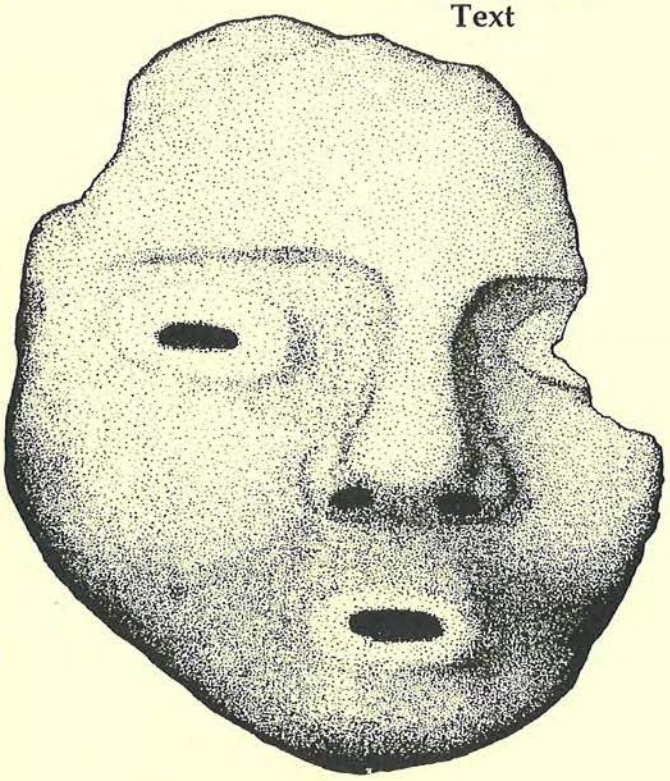
THE JEFFERSON STREET BRIDGE PROJECT:

ARCHAEOLOGICAL INVESTIGATIONS AT THE EAST NASHVILLE MOUNDS SITE (40DV4) AND THE FRENCH LICK/SULPHUR DELL SITE (40DV5) IN NASHVILLE, DAVIDSON COUNTY, TENNESSEE

Volume I
Text



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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

TENNESSEE DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENTAL PLANNING AND PERMITS
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2000

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ARCHAEOLOGICAL INVESTIGATIONS AT
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AND
THE FRENCH LICK/SULPHUR DELL SITE (40DV5)
IN NASHVILLE, DAVIDSON COUNTY, TENNESSEE

Volume I
Text

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BY
Panamerican Consultants, Inc.
Memphis, Tennessee
Report of Investigations 93-36

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ABSTRACT

Archaeological investigations at East Nashville Mounds (40DV4) and the French Lick/Sulphur Dell Site (40DV5) were conducted by Panamerican Consultants, Inc. under contract with the Tennessee Department of Transportation. These investigations were carried out in conjunction with the proposed replacement of the Jefferson Street Bridge over the Cumberland River, Davidson County, Tennessee. Investigations included Phase II testing at East Nashville Mounds and data recovery excavations at both East Nashville Mounds and French Lick/Sulphur Dell. Archaeological investigations at East Nashville Mounds were limited to sampling that portion of the site contained within the existing and proposed rights-of-way for the Jefferson Street Bridge. Initial data recovery at French Lick/Sulphur Dell was restricted to specified bent locations. Subsequent data recovery was conducted in conjunction with the construction of a stormwater runoff system at French Lick/Sulphur Dell.

These Mississippian mound and village centers occupy opposite banks of the Cumberland River in what is now Nashville, Tennessee. East Nashville Mounds is apparently single-component Mississippian, while the French Lick Site also has Early through Late Archaic, Gulf Formational, and Middle Woodland components.

PREFACE

The report that follows presents the results of Phase II and Phase III investigations of portions of the East Nashville Mounds (40DV4) and French Lick/Sulphur Dell (a.k.a. Lick Branch and Sulfur Dell) sites. This project was carried out by Panamerican Consultants, Inc. under contract with the Tennessee Department of Transportation. Interestingly, Ralph W. E. Earl's excavations of the mound at the French Lick site (Haywood 1959[1823]) were begun 170 years, almost to the day, before we hit the field for the Phase II of the present project. Ours has been a project of some duration.

PROJECT SCHEDULE

May 1991:	40DV4 Phase II Request for Proposal (RFP)
	Submission of 40DV4 Phase II Proposal
June 1991:	40DV4 Phase II Notice to Proceed
	Right of Entry signed
July 1991:	Request for State Archaeological Permit
	Issuance of State Archaeological Permit
	Begin 40DV4 Phase II field investigations
August 1991:	Modification of field methods approved
	Complete 40DV4 Phase II investigations
	RFP and Scope of Work 40DV4 Phase III
September 1991:	Proposal 40DV4 Phase III
	Approval of Proposal and Notice to Proceed 40DV4 Phase III
October 1991:	Begin 40DV4 Phase III Field investigations
	Initial visit to 40DV5 and suspension of construction activities there
	Begin assessment of construction impacts at 40DV5
November 1991:	Complete assessment of construction impacts at 40DV5
	RFP and Scope of Work 40DV5 Phase III (Bents)
	40DV5 Data Recovery Proposal submitted
	Begin monitoring of construction 40DV5 Bents
	Begin 40DV5 (Bents) fieldwork
December 1991:	Fieldwork 40DV5 Bents continues
	40DV5 mitigation proposal approved
	Issuance of Court Order for Termination of Use as a Cemetery, 40DV4 and 40DV5
	Begin burial removal
January 1992:	Complete burial removal and Phase III field investigations 40DV4 and 40DV5

February 1992:	40DV5 Stormwater Phase II RFP
	40DV5 Stormwater Phase II Proposal
	40DV5 Stormwater Phase II Notice to Proceed
	40DV5 Stormwater Phase II fieldwork
	40DV5 Stormwater Phase III RFP
	40DV5 Stormwater Phase III Proposal
	40DV5 Stormwater Phase III Notice to Proceed
	Begin 40DV5 Stormwater Phase III fieldwork
June 1992:	Complete 40DV5 Stormwater Phase III fieldwork
November 1993:	Submission of Draft Report of investigations 40DV4 and 40DV5
February 1997:	Receipt of comments on Draft Report
April 1997:	Notice of Proceed with Final Report
May 1997:	Submission of Final Report and curation of artifacts and documentation
September 1999:	Receipt of final editorial comments for publication in TDOT series
January 2000:	Submission of response to final editorial comments

As can be gathered from the above list of project milestones, the archaeological investigations at East Nashville Mounds (40DV4) and French Lick (40DV5) sites included almost one year of fieldwork and an additional year and a half to complete laboratory analysis and draft report preparation. The individuals who conducted the excavations persevered through all extremes of climatic conditions that one could expect to endure during a project that spanned the four seasons, and they worked under the sometimes harrowing conditions of being surrounded by a rather furious construction effort of the engineering contractor. These investigations took place early in the implementation phase of the NAGPRA process and gained national exposure during a period of interested and involved individuals from near and far. In the end, on at least a local level, an amicable and workable solution was achieved, and work proceeded in an atmosphere of cooperation.

This report is to a great degree unchanged from the draft. During the intervening period from submission of the draft and final reports much new information has been gleaned from the archaeological record and new interpretations of the data have been developed. However, in most instances the report stands as a 1993 effort with some revision to the references for those that have come to press since we cited prepublication manuscripts and expanded discussion of particular aspects of the project (particularly the bathtub-shaped features and the summary chapter). The authors thank all of those involved in bringing this project to a hopefully successful conclusion that will contribute something of use to the community at large.

Richard Walling
Bath, New Hampshire
January 2000

ACKNOWLEDGMENTS

A project this size necessarily entails the efforts of a large number of people. We wish to express a sincere thanks to those whose efforts, sweat, and shivering made these investigations possible. It is of course feasible that we have forgotten to mention some of those involved, particularly those citizens of Nashville who visited the site and encouraged us with their interaction.

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Kenneth Willis, field technician, 40DV4, 40DV5

Evan Peacock served as project director for the duration of the East Nashville Mounds (40DV4) investigations, initial investigations at the French Lick Site (40DV5), and burial removal, and as project paleomalacologist. Lawrence Alexander served as project geomorphologist. Dr. Mary Cassandra Hill served as project physical anthropologist and supervised the burial removal phase. Dr. David Lentz served as project paleobotanist. Dr. Emanuel Breitburg conducted the faunal analysis. Steve Ruple served as field supervisor for the Phase II investigations and compiled the historic background information for 40DV4. Dr. Scott D. Kirsh carried out the soil analysis during Phase II investigations at 40DV4. Tim Mistovich directed the second half of the Phase II investigations at 40DV4. Shari Moore compiled the historic background information for 40DV5. Camille Stanley served as laboratory supervisor, edited the manuscript, and coordinated the report production phase. Richard Walling served as principal investigator for the duration of the project, and directed the initial Phase II at 40DV4 and the stormwater drain investigations at 40DV5.

Many members of the Panamerican staff were indispensable in seeing this project to completion. Terry Lolley assisted in the final ceramics analysis; and he and Paul Jackson, with the assistance of Susan Nielsen and Joy Brown, produced the final ceramics and lithics tables. Paul Jackson also assisted in the final lithics analysis. Geoffrey Herbert and Susan Nielsen assisted with proofreading. Lorraine Stevens also helped with proofreading and spent countless hours photocopying the report. Steve Hack, in addition to his field duties, prepared the appendix diskettes, the photographs, and, with Jeff Motz and Tim Rice, the drafting. Jeff Motz also produced the cover illustration, a human effigy bottle fragment recovered from East Nashville Mounds. Amy Starks helped with the final analysis of the 40DV4 ceramics and with preparation of the ceramics chapter. Lorraine Stevens and

Cecile Mistovich kept the project going by handling the myriad of paperwork, payrolls, etc. Tim Mistovich, in addition to his field stint, provided administrative and immeasurable other support.

From the Tennessee Department of Transportation, Gerald Kline, assisted by Zada Law and Shari Moore, provided support, information, and insights without which this project could not have endured. Don Jones of the UT Transportation Center handled the contract end of the project. Project Engineer Joe Eply assisted in innumerable ways.

From the Tennessee Division of Archaeology, Nick Fielder, Mike Moore, John Broster, Suzanne Hoyal, the late Patricia Coates, and especially Kevin Smith were forthcoming with help, ideas, and information. Katherine Sanford initiated the editing of the report for TDOT in its preparation for publication.

Caroline Albright-Simpson, under contract with Parsons Engineering Science, Inc., completed the final editing of the report and coordinated its final production for TDOT's *Publications in Archaeology* series.

From the Middle Cumberland Archaeological Society, Kevin Smith, John Dowd, Roger Armes, and George Heinrich were founts of information about the history of the sites and local archaeological data and interpretation--not to mention plain old southern hospitality.

Margaret Hunter and George Chase, representatives of the Alliance for Native American Indian Rights, maintained a positive and helpful interest and involvement for the duration of the project.

A number of colleagues, in addition to those mentioned above, have provided help, information, and/or advice. These include Charles McNutt, Sr., Bob Mainfort, Drew Buchner, and Eric Albertson, who also assisted with statistical analysis, as well as Ken Carlton, Jeff Chapman, Mitch Childress, John Dowd, David Dye, Jim Knight, Carl Kuttruff, Jenna Kuttruff, Janet Rafferty, Harold E. "Trip" Smith, Guy Weaver, Camille Wharey, and Stephen Williams. Kevin Smith, Mike Moore, and Gerald Kline reviewed the draft report. The authors are grateful for their insights and suggestions--most of which we heeded.

As is always the case, we truly thank all those who have aided in the completion of this project and apologize to those we have inadvertently failed to note. In spite of all the help and suggestions, there are certain to be shortcomings and mistakes; for these the authors take full responsibility.

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CHAPTER 1
INTRODUCTION

Richard Walling

BACKGROUND

Archaeological investigations at East Nashville Mounds (40DV4) and the French Lick/Sulphur Dell Site (40DV5) were conducted by Panamerican Consultants, Inc. (PCI) under contract with the Tennessee Department of Transportation (TDOT) in conjunction with the proposed replacement of the Jefferson Street Bridge over the Cumberland River, Davidson County, Tennessee (Figure 1). The project area was within the right-of-way (ROW) of Jefferson Street at Log Mile 0.40, adjacent to the river on both the east and west sides. The proposed construction extended from Fourth Avenue North on the west side of the river to North First Street on the east side. The total length of the construction project was approximately 4,400 feet. The bridge span and approaches are 1,560 and 2,840 feet, respectively.

Investigations began with Phase II testing at East Nashville Mounds on July 29, 1991. Investigation techniques included extensive archival research, particularly for the historic component, including the excavation of backhoe trenches, mapping of trench locations and existing historical features, and recording of profile columns exposed by the trenching. Based on the results of the archival and field investigations, it was noted that although East Nashville Mounds had been impacted by past industrial, transportation, and (probably) agricultural activities, a substantial portion of the Mississippian midden was intact below as much as 1.7 m of historic fill. A stone box burial was encountered, as well as a large trash-filled pit and a possible house floor. Midden deposits from the Mississippian occupation were observed for the entire north/south extent of the ROW; these continue for an unknown distance to both the north and the south, extending eastward from the present river bank for some 50 m. The deposits up to 60 cm thick and contained shell, bone, ceramics, lithics, and carbonized remains.

The types, condition, and distribution of material recovered and observed suggested that the Mississippian remains represented in situ, primary deposits associated with the mound and village complex. Within the ROW, these prehistoric deposits appeared to be restricted to an area of approximately 1,280 square meters; they averaged approximately 30 cm in thickness. Cultural material within the midden was more dense on the north and west (i.e., river and existing bridge sides).

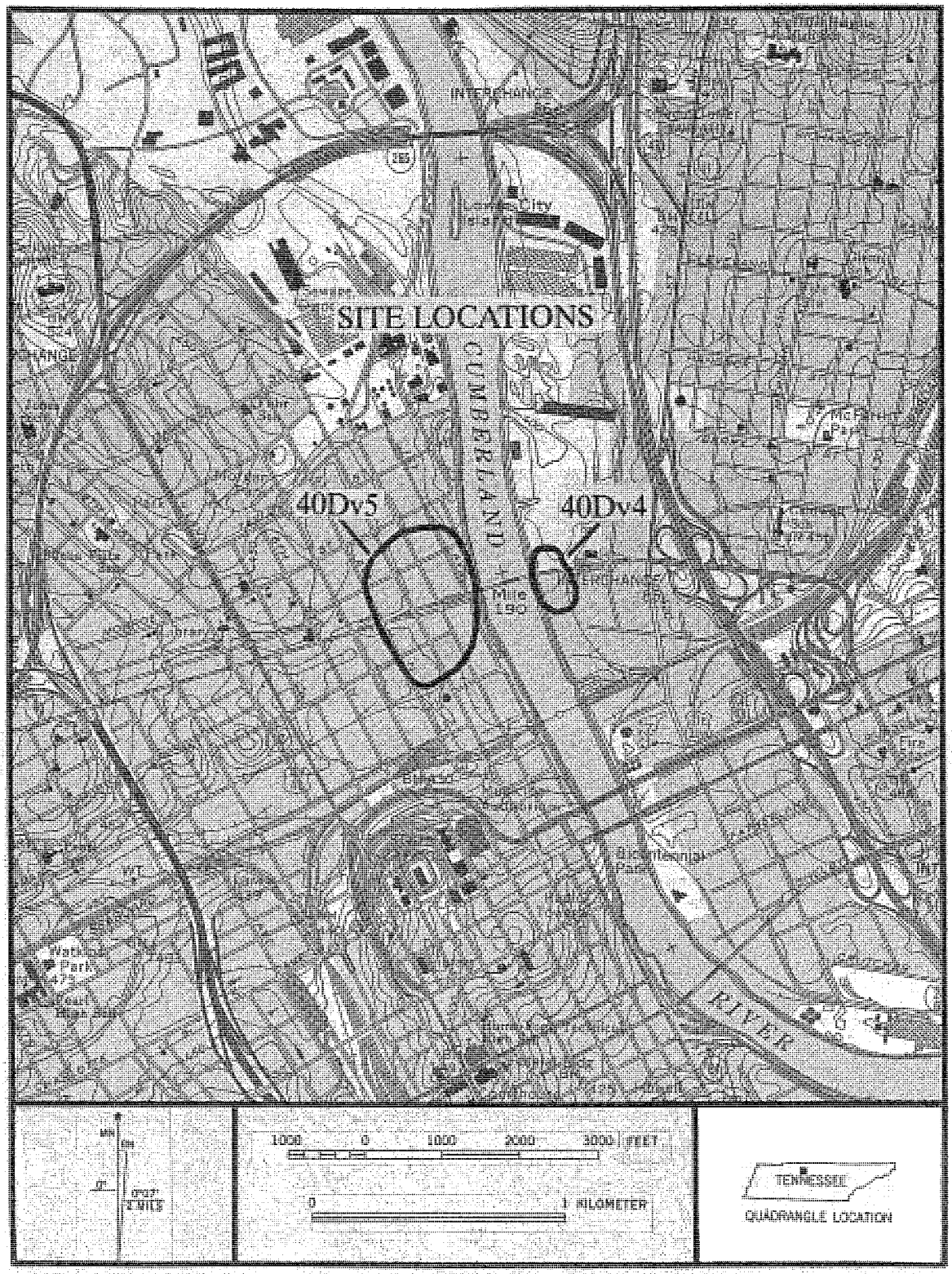


Figure 1. Site locations, 40DV4 and 40DV5 (USGS Nashville West 7.5' Quadrangle 1968, photorevised 1983).

The Phase II investigation resulted in a recommendation based that the East Nashville Mounds site satisfied the criteria for classification as a significant cultural resource and was potentially eligible for listing in the National Register of Historic Places (NRHP).

Data recovery excavations at East Nashville Mounds began in October 1991. This phase was limited to a sampling of that portion of the site within the existing and proposed ROW for the proposed bridge replacement project (Figure 2).

While data recovery was under way at East Nashville Mounds, human remains were en countered and reported by the engineering firm. The remains were found during construction-related excavations of the bent locations on the west side of the river. Inspection of the construction area at the French Lick/Sulphur Dell site (hereafter referred to simply as the French Lick site) (see Figure 1) was carried out by TDOT staff archaeologists, the State Archaeologist, and the SHPO archaeologist. PCI was requested to evaluate the impacts, assess exposed archaeological deposits for potential significance, and carry out archaeological monitoring of the unexcavated bent locations.

The construction contractor ceased all activities at bent locations containing intact archaeological deposits, and a data recovery plan was implemented for these areas. Although portions of the site have been disturbed by both recent and previous activities related to bridge construction and local development, undisturbed archaeological deposits were located at a number of the proposed impact areas (Figure 2).

Initial data recovery at the French Lick site was restricted to a sampling of specified bent locations. Subsequent data recovery was conducted in conjunction with the construction of a stormwater runoff system at this site (Figure 2). The research design and field methods developed for investigations at East Nashville Mounds required only slight modification for implementation at the French Lick site.

Investigations at these sites offered the potential to address a range of topics relevant to ongoing research into Mississippian (at East Nashville Mounds and the French Lick site) and Woodland (at the French Lick site) period lifeways. Because of the nature, types, and condition of the archaeological deposits, as well as the nature of these investigations, there were some limitations to the questions that could be addressed.

Horizontal limits could not be established for either site, and both areas had suffered extensive damage as a result of urban and industrial development. As noted, the area of East Nashville Mounds to be investigated under this contract was restricted to that portion falling within the state ROW; at the French Lick site, only areas of direct impact were sampled.

The Tennessee Division of Archaeology (TDOA) has developed a number of research questions to be addressed during investigations of Mississippian sites within the Central Basin (1987a). Many of the questions are concerned with the overall pattern, expression, and

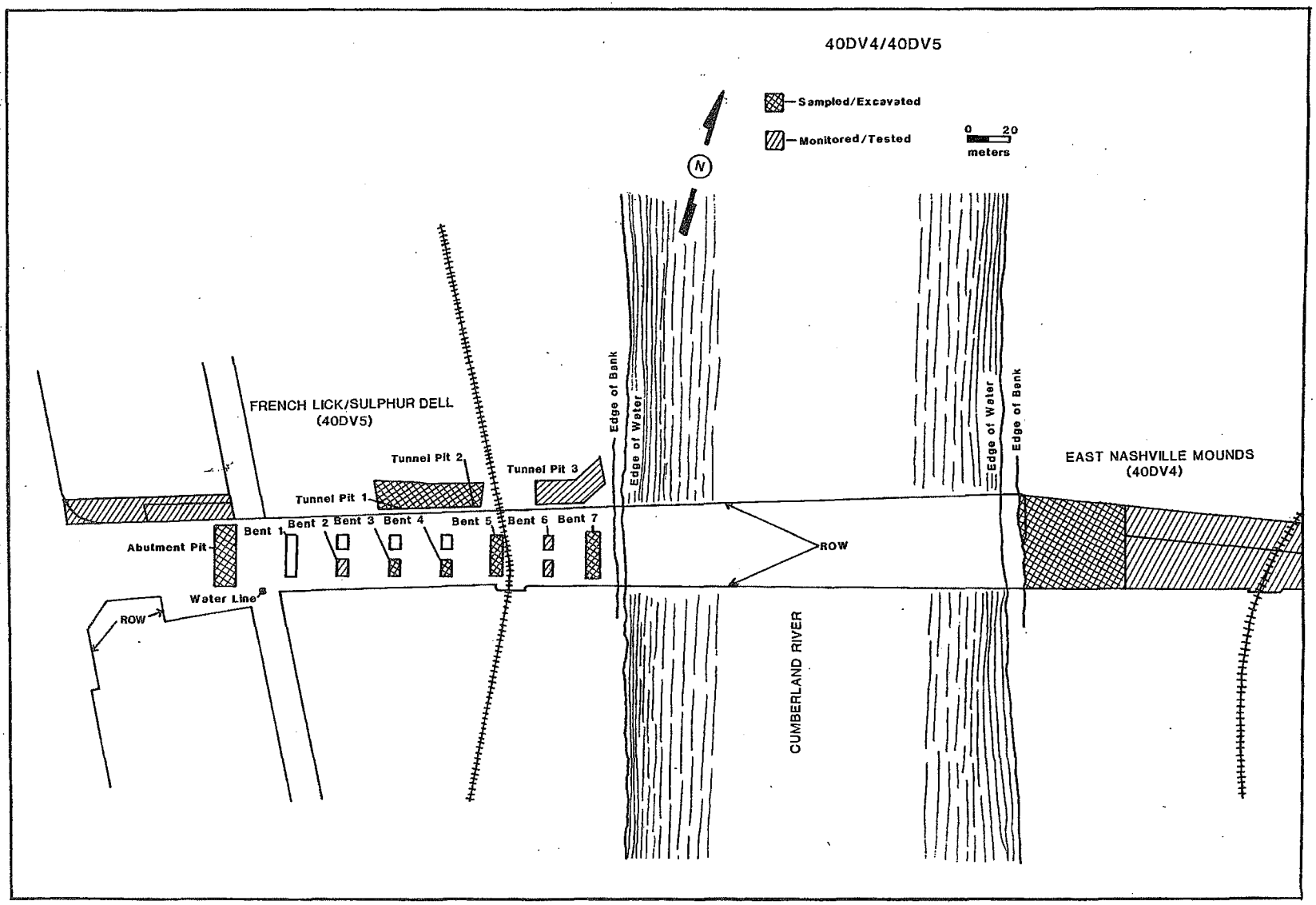


Figure 2. 40DV4, 40DV5 project area and levels of investigation.

development of Mississippian culture in the Central Basin. It was obvious that a number of these could be addressed, at least partially, by a carefully developed program of data recovery for the East Nashville Mounds and the French Lick site.

RESEARCH TOPICS

Specific questions and topics in the research design for these investigations were derived following criteria developed and presented in Study Unit 32, Mississippian-Central Basin (TDOA 1987a). These include the following areas of inquiry.

SUBSISTENCE

Preservation of shell, bone, and carbonized remains indicate a high potential for recovering information about several classes of subsistence activities practiced at this mound center. Data developed as a consequence of these investigations can be compared to those derived from other sites of this period within the Central Basin. Such comparisons could provide new insights to similarities and differences among sites of different types and ages.

POLITICAL & SOCIAL FRAMEWORK

The material and information derived from this project have the potential to provide insights into the political and social framework of the region's Mississippian communities. Through a comparison of these results with those of other sites of the region, inferences may be made regarding the interaction of a major mound center and surrounding sites, and about the extent of this center's influence on these other sites.

MOUND SITE CEMETERIES

Burials are known to exist within the project area. Hence, the potential exists to address the question of social status of those interred at this site.

COMPARISON OF PHYSICAL ATTRIBUTES

Osteometric and pathological data derived from human remains recovered at 40DV4 will provide vital details for regional and pan-regional comparisons of populations. Additionally, mortuary practices at this site can be compared to those at other locations.

CERAMIC CHRONOLOGY & LITHIC TECHNOLOGY

Analysis of ceramic and lithic material recovered from these investigations has the potential to help refine our understanding of the local chronology. Spatial and functional

differences within the local ceramic tradition also may be determined. Attributes of the lithic technology can be addressed as well.

NONARTIFACTUAL INDICATORS OF INTERNAL CHANGE

The study of nonportable artifacts such as structural remains, burial regimen, spatial configuration, etc., will contribute to a growing body of knowledge leading to an understanding of the local prehistoric phenomenon from a diachronic perspective.

DISAPPEARANCE OF THE LOCAL PREHISTORIC OCCUPANTS

It is possible that information regarding the apparent abandonment of the area by the local inhabitants sometime around A.D. 1450 will be derived as a result of these investigations.

DISTRIBUTION OF NONLOCAL ARTIFACTS & RAW MATERIAL

Nonlocal materials tend to be concentrated at the larger centers of this period. As 40DV4 is just such a center, it is expected that information about the types and distribution of nonlocal artifacts and raw materials can be addressed during these investigations.

ARCHITECTURAL VARIABILITY

Structural information gained from this project can help us interpret the varying architectural patterns recorded for this area.

An additional question to be addressed is the temporal relationship between East Nashville Mounds and the French Lick site. If the Mississippian components at these sites were contemporary, the function that each filled would be of particular interest. If they were not contemporary, the question of temporal precedence could be addressed, as well as whether the sites represent a single social/political entity, or separate and distinct populations.

These investigations at East Nashville Mounds and French Lick will provide critical information about two important but poorly known archaeological sites. They should also prove useful in the future interpretation of the prehistory of the area.

CHAPTER 2
ENVIRONMENTAL SETTING

Lawrence Alexander & Richard Walling

The project area is in Davidson County immediately north of downtown Nashville, Tennessee in the Middle Cumberland Area (Figure 3). The Cumberland River meanders across the Ordovician age limestones of the Nashville Basin before crossing the fall line into the Mississippian age limestones of the Highland Rim. This transition, approximately 20 km west of the French Lick and East Nashville Mounds sites, is marked by the shift from rolling limestone hills with collapsed karst topography to the deeply dissected drainage channels and uplands of the Highland Rim.

CLIMATE

The climate of Davidson County is humid subtropical and mesothermal. The winters in this area are relatively mild with occasional short periods of cold weather. Minor snowfall during the winter months lasts only a few days on the ground. The average winter temperature ranges from 40 to 45 degrees. Heaviest rainfall occurs during the winter and spring. Summers are often hot, with an average temperature of 76 degrees. July and August are the hottest months, with a temperature ranging up to 106 degrees. Rainfall during the summer often comes in short, heavy downpours. Spring and fall are clearly marked transitions between the seasonal rhythm of precipitation and temperature. Springs are often excessively wet, and precipitation during the fall is the lowest of the annual cycle. Severe drought conditions occur on an average of every six to seven years (Smith 1992). The climate is controlled by continental air masses that cause greater temperature extremes than those that occur to the east and south. The frost-free growing season extends from mid April through late October. The average frost-free season is 192 days (True 1977).

FLORA

The study area falls within the Western Mesophytic Forest as defined by Braun (1950), or Shelford's (1963) Temperate Deciduous Forest Biome. This area is included in the Carolina Biotic Province of Dice (1943). Smith (1992) has summarized the local floral and faunal resources available, and this discussion draws from that summary.

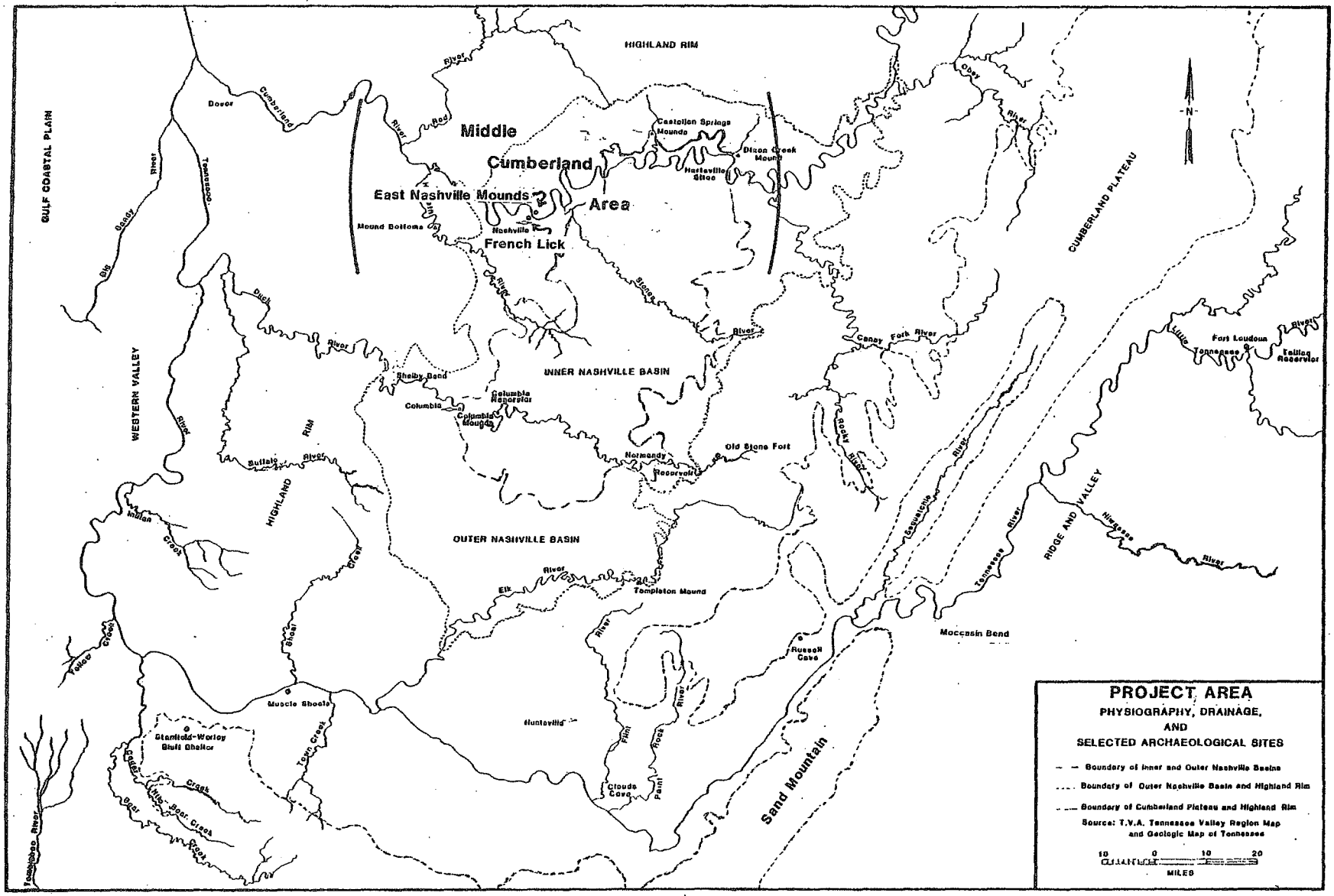


Figure 3. Project-area physiography, drainage, and selected archaeological sites.

Local mixed deciduous forests are predominant in the area, with over three dozen dominant species. Pine, hemlock, cedar, and magnolia are the minority evergreen species (Smith 1992). Local forests also include a rich and varied understory. Local mast-producing species include hickory, walnut, and oak. Floodplain and stream-margin species include willow, box elder, maple, cottonwood, and sycamore (Smith 1992).

Smith (1992) notes the relative botanical stability of the area and a resulting mature ecosystem. By 8000 B.C. the area was characterized by a mixed mesophytic regime that was largely replaced by an oak-hickory–dominated forest by about 3000 B.C. (Delcourt 1979).

FAUNA

As with the flora, the local faunal assemblage is varied and abundant. Large mammals present, or once present, include white-tailed deer, wapiti, black bear, gray wolf, and cougar. A wide variety of small mammals, rodents, fish, reptiles, amphibians, and birds round out the local assemblage (Smith 1992). Dillehay et al. (1984) include 30 species of mammals, 23 species of birds, and a variety of reptiles and amphibians in a list of extant species of the Middle Cumberland fauna. The primary food resources include white-tailed deer, snails, wild turkey, various migratory waterfowl, fish, turtle, mussels, and various small mammals such as opossum, squirrel, and rabbit (Walling and McNutt 1989). This area falls within secondary migratory corridors and therefore has abundant waterfowl seasonally (Smith 1992).

THE FRENCH LICK

Brown (1980) notes the presence of two extensive rock salt deposits in eastern North America. The one of concern here is known as the Eastern Salt Basin or Saline Basin. The salines found from Missouri to New York occur at the margins of this formation. As noted by Brown (1980) and Keslin (1964), small concentrations of salt springs are noted in southern Illinois and Indiana, and a large complex of saline springs is located in the central Kentucky-Tennessee region. The springs at French Lick in Nashville are included in this complex and fall at the southwestern edge of the rock salt deposit (Brown 1980:Figures 1, 3).

The saline spring at French Lick has been active since before the Pleistocene epoch. Wilson (1991) reports Pleistocene megafauna remains recovered from the spring. Early European traders on the Cumberland River found the salt lick visited by eastern bison and other game animals (Haywood 1959 [1823]). The spring is about 1 km southwest of the project area (Figure 4). Two of the primary environmental determinants for the location of the French Lick site and the city of Nashville were the salt spring and the Cumberland River. The spring's overflow channel enters the Cumberland within the limits of the French Lick site as defined on the state site form (Figures 1 and 4). The salt springs were active until the 1800s, when they were dynamited by the land owner. Lonn (1965) does not list Nashville as

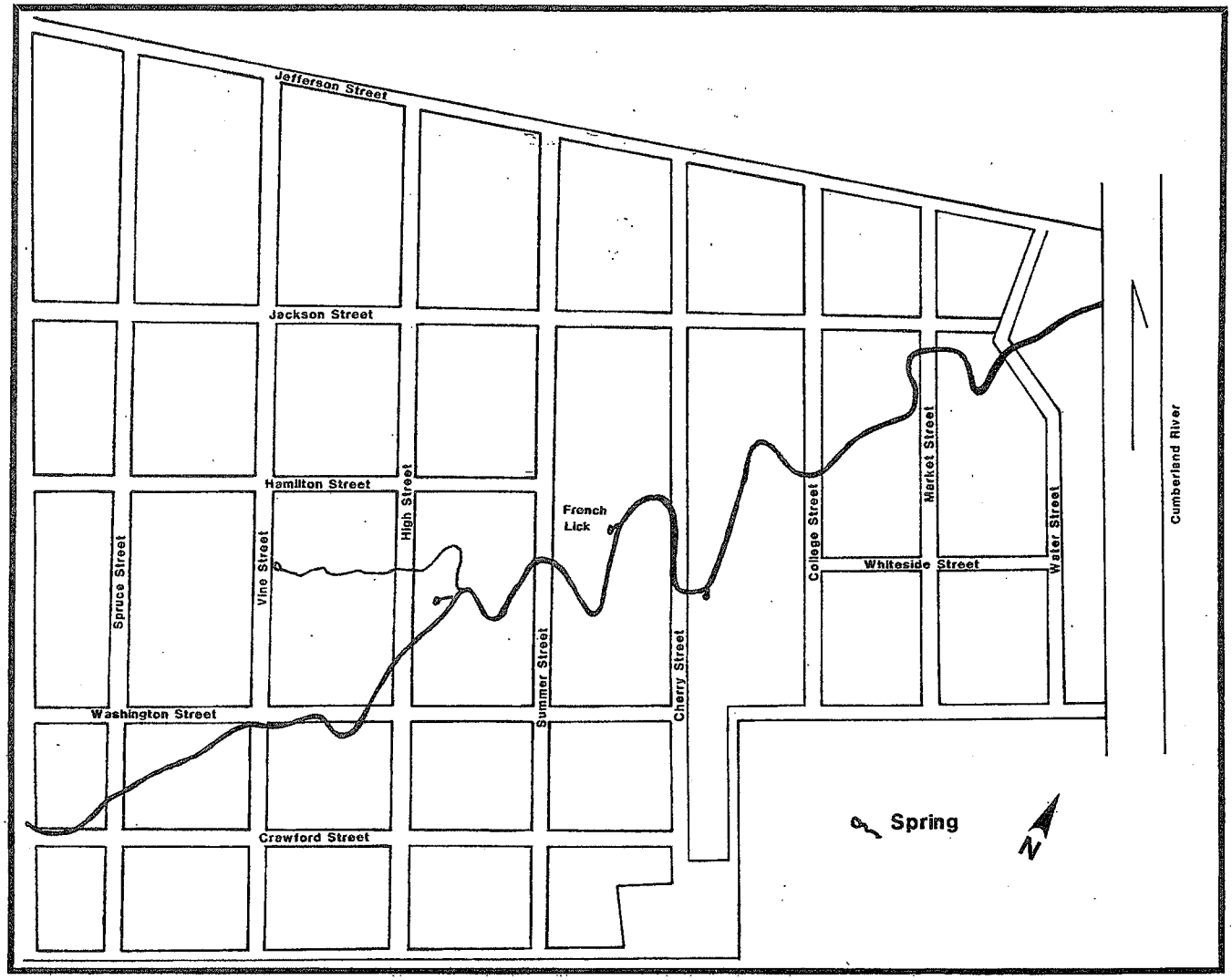


Figure 4. Location of French Lick (from Weakley's map of the Balch and Whiteside addition, 1824; Tennessee State Library and Archives [TSLA] Map File No. 663).

a location of Confederate saltworks but notes that in 1861, 50,000 bushels of salt were purchased there by the Confederate government.

Six other salt-sulfur springs located in the northern Nashville Basin are associated with Mississippian settlements (Autry 1983; Smith 1992). The major saline springs of Sulphur Dell/French Lick and Castalian Springs have large Mississippian communities and mound complexes associated with them.

Jolley (1983a) has suggested that the presence of salt springs in the vicinity of Nashville, particularly French Lick, provided a valuable trade commodity that enhanced the carrying capacity of the immediate area. This allowed the population density to increase over that of other areas of the region which, except for the presence of salt, were as suitable for occupation and possibly even superior in the availability of natural resources (Jolley 1983a). Brown (1980) posits that there were salt specialists during the Mississippian period, suggesting that the aboriginal extraction of salt was apparently an activity of females, while the males controlled the trade during the historic period. However, Muller (1984) suggests that while there were specialized sites, the evidence for specialists is less apparent in his sample. Muller (1984) prefers part-time specialization or just plain folk seasonally extracting salt.

Salt, in addition to serving as a condiment, is extensively used in the preservation of various foods, though this latter use was apparently not employed by prehistoric American Indian populations (Brown 1980). In addition to these well-known uses, salt is a vital part of the diet for humans as well as other animals. Inadequate amounts salt in the diet will result in a deficiency of hydrochloric acid in the digestive system and insufficient sodium chloride in the blood (Lonn 1965).

There is no need to speculate on the amount of salt extracted by the prehistoric populations at the French Lick site; the methods are not even known, though solar evaporation or direct heating are possible options. Though not directly comparable to this situation, Lonn (1965) stresses that the impact on the availability of fuel for salt extraction by the Confederate states was a constant problem. At the large saltworks located near Wilmington, North Carolina, 2,000 cords of wood were required for the operation of two furnaces for one month, and it was noted that all the available wood within a 4-mile radius would be depleted in just a few months. The dwindling supply of wood and the cost of its transportation to the saltworks led the Confederate government to investigate the adoption of the "European method" of solar evaporation for the extraction of salt. The drawback to this method was the amount of land required to maintain production levels; at the saltworks located in Clark County, Alabama, 100 acres were requested for the placement of evaporative pans (Lonn 1965).

PHYSIOGRAPHIC SETTING

The study area is located within the Interior Low Plateau physiographic province (Fenneman 1938:Figure 4). The dominant regional bedrock geology is controlled by a broad structural anticline referred to as the Cincinnati Arch. The Cincinnati Arch trends north-south, and it incorporates an area from northern Alabama to southern Ohio. The Nashville Dome, in Middle Tennessee, is a within the southern edge of the larger Cincinnati Arch. The interior of the Nashville Basin encompasses an area of approximately 7,200 square miles (Wilson 1991). The Nashville anticline began upthrusting during the middle Ordovician period, and this continued into the Pleistocene epoch. Gradual erosion of the structurally soft limestone has truncated the arch, and progressively older Ordovician age limestones have been exposed.

Based on the bedrock geology, DeSelm (1959) and Hardeman et al. (1966a, 1966b, 1966c) have divided the Nashville Basin into Inner and Outer regions. Wilson (1991) defines the Inner Nashville Basin on the basis of the low-phosphate, Ordovician age Stones River group of limestone formations. Topography within the Inner Nashville Basin consists of gently rolling uplands with poorly developed surface drainage. The well-developed karst topography within the Nashville Basin occurs on the Ridley and Lebanon limestone. With extensive karst features, a great deal of interior subterranean drainage is present; this inhibited development of surface drainage features. Shallow soil development and bedrock exposures also characterize most of the Inner Basin. Cedar "glades" are found on the phosphate-poor Lebanon limestone outcrops. The glades are formed where little to no topsoil remains and minimal moisture is available to support floral development.

The Outer Nashville Basin is composed of the overlying Nashville group of limestones. These limestones include the Catheys, Cannon, and Bigby formations, which are consistently high in phosphates (Edwards et al. 1974; Wilson 1991). The Outer Nashville Basin has a well-dissected drainage pattern with narrow valley floors and steep, undulating ridges. The floodplain soils are well-drained loam with clay subsoil horizons and are some of the richest soils in the state (Edwards et al. 1974).

The Highland Rim divides the Nashville Basin from the Interior Low Plateau Physiographic Province (Fenneman 1938). The highly dissected Highland Rim is approximately 25 km to the east of the project area. It consists of an irregular circular cuesta ranging 50 to 75 m higher than the Outer Nashville Basin. The Highland Rim is capped by the Mississippian age Fort Payne and St. Louis formations. The well-known Dover chert of Stewart County is part of the lower St. Louis formation (Marcher 1962b). Highly tractable Fort Payne/St. Louis chert occurs as nodules in gravel bars, and it is found eroding from limestone solution clays on the ridgetops in the Highland Rim of western Middle Tennessee.

HOLOCENE GEOMORPHOLOGY

Schumm (1977) and Chorley (1971) have proposed that changes in regional climate are responsible for changes in the depositional features within a drainage system. Fluctuations in temperature and precipitation have resulted in corresponding changes in vegetation, runoff, and sedimentation along the terraces within the Nashville Basin. Defining and dating the regionally significant environmental changes occurring during the past 15,000 years are critical to the geomorphological interpretation of the Tennessee River Valley fluvial system. The Holocene geological framework has provided a testable model for predicting the location of alluviated prehistoric settlements.

Using information from extensive fieldwork conducted on the Middle Duck River, Brackenridge (1982) developed a classification system of Pleistocene and Holocene terraces. The distinctive features used by Brackenridge to analyze the floodplain include the relative position and elevation of the terraces from the current drainage channel, lithostratigraphic characteristics, soil particle size, and soil color. Radiocarbon samples and archaeological materials were used to assign dates to the terrace-levee developmental sequence.

Description of the Late Pleistocene and Holocene fluvial deposits in the Nashville Basin can be described using Brackenridge's (1984) model for the Middle Duck River. Other studies on the Cumberland River by Autry et al. (1989, 1991), Hagee (1983), and Leach and Jackson (1987) were employed to augment this model.

Modeling floodplain development, Chorley (1971) and Schumm (1977) proposed that changes in environmental input may be responsible for changes in the depositional pattern within the fluvial systems. The deposition and erosion of river levees and terraces are attributable to fluctuations in temperature and precipitation. Subsequent changes in vegetation, runoff, and available sediments resulted in the Holocene fluvial development evident along the Tennessee River drainage. This study follows the hypothesis that the effects of Quaternary environmental change will be reflected in the rates and patterns of river terrace development and soil horizon processes within the terraces. This preliminary analysis presents a model for addressing problems of buried-site reconnaissance and geomorphological interpretation within the entire Tennessee River Valley.

The late Pleistocene-early Holocene transition in the Appalachian uplands of Tennessee has been described by Paul Delcourt (1980). The initial deposition of Holocene floodplain can be dated to the climatic amelioration, which began following the retreat of the Laurentide Ice Sheet at 16,000 B.C. and the replacement of boreal spruce and fir forests with southern deciduous forests. Delcourt (1980) has also described this climatic transition as one of increasing warmth and precipitation. Tundra conditions in the higher elevations of the southern Appalachians were mostly gone by 10,500 B.C. At this time the alluvial valleys in

the upland Southeast were flushed, and the second terrace (T-2) scarp was created. The second terrace is consistent and distinctive within the Tennessee River system. It is elevated 10 to 15 m above the floodplain, and a conspicuous scarp is present. This sedimentation is consistent with the late Early Farmdalian interstitial epoch. This terrace has been dated at Watts Bar to 30,380–29,280 B.C. by Chapman (1977). During the ensuing Holocene, a new series of floodplain features was deposited.

This transition resulted in the flushing of sediment from the uplands and rapid aggradation of the adjacent floodplains. At Bussell Island, Foley and Chapman (1977:82) reported radiocarbon dates of 12,910 B.C. and 8810 B.C. for organic deposits interbedded with channel lag sands. Brackenridge (1984) also suggests a transition from the deposition of T-2b to the T-1a by 8000 B.C. A date of 8000 B.C. for the initial deposition of early Holocene deposits may be interpolated to the Pigeon River floodplain.

The alluvial terraces in the Tennessee River drainage are identified using the classification system developed by Brackenridge (1984) and Mahaffey (1984) for the Duck River. For the upper Tombigbee River, Muto and Gunn (1981) have described a similar series of Holocene topographic features. As one moves from the incised, mature floodplain to the alluvial deposits at the foot of the Appalachian Mountains, a distinctly different set of features is encountered. This fluvial environment is more dynamic, with a larger sediment load and different Holocene features. Delcourt (1980:110–121) used a general model for describing the Holocene terrace sequence on the Little Tennessee River. Brackenridge (1984) and Mahaffey (1984) developed a descriptive model of the Holocene fluvial features as a series of alluvial terraces, river levees, and lithostratigraphic units. The second terrace is referred to as T-2, the first river terrace is referred to as T-1, and the active floodplain is designated as T-0. These alluvial features have been named and a set of distinctive features defined. The features are as follows. The Cheek Bend formation (T-2) was deposited between 16,000 and 8000 B.C.; the Cannon Bend formation (T-1a) was deposited between 8000 and 4000 B.C.; the Leftwich formation (T-1b) was deposited between 4400 B.C. and A.D. 1000; and the Sowell Mill formation (T-0) was deposited in two episodes beginning in A.D. 1450, with a second episode starting in A.D. 1830. These periods of floodplain stability and alluviation can generally be correlated with periods of Holocene climatic shift in eastern North America.

Within the Tennessee River Valley, archaeologists conducting settlement pattern studies are continuing to define the effects of these episodes of floodplain stability. Within the Cumberland River/Nashville Basin, intact stratified Middle and Late Archaic deposits have been described by Alexander (1982), Amick et al. (1986), Autry et al. (1989, 1991), and Hofman (1984a). Surveys and excavations by Alexander (1988, 1991a, 1991b), Calabrese (1976), Faulkner and Graham (1966a, 1966b), and Leach and Jackson (1987) have begun to document the middle and late Holocene floodplain fluvial developments and archaeological settlement patterns around the Tennessee River.

A study by Brackenridge (1984) in the Columbia Reservoir of the Duck River, approximately 50 miles south of Nashville, provides us with a comparable model to evaluate the stratigraphic development along the Cumberland River. In the present study, the river terraces and levees are identified on the basis of the following seven criteria:

1) elevation above the present river level
2) relative distance from the river channel
3) typical particle size distribution of sediments collected from vertical profiles
4) soil classification of surface sediments
5) a series of related pedogenic features, including elevation, alluviation, oxidation, and precipitation of iron (Fe) and manganese (Mn)
6) the age of archaeological remains within the terrace deposits
7) soil types developed by the USDA (North 1981; Soil Survey Staff 1951)

Brackenridge (1984) defined the Cheek Bend formation (T-2) as massive yellowish brown, brown, and strong brown with mottled clay loam. The mottling of manganese oxide concretions and a high ratio of sand to clay characterize the Cheek Bend formation. The upper member (T-2a) of the Cheek Bend formation is lithologically distinguishable from the T-2b by a dispersed patinated chert pebble sheet and a somewhat less yellowish hue. This pebble sheet is an erosional surface on the foreslope of the Pleistocene terrace; the estimated date is approximately 8000 B.C. (Brackenridge 1984).

The Cannon Bend formation (T-1a) is a brown to dark brown massive clay loam to clayey silt (Brackenridge 1984:Table 1). Dispersed thin manganese oxide coatings and wood charcoal fragments occur within this formation. The Cannon Bend upper member ($T\text{-}1a^2$) is commonly found superimposed over the Cannon Bend lower member ($T\text{-}1a^1$) within the Columbia Reservoir study area. The lower member is distinguished by its more pronounced pedogenic development and yellow-brown color. Brackenridge's (1984) description suggests that the lower member is the remnant of a former floodplain, with well-developed pedogenic structure and reddish brown alluvial clay skins in the upper meter. These features appear to have been truncated and replaced by a soil horizon containing a more reddish brown silt clay soil with less well-developed ped structure. We may assume a relative date of 8000 to 6000 B.C. for the earlier T-1a Cannon Bend ($T\text{-}1a^1$) lithostratigraphic unit. Kirk artifacts have occasionally been recovered at the contact between these two units.

The Cheek Bend upper member ($T\text{-}1a^2$) contains a gray fossil floodplain soil. This commonly follows the levee-and-swale topography of a fossil floodplain. Hofman (1982, 1984a, 1984b) describes these in situ Middle Archaic Morrow Mountain horizon artifact assemblages and reports a suite of radiocarbon dates ranging from 4885 to 5250 B.C. associated with this soil horizon. Brackenridge (1984) states that the Cannon Bend aggradation ended by 5300 B.C., and the stable surface and soil formation ended by 4250 B.C.

The Leftwich formation (T-1b) is also a massive dark brown silty clay or silty clay loam soil. This formation lacks appreciable manganese coatings or concretions. Locally abundant charcoal and Late Middle Archaic to Early Woodland artifacts are commonly recovered from this formation. Brackenridge (1984) notes that the sand/silt/clay ratios of the Leftwich formation are indistinguishable from the Cannon Bend formation; however, the later Sowell Mill formation contains more abundant sand and silts than does the earlier Leftwich formation.

The Leftwich lower member ($T\text{-}1b^1$) is generally absent in the segment of the Duck River investigated. At the Leftwich type site, Brackenridge (1984:Figure 5) noted a 0.5- to 1.0-m-thick dark gray soil; radiocarbon dates of 2180 B.C. and 4210 B.C. were recovered from the alluvial unit and paleosoils, respectively.

The Leftwich upper member ($T\text{-}1b^2$ and $T\text{-}1b^3$) has two phases of aggradation separated by a period of stability and paleosoil development. The Leftwich upper member formation is less grayish and somewhat more reddish or brownish than the Leftwich lower member.

Radiocarbon dates from the $T\text{-}1b^2$ include 1030 B.C. and 880 B.C. from within the Leftwich upper member. From this, Brackenridge (1984) inferred that the lower Leftwich formation had occurred between 1950 B.C. and 1050 B.C., and the final phase of Leftwich upper member accumulation began from 650 B.C. to A.D. 50.

The Leftwich formation is a conspicuous feature of floodplain deposits throughout the Tennessee River Valley. This "Late Archaic Levee" has been excavated on the Cumberland River (Alexander 1982), the Duck River (Alexander 1982; Amick 1986), and the Tennessee River (Calabrese 1976; Council 1990; Faulkner and Graham 1965, 1966a, 1966b; Resource Analysts 1984; Webb and Wilder 1951). These cultural components and stratigraphy are well known, though not systematically understood to date.

The Sowell Mill formation consists of a T-0a and T-0b development that took place after the late seventeenth century. It is comprised of cross-bedded sands with organic mats. Historic material and recent fence posts have been recovered from this formation. Typically, the Sowell Mill formation consists of two benches attached to the front of the T-1b at a lower elevation.

SUMMARY

The preceding discussion of the geology of the Nashville Basin and surrounding Highland Rim establishes a framework for the later chert analysis and discussion of regional lithic procurement patterns.

The French Lick was part of a region-wide system of saline springs. The presence of this salt spring was one of the primary factors in the settlement of East Nashville Mounds and the French Lick site. Archaic and Woodland populations were undoubtedly attracted by the large numbers of game animals drawn to the salt, and almost certainly exploited the spring for their own use as well. The use of the saline spring by the inhabitants of the Mississippian settlements is clearly evidenced by the large volume of salt pan ceramics recovered from these two settlements.

The Holocene geomorphology of the Cumberland River floodplain is one of the principal variables in interpreting the fluvial development and cultural stratigraphy of the Jefferson Street Bridge sites. East Nashville Mounds, a large mound and village complex, appears to have been truncated, and the Mississippian settlement is isolated from earlier components. The portion of the site excavated is located on the upstream end of a large series of river levees which parallel the Cumberland River channel for over a mile; the site is located on the central area of these levees. The 0–30 cm level below surface contains a stratified Mississippian component. Stratum 2 is of particular interest, with a shell midden that may represent the Thruston phase, the most intense period of occupation in the Nashville area.

The French Lick site, directly across the river from East Nashville Mounds, is located on a decomposing segment of Ordovician bedrock, and a large segment of Holocene fluvial deposits has remained in place. The contact between the T-2a and T-2b Cannon Bend formation is indicated by a gravel sheet at 2 m below the historic surface. Middle and Late Archaic and Woodland stratified deposits remain in situ on the 30–110 cm level below surface. The 0–30 cm level below surface contains a stratified Mississippian component.

CHAPTER 3
BRIEF OVERVIEW OF PREVIOUS INVESTIGATIONS IN THE NASHVILLE AREA

Richard Walling

It has long been recognized that the archaeological emphasis within the Central Basin and environs has been on the highly visible and extensive late prehistoric Mississippian sites (Jennings 1946). For the most part, it has been left to cultural resources management (CRM) projects, including survey and excavation of particular impact areas, to begin to fill the gaps in our knowledge and understanding of the majority of the prehistory for this area.

As noted by Smith (1992) in his review of previous investigations of Mississippian sites in the area, a number of early nineteenth century Nashville residents had an interest in the local antiquities. These interests were aimed at the numerous stone box graves for which the area was known. Individuals such as John Overton and Ralph E. W. Earl conducted excavations and collected material but failed to publish their findings. It was left to one of their contemporaries, John Haywood (1959 [1823]), to provide an account of Earl's exploits. Haywood's volume, although rife with wild speculation and misinterpretation, includes the earliest and most detailed description of the French Lick site. In fact, Haywood's description of Earl's excavation of the mound at the site provides virtually the only information, beyond the general location, that we have for this earthwork.

By the middle of the nineteenth century, more descriptions of local sites were finding their way into print. Troost (1845), Jones (1869, 1876), Putnam (1878), and Thruston (1890), the last of the nineteenth-century authors, provided brief to very detailed descriptions of many sites near Nashville.

Joseph Jones, Nashville Health Officer for 1868 and 1869, took advantage of his posting at the city to carry out rather extensive investigations in the area. Jones is of particular interest here, as his are the only reported investigations of East Nashville Mounds prior to those with which this report deals. While Jones's (1869, 1876) work does not stack up well against much of the professional work being conducted in the area today, he did introduce the scientific method into local antiquarian activities, and he credited the local sites to the ancestors of extant aboriginal populations.

Jones (1876) apparently entered the field with a research design, as related in the preface to his longer article. He states:

> The inductive method was followed in the entire investigation, and in presenting the outline of the explorations of the effort has been made to accomplish two results:
>
> 1st. The accurate description of the aboriginal remains.
>
> 2nd. The collection and classification of such facts as bore on their obscure history [Jones 1876:v].

Jones was also interested in disproving the assertion, fostered by Haywood (1959 [1823]), that a race of pygmies had inhabited the area, and that entire cemeteries contained only small graves. In order to investigate this, he opened a "large number" of the small graves. Jones (1876) reports that some of these contained only the bones of small animal and birds. These included dog, rabbit, raccoon, and opossum. Bird remains included wild turkey, eagle, owl, hawk, and wild duck. "Occasionally the bones of animals and birds were found in the large graves along with the bones of adult humans" (Jones 1876:9).

Jones (1876) found that the small graves were often in groups near the large graves, and that within the "royal mounds" (burial mounds) there would be only two or three small graves, all of children. Finally he states with unequivocal firmness, citing a summary of the data, that all the "pygmies" were indeed children. He goes on to note that Dr. Troost (1845) and Putnam had come to the same conclusion.

His duties keeping him near Nashville, Jones corresponded with medical professionals in the Sparta area, where Haywood had alleged the evidence for the race of pygmies originated, asking for descriptions and skeletal remains. Again, the conclusions of the local doctors and Jones were that no such race existed. In addition to the discussions of the sites of concern here, Jones also notes the location of other investigated sites, provides a detailed description of stone box construction (including different types of, and differences in, box construction) and types of interments— adult, infant, secondary, single, and multiple.

At least partially inspired by the work of Jones (Stephen Williams, personal communication 1992), Frederic W. Putnam visited the Nashville area in 1877. In a footnote, Putnam (1878) notes the second publication of Jones's work (1876), stating that it was not viewed by him until after his return from the field. He makes no mention of Jones's 1869 *American Naturalist* article, a publication that was edited by Putnam. Putnam does credit Jones with retrieving many identical artifacts and coming to many of the same conclusions, but differs with Jones most significantly on the occurrence of syphilis within the indigenous population. Putnam is credited with bringing sound archaeological techniques to the investigation of Middle Cumberland sites (Smith 1992).

Gates P. Thruston, a retired Union general and Nashville lawyer, oversaw the excavation of thousands of stone box burials. Thruston's (1973 [1890]) publication draws heavily on his own work and that of previous investigators in the area. Like Jones, Thruston believed

that the local sites were the result of settlements of the ancestors of extant aboriginal populations. As noted by Smith (1992), while the material recovered by Thruston is of little use beyond information about a general collection, Thruston did deduce much of the variety of settlement and subsistence, and did see the connection of the local material with that of other Mississippian sites throughout the Southeast.

William Myer was next to conduct archaeological investigations in the general area, and indeed was in contact with Thruston. Myer conducted a fairly ambitious program of excavating, recording, and mapping sites throughout Middle and West Tennessee. This work led to an impressive list of manuscripts and publications (Myer 1912, 1917, 1921, 1922, 1923a, 1923b, 1924, 1928a, 1928b).

The period of the 1920s through the 1970s saw relatively limited professional activity in the Nashville area. However, a number of survey and testing projects were conducted in conjunction with CRM activities and postgraduate research, and by avocational archaeologists in the area. The majority of this work was carried out well away from the Nashville area, but it provides a framework of comparative data within which the local cultural systems can be studied (Smith 1992).

The National Park Service conducted a preconstruction survey along the proposed route of the Natchez Trace Parkway (Jennings (1944, 1946). In his earlier publication, Jennings dealt only with the Mississippian sites encountered in the Nashville area. In his latter brief article, Jennings attempted, through his own admission, to rectify in a small way his ignoring the earlier components noted. In the 1946 article, Jennings notes the presence of two mound sites that he attributes to a Copena presence a short distance west of Franklin, in the Harpeth River Valley.

In 1963, the University of Tennessee conducted pre-inundation survey and testing in the J. Percy Priest Reservoir area for the National Park Service (Morse and Morse 1964). Twenty-eight sites were identified by the survey. These were generally small, multicomponent campsites; Paleoindian through Mississippian components were represented. A more recent survey of selected areas of Corps of Engineers-owned agricultural lease areas within the Reservoir area was carried out by DuVall (1987). Over 100 sites were recorded or revisited during the survey. DuVall reports that many of these sites were below flood pool, and others were heavily impacted by scouring and wave action.

John Dowd's (1970, 1972, 1974, 1989) interest in the local prehistory has resulted in a number of investigations and reports of various levels of intensity. These include investigations of two Mississippian sites, West and Brick Church Pike. The West site (40DV12) is a small village and cemetery site located on the east bank of the Cumberland River, within Bells Bend (Dowd 1972; Wright et al. 1973). Brick Church Pike (40DV39) is a small mound and village complex (Dowd 1974). These investigations are among the few reported excavations carried out between the 1920s and the advent of CRM projects of the

late 1970s and 1980s in the Nashville area. Dowd (1989) also reported the results of investigations at the rather unique Anderson site (40WM9). A relatively undisturbed Middle Archaic component was the primary feature at this site.

The TDOA has carried out a number of projects in this general area. These include survey, testing, and larger-scale excavation. Though often resulting from CRM concerns on state-owned land, a number of projects have been conducted at locations of impending destruction that do not fall under state or federal jurisdiction and mandates. Jolley (1978, 1979, 1980, 1983a) conducted a number of surveys within selected portions of the Lower Duck and Middle Cumberland River Valleys, in the Western Highland Rim and Outer Nashville Basin, and within the headwater area of Caney Fork River. Froeschauer et al. (1986) provide brief statements pertaining to the environmental and cultural setting and known cultural resources resulting from a survey of state-owned land in Tennessee.

A number of excavations of varying levels of intensity have been conducted by TDOA in the general area. O'Brien (1977) reported the results of investigations conducted at the large Mound Bottom Archaeological Complex, located on the Harpeth River near Kingston. O'Brien directed CRM excavations designed to test areas of the site for development as a state park. These investigations also drew on the unreported previous work conducted at the site by the University of Tennessee and the State of Tennessee.

Benthall (1983) reported on a three-week CRM investigation at Noel Cemetery (40DV3), from which Thruston (1972[1890) recovered much of his collection. These investigations were conducted in 1973 in response to the potential impact of a portion of the site area by road construction. Benthall (1987) reported on the excavation of a small Mississippian burial mound at Site 40SU20 in Goodlettsville, just northeast of Nashville. Ninety-six stone boxes with 106 burials were excavated, most of which had been previously disturbed by relic hunters. No patterning was observed in the arrangement of the stone boxes.

Broster et al. (1991a, 1991b) have reported on survey and limited excavation of Paleoindian sites in the Cumberland and Tennessee River Valleys.

