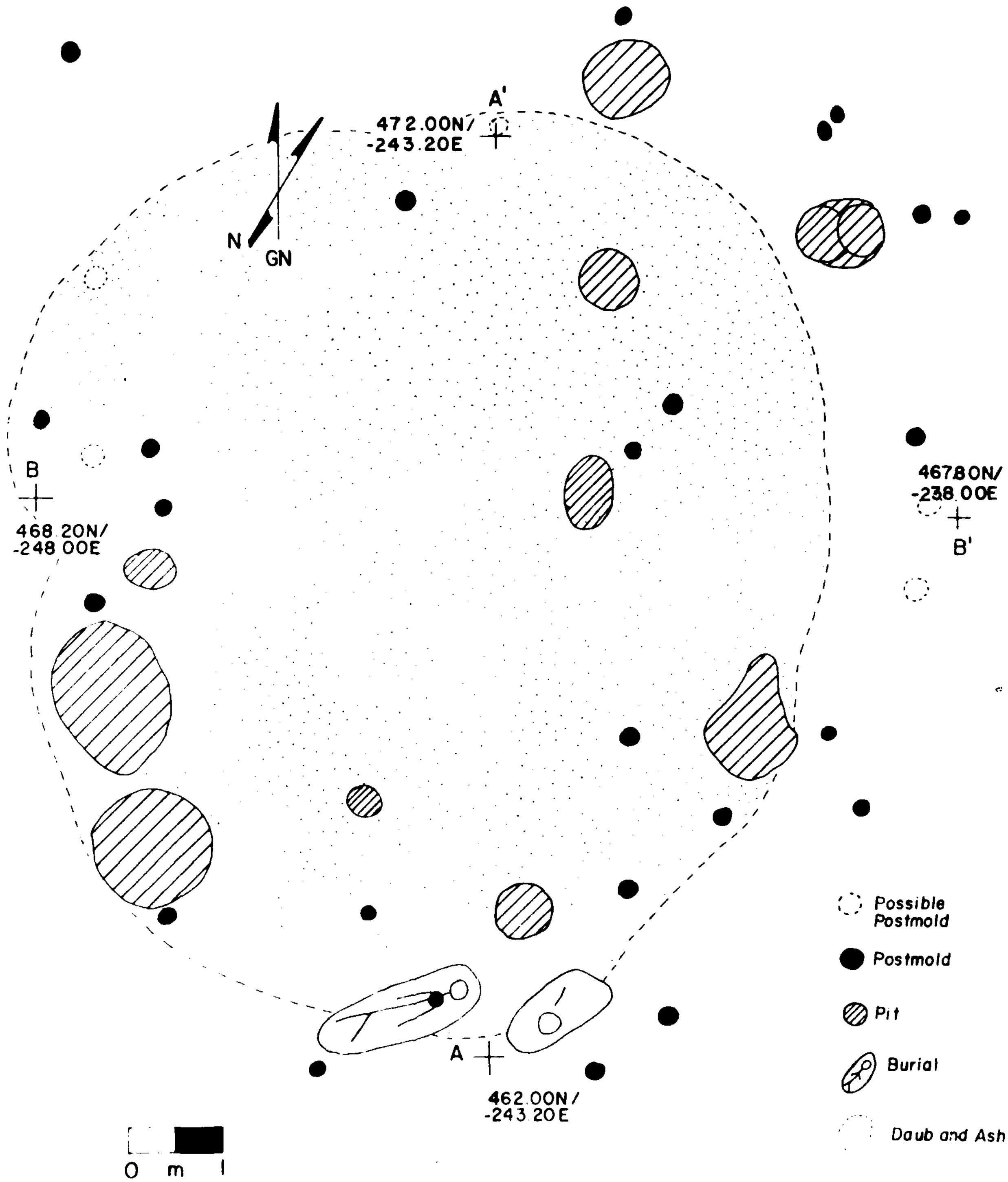


Figure 4. Structure 6 (USN 4857).

Postmolds ranged in size from 10 to 20 cm in diameter (radius: mean = 7.8 cm, s = 2.4 cm) and from 2 to 13 cm deep (mean = 8.5 cm, s = 3.5 cm). The shallow postmold depths, lack of a definite post [illegible] and the small total number of postmolds were all the result of severe plow disturbance. No evidence of a hearth could be found; if it had existed, it was destroyed by the plow.

All of the ceramic sample from this provenience was recovered from the plowzone and cannot be considered directly associated with Structure 6. Most of the ceramic types were late in the Summerville sequence; Mound Place Incised var. Havana, Carthage Incised var. Moon Lake, and Moundville Engraved var. Tuscaloosa were well represented. There was a large amount of grog tempered Woodland ceramics present in the plowzone above the undisturbed palisade sequence. This material was probably dispersed throughout the plowzone as a result of the constant prehistoric building and rebuilding activity.

Several large oval pits (USN 5141, 5142, 5574) were discovered in Units 463N/-256E and 475N/-242E in the general area of Structure 6. Most of these "pits" were actually very shallow deposits of concentrated midden debris. Because of the extensive plow disturbance, it could not be determined if the midden deposits were related directly to the occupation of the building. Two pits (USN 5526, 5527), which were intrusive into the northeast portion of the structure, contained small amounts of Alabama River Applique sherds. These ceramics were indicative of the Protohistoric occupation (see Chapter 10). Another small pit (USN 5180) just north of Structure 6 contained a small amount of Mound Place Incised var. Akron. The plow had removed upper portions of most of the pits (Figure 5).

Two human burials were discovered at the southern edge of Structure 6 in Unit 460N/-243E. Burial 3 (USN 4890) was a single child represented by the fragmentary remains of cranium, maxilla, and pieces of rib. No grave outline could be determined due to extensive damage by the plow. Several fragments of bone, which probably came from this burial, were scattered in the surrounding plowzone.

Burial 4 (USN 5564) appeared as a large oval stain beneath the daub (Zone A) 50 cm west of Burial 3. The long axis of the grave was oriented east to west; it was 198 cm long and 50 cm wide. A single adult had been placed in a supine extended position with the left hand resting on the pelvis and the right hand beneath the pelvis. One postmold associated with Structure 6 had intruded into the grave (Figure 6).

The postmold pattern of Structure 8 became apparent as features from Extension 12 (477N/-251E) and the adjacent unit to the west, Level 2 (477N/-261E), were plotted on the 400N/-300E field map of the hectare. Extension 12 was cut to Level 2 with the backhoe to explore the several palisade lines which had been exposed in the adjacent unit at this level. No indication of the structure appeared in the upper level. Level 1 of Extension 12 appeared to be undifferentiated midden containing sherds, animal bone, and charcoal. No distinct daub layer was evident. An auger test (USN 166), located near the northwest corner of the extension at 468N/-248E, found an undifferentiated midden and produced charcoal and fired clay to a depth of 1 m.

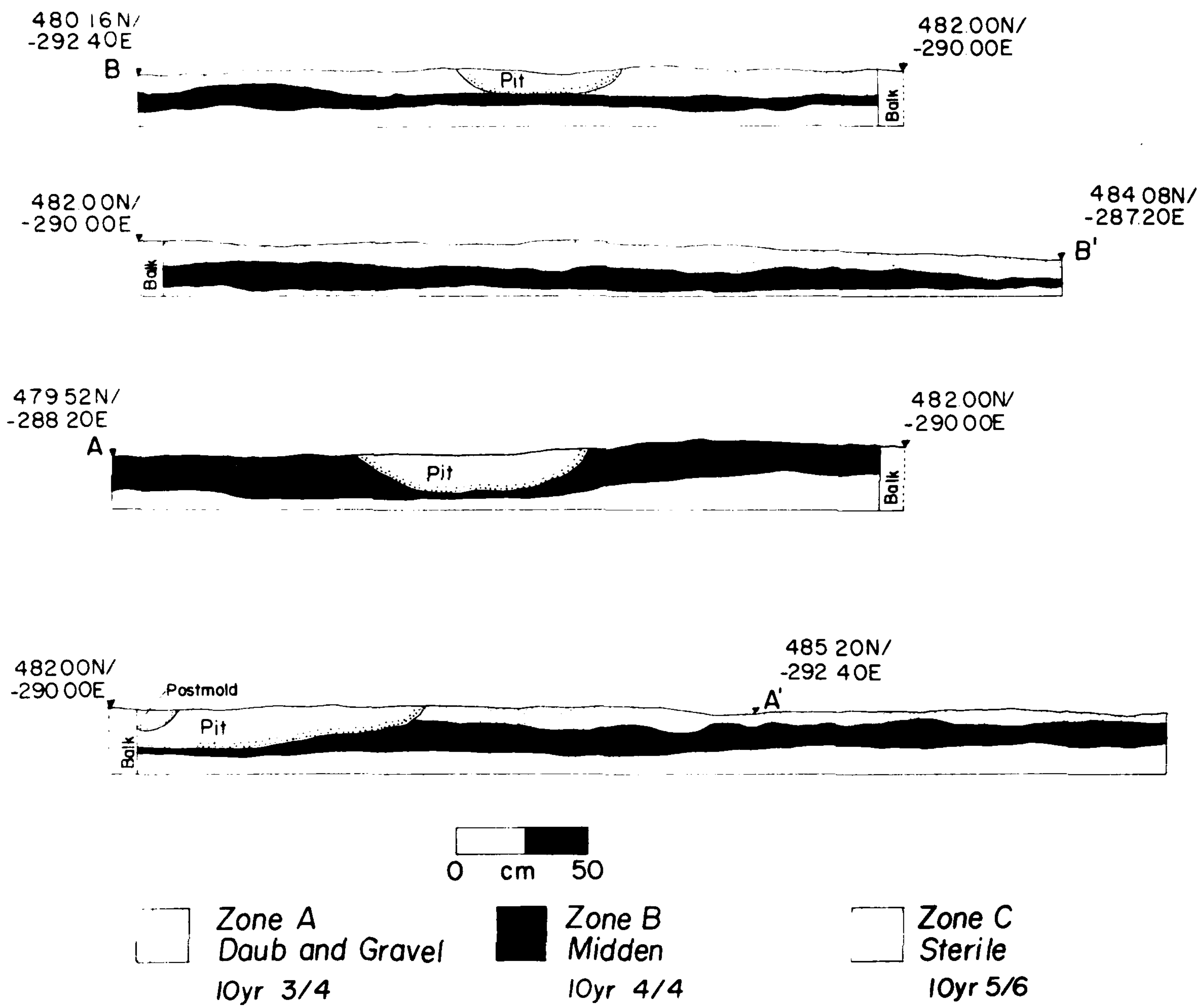


Figure 3. Structure 7 (USN 8168) profile view.

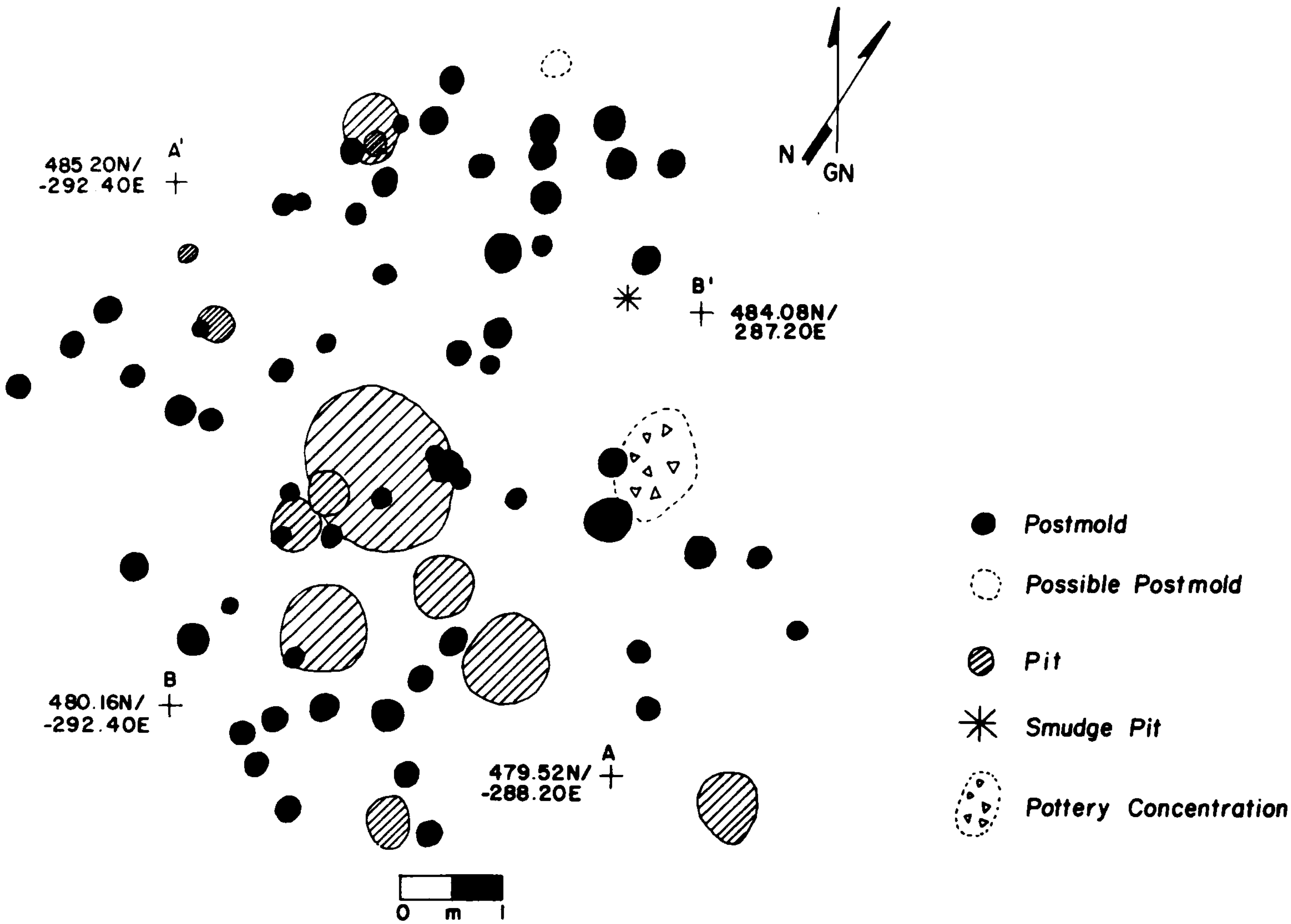


Figure 2. Structure 7 (USN 8168), Hectare 400N/-300E.

of the plowzone had been removed by the backhoe, the surface still showed a considerable amount of plow and root disturbance. The discovery of a 1918 penny confirmed this surface was still within the plowzone (Zone A).

Zone A contained a large amount of gravel mixed with the sandy loam soil. This gravel originated from a natural stratum that existed at 1 m below the modern ground level. Apparently it had been deposited over Structure 7 as the result of the subsequent construction of a deep ditch during the Protohistoric period. A section of this ditch was discovered in Unit 487N/-293E, 6 m west of Structure 7 (see Chapter 10).

Postmolds began to appear at the interface of the plowzone and Zone B, a large oval stain of dark organic soil 5 to 8 cm thick. After Zone B had been carefully troweled away, the rest of the postmolds became visible. It was not possible to define the exact shape of the structure, but the postmolds circumscribed an area 7.50 m in diameter (Figures 2 and 3). The fifty-two postmolds ranged in diameter from 13 to 15 cm (radius: mean = 11 cm, s = 2.7 cm) and in depth from 8 to 37 cm, but there was no patterned difference based on the size of the postmolds. The plowzone damage to Structure 7 was extensive. This destruction made it difficult to determine if the numerous shallow pits were contemporary with the structure. In the profile view several of these pits and postmolds appear to be intrusive (Figure 3).

Ten small pits were discovered within the area defined as Structure 7. All were shallow oval depressions which ranged from 35 to 90 cm in diameter. These features were bowl-shaped in profile and contained charred botanical material, mussel shell, fire-cracked rock, and sherds. There was one large concentration of pottery within Zone B. Two triangular projectile points, an abrader, ground stone, hematite, limonite, and petrified wood were also recovered. No evidence of a hearth could be found.

The ceramic material, which was abundant in postmolds, pits, and structure levels, included Mississippi Plain var. Warrior, Hale, and Hull Lake; Moundville Incised var. Carrollton; Moundville Engraved var. Hemphill, Wiggins, and Tuscaloosa; and Carthage Incised, var. Moon Lake.

Structure 6 (USN 4857) was an oval concentration of fired daub and ash 23 cm below the ground surface in Units 463N/-246E and 475N/-242E. The daub and ash covered an area of 9.9 m from -239.50E to -247.90E (Figure 4). The stratigraphy in this portion of Hectare 400N/-300E was quite complex because Structure 6 overlay two earlier palisade sequences: Palisade I (USN 4050), and Palisade II (USN 6399). Four zones were revealed in profile (Figure 5). Zone A was a plow scarred layer of daub and ash that varied from 4 to 15 cm thick. All features assigned to Structure 6 originated in this zone. Beneath this stratum was Zone B, a dark stained sandy loam midden 6 to 15 cm thick that contained faunal, ceramic, and lithic debris. Posts extended less than 10 cm into this zone, and plow scars intruded into it.

Zone C was a layer of loamy sand that extended to a maximum depth of 20 cm below Zone B. A few postmolds detected within this level were associated with Palisades I and II. These palisade posts and wall trenches were clearly detected in Zone D, approximately 27 cm below the level for posts assigned to Structure 6.

selected for the Summerville II-III ceramic seriation were identified in 8 hectares.

Hectare 300N/-200E

Only two 10 by 10 m units were excavated in this hectare. Unit 387N/-199E contained no features, but Unit 355N/-195E contained a large midden deposit. This deposit, designated Midden 1 (USN 2674), was a 10 to 25 cm thick layer of mussel shell, animal bone, fire-cracked sandstone, and sherds. A total of twenty 1 by 1 m units was used to sample the midden. Its contents included Mississippi Plain and Moundville Incised var. Moundville sherds. These ceramics indicate a Summerville I association for the deposit itself, but several later features were intruded into this midden.

One of these features was Pit 26 (USN 2896), a 55 by 46 cm pit filled with animal bone, mussel shell, and charred botanical material including corn cobs. One sherd of Mound Place Incised var. Akron was found within the pit fill. A similar feature in the same 10 by 10 m unit yielded sherds of Mound Place Incised var. Havana. Another intrusive feature was Pit 15 (USN 2700) which contained a compact mass of animal bone, daub, sherds of Carthage Incised var. Undetermined, and Moundville Engraved var. Hemphill.

Small shallow features designated "smudge pits" were particularly numerous in Unit 355N/-195E. A typical example, Pit 11 (USN 2714), was a small round depression 25 cm in diameter and 7 cm deep. The pit fill consisted entirely of charred botanical material, mainly corn cobs. There was no indication of scorching by fire on the sides either of this or most other smudge pits. Other features similar to Pit 11 were found over the entire site and were one of the most common features encountered. Occasionally sherds and bits of lithic debris were found in smudge pits, but the majority contained only charred botanical material. A more detailed description of the contents of these smudge pits may be found in Chapter 3, Volume II.

Hectare 300N/-300E

There were very few features that could be assigned to the Summerville II-III occupation in Hectare 300N/-300E. Most Mississippian features were random collections of postmolds and pits that contained plain shell tempered ceramics.

One Summerville II-III feature that could be identified in Hectare 300N/-300E was Pit 21 (USN 3164). This pit was circular, 1 m in diameter, and 70 cm deep. It was stratified into six distinct layers of organic soil differentiated by subtle contrasts of color and texture. Only a few pieces of bone, daub, and ceramic debris were present. One sherd of Moundville Engraved var. Hemphill implied a Summerville II-III association. This feature probably represented a multiple use storage facility.

Hectare 400N/-300E

A large oval stain of dark organic soil was discovered in Unit 479N/-296E and designated Structure 7 (USN 8168). Two 20 cm wide balks were placed to divide the stain into four quarters. Fired daub and ash were scattered throughout the unit but did not fit any recognizable pattern. Although 12 cm

TABLE 1

Summary of Summerville II-III Features by Provenience and (USN). Postmolds, 1 by 1 m Tests, and Plowzone Samples Excluded.

300N/-200E	300N/-300E	400N/-300E	400N/-400E	500N/-200E	500N/-300E	500N/-400E	600N/-400E
Pit 26 (2896)	Pit 21 (3164)	Burial 3 (4890)	Pit 1 (1504)	Pit 1 (4702)	Pit 47 (9054)	Pit 4 (3594)	Pit 14 (5099)
Pit 35 (2941)	Hearth 1 (3048)	Burial 4 (5564)	Pit 7 (1509)			Pit 16 (4134)	
		Pit 93 (5180)	Pit 21 (2081)			Pit 31 (4345)	
		Pit 124 (6848)	Pit 20 (2084)			Pit 48 (4954)	
		Pit 143 (8142)	Pit 50 (2846)			Pit 42 (4911)	
		Pit 146 (8145)	Structure 1 (1552)			Pit 45 (4950)	
		Pit 152 (8174)	Structure 3 (2832)			Burial 2 (4140)	
		Pit 157 (9320)	Structure 4 (2317)			Burial 3 (4132)	
		Pit 163 (9334)	Burial 1 (1693)				
		Structure 6 (4857)	Burial 3 (2082)				
		Structure 7 (8168)	Burial 4 (2085)				
		Structure 8 (no USN)	Burial 5 (2789)				
		Pit O (2491)	Burial G (2823)				

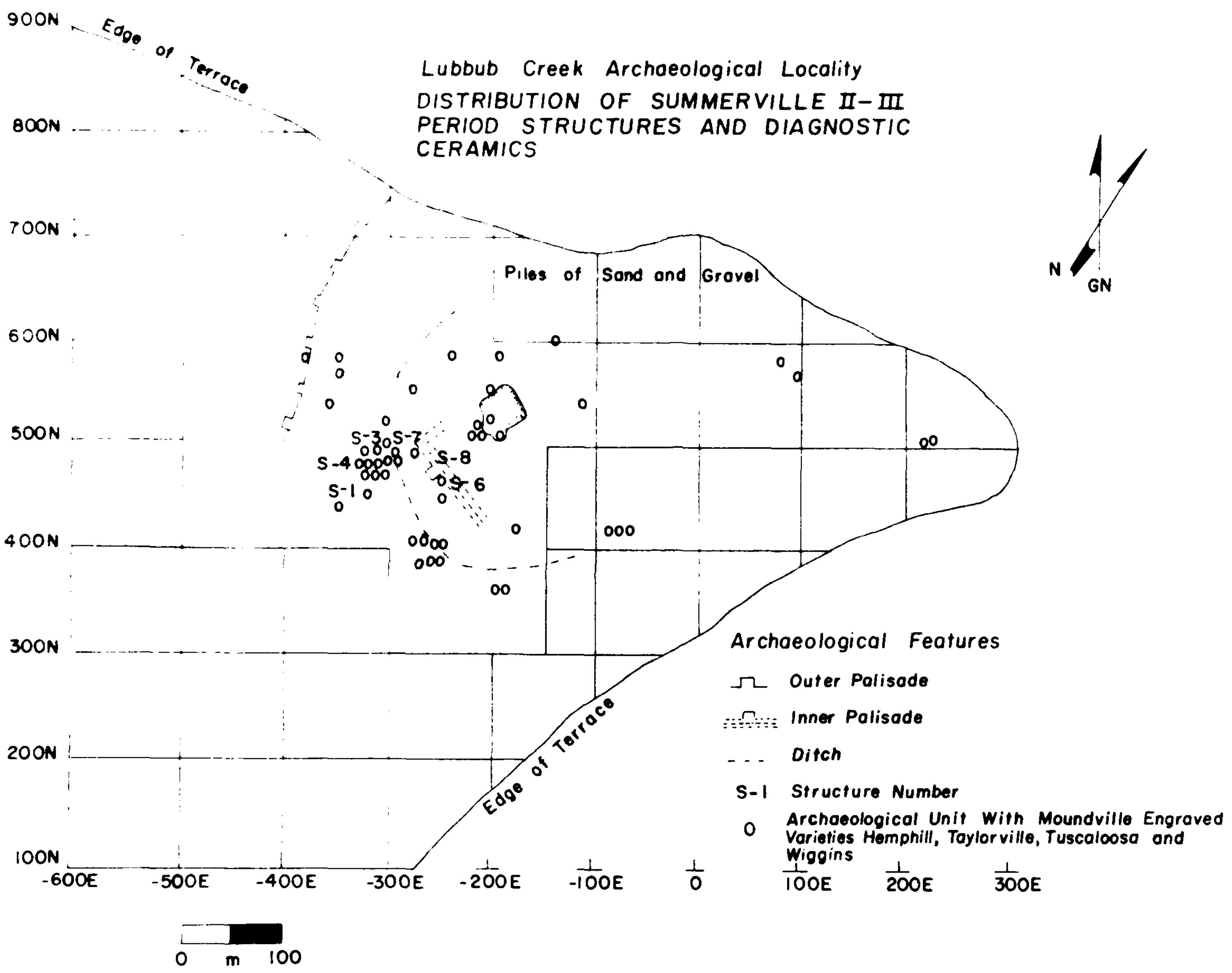


Figure 1. Distribution of Summerville II-III period structures and diagnostic ceramics. Earlier palisades and later ditch included for purposes or orientation.

CHAPTER 9. THE SUMMERVILLE II AND III COMMUNITY

John H. Blitz and Christopher S. Peebles

The Summerville II and III periods, and the community that existed in the Lubbub Creek Archaeological Locality during this span, are defined and delimited in time and space by the ceramic type Moundville Engraved, varieties Hemphill, Taylorville, Tuscaloosa, and Wiggins. The dual designation, II and III, is an attempt to align the ceramic sequence at Lubbub Creek with that proposed by Steponaitis (1980) for Moundville. However the clear separation in ceramic varieties and attributes used by Steponaitis to define the Moundville II and III periods cannot be effected with the ceramic data from Lubbub Creek. Therefore the two periods and their diagnostic ceramics have been combined. The merger of these two periods in effect aligns the Lubbub ceramic sequence with the "Mature" Mississippian period of the lower and especially the central Mississippi Valley and at the same time coordinates it with the Moundville ceramic chronology.

In the Moundville sequence, the Moundville II period extended from approximately A.D. 1250 to 1400 and the Moundville III period from A.D. 1400 to 1550. A comparable span of A.D. 1200 to 1450 or 1500 can be used to bracket the Summerville II and III periods in the Lubbub Creek Archaeological Locality. A single radiocarbon date, taken from Pit 0 in Hectare 400N/-300E fits into this part of the sequence. It produced a date of A.D. 1290 (660 $\pm$80 radiocarbon years, Beta 1094).

The extent of the Summerville II and III community is shown in Figure 1, and the major features that can be assigned to these periods are given in Table 1. When compared to the Summerville I community, the Summerville II and III community is a much more compact settlement. Like the earlier settlement it is centered on the mound, but unlike its predecessor it is not fortified. In fact, several structures are located on top of the inner palisades, and the outer palisade shows neither repairs nor rebuilding. Diagnostic Summerville II and III ceramics found in the remnants of the mound show that it was being used during this period, and the distribution of burials and structures indicates that the community spread out in a ring around the mound. The lack of daub and other living debris southeast of the mound suggests that a "plaza" was still being maintained.

DESCRIPTION OF THE SUMMERVILLE II-III COMMUNITY

The following description provides a detailed examination of the important Summerville II-III features and stratigraphy in each hectare. These features represented a wide range of human activity and included 25 pits, 9 human burials, 6 structures, and numerous smudge pits. Significant features

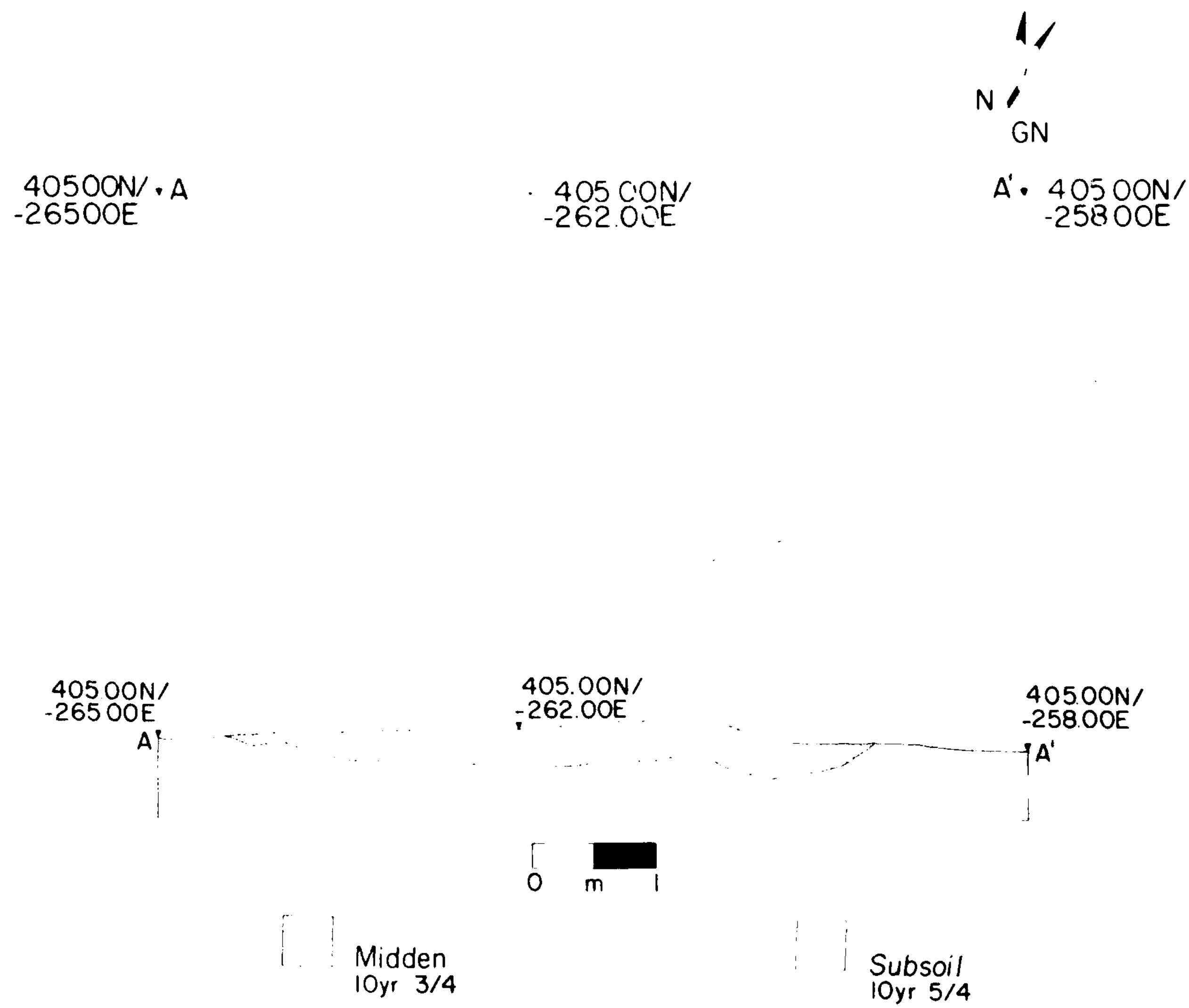


Figure 8. Pit O (USN 2491).

Hectare 400N/-400E

Structure 1 (USN 1552) was discovered beneath [illegible] cm thick plowzone in Units 458N/-351E and 450N/-351E. This structure, like the others, first appeared as a large oval mass of fired daub. Two 20 cm balks were oriented along the grid axes to divide the fired daub into four quarters for excavation. Trowels were used to remove the 5 to 8 cm thick daub layer. Beneath this deposit, an arc of postmolds circumscribed an area 7.80 m in diameter, but the actual shape of the original structure remained obscure (Figure 9). The 25 postmolds that were associated with this structure ranged in depth from 13 to 57 cm (mean = 37 cm, s = 12.6 cm) and in diameter from 8 to 24 cm (mean = 13.8 cm, s = 3.8 cm).

Small amounts of animal bone, mussel shell, plain and incised shell tempered ceramics were associated with the surface beneath the daub. This surface was excavated in two 5 cm levels, but the floor was difficult to identify precisely. The usual amount of organic staining associated with structure floors was not present, and the artifact-bearing stratum was similar in color and texture to the sterile levels in the loam sand soil. Central portions of the surface directly beneath the daub layer had been intensely heated when the structure burned. An alternative interpretation of the heated area is that the occupants were building their fires directly on the floor, since no prepared hearth was found.

Debris found in the postmolds included shell tempered sherds, animal bone, and fired daub. Several postmolds found after the second 5 cm cut may not have been contemporary with those detected at the first 5 cm level. This may indicate that an earlier structure existed prior to Structure 1. One small pit found in the southern portion of Structure 1 was filled with charred corn cobs and covered with a large shell tempered sherd.

A diverse ceramic sample was secured from postmolds and floor levels and included the following types: Carthage I cised var. Moon Lake, Mound Place Incised var. Akron, Moundville Incised var. Snows Bend and var. Carrollton.

Three pits were discovered just north of Structure 1 in Unit 438N/-351E. Pit 8 (USN 1550) and Pit 9 (USN 1551) were small depressions that contained only a charcoal flecked fill. Pit 10 (USN 1682) was a large, circular, basin-shaped feature 128 cm in diameter and 45 cm deep; it was filled with a dark organic soil that contained mussel shell, animal bone, and small shell tempered sherds. The pit had intersected an earlier postmold.

Two meters south of Structure 1, in Unit 450N/-335E, a fragmented human burial (USN 1693) was discovered in a large pit (Figure 9). The burial pit was disturbed by a later intrusion which could be seen in the southern pit profile as bits of fired clay and charcoal. Several large sherds of a plain shell tempered vessel and of Mound Place Incised var. Havana were found in association with the fragmentary skeletal material.

Units 440N/-351E and 430N/-351E contained 35 random postmolds, 11 pits, and two human burials. Although it was not possible to deliniate a structure, the abundant features indicated an intensive occupation contemporary with Structure 1. Pit 7 (USN 1509), in the northwest corner of 430N/-351E, was similar to the majority of Mississippian pits. It was oval in plan view, its

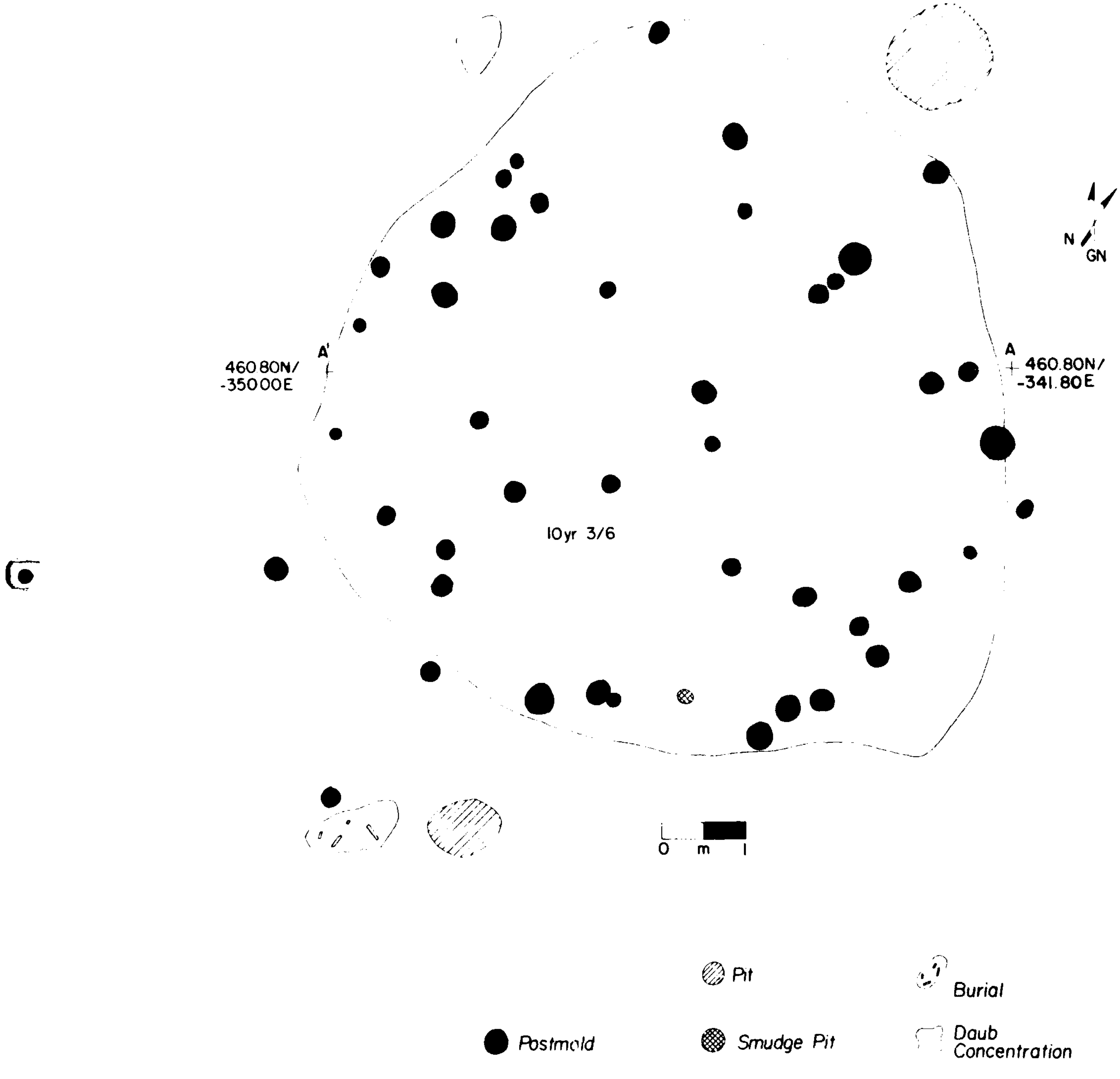


Figure 9. Structure 1 (USN 1552), Hectare 400N/-400E.

horizontal dimensions were 58 by 53 cm, and it had sides that sloped sharply to a depth of 40 cm. The dark brown soil was high in organic content and contained mussel shell, animal bone, lithic flakes, shell tempered sherds, and other refuse. It probably served as a food storage facility. A similar feature, Pit 20 (USN 2084, 2085) in Unit 440N/-351E, contained the ceramic type Moundville Engraved var. Wiggins. Another feature common to the Mississippian occupation was represented by Pit 16 (USN 2054), a shallow, concentrated midden deposit that appeared to be the result of a deliberate dumping of trash.

Two human interments occurred close together in the eastern portion of Unit 440N/-351E. Burial 3 (USN 2082) was a circular feature 70 cm in diameter that contained two separate zones. Zone A was a heat scorched depression 8 cm deep filled with charcoal flecks, fired clay, shell tempered sherds, and bits of mussel shell. Zone B was a dark brown sandy soil 10 cm thick that contained a child's cranium and mandible. This interment had occurred prior to the formation of Zone A since there was no evidence of intrusion or mixing of the distinct zones. The presence of numerous postmolds, household debris, and small amounts of fired, cane impressed daub in Unit 440N/-351E suggested Zone A may have functioned as a hearth associated with these features, but a structure pattern could not be defined.

Burial 4 (USN 2085) was the fully extended skeleton of a child encountered 3 m south of Burial 3 (Figure 10). The grave was an oval basin shape, 105 cm long by 71 cm wide; it was filled with brown loamy sand 25 cm deep. A small unmodified mussel shell was placed to the left of the cranium and another piece of mussel shell was placed between the knees. A small, plain shell tempered sherd lay on the anterior aspect of the left tibia.

Structure 3 (USN 2832) was a circular depression discovered beneath the plowzone in Units 487N/-322E and 487N/-312E. A dark organic stain was exposed after a large midden deposit (USN 2776) was removed. This stain was not exactly circular, but it averaged 6.50 m in diameter. The depression was 10 to 15 cm deep and was filled with a clay loam containing animal bone, mussel shell, and small chunks of fired daub. Eight postmolds were discovered within the depression, but they showed no discernible pattern or orientation. Four postmolds were spaced equidistant from a large hearth in the structure's center. These postmolds were quite large, and averaged 55 cm deep and 30 cm in diameter.

The central hearth (USN 2772) was the most complex feature associated with Structure 3 (Figure 11). A large mass of blue clay (Zone A), 160 cm in diameter and 10 cm thick, covered the center of the structure. This clay contained a small sherd of Parkin Punctate var. Undetermined and a shell tempered squirrel or owl effigy head. Zone A showed no evidence of intense heat. Beneath Zone A was a dark thin layer of heavily carbonized material (Zone B) which contained fired clay inclusions. The actual hearth consisted of a yellowish brown clay (Zone D) that had been packed into a large depression to form a clay lined basin 70 cm in diameter and 30 cm deep. The yellow clay lining the interior of the hearth had been baked to the color and consistency of brick. The heavy clay of Zone D formed a ring 45 cm wide around the orifice of the basin. Inside the basin was a grey soil (Zone C) with a greasy texture that seemed to be a mixture of ash and clay. Several plain shell tempered sherds were found in this zone.

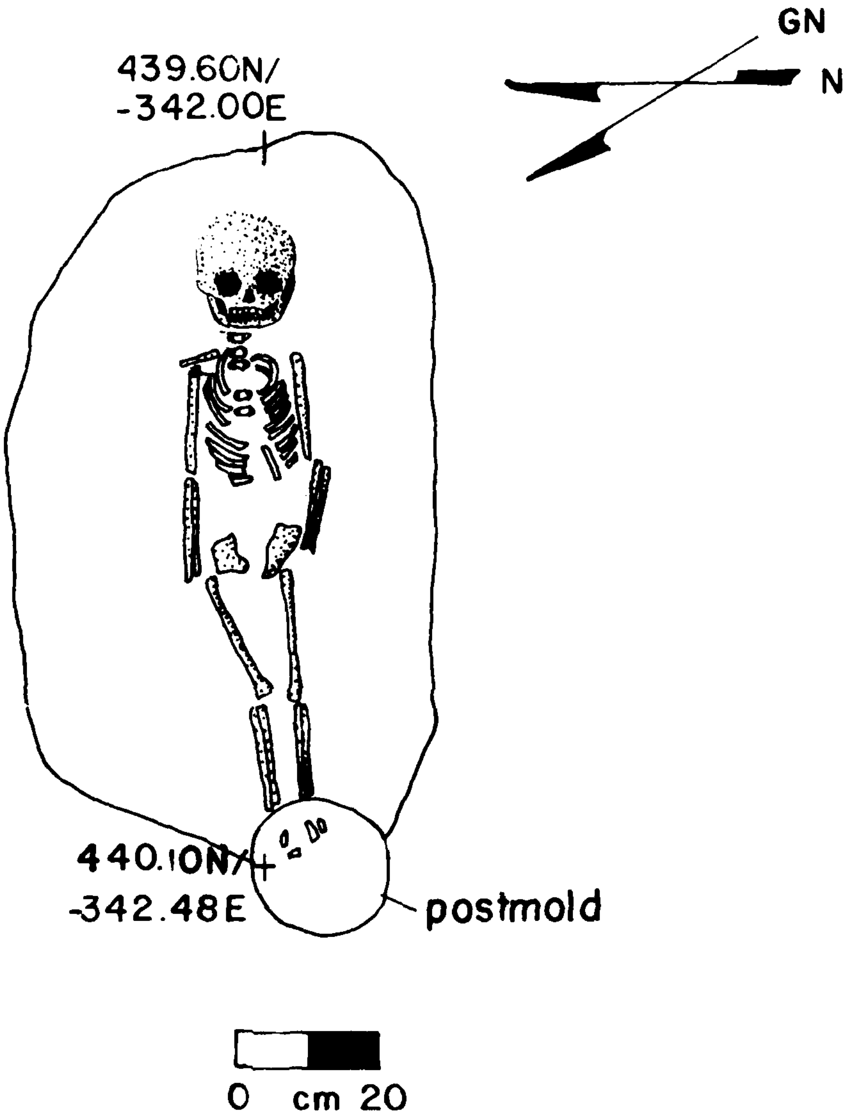


Figure 10. Burial 4 (USN 2085), Hectare 400N/-400E.

A large ceramic sample was secured from Structure 3 which included sherds of the following types: Carthage Incised var. Undetermined, Moundville Engraved var. Tuscaloosa and Wiggins, Moundville Incised var. Carrollton. All of the available evidence suggests that Structure 3 was a circular structure with a semisubterranean or depressed floor.

Structure 4 (USN 2317) was located eight meters south of Structure 3. It appeared just below the plowzone as a group of postmolds; it was discovered while shovel skimming Unit 477N/-322E. Although there was no fired daub, the angularity of the emerging postmold pattern indicated the presence of a structure. Two 20 cm wide balks were placed at 90 degrees to the wall posts to divide the building into quarter sections. Trowelling revealed a rectangular, almost square pattern 7 m east to west and 7.5 m north to south. The postmolds associated with the structure ranged in depth from 4 to 57 cm (mean = 28 cm, s = 11 cm) and in diameter from 12 to 30 cm (radius: mean = 12 cm, s = 4.9 cm).

Two parallel wall trenches 2 m long were aligned perpendicular to the wall and formed a narrow vestibule entrance oriented east. The floor was difficult to define due to the homogeneity of the soil color and texture; however, the area circumscribed by the postmold pattern was intact and undisturbed. Lines of small interior postmolds were probably the result of partitions or furniture such as benches or beds. The interior of the structure contained very little cultural debris, and there was no evidence of any burning or fired daub.

In the center of the structure there was a circular clay hearth 60 cm in diameter which was raised several centimeters above the level at which the postmolds were first detected. Three small shallow pits (USN 2862, 2863, 3739) were found within the postmold pattern. All three were filled with carbonized botanical material, particularly corn cobs (see Chapter 3, Volume II). A variety of sherds was recovered from postmolds, wall trenches, and the interior floor levels. The major ceramic types were Mississippi Plain var. Warrior and Hale, and Mound Place Incised var. Akron. Very few lithic artifacts were associated with Structure 4.