Smith and others (Moore et al. 1993; Moore and Smith 1993; Smith 1991, 1993; Smith and Broster 1989; Smith et al. 1993) have conducted excavations as well as syntheses in an effort to establish a meaningful chronology of the lifeways of the local Mississippian peoples. Limited excavations were conducted at the Gordontown site (TDOA 1991), a site previously reported by Myer (1928a). Small-scale salvage excavations were conducted at Old Town, 40WM2, (Smith 1993), a site previously investigated by Thruston (1973 [1890]).

Moore et al. (1992) reported on test excavations at 40DV35, a site originally reported by Dowd (1970). Based on projectile point morphology, Early Archaic through Mississippian components were represented, though the site had been severely eroded, and there was little

stratigraphic integrity to these deposits. Middle Archaic through Early Woodland materials made up the bulk of the collection (Moore et al. 1992).

Relevant to the study area, the TDOA has issued study units for the Mississippian in the Central Basin (1987a), for the Mississippian period of the Western Highland Rim (1987b), and for the Paleoindian statewide (1989). These documents provide a brief synthesis of the available information by stage and provide guidelines for further research.

In addition to those studies mentioned above, various private consulting firms and universities, in compliance with federal mandates, have carried out a number of CRM projects within the general Nashville area. These include survey, testing, cemetery removals, and mitigation projects.

Jolley (1983b) conducted limited CRM excavations at the extreme southern end of the Brick Church Pike Mound site (40DV39). These investigations revealed one intact feature and resulted in the recovery of a variety of artifacts attributable to the Mississippian occupation. As previously noted, Dowd (1974) reported on limited investigations at this site.

Extensive excavations were carried out at the Averbuch site (40DV60) by the University of Tennessee (Klippel and Bass 1984). This is one of the few cases in recent history that a relatively extensive portion of a single site was subjected to professional, systematic excavation.

Taylor et al. (1991) reported the results of survey of 124 acres and the testing of three previously unreported sites in Bells Bend of the Cumberland River north of Nashville.

Childress (1992a) reported on the prehistoric remains recovered from the Gowen Farmstead, located on the Nashville Airport property. The major component at this location is an eighteenth- and nineteenth-century farm complex.

S. D. Moore (1993) has reported the results of a survey of 17.5 miles of I-840 highway corridor in Wilson and Rutherford Counties.

A number of projects have been conducted in the general Nashville area since the 1984 reinterpretation of the Tennessee burial law, which brought protection to prehistoric graves. The first action under this new interpretation was the TDOA (1991) excavations at Gordontown (40DV6) in 1985 and 1986. These investigations included the excavation of burials encountered during construction and the salvaging of information, as the area was undergoing residential development. A number of aboriginal cemeteries in the Nashville area were removed before construction or other proposed disturbances as a result of this legislation (i.e., DuVall 1990; DuVall and Dowd 1987, 1988; Taylor et al. 1990). Because of

the nature of these projects and the responsibilities of the contractor under the existing law, investigations are generally limited to burial recording and removal.

Vanderbilt University published the results of salvage excavations at the Mississippian Arnold (Ferguson 1972) and Ganier sites (Broster 1972).

Miller (1987) has provided a description of Travelers' Rest (40DV11), including early descriptions and investigations and the salvage excavations conducted in the mid-1960s. The Tennessee State Museum (1985) published a catalog and background information for the Thruston collection.

Probably the most notable recent work dealing with this general area is K. E. Smith's 1992 tome. Conclusions and inferences based on a synthesis of available information for the Mississippian sites of the Middle Cumberland region provided the first framework that allowed a diachronic perspective on the late prehistoric period of the area.

Moving farther afield, recent investigations in contiguous areas have provided comparative information relevant to Mississippian stage investigations. In recent years, western Kentucky has been the scene of a number of projects focusing on Mississippian research. The University of Illinois at Urbana-Champaign has been conducting a program of survey and testing, the Western Kentucky Project (Edging 1985; Kreisa 1988, 1991a; Stout 1987; Sussenbach and Lewis 1987), focusing on extreme Western Kentucky. The Kentucky Heritage Council (Edging 1990; Lewis 1986; Pollack and Railey 1987; Pollack et al. 1984) has carried out a number of projects in the Lower Cumberland and Tennessee River Valleys and other locations in western Kentucky. The work at Wickliffe Mounds (15BA4) (Wesler 1985, 1989, 1991; Wesler and Neusius 1987) has resulted in the compilation and synthesis of a great deal of information and data regarding the problem of late prehistoric archaeology in this general area.

For comparative information on the Woodland stage and, to a slightly lesser degree, earlier occupations of the Nashville area, we must draw on investigations in the Middle Tennessee River Valley (Cole 1981; Dye 1980; Knight 1990; Walthall 1973, 1980), the Duck and Elk Rivers (Butler 1977, 1979; Cobb and Faulkner 1978; Crites 1991, 1993; Faulkner and McCollough 1973, 1974; Faulkner 1988; Kline et al. 1982), the Highland Rim (Childress and Buchner 1993; Dillehay et al. 1984), and Kentucky (Clay 1963; Railey 1990).

A number of projects have been conducted down the Cumberland River in the Highland Rim area, north of the present study area. These include survey, testing, and mitigation projects carried out in compliance with federal preservation provisions. Previous investigations for this area have recently been summarized in several publications (cf. Childress and Buchner 1992; Walling and McNutt 1989), and only a few will be briefly noted here. Ball (1979), in a survey and testing project of the Salt Lick Recreation Area, Jackson County, Tennessee, reported nine sites with components ranging from Paleoindian through

historic. Ball (1979) notes the historic salt-extracting activity known for the general area; no information could be found relating to the origins of the name of the creek, Salt Lick. In 1963, Morse (1963) oversaw testing of the Jellicourse site (40SM9), located at approximate Cumberland River mile 323.5 in Smith County, Tennessee. Although this site is well north of the present study area, this work represents one of the few transitional Paleoindian/Early Archaic sites reported in the region. Morse and Polhemus (1964) carried out a program of survey and testing in 1963, prior to the inundation of Cordell Hull Reservoir.

CHAPTER 4
CULTURAL OVERVIEW

Richard Walling & Lawrence Alexander

Until fairly recently, archaeological research in the Nashville area has focused almost exclusively on the numerous and large Mississippian sites. Exacerbating the situation is an apparent paucity of sites with intact earlier components. Much of the information relevant to a cultural/historical overview must draw heavily from information on neighboring areas, particularly to the south and southeast. Over the past two decades work in the Duck, Tennessee, and Tombigbee River Valleys has resulted in the establishment of detailed area chronologies. Extensive information on the settlement patterns, subsistence, and stylistic and technological change in these areas has provided a relatively detailed picture of much of the prehistoric era in the Middle South. Recent work focusing on the Mississippian stage in the Middle Cumberland area and Kentucky provides the framework for discussing the late prehistory of this area.

PALEOINDIAN STAGE

The earliest known aboriginal occupation in Middle Tennessee was during the Paleoindian stage, estimated to date between 14,000 and 8000 B.C. This occupation has been tentatively described as having three consecutive horizons: the Clovis horizon, 14,000–12,000 B.C.; the Cumberland-Redstone horizon, 12,000–10,000 B.C.; and a third horizon which will be designated as the "Quad," 10,000–8000 B.C. A distinctive series of projectile point/knife (PP/K) types characterizes each horizon. The Clovis and Cumberland-Redstone projectile point types are characterized by grinding of the basal hafting area and removal of large channel flake(s) on both the dorsal and ventral surfaces parallel to the long axis of the artifact. The third Paleoindian horizon is characterized by the Beaver Lake, Quad, and other related PP/K types. These lanceolate projectile points, similar to those of the earlier phases, are generally not fluted, but are usually basally ground.

The lithic technology associated with the Paleoindian stage is characterized by large flake-blade tools struck from prepared cores. With this distinctive stoneworking technology, a series of uniface blades (used as scrapers and knives), steep-angle scrapers, and compound scraper-graver tools were manufactured.

The settlement pattern in northwestern Alabama during the Paleoindian stage has been the subject of an intensive study by Hubbert (1989). In the Tennessee River drainage, Paleoindian sites have been found in three topographic situations: (1) low river levees at the intersection of the Pleistocene and Holocene terraces; (2) high terrace remnants (T-2 and T-3) or knolls at the edges of drainage floodplains; and (3) areas of upland karst topography. These sites are located in topographic settings that have been continually eroded. As a result, very few Paleoindian sites have been excavated in this region of the eastern United States.

Broster and Norton (1990; Norton and Broster 1992) describe a Paleoindian lithic assemblage at Kentucky Lake. On the Tennessee River floodplain in northern Alabama, extensive Paleoindian site complexes have been reported at the "Old Slough" site complex by Hubbert (1989) and Hulse and Wright (1989). The Quad site consists of a 20- to 30-acre complex of river levees that are seasonally inundated by the Wheeler Reservoir. At low water, Paleoindian artifacts are recovered from the eroded early Holocene river levees.

In both Kentucky Lake and Wheeler Reservoir, the most significant factor in locating Paleoindian stratified deposits is identifying the areas where the early Holocene river levees are being actively eroded by the seasonal high and low water zones. In the lower portions of the reservoirs, these deposits are perennially flooded; in the upper zones of the reservoirs, these areas are cultivated. Only in the middle of each lake level cline are these areas being actively eroded. As Hulse and Wright (1989) documented, these archaeological deposits are transitory over a 30- to 40-year period of active erosion.

These sites are located on alluviated river levees (T-1a/Cheek Bend Formation) at the foot of the Pleistocene terraces. These levees are the earliest Holocene floodplain deposits, characterized by distinctive soil profiles that include vertical white soil or iron staining. These early Holocene river levees are likely to be present, as erosional remnants, throughout the entire Tennessee and Cumberland River drainages. If the Cumberland and Tennessee River examples are stratified Paleoindian occupations, archaeologists working in these river valleys have repeatedly failed to note these sites. This omission is due to alluvium up to 2 m thick covering the sites, and to the failure to employ a geomorphologist to model the sedimentary history in the area under investigation.

Paleoindian sites are most commonly encountered on the edges of the second and third terraces overlooking the intersections of lateral drainages with primary streams. In these topographic situations, Paleoindian sites typically consist of lithic scatters found in plowed fields. The artifact density is generally low; the sites have been intensively plowed, dispersed by erosion, and obscured by later occupations. The Paleoindian archaeological deposits on these sites are not intact.

The third environmental situation where Paleoindian sites have been recovered is areas of upland karst topography (Gatus and Maynard 1978; Hubbert 1989). Karst topographic features are located throughout the Inner and Outer Nashville Basin and the Highland Rim of

Middle Tennessee along the Tennessee River; along the major tributaries of the Tennessee in northern Alabama; and throughout the Ridge and Valley province of eastern Tennessee, northwestern Georgia, and northeastern Alabama. Similarly, karst topography is located in the Inner and Outer Bluegrass of central Kentucky and in the western Kentucky Pennyroyal and Mammoth Cave Plateau areas (Gatus and Maynard 1978:205).

The Paleoindian sites associated with karst topography consist of lithic scatters situated on low hills surrounded by collapsed sinks or on the rims surrounding sinks. Early Archaic occupations are also commonly associated with these Paleoindian sites. At the end of the Pleistocene, these sinkhole complexes would have presented a microenvironment consisting of a low plain of open ponds, bogs, and swamps. Following the Early Archaic, however, the environment changed sufficiently to make the area no longer attractive to small groups of hunters and gatherers. These areas today are seasonally wet, and a few contain perennial ponds.

Although distinctive fluted points are recovered throughout the Southeast, the Nashville Basin and the Tennessee River in northern Alabama are very well known for fluted point finds. Within the Nashville Basin, the largest numbers of fluted points have been recovered from northern Middle Tennessee (Lewis 1953; Morse et al. 1964; Thruston 1890:32). In northwestern Alabama, fluted points have been recovered in Colbert, Lauderdale, and Limestone Counties (Futato 1982a:9).

The physiographic settings of these counties yield a significant insight into Paleoindian cultural ecology. In Tennessee, Smith County is located on the Cumberland River, in the area where the river widens and crosses from the Highland Rim to the Outer and then the Inner Nashville Basin. Maury County is located on the Duck River where it crosses from the Inner to the Outer Nashville Basin. The entire Nashville Basin is well known for its extensive sinkhole pond complex. In northern Alabama, two areas of high-density fluted point finds are known. One is at the Muscle Shoals in Colbert and Lauderdale Counties. The other is in Clouds Cove near the confluence of the Flint and Tennessee Rivers in Madison County. Muscle Shoals is a series of shallow-water shoals formed where the Tennessee River crosses the erosion-resistant Fort Payne chert beds. This was the only place within 100 miles of Nashville where the Tennessee River could be crossed on foot (Hubbert 1989). The Muscle Shoals provided a complex shallow-water environment conducive to fishing and mussel collecting. The Fort Payne chert beds also provided a local base level for the Tennessee River. Subsequently, the shoals controlled the Holocene depositional sequence, both upstream and downstream on the river. Adjacent to the shoals in the uplands is a collapsed sink complex 5 to 10 km wide. This complex parallels the Tennessee River for approximately 70 km to the foot of the Guntersville Gorge.

Clouds Cove is located in northeast-central Alabama on the Tennessee River where the Sequatchie Anticline has incised the Cumberland Plateau. At the foot of the Guntersville Gorge, the river creates a dump pool and enters a wide floodplain. Immediately west of

Clouds Cove is the confluence of the Flint River with the Tennessee. The Tennessee River floodplain is not obstructed until it reaches Muscle Shoals. This area is a complex environment which has resulted from juxtaposition of the Cumberland Plateau and the Interior Low Plateau. North of the Tennessee River, this area marks the westernmost extension of the Cumberland Plateau. Here the Tennessee River traverses the Fort Payne formation, the geological equivalent of the Highland Rim in Tennessee. In both areas, chert resources are abundant.

These examples from northern Alabama and central Tennessee display a remarkable physiographic and paleoecological similarity that is useful in generating further models. Both the Cumberland and the Tennessee Rivers flow through the Cumberland Plateau before changing gradients and entering wider floodplains. Similarly, both rivers enter gradient obstructions of resistant Fort Payne chert before crossing into another series of physiographic zones. Both areas are noted for their extensive collapsed sink pond complexes.

Within the Nashville Basin, similar hydrologic-physiographic situations exist on the Elk River in the vicinity of Fayetteville and on the Harpeth and Cumberland Rivers near Nashville. Both of these areas should contain evidence of extensive Paleoindian settlements. This Paleoindian model can also be tested on the Green River in Kentucky and at the falls of the Ohio River at Louisville, Kentucky.

ARCHAIC STAGE

The Archaic stage in the Middle South has been divided into Early, Middle, and Late Archaic periods. A time range of 8000–700 B.C. has been estimated for the Archaic.

EARLY ARCHAIC

The Early Archaic in the Nashville Basin has been dated to 8000–6000 B.C. The Early Archaic in the Middle South can be discussed in terms of four horizons, each of which has a specialized temporal and regional development. The Dalton horizon appeared earliest, and it most closely followed the Paleoindian tradition. The Dalton horizon was followed by the Big Sandy, and later, the Kirk horizon. The final horizon in the Early Archaic was the Bifurcate Base horizon. Each horizon was named for its characteristic distinctive PP/K series. Each can be arbitrarily assigned a 1,000- to 500-year time span until more definitive work can be completed.

On the Little Tennessee River, the Early Archaic date range is 7200–6200 B.C. (Chapman 1975:256–259). Early Archaic materials have also been found in the basal levels at the St. Albans site in West Virginia (Broyles 1966:41). In the Stanfield-Worley Bluff Shelter in

northern Alabama, Early Archaic material from Zone D dates from 7690±450 B.C. and 6870±400 B.C. (DeJarnette et al. 1962).

The lithic technology associated with this period represents a significant change from the preceding Paleoindian stage. This technology demonstrates the beginning of an adaptation to regional lithic resources and regional stylistic point type variants. The lithic reduction sequence changed from large blade tools to a less complex core reduction and flake tool technology.

Evidence of the Dalton complex appears most frequently from the Tennessee Valley of northern Alabama and western Tennessee to Arkansas and the Mississippi River Valley. Dalton projectile points also occur to the east in Middle and East Tennessee (Roberts 1977) and the North Carolina Piedmont (Coe 1964). Big Sandy projectile points, representing a presumably later horizon, are of little significance in East Tennessee and the Appalachian area.

The Kirk projectile point series, on the other hand, is widespread throughout Middle and East Tennessee and is a well-known Early Archaic horizon marker throughout the Appalachian Mountains and the Atlantic Piedmont area (Broyles 1966, 1971; Chapman 1975, 1977). The Kirk projectile point is also significant in the Middle and Lower Tennessee River Valley and the adjacent Gulf Coastal Plain of Mississippi and Alabama.

The Bifurcate Base projectile point series, representing the succeeding chronological period, is most common in East Tennessee and throughout the Appalachian Mountains, the north-central states, and the Atlantic Coastal Plain. Bifurcate Base projectile points, however, are rare in Middle Tennessee, and are of little significance in the Gulf Coastal Plain.

An Early Archaic settlement pattern model for the Nashville Basin can be extrapolated, with reservations, from northeastern Arkansas where seasonal settlements have been identified (Morse 1973, 1975, 1977). Although considerable disagreement has been generated (Price and Krakker 1975; Schiffer 1975a, 1975b), Morse appears to present the argument most applicable to the Nashville Basin. This model posits a central base camp and scattered special-purpose camps in the hinterlands. The restricted chert sources and the possible location of Dalton cemeteries in Arkansas are two significant aspects of Morse's model that may not be appropriate in Middle Tennessee. The locations of small upland settlements, as typified by the Stanfield-Worley Bluff Shelter in northwestern Alabama (DeJarnette et al. 1962) and open sites on local drainages (Hubbert 1989), appear to represent elements of the Morse settlement pattern model. Chapman's (1975:279) similar model suggests that during the Early Archaic, a narrow range of plant and animal species was being intensively exploited from specific forest and lacustrine environments.

A partial overlap of the Early Archaic sites with Paleoindian settlements has been noted by Hubbert (1989). In northwestern Alabama and southwestern Tennessee, along the

Tennessee River and its upland drainage sites, sites have been noted which contain (1) only Paleoindian artifacts, (2) only Early Archaic artifacts, and (3) both Early Archaic and Paleoindian artifacts. This pattern has been interpreted to represent a transition in settlement pattern and exploitation strategy from Paleoindian to Early Archaic (Hubbert 1989).

Middle Archaic

The Middle Archaic dates range in the Nashville Basin is approximately 5500–3000 B.C. During this period, a significant population increase occurred throughout the Middle South. The PP/Ks characteristic of this period include the Eva-Morrow Mountain cluster, the White Springs-Sykes cluster, and the Benton cluster. Long and Josselyn (1965:143–146) suggest a developmental sequence of point types as follows: Eva to Morrow Mountain and Sykes-White Springs, followed by the Benton, Ledbetter, and Pickwick point types of the Late Archaic. This stylistic trajectory of projectile point types can be further expanded to include the terminal Archaic Wade point types.

The stylistic development of projectile points has been tenuously equated with a series of horizons that includes Eva-Morrow Mountain and Sykes-White Springs. The Eva-Morrow Mountain point types are widely distributed throughout the Middle South. The Benton horizon is named for a short stemmed, corner-removed projectile point that appears to be a stylistic development from the earlier Sykes/White Springs style. The Benton horizon can be tentatively dated from 4000 to 3000 B.C. The Benton horizon is characterized by Benton Stemmed, Buzzard Roost Creek, and possibly Elora types. The individual types may have somewhat different distributions, and they may be portions of two distinct cultural assemblages (Faulkner and McCollough 1973:419).

The Eva projectile points are found throughout the Lower Tennessee Valley, their frequency diminishing through Middle Tennessee and north Alabama. Morrow Mountain points, however, are common throughout Middle and East Tennessee and reflect a significant occupation in the North Carolina Piedmont (Coe 1964:122–123). Hofman (1984a), after extensive analysis, has concluded that the Morrow Mountain horizon of southern Appalachia is distinct from the Eva horizon of Middle Tennessee. He has noted that the lithic assemblage from Site 40MU141, which has been traditionally classified as Morrow Mountain, is not taxonomically separable from the Eva type. These two types represent a continuum that can be attributed to a single biface reduction system. This lithic reduction system is distinct from the Appalachian Mountain reduction technology.

The Eva site, located on the Lower Tennessee River, was characterized by an adaptation to a floodplain exploitation pattern that persisted for the next 6,000 years. Although the site was stratigraphically mixed, the Eva projectile point type was dated at 5200±500 B.C. (Lewis and Lewis 1961:173). Webb and DeJarnette (1942:235–266) describe a series of flexed burials that contained Morrow Mountain points lodged in bone. The burials were recovered at the bottom of one of the large shell mounds on the Middle Tennessee River. The Morrow

Mountain horizon has been dated at the Stanfield-Worley Bluff Shelter and Russell Cave at 5000–4000 B.C. (DeJarnette et al. 1962; Griffin 1974). At the Stucks Bluff site in northwest Alabama, a radiocarbon date of 4500±120 B.C. was obtained from a hearth that contained a Morrow Mountain point (DeJarnette et al. 1975a:113). Griffin (1974:112) states that the Morrow Mountain occupation in Russell Cave is the earliest in which storage pits occur, and there is a distinctive decrease at that time in the proportion of uniface tools relative to biface tools.

At the Westmoreland-Barber sites, Faulkner and Graham (1966b:1–72) located a stratum 7 to 8 feet below surface which contained Sykes and Morrow Mountain points. In the Normandy Reservoir, a radiocarbon date of 4575±165 B.C. was obtained from a shallow basin-shaped feature (Faulkner and McCollough 1977:281). Chapman (1977:125, 164–165) describes the Middle Archaic in East Tennessee, where Morrow Mountain points were radiocarbon dated to 5045±245 B.C. Finally, Coe (1964:123) dated the Morrow Mountain points on the North Carolina Piedmont to about 4500 B.C.

Results of work in the proposed Columbia Reservoir of Middle Tennessee indicate that a major set of river levees was being deposited along the Middle Duck River during the period of 6000–4000 B.C. Middle Archaic projectile points have been recovered in a buried A soil horizon in several of these river levees (Hofman 1980, 1984a; Mahaffey 1984). Changes in the riverine fluvial systems that resulted in this river levee formation may be linked to the Altithermal climatic shift. Faulkner and McCollough (1973:418) suggest that this period marked a significant increase in the local population and the establishment of more permanent sites in the Upper Duck River Valley. Amick (1984), Hagee (1983), and others have suggested that this period marked a significant increase in the local population and the establishment of more permanent sites in the Inner Nashville Basin to compensate for a climatic ameriation elsewhere in the Tennessee Valley. The riverine environments were intensively exploited from semipermanent camps, some of which were located on presently flood-prone expanses of the river margin. The large shell mounds on the Tennessee River were first constructed during this period.

LATE ARCHAIC

The Late Archaic in the Nashville Basin was marked by a return to a climate similar to that of the present day, a significant increase in population, and the settlement or exploitation of new environments. Three horizons or phases can be tentatively defined for the Late Archaic in the Middle South: Ledbetter from 3000 to 2000 B.C.; Little Bear Creek from 2000 to 1000 B.C.; and Wade from 1100 to 700 B.C. Each of the Late Archaic horizons is named for a distinctive projectile point type or type site. The taxonomic convention of naming a local phase or regional variant by the distinctive PP/K type of that horizon should be avoided in the future. This practice distorts the heuristic significance of that artifact and the local variant or phase. These distinctive artifact types are temporally and spatially significant.

The Ledbetter horizon is characterized by a series of large stemmed points, including the Ledbetter and Pickwick types. The Little Bear Creek horizon is characterized by the Little Bear Creek, Mulberry Creek, and Perry types. Adena and Gary points are also associated with this horizon. The Wade horizon is characterized by the Cotaco Creek, Limestone, McIntire, Wade, and other, unnamed point types. The Wade horizon is also characterized by evidence of extralocal exchange in the form of steatite vessels. Pitted cobbles, hammerstones, bar gorgets, axes, various biface knives, and drills are recovered from Late Archaic sites.

The Late Archaic was quite dynamic. Three types of sites from this period have been recognized in the Middle South: (1) large-scale villages with midden deposits; (2) smaller, less densely occupied sites with storage facilities; and (3) lithic scatters. These three site types of the Late Archaic settlement configuration may characterize three different environmental exploitation patterns.

The first two site types are Late Archaic camps, defined for the Tennessee River drainage by Bowen (1975) and McCollough and Faulkner (1978:vii). Sites of the first type were camps of long-term, intensive occupation. These sites show evidence of structures and midden deposits covering large areas; they lack the large storage facilities of the next type of camp. The second type includes sites that appear to have focused on hunting and the collection, processing, and storage of plant foods. These sites contain numerous large, cylindrical storage pits and conoidal storage "silos." The third type of Late Archaic site is the small lithic scatter. Almost any location within the Tennessee Valley with significant relief and access to water will likely produce a small lithic scatter of probable Late Archaic origin (Futato 1979:17).

At a least three locations within the Nashville Basin, Late Archaic sites have been identified in alluviated river levees: Hartsville (Alexander 1982) and Robinson (Morse 1967) on the Cumberland, and at the Fatty Bread Branch site on the Duck River (Amick 1986). In addition, deeply alluviated Late Archaic sites on the Tennessee River have been described by Faulkner and Graham (1966b) and McCollough and Faulkner (1973). These sites are characterized by a buried river levee within a dark A horizon soil. This soil horizon marks a period of environmental stability that allowed the area to be occupied for a significant period of time. The stable surface present during the Late Archaic may ultimately be located throughout the entire Tennessee drainage system. In all three study areas, the post–Late Archaic to historic period is marked by the deposition of approximately 30 to 50 cm of additional sediment. In these upper deposits, Woodland and/or Mississippian components may be encountered.

The Late Archaic Wade phase is defined in the Normandy Reservoir area by Faulkner and McCollough (1973, 1974) and Keel (1978). This phase was radiocarbon dated at 1100–700 B.C. The Wade phase from Normandy is characterized by a cluster of similar PP/Ks including Wade, McIntyre, and Motley. The steatite vessels traded throughout the Southeast are the

most diagnostic artifacts of this phase. Other important artifacts of the Wade phase are stone hoes and turkey tarsometatarsal awls (Keel 1978:155).

The Wade horizon cultural pattern, lithic technologies, economies, and settlement patterns appear to be quite similar to those of the preceding Late Archaic Ledbetter horizon suggesting a cultural continuum. The occurrence of steatite vessels and evidence of the sand-tempered Gulf Formational ceramic tradition have implications concerning the widespread trade network of that period. The near absence of the Woodland tradition ceramics and burial mound cultural attributes in the Nashville Basin area could be extended to include all the Nashville Basin during the period of 1100–700 B.C. If this is the case, the areal extent of the Wade horizon can be readily defined. Models may be generated to explain why Wade horizon populations of the Nashville Basin may not have participated in the dynamic cultural events in the surrounding drainages of West Tennessee, and the Ohio and Lower Mississippi Rivers.

Steatite bowls are found in burial contexts and in caches of other artifacts (Herbert 1986). Several of the recovered bowl fragments show evidence of having been reworked into smaller implements (Keel 1978:154). Steatite does not occur in earlier Ledbetter phase or later local contexts. Steatite sources and trade routes have been studied and described elsewhere (Bohannon 1975, cited in Faulkner and McCollough 1977:107; Luckenback 1974; Luckenback et al. 1974a, 1974b). At the Bellefonte site in northeastern Alabama, two steatite sherds were traced to Soapstone Ridge in southern DeKalb County, Georgia. A third sherd matched no known steatite source (Futato 1977:115). The steatite in the Nashville Basin would probably have been quarried in the Piedmont of eastern Alabama, Georgia, or the Carolinas.

If we examine the Early Woodland chronology of East Tennessee, different Late Archaic to Early Woodland cultural dynamics are evident. Lafferty (1981) presents a model describing an Early Woodland migration from the Ohio River Basin to upper East Tennessee by 900 B.C. The ceramic data suggest a gradual transition from grit-tempered cord- and fabric-marked to limestone-tempered ceramics by 500 B.C. Limestone-tempered fabric-marked and cord-marked ceramics gradually diffused west down the Tennessee River to northern Alabama.

Gulf Formational Stage

The Gulf Formational stage, also divided into Early, Middle, and Late (Walthall and Jenkins 1976), is a developmental unit proposed to include the spread of ceramics across the Coastal Plain that occurred between the end of the Late Archaic and the development of a fully developed Woodland pattern (Jenkins 1982; Jenkins and Krause 1986; Walthall and Jenkins 1976). However, Alexander (1991b), noting the continuity of all recognized aspects of the Archaic continuum with only the apparent addition of ceramics, questions the validity

of the Gulf Formational stage as a developmental unit. As does Phillips (1970), Alexander prefers to view the fiber-tempered Wheeler series and the sand-tempered Alexander series as horizon markers. Sassaman et al. (1990) refer to the "Ceramic Late Archaic." For the purposes of this presentation, we will use Gulf Formational as a heuristic device, as it is established in the literature, but note that we are cognizant of the many shortcomings of this unit at this time.

Early Gulf Formational

As originally proposed, the Early Gulf Formational (2500–1200 B.C.) is restricted to the eastern Coastal Plain and is defined by the presence of Stallings Island and Orange series ceramics. For the area of concern here, a Late Archaic pattern prevailed, and we will not labor the reader with a discussion of limited relevance to the problem at hand.

Middle Gulf Formational

The Middle period (1400–900 B.C.) is marked by the spread of fiber-tempered ceramics across the Gulf Coastal Plain. Jenkins (1982; Jenkins and Krause 1986) summarizes fiber-tempered ceramics of the western Gulf Coastal Plain. Based on morphology and attribute similarities, Jenkins (1982; Jenkins and Krause 1986; see also Walthall 1980) suggests that Wheeler developed out of Stallings Island. Noting the absence of a significant use of incising in Wheeler, Jenkins (1982; Jenkins and Krause 1986) postulates that this surface treatment entered the Stallings repertoire after Wheeler developed. However, Sassaman et al. (1990) suggest that incising developed in Stallings between 1850 and 1450 B.C. This implies that Jenkins's idea of transmittal is incorrect, which is not being argued here. More likely, the Wheeler series may date somewhat earlier than suggested by Jenkins.

Three Middle Gulf Formational phases have been proposed for the Middle South: McGary, Bluff Creek, and Broken Pumpkin Creek. McGary is the proposed phase designation for a very localized fiber-tempered manifestation in the Yazoo Basin of western Mississippi (Williams and Brain 1983). The five sites initially integrated into this operational unit are situated near the Loess Bluffs, on oxbows of the eastern diversion of the Stage 4 meander belt of the Mississippi River. The eastern diversion was apparently abandoned by about 1500 B.C. (Saucier 1974). It is likely that this material could date to this time or shortly thereafter (Walling and Roemer 1993). At the McGary site, Wheeler Plain, Wheeler Punctate, and Wheeler Simple Stamped ceramics were reported (Williams and Brain 1983).

The Bluff Creek phase of the Middle Gulf Formational period in the Middle Tennessee River Valley has a suggested temporal span of 1000–600 B.C. (Dye 1977; Jenkins 1974, 1975). However, as noted above, it is likely that these dates will need to be pushed back. The general assemblage, subsistence pattern, and settlement pattern appear to represent a continuation of the preceding Late Archaic period lifeway with the addition of fiber-tempered Wheeler series ceramics (Dye 1988).

Investigations in the western Middle Tennessee and Tombigbee River Valleys suggest that riparian base camps and smaller camps, along with small open-air camp sites and bluff shelters in the uplands, comprised the settlement pattern (Walthall 1980). Subsistence relied heavily on the exploitation of riverine environments, though exploitation of shellfish does not appear to have been important in all areas (Walthall 1980). Cotaco Creek points are the major type associated with Wheeler ceramics (Walthall 1980).

Jenkins (1974, 1975, 1982, Jenkins and Krause 1986) has defined the Broken Pumpkin Creek phase of the Middle Gulf Formational period in the Tombigbee River Valley. Attributes, excluding spatial distribution, are essentially the same as those for the Bluff Creek phase. Plain, punctated, simple-stamped, dentate-stamped, and (rarely) incised the reported surface treatments.

Following Griffin (1967), Walthall (1980) notes that during the last 2,000 years B.C., there was apparently extensive population growth and regional adaptation. Trade in raw material and perhaps finished products apparently intensified during the terminal Archaic and into the Gulf Formational stage. Regional burial complexes have been recognized for this time span in various areas of the eastern United States. In Middle Tennessee, the Pickwick Burial complex is defined by flexed interments and occasional cremations. Mortuary goods rarely accompany adult interments and are not differentiated by sex; however, grave goods are not uncommon with children and infants. This led Walthall (1980) to speculate that this might reflect the beginnings of status differentiation within these groups.

In the central South, it appears that the valleys of the Central and Upper Tombigbee River and the western Middle Tennessee River are the areas of densest distribution of Wheeler ceramics. McCulloch (1982), summarizing available data for the Lower Tennessee River Valley, notes that fewer than 15 fiber-tempered sherds have been reported for that area. The Spring Creek site, located in Perry County, Tennessee, is the site farthest downstream on the Tennessee River for which Wheeler sherds have been reported from excavated contexts (Peterson 1973). As one moves east, up the Tennessee River from the Pickwick Basin, fiber-tempered ceramics become increasingly scarce, and are not reported north of Rhea County, Tennessee (Faulkner and Graham 1966a). A single fiber-tempered sherd was reported from the Mason site in the headwaters of the Elk River (Faulkner 1968a). Jolley (1980) reported that no fiber-tempered material was recovered in a survey of the Middle Cumberland and Lower Duck River Valleys. A single fiber-tempered sherd is reported from Savage Cave in south-central Kentucky (Railey 1990). However, this sherd is noted to be of less than secure provenience (Railey 1990). Investigations at a spatially restricted group of sites on the lower Missouri/Kansas border has resulted in the recovery of several plain fiber-tempered sherds (Reid 1984). Reid (1984) and Skibo et al. (1989) argue for natural frost heaving, rather than a cultural cause, as an explanation for the limited recovery of fiber-tempered material at those latitudes. However, the occurrence of isolated, widely dispersed pockets of fiber-tempered material beyond the "core area" is the norm even in more southerly locations.

Late Gulf Formational

The Late Gulf Formational period (900–300 B.C.) is characterized by the demise of fiber-tempering technology and the development and spread of Alexander and Tchefuncte series ceramics across the western Coastal Plain. The introduction of northern tradition paddle-stamped ceramics into the Coastal Plain also occurred at this time (Jenkins 1982; Jenkins and Krause 1986).

The Harden phase (Dye 1973) is defined for the Late Gulf Formational period in the Middle Tennessee River Valley. This phase is characterized by the coarse-sand–tempered Alexander series ceramics. The coeval operational unit in the Tombigbee Valley is the Henson Springs phase (DeJarnette et al. 1975b; Jenkins 1981; Jenkins and Krause 1986). Recent work on the Tombigbee River in east-central Mississippi has resulted in a series of radiocarbon dates for Alexander showing that a well-developed complex existed in the area by 800 B.C. (O'Hear 1990).

Flint Creek, Little Bear Creek, and Wade cluster projectile points have been recovered in association with Middle and Late Gulf Formational period ceramics in the Middle South. The Terminal Late Archaic Wade phase has been dated to between about 1100 and 700 B.C. in the Normandy Reservoir area. Benthall (1965) reports the association in mortuary contexts of Wade cluster points and Wheeler ceramics at the Bluff Creek site on the Middle Tennessee River in north Alabama. On the Duck River, Wade cluster points have been dated at 625 B.C. (2575±85 B.P.) in apparent association with Alexander pinched ceramics and steatite vessel fragments (Herbert 1986). Jolley (1980) reports that no Alexander material was recovered in a survey of the Middle Cumberland and Lower Duck River Valleys. Portions of a single vessel identified as Alexander Pinched, noted as a possible trade item, were reported from the otherwise aceramic Roach site in the Lower Tennessee/Cumberland area of south-central Kentucky (Railey 1990). Clay (1979) notes the presence of Alexander Pinched at the Jonathan Creek site on the Lower Tennessee River, also in south-central Kentucky.

Woodland Stage

For the Woodland stage, we must again look beyond the Middle Cumberland area for a developed data base. While a number of Woodland and potentially Woodland components have been identified in the Middle Cumberland area (Dowd 1970; Jolley 1980; Moore et al. 1992), none have been excavated on the Middle or Upper Cumberland River Valley. Again we must look south and southeast of the immediate area for possible characterization of this stage in the development of local populations.

EARLY WOODLAND

Early Woodland in the Middle Cumberland area remains somewhat enigmatic. Jolley (1980), noting the lack of previous information, found it difficult to separate various Woodland components. As a result, he was forced to rely on formulations such as Terminal Archaic/Early Woodland, Early/Middle Woodland, etc. Jolley (1980) reports only two sherds with a probable Early Woodland date and relies heavily on the presence of particular point types for assignment of sites to this period. The ceramic material consisted of two sherds of Long Branch or Baumer Fabric Marked, while the diagnostic PP/Ks include the Late Archaic Wade, Cotaco Creek, Motley, and Adena Stemmed.

In upper East Tennessee, Woodland Triangular cluster points are associated with Early Woodland Swannanoa and Long Branch Fabric Marked ceramics as early as 600 B.C. (Lafferty 1981). Jolley (1980) suggests an Early Woodland settlement pattern in the Middle Cumberland area. This pattern includes floodplain and upland sites, an extensive exchange network, and a degree of burial ceremonialism; this last characteristic was based on the findings by Dowd (1970) at 40DV35 of a burial accompanied by a number of exotics and Wade PP/Ks. No ceramics were recovered with this interment, and its Early Woodland provenience, as opposed to Late Archaic, remains to be demonstrated.

At the Duncan Tract site (40TR27), situated in the Cumberland Valley in Trousdale County, Tennessee, McNutt and Weaver (1983) were able to isolate an Early Woodland component(s) characterized by Adena and other Rounded Base cluster points in association with quartzite-tempered Watts Bar ceramics. Fabric impressing and cordmarking were the predominant surface treatments. They suggest the possibility of two separate components for this period based on the spatial distribution of the surface treatments; fabric-impressed material was recovered from one area only, while cord-marked material occurred at three locations. They suggest that limestone fabric-impressed may also be associated (McNutt and Weaver 1983).

Knight (1990) provides a synthesis and reevaluation for the eastern Wheeler Basin sub-region of the Middle Tennessee Valley. As noted by Knight (1990), the Colbert culture, suggested to date from 600–100 B.C., is the northern Alabama expression of Caldwell's (1958) Middle Eastern Tradition. No phases have been defined for Colbert, but it is subdivided by Knight (1990) into Colbert I and II, with the dividing point at 300 B.C. Colbert ceramic assemblages are dominated by Long Branch Fabric Marked. Colbert I is proposed on the notion of a co-occurrence of Alexander series, Long Branch, and other limestone-tempered material, though how these dissimilar complexes relate is unknown (Knight 1990). Wright Check Stamped occurs at Colbert II sites as a significant minority. Settlement pattern focused on riverside settlement; Knight (1990) notes that there are no substantial Colbert sites known for the interior valley. Flint Creek points have been reported from Late Archaic, Gulf Formational, Early Woodland, and Middle Woodland contexts. Rounded Base cluster

points are associated with the Early Woodland quartzite-tempered ceramics dated to 700–400 B.C. in the southern Nashville Basin (Faulkner and McCollough 1973, 1974; Keel 1978).

In the western Middle Tennessee Valley, the Colbert tradition is considered an Early Woodland manifestation and is suggested to fall between 200 B.C. and A.D. 100 (Dye 1988), a temporal range that overlaps considerably with the early Middle Woodland McFarland phase defined for the Upper Duck River Valley (DuVall 1977; Kline et al. 1982). Dye (1988) suggests that Colbert apparently diffused to the Middle Tennessee River Valley from the eastern Appalachians. The settlement pattern includes large sites along the riverbank and also well away from the main channel, and upland bluff shelters. Plain and fabric-impressed limestone-tempered materials dominate the ceramic collections. Hunting, fishing, and gathering provided the subsistence base (Dye 1988).

For the Lower Tennessee River Valley, Dye (1983) notes that the Early Woodland is marked by the addition of ceramics to the material culture and by slight morphological changes in the PP/Ks of the preceding Late Archaic. The Wade cluster characterized the PP/K assemblage. Baumer and Long Branch ceramics were introduced late in the first millennium B.C. Ceramics include limestone-, chert-, and crushed-quartzite–tempered materials. Surface treatments include fabric-impressed, cordmarked, and plain. Sims (1971) reports a fairly substantial Early Woodland component at the multicomponent Big Bottom site near the confluence of the Duck and Tennessee Rivers. The ceramics at Big Bottom are dominated by Long Branch Fabric Marked.

Early Woodland in Kentucky is suggested to date from 1000–200 B.C. Little is known of the Early Woodland settlement pattern, structure forms, etc., for south-central and western Kentucky. Early Woodland is distinguished from the preceding Late Archaic by the addition of ceramics in the local technological/economic complex. Railey (1990) suggests that the introduction of ceramics occurred sometime between 1000 and 800 B.C. in the eastern and central parts of Kentucky, a bit later in the western portion.

In southern and western Kentucky, the ceramic trends are suggested to be tied to those of the greater Midsouth region. However, at the upland Lawrence site (15TR33), east of Lake Barkley on the Lower Cumberland, ceramics were similar to early Crab Orchard material, with cord-marked, fabric-impressed, and plain quartzite- and chert-tempered material (Railey 1990). In central and western Kentucky, surfaces are usually plain; fabric-impressed or cord-marked sherds occasionally occur (Railey 1990), but information is limited.

Butler and Jeffries (1986) characterize the Crab Orchard ceramic complex as one of mixed grit temper, including coarsely crushed limestone. They suggest that the earliest Crab Orchard ceramics began about 600 B.C. in southern Illinois and were exclusively cordmarked. Soon after this initial appearance, fabric impressing entered the repertoire and spread throughout the area. Ceramics did not become common until after about 300 B.C., at which time fabric-impressed material dominated collections. Because of the continuity of the

ceramics, the division between Early and Middle Woodland in the area is difficult to document.

Early in the period, projectile points were carry-overs from the preceding Late Archaic/Late Gulf Formational; later in the period Adena became the predominant type. Early Woodland burial mounds are unknown for south-central and western Kentucky, though this could be the result of survey bias (Railey 1990). Evidence from Kentucky suggests that sumpweed and sunflower were cultivated at this time, along with squash and gourd, which are known from Archaic contexts (Dye 1983).

MIDDLE WOODLAND

Middle Woodland in the Middle Cumberland is a bit more conspicuous than the preceding period, but is still poorly represented in the published record. Jolley's (1978, 1980) Middle Woodland I, or early Middle Woodland, is characterized by Copena, McFarland, and Bakers Creek PP/Ks. Jolley (1980) notes that the vast majority of the medium triangular points are Copena rather than McFarland. Blade core technology and prismatic blades are also present at this time. Wright Check Stamped material is assigned to the Middle Woodland I or II, but placement could not be distinguished beyond that level from the survey data. Jolley's (1980) Middle Woodland II is characterized by Lanceolate Expanding Stemmed cluster PP/Ks. Jolley (1980) notes that there was apparently no settlement pattern shift from the Late Archaic through the Middle Woodland. Settlement pattern concentrated in the floodplain. He does note a continuing decline in the apparent intensity of occupation, the opposite of what was occurring at that time on the Upper Duck and on the Tennessee near the mouth of the Duck.

Conical mounds, constructed of both earth and stone, are known for the Middle Cumberland area and are attributed to Middle Woodland occupation in the area. Jennings (1946), in a brief follow-up to his summary of the Natchez Trace survey (Jennings 1944), notes the presence of "Copena-like" sites in the Nashville area. Specifically, he mentions a conical stone mound and a pair of conical mounds, previously reported by Myer, in the vicinity of Franklin, Tennessee. Although no ceramics were recovered, or because no ceramics were recovered, Jennings (1946) suggests a probable Copena assignment for these sites.

Thruston (1973[1890]:47) briefly notes the report of three conical stone mounds on the Buffalo River in northern Lawrence County, Tennessee. These structures had been destroyed by relic hunters by that time.

While there is some problem with the assignment of small stone piles to prehistoric or historic contexts, there is a general consensus that the larger examples in the southeastern United States represent aboriginal mortuary activity (Gresham 1990; Holstein and Little 1985; Holstein et al. 1989).

McNutt and Weaver (1983) report two Middle Woodland components for the Duncan Tract site. Component A, situated on the lower terrace, is characterized by circular structures, extra-edificial storage pits, earth ovens, and cooking pits. Diagnostic portable artifacts include McFarland cluster points; ceramics are limestone-tempered, with plain and check-stamped, both square and rhomboidal, dominating the assemblage. Limestone-tempered cordmarked, simple-stamped, and complicated-stamped are minority treatments. McNutt and Weaver (1983) note the similarity of the artifact assemblage to McFarland phase sites of the Duck and Elk River Valleys. A notable exception is the size of the structures, which are much larger at Duncan Tract, and differences in the burial regime. These differences led the authors to suggest that the Middle Woodland Component A at Duncan Tract, with a date range from about 200 B.C. to A.D. 75/150, is a distinct unit, though contemporaneous with and closely related to the McFarland phase as defined for the Upper Duck and Elk River Valleys (McNutt and Weaver 1983).

The Duncan Tract Middle Woodland Component B is situated on the upper terrace and has a suggested date range of A.D. 75/150 to 400. Diagnostic artifacts include McFarland cluster points, whereas limestone-tempered plain and simple-stamped materials dominate the ceramic assemblage. Cordmarked, check-stamped, and complicated-stamped are minority types (McNutt and Weaver 1983). The authors note a similar assemblage at the Banks III site (see also Faulkner and McCollough 1974) and suggest that a transition between McFarland and Owl Hollow might be represented by Duncan Tract Component B and Banks III.

Two sequential Middle Woodland phases have been defined for the Upper Duck and Elk River Valleys in Middle Tennessee. The Early Middle Woodland McFarland phase was defined as a result of the rather extensive investigations conducted during and ancillary to the Normandy Reservoir Project (DuVall 1977; Faulkner and McCollough 1973, 1974; Faulkner and McCollough, eds. 1977, 1978, 1982a, 1982b; Kline et al. 1982; McCollough and Faulkner, eds. 1976, 1978). As defined, the McFarland phase dates between 100 B.C. and A.D. 150 (DuVall 1977; Kline et al. 1982). McFarland phase components have been identified at approximately 30 sites in the Upper Duck, while Old Stone Fort (40CF1) (Faulkner 1968b) is the only suspected ceremonial site tentatively assigned to this phase (Faulkner 1973; Kline et al. 1982).

The McFarland phase ceramic complex includes limestone-tempered plain, check-stamped, simple-stamped, fabric-marked, and complicated-stamped ceramics. Podal supports occur in collections (Kline et al. 1982). Fabric-impressed is a significant type in early McFarland assemblages; cordmarking is present, having become a significant type during a possible short interval of Hopewell interaction (Faulkner 1978; Faulkner and McCollough, eds. 1977:166–169). Faulkner (1978) suggests that new elements in the assemblage, such as scraped surfaces and notched rims, may indicate influences from the Middle Tennessee Valley and Georgia. Cobb (1982) notes that chert-tempered ceramics have been recovered from McFarland phase contexts; mixed limestone- and chert-, quartz-, and

other forms of grit-tempered ceramics form a consistent, though small, minority of McFarland assemblages.

The McFarland site (40CF48), thought to be associated with Old Stone Fort, produced Mulberry Creek Plain, Wright Check Stamped, and Pickwick Complicated Stamped ceramics (Faulkner 1973). Relative frequencies for the intensively analyzed portion of the sample from the McFarland site were 70 percent check-stamped, 54 percent of which were smoothed over. Plain-surfaced sherds accounted for 22 percent, while simple-stamped accounted for 6 percent; again, the majority are reported to be smoothed over. The remainder of the sample included incised, incised in combination with punctating or check stamping, complicated stamping, and cordmarking. Check stamping included square and rectangular forms (Kline et al. 1982).

At the late McFarland Ewell III site (40CF118), Wright Check Stamped accounted for 17.2 percent of the ceramics; Mulberry Creek Plain for 23 percent; Bluff Creek Simple Stamped, 5 percent (this type is rare in other McFarland phase components); Pickwick Complicated Stamped, .3 percent; and Candy Creek Cord Marked, .5 percent (DuVall 1977; Faulkner 1978). Lithics included medium triangular McFarland cluster PP/Ks in association with rounded base types, and a variety of ground-stone artifacts. Both local and exotic raw materials were used.

Associated features include earth ovens, cylindrical storage pits, windbreaks, and round to oval tension pole structures with interior pits (Kline et al. 1982). Subsistence and settlement patterns centered on the exploitation of locally available resources and on the possibility for cultivation of lambsquarter, knotweed, maygrass, and sumpweed. Sunflower, goosefoot, squash, and maize were the domesticated plants recovered from the McFarland site (Crites 1991; Kline et al. 1982).

Faulkner (1988) notes that material similar to that from McFarland phase components has been reported from the Upper Caney Fork, within the eastern Highland Rim and the Middle Cumberland River, in the Central Basin. McFarland can be divided into Early (200–100 B.C.); Middle (100 B.C.–A.D. 100); and Late (A.D. 100–200). There were significant changes in community and settlement pattern from Early to Late McFarland. During the Middle McFarland, the formal community and settlement pattern was established and lasted for some 200 years (Faulkner 1988). Faulkner (1988) suggests a southern orientation for the McFarland phase in terms of extra-regional connections.

A fuller understanding of Early McFarland is hampered by the presence of the apparently contemporary Neel phase in the Upper Duck and Elk River areas. These phases are sorted on the basis of relatively high frequencies of limestone-tempered plain and cord-marked wares. Faulkner (1988) suggests that sites such as Yearwood and Parks might have functioned as mortuary camps within the Neel phase system.

The Yearwood site (40LN16), located on the Elk River in extreme southern Middle Tennessee, is unique within the presently known archaeological record in that it appears to represent a small mortuary site of short-term use. The site contained a series of possibly paired structures varying from ovoid to square in outline. The apparent planned layout of the structures, lack of evidence for rebuilding, and limited number of pit features led to the interpretation of a short span of use of the site (Butler 1977).

Radiocarbon dates indicate a first century A.D. occupation of the site, though Butler (1977) notes that the recovered ceramics suggest a later placement. The ceramics are dominated by limestone-tempered cordmarked, followed by plain, with a very minor amount of check- stamped; there is a persistent minority of sand-tempered material, most of which is plain, with minor amounts of simple-stamped, complicated-stamped, and rocker-stamped. On the other hand, the lithics, which generally correspond to the McFarland cluster, are in keeping with the early placement. Butler suggests the possibility of a separate phase, represented by components at Yearwood, Tunacunnhee in northwest Georgia, and the Walling site located on the Tennessee River. As noted above, Faulkner (1988) suggests a Neel phase assignment for this site.

In the eastern Highland Rim, the late Middle Woodland Owl Hollow phase was originally defined for the Upper Elk River area (Cobb and Faulkner 1978; Faulkner 1968a). Additional components and understanding have resulted from investigations within the Upper Duck River Valley (Cobb and Faulkner 1978; Faulkner and McCollough 1973, 1974; Faulkner and McCollough, eds. 1977, 1978, 1982a, 1982b; McCollough and Faulkner, eds. 1976, 1978). The suggested date range for the Owl Hollow phase is A.D. 200–600 (Faulkner 1978; Kline et al. 1982). It has been suggested that the Owl Hollow phase was a direct development from the preceding McFarland phase in the Upper Duck River Valley (Cobb and Faulkner 1978). However, the relationship is not well understood, and there is a gap between the latest and earliest dated components for these phases (Faulkner 1988; Kline et al. 1982).

Limestone-tempered carved paddle-stamped and plain-surfaced materials dominate the ceramic assemblage. The introduction of paddle stamping in the area began in the preceding McFarland phase (100 B.C.–A.D. 200), but had begun to decrease in importance by late Owl Hollow (A.D. 400–600), with plain-surfaced material dominating (Faulkner 1978). In general, Owl Hollow collections are dominated by the types Bluff Creek Simple Stamped and Mulberry Creek Plain. Minority types include limestone-tempered check-stamped, complicated-stamped, and cordmarked (Cobb and Faulkner 1978; Faulkner 1978). Faulkner (1973) suggests that Pickwick Complicated Stamped may be a relatively late Middle Woodland marker.

Mixed limestone and chert, chert, quartz, and other types of grit temper form a small but consistent minority in Owl Hollow assemblages (Cobb 1982; Faulkner 1978). Faulkner (1978) suggests that the minority sand-tempered material is nonlocal. Cobb and Faulkner (1978) note that the chert-tempered material, including plain and cordmarked, from the

Shofner site (40BD55) is probably associated with a late Owl Hollow component. This is as opposed to being associated with the Late Woodland Elk River series, which is associated with the Mason phase on the Upper Elk (A.D. 600–900).

The Owl Hollow type site (40FR7), situated in the Upper Elk River drainage, is an early component. Mulberry Creek Plain comprised 85 percent of the sample. Bluff Creek Simple Stamped made up 11 percent, Wright Check stamped 2.3 percent, and Pickwick Complicated Stamped 2.1 percent; cordmarked, similar to Candy Creek, occurred as a very small minority. The predominant vessel forms were sub-conoidal jars with slight shoulder development; rims are straight to slightly flaring, and lips are generally notched; vestigial podal supports occur. Chert- and limestone/chert-tempered are minor constituents of the assemblage and continue to be throughout the phase (Faulkner 1978).

At 40FR47, all the Pickwick Complicated Stamped sherds were recovered from a single feature; Wright Check Stamped also occurred in this feature. Wright Check Stamped and Long Branch Fabric Marked co-occurred in three features (Bacon and Merryman 1973).

During Late Owl Hollow and possibly later, there was an apparent increase in the relative frequency of plain ware (Faulkner 1978). At Shofner (40BD55), on a tributary of the Duck River, 95 percent of the Owl Hollow ceramics were plain (Cobb and Faulkner 1978; Faulkner 1978). Podal supports were no longer by the fifth century, and only traces of check-stamped, complicated-stamped, and cordmarked ceramics occurred. The late Owl Hollow ceramics are apparently not related to the succeeding Late Woodland Mason phase material of the area (Faulkner 1978).

The Owl Hollow community pattern is characterized by large permanent villages with plaza areas; deep, dense middens; and a dual house pattern. The main structure type was a circular winter house with double earth ovens, accompanied by a more lightly constructed summer house of oval to square outline (Faulkner 1978).

Subsistence was based on hunting, fishing, intensive collecting of wild seeds and nuts, and the cultivation of domesticated sunflower, squash, gourd, and maize. It appears that maize became a relatively important part of the diet after A.D. 400. Squash apparently increased in importance by late Owl Hollow (Crites 1978; Faulkner 1978).

Faulkner (1973, 1978) recognizes similarities of Owl Hollow to contemporary manifestations located north and south of the home area for this phase. Faulkner (1973) notes that Mulberry Creek Plain (48 percent) and Wright Check Stamped (32 percent) occurred in significant quantities at Wright Village, a Copena site in the Middle Tennessee River Valley (Knight 1990; Walthall 1980).

Simple stamping was the predominant surface treatment in the contemporaneous Connestee/Candy Creek phase(s) of the eastern Tennessee Valley, but any similarity ends

there (Faulkner 1978; see also Chapman 1973; Keel 1976). Simple stamping also occurred in Copena of the Middle Tennessee Valley, but the associated fabric-marked and significant quantities of check-stamped in Copena suggest more affinity with McFarland (Faulkner 1978). Point styles and Hopewell interaction also set Connestee/Candy Creek and Copena apart from Owl Hollow. The Late Woodland Flint River phase of northern Alabama was similar to late Owl Hollow but was too late to have contributed to its development. Faulkner (1978) also points out similarities to the late Cartersville culture of northern Georgia and the La Motte culture of the Lower Wabash Valley, but notes differences as well. Strong similarities between the contemporaneous La Motte and Owl Hollow cultures include dual structures, plazas, lithics, and worked stone and bone. All this suggests a connection through the Interior Low Plateau and Wabash Lowlands (Faulkner 1978, 1988).

Faulkner (1978, 1988) notes the lack of intermediately placed sites as a discontinuity in this possible northwest/southeast connection, though he suggests that this is possibly a result of inadequate data. In Kentucky, the Watkins Mound in Logan County has expanded-stemmed points and cord-marked pottery reminiscent of Allison-La Motte. A mound in Adair County, Kentucky produced blades and rectangular pipes, but both sites appear more closely akin to McFarland and Allison than to Owl Hollow and La Motte (Faulkner 1978, 1988). What is essentially Bluff Creek Simple Stamped has been recovered in association with limestone-tempered plain and cordmarked, in lower frequencies than cordmarked, in Middle Woodland contexts in the Kentucky Karst area, and at four sites along the Green River and tributaries. Faulkner (1978, 1988) tentatively suggests that western Kentucky Middle Woodland may be more closely related to Allison-La Motte than to McFarland-Owl Hollow.

Faulkner (1978, 1988) suggests a prairie adaptation for the Owl Hollow people; this in turn would make a connection to the La Motte population more tenable. Such a connection is unsupported but not unlikely; it could have been simply a common, though not communicated, prairie adaptation. Also, the prairie outliers that extend or almost certainly extended into the eastern Highland Rim and Owl Hollow area could have provided avenues of direct communication and diffusion of ideas (Faulkner 1978, 1988).

Faulkner (1988) notes that, like the preceding McFarland phase, Owl Hollow can be subdivided into Early (A.D. 200–400), Middle (A.D. 400–600), and Late (post–A.D. 600) segments. Lanceolate "spike," expanded-stemmed, and shallow side-notched are the characteristic PP/Ks. Limestone-tempered plain and simple-stamped were the dominant ceramics. No Copena/Hopewell connection is apparent, unlike that for the preceding McFarland phase (Faulkner 1988). Faulkner (1988) suggests a northern orientation for Owl Hollow in terms of extra-regional connections, the opposite of that suggested for the preceding McFarland phase.

Farther to the south in the central Tombigbee drainage, Lanceolate Expanding Stemmed and Lanceolate Spike clusters are associated with the Middle Woodland Miller I and Miller II

phases (Ensor 1981), with suggested dates of ca. 200 B.C.–A.D. 400 (Walling et al. 1991). The latter cluster has been reported in association with limestone-tempered ceramics in northeastern Alabama at about A.D. 400 (Futato 1977). A range of A.D. 1–600 for these clusters is suggested.

In the western Middle and Lower Tennessee River, two Middle Woodland phases have been proposed. McCulloch (1982) suggests the Hog Creek phase for the early Middle Woodland in the Lower Tennessee River Valley; suggested dates are 200 B.C.–A.D. 200, essentially contemporary with the McFarland phase of the Duck River Valley. Limestone-tempered fabric-impressed, followed in frequency by plain, are the majority ceramic types.

The Britt phase, a suggested late Middle Woodland phase for the Lower Tennessee River Valley, is characterized by a mixed bag of ceramics dominated by limestone-tempered cordmarked, followed in frequency by minor amounts of Mulberry Creek Cordmarked, Mulberry Creek Plain, Long Branch Fabric Marked, Wright Check Stamped, McKelvey Plain, and Wheeler Check Stamped. Suggested dates are A.D. 200–400 (McCulloch 1982). This phase is essentially contemporary with Owl Hollow of the Duck River. Neither of these two suggested phases is currently well defined or supported by the data presented. Additional work will be required to sort out the chronological and cultural vagaries in the Lower Tennessee Valley.

In the Middle Tennessee River Valley, Middle Woodland research has been hampered by the Copena concept. Knight (1990) provides a synthesis and reevaluation of this period and area. Both Knight (1990) and Cole (1981) suggest that Copena should be viewed as a mortuary complex actively integrated by three distinct sub-regional complexes. This mortuary complex had sufficient duration to have spanned two or more phases in some sub-regions. Knight (1990) suggests three Copena sub-regions. The Eastern sub-region, including the Guntersville Basin, was characterized by a persistence of Long Branch in the local assemblages; this type was replaced only in the late Middle Woodland by plainware and brushed types. Carved paddle-stamped material is present, but only as a minority. The Western sub-region, including Pickwick, Wilson, and western Wheeler Basins, is characterized by a strong showing of paddle-stamped material, accounting for up to 50 percent in local assemblages, and an absence or near absence of Flint River Cord Marked. In the Eastern Wheeler Basin sub-region, Mulberry Creek Plain dominates assemblages at a ratio of 4:1 over carved paddle-stamped material; Flint River Cord Marked increased in frequency through the Middle Woodland period.

Knight (1990) proposes three sequential Middle Woodland phases for the eastern Wheeler sub-area of the Middle Tennessee Valley. The Green Mountain phase, believed to fall between 100 B.C. and A.D. 100, is characterized by the dominance of Mulberry Creek Plain in local ceramic assemblages, with a concomitant decrease in the relative frequency of Long Branch Fabric Marked. Carved paddle-stamped ceramics became important features, and Pickwick Complicated Stamped and Bluff Creek Simple Stamped made their

appearances. Wright Check Stamped was carried over from the Early Woodland and in collections outnumbers the other carved paddle-stamped types. Flint River Cord Marked probably occurred as a minor constituent of the local assemblages by this time (Knight 1990).

The Walling phase, A.D. 100–350, was characterized by a predominance of Mulberry Creek Plain (70 percent) in the local ceramic assemblage. Flint River Cord Marked outnumbers Bluff Creek Simple Stamped, which is the dominant stamped type. Flint River's ascendancy was at the expense of Wright Checked Stamped at the Walling site (Knight 1990).

The Late Middle Woodland Bell Hill phase was proposed by Knight (1990) to include the period of A.D. 350–500. A shift to spike cluster PP/Ks is the most useful diagnostic for this phase. The limestone ceramics remained the same, though there were changes in the relative frequencies from the previous phase; plain-surfaced ceramics reached their highest relative frequency (90 percent). Flint River Cord Marked, followed in frequency by Bluff Creek Simple Stamped, are the dominant non-plain types. Pickwick Complicated Stamped is present, but Wright Check Stamped is rare. Flint River Brushed and incised and punctated types compete the assemblage. Knight (1990) notes diminished diversity in the ceramic assemblage dating to this phase.

The Early Middle Woodland in the eastern Middle Tennessee River Valley is thought to date between approximately 200 B.C. and A.D. 200. Ceramics are characterized by limestone-tempered plain, fabric-marked, check-stamped, and simple-stamped. Stamped ceramics are minorities in the eastern range of Copena (Cole 1981).

The Copena mortuary complex developed during this period. This complex is characterized by participation in the "Hopewell Interaction Sphere" and by the construction of accretionary burial mounds.

The Late Middle Woodland in the Guntersville Basin is believed to date between A.D. 200 and 700. The associated ceramics are characterized by the addition of curvilinear-stamped material to the preceding complex. Cordmarked material increases, while fabric-marked material decreases in relative frequency. The generalized gathering and hunting subsistence pattern was supplemented by cultivation, now with the addition of squash, sunflower, and maize (Alexander 1991b).