Two human burials were found in Unit 487N/-312E, in the extreme northeast corner of the hectare. Both of these burials were contemporary with Structure 3 (USN 2832) and Structure 4 (USN 2317).

Burial 5 (USN 2789) was first exposed as a gravel filled oblong feature, 332 by 114 cm in plan and 46 cm deep in profile. A single, supine adult was found lying in a fully extended position. The skeleton had been damaged by both root and rodent disturbance. A root was found growing through the thoracic cavity. The preservation of the bone was very poor and the cranium had collapsed. The feet, ribs, spine, pelvis, and portions of the arms were present only as bone flakes and stains; however, all bones were in correct anatomical position. The grave had intruded into a natural stratum of river gravel at 60 cm below the ground surface. The gravel had become thoroughly mixed into the loamy sand fill with almost solid gravel at the lower levels. A shallow bowl of Mississippi Plan var. Hale was placed 20 cm behind the cranium. A small piece of hematite was placed to the east side of the cranium and pieces of limonite and conglomerate were also present in the gravel fill (Figure 12).

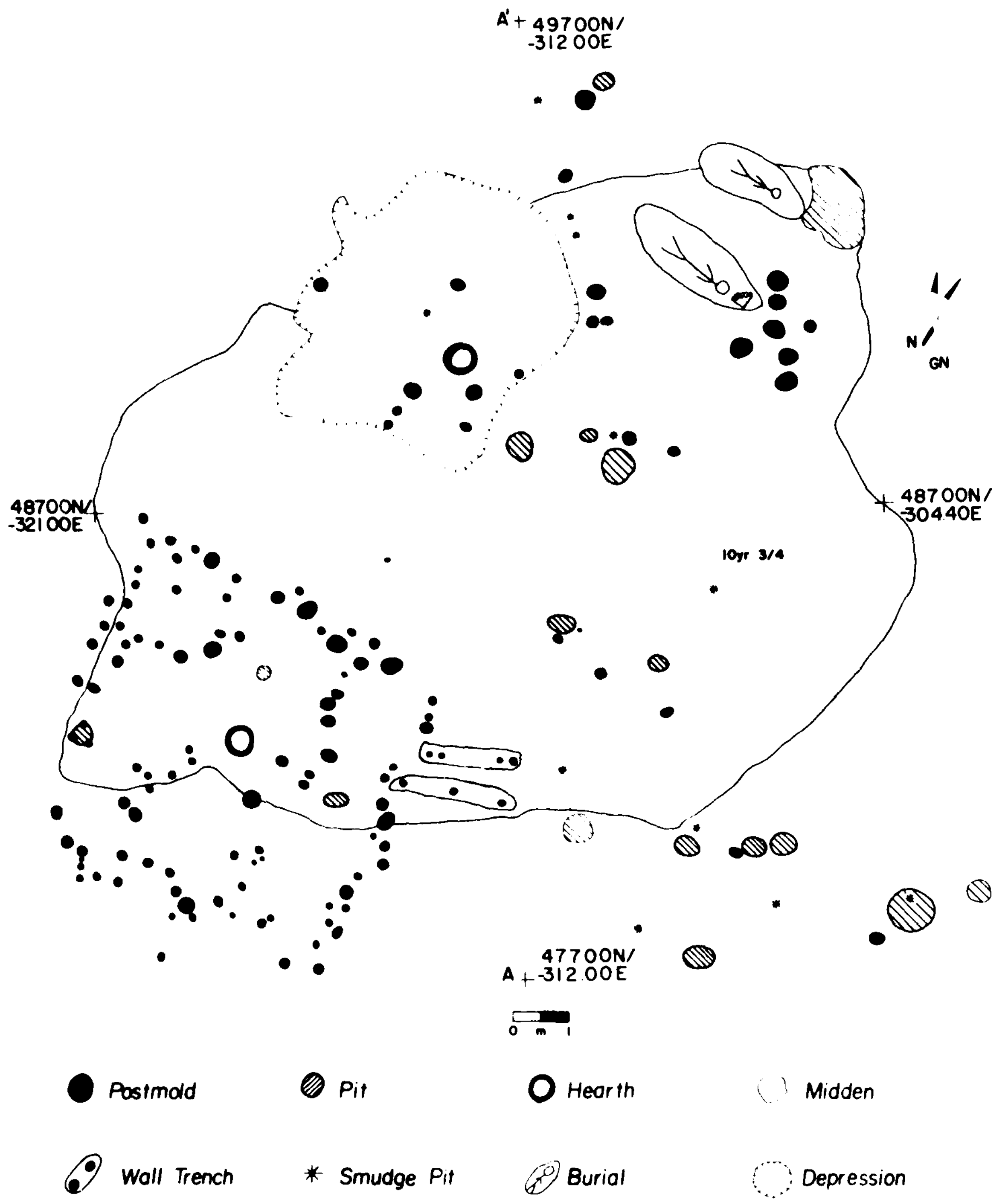


Figure 11. Structure 4 (USN 2317) is in the lower left; Structure 3 (USN 2832) is in the upper center.

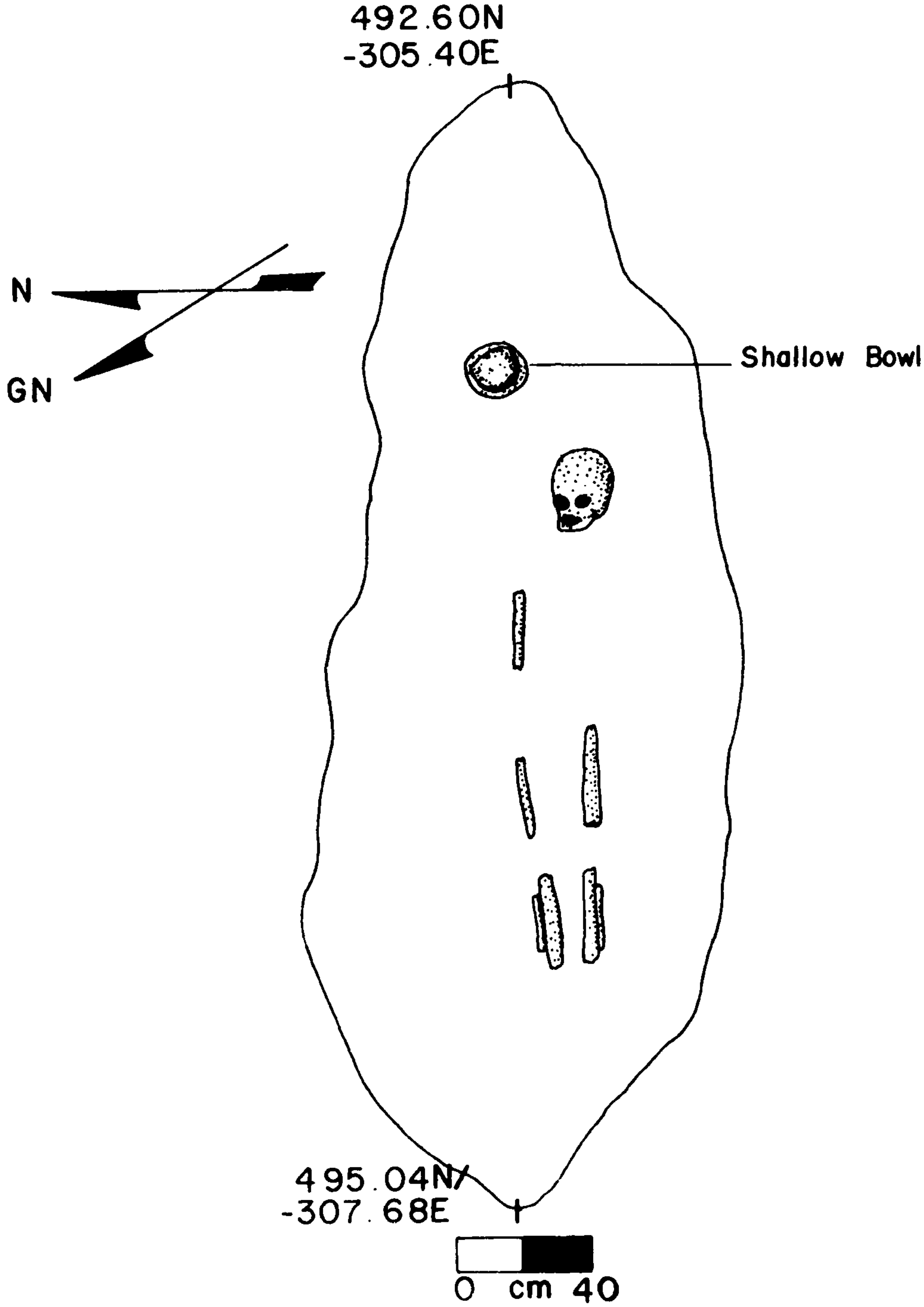


Figure 2. Burial 5 (USN 2789), Hectare 400N/-400E.

Burial 6 (USN 2823) was discovered below the plowzone 50 cm southwest of Burial 5 in Unit 487N/-312E. The grave was a large oblong, 302 by 144 cm in plan and exactly paralleled the orientation of Burial 5. The grave fill consisted of a light colored loamy sand mixed with gravel from a natural stratum 60 cm below the surface. The most dense concentration of gravel was at the lowest level of the grave.

In the southeastern end of the grave, at 20 cm below the surface, an unusual shell tempered vessel was discovered in an upright position. The vessel was a flat bottomed, flat sided open-front box with terraced sides and incised rectilinear motifs. At the bottom of the grave, 50 cm below the terraced vessel, a single supine adult was discovered in a fully extended position. The cranium was turned to the skeleton's left. The left hand was resting over the left femur and innominate. The preservation of the skeleton was very poor, with portions of the ribs, spine, and feet present only as flakes of bone (Figure 13).

A large sherd of Mississippi Plain var. Warrior was placed 10 cm southeast of the cranium. Two copper earspools, together with bone pins, were found resting against both sides of the skull. The copper had preserved small pieces of matting or cordage. Four identical and carefully made triangular projectile points were uncovered just above the skeleton. Some small pieces of hematite, limonite, and conglomerate were recovered from the grave fill. The grave had no debris that appeared to be intrusive from the surrounding matrix except for a small amount of animal bone and a few mussel shells.

An extensive deposit of midden (USN 2776) covered both Structures 3 and 4 and contained a large amount of late Mississippian ceramics. Several pits had been constructed in this area. A typical pit, Pit 50 (USN 2846), was 90 by 73 cm and 60 cm deep. It contained the same domestic debris common to the majority of the Mississippian pits excavated and included a small amount of Moundville Engraved var. Wiggins.

Hectare 400N/-500E

Two human burials occurred in Unit 464N/-448E in Hectare 400N/-500E. Burial 2 (USN 2206) consisted of the cranium and teeth of an infant less than one year old. The cranium was resting upon the occiput, but the face and mandible had been shattered by the plow. This burial was at the interface of the plowzone and an undisturbed stratum.

One meter south of Burial 2 a fully extended supine adult was exposed after the removal of the plowzone. The grave was an oblong stain, 228 by 88 cm, and was extremely shallow. Apparently the upper portion of the grave had originated at a level within the plowzone. Burial 3 (USN 2202) was articulated with portions of the cranium, pelvis, and long bones present in a poor state of preservation. The extremities and the thoracic region had deteriorated completely into a "ghost" stain of bone flecks. Unfortunately there were no cultural associations for these interments. The plowzone sample for the unit contained moderate amounts of shell and grog tempered ceramics.

Ceramic debris indicative of the Summerville II-III period was scattered throughout the plowzone in Hectare 500N/-300E, but few intact features were found. The majority of the features in this hectare contained plain shell

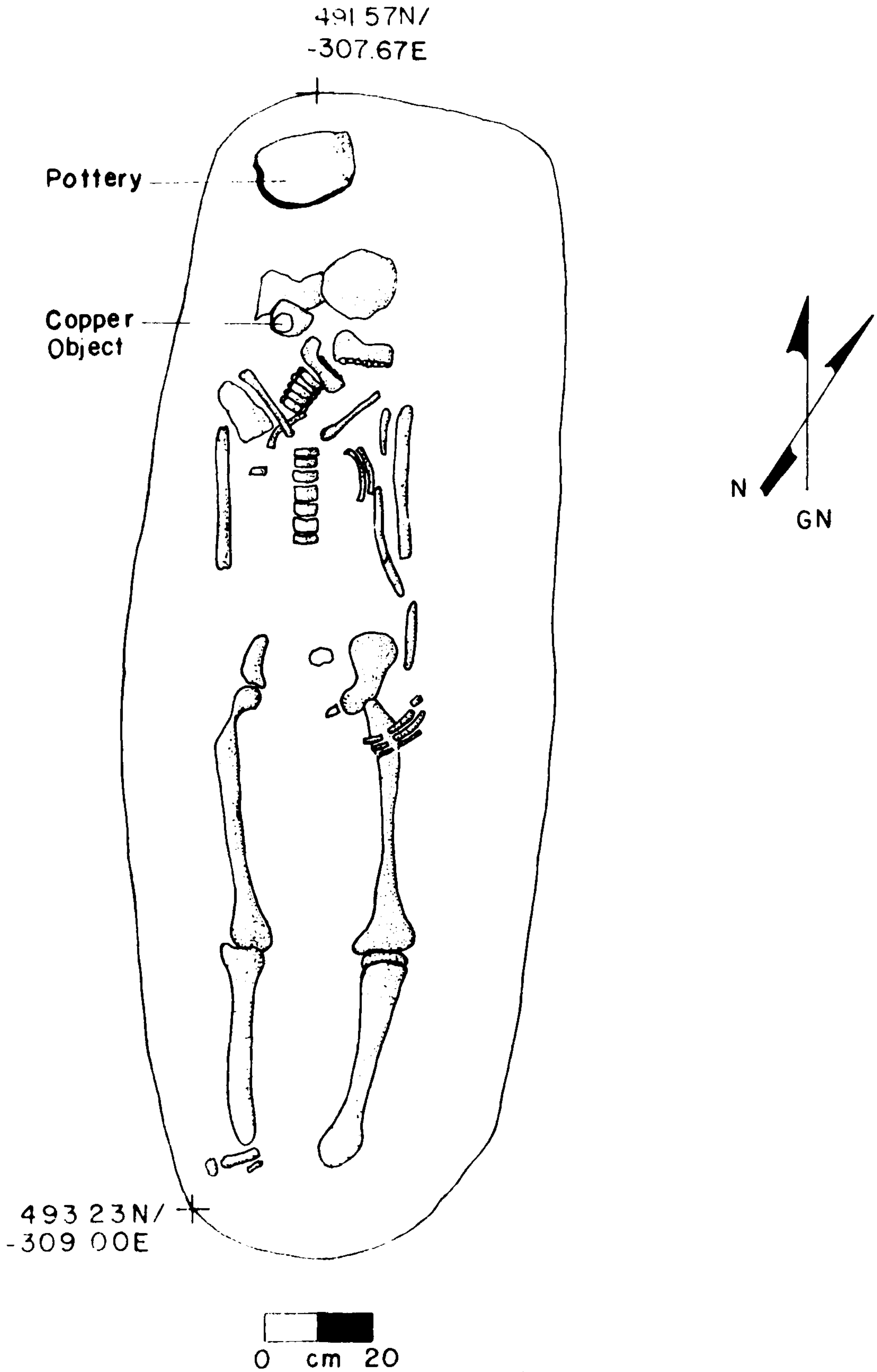


Figure 13. Bu-ial 6 (USN 2823), Hectare 400N/-400E.

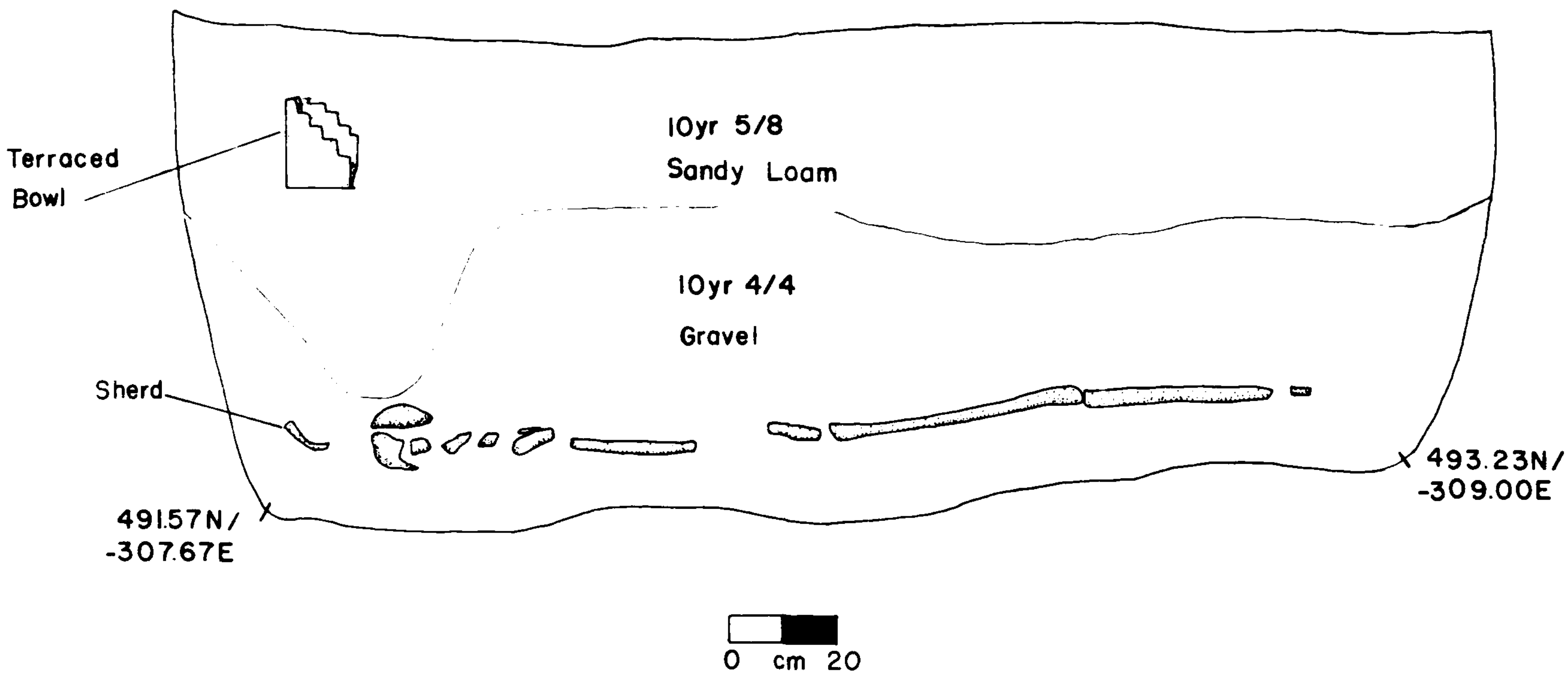


Figure 14. Burial 6 (USN 2823), profile view.

tempered ceramics. One significant Summerville II-III feature was Pit 1 (USN 4702, 4703) located in Unit 500N/-281E. This "pit" was actually a concentrated midden deposit, 3.15 by 2.75 m in plan and 35 cm deep. Pit 1 was similar to other shallow deposits of refuse at the site and seems to represent several episodes of intentional dumping of debris. The ceramic sample included small amounts of Carthage Incised var. Moon Lake, Moundville Engraved var. Tuscaloosa, and Parkin Punctate var. Undetermined.

Hectare 500N/-400E

The Summerville II-III community was well represented in Hectare 500N/-400E, particularly in the northern portion where several large features were excavated. The area around Structure 1 (USN 3889) had been occupied by the earlier Summerville I community, then later by the Summerville II-III and protohistoric Summerville IV populations as well.

In Unit 574N/-343E two small concentrations of sherds (USN 3341, 3344) produced the types Carthage Incised var. Carthage and Mississippi Plain. This material was uncovered after the plowzone was removed but no pit outline was found.

A large shallow feature, Pit 4 (USN 3576), was exposed in Units 574N/-343E and 570N/-353E. This feature was 3.8 by 2.8 m in plan and was filled to a depth of 30 cm with well preserved faunal remains, lithic flakes, mussel shell, and sherds. The upper portions of this deposit had been plowed away. Pit 4 contained large amounts of typically Summerville II-III ceramics, with bottle, jar, and bowl forms represented. A ceramic pipe bowl was found also.

No stratification could be observed within the pit. This type of pit has been described elsewhere (See Pit O, p. 332) as a small deposit of midden. What function, if any, these large oblong depressions served before they became filled with debris has not been determined. It is quite possible that these features were once small refuse deposits that were gradually covered by sediment and sod. Upon excavation such deposits might give the false impression that they had once filled a depression.

Burial 4 (USN 4385) appeared as a small dark stain below the plowzone on the northern boundary of Unit 500N/-330E and extended north into Unit 510N/-325E. The grave was an oval basin shape 85 by 90 cm in plan and 18 cm deep. The burial was disturbed, either by root intrusion or aboriginal activity. Fragmentary portions of maxillary and mandibular teeth were the only skeletal remains found and there was no evidence that any of the post cranial skeleton had been interred. A small jar of Mississippi Plain var. Warrior and a Moundville Incised var. Carrollton jar had been placed directly over the teeth. An abrader of petrified wood was found in the pit fill.

Burial 4 was located in an intensely occupied area which contained abundant postmolds and pits. Although no postmold pattern could be defined, the presence of large pieces of fired cane-impressed daub in Units 500N/-330E and 510N/-325E suggested that one or more structures had existed here. Several postmolds and Pit 48 (USN 4954), approximately 3 m east of Burial 4, contained Mound Place Incised var. Akron.

Two pits (USN 4911,4950) adjoining Unit 500N/-320E produced the types Moundville Engraved var. Undetermined and Moundville Incised var. Undetermined. Most of the pits were shallow, showed no stratification, and presumably functioned as food storage facilities. Several smudge pits filled with charred botanical remains were also present. Structure 3 in 400N/-400E was situated 5 m directly south of these features.

Two human graves were found in the northeast portion of Hectare 500N/-400E. Burial 2 (USN 4140) was located in Unit 592N/-347E. The grave was 107 cm by 47 cm, and so shallow that a portion of the burial was exposed as the backhoe removed the plowzone. A single adult was found lying on its left side in a flexed position. Portions of the cranium, left femur, tibia, and fibula were sliced by the backhoe blade. The only cultural debris recovered were plain shell tempered sherds (Figure 15).

Burial 3 (USN 4132) was encountered while excavating a postmold in Unit 592N/-347E, two meters east of Burial 2. There was no organic staining and consequently the limits of the burial pit were difficult to define. A single, supine adult was found in a fully extended position with the right radius lying above the pelvic region in a vertical position. The bones of the middle and lower trunk region were extremely disturbed by the intrusive postmold (Figure 16). The postmold or small pit contained the fragmentary remains of an infant. No grave goods were associated with the interment but the burial pit fill contained chert flakes, faunal remains, a small amount of Carthage Incised var. Moon Lake, and plain shell tempered sherds.

Hectare 600N/-400E

Two units in this hectare had Summerville II-III features. In the southern portion of the hectare, Unit 600N/-375E contained two small pits with Summerville II-III ceramics adjacent to a portion of the western palisade (USN ----). Pit 14 (5099) and Pit 23 (5233) were large bowl-shaped depressions filled with animal bone, mussel shell, sherds, and other debris. This material was probably deposited after the pits were no longer being used for food storage.

A similar feature was found in Unit 614N/-388E. Pit 98 (USN 6187) was a large pit 80 by 60 cm, filled with mussel shell, charred botanical material and bits of fired clay. The ceramic sample included Moundville Engraved and Carthage Incised sherds too small to determine the variety. It should be noted that the plowzone sample of this unit contained no Summerville II-III ceramics and that the major occupation in this hectare was the Summerville I community.

SUMMARY

The Summerville II and III community seems to have been a direct descendent of the earlier Mississippian community in the Lubbub Creek Archaeological Locality. Unlike the earlier Summerville I and later Protohistoric Summerville IV communities, however, the Summerville II and II community seems not to have been fortified. No palisades can be assigned to this period, and the earlier, inner palisade system is covered by structures of the Summerville II and III community. There are more pits, structures, and other features, including mound building stages, assigned to the Summerville

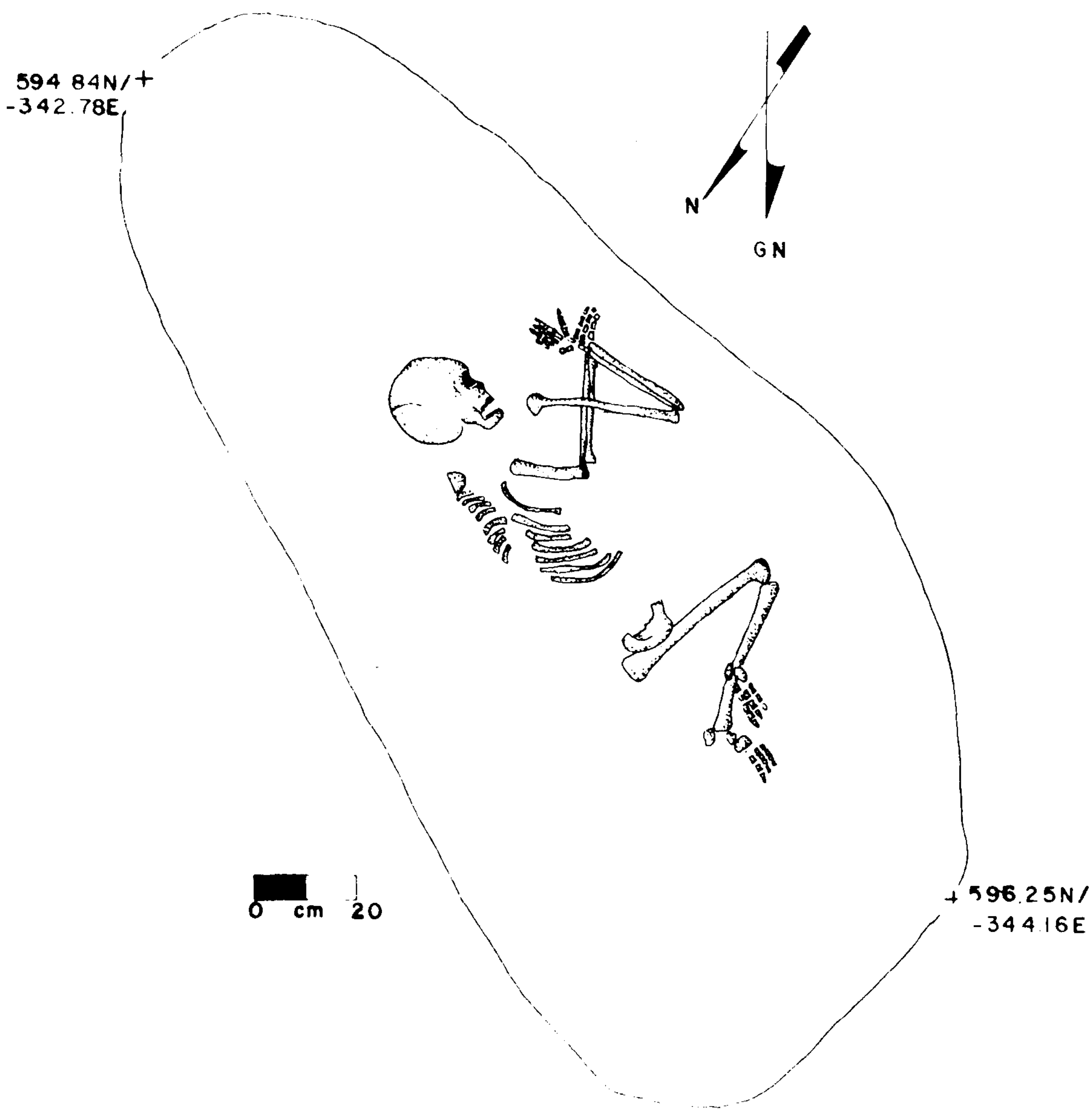


Figure 15. Burial 2 (USN 4140), Hectare 500N/-400E.

into Hectare 300N/-300E. This trench, Trench 4 (396.5N/-245.7E, USN 3133), was positioned along the east wall of the same large 11 by 13 m unit. Trench 4 was excavated in nine 10 cm levels and the east wall profile was recorded (Figure 6). Here, the depression terminated at approximately 1.4 m below surface. The stratigraphy in Trench 4 appeared as follows: beneath the 20 cm thick plowzone (Zone A) lay a 25 to 30 cm thick layer of dark yellowish brown sandy loam which, in turn, graded into a very dark grayish brown zone (Zone C) of sandy loam which was roughly 10 cm thick; a thin, 8 to 10 cm thick zone of charcoal and ash (Zone D) was present in this trench as it was in the ones excavated before; beneath this charred zone lay a 70 to 75 cm thick layer (Zone E) of mottled sandy loam which graded from dark yellowish brown to yellowish brown and contained an abundance of ceramics; Zone E overlay light yellowish brown subsoil (Zone F).

Based on the stratigraphy observed in the hand-dug trenches, it finally was obvious that this large depression-like feature was neither a midden nor a structure, but a prehistoric, hand-dug trench. Once the nature of this feature was ascertained, the problem then was to (1) define its limits, (2) determine its function, and (3) determine the date of its construction.

In order to define the limits of the ditch, a series of fourteen backhoe trenches was excavated in hopes of finding its northern and eastern path. These trenches were temporarily labeled 1 to 14, but they were not excavated in that order. No USNs were assigned to these trenches.

Starting in the northeastern portion of Hectare 300N/-300E, eight backhoe trenches were dug, and the ditch was present in the profiles of all of them. Profiles of Trenches 4 and 7 are illustrated in Figures 7 and 8. Both profiles show the thin charcoal and ash-filled zone underlain by sandy loam. This charred zone was deposited nearer the surface in Trench 7 than in Trench 4. Perhaps the contrast in stratification in these two trenches was due to the fact that the subsoil below Trench 7 contained gravel, whereas there was sandy loam beneath Trench 4. All in all, the ditch appeared to be basically in the same form in both these trenches.

Moving eastward into Hectare 300N/-200E, three more exploratory backhoe trenches were dug in order to trace the ditch. The first two missed it altogether, but the third easternmost trench picked it up again (not illustrated). Therefore, the course of the ditch seemed to have circled south and east of the mound.

In order to trace the ditch's northward path, three more backhoe trenches were positioned intuitively in Hectare 400N/-300E. Intuition proved correct, and all three trenches cut into the ditch-like depression. Figure 9 illustrates the stratigraphy of the two southernmost trenches. The charred zone was once again visible in both trenches, and this zone was overlain by a 50 cm thick layer of dark yellowish brown sandy loam. The northern side of the ditch in Trench 5 contained a layer of dark yellowish brown clay. However, in Trench 6 large gravel mixed with sand comprised the upper levels, and it was underlain by subsoil mixed with smaller-sized gravel.

The backhoe trenches were an archaeological success and we did trace part of the southern boundary of the ditch using this technique. The northern boundary, however, was discovered in various other ways, and these will be

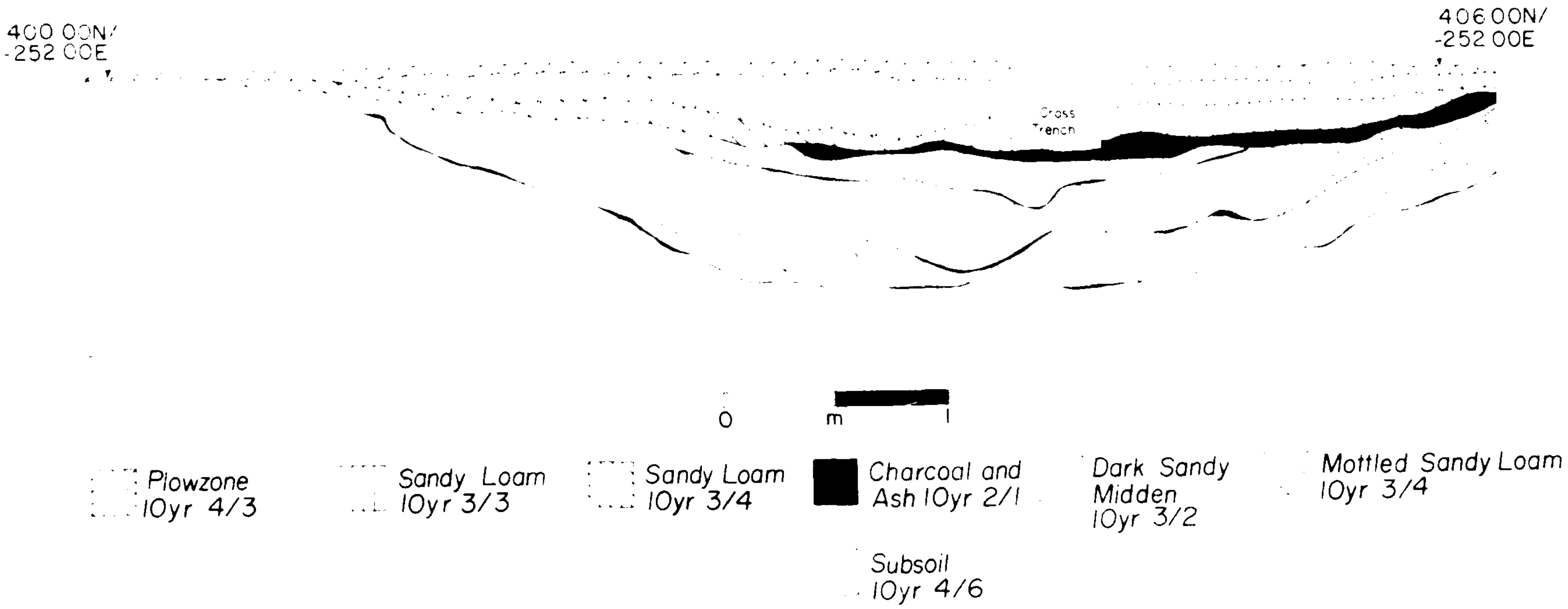


Figure 5. Profile of the west wall of Trench 2 (USN 3073) showing the ditch.

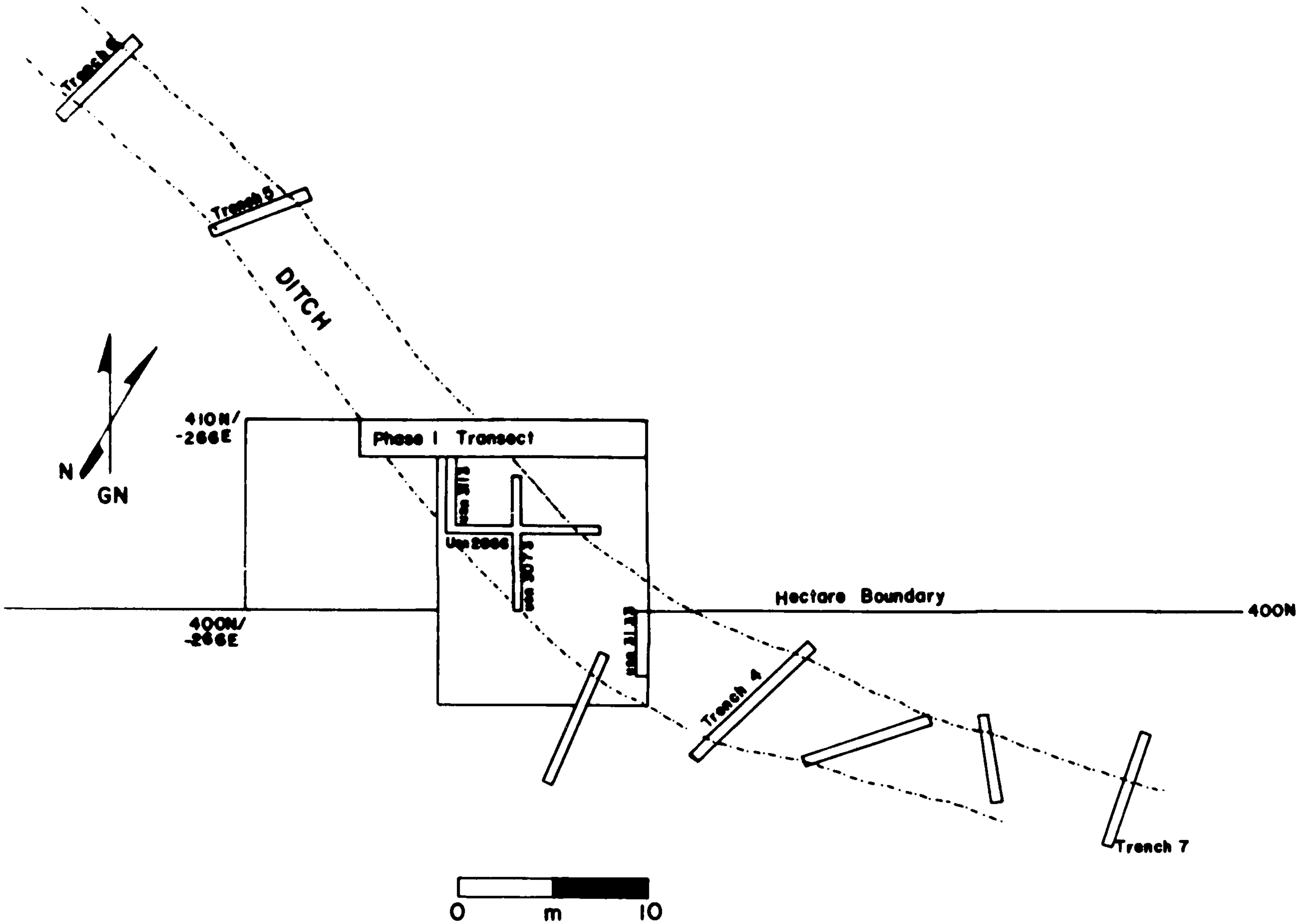


Figure 4. Distribution of trenches excavated across the ditch in Hectares 400N/-300E, 300N/-300E, and 300N/-200E.

With Figure 3 as a guide, the discussion of the ditch will proceed through the sequence of discovery and excavation, from south to north, and will illustrate how the conclusion was reached that this feature was indeed a prehistoric "ditch."

Hectares 400N/-300E, 300N/-300E, 300N/-200E

A portion of the ditch was first encountered early in Phase I on the floor of an east-to-west, 2 by 15 m transect, 408N/-260E (USN 117) in Hectare 400N/-300E. This transect was leveled at one meter below ground surface. At the time, such a feature was not expected, and it was assumed that the darker, discolored area in the western six meters of the transect was just a midden deposit which yielded an abundance of sherds (including Alabama River Applique) and daub. The eastern portion of the floor was sterile. In retrospect, it is clear that this excavation unit picked up the edge of the ditch. Later, during Phase II, the excavation of an 11 by 13 m extension unit, 395N/-256E (USN 2546), yielded more of the midden-like deposit that was first discovered a few meters north in the Phase I transect. It was then decided to excavate arbitrary sections into this midden in 10 cm levels, thereby producing several hand-dug trenches (Figure 4).

The first, meter-wide trench, 404N/-256E (USN 2666), was oriented east-to-west in line with the grid system, and it was excavated in five 10 cm levels, all of which were waterscreened. At the base of Level 3, approximately 40 to 50 cm below surface, there appeared in profile a long, trench-like depression which had steep sides and was oriented generally northwest to southeast. Ceramics and animal bone were encountered in the dark sandy loam fill. Below this point, Level 5 encompassed a dark, charcoal-filled deposit. At this time, the field archaeologists generally agreed that they were dealing with a possible semi-subterranean structure of some kind, and that the charred zone may have represented roof-fall. Therefore, it was decided to excavate additional trenches in order to pin down the exact orientation of this strange, depression-like feature.

Trench 2, 400N/-252E (USN 3073), was set perpendicular to and crossed Trench 1 (USN 2666) at right angles. The six-meter long west wall profile of Trench 2 was drawn (Figure 5), and a portion of the trench was excavated in twelve 10 cm levels. The depression terminated at about 1.3 m below surface. Here, the stratigraphy was much the same as in the first trench: beneath the plowzone a 40 cm thick area of sandy loam graded from dark to light; below this was a very black charcoal and ash-filled zone which was approximately 10 cm thick; directly beneath this organic zone lay a very dark grayish brown, sandy midden zone, 10 to 20 cm thick, which contained an abundance of ceramics; at the very bottom of the depression, just above the contact with the sterile subsoil, was a 40 cm thick zone of dark yellowish brown sandy loam that was streaked by dark sediment bands.

By this time it was agreed that the depression was much too large for a structure, so another exploratory trench was excavated. Trench 3, 404.5N/-255.5E (USN 3113), was placed just west of and parallel to Trench 2. Five 10 cm levels were completed, and the stratigraphy was basically the same as in Trench 2.

Just south of the 400N line a fourth trench was laid out which crossed

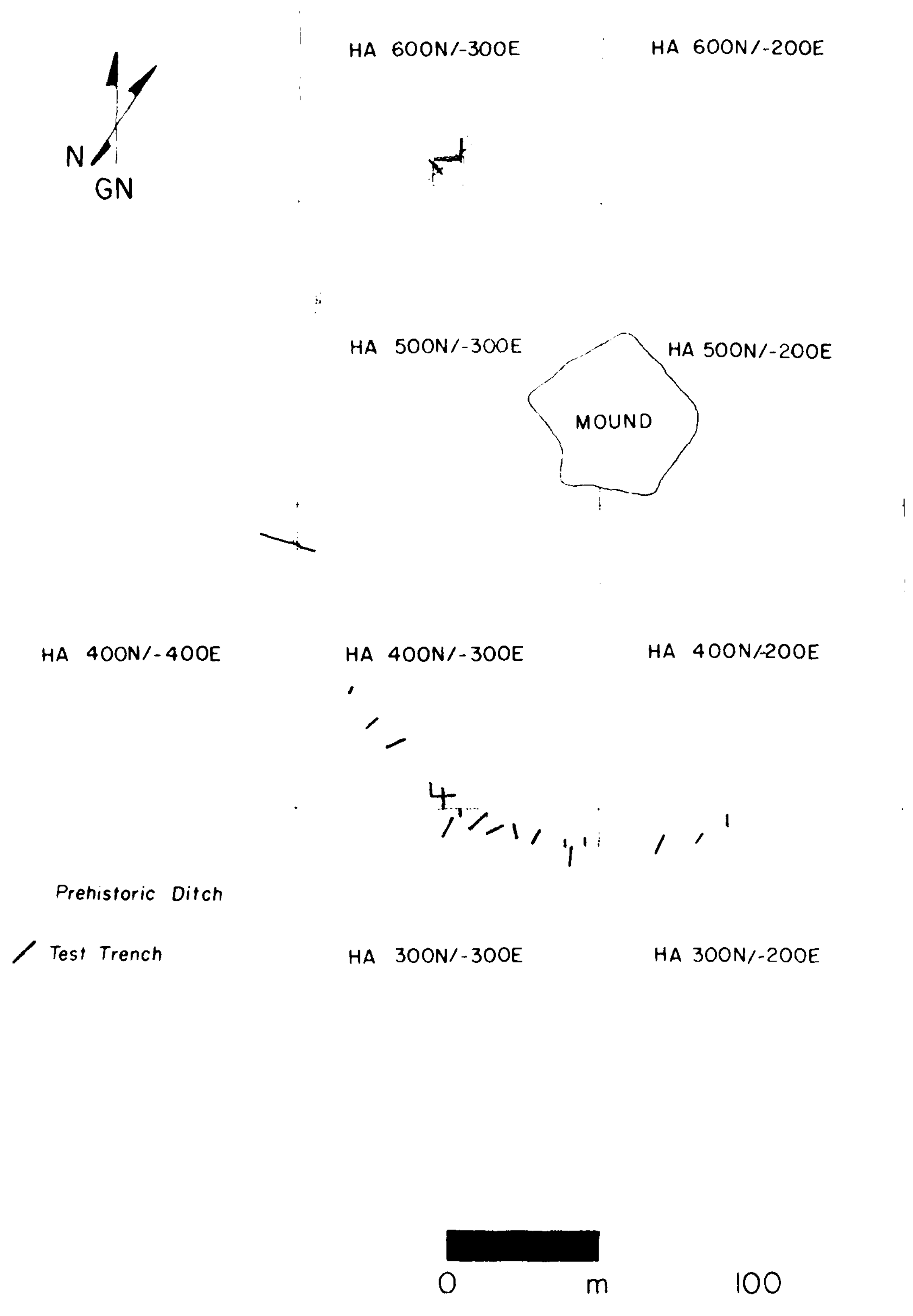


Figure 3. Portions of the ditch verified by excavation.

Figure 2. Aerial photo of bend: arrow points to the Protohistoric ditch.

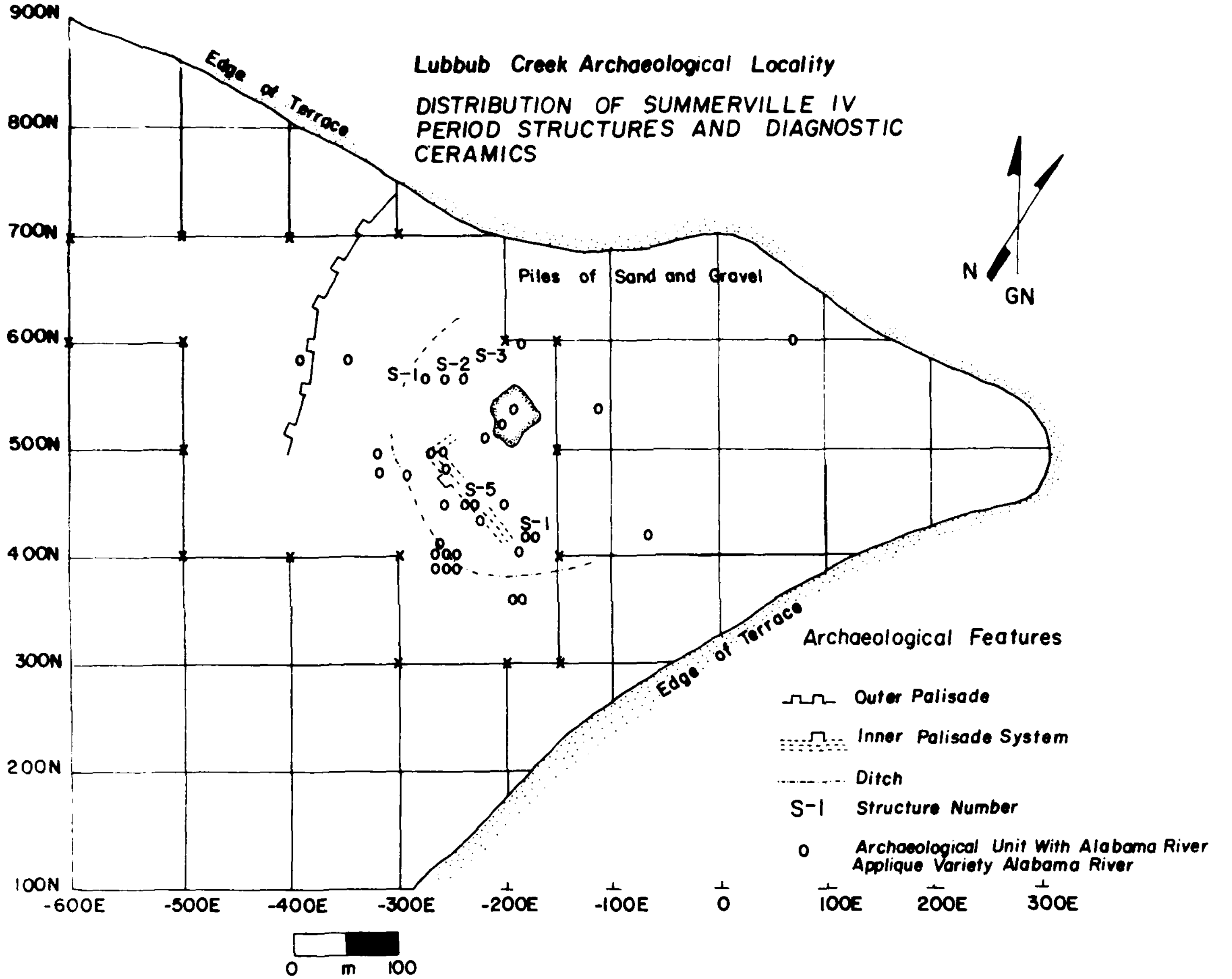


Figure 1. Distribution of Summerville IV features and ceramics.

TABLE 1
(contiuned)

Feature (USN)	Hectare	Southwest Corner	Center Point	North	East	Beginning Elevation (mAMSL)	Ending Elevation (mAMSL)
Pit 20 (6441)	500N/-300E		x	576.34	-255.76	39.43	38.94
Pit 21 (6483)	500N/-300E		x	583.08	-249.50	39.62	39.39
Structure 3 (7470)	500N/-300E		x	586.00	-232.00	39.67	39.53
DC 3 (8421)	500N/-300E		x	587.75	-231.60	39.66	39.59
DC 4 (8426)	500N/-300E		x	586.21	-231.59	39.66	39.59
DC 5 (8434)	500N/-300E		x	588.10	-232.10	39.66	39.54
Burned Sand Concentration (8667)	500N/-300E		x	585.77	-231.00	39.55	39.48
Urn Burial 3 (7404)	500N/-300E		x	586.06	-233.97	38.79	38.45
Ossuary (7480)	500N/-300E		x	593.60	-227.00	39.64	39.24
Pit 47 (9054)	500N/-300E		x	578.64	-239.40	39.60	39.50
Extension Unit (4549)	500N/-300E	x		510.00	-220.00	39.98	39.54
Extension Unit (6480)	500N/-300E	x		568.00	-243.00	39.63	39.34
Pit 14 (4072)	500N/-400E		x	591.30	-340.80	39.87	39.40
Shell Concentration (4316)	500N/-400E		x	587.80	-388.20	39.38	39.28
Postmold 278 (4959)	500N/-400E		x	500.08	-311.22	39.28	38.96
2 by 1 m test (6688)	600N/-300E	x		615.00	-250.00	39.90	38.42
1 by 1 m test (654)	600N/-300E	x		605.00	-240.00	40.08	39.88

TABLE 1
(continued)

Feature (USN)	Hectare	Southwest Corner	Center Point	North	East	Beginning Elevation (mAMSL)	Ending Elevation (mAMSL)
Burial 1 (3449)	400N/-300E		x	452.76	-233.51	38.7[illegible]	38.51
Burial 2 (4051)	400N/-300E		x	452.22	-234.32	38.17	38.23
2 by 15 m Transect (117)	400N/-300E	x		408.00	-260.00	39.25	38.77
Hand Trench 1 (2666)	400N/-300E	x		401.00	-256.00	38.91	38.85
Hand Trench 2 (3073)	400N/-300E	x		400.00	-252.00	38.85	37.75
Hand Trench 3 (3113)	400N/-300E	x		404.50	-255.50	38.85	38.35
Trench (2116)	400N/-400E	x		488.80	-311.00	39.91	38.46
1 by 1 m test (354)	500N/-000E	x		598.00	-074.00	39.50	39.30
1 by 1 m test (783)	500N/-200E	x		599.00	-183.00	39.22	39.02
10 by 10 m unit (4504)	500N/-200E	x		540.00	-190.00	40.25	39.35
Test Cut/Ditch (4775)	500N/-300E	x		567.00	-295.00	39.14	38.34
Structure 1 (4776)	500N/-300E		x	571.00	-275.00	39.31	39.12
Animal Bone Concentration (5495)	500N/-300E		x	568.86	-274.64	39.24	39.19
Pottery Concentration (5496)	500N/-300E		x	574.02	-272.68	39.30	39.30
Burned Sand Concentration (5497)	500N/-300E		x	569.70	-277.16	39.23	39.16
Pit 12 (5633)	500N/-300E		x	574.50	-272.30	39.29	39.05
Pit 13 (5638)	500N/-300E		x	569.67	-276.25	39.23	39.12
Pit 14 (5639)	500N/-300E		x	570.20	-276.40	39.21	38.80
Pit 15 (5643)	500N/-300E		x	573.65	-278.50	39.22	38.87
Pit 16 (5660)	500N/-300E		x	571.92	-273.51	39.17	39.13
Structure 2 (6422)	500N/-300E		x	578.00	-249.00	39.47	39.33
Charred Nut Concentration (6432)	500N/-300E		x	577.38	-248.06	39.65	39.57
Burned Sand Concentration (8643)	500N/-300E		x	578.20	-249.30	39.40	39.35
Daub and Ash Concentration (6485)	500N/-300E		x	581.70	-258.20	39.61	39.57

TABLE 1

Provenience Index for Protohistoric Features.

Feature (USN)	Hectare	Southwest Corner	Center Point	North	East	Beginning Elevation (mAMSL)	Ending Elevation (mAMSL)
AC-3 (2739)	300N/-200E		x	362.90	-185.34	38.75	38.66
Pit 23 (2887)	300N/-200E		x	355.06	-189.52	38.96	38.61
1 by 1 m test (3121)	300N/-300E	x		390.00	-266.00	39.23	38.93
Hand Trench 4 (3133)	300N/-300E	x		396.50	-245.70	38.64	38.14
1 by 1 m test (419)	400N/-100E	x		416.00	-066.00	39.34	39.14
Structure 1 (1831)	400N/-200E		x	420.00	-171.00	38.84	38.69
Urn Burial 1 (1850)	400N/-200E		x	419.60	-173.06	38.52	38.36
Urn Burial 2 (2303)	400N/-200E		x	419.36	-170.15	38.65	38.34
Daub Cap (2269)	400N/-200E		x	419.38	-170.00	38.79	38.77
Skull Cap Burial (6310)	400N/-300E		x	470.38	-201.08	38.91	38.72
Structure 5 (3452)	400N/-300E		x	449.90	-236.10	38.68	38.56
Pit 40 (3507)	400N/-300E		x	445.58	-233.90	38.43	37.82
Pit 69 (4601)	400N/-300E		x	431.34	-219.18	38.55	38.25
Pit 70 (4664)	400N/-300E		x	450.80	-201.33	38.77	38.63
Pit 99 (5526)	400N/-300E		x	470.80	-239.10	38.81	38.66
Pit 100 (5527)	400N/-300E		x	470.80	-239.50	38.81	38.66
Pit 108 (5717)	400N/-300E		x	464.00	-252.10	38.82	38.71
10 by 10 m unit (2568)	400N/-300E	x		475.00	-242.00	39.13	38.83
10 by 10 m unit (2564)	400N/-300E	x		490.00	-266.00	39.13	38.82
Hearth 3 (3506)	400N/-300E		x	448.80	-234.80	38.60	38.43
Pit 40 (3507)	400N/-300E		x	445.58	-233.90	38.43	37.82
Pit 44 (3966)	400N/-300E		x	445.30	-232.40	38.32	38.14
Pit 46 (4195)	400N/-300E		x	446.94	-235.84	38.33	38.11
Pit 78 (4827)	400N/-300E		x	452.80	-230.90	38.38	38.28

The Summerville IV community in the Lubbub Creek Archaeological Locality continued the same sedentary, agricultural lifestyle of its predecessors. The only major changes in community organization were [illegible]ensity of features, the changes in mortuary practices, and the construction of a ditch around the community for defense. There were more features -- structures and pits -- per unit area during the Summerville IV period than during any of the preceding periods. Moreover, because the area of settlement had been reduced to the four hectares encircled by the ditch, the absolute density of features increased. What did remain constant was the focus of the community on the mound; it was the center point of the community.

The body of this chapter will begin with a discussion of the ditch that enclosed the community. This section will be followed by a summary of each hectare in which protohistoric features occurred. Each of the major features will be discussed in detail, and these descriptions will include general summaries of their contents. The extent of the Summerville IV community is shown in Figure 1, and the major features and units that have been assigned to this period are listed in Table 1. Of necessity, this table is more detailed than the summary tables used in previous chapters. The density of features in some hectares makes the listing of their coordinates in the grid system necessary to prevent confusion.

The vestiges of a tiny historic Native American component, defined by the presence of Chickachae Combed ceramics, were also isolated near the slope of the mound. This historic component has been included in this chapter and will be treated more fully in the summary section below.

THE DITCH (USN 2265 AND 6684)

The 1942 and later aerial photographs of the Lubbub Creek Cutoff vicinity show a very light, "U"-shaped line centered on and approximately 100 m distant from the mound. The earliest of these photographs (ASCS HS-3C-48, 3-22-42) is reproduced here as Figure 2, and the line in question is marked at several points along its course. We believe that this line represents the remnants of a ditch which encircled and fortified the protohistoric, Summerville IV community. Portions of this ditch were traced archaeologically, and the distribution of test trenches in relation to the reconstructed path of the ditch is shown in Figure 3.

These test trenches demonstrated that the ditch varied in width from 3 to 6 m and was approximately 1.4 m deep. The ceramics recovered from arbitrary and natural levels in these test trenches indicated that the ditch was dug initially in the protohistoric period, partially filled during that period, and then almost completely obliterated by erosion over the next 300 years. Moreover, at several points along its length, the ditch was capped by fill from the same land-forming activities that destroyed the Summerville Mound in the 1950s. In sequence, protohistoric ceramics were found in the bottommost levels of the ditch, but earlier ceramic types and varieties were mixed in with the fill recovered from levels above. This sequence strongly suggests that the ditch was constructed late in the occupation of the Lubbub Creek Archaeological Locality and was filled gradually with nearby debris and with deposits from earlier Mississippian components along its course.

CHAPTER 10. THE SUMMERVILLE IV COMMUNITY

Caroline H. Albright

> [The] Protohistoric is generally construed as encompassing the period between initial European exploratory contact and the establishment of effective European trade and colonization which in the following Historic period leads to the acculturation of the aboriginal cultures. ...In central Alabama, the Protohistoric would subsume the time between A.D. 1540 with the passage of the deSoto expedition through the area and approximately A.D. 1715 with the establishment of Fort Toulouse at the forks of the Coosa and Tallapoosa by the French. This represents approximately 175 years in which direct aboriginal-European contact and impact were almost non-existent and in which very limited numbers of European trade materials moved into the area primarily through the process of internal aboriginal trade (Sheldon 1974:33).

The Summerville IV community in the Lubbub Creek Archaeological Locality certainly overlapped, in whole or in part, the protohistoric period as defined by Sheldon. The ceramics diagnostic of this period, the types Alabama River Applique and Alabama River Incised (Sheldon 1974:201-226), and the distinctive modes of burial, interment in large ceramic vessels and mass-interment of secondary burials, are both characteristic of the Summerville IV community. This community, however, does exhibit differences when compared to protohistoric communities in the Alabama and Black Warrior Valleys, a geographical contrast anticipated by Sheldon (1974) in his synthesis of the protohistoric period in Alabama.

As Sheldon emphasized, the protohistoric period in Alabama has been synonymous with the term "Burial Urn Culture." The boundaries of this "culture" have expanded from year to year as new sites with burial urns have been discovered. The maximum extent of this "culture" in Alabama runs from the Fall Line and the forks of the Coosa and Talapoosa rivers in the north and northeast, to the Warrior Valley near Tuscaloosa on the northwest, and to somewhere south of the junction of the Alabama and Tombigbee rivers on the southwest. Sheldon specifically excluded the central Tombigbee River Valley from the distribution of the "Burial Urn Culture." Recent work by C.B. Curren, Jr. of the University of Alabama has added protohistoric sites with human burials farther north in the Black Warrior Valley, and the excavations in the Lubbub Creek Archaeological Locality and at an unnamed location near Columbus, Mississippi, have extended the border up the Tombigbee River Valley into northeast Mississippi.

II and III periods than were assigned to the earlier period. Moreover, these features are packed into a smaller area than those of their predecessor, the Summerville I period. This trend to greater "social density," however, reaches its zenith in the Protohistoric, Summerville IV period, when an equal number of features were built in a shorter span of time in a smaller area that was enclosed by a ditch fortification.

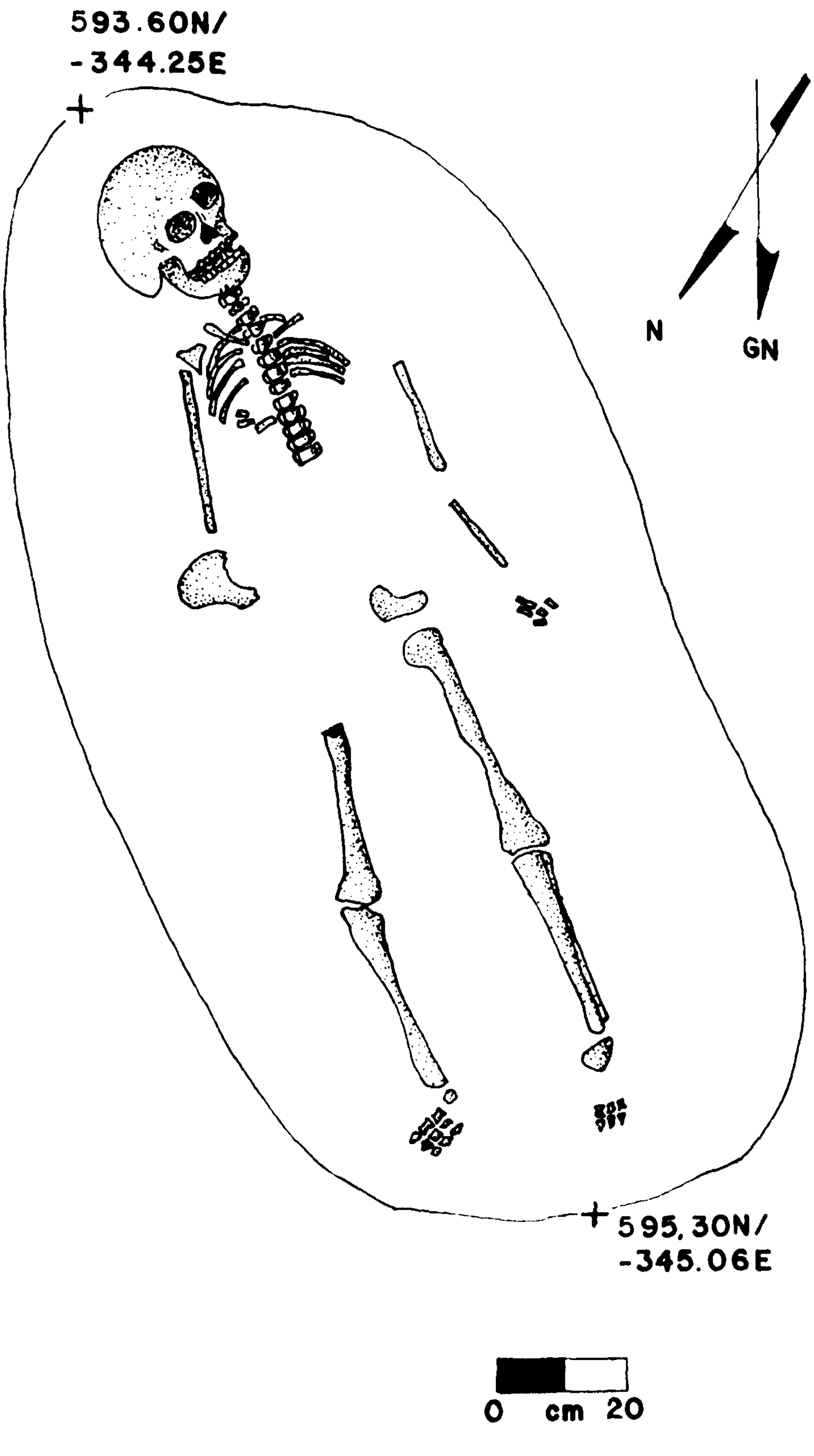


Figure 16. Burial 3 (USN 4132), Hectare 500N/-400E.

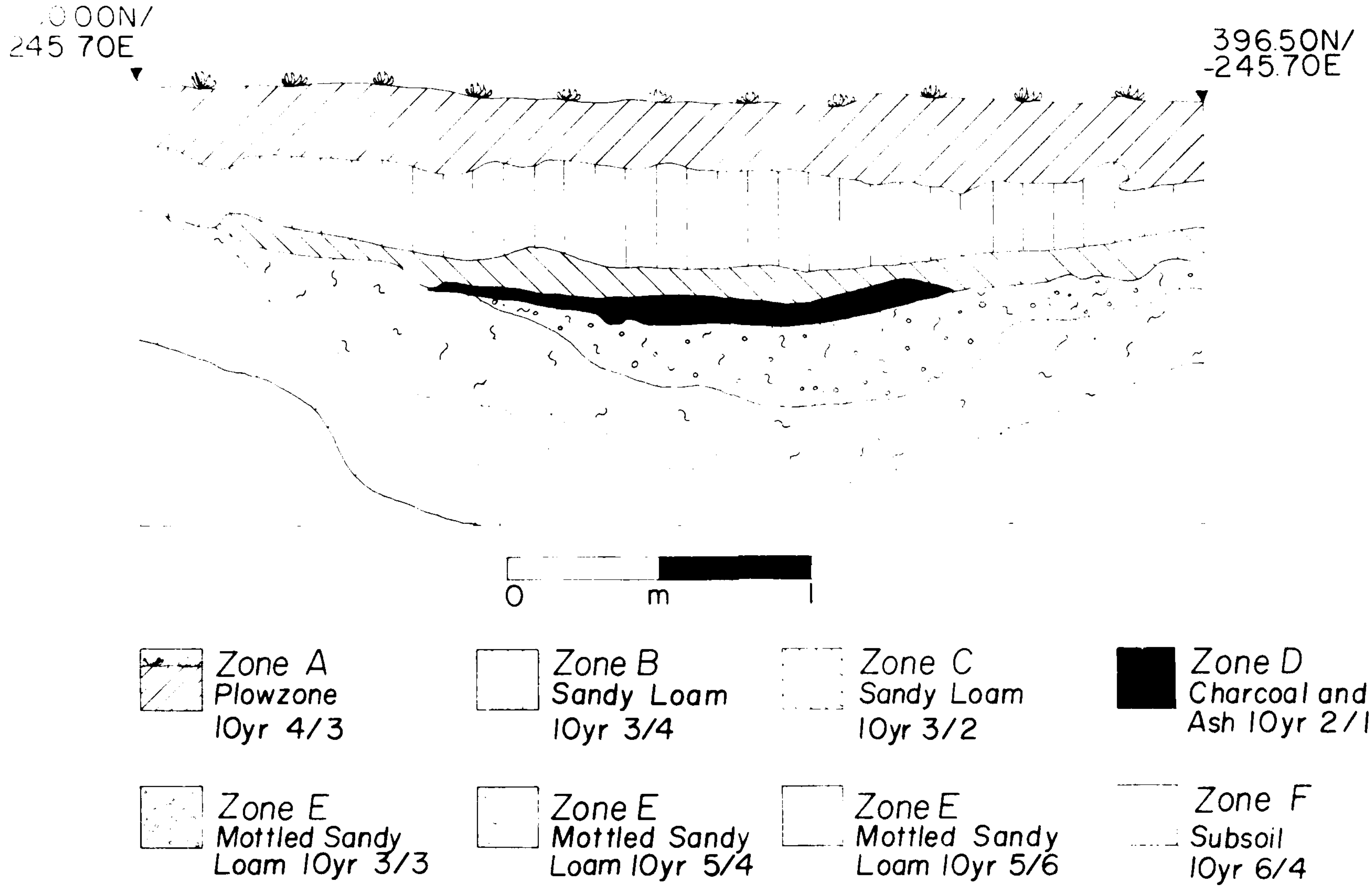


Figure 6. Profile of east wall of Trench 4 (USN 3133) showing the ditch.

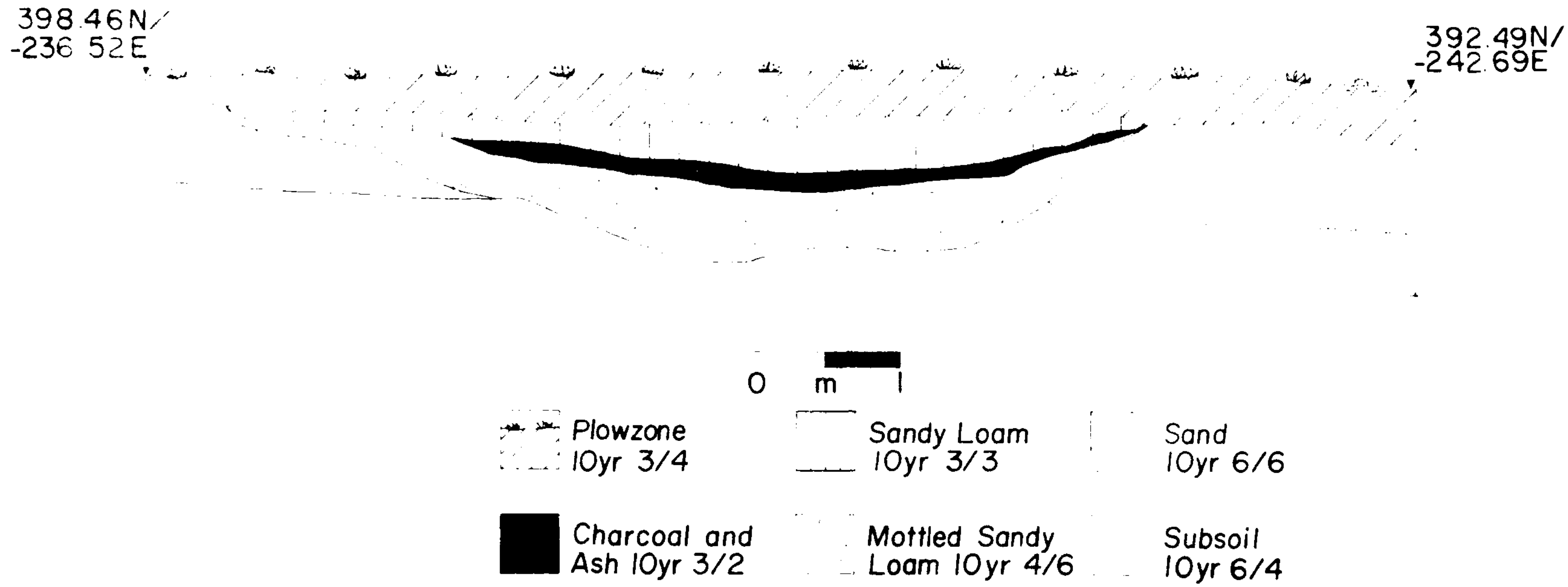


Figure 7. East wall of Backhoe Trench 4 showing the ditch.

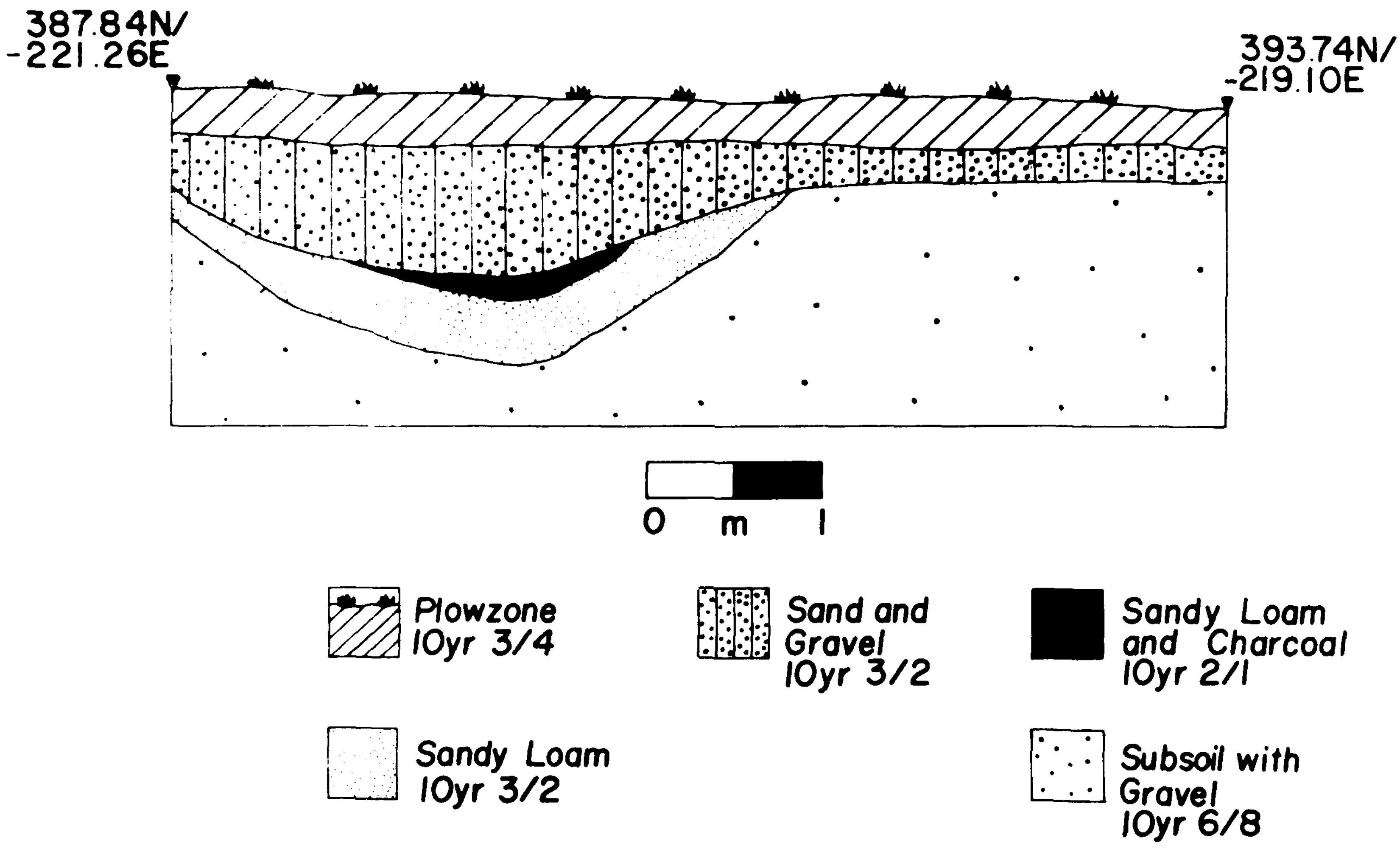


Figure 8. Profile of the west wall of Backhoe Trench 7 showing the ditch.

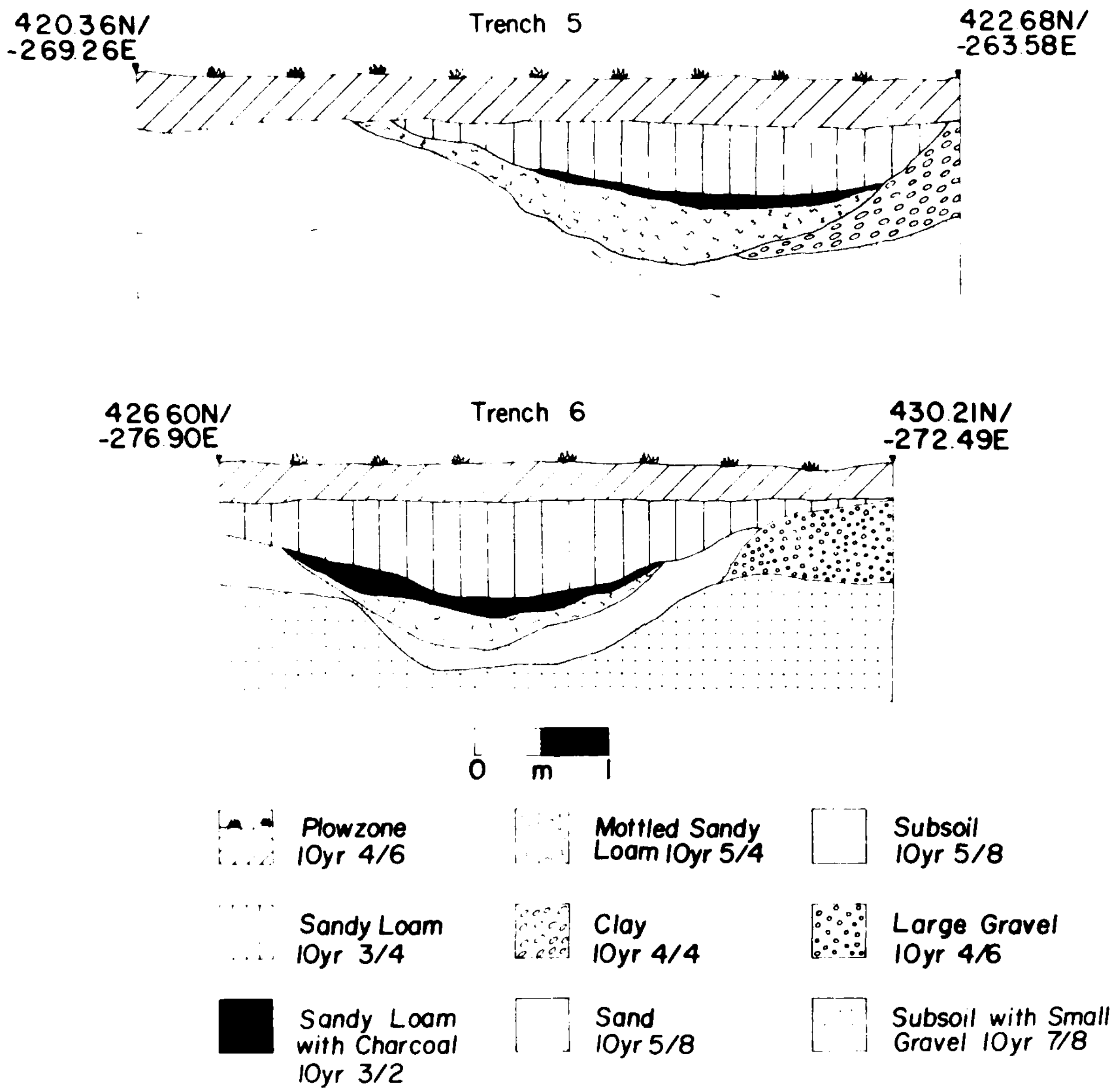


Figure 9. Top: Profile of west wall of Backhoe Trench 5 showing the ditch. Bottom: Profile of west wall of Backhoe Trench 6 showing the the ditch.

discussed in the following sections.

Hectare 400N/-400E

The ditch was found by accident in Hectare 400N/-400E. It appeared in the wall of a trench excavated to locate the eastern extent of a midden in the northeast corner of this hectare. The ditch showed up in the exact center of the long, west-to-east trench, 488.80N/-311.00E, which crossed into Hectare 400N/-300E (Figure 10).

This ditch segment was oriented generally north-to-south and was approximately 4.5 m wide and 0.7 m deep. The profile, illustrated in Figure 11, showed a 30 cm thick plowzone which topped a 20 cm thick, yellowish brown zone of sandy loam mixed with pebbles. Below this pebble-filled zone lay a 20 cm thick midden zone of sandy loam. The subsoil was yellowish brown sandy loam.

A sample (USN 2116) from the trench as a whole was waterscreened. Analysis of the fill indicated that only plain shell tempered ceramics were present. No lithics were recovered in this segment of the ditch.

In summary, the stratigraphy of the ditch in Hectare 400N/-400E differed from most of the ditch segments found elsewhere on the site. First of all, the ditch here was shallow and no charred zone was present. Structure 4 (USN 2317), a Summerville II-III period feature, was located west of the ditch; Structure 7 (USN 8168), which is late Summerville II-III in age, was located to the immediate east of the ditch. This structure was perhaps bounded by the ditch sometime during its occupation.

Hectare 500N/-300E

Moving northward, the ditch appeared in the western edge of a 10 by 10 m sample unit, 560N/-295E (USN 4719). The ditch in planview appeared as a grayish white stain (Figure 12). A test-cut, 567N/-295E (USN 4775), approximately 1 by 1.2 m, was shoveled out by hand in order to record the profile. The south wall profile of this test-cut revealed the edge of the ditch.

In this part of the site, the ditch was made up of four basic zones: a 30 cm thick plowzone lay over an odd-colored (10YR7/1, grayish white) zone comprised of an unusual alluvial silt; below this very light zone were three zones of relatively equal thicknesses (20 cm) which were composed of sandy loam that graded from light to dark shades of dark yellowish brown; at its base the sterile subsoil was brownish yellow sandy loam.

Since time did not permit further exploration in this area of the ditch, the actual width and depth of this particular section is not known. The depth was traced as deep as one meter below surface.

Hectare 600N/-300E

In Hectare 600N/-300E, the ditch (USN 6684) was observed first during the exploratory trenching of a nearby midden (USN 6644). Like the other segments of the ditch recorded throughout the site, the northern portion of the ditch

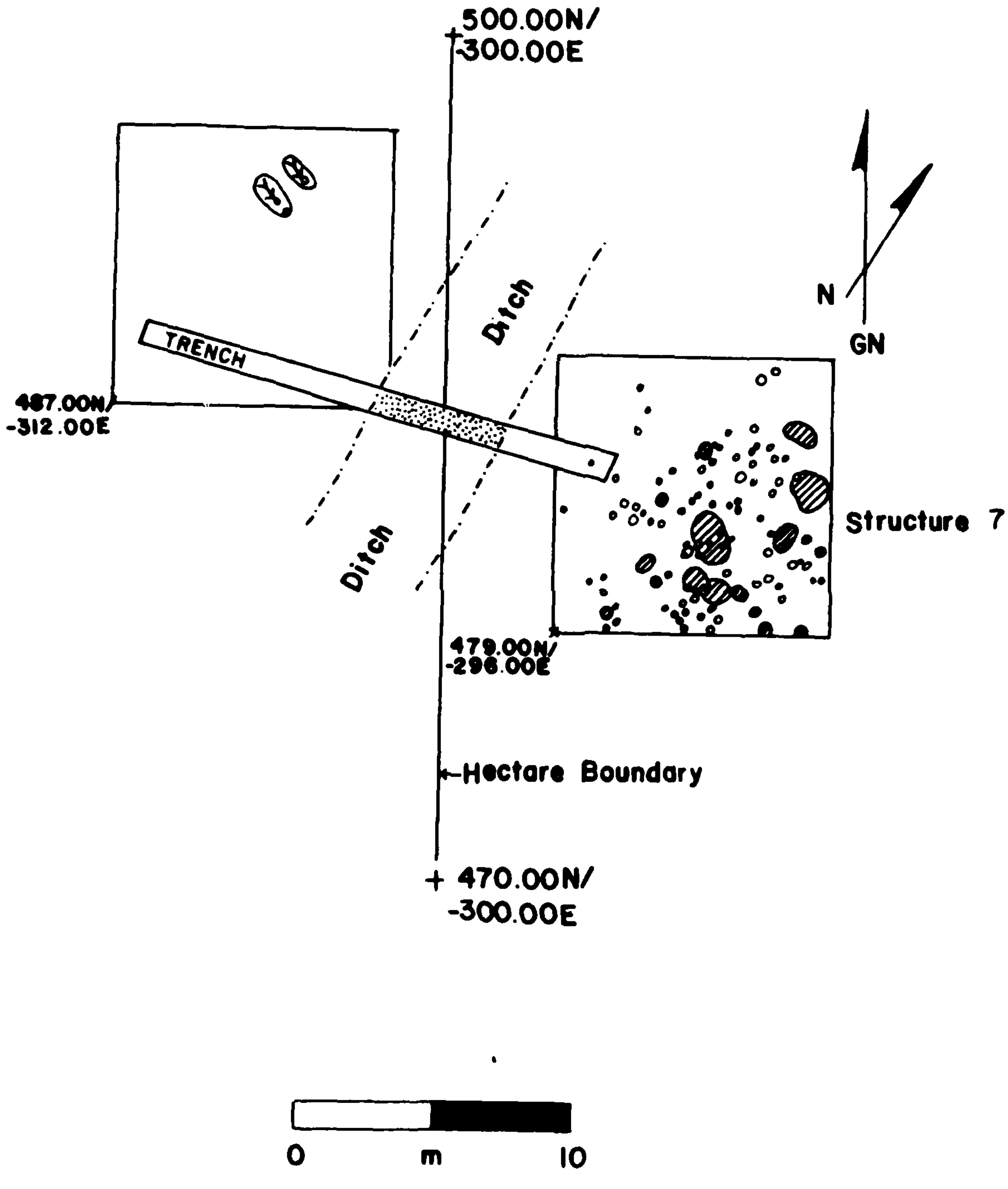


Figure 10. Planview of the ditch at the boundary between Hectares 400N/-400E and 400N/-300E.

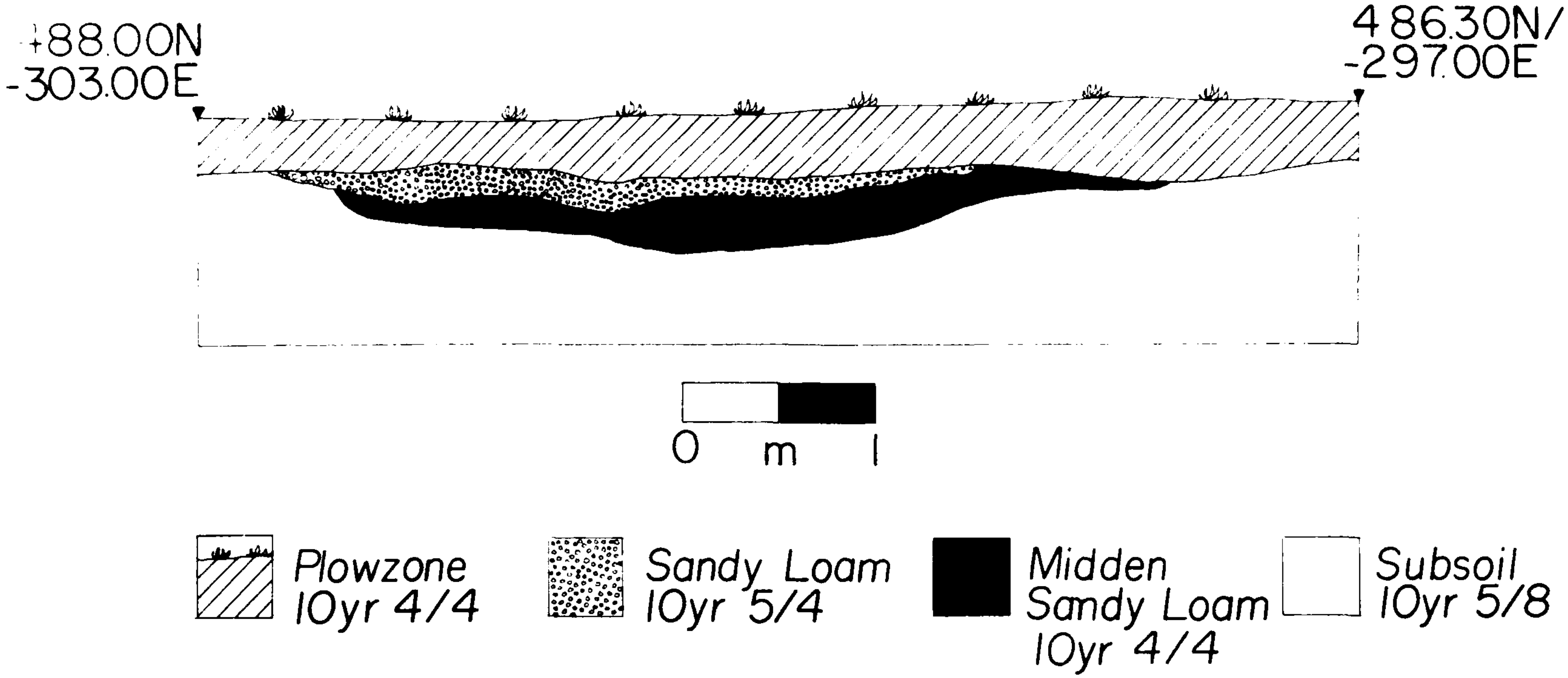


Figure 11. West-to-east profile of portion of trench crossing Hectare 400N/-400E into Hectare 400N/-300E showing ditch.

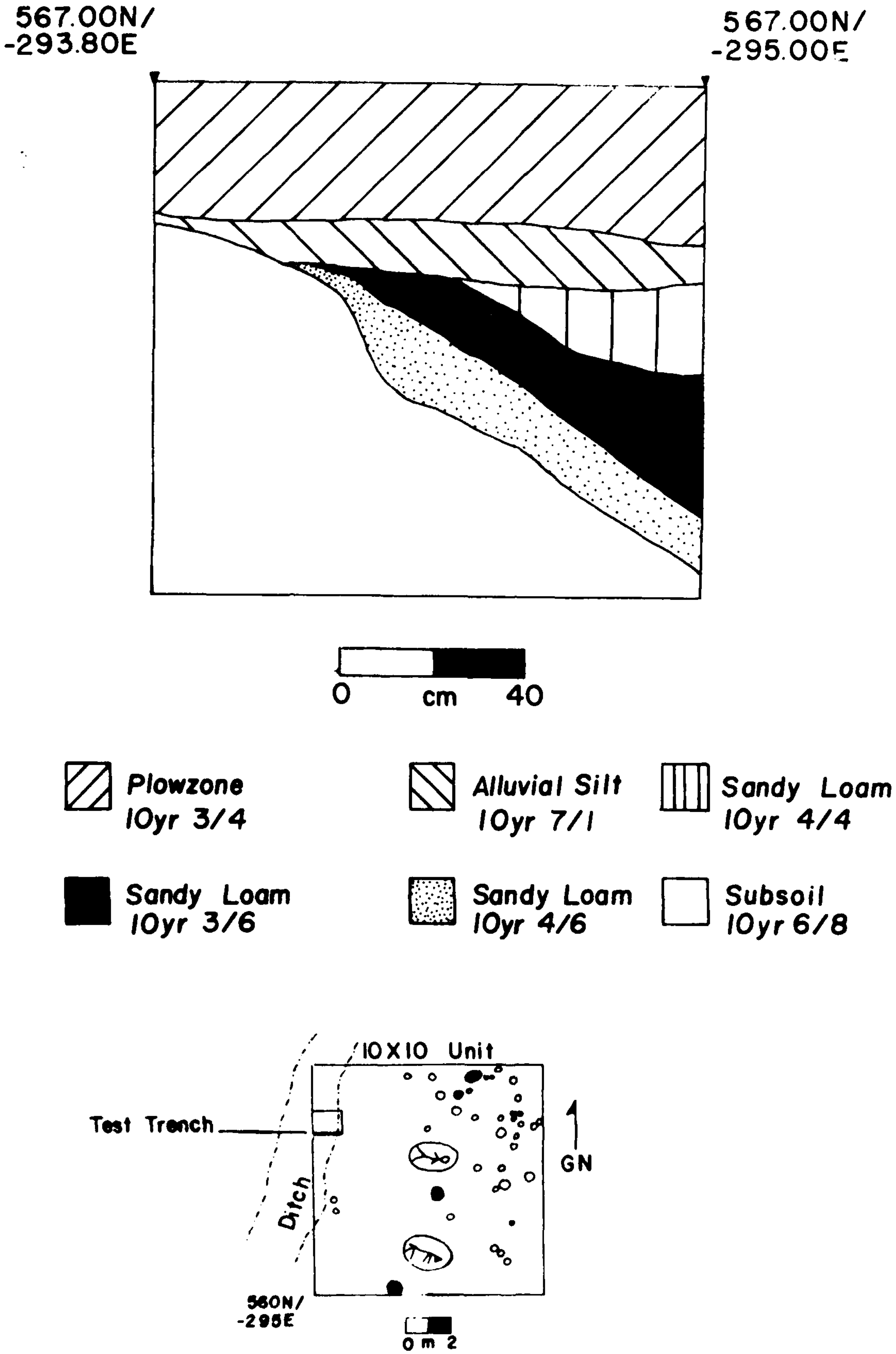


Figure 12. South wall (east-to-west) profile of test trench in Unit 560N/-295E (see inset) which shows the ditch.

contained protohistoric ceramic types that lay on the bottom levels in direct contact with the subsoil. Figure 13 shows the general location of this segment of the ditch in relation to the sample units.