Walthall (1972) suggests that the Copena burial complex was fully developed by A.D. 300, and that Copena should fall in the A.D. 150–500 range, contemporaneous with late Hopewell of the Midwest. However, Knight (1990) suggests that the Copena mortuary complex spanned the period from about A.D. 0–500 in his Eastern sub-region.

Commenting on the general pattern for the Middle Tennessee Valley, Futato (1982b) notes that the maximum expression of cordmarking and apparent interaction with Hopewellian ideas coincided. Knight (1990) suggests that the diversity in the ceramic

assemblage and the increase in cordmarking at Walling phase and contemporary sites in the Middle Tennessee Valley are attributable to participation in the north/south interaction most obviously expressed by what is termed the Hopewell Interaction sphere. Walthall (1972) notes a shift in settlement pattern and a population increase, leading him to the suggest the possibility that the introduction of maize was a major attribute of the spread of the Hopewell interaction Sphere. Knight (1990) notes a shift in the settlement pattern during the Middle Woodland away from the riverbank to locations on smaller tributary streams. Cole (1981) suggests that Copena society was organized by ranked lineages with differential access to various goods used in mortuary contexts. Hunting and gathering were the primary modes of subsistence, though it is likely that some of the eastern cultigen complex was cultivated, possibly along with squash, sunflower, and maize (Alexander 1991b).

Middle Woodland in Kentucky is tentatively dated between 200 B.C. and A.D. 500 (Railey 1990). In central and western Kentucky, ceramics are generally plain-surfaced, though cordmarked, cord-wrapped dowel-impressed, and fabric-impressed occur, along with small quantities of paddle-stamped material. The settlement pattern for the Middle Woodland in south-central and western Kentucky appears to have been a continuation of the Late Archaic and Early Woodland periods. Ceramic assemblages of the late Middle Woodland are dominated by cordmarked and plain wares, along with minorities of simple-stamped, check-stamped, complicated-stamped, rocker-stamped, and brushed. PP/Ks are weakly shouldered, expanded-stemmed, or shallow side-notched types. The few Woodland burial mounds in south-central and western Kentucky appear to date to the late Middle Woodland. Few large Middle Woodland sites have been identified in south-central and western Kentucky; this may reflect a shift to a dispersed pattern or survey bias. Little is known about subsistence in the area (Railey 1990).

In the Lower Cumberland area, Middle Woodland was marked by the appearance of Expanded Stemmed cluster PP/Ks. Ceramics include limestone-tempered fabric- and cordmarked (Baumer) (Clay 1963). Elaborate burial ceremonialism and long-distance exchange appear to have been absent in the Lower Cumberland area (Clay 1963).

LATE WOODLAND

At present, few if any large camps or villages attributable to the Late Woodland period have been identified within the Middle Cumberland area. Smith (1993) indicates that the data suggest two possible explanations for this lack of substantial population: (1) the area was thinly populated by highly mobile hunter/gatherers; or (2) the are was used as an extraction area by populations in surrounding areas.

Moore et al. (1993) note that the state site files list only nine Late Woodland sites in Davidson County. Of these, the temporal assignments of six are considered unreliable because of extremely limited material, while two are multicomponent sites with low artifact

density (Moore et al. 1993). Mansker Creek Site (40DV53) is the only local site with a reported substantial Late Woodland component (Moore et al. 1993).

In the Upper Elk and Duck River Valleys, the Late Woodland Mason phase is characterized by chert-tempered ceramics (Faulkner 1978). In the Middle Tennessee River Valley, the McKelvey culture developed after A.D. 500. Grog-tempered plain, check-stamped, and cordmarked pottery dominate assemblages. The presence of small triangular points suggests the introduction of the bow during this time (Dye 1988).

The Flint River culture is the recognized Late Woodland manifestation in the eastern Middle Tennessee River (Knight 1990; Walthall 1980). No phases have been proposed for this period in the Middle Tennessee River Valley. The ceramic assemblage is dominated by unsmoothed Mulberry Creek Plain, and is accompanied by Flint River Brushed and smoothed Mulberry Creek Plain. Minority types include McKelvey Plain, Flint River Cord Marked, Flint River Incised, Slauty Incised, and Cox Punctated. The Late Woodland in the Guntersville Basin of the Middle Tennessee River Valley is believed to date from about A.D. 700–1100. Geographic isolation and a successful adaptation to the local complex environment are noted as reasons for the apparent delay in adoption of the Mississippian technologies and political systems in this area (Alexander 1991b).

Burial mounds are not associated with the Late Woodland in the Guntersville Basin, as opposed to farther up river in East Tennessee where these features are conspicuous components of the Hamilton complex. Ceramics are characterized by the limestone-tempered types Mulberry Creek Plain and Flint River Brushed. Hamilton points and microliths are the diagnostic lithics. Settlement patterns are essentially the same as in the preceding Middle Woodland (Alexander 1991b).

The Late Woodland of the Lower Tennessee Valley is characterized by small triangular cluster points and grog-tempered Baytown Plain and Mulberry Creek Cord Marked ceramics, along with minor amounts of Yankeetown Incised and Blue Lake Cord Marked (Clay 1979; Dye 1983). Clay (1963, 1979) originally suggested that Morris Plain was produced by non-Mississippian people reoccupying abandoned Mississippian sites, but more recently (1984) places it in the Mississippian Tinsley Hill phase.

The Decatur phase is a suggested early Late Woodland phase for the Lower Tennessee River Valley (McCulloch 1982). As defined, this phase is characterized by a variety of ceramic surface treatments occurring at the four sites noted by McCulloch (1982). Little other data exists for this construct, though McCulloch (1982) notes that some minor ceramic traits suggest ties to the north, while assumed diagnostic lithics point to connections to the south and east. As noted for the two Middle Woodland phases suggested for this area, this operational unit is not well defined or supported by the data presented; additional work will be required to sort out the chronological and cultural vagaries in the Lower Tennessee Valley.

Late Woodland in Kentucky is suggested to date between A.D. 500 and 1000 (Railey 1990). Early Late Woodland in most parts of the state of Kentucky is similar to late Middle Woodland in artifact assemblage, but lacks Hopewellian material. Ceramics are dominated by cordmarked jars. The settlement system includes large villages and small dispersed sites. Maize was apparently not a major component of the subsistence system. By terminal Late Woodland, there was greater regional variability in ceramics, subsistence, and possibly social organization. The bow and arrow were apparently introduced at this time, and in western Kentucky maize became important after A.D. 800; there is evidence for large nucleated villages, and for increased variability of decoration and vessel form (Railey 1990).

MISSISSIPPIAN STAGE

In contrast to the preceding stages, there is a great deal of information available relative to the Mississippian stage in this area. Although an unfathomable amount of information has been lost due to modern agricultural practices, urban expansion, and relic collecting, most of the nineteenth- and early twentieth-century investigations in the area concentrated on Mississippian sites and have provided us with at least some information. Recent work by Smith and his colleagues has led to new information relevant to this line of inquiry and has begun to provide a synthesis of the available data.

As previously noted, Smith (1992) defines a Middle Cumberland area, rather than a Middle Cumberland culture. The former is that part of the Middle Cumberland River Valley bounded on the east by the confluence of the Caney River with the Cumberland, and on the west by the confluence of the Harpeth and the Cumberland. The Middle Cumberland culture was a rather monolithic concept combining all the obvious attributes of the local expression of the Mississippian tradition. As Smith points out, the Middle Cumberland area "was a peripheral adoption and unique expression of Mississippian adaptation (1992:401)."

Until very recently, the limited nature of survey data and the focus of antiquarians' investigations and collections did not allow sufficient discrimination to devise a meaningful internal chronology for the local Mississippian. As recently as 1989, Smith and Broster, viewing the local Mississippian synchronically because of the nature of the available data, proposed five types of settlements in the Middle Cumberland area. More recently, Smith and others (Moore et al. 1993; Smith 1993; Smith et al. 1993) refined this data set to a degree that we may now begin to picture the Middle Cumberland from a diachronic perspective. Three phases for the local Mississippian have recently been proposed. For the first time, we have operational units developed, or more precisely proposed and being developed.

SPENCER PHASE

The Spencer phase (A.D. 850/900–1050) is the operational unit for the Emergent or Early Mississippian in the Middle Cumberland area (Moore et al. 1993). The initial and apparently local development, the Spencer phase, the least understood of the three proposed Mississippian phases for this area (Moore et al. 1993; Smith, personal communication 1993). This phase is tentatively defined based on investigations at the small multicomponent Spencer site (40DV191), buttressed by a thorough knowledge of the local and general Mississippian expression. Comparison with sites in the Lower Cumberland and Lower Tennessee Rivers suggest an early placement (Moore et al. 1993; Smith 1992, personal communication 1993). This site was characterized by the presence of three oval to circular and one large, square, single-set post structures, as well as a number of trash-filled pits and a possible palisade trench (Moore et al. 1993). Based on the interpretation of 10 radiocarbon assays, Smith (personal communication 1993) suggests a span of A.D. 950–1150 for this phase. The Spencer phase was proposed to span the transition from the low-density, highly mobile Late Woodland populations to the more nucleated Mississippian populations in the Middle Cumberland area (Smith, personal communication 1993).

Kevin Smith (personal communication 1993) suggests that this developmental Mississippian expression coincides with the introduction of new varieties of maize from the confluences of the Tennessee, Cumberland, and Ohio Rivers; these varieties were more tolerant of the local climate. Maize was apparently introduced into the local diet very rapidly after A.D. 800 (Buikstra et al. 1988, cited in Smith et al. 1993). Maize was reported from Middle Woodland contexts at a number of sites in Middle Tennessee, but apparently did not form a very important part of the local diet (Childress and Buchner 1993; Crites 1991, 1993; Faulkner 1978, 1988).

The introduction of this new variety of cultigen possibly led to a population expansion, adoption of a sedentary lifestyle, population nucleation, and establishment of specialized community structures as focal points for the local populations (Smith, personal communication 1993). Stone box burials and artifact types interpreted as indicating elite status are apparently not associated with this phase (Moore et al. 1993).

Kevin Smith (personal communication 1993) notes that this was a time of experimentation with mixed-tempered ceramics. Limited amounts of coarsely crushed shell were combined with abundant grit and/or clay. Ceramics associated with the early or emergent Mississippian component at the Spencer site are described as being tempered with coarse shell, shell and clay, or shell and grit. The majority of the collection (86 percent) is plain-surfaced coarse-shell–tempered and mixed coarse shell and clay- or grit-tempered; Bell Plain comprised only two percent of the assemblage. Smoothed-over cordmarking on jars made an appearance as a minority type (3 percent of the collection) at this time and increased in relative frequency through time (Moore et al. 1993). Also included in the collection are minor amounts of fabric-impressed salt pan (4 percent). The single identifiable incised sherd

is classified as Matthews Incised, *var. Matthews* (Moore et al. 1993). Cordmarking and smoothed-over cordmarking are the only significant surface embellishments, and effigy forms are absent during this phase (Smith, personal communication 1993). In contrast to other areas where plain-surfaced salt pans are considered earlier than fabric-impressed types (Brown 1980; Phillips 1970), the initial appearance of salt pans in the Middle Cumberland area was apparently fabric-impressed (Moore et al. 1993).

Vessel forms represented at the Spencer site are restricted to globular and subglobular jars, blank-faced hooded bottles, fabric-impressed pans, and an apparently early variety of cylindrical-necked bottles, in order of decreasing frequency within the collection. Bowls, plates, and beakers were not recognized within the collection. Bowls occur in later local assemblages, while plates and beakers are rare for the central Cumberland area (Moore et al. 1993). Handles are rare and consist of lugs and, rarely, riveted loop handles (Smith, personal communication 1993). In the Spencer site collection, none of the loop handles were adorned or modified (Moore et al. 1993).

Lithic material recovered from the Spencer site is mostly of Fort Payne chert, probably collected from the nearby river bed. A minor amount of Dover chert is the only nonlocal lithic material identified. Projectile points from the site include a variety of transitional Paleoindian through Mississippian small triangular (Madison) forms (Moore et al. 1993).

The large Mississippian center of Mound Bottom/Pack (40CH8/40CH1) (O'Brien 1977; Smith 1992) was apparently established by between A.D. 850 and 900 (Smith 1992; Moore et al. 1993). Kevin Smith (personal communication 1993) suggests a connection to the northwest, possibly Cahokia, for this large site. Specific traits reflecting this possible connection are local copies of particular Cahokia ceramic types and dental modification similar to that known for the American Bottoms. Smith (personal communication 1993) further suggests that the operational unit defined as the Spencer phase was possibly a response to the introduction of new ideas and technologies and a new subsistence base, resulting in the Mississippianization of the local dispersed Late Woodland populations (Moore et al. 1993). This realignment is seen to have resulted not from population pressures and related stresses, but from the introduction of the above-mentioned new subsistence base and related technologies and ideas (Moore et al. 1993).

Two possible additional Spencer phase sites are reported by Moore et al. (1993). Site 40DV297 was the scene of limited testing that identified two extended pit burials, reinforcing the notion that stone box burial is a post–Spencer phase innovation. The Lock 3 site (40SU112) is known only from surface collections (Moore et al. 1993), but is apparently another small Spencer phase locale. Hamlets may represent the primary settlement type for the Spencer and subsequent Dowd phases (Smith et al. 1993).

Moore and Smith (1993) suggest that Hamilton points may be associated with the Spencer phase. They also note the relative abundance of these at the early Mound Bottom site (see also O'Brien 1977; Smith 1992).

DOWD PHASE

The Dowd phase (A.D. 1050–1250) is the second in the sequential operational tripartite defined for the Mississippian of the Middle Cumberland area (Moore et al. 1993; Moore and Smith 1993; Smith 1992, personal communication 1993). While Smith (1992) provided the general chronological bracketing, a basic description of the contents, and the proposed political integration for this span, it is only presently being refined (Moore and Smith 1993; Smith, personal communication 1993).

Salvage excavations at the Brandywine Pointe site (40DV247) provided the first tight data set for the initial characterization of Dowd phase contents (Moore and Smith 1993). This site is a farmstead on a ridge projecting into the Cumberland River bottoms of northeast Davidson County. The single structure identified and investigated was square with rounded corners and single-set post construction. Interior support posts, a central prepared hearth, and assorted features and posts completed the plan. No rebuilding of the structure was evident.

Three carbon samples from the Brandywine Pointe site yielded calibrated dates ranging from A.D. 1007 to 1375, at one standard deviation. Based on context, the authors suggest that the calibrated date of A.D. 1007 (1030) 1163 from Feature 54 (TX-7687), an intra-edificial pit, is the most reliable (Moore and Smith 1993). Various manipulations by the authors of the radiocarbon determinations leave little doubt that the structure was used during the newly proposed Dowd phase (Moore and Smith 1993).

A majority of lithic artifacts reported are crafted of locally available material. Exceptions to this were Dover chert and greenstone (Moore and Smith 1993). Madison, and one possibly associated Hamilton, were the associated point type(s). The majority of the ceramics recovered were from the vicinity of the structure and are assumed by the authors to be associated with it (Moore and Smith 1993). Shell-tempered ceramics recovered include plain, cordmarked, fabric-impressed (salt pan), incised, and painted. Jars were the predominant vessel form, with pans (fabric impressed and plain), bottles, and bowls, in decreasing order of frequency, also represented.

Faunal remains included a variety of mammals, birds, reptiles, amphibians, and fish. Floral remains included assorted nuts, fruits, seeds, maize, and squash, in addition to wood and cane. The maize was of the eight- and ten-row varieties. The authors note that evidence from elsewhere in the Central Basin suggests more diversity in the locally grown varieties of maize, though ten- row is consistently predominant. They note a similar pattern in Fort

Ancient contexts, but suggest that for the Central Basin there was apparently greater diversity after ca. A.D. 1250 in Thruston phase contexts (Moore and Smith 1993).

The recovered artifacts, supported by a single radiocarbon date with a calibrated mean of A.D. 1215, indicate that the Brick Church Business Park site (40DV301) was occupied late in the Dowd phase, prior to the nucleation of the settlement pattern into palisaded villages of the subsequent Thruston phase (Smith et al. 1993). A structure (Feature 2/Structure 1) was exposed by construction activities subsequent to the removal of a small stone box cemetery at the site (DuVall 1990). Structure 1 was approximately 60 feet (18.29 m) west-southwest of the cemetery area.

Ceramics from the structure area included coarse shell and fine shell-tempered plain, and mixed shell/grit-tempered plain, incised, and fabric-impressed. The mixed-tempered material is described as containing sparse to moderate amounts of coarse shell with moderate to dense grit. The incised sherds are classified as Matthews Incised, *var. Matthews*, and appear to be from two jars. The fabric-impressed sherds are pan fragments, while a single sherd of mixed-tempered plain pan was recovered. Vessel forms are predominantly jars, with examples of pans and a single outslanting bowl form represented. Three trowel fragments were also recovered (Smith et al. 1993).

Lithics recovered from the Structure 1 area are predominantly of Fort Payne chert, probably extracted from stream deposits. Locally available sandstone was present. Dover chert and greenstone represent the only nonlocal lithic material recognized in the collection (Smith et al. 1993).

Based on the types and quantities of floral material present within the burned structure, a late fall/winter habitation is suggested (Smith et al. 1993).

The Dowd phase, as presently understood, saw the rise of numerous small autonomous and semi-autonomous polities along the Cumberland River. Small village sites, each with a single platform mound, were the central settlement type. Populations at these central sites rapidly expanded, though most of the population was dispersed in single-family farmsteads. These often grew in size and complexity into hamlets and small villages. The end of the Dowd phase was marked by systemic sociopolitical collapse as population and settlement systems expanded, resulting in increased competition and conflict. This was reflected in the growth of nucleated fortified villages during the subsequent Thruston phase (A.D. 1250-1450) (Moore and Smith 1993; Smith, personal communication 1993). A stone box burial regime apparently developed during the Dowd phase by about A.D. 1100 and rapidly became the norm. Jars were the predominant vessel form and were accompanied by cylindrical-necked bottles early in the phase; later, large cylindrical-necked and smaller carafe-necked bottles occurred. Outward-slanting bowls occurred early in the phase (Smith, personal communication 1993).

THRUSTON PHASE

The Thruston phase (A.D. 1250-1450) was the last and best- developed of the operational units defined for the Middle Cumberland area. Smith (1992) proposed and defined the Thruston phase as the final response of the local prehistoric inhabitants to the growing political and environmental stresses resulting from the developing Mississippian pattern within which they operated.

Smith (1992) notes that the characterization of Thruston phase ceramics is potentially impacted by the reality that much of the available information is derived from mortuary contexts. However, Smith does provide a detailed presentation of the nature and constitution of the Thruston phase ceramic assemblage.

Mississippi Plain forms the majority of any ceramic collection and is generally followed distantly in frequency by Bell Plain, and even more distantly by Kimmswick Fabric Impressed and Plain. In general, shell-tempered plain wares comprise over 95 percent of the assemblage. Decorated wares, incised and/or punctated, make up less than 1 percent of domestic and mortuary assemblages. Decorated types include Matthews Incised, *vars. Matthews* and *Manly*, and often jars with zoomorphic/anthropomorphic strap handles. Negative painting is rare and occurs only in mortuary contexts. Engraved/incised plate rims (i.e., O'Byam Incised) are extremely rare. Red-slipped and cordmarked are absent in Thruston phase assemblages (Smith 1992).

Jars comprise the predominant vessel form recovered from local sites. Jars are globular or subglobular, often with loop, strap, or lug handles. Jars are the only forms reproduced as miniature vessels. A limited variety of incising motifs occurs in this vessel class (Smith 1992).

The most common bowls are restricted rim and simple hemispherical forms. The latter often has a horizontal notched applique strip below the lip. Cylindrical wall, or beaker, forms are rare, and the only examples known are of the type Mound Place Incised, which Smith (1992) suggests was not made locally. Another rare form is the outslanting-wall bowl, which Smith (1992) suggests may be the local functional equivalent of the plate form known for other areas. This latter form is also extremely rare in the Middle Cumberland area. Fish, bird, and beaver effigies on restricted or incurvate rim bowls are also characteristic of the Thruston phase (Smith 1992).

Bottle forms are rare in Thruston phase contexts. Full-figured effigy bottles are present in Thruston phase contexts, but are absent from earlier ones. Carafe-necked bottles occur in Thruston phase contexts, but cylindrical-necked bottles, more common earlier, are virtually absent. Blank-faced hooded bottles from the Mississippian stage occur in this area (Smith 1992).

Pans, ranging from 30 cm to over 2.4 m in diameter, are common minority forms at local sites. Smith (1992) suggests that the plain pan (i.e., Kimmswick Plain) is under-represented in local collections because of the difficulty in sorting from Mississippi Plain. Other ceramic artifacts include disks, earplugs, beads, pipes, figurines, and trowels (Smith 1992).

In summary, Smith (1992) notes that the Thruston phase ceramics are characterized by the initial appearance of carafe-necked bottles, full-figured effigy bottles, simple hemispherical bowls with notched horizontal applique strips, anthropomorphic and zoomorphic effigies, and strap handles.

Thruston phase lithics include small triangular, serrated points (Sand Mountain) (Moore and Smith 1993; Smith 1993) and a variety of chipped- and ground-stone artifacts. Smith notes the presence in local collections of a number of Dover chert eccentric or "ceremonial" chipped-stone bifaces. These include mace, sword, and claw forms. A ground-stone monolithic axe, an artifact of special/ritual significance and generally believed to be an expression of rank, was recovered by Jones (1876) from the East Nashville Mounds. Other ground- and chipped-stone artifacts included hoes, often of Dover or Mill Creek chert, celts, discoidals, and a variety of other more utilitarian devices. In addition to Dover and Mill Creek cherts, other nonlocal materials include greenstone, copper, galena, mica, and ocher (Smith 1992).

A variety of worked shell and bone artifacts are known from Thruston phase components. These include shell spoons, cups, beads, and gorgets. While the majority of gorgets are plain, the most common gorget design is the scalloped triskele, termed by Thruston (1973[1890]) and Muller (1966, cited in Smith 1992).

Old Town (40WM2) is one of the only Thruston phase sites investigated since Smith formulated this operational unit. Old Town is located at the southwestern boundary for the Thruston phase as presently defined (Smith 1993). While modern investigations at Old Town have been limited in scope and number, Smith (1993) suggests that, based on the variety and types of materials recovered, this was an important site in the local hierarchy.

Ceramics from Old Town conform to the expected pattern for a Thruston phase component. Bowls with appliqué rim strips and Matthews Incised, *var. Beckwith* jars indicate a post-1200 A.D. deposition. Matthews Incised, incurvate effigy bowls, and notched rim appliqué semi-hemispherical bowls (Bell Plain, *var. Noel*) are typical Thruston phase markers (Smith et al. 1993).

As noted above, it was not until very recently that the development of a chronologically sensitive characterization of the local Mississippian was begun. As a result, settlement patterns for the Thruston phase are poorly understood. Compounding this problem is the low frequency of diagnostic markers recovered from local sites. This has been exacerbated by

the destruction of numerous sites by agriculture, urban and industrial expansion, and relic hunting (Smith 1992).

Smith (personal communication 1993) suggests that the importance of mound centers declined during the Thruston phase. Mound construction ceased, and existing substructure mounds were converted to use as cemeteries. With the abandonment of hamlets and farmsteads, palisaded villages became the dominant settlement type. Smith (1992) suggests that the substructure mound construction flourished from about A.D. 950 to 1150, ending about or soon after A.D. 1200. Apparently little substantial mound construction occurred after the initiation of centralized settlement. Palisaded villages were the pattern subsequent to this time throughout the Central Basin (Smith 1993). Burials were often placed in existing platform mounds during the Thruston phase (Smith 1993).

Because of the less than ideal nature of the data, Smith (1992), after testing a series of alternative hypotheses, summarized the pattern of Mississippian settlement of the Middle Cumberland area. The primary factors influencing the location of civic/ceremonial centers were access to fertile soils and riverine flora and fauna, and to a lesser degree, locations of secondary streams and concentrations of resources such as salt. Site spacing was maintained through interpolity conflict. The distribution of smaller villages, hamlets, and farmsteads is suggested to be relatively even across the area, at least early in the phase. Subsistence information indicates that maize, beans, squash, and pumpkin were the primary cultigens.

The geographical distribution of the Middle Cumberland area includes the Mississippian sites located along the Cumberland River within the Central Basin and along the Upper Harpeth River at the margin of the Central Basin and Western Highland Rim (Smith 1992). Collections from the Lake Barkley area on the west and Caney Fork River on the east suggest that the boundary falls upstream from the former and downstream from the latter (Smith 1992) (see Figure 3).

Smith notes that for mound-village complexes,

> the spacing of sites was established and maintained through conflict between centers over sections of major river drainages, and was partially influenced by the relative productivity of soils, location of secondary stream confluences, the presence of concentrated resources (including salt and Dover chert), and access to riverine transport systems. The primary causal factors influencing the location of civic-ceremonial centers are access to fertile alluvial soils and riverine flora and fauna [Smith 1992:326].

While the distribution of Thruston phase sites along the Cumberland River could be explained as an adaptation to the riverine setting, sites on the periphery of the Central Basin are located a strategic points of entry to the valley (Smith 1992).

Smith (1993) notes that although Old Town is located on the Upper Harpeth River, not far from the Mound Bottom/Pack complex (40CH8/40CH1), the artifact assemblages for these localities are markedly different. Smith (1993) suggests that Old Town was probably at

the southwestern frontier of the Thruston phase and was not a secondary center subordinate to the much earlier Mound Bottom/Pack site.

Smith (1992) noted the possibility of interaction between Middle Cumberland Mississippian and Fort Ancient groups and is currently developing this avenue of research (Smith, personal communication 1993). Smith credits Emanuel Breitburg for suggesting the Interior Low Plateau physiographic province (cf. Fenneman 1938) as a research universe. Smith (personal communication 1993), while noting that this avenue is at present in its nascent stage, points out a number of commonalities and similarities between these groups. There was a strong presence of serrated triangular projectile points in both areas at the same time. Neither area shows evidence for large centralized chiefdoms in the late prehistoric. Vessel forms became more similar through time, though there were differences in temper, and plate forms were absent in both. Subsistence regimes were similar, including types of maize cultivated and the apparent particular importance of the exploitation of elk and bear. Smith (personal communication 1993) has stressed that it is unknown at this time if these similarities represent significant interaction or simply result from both groups living in the same environmental setting.

Moving farther afield for a regional perspective, it becomes obvious that the basic framework of the Mississippian stage in the Middle South has been developed. However, we are only beginning to achieve a clear understanding of the stage.

Dye (1988) notes that Early Mississippian in the western Middle Tennessee Valley is poorly understood. Early Mississippian Harmon's Creek phase, of the Lower Tennessee Valley in Tennessee, is suggested to date from A.D. 700–1200. This phase is marked by square and rectangular structures of single-set post construction. Pit burials appear to have been the dominant mortuary practice. Madison projectile points, along with ceramic types Mississippi Plain, Bell Plain, and Kimmswick Fabric Impressed, and the minor types McKee Island Cord Marked, Old Town Red, and Mound Place Incised, were introduced at this time. Globular jars with loop handles are the dominant vessel form (Dye 1988).

Dye (1988) suggests that the Late Mississippian of the Lower Tennessee Valley in Tennessee is similar to the Tinsley Hill phase of the Lower Cumberland as defined by Clay (1979). Madison was still the recognized point type, but the ceramic complex became more diverse. Mississippi Plain, Bell Plain, and Kimmswick Fabric Impressed still dominate, and the minority types McKee Island Cord Marked and Old Town Red remained. However, Kimmswick Plain, Nashville Negative Painted, Matthews Incised, and Tolu Interior Fabric Impressed were added to the complex. Vessel forms included jars with strap handles, long-necked bottles, and plates.

Dye (1988), following Autry and Hinshaw (1979) and Jolley (1980), notes that structures are generally rectangular and of wall trench construction. A hierarchical settlement pattern of small task-specific sites, farmsteads, hamlets, villages, and civic/ceremonial centers

had developed. Substructure mounds, the accompaniment of interments with ceramic vessels, polished stone implements and worked shell, and the introduction of the Southeastern Ceremonial Complex iconography were conspicuous elements of this time. Finished products and raw materials, including Dover chert, were apparently traded.

In the western Middle Tennessee River Valley, Kogers Island is the designated phase of the Middle Mississippi period. Suggested dates are A.D. 1200–1350, making it generally contemporary with the Thruston phase in the area of concern. The material culture was essentially that described for the Lower Tennessee Valley (Dye 1988). The western Middle Tennessee Valley was apparently abandoned during the Late Mississippi period (Dye 1988).

Wesler (1991) notes that two culture historical schemes are in use in the western central and West Kentucky areas—Clay's (1979) sequence for the Lower Tennessee/Cumberland area and Lewis's (1986, 1990) for the Mississippi River counties. Wesler notes problems with the two schemes. The Clay scheme has not been modified much since its introduction. The Western Kentucky Project scheme is tied to three calendrical units of 200 years' duration each, rather than to the material culture (Wesler 1991).

In the Lower Tennessee/Cumberland, Clay (1979) proposes the Jonathan Creek and sequent Tinsley Hill phases for the Lower Tennessee/Cumberland area, and suggests that the Angelly phase defined for the Black Bottoms of Illinois is intermediate for these two Kentucky phases. The Jonathan Creek phase (Clay 1963, 1979) is suggested to date from about A.D. 1000 to 1100/1150 (Kreisa 1991b; Pollack and Railey 1987). The ceramic assemblage is characterized by Mississippi Plain, Bell Plain, Kimmswick Fabric Impressed, McKee Island Cord Marked, and Old Town Red (Clay 1979). The typical vessel form was a small globular jar with loop handles. Fortified villages occurred (Clay 1979), and hamlets (Kreisa 1991b) are reported. The ceramics of this phase are notable for a lack of decorated types and little variation in vessel form. Plate forms are lacking (Pollack and Railey 1987). Wesler (1991) suggests that the Jonathan Creek site ceramic collection resembles an Early Wickliffe assemblage (A.D. 1000–1150).

As noted, Clay (1979) suggests that the Angelly phase of the Black Bottoms (Riordan 1975; Muller's 1986 Kincaid phase) falls between Jonathan Creek and Tinsley Hill phases. Angelly is suggested to date to the A.D. 1150/1200 to 1300 range (Pollack and Railey 1987). Angelly ceramics are predominantly Mississippi and Bell Plain, with minor amounts of Kimmswick Fabric Impressed, Kimmswick Plain, Wickliffe Thick, Angel Negative Painted, *var. Angel*, and a little Matthews Incised, *var. Matthews* or *Manly* (Clay 1979). Plate forms were introduced into the area at this time, along with Matthews Incised and O'Byam Incised. No Angelly components have as yet been identified south of the Ohio River. Dates for this phase cluster in the thirteenth century A.D. for Southern Illinois (Pollack and Railey 1987).

Clay (1979) notes that the Tinsley Hill phase is characterized by wall trench structures. The ceramic assemblage of this phase is characterized by Mississippi Plain; Bell Plain;

Kimmswick Fabric Impressed; and minor amounts of Nashville Negative Painted, *var. Nashville*; Matthews Incised, *vars. Matthews, Beckwith,* and *Manly*; O'Byam Incised, *var. Stewart*; and Tolu Interior Fabric Impressed. Dominant vessel forms include globular jars with wide strap handles, long- and short-necked bottles, and plates (Clay 1979). Lugs and notched rim strips on hemispherical bowls are also noted by Pollack and Railey (1987). There is at present much debate about the temporal placement of the Tinsley Hill phase. Pollack and Railey (1987) provide a brief summary of the debate and note that Clay (1963, 1979) prefers a late placement of about A.D. 1300–1650. Butler (1983) and Muller (1986) support abandonment of the area by the fifteenth century and suggest spans of A.D. 1300–1450 and 1250–1400, respectively, based on evidence and interpretations for Kincaid and the Black Bottoms (Pollack and Railey 1987).

Clay (1979) notes an apparent settlement hierarchy. Only the Tinsley Hill site has a mound; one non-mound village is fortified, and farmsteads and hamlets are known. Clay suggests that the Tinsley Hill phase ended sometime post-A.D. 1600.

Wesler (1991) suggests that the mound at Tinsley is either not associated with the village and cemetery areas or is related to the lower zones (a Jonathan Creek component) that have not been adequately sampled. He also suggests that the fourteenth-century radiocarbon date for the cemetery is not unlikely. The village and cemetery are similar to Late Wickliffe, ca. A.D. 1250–1350, and the mound is similar to Early Wickliffe, ca. A.D. 1100–1150 (Wesler 1991). It should be noted that Wesler's chronology effectively ends at ca. A.D. 1350 and so does not necessarily provide much weight to the early scheme. Comparing ceramic attributes from Chambers and various Tinsley Hill phase components, Pollack and Railey (1987) suggest an A.D. 1400 beginning date and A.D. 1600 ending date for the Tinsley Hill phase.

The Chambers site (15Ml109), located in Marshall County, Kentucky, in the Lower Tennessee/Cumberland area, is suggested to have been occupied from A.D. 1250 to 1350 (Pollack and Railey 1987). The Mississippian ceramic assemblage is dominated by Mississippi Plain, followed distantly by Bell Plain, Kimmswick Fabric Impressed, and Kimmswick Plain. Minor percentages of Matthews Incised occur (all three varieties), along with O'Byam Incised, *var. Stewart*, Old Town Red, Nashville Negative Painted, and a couple of sherds each of Mound Place Incised, Barton Incised, and unclassified cordmarked. Hooded water bottles were recovered. Wide strap handles are absent, and 86 percent of the handles are loop; bifurcate lugs also occur. Relatively few lithics were recovered, though Dover and Mill Creek cherts are present in the collections (Pollack and Railey 1987). Pollack and Railey (1987) point out that Chambers falls at the cusp between the Angelly and Tinsley Hill phases, with similarities to and differences from both. Chambers lacks evidence of the use of beaded appliqué strips on bowls, which Pollack and Railey (1987) suggest is a late trait as exemplified by their occurrence in Tinsley Hill phase and Fort Ancient assemblages (after A.D. 1400 for the latter).

Comparing Chambers to the Mississippi River counties of the Western Kentucky sequence, Pollack and Railey (1987) note that, based on similarities in ceramic and radiocarbon dates, Chambers straddled the Dorena (A.D. 1100–1300) and Medley (A.D. 1300–1500) phases. Using the collections from Adams (Lewis 1986) and Turk (Edging 1985) for comparison, similarities are noted for the frequency distribution of a number of decorated types. Differences are most notable in the high frequencies of Matthews Incised, *var. Beckwith* and O'Byam Incised at the more westerly sites. The lower frequency of the latter at Chambers, and a higher frequency of Bell Plain at Adams, is thought to reflect functional differences between the sites (Pollack and Railey 1987).

Wesler (1991) notes that most of the radiocarbon dates and the ceramics reported for Chambers are comparable to Late Wickliffe, or ca. A.D 1250–1350, in keeping with the position of Pollack and Railey (1987). Wesler suggests that Chambers is comparable to and possibly slightly later than Late Wickliffe, though not much later, pushing it slightly later than Pollack and Railey suggest.

Lewis and his colleagues (cf. Kreisa 1988, 1991a; Lewis 1986, 1990; Stout 1987; Sussenbach and Lewis 1987) propose four sequential Mississippian phases of the Mississippi River counties of western Kentucky: James Bayou, A.D. 900–1100; Dorena, A.D. 1100–1300; Medley, A.D. 1300–1500; and Jackson, A.D. 1500–1700. Wesler (1991) notes that while the sequence of popularity in the ceramic samples agrees well with the Wickliffe data, there is a problem with the temporal units proposed for the Western Kentucky Research Project.

Lewis (1990) and Kreisa (1991b) have recently summarized the results of the Western Kentucky Research Project. Kreisa (1991b) notes that four essentially contemporary emergent Mississippian phases have been proposed for the Mississippi-Ohio River confluence area. Settlement systems for each of these phases include both small sites and large villages. Single mounds may be associated with large village sites of the Kersay and James Bayou phases of southeastern Missouri and western Kentucky, respectively (Kreisa 1991b; Lewis 1990). No mounds are suspected to be associated with Dillinger of southern Illinois or Yankeetown of southern Indiana (Kreisa 1988, 1991b). Settlements tend to be located near aquatic resources, though some are situated to exploit various environments. Structures at the Kersay and James Bayou sites are of single-set post and shallow basin construction. Kreisa (1991b) interprets the socio-political system as nonhierarchical, at the nonchiefdom level of integration. Maize is present at sites of each of these phases.

The James Bayou phase (A.D. 900–1100) (Kreisa 1991b; Lewis 1990) ceramics were tempered with grog or grog and shell. Globular jars are the major vessel form and are accompanied by bowls, pans, and funnels. Rectilinear incising is the common decorative mode. Red slipping is common in Kersay and James Bayou assemblages, but less so in Dillinger and Yankeetown assemblages. Kreisa (1991b) suggests that the presence of Yankeetown ceramics at sites in western and west-central Kentucky indicates contact and

influences during the emergent Mississippian. Overall, the ceramic assemblage is similar to that of the Jonathan Creek phase of the Lower Tennessee Cumberland area (Kreisa 1991b). Small triangulars are the common projectile points (Kreisa 1991b).

Cultivated plants included maize and squash, and the exploitation of locally available wild flora and fauna yielded important parts of the diet (Kreisa 1991b). Kreisa (1991b) suggests a settlement system of large villages, some with mounds, and smaller villages, hamlets, and farmsteads, noting that the material culture does not support differential access to goods.

Twin Mounds and Marshall are noted as having James Bayou phase components (Kreisa 1988, 1991b). As noted by Wesler (1991), James Bayou phase ceramic assemblages are characterized by Mississippi Plain, Bell Plain, Baytown Plain, Mulberry Creek Cordmarked, Kimmswick Fabric Impressed, and red-filmed. Wesler (1991) notes that the Marshall site (Sussenbach and Lewis 1987) is apparently rather early. Incising is rare, but includes Matthews, and the frequency for red-filmed is high, higher than in Early Wickliffe contexts at the Manesake site. Radiocarbon dates are appropriately early. A lot of Kimmswick material is present and supports the idea of decreasing use of fabric impressing through time. Marshall may have predated and overlapped Early Wickliffe, and was probably abandoned prior to Middle Wickliffe (Wesler 1991).

The Dorena phase, A.D. 1100–1300 (Kreisa 1991b; Lewis 1990), is notable for the development of multiple mound and village complexes, some palisaded. Smaller settlements included one- and two-mound villages, villages without mounds, hamlets, and farmsteads. There was still no apparent differentiation in the distribution of goods, and houses were of comparable size at the various settlement types. The sociopolitical system was characterized by small chiefdoms competing for resources and trade (Kreisa 1991b).

Excavated components include Adams, Beckwith's Fort, Burcham, Turk, Twin Mounds, and Wickliffe (Kreisa 1991b). As noted by Wesler (1991), within the Dorena ceramic assemblage Mississippi Plain and Bell Plain continue to dominate; there is less Mulberry Creek Cord Marked, and Kimmswick Fabric Impressed continues. New additions include minor amounts of Matthews Incised and O'Byam Incised, *var. Adams*, and rarely O'Byam Incised, *var. O'Byam*.

The Medley phase (A.D. 1300–1500) is noted as a time when populations began to concentrate in larger Centers. There is, apparently for the first time, noticeable differentiation in the material culture recovered from larger versus smaller settlements (Kreisa 1991b). This pattern is interpreted as a reflection of increasing stratification of the hierarchical social and settlement system (Kreisa 1991b). Material culture of the Medley phase was similar to that reported for the Tinsley Hill phase of the Lower Tennessee/Cumberland area (Kreisa 1991b).

Investigated components include Adams, Callahan-Thompson, Hess, Lilburn, Turk, Twin Mounds, and Wickliffe (Kreisa 1991b; Lewis 1990). Mississippi Plain and Bell Plain still

comprise the majority of the ceramics (95–97 percent) (Kreisa 1991b; Lewis 1990), while Matthews Incised (all three varieties) and O'Byam Incised, *var. O'Byam* become the dominant decorated types in Medley phase ceramic collections (Lewis 1986; Wesler 1991). Two varieties of Barton Incised, *Barton* and *Kent,* are found (Lewis 1990; Wesler 1991), along with other southern imports (Kreisa (1991b).

The Jackson phase (A.D. 1500–1700) has been proposed (Kreisa 1991b; Lewis 1990), but its reality is yet to be demonstrated, pointing to one of the weaknesses(or strengths—name the phase, find evidence for it later) of the system, as noted by Wesler (1991). At any rate, none of the diagnostics purported for this phase can be tied to such a late date. Both "astragali die" and beaded rim appliqué bowls are common in components of early phases, while the beginning date for "head pots" has yet to be determined. This is not to argue whether or not the area was depopulated, but simply to point out that this construct has no defining features other than a time bracket.

Based on excavations at Wickliffe Mounds (15BA4) (Wesler 1985, 1989, 1991; Wesler and Neusius 1987) and comparison and integration with information for the surrounding area, these researchers suggest a three-phase ceramic sequence falling between ca. A.D. 1000 and 1300 for the site. The site expanded through time, and the mounds do not represent simultaneous construction episodes. Wesler's (1991) Wickliffe Chronology includes Early Wickliffe (A.D. 1100–1200), characterized by Matthews Incised, *vars. Beckwith* and *Manly*, Barton Incised, Mound Place incised, and Ramey Incised (as a probable import); the ratio of red-filmed to incised is 3:1. Jars are the predominant vessel form, and loop handles are present (Wesler 1991).

Middle Wickliffe (A.D. 1200–1250) had the same ceramic types as Early Wickliffe with the addition of O'Byam Incised, *var. Adams*. The ratio of red filming to incising equalized to ca. 1:1. Flared rim bowls and intermediate loop-strap handles entered the repertoire (Wesler 1991).

Late Wickliffe (A.D. 1250–1350, lasting later at Adams and Turk), is characterized by Matthews Incised, *vars. Beckwith* and *Manly*, Barton Incised, and Mound Place Incised. New types and varieties added to the assemblage include O'Byam Incised, *var. O'Byam*, Owens Punctated, Winterville Incised, and Leland Incised. The ratio of red-filmed to incised at 1:3 is the reverse of Early Wickliffe. Intermediate loop-strap handles continued, with a hint of strap handles later. Plates with rim widths of 30–67 mm occurred (Wesler 1991).

General trends for Wickliffe noted by Wesler (1991) include a decrease in jars, pans, and Kimmswick Fabric Impressed. There was an increase in the ratio of bowls and plate to jars. Decorations became more varied, and there was increasing influence, at least on decorated types, from the Lower Mississippi Valley (Wesler 1991).

Within the American Bottoms, a number of Emergent and Mississippian phases have been established. These include the Merrell (A.D. 900–950), George Reeves (A.D. 900–950), Linderman (A.D. 950–1100), Lohmann (A.D. 1000–1050), Stirling (A.D. 1050–1150), Moorehead (A.D. 1150–1250), and Sand Prairie phases (A.D. 1250–1400) (Emerson and Jackson 1987; McElrath et al. 1987).

McElrath et al. (1987) characterized the Mississippian stage in the American Bottoms. Populations appear to have increased through the Lohmann phase and peaked during the Stirling phase. Populations appear to have declined beginning in the Moorehead phase and continued through the Sand Prairie phase. Following Muller (1987), they note that this apparent decline could actually reflect a shift in settlement pattern, with people moving out of hamlets and farmsteads to larger villages (McElrath et al. 1987).

In Merrell phase ceramic assemblages, the dominant vessel form is the subconoidal jar, a.k.a. the "Late Bluff" jar. This type of jar generally has a cordmarked body with a plain neck and rim. Limestone-tempered red-slipped (Monks Mound Red) appears. Minor frequencies of cordmarked bowls, grog-tempered stumpware, and small numbers of seed jars, hooded water bottles, and nonlocal ceramics occur. Other Merrell phase vessel forms include pinch pots and pans. Loop handles and lug handles, including round or triangular and bifurcate handles, are present. Ceramic disks (from sherds) occur. Most of the jars are tempered with grit, followed by grog and grit and grog. Temper is of both igneous and metamorphic rock (Maher 1987).

Linderman phase ceramics are characterized by jars, bowls, water bottles, and stumpware. Limestone (the majority), grog, shell, grit, and grit/grog are the tempers. Cordmarking occurs on bowls and jars; red-filmed ware is also reported (Emerson and Jackson 1987).

Lohmann and Stirling phase ceramics include shell, limestone, shell/grog, grog, grit, and grit/grog tempers. Jars, beakers, bowls, and stumpware are the vessel forms present (Emerson and Jackson 1987).

The Moorehead vessel assemblage is similar to that of the Stirling phase, but plates appear and hooded bottles and seed jars apparently disappear. For Sand Prairie, jars predominate and plates, beakers, and juice presses disappear (McElrath et al. 1987).

Williams (1980, 1983, 1990) has proposed the notion of a Vacant Quarter encompassing much of the central Mississippi, western Middle and Lower Tennessee, and most of the Cumberland River Valleys. As proposed, this hypothesis did not purport a single causal factor, or rapid, extensive depopulation. Instead, there was population rearrangement, though without any mass migrations. Williams (1990) notes that while a large area was apparently abandoned, in terms of large sites and mound centers, in other areas of the greater Southeast groups and complex sociopolitical systems continued to flourish.

HISTORIC STAGE

The Middle Cumberland area was apparently abandoned, or nearly so, sometime shortly after A.D. 1450 (Smith 1992). The area was reoccupied by the Shawnee during the late seventeenth century (Swanton 1946). The Cumberland Valley was claimed by both the Chickasaw and the Cherokee, who, with British aid, expelled the Shawnee from this area ca. 1714 (Swanton 1911, 1946). Another band of Shawnee was also ousted from the Cumberland region in 1745.

In 1714, a French trader is reputed to have had a store built on the mound at the French Lick site mound. Later in his narrative, Haywood (1959[1823]) also records that this store was located within a fort, and that the location was stockaded by the Cherokee. French trappers from Illinois and Orleans (sic) apparently came to this area to hunt game. Following the Shawnee removal, no one settled this area until General Robertson and party began surveying and settling this area in the late eighteenth century (Haywood 1959[1823]).

Following the American Revolution, many soldiers were granted lands in the Middle Tennessee area in return for military service. These persons established homes or "stations," some fortified, within the Cumberland Valley (Moore 1993). These stations were often raided by the Cherokee, Chickasaw, and Creek, as the Cumberland area was considered to be tribal hunting grounds. James Robertson's expedition against the Cherokee in 1794 brought about lasting peace the following year. With the admission of Tennessee to the United States in 1796, the frontier stations were no longer needed for protection (Rogers 1977). The Civil War battles fought in and around Nashville are well known and well documented.

CHAPTER 5
SITE DESCRIPTIONS

Richard Walling, Steven Ruple & Shari Moore

The East Nashville Mounds and French Lick sites are located within the Middle Cumberland River drainage. This area is defined as that portion of the Cumberland River drainage system falling within the Central Basin physiographic province and the contact of the Central Basin and the Highland Rim. The upstream limit is the confluence of the Cumberland and Caney Fork Rivers, while the downstream limit is the confluence of the Cumberland and Harpeth Rivers (Smith 1992; Moore et al. 1993). Nineteenth-century accounts indicate that both were mound and village complexes. The sites are located opposite one another on the banks of the Cumberland River, just north of present downtown Nashville (see Figure 1).

EAST NASHVILLE MOUNDS (40DV4)

The East Nashville Mounds site (40DV4) is located at north latitude 36° 10' 35", west longitude 86° 46' 45", on the east side of (right bank descending) and adjacent to the Cumberland River in Nashville, Tennessee. The site was a large Mississippian center consisting of four earthen mounds and associated village extending over several acres (Dowd 1971; Jones 1876; Ward 1988). What may be a remnant of the largest mound is still visible approximately 50 m north of the old bridge, though this identification is far from certain. Jones's (1876) placement and Dowd's (1971) estimate of the location of the smaller mounds would place one of these within or immediately north of the present ROW. The site has suffered extensive bank erosion, and was apparently farmed during the nineteenth century. A twentieth-century sawmill and lumber yard occupied much of the site area until recently. During the second decade of this century, the site was also impacted by the existing Jefferson Street Bridge.

As of late July 1991, virtually all above-ground evidence of the lumber yard and sawmill had been removed. All that remained were a few concrete foundation remnants and a fire box for the mill's power plant in a restricted portion of grassy alluvial bottomland (Figure 5).

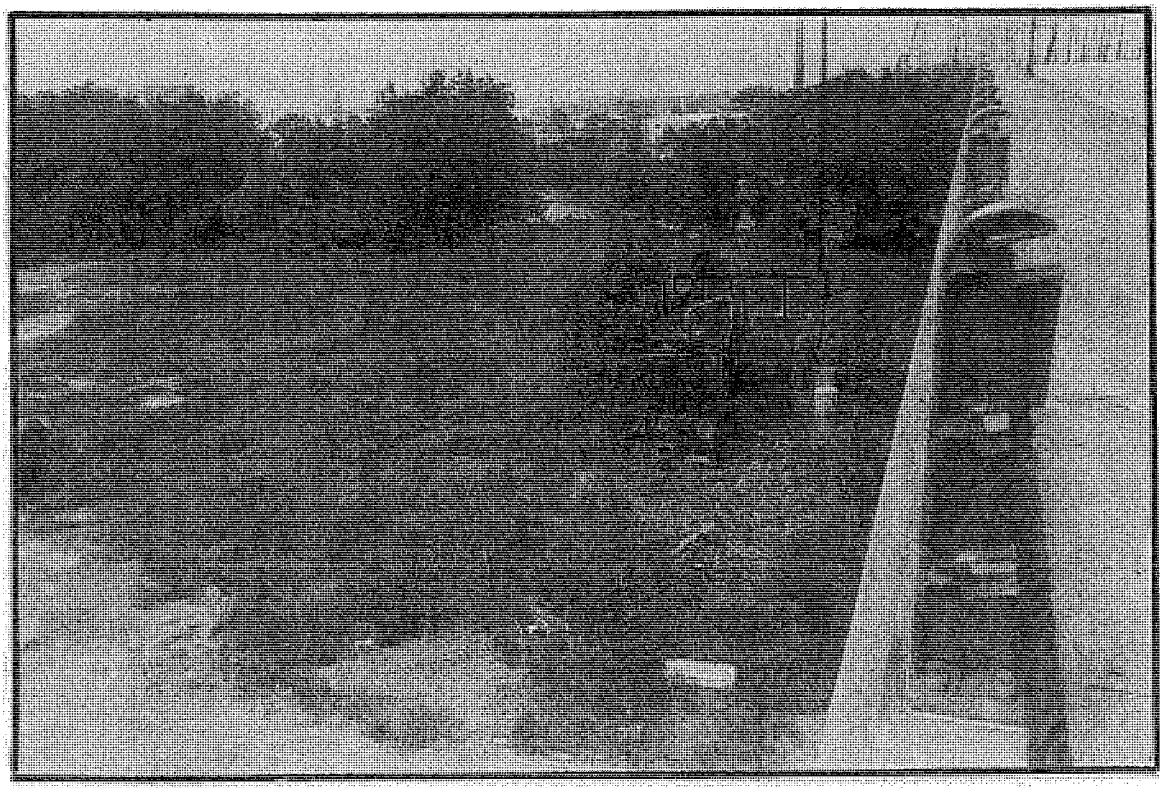


Figure 5. East Nashville Mounds, project area on July 28, 1991; view to the west-southwest.

EARLY DESCRIPTIONS (WALLING)

We have only one relatively detailed firsthand account of the original configuration and extent of the East Nashville Mounds site. Joseph Jones investigated the site in 1868 or 1869 while, as recounted above, he served as Medical Officer for the City of Nashville. Jones submitted a short article to *American Naturalist* (1869), and a longer report was published by the Smithsonian Institution (1876). The latter reports his investigations of a number of sites in Tennessee, and his resulting conclusions and inferences. Also included is a fairly detailed account of his work at East Nashville Mounds. While this report has a number of weaknesses, probably the most crucial being the lack of a site plan, it is, as noted, the only account available. Though Thruston (1973[1890]) mentions the site several times and illustrates a number of the artifacts recovered by Jones, it appears that he may have never actually visited the site. This could indicate that East Nashville Mounds had been destroyed, to ground level at least, by the time Thruston became active in the area, though this seems unlikely. In any event, Jones's account is of sufficient import that we take the liberty of presenting a rather extensive quotation of his description of the site and much of his investigation report. There is a single possible map reference to a mound at this site. The 1786 map of the Nashville area displays the label "Mount Pleasant" in this general area, but no symbolic representation on the map (Figure 6).

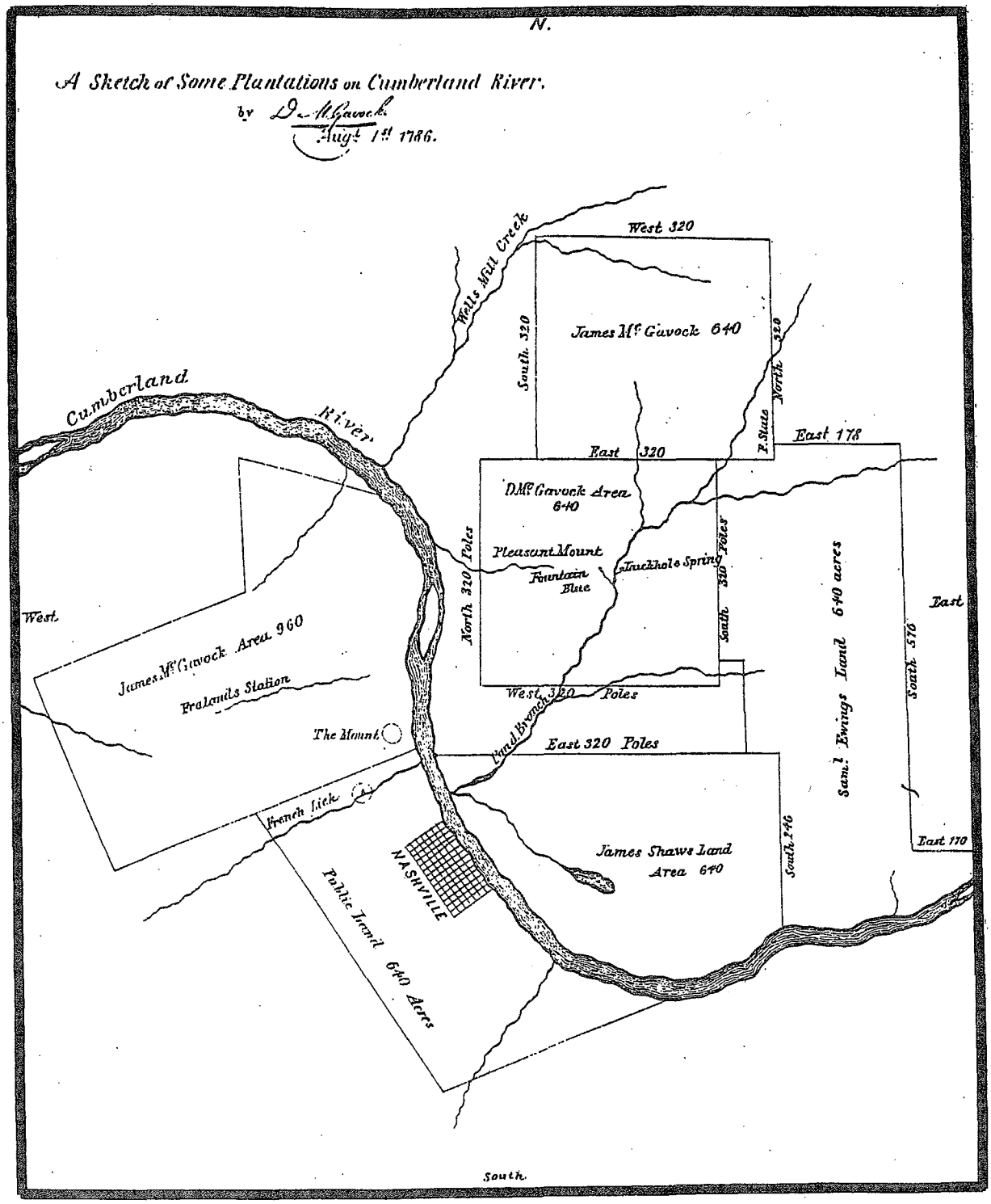


Figure 6. The Nashville area in 1786 (McGavock 1786 as given in Clayton 1971 [1880]:196).

There is some confusion regarding an account attributed to Gerald Troost. Jones, commenting on the findings of Troost (1845), notes that "the burying-grounds on the banks of the Cumberland, in the suburbs of the city of Nashville, to which we have already alluded [French Lick site], extended at that time, 1844, about a mile in length, almost to Mr. Mcgavoc's (sic)," (Jones 1876:11). Thruston, on the other hand, quotes Troost as stating "that the ancient burial grounds on the banks of the Cumberland river, opposite Nashville [East Nashville Mounds], extended, in 1844, more than a mile along the river" (1890:28). Troost's site on the opposite side of the Cumberland is "about one and a half or two miles from this" (1845:355). Jones is correct. Regardless, both sites were obviously quite extensive and complex.

The following excerpt from Jones's 1876 report is taken from pages 41 to 50.

> Some of the burial mounds were evidently used also for religious purposes. Thus in a small mound, about one hundred feet in diameter, and about ten feet high, which I explored on the eastern bank of the Cumberland River, opposite the city of Nashville, across from the mouth of Lick branch, at the foot of a large mound, [page 42] which had been apparently used as a residence or site of a temple, I discovered the following remains.
>
> In the centre of the mound, about three feet from its surface, I uncovered a large sacrificial vase or altar, forty-three inches in diameter, composed of a mixture of clay and river shells. The rim of this flat earthen vessel was three inches in height. It appeared to have been moulded in a large wicker basket, formed of split canes and the leaves of the cane, the impressions of which were plainly visible on the outer surface. The rim of this earthen vessel or sacrificial altar appeared to be almost mathematically circular. The surface of the "altar" was covered with a layer of ashes, about one inch in thickness. These presented the appearance and composition of incinerated animal matter. The antlers and jawbone of a deer were found resting on the surface of this object. The edges of the *altar* or fire vessel, which had been broken off apparently by accident, were carefully placed over the layer of ashes, and then covered with nearly three feet of earth; thus the ashes were preserved to a remarkable degree from the action of the rains.
>
> Stone coffins or rude sarcophagi were ranged around this central object, with the heads of the dead toward the centre and the feet toward the circumference of the mound, resembling the radii of a circle.
>
> The inner circle of graves was constructed with great care, and all the bodies buried around the altar were ornamented with beads of various kinds; some of which had been cut out of large sea-shells, others out of bone, and others again were composed of entire sea-shells of small size, and punctured so as to admit of the passage of the thread upon which they were strung. The large shell beads were found most generally by the side of the crania, and upon the breast, as if they had constituted ear-rings and necklaces; the smaller beads were found most generally surrounding the waist, and the arm and leg bones. . .
>
> In a carefully constructed stone sarcophagus, in which the face of the skeleton was looking towards the setting sun, a beautiful shell ornament was found resting upon the breast bone of the skeleton. This shell ornament is 4.4 inches in diameter, and it is ornamented on its concave surface with a small circle in the centre, and four concentric bands differently figured in relief. The first band is filled by a triple volute; the second is plain; the third is dotted, and has nine small round bosses carved at unequal distances upon it. The outer band is made up of 14 small elliptical bosses, the outer edges of which give to the object a scalloped rim. This ornament on its concave figured surface had been covered with red paint, much of which was still visible; the convex smooth surface is highly polished, and plain with the exception of three concentric marks. The material out of which it is [page 43]

formed was evidently derived from a large flat sea-shell; no fresh-water mussel in any part of the waters of Tennessee and of the surrounding States could furnish a uniform thickness of flat shell equal to this; and the regularity of its convex and concave surfaces, as well as the perfection of all its parts, and the uniformity of its thickness (about 3/10 of an inch) are proofs that it must have been derived from a large shell from the sea-coast.

The form of the circles or *"suns,"* carved upon the concave surface, is similar to that of the paintings on the high rocky cliffs on the banks of the Cumberland and Harpeth. . .

This ornament, when found, lay upon the breast bone, with the concave surface uppermost, as if it had been worn in this position, suspended around the neck, as the two holes for the thong or string were in that portion of the border which pointed directly to the chin or central portion of the lower jaw of the skeleton. The marks of the thong by which it was suspended are manifest upon both the anterior and posterior surfaces, and in addition to this the paint is worn off from the circular space bound below by the two holes.

This skeleton had around the neck, arms, waist, and ankles, numerous beads of various kinds. The smaller beads were all formed of small sea-shells. . . This form of bead was but rarely found in the stone graves; the majority of the graves containing either no beads at all, or only the small round and oblong kinds carved out of bone and shell. About one pint of these small perforated sea-shells were found with this skeleton, and the greatest number lay around the waist, as if the body had been encircled with a belt ornamented with these shells.

This stone grave, which was about two feet beneath the surface (that is, the lid of the coffin was covered with this thickness of earth), had been constructed with such care that little or no earth had fallen in, and the skeleton rested as it were in a perfect vault. . .

[page 44] In the grave of a child, near the right side of the stone grave. . . a small black image was exhumed.

The features of this image, with its straight retreating forehead and prominent nose, resemble those of the Aztec or ancient Mexican sculptures. The figure is kneeling, with the hands clasped across the breast, in the *attitude of prayer*. This object is formed of a mixture of black clay and pounded shells, and is exceedingly hard, with a smooth polished surface. It might with propriety be called a vase, as it is hollow, with the mouth or opening in the back of the head, and not at the summit as is usual with the vases of the Egyptians and Romans. . .

[page 45] The under jaw of the skeleton of the aged mound builder, whose grave lay near that containing the black image, was of remarkable size, and had only one long tooth or fang, like the tusk of a wild animal.

On the left of the grave which contained the carved shell ornament, previously described, lay two other carefully constructed stone graves, in one of which numerous shell beads were found encircling various portions of the skeleton, and in the other a large sea conch. The interior portion or spiral of the shell had been carefully cut out, and it was probably used as a drinking vessel or as the shrine of a small idol, as had been observed by Dr. Troost. From the great distance whence these large marine shells must have been brought, it is reasonable to suppose that they were considered of great value by the aborigines.

The grave furnishing this vessel fashioned from a shell also contained two copper ornaments, lying on the side of the cranium of the skeleton. These ornaments should more properly be described as two round pieces of wood, perforated through the centre, and covered with a layer of copper. They appear to have been suspended from the ear by a thong, since the remains of small leather strings were observed in the central holes. I discovered similar ornaments of wood, but more finely carved, and

covered with a thin layer of copper, in a stone grave near Nashville, at the residence of Colonel W. D. Gale. Upon the summit of the mound now under consideration, about six inches below the surface, immediately above the large circular earthen vessel, I also discovered several pieces of thin, corroded copper, which appeared to have formed originally a plate, vessel, or mask. A copper mask, which was fashioned with human features, is said to have been found in a mound near Franklin, Tennessee. From a stone grave near Lick Branch, I obtained several small, round masses of pure silver. Silver coins are said to have been found in a stone grave on the banks of the Cumberland, opposite Nashville, but after diligent inquiry, I was unable to obtain any reliable information. The wooden ornaments covered with copper previously described, were one inch in diameter, and presented the general appearance of [Jones's] Figure 10.