The first trench, the one which revealed the ditch, was placed along the eastern edge of Unit 616N/-257E (USN 6606). Based on the ditch's orientation in the first trench, a second trench was dug which ran west-to-east along the northern edge of Unit 605N/-256E (USN 6605). The third and final trench was oriented northwest to southeast and, as it turned out, crossed the path of the ditch at a right angle. Therefore, by comparing the three test trench profiles, the course of the ditch in Hectare 600N/-300E was established.

The ditch's course ran in a northeast to southwest direction and was approximately six meters wide and more than 1.2 meters deep. It cut through the Late Woodland and Summerville I shell midden that was in the immediate vicinity (see Chapter 8, Volume I). Some of this midden probably washed into the low area of the ditch in prehistoric times, and additional earlier material probably was bulldozed into the ditch when the mound was flattened in the 1950s. The thickest part of the midden, which contained an abundance of mussel shell, did not seem to overlie the ditch; therefore, the midden is not thought to have been directly associated with it, but that the ditch cut through and removed a portion of the earlier midden. Although large amounts of grog tempered and shell tempered ceramics were recovered from the ditch fill, this mixture is believed to have been the result of later deposition from the earlier midden deposit.

The ditch's depositional layers in this northern area of the site were similar to those found to the south. The stratigraphy recorded in the second trench (Figure 14) showed a 10 cm thick dark brown charred zone filled with charcoal and ash lying beneath what we believe to have been a recent alluvial deposit that washed the surrounding midden into the depressions. A 30 cm thick plowzone truncated this alluvial deposit. Beneath the charred zone, a layer of yellowish brown sandy loam graded into a lighter mottled sandy loam, and both strata were filled with a mixture of grog tempered and shell tempered ceramics. The subsoil was a light yellowish brown sandy loam. All zones appeared to be darker and more concentrated in the very center of this section of the ditch. Based on the stratigraphy of this trench, it is assumed that the upper two layers (Levels A and B) were deposited subsequent to the abandonment of the site, but that the lower three layers (Levels C, D, and E) were deposited by some combination of cultural and natural events.

Since tighter control was needed for actual artifact recovery, a 2 by 1 m test unit, 615N/-250E (USN 6688), was excavated into the center of the ditch. By using the natural zones already established from the second trench profile as a guide (summarized above), and by employing the "isolated block" method, the 2 by 1 m test unit was excavated in five natural zones (Levels A-E). Table 2 shows the distribution of temporally sensitive ceramic types from this unit and compares it with the cluster of hand-dug trenches tested in Hectares 400N/-300E and 300N/-300E.

The mixing of grog tempered ceramics with the shell tempered wares in this 2 by 1 m unit and the abundance of earlier Woodland and Summerville I-II ceramics were probably the result of deposition from the surrounding midden (USN 6644). However, the recovery of Carthage Incised _var. Carthage_ sherds in

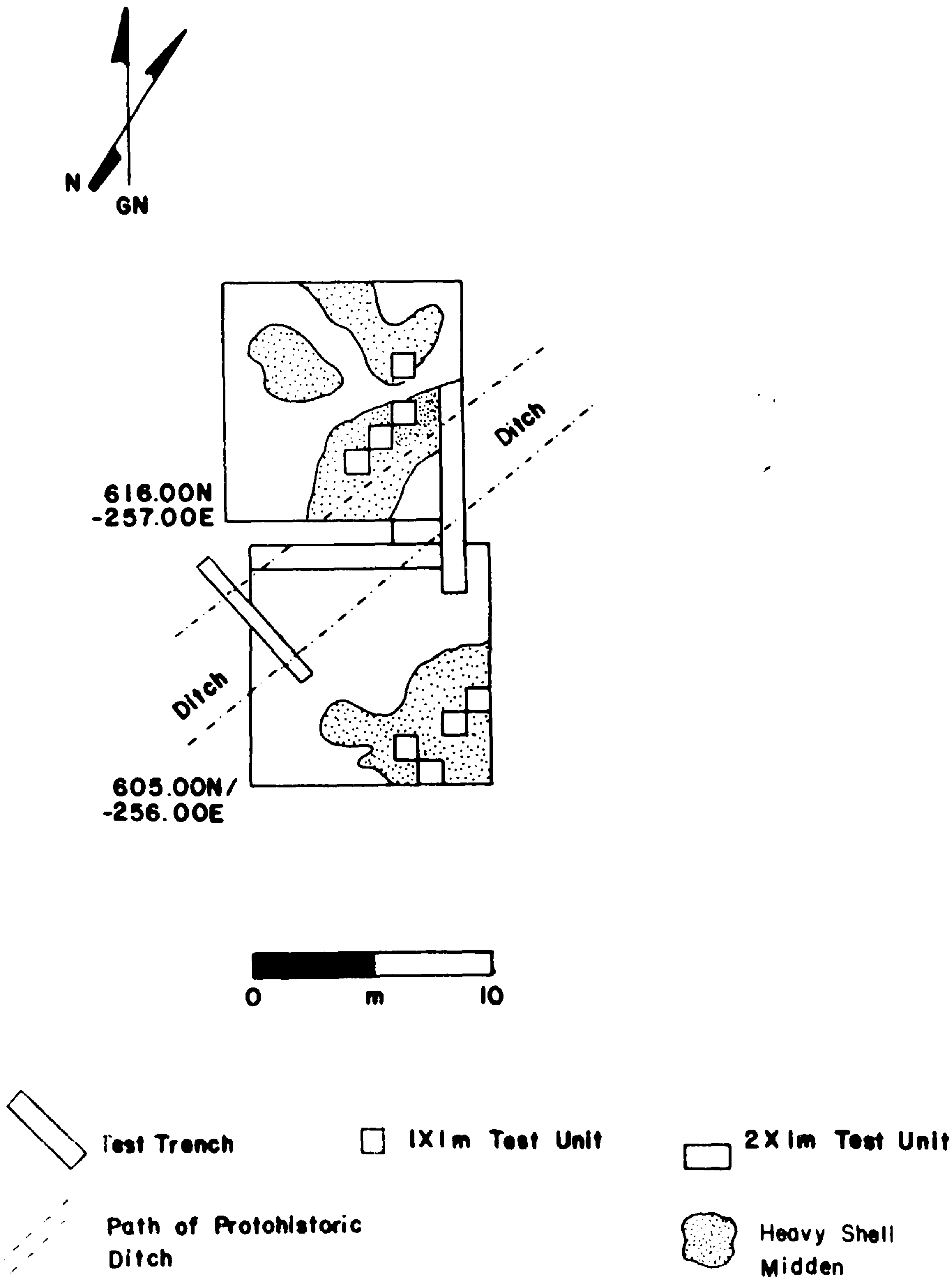


Figure 13. Planview of ditch in Hectare 600N/-300E based on orientation in test trench profiles.

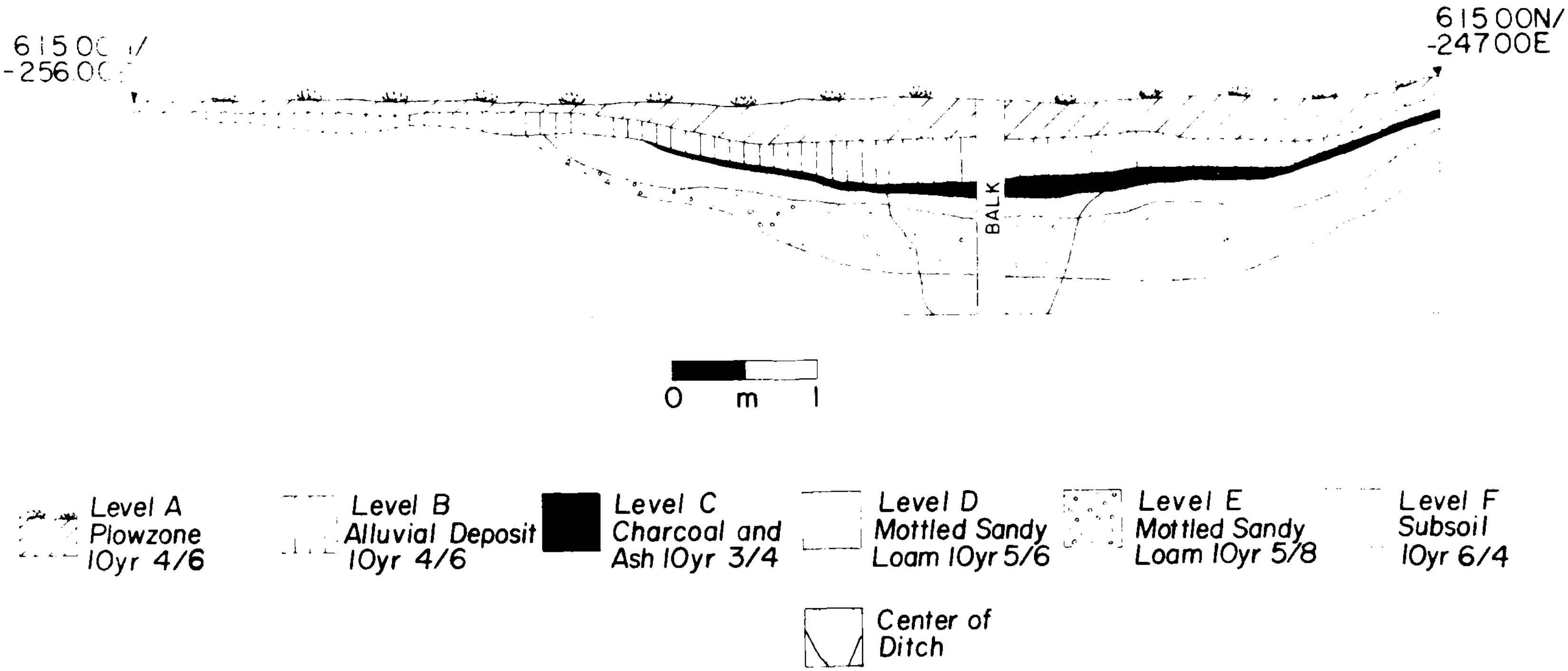


Figure 14. Profile of the north wall of Unit 605N/-256E (USN 6605) showing the ditch.

TABLE 2

Diagnostic Ceramics from Hand-Dug Trenches Across the Ditch

Cm Below Surface	HA 400N/-300E Trench 1 (USN 2666)		HA 400N/-300E Trench 2 (USN 3073)		HA 400N/-300E Trench 3 (USN 3133)		HA 300N/-300E Trench 4 (USN 3133)		HA 600N/-300E 2 by 1 m Test (USN 6688)	
	Level (USN)	Contents'	Level (USN)	Contents'	Level (USN)	Contents'	Level (USN)	Contents'	Level (USN)	Contents
0 to 10										
10 to 20			L-1 (3074)				L-1 (3134)		L-A (6689)	
20 to 30	L-1 (2667)		L-2 (3075)	CARTHAGE AKRON	L-1 (3114)		L-2 (3135)			
30 to 40	L-2 (2668)	ALA APPLIQUE	L-3 (3076)		L-2 (3115)	CARROLLTON	L-3 (3136)	ALA APPLIQUE PARKIN HAVANA		
40 to 50	L-3 (2669)		L-4 (3077)		L-3 (3116)	CARTHAGE	L-4 (3138)	ALA APPLIQUE MOON LAKE	L-B (6690)	AKRON
50 to 60	L-4 ([illegible])	CARTHAGE AKRON HAVANA ****	L-5 (3078)		L-4 (3117)		L-5 (3141)	PARKIN SNOWS BEND		
60 to 70	L-5 ([illegible])	HEMPHILL	L-6 (3129)	HAVANA ****	L-5 (3118)	****	L-6 (3168)		L-C (6691)	****

TABLE 2

(continued)

cm below Surface	HA 400N/-300E Trench 1 (USN 2666)		HA 400N/-300E Trench 2 (USN 3073)		HA 400N/-300E Trench 3 (USN 3133)		HA 300N/-300E Trench 4 (USN 3133)		HA 600N/-300E 2 x 1 m Test (USN 6688)	
	Level (USN)	Contents[a]	Level (USN)	Contents[a]	Level (USN)	Contents	Level (USN)	Contents[a]	Level (USN)	Contents[a]
[illegible] to 80			L-7 (3131)	ALA. INCISED CARTHAGE			L-7 (3170)	SNOWS BEND HEMPHILL ****	L-D (6692)	MOON LAKE
[illegible]			L-8 (3139)				L-8 (3246)			
[illegible]			L-9 (3140)				L-9 (3247)			
[illegible] to 110			L-10 (3162)	ALA. APPLIQUE					L-E (6693)	CARTHAGE MOUNDVILLE CARROLLTON
[illegible] to 120			L-11 (3167)							
120 to 130			L-12 (3169)							

ALA. APPLIQUE, Alabama River Applique var. Alabama River
ALA. INCISED, Alabama River Incised var. Unspecified
CARTHAGE, Carthage Incised var. Carthage
MOON LAKE, Carthage Incised var. Moon Lake
AKRON, Mound Place Incised var. Akron
HAVANA, Mound Place Incised var. Havana
CARROLLTON, Moundville Incised var. Carrollton
MOUNDVILLE, Moundville Incised var. Moundville
SNOWS BEND, Moundville Incised var. Snows Bend
HEMPHILL, Moundville Engraved var. Hemphill
PARKIN, Parkin Punctate var. Unspecified
****, Level falls within charred zone

the lowest stratum argues for the ditch's placement in the latter part of the site's history.

Stratigraphic Summary of Ditch

A model has been constructed with data from all sections of the ditch to illustrate its general stratigraphy (Table 3). The ditch fill consisted of four depositionally significant zones (B,C,D,E) which were bounded by one plow-disturbed zone and one undisturbed parent zone (A,F).

In reconstruction, Zone E with its abundance of material found *in situ* probably represents the floor of the original ditch prior to some episode of intense burning (Zone D). The occurrence of late sherds below this charred zone suggests that the ditch was constructed and allowed to fill in partially during protohistoric times, and that during this time period the burning took place. After the episode which created the charred zone, Zone D, the ditch seemed to have been the receptacle for refuse, and eventually filled in (Zones B and C). Table 2 further illustrates the depositional stages of the ditch by summarizing the ceramic contents recovered from five trenches. In most of the trenches in the table, the ceramics date much later in time starting in Zones D or E. Thus, this configuration of ceramics, with the latest types being generally at the bottom or "floor" of the ditch, argues for our late temporal assignment of Summerville IV being given to the ditch as a whole.

The Ditch as a Fortification

Like the two palisade systems (see Chapter 6, Volume I), the ditch probably served to protect the population which lived in the Lubbub Creek Archaeological Locality. In Lafferty's four-fold division of defensive works -- (1) natural and artificial obstacles, (2) cover and concealment, (3) bastions or some other method of flanking the enemy, (4) reinforced gateways (Lafferty 1973:120) -- the ditch which encircled the protohistoric community at Lubbub best fits into the "artificial obstacle" category. His definition of "obstacle" is as follows:

> An obstacle is anything which slows the advance of the enemy by forcing him to go around or through difficult terrain, such as wire, ditches, or anything else which impedes the forward progress of the enemy. Obstacles may be either *natural* (e.g. rivers, oceans, hills, etc.) or *artificial* (e.g. wire, abatis, ditches, moats, or walls) (1973:191).

According to Lafferty, "the use of artificial obstacles was fairly well known in the Pre-Columbian Southeast" (*ibid*:126); the most common were walls, but "exterior moats and trenches could have clearly served as obstacles" (*ibid*:131) as well. He also added that obstacles caused the enemy to be exposed longer to fire, thus rendering them less effective from exhaustion and other factors by the time they reached the assailed forces; all in all, obstacles tended to blunt the forward attack of the enemy (*ibid*:11-12). Thus building upon Lafferty's premises, it is assumed that the protohistoric inhabitants at the Lubbub Creek Archaeological Locality constructed such an obstacle with similar principles of defense in mind.

Lafferty compared 211 fortified sites in his study, the majority of which were examples drawn from the Southeast. Of these 211 sites, he found that

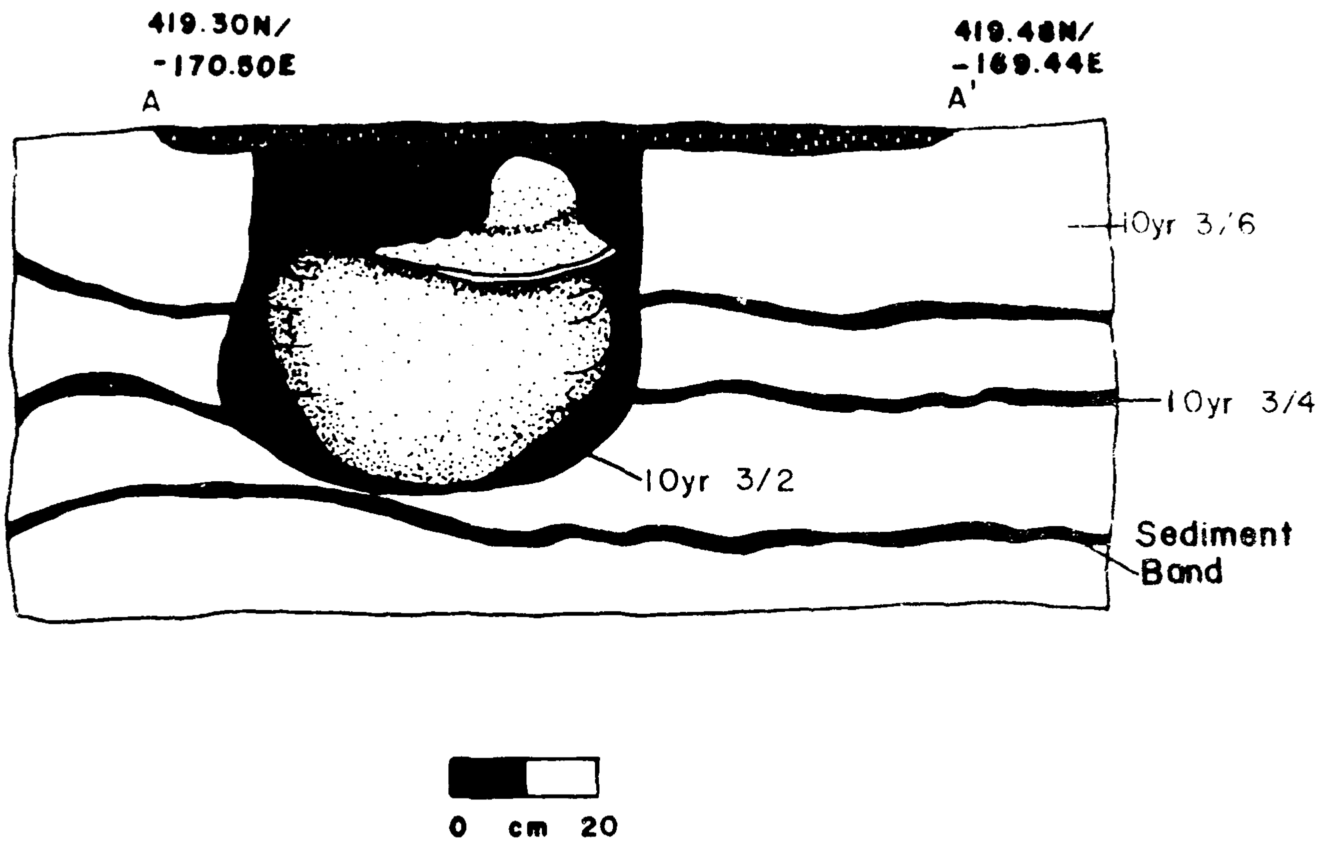


Figure 20. Reconstructed view of Daub Cap (USN 2269) packed over Urn Burial 2 (USN 2303).

undoubtedly caused some cracking, but at the time it was not known just how stable the urn was for lifting without use of the pedestal for added support. Four people supported the urn as the metal was driven beneath it. As the pedestal began to fall away, everyone quickly lifted the entire urn into a wheelbarrow which had been filled with dirt for the urn to sit upon. The wheelbarrow was then placed in the back of a pickup truck and hauled to the laboratory. At [illegible], the urn was in sturdy enough condition to [illegible] the [illegible] procedure.

[illegible] of the skeletal remains in the laboratory showed that four subadults had been placed within the urn for interment. The sandy urn fill (USN 2287) contained neither ceramics nor lithics, but did contain 101 g of daub. Most of this daub was found in the upper levels of the urn and probably fell in from the daub cap above it.

Analysis of the daub cap (USN 2269) showed recovery of one secondary decortication flake, 5 g of botanical material, and 743 g of daub. The radiometric date secured from the daub cap was calculated at 690 ±110 radiocarbon years (A.D. 1260, Beta 1092). Since this radiocarbon date for the daub cap predated the urn by at least a hundred years, it is believed that the pit for the urn must have been dug through the earlier midden which contained high contents of daub. The daub, in turn, was then tightly packed back over the urn during interment. From this, we then have reason to believe the early C-14 date is associated with the materials in the underlying midden. Such a daub cap is not unusual: "Often the urn depostions were covered with twigs, plastered with mud, and finally covered with more twigs which were then burned, producing a hard clay covering for the entire deposit" (Hill 1979:3-4).

The burial pit (Pit 12, USN 2284) for the urn contained one rim of Alabama River Applique which is believed to have fallen in from the surrounding protohistoric structure. Three Mississippi Plain <u>var. Warrior</u> body sherds and a few small shell tempered sherds were also recovered. No lithics were in the pit. However, there was a good deal of daub, 137 g, which probably resulted from digging through the earlier midden and then refilling the pit with the same soil.

In summary, Urn Burial 2 was located in the interior of a protohistoric structure and contained the remains of four individuals. The thin daub layer which covered the area of excavation probably belonged to an earlier midden. The daub cap also originated at approximately the same elevation as the early midden. The subsoil around the urn was a dark yellowish brown (10YR3/6) sandy loam. Dark alluvial sediment bands (10YR3/4) ran ribbon-like throughout the subsoil and the burial pit cut through the bands. Compare Figures 18 and 20 for the stratigraphic relationship of the daub cap with the urn and with Figure 16 for the general stratigraphy of the area. (See Hectare 500N/-300E in this chapter for discussion of the third urn burial, USN 7404.)

<u>HECTARE 400N/-300E</u>

Eight of the [illegible] occurrences of protohistoric material in Hectare 400N/-300E were [illegible] in the northeastern quadrant (Figure 21). These ranged from an exotic "skull cap cache," to an overlapping structure complex, to five scattered pits, to a sample unit which contained Chickachae Combed

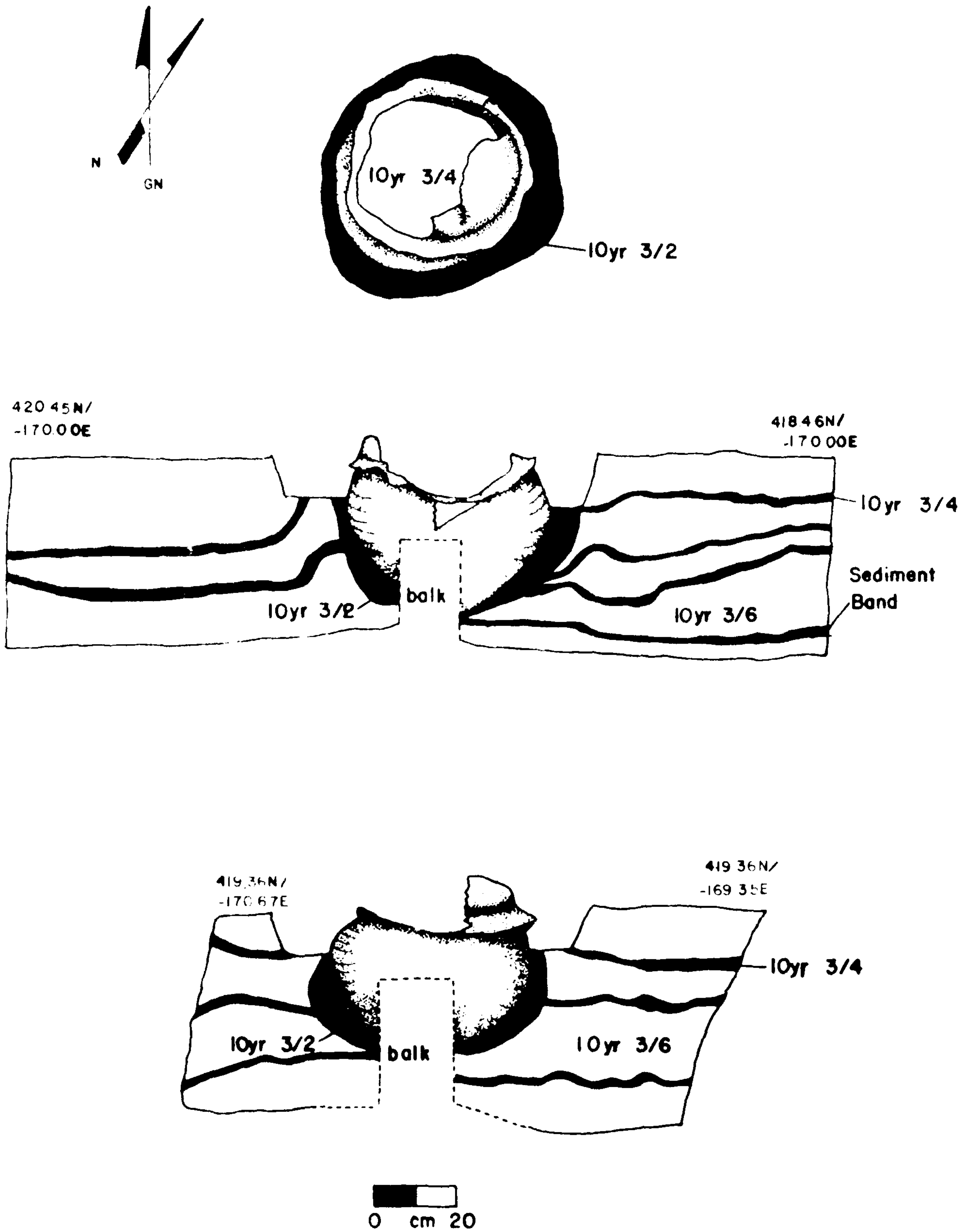


Figure 39. Top: Planview of Urn Burial 2 (USN 2303); Center: North-to-south profile view (facing east); Bottom: west-to-east profile view (facing north)

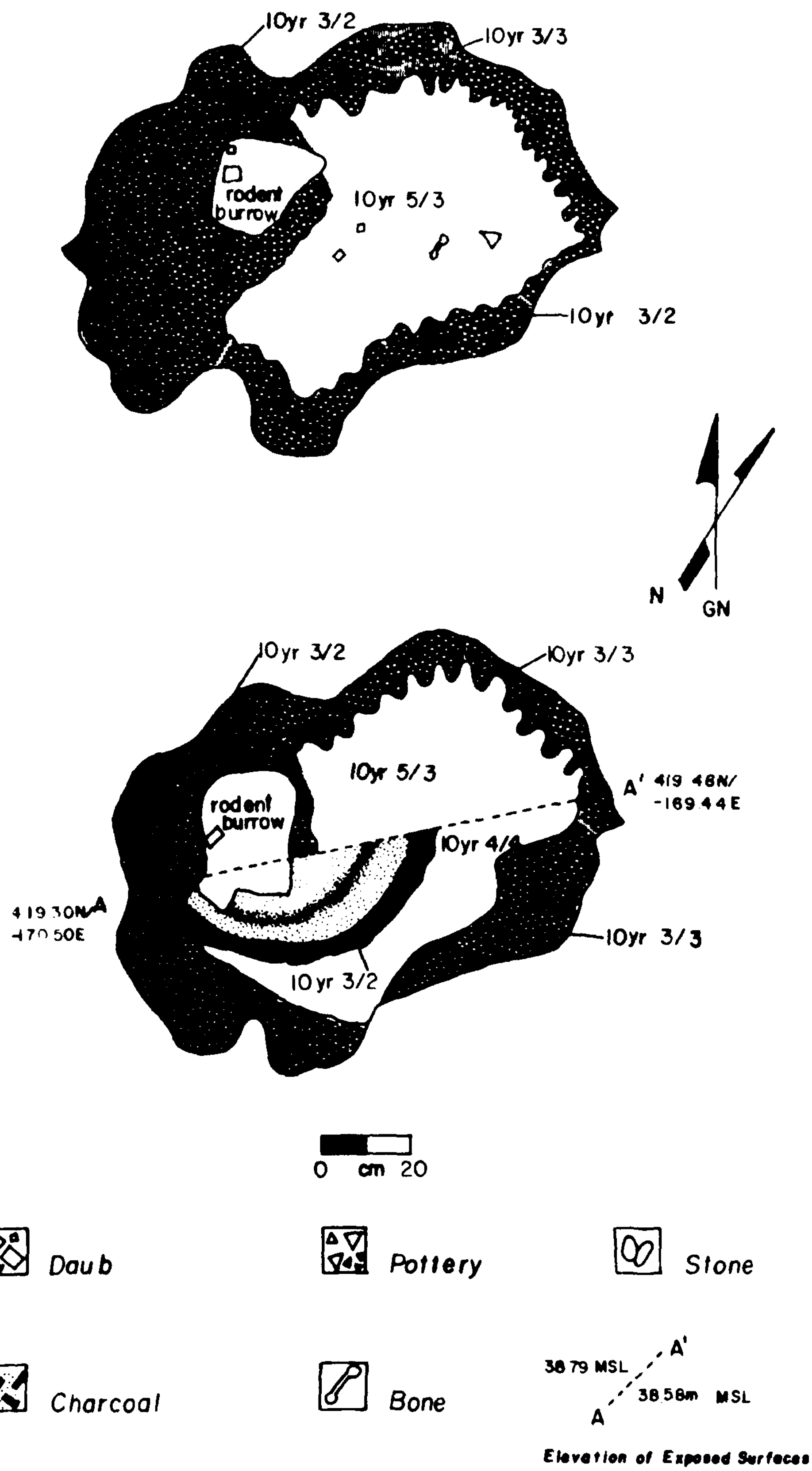


Figure 18. Planview of Daub Cap (USN 2269) over Urn Burial 2 (USN 2303). Line A-A' indicates cross section of feature which exposed cover vessel of urn.

Urn Burial 2 (USN 2303)

Urn Burial 2 (USN 2303) was located near the east [illegible] of Structure 1, approximately 2.5 meters east of Urn Burial 1. This urn was removed as a whole from the field and transported to the laboratory for further excavation. Later excavation and analysis showed that the urn contained the remains of four individuals -- all subadults. The contents of the urn will be discussed more fully at the end of this section and in Chapter 6, Volume II.

At the outset, a large hearth-like feature (USN 2269) was observed within Structure 1 at an elevation of 38.79 m AMSL (Figure 18). Having an amorphous shape, the maximum dimensions of this feature were 108 by 88 cm. The dark brown (10YR3/2), charcoal-flecked, clay loam which surrounded a lighter brown soil (10YR5/3) gave the feature a burned appearance. Large daub chunks were scattered on the surface, and a sandy rodent burrow intruded into its western side; but excavation of this feature disproved our initial assumption that it was a hearth, because just 3 cm beneath the thin daub veneer a large burial urn was uncovered.

This Alabama River Plain urn (USN 2290) had a single cover vessel (USN 2289), an inverted, shallow (12 cm high), flaring-rimmed bowl (Walls-like Engraved). Taken together, the urn and its cover measured 43 cm in height. The elevation at which the top of the urn was first visible was 38.76 m AMSL. The urn, which was beautifully symmetrical and generally intact, had a maximum diameter of 45 cm. The cover vessel, however, had caved in on one side. The urn remained intact during excavation and was in good condition for transport. A dark, circular pit outline (USN 2284) surrounded the urn and had a diameter of 55 cm -- only a few centimeters wider than the urn. The depth of this pit was approximately 45 cm, and its outline was easily defined in profile (Figure 19).

During the cross-sectioning of the fire-hardened daub area or "daub cap" (USN 2269), the cover vessel to the urn was exposed first. The western side of the cover was not visible, but was later found within the urn. After the daub cap was removed, the surrounding earth was cut back to expose the vessels. The earth beyond the sourthern half of the urn was shovelled out to the level of the urn's base. Support of the urn as well as stratigraphic control was maintained by a 20 cm wide north-to-south balk. Next, the earth beyond the northern half was cut down in like manner, leaving a 20 cm wide east-to-west balk, which gave a complete view of the urn on all sides. Photographs were taken and profiles were drawn facing north and east.

A mixture of plaster-of-paris and styrofoam chips was prepared in the field in order to make an artificial pedestal for the urn to rest upon when the balks were removed. This material was packed beneath the urn and into the areas between where the balks crossed, thus forming another cross in the opposite direction. The pedestal was left to dry. The urn itself was then tightly wrapped in wide "Ace" bandages to prevent breakage when handling.

Finally, the plaster pedestal was hard enough to allow removal of the two balks, and these supports were cut down and discarded. Only the pit fill was saved for waterscreening. The ground around the pedestalled area was shovelled out to the point that a thin piece of heavy sheet metal could be wedged under the urn. Using a hammer to drive the metal under the urn became visible.

Partial excavation of the skeletal remains was begun in the field because the urn was believed to have been too fragile for removal in one piece. Later, however, it was decided to try coating the urn with a mixture of plaster-of-paris which might then enable removal without collapse. After all the loose sherds had been cleared away, the coating process began. Wet paper towels were placed on the vessel wall for protection; then burlap strips soaked in plaster-of-paris were wrapped around the urn in order to brace it. Next, when the plaster had hardened, a window screen was carefully wedged beneath the urn. Finally, excavators lifted the urn into a prepared wheelbarrow filled with dirt which was then transported back to the laboratory.

Excavation of the skeletal remains showed that three individuals had been placed inside the urn for burial. Three subadults were identified on the basis of the relative thickness of the crania and the dental morphology of their three mandibles.

The sandy urn fill (USN 1843) was excavated in zones which indicated that a good deal of daub had collapsed into the upper portion of the urn from the daub layer above. All zones combined, the fill contained 686 g of daub, 3 pieces of hematite, 11 g of faunal material, and 13 g of botanical material. Neither ceramics nor shell were present.

Analysis of the contents of the pit (Pit 8, USN 1839) containing the urn indicated that only Mississippi Plain var. Warrior and a few small shell tempered sherds were present. One bifacial thinning flake and 85 g daub were also recovered.

The sequence of events that created this urn burial seems to have been as follows. A pit, which had a diameter slightly greater than that of the urn (ca. 66 cm) was dug through an earlier midden deposit to a depth of approximately 40 cm. The urn, a large Alabama River Plain vessel, 55 cm in diameter and 35 cm high, and its contents were placed in the pit. The two cover vessels -- one (USN 1841), an outslanting bowl which looked like a poor copy of a Walls Engraved bowl, the other (USN 1842), a red painted, shallow, flaring-rimmed bowl -- were placed over the urn so that they formed an inverted "V". Such a sequence of events would account for: 1) daub over the urn; 2) daub in the urn; and 3) earlier ceramic types mixed with daub in the pit fill.

In summary, Urn Burial 1, containing skeletal remains of three individuals, was located inside the bounds of a protohistoric structure. Two inverted bowls covered the urn at the time of interment. The structure overlay an earlier Summerville I midden which the urn penetrated; subsequent analysis of the burial pit and urn fill showed evidence of daub and ceramics directly associated with the earlier midden. Thus, it is assumed that the pit was, at one time, dug out of the surrounding midden and then refilled with the same soil. The urn fill, which contained significant amounts of daub, probably filtered in from the midden as there was, no doubt, a large space left between the two inverted bowls -- enough of a space for dirt to sift in through time.

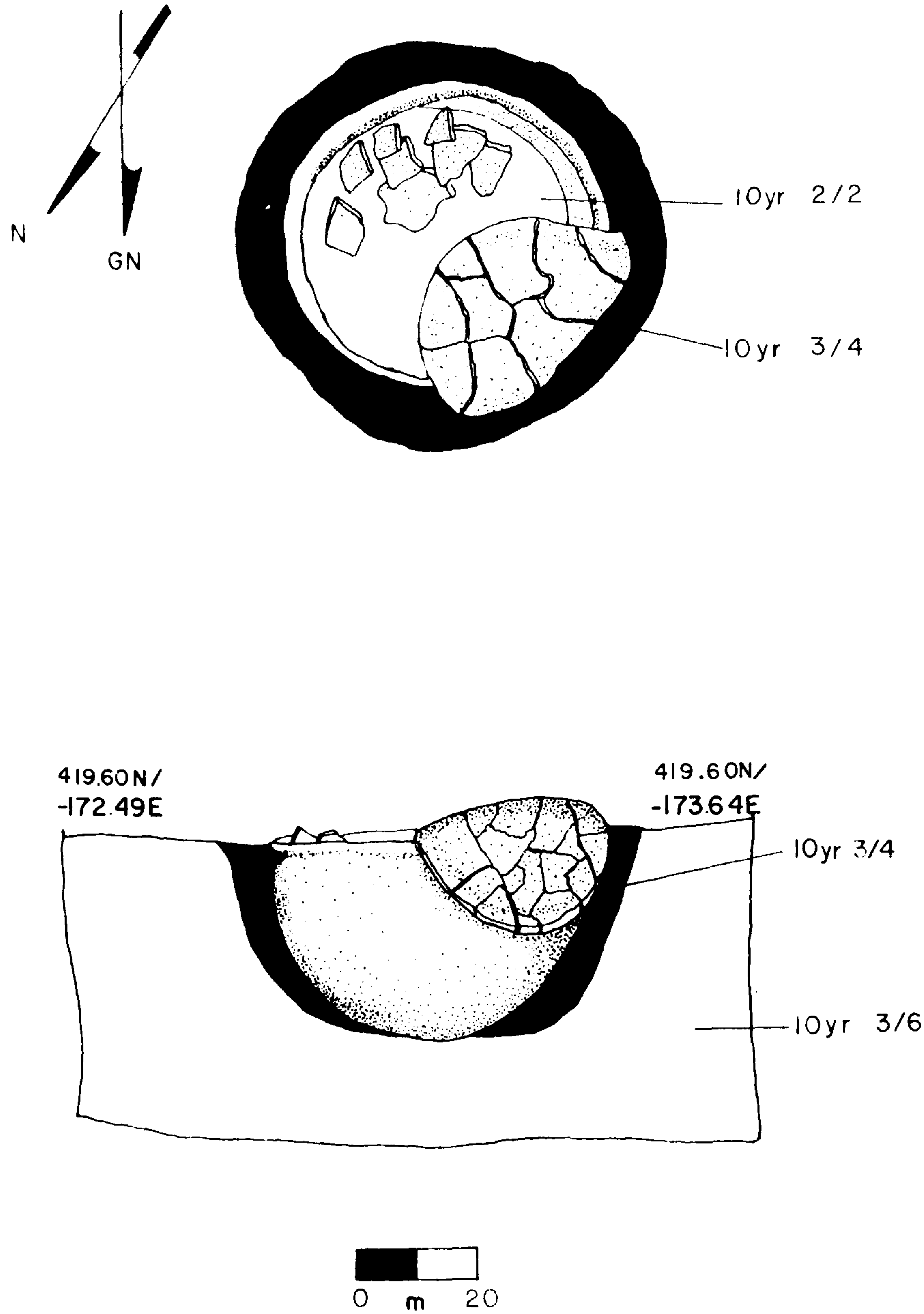


Figure 17. Urn Burial 1 (USN 1850).

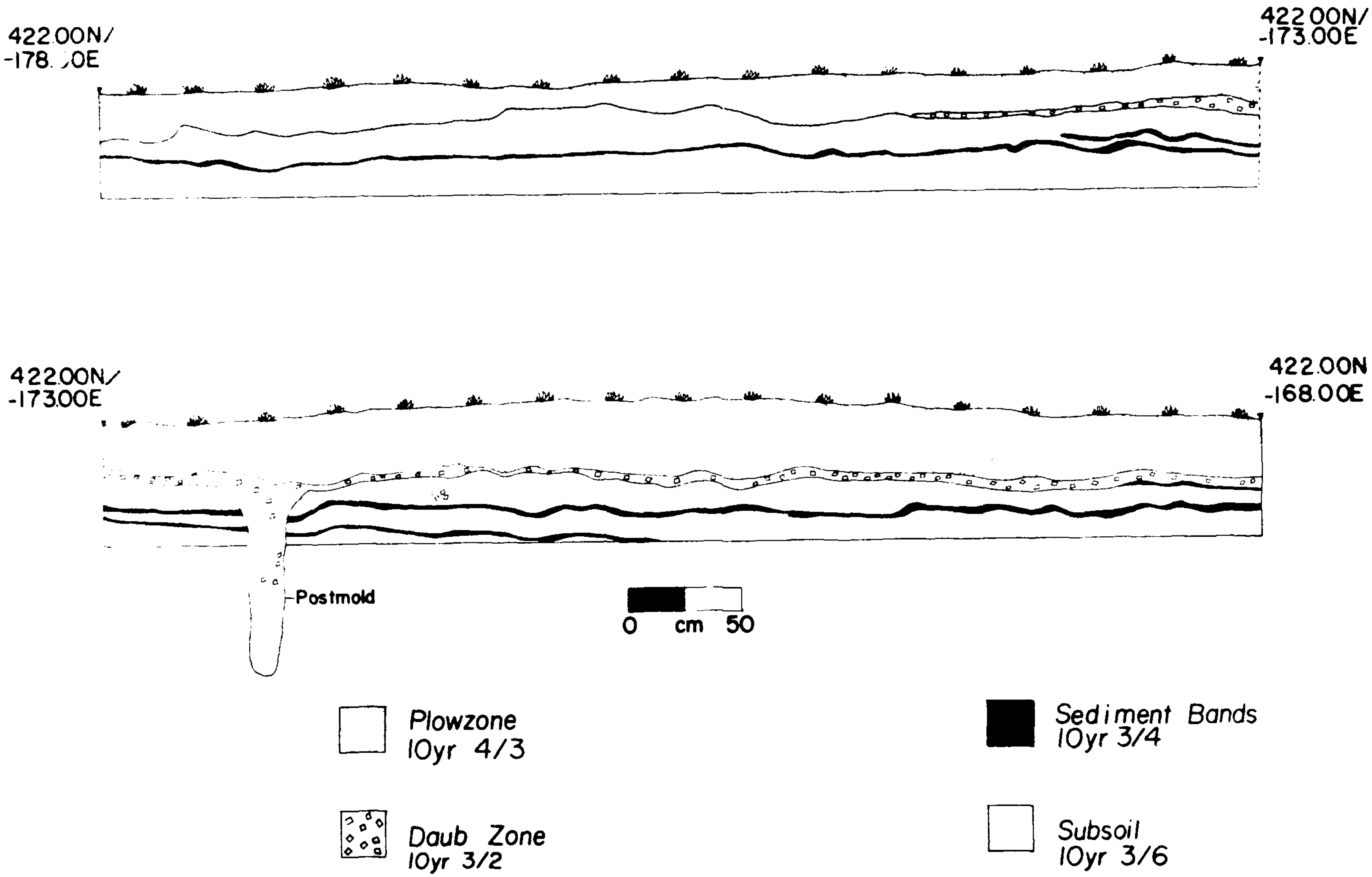


Figure 16. North wall profile of sample unit which contained Structure 1 (USN 1831).

average depth of 38.40 m AMSL (s=30 cm AMSL).

The urn burials (USN 1850 and 2303) were located on the east and west sides of the structure approximately 2.5 meters apart, and the tops of their cover vessels were located at roughly the same elevation, 38.40 m AMSL. The first urn contained the remains of three individuals; the second urn contained four individuals.

A daub layer extended over 120 m^2 excavated in the southwestern corner of Hectare 400N/-200E and provided a useful stratigraphic marker. A profile (Figure 16) drawn from the north wall of the original 10 by 10 m sample unit illustrates the stratification in the area around Structure 1. A plowzone of 20 cm tops the entire area. Beneath this disturbed stratum, a thin layer of daub overlies a sandy subsoil ribboned with alluvial sediment bands. The postmolds defining Structure 1 and the pits into which the urns were placed began at some point above the daub layer and penetrated into the subsoil.

Other than the burial urns themselves, the ceramics recovered from the samples of the plowzone and from the daub and subsoil in these units underscored the presence of two temporally distinct components. The earlier, Summerville I component was indicated by Barton Incised and Moundville Incised sherds; the later, protohistoric, Summerville IV component contained Parkin Punctated var. Bridgeville and Alabama River Applique sherds. The single radiocarbon date of 690 ±110 radiocarbon years (A.D. 1260, Beta 1092) taken from the daub cap over Urn Burial 2 seems to be contaminated by materials deposited during the earlier of the two periods.

Urn Burial 1 (USN 1850)

The first of the three urn burials found in the Lubbub Creek Archaeological Locality was located in the western side of Structure 1 (USN 1831). This urn, its associated cover vessels, and its contents were excavated partially in the field; but when it became apparent that additional excavation in the field would be too time consuming and difficult, the urn was transported to the laboratory for further excavation. Later laboratory analysis showed that the urn contained the remains of three subadults (see Chapter 6, Volume II).

Urn Burial 1 (Figure 17) consisted of five major parts: the urn itself (USN 1840); Cover Vessel 1 (USN 1841); Cover Vessel 2 (USN 1842); the urn contents (soil fill and skeletons); and the pit (USN 1839) containing the urn.

The fragmented top portion of the urn was first discovered at an elevation of 38.71 m AMSL while cleaning the working floor of a 10 by 10 m sample unit (412N/-178E, USN 1539). The urn was surrounded by a dark yellowish brown (10YR3/6) sandy loam.

Hand tools were used to expose the urn. Although the pit was hard to define, the soil from around the urn was saved, nevertheless, and treated as pit fill. When the first cover vessel had been completely exposed, the sherds were mapped and bagged according to their relative positions. A flotation sample then was collected near the cover vessel area. Another map was drawn of the exposed rim of the second cover vessel and the sherds were removed. During the removal of Cover Vessel 2, the skull fragments inside the urn burials suggested that these three features formed a single cultural complex; therefore, the structure as well as the burials were included in the Summerville IV period community. It should be noted, however, that the complex intruded into an earlier, Summerville I period midden, which was reflected by a wide scattering of daub. This daub scatter extended into the northern half of the structure, and the postmolds which defined this portion of the structure contained chunks of daub from this scatter. A thick, shell-filled organic midden located immediately south of the feature complex, like the daub scatter, yielded only ceramics indicative of the earlier, Summerville I period.

Unfortunately, it appeared that most elements of the protohistoric component in Hectare 400N/-200E were destroyed as a result of more than 100 years of intensive cultivation. The light daub scatter may therefore be representative of plow-drag from an earlier component. The protohistoric features which did survive will be described in greater detail in the sections which follow.

Structure 1 (USN 1831)

The existence of a structure in the southwestern portion of Hectare 400N/-200E was suggested first by a light scattering of daub in 10 by 10 m sample Unit 412N/-178E (USN 1539). Three excavation units located to the north and east of the original sample unit were opened in order to trace the light daub scatter which was so prevalent throughout the area and to delimit any features within it. This investigation proved to be successful; a postmold pattern enclosing two urn burials was discovered.

Excavation, which was guided by the expectation that a structure lay beneath the daub, began by dividing the daub scatter into four quadrants or cuts. Two cross balks, oriented to the grid and at right angles to one another, were centered on the scatter. As it turned out, the structure and the daub were not two aspects of the same feature, but were, instead, temporally separated, independent features. The whole of the structure was located in the southwestern cut (Cut 3, USN 2234) of the four that were used to guide the excavation of the daub scatter. The beginning elevation of the structure was 38.84 m AMSL.

No living floor was encountered during excavation of the daub scatter, but a few in situ artifacts (a hammerstone, USN 2227; a pitted stone, USN 2229; a drilled hematite object, USN 2239; and a sherd concentration, USN 2220) were found around the exterior of the structure. These artifact concentrations, however, may have been work areas from the earlier midden. Several isolated daub concentrations were also scattered about the structure area. Analysis of these daub concentrations indicated that no artifacts were associated with them, with the exception of the daub cap, USN 2269, which was packed over the top of Urn Burial 2 (USN 2303).

Twenty-three postmolds associated with Structure 1 formed a circle approximately seven meters in diameter. The postmolds, which appeared slightly darker than the dark brown (10YR3/3) sandy loam which surrounded them, had an average diameter of 10 cm (s=4 cm) and an average depth of 27 cm (s=31 cm). Their point of origin which, no doubt, had been truncated by plowing, averaged 38.70 m AMSL (s=5 cm AMSL), and they extended downward to an

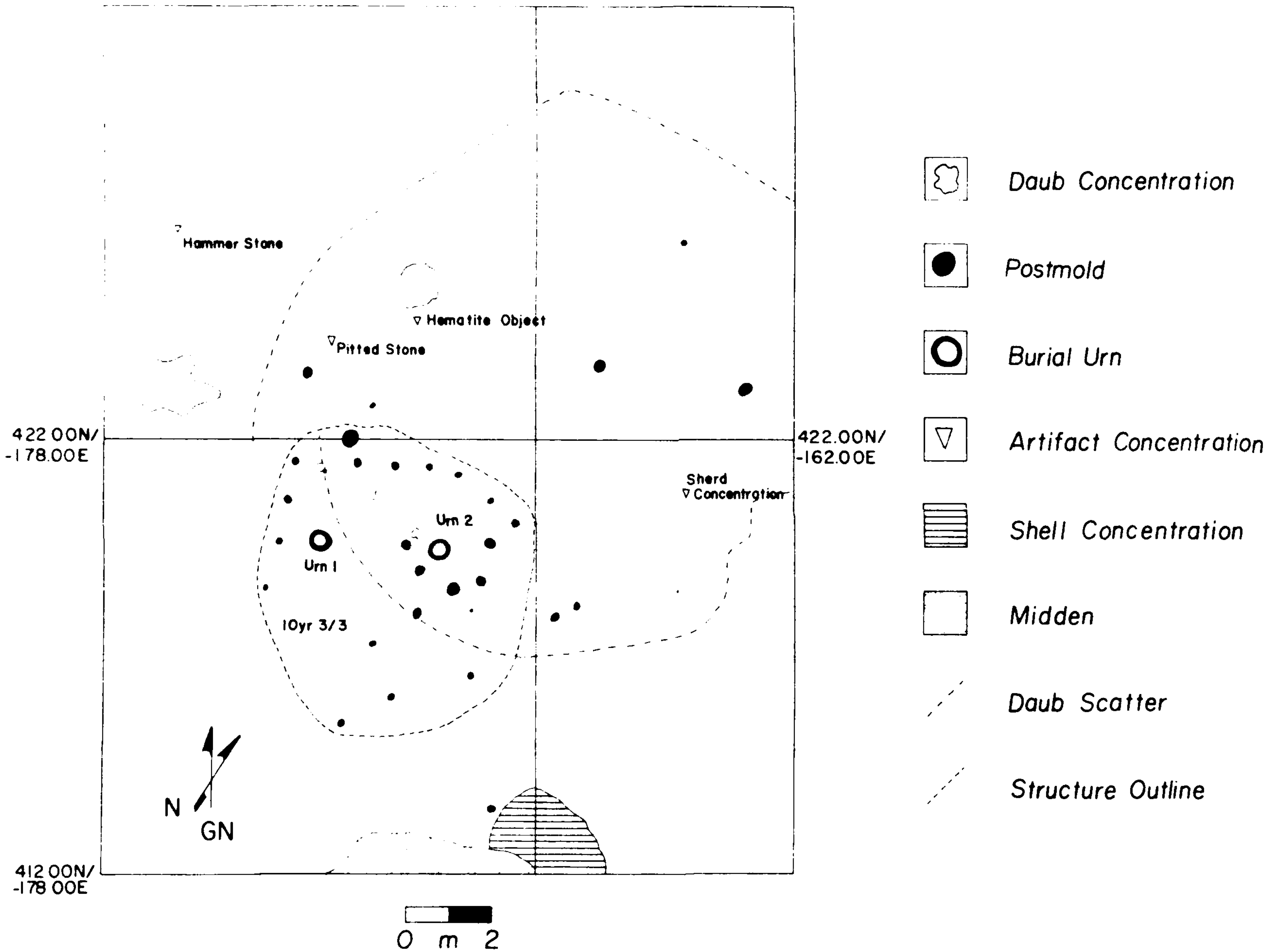


Figure 15. Structure 1 (USN 1831) in Hectare 400N/-200E.

near Starkville, Mississippi.

Pit 23 (USN 2887)

Pit 23 (USN 2887), which had been truncated by the plowzone, was observed in both the floor and the south profile of Unit 355N/-195E. The pit measured 24 by 34 cm across and had a depth of 35 cm. The pit fill was very dark brown (10YR2/2) sandy loam which appeared much darker and different in texture than the surrounding dark brown (10YR3/3) matrix. Pit 23 contained a sparse amount of protohistoric ceramics and a general mixture of other ceramic types. The pit also contained a few chert flakes, as well as deer and tortoise remains.

HECTARE 300N/-300E

The northern half of Hectare 300N/-300E yielded two occurrences of Alabama River Applique ceramics: one in the previously discussed segment of the ditch and the other contained in a 1 by 1 m test unit just west of the ditch.

Unit 390N/-266E (USN 3121)

Unit 390N/-266E (USN 3121) was part of a 20 percent sample taken from a large daub scatter (USN 3103) which represented the remnants of a Summerville II-III structure (see Chapter 9, Volume I for further discussion of this particular area). This 1 by 1 m test unit lay approximately 18 meters west of the ditch and 12 m south of Pit 0 (USN 2491). Dug to a depth of 30 cm, the soil in this unit consisted of very dark grayish brown (10YR3/2), tightly compacted sandy loam with small inclusions of daub. The unit was waterscreened as a whole, and small amounts of Alabama River Applique mixed with shell tempered, grog tempered, and sand tempered ceramic types were recovered; however, judging from the rest of the fill, these late sherds were probably intrusive.

HECTARE 400N/-100E

Unit 416N/-066E (USN 419) was a Phase I, 1 by 1 m test unit located approximately 150 m east of the mound in the southwestern quadrant of Hectare 400N/-100E. Level 2 of this unit, which lay directly beneath the plowzone (20 to 40 cm below surface), contained Alabama River Applique ceramics; however, no features could be observed in the homogeneous matrix of dark brown (10YR3/3) sandy loam.

HECTARE 400N/-200E

During Phase I only 2 units out of the 22 test units excavated in Hectare 400N/-200E yielded ceramics diagnostic of the protohistoric, Summerville IV period. Both units were located in the extreme southwestern part of the hectare. Phase II excavation of a randomly placed 10 by 10 m unit in this same quadrant revealed the remains of a structure that contained two urn burials (Figure 15), and the protohistoric ditch was traced to the center of the southern border of this hectare.

The close spatial relationship between the postmold pattern that defined the structure (Structure 1, USN 1831) and the positioning of the two urn "trenches and moats are found at twenty-nine percent of the sites in the sample" (ibid:129). He found that the most common occurrences of trenches and moats were in association with earthworks in 58 per ... of the sample, and "virtually all the moats appeared to be dry moats" (ibid:129). Among the 55 Mississippian wooden fortifications in the Southeast analyzed by Lafferty, four definitely had trenches or moats exterior to their palisade walls (ibid: Table 3). The protohistoric King Site in northwest Georgia (Halley, Garrow, and Trotti 1975) can be added to Lafferty's sample which included the protohistoric Mouse Creek Site in eastern Tennessee. The King Site, which has yielded sixteenth century European metal artifacts as part of its assemblage, had a single, bastioned palisade set approximately 5 meters inside a ditch approximately 1.4 m deep and almost 3 meters wide. According to Lafferty the function of trenches could have been to increase the height of the defenders' wall (Lafferty 1973:132). However, a stockade or palisade wall which abutted the ditch could not be found at Lubbub, and only one shallow postmold was found in close association with the ditch.

There are three possible explanations for the absence of a palisade wall in association with the ditch. The first is that the wall was present and the archaeologists did not find it. However, given the sampling strategy and the fact that the excavators found several other palisade lines, it is unlikely they missed a palisade line near the ditch. The second is that no wall was associated with the ditch. This explanation is possible, but is not probable. Third is the possibility that the palisade posts were set in the berm formed from the material excavated from the ditch. This mound of earth, the berm, could have been up to one meter high, and, as the topographic map of the site showed, if it existed, it has since been plowed and eroded away. At the moment, this explanation seems most probable. The evidence, or lack of evidence in this case, suggests that any remains of a palisade have been destroyed totally in the 400 years since it was built.

HECTARE 300N/-200E

Two protohistoric features were found in the northwest quadrant of Hectare 300N/-200E. These features were located in a single 10 by 10 m unit, 355N/-195E (USN 2674). Both features were found approximately 15 to 40 cm below surface, along with more than 100 postmolds and other earlier features (see Chapter 9, Volume I for discussion of the Summerville II-III features in this area). Both of the protohistoric features were thought to have been intrusive into the earlier midden of this area.

Artifact Concentration 3 (USN 2739)

A small cluster of Alabama River Incised *var. Unspecified* sherds (AC 3, USN 2739) was found in the northeastern corner of Unit 355N/-195E (USN 2674) at approximately 38 cm below the surface. This irregular cluster, which was not bounded by a pit stain, measured roughly 10 by 15 cm across and had a maximum depth of 9 cm. The largest sherds were recovered by hand and the remaining smaller sherds were recovered in the waterscreen. The partial vessel found in this deposit is very similar to one illustrated by Atkinson (1979: Figure 5), which he thinks to be associated with a Chachiuma village

TABLE 3

General Stratification in the Ditch

Cm Below Surface	Depositional Zones	
0-20	Zone A	-(Plowzone) Dark brown sandy loam
20-50	Zone B	-Dark yellowish brown sandy loam
50-60	Zone C	-Darker yellowish brown sandy loam
60-70	Zone D	-Black ash and charcoal-filled zone
70-130	Zone E	-Dark to light mottled sandy loam containing abundant <u>in situ</u> ceramics including protohistoric sherds
130+	Zone F	-Light sandy subsoil

ceramics in the plowzone. The northwestern quadrant of this hectare contained another sample unit in which Alabama River Applique var. Alabama River ceramics were recovered from the plowzone. One lone pit was located in the southeastern quadrant of 400N/-300E.

Discussion of these scattered features will proceed from the exotic to the ordinary, and generally from south to north when possible. (The portion of the protohistoric ditch which was located in the southwestern quadrant of Hectare 400N/-300E has been discussed already in the beginning of this chapter.)

Skull Cap Cache (Burial 5, USN 6310)

On the extreme eastern edge of Hectare 400N/-300E and within a 10 by 10 m sample unit (465N/-210E, USN 1566), a tightly nucleated cluster of "calottes" or human skull caps was found. These skull caps seemed to have been purposefully stacked, ordered, and placed together. Beginning at 38.91 m AMSL, ten individual adult calottes had been arranged in an odd, oval-shaped configuration which measured 30 by 50 cm across (Figure 22). In planview, a faintly discernible pit stain, which measured 88 by 118 cm, surrounded the cache of calottes. The pit fill consisted of dark yellowish brown (10YR3/4) sandy loam and was surrounded by a slightly lighter value (10YR3/6) of the same color. Two postmolds (USN 8119 and 8120), which began at an elevation approximately 10 to 14 cm higher than that of the pit, intruded into its northeastern and southwestern quadrants. Based on the elevation of their origin these postmolds are thought to have dated later than the burial and cannot be directly associated with it. Furthermore, no cultural remains whatsoever were found in the burial pit or in the postmolds. Small bits of charcoal were interspersed between the cranial fragments, but none was large enough for C-14 dating.

Eleven additional postmolds were found in the sample unit, but no pattern could be ascertained from their scattered configuration. No cultural remains were present within any of the postmolds, and only a hand-full of Mississippi Plain var. Warrior ceramics were present in the plowzone sample itself. Therefore, Burial 5 seemed to have been a very isolated and unique find in relation to the surrounding area.

The skull mass was completely pedestaled prior to removal and photographs were taken (Figure 23). The burial was removed from the field en bloc due to the fragility of the bones and because of its complexity. Plywood was cut to fit within a large cardboard box; next, using the blade of a bow saw, the pedestal was carefully cut horizontally and the thin plywood sheet was wedged beneath the burial pedestal; finally, the whole feature was placed in the box for transport.

Later, in the laboratory, the osteologist completely excavated the feature and waterscreened the remaining pit fill. The bundled long bones of a young adult female, which showed traces of burning, as well as an infant calotte below the bundle, were discovered below the calottes. (See Chapter 6, Volume II for further discussion of this burial.) The remaining pit fill contained no cultural remains.

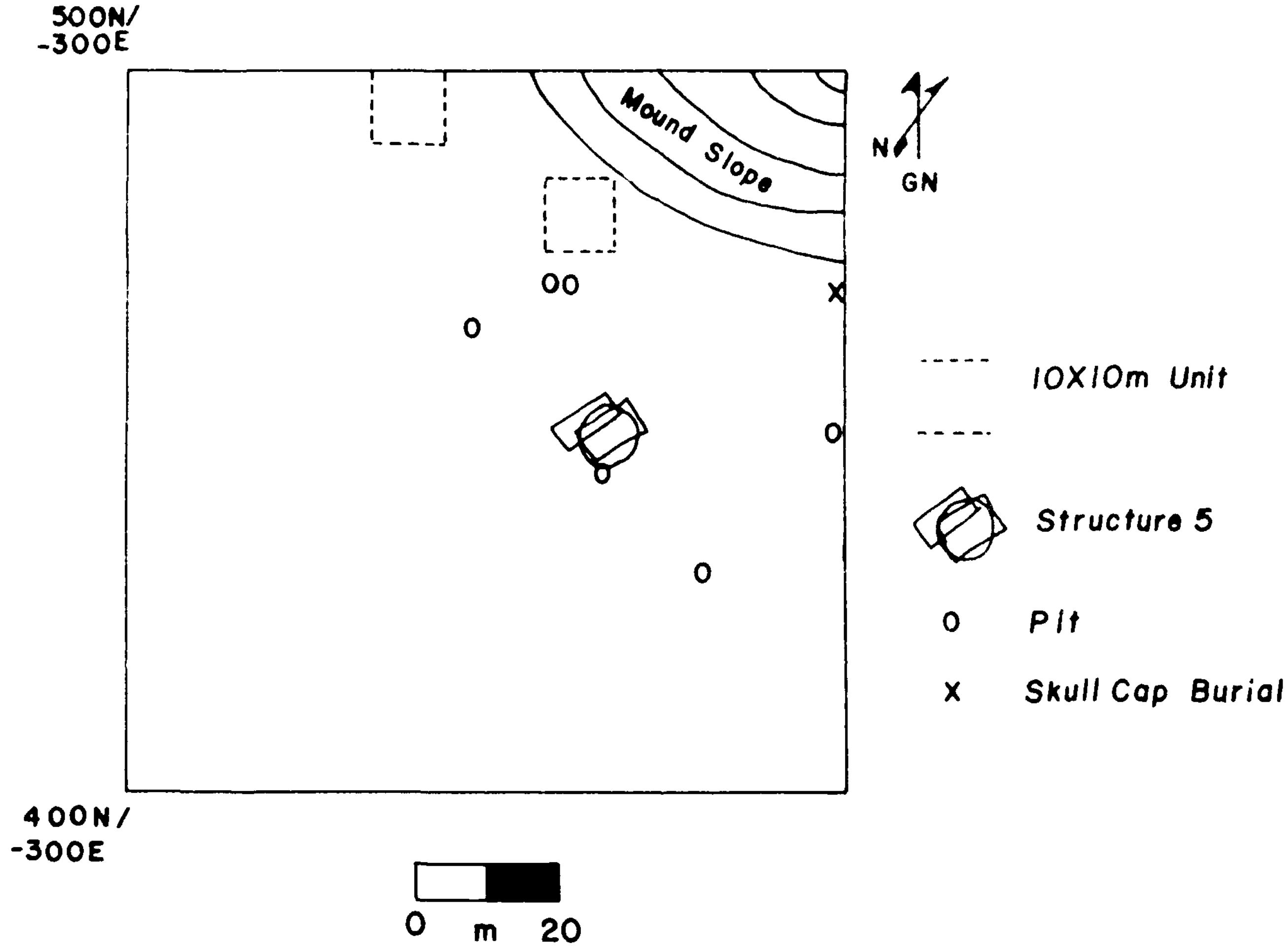


Figure 21. Protohistoric features in Hectare 400N/-300E.

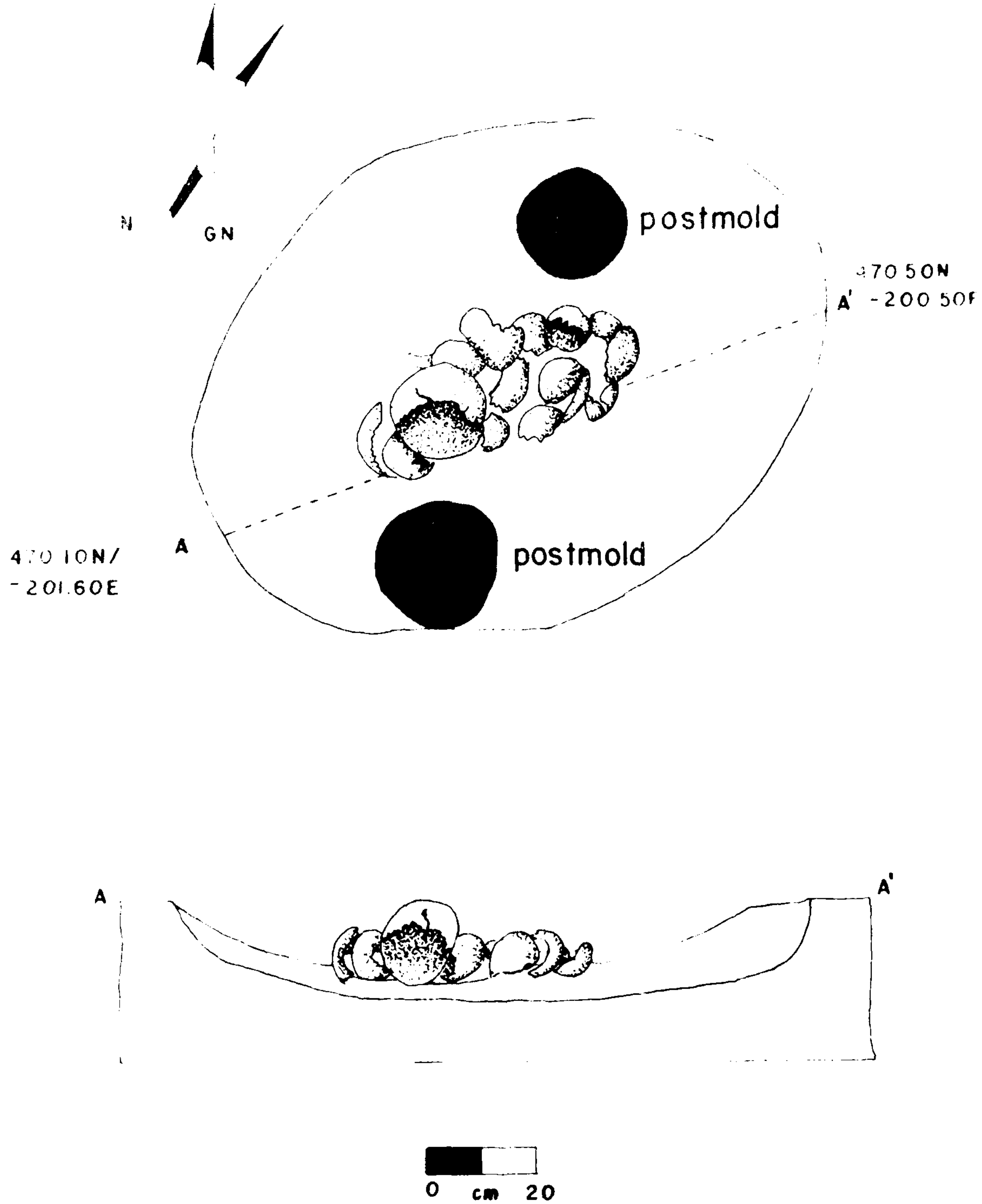


Figure 22. Skull Cap Cac (USN 6310).

Figure [illegible]3. Skull Cap Cache (USN 6310) pedestalled in field.

Structure 5 (USN 3452)

The group of features designated in the field as Structure 5 (USN 3452) first appeared as a large daub concentration in the western half of Unit 446N/-234E (USN 2558). In order to follow out this large mass of daub, two extension units were opened to the west (Extension 5, USN 3451) and south (Extension 6, USN 3497) of the original 10 by 10 m unit. The structure covered an area of approximately 90 square meters and began at roughly 50 cm below ground surface. However, the original surface of Structure 5 proper was destroyed by bulldozing and plowing. Plow scars penetrated the daub layer and were most apparent in the southwestern sector of the structure where the daub was more sparse. The stripped surface of the structure was disturbed further by many tree roots and rodent burrows.

To further complicate the situation, the original ground surface sloped southward following a natural contour toward a large depression found in Unit 433N/-234E (USN 2557). This unit, in turn, contained historic sherds at the base of the redeposited mound material excavated from within the depression.

The soil in the Structure 5 area was very sandy, dark yellowish brown (10YR3/4) alluvium which had accumulated over an old river channel. This deposit created conditions favorable for severe leaching, and features often appeared indistinct in the surrounding matrix.

The excavation of Structure 5 was controlled by maintaining a 20 cm wide crossbalk centered over the daub deposit. The feature was excavated in four quadrants or "cuts." Each cut had two levels, the first which represented the daub layer (approximately 8 cm thick), and the second, the floor area (approximately 10 cm thick). The soil from each cut was waterscreened and soil samples were collected. All features which were mapped and excavated were assigned to their respective cuts (Level 1, USN 3453-3456; Level 2, USN 3457-3460).

The structure had been burned. Several large pieces of burned oak and pine were observed under the daub layer on the floor of the structure. Numerous postmolds also were identified beneath the daub layer, and many of these contained considerable amounts of daub themselves. A large circular hearth lay near the center of the structure, and several large pits were observed within the structure area. One postmold (USN 4017), which was located near the center of the structure, contained a sandstone discoidal at its very top. This particular discoidal, which measured 6.5 cm across, 2.5 cm thick, and was depressed on either side, was the largest discoidal found on the entire site.

The southern half of Level 1 yielded protohistoric ceramics as well as a wide variety of other ceramics: Alabama River Applique *var. Alabama River* (18 g); Carthage Incised *var. Undertermined* (18 g); Mississippi Plain (2519 g); Mound Place Incised *var. Akron* (6 g); Moundville Incised *var. Carrollton* (6 g); grog tempered varieties (96 g); sand tempered varieties (40 g); and fiber tempered varieties (1 g). The lithics recovered from Level 1 were: flakes (23 g); unmodified introduced rock (902 g); 2 bifaces; and 1 grooved piece of sandstone.

Level 2 also yielded a wide range of ceramic types which included:

Mississippi Plain (450 g); Mound Place Incised var. Akron (3 g); Moundville Incised (10 g); grog tempered varieties (5 g); sand tempered varieties (13 g); and fiber tempered varieties (222 g). The lithics recovered from Level 2 of Structure 5 were: flakes (21g); unmodified introduced rock (64 g); and 1 preform. The faunal remains recovered from the southeastern quadrant of Level 2 (Cut 3, USN 3459) were abundant and varied. These remains included deer, cottontail rabbit, gray fox, gray squirrel, fox squirrel, kingfisher, and several species of turtle, snake, and fish. A large amount of freshwater bivalves (2874 g) was also recovered. However, it seemed odd that nearly all the faunal remains recovered from Structure 5 came solely from one cut. Therefore, the chances are that these remains came from a trash pit or sheet midden which underlay the structure cut, but went undetected during excavation.

Method of Structure Separation

Additional analysis was carried out by the excavator in order to separate the numerous postmolds that comprised Structure 5. These analyses were undertaken with the hope of isolating distinct post patterns. As it turned out, three separate overlapping structures were delineated and have been designated as Structures 5A, 5B, and 5C.

In order to compare the relative depths of all postmolds associated with the structure, a formula was devised for each postmold which corrected for the slope of the surface. The beginning elevation of each postmold was subtracted from the nearest surface elevation (base of Level 1). This difference, in turn, was added to the ending elevation of the postmold. In effect, the difference between the "structure floor" elevation and the beginning elevation of postmolds was added to the ending depth of the postmold, thereby giving a depth of intrusion for the postmold. When the ending elevations of the postmolds were adjusted to take account for the sloping surface of the floor, Structure 5A postmolds averaged 33 cm below surface, Structure 5B postmolds averaged 36 cm below surface, and Structure 5C postmolds averaged 42 cm below surface.

Although three distinct clusters of postmolds were discovered when these features were adjusted to the same surface level, not all postmolds fit one of the three groupings. The postmolds that did not fit were droppped from the list. They are believed to represent a part of the general complex but they cannot be assigned to a particular structure (for instance, the postmold, USN 4017, which contained the large discoidal mentioned before, fell into this unassignable category).

In addition to the three structure patterns, several randomly spaced postmolds intruded so deeply below the base of Level 1 that they probably originated at the level of the palisade: Palisade I (USN 4050) was found 8 to 10 cm beneath the Structure 5 complex; Palisade II (USN 6399) was located just west of Structure 5C and originated approximately 18 cm below it. Another line of postmolds, most clearly defined in Unit 446N/-250E, also contributed to the confusion of the Structure 5 features; the shallowness of these postmolds suggested that they were more recent than Structure 5 proper and that the line was parallel to, but not part of an established palisade found on the site. (See Chapter 6, Volume I for further discussion of the inner palisade sequence.)

Stratigraphy

The relationship between the original balk profiles observed in the field and Structures 5A, 5B, and 5C has been diagrammatically represented in Figure 24. Zone A, the daub layer, had a maximum depth of 16 cm and varied in color from dark yellowish brown (10YR3/4) in the west to dark brown (10YR3/3) on the eastern periphery of the feature. Structure 5A was associated with Zone A. Zone B was an undifferentiated midden zone which averaged 26 cm in thickness. It underlay the darker daub layer and was composed of dark yellowish brown (10YR4/6) sandy loam. Beneath Zone B lay another midden zone, Zone C, which consisted of slightly darker yellowish brown (10YR3/6) sandy loam and extended below the level of excavation of Structure 5. Zone C was associated with Structures 5B and 5C and possibly with Palisade 1.

Structure 5A

Structure 5A (Figure 25) formed an ill-defined circular-to-ovoid postmold pattern which measured approximately 7 to 9 m across and generally conformed to the daub layer in planview. There were 22 postmolds associated with Structure 5A, and the average depth of their intrusion was 33 cm below the base of Level 1. From these 22 postmolds a complete set of size and depth measures were taken. Their radii ranged from 6 to 14 cm (mean=8.7 cm; s=2.[illegible] cm); their depths ranged from 7 to 32 cm (mean=14.0 cm; s=6.5 cm). Beginning elevations ranged from 38.33 to 38.59 m AMSL and ending elevations ranged from 38.21 to 38.47 m AMSL.

In profile (Figure 24), Structure 5A extended from 444N to 452N in the south-to-north balk profile (the area directly to the south which would have contained the southern boundary was covered with several feet of redeposited fill) and from -238E eastward 8 m in the west-to-east balk profile. The limits of the structure actually exceeded the length of the balks; thus, it could not be recorded completely in profile.

Based on elevations and patterns observed, one hearth, two burials, and three pits could be assigned to the Structure 5A complex. There was considerable rodent and tree root disturbance in the southern half of the structure and many of the features were disturbed.

Near the center of Structure 5A, a large basin-shaped hearth (USN 3506) with a raised rim or lip was found beneath the daub layer. The hearth measured approximately 1 meter in diameter and was 17 cm in depth. Raised approximately 8 cm above floor level, the burned clay rim averaged 5 to 6 cm in thickness and had a rounded profile in cross section. The interior basin had walls that sloped inward and a flat bottom. The hearth appeared reddish orange in color and contained gray ash on the western side of the basin. Several large fragments of charred wood were clustered around the southeastern sector of the hearth and were probably the remains of a large tree root which intruded into the hearth's center.

Daub, shell tempered ceramics, lithics, and faunal remains were recovered from the hearth fill. The ceramics included Mississippi Plain _var._ _Warrior_ (70 g) and _var._ _Hale_ (2 g). One flake, unmodified introduced rock (9 g, including fire-cracked chert, chalk, hematite, and limonite), and 1 ground sandstone fragment made up the lithic category. Deer bone also was present in

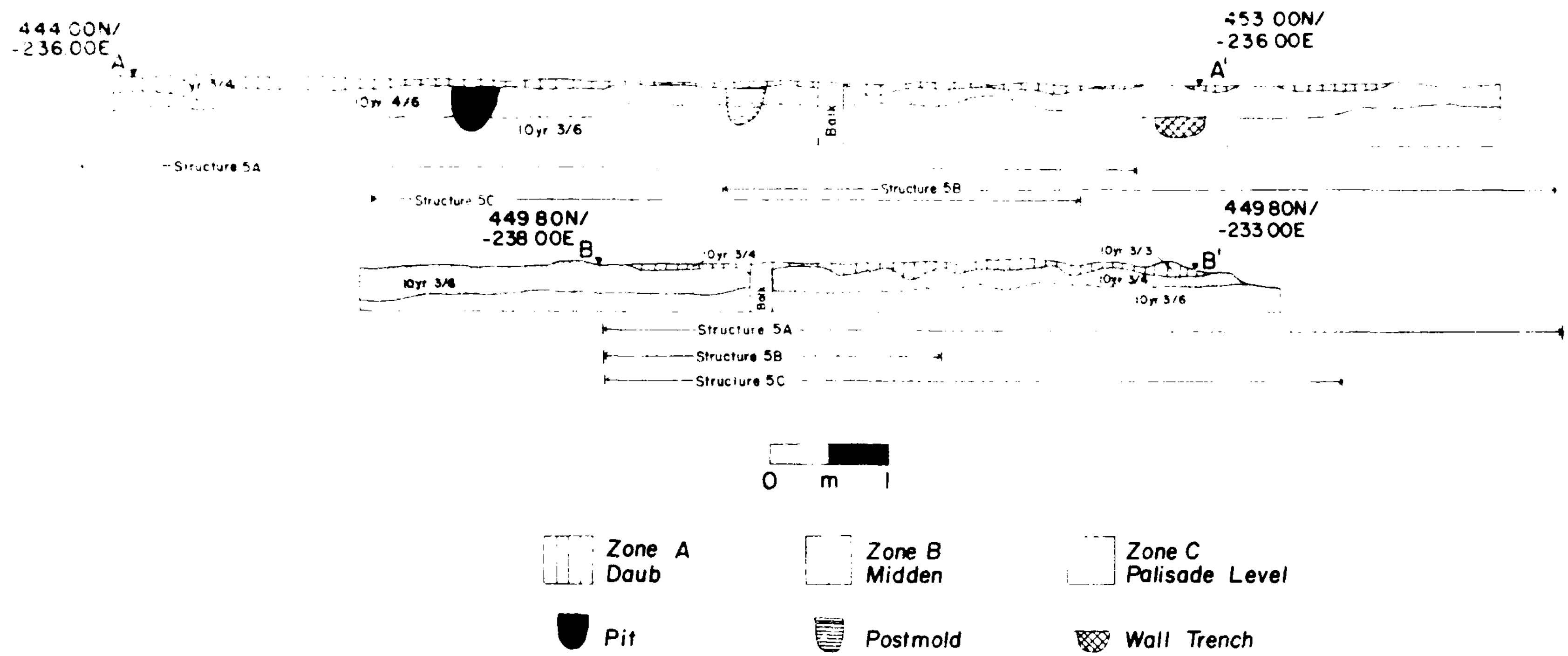


Figure 24. Profiles of Structure 5 (USN 3452). Top: South-to-north balk profile; Bottom: West-to-east balk profile.

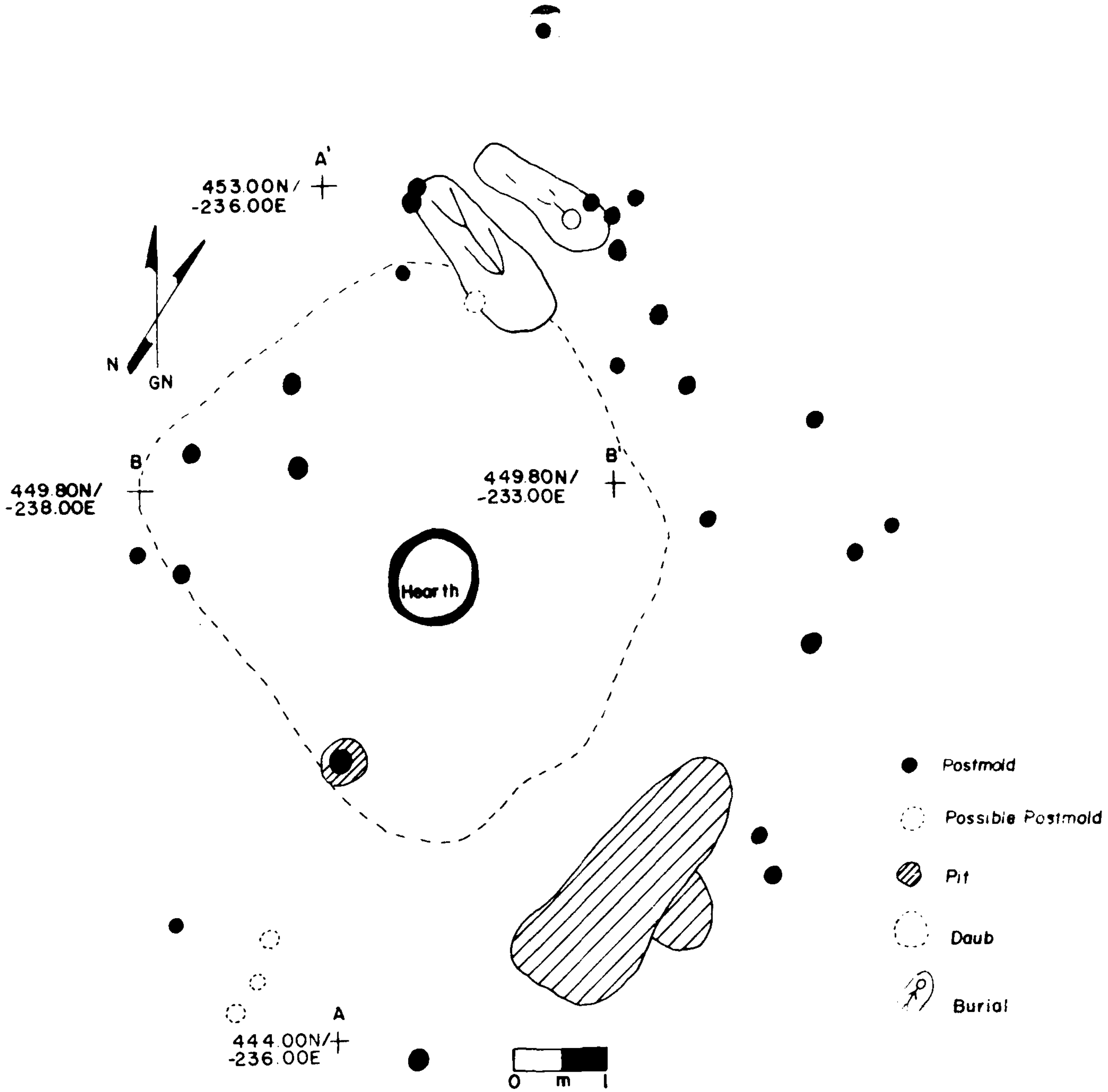


Figure 25. Structure 5A.

the hearth fill.

Burial 1 (USN 3449), located in the northernmost portion of Structure 5A, was a secondary burial of a child. It consisted of only the cranium and long bones, and these bones appeared to have been purposefully stacked. The skull was crushed, but the long bones were in fair condition at the time of recovery. No pit outline was visible. The space occupied by the bones, which were oriented in a magnetic northwest to southeast position with the head at the southern end, measured 24 by 75 cm. Two shell tempered sherds were located about 20 cm northeast of the cranium; no other ceramics were recovered from the area around the bones. The rest of the cultural material associated with Burial 1 consisted of 2 flakes, small amounts of fire-cracked chert and cracked cobble fragments, and large mammal bone fragments.

Burial 2 (USN 4051) was located within the bounds of Structure 5A just north of and parallel to Burial 1 (Figure 26). This burial appeared as a dark (10YR3/4) oblong, greasy stain which measured 67 by 195 cm across. In profile the pit had straight sides, and the pit bottom, which seemed to conform with the shape of the body, measured 24 cm in depth. All the bones of an extended adult were apparently in place except the skull. An asymmetrical dark stain was present in the head region and was excavated, but this stain seemed to taper sharply and may have been the result of rodent or tree root activity. Nevertheless, the skull was completely absent which might indicate that it was: (1) never present; (2) reburied at a later time; or (3) burglarized. The pit fill contained a sparse amount (39 g) of Mississippi Plain <u>var. Warrior</u> ceramics and sparse amounts (21 g) of lithics (which included sandstone and cracked cobble fragments), and fragments of mammal bone.

Pit 40 (USN 3507), located on the southeastern portion of Structure 5A, was a large bathtub-shaped pit that measured approximately 1.1 by 2.5 m across. This pit contained a small amount of protohistoric ceramics (Figure 27). In profile, Pit 40 had irregular sides and bottom and was 61 cm deep at its deepest point.

The pit was stratified in five distinct zones (A through E), but in some ways it appeared to be disturbed --possibly the result of tree disturbance. The uppermost Zone A contained very dark brown soil mixed with large chunks of daub and two distinct concentrations of burned oak (USN 3990 and 3991). Zone B, which also began at the top of the pit but was concentrated on the western side of the feature, looked different in texture than Zone A and contained lesser amounts of daub. One gram Alabama River Applique <u>var. Alabama River</u> and 3 grams Parkin Punctated <u>var. Undetermined</u> were found in Zone B. Zone C, a thin lens of charcoal and ash, lay directly beneath Zone A. Zone D, a thin lens of sand, lay beneath Zone B. Zone E, mottled grayish brown in color and greasy in texture, underlay all zones and formed the bottom of the pit.

In profile, the irregular western outline formed at the point Zone A and B made contact, made the pit appear as if it had been re-dug: Zones A, C, and D seemed to have been deposited in sequence over Zone E. It is possible that previously excavated soil was packed or washed in over the western side, producing Zone B; however, Zone B was the layer which contained the protohistoric ceramics.

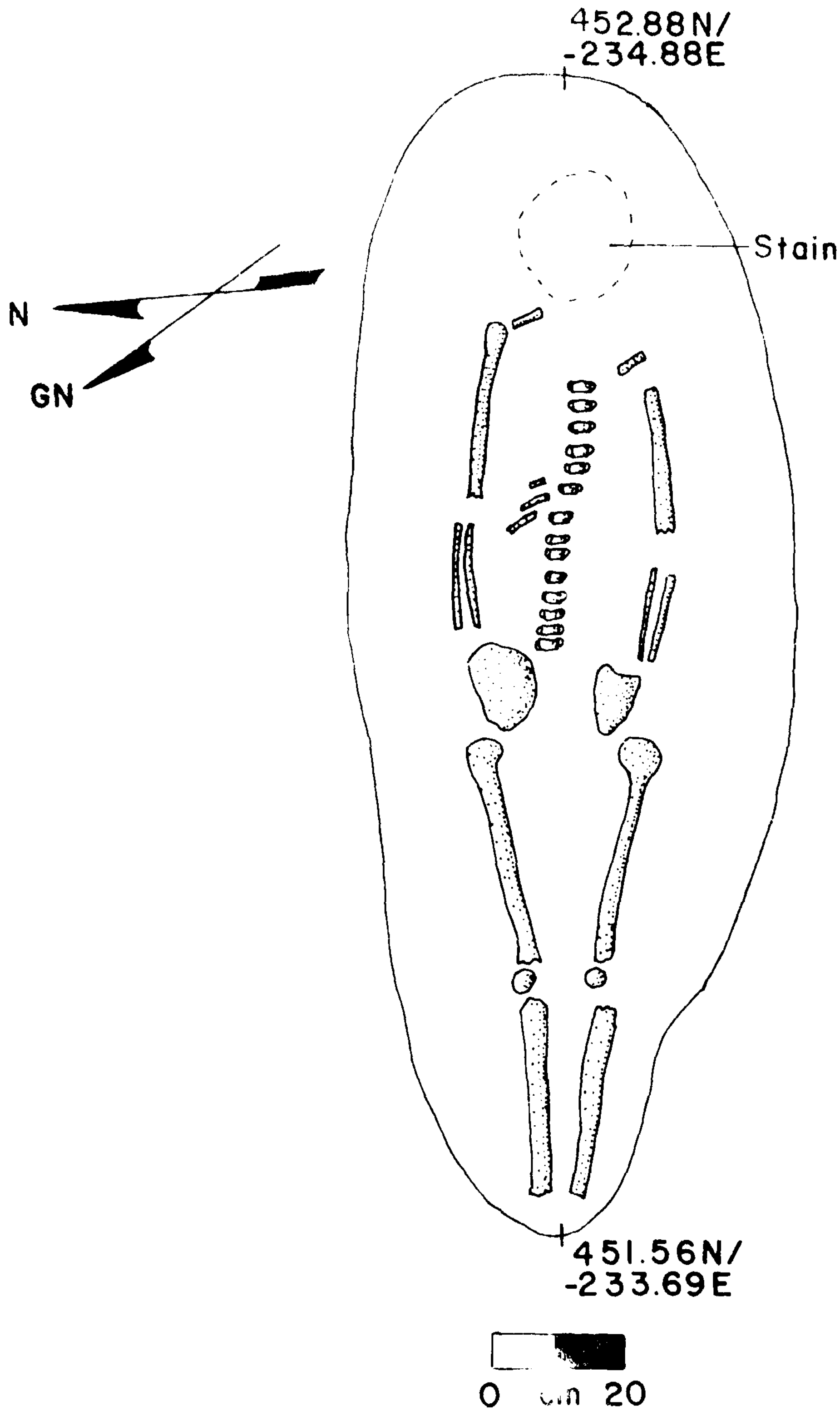


Figure 26. Burial 2 (USN 4051).