The metal was almost entirely reduced to the oxide and carbonate of copper.

Two skeletons, apparently those of a man and woman, were found on the southern slope of the mound, near the altar: they had been interred in the earth, without any stone coffins. At the side of the female skeleton, apparently encircled by the bones of the fingers, a highly finished, light reddish-yellow vase was found painted with regular black figures. This vase is composed of light-colored clay and crushed shells: height 7 8/10 inches; circumference 18 5/10 inches. The body of the vase is divided into segments by four broad depressions extending from the base nearly to the neck. Each of the four divisions is bordered with black, and [page 46] in the centre of the circles thus formed is an inner black circular figure. This vase had evidently been subjected to the action of fire; and in its general appearance and finish compares favorably with the best Mexican and Peruvian vases that have come under my observation.

Under the head of the male skeleton I found a carefully fashioned and highly polished stone hatchet, with a double edge, and with the entire handle and ring carved out of a compact chloritic stone. On each side of the top of the handle are three grooves. A reduced drawing of this warlike weapon, which is one of the most beautiful and perfect stone implements ever exhumed from the aboriginal remains within the limits of the United States, and which appears to constitute a special type, differing from both American and European stone implements, is represented in [Jones's] Figure 11. Length 13.5 inches; blade between the edges 6.1 inches; greatest width of the blade 2.5 inches; greatest width of the handle 2 inches; least width of the handle 1.5 inches.

A row of graves extended around the inner circle, which we have described as radiating from the altar. The stone coffins of this outer circle lay at right angles to those of the inner circle, and rested as it were at the feet of the more highly honored dead. In the outer graves no ornaments were found, and only a few arrow-heads and fragments of shells and pottery. The arrow-heads are very small, and most carefully fashioned with sharp points. . .

[page 48] Graves also extend to the river's edge, many of which are uncovered from time to time by the crumbling of the sandy bank; the remains consisting of shells, bones, pottery, and implements of various kinds, precipitated along the shores of the river below.

From the grave of a child, near the brink of the river, I took a small shell ornament, carved in the shape of a human countenance. . .

[page 49] About fifty yards higher up the Cumberland, and evidently connected with the mound previously described, are two smaller mounds, about forty feet in diameter, and about four feet high. These contained stone graves irregularly arranged, but no central earthen vessels, corresponding to that which we have designated as the *sacrificial altar.*

The graves which I opened [in the smaller mounds] contained no ornaments of any kind. . .

> I found a stone hatchet, and numerous arrow- and spear-heads, on the surface around these mounds. While examining the banks of the river in the neighborhood of these mounds, I observed strata of ashes and charcoal, pieces of shell and flint, stone implements, and numerous fragments of pottery: the fields around also abound with fragments of pottery, shells, stone implements, and splinters of flint. These remains indicated the occupancy of this locality for a considerable length of time by the aborigines. . .
>
> [page 50] In all my research I found no implement of European manufacture within and around the mounds. The only metal discovered was copper, in the form of a thin plate, much corroded, and the thin coatings of the wooden disks, which we have described at length. No implements of iron or of any other metal were obtained.
>
> It is worthy of note that whatever may have been the offices to which this mound had been applied, it was completed by its builders. Thus, even the ashes upon the "altar" had been carefully covered with earth.
>
> Whilst standing in the midst of these ancient "stone coffin" graveyards I have often been impressed with the belief that some fatal disease or wide-spread pestilence may have had much to do with the extinction of this once populous nation, and the filling of these extensive burying-grounds. [Jones 1876:41–50].

Elsewhere, Jones (1876) provided a summary description of the site.

> An extensive burying-ground lies on the opposite bank of the Cumberland, directly across from the mouth of Lick Branch, surrounding a chain of four mounds. One of these mounds appeared to have been the burying place of a royal family. Two of the smaller ones are thought to have been the general burying-ground of the tribe, whilst the largest one may possibly have been erected as a site for the residence of the chief, or for a temple. In the low alluvial plain, all around these [mounds] stone graves, are scattered fragments of pottery, arrow-heads, and other stone implements. The caving of the bluff constantly exposes stone graves, skeletons, and relics of various kinds [Jones 1976:11].

An interpretation of Jones's description of the East Nashville Mounds does provide an idea of how the site appeared in the late 1860s. Jones describes the East Nashville Mounds (though he never names the site) as being situated on the bank of the Cumberland River opposite Nashville, directly across from the mouth of Lick Branch. The central feature of the site was a chain of 4 mounds; one was flat-topped, and three were burial mounds. The largest of the burial mounds, described as being about 30 m in diameter and about 3 m high, was adjacent to a larger flat-topped mound. The two remaining burial mounds were described as being about 12 m in diameter and about 1.2 m high. The two smaller mounds were apparently situated near one another, but about 45 m south of the larger structures. What Jones seems to be describing is a linear arrangement of mounds, rather than a mound and plaza arrangement. The largest mound was a truncated pyramid with an adjacent burial mound for the elite.

It is safe to assume that all these mounds were of Mississippian construction, as Jones notes that each of the three burial mounds contained stone box burials. Jones concentrated his investigations, or at least his report, on the larger burial mound. However, it is obvious from the report that he also excavated the two smaller burial mounds, along the riverbank, and inspected the surface of much, if not all, the site. There is a hint in his discussion of the

mound at the French Lick site that Jones also excavated the large, or flat-topped, mound. However, it is more likely that he is referring to the large burial mound at East Nashville Mounds and basing the suggested similarity on Haywood's (1959[1823]) secondhand report. Regardless, no mention of actual excavation is provided for the apparent substructure mound in the 1876 report.

Jones described the larger burial mound as being the burial place of a "royal family," attributing status as reflected by position within the mound and associated artifacts. He noted that in the center of this mound was an *altar* or fire vessel, a Kimmswick Fabric Impressed pan 109 cm in diameter, full of ashes. This vessel can be viewed as the hub of a wheel-like arrangement for the burials. Two groups of burials were differentiated by location within the mound, by the distribution of the grave goods, and by differences in cranial deformation between the groups. The central group of burials, or "spokes" on the described wheel-like arrangement, contained all the grave goods recovered from mound contexts, and were in closest proximity to the central feature. It should be noted that two individuals from the inner group were not interred in stone boxes. Though not explicit, it appears that these individuals may have been adjacent to one another, possibly in the same pit. A female was accompanied by what is interpreted as a Nashville Negative Painted dragooned bottle, and a male was interred with a monolithic axe (Jones 1876:45-46, Figure 11; see also Moorehead 1968[1900]:Figure 194; Museum of the American Indian Slide 3041; Thruston 1973[1890]: Figure 163; Waring 1977:Figures 18, 20). The monolithic axe is now in the collections of the Museum of the American Indian.

In the outer ring of burials, the "tire" of the wheel, the stone boxes were perpendicular to the inner burials and contained no grave goods. One small triangular point, apparently collected as incidental fill and illustrated by Jones (1876), is serrated and at least similar to the Sand Mountain (Smith 1992) or Fine Triangular, Coarsely Serrated (Railey 1992; Alexander this volume) type potentially attributable to some type of Fort Ancient influence or interaction.

Jones observed that this mound was completed and ritually closed. He notes that ashes within the central feature, the Kimmswick Fabric Impressed vessel, appeared to be the remains of animals and was topped with a deer antler and jaw, suggesting the possibility of some type of ritual feasting or sacrifice. The rim of the vessel had (been?) broken off and laid over the remaining portion, and a final mantel about 1 m thick had been placed over the mound. The two smaller mounds contained a number of stone box burials. None was accompanied by grave goods, leading Jones (1876) to attribute lower status to these individuals. However, grave goods were encountered with non-mound stone box interments.

As for the rest of the site, Jones described it as an extensive "burying-ground" of stone box graves, surrounding the mounds. He describes what is interpreted as a dense surface scatter of sherds, points, and other stone implements, suggesting that the area was under cultivation at that time, which corresponds to information we have relative to the area during the Civil War. He also noted that erosion of the riverbank constantly exposed stone graves,

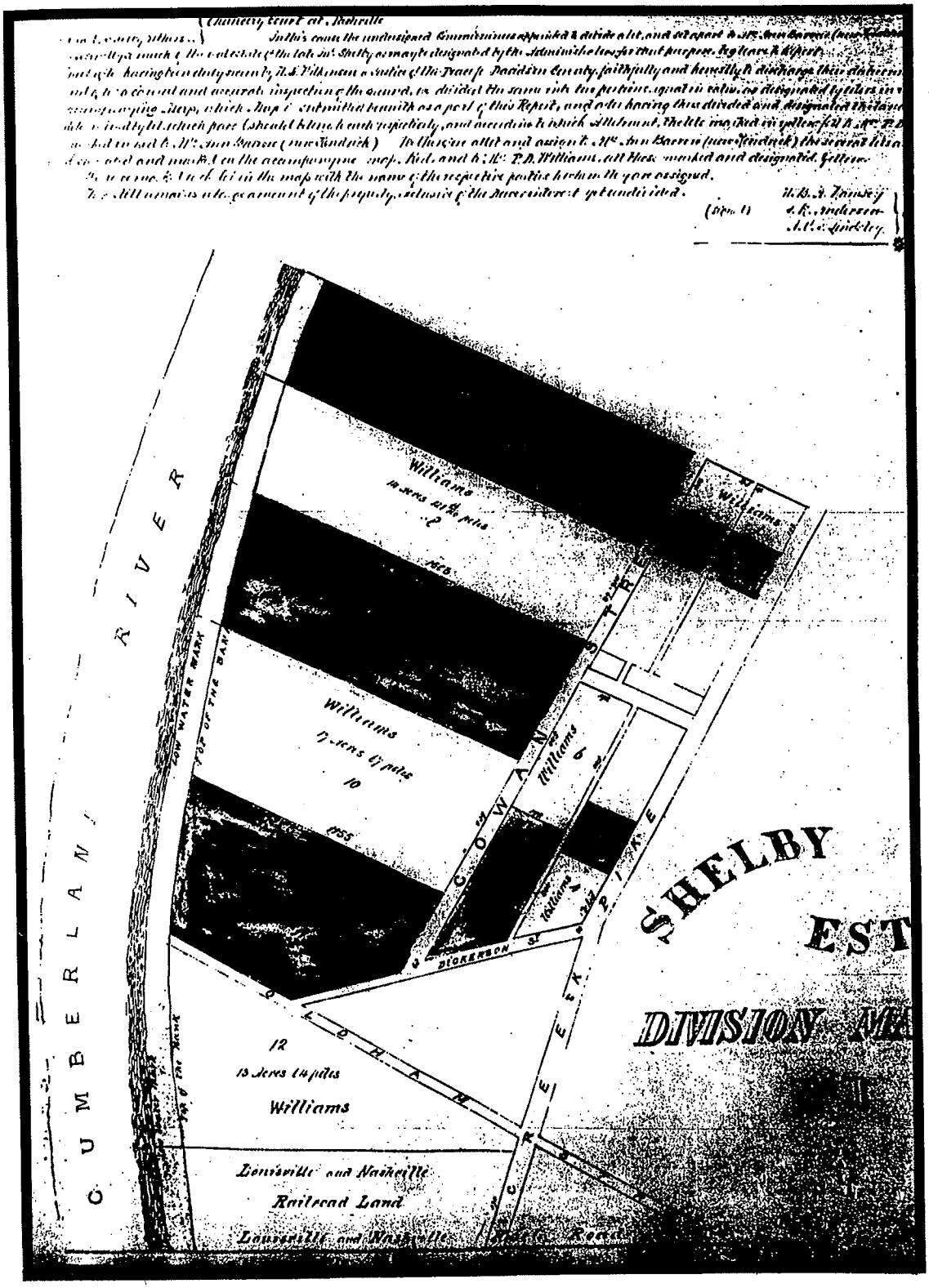
skeletons, and relics of various kinds. Judging by the amount of material and the strata exposed on the river bank, Jones suggested that the site was occupied for a considerable length of time. Jones notes that he recovered no artifacts of European manufacture, leading him to conclude a fully prehistoric occupation.

HISTORY OF THE PROJECT AREA *(RUPLE)*

Sequence of Ownership. Land in the Nashville area was surveyed for grants and sales not long after the American Revolution. David McGavock was an early surveyor and land speculator who, in 1786, drew the earliest map of the region that has survived to the present. It is accurate enough to approximately locate the project area (Figure 6). The project area lies on the east bank of the Cumberland River, just north of a point opposite the mouth of the creek named French Lick. McGavock's map shows that most of the land across the river from early Nashville was owned by James Shaw, and that the northern boundary of Shaw's land contacted the Cumberland River opposite the mouth of French Lick. Today this line would lie a little south of the Jefferson Street Bridge and the project area, at or near Oldham Street. The land north of Shaw's tract is depicted without a northern boundary or an owner in that year. Its original title is not listed in the indices of deeds within the Davidson County Courthouse, but the boundary between it and Shaw's land disappeared eventually, and Shaw's successor became owner of the east bank north and south of the project area.

Although there is a gap in the records of ownership of the project area, the records of Shaw's contiguous land to the south suggest how the sequence of ownership occurred, if not exactly when. James Shaw sold his 640-acre tract to David Shelby in 1788. Shelby's two sons, John and Anthony, were given the land as a gift in 1818, and John bought Anthony's portion the same day. The resulting tract contained most of the land opposite Nashville on the east side of the Cumberland River (*Nashville Tennessean*, 12 December 1976). It still contained 640 acres, and apparently did not encompass the project area as of 1818.

At John Shelby's death in 1859, his will gave a tract of land to his two daughters to be divided between them by a committee of administrators. The resulting parcels are represented on an undated map, probably drawn in 1859 or 1860, which shows the largest part of the land as lying between the river and Cowan Street, or White's Creek Pike, and north of Oldham Street (Figure 7); this includes the project area. This map is referred to in all subsequent deed transfers as the "Plan of the First Division of John Shelby Estate," and may serve as the point of origin for title to the project area. Alternate segments of the tracts depicted in this map appear black in the microfilm copy because they were tinted red by the map maker to indicate those portions given to Mrs. Ann Barrows (subsequently Ann Kendrick). The other segments went to her sister, Mrs. Priscilla D. Williams, who was later


RIVER
CUMBERLAND
Williams
Williams
Williams

widowed and then married to Judge John Phelan (Davis 1976). Lot 10 went to Priscilla Williams, and the adjacent parcel, Lot 11, went to Ann Barrows. The location of the Jefferson Street Bridge (1910) and the 1991 project area lie within Lot 10, as will be seen in the description of maps and land use below.

In 1885, A. S. Williams (a presumed descendant of Priscilla and David Williams) sold Lot 10, shown on the same map, to the Indiana Lumber Company. Mr. R. P. Mattingly was listed as President and A. M. Mattingly as Secretary of that company. The secretary's initials probably stand for Ada Mae, as Ada Mae Mattingly sold Lot 10 to George Killibrew on May 12, 1924. Three days later, Killibrew sold the land to F. M. Farris, trustee of the Farris Hardwood Lumber Company. He in turn transferred the title over to the company five years later.

Land Use. There is no direct indication of the project area on the east bank on early maps; the few maps depicting the east bank give no symbols for streets or structures. The line of Jefferson Street on the west bank does not appear on a map until 1824 (Figure 8); subsequent maps indicate that a street existed there, possibly unnamed, which served as the city limit in 1831 and 1854 (Figures 9 and 10).

A ferry operated from 1791 about 600 feet upstream (south) of the present bridge, at or near the present Oldham Street terminus on the east bank (Creighton 1969:70). The few maps that include the east side of the river show no structures north of Edgefield, a community about a mile south of the project that was incorporated into Nashville in 1880. Presumably, the land lay in trees, pasture, or cultivated fields until industrial development spread north from Nashville along the river.

The earliest specific evidence of the project area is a drawing made during the federal occupation in the Civil War that shows a stretch of the east bank north of the railroad bridge (Figure 11). The subject of the drawing was the encampment of the 16th Regiment of the Illinois Volunteer Infantry, undated, but drawn sometime between 1863 and 1865. There is no scale or definite recognizable features on the west bank which would determine whether the drawing extends as far north as the project area. But one street on the west bank extends down to the shoreline, and a gully south of that may represent the mouth of French Lick. Comparison with an 1860 map (Figure 12) which shows existing structures suggests that the artist took some license, as only a general correlation can be seen between buildings on the map and in the drawing. However, the map shows no streets which descend the bluff between the railroad bridge and Jefferson Street. Therefore, the street at the right edge of the drawing may be Jefferson, and the scene may at least closely approach the project area at the extreme right edge of the drawing. No evidence of mounds was represented in the drawing.

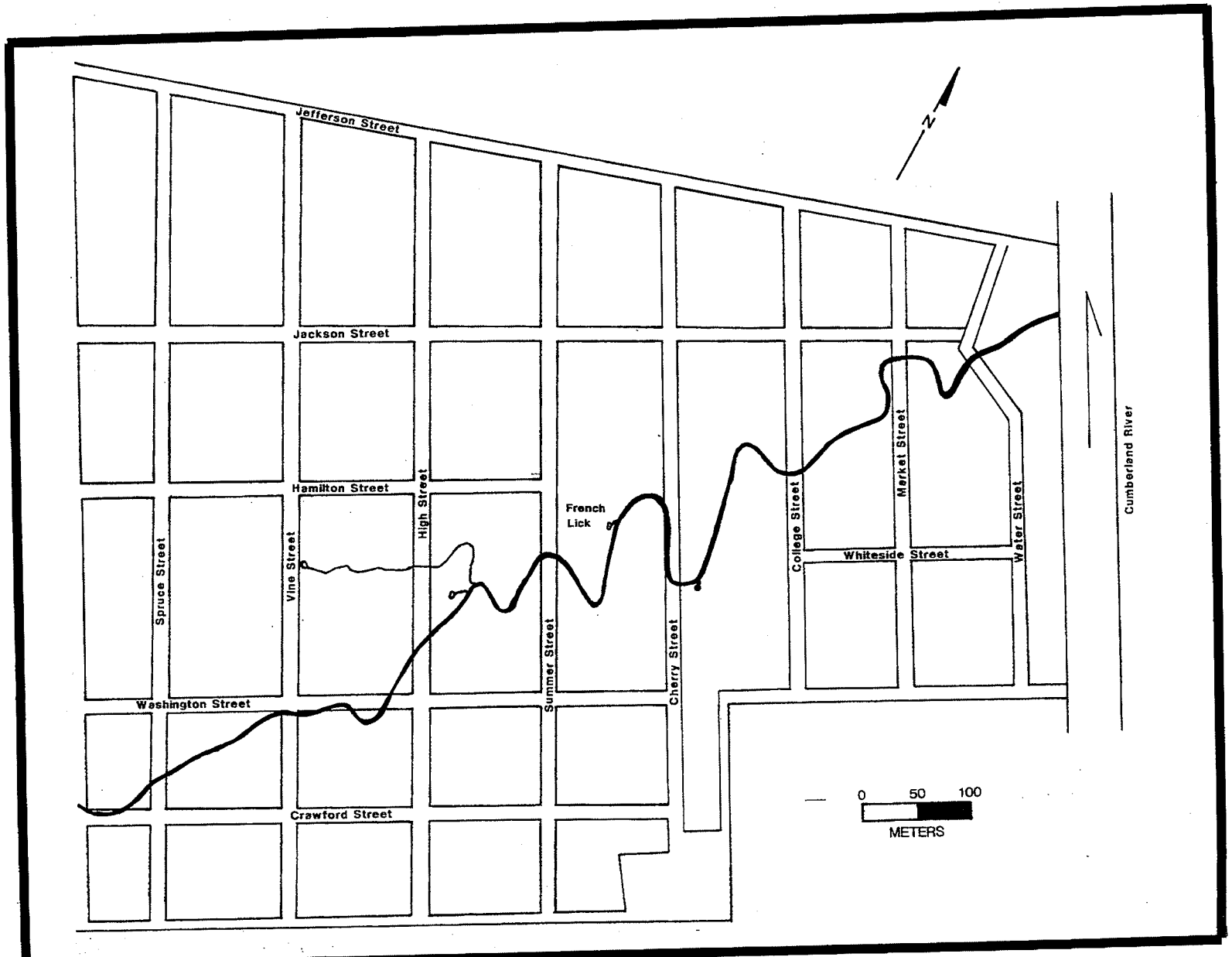


Figure 8. From Weakley's map of the Balch and Whiteside addition, 1824, showing French Lick (TSLA Map File No. 663).

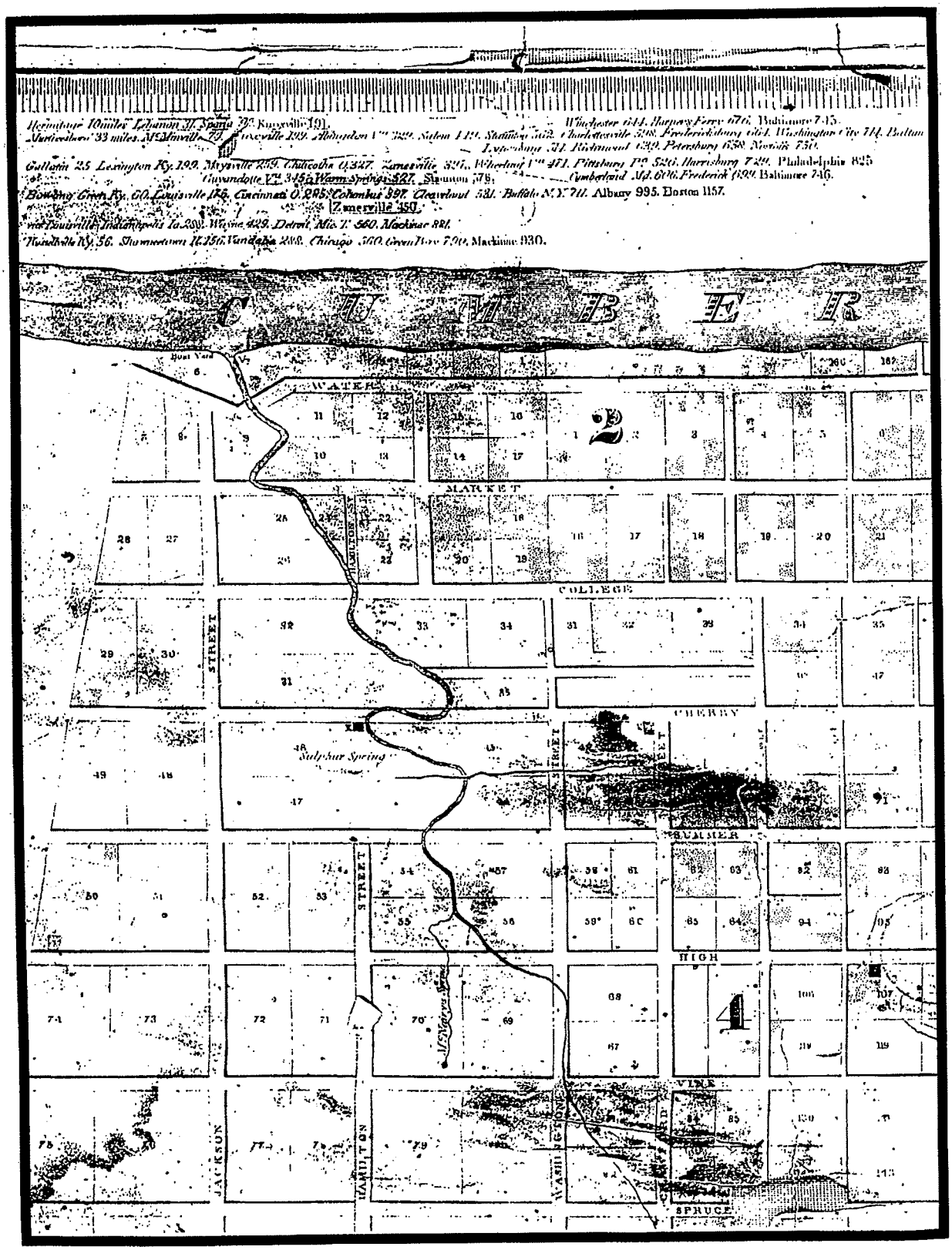


Figure 9. Map of Nashville in 1831 (TSLA Map File No. 2330).

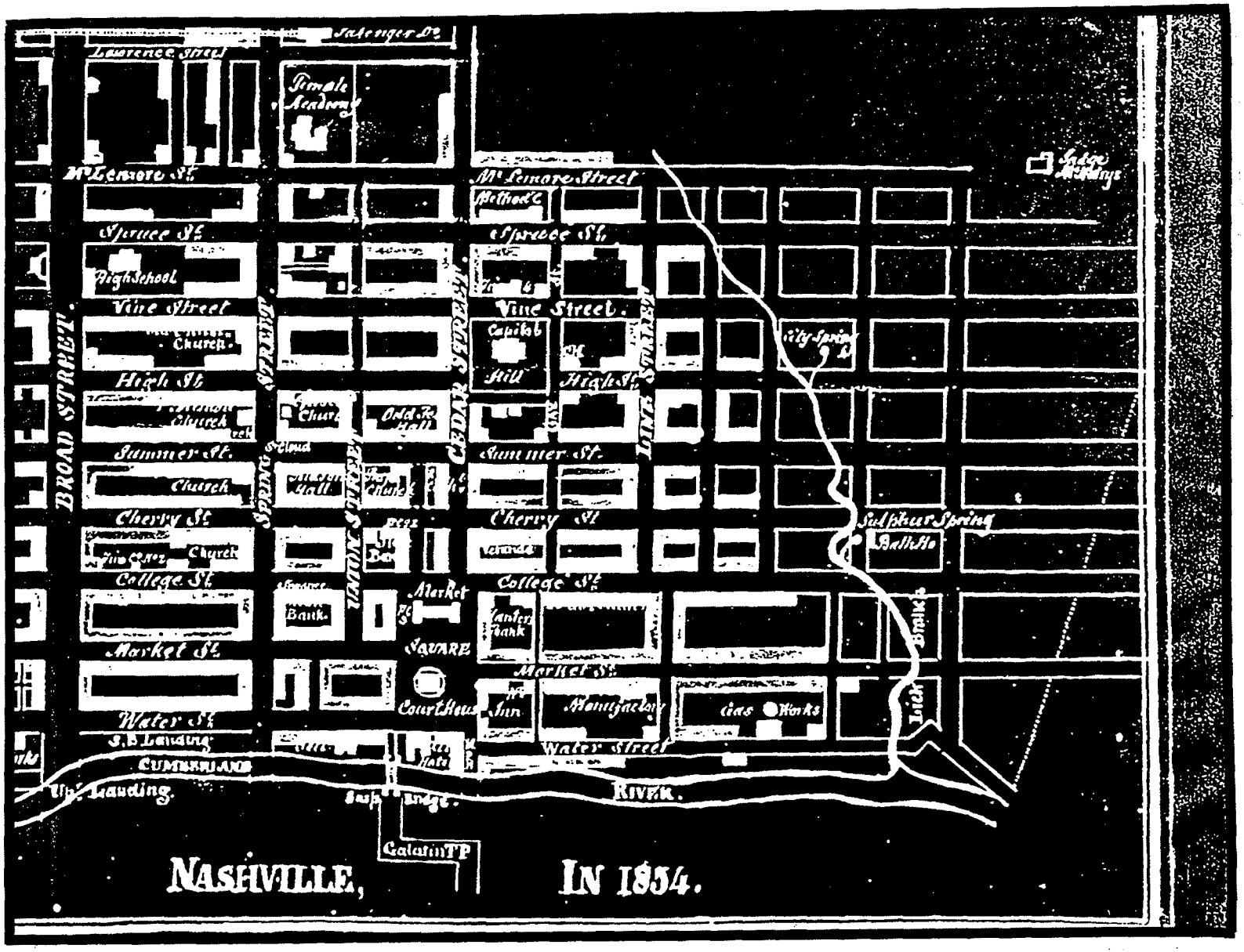


Figure 10. Map of Nashville in 1854 (TSLA Map File No. 475).

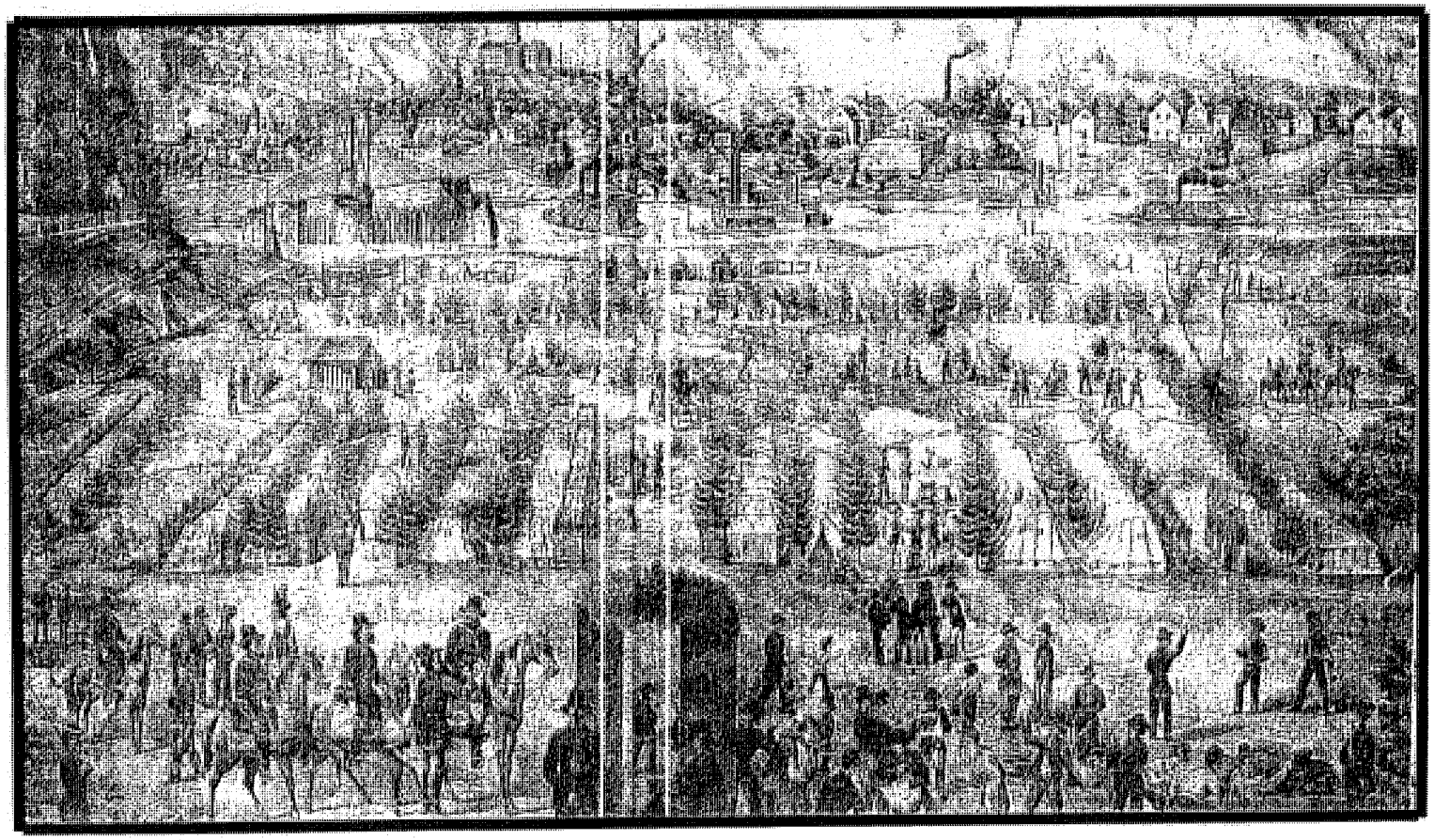


Figure 11. Contemporary drawing of a federal encampment in the project area (TSLA Map File No. 696).

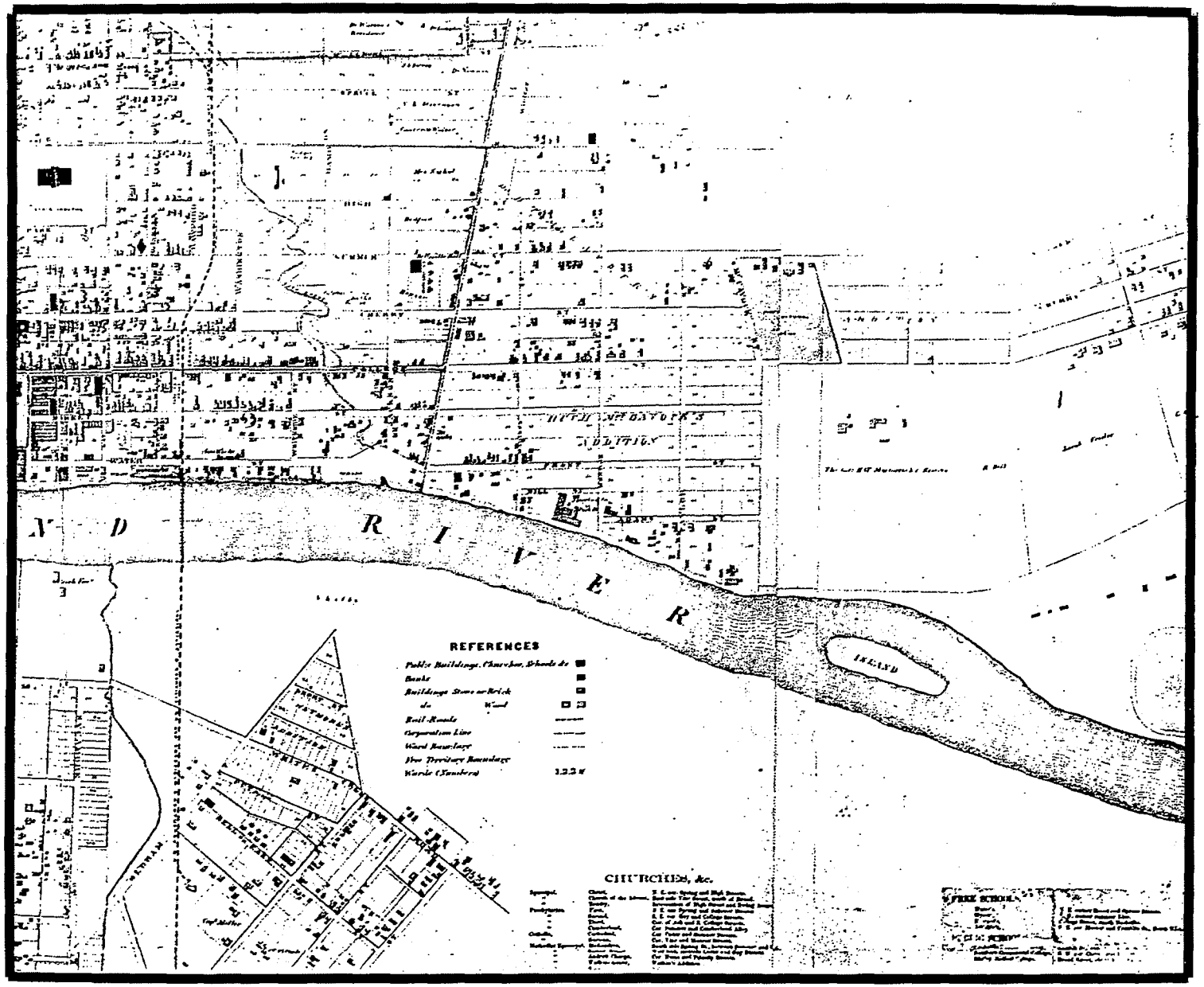


Figure 12. Nashville in 1860, with structures (TSLA Map File No. 655).

Incidentally, the 1860 map is the earliest to show Edgefield's development toward the project area. Note, too, that the project area bears the name Shelby.

The bird's-eye view of Nashville from the east (Figure 13) was published in 1872. The information provided for both banks in the project area shows only subtle changes from the previous decade, and may have been based on dated maps.

The earliest topographic map located is the 1:125,000 scale, USGS map, Nashville Quadrangle, based on the surveys of 1900–1901. Figure 14 is a magnified view of the urban area, including the project vicinity. Developments shown in the project area include a railroad spur.

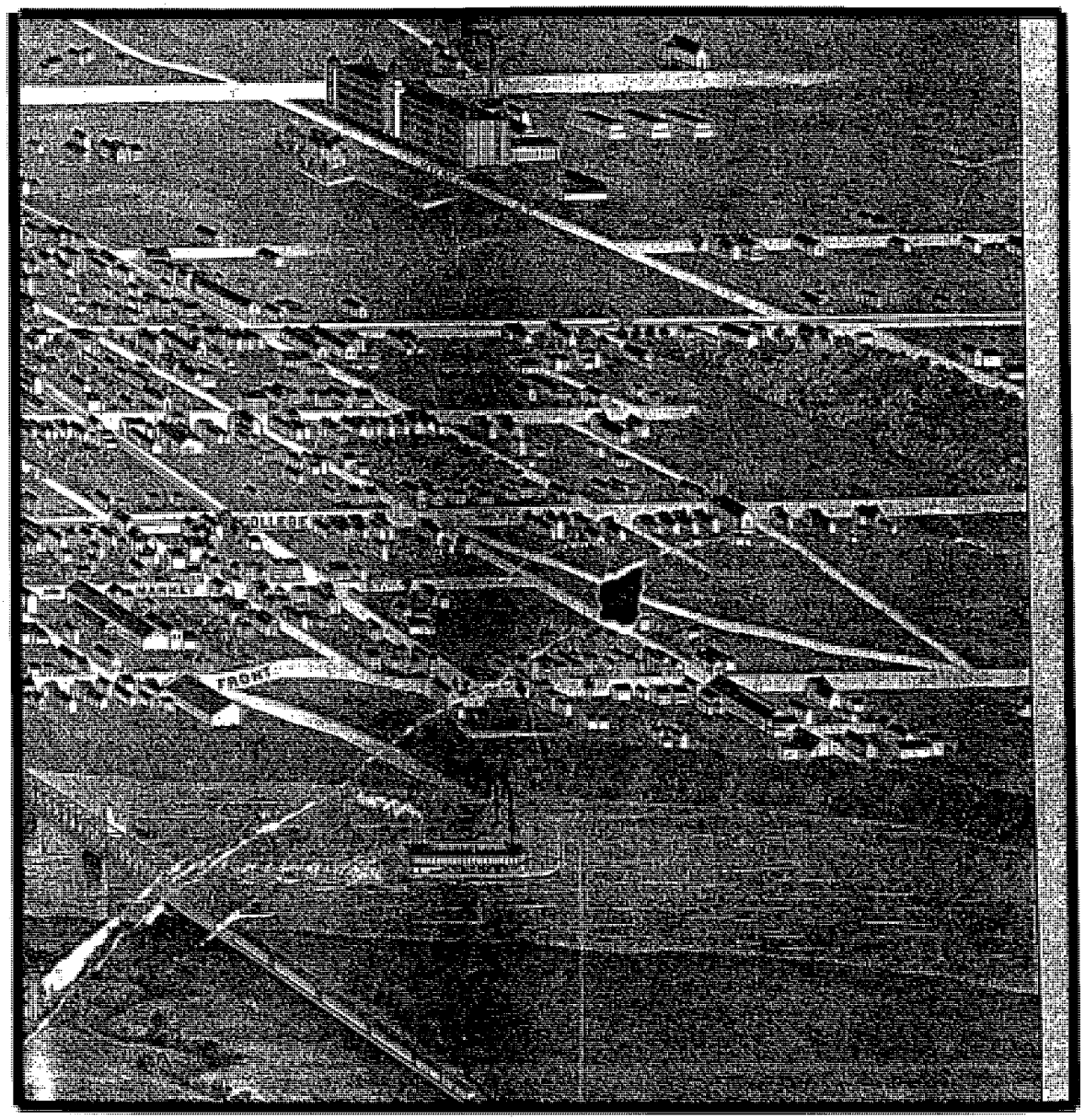


Figure 13. Bird's-eye view of Nashville, 1872 (TSLA Map File No. 2340).

Figure 14. Portion of 1903 topographic map (USGS Nashville, Tennessee 30' Quadrangle).

The 1897–1914 Sanborn Map shows the Indiana Lumber Company to the north of the east end of the Jefferson Street Bridge, and the Farris Hardwood Lumber Company just south of the bridge (Figure 15). Since the latter company changed its name from Cherokee Lumber Company to Farris Hardwood Lumber Company in September of 1908, the map information must date after that year. Plans for the bridge were finalized in that year, so the Sanborn map does not necessarily date after 1910, the year of its completion.

The 1914–1930 Sanborn Map (Figure 16) reveals that the Indiana Lumber Company no longer existed at that location, and the Farris operation had expanded to both sides of the bridge. Also, their original mill south of the bridge had relocated and expanded.

A 1930 Corps of Engineers map set based on aerial surveys shows three structures immediately south of the bridge. An enlarged portion of Sheet 43 (Figure 17) reveals the largest of these extending nearly to the river bank. By comparison with the Sanborn maps, one sees there is little correlation between the locations and outlines of structures in spite of, at most, sixteen years' difference between them. A possible explanation may lie in the fact that the river bottom flooded completely in 1926. When John Dowd recorded 40DV4 in 1971, he interviewed Mr. Farris and an elderly employee, Mr. Ball. Dowd reported Ball's comments regarding the flood of 1926, ". . . that this mound was the only spot above water for miles up and down the river. . . that a rope fence was floated around the lumberyard and none of the lumber was lost" (Dowd 1971). Whether such a flood would account for the rearrangement of buildings prior to 1930 is uncertain.

The property remains in the ownership of the Farris Hardwood Lumber Company, although little remains of the structures drawn on the Sanborn maps.

THE FRENCH LICK SITE (40DV5)

The French Lick site (40DV5) is located at north latitude 36° 10' 1", west longitude 86° 46' 55" on the west (left bank descending) adjacent to the Cumberland River in Nashville, Tennessee. The site was a large Mississippian mound and village complex. The site has no surface expression at this time. Site limits are unknown, and the site limits on Figures 1 and 17 must be viewed as estimates; it is suspected that the site originally extended several hundred meters west from the current river bank. Jones (1876), citing Troost (1845), states that the site stretched for over one mile along the river. However, as previously noted, Jones (1876) is correct. Thruston (1973[1890]) attributes this same account as a reference to East Nashville Mounds. The site originally had at least one mound, and Smith (1992) notes that unpublished information by W. E. Myer (1923b) notes the presence of three and possibly four additional mounds for this site.

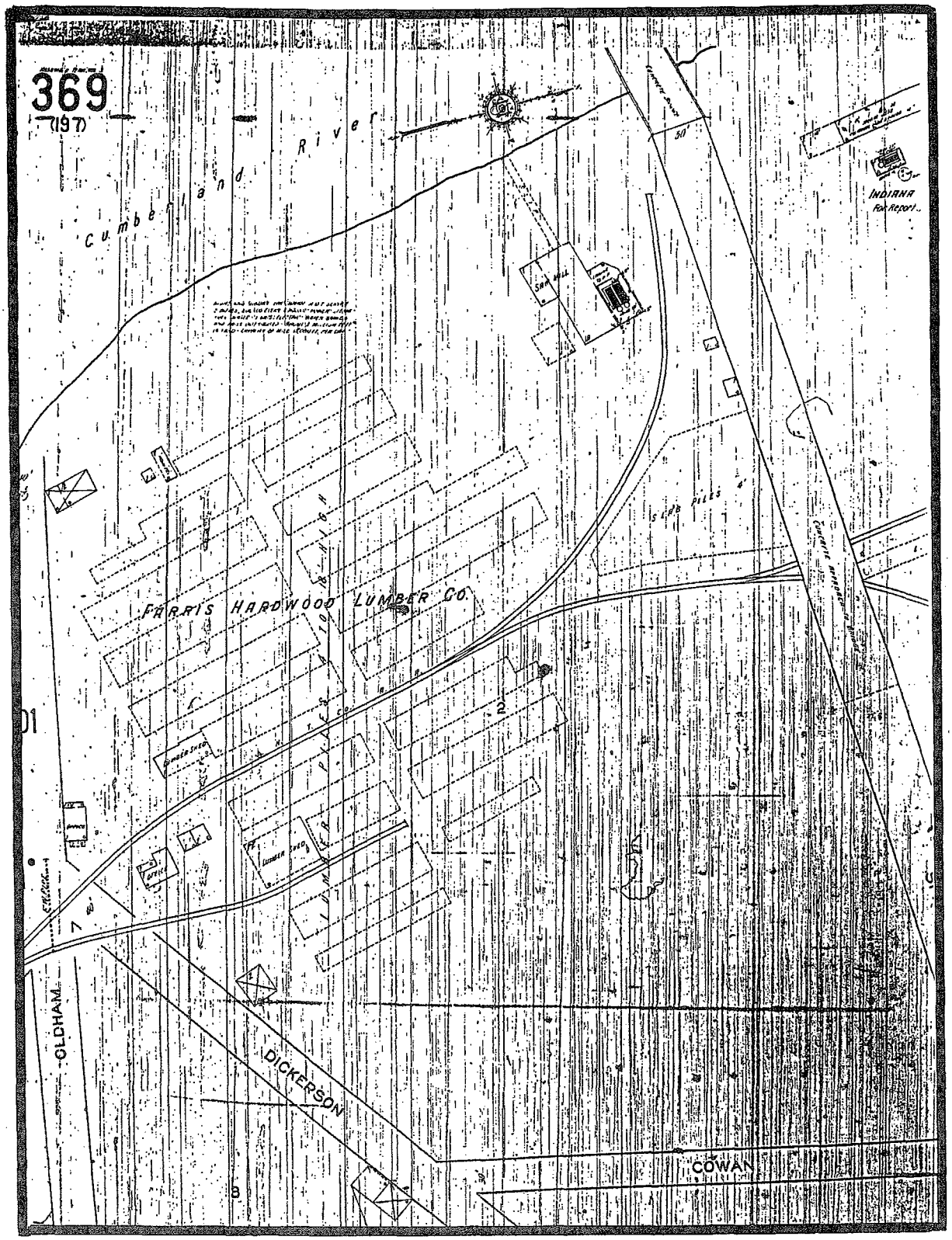


Figure 15. Portion of Sanborn Map of 1897-1914 (Sanborn Maps Microfilm, Reel 13, Vol. 2, sheet 369; TSLA).

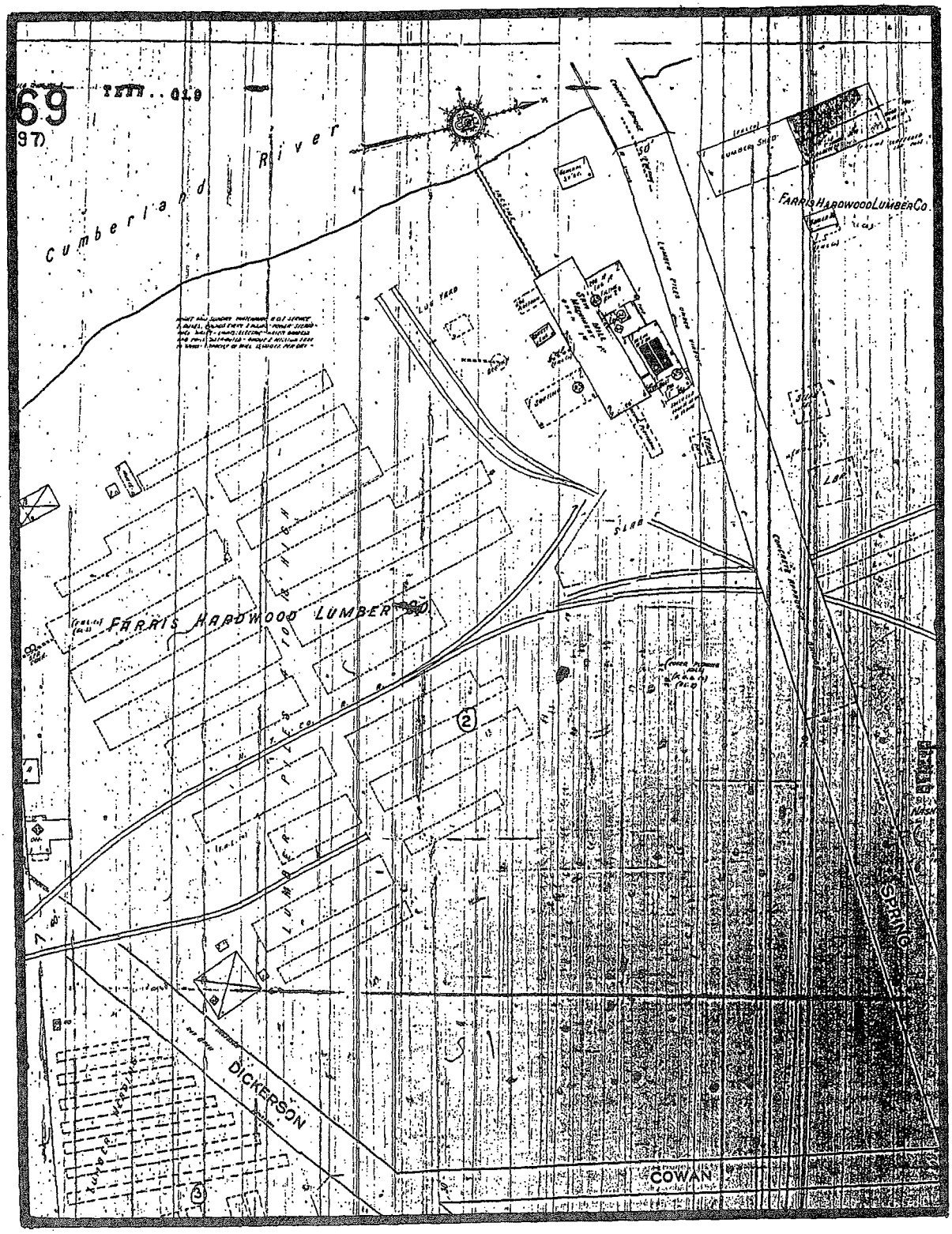


Figure 16. Portion of Sanborn Map of 1914-1930 (Sanborn Maps Microfilm, Reel 14, sheet 369; TSLA).

Figure 17. Enlarged portion of Corps of Engineers map, 1930 (Cumberland River Survey, Sheet 4 on file with Nashville Office, Corps of Engineers).

The site has suffered from extensive residential, industrial, and civil development. During the second decade of this century, the site was also impacted by the existing Jefferson Street bridge. Those portions that have not been completely destroyed are buried under recent fill and debris. As of late October 1991, construction of the new Jefferson Street bridge was underway (Figure 18).

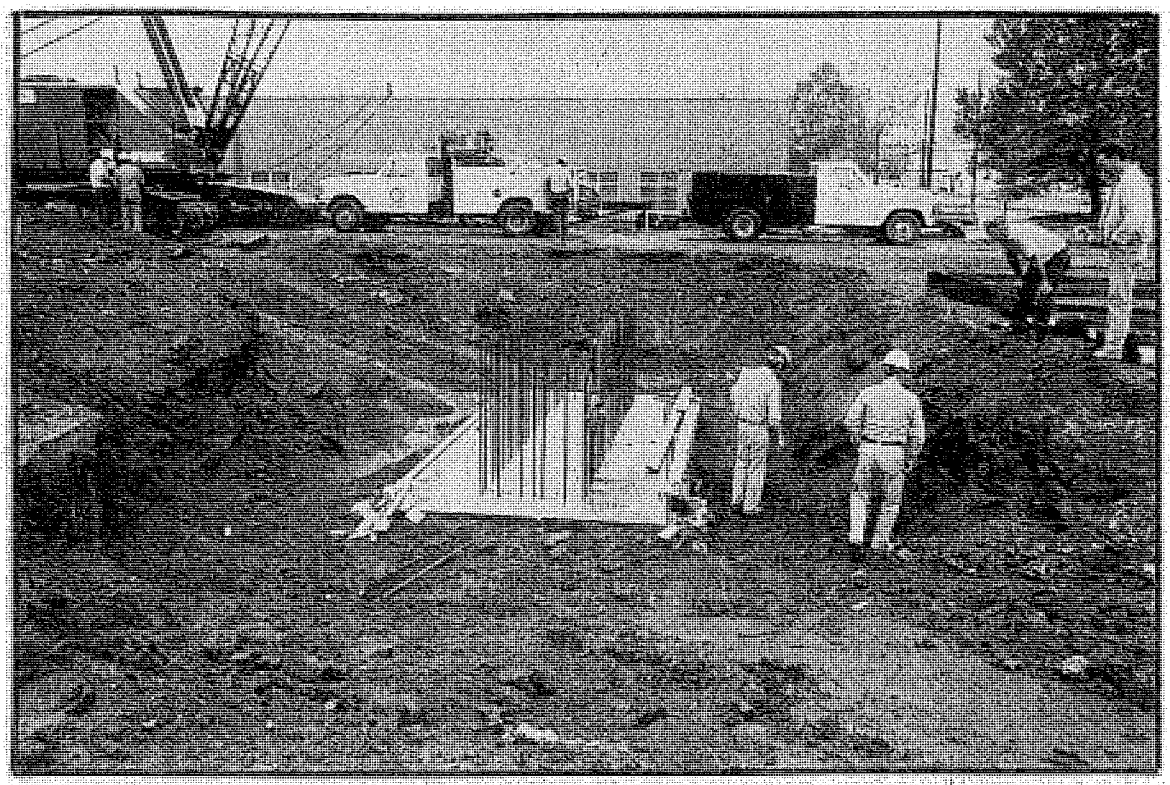


Figure 18. Initial visit to the French Lick site, Bent 2 left, October 22, 1991; facing west.

EARLY DESCRIPTIONS (WALLING)

The earliest reported excavations at the French Lick site described by Haywood (1959[1823]). He relates in some detail the excavations supervised by Ralph E. W. Earl in 1821 of the mound formerly located here. Although care must be taken in using Haywood, we are left with no choice for a description of this site. Jones (1876) visited the site in 1868 or 1969 and provides some descriptive information. Thruston (1973[1890]) also visited the site and provides some information as well. Smith (1992) notes that Myer (1923b) reported three and possibly four additional small mounds at or near this location, probably within the limits of the site. The only map representation available is the 1786 map of the Nashville area depicting a mound labeled "The Mount" (see Figure 6).

Haywood (1959[1823]) published the account of Earl's excavation and observation of the mound and site. By the time Jones (1876) had arrived, the Mound had been destroyed and much of the site was in development as Nashville spread north. Apparently by the time Thruston was active at the site, material was exposed only as additional construction was conducted. As was the case for East Nashville Mounds, we will take the liberty of providing fairly extensive quotations from Haywood (1959[1823]), Jones (1876), and Thruston (1973[1890]), as they relate experiences at the French Lick site.

Haywood (1959[1823]) provides the following account.

> [page 127] Part 4. On the 21st of July, 1821, Mr. Earl proceeded to the mound near Nashville on the field of David McGavock, Esquire, with workmen furnished with spades and pickaxes to cut into it. This is the mound upon which Monsieur Charleville, a French trader, had his store in the year 1714, when the Shawanese were driven from Cumberland by the Cherokees and Chickasaws. It stands on the west side of the river and on the [1823:136] north side of French Lick Creek, and about 70 yards from each. It is round at the base, about 30 yards in diameter, and about 10 feet in height at this time. The workmen opened a circular hole about the centre of the summit, and a ditch from thence to the western extremity. They found pottery of Indian fabrication everywhere within the mound; and two or three feet under the summit, the jaw bone of an animal not human, of the carnivorous species; and small fragments of bones, whether human or not could not be determined. About 4 feet below, they came to a layer of charcoal, or rather of black cinders, about two inches through, and extending from the central hole towards the west 8 or 10 feet, and exhibiting an appearance which made it probable that the dirt in which it lay was once the top of the mound, and had been flattened, and a large fire made upon it, which had consumed to cinders the fuel which had been placed on it and [page 128] set on fire; and that afterwards the mound had been raised higher, by the accumulation of fresh dirt thrown upon it, of the same sort as that which composed all the rest of the mound. This dirt was black, rich and very fine, and seemed to have been brought to it in pots, the fragments of which were seen through every part of the mound. Below the layer of cinders, they frequently came to detached pieces of coal, as they descended towards the base. About 4 feet below this layer of coal, they took up the tooth of a carnivorous animal, and an arrow head of flint, very neatly shaped into an acute-angled triangle, sharp on the sides, which had been cut by the application of other stones to it. When they began the central hole they saw some flat rocks, partly covered and in part not. After raising them and digging about a foot below, they came to a piece of silver, about the size of a ninepenny piece of silver but more than twice as thick, with an indented representation of [1823:137] the head of a woman on one side. It is supposed to be of European manufacture, and resembled a watch seal. And it was found below where the house of Mr. Charleville formerly stood in 1714, and for many years before. The mound also had been stockaded by the Cherokees between the years 1758 and 1769. The metal was remarkably heavy for its size.
>
> Very large burying grounds once lay between the mounds and the river, thence westwardly, thence to the creek. Vast numbers of bodies had been interred. The great extent of the burying ground and the vast number of interments, induce the belief that a population once resided here, which more than 20 times exceeded that of the present day: and suggested also another idea, that the cemetery was in the vicinity of the mound, because the latter was an erection consecrated to religious purposes. The layer of cinders had been made from fuel very combustible, and soon reduced to ashes. It seemed to have been pounded hemp reduced to cinders, or the pounded bark of the papaw tree. Upon reflection, it is now thought to have [page 129] been tobacco, the only plant in the country of which incense could have been made. From hence arose the conclusion that the object in kindling the fire was to have a flame of no long continuance, and that thousands of jars of dirt had been poured upon it as soon as the fuel was reduced to embers. That the jars themselves had been broken to pieces, and the remnants left intermixed with the dirt which had been emptied from them. That fire had been employed as an agent

at different periods of the mound's growth, and that the matter consumed, whatever it was, had been preserved with sacred veneration, by strata of dirt thrown over it before the rains had washed it away or the winds had scattered it. The stratum of cinders was remarkably black, suggesting the idea that the rains had not fallen upon it for any time so as to change its [1823:138] colour in any degree before it was covered over with fine black mould. The fragments of pottery were composed of clay, and pounded cockle shells, many of which unpounded and unimpaired were found in parts of the mound not far removed from the surface. These were used probably for scooping the dirt, and for getting it into the pots and jars in which it was carried to the mound [Haywood 1959:127–129].

Jones (1876) provides us with the following bits of recapped and new information.

A considerable portion of the city of Nashville has been built over an extensive Indian graveyard which lay along the valley of Lick Branch. A large number of these graves have been destroyed in the building of North Nashville. In this section of the city I saw a number of them quite exposed during the digging of cellars of a row of houses, and obtained a from them a small stone hatchet and another implement of hard silicious material, beautifully polished. . . All around the sulphur spring, traces of the aborigines are manifest in the form of fragments of large pots and various stone implements. It is supposed that the salt lick was frequented by the aborigines for the purpose of killing buffalo and deer which resorted there, and also for the manufacture of salt. A number of interesting relics are said to have been found in the banks around the sulphur spring; and I myself have gathered a large number of fragments of pottery in the locality, and found them to be uniformly composed of a mixture of crushed river shells and clay. Many of these fragments were nearly one inch in thickness, with an almost imperceptible convexity indicating that they had once formed parts of very capacious vessels. From the markings upon the exterior they appear to have been moulded in baskets made of split cane [Jones 1876:7].

Jones (1876) relates elsewhere:

[page 50] Across the Cumberland River [from East Nashville Mounds], below the mouth of Lick Branch, on the same side as the city of Nashville, another mound once stood which has since been levelled in the formation of streets and in building North Nashville [the French Lick site].

I am informed by some of the old citizens that stone graves occupied the base and flanks of the mound, and that various relics, such as vases, and spear- and arrow-heads, were exhumed, and I obtained a large flint instrument shaped like a chisel, which was said to have been taken from a stone grave within the mound. The edges were highly polished as if it had been used in various mechanical operations. . .

The singular disk composed of clay and crushed shells, represented in [Jones's] Figure 17, with a handle divided into three parts, was said to have closed the mouth of a large clay jug or vase exhumed from the centre of the summit of the mound around which were ranged stone coffins.

The reverse surface of this and other similar disks was knobbed. . .

A large disk of this character, composed of clay and crushed shells, which I found near the mounds on the banks of the Cumberland, opposite Nashville, was furnished with a large handle which could readily be grasped with the hand. The surface was much worn, as if the implement had been used for crushing corn, [page 51] or rubbing paint, or smoothing the skins of wild animals. I also obtained several highly polished disks of silex from the same localities, which were probably used for similar purposes. These implements may have been employed for grinding paint or crushing corn in the biconcave stone disks, cups, paint bowls, or mortars, which abound in all parts of the valley of the Cumberland and other rivers of Tennessee, one of which (was) found in the neighborhood of Nashville.

> I obtained numerous chisels or celts from stone graves within and around the limits of Nashville...
>
> It appears from the testimony of John Haywood, in his "Natural and Aboriginal History of Tennessee," that the mound formerly standing within the limits of North Nashville was carefully examined by Mr. Earl, in 1821, and that, to a certain extent, the structure was similar to that of the mound which I explored directly across on the opposite bank of the Cumberland...[Jones 1876:50–51].

Imbedded within his discussion of East Nashville Mounds, Jones mentions that, "From a stone grave near Lick Branch, I obtained several small, round masses of pure silver" (Jones 1876:45).

Thruston (1973[1890]) did visit the French Lick site, but by which time there was apparently little left to report other than a detailed description of a portion of a Kimmswick Fabric Impressed pan that was recovered from the excavation of a new spring house "within a few yards of 'Sulphur Spring' or old 'French Lick'. . . Extensive burial grounds were found on both sides of the 'Lick Branch,' and many fine implements and specimens of earthenware have been obtained there" (1890:157–158). Beyond this, Thruston does not, probably could not, provide any firsthand description of the site. However, he does provide some information on other aspects of this location; these are related in a other sections of this report.

Haywood, relating the expedition of Earl to the large mound at the French Lick site, seems to be describing a substructure mound located about 65 m west of the Cumberland and north of Lick Branch. The mound, in 1821, measured about 27 m in diameter by about 3 m high. Haywood's statement of measurement includes the qualifier "at that time", suggesting that it had already been impacted, possibly by cultivation. The reported use of the mound as the site of Charleville's trading post and fortification of the mound by the Cherokee are obvious additional agents of modification. The use of the mound as a later site for structures also suggest a flat summit, though is certainly not confirming. Haywood's description of the stratigraphy is more suggestive of a substructure mound. At a little over one meter below the surface, Earl encountered a layer of what seems to be burned thatch on a what is described as having once been the flat surface of the mound. It is also apparent that the mound stratigraphy revealed evidence of the typical multistage Mississippian mound, with multiple episodes of destruction of the surmounting structure by fire and the addition of subsequent mantels. The consistent occurrence of shell-tempered ceramics, lithics, etc. within the fill is indicative of mound construction using local midden soils.