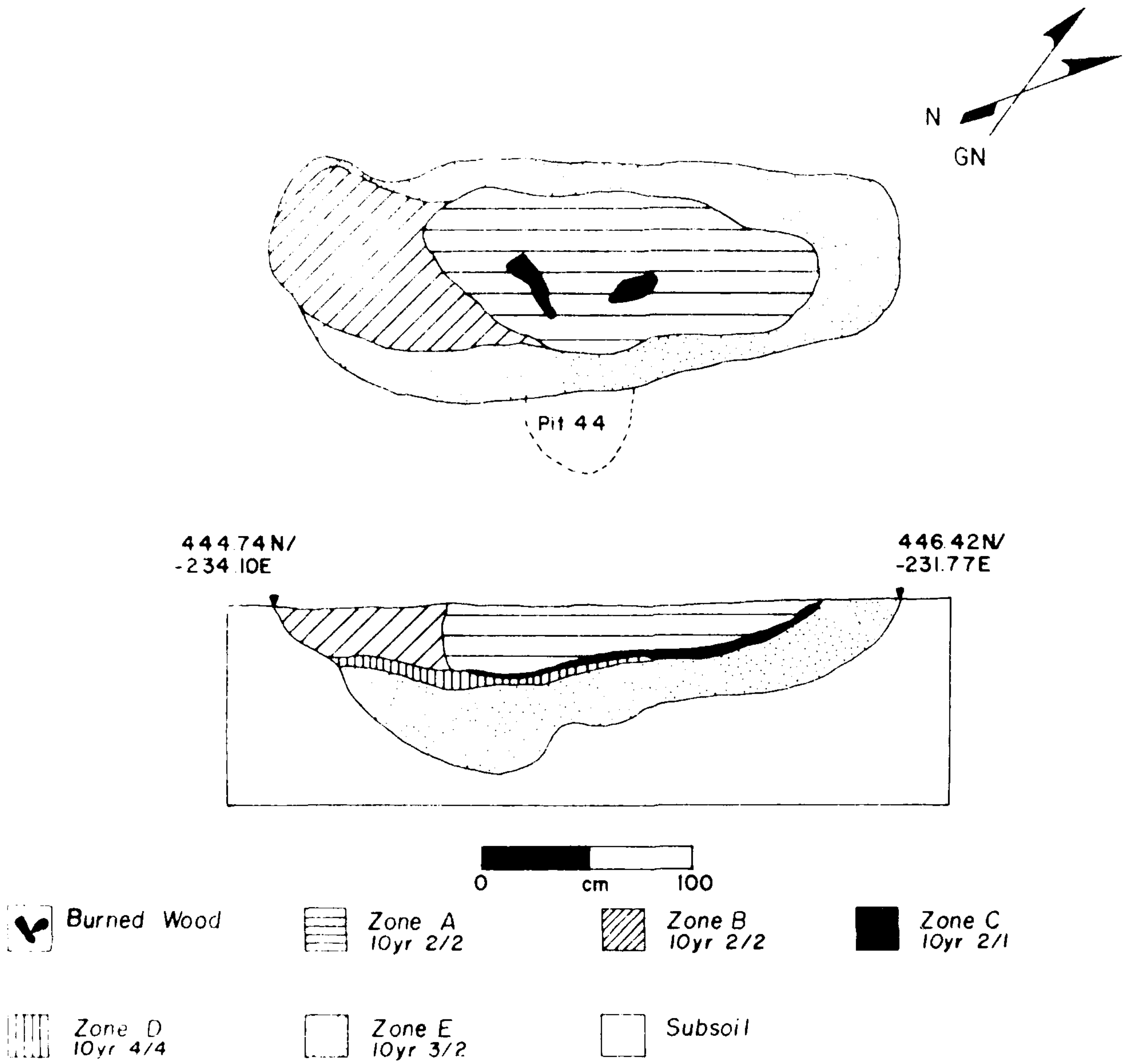


Figure 27. Pit 40 (USN 3507), associated with Structure 5A.

Subsequent analysis of the pit fill revealed that a wide variety of ceramics, lithics, and faunal remains were present. The ceramics in Pit 40 included Alabama River Applique var. Alabama River (1 g); Mississippi Plain (954 g); Mound Place Incised var. Akron (4 g); Moundville Incised var. Undetermined (3 g); Parkin Punctated var. Undetermined (3 g); untyped shell tempered sherds (14 g); and total grog tempered varieties (1 g). The lithics recovered from Pit 40 were: flakes (2 g); unmodified introduced rock (69 g); and 1 ground sandstone fragment. Faunal analysis showed that opossum along with other large and small mammal remains was present in all zones of the pit.

Pit 4[illegible] (USN 3365) was a dark yellowish brown (10 YR 3/4) oval-shaped pit, 46 by 73 cm in plan, which was cut by Pit 40 (USN 3507) on its northeastern side [illegible] 44, which began approximately 10 cm beneath the top level of Pit [illegible], had a maximum depth of 18 cm. No stratification was evident in the shallow basin-shaped pit, and no artifacts were recovered.

[illegible] (USN 4 35) was located in the southwestern portion of Structure 5A and appeared as a dark oval stain, 43 by 50 cm, set against the lighter sand, [illegible]. In profile the pit was shallow (22 cm deep) and basin-shaped. No artifacts were recovered from the pit, but daub and charcoal bits were present in the fill.

Structure 5B

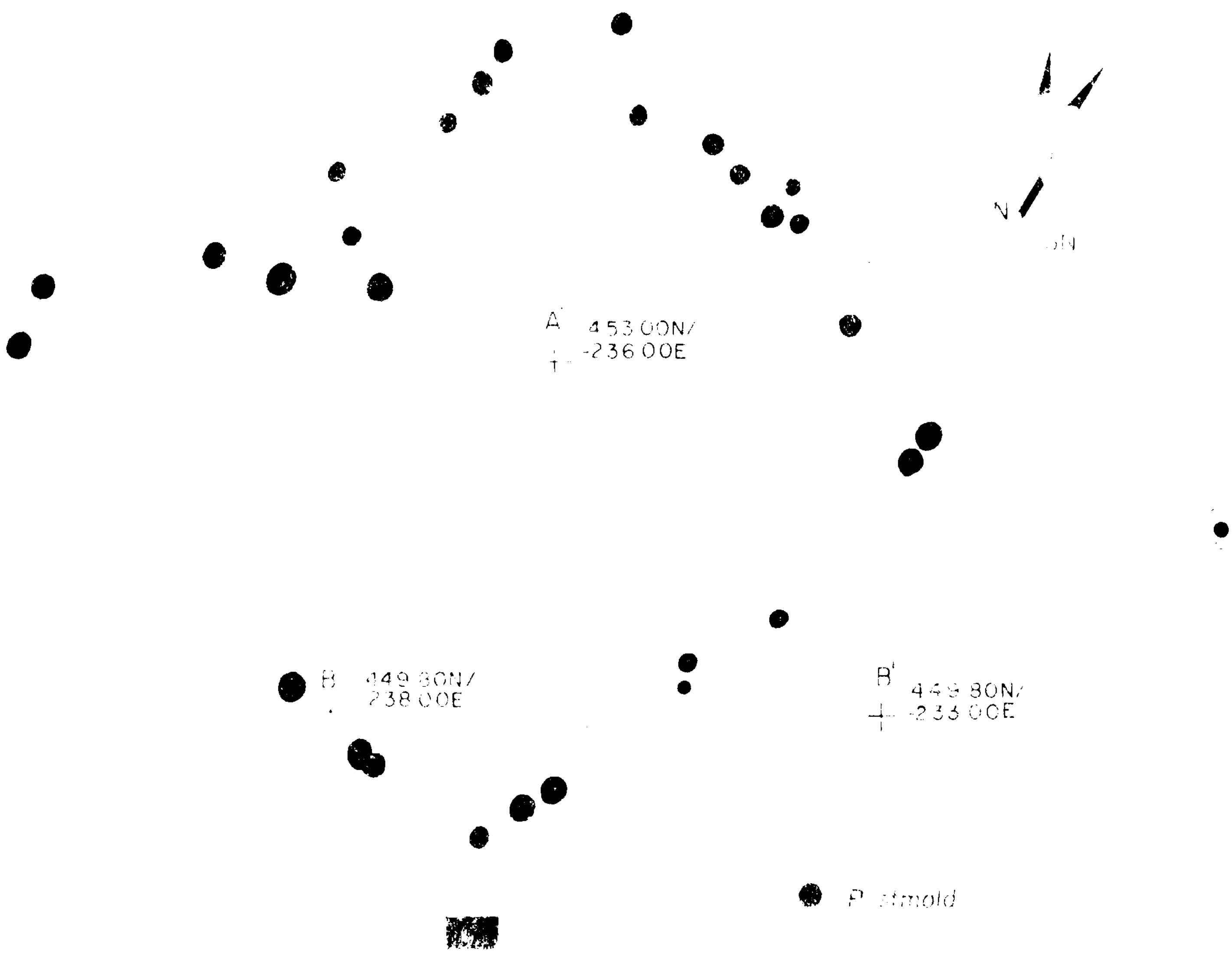
Structure 5B (Figure 28) was a rectangular postmold pattern which measured approximately 4.5 by 6.0 m across. There were 23 postmolds associated with Structure 5B, and their average depth of intrusion was 36 cm below the base of Level 1. No features other than postmolds were assigned to this structure. Measurements taken on the postmolds indicated that their radii ranged from 7 to 15 cm (mean=10.0 cm; s=2.5 cm); their depths, which were measured for 21 postmolds, ranged from 6 to 29 cm (mean=16.0 cm; s=6.6 cm). Beginning elevations ranged from 38.39 to 38.72 m AMSL and ending elevations from 38.20 to 38.66 m AMSL.

The south-to-north axis, which corresponded to the balk profile (Figure 24), formed a diagonal to the rectangular pattern formed by the postmolds; the diagonal extended 7 m north from 449N which positioned Structure 5B just a few meters beyond the northern limit of the heaviest concentration of daub. The west-to-east balk bisected the southwestern corner of the structure for approximately 2.75 m.

Structure 5C

Structure 5C (Figure 29) formed a rectangular pattern of postmolds which measured approximately 4.5 by 8 m across. One pit and 24 postmolds were assigned to this structure. The average depth of intrusion of the postmolds was 42 cm below the base of Level 1. From the size and depth measures taken from the postmolds, their radii ranged from 7 to 15 cm (mean=9.6 cm; s=2.0 cm) and their depths ranged from 9 to 33 cm (mean=21.3 cm; s=7.7 cm). Beginning elevations of the 24 postmolds ranged from 38.30 to 38.58 m AMSL and ending elevations from 38.13 to 38.33 m AMSL.

The balks formed diagonal lines to the structure's rectangular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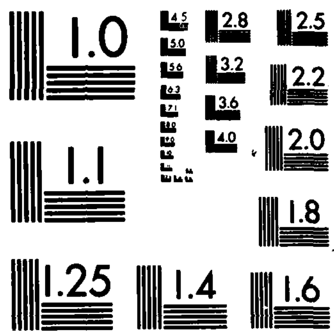

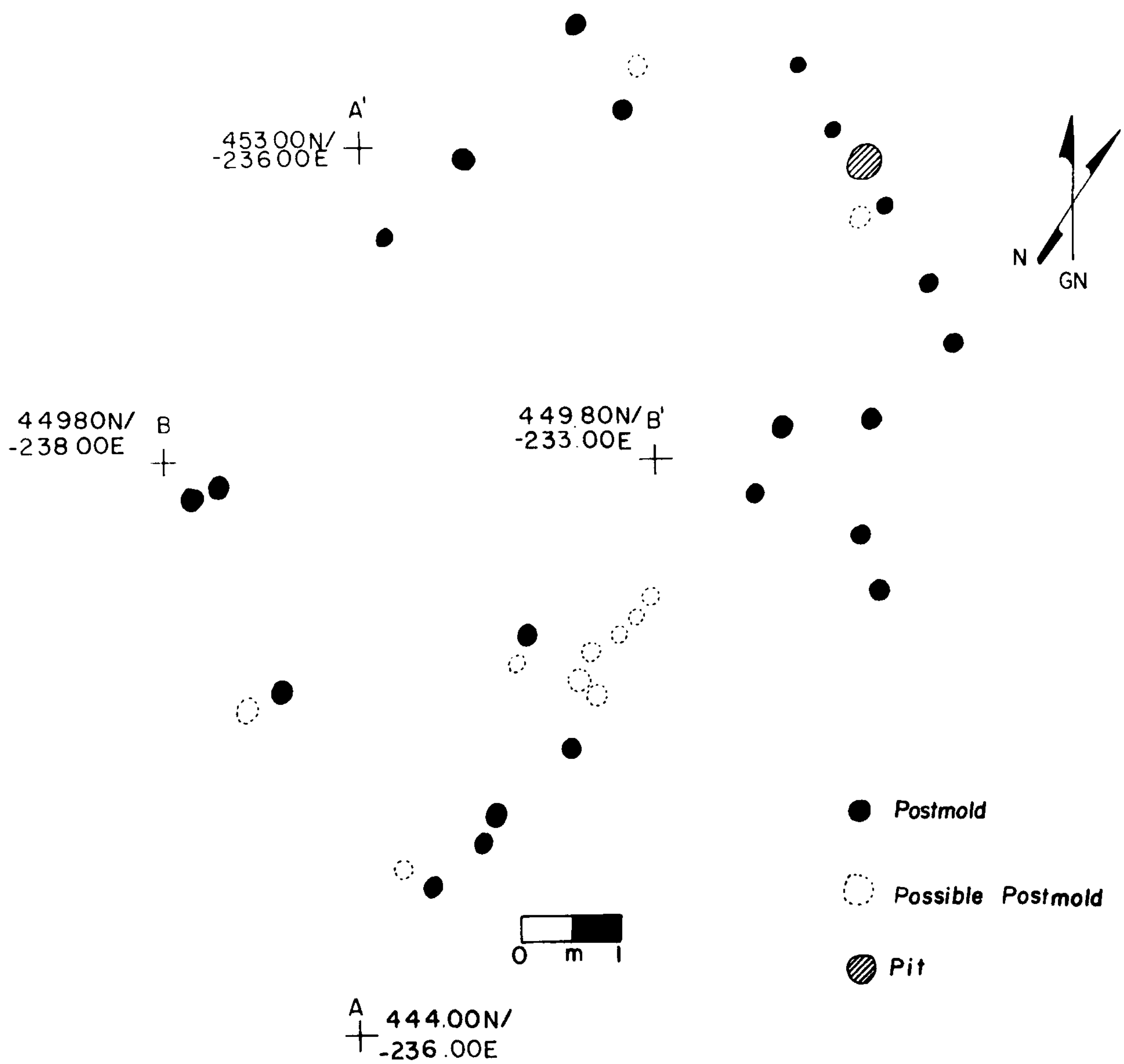

Figure 29. Structure 5C.

configuration, and the western edge of Structure 5C was cut by the south-to-north balk between 445.40N and 452.00N. The structure began at approximately -238E and continued eastward approximately 6.25 m in the west-to-east balk profile (Figure 24). The outline of Structure 5C corresponded generally to the daub layer in planview, but to the level of Zone C in profile.

Pit 78 (USN 4827) was located in the northeastern portion of Structure 5C and was 33 cm in diameter and 10 cm in depth. The pit contained an abundance of charred material and contained a greater percentage of clay particles than did the surrounding matrix of sandy loam. The entire pit was floated and produced wood charcoal and hickory remains (25 g), deer bone, and one Mississippi Plain *var. Warrior* sherd. Pit 78 may have been a smudge pit based on its relative size and the amount of charred remains within it.

Pit 69 (USN 4601)

Pit 69 (USN 4601), which contained protohistoric ceramics in the top and bottom levels, was located in the center of the southeastern quadrant of Hectare 400N/-300E. The pit was roughly circular in shape and intruded into the southernmost walltrench sequence of Palisade I (USN 4050). The pit measured 59 by 74 cm across and looked black (10YR2/1) and charred on the surface. A large mammal (bear) jaw was found on the pit's northern edge. In profile the basin-shaped pit was 30 cm deep and stratified into four zones (USN 4620, 4621, 4624, 4625), each approximately 7 to 8 cm thick and ranging from black to very dark grayish brown in color. The pit cut two postmolds (USN 4619 and 4626) which were located on the western side at either end.

Analysis of the ceramics in Pit 69 included: Alabama River Applique *var. Alabama River* (22 g); Carthage Incised *var. Carthage* (7 g); Mississippi Plain (175 g); untyped shell tempered varieties (13 g); Moundville Incised *var. Undetermined* (2 g); and Baytown Plain *var. Tishomingo* (4 g). Lithics contained by Pit 69 included: flakes (1 g); unmodified introduced rock (fire-cracked chert, cracked cobbles, sandstone, and hematite, 91 g). Faunal analysis indicated that several large mammal bones, deer bones, and a tooth and mandible of a bear were present in the pit fill.

Pit 70 (USN 4664)

Pit 70 (USN 4664) was located in the southeastern corner of 10 by 10 m Unit 450N/-210E (USN 2556). The large amorphous pit stain looked black (10YR2/1) in contrast with the lighter (10YR5/8) sandy loam of the area. In plan, this pit measured 1.6 by 2.0 m across. The profile, however, showed this large midden-like deposit to be a shallow 14 cm in depth.

Small amounts of protohistoric ceramics were recovered from the pit fill along with a general mixture of several types and tempers. Total ceramic recovery from Pit 70 included: Alabama River Applique *var. Alabama River* (2 g); Mississippi Plain varieties (494 g); fiber tempered varieties (1 g); grog tempered varieties (20 g); and sand tempered varieties (4 g). No diagnostic lithics were recovered from the pit; one deer tooth was present.

Pit 108 (USN 5717)

Pit 108 (USN 5717), located in the northeastern quadrant of Hectare

400N/-300E, was a large oval pit which contained protohistoric ceramics. Measuring 75 by 87 cm across, the pit was dark yellowish brown (10YR4/4) in color and contrasted with the darker (10YR3/4) matrix of sandy loam. In profile the pit was dish-shaped and shallow; it was only 11 cm deep.

Ceramic recovery from Pit 108 included: Alabama River Applique <u>var. Alabama River</u> (12.5 g); Mississippi Plain <u>var. Warrior</u> (51 g); and small shell tempered sherds (2 g). No lithics were recovered from this pit. Faunal remains were limited to large mammal bones.

<u>Pit 99 (USN 5526) and Pit 100 (USN 5527)</u>

Alabama River Applique <u>var. Alabama River</u> ceramics were found in both Pit 99 and Pit 100. Located in Unit 468N/-243E, these pits were approximately 10 cm apart and are thought to have intruded into the northeastern portion of Structure 6, USN 4857 (See Chapter 9, Volume I). Both pits began at the same elevation and had the same depth.

Pit 99 measured 40 by 68 cm across, appeared basin-shaped in profile, and had a depth of 15 cm. The fill was very dark brown (10YR2/2) sandy loam surrounded by dark yellowish brown (10YR3/4) sandy loam matrix. A piece of iron was observed in the northern portion of the pit. Ceramics recovered from Pit 99 were: Alabama River Applique <u>var. Alabama River</u> (2 g); Bell Plain <u>var. Big Sandy</u> (10 g); Mississippi Plain varieties (261 g); Moundville Engraved <u>var. Undetermined</u> (5 g); and grog tempered varieties (6 g). A few flakes and pieces of sandstone and 1 piece of modified hematite were the only lithics contained by the pit.

Pit 100, located 10 cm east of Pit 99, measured 40 by 70 cm across and appeared oblong in planview. The fill was black (10YR2/1) sandy loam. In profile Pit 100, like Pit 99, appeared basin-shaped and had a maximum depth of 15 cm. Ceramics recovered from Pit 100 included: Alabama River Applique <u>var. Alabama River</u> (25 g); Mississippi Plain (571 g); and untyped shell tempered sherds (5 g). Faunal analysis showed that large mammal bones were present. No lithics were recovered from the pit.

<u>Unit 475N/-242E (USN 2568)</u>

Two historic Chickachae Combed sherds (3.7 g) were recovered from the plowzone sample taken from Unit 475N/-242E (USN 2568). This 10 by 10 m unit lay approximately 60 m south-southwest of the mound, and the occurrence of these Choctaw-like ceramics here may be the result of recent disturbances resulting either from plowdrag or possibly from the mound bulldozing actvities of the 1950s.

Other ceramics from Unit 475N/-242E included: Mississippi Plain (1137 g); Moundville Incised (5 g); and grog tempered varieties (107 g). Lithic recovery included: unmodified lithics (157g); unmodified introduced rock (352 g); 1 hammerstone, 1 bifacially worked flake, and 2 ground greenstone fragments.

<u>Unit 490N/-266E (USN 2564)</u>

One gram of Alabama River Applique <u>var. Alabama River</u> along with 4 g of the Carthage Incised were recovered from the plowzone sample of 10 by 10 m Unit 490N/-266E (USN 2564). Since these late ceramic types were not found in a "closed find" context, they can hardly be diagnostic of the area as a whole and could have originated from any one of the many features in the unit. Three of the inner palisade lines (I, IV, V) crossed this unit, and a large midden (USN 9832) was found in the northeastern corner. This latter feature probably resulted from the redeposited mound material.

Ceramic recovery from Unit 490N/-266E included: Alabama River Applique var. Alabama River (1 g); Carthage Incised (4 g); Mississippi Plain (380 g); Mound Place Incised var. Undetermined (5 g); Moundville Incised var. Carrollton (5 g); and grog tempered varieties (17 g). Lithics recovered included: unmodified lithics (66 g); unmodified introduced rock (282 g); 2 bifacial tools (1 preform, 1 microlith) and 2 unifacial tools (1 concave "scraper," 1 "perforator").

HECTARE 500N/-000E

Unit 598N/-074E (USN 354) was a Phase I, 1 by 1 m test unit located in the upper northeastern quadrant of Hectare 500N/000E -- approximately 250 m north-northwest of the mound. Level 1 of this unit which represented the plowzone (0 to 20 cm below surface) contained Alabama River Applique ceramics. This disturbed level consisted of heavily compacted sandy loam which was dark yellowish brown (10YR4/4) in color. Small fragments of daub were noted throughout the level but no features could be observed. Total ceramics from Level 1 included: a small historic sherd (0.5 g); Alabama River Applique var. Alabama River (4.3 g); Mississippi Plain (27.1 g); grog tempered varieties (18.2 g); and fiber tempered varieties (1.2 g).

HECTARE 500N/-200E

The southwestern quarter of Hectare 500N/-200E was covered by the eastern half of the mound. Two excavation units in this hectare, randomly placed on the northernmost edge and base of the mound, revealed minute amounts of Alabama River Applique var. Alabama River. Both these cases seem to have been the result of disturbance.

Unit 599N/-183E (USN 783)

During Phase I, of the thirty 1 by 1 m test units excavated around the periphery of the mound in Hectare 500N/-200E, only one produced protohistoric ceramics. This unit, 599N/-183E (USN 783), was located approximately 50 m north of the mound's north side. The protohistoric sherds were recovered from Level 2 of the unit, approximately 20 to 40 cm below surface. The soil was yellowish brown (10YR5/4) sandy loam. No features were observed in this level, but one large piece of daub was noted in the south wall. Equal amounts (40 g) of Mississippi Plain, Baytown Plain, and Mulberry Creek Cord Marked ceramics were recovered with lesser amounts of Alabama River Applique (26 g).

Unit 540N/-190E (USN 4504)

A 10 by 10 m unit on the northern perimeter of the mound, Unit 540N/-190E (USN 4504), produced a few sherds of Alabama River Applique. This unit lay east of the 1977 mound trench. Only the eastern half of this unit was excavated; the western half had been disturbed. Total ceramics recovered from this unit included: Alabama River Applique var. Alabama River (1 g); Mississippi Plain (24 g); Mound Place Incised var. Akron (13 g); Baytown Plain var. Roper (12 g); and Mulberry Creek Cord Marked var. Aliceville (266 g).

HECTARE 500N/-300E

Hectare 500N/-300E yielded more protohistoric features than did any other hectare on the entire site. The majority of these features lay buried in the northern one-half of this hectare. Segments of the protohistoric ditch and Structure 1 were located in the northwestern quadrant of the hectare; Structure 2, Structure 3, and a large protohistoric ossuary were found in the northeastern quadrant.

The three structures will be described according to their sequence of discovery, moving from west to east. Other features will be discussed in relation to their respective structure complexes. The ossuary, due to its uniqueness, will be discussed separately. (The section of the protohistoric ditch found in Hectare 500N/-300E is discussed in the first section of this chapter.)

Structure 1 (USN 4776)

Structure 1 (Figure 30) was discovered in the southwestern corner of a 10 by 10 m sample unit (564N/-275E, USN 4757). Initially, it appeared as a large concentration of daub and ash. In order to delimit the bounds of the daub and ash layer, two extension units and another 10 by 10 m unit (572N/-285E, USN 4777) were opened. A cross-balk oriented to the grid was retained for stratigraphic control, and the structure was removed in quadrants. First the 15 cm thick daub and ash layer was stripped off to expose the "floor" of the structure. The floor and two arbitrary levels of the subfloor were also quartered and removed in like manner.

The structure was roughly circular, approximately 6.6 by 7.8 m in extent; the daub and ash deposit was approximately 15 cm thick, and the "floor" added approximately 5 cm to the depth of the deposit. Figure 31 illustrates the stratigraphy (with plowzone removed) in the west-to-east profile of Structure 1. The dark yellowish brown (10YR3/4) daub and ash layer was underlain by yellowish brown (10YR5/8) subsoil; the structure "floor" was located at the interface of these layers.

Beneath the daub and ash layer were numerous postmolds, a few pits, an *in situ* crushed protohistoric vessel, and an animal bone concentration, all of which helped to define the floor of the structure. Also scattered on the floor were a triangular point, a nutting stone, a hematite discoidal, and a strange piece of ground sandstone having three drilled holes. No hearth was associated with the structure, but in the southwest quadrant beneath the daub and ash layer was a small -- less than a meter square -- concentration of reddish orange burned sand which might have represented the remnants of a hearth.

Fifty postmolds were associated with Structure 1; their radii ranged from 6 to 40 cm (mean=11.8 cm; s=5.1 cm), and their depths ranged from 6 to 50 cm (mean=17.6 cm; s=9.7 cm).

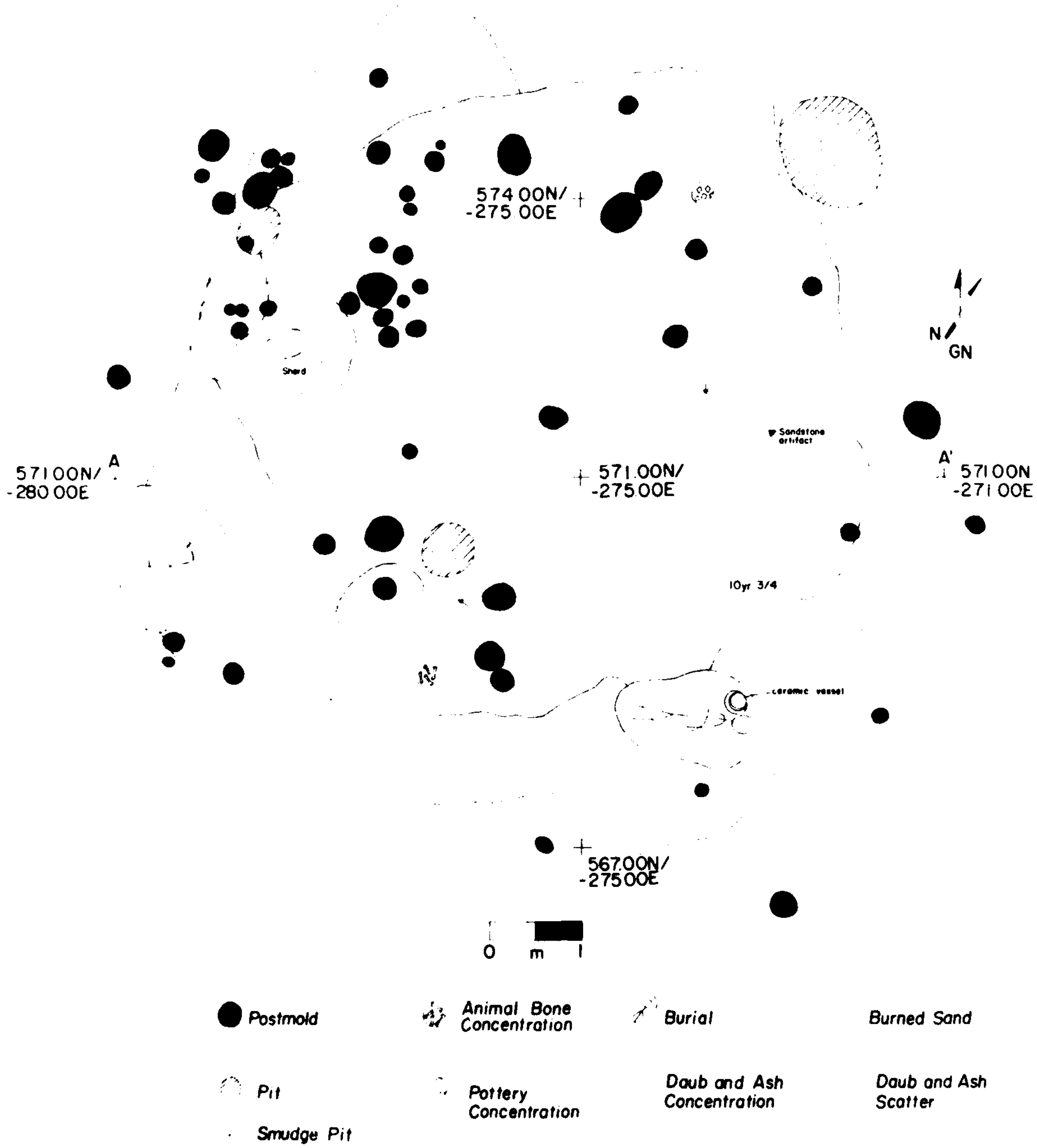

Figure 30. Planview of Structure 1 (USN 4776).

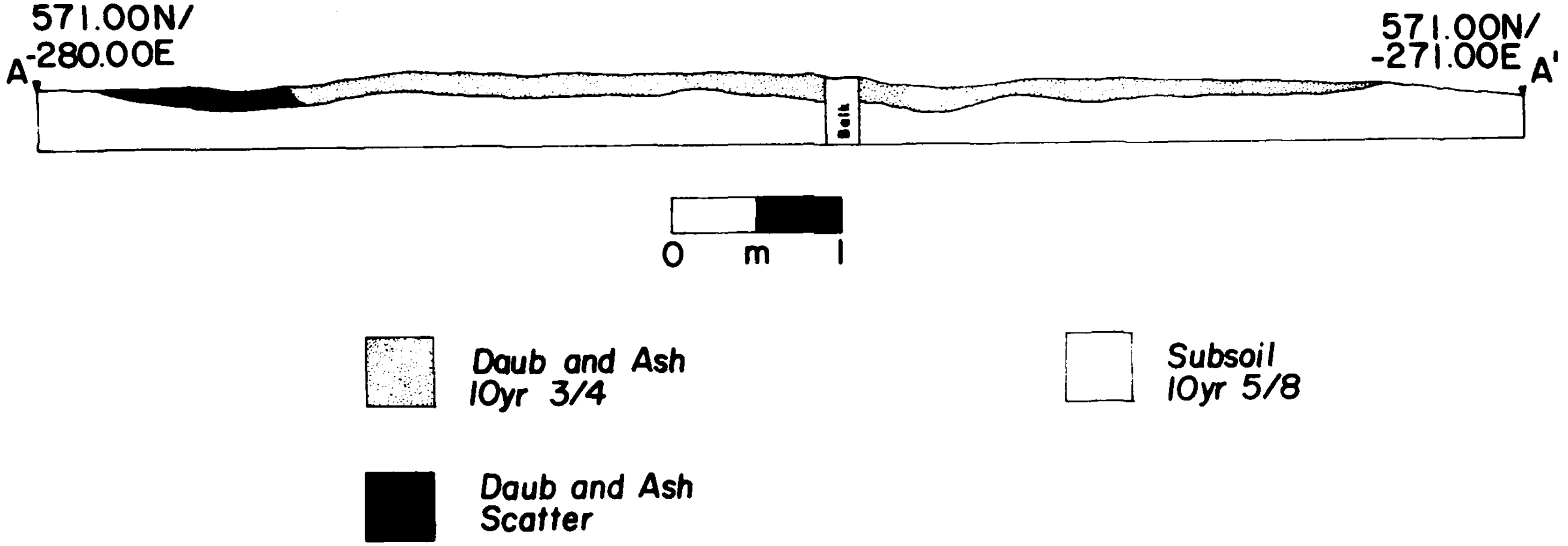

Figure 31. Profile of Structure 1 (USN 4776).

Three burials (Burials 5, 6, 7) lay beneath the floor of tne structure; all, however, seem to be Summerville I period burials, and postmolds from the structure cut through two of them. (See Chapter 6, Vo'um^ II for discussion of these burials.)

A whole Alabama River Appplique var. Alabama River vessel (USN 5496) was found within the daub and ash deposit. The majority of the ceramics in the daub and ash layer of Structure 1 was Mississippi Plain var. Warrior (1362 g). Other ceramic types in this layer were: Carthage Incised var. Moon Lake (16 g); Moundville Incised (15 g); grog tempered varieties (30 g); and sand tempered varieties (2 g). Ceramics recovered from the excavation of the floor revealed only Mississippi Plain var. Warrior (200 g) and a small grog tempered sherd (1 g).

Lithic recovery from the daub and ash layer showed a sparse amount of flakes (12 g); a variety of introduced unmodified rocks including sandstone, hematite, cracked cobble fragments, and a fire-cracked chert (362 g); a preform; and a polished greenstone fragment. Cuts taken from the floor revealed lesser amounts of flakes (2 g) and introduced unmodified rock (250 g); a discoidal made from hematite (USN 5449); a pitted stone; a triangular projectile point, and a drilled piece of ground sandstone.

Animal Bone Concentration (USN 5495)

A small (30 cm in diameter) concentration of animal bone was located (resting on the floor) in the southwestern quadrant of Structure 1. No pit was discernible, and the soil between the bones was not noticeably different from the surrounding matrix. One large mammal bone and one deer femur were recovered. Neither ceramics nor lithics were found in direct association with the bone concentration.

Pottery Concentration (USN 5496)

Located in the northeastern quadrant of Structure 1, within the daub and ash layer and just a few centimeters above the structure floor, lay a concentration of sherds. The pottery consisted of several large sherds from the same vessel which had been crushed. Reconstruction of this vessel showed it to be a globular-shaped jar of Alabama River Applique var. Alabama River. The finding of this protohistoric vessel so close to the structure floor made it the key indicator for assigning Structure 1 to the protohistoric, Summerville IV period.

Burned Sand Concentration (USN 5497)

A reddish orange (2.5YR4/6) oval of burned sand which measured 73 by 87 cm was found on the floor of Structure 1. In profile this feature was shallow, 7 cm deep, and slightly basin-shaped. It contrasted markedly with the surrounding yellowish brown (10YR5/8) sandy loam. One postmold (USN 5498) intruded through the northern portion of the burned sand. This postmold was black in color (2.5YR2.5/0) and contained no artifacts. Although the burned sand was not situated in the exact center of the structure, it is nevertheless believed to have been the remnants of a fireplace.

Pit 12 (USN 5633)

Pit 12 was a large irregularly-shaped refuse pit found on the northeastern perimeter of Structure 1. In plan it measured 98 by 118 cm. The pit was basin-shaped with a shallow profile of 25 cm. The pit fill was composed of dark yellowish brown (10YR5/6) sandy loam and was surrounded by a lighter sandy loam. One piece of hematite and a few shell tempered ceramics were recovered from the pit.

Pit 13 (USN 5638)

Pit 13 was a small, circular pit filled with carbonized organic material. It was located in the southwestern quadrant of Structure 1. This pit, which was found on the floor of the structure, measured 42 by 43 cm and had a shallow depth of 11 cm. The pit was black in color (2.5YR2.5/0) and was surrounded by yellowish brown sandy loam. The entire pit (6 liters) was taken as a flotation sample which yielded 242 grams of burned pine cones.

Pit 14 (USN 5639)

A large circular pit, Pit 14, was found just a few centimeters north of Pit 13. This pit was approximately 60 cm in diameter. In profile, Pit 14 looked cone-shaped and had a maximum depth of 41 cm. The soil within the pit was black (2.5YR2.5/0) but was surrounded by dark yellowish brown sandy loam. This pit contained daub, a few flakes, wood charcoal, and carbonized hickory and bark.

Pit 15 (USN 5643)

Pit 15 was located on the northwestern periphery of Structure 1. The planview showed an oval stain, 37 by 60 cm. In profile the pit was "U"-shaped, unstratified, and 36 cm deep. The dark yellowish brown (10YR4/4) pit fill was surrounded by a lighter sandy loam matrix. Postmold 16 (USN 5642) intruded into the southern end of this pit, but both features had approximately the same ending elevations. The 18 cm diameter postmold appeared slightly darker than the pit and contained no cultural material. The pit only contained 1 scraper and an unfused squirrel ulna.

Pit 16 (USN 5660)

Pit 16 was a small oval smudge pit, 22 by 30 cm, located approximately 2 meters south of the pottery concentration (USN 5496) in the northeastern quadrant of Structure 1. The pit was very shallow, only 4 cm deep, and had slanting walls; it was black in color (7.5YR2.5/0) and was surrounded by a light-colored sandy loam. Neither lithics nor ceramics were recovered from this pit. However, it did contain 100 grams of wood charcoal, bark, carbonized corn cupules, and one deer bone.

<u>Structure 2 (USN 6422)</u>

Structure 2 (USN 6422) first appeared as an irregularly shaped concentration of daub and ash approximately 3.8 by 3.2 m in size and very dark in color (Figure 32). This structure was discovered in a 10 by 10 m unit (574N/-254E, USN 5667) at 39.47 m AMSL. Structure 2 was located approximately

25 m north-northeast of Structure 1 and 15 m south-southwest of Structure 3. Figure 33 shows the areal relationship between Structures 2 and 3.

Several postmolds and two large pits were observed in the dark yellowish brown (10YR4/6) sandy loam perimeter of the daub and ash concentration. A smaller concentration of daub and ash, possibly representative of structure-fall, lay approximately two meters to the immediate north of Structure 2 and contained large amounts of charcoal, including some burned timbers.

The structure was exacavated in four quadrants. A cross-balk, centered on the daub and ash concentration and oriented to the grid, was used to maintain stratigraphic control. In the southeastern quadrant, within the daub and ash zone, lay a large concentration of charred nuts. Below the daub and ash layer, the exposed floor was the same color as the surrounding matrix, but additional postmolds were found. The floor was removed in an arbitary 5 cm level. There was no evidence of a hearth other than a small concentration of burned sand near the center.

The overall stratigraphy of Structure 2 is illustrated in the west-to-east balk profile (Figure 34). The upper layer was composed of very dark grayish brown (10YR3/2) daub and ash zone and was approximately 6 cm thick; this layer topped the 10 cm thick structure floor which appeared much lighter in color, dark yellowish brown (10YR4/6). Beneath the floor lay darker yellowish brown (10YR3/4) subsoil of sandy loam.

Fifty-two postmolds were associated with Structure 2. Their radii ranged from 5 to 50 cm (mean=11.4 cm; s=6.3 cm); their depths ranged from 4 to 52 cm (mean=14.6 cm; s=9.6 cm).

Lithic recovery from the daub and ash layer of Structure 2 revealed very few flakes (4 g), a variety of unmodified introduced rock (127 g), 1 ground sandstone fragment (12 g), and 1 drill fragment made from non-local material. Lesser amounts of lithics were recovered from the floor of the structure: flakes (1 g); unmodified introduced rock (44 g); and 1 grooved, ground sandstone object (766 g).

The majority of ceramic types recovered from the daub and ash layer were Mississippi Plain (371 g); grog tempered varieties totaled 71 g. However, a single gram of Alabama River Applique var. Alabama River was recovered from this upper layer. The floor contained very small amounts of Bell Plain var. Big Sandy, Mississippi Plain, Moundville Incised, and grog tempered sherds.

Charred Nut Concentration (USN 6432)

One of the most interesting features directly associated with Structure 2 was a large concentration of charred nuts (USN 6432). This feature was located in the southeastern quadrant of the daub and ash layer. This amorphous-shaped concentration was black in color (2.5YR2.5/0) and measured 1 by 1.2 m. Dark yellowish brown (10YR4/6) sandy loam surrounded this feature. In profile, the deposit appeared very thin and flat; it ranged from 4 to 8 cm in depth. The tops of two postmolds (USN 6464 and 6465) were found at approximately 17 cm beneath the nut concentration on the north and south sides.

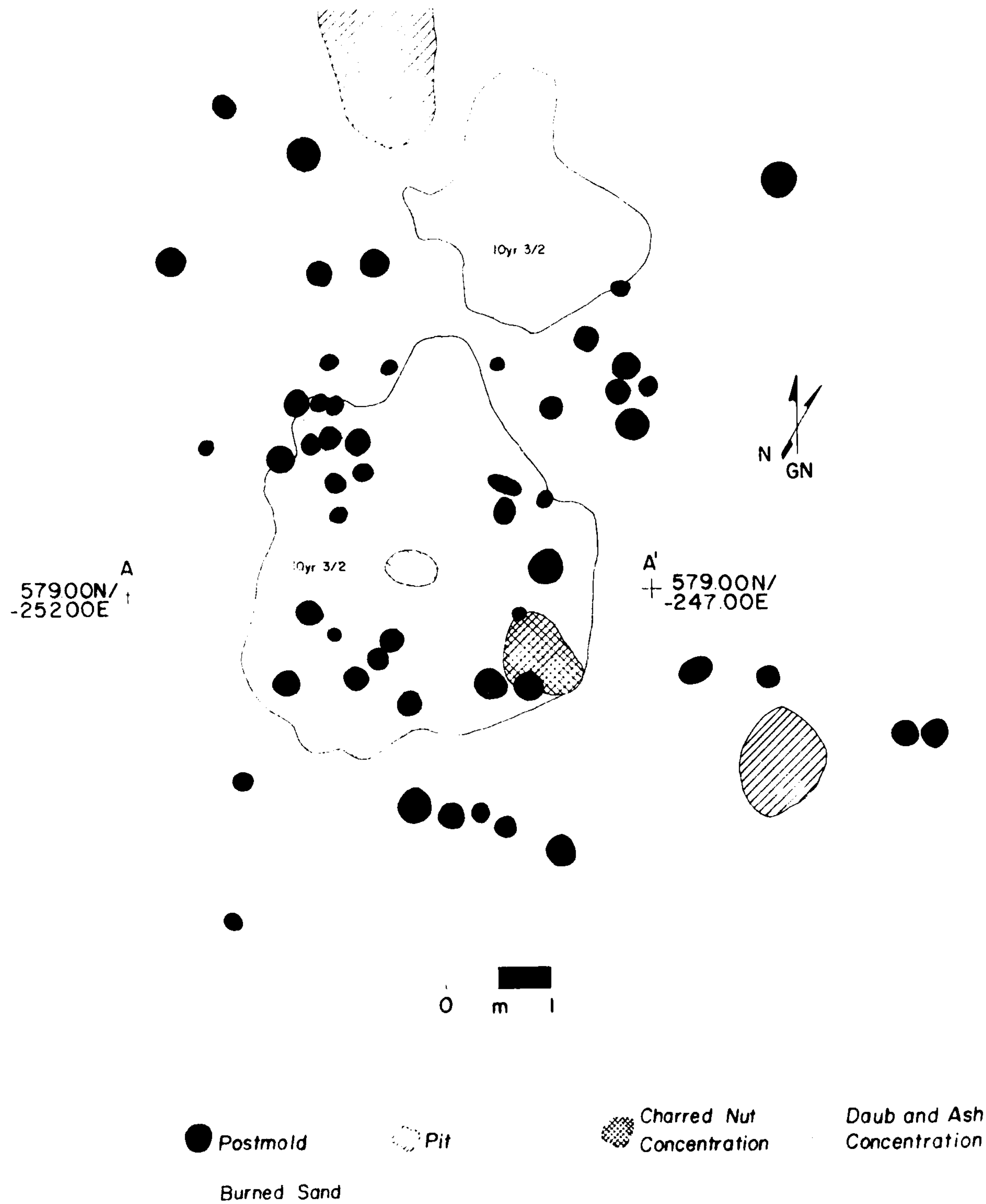

Figure 32. Planview of Structure 2 (USN 6422).

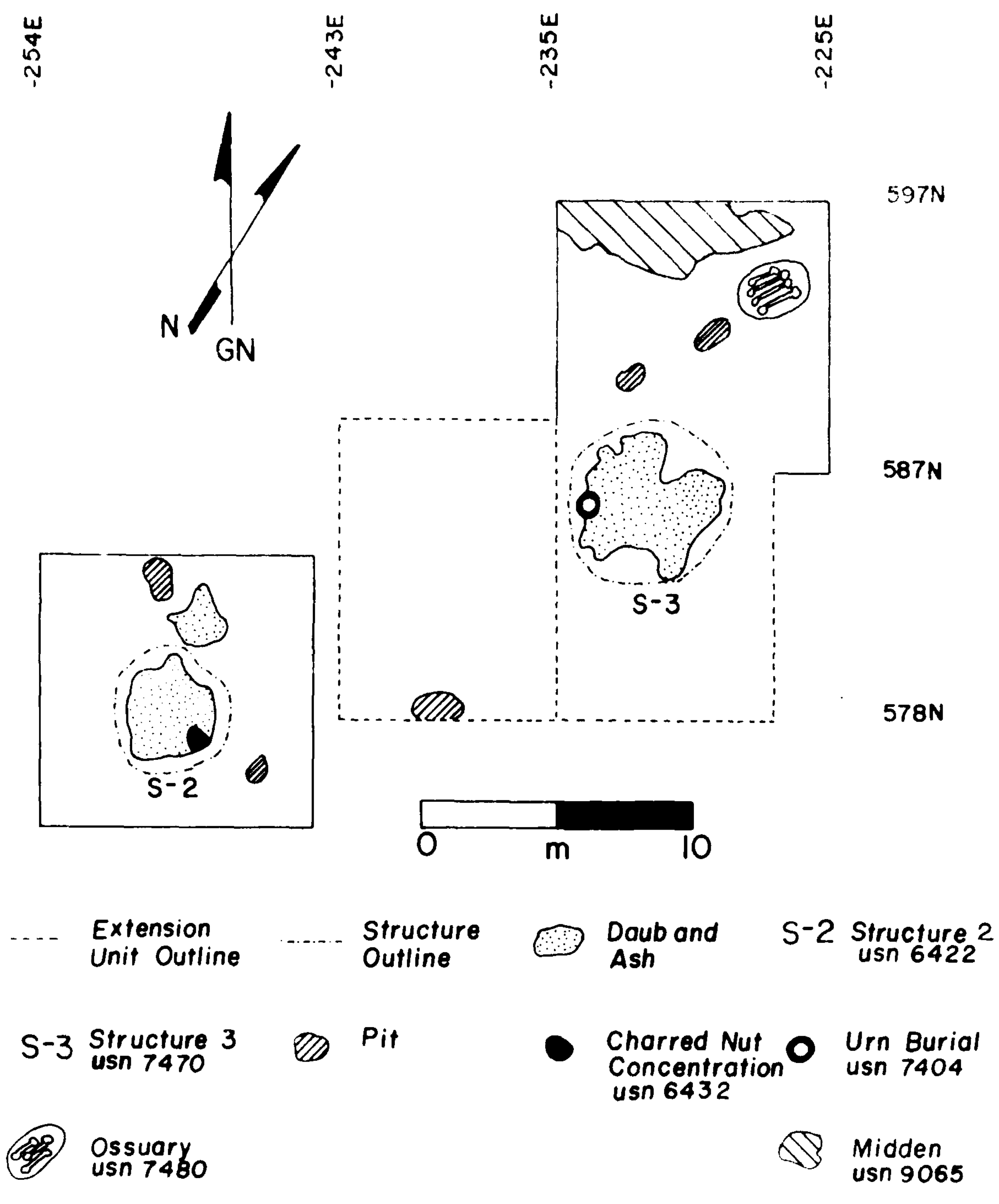

Figure 33. Distribution map showing relationship between structure complexes in the northwest one-quarter of Hectare 500N/-300E.

northwestern quadrant of Hectare 500N/-400E yielded a total of 4700 mollusc shells and a small amount of protohistoric ceramics. However, these Alabama River Applique sherds were probably intrusive. The surrounding area contained mostly Summerville I ceramic types. Located in the northeastern portion of 10 by 10 m Unit 579N/-398E (USN 3300), the feature was also observed in the west wall profile of the adjacent 10 by 10 m unit, 582N/-386E (USN 3301).

This unstratified feature was amorphous in shape and measured 4.5 by 5.3 m in plan and 10 cm in depth. The surrounding matrix was dark yellowish brown (10YR4/4) loamy sand. The entire fill was waterscreened.

The ceramics found in the shell concentration were: Alabama River Applique <u>var. Alabama River</u> (1 g); Carthage Incised (15 g); Mississippi Plain (4209 g); Mound Place Incised (5 g); Moundville Incised (148 g); small shell tempered sherds (612 g); untyped shell tempered sherds (18 g); and Mulberry Creek <u>var. Aliceville</u> (46 g). The lithics recovered included: flakes (32 g); unmodified introduced rock (625 g); 1 grooved piece of sandstone; 1 polished greenstone fragment; 1 polished hematite fragment; 3 unifaces; 1 Madison Point; and 1 projectile point fragment.

The fauna identified in this feature included large and small mammals, deer, raccoon, gray fox, squirrel, rabbit, turkey, and reptiles. The freshwater shell weighed a total of 24,338 g.

<u>Postmold 278 (USN 4959)</u>

Located in the extreme southeastern corner of Hectare 500N/-400E, a single postmold (USN 4959) in Unit 500N/-320E yielded 2 g Alabama River Applique <u>var. Alabama River</u> and 12 g Mississippi Plain sherds. Having a diameter of 30 cm, the postmold was 32 cm deep and dark yellowish brown (10YR4/4) in color; the surrounding matrix was lighter colored sandy loam. This postmold was part of a Summerville II-III complex and the protohistoric sherd was probably intrusive.

<u>HECTARE 600N/-300E</u>

The southern portion of Hectare 600N/-300E yielded a portion of the protohistoric ditch as well as the first historic Chickachae Combed sherd found on the site.

<u>Unit 605N/-240E (USN 654)</u>

Unit 605N/-240E (USN 654) was a Phase I, 1 by 1 m test unit which contained a single Chickachae Combed sherd. Falling within a Summerville I midden, this unit lay approximately 70 m north-northwest of the mound and was bounded by the ditch which lay approximately 20 m to the west. However, the historic sherd was recovered from Level 1 of the unit (0 to 20 cm below surface) which corresponded to the plowzone. The plowzone consisted of dark yellowish brown (10YR3/6) sandy loam. Therefore, since the historic sherd was not <u>in situ</u>, it was more than likely intrusive into the earlier midden.

<u>SUMMARY</u>

The protohistoric, Summerville IV community, the final prehistoric

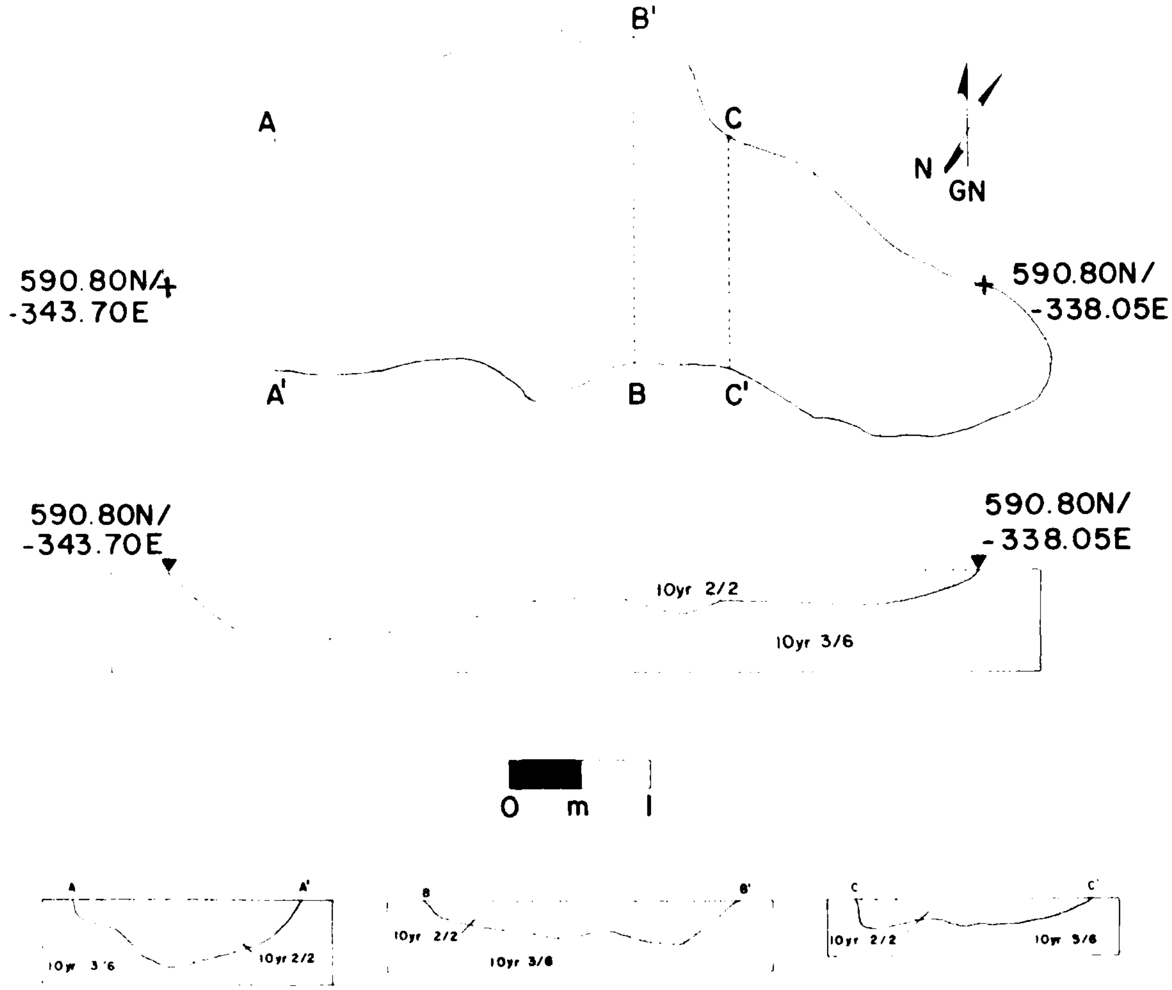

Figure 39. Pit 14 (USN 4072).

drawn, photographed, and removed. This whole procedure took several weeks. Approximately 446 bones were removed from the ossuary. Each bone was wrapped in aluminum foil and packaged in a plastic bag. All the remaining burial fill was then waterscreened through 1/8-inch hardware cloth. (See Chapter 6, Volume II for the detailed osteological analysis and an in-depth discussion of the protohistoric ossuary in general.)

HECTARE 500N/-400E

Protohistoric ceramics in Hectare 500N/-400E were recovered from a large pit in the upper northeastern quadrant, a large mussel shell concentration in the upper northwestern quadrant, and one postmold in the extreme southeastern corner. All three of these features have been included in this chapter due to the presence of Alabama River Applique var. Alabama River sherds. The protohistoric sherds were more than likely intrusive into the shell concentration and postmold, however, because both features were surrounded by earlier occupation areas.

Pit 14 (USN 4072)

Pit 14 (USN 4072), a large crescent-shaped refuse pit which contained an abundance of large Mississippian sherds and other cultural debris, was located in the northeastern quadrant of Hectare 500N/-400E on the northern side of Structure 1 (USN 3880). The pit was found while defining the limits of the structure. The structure contained Summerville I ceramic types and probably was not associated with Pit 14. (See Chapter 8, Volume I for discussion of this structure.)

Pit 14 (Figure 39) measured 5.6 m long and had a maximum width of 2.7 m. The pit's surface looked very different from the surrounding dark yellowish brown sandy loam. It had a very dark brown (10YR2/2) soil that was packed with an abundance of ceramics, lithics, bone, and mussel shell. In profile the pit was unstratified and basically basin-shaped, but looked shallow in relation to its overall size. It was deeper at both ends than in the center, and it had a maximum depth of 46 cm on its western end. Therefore, judging from its profile, the pit could have begun as two separate pits that were joined later in time.

Because of its great size, the pit was excavated in four sections or cuts which were waterscreened separately; flotation samples were collected from each cut. Profiles were drawn which showed the variation of the pit's depth in relation to its width; the long west-to-east profile view was also recorded.

Analysis of Pit 14's contents showed a broad range of materials. For the most part the pit contained large amounts of freshwater shell and well-preserved shell tempered ceramics, a few sand tempered ceramics, a sizable amount of worked lithics, and beautifully preserved faunal remains discussed in Chapter 4, Volume II. The botanical remains that were identified included hickory nutshells, wood charcoal, bark, and corn cob fragments.

Shell Concentration (USN 4316)

A large concentration of freshwater shell (USN 4316) located in the

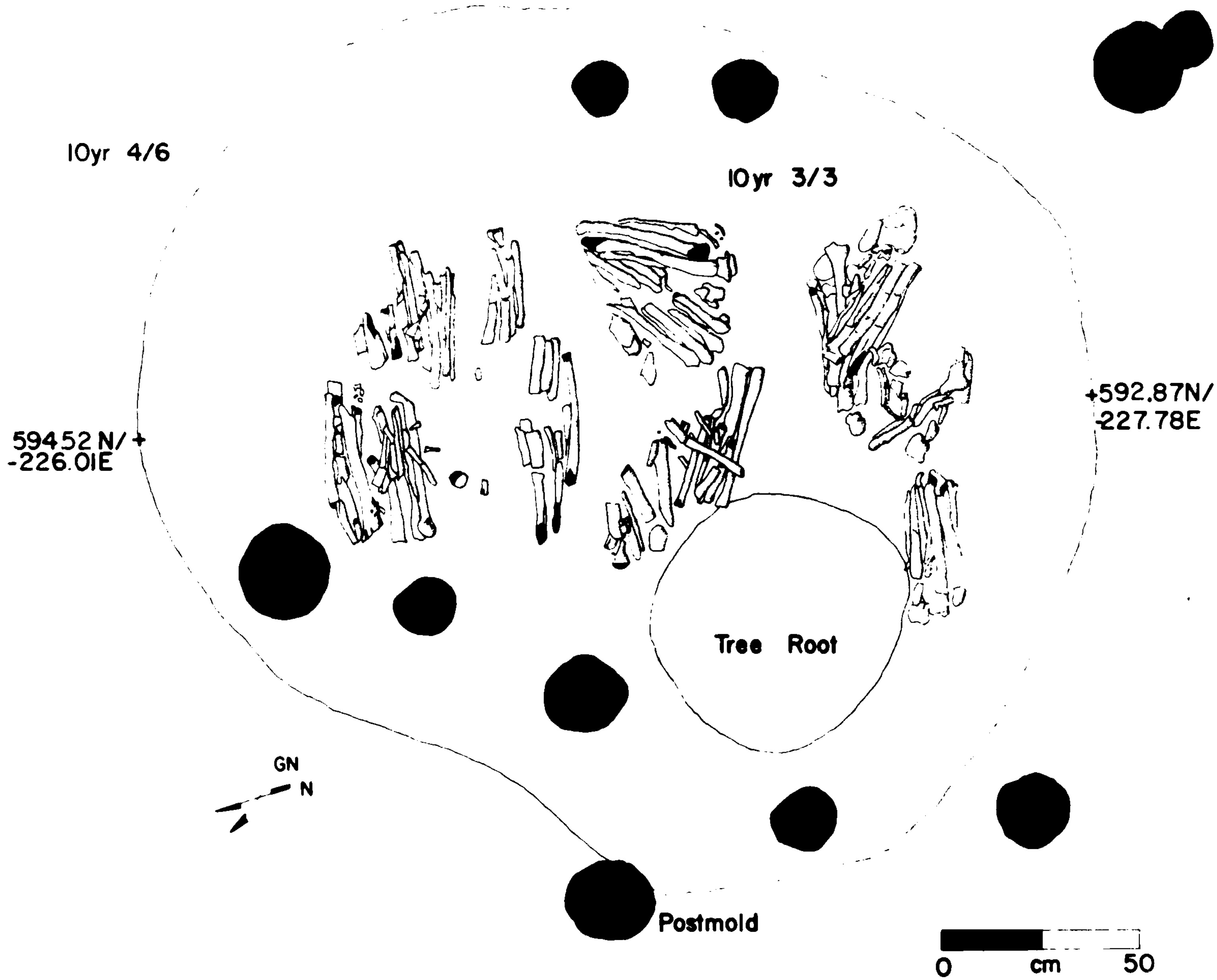

Figure 38. The Ossuary (Burial 9, USN 7480).

Combed were recorded from the site -- all in close proximity to the mound.

The Ossuary (Burial 9, USN 7480)

A large protohistoric ossuary (USN 7480), containing skeletal remains from parts of 43 individuals, was located approximately 5 m north of Structure 3 (Figure 33). Found at a depth of 39.64 m AMSL, the ossuary appeared to be a round, almost triangular-shaped pit which measured approximately 2.2 by 2.4 m across (Figure 38). The pit fill consisted of dark brown (10YR3/3), fine-grained sandy loam and was surrounded by a lighter and more yellow loamy matrix (10YR4/6). When the top layer of bones was exposed, it appeared that many pairs of reinterred long bones had been buried in a magnetic north-south direction. The bones, infiltrated by small roots, were in a relatively fair state of preservation, but when wet, would quickly crumble to bone meal. There was evidence of rodent gnawing on some of the bones. Soil samples from in between the bones were taken from each quadrant of the ossuary; flotation samples, 9 liters in total, were collected from general bone brushings and from the pit fill.

Several postmolds were recorded around the edge of the pit, but due to lack of time, these postmolds were not excavated. A large tree root intruded into the northeastern portion of the burial pit and caused some disturbance to the bones in that area; no cultural remains were present within the root fill. A ceramic fish-head effigy was found on the northeastern periphery of the pit, but it might have been associated with the midden located immediately to the north. Pottery and chert flakes were observed throughout the general pit fill.

Since time did not permit total excavation of the ossuary in the field, the entire feature was moved to the lab. In order to accomplish this move, the feature was completely pedestalled and then divided into five large sections (labeled I-V). These divisions were based on general bone groupings when possible, and each section was keyed to the planview drawing (Figure 38).

Two large open-ended metal boxes of cold-rolled steel were built to move the ossuary. Temerson Steel Warehouse, Inc. of Tuscaloosa, Alabama, was contracted to build these steel boxes; one box measured 1.2 by 1.0 by .35 m; the smaller box was about half this size and measured 1.2 by 0.6 by .35 m. Small holes were cut into the boxes in order to attach rope handles.

Luckily, being mid-December, the ossuary "froze" one night and was in perfect condition for removal the next day. Three of the smallest sections were each wrapped in "Ace" bandages and lifted in their frozen state into wheelbarrows which contained a base of loose dirt for support. The two larger sections were each carefully wedged into their made-to-order metal boxes and, with the help of the backhoe and rope, they were lifted into the back of a truck. Later, at the field camp, the truck was backed up to the front porch of the house and several persons slid and guided the two boxes into the front hallway. "Ace" bandages coupled with "fuzz" from Huyck Felt Company of Aliceville, Alabama, aided in protecting and packing the ossuary sections inside the metal scoops.

Once in the laboratory, each section of the ossuary was excavated as a whole, whereby each exposed (arbitrary) layer of each section was cleaned, the time of the structure's collapse.

Pit 47 (USN 9054)

Pit 47, a large refuse pit, was located 8 m south-southwest of Structure 3 in an 8 by 11 m extension unit (578N/-243E, USN 9017). In plan view the pit appeared as a large, very dark grayish brown (10YR3/2) oval and measured 1.2 by 1.8 m across. However, in profile, the pit was shallow, 20 cm in depth, flat on the bottom, and had gently sloping sides. A heavy concentration of animal bone combined with moderate amounts of lithics and ceramics was found in the southeastern quadrant of the pit.

Faunal analysis showed that several deer bones along with those of a large bird were present in the pit. Lithic recovery included a few flakes, introduced unmodified rock (fire-cracked chert, cracked cobble fragments, sandstone, chalk, and hematite), plus 1 ground piece of hematite, and 1 microlith.

The ceramics recovered in Pit 47 were a mixture of shell tempered and grog tempered types: Mississippi Plain (480 g); Moundville Incised (12 g); Parkin Punctated (9 g); and grog tempered sherds (139 g).

Since Parkin Punctated ceramics were recovered from Pit 47, this feature could have been contemporary with Structure 3; it therefore has been included in this section for discussion.

Unit 568N/-243E (USN 6480)

A 10 by 10 m sample unit (568N/-243E, USN 6480), located just south of Structure 3 and Pit 47, yielded protohistoric ceramics in the plowzone sample. This unit also contained an abundance of postmolds and smudge pits. However, no structure pattern could be constructed from these features.

Ceramic recovery from this plowzone sample included: Alabama River Applique var. Alabama River (1 g), Carthage Incised (2 g), Mississippi Plain (1175 g), Moundville Incised (13 g), grog tempered sherds (650 g), and 1 small sand tempered sherd. Lithic recovery included unmodified lithics, unmodified introduced rock, 2 polished greenstone fragments, 1 uniface, and 1 biface.

Unit 510N/-220E (USN 4549)

Several sherds of Alabama River Applique var. Alabama River were recovered from the "redeposited" mound material on the southern edge of the mound in a 5 by 10 m extension unit (510N/-220E, USN 4549). This redeposited mound material probably resulted from either the 1950 mound bulldozing or possibly from the mound inhabitants discarding waste materials from the summit of the mound. (See Chapter 7, Volume I for a detailed discussion of this "redeposited" mound material.)

Although protohistoric ceramics occurred in this unit, they were not in situ and were mixed with large amounts of mussel shell, bone, lithics, and earlier ceramic types. Two historic "Chickachae Combed" sherds were also recovered from this extension unit. These intrusive sherds were grog tempered and weighed 16.1 g. Only two other sherds (USN 654 and 2568) of Chickachae

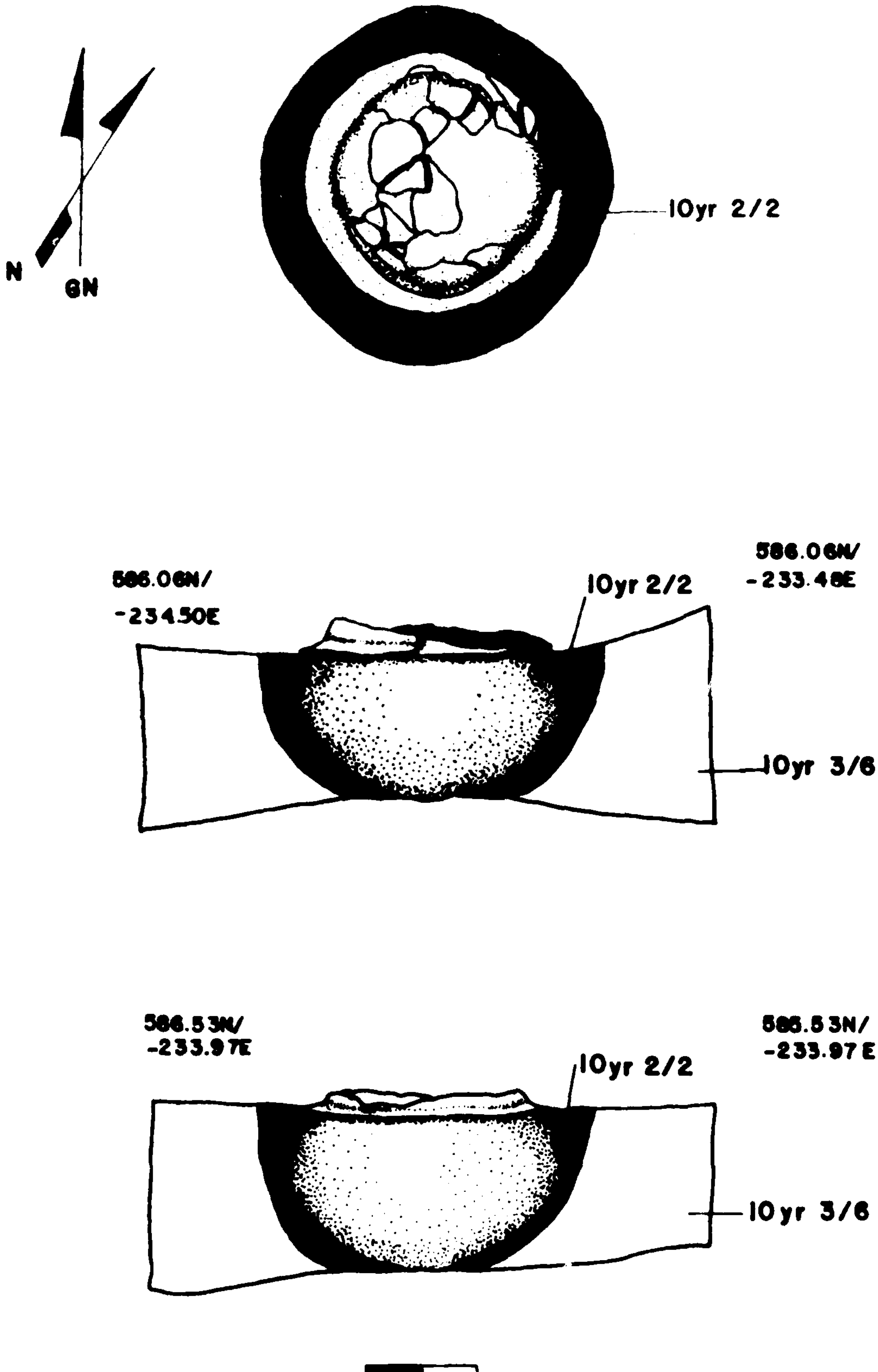

Figure 37. Urn Burial 3 (Burial 8, USN 7404).

vessel exposed. The pit was very dark brown (10YR2/2) and contrasted with the surrounding dark yellowish brown (10YR3/6) sandy loam.

Excavation of this urn burial was more streamlined and went more quickly than excavation of the urns in Hectare 400N/-200E. Here, the earth around the pit was removed in opposite (northeast and southwest) quadrants, thus fully exposing the urn on two opposite sides. The pit fill was waterscreened and two profiles were recorded. The pit was basically the same shape as the urn and measured 34 cm in depth. Artifact recovery from the burial pit included a little daub and an odd mixture of shell, grog, and sand tempered small sherds.

The urn (USN 10,202) was cracked all the way around but remained intact during excavation. The cover vessel (USN 10,203), however, was badly broken and portions of its base were missing. Once the cover vessel had been removed, the urn was tightly wrapped in "Ace" bandages and removed in one piece. Subsequent excavation of the urn contents took place in the field laboratory.

The urn, Alabama River Plain var. Alabama River, measured 46 cm in diameter and 30 cm in height. The cover vessel was an unrestricted bowl of Carthage Incised var. Unspecified and had a "hand" design incised around the rim. (See Chapter 1, Volume II for a more detailed discussion of these ceramics.)

The urn fill was very sandy and contained only a few pieces of charcoal and fired clay. One child was found buried inside the urn, and most of these remains were located in the western one-half of the vessel. (See Chapter 6, Volume II for further discussion of the skeletal remains inside Urn Burial 3.)

Burned Sand Concentration (USN 8667)

In the subfloor of Structure 3 a small, circular-shaped concentration of burned sand (USN 8667) was located approximately one meter east of the structure's center. Based on its configuration and location, this feature probably represented the vestiges of a central hearth. The burned sand was red in color (2.5YR4/8) and measured 26 cm in diameter. The deposit was shallow in profile, only 7 cm deep, and was slightly basin-shaped. No cultural remains other than charred wood and bark were present within the burned concentration of sand.

Daub Concentrations 3, 4, and 5 (USN 8421, 8426, 8434)

Three heavy, irregularly-shaped concentrations of daub which contained a few burned timbers were located in the northern half of Structure 3 and were within the upper daub and ash layer. These deposits averaged 40 cm in diameter, 9 cm in depth, and were generally yellowish red (5YR5/8) in color. Ceramics recovered included plain shell tempered sherds mixed with plain and cord marked, grog tempered ceramics. Other recovery included a few pieces of hematite and deer bone.

These daub concentrations probably represent part of the fallen ceiling or upper walls that settled into a depression on the structure floor. They should not be considered as "closed finds," because the cultural remains contained by them are most probably the result of general mixing of debris at

TABLE 4

Ceramic Contents of Structure 3 (USN 7470)
(Weight in Grams)

	Daub & Ash Layer	Floor	Subfloor	General Recovery	Total
Carthage Incised var. Moon Lake	-	-	-	15	15
Bell Plain var. Big Sandy	-	-	7	-	7
Mississippi Plain	375	344	343	203	1265
Moundville Engraved var. Hemphill	-	1	-	-	1
Moundville Incised var. Undetermined	-	-	4	-	4
Moundville Incised var. Snows Bend	-	-	5	-	5
Moundville Incised var. Carrollton	-	-	7	-	7
Grog tempered ceramics	170	447	261	372	1250
Total Ceramics					2554

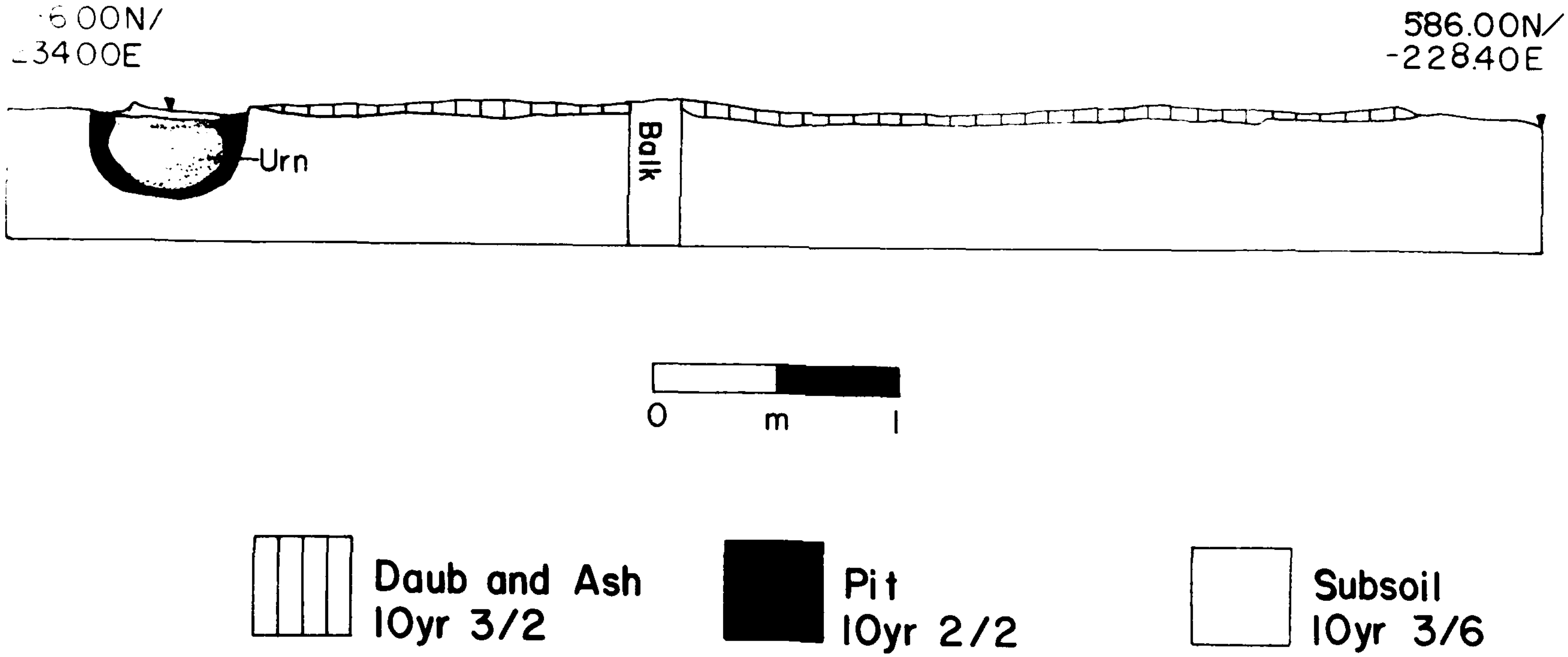

Figure 36. Structure 3 (USN 7470); west-to-east balk profile.

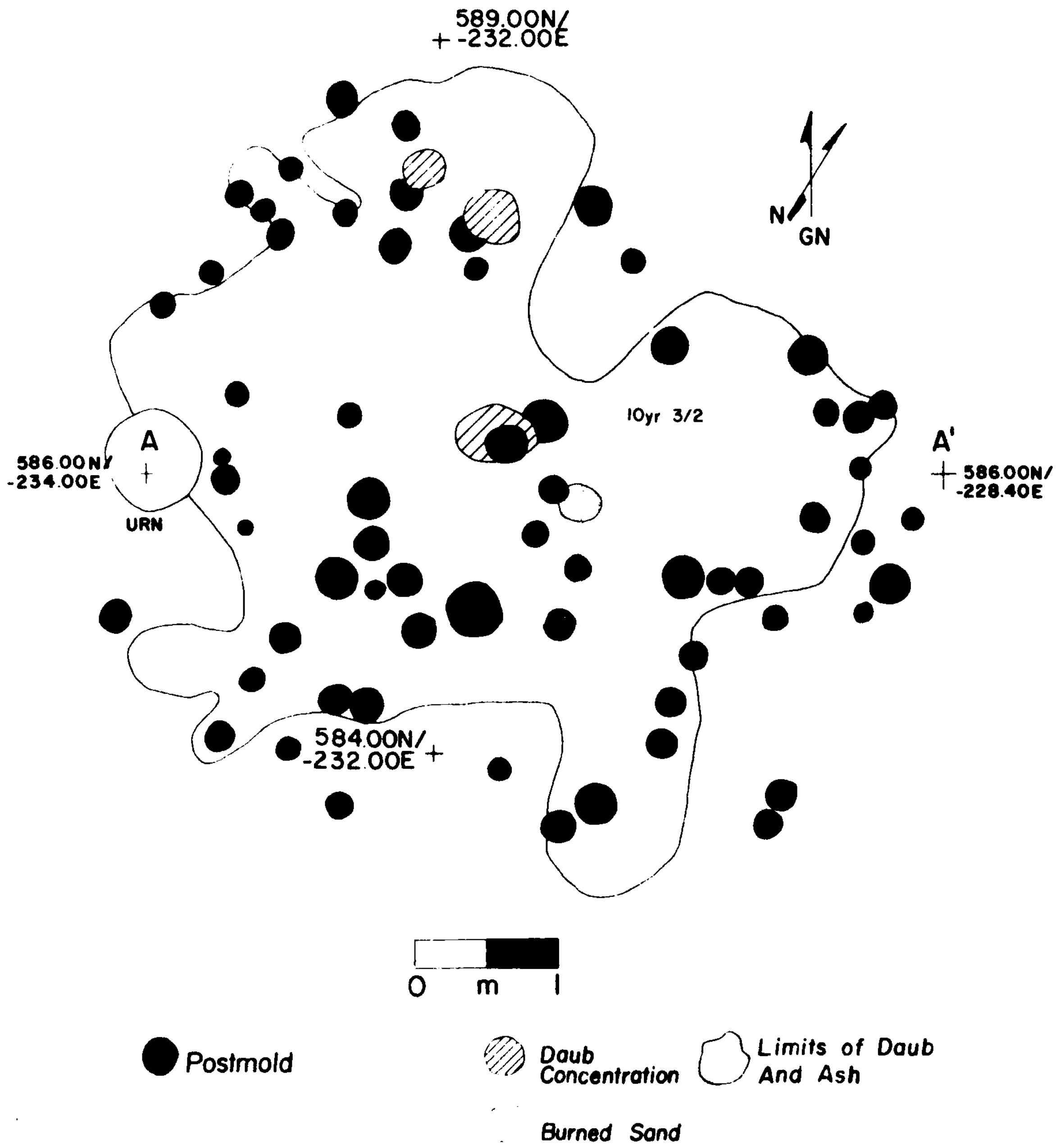

Figure 35. Planview of Structure 3 (USN 7470).

and indeterminate faunal remains were also recovered.

Structure 3 (USN 7470)

Structure 3 (USN 7470) first appeared as an irregularly-shaped concentration of daub and ash approximately 4.3 by 5 m in size and dark in color (Figure 35). This daub concentration was located on the southwestern edge of a 10 by 10 m sample unit (587N/-235E, USN 6478). Postmolds were visible around the perimeter of the structure as well as within the daub and ash layer. In order to delimit the rest of the structure, an 8 by 9 m extension unit (578N/-235E, USN 7427) was opened (Figure 33). In doing so, a protohistoric urn burial (USN 7404) was encountered on the western periphery of the daub and ash layer.

Like other structures in this hectare, Structure 3 was excavated in four quadrants, and a cross-balk centered on the daub and ash deposit was maintained for stratigraphic control. Upon removal of the 6 cm thick, very dark grayish brown (10YR3/2) daub and ash layer, additional postmolds were discovered. The floor of the structure was dark yellowish brown (10YR4/6) sandy loam and was underlain by slightly darker subsoil (Figure 36). Several heavy daub deposits were noted in the northern half of the structure and were treated as features. A radiocarbon sample (USN 9022) was collected at the very top of the daub and ash layer in the northwest section. Processing of this carbon sample produced a date of 500 $\pm$70 radiocarbon years (A.D.1450, Beta 1104). A total of sixty-four postmolds was associated with Structure 3. Their radii ranged from 6 to 20 cm (mean=9.9 cm; s=2.9 cm); their depths ranged from 6 to 114 cm (mean=15.8 cm; s=13.8 cm). Although no raised hearth was found associated with this structure, a small concentration of reddish brown sand was noted near its center.

Lithic recovery from the three combined levels of Structure 3 was sparse: a few flakes, some introduced unmodified rock, 1 uniface fragment, 2 biface fragments, 1 steatite fragment, and 1 drill. A few large mammal bones were also recovered from the structure.

Based on the ceramic contents of Structure 3 as a whole (Table 4, below), the structure could actually have been assigned to the late Summerville III period. However, since the urn burial seemed to be directly associated with the structure itself, it is believed that Structure 3 belonged to the protohistoric community at Lubbub. Moreover, the protohistoric ossuary (USN 7480), which was located just 5 to 6 m north of Structure 3, was probably contemporary with the structure complex.

Two large pits (USN 7410 and 7481) and a large midden deposit (USN 9065) were located immediately to the north of Structure 3. However, based on ceramics recovered from these features, they cannot be directly associated with the structure complex and have been discussed in Chapter 7 of this volume.

Urn Burial 3 (Burial 8, USN 7404)

An urn burial (USN 7404) was found on the western periphery of Structure 3 and seems to have been in direct association with the structure (Figure 37). A round pit, 62 cm in diameter, was first seen with a portion of the cover

Ethnobotanical analysis showed that the entire feature was composed of charred acorn shells and nut meats (33.3 g). One fragment of hematite, exhibiting scratch marks and a slight depression, was also recovered from the feature. This stone was more than likely used as a nutting stone. Approximately one meter west of the acorn concentration, a larger piece of hematite (USN 9042, 190 g) was found in situ in the balk; unfortunately, this particular piece was plain, showed no evidence of wear, and did not originate from the same parent material as the first piece and therefore cannot be directly associated with the acorn concentration. It is believed that the acorn concentration was the remains of a food processing area rather than a cache or storage area since the feature was so shallow and there was no pit associated with it.

Burned Sand Concentration (USN 8643)

A circular concentration of burned sand (USN 8643), roughly 40 cm in diameter and red in color (2.5YR4/6), was located on the floor near the center of Structure 2. The red sand was in marked contrast with the surrounding dark yellowish brown sandy loam matrix of the structure. No cultural remains were associated with this feature, but, judging from its close proximity to the center of the structure, it is believed to have been a hearth.

Daub and Ash Concentration (USN 6485)

Approximately 2 meters north of Structure 2 lay a large concentration of burned timbers, daub, and ash (USN 6485). This feature was approximately 2.3 m in diameter and 7 cm thick. It looked darker but similar to the structure itself. However, this patch of charred material began about 15 cm higher than the daub and ash zone of the structure, and it is therefore believed to have resulted from the collapse of the structure. Nothing was recovered within this daub and ash concentration, and no features lay below it.

Pit 20 (USN 6441)

Pit 20 was located outside the limits of the daub and ash layer of Structure 2. It was approximately 2 meters to the southeast but at the same elevation as the floor of the structure. The pit measured 108 by 113 cm and contained dark yellowish brown (10YR4/4) fill. In profile, the pit appeared cone-shaped and unstratified, and it had a maximum depth of 49 cm. Analysis of the pit contents revealed that it had a little of everything in it: ceramics, lithics, floral and faunal scraps. Therefore, it is thought to have served as a refuse or "trash" pit on the southeastern periphery of Structure 2.

Pit 21 (USN 6483)

Located approximately 2.5 m north of Structure 2 and outside the structure proper, Pit 21 is believed also to have been some sort of refuse pit. The pit began at approximately the same elevation as the large daub and ash concentration (USN 6485) located just south of it. This yellowish brown (10YR5/6) pit appeared oblong in shape and measured 1 by 1.5 m. In profile, the pit was shallow (23 cm deep), basin-shaped, and unstratified. The pit contained shell tempered and grog tempered ceramics, flakes, and introduced unmodified rock (cracked cobbles, sandstone, chalk, hematite). Charred wood

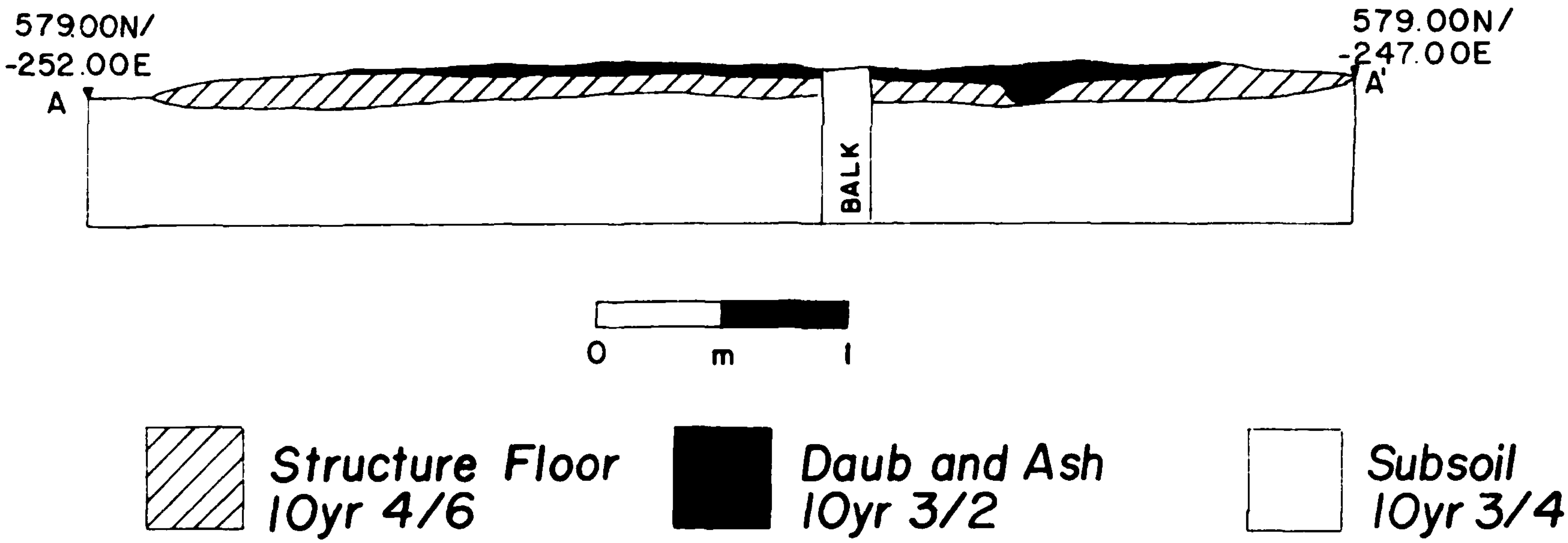

Figure 34. Profile of Structure 2 (USN 6422).

occupation in the Lubbub Creek Archaeological Locality, was defined by the presence of Alabama River var. Alabama River and Alabama River Incised, as well as by the occurrence of urn and ossuary interment for the disposal of the dead. The distribution of the features which had diagnostic protohistoric ceramics suggested a small sedentary community that was encircled by a large fortification ditch. From the evidence available, the mound continued to serve as a central spot in community life during this period. The ceramic chronology indicated that this community occurred between A.D. 1450 and perhaps as late as A.D. 1650 and was contemporary with the Moundville IV (Protohistoric) period in the neighboring Black Warrior Valley some 35 miles to the east. Both areas seemingly were abandoned prior to European settlement in the late eighteenth century.

The ceramics as well as the community plan suggested that the Summerville IV community was a direct descendant of the earlier communities which occupied the Lubbub Creek Archaeological Locality. There was continuity across the range of material items and in the spatial organization of the community. However, unlike the preceding communities, the Summerville IV community was surrounded by a ditch-like fortification system. Because the settlement's area was constrained by the ditch and there seems to have been no decrease in population, there was greater "social density." That is, there were more features confined to a smaller area. In addition, the mortuary practices were also markedly different from earlier periods. Ossuaries and urns replaced single, primary interments.

A total of five major Summerville IV structures was located. All of them tended to have circular or irregular postmold patterns. All the structures were believed to have burned because charred timbers were oftentimes found beneath the fallen walls of the daub. No prepared clay floors were identified, and only one hearth survived. Frequently, however, burned concentrations of sand were found on the structure floors and may have been the remnants of hearths.

The seven burials recorded in the protohistoric community exhibited a wide range of mortuary practices: 1 extended adult burial, 1 secondary child burial, 3 urn burials (one of which contained 3 subadults, another of which contained 4 subadults, and the last one which contained 1 child), 1 ossuary containing parts of 43 individuals, and 1 skull cap cache of 10 calottes placed over the remains of a young adult female. All burials were associated with structures or structure complexes with the exception of the skull burial which seemed to have been an isolated phenomenon.

The five Chickachae Combed sherds found around the periphery of the mound and a Chachiuma-like vessel fragment (cf. Atkinson 1979: Figure 5) found just south of the southernmost section of the ditch suggest that a very late protohistoric or early historic population inhabited a portion of the Lubbub Creek Archaeological Locality. Furthermore, one Choctaw family was known to have lived in this area in the early nineteenth century.

According to Collins (1927:260), Chickachae Combed ceramics were associated with Choctaw villages in the east central section of Mississippi -- the former home of the Choctaw. Many of these Choctaw villages were abandoned in the first half of the nineteenth century. Most of the sherds appeared to have been bowls of medium depth (Collins 1927:262). The decoration was largely confined to the upper part of the vessel and took the form of bands of finely incised parallel lines; the decoration was made by trailing a fine, comb-like implement across the still soft surface of the vessel.

> The presence of this single type of decorated ware from such widely separated Choctaw settlements, covering the entire area known to have been occupied by that tribe, suggests very strongly that it was the prevailing type of pottery in use at some period of their history. It may safely be regarded as Historic, in the sense that it is found thus far only at Choctaw sites known to have been occupied as late as the 19th century, but further than this its age cannot at present be determined (Collins 1927:263).

Collins also noted that this Choctaw pottery was similar to a widespread type from the mounds in western and central Mississippi and in parts of Arkansas and Louisiana, but that it was strikingly different from the prevailing type of mound pottery from eastern Mississippi (1927:263). Thus, the Chickachae Combed ceramics found near the mound at the Lubbub Creek Archaeololgical Locality may represent the Late Protohistoric or a smaller, separate Choctaw component (after 1740, related to the Fort Tombecbe Choctaw), thereby redefining Collins' easternmost distribution of this Choctaw pottery.