The only object of apparent European manufacture was recovered about 30 cm below the surface. This bauble was recovered from beneath some flat stones, presumably limestone slabs, that probably resulted from the French or Cherokee use of the site. Haywood makes no mention of burials being encountered within the mound. That the lack of burials within the mound is more than just an omission is suggested by the mention of a large cemetery area surrounding the mound on the east, west, and south. Though it is not clear if the cemetery

area included the entire area from the mound to the Cumberland, Haywood does seem to state that it included the entire ca. 65 m from the mound south to Lick Branch. No indication is given as to how far to the west burials were observed. Haywood's locational information for the mound places it north of Lick Branch, more or less in the ROW of Water Street/First Avenue, the location of the existing railroad tracks today, and between Jackson and Jefferson Streets. As noted above, the 1786 map (Figure 6) places "The Mount" (presumably the mound) south of Lick Branch, apparently within or very near the present project area. Dowd (1968), in his reconstruction of the site area, also places the mound south of Lick Branch, again very near or within the present project area.

By the time Jones arrived on the scene, the mound had been destroyed, and most of the remainder of the site had been extensively impacted by urban spread. Jones (1876) notes that he observed numerous burials exposed as a result of construction. He is also explicit about the occurrence of such material as Kimmswick Fabric Impressed pan fragments at the lick; this is confirmed by the observations of Thruston (1973[1890]). Jones seems to indicate that material is more or less continuous along the creek from the river to the spring. Jones (1876) provides secondhand accounts relating the presence of burials within the mound.

History of the Project Area (Moore)

The plethora of literature concerning the early history of Nashville and its environs is a source of frustration as well as information. As might be expected, many of these early accounts and "re-accounts" present conflicting historical data. The following is intended as a brief overview of what is known (and unknown) about the early historic occupation of the 40DV5 area, beginning with the Shawnee occupation in the mid to late seventeenth century and concluding with early North Carolina Land Grants in the late eighteenth century, with some additional information about late nineteenth- to early twentieth-century land use. Particular attention is given to those persons and events directly related to the site area.

Tradition and linguistics indicate that the Shawnee had migrated to the Cumberland region from the north (Ohio River) prior to the historic period, and were settled in the region by the late seventeenth century (Swanton 1979:184[1946], 1984:227[1952]). They began to migrate as early as 1674, when the Hathawekla band moved to the Savannah River (Swanton 1984:227[1952]). A group of Shawnee, probably Piqua, from the Illinois Territory joined those remaining at the Cumberland in ca. 1689. With this band was Martin Chartier, a Frenchman who had married into the tribe and had deserted LaSalle while Fort Crevecour was under construction on the Illinois River. After three years, this group moved to Pennsylvania, where Chartier established a trading post (Folmshee et al. 1960:48). The Piqua band, or at least a portion thereof, seems to have remained in the area. The Cumberland Valley has traditionally been known as the shared hunting ground of the Chickasaw and the Cherokee, which may account for continued hostilities between these tribes and the Shawnee. Perhaps that is why, with British aid, they expelled most of the Shawnee from this area in ca. 1714 and in 1745 (Swanton 1979:117[1946]). Another band of Shawnee from Pennsylvania,

returning north from the Upper Creek Country, settled for a short time on the Cumberland ca. 1760, but this group was ousted by the Chickasaw (Swanton 1984:227[1952]). Haywood (1959:208[1823]) indicates that the Cherokee kept a stockaded fort on the mound north of Lick Branch during this time (Haywood 1959:208[1823]).

During the late seventeenth and early eighteenth centuries (while Iberville was founding the gulf ports of Mobile, Biloxi, and New Orleans), the French were busily establishing trading posts in the interior U. S. One of these was a temporary trading post among the Shawnee at the French Lick, established by a Frenchman whose name has, unfortunately, not been preserved (Folmshee et al. 1960:49; Moore 1923:42–43). Folmshee et al. (1960) cite two earlier works as sources for this data—Haywood (1959[1823]) and Williams (1972).

Haywood (1959:127–128[1823]) states that in 1714, Monsieur (Jean du) Charleville, a French trader, is reputed to have had a store built on a mound located north of Lick Branch. Later in his narrative (pages 207–208), Haywood (1959[1823]) states that in 1710 Charleville, then about age fifteen, worked for a trader who had a post on the mound; this store was located within a fort. This information is apparently based on the firsthand account given to James Robertson by Charleville while the former was in the Illinois Territory in 1779 buying horses (Haywood 1959:207[1823]; Williams 1972:75). When the Cherokee and Chickasaw attacked the Shawnee, the trader was killed also, and his store and goods taken. Charleville was away on a trading expedition and escaped a similar fate (Haywood 1959:207[1823]). Moore (1923:42–43) indicates that Charleville was at the post during the attack, and that the old trader was not killed. He states that the Chickasaw and Cherokee found the old trader and Charleville at the Shawnee fort (which is, presumably, the trading post) and traded with them. He adds that Charleville returned to this location intermittently after this incident, but that the old trader was never heard of again.

Although Williams (1972:75–77) cites Haywood (1959[1823]) for much of his information concerning this early French post, he adds some biographical information about Jean du Charleville in his footnotes. Of interest here is that, after Charleville moved to Kaskaskia, his family became acquainted with another notable family of both Kaskaskia and the Cumberland settlements, that of Timothy Demonbreun; Charleville's daughter-in-law was godmother to two of Demonbreun's children (Williams 1972:76). According to Moore (1923:43), Charleville told Demonbreun about the trading post location prior to the latter's establishment of his trading post. McRaven (1949:3–4), who refers to Charleville as Charles rather than Jean, relates that Charleville not only told Demonbreun about the post, but also traveled with him to the site in ca. 1763. Since McRaven does not provide citations in his volume, the source of this information could not be ascertained. It is not clear whether Charleville came to the Cumberland from New Orleans or from Illinois, but Williams (1972:76) believes New Orleans to be the more probable point of departure based on Charleville's kinship. (According to Du Pratz (1972:109[1758]), Charleville was related to Bienville.)

Haywood states that after the Shawnee removal, no one settled this area until General Robertson and party began surveying and settling this area in the late eighteenth century (Haywood 1959[1823]). However, the British began to explore their newly acquired territory following the French and Indian War (Williams 1970:211). Thomas Hutchins surveyed the Cumberland from its mouth, past the future site of Nashville, ending at the Stones River (Williams 1970:212, 226). Although Hutchins's extant notes are mostly course and distance calls, some marginal comments are of particular interest. Williams has provided some interpretive notes to help orient the survey in relation to present-day landmarks. As Hutchins passes the Nashville environs, he notes several remnant structures to the left (east) side of the river. Williams (1970:225) asks the question, "Was this a trading post of Charleville?" This group of structures may have, indeed, been a trading post or, rather, its remains, but all the sources consulted for this report give the location of the Charleville-associated post as being on the west (right) side of the river near the Lick. Hutchins next records an island (Lower City Island?) approximately "60 Rodds [sic] in length" (990 feet) somewhat nearer the left bank. He then notes the location of a "Big Buffaloe [sic] Lick" approximately 0.75 miles from the right bank, which is probably the French Lick at Nashville. Just below this, Hutchins describes "the remains of an old Shawanoe [Shawnee] Town which was Picketed in appears by some of them still to be seen." Several small islands are noted below this (Williams 1970:225).

Moore (1923:103) relates that a number of French traders came to the Bluff (Nashville) and established a trading post and cabins there in ca. 1778. This is possibly a reference to Demonbreun's post which was established sometime between 1766 and 1775 (Folmshee 1969:73; Hale and Merritt 1913:85; Putnam 1971:75[1859]; Williams 1972:324–325). Timothy Demonbreun (Jacques-Timothee Boucher de Montbrun) was a French Canadian from Kaskaskia in the Illinois Territory. He was made a Justice of the Peace in 1770 and had allied himself with the colonists by 1778 when American forces took Kaskaskia. He became lieutenant governor of the Illinois Territory in 1783 (Cate 1957:215–216). Varying opinions exist as to the date Demonbreun came to the Cumberland River. Hale and Merritt (1913) place Demonbreun's presence as early as 1760; however, he would have only been thirteen years old at that time (Cate 1957:215). Williams (1972:324) states that Demonbreun's hut or trading post was seen by long-hunters as early as 1766. However, Hutchins does not record the presence of a trading post during his 1768 survey of the Cumberland River (Williams 1970:225). Folmshee et al. (1969:73) place his initial hunting activities in 1769, when he would spend a great deal of the winter hunting in this location. Cate (1957:218), citing an account given in the Draper manuscripts, states that Demonbreun took his first load of furs to New Orleans in 1770, indicating his first foray to the Cumberland to be nearer the 1769 date. According to Putnam (1971[1859]), Demonbreun built his trading post on the exact location of the ca. 1710 French post described above.

A. W. Putnam (1971[1859]) mentions several hunters and explorers who camped and hunted on the east side of the river between 1769 and 1775, including Kasper Mansker, Abraham and Isaac Bledsoe, John Rains, Joseph Drake, and Michael Stoner. These men

would later return to establish stations and forts in the Cumberland basin. Putnam states that these earlier visitors did not hunt on the west side of the river and that no one as of yet had even crossed to the west side of the Cumberland. However, he indicates that Demonbreun's post was already established by this time (Putnam 1971:65[1859]).

Following the American Revolution, many soldiers were granted lands in the Middle Tennessee area in return for military service. These persons established homes or "stations," some fortified, within the Cumberland Valley. Albright (1909), Cisco (1971[1909]), and Durham (1969, 1972) give accounts of the daily lives of these early pioneers. Many times these stations were raided by the Cherokee, Chickasaw, and Creeks as the Cumberland area was considered to be tribal hunting grounds. These stations were the settlers' only defense against Indian hostilities (Rogers 1977).

James Robertson and his party of settlers arrived in December 1779. The winter was so fierce that the river was frozen over; the group merely walked across. That winter, Fort Nashborough was established on the bluff overlooking the Cumberland at the site of present-day Nashville. Robertson was soon joined by Donelson and his party, who journeyed by river rather than by land (Carr 1857). For the next ten to fifteen years, these early pioneers built and defended their forts, stations, and homes against the Cherokee, Chickasaw, and Creek tribes, whose shared hunting grounds they had encroached upon. James Robertson's expedition against the Cherokee in 1794 brought about lasting peace the following year. With the admission of Tennessee to the United States in 1796, the frontier stations were no longer needed for protection (Rogers 1977).

One of the earliest settlers in the Nashville vicinity was John Buchanan, who built his first station, French Lick, in 1779 (Arnow 1963:10). This land later fell within the boundaries of land set aside by North Carolina for Nashville, so Buchanan was forced to move to another location in ca. 1785 (Arnow 1963:11).

The earliest extant map from this period was drafted by David McGavock in 1786 (see Figure 6). The map shows the location of Lick Branch and the mound upon which the two French trading posts were allegedly located. By enlarging this map and superimposing it on the Nashville West USGS 7.5' quadrangle, one can see that the mound would be located near the present intersection of Madison Street and First Avenue. Site 40DV5 and, hence, the current project area, are located on both sides of the old boundary line between James McGavock's tract and a tract surveyed as Public Land which later became the city of Nashville. Jefferson Street follows this old boundary line.

In 1866, N. B. Southgate drafted a map showing North Carolina Land Grants surrounding Nashville (Figure 19). This map was compiled from records by W. W. Southgate, Sr. and gives the deed book and page number where these grants were recorded. George Freeland was granted the McGavock property (as shown on the 1786 map) by Grant Nos. 40 and 82 in

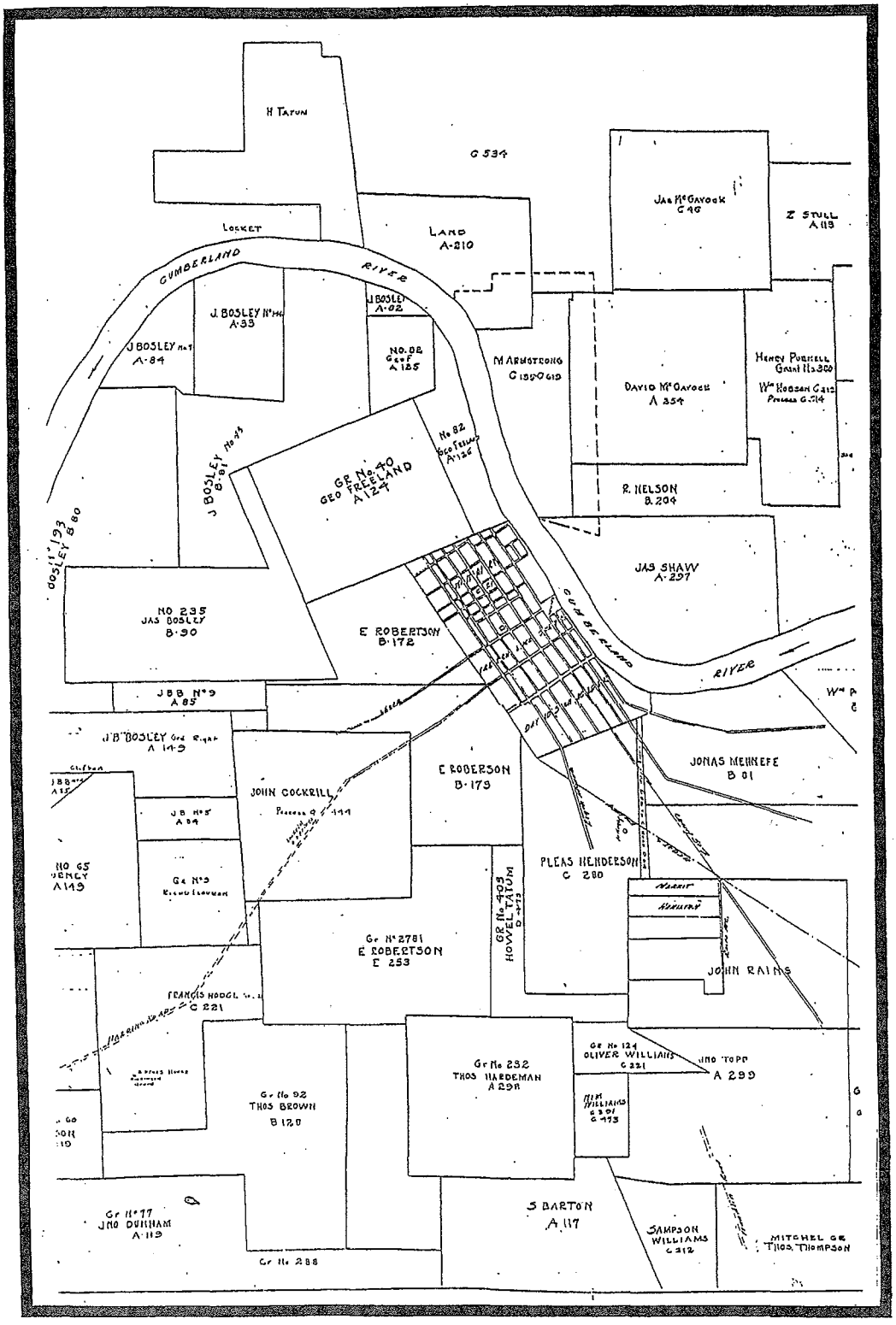


Figure 19. Map of North Carolina Land Grants surrounding Nashville (Southgate 1866, TSLA Map File No. 470).

1788 as recorded at the Davidson County Courthouse [DCC] 1788; Deed Book [DB] A:124–125).

Freeland had established a station located a short distance west of the French Lick in ca. 1780 (Carr 1857:7); the station was destroyed by construction of the Werthan Bag Company at 1400 Eighth Avenue (Rogers 1977). John McNairy was granted 200 acres in 1793 (DCC 1793:DB C:217), including the French Lick. This is the northern portion of the Public Land shown on the 1786 map. The instrument mentions the public survey was conducted by Thomas Molloy (sometimes spelled Mulloy). Again, Jefferson Street runs along the boundary between these two properties. Thus, the project area is located on both Freeland's and McNairy's former properties.

According to a legend on Weakley's original map of the Balch and Whiteside addition in 1824 (see Figure 8, which was drafted from Weakley's map), Balch and Whiteside purchased this tract from John McNairy; the date of this transaction is not given. This map shows the location of several springs, including "the Lick," and several lot owners at the time. According to Hopkins's 1889 map of the city (Figure 20), the land immediately north of Jefferson Street was included in Hugh McGavock's 1866 Addition. This would have been the property formerly owned by Freeland. This map also shows some nineteenth-century property owners.

The Sanborn Fire Insurance Company maps (Figures 21 through 24) reveal that during the late nineteenth and early twentieth centuries, the project area consisted of both commercial and residential development. An attempt was made to correlate some of these structures with the Nashville City Directories for those years. Since these early directories are arranged in alphabetical order by occupant, unlike more recent directories which are also indexed by address, success was limited. Some businesses along Jefferson Street in 1888 include Schaeffer's Lumber Yard and Saw Mill, Wagon and Blacksmith Shops (probably owned by John Meyer [1888 City directory]), Hughes and Rives Planing Mill, Giest Blacksmith Shop, and M. Brisbo's Furniture Factory. Stores were located at the southeast corner of Jefferson and Market (2nd), the southwest corner of Jefferson and College (3rd), and the northwest corner of Jefferson and Cherry (4th) (Figure 21). The store at 402 Jefferson at Cherry was run by Frederick Phillips, Sr. in 1888. His home was next door at 400 Jefferson (1888 City directory). A drugstore was located at the southwest corner of Jefferson and Cherry.

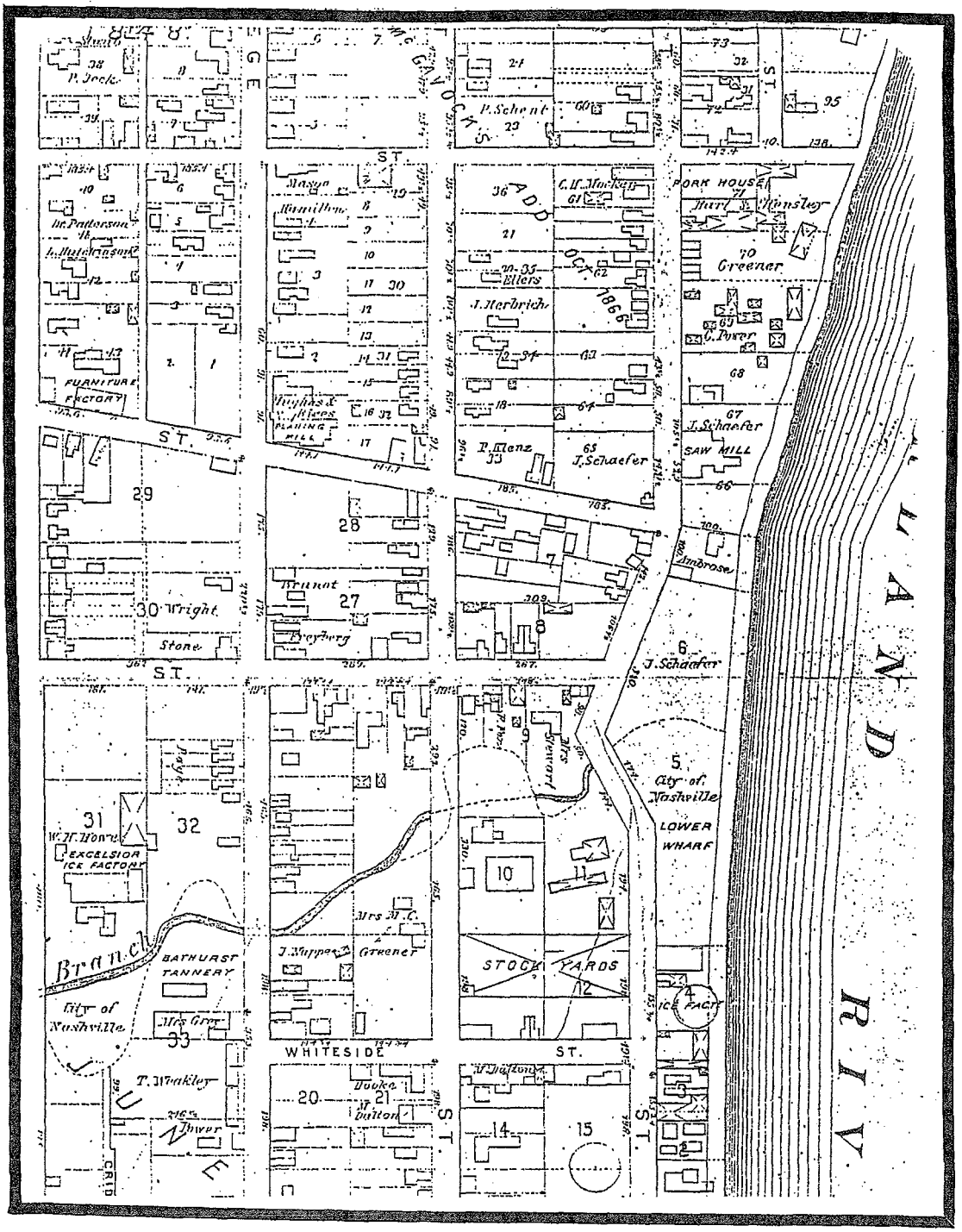


Figure 20. Detail from an 1889 map of Nashville (Hopkins 1889).

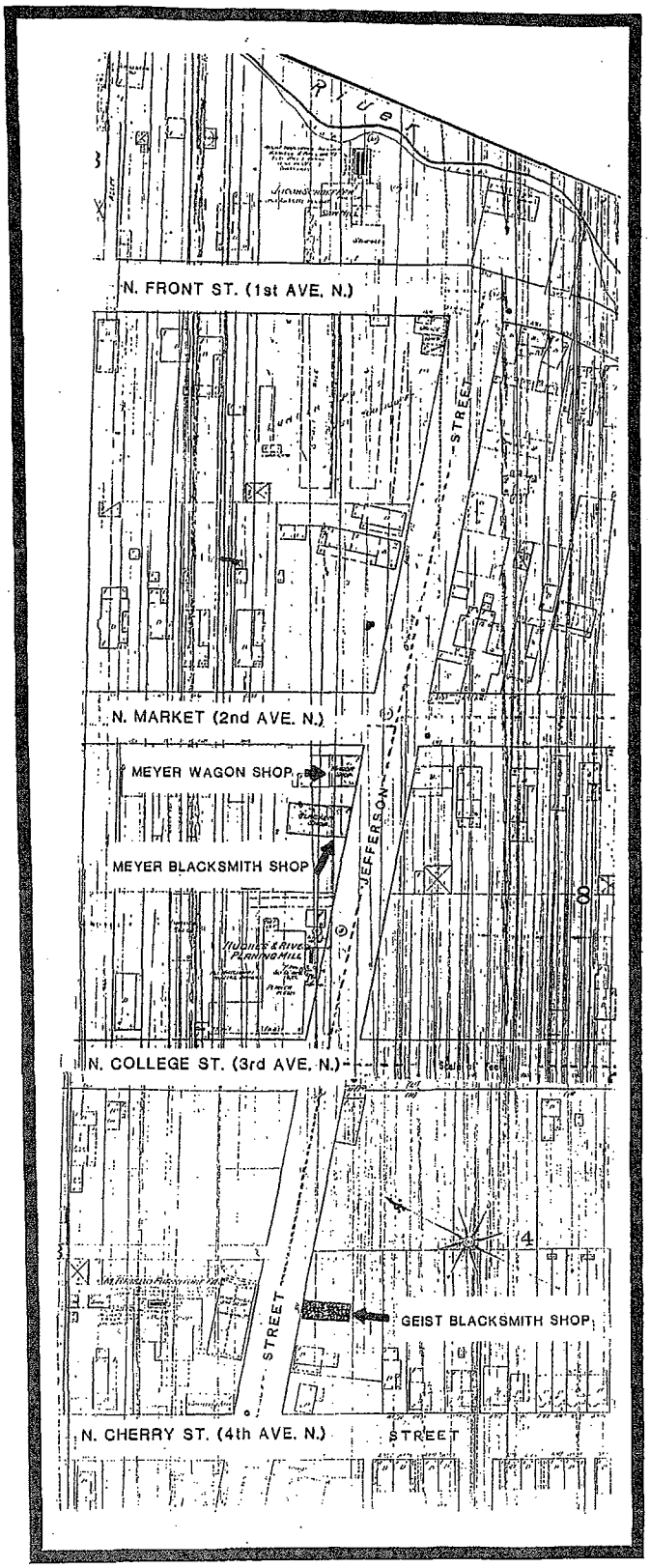


Figure 21. 1888 Sanborn Map showing project environs (Sanborn Map Microfilm, Reel 12, sheets 27 and 29).

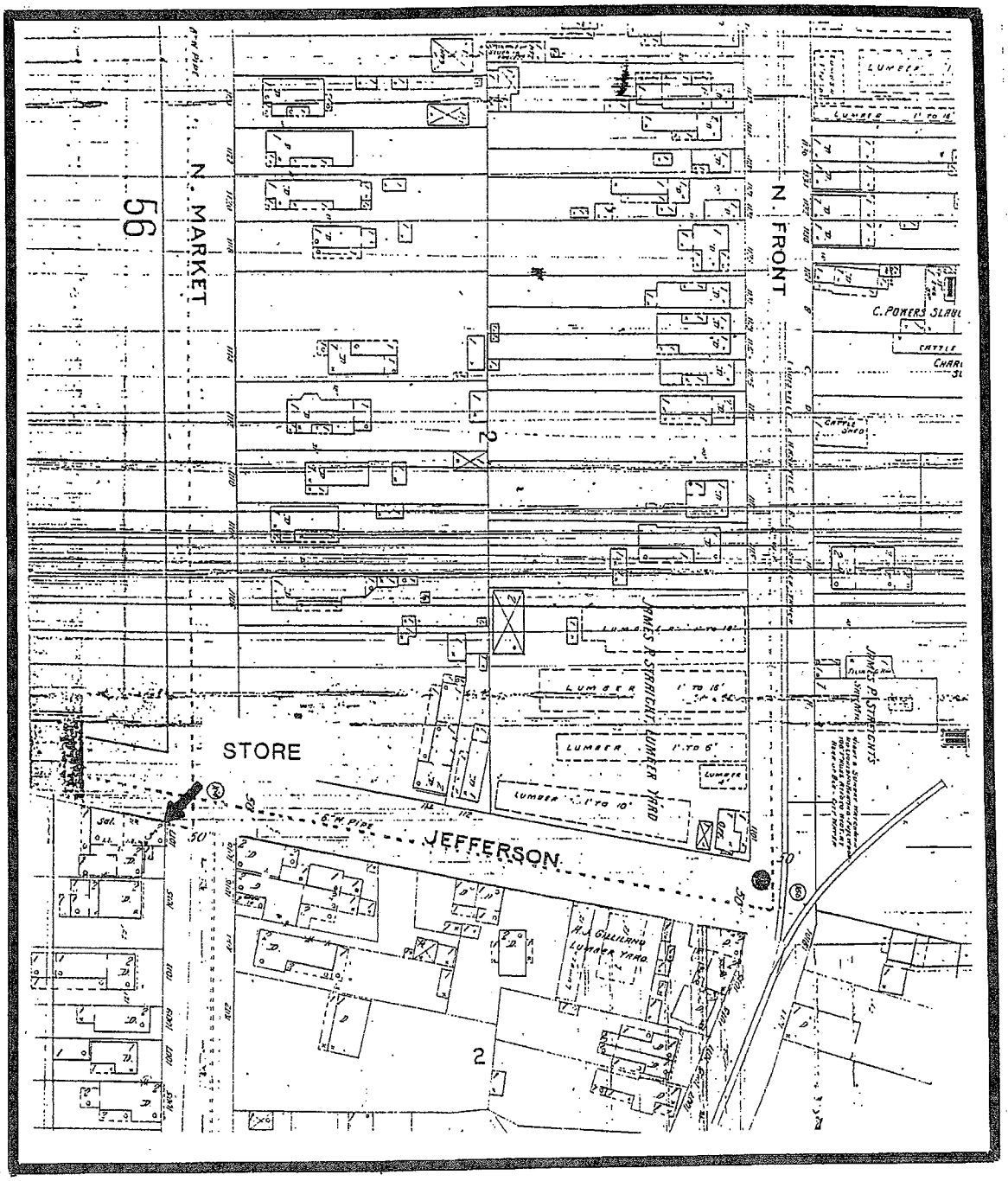


Figure 22. 1897 Sanborn Map showing project environs (Sanborn Map Microfilm, Reel 12,Vol. 1, sheet 54).

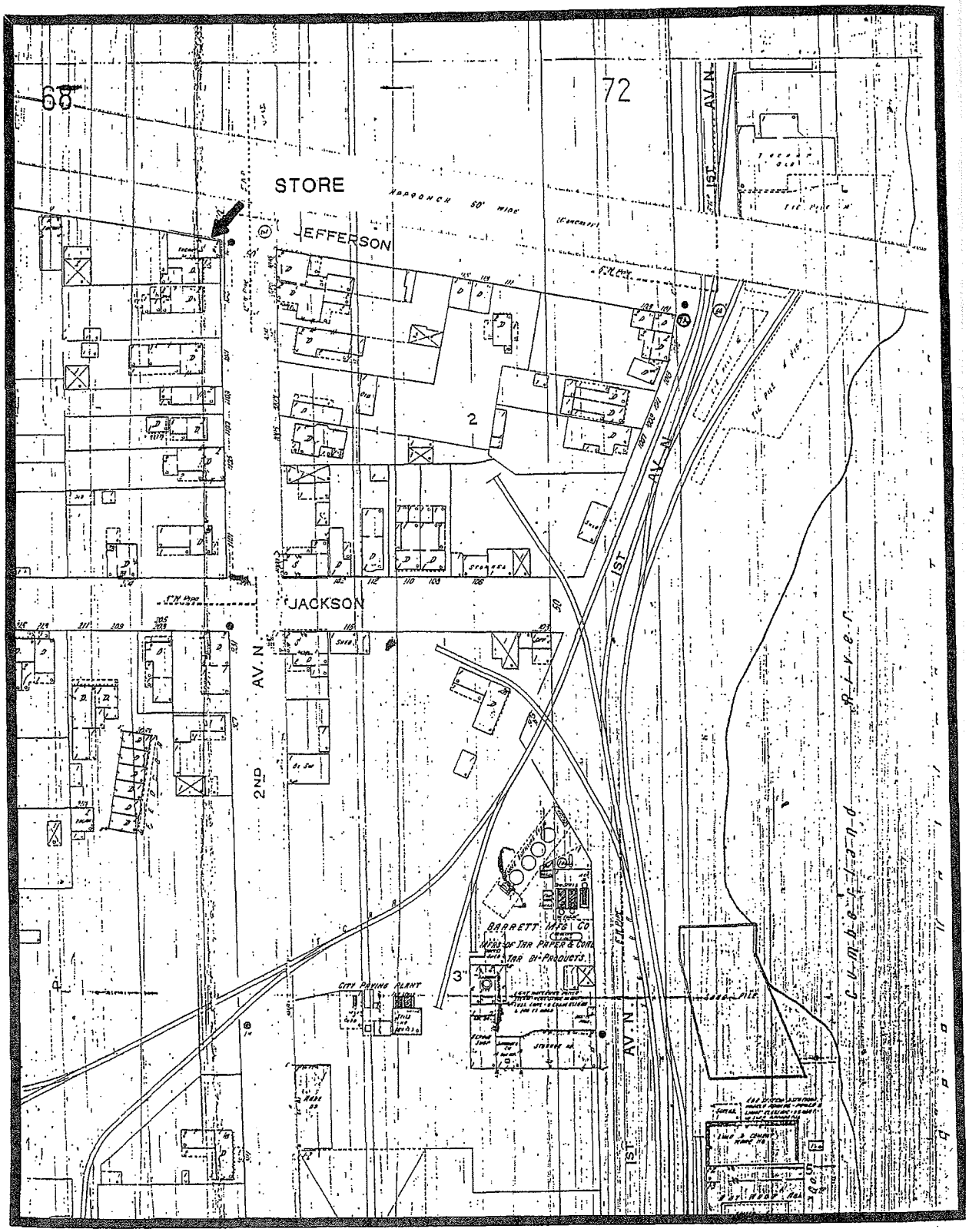


Figure 23. 1914 Sanborn Map showing project environs (Sanborn Map Microfilm, Reel 14, sheet 41).

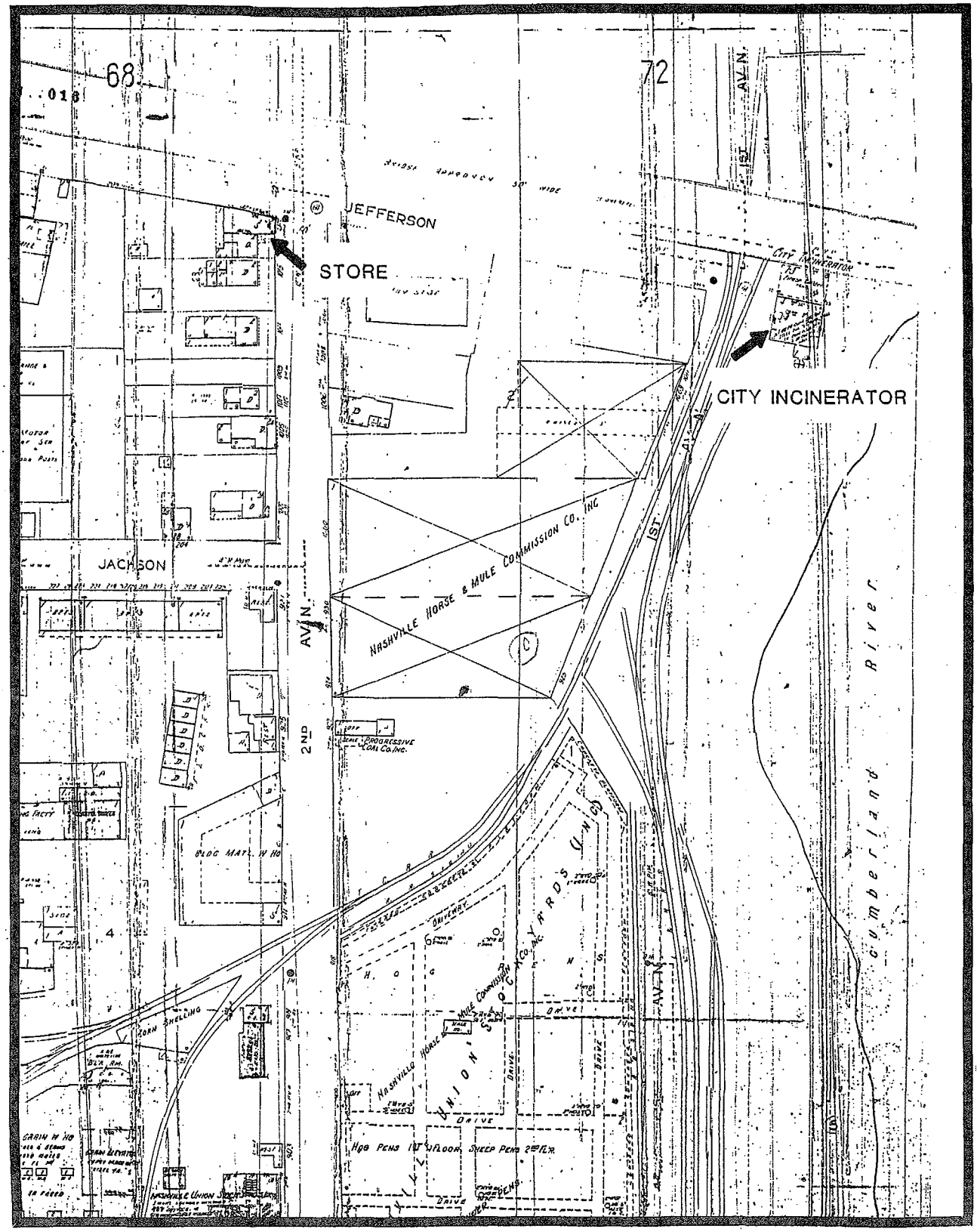


Figure 24. Revised 1914 Sanborn Map showing project environs (Sanborn Map Microfilm, Reel 14, sheet 41, with 1930-1951 additions).

Although the 1897 Sanborn map (Figure 22) does not reveal any terribly significant changes in the area, it does show that the Schaeffer Lumber yard was by then owned by James P. Streight. Also of note on this map is the store located at the southwest corner of Jefferson and Market (2nd). During archaeological excavations in this area, a partial structure believed to be a nineteenth-century basement was identified in this location. The basement was filled with rubble and refuse and had been covered with fill and more rubble. The store is shown as vacant in 1914 (Figure 23). It is later shown as occupied (Figure 24), but since several revisions were made to this map up to the 1950s, it is impossible to date this later occupation. Also of interest on the 1914 Revised map is the City Incinerator located south of the bridge approach between the river and 1st Avenue (Figure 24). Parts of this structure, including the stack, were extant at the time of these investigations.

SUMMARY *(WALLING)*

It thus appears that we have two multi-mound and village complexes situated on the banks of the Cumberland River, immediately opposite one another. Both sites are reported to have contained extensive cemeteries and midden areas and have been extensively impacted by historic development, excavation, and natural forces. If the identification of a possible remnant of the large mound at East Nashville Mounds is correct, the limits of this site can be estimated to extend for some unknown distance, but greater than 100 m, along the river and about 50 m east from the present riverbank within the present project area. The French Lick site can be estimated at a minimum of 150 m north/south by 200 m east/west. A more accurate assessment of the size of both of these sites is probably achievable through multiplying each dimension by a factor of 10 or more.

CHAPTER 6
FIELD METHODS

Richard Walling & Evan Peacock

The PCI investigations of East Nashville Mounds and the French Lick site included a number of intermittent field efforts, starting with a Phase II evaluation at the former beginning on July 29, 1991 and ending with final field investigations at the French Lick site concluding in mid June 1992. While the application of field techniques varied somewhat between the two sites, the techniques themselves, unit size, excavation methods, recovery methods, sampling, and recording methods were identical.

Field techniques proposed for the Phase III investigations minimally followed the stipulations as provided by the scope for this project. In addition, specific attention was given to recovery techniques that would provide information pertinent to the research questions developed by the TDOA (1987a) for the Mississippian period in the Central Basin.

The initial mechanical stripping of the majority of the historic overburden was closely monitored to avoid unnecessary impact to the archaeological deposits. An effort was made to leave a layer of overburden above the intact strata. While the thickness of this layer varied somewhat depending on the elevation of the archaeological deposits and the depth of the disturbed layer, subsequent excavation proved that the effort had been successful; impact due to stripping was negligible.

Excavation was carried out using standard field techniques. The standard unit size was 2 x 2 m, although occasionally smaller units were established to expose features. The remaining historic overburden within excavation units was removed with shovels. The archaeological deposits were then excavated in natural/cultural zones, where observable, with 10 cm subdivisions within zones exceeding that thickness.

All general excavation materials were water screened through 1/4" hardware cloth, with soil samples being retained from each level of each excavation unit. Approximately 2 liters (l) of each feature were retained for flotation, with the remaining volume being screened through window mesh. Features less than 2 l in volume were taken in their entirety for flotation.

Horizontal and vertical control for all units and features was maintained with a Geodimeter Total Station. Plan mapping was carried out with the Geodimeter, supplemented by alidade and plane table plotting. Reference points established by TDOT for the construction project control were used as primary reference points and benchmarks.

All units and features excavated were recorded using standard techniques. These included mapping within the site grid; maintenance of vertical control; detailed recording of plan, profile, and cross section as pertinent; and photographing all features and relevant levels. All recovered material was bagged by provenience (including unit, level, feature, sample, etc.); bags were labeled with all pertinent and ancillary information for the maintenance of control. Preprinted forms tailored to the various classes of excavation involved were used to promote uniformity of information recording; field journals were also maintained. Munsell charts were used to determine soil color. Mapping was accomplished by Geodimeter, alidade, and tape and level as dictated by the circumstances.

As the unit excavation phase at East Nashville Mounds was nearing completion, the remainder of the midden deposits were removed from the project area by machine-aided stripping. At the French Lick site this was carried out as each bent or tunnel pit location was completed. All features (i.e., pits, postholes, burials) exposed by the final stripping were treated in the same manner as those previously encountered.

As required by Tennessee law, a court-ordered termination of use as a cemetery was issued prior to excavation of human remains. Removal of these was accomplished at both sites in a single field phase and was supervised by the project physical anthropologist and the project director. Until the court order was issued and we received notice from TDOT to proceed with exhumation, no human remains were excavated or removed from the site. Prior to this permission, all human remains, or indication of same, were documented by the recording of pertinent information and photography. These were subsequently covered and protected until such time as they could be removed. After the issuance of the court order and notice to proceed, through consultation with TDOT, the State Archaeologist, PCI, Federal DOT, a SHPO representative, and other involved parties, it was agreed that representatives of the local Native American groups would observe the burial removal phase and perform ritual activities they deemed appropriate that did not interfere with the fieldwork. Out of this grew an agreement by which one representative would remain on site throughout the remainder of the field activities, in case additional burials were encountered by subsequent excavations.

Intensive research of the historic components present at these sites was not part of the research design. Investigations were limited to establishing a deed progression and the recording of intact historic features encountered.

EAST NASHVILLE MOUNDS (40DV4)

Phase I assessment of the East Nashville Mounds area was carried out by TDOT in 1988, at which time visual inspection of the west side of the Cumberland was effected. No evidence was reported indicating that any portion of East Nashville Mounds was noted (Ward 1988).

However, because a major site was known to have existed at this location and minor amounts of related material were occasionally recovered from the riverbank, and because the area was covered by extensive overburden, Phase II investigations were recommended.

Phase II field investigations were conducted between July 29 and August 19, 1991. The goals of these investigations were to determine the existence, nature, and extent of any intact significant cultural deposits within selected portions of the ROW for the Jefferson Street Bridge Replacement Project over the Cumberland River.

The initial plan was to confine field investigations to the five proposed 115-sq-m bent, or footing, locations. These investigations would include cutting a backhoe trench at each of the bent locations, to be followed by stripping of the overburden and subsequent hand excavation. However, after encountering in situ human remains within the first 3 m of the first trench, and establishing that significant deposits were present, a change of strategy was enacted. Rather than exposing fairly extensive areas of the site to possible looting, efforts were turned to establishing the horizontal and vertical extent of deposits within the entire 3,816-sq-m of right-of-way. As a result, field methods included the excavation of 150 linear meters of backhoe trenches (Figure 25). Additional efforts included detailed and thorough archival research on the historic component, as well as preliminary compilation of the previous archaeological research at this site. A contour map of the present ground surface had been produced by the TDOT. Above-ground historic features, as well as those exposed

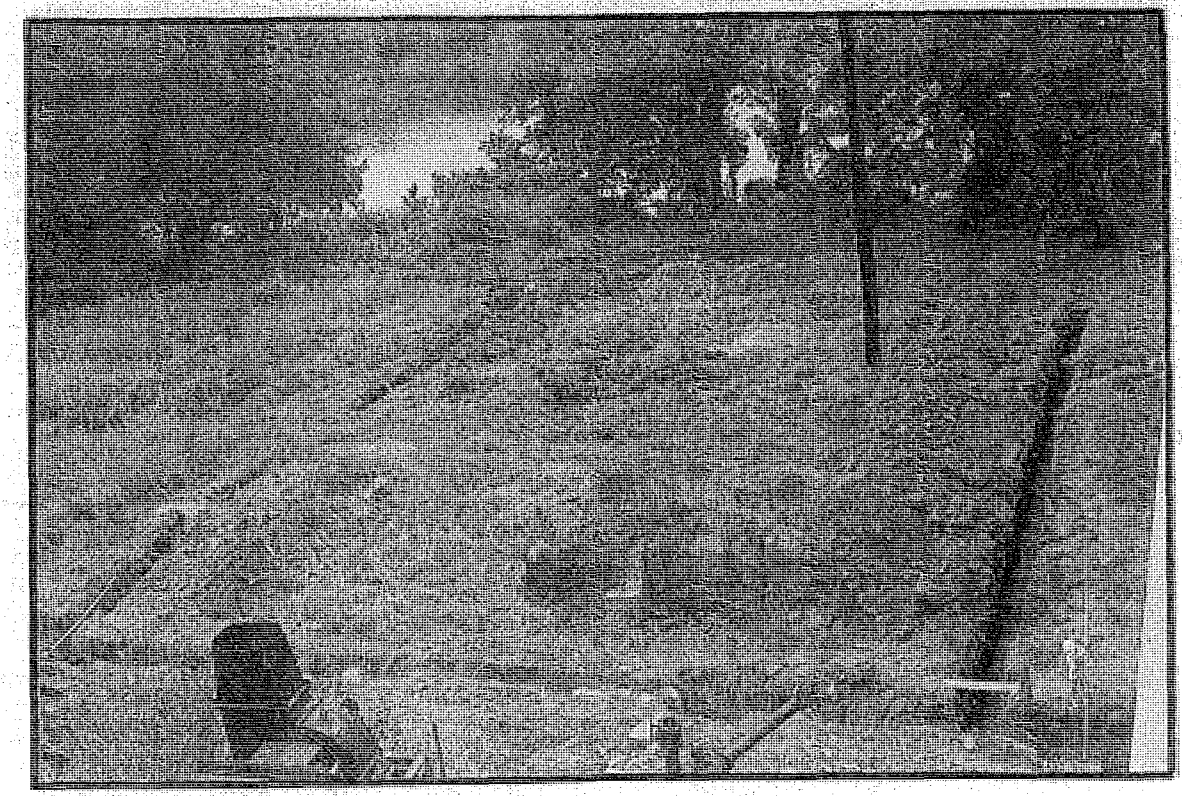


Figure 25. East Nashville Mounds, Phase II backhoe trenches 1, 2, 3, and 5; view to the west.

during the Phase II investigations, were mapped, as were the trench locations. Profile columns within the trenches were recorded. A permanent datum had been established, which was later destroyed, and the entire effort was tied into the TDOT survey points for the new construction and the existing, or old, bridge.

Prior to initiating Phase III excavation at East Nashville Mounds, a site grid was established oriented on magnetic north. A benchmark, denoted as grid point 100N100E, was established just south of the ROW. This point, referred to as Benchmark 1, served as a backsight during the remainder of the field operations. A second benchmark was established at 115N95E, in a disturbed area. Benchmark 2 served as the primary station for vertical control shots and mapping of features exposed by the final stripping. Once the grid benchmark had been established, mechanical stripping of the historic overburden began. The initial stripping operation was closely monitored to avoid unnecessary impact to the archaeological deposits. Originally a two-stage stripping program was proposed. The bulk of the overburden was to be removed with the aid of a bulldozer, leaving a sufficient amount in order to avoid damaging the prehistoric deposits by the weight of the machine. Subsequent to the bulldozer stripping, a grade-all machine was used to remove the cushion and conduct final stripping. A backhoe/front end loader was to be used to provide fine-scale work. However, because all spoil was to be placed on the peripheries of the ROW, the suggestion was made and implemented that stripping of the overburden could more effectively be accomplished using a large trackhoe, a front end loader, and a team of dump trucks (Figure 26).

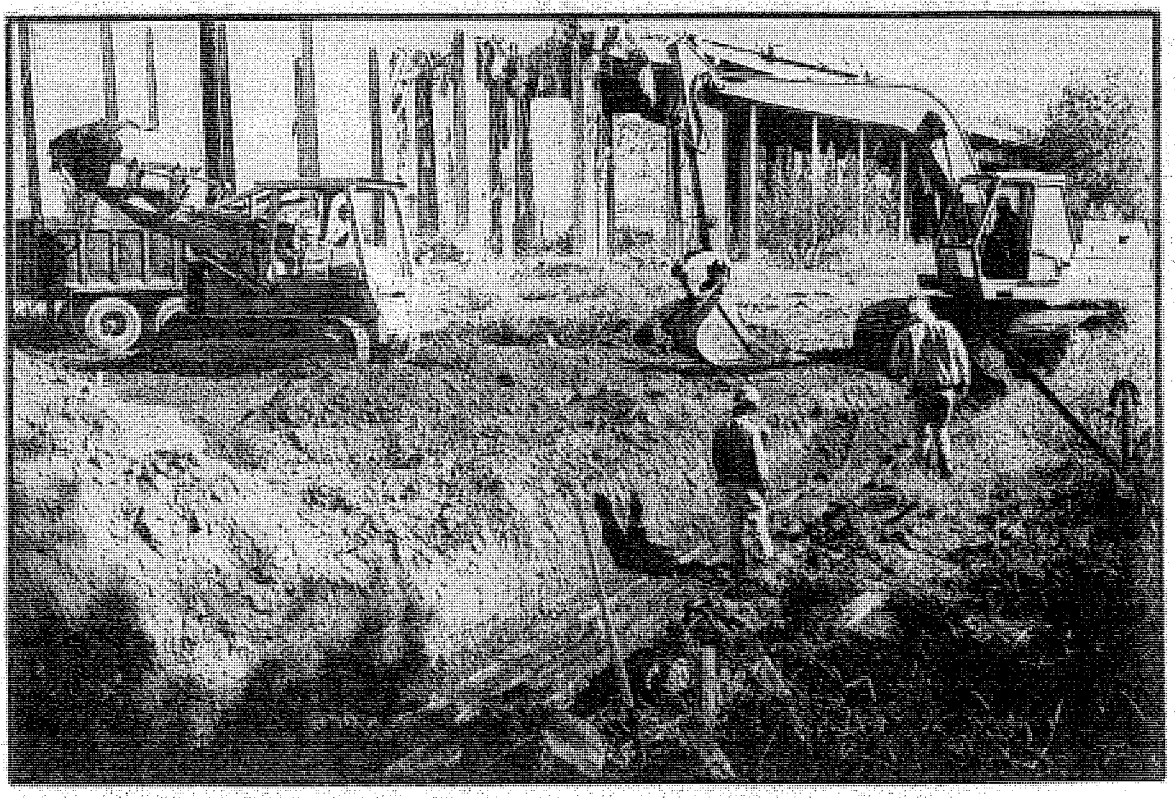


Figure 26. East Nashville Mounds, initial stripping; facing northeast.

An effort was made to leave a layer of disturbed material approximately 50 cm thick above the intact strata; this varied somewhat depending on the elevation of the archaeological deposits and the depth of the disturbed layer. Intermittent hand stripping was used to guide the machine (Figure 27). Subsequent excavation proved that the effort had been worthwhile; there was little impact due to stripping.

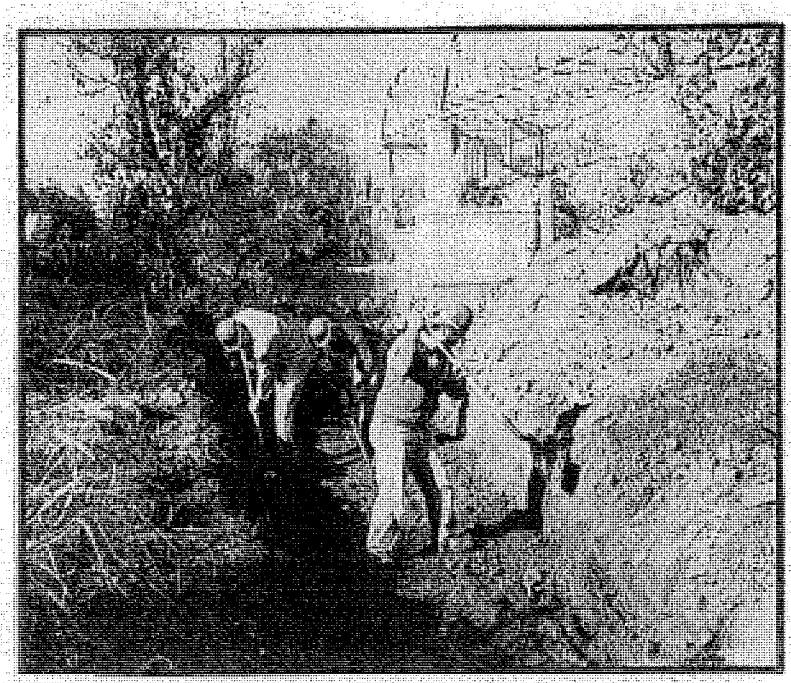


Figure 27. East Nashville Mounds; determining depth of historic overburden; facing west.

Following the stripping of historic overburden, structural features and land modifications associated with the twentieth-century sawmill/lumber yard were mapped; those mapped during the Phase II investigations were reshot to serve as additional common reference points. Mapping of these features was the only field activity called for with respect to the historic component.

Upon completion of the initial stripping, units were set out using the previously established grid system. The majority of the units were 1 or 2 meters square; units of different sizes were used when necessary to complete excavation of features. One 4 x 4 m unit was excavated in the northeastern part of the ROW.

Excavation was carried out using standard field techniques. The majority of the historic overburden was mechanically stripped. The remaining historic overburden was removed with shovels, then the archaeological deposits were excavated in natural zones with 10 cm subdivisions within zones exceeding that thickness. It was not always possible to be certain that all historic materials had been removed, due to the intricate mixing of the disturbed layer

and the underlying stratum. In such cases, historic materials were consistently contained within Zone 1, Level 1.

Hand excavations were to be initiated within the northwestern portion of the project area while the final stripping was being completed in other areas. However, demolition of the old bridge precluded activity in that area until a later date. A 10 percent sample of the midden was be excavated by hand using a combination of 1 x 1, 2 x 2, and 4 x 4 m units. Hand excavation of an estimated 200 sq m was required to meet the stipulated 10 percent sample. With the midden averaging 0.30 m in thickness, approximately 60 cubic m of hand-excavated fill was anticipated.

THE FRENCH LICK SITE (40DV5)

On or about October 22, 1991, intact deposits relating to the French Lick site were encountered on the west side of the Cumberland River. Emergency measures were enacted by TDOT, and a Panamerican crew was dispatched to that site to evaluate the degree of impact and the extent and condition of the deposits present. Assessment of deposits within bent locations that had already been impacted was begun on October 30, 1991. All construction-related excavation was halted, and monitoring of overburden removal within the bent locations was initiated.

As part of the initial assessment process, profiles of the bridge footing already excavated were recorded (Figure 28). These profiles, as well as an examination of other portions of the footing excavation, show the presence of both disturbed and intact archaeological deposits associated with this site.

Monitoring and assessment of the remaining areas of direct impact were initiated on November 13, 1991. This was followed by the fielding of an additional crew for simultaneous data recovery in the direct impact areas associated with the bridge construction. This initial data recovery program began on November 14, 1991 and continued until mid December. Investigations were restricted to the direct impact area within which intact deposits were shown to exist (Figure 29). The research design called for the hand excavation of a 10 percent sample of the intact deposits, or approximately 25 sq m. Recovery techniques were identical to those under way at East Nashville Mounds. Burial removal was carried out in tandem with that for East Nashville Mounds.

At locations where no intact archaeological deposits were encountered, machine-aided excavations were continued to the bottom elevation required by the construction contractor. If this elevation was considered too shallow by the site archaeologist, in consultation with TDOT, a slot trench was machine-excavated to a sufficient depth to assess the presence or absence of deeply buried archaeological deposits. The original proposal for monitoring and

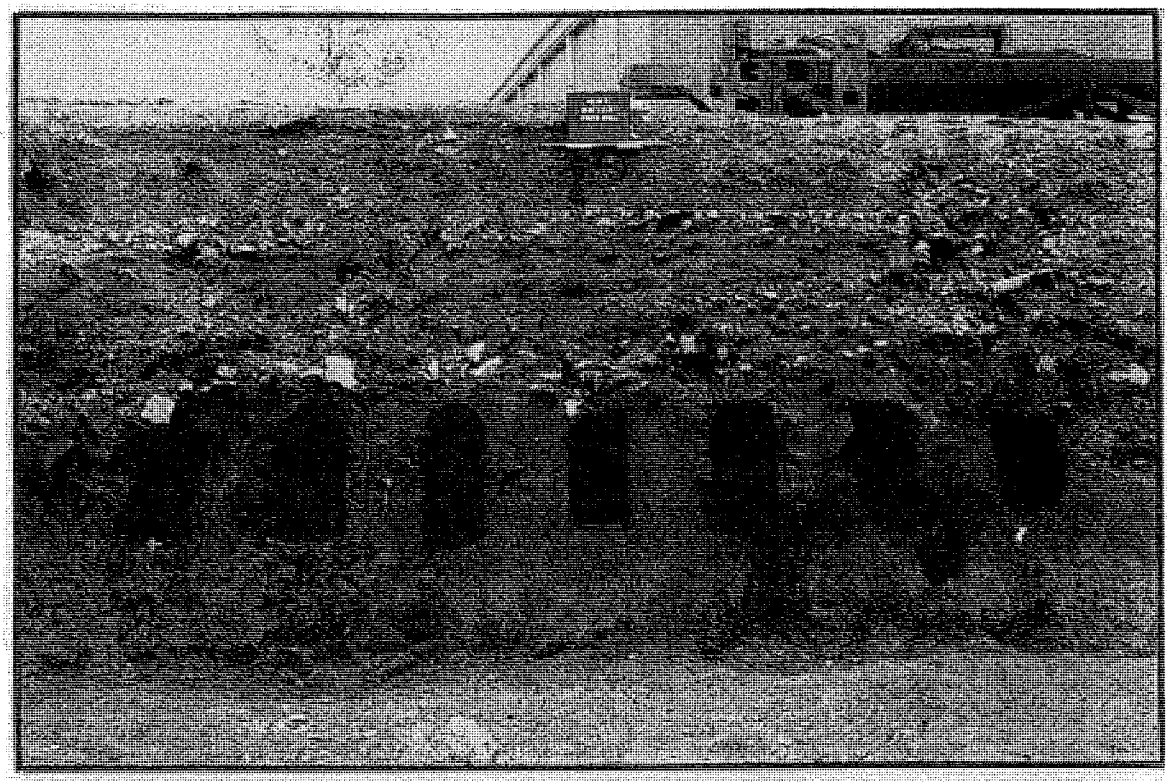


Figure 28. The French Lick site, Bent 3 left, profile of south wall.

Figure 29. The French Lick site, view of project area, Bent 4 right in middle ground; facing west-southwest.

data recovery was for archaeological investigations of the Woodland and Mississippian deposits at the site.

Additional data recovery at French Lick was carried out immediately north of the bridge area within a stormwater drain impact area. This work was conducted between February 14 and early June 1992, with the major field effort ending May 2. Initial activities were established as they had been for the earlier investigations at this site. Removal of approximately 33 percent of the historic overburden was conducted at the locations for tunnel pits and open cuts by excavating a series of trenches parallel to the long axis of the proposed impact area.

In areas where intact prehistoric deposits were encountered, a program of data recovery, again using the same techniques as previously employed, was initiated. Following hand recovery, the remainder of the midden was mechanically stripped, and all additional features and postholes were excavated. Additional minor excavations were conducted at the abutment pit and to recover a previously disturbed burial within a water line trench.

CHAPTER 7
EAST NASHVILLE MOUNDS (40DV4): DATA RECOVERY & INTERPRETATION

Richard Walling, Evan Peacock, Lawrence Alexander & Scott D. Kirsh

STRATIGRAPHY & GEOMORPHOLOGY *(ALEXANDER)*

The following study of stratigraphy and geomorphology will describe and interpret the upper 2.5 m of alluvial deposits on the Cumberland River bank at East Nashville Mounds (40DV4). This description will place the site within the model developed by Brackenridge (1984) for the Middle Duck River, also located within the Nashville Basin. The location of the area investigated within the context of the Holocene river levees and overflow chutes will also be addressed. Finally, the site stratigraphy will be discussed.

As previously noted, the archaeological investigation at East Nashville Mounds was limited to specific impact areas within a much larger site context. A detailed cross section sample of the entire river levee was unavailable, as were data for downstream areas of the river levee system. Also, the entire area had been modified by industrial development, and up to 80 cm of fill was present on top of the site. To further compound these limitations, the Davidson County soil map (North et al. 1982) has listed the area as Lindell (Ln), an industrial development. With the stated objectives and limitations to the research, the following analysis was conducted.

FIELDWORK

The fieldwork for this study at East Nashville Mounds consisted of excavating two deep slot trenches on the northeastern and southeastern edges of the block excavation. The trenches were positioned to take advantage of isolated areas of intact soil profiles. These trench locations have been plotted in Figure 30. Each profile was excavated approximately 1.2 m wide and 2.5 to 3.0 m deep; unconsolidated loose material prohibited excavations to greater depth.

On the south wall of the excavated trench, a 1-m-wide profile was scraped and the strata marked. A 25-cm pedological column was rough-picked adjacent to the profile (Figure 31).

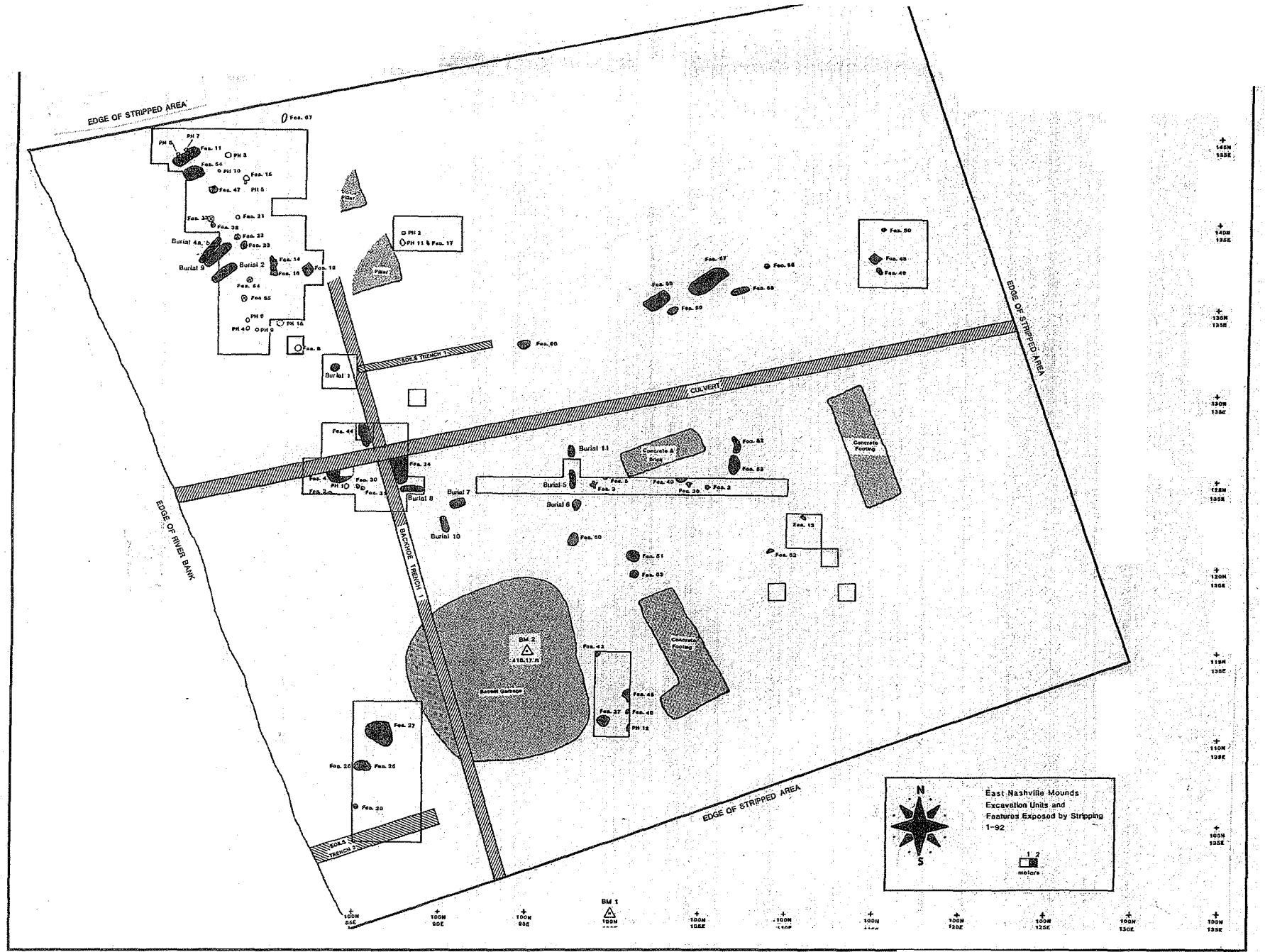


Figure 30. East Nashville Mounds, excavation units and features exposed by stripping.