The Chachiuma-like vessel found south of the ditch has been defined in this report as an "unclassified incised fragment of a late 'burial urn associated' vessel." However, this vessel fragment bears a strong resemblance to a sherd illustrated in Figure 5 of Atkinson's (1979) article on the Historic contact settlement near Starkville, Mississippi. The incising on the handle is quite similar to that sherd. Nevertheless, it may be that this vessel comprised part of the very small historic Native American community that once occupied a portion of the Lubbub Creek Archaeo.ogical Locality near the mound during the 100-year span between A.D. 1650 and 1750.

CHAPTER 11. THE HISTORIC COMPONENTS

Christopher S. Peebles

Very few items of Euro-American manufacture were recovered in the Lubbub Creek Archaeological Locality. With the exception of three sherds of pearlware, the sparse distribution of historical materials was limited to an area within 30 m of the mound. Moreover, all historic artifacts were found in the plowzone. Although limited in number and restricted in variety, these artifacts can be grouped into three temporally distinct assemblages. The earliest, which probably was associated with the small historic Choctaw component, can be placed in the later one-half of the eighteenth century. The next, which could represent a continuation of the first, can be assigned to the first one-third of the nineteenth century. The latest, which post-dates the Civil War, is made up of the detritus from a late nineteenth and early twentieth century barn built on the mound.

Four artifacts comprise the early assemblage: one musket ball (ca. 50 cal.), one badly corroded spur, one piece of French bottle glass, and the neck of a hand blown, light green, French wine bottle (Figure 1). The spur, which is almost completely oxidized, is incomplete, minus its spike, and is approximately the same size and shape as a pair from Oven Hill (8-Di-15), a Florida Seminole site occupied in 1763 (Peebles, lab notes). The configuration of the bottle neck, especially the string rim, suggests a date after 1750. Taken together with the four Chickachae Combed sherds (Chapter 10, Volume I), these artifacts evidence a small, historic Choctaw component that in all likelihood postdates 1750 (cf. Penman 1980).

The early nineteenth century assemblage comprises the 32 pearlware sherds plus some part of the 25 whiteware sherds recovered from the site. The pearlware sherds, which clearly were made no later than 1830 (Hume 1974), represent five vessels, all small bowls with ring bases. One vessel has a dye transfer "sea scape," the others have annular, painted decoration. Four of these vessels were found near the mound, the fifth was recovered in the southwest corner of Hectare 800N/-500E. The whiteware is composed of one "gaudy dutch" bowl, five blue shell-edge plates, two pieces of dye transfer, and twenty-four plain sherds. All were found near the mound. The pearlware could represent a continuation of the Choctaw assemblage, but it just as well could be evidence of a later occupation. Some of the whiteware could be contemporary with the pearlware, but the majority of it probably is associated with the later, post Civil War component.

The late nineteenth century component is for the most part junk: nails, scrap iron, glass, crockery, and some dinner ware. The plowzone near the mound contained 44 square nails, 6 round nails, 7 pieces of barbed wire, and

134 scraps of rusted iron. The same general area yielded 25 pieces of window and bottle glass, 2 molded whiskey bottles, 1 medicine bottle, and 2 miscellaneous bottle fragments. The remains of an unglazed inkwell, 19 sherds of alkaline glazed stoneware, some number of the whiteware sherds, and 7 drain tile fragments complete this barnyard inventory.

As an assemblage, each of these three groups of artifacts is incomplete. None matches any of South's (1977) artifact patterns for historic sites. In the case of the earlier two, if the Euro-American artifacts were part of a household inventory, then they were only a minor part of an otherwise locally manufactured assemblage. In contrast, the post Civil War assemblage encompasses the limited range of materials that might be found near an isolated barn: crockery, plates on which meals were carried into the field, the occasional whiskey flask, and a medicine bottle; scrap iron, nails, and the leaf spring from a wagon.

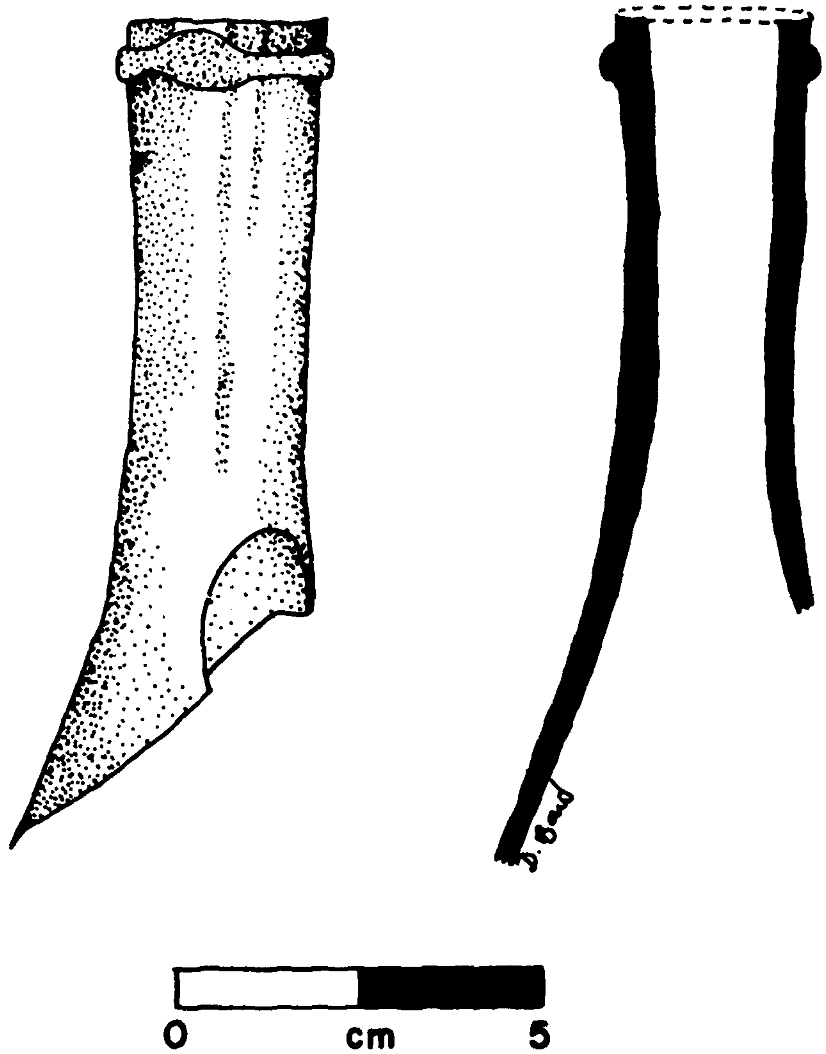

Figure 1. Spirit bottle neck ca. A.D. 1750.

CHAPTER 12. SUMMARY AND CONCLUSIONS: CONTINUITY AND CHANGE IN A SMALL MISSISSIPPIAN COMMUNITY

Christopher S. Peebles

The archaeological record may be a thing of bits and pieces, but it is more than material remains. It is order, and in that order come the links with man and society. As V. Gordon Childe pointed out almost 25 years ago,

> Archaeology is a source of history, not just a humble auxiliary discipline. Archaeological data are historical documents in their own right, not mere illustrations to written texts. Just as much as any other historian, an archaeologist studies and tries to reconstitute the process that has created the human world in which we live--and us ourselves in so far as we are each creatures of our age and social environment. Archaeological data are all changes in the material world resulting from human action or, more succinctly, the fossilized results of human behavior (Childe 1958:9).

Several aspects of the aggregate of human behavior can be explored with the data gathered from the Lubbub Creek Archaeological Locality. The links between man and the natural environment can be seen in artifacts, in dietary remains, discards of food preparation and consumption, and, sometimes in the biological remains of the population. Several aspects of the social environment can be seen in the organization of settlements and dwellings and in the use of "social spaces." Relationships with other societies can be seen in the volume of exchange of raw materials and finished artifacts, and the strength of fortifications.

The major part of this summary will focus on the Mississippian communities in the Lubbub Creek Archaeological Locality. This focus will be widened to include the immediate area and the West Alabama region, but the point to be underscored here is the fact that these communities were, on the whole, insular and independent. Although there is evidence for ties with the wider cultural world of the prehistoric Southeast, on balance these contacts seem to have been minimal. The Mississippian communities in the Lubbub Creek Archaeological Locality were neither outposts of Moundville nor of any other polity. It is only with the European colonization of the Southeast that the effects of a wider world are clearly visible, and at this point those effects are disastrous.

Although the habitable portions of the Locality were occupied over the span of several thousand years, given the areas chosen for excavation, the archaeological data in hand support detailed analyses only for the remains of the last several hundred years. Evidence from earlier hunter-gatherer societies -- from the Archaic through the Middle Woodland -- was sparse in areas other than the eastern portion of the river bend. What little data were recovered by the Phase I excavations confirmed that, as in the remainder of the Southeast, these groups were small, seasonally mobile, and had a broad spectrum of wild foods in their diet.

The first solid analytical ground comes with the data from the Late Woodland period. In the Lubbub Creek Archaeological Locality, components from this period seem to have been created during the later portion of the Late Woodland, ca. A.D. 900. Like other Late Woodland phases, the floral and faunal data suggest these were primarily hunter-gatherer populations which supplemented their diet with a small quantity of horticultural products, mainly maize.

The largest Late Woodland component, which covered approximately 2.5 ha and had been designated 1-Pi-12, was situated northwest of the mound. A portion of this area was excavated, and the 10 by 10 m units in Hectare 600N/-300E uncovered a dark, shell-filled, multicomponent Mississippian and Late Woodland midden. Neither inclusive features nor features beneath the midden were found during the excavation. The second Late Woodland component that was sampled during Phases II and III was located 200 m south of the mound. The central feature of this component was a veneer of midden that coated a small knoll. This midden was ringed loosely by several Late Woodland pits filled with ceramics, lithics, and abundant floral and faunal remains. Three additional Late Woodland components were situated east of the mound, and all three have been preserved on the island.

The ceramics found in the several pits place these features in the Middle Miller III period. However, a recent reanalysis of the Late Woodland ceramic sequence by Jenkins and Peebles suggests that Middle Miller III is in fact the latest division in the Late Woodland period.

Analysis of the floral material by Caddell (Chapter 3, Volume II), underscores the fact that the majority of the vegetable foods in the Late Woodland diet came from gathering: acorns and hickory nuts were co-dominant. Maize fragments, however, were found in small quantities in the majority of Late Woodland features.

The faunal remains analyzed by Scott (Chapter 4, Volume II) have both adaptive and seasonal implications. The overall distribution of the species hunted, as well as the sizes of the animals taken within any one species, suggest that overexploitation and the resulting resource imbalance between man and animal populations had adversely affected the Late Woodland groups. As a consequence, the Late Woodland settlements in the river bend were occupied seasonally. They were utilized during the spring, summer, and early fall, but they were abandoned during the late fall and winter. The winter hunt was conducted at locations outside the valley.

As Scott emphasizes, there is a point at which resources become inelastic for hunter-gatherers. That is, there is a point at which an increase in effort does not yield an increase in return in the form of foodstuffs. The Late Woodland populations in the Lubbub Creek Archaeological Locality had reached that point by A.D. 900. They were taking animals that were at the small end of the size distribution for their species and they were forced to go farther afield to hunt for part of the year.

The inherent limits imposed on hunter-gatherer subsistence by the distribution and abundance of natural populations of plants and animals can be transcended by domestication. Agricultural systems are elastic; increases in the investment of labor are repaid, in most cases, by a many-fold increase in yield. Such was the response of the Late Woodland populations of west Alabama. At approximately A.D. 950 the focus of the subsistence system shifted from wild plant foods to domesticated crops. Therein lies the transition from the Late Woodland to the Mississippian adaptation in the region.

In this development there was continuity in the species of plants and animals exploited, but their proportions in the diet changed radically. Maize became the dominant plant food, and it was supplemented by beans and sunflower. The clearing of land for corn fields created new habitats for small mammals, and these species were exploited for food. Moreover, hunting became more selective. The larger members of each species were taken, in contrast to the earlier grab bag of sizes that contained a disproportionate number of smaller members.

The transition from the Late Woodland to the Mississippian was marked by a series of fundamental changes in the social and cultural fabric of the groups which lived in west Alabama. Perhaps the most basic change, apart from the intensification of the horticultural system, was in the form and duration of settlements. There was a shift to permanent villages composed of a ceremonial precinct as well as residential areas. These settlements showed an investment in buildings and other capital improvements (mounds, fortifications) that matched the large expenditure of labor invested in the clearing of bottomland forest for permanent agricultural fields.

Perhaps the most visible set of changes came in the ceramic assemblage. The relatively lackluster Late Woodland ceramics were replaced by a far more varied Mississippian assemblage. These changes entailed far more than the replacement of clay temper with shell and the disappearance of cord marked vessel surfaces. Only a few basic vessel forms, all of which were undecorated, comprised the Late Woodland assemblage. The Mississippian ceramic assemblage, on the other hand, encompassed a wide variety of vessel forms, both decorated and plain. The reasons for these developments were straightforward: changes in foods, food preparation and storage, and the use of ceramics in a wider variety of tasks. In brief, the context of ceramic production, distribution, and use changed radically. The processes by which the ceramic technology changed, however, are not apparent. All that is clear is the Mississippian ceramics, at least at Lubbub, are not prefigured in the Late Woodland ceramics.

The appearance of shell tempered ceramics can be used as an unambiguous marker for the Mississippian period throughout this part of the Southeast. In the Tombigbee Valley this transition presents particular and, to date, unresolved problems. There the shift from Late Woodland to Mississippian ceramic forms seems to have been rapid and complete. There is neither a developmental continuum nor are there more than a few features which contain both shell and grog tempered ceramics. There is, however, what seems to be an overlap in time, but not in space, of these two ceramic traditions. Based on radiocarbon dates (Jenkins 1979a), the Late Woodland components persist until A.D. 1100 while the Mississippian is firmly established before A.D. 1000. The reality and causes of this overlap are still open questions. Depending upon the point of view, the solutions come in the form of two clear, mutually exclusive sets of implications: either there were two separate ceramic traditions, only one of which was indigenous; or, there was a lineal development from one to the other. In the absence of sufficient data, which by circumstance will be sparse in either case, the question must remain open.

The Mississippian occupation in the Lubbub Creek Archaeological Locality, when taken as a whole, spread around the mound in an almost continuous arc. Based on the ceramic chronology developed in the preceding chapter, this donut-shaped area can be divided into three sequent "communities." Admittedly this partitioning is somewhat arbitrary, but it is not capricious. Each of the communities so defined has structural coherence and stands in sharp contrast to the others. The Summerville I community, which existed from ca. A.D. 1000 to A.D. 1200, is defined by features which contained Moundville Incised <u>var. Moundville</u> ceramics, and Mississippi Plain <u>var. Warrior</u> vessels which had either small loop handles or small strap handles with two centrally placed nodes. The Summerville II-III community, which spanned the period from ca. A.D. 1200 to A.D. 1450, is defined by features which contained Moundville Engraved of all varieties, Carthage Incised of all varieties, and Mississippi Plain <u>var. Warrior</u> vessels with strap handles on which nodes had been placed either on the top or the bottom. The Summerville IV community, which was occupied between ca. A.D. 1450 and 1650, is defined by features which contained Alabama River Applique, Alabama River Incised, and other ceramics associated with the protohistoric period.

The Summerville I community was bounded on the west by the outer palisade, on the south by an extension of this palisade traced from aerial photographs, and on the north and east by the river (Figure 1). In total, 19 ha was enclosed, and of this total, approximately 8.5 ha contained archaeological features of the Summerville I period. These features included 4 structures, 4 pits, 9 burials, several large expanses of midden, the outer palisade, the inner palisade system, and the 6 structures in the ceremonial precinct beneath the mound.

The outer palisade, with its bastions every 30 m, was definitely a defensive work. The single complete ceramic vessel found in one of its postmolds suggests that it was built early in the history of the community, and the Summerville II-III period midden which overlaid one of its bastions confirmed this chronological association. The inner palisade system, with the exception of the outermost line, does not have bastions and thus may not have served as a fortification. Instead, it may have functioned to demarcate and screen the ceremonial structures and perhaps a plaza from the residential area. This set of walls definitely can be assigned to the Summerville I period, but their use and rebuilding may have extended into the early part of the Summerville II-III period.

The ceremonial precinct that lay beneath the first mound building stage was the spatial focus of the community. The six buildings, which comprised

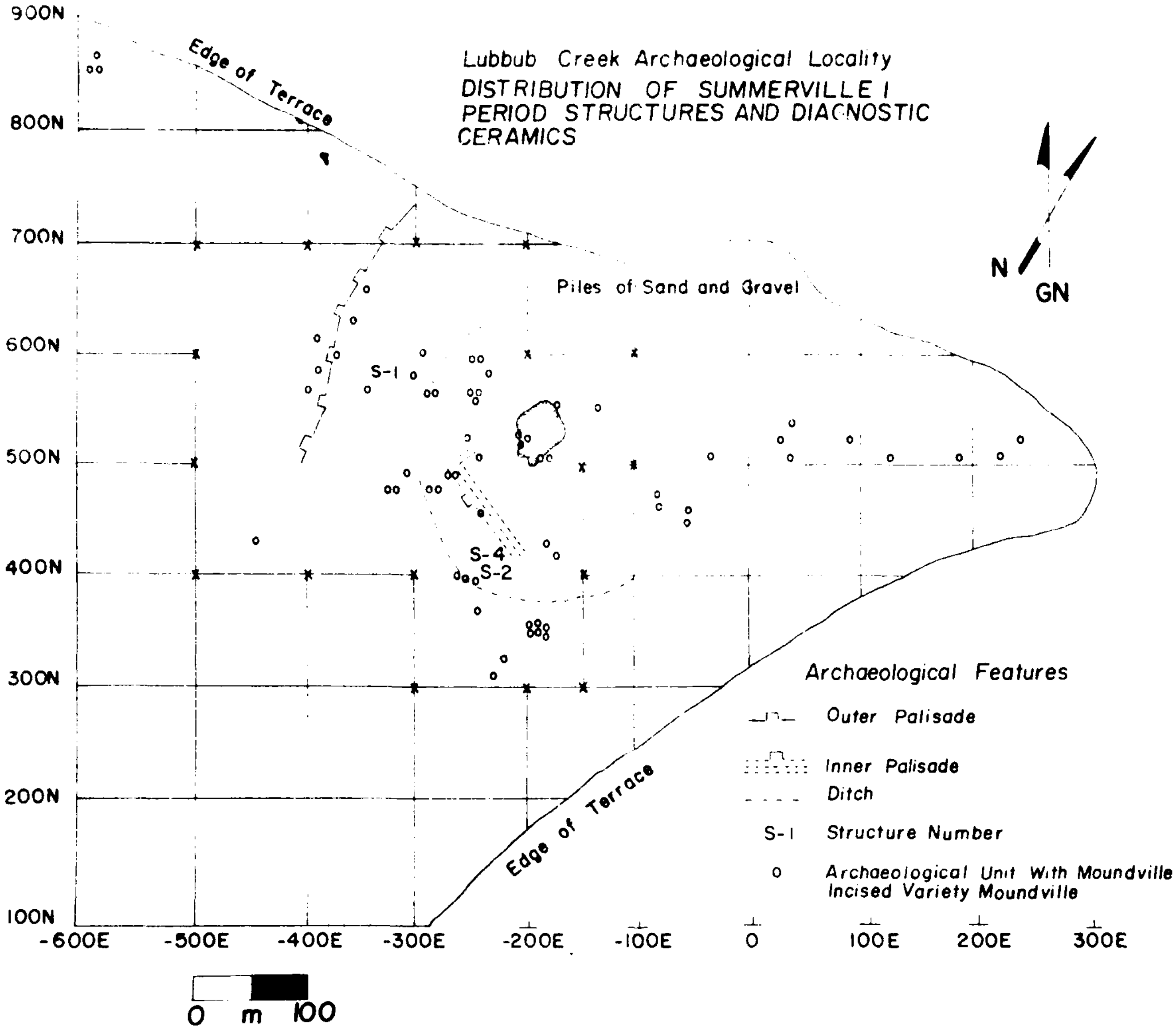

Figure 1. Distribution of Summerville I period structures and diagnostic ceramics. The several fortifications are plotted for ease of reference. The palisades are associated with the Summerville I community; the ditch is a Summerville IV feature.

three sequent pairs, were set off from the residential area and, for part of their existence, were enclosed by the inner palisade system. Of paramount importance is the continuity between these buildings and the erection of the mound itself. When the last pair of buildings was demolished, a low yellow clay cap was placed over the floor and burned clay platforms of the larger structure and then the first mound stage was placed over the yellow clay cap. In brief, the symbolic importance of these public buildings predated mound construction and their later placement on mound summits.

The residential area spread around the mound in an almost continuous arc that excluded the plaza to the east of the mound. Four structures can be assigned to the Summerville I period: three are shown in Figure 1, and the fourth was located in the northeast corner of Hectare 500N/-300E. Three of these structures had an interior floor area of approximately 35 m^2 (34.8 m^2, 34.6 m^2, and 35.4 m^2); the fourth, S-4 in Hectare 400N/300E, seemed to be an outbuilding associated with S-2, and its floor area was 8.6 m^2. The mean density of structures was 1.21/ha (sd=2.47/ha). Given 8.5 ha of village area, then there were as few as 10 houses and, taking one standard deviation as a guide, as many as 31 houses in the Summerville I community. If there were 5 persons/house, which is a reasonable estimate, then the community contained from 50 to 150 persons. If the span of the Summerville I period is set at 200 years, and if the site was continuously occupied during that period, and if useful lifespan of a house was 20 to 40 years, then there would have been only 1 to 6 houses occupied at any one time.

The ethnobotanical data from this period show a fully horticultural adaptation. Maize had become the dominant vegetable food; although hickory nuts continued to form an important part of the diet.

Three species of animals dominate the faunal assemblage by count and by weight of edible meat: deer, bear, and turkey. Beaver, rabbit, and raccoon are minority members of the faunal assemblage. Migratory birds and fish are conspicuous by their near-absence. This list of species by rank does not change appreciably for the next 600 years among the Mississippian components in the Lubbub Creek Archaeological Locality.

The Summerville II-III community, which would correspond to the "Mature Mississippian" in most other chronologies, had no fortification systems to delimit it. If, however, the limits of its features are used as a guide, then it covered 11.3 ha (Figure 2). The excavated portions of this area contained 6 structures, 25 pits, and 9 burials. As with the Summerville I community, the mound was the central point in the settlement and was set off from the residential area.

The interior dimensions could be measured for five of the six structures. The floor area ranged from 28.3 m^2 to 86.4 m^2, and the average floor area was 43.3 m^2 (sd=24.9 m^2). The mean density of structures for the Summerville II-III period was 2.67/ha (sd=7.45/ha). Given an area of 11.3 ha for this community, then there were at least 30 structures and, taking one standard deviation as a guide, as many as 114 houses in this community. Again, with an estimate of 5 pers[illegible], then the community contained from 150 to 570 persons. If the span of the Summerville II-III period is set at 250 years, and if the site was continuously occupied during this period, and if the useful lifespan of a house was 20 to 40 years, then there would have been

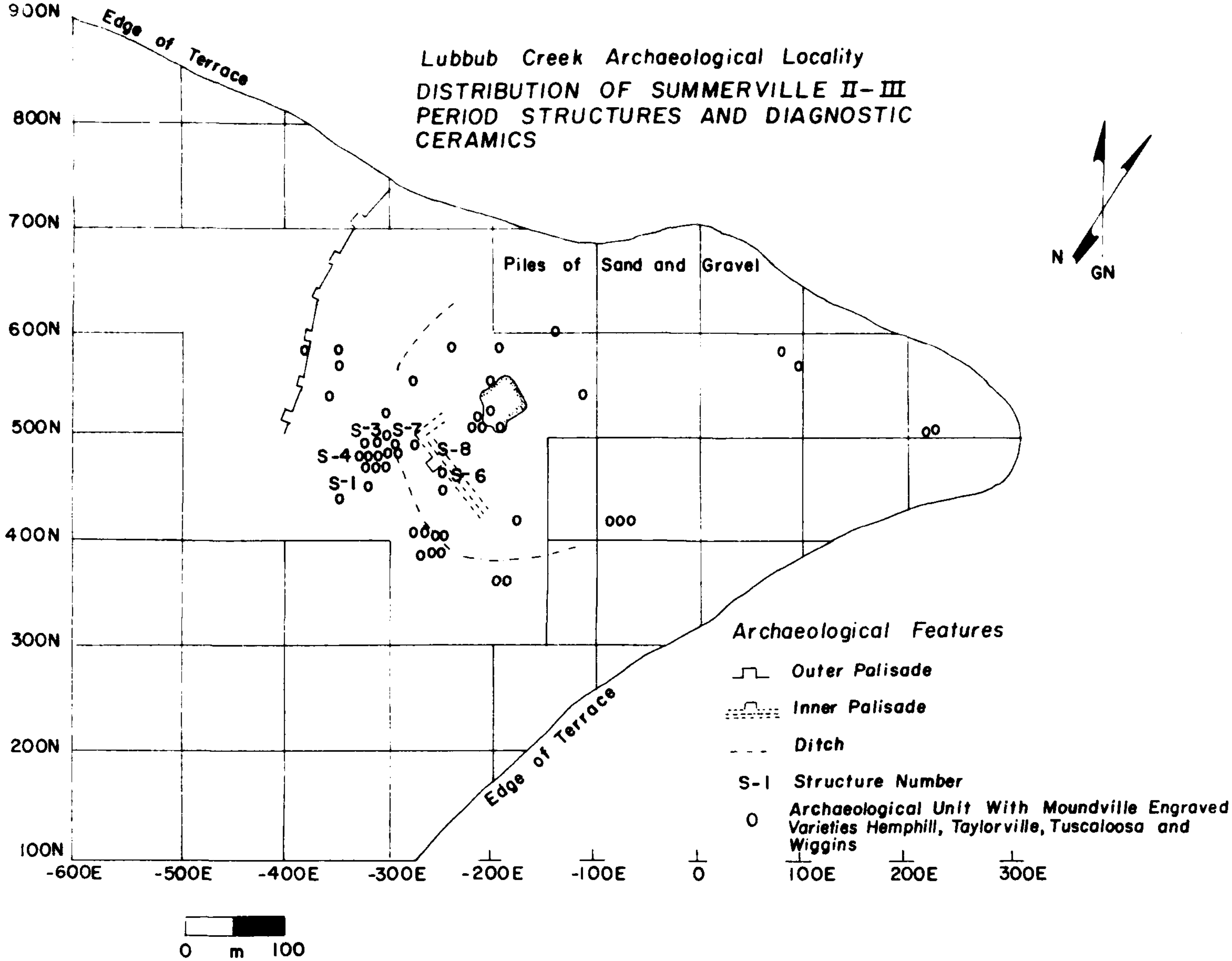

Figure 2. Distribution of Summerville II-III period structures and diagnostic ceramics. The several fortifications are plotted for ease of reference purposes. The palisades are associated with the Summerville I community; the ditch is a Summerville IV feature.

between 5 and 18 houses occupied at any one time.

The Summerville II-III period represents the growth of the social and adaptive patterns set a few generations earlier. The community grew somewhat in size and population, but there were no radical changes in subsistence and, seemingly, no need for fortifications.

The protohistoric, Summerville IV community represented a major departure from the settlement and subsistence patterns established by the earlier Mississippian communities. It was far smaller than either of the preceding settlements, and it was enclosed by a ditch fortification. If the mound is taken as the center point, then this ditch, which had a diameter of 230 m, enclosed an area of 4.2 ha (Figure 3). The ditch had been dug to a depth of over 1 m and probably had a palisade constructed along its inner margin. No postmolds were found along the interior of the ditch, but if the palisade had been constructed in the berm built from the excavated earth, then none would be expected, because the berm had been destroyed completely by erosion.

All the Summerville IV period features were found within the area defined by the ditch. They included 5 structures, 20 pits, 7 burials, and a variety of other features including several small middens. The density of settlement and intensity of use was greater for this community than for the earlier ones. Five structures, one of which comprised three separate structures, can be assigned to this period. The average interior floor area was 32.3 m^2 (sd=10.7 m^2). The mean density of structures, counting the rebuilt one only once, was 2.90/ha (sd=5.86/ha). Given 4.2 ha of inhabited area, then there were as few as 12 houses and, using one standard deviation as a guide, as many as 37 houses. Taking 5 persons/house as an estimate, then the community contained from 60 to 185 persons. If the span of the Summerville IV period is set at 200 years, and if the site was continuously occupied during that period, and if useful lifespan of a house was 20 to 40 years, then there would have been between 2 and 7 houses occupied at any one time.[2]

The burials and mortuary ceremonialism comprise the greatest departure from traditions established by the previous communities. During the Summerville I through III periods most burials were single extended interments. In the Summerville IV period multiple, disarticulated burials were the rule. One burial, an ossuary, contained 43 individuals; another, also an ossuary, contained 9 calvaria stacked over the disarticulated remains of another individual. Three additional burials were multiple interments of subadults who had been placed in urns.

Although there was no major change in hunting practices, there was a change in the source of vegetable foods in the diet. The proportion of maize decreased and that of acorns increased markedly. It is almost as though part of the Summerville IV subsistence clock had been turned back to the Late Woodland.

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[2] If the higher estimates for total population during Summerville I, II-III, and IV are summed, they equal 905 persons. If the estimates of the density of Mississippian burials are converted to a total number of individuals it equals almost 1,000 persons.

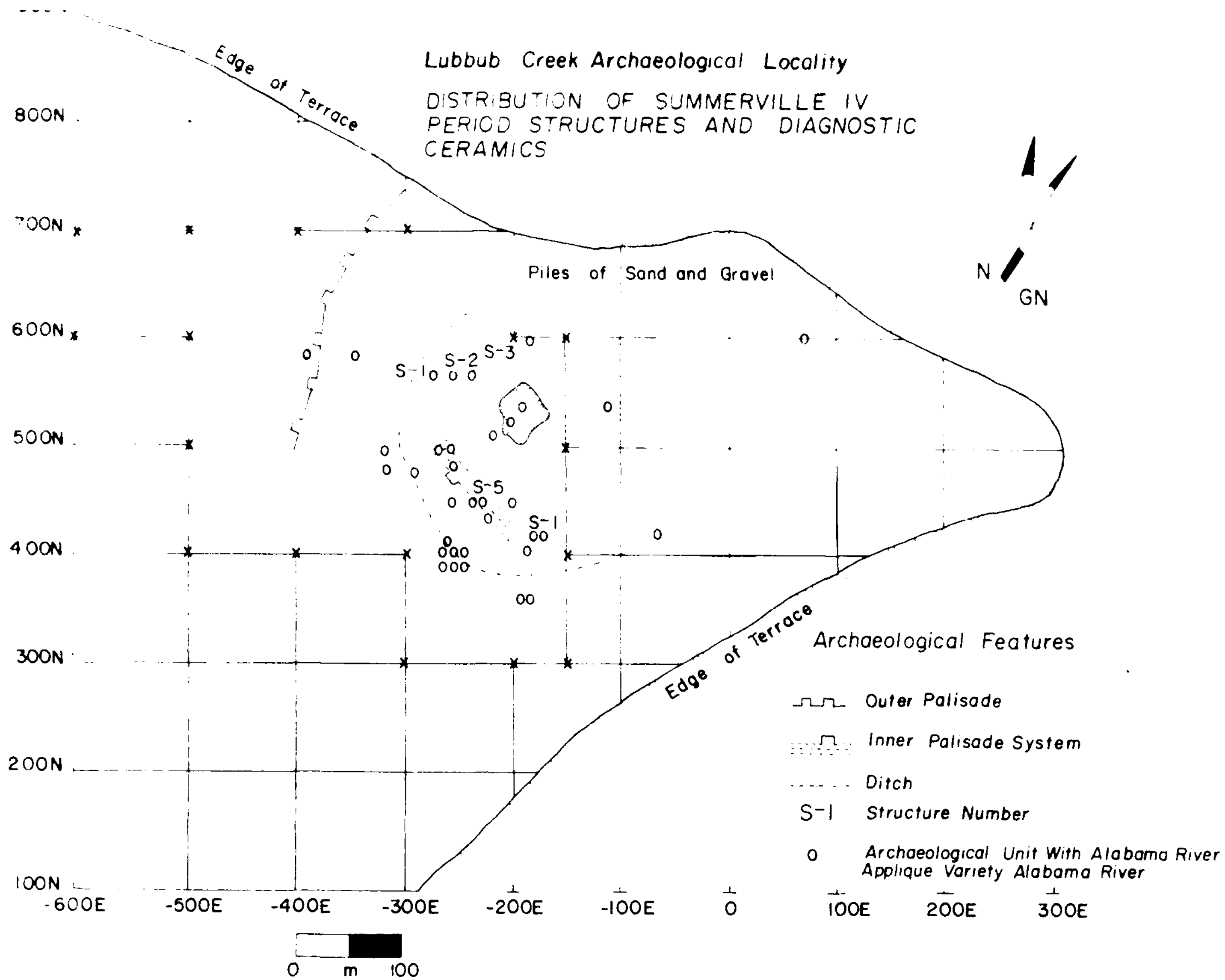

Figure 3. Distribution of Summerville IV period structures and diagnostic ceramics. The several fortifications are plotted for ease of reference. The pa 'sades are associated with the Summerville I community; the ditch is a Summerville IV feature.

The reduction in population and change in subsistence in the protohistoric period are no doubt related. However, the reduced population does not seem to be the result of increased mortality due to a decrease in the quality of the diet. Quite the opposite is the case. The biological data for all the Summerville populations show them to be adequately nourished (see Powell, Chapter 6, Volume II). It would seem instead that within the region the trend was to smaller settlements (and presumably more settlements), toward greater utilization of wild food resources (especially plant foods), and toward the more efficient use of domesticates. Increased agricultural efficiency is indicated by the further reduction in the phenotypic diversity of the maize crop in the Summerville IV period. It would seem that more rigid criteria were applied in the selection of seed stock and to the plants themselves as they matured in the field. In the exploitation of the natural environment, hunting practices did not seem to change in the transition from the Summerville II-III to the Summerville IV period. For the most part, the faunal remains of the Summerville IV period indicate that the same species were taken in approximately the same proportions as in the earlier parts of the Mississippian period. The major change in adaptation was in the increased use of wild plant foods, especially nuts. There was a reintroduction of acorns into the diet as a staple. In effect, the adaptation outlined above is much like that reported for the Choctaw. Swanton (1931) noted that the Choctaw had by far the most productive economy of any of the Southeastern groups. To that end, the Choctaw utilized every aspect of their habitat to their advantage.

The major changes that characterize the Summerville IV period in the Lubbub Creek Archaeological Locality all point to the development of a society much like the Choctaw. The most obvious similarity is in mortuary practices: the ossuary and the extensive processing of the remains before burial. The second similarity is in adaptation: a broad spectrum intensive utilization of local habitats plus efficient maize horticulture. A third similarity, I suspect, will turn out to be in ceramics. There is continuity of motifs between the latest incised and engraved vessels in the Lubbub collection and the historic Native American ceramics recovered recently by James Parker of the University of Alabama at Ft. Tombecbe. If Patricia Galloway's initial conclusions about the development of Chickachae Combed ceramics are correct, that they post-date the French settlements in the lower Mississippi Valley, then there will be continuity from Mississippian through Chickachae Combed ceramics, and the latter type will be shown to post date A.D. 1700.

The Summerville IV community comprised the final major occupation of the Lubbub Creek Archaeological Locality. The demise of this community was, in all probability, part of a much broader, European-induced depopulation of the Black Warrior and central Tombigbee valleys during the last quarter of the seventeenth century. There is unequivocal evidence which shows that between 1700 and 1736 there were no Native American settlements between the forks at Demopolis and the Chickasaw at the headwaters of the Tombigbee. The early French ethnohistories and English administrative documents suggest that depopulation took place between 1670 and 1700, and that it was the result of slave raids made by the Lower Creeks on the Choctaws and other groups such as the Mobile and Pensacola. These raids were made by warriors from towns like Coweta and were a direct expression of the "Indian policy" of the traders (not the Government) of South Carolina. The traders did not create the enmity between these groups. Warfare from east to west and back across Alabama seems to have had its roots far back into the prehistoric period (Peebles 1981b, 1983). All the English traders did was take an existing situation, exacerbate it, add guns, and buy captives as slaves. If there should be doubt that a few traders, their Indian allies, and guns are capab[illegible]ing out the Native American populations in an entire region, let me point out that this very same combination completely destroyed the Apalachee, more than 5,000 strong, in two seasons.

The early days (1670-1750) of the colony of South Carolina were marked by a constant, long-distance conflict between the Lords Proprietors in England and the trader's faction in the colony. The latter wanted neither regulation nor oversight of their actions either at home or in the frontier trading posts. The proprietors wanted trade, but trade and mercantilism that would develop the colony. The Indian trade, however, grew first and assumed an almost independent status from the government. As Verner Crane points out, "In 1687, when the inland trade was just opening, [it] was still mainly a slave trade" (Crane 1929: 110).

The proprietors had decreed that slaves could only be taken when they were at war with the colony. Therefore, the traders promoted war and kept the existence of slave-raiding secret. The extent of enslavement was kept quiet for an additional reason. Slaves were subject to an excise tax which was avoided to the extent possible. Despite the lack of official documents, the covert nature of the activity, and the export of Indian slaves without payment of tax, modern scholarship has shown it to be an integral and massive part of the overall Indian trade (see Snell 1972, Wright 1981).

As late as 1708, Thomas Nairne wrote to one of the proprietors and outlined his views and, presumably the views of other traders:

> Our friends the Talopoosies and Chicasas Imploy themselves in making slaves of such Indians about the Lower parts of the Mississipi as are now subject to the french. The good prices the English Traders give them for slaves Encourage them to this trade Extreamly, and some men think it both serves to Lessen their number before the French can arm them and it is a more Effectuall way of Civilising and Instructing, Then all the Efforts used by the French Missionaries (British Public Records Office, A and W.I. Volume 620).

It would seem that this philosophy has a hollow ring, because the Indian slave trade predated the French. The tone of the communication, however, is accurate.

One French correspondent, perhaps Savole, wrote about slaving in 1701. His informant, a Mugalasha who lived among the Mobile, told him that the English had "always" been among the Lower Creek:

> That they [the English] brought pack trains loaded with guns, powder, shot, and other merchandise, that the Indians traded for these items tanned deerskins and some green skins with the hair still on them...but the greatest traffic that the English have with the Indians, is the trade of slaves that the Indians take from their neighbors with whom they carry on a continuous war, so that the men [warriors] lead away the women and children who they sell to the

> English, each person for one gun, they who destroyed many of the nations who are our neighbors, among others the Pensacolas and Mauvillas who were their nearest neighbors, only five short days travel from them (Archives Hydrographiques, Vol. 115x, No. 17, translated from de Villiers 1922: 131; translation by the author).

The effects of the slave raids and warfare were summarized by Bienville in his Memoir on Louisiana which he wrote in 1726. For the Choctaws:

> We reckon twenty-seven villages which cover a space of more than thirty leagues and they can put about eight thousand good men under arms. A short while before the exploration of the country they were in a position to oppose twenty thousand men to their enemies. The continual wars they have had to sustain [against] the Chickasaws, Abihkas, Kawitas, etc., who came to disturb them on their lands have greatly weakened them, not that they were less brave and less warlike than their enemies but because the Chickasaws and others had been armed with guns by the English and this made them formidable to the Choctaws who did not have any at all (Rowland and Sanders 1932: 537-538; emphasis mine).

By the time the French armed the Choctaw, the English and their Indian allies had worked their way across the Tombigbee and were attacking the Choctaws who lived in the headwaters of the Pearl River.

It was in this climate that the Summerville IV community came to an end. There is some evidence that the palisade near the ditch may have burned. The ditch has a deep ash and charcoal layer near its bottom layers. On the other hand, the population could have seen the neighborhood going downhill and moved away before they were attacked. In either case, the result was the same. The community in the Lubbub Creek Archaeological Locality died, never again to be reborn. One Choctaw family occupied the bend in the eighteenth or nineteenth century, but after them came corn fields, a sawmill, and finally a pasture.

Throughout the six hundred years, more or less, of Mississippian settlement in the Lubbub Creek Archaeological Locality, there is little evidence for sustained, substantial ties with other Mississippian polities either in the immediate area or in the wider region. The several survey projects conducted as a part of the Tennessee-Tombigbee Waterway project's Environmental Impact Statement found no other Mississippian sites in the Tombigbee River Valley within 5 km of Lubbub. The nearest Mississippian site is 1-Gr-2 which is located approximately 15 km south. The second nearest substantial Mississippian presence comprises four mounds and a number of other sites situated 40 km to the north, near Columbus, Mississippi.[3] Yet the population estimates for the several Mississippian communities in the Lubbub Creek Archaeological Locality developed above seem far too small 1) to constitute a viable, reproducing biological population, 2) to man and maintain the fortifications, and 3) to build and renew the mound. These considerations

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[3]There has been no systematic archaeological survey of either the Lubbub Creek or the Sipsey River drainages. Both certainly would have provided suitable resources for Mississippian exploitation and settlement.

compel, at least as a working proposition, and as a problem for future research, the suspicion that these Mississippian communities were set within a larger regional population and settlement system. Such a system need not have extended beyond the area within a radius of 10 km of Lubbub, and the material remains there do not indicate that it went any further than that. The ceramics at Lubbub, although they can be fitted into a regional (Moundville) ceramic tradition, nonetheless were made and used within the confines of the local community. The particular micro-stylistic markers and methods of construction that can be used to unambiguously identify Moundville Engraved vessels of the Moundville phase are not present in the Mississippian ceramic assemblages from Lubbub. In addition, a case can be made that the Mississippian ceramics from the Lubbub Creek Archaeological Locality are equally closely related to those from the Lyons Bluff site near Starkville, Mississippi (see Marshall 1977).

In fact, the Mississippian communities in the Lubbub Creek Archaeological Locality present an instructive contrast when compared to the developments at Moundville and to those of the Moundville phase. Whereas the former are an example of Schumaker's phrase, "small is beautiful," the latter demonstrates "the limits of growth" (see Peebles 1983 which forms the basis for the following discussion). The Moundville phase has its roots in the West Jefferson phase (A.D. 900-1000). The components of this phase are analogous to the Late Miller III sites in the Tombigbee Valley. The West Jefferson populations seem to have been composed of semi-sedentary hunter-gatherers who added maize cultivation as a supplement to the wild foods in their diet. The Moundville I phase (A.D. 1050-1200) seems to have been a direct descendant of the West Jefferson phase. It comprises four single-mound centers, of which Moundville is one, and a regional population scattered in hamlets around each of these centers. At this point in the development of the Moundville phase, as with the corresponding point in the Summerville phase, cultigens provide the bulk of the population's diet. The apparent independence of the four single-mound centers in the Black Warrior Valley matches the demonstrable independence of the single mound in the Lubbub Creek Archaeological Locality. It is at this point, however, that the evolution of the Moundville phase diverges completely from that of the Summerville phase.

As early as the Moundville I phase, there is evidence for Moundville having been _primus inter pares_ among the four centers. There is also evidence that the volume of external exchange with Mississippian polities as far away as southeast Missouri is established during this phase. At the beginning of the Moundville II phase (A.D. 1200-1400), Moundville becomes _primate_, the center of a population and settlements that are distributed among 350 km^2 of the Black Warrior Valley. Ranking among persons and centers becomes clearly defined during this period. Moundville grows from a single-mound center to a four-mound center, and the penultimate and ultimate ranks are represented in the burials only at Moundville. The volume of external exchange increases markedly during this period, and there is some evidence for the specialized production of ceramics and shell beads at Moundville. The population grows 400% at Moundville during this 200-year period, and there is reasonably good evidence that the population in the hinterlands increases in like manner. Thus, at A.D. 1400, Moundville is at the center of a settlement system that includes several single-mound centers and local populations spread out around each of these centers. At some point in the Moundville III phase

(A.D. 1400-1550) sixteen additional mounds are constructed at Moundville, the population grows another 50%, additional single-mound centers are constructed, and some part of the local populations collect in large (fortified?) villages. The earliest part of this period encompasses the zenith of Moundville's development. It is a planned community in which 20 large platform mounds define a 40 ha plaza, and it has a resident population of approximately 3,000 persons. Likewise the regional population probably comprises 20,000 persons. Throughout this development the health of the population at Moundville remains excellent. At some point in the second one-half of the Moundville III phase the volume of external exchange falls drastically, and the apex of the social hierarchy collapses. By the end of this phase, Moundville has been abandoned, and the social focus has shifted to the regional centers. Thereafter, in the Alabama River (Moundville IV) phase, the population is nucleated in several large villages, and the health of their population only can be described as poor (see Hill 1979). The social fragmentation of Moundville, which took place either before or just at the time that the first Europeans came into the Southeast, has disastrous consequences. Valley-wide coordination is replaced by inter-settlement competition, and although there seems to be no net reduction of population in the Black Warrior Valley, it also seems that there was some emigration into the Alabama River Valley.

At least on the surface, the transition to the Late Mississippian in the Lubbub Creek Archaeological Locality contained some of the same features as that in the Black Warrior Valley. Ceramic styles changes in analogous ways, and urn burial replaced primary inhumation for children and infants. Here, however, is where the similarity ends. Whereas the Alabama River phase populations retained the tightly focused agricultural and hunting patterns of their ancestors, the Late Mississippian population at Lubbub broadened their subsistence economy and reinstituted procurement systems that characterized their Late Woodland predecessors some 700 years before. Whereas the Alabama River phase settlements spaced themselves equidistantly from one another -- to hold as much territory as they possible could -- Lubbub remained isolated. Whereas the Alabama River phase populations seemed to have suffered from chronic and sometimes fatal nutritional deficiencies, the Late Mississippian population in the Lubbub Creek Archaeological Locality enjoyed the same level of health that characterized its ancestors. In brief, there is some benefit to remaining small, unspecialized, and living within one's means.

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