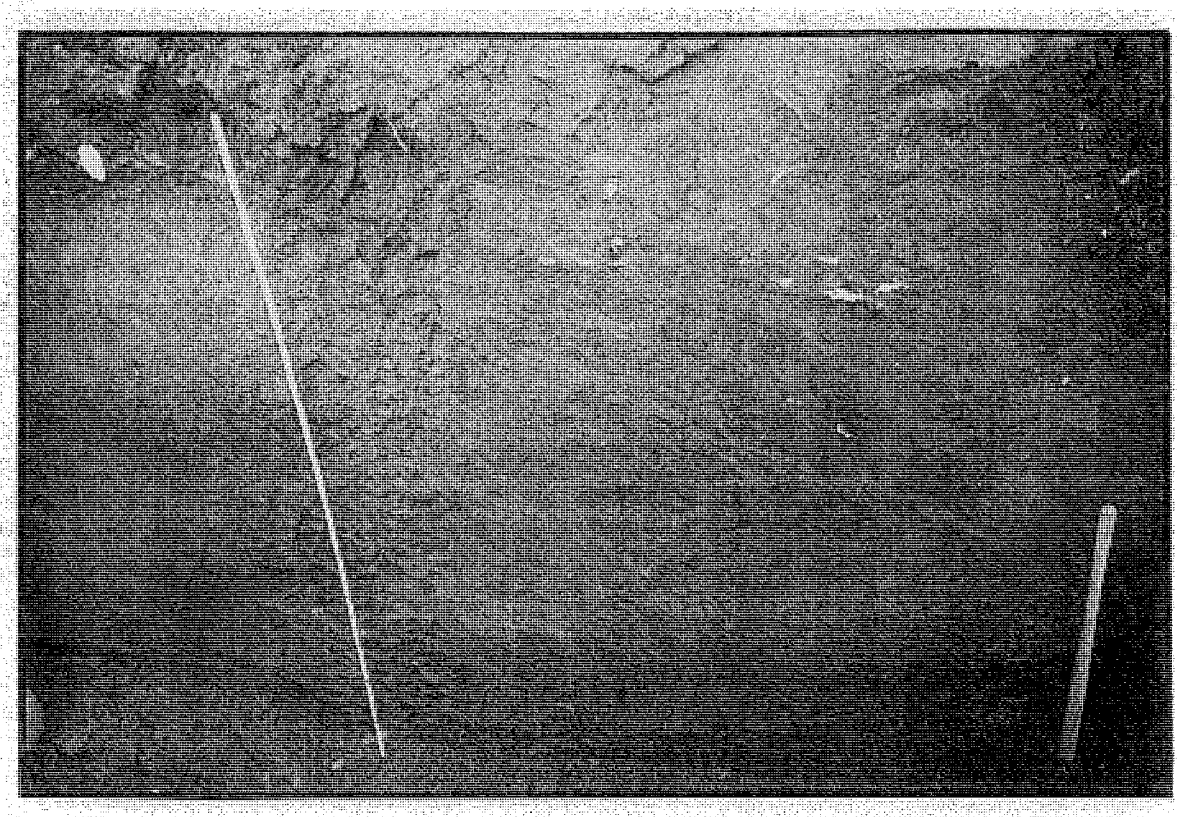


Figure 31. East Nashville Mounds, Soils Trench 1, pedological column adjacent to profile.

The sediment attributes of texture and color (Munsell 1975) and the primary mineralogical components were observed. Pedological structure, including alluvial clay skins, and alluvial structure, including manganese oxide coating and concretions, were also observed. Stratigraphic descriptions of Trench 1 are included in Table 1.

Table 1. East Nashville Mounds, Trench 1 Soils Stratigraphic Description.

Stratum	Description	Thickness (cm)	Texture	Color	Comments
1	trash	80	historic fill	_____	sawdust and historic trash
2	plowzone	12	sandy loam	dark brown 7.5YR 5/2	scattered shell; distinct lower boundary
3	top midden	8	silty clay	dark brown 7.5YR 3/2	midden; arbitrary lower boundary
4	shell midden	12	silty clay	dark brown 7.5YR 4/2	shell midden; abundant shell, charcoal fire-cracked rock
5	lower midden	7	silty slay	brown 7.5YR 4/2	no shell, scattered daub; clear lower boundary
6	A horizon	36	sandy silt loam	medium brown 7.5YR 5/3	no ped structure; possible disconformity at lower contact
7	A horizon	20	clay silt	dark brown 7.5YR 3/2	well-developed ped structure
8	A/B horizon	28	clay loam	reddish brown 5YR 5/3	truncation at lower contact
9	B horizon	34	clay	dark yellow brown 10YR 4/4	massive yellow subsoil
10	B horizon	50	clay	yellow brown 10YR 5/4	massive yellow subsoil with mg nodules

RESULTS OF TESTING

The lithostratigraphy of the alluvial sequence (Figure 32) observed at 40DV4 consists of a basal component of massive yellowish clay, Strata 9 and 10. These strata were likely associated with an early Holocene Cannon Bend formation. A distinctive disconformity was observed at the contact between Strata 8 and 9; the river levee was truncated at this point. Strata 7 and 8 consisted of an intact A horizon soil with an incipient B horizon soil developing

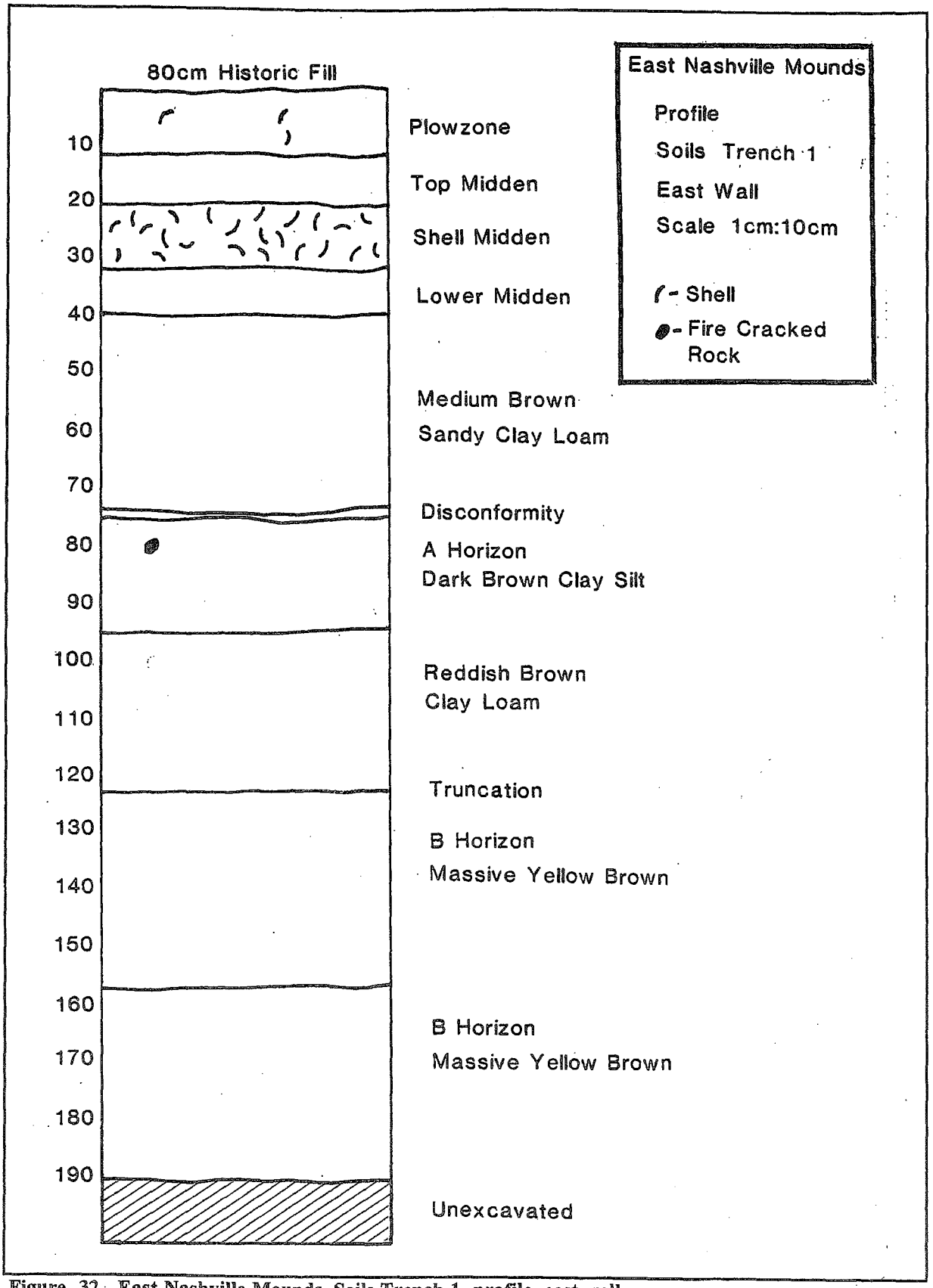


Figure 32. East Nashville Mounds, Soils Trench 1, profile, east wall.

below. A possible disconformity was also observed between Stratum 6 and Stratum 7. However, Stratum 6 appeared to represent another A horizon in the process of alluviation from the upper levels.

Interpreted as a unit, Strata 6, 7, and 8 represent a stable surface where an organic A horizon soil developed. These levels are associated with the Leftwich formation. Elsewhere in the Cumberland River Valley, Late Archaic archaeological deposits have been recovered from stratified contexts at 50–100 cm below surface at a number of sites (Alexander 1982:30; Cridlebaugh 1986; Morse 1967).

The Mississippian period deposits were contained in Strata 3, 4, and 5. Stratum 5 contained no shell, but scattered charcoal, daub, and fire-cracked rock were observed. This might have been a limited early Mississippian occupation at the site, or a localized dip in the midden with little cultural significance. Stratum 4 was a Mississippian shell midden, and it was the primary component investigated at the site. Strata 3 and 4 differed only in the lower quantity of shell observed in Stratum 3. Like the Strata 4/5 separation, this might have been a localized phenomenon within the area investigated.

The plowzone, Stratum 2, was separated from Stratum 3 by a distinct change in the profile texture as well as an increase in shell. Stratum 1 was an 80-cm-deep fill of sawdust and industrial debris.

GEOMORPHOLOGY

The floodplain north of the Cumberland River between river miles 192.0 and 188.5, Lock and Dam 1, has a complex set of overflow chutes and river levees. The upstream mouth of the overflow channel is located between river miles 190 and 191. The mouth of this chute is mostly silted over, and industrial development has largely destroyed any topographic evidence of its location. The lower end of this overflow channel is controlled by a bedrock outcrop at river mile 188.5 (Figure 33).

The Pleistocene terrace, T-2, is located at the 415–430 foot contour 50 m to the northwest of the site. The topographic map (Figure 33) shows a complex set of river levees between river miles 189 and 190. East Nashville Mounds appears to be located at the upstream terminus of these alluvial deposits. The primary channel of the outflow chute is located approximately 100 m northeast of the site. The site stratigraphy and midden deposits also slope to the northeast, following the interpolated preindustrial contours. On the river slope of East Nashville Mounds, a trench was excavated to test the potential of a Sowell Mill, T-0, deposit. A sloping post-1900 industrial fill up to 200 cm deep was found, but no intact Sowell Mill formations were located.

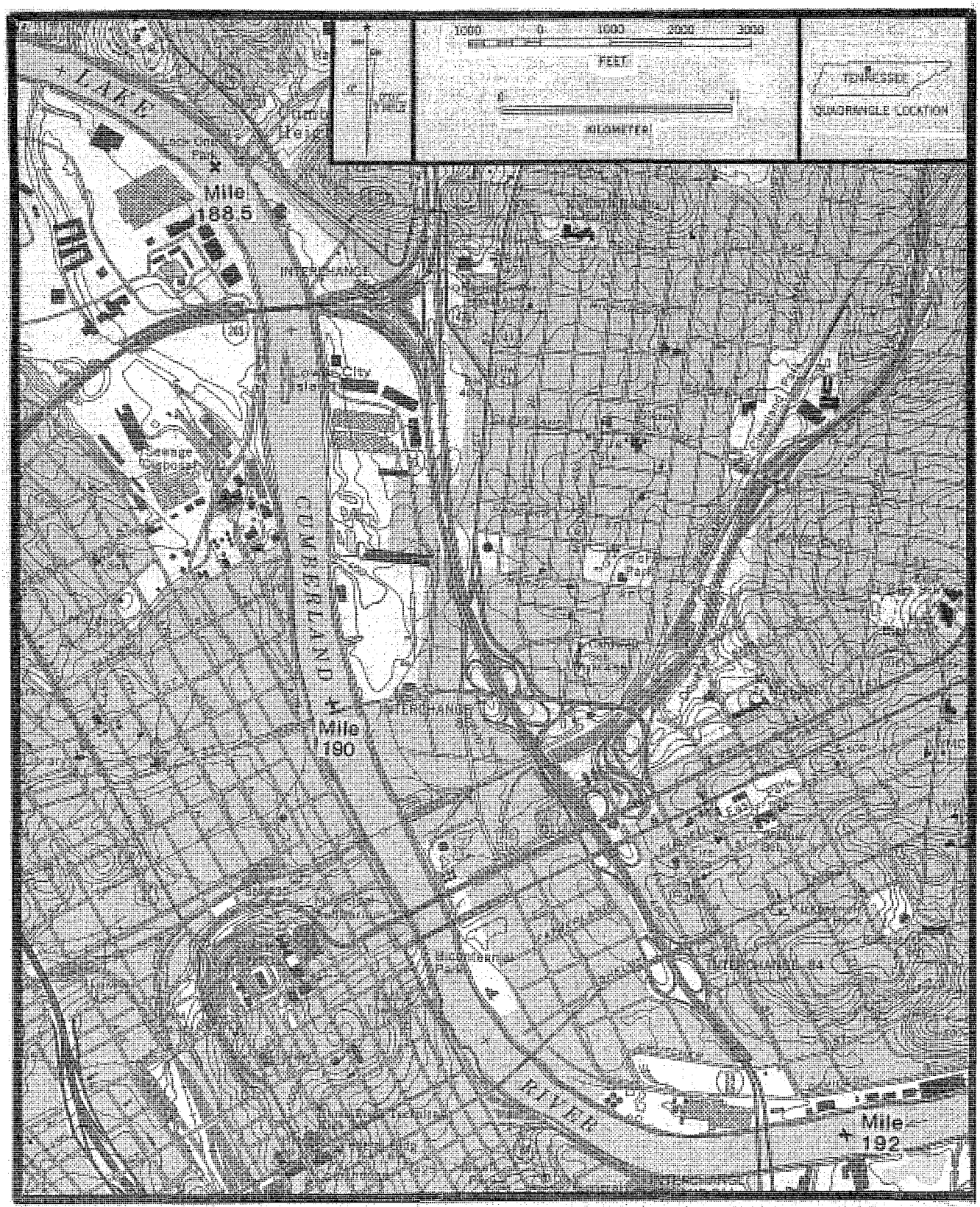


Figure 33. Cumberland River, miles 188.5 to 192 (USGS Nashville West 7.5' Quadrangle 1968, photorevised 1983).

SUMMARY

A study of the stratigraphy and geomorphology at East Nashville Mounds located stratified segments of the Early Holocene Cannon Bend formation. A stratigraphic disconformity separated it from the Leftwich formation. This thickened mollic epipedon has been located throughout the Cumberland and Tennessee River Basins. Elsewhere, Middle to Late Archaic cultural deposits have been encountered in these strata. The upper component contained a 35- to 40-cm-deep Mississippian midden. The midden is stratified with a plowzone and three intact subplowzone strata.

The site area is at the upstream terminus of a series of Holocene river levee deposits. This area has been subject to repeated alluviation and flood stripping of soils in the past. The cultural deposits were restricted to the narrow levee crest 100 to 150 m wide. Downstream where the alluvial deposits are wider, a significant segment of the Mississippian town is likely to be preserved.

SOILS (KIRSH)

As part of the Phase II investigation at East Nashville Mounds, it was deemed appropriate to determine what soils existed at the site. Several trenches approximately 2 to 3 m deep were opened; five profiles in the faces of these backhoe trenches were examined and sampled to aid in the classification of these soils. The soils were examined at locations where descriptions had already been done by the on-site archaeological staff.

The soils of this site were formed in alluvial deposits within the floodplain of the Cumberland River. The site's geomorphic history is one of frequent flood events accompanied by many erosional and depositional episodes. Given the repeated erosion and deposition on sites such as this, one expects to find minimally developed soils; this expectation was confirmed by examination of the soils at this site. Soils such as these, evolving on unstable geomorphic surfaces, are generally classified as belonging to the group known as Inceptisols.

Examination of the site revealed that approximately 1 m of fill material was laid down some time in the recent past. The natural soil was buried by this fill and is essentially preserved in the state it was in at the time the fill was deposited. Since the deposition of the historic fill, the natural soil has experienced a greatly reduced rate of evolution, since it is now insulated from the principal soil developmental vectors (i.e., flowing water, floral and faunal influences, etc.).

The general profile description which follows is for the profile at 12–13 m west in Trench 6 (Figure 34). The soils of the site, beneath the fill, were found to be quite similar in their

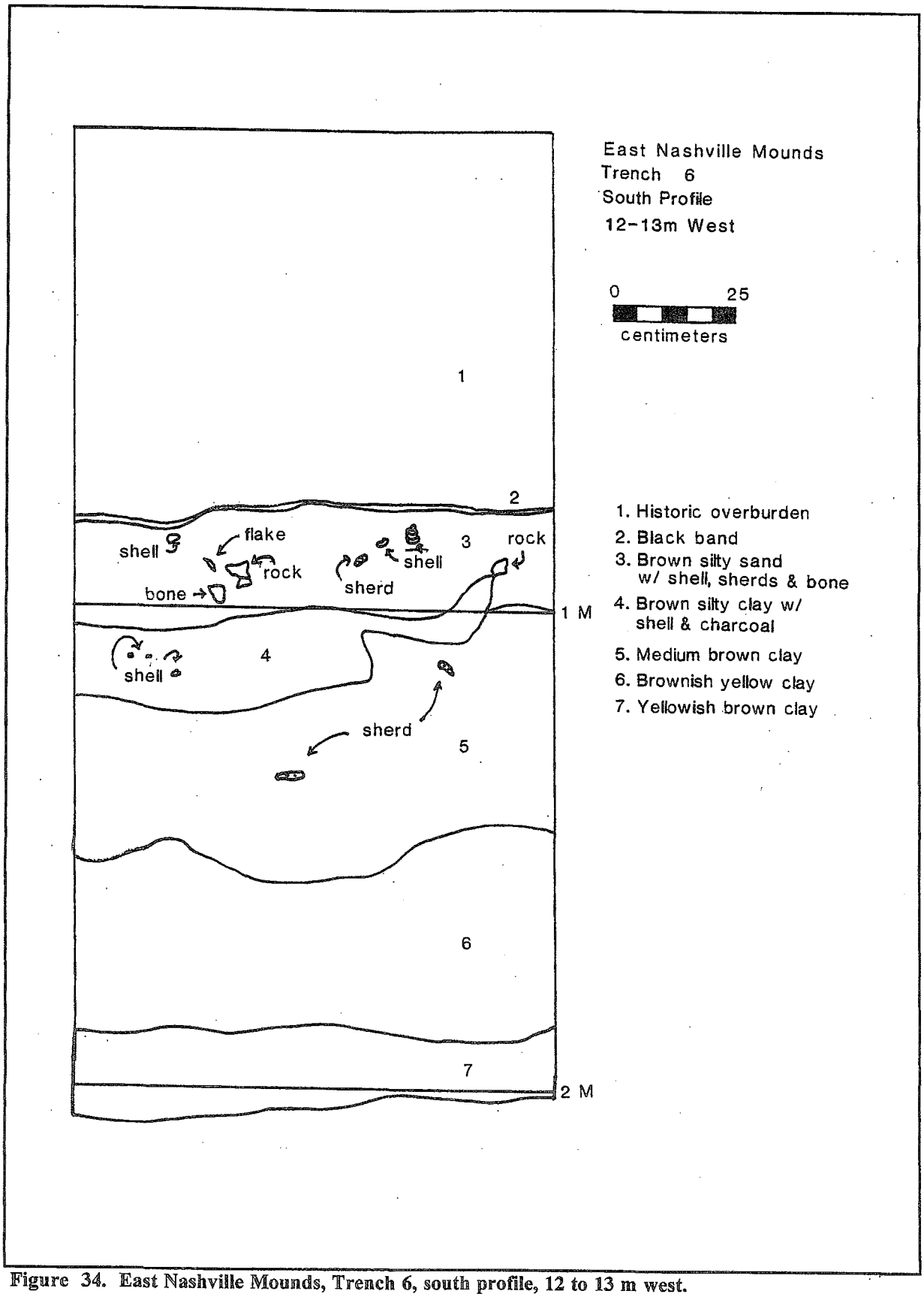


Figure 34. East Nashville Mounds, Trench 6, south profile, 12 to 13 m west.

general characteristics and are fairly well represented by this profile. In the description below, the zero point is the natural soil surface; it is given a depth of 0 cm.

Historic overburden, 80–0 cm: Fill material added to make the area less subject to flooding. Light brownish gray, calcareous, predominantly sandy loam; frequent roots, many historic artifacts. Two-centimeter band of black material at bottom of fill, directly on top of the natural soil surface; possibly cinders. Clear, slightly wavy boundary.

Ap, 0–20 cm: Brown to grayish (10YR 5/3 to 10YR 4/2) silt loam; granular structure; friable; slightly basic. Many shells, sherds, bones; few small stones, occasional larger rocks (< 5 cm in diameter). Clear, wavy boundary.

B1, 14–35 cm: Brown (10YR 5/3) silty clay loam; granular to weak subangular blocky structure; friable; slightly basic. Occasional shells and sherds. Clear broken boundary—not present in every pedon or in the entire extent of each pedon.

B21, 20–70 cm: Brown (10YR 4/3) silty clay loam; strong granular to medium subangular blocky structure; friable; slightly acid; very few black concretions. Cutans (5YR 5/8) in clear evidence on walls of voids, probably left by fine roots. Clear, wavy boundary.

B22, 70–110 cm: Yellowish brown (10YR 5/4) silty clay loam; subangular blocky structure; friable; slightly acid. Frequent cutans (5YR 5/8) on walls of voids left by many fine roots; very few small black concretions. Clear, wavy boundary.

B23, 110 cm to bottom of trench: Dark yellowish brown (10YR 4/4) silty clay loam; subangular blocky structure; friable; occasional small black concretions.

The slightly basic nature of the upper solum (A and upper B horizons) is due to overprinting from the historic overburden. Carbonates are translocating downward into the solum from the calcareous fill atop the A horizon. The essential point at this site is that these are easily recognized as soils of the Lindell Urban Land complex.

SUMMARY

Five soil profiles were examined at the East Nashville Mounds site on August 19, 1991. Field examination of these profiles in conjunction with samples taken from the profiles were used to determine the soil type(s) present.

Based on the field and laboratory data, the profiles at the site were found to be members of the Lindell soil series. Specifically, these profiles were found to be typical of the Lindell Urban Land Complex soils. These are Lindell and related soils which have been extensively modified by humans, chiefly through the addition of fill material intended to protect the areas of these soils from flooding.

EXCAVATIONS (WALLING)

As previously noted, investigations at East Nashville Mounds were carried out in three phases. TDOT conducted Phase I investigations, and PCI carried out Phase II evaluation and Phase III data recovery.

Phase I investigations consisted of site file and archival research and a visit to the site location. No visible indications of site presence were reported by Ward (1988) as a result of this visit. However, sufficient documentary evidence for the existence of a large Mississippian mound and village complex at this location suggested the need for additional work within this portion of the proposed project area (Ward 1988).

Phase II investigations were carried out during the late summer of 1991 by PCI (Walling 1991). The area to be investigated was bounded on the north by the existing (old) bridge, on the west by the Cumberland River, and on the east and south by the edge of the ROW (see Figure 2). Investigation techniques included extensive archival research, particularly for the historic component (see Chapter 5). Field methods included the excavation of 150 linear meters of backhoe trenches, the mapping of trench locations and existing historical features, as well as the recording of profile columns exposed by the trenching (Figure 35). Based on the results of these investigations, both archival and field, it was noted that while East Nashville Mounds had been impacted by past industrial, transportation, and (probably) agricultural activities, a substantial portion of the Mississippian midden remained intact below recent historic fill.

This historic fill varied from 0.75 to 1.70 m thick, but was generally 0.80 to 1.00 m. At a number of locations it was impossible to effectively excavate backhoe trenches because of the presence of foundations and rubble (Figure 36). A stone box burial was encountered, along with a large, trash-filled pit, and a possible house floor. Midden deposits resulting from the Mississippian occupation were observed for the entire north/south extent of the ROW; these continue for an unknown distance to both the north and the south, extending eastward from the present riverbank for some 40 meters. These deposits varied from 20 to 60 cm in thickness, averaging approximately 30 cm, and contained shell, bone, ceramics, and lithics (Figures 37 through 41). The density of prehistoric cultural material became considerably lower to the southeast, and it appeared that the prehistoric deposits had been destroyed by multiple building episodes associated with the lumber yard in the eastern portion of the area tested.

Based on the types, condition, and distribution of material recovered and observed, it was apparent that the Mississippian remains represent in situ, primary deposits associated the East Nashville Mounds site. Within the ROW, these extant prehistoric deposits were spatially restricted to an area of approximately 1,280 square meters and averaged approximately

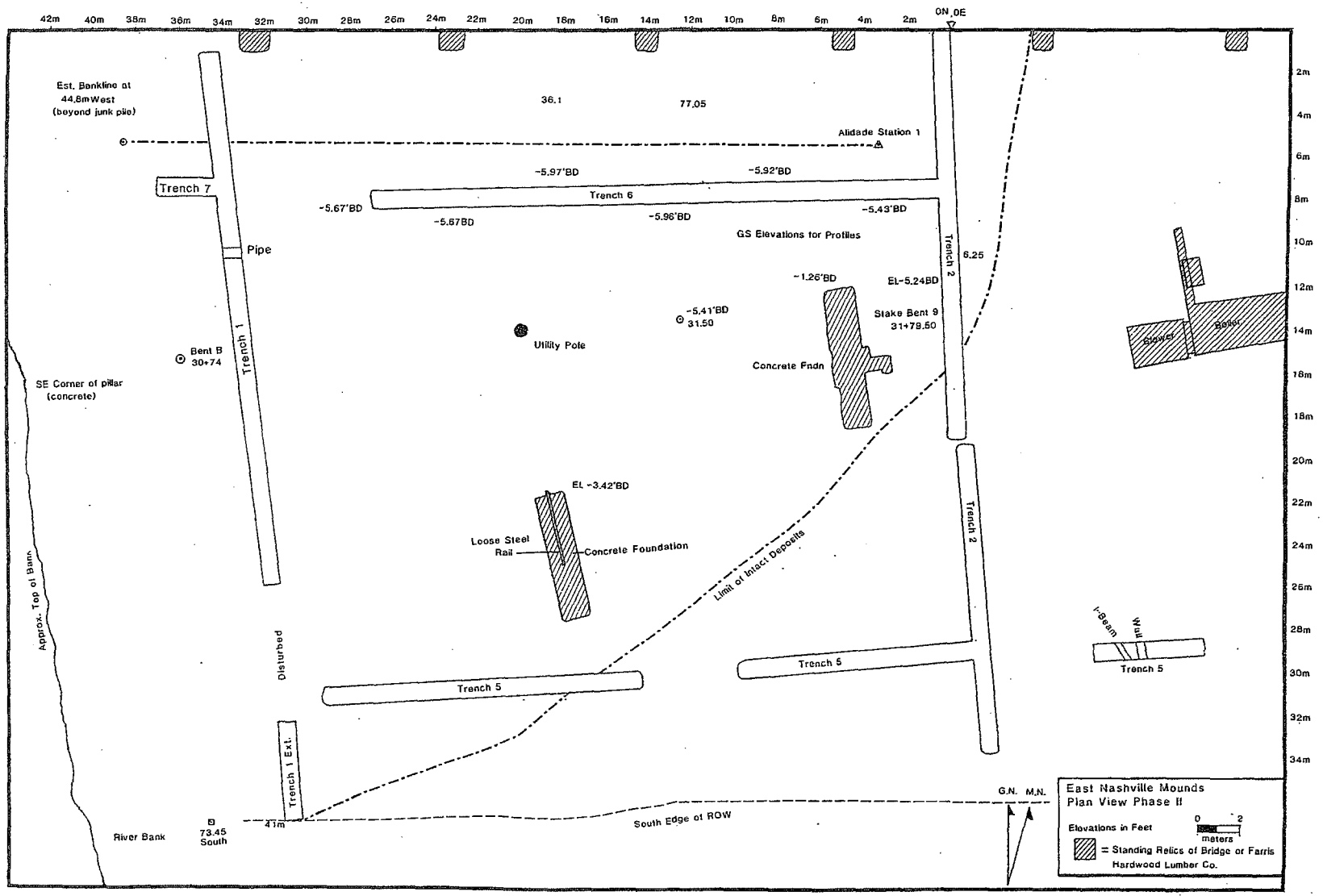


Figure 35. East Nashville Mounds, plan of Phase II investigations within site limits.

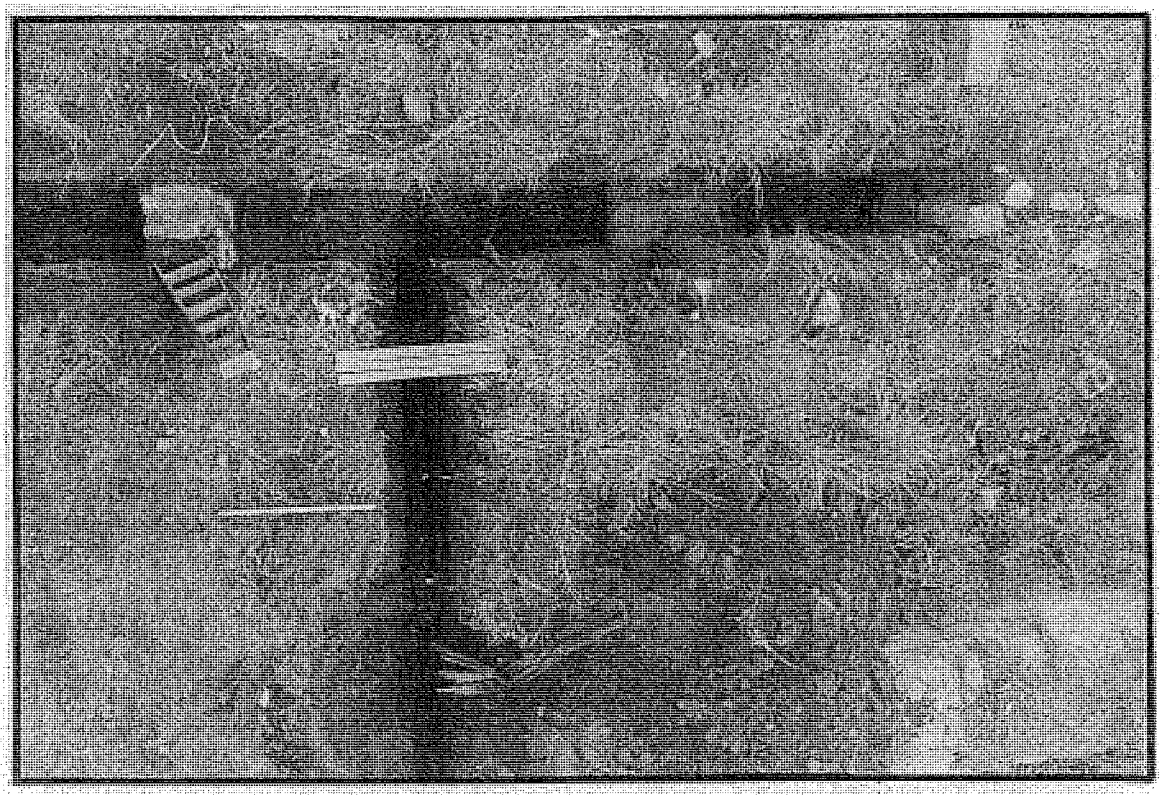


Figure 36. East Nashville Mounds, portions of backhoe trenches showing foundations and rubble; view from old bridge.

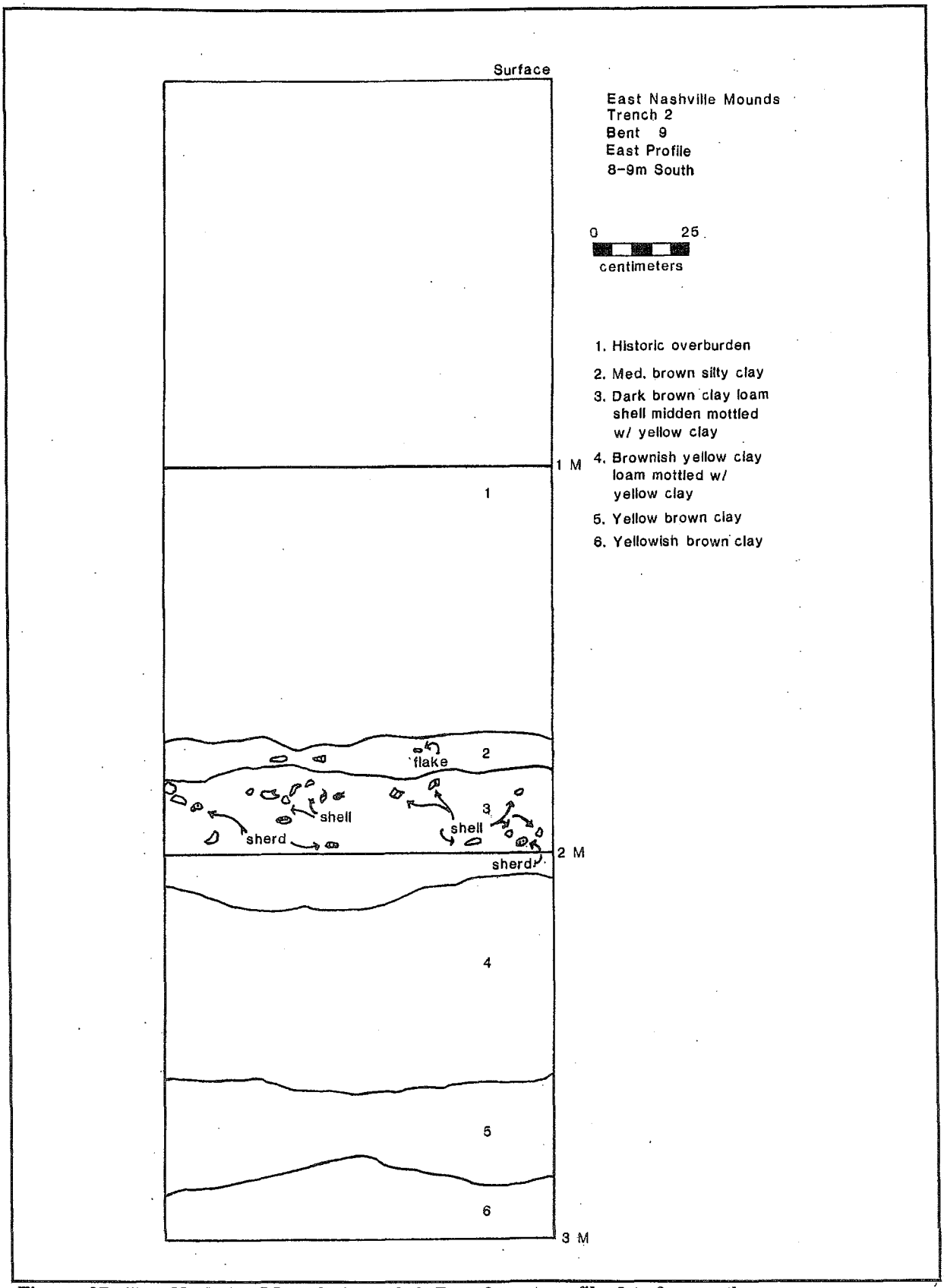


Figure 37. East Nashville Mounds, Trench 2, Bent 9, east profile, 8 to 9 m south.

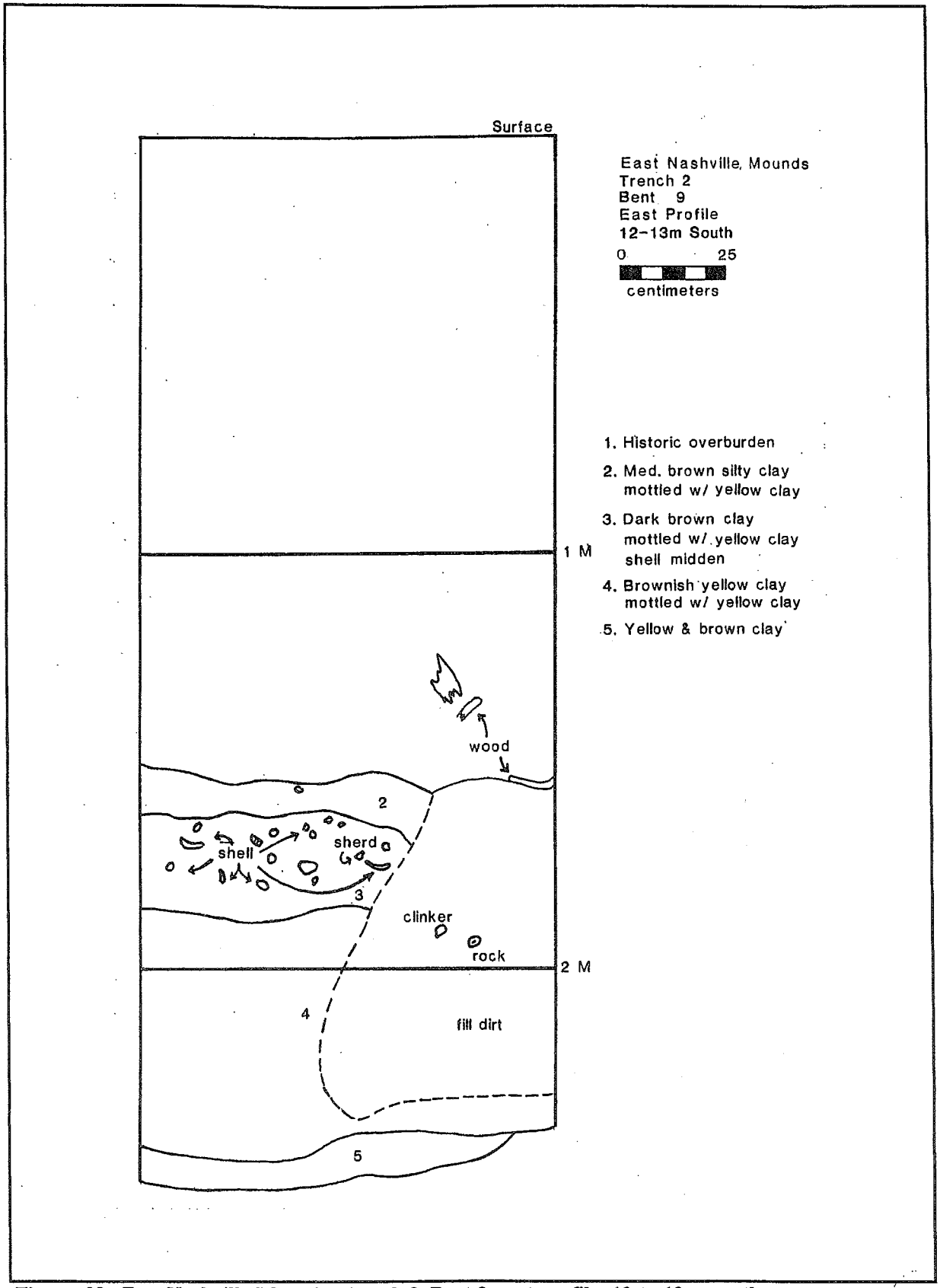


Figure 38. East Nashville Mounds, Trench 2, Bent 9, east profile, 12 to 13 m south.

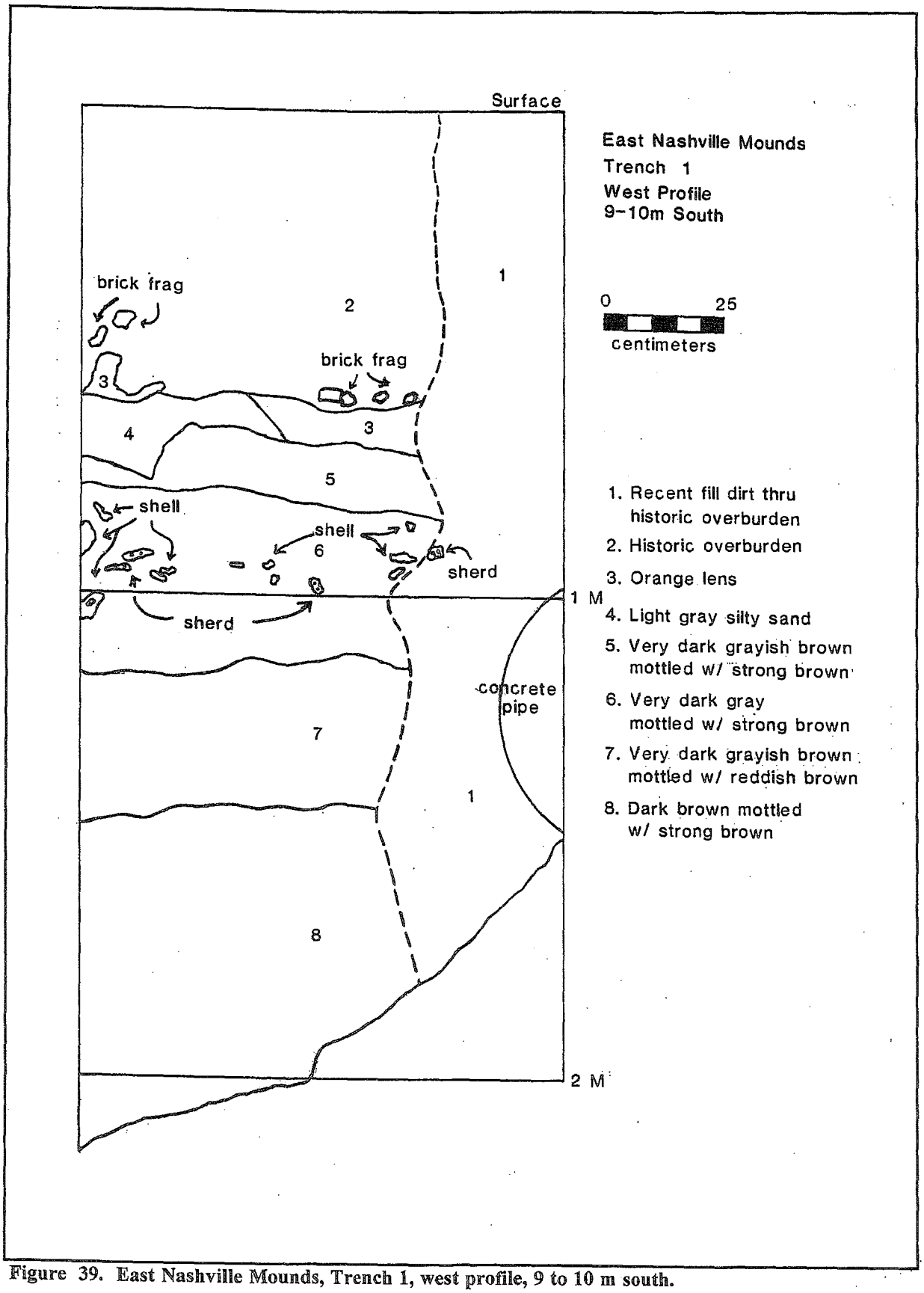


Figure 39. East Nashville Mounds, Trench 1, west profile, 9 to 10 m south.

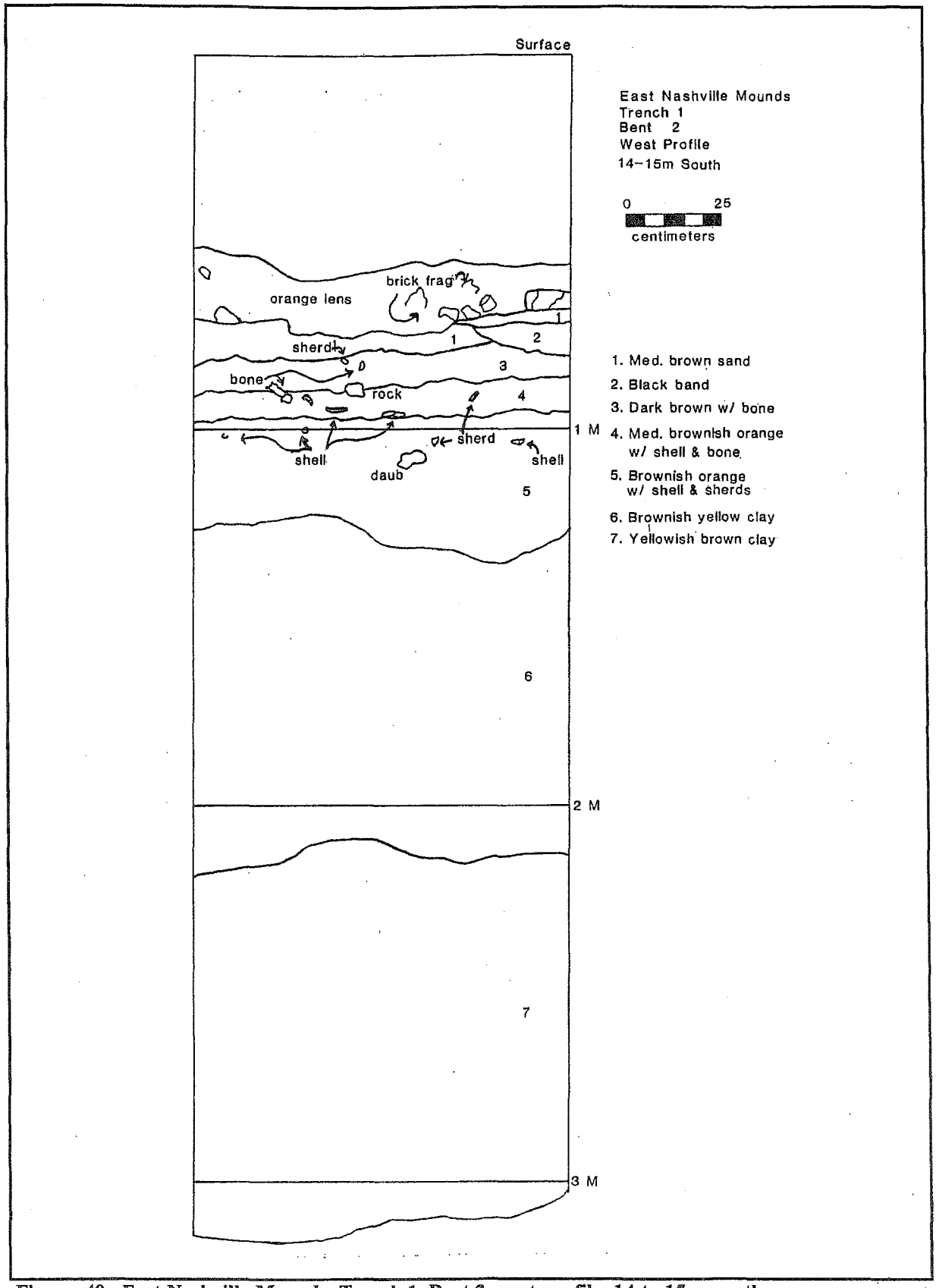


Figure 40. East Nashville Mounds, Trench 1, Bent 2, west profile, 14 to 15 m south.

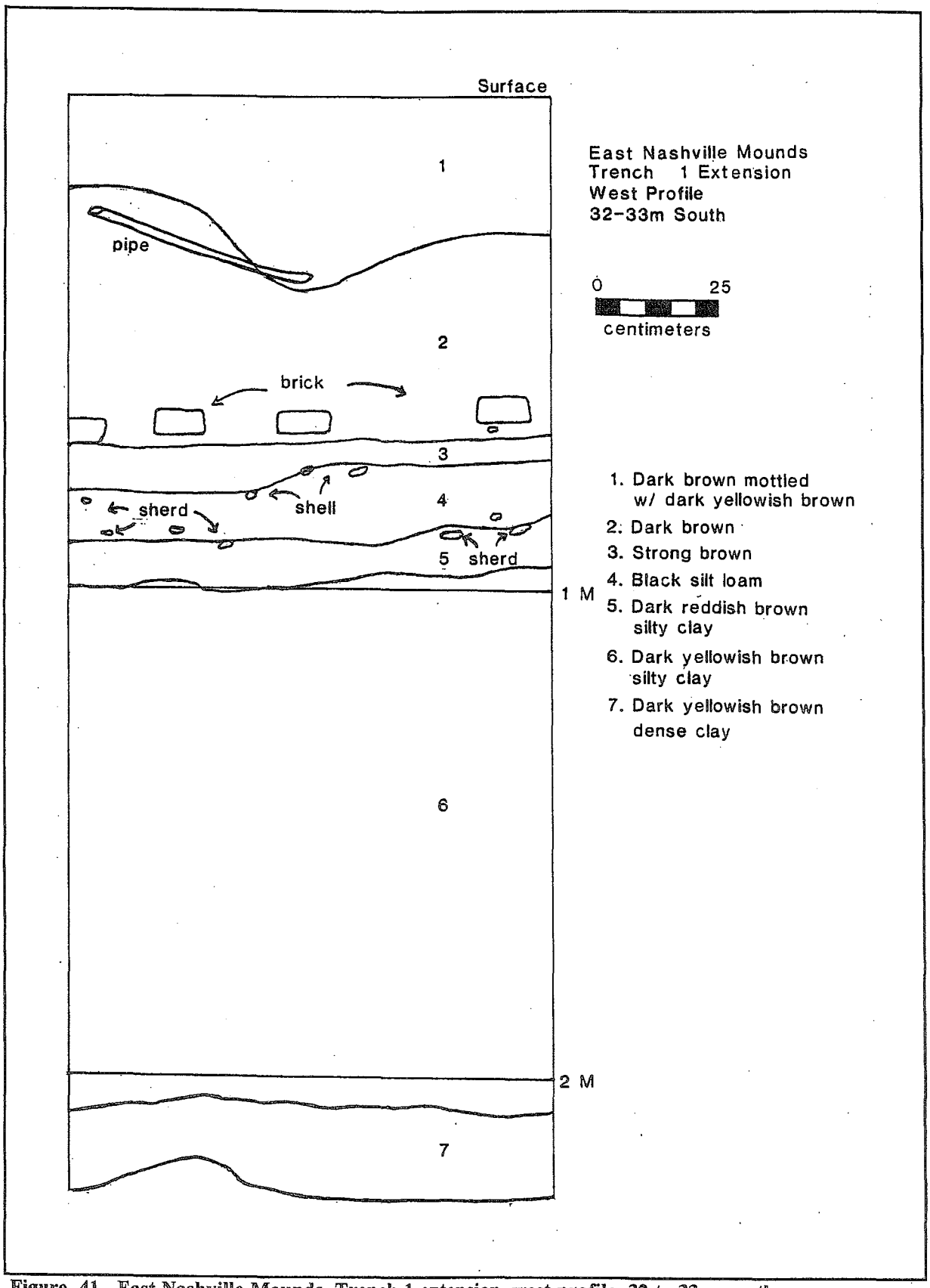


Figure 41. East Nashville Mounds, Trench 1 extension, west profile, 32 to 33 m south.

30 cm in thickness. Cultural material within the midden was more dense on the north and west (i.e., river and existing bridge sides).

Recommendations based on the results of the Phase II study were that the portion of East Nashville Mounds investigated satisfied the criteria for classification as a significant cultural resource, and that the site was potentially eligible for listing in the National Register of Historic Places.

Subsequent to and acting on the recommendations resulting from the Phase II investigations, TDOT initiated Phase III data recovery at East Nashville Mounds as the only viable alternative. As noted above, these were carried out in two stages, general excavation and burial removal. A discussion of the latter is presented by Hill in Chapter 15.

Phase III field investigations were begun in late October, 1991. Based on the findings of the Phase II investigations, the project area was enlarged to include both that portion of the new ROW retaining intact deposits and the area under the existing, or more properly, the previously existing bridge. The area investigated included approximately 2,000 square meters, and the research design called for a minimum sample of 10 percent hand excavation. Excavations were carried out in 10 cm levels within identified natural/cultural zones. All hand-excavated fill was water screened through 1/4/ mesh, and all feature fill was additionally processed through window screen. Two-liter soil samples were retained from each feature and level, and selected samples were further processed through flotation. Following hand excavation, the remainder of the midden was stripped, and all features encountered were excavated and processed.

Following establishment of a baseline along the southern ROW, the historic overburden was mechanically stripped from the project area. Historic material in this layer ranged from brick foundation remnants to timbers, garbage bags, and septic tanks. Many lengths of pipe and culvert were found cutting through the site. While all areas of the site had been impacted to some degree, some parts were totally disturbed. These included the northeastern corner of the ROW, the area beneath the old bridge north of the second span, and a large area located in the south-central portion of the ROW (see Figure 30). This last disturbed area consisted of essentially a plug of modern garbage (tires, garbage bags, etc.) penetrating the prehistoric strata and extending several feet into the subsoil. The core of this plug was left in place, and a second benchmark (BM 2; grid point 115N 95E, elevation 418.17 ft AMSL) was established on top of it (Figure 42; the French Lick site project area is to the right of the smokestack in the background.) Some of the best-preserved deposits occurred under the old bridge, in the northwestern corner of the project area (Figure 43). This area had been protected by a concrete slab poured between the bridge supports; the area served as a storage building for the lumber company.

A total of 202.5 sq m, or approximately 94.40 cu m, of midden was hand excavated; 45 features and 27 postholes were identified and excavated. Ten burial loci were identified, representing sixteen individuals.

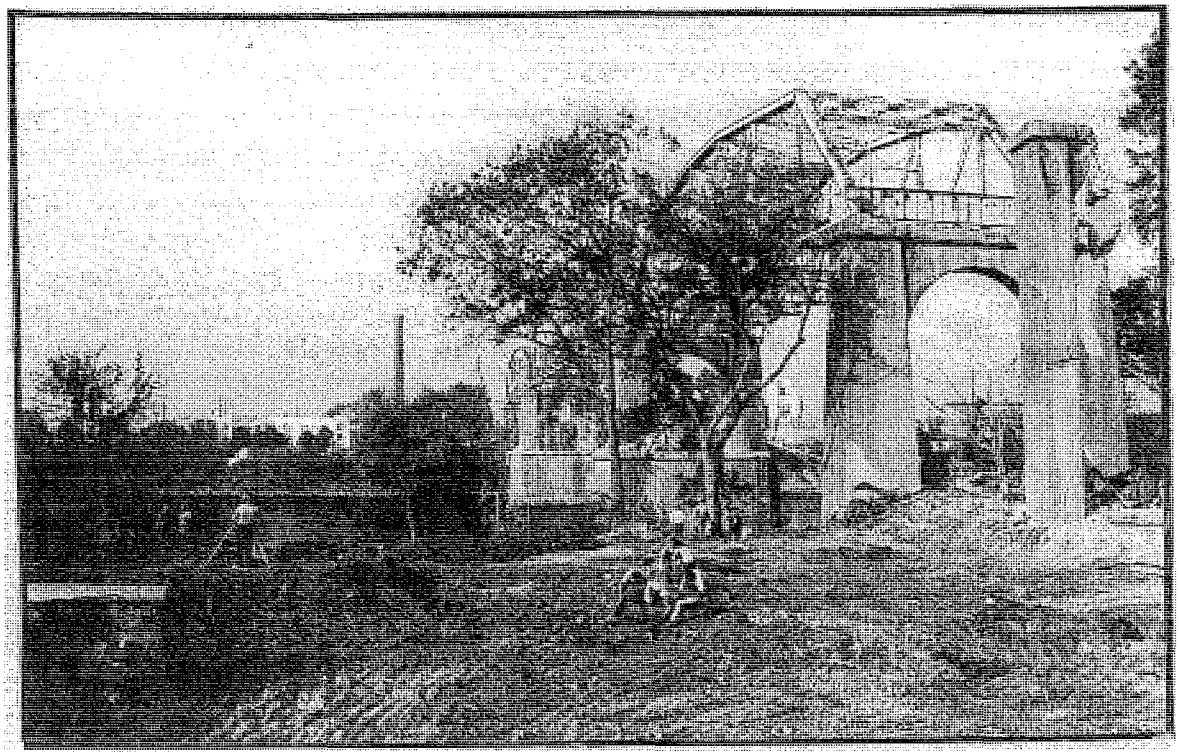


Figure 42. East Nashville Mounds, general view of northwest portion of project area, showing initial hand excavations and Benchmark 2.

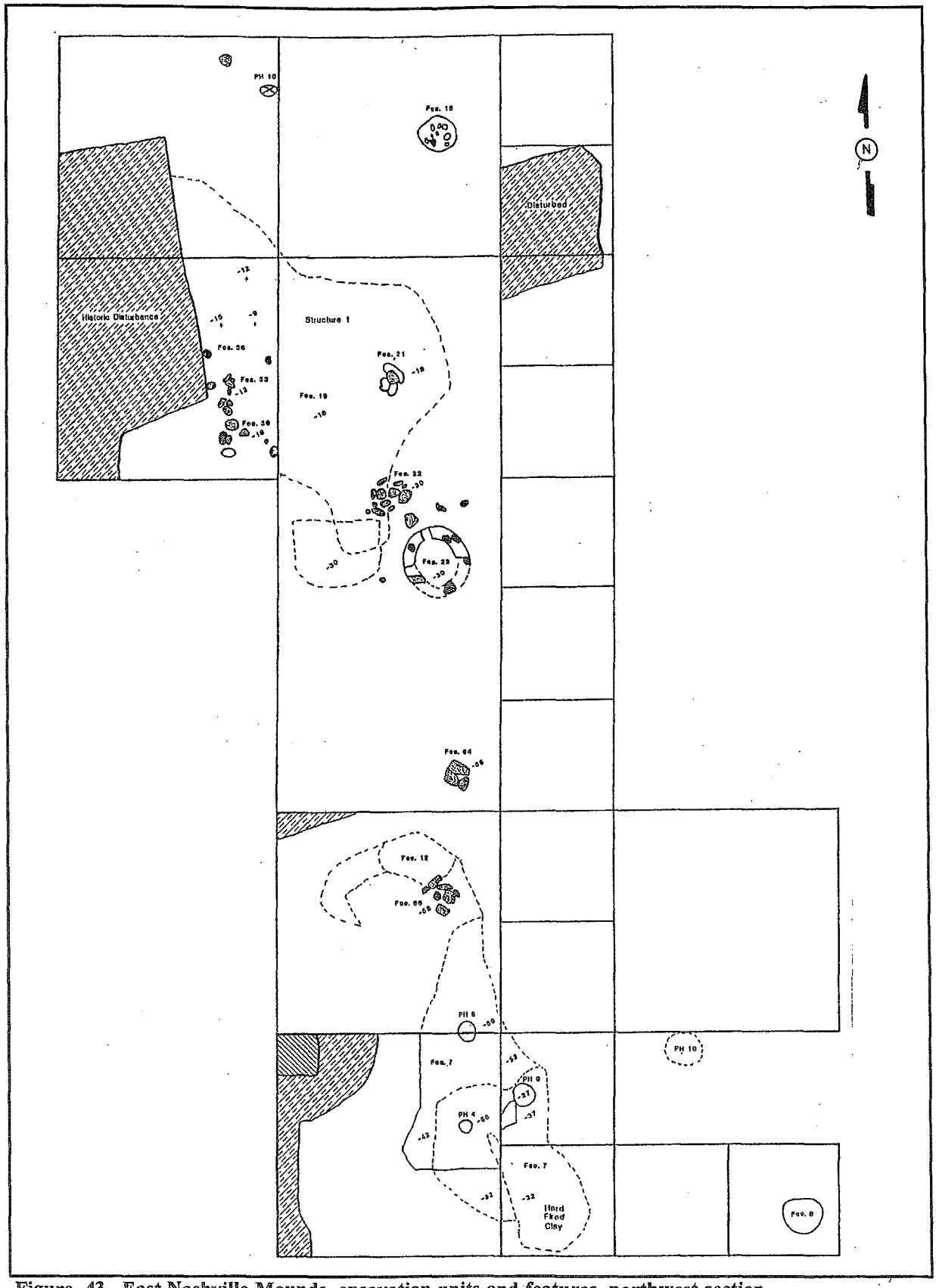


Figure 43. East Nashville Mounds, excavation units and features, northwest section.

Two zones were dentified as containing the bulk of the prehistoric material at East Nashville Mounds. Although there has been extensive impact to the prehistoric deposits at this location, and it is unknown how much of Zone 1 has been lost, and despite numerous intrusions into the site matrix, the stratigraphic sequence at East Nashville Mounds is relatively simple (Figures 44 through 48). Underlying the historic overburden is a truncated layer of silt loam averaging 10 to 20 cm thick; this was designated Zone 1. In places, the top half of Zone 1 was oxidized, evidence of a fire which had taken place over the entire area. In some areas, historic material intruded into the upper portion of this zone, and may represent a plowzone. Artifact density in Zone 1 varied across the ROW; it was highest beneath the first and second span of the old bridge, where a large concrete slab had preserved the deposits.

Grading from Zone 1 was Zone 2, a dark, silty clay loam midden layer with large amounts of freshwater shell, bone, sherds, and limestone rock. Zone 2 averaged 40 cm thick. As in Zone 1, artifact density varied across the ROW and was highest under the western end of the old bridge. In all areas investigated, artifact density was much higher in Zone 2 than in Zone 1.

Zone 2 overlaid and graded with Zone 3, a sterile silty clay. Zone 3 was generally lighter and much harder than the overlying midden, making recognition easy. In several units, posthole tests were taken down 60 cm below the top of Zone 3, and no other strata were encountered. The thickness of this stratum could be seen in a trench dug to record the soil profile.

DESCRIPTION OF FEATURES *(PEACOCK & WALLING)*

Forty-five features and 27 postholes were identified and excavated during the Phase III investigations at East Nashville mounds. Feature distribution is shown on Figures 41 and 43. Materials recovered from feature contexts are presented in Tables 30, 32, 34, and 36, and in Appendices A, B, C (Part I), and F.

Feature 1

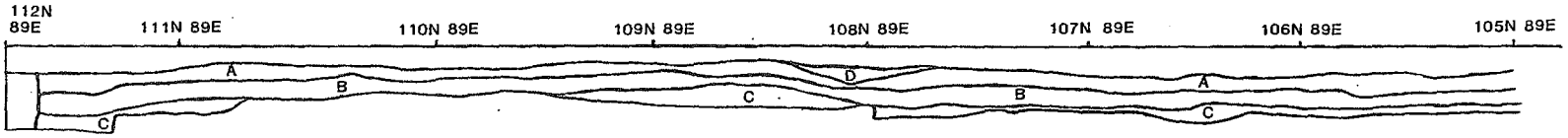
See Feature 27.

Feature 2

Provenience: 125N 106E
Dimensions: 32 cm NS x 39 cm EW
Depth: 6 cm
Origin: Zone 2, Level 3

This feature was a small, irregularly shaped pit originating in the midden (Zone 2) and

East Nashville Mounds
East Wall
Profile



A - Zone 1, mixed historic upper, silty clay loam

B - Zone 2, silty clay loam

C - sterile clay

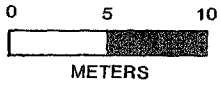
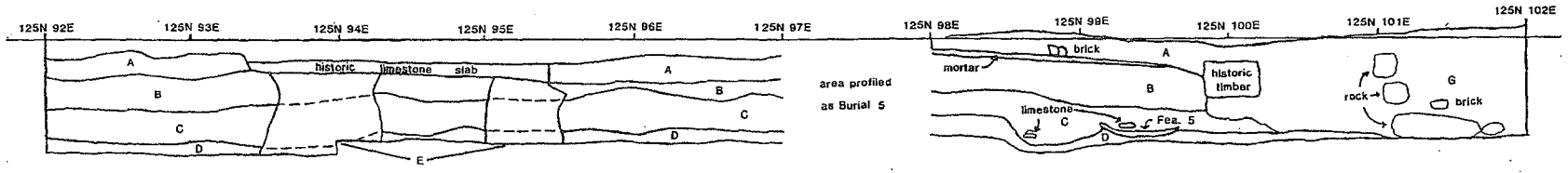


Figure 44. East Nashville Mounds, east wall, profile.

East Nashville Mounds
East/West Trench
North Profile



A - Zone 1, disturbed

B - Zone 1, midden, silt loam

C - Zone 2, midden, silty clay loam

D - Zone 3, subsoil, massive silty clay

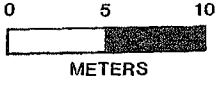


Figure 45. East Nashville Mounds, east/west trench, north profile.

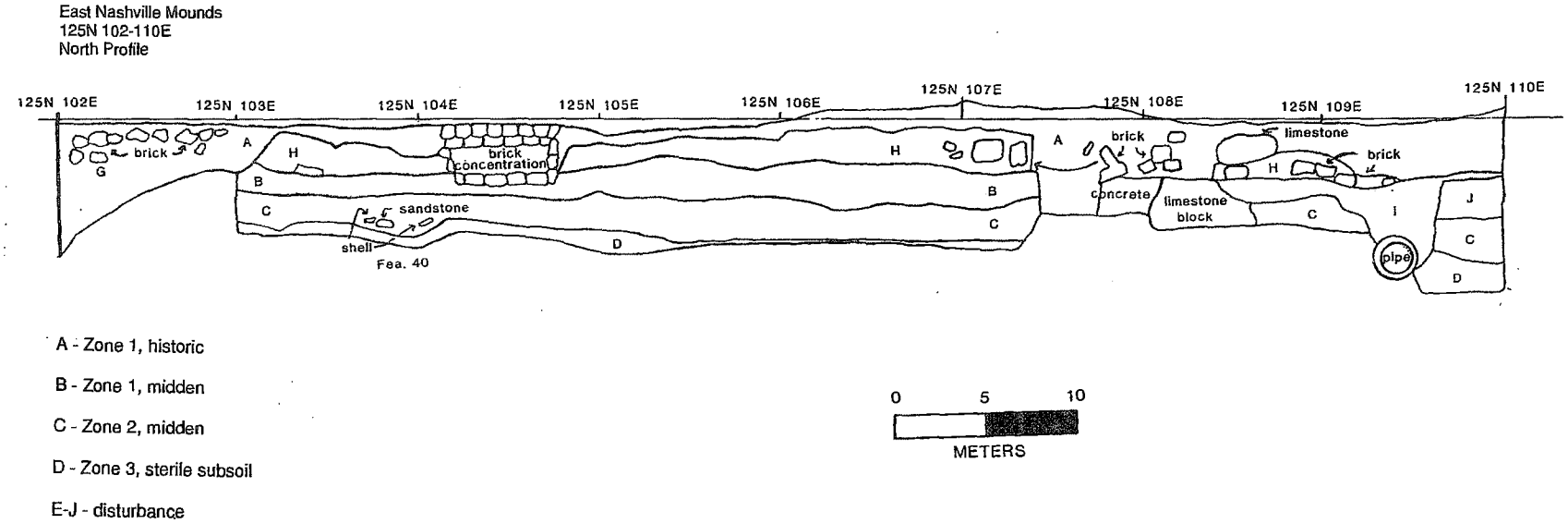
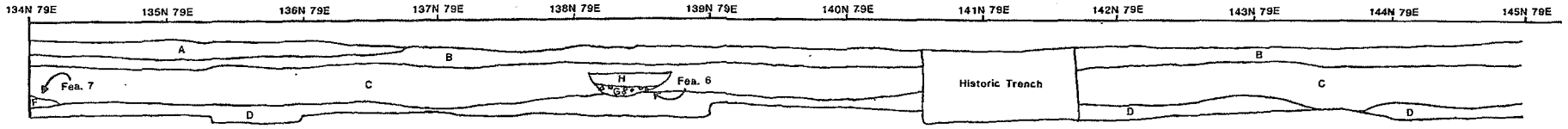


Figure 46. East Nashville Mounds, 125N 102-110E, north profile.

East Nashville Mounds
134-145N 79E
West Profile



A - Zone 1, fine sandy loam

B - Zone 1, sandy loam

C - Zone 2, silty clay loam

D - Zone 3, clay

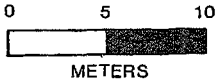
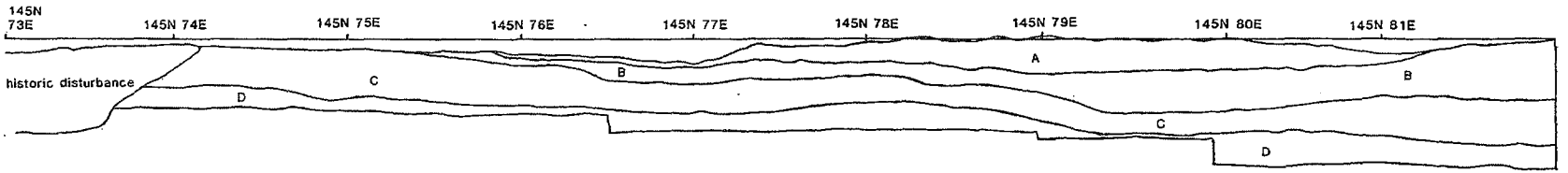


Figure 47. East Nashville Mounds, 134-145N 79E, west profile.

East Nashville Mounds
Northernmost Units Under Bridge
North Wall Profile



A - Zone 1, mixed, silty clay loam

B - Zone 1, midden, silty clay loam

C - Zone 2, midden, silty clay loam

D - Zone 3, sterile subsoil, massive silty clay

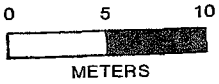


Figure 48. East Nashville Mounds, northernmost units under bridge, north wall profile.

intruding into the sterile subsoil (Zone 3). A thin band of fire-hardened, orange clay was found around approximately half the perimeter of the feature. Artifacts included a concentration of shell immediately above the feature and some charred corn cob fragments and animal bone from the southwest corner.

Feature 3

Provenience: 125N 100E
Dimensions: 37 cm NS x 34 cm EW
Depth: 16 cm
Origin: Zone 2, Level 2

Feature 3 was a small cluster of unmodified tabular limestone. The main cluster consisted of two layers of slabs, six in the bottom layer and nine in the top. Placement of the slabs within the layers appeared to be random. The slabs averaged in size from 5 cm to 17 cm across. A few similar pieces of limestone were scattered to the east of the main cluster, and might or might not have been associated with the feature. No pit fill was discernible around the slabs; however, the dirt from within the cluster was taken for flotation and microartifact analysis.

Feature 4

Provenience: 125N 84E
Dimensions: 77 cm NS x 149 cm EW
Depth: 12 cm
Origin: Zone 2, Level 1

Feature 4 was a large, shallow pit containing great quantities of shell, bone, sherds, and limestone fragments. This feature had been impacted by a culvert and adjacent pipes which ran generally east-west across the ROW.

Feature 5

Provenience: 125N 100E
Dimensions: > 12 cm NS x 53 cm EW
Depth: 8 cm
Origin: base of Zone 2

This feature was a shallow basin with an orange fired clay lining. It was located at the base of the midden zone, intruding slightly into the sterile subsoil. The pit fill was indistinguishable from the surrounding midden.

Feature 6

Provenience: west wall, Unit 139N 80E
Dimensions: 48 cm EW
Depth: 12 cm max.

Origin: Zone 2

Feature 6 was the number given to a thin trace of orange material noted in the west profile of Unit 139N 80E. It was similar in appearance to Feature 19, a possible house floor. The band was about 1 to 2 cm in thickness and 80 cm long and occurred in the center of the Zone 2 midden. Excavation revealed only faint traces of fired clay other than the thin band recorded in the profile; it is probable that this band represents a trace of Feature 19.

Feature 7

Provenience: 133N 80E/134N 80E
Dimensions: 3 m NS 1.40 m EW
Depth: avg. 20 cm
Origin: Zone 2, Level 2

Feature 7 was a possible house floor. It consisted of a hardened, mottled light gray/white/yellowish brown sandy clay with abundant charcoal flecks, artifacts, and postholes (Postholes 4 and 6; see below). Shell and charred corn were also found in and around this feature, which lay at the bottom of the midden zone. The clay, which was presumably fire hardened, ranged in thickness from less than 1 cm to 19 cm. The feature had no distinct shape; the edges were thin, highly mottled, and irregular. No lines of postholes or wall trenches were found associated with the hardened clay, although three postholes (Postholes 4, 6, and 9) occurred within Feature 7. The feature was irregular in shape and thickness; it averaged about 20 cm thick.

Feature 8

See posthole descriptions below.

Feature 9

Provenience: 136N 82E
Dimensions: n/a
Depth: ca. 20 cm
Origin: Zone 2, Level 1

Feature 9 was the number given to an area within Unit 136N 82E which seemed to contain more charcoal than the surrounding midden. Upon excavation, however, no feature boundaries could be discerned, and the charcoal was never concentrated enough to warrant special excavation procedures. This material was taken with the general level fill.

Feature 10

Feature 10 was the number assigned to a discoloration in the northeast corner of Unit 140N 82E. Excavation proved this to be a pocket of disturbed material which was subsequently discarded; the feature number was discontinued.

Feature 11

Provenience: 145N 77E
Dimensions: interior—53 cm NW/SE x 135 cm NE/SW
exterior—78 cm NW/SE x 151 cm NE/SW
Depth: 58 cm
Origin: Zone 2, Level 1

Feature 11 was a large, subrectangular prepared clay basin which was discovered near a possible house floor. The rim and sides of the basin were fire-hardened orange clay, approximately 12 cm thick around the rim, tapering off to end near the bottom of the basin (Figures 49 and 50). A square shelf of orange fired clay was raised some 3 cm from the floor at the eastern end of the feature. Two thin gray layers of oxidized clay lined the sides of the basin. An opening 24 cm wide was left in the rim in the center of the NW, long side. Two postholes nearly identical in size (Postholes 7 and 8) were found, one on each side of the opening. These postholes are 22 cm in diameter and 20–22 cm deep.

Approximately the top three-fifths of the feature seemed to be filled with general midden materials. Beneath that were two distinct strata, A and B. Stratum A was a hard, light brown, ashy deposit 13 cm thick. This stratum had an abrupt boundary both with the overlying midden and the underlying Stratum B. Stratum B was a 6- to 8-cm-thick layer of charcoal. While the sterile clay beneath Stratum B was fire hardened, there was no indication of a prepared floor. A stone discoidal was found on the clay rim of the southeastern end of the feature.

Feature 11 originated in the midden. However, much of the midden in this area had been lost due to prior historic disturbance; only a few centimeters remained over the feature. Other than the two postholes flanking the rim opening, no indications of a possible structure were found definitely associated with the basin. It should be noted, however, that a possible house floor, Structure 1, was located very near to Feature 11 (see Figure 30).

Feature 12

Provenience: 136N 79E
Dimensions: 46 cm NS x 126 cm EW
Depth: 6 cm
Origin: Zone 2, Level 1

This feature was an irregularly shaped area of light gray, ashy soil. While the discoloration covered a fairly large area, the central part of the feature, where the lighter color and mottling was more pronounced, was an oval 40 cm NS x 64 cm EW. It was also deepest in this central portion, thinning out toward the edges of the discolored area. This feature was probably a house floor.

Figure 49. East Nashville Mounds, Feature 11.

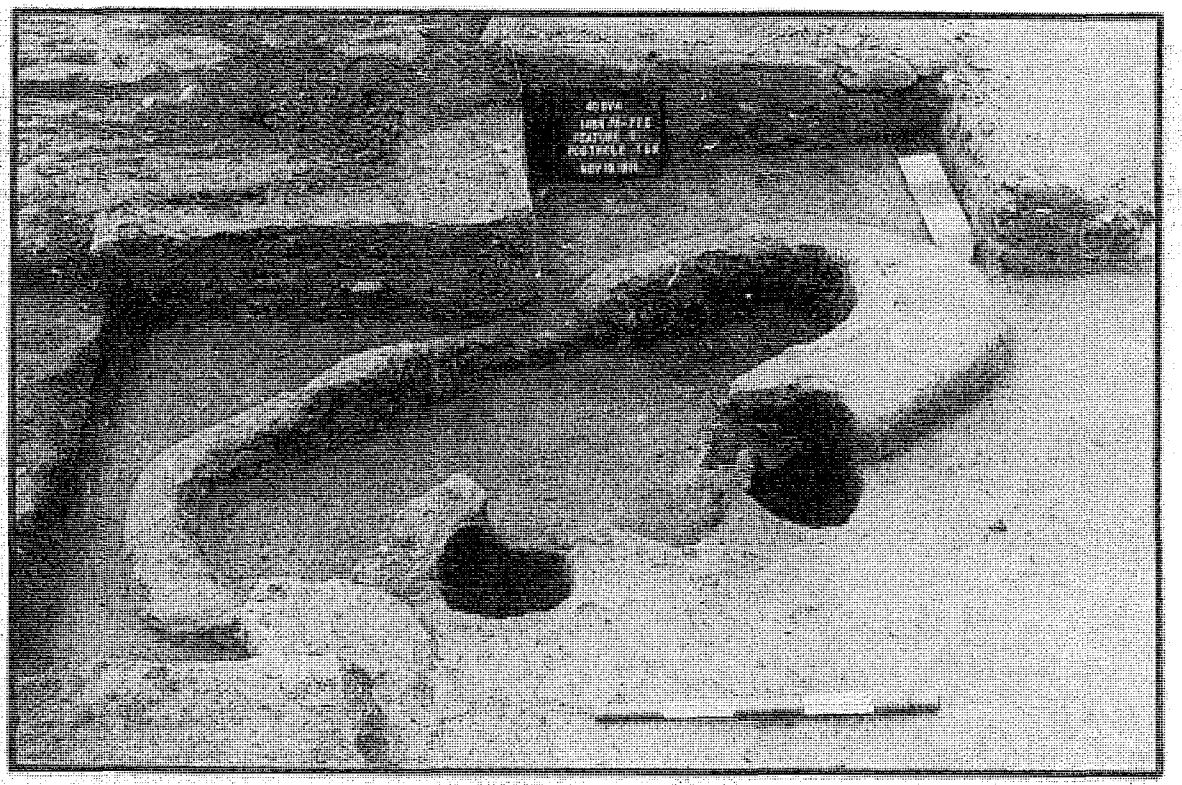


Figure 50. East Nashville Mounds, Feature 11 and associated Postholes 7 and 8.

Feature 13

Provenience: 123N 112E
Dimensions: 25 cm NS x 34 cm EW
Depth: 5 cm
Origin: Zone 2, Level 3

Feature 13 was a small, shallow, clay-lined basin located at the base of the midden; it intruded into the subsoil. Some shell and small bits of charcoal were noted in the fill, which was indistinguishable from the overlying midden. The lining of the roughly circular basin was 1 to 5 cm of orange, fire-hardened sandy clay. A thin band of gray, oxidized clay was found between the orange clay and the subsoil.

Feature 14

Provenience: 138N 82E
Dimensions: 48 cm NS x 36 cm EW
Depth: 10 cm
Origin: Zone 2, Level 3

This feature was a small, shallow, shell-filled pit contained within the midden. It contained a large number of sherds and bone fragments. Feature 14 intruded into Feature 16, a similar pit with lesser amounts of shell. Feature 14 was impacted on the eastern edge by a recent historic pit.

Feature 15

See posthole descriptions below.

Feature 16

Provenience: 138N 82E
Dimensions: 48 cm NS x 32 cm EW
Depth: 10 cm
Origin: Zone 2, Level 3

Feature 16 was a small, shell-filled pit similar in size and artifact content to Feature 14, which intruded into it. Feature 16 had a lesser concentration of artifacts than the intruding pit.

Feature 17

Provenience: 139N 90E
Dimensions: 32 cm NS x > 18 cm EW
Depth: 17 cm
Origin: Zone 2, Level 1

Feature 17 was a pit containing abundant shell and sherds. Its original size was difficult to estimate due to recent historic disturbance; an estimated one-third of the feature was destroyed on the east. A smaller portion of the pit was located to the west; this was unrecognized during the earlier excavation of Unit 139N 89E and was removed with the general excavation materials from that unit. Feature 17 was wholly contained within the midden zone. Its fill was indistinguishable from the midden, so no pit outline could be discerned.

Feature 18

Provenience: 138N 82E
Dimensions: 72 cm NS x 61 cm EW
Depth: 41 cm
Origin: Zone 2, Level 3

Feature 18 was a well-defined, deep pit with sloping sides and a flat bottom. It occurred well within the midden zone and penetrated several centimeters into the sterile subsoil. The pit was roughly circular with a hard gray clay wall about 3 to 4 cm thick at the top of the feature, thinning down to less than 1 cm beneath the feature (Figures 51 and 52). The clay changed in color from dark gray to orange with depth. The soil surrounding the feature had been oxidized from heat.

Three fill strata were noted within Feature 18. The top 8 to 10 cm were similar to the midden zone, but darker and with a higher artifact concentration, including several large sherds and mussel shells. The second stratum made up the bulk of the pit fill. It was composed of very mottled dark brown/orange/gray dirt with a large amount of fired clay. The bottom stratum was composed mostly of wood charcoal surrounded by small areas of gray/brown fill.

Feature 19

Provenience: 141N 79E
Dimensions: 245 cm NS x 153 cm EW
Depth: 10 cm
Origin: Zone 2, Level 2

This feature was one of a series of features which possibly made up a house floor. It was a broad area of yellowish brown, sandy clay with abundant charcoal flecks; it was distinguished from the surrounding midden by color, texture, and a much lower incidence of shell. Two probable rock-filled postholes (Features 21 and 22) and a hearth (Feature 23) were associated with Feature 19. Feature 21 was located within Feature 19; Feature 22 intruded into the eastern edge of Feature 19, and Feature 23 was located just to the southeast of Feature 19.

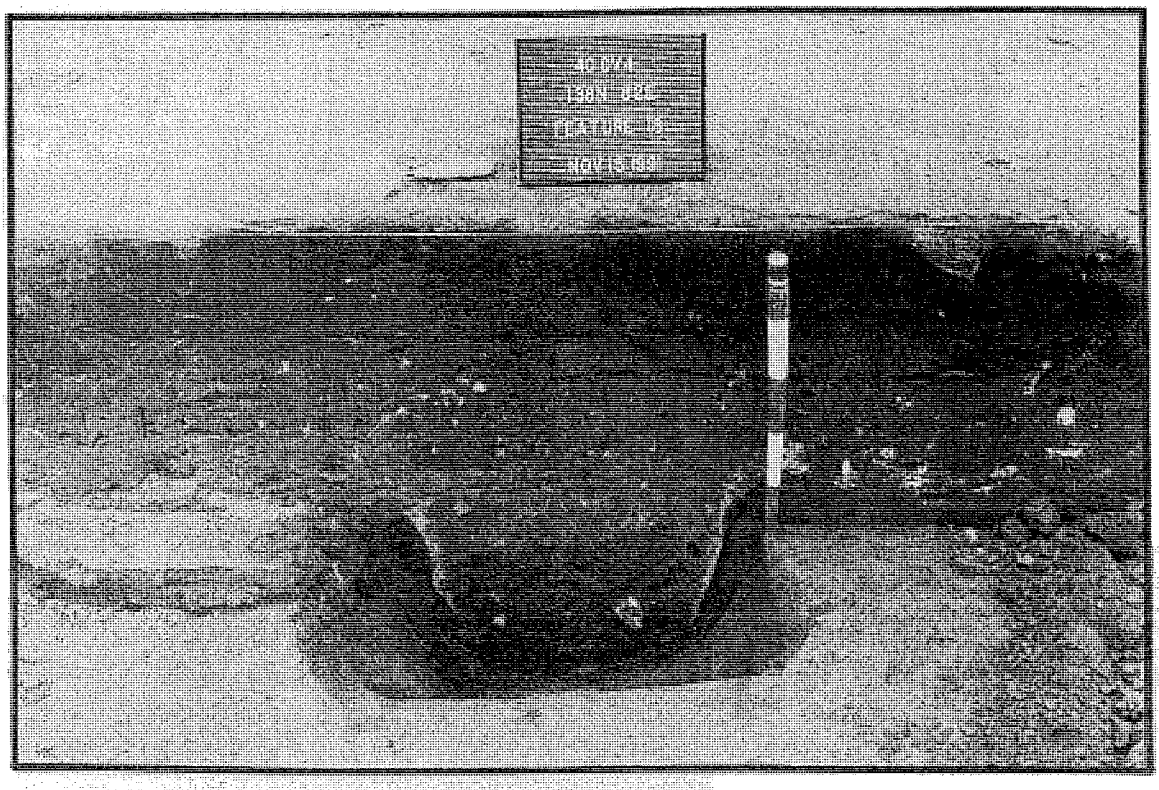


Figure 51. East Nashville Mounds, Feature 18, east profile.

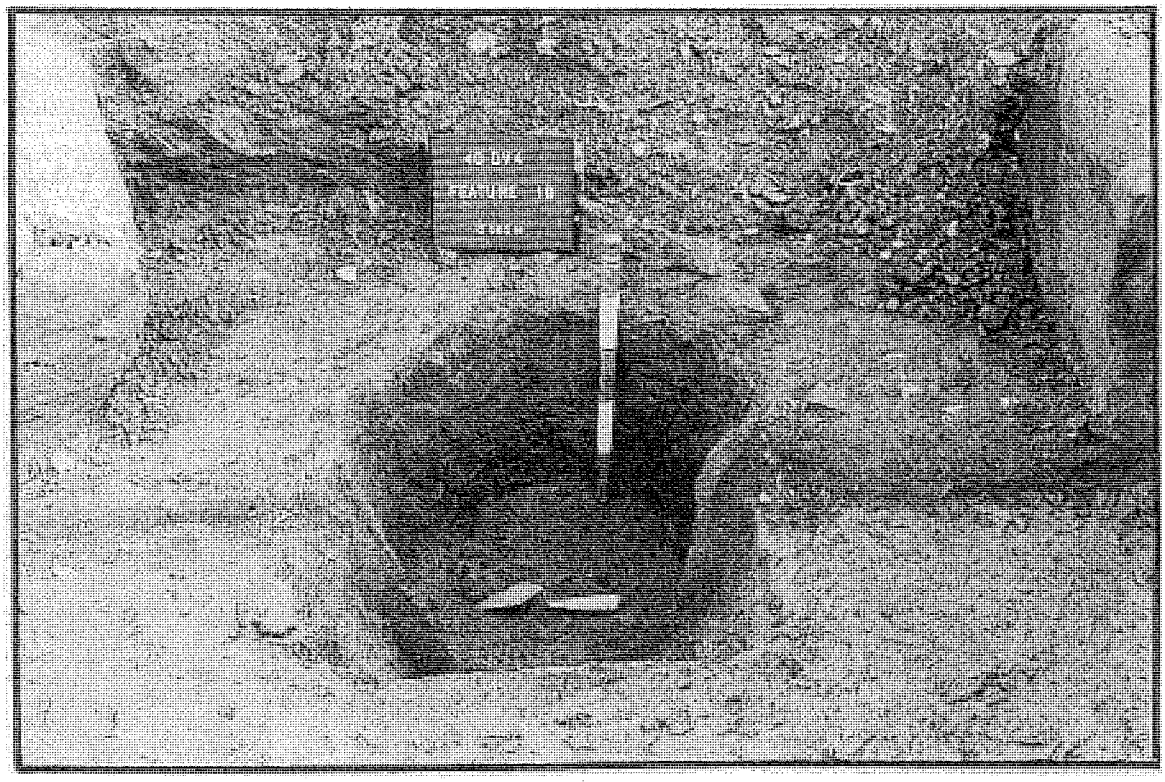


Figure 52. East Nashville Mounds, Feature 18, plan view.

Feature 20

Provenience: 106N 87E
Dimensions: 54 cm NS x 52 cm EW
Depth: 18 cm
Origin: Zone 1

Feature 20 was a double-layered pile of limestone slabs with a concentration of artifacts on top of the rock. The bottom rock layer contained 11 slabs, ranging from about 5 cm to 18 cm across. The top layer contained 11 slabs, ranging from about 5 cm to 24 cm across. Other than being laid flat, the placement and orientation of the slabs within the feature appeared to be random. A few sherds were found within the rock cluster. This feature occurred in an area where there was no midden, and Zone 1 had very low artifact density except around features. The feature was denoted by the presence of the artifacts and the limestone slabs; no pit fill could be distinguished.

Feature 21

See posthole descriptions below.

Feature 22

See posthole descriptions below.

Feature 23

Provenience: 141N 79E
Dimensions: 53 cm NS x 60 cm EW
Depth: 14 cm
Origin: Zone 2; Feature 19?

Feature 23 was a circular hearth about 20 cm southeast of Feature 19, a probable house floor. It was bounded by a prepared clay basin forming its base and sides. This basin was of orange fired clay and averaged 10 cm thick on the sides and 3 to 4 cm thick at the base. The feature fill was a mixture of dirt and charcoal with abundant shell and bone fragments.

Feature 24

Provenience: 126N 88E
Dimensions: > 150 cm NS x > 90 cm EW
Depth: > 13 cm
Origin: Zone 2

Feature 24 was a pit with abundant shell, sherds, fired clay, bone, and limestone rock fragments. Its original size could not be determined with much accuracy due to historic disturbance. The feature was impacted on the north by a large culvert running east-west across the site; it was destroyed on the west by the Phase I Backhoe Trench 1. Feature 24

was also designated as Feature 28 during the excavation of 128N 88E; it will be referred to as Feature 24 henceforth.

Feature 25

Provenience: 110N 87E
Dimensions: 47 cm NS x 48 cm EW
Depth: 15 cm
Origin: Zone 1

Feature 25 was one of a pair of juxtaposed small, clay-lined basins; it intruded into the other basin, Feature 26. The circular basin of Feature 25 was of reddish orange fired clay, 2 to 4 cm thick, with well-preserved walls and a flat base. The basin contained two discrete lenses of ash and small amounts of charcoal throughout (Figure 53).

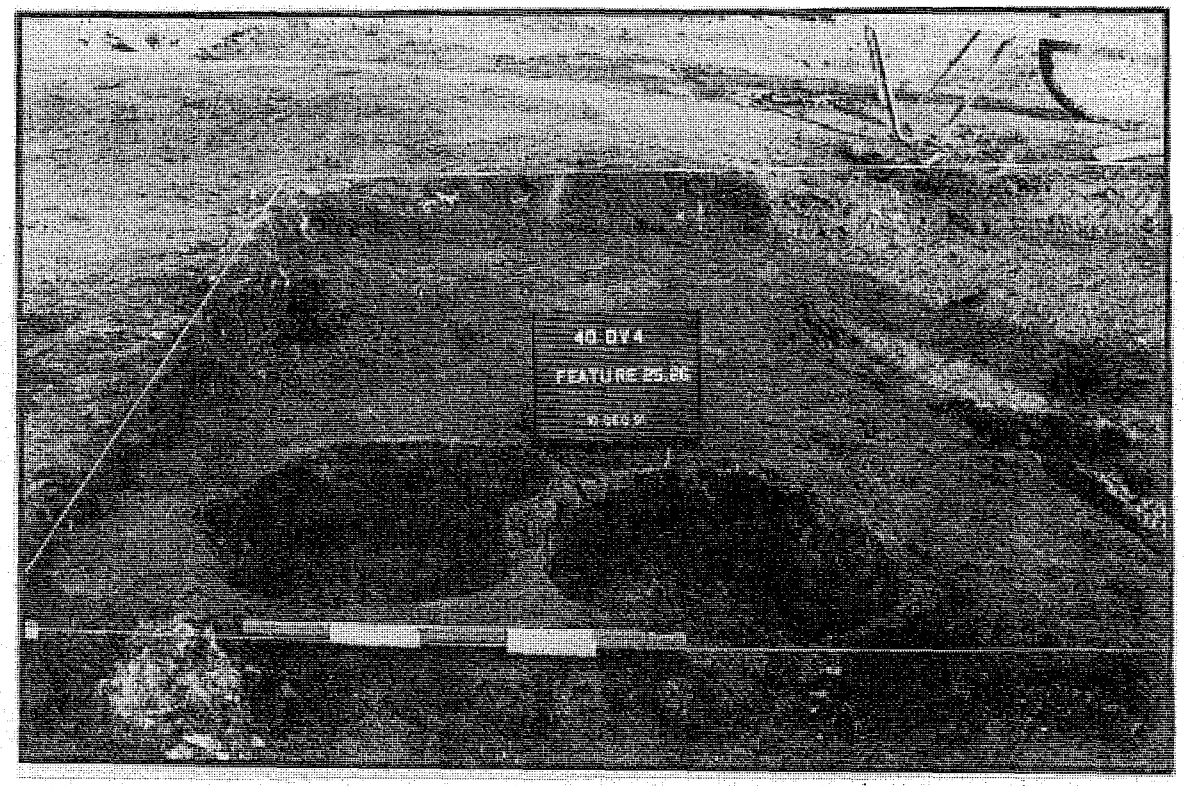


Figure 53. East Nashville Mounds, Features 25 and 26.

Feature 26

Provenience: 110N 87E
Dimensions: 58 cm NS x > 48 cm EW
Depth: 20 cm
Origin: Zone 1

Feature 26 was a small, clay-lined basin intruded into by Feature 25. An estimated 15 percent of Feature 26 was destroyed by construction of the other, slightly smaller basin. Feature 26 was circular in outline; extrapolation of the circular shape allows an estimation of about 60 cm for the original EW width. Like Feature 25, Feature 26 had a fired clay base and a wall 2 to 4 cm thick (see Figure 53).

Feature 27

Provenience: 110N 87E
Dimensions: 136 cm NS x 150 cm EW
Depth: 24 cm
Origin: Zone 1, Level 1

Feature 27 was a large pit with moderate amounts of bone and shell. The matrix of the feature was indistinguishable from the surrounding Zone 1; the feature was traced based on the presence of visible artifacts and the looser soil. While no midden was found in this portion of the site, it is possible that Feature 27 represented a depression filled with wash from the midden to the north and east. The feature was disturbed by a square historic post in the southern portion. This feature was the same as Feature 1, the number assigned to a concentration of shell noted on the surface after initial stripping of the historic overburden.

Feature 28

See Feature 24.

Feature 29

See Burial 5 (Chapter 15).

Feature 30

See posthole descriptions below.

Feature 31

See posthole descriptions below.

Feature 32

Provenience: 126N 87E
Dimensions: 20 cm NS x 24 cm EW
Depth: 7 cm
Origin: Zone 2, Level 1

Feature 32 was a probable rock-filled posthole similar to Features 30 and 31, located about 1.9 m to the southwest. As with the above features, no distinction could be made between the fill of the feature and the surrounding midden.

Feature 33

See posthole descriptions below.

Feature 34

Feature 34 was the number given to a small, subrectangular area of hard tan clay overlying the northeastern corner of Feature 37. Upon excavation, it was determined that Feature 34 was in fact part of the historic disturbance above Unit 112N 100E; this disturbed level contained several lenses of tan clay identical to Feature 34, while nothing similar was found in undisturbed contexts anywhere on the site. No artifacts were recovered from this clay pocket, and the feature number was discontinued.

Feature 35

Feature 35 was the number given to a dark stain crossing the western side of Units 113N 101E and 112N 101E. Excavation showed this feature to be a recent historic trench. No artifacts were retained from this feature, and the feature number was discontinued.

Feature 36

Provenience: 143N 77E
Dimensions: 110 cm NS x 60 cm EW
Depth: 5 to 26 cm thick
Origin: Zone 2, Level 2

This feature was a probable house floor. It was a broad area of mottled light brown/gray/orange hardened clay with several associated postholes (see above and below). The surface was not even, but varied considerably in elevation, with a difference of about 6 cm between the highest and lowest points. A few small pieces of mica were encountered directly beneath the house floor, which lay on top of sterile subsoil. A hearth feature (Feature 47) was also found just below the floor (see below).

Feature 37

Provenience: 112N 100E
Dimensions: 65 cm NS x 75 cm EW
Depth: 15 cm
Origin: Zone 2

Feature 37 was a shallow pit with a heavy concentration of sherds, bone, and other artifacts (Figure 54). The pit had sloping sides with a bottom sloping gently to the west.

The fill in Feature 37 was slightly lighter than the surrounding matrix. Iron staining was found on top of this feature and the matrix, presumably having percolated from the overlying historic, disturbed layer.

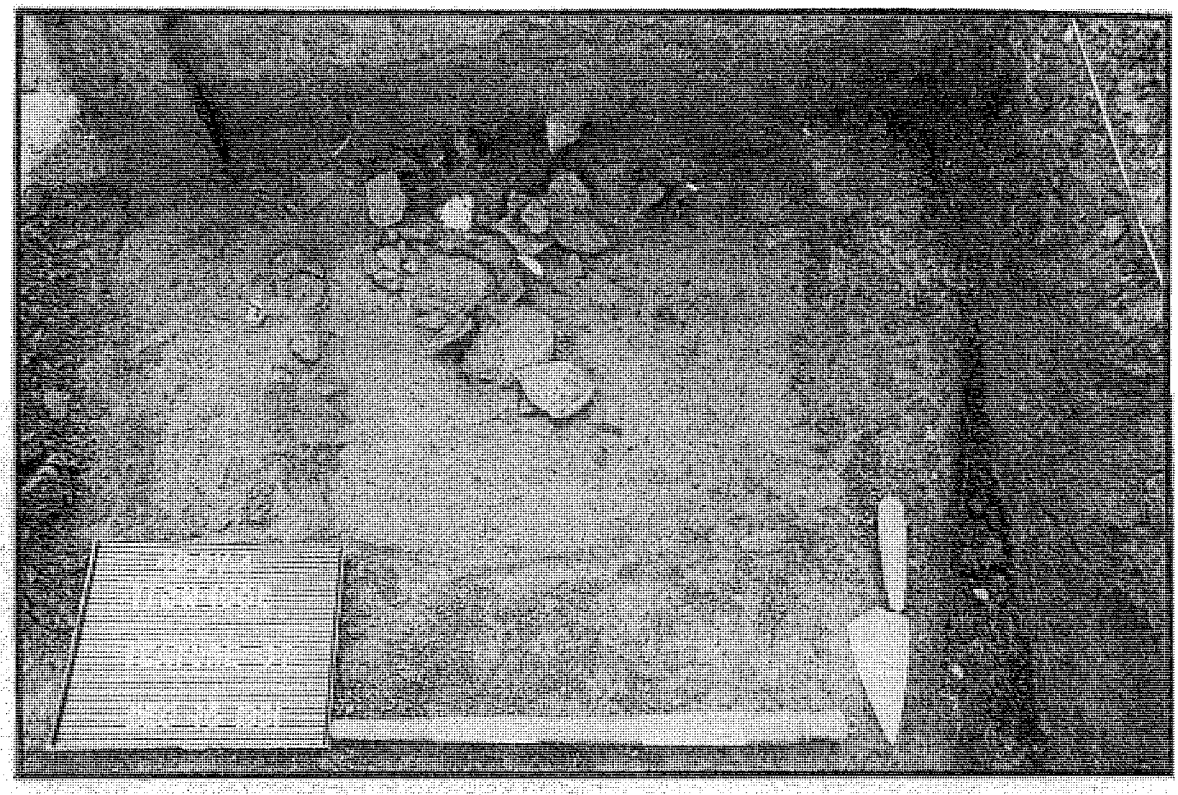


Figure 54. East Nashville Mounds, Feature 37.

Feature 38

See posthole descriptions below.

Feature 39

Provenience: 125N 105E
Dimensions: 39 cm NS x 37 cm EW
Depth: 10 cm
Origin: Zone 2, Level 2

Feature 39 was a small, irregularly shaped pit containing a discrete lens of white ash encompassed by mixed ash and dirt. The white ash lens contained numerous fragments of burned mussel shell. Some charcoal was located beneath the ash lens. Spots of fired clay were found around the top of the feature.

Feature 40

Provenience: 125N 105E
Dimensions: > 18 cm NS x 56 cm EW
Depth: 16 cm
Origin: Zone 2, Level 2

Feature 40 was a small pit or depression with poorly defined edges, containing numerous charcoal flecks and fragments of shell. It appeared to have been intruded on the east side by Feature 39, although the poor definition of the feature boundaries made this uncertain. An estimated one-half of the feature was excavated; the northern half was beneath the unexcavated materials north of Unit 125N 105E. If the estimation is correct, then the north-south size of the feature would be approximately 36 cm.

Feature 41

Provenience: 108N 89E
Dimensions: 58 cm NS x est. 40 cm EW
Depth: 22 cm
Origin: Zone 1, Level 1

Feature 41 was a basin-shaped pit with a concentration of shell and sherds. Its fill was almost exactly the same in color and texture as the surrounding Zone 1 matrix, making delineation difficult. The feature was discovered in the east profile of Unit 108N 87E; the western half was undetected and excavated with the general materials from that unit. This feature might have been a depression which was filled with wash from other areas.

Feature 42

Provenience: 126N 85E
Dimensions: > 20 cm NS x 37 cm EW
Depth: 29 cm

Origin: Zone 2, Level 3

Feature 42 was presumably a small pit with several sherds, including a large salt pan rim sherd, and unmodified pieces of limestone slab. These artifacts were stacked in the pit vertically, with sides touching. Unfortunately, the majority of the feature had been destroyed by recent historic disturbance to the south, so its overall size, shape, and configuration could not be determined with any accuracy.

Feature 43

Provenience: 115N 101E
Dimensions: > 27 cm NS x > 33 cm EW
Depth: 10 cm
Origin: Zone 2, Level 2

Feature 43 was a cluster of artifacts including limestone, sherds, and animal bone. These seemed to be piled at random; no pit outlines were visible, and there was no textural difference between the dirt within the artifact cluster and the surrounding midden. The feature had been impacted on the west by recent historic disturbance; it extended for an unknown distance to the north beneath unexcavated materials.

Feature 44

Provenience: 127N 83E
Dimensions: 110 cm NS x > 60 cm EW
Depth: 25 cm
Origin: Zone 2, Level 1

This feature was a possible trash dump consisting of large numbers of a variety of artifacts, including sherds, bone, rock, and shell. Its original size could not be determined, as the eastern portion had been destroyed by Backhoe Trench 1 from the Phase II testing; however, if a circular shape is assumed, it appears that at least half the feature was intact. No differences in soil color were noted between the feature fill and the surrounding midden, and there were no textural differences indicative of a pit.

Feature 45

Provenience: 113N 101E
Dimensions: 64 cm NS x > 35 cm EW
Depth: 5 cm
Origin: Zone 1, Level 1

Feature 45 was a shallow pit with numerous sherds, shell, and bone fragments. Approximately half the feature was excavated; the eastern half extended beneath unexcavated materials.

Feature 46

Provenience: 113N 101E
Dimensions: 18 cm NS x 19 cm EW
Depth: 5 cm
Origin: Zone 2, Level 2

This feature was a small lens of white ash with some fired clay and small sherds.

Feature 47

Provenience: 143N 77E
Dimensions: 54 cm NS x 51 cm EW
Depth: 14 cm
Origin: Zone 2, Level 2; Feature 36?

Feature 47 was a circular stain with irregularly shaped sides and bottom. It contained several lumps of fired clay and large amounts of scattered charcoal. This possible hearth was found directly beneath Feature 36, a house floor.

Feature 48

Provenience: 140N 118E
Dimensions: 69 cm NS x 76 cm EW
Depth: 7 cm
Origin: Zone 2, Level 3

The feature was a small, subrectangular trash pit originating near the bottom of the midden and extending into the subsoil. It contained numerous sherds, stone, and shell. While the fill was indistinguishable in color from the matrix, the soil was looser within the feature.

Feature 49

Provenience: 140N 118E
Dimensions: 45 cm NW/SE x 20 cm NE/SW
Depth: 17 cm
Origin: Zone 2, Level 3

Feature 49 was a small, oblong trash pit similar in artifact composition to Feature 48, which was located 40 cm to the north. Like Feature 48, it originated near the base of the midden and extended into the subsoil. Similarly, the soil within the feature was looser than the surrounding matrix, although there was no color change associated with the artifact cluster.

Feature 50

Provenience: 140N 118E
Dimensions: 13 cm NS x 20 cm EW

Depth: 12 cm
Origin: Zone 2, Level 3

Feature 50 was a small, subrectangular trash pit located 110 cm N/NE of Feature 48. It was similar in shape, composition, color, and structure to Features 48 and 49.

Feature 51

Provenience: 122N 104E
Dimensions: 80 cm NS x 105 cm EW
Depth: 15 cm
Origin: unknown

Feature 51 was the number given to a large, oval concentration of shell, rock, and sherds found beneath the midden after stripping. During the course of excavation, it was decided that Feature 51 represented a residual pocket of midden rather than a true feature; however, it may be the truncated remnants of a trash dump.

Feature 52

Feature 52 was a dark, irregularly shaped stain found beneath the midden after stripping. It had no depth, and was determined not to be a feature.

Feature 53

Feature 53 was an irregularly shaped stain found beneath the midden after stripping. It was found to have no depth, and was not a feature.

Feature 54

Provenience: 143N 77E
Dimensions: 83 cm NS x 134 cm EW
Depth: 26 cm
Origin: Zone 2, Level 2

This feature was a large, bowl-shaped pit which originated in the midden and penetrated into the subsoil. It contained several large sherds, shell, bone, and limestone rock. This feature was below the level of the house floor Feature 36, and was located between the house floor and the large fire basin, Feature 11.

Feature 55

Provenience: 137N 106E
Dimensions 47 cm NS x 96 cm EW
Depth: 20 cm
Origin: unknown

Feature 55 was one of a cluster of prepared clay basins found during stripping which were morphologically similar to Feature 11, the large fire basin discussed above. Feature 55 was the smallest of these basins. It had a very regular subrectangular form, with walls and a flat base of gray, fire-hardened clay. The walls were surrounded by orange fired clay. The gray interior layer was about 2 cm thick, while the orange layer ranged from 4 to 8 cm thick at the top of the feature and narrowed to disappear near the base. The eastern short side was nearly vertical, while the western short side sloped in toward the bottom at about a 45 degree angle.

Feature 56

See posthole descriptions below.

Feature 57

Provenience: 139N 102E
Dimensions: 112 cm NS x 212 cm EW
Depth: 80 cm
Origin: unknown

Feature 57 was the largest of the subrectangular, prepared-clay fire basins found at East Nashville Mounds. It had orange-reddish fired clay walls up to 10 cm thick on the sides; these narrowed with depth to disappear near the flat base. This feature had been badly disturbed by a recent historic trench which bisected it along a line running nearly east-west through the length of the basin. The basin had internal stratigraphy consisting of a number of layers of mixed midden/fired clay, a discrete ash layer near the bottom, and a 14-cm-thick layer of wood charcoal at the bottom. This feature was found beneath the midden after stripping.

Feature 58

Provenience: 137N 106E
Dimensions: 64 cm NS x 125 cm EW
Depth: 70 cm
Origin: unknown

Feature 58 was another of the cluster of deep, subrectangular prepared clay basins. It shared many similarities with the other such features described. The clay walls were divided into a gray, reduced clay layer 2 to 4 cm thick on the interior, with 3 to 4 cm of reddish orange fired clay on the exterior. The bottom was flat clay of similar thickness. It had a protrusion about 15 cm wide and 10 cm long on the northern long side, much like the opening on the north side of Feature 11. Its internal stratigraphy consisted of about 30 to 35 cm of mixed midden and fired clay lumps overlying a distinct burned clay layer 10 to 13 cm thick; this in turn overlaid a charcoal layer which averaged 27 cm thick (Figures 55 and 56). Several

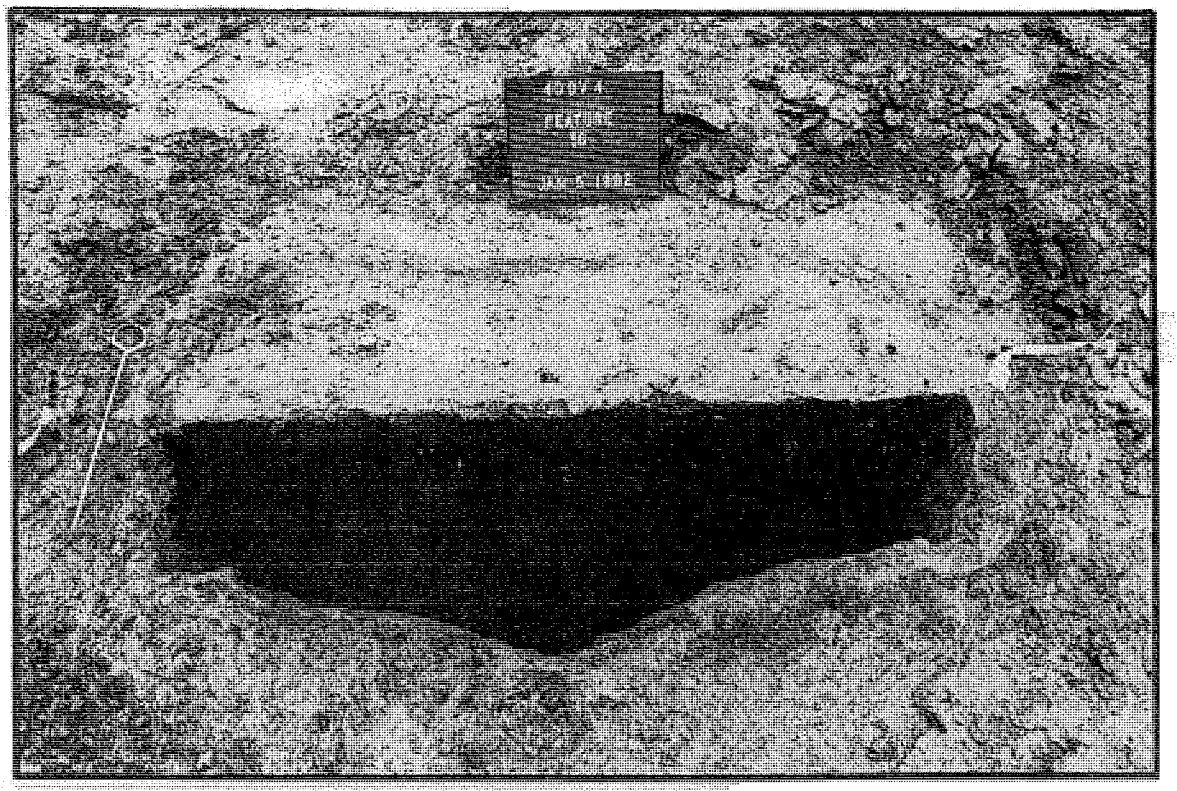


Figure 55. East Nashville Mounds, Feature 58, south profile.

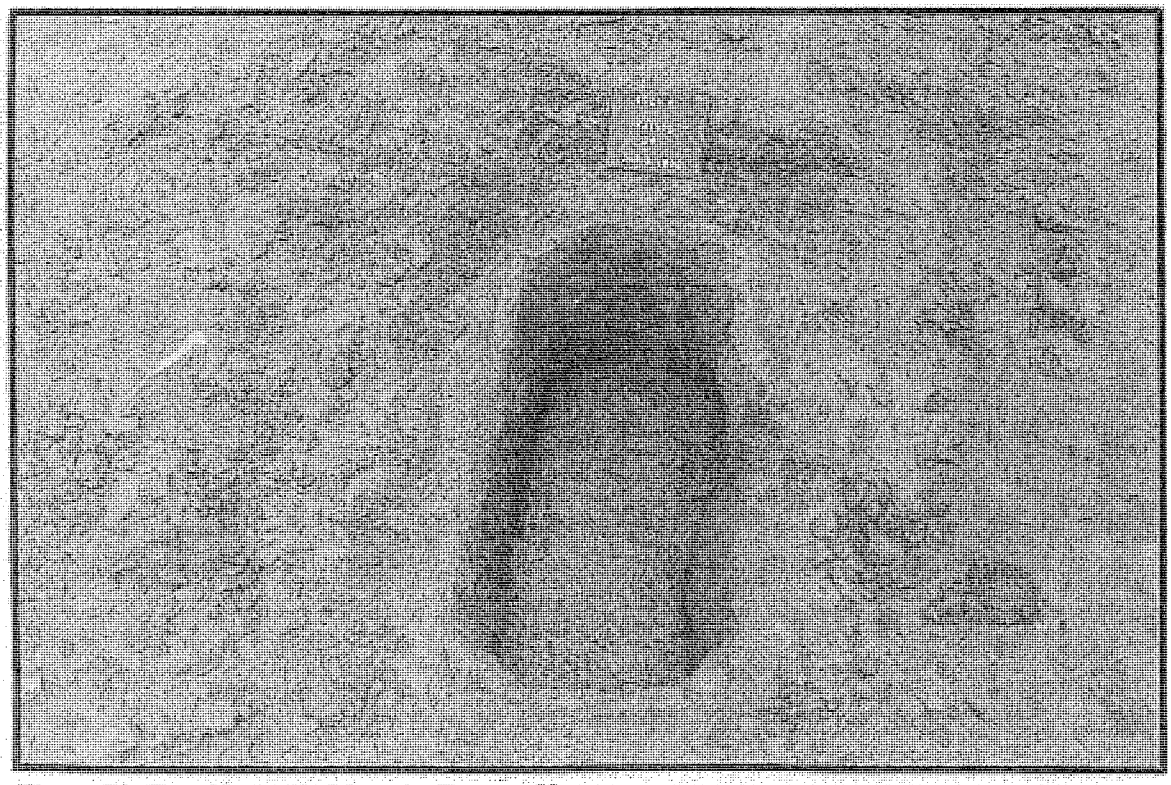


Figure 56. East Nashville Mounds, Feature 58.

large pieces of wood, evidently tree limbs, were noted in the charcoal layer during excavation; a few of these wood pieces were not completely carbonized.

Feature 59

Provenience: 135N 108E
Dimensions: 55 cm NS x 56 cm EW
Depth: n/a
Origin: unknown

This feature was a small cluster of limestone rocks found beneath the midden zone after stripping. No pit was visible, and there was no change in the friability of the soil between the rocks and the sterile subsoil upon which they lay. The rocks were in a single, rather sparse layer, and ranged from 4 to 13 cm across. They were not modified in any apparent fashion. A large salt pan sherd lay nearby, but whether or not it was associated with the feature is unknown.

Feature 60

Provenience: 124N 101E
Dimensions: 62 cm NS x 72 cm EW
Depth: 5 cm
Origin: unknown

This feature was a dark, circular stain revealed by stripping. It was a shallow pit with a flat base containing shell, sherds, and lithics (see Tables 30, 32, 34, and 36; Appendices A and B). Given its shallow nature, it is probable that most of this feature occurred within the midden and was destroyed during stripping.

Feature 61

Feature 61 was the number assigned to a dark stain revealed by stripping. Upon excavation, it was discovered that the stain was an area of heavy clay saturated with oil, similar to other such lenses noted in the upper, disturbed historic stratum. This feature was subsequently disregarded.

Feature 62

Provenience: 120N 110E
Dimensions: > 15 cm NS x 30 cm EW
Depth: 13 cm
Origin: Zone 2

This feature was a small, ash-filled pit located near a concrete footing and exposed by stripping. The midden was stripped off as near to the footing as possible, leaving a profile which showed some intact midden and Feature 62. The feature had been impacted by a

historic post; a piece of amber glass was recovered from beside the post where it reached the top of the feature. An estimated one-half of this feature was recovered.

Feature 63

Provenience: 120N 104E
Dimensions: ?
Depth: ?
Origin: ?

(Note: Paperwork is missing in action; no data other than the location is available for this feature.)

Feature 64

See posthole descriptions below.

Feature 65

See posthole descriptions below.

Feature 66

Provenience: 136N 95E
Dimensions: 58 cm NS x 88 cm EW
Depth: 38 cm
Origin: unknown

This feature was exposed by stripping. It was a rock-filled pit, roughly circular in outline, with gently sloping sides and a flat base. It was dissimilar from the other rock-filled pits at East Nashville Mounds in terms of size, depth, and in the size of the limestone slabs it contained. These ranged from 9 to 40 cm across and 1_ to 9_ cm thick. The profile suggested that several of the larger stones had been stacked side by side on end and had subsequently slumped. Prior to excavation, this feature had been designated as Burial 7, as it was suspected of being the remnant of a stone box grave.

Feature 67

Exposed by stripping, this feature was a cluster of large limestone slabs with numerous frag ments of animal bone. As with Feature 66, the slabs were quite large, averaging 30 cm across. Excavation proved this to be a recent historic disturbance; the feature number was discontinued.

Feature 68

Provenience: No data
Dimensions: 58 cm NS x 64 cm EW
Depth: 24 cm

Origin: unknown

Feature 68 was exposed by stripping. It was a dark stain with a large salt pan sherd resting vertically in the north-center of the feature. During excavation, it was noted that the eastern half, in which a brick fragment was found, seemed to be disturbed.

DESCRIPTION OF POSTHOLES *(PEACOCK & WALLING)*

Posthole 1

Provenience: 125N 85E
Dimensions: 15.20 cm NS x 10.50 cm EW
Depth : 27 cm
Origin: unknown

This feature was recognized as a dark, oval stain beginning at the top of the midden layer (Zone 2). It was perfectly straight-sided, with a base that was nearly flat.

Posthole 2

Provenience: 140N 88E
Dimensions: 16 cm NS x 18 cm EW
Depth: 5 cm
Origin: unknown

This feature was recognized in the top of Zone 3. It was a shallow feature with a flat base and nearly straight sides. It probably originated in Zone 2.

Posthole 3

Provenience: 145N 79E
Dimensions: 22 cm NS x 30 cm EW
Depth: 25 cm
Origin: Zone 2, Level 3

This posthole originated in the midden. It had vertical, parallel sides and a flat base.

Posthole 4

Provenience: 134N 79E
Dimensions: 12 cm NS x 12 cm EW
Depth: 30 cm
Origin: Feature 7

This posthole was associated with Feature 7, a possible house floor. It was discovered during the removal of the west half of Feature 7, which, unlike the east half, was indistinct and difficult to trace. Posthole 4 was a vertical, straight-sided feature with a flat base. It was one of the deepest postholes found at East Nashville Mounds, descending well into the subsoil. Its center was located 84 cm to the south of the center of Posthole 6, which originated in Zone 2 and penetrated into Feature 7. Posthole 4 was partially disturbed by root intrusion.

Posthole 5

Provenience: 143N 79E
Dimensions: 15 cm NS x 18 cm EW
Depth: n/a
Origin: unknown

This feature was a dark, oval stain discovered during hand removal of the historic overburden from Unit 143N 79E. Cross sectioning of the feature revealed it to have no depth. If it was a posthole, all but the base may have been destroyed by historic disturbance. A small, rectangular stain of similar color was noted 70 cm to the southeast of Posthole 5; cross-sectioning of this stain likewise showed it to have no depth, and it was not given a posthole or feature number.

Posthole 6

Provenience: 134N 79E
Dimensions: 20 cm NS x 14 cm EW
Depth: 30 cm
Origin: Zone 2

This posthole was associated with Feature 7, a possible house floor. It was located during the removal of the west half of Feature 7. The posthole originated in Zone 2 and penetrated the floor. Its center was located 84 cm north of the center of Posthole 4, which was also associated with Feature 7.

Posthole 7

Provenience: 145N 77E
Dimensions: 18 cm NS x 22 cm EW
Depth: 20 cm
Origin: Feature 11

This was one of two postholes associated with Feature 11, a large fire basin; the other was Posthole 8. Feature 11 was a deep, subrectangular prepared clay basin with an opening in the top center of the north long side (see Figure 50). Postholes 7 and 8 flanked this opening and abutted the side of the basin, Posthole 7 being on the east edge of the opening. Posthole 7 was straight-sided with a flat base, and leaned very slightly to the west. The

midden above Feature 11 was very thin and dark, so it was impossible to say whether the posthole intruded through the midden.

Posthole 8

Provenience: 145N 75E
Dimensions: 20 cm NS x 22 cm EW
Depth: 22 cm
Origin: Feature 11

Posthole 8 was on the west edge of the opening in the north side of Feature 11. It was nearly identical in size to Posthole 7, being very slightly larger and deeper; it also leaned slightly more to the west (see Figure 50).

Posthole 9

Provenience: 134N 80E
Dimensions: 17 cm NS x 20 cm EW
Depth: 11 cm
Origin: unknown—probably Zone 2

This posthole was located just within the eastern fringe of Feature 7, a possible house floor. It was subtriangular in cross section, and shallow, suggesting that it originated in Zone 2 but was undetected during excavation due to the dark color of the midden.

Posthole 10

Provenience: 143N 77E
Dimensions: 14 cm NS x 16 cm EW
Depth: 14 cm
Origin: Zone 2, Level 1

This feature was presumed to be a posthole from its shape and size; however, the fill was indistinguishable from the surrounding midden. The feature was located and excavated following a concentration of artifacts, including shell, sherds, and bone (see Tables, 30, 32, 34 and 36; Appendices A and C). The sides were fairly straight, constricting slightly toward the rounded bottom.

Posthole 11

Provenience: 139N 88E
Dimensions: 40 cm NS x 26 cm EW
Depth: 22 cm
Origin: Zone 2

This midden-filled posthole was recognized in the subsoil after the Zone 2 material had been excavated. While it originated in Zone 2, it was indistinguishable within the midden, and

therefore its original depth is unknown. While this posthole was generally rounded in cross section, it had been intruded on the north side, possibly by an animal burrow, root disturbance, or a subsidiary shoring post.

Posthole 12

Provenience: 111N 101E
Dimensions: 15 cm NS x 20 cm EW
Depth: 3 cm
Origin: Zone 1

This feature intruded into the sterile subsoil of Unit 111N 101E. An estimated half of the feature was located within the unit; the other half was beneath the unexcavated materials to the east. Given its relatively small size and depth, Posthole 12 may in reality have been only a small, filled depression in the subsoil; its fill was indistinguishable from the overlying zone.

Posthole 13

Provenience: 112N 89E
Dimensions: 24 cm NS x 24 cm EW
Depth: 20 cm
Origin: Zone 1

This posthole was circular in outline, with a conical cross section and pointed base. The fill was dark with numerous flecks of charcoal.

Posthole 14

Provenience: 110N 89E
Dimensions: 18 cm NS x 24 cm EW
Depth: 6 cm
Origin: Zone 1

Posthole 14 was a small, ovoid feature with a slightly rounded base. Its fill contained gastropod shells, charcoal, fired clay, and ash. Given its shallow nature, it is possible that this feature had been truncated, or that the upper portion was unrecognized within the dark matrix.

Posthole 15

Provenience: 141N 70E
Dimensions: 23 cm NS x 23 cm EW
Depth: 7 cm
Origin: base of Burial 9

This posthole was located beneath Burial 9 and associated with Burials 9, 4A, 4B, 4C. It is likely that this post was truncated by interment of Burial 9.

Posthole 16

Provenience: 134N 82E
Dimensions: est. 13 cm NS x 13 cm EW
Depth: 18 cm
Origin: Zone 2

This feature was a rock-filled posthole similar to the ones found associated with the nearby house floors. It was recorded in the south profile of Unit 136N 82E, but was not excavated.

Feature 8

Provenience: 133N 82E
Dimensions: 36 cm NS x 36 cm EW
Depth: 27 cm
Origin: Zone 2, Level 4

Feature 8 was a possible posthole found at the base of the midden, intruding into the subsoil. It was circular in outline, and it narrowed with depth. The base was slightly rounded. This feature contained abundant shell, charcoal, sherds, and bone, indicating that the post had probably been removed and the hole filled with midden.

Feature 15

Provenience: 143N 79E
Dimensions: 29 cm NS x 31 cm EW
Depth: 8 cm
Origin: Zone 2, Level 2

Feature 15 was a small, circular, shell-filled pit that also contained bone and ceramics (see Tables 30, 32, 34, and 36; Appendices A and C). It was contained entirely within the midden zone. Given its circularity and nearly flat base, this feature might have been a posthole. If so, it probably originated from higher in the midden and was unrecognized until the shell concentration was reached.

Feature 21

Provenience: 141N 79E
Dimensions: 22 cm NS x 18 cm EW
Depth: 14 cm
Origin: Zone 2; Feature 19

Feature 21 seems to have been a rock-filled posthole associated with Feature 19, a probable house floor. It was similar to Feature 22, another rock-filled posthole located 1.3 m to the south and also associated with Feature 19. Placement of the rocks within the posthole appeared to have been random. The sides of the hole were straight, and the bottom seemed to

be flat. Other than being more friable, the fill was indistinguishable from the surrounding matrix.

Feature 22

Provenience: 141N 79E
Dimensions: 30 cm NS x 35 cm EW
Depth: 25 cm
Origin: Zone 2; Feature 19

Feature 22 was a rock-filled posthole associated with Feature 19, a probable house floor. It was straight sided with a flat base. Small pieces of limestone made up the bulk of the excavated feature; other than being more friable, the fill from between the rocks was indistinguishable from the surrounding matrix. Placement of the rocks within the hole seemed to be random.

Feature 30

Provenience: 126N 87E
Dimensions: 22 cm NS x 20 cm EW
Depth: 14 cm
Origin: Zone 2, Level 1

Feature 30 was a small, rock-filled posthole. It was circular in plan, with straight walls and a flat base. The fill was indistinguishable from the surrounding midden; the feature was excavated following the concentration of small limestone pieces and artifacts. This feature was located about 20 cm NW of Feature 31, another probable posthole.

Feature 31

Provenience: 126N 87E
Dimensions: 20 cm NS x 18 cm EW
Depth: 14 cm
Origin: Zone 2, Level 1

Feature 31 was a rock-filled posthole. It was circular in outline and was approximately the same size and depth as Feature 30. The fill was indistinguishable from the surrounding midden; the feature was traced following the concentration of limestone rock and artifacts.

Feature 33

Provenience: 141N 77E
Dimensions: 34 cm NS x 38 cm EW
Depth: 26 cm
Origin: Zone 2, Level 2; Feature 36

This rock-filled posthole was associated with Feature 36, a probable house floor. It had straight sides, a flat base, and contained several pieces of unmodified limestone. It was 10 cm northeast of Feature 38, another rock-filled posthole in Feature 36.

Feature 38

Provenience: 143N 77E
Dimensions: 23 cm NS x 22 cm EW
Depth: 24 cm
Origin: Zone 2, Level 2; Feature 36

This feature was a rock-filled posthole in Feature 36, a probable house floor. It had straight sides and a flat base and contained several pieces of limestone averaging 12 cm across. It was located 10 cm southeast of Feature 33, a similar posthole. A sample of wood charcoal and a sample of charred corn were recovered from the bottom of Feature 38.

Feature 56

Provenience: 141N 108E
Dimensions: 23 cm NS x 22 cm EW
Depth: 7 cm
Origin: unknown

Feature 56 was a posthole found after the midden zone was stripped from the site. It was circular in plan with a bowl-shaped cross section. The eastern edge had been somewhat disturbed by an animal burrow.

Feature 64

Provenience: 136N 79E
Dimensions: 32 cm NS x 26 cm EW
Depth: 20 cm
Origin: Zone 2, Level 3

This was a rock-filled posthole located about 63 cm southeast of Burial 2. Like the other similar features found in this area of the site, it had straight sides and a generally flat base.

Feature 65

Provenience: 136N 79E
Dimensions: 27 cm NS x 28 cm EW
Depth: 20 cm
Origin: Zone 2

This feature was a rock-filled posthole similar to Feature 64. It also had straight sides and a flat base, and it contained several small pieces of limestone.

FEATURE SUMMARY (WALLING)

Based on morphological similarities, many of the features from East Nashville Mounds can be grouped into classes that can then be examined in terms of function.

POSTHOLES:
Postholes 1-4, 6-9, 11-15; Features 8, 15, 56

These features were typical postholes, being generally straight sided with flat to rounded bases. The majority of these postholes seemed to have originated in Zone 2, but were undetected within the dark matrix of the midden and were not discovered until the lighter Zone 3 subsoil had been reached.

ROCK-FILLED POSTHOLES
Postholes 10, 16; Features 21, 22, 30–33, 38, 64, 65

These features were determined to be postholes based on size, shape, and association with house floor features. They were straight-sided, flat-based features with large amounts of small, unmodified limestone in the fill. In fact, limestone rock made up the majority of the fill for all these features, and was too abundant to represent chocking stones. Another explanation for the rock is that it served as a firm base upon which the post could rest. This explanation also seems unlikely, however, given that the subsoil, which all these features reached to or into, is very hard and compact. It would seem that the posts were deliberately removed and the postholes intentionally filled with rock, perhaps marking an episode of rebuilding. Given the small sample size and the patchy nature of the house floors, this latter hypothesis cannot be further addressed at this time.

HEARTHS
Features 2, 5, 13, 23, 25, 26, 39, 47

These features were presumed to be small hearths. They were typified by the presence of charcoal and burned shell fragments. Most had a thin band of orange fired clay around half or less than half of the perimeter, suggesting that firing was largely incidental. In contrast, Features 23, 25, and 26 were formal, prepared clay basins with discrete bottoms and sides.

ROCK PILES
Features 3, 20, 59

These features were small piles of unmodified limestone slabs. Features 3 and 20 had two rock layers, while Feature 59 had only one. The limestone was unmodified in all cases, and orientation within the piles seemed to be random. There was no indication that these rock

piles were located within pits. Artifacts, including sherds and shell, were clustered around and above these features. The function of these rock piles is unknown.

TRASH-FILLED PITS
Features 4, 17, 24, 27, 37, 40, 44, 45, 48–51, 54, 60

These features were shallow pits with abundant rock, shell, sherds, and bone (see Tables 30, 32, 34, and 36; Appendices A and C). They fall into four clusters based on area:

small (0–.3 m^2)	Features 17, 40, 49, 50
medium (.4–.6 m^2)	Features 37, 45, 48, 60
large (.8–1.4 m^2)	Features 4, 44, 51, 54
very large (1.9–2.1 m^2)	Features 24, 27

These features were typified by a great variety and abundance of artifacts; no more specific function than trash pit can be suggested for them at this time. It is possible that the two largest features may in fact have been midden-filled depressions rather than true features.

HOUSE FLOORS
Features 7, 12, 19, 36

These features represented parts of at least two different structures. The largest uncovered consisted of Features 19 and 36 (see also Feature 6 description) and was designated Structure 1. Its original size was impossible to determine due to historic disturbance on the west. The floor of Structure 1 was a highly mottled light gray/white/brown hardened, sandy clay. The surface was very uneven, differing as much as 9 cm across 1 m of space. No clear edges could be discerned; the mottled clay lensed out in uneven, indiscrete patches on the north, south, and east edges, yielding a very irregular shape when drawn in plan. Four rock-filled postholes (Features 21, 22, 33, and 38) were found within this floor; these intruded into the subsoil beneath the structure, which was located at the base of the Zone 2 midden. If these rock-filled postholes represented two sides of a rectangular structure oriented north-south, then the width of Structure 1 was about 1.3 m east-west. However, this must remain conjectural, given the lack of other architectural elements such as a house corner or a clear posthole pattern.

A hearth (Feature 23) was located about 20 cm to the south and slightly east of the floor features and may in fact have been located within the structure. Several artifacts, including sherds, mussel shell, and rock, were found on the floor. In addition, a carbon 14 sample was taken from the floor just south of Feature 38, a rock-filled posthole.

Features 7 and 12 made up another house floor, located 2.2 m south of Structure 1. The edges of this structure, Structure 2, were even more difficult to delineate than were the edges of Structure 1. The features consisted of the same mottled sandy clay, and also had

associated artifacts. In addition, three postholes (Postholes 4, 6, and 9) were found within the main area of fired surface (Feature 7). A rock-filled posthole (Feature 65) was located within Feature 12, a smaller mass of fired material north of and tenuously connected to Feature 7. No patterns were evident within the layout of these four postholes.

SUBRECTANGULAR CLAY BASINS
Features 11, 55, 57, 58

These features represent an apparently rare, though not unique, form of fire pit. While the four examples identified at East Nashville Mounds vary in size, they are uniformly large and similar in basic shape and other attributes (Tables 2 and 3). Features 55, 57, and 58 clustered in the northeastern quadrant of the area investigated, while Feature 11 was encountered approximately 30 m to the west northwest, in the extreme northwestern portion of the project area (see Figure 30).

Table 2. East Nashville Mounds, Subrectangular Clay Basins: Metric Attributes.

Feature	Provenience	Length(m)	Width(m)	Depth(m)	Origin
11	145N 77E	1.51	0.78	0.58	Zone 2, Level 1
55	137N 106E	0.96	0.47	0.20	unknown
57	139N 102E	2.12	1.12	0.80	unknown
58	137N 106E	1.25	0.64	0.70	unknown
	average	1.46	0.7525	0.57	
	median	1.38	0.71	0.64	
	sd	0.49	0.28	0.26	

Table 3. East Nashville Mounds, Subrectangular Clay Basins: Summary Information.

Feature	Protrusion	False Bottom	Sides	Bottom	Fill Characteristics
11	yes, north side	yes	2 zones fired, 12 cm prepared	fired sterile clay	midden false bottom charcoal
55	no	no	2 zones fired, 6-10 cm	fired sterile clay	midden
57	no	no	1 zone fired, 10 cm	fired sterile clay	midden charcoal/midden ash charcoal
58	yes, north side	yes	2 zones fired, 5-8 cm prepared	fired sterile clay	midden false bottom charcoal

In each case these represent the largest features, excluding house floors, encountered at the sites. Each pit had highly fired walls, which were obviously prepared for Features 11 and 58. Pit floors were the sterile clay subsoil, and all were fired. The fill of Feature 55 fill was composed entirely of general midden, while that of Features 11, 57, and 58 consisted of an upper zone of midden, probably representing filling at abandonment. The lowest stratum in each of the last three was a dense layer of charcoal, in some instances incompletely combusted. As noted above, Features 11 and 58 had a fired cap or "false bottom"; in the case of Feature 11, this was initially interpreted as the base of the pit, while Feature 57 had a stratum of mixed charcoal/midden and a stratum of ash above the basal layer of charcoal. A discontinuous stratum of reddened clay/midden in Feature 57 may have resulted from filling while the lower contents of the pit were still at a high temperature. Both Features 11 and 58 had a protrusion or opening on the northerly side that extended to the base of the pit. In the case of Feature 11, this was flanked on the east and west by postholes, which were absent at Feature 58. The function of the protrusion is unknown, but its occurrence on only the pits with "false bottoms" suggests that it is a function attribute, possibly for venting the lower level of the pit.

Excluding Feature 55, from which very little material was recovered, in general terms the material culture recovered from these features is similar. Course shell-tempered sherds (Mississippi Plain and eroded nonpan sherds) dominate the collections from Features 11 and 58, and are in the majority for Feature 57. Pan sherds account for most of the remaining portion of the considered ceramics. Very little in the way of decorated ceramics occurred in the fill of these features. Totaling six sherds, these include varieties of Matthews Incised, unidentified complicated-stamped, unidentified surface-roughened, and one sherd from an effigy bottle. Debitage and modified lithics make up a relatively small percentage of the considered collection. Fire-cracked rock occurred in paltry amounts as decorated sherds, with only five pieces recovered. Fired clay, not unexpectedly, tends to predominate in the "Other" category, though it is slightly eclipsed by unmodified rock in Feature 11. This latter class of material falls second in Features 57 and 58. Shell and bone occur at rather insignificant relative frequencies with the exception of shell in Feature 57.

A Brainerd-Robinson Index of Agreement of 179.20 for the ceramic contents of Features 11 and 58 is the only result indicating any strength for these three features. It is likely that the results of this test is in fact only scaling the variability of midden content contained in the upper fill of these features.

Large subrectangular pit features are well represented in the archaeological record. However, we will exclude pits of pre-Mississippian origin, including the grossly similar cremation basins well known from Middle Woodland contexts. There is no indication that the East Nashville Mounds pits were utilized as direct mortuary facilities.

In general form these pits fall into a class of features that are often referred to as bathtub-shaped (cf: Belmont 1967; Bitgood 1989; Connaway and McGahey 1971; Ford 1951). While

we were at the time ignorant of the prior use of the term, we referred to these at East Nashville Mounds as "bathtub-shaped" during and subsequent to excavation.

In the Nashville area, a large bathtub-shaped pit, Burial 9, was excavated during the 1982 salvage investigations of Site 40DV34, located some 9.7 km west of French Lick (Carl Kuttruff, personal communication 1997). However, beyond close similarity in basic shape, Burial 9 has little similarity to those of concern here. As indicated by its label, this 170-x-80-x-55 ±cm pit was a burial, in fact three partially articulated bundle burials of unknown temporal affiliation. Site 40DV34 is a small multicomponent site with Benton phase cremations and Mississippian stone box interments (Carl Kuttruff, personal communication 1997).

Farther afield, Connaway and McGahey (1971; see also Starr 1992) report bathtub-shaped pits for the Mississippian Powell Bayou site (22SU516) located in the Yazoo Basin of northwestern Mississippi . However, in the Powell Bayou case, the pits were apparently excavated through rubble of burned mound-top structures for disposal of said rubble (Connaway and McGahey 1971). Chapman (1982) reports a large circular pit with an internal cap (or false bottom) from the Eoff I site (40CF32) located in southern Middle Tennessee. However, while it is Mississippian, this last is not subrectangular and has no indication of intense firing (Chapman 1982).

An acutely similar group of pits is reported from northeastern Louisiana. While these occur some 600 km to the southwest of East Nashville Mounds and were apparently used some 600 years earlier, they represent the only analogous features that we have been able to find in the literature. The first of these to be reported were 10 similar pits encountered at the Greenhouse site (Ford 1951). Ford describes the Greenhouse features with statements such as: "The lower part of the feature was shaped like a bathtub. The side walls of this pit were throughly fired, and it was filled with alternate layers of ash and midden soil. The fill contained a normal amount of cultural refuse, but nothing unusual was recovered" (Ford 1951:29); "[the pit] had been scooped out of the black midden soil and had a clay lining which was fired. Four to 5 inches of fine ash filled the bottom of the pit, and the upper part was filled with midden" (Ford 1951:30); and "It was filled with packed ash to within 5 inches of the top, where a second or false bottom had been made by lining the depression with clay. The side walls and both the pit bottoms were deeply fired" (Ford 1951:30); and so on *ad infinitum*. Basically, Ford's description, with changes only in the metric attributes, could virtually be substituted for the East Nashville Mounds pits. Ford (1951) placed these features at the dividing line between Troyville and Coles Creek, essentially early and late Late Woodland, and suggested their use in cooking. A scatter plot of the horizontal dimensions of the Greenhouse and East Nashville Mounds bathtub-shaped pits provides a straight-line linear relationship that includes all four of our pits and three of those from Greenhouse.

Belmont (1967), using the type/variety ceramic classification that has become standard in the Mississippi Valley and elsewhere, reanalyzed Ford's data. This resulted in no real change

in the chronological placement of the Greenhouse bathtubs. Belmont (1967) suggests that construction of these features originated in the early Baytown (late Troyville) Back River phase and continued through the subsequent late Baytown Fort Adams and early Coles Creek Grand Cote phases. This assignment would place the construction of the Greenhouse pits at sometime between approximately A.D. 500 and 700 (Belmont 1982) or A.D. 600 and 800 (Bitgood 1989).

Four additional bathtub-shaped pits are reported for northeastern Louisiana. Bitgood (1989:62) reports two features that are "almost identical to the 'bathtub-shaped fire pits' found by Ford at Greenhouse." These features were encountered at the Marsden site in the Upper Tensas Basin, northeastern Louisiana. Bitgood (1989) assigns these to the Marsden phase (ca. A.D. 475 to 600). This assignment was guided by stratigraphic association and an uncorrected radiocarbon date of A.D. 560±85 (Bitgood 1989). Belmont (1980) notes the presence of a bathtub-shaped pit at the Neely site that he assigns to the Marsden phase. Belmont (1980:30) describes a compound pit excavated at the Gold Mine site (16RI13). He notes that the lower pit is "a type example of the class" recorded at Greenhouse. In a later summary article, Belmont (1984:86) notes that the "lower portion is identical to the 'bathtub-shaped fire pits' at Greenhouse." Belmont (1980, 1984) assigns the Gold Mine site to the late Troyville.

Belmont (1984) suggests that the Louisiana bathtub-shaped pits, at least at Greenhouse and Goldmine, functioned in large-scale feasting during community or intercommunity ritual. Based on the available information, the function of the East Nashville Mounds bathtub-shaped features is unclear, and given the temporal and spatial separation from those in Louisiana, we are loath to make too much from a comparison of the two sets. However, given the uncanny similarity in form, a suggestion of similar function does not seem outrageous.

CHAPTER 8
THE FRENCH LICK SITE (40DV5): DATA RECOVERY & INTERPRETATION

Richard Walling, Lawrence Alexander & Evan Peacock

STRATIGRAPHY & GEOMORPHOLOGY *(ALEXANDER)*

This description of the stratigraphy and geomorphology will describe and interpret the upper 2.5 m of alluvial deposits on the Cumberland River bank at the French Lick site. As was done for East Nashville Mounds in the previous chapter, the site will be discussed in terms of the model developed by Brackenridge (1984) for the Middle Duck River. The location of the area investigated with regard to the Holocene river levees and overflow chutes will also be addressed. Finally, the site stratigraphy will be discussed.

Holocene stratigraphy and geomorphology at the French Lick site result from a series of fluvial deposition and truncation events which began at the end of the Pleistocene, 10,000 to 12,000 years ago. Located on a bedrock terrace overlooking the confluence of localized drainage with the Cumberland River, the site provides a well-drained location for prehistoric settlement. The French Lick Salt Springs are located approximately 1.3 km to the southwest of the site.

The soils and stratigraphy at the French Lick site can be correlated with a model developed by Brackenridge (1984) for the Middle Duck River, also in the Nashville Basin. Before beginning this description and analysis, a disclaimer is in order. Field research procedures employed elsewhere on geoarchaeology projects could not be implemented in this study. A detailed cross section sample of the entire river levee was unavailable, as were data for downstream areas of the river levee system. The entire river levee is obscured with up to a meter of brick rubble, and French Lick Spring Branch, which enters the Cumberland River to the southeast, has been channelized and run completely underground. Davidson County soil maps (North 1981) list the entire area as industrial (Ln), and no soil types can be determined. The site excavation was dictated by the construction plans, not by an archaeological research design. As a result, the river bank foreslope was only superficially investigated, the levee crest was investigated with a series of four excavation units (Bents 3,

4, and 5), and the site backslope was extensively excavated in Tunnel Pits 1 and 2. Each excavation area gave a different perspective of the site. There was no opportunity to integrate each window into a composite interpretation of the Holocene history of the French Lick site; such is the nature of urban salvage archaeology.

FIELDWORK

The fieldwork was conducted December 19, 1991, February 28–29, 1992, and April 2, 1992. It consisted of clearing the profiles from previously excavated test units and excavating four stratigraphic trenches on the south wall of the tunnel pit excavation area. Table 4 presents stratigraphic descriptions. A 1-m-wide profile was trowel cut, and the lithostratigraphic units were defined. A 25-cm-wide column was rough picked to determine the pedological structure (Figure 57). The sediment attributes of texture and color (Munsell 1975) and the mineralogical components were observed; pedological structure was also noted.

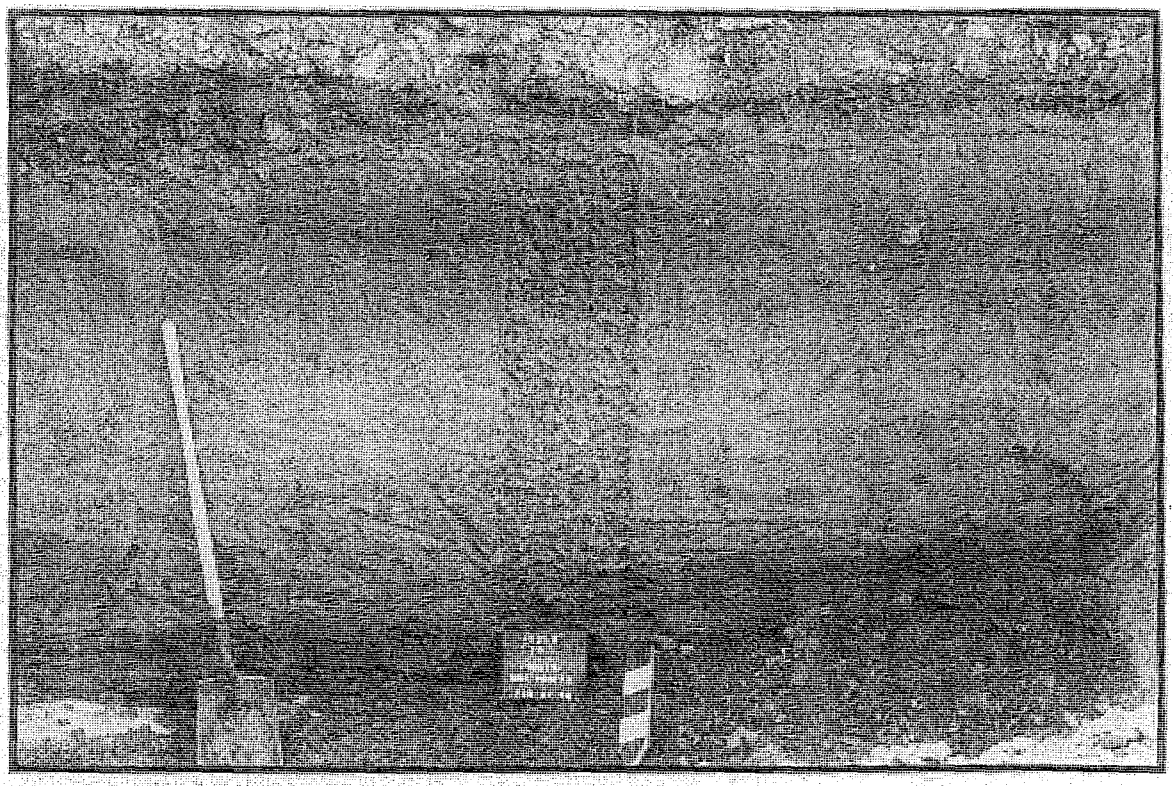


Figure 57. French Lick, Tunnel Pit 1, pedological column.

Table 4. French Lick Site, Stratigraphic Descriptions.

Location	Stratum	Description	Thickness (cm)	Texture	Color	Comments
Bent 4	1	trash	85	historic fill	———	coal ash
	2	plowzone	15	sandy loam	very dark brown 7.5YR 2/2	scattered fire-cracked rock and daub
	3	shell midden	6–8	fine sandy loam	very dark brown 7.5YR 2/2	shell, daub, and fire-cracked rock
	4	A horizon	14	fine sandy loam	dark brown 7.5YR 4/2	minor amounts of fire-cracked rock
	5	A/B horizon	13	fine sand	dark brown 7.5YR 4/4	disconformity with Stratum 6
	6	B horizon	34	fine sand	yellow brown 10YR 5/6	no observed structure
	7	A/B horizon	13	fine sand	yellow brown 10YR 5/4	no structure; truncation at contact with Stratum 8
	8	A horizon	23	sandy clay	dark reddish brown 5YR 4/2	abundant cultural material; benton point recovered during clearing
	9	A/B horizon	20	silty clay	dark yellow brown 10YR 3/6	moderate mg nodules; truncation at contact with stratum 10
	10	B horizon	18	clay	brownish yellow 10YR 6/6	heavy mg and limonite concretions; scattered river pebbles
Tunnel Pit 1 Deep Test 2	1	trash	117	historic fill	———	coal ash and brick rubble
	2	plowzone	14	fine sandy loam	dark brown 7.5YR 3/2	small amounts of shell; river pebbles
	3	A horizon	12	clay loam	very dark brown 7.5YR 3/2	midden scatter, FCR, bone
	4	A horizon	11	loam	medium gray brown 7.5YR 4/4	low density cultural material
	5	A/B horizon	13	loam	reddish brown 5YR 5/3	truncation at contact with Stratum 6
	6	A/B horizon	26	clay loam	light reddish brown 5YR 6/3	truncation at contact with Stratum 7
	7	unknown	24	clay loam	reddish yellow brown 5YR 6/6	abundant river gravel and angular sandstone
	8	B horizon	29	clay loam	light reddish brown 5YR 6/3	truncation at lower contact with stratum

Table 4. French Lick Site, Stratigraphic Descriptions. Continued						
Location	**Stratum**	**Description**	**Thickness (cm)**	**Texture**	**Color**	**Comments**
	9	C horizon	23	fine sand	medium brown 7.5YR 6/6	decomposing sandy limestone; bedrock—tabular bedded sandstone fragments in profile
	10	C horizon	17	fine sand	medium brown 7.5YR 6/5	decomposed bedrock
	11	bedrock	—	rock	yellowish brown 10YR 5/4	sandy limestone bedrock
Tunnel Pit 2 Deep Test 4	1	trash	150	historic fill	—	coal and brick rubble
	2	plowzone	22	sandy loam	very dark brown 7.5YR 2/2	scattered fire-cracked rock
	3	A horizon	24	sandy loam	medium dark brown 7.5YR 3/4	large volume of flakes, fire-cracked rock
	4	B horizon	9	silty loam	medium brown 7.5YR 5/4	fire-cracked rock
	5	B horizon	11	silty loam	medium brown 7.5YR 3/4	flakes and fire-cracked rock
	6	A horizon	24	silt loam	very dark brown 7.5YR 2/4	scattered fire-cracked rock; disconformity at lower contact
	7	A/B horizon	25	silty clay	reddish brown 5YR 4/4	one fire-cracked rock observed
	8	B horizon	21	silty clay	reddish brown 5YR 5/4	disconformity at lower stages
	9	B horizon	27	clay	yellowish brown 10YR 5/6	fire-cracked sandstone observed
	10	B horizon	21	clay	dark yellowish brown 10YR 4/4	scattered river pebbles
	11	?	6	sandy clay	light yellow brown 10YR/6/4	pebble sheet
	12	C	30+	sandy clay	light yellow brown 10YR 6/4	decomposing bedrock

RESULTS OF TESTING

The lithostratigraphy of the French Lick site will be discussed in terms of three units. Bent 5 will be addressed first, followed by Tunnel Pit 1 and Tunnel Pit 2.

Bent 5. The stratigraphy at Bent 5 represents the top of the fluvial deposits (Figure 58). A Mississippian A horizon midden was present in the plowzone, Stratum 2. A 5-cm-thick shell midden was located in Stratum 3. Stratum 4 consisted of an A horizon and a lower A/B horizon, with cultural material located up to 45 cm below the surface of the intact deposits.

Strata 5, 6, and 7 were a yellow brown fine sand without any sedimentary structure. This represents a rapid alluviation of 45 cm of flood sand during the period between 3000 B.C. and A.D. 1000. An Early Woodland deposit was recovered from these levels. Stratum 7 contained a late Middle Archaic midden. Abundant flakes and fire cracked rock were observed, and a Benton projectile point was recovered during the profile clearing.

Strata 8, 9, and 10 comprised the Leftwich formation. Stratum 8 contained lesser amounts of cultural material than the upper strata. Stratum 9 was also an A/B horizon, and the contact with Stratum 10 was a stratigraphic disconformity with the underlying units. Stratum 10 was brownish yellow with heavy magnesium and limonite concretions; it was part of the Cannon Bend formation, likely deposited during the Early Archaic period. An unknown quantity of deposits was removed at the horizon truncation between Strata 9 and 10.

Tunnel Pit 1. Deep Cut 2 of Tunnel Pit 1 was located on the backslope of the French Lick site (Figure 59). This profile description provides a different, though comparable, profile from the excavations at Bent 5. Historic fill ranged up to 118 cm deep at this location. Strata 2, 3, 4, and 5 were dark brown sandy loams with cultural material present.

A limestone-tempered Woodland sherd was recovered from Stratum 3 during the profile clearing. Bone fragments, daub, and a biface preform were recovered during the clearing of Strata 4 and 5; these were Leftwich formation strata. A soil profile truncation was located at the contact with Stratum 6. Strata 6, 7, and 8 were yellowish brown dense clays associated with the early Holocene Cannon Bend formation. Stratum 9 was also a yellowish clay with scattered river gravels. Elsewhere in the Tennessee River Basin, this patinated chert pebble sheet marks the contact between the upper and lower Cheek Bend formations (Brackenridge 1984). This contact is an erosional surface that was exposed at the end of the Pleistocene. Paleoindian artifacts have been recovered from the upper Cheek Bend formation in the Middle Duck River.

Strata 10 and 11 dipped slightly riverward and were composed of decomposing sandy limestone bedrock. This area is mapped as Hermitage formation overlain by Quaternary alluvial deposits (Wilson 1966a). This is an Ordovician bedrock outcrop exposed during the Late Pleistocene and later covered with Holocene alluvium.

Tunnel Pit 2. The stratigraphic profile of Tunnel Pit 2 (Figure 60) is largely a continuation of the stratigraphy encountered in Tunnel Pit 1, and it provides a continuity with the Bent 5 profile. Strata 2 through 6 contained scattered cultural material with no distinct midden horizon located during the profile clearing. This is the Late Leftwich

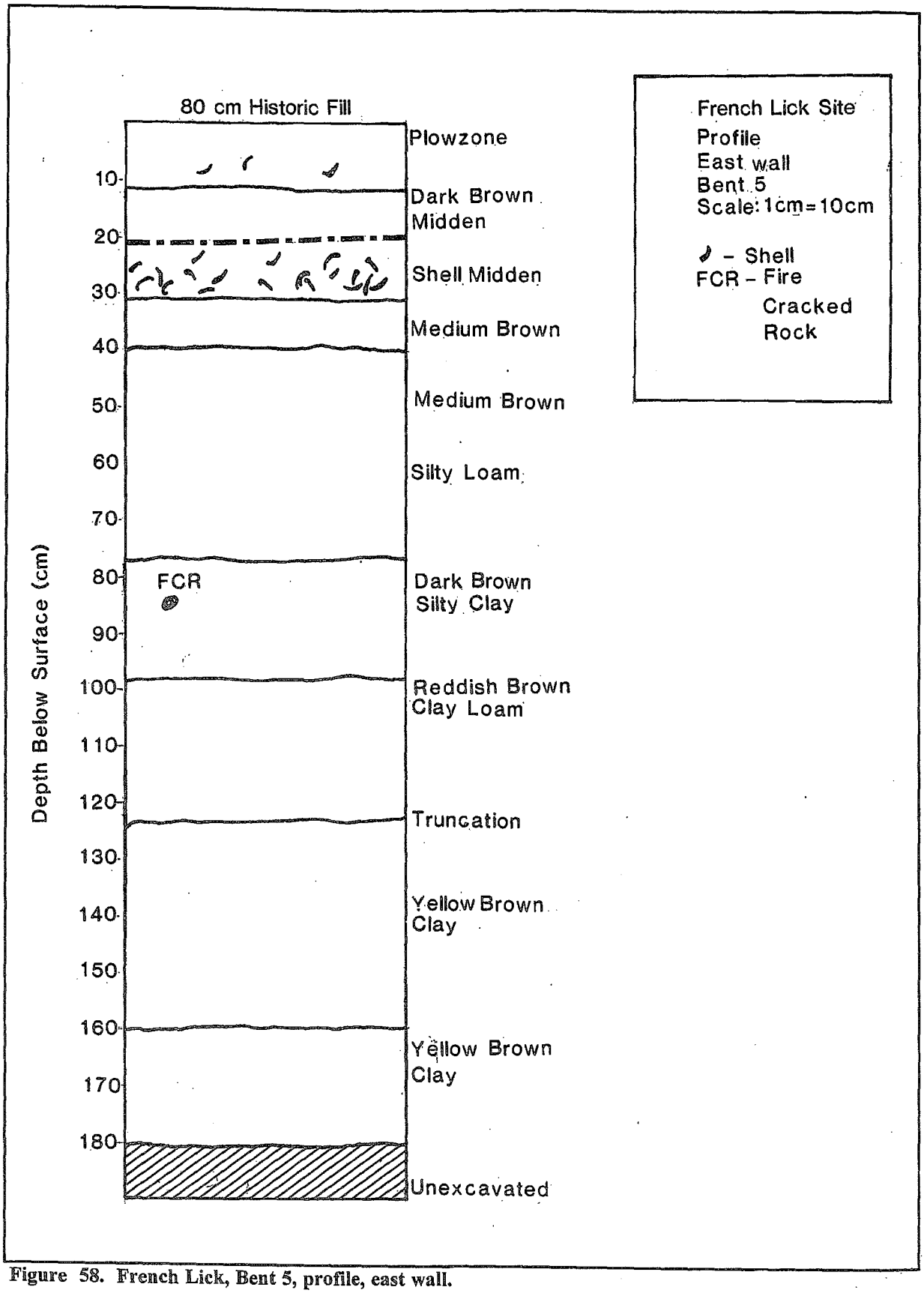


Figure 58. French Lick, Bent 5, profile, east wall.

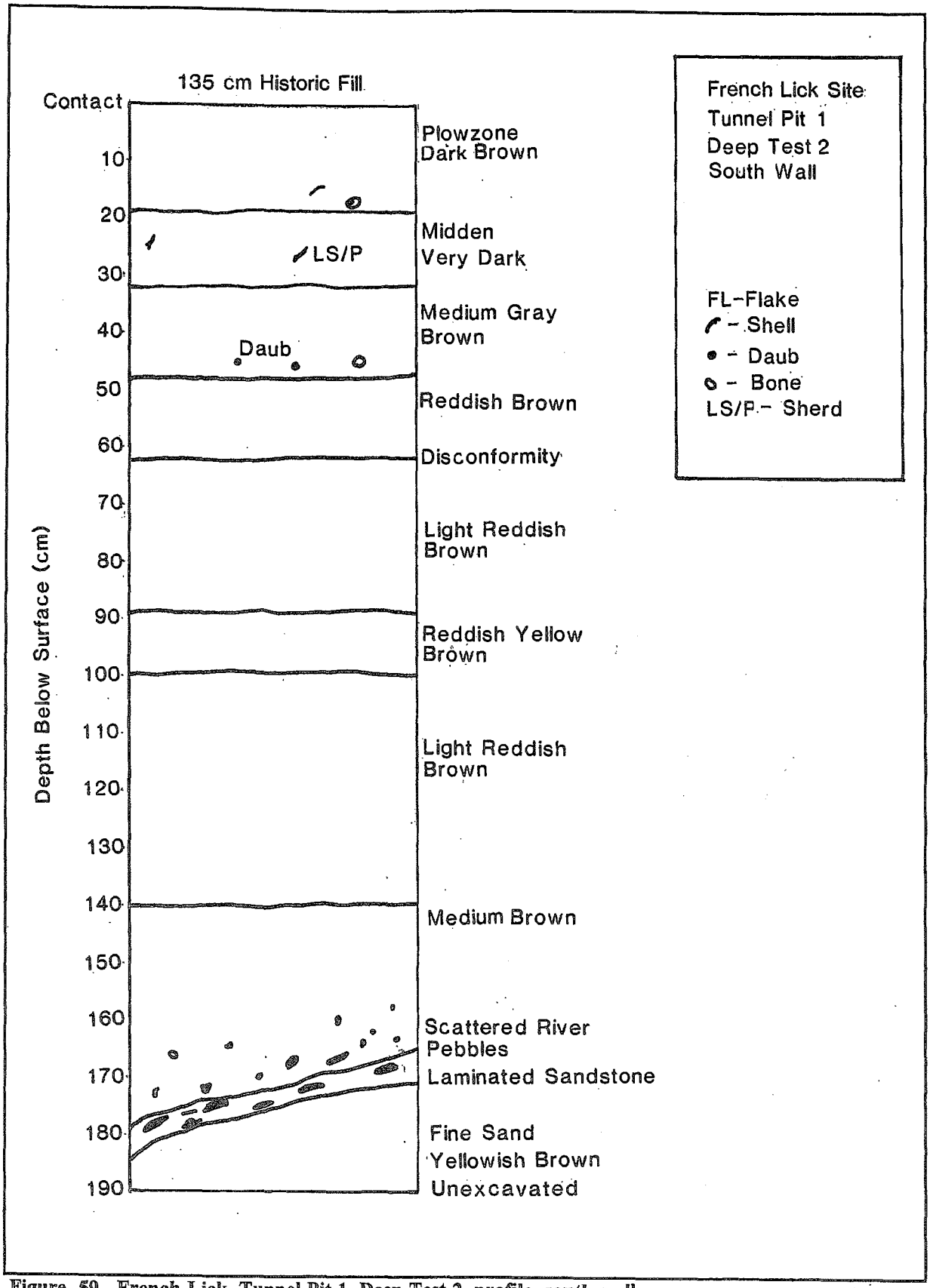


Figure 59. French Lick, Tunnel Pit 1, Deep Test 2, profile, south wall.

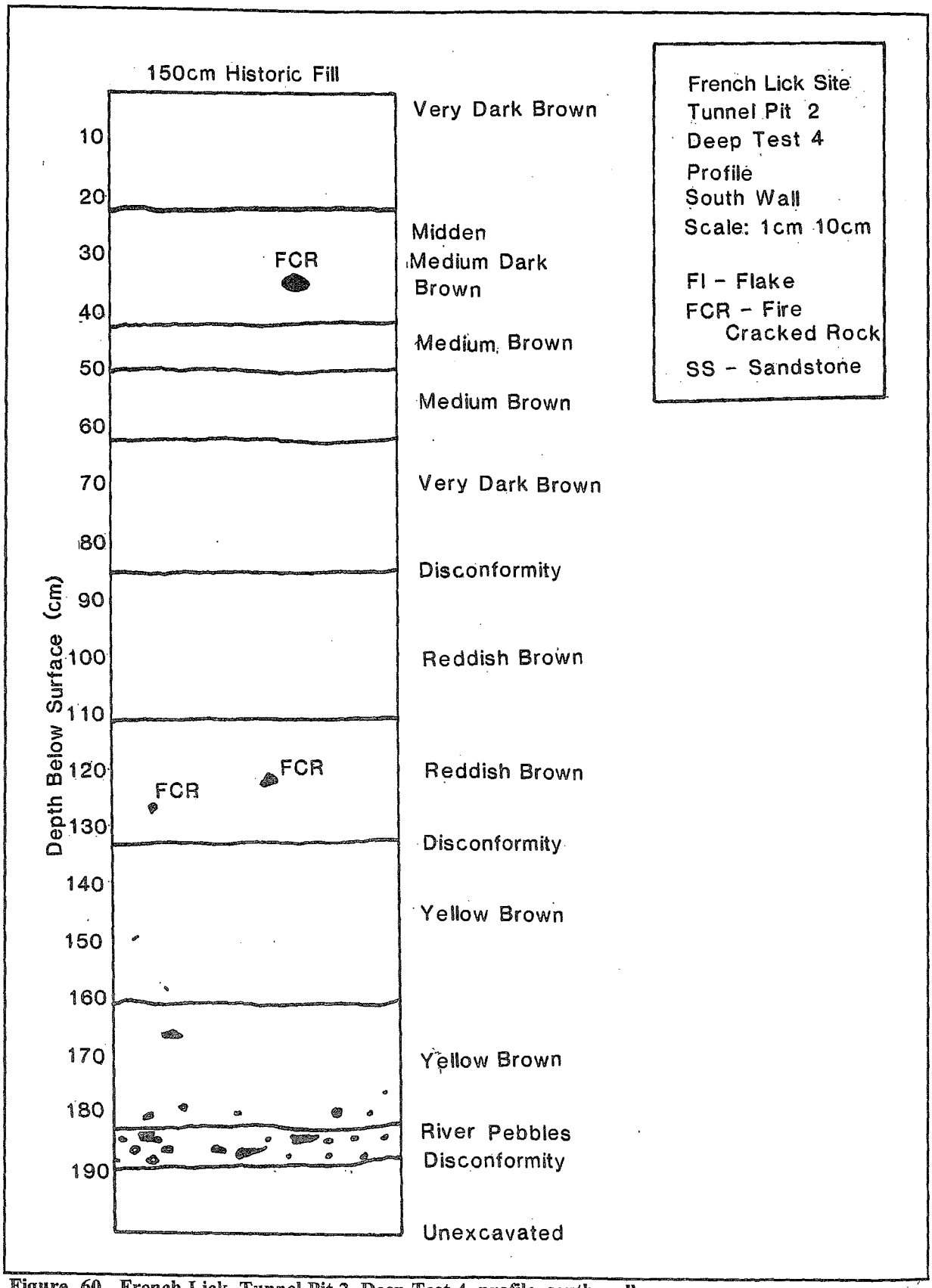


Figure 60. French Lick, Tunnel Pit 2, Deep Test 4, profile, south wall.

formation ranging up to 83 cm thick. A stratigraphic disconformity was observed at 83 cm below the datum. Stratum 7 was an indistinct A/B horizon, and Stratum 8 was a B horizon. Both strata were 74 cm thick and contained intermittent cultural material. This may represent an early Leftwich formation which is directly comparable to Strata 8 and 9 in the Bent 5 profile. Although the Benton midden is not as obvious in the Tunnel Pit 2 profile, the sequence of stratigraphic disconformity and relative depth below the surface sufficiently indicates this is the case.

A profile disconformity is located between Strata 8 and 9, also. These two strata are part of the early Holocene Cannon Bend formation (T-1a). Scattered fire cracked rock was observed in these two levels. These strata are comparable to Stratum 11 in Bent 5 and to Strata 7 and 8 in the Tunnel Pit 1 profile.

Stratum 11 was a yellow brown sandy clay with water-worn pebbles and decomposing sandstone fragments. Another stratigraphic disconformity was located at the lower contact with level T-2. This is a composite of Strata 9 and 10 from Tunnel Pit 1. This level was part of the upper Cheek Bend formation, and it marks the Pleistocene-Holocene contact within the stratigraphic sequence.

When comparing the profiles from Bent 5 and Tunnel Pit 2, we find the Leftwich (T-1b) formation with cultural material was contained in Levels 2 through 8 (a 162-cm maximum thickness) at Bent 5. In Tunnel Pit 1, Deep Test 2, the Leftwich formation was collapsed to Strata 2 through 5 (a 60-cm-thick deposit).

The Cannon Bend (T-1a) formation was minimally exposed in Stratum 10 at 163 cm below the soil surface. At the rear of the site, the Cannon Bend formation was approximately 104 cm thick and rested on decomposed bedrock.

SUMMARY

Throughout the Tennessee River Basin, we find a similar series of formations containing stratified Middle and Late Archaic deposits within the Leftwich formation. On the Duck River, Amick (1986) reported an extensive Pickwick-Ledbetter component in an upper Leftwich formation. Hofman (1984b) described a buried paleosoil which was radiocarbon dated between 6540±110 and 7250± 350 B.P. On the Cumberland River, Cridlebaugh (1986) described a Late Archaic shell midden which had a mean radiocarbon date of 3093 B.P. Morse (1963) also excavated a Late Archaic shell midden on the Cumberland River with radiocarbon dates of 1265 B.C., 973 B.C., and 555 B.C.

The geomorphological fieldwork recorded a series of lithostratigraphic units at the French Lick site. Culturally diagnostic artifacts appear to have been somewhat mixed within the site, and they can be employed with only limited confidence to interpret the site stratigraphy.

Radiocarbon samples suitable for dating purposes were not recovered from Woodland or Archaic contexts within the site. Soil samples sufficient for lost carbon ignition dating were taken during the field work; however, none have been submitted for testing.

The basal strata in all the investigated profiles consisted of late Pleistocene-early Holocene Cheek Bend formations. A yellowish brown clay to fine sand with manganese-oxide coating and concretions was consistently observed in the profiles. Within this level, patinated chert and quartzite pebbles and decomposing sandstone bedrock strata were mapped. The strata dipped gently toward the present river bank. These lower strata are part of the Cheek Bend (T-2b) formation which was deposited on top of a decomposing Ordovician age bedrock. Brackenridge (1984:13) noted that artifacts exhibiting Paleoindian technology have been recovered near the upper surface of this unit. A stratigraphic disconformity at the contact with the superimposed units at 80 to 90 cm below the surface was mapped in Tunnel Pit 1, Trenches 1 and 2. In Tunnel Pit 2, Trench 4, the upper contact between the T-2b/T-1a was observed at 130 cm below the historic contact, and in the Bent 5 profile this disconformity was observed at 165 cm below surface. An estimated age of 10,000 B.P. for the upper contact of the upper Cheek Bend formation has been made by Brackenridge (1984).

The Holocene alluvial and cultural history of the French Lick site in the areas of Tunnel Pit 1, Bent 5, and Tunnel Pit 2 will be discussed as separate units. At the Tunnel Pit 1 area, at the rear of the active river levee, less rapid alluvial development took place. A distinct collapse in the thickness and integration of the Cannon Bend formation (T-1a) and Leftwich formation (T-1b) occurred. Within Tunnel Pit 1, Profiles 1 and 2, a distinct disconformity was observed at 80 cm below surface and at 69 cm below the surface, respectively. Below this contact the Cheek Bend formation was observed. An unknown amount of the Cannon Bend formation was missing from the profile within the Tunnel Pit 1 area. The extent to which profile truncation occurred and the Early Archaic projectile points were deposited on this contact has not been determined. Alternatively, alluvial deposition may have been minimal, and later occupation mixed these specimens within the stratigraphic context.

Early Archaic artifacts were contained in Levels 5, 6, and 7 at 50 to 80 cm below the surface. The Middle Archaic Benton horizon projectile points were contained in Levels 2 and 3 at 20 to 40 cm below surface, and the Middle Woodland Copena horizon materials were found in Levels 2 and 3 at 20 to 40 cm below surface. The Middle Archaic to Middle Woodland deposits were clearly the Leftwich formation deposits which have been dated from approximately 6,400 B.P. to 1,500 B.P. The Mississippian occupation was not represented in the Tunnel Pit 1 location.

Within Tunnel Pit 2, Trench 2 and Bent 5, another alluvial sequence can be defined. The Cannon Bend formation (T-1a) is present where it rests unconformably upon the Cheek Bend formation. The upper contact of the Cannon Bend formation is also defined by a profile truncation. In Tunnel Pit 2 this formation was recorded as Strata 9 and 10 at 130 to 190

below surface. In Bent 5 this formation was recorded as Stratum 10 at 145 to 168 cm below surface. No cultural materials were observed during the profile clearing, and none of the excavations sampled these levels.

The early Leftwich formation (T-1b_1) included Levels 8 and 9 at 93 to 145 cm below surface in Bent 5. A Benton projectile point was recovered at 116 cm below surface, and a distinctive midden was observed at 93 to 120 cm below surface. In Tunnel Pit 2, the early Leftwich formation included Levels 7 and 8 from 83 to 131 cm below surface. Minimal cultural material was observed during the profile clearing. At both locations a profile truncation was observed at the contact with the overlying strata. The stratigraphic excavations from Bent 5 recovered a Flint Creek and 2 Benton horizon projectile points from these levels. Alexander (1983) has discussed a similar profile truncation occurring throughout the upland Southeast at 5,000 to 5,300 B.P.

The middle to late Leftwich formations (T-1b_2 and T-1b_3) were contained in Levels 4 through 7 in Bent 5 at 20 to 93 cm below surface. In Tunnel Pit 2, this included Strata 4, 5, and 6 at 42 to 85 cm below surface. These strata consisted of fine sand on the levee top ranging to sandy loam toward the rear of the levee. This included the Woodland and Late Archaic stratified deposits recovered from the stratigraphic excavations in Bents 4 and 5. In the Tunnel Pit 2 excavations the cultural deposits appeared to be mixed due to extensive feature excavations by the prehistoric inhabitants.

At Bents 4 and 5, Levels 2 through 4 contained the late Leftwich formation and the primarily Mississippian midden at the French Lick site. These Mississippian deposits ranged up to 20 cm below the historic disconformity. In Bent 5 a distinctive shell midden was observed at Stratum 2 from 15 to 20 cm below the historic contact surface. On the site foreslope at Bent 7 the Mississippian midden was superimposed upon the Late Archaic deposits, with little separation. Early historic disturbance has removed an unknown portion of the Mississippian component at Tunnel Pit 2.

The stratigraphy at the French Lick site has been determined by the alluvial deposition and truncation sequence of the Cumberland River. The highest area of the river levee (Bents 4 and 5 and Tunnel Pit 2) contain the most complete Holocene stratigraphic record, with stratified late Pleistocene-early Holocene deposits resting unconformably upon Ordovician bedrock. The Late Archaic through Mississippian components are well represented in this area. At the rear of the river levee (Tunnel Pit 1), the stratigraphic record is compressed; Early Archaic through Woodland components are present in a compressed 60- to 70-cm unit. The alluvial cross section has an erosion-truncated profile and redeposition sequence on the front slope, with deeply stratified deposits on the river levee top, and a compressed stratigraphic sequence on the back slope of the river levee; this cross section may be anticipated throughout the Tennessee River drainage basin.

EXCAVATIONS (WALLING)

As previously noted, investigations at the French Lick site were initiated subsequent to the discovery of human remains during construction activities within Bent 2 Left (Figure 61 and Figure 62 [insert]). Those areas exposed up to that time by construction activities were inspected by representatives of the TDOT, TDOA, and SHPO. At that time it was determined that an evaluation of the impact to the site and of the exposed archaeological deposits was in order. PCI was involved in the mitigation of adverse impacts associated with the construction of the Jefferson Street Bridge directly across the Cumberland River at East Nashville Mounds. TDOT requested that PCI initiate the evaluation and make recommendations for further action at this location. The site was thought to have been completely destroyed by the development of this part of Nashville (Autry 1982), and as noted above much of the site has been impacted.

All construction-related activities at bent locations was suspended, and the site was initially visited by PCI on October 22, 1991 (see Figure 18); plans were formalized for evaluation of the exposed deposits and subsequent activities at the site. Inspection of the profiles exposed by the construction-related activities resulted in the determination that substantial intact deposits were impacted in Bents 1 Left, 2 Left, 3 Left, and 4 Left. However, by that time all construction-related excavations had been completed at these locations. As a result, no archaeological investigations were carried out within these bents beyond recording sample profiles and associated activities (Walling 1992).

As part of the initial assessment process, profiles of the bridge footing already excavated were recorded. These profiles, as well as examinations of other portions of the footing excavations, revealed the presence of both disturbed and intact archaeological deposits. Included in the latter were midden, features, apparent house floors, and most significantly, human burials. Up to 120 cm of deposits was observed in the existing profiles. Recent overburden, which covered the deposits, varied in thickness from about 20 cm to 1.2 m.

Following initial evaluation, all additional construction-related excavations were monitored. These activities involved the exploratory excavation using a backhoe in all areas that were to be directly impacted by below-surface construction-related activities. This monitoring showed that intact deposits remained in Bents 3 and 4 Right, and throughout much of Bents 5 and 7. The majority of Bent 5 Left had been disturbed by construction of the original Jefferson Street Bridge, but intact deposits remained on the eastern and southern margins. Bents 1 Right, 2 Right, 6 Right, and 6 Left were found to contain no substantial intact deposits. The Bent 1 Right area had been disturbed by older construction-related activities; although intact deposits were encountered at the periphery of the bent location, no additional impact was to occur.

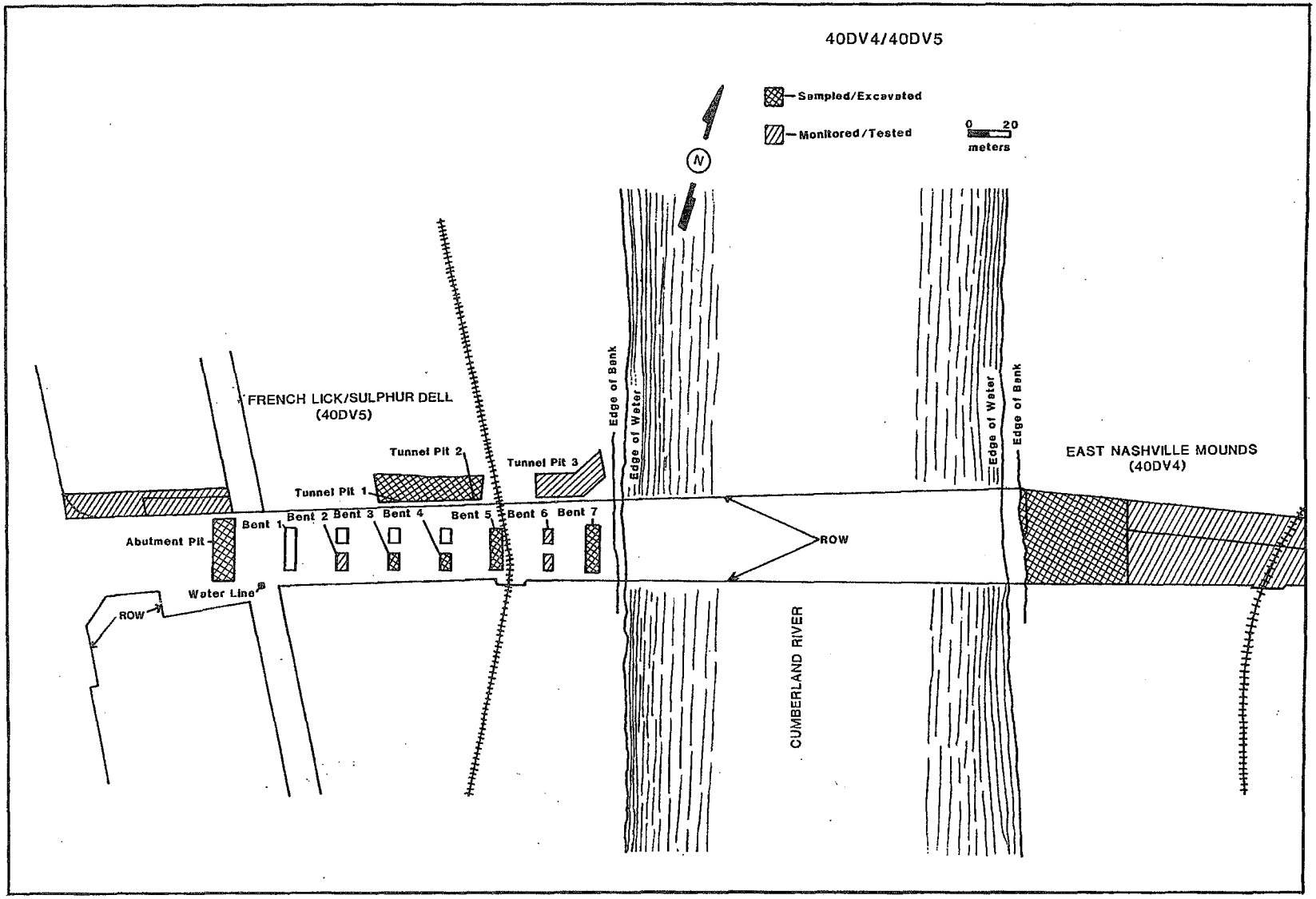


Figure 61. French Lick, project area and levels of investigation.

At the Bent 2 Right location, all prehistoric deposits had been truncated at some time in the past (if, as it seems reasonable to assume, such deposits ever existed at this location). At the Bent 6 area, all prehistoric deposits had been disturbed by older construction activities. Table 5 summarizes the results of the initial inspection and monitoring activities conducted at the French Lick site.

Table 5. Results of Inspection of Excavated Bents and Monitoring, the French Lick Site.

Bent	Results of Monitoring
1 Left	Excavated prior to monitoring; profiles and samples taken.
1 Right	No intact deposits within direct impact area.
2 Left	Excavated prior to monitoring; profiles and samples taken.
2 Right	No intact deposits within direct impact area.
3 Left	Excavated prior to monitoring; profiles and samples taken.
3 Right	Construction monitored; excavation halted due to presence of intact deposits.
4 Left	Excavated prior to monitoring; profiles and samples taken.
4 Right	Construction monitored; excavation halted due to presence of intact deposits.
5 Left	Construction monitored; excavation halted due to presence of intact deposits.
5 Right	Construction monitored; excavation halted due to presence of intact deposits.
6 Left	Construction monitored; no intact deposits.
6 Right	Construction monitored; no intact deposits.
7	Construction monitored; excavation halted due to presence of intact deposits.

General field techniques proposed for investigations at the French Lick site were the same as those employed at East Nashville Mounds. However, while a relatively large area of East Nashville Mounds was investigated, at the French Lick site excavations were limited to areas of direct impact. Because of the nature of the project area, no permanent grid was established prior to hand excavations. Units were placed within specific direct impact locations and aligned to those areas. All units, features, etc. were tied to a permanent benchmark; subsequent to the field phase, grid coordinates were assigned to units to provide a sense of spatial relationship. Impact resulting from bent construction was limited to paired footing excavations for Bents 1 through 4 and Bent 6. Bents 5 and 7 were to be totally excavated (Figure 63). As a result, archaeological excavations were restricted to the locations of Bents 3, 4, 5, and 7. Bents 1 through 5, Right and Left, were to measure 23' x 18' x 8' deep. Bent 7 was excavated across the entire ROW and measured approximately 84' north/south by 20 to 30 feet east/west. The research design called for the investigation of the prehistoric remains encountered. Historic features were recorded when encountered, but no in-depth analysis of these was attempted.

Two-by-two-meter squares were hand excavated in Bents 3, 4, 5 Right, and 7. A 1-x-2-m unit was excavated in the remaining deposits in Bent 5 Left. The discontinuous deposits in

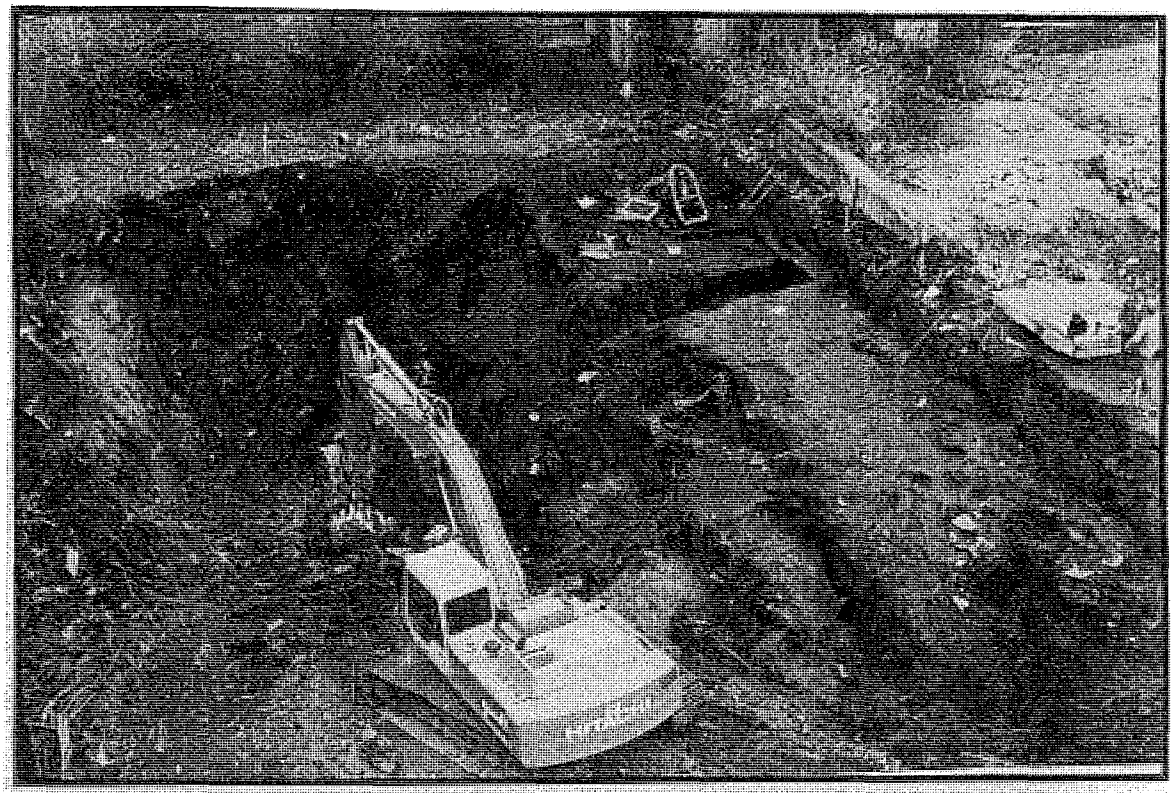


Figure 63. French Lick, removal of historic fill along river bank immediately west of Bent 7.

Bent 7 were additionally sampled with a 1-x-1-m unit. This phase of investigations at French Lick resulted in the hand excavation of 23 sq m (26.23 cubic meters), 25 features, 10 postholes, and the identification of 17 burial loci representing the remains of 18 individuals.

As previously noted, additional data recovery was carried out immediately north of the bridge area, within the stormwater drain impact area. See Figure 61 and Figure 62 [pocket]. This work was conducted between mid February and early June, with the major field effort ending on May 2, 1992. Two construction alternatives were originally proposed: 1) a combination of open trench cutting and tunneling, or 2) tunneling of the entire route with three tunnel pits. In the end, a combination of the two was settled upon.

The initial plan for this portion of the archaeological investigations was to include the removal of the historic overburden from 100 percent of the tunnel pit areas. As per construction design, this would have involved the removal of all overburden from an area of approximately 880 square feet (79 sq m) at each of the three proposed tunnel pits. This would have amounted to the total removal of the historic overburden from approximately 2,640 square feet (238 sq m). Modifications to the construction plans resulted in the conjoining of Tunnel Pits 1 and 2 and the enlarging of the actual area of impact for each pit, in addition to the area between Tunnel Pits 1 and 2.

The historic overburden was stripped from the Tunnel Pit 1 area, and a series of trenches, using a grade-all, was excavated the length of Tunnel Pit 2, which included the area originally planned to have separated these two areas. A series of trenches was also excavated through the Tunnel Pit 3 area (Figure 64) and in the area to the west of 2nd Avenue that was to be open cut for the drain (Figure 65).

Intact deposits were observed within the Tunnel Pit 1 and 2 locations, though it appeared that the deposits had been truncated and the Mississippian midden had been completely removed by past activities. Within the Tunnel Pit 3 area, intact deposits were observed within the western portion, whereas the eastern portion was included in recent bank-filling material. No intact prehistoric deposits were encountered west of 2nd Avenue within the drain area; in fact, quite recent debris was encountered to the base of excavations at sterile subsoil.

As a result of this phase of these investigations, it was determined that a program of data recovery would be necessary in the expanded Tunnel Pit 1 and 2 area. By shifting the location of Tunnel Pit 3 to the east, impact to the archaeological deposits would be avoided, and no additional work would be required in that location. As no deposits were encountered west of 2nd Avenue, no additional work was required in that area.

As the construction plans for the Tunnel Pit 1 and 2 area called for excavation to a depth of over 20 feet, it was necessary to determine whether any deeply buried cultural deposits existed at these locations. This was effected by machine-aided excavation of sufficient horizontal extent to determine that no such deposits existed at the level of the proposed tunnel. These deep tests were also utilized as deep soil profiles for the geomorphological evaluation at the site (see above).

Investigations within the Tunnel Pit 1 area included the hand excavation of twelve 2-x-2-m units and an L-shaped unit to complete the exposure of Feature 28. A 50-x-50-cm unit was laid out over a portion of Feature 27 but was not hand excavated; instead, this area was stripped to the point of recognition for this feature. In all, 50 sq m were hand excavated in this area. Deposits were relatively shallow in this location. Two burials of uncertain affiliation were recovered.

Four 2-x-2-m units were excavated in the western portion of Tunnel Pit 2, the area originally slated to be between the tunnel pits. Deposits here were similar to those of Tunnel Pit 1. This area has been interpreted as being the back side of the natural levee on which the site was located.

In the approximate center of Tunnel Pit 2, a concentration of features and postholes was observed following the initial stripping of the overburden. As little in the way of Mississippian remains had been encountered in this general area, it was hoped and assumed that this concentration would represent an intact Middle Woodland habitation area similar to

Figure 65. French Lick, test trench for stormwater runoff drain west of 2nd Avenue.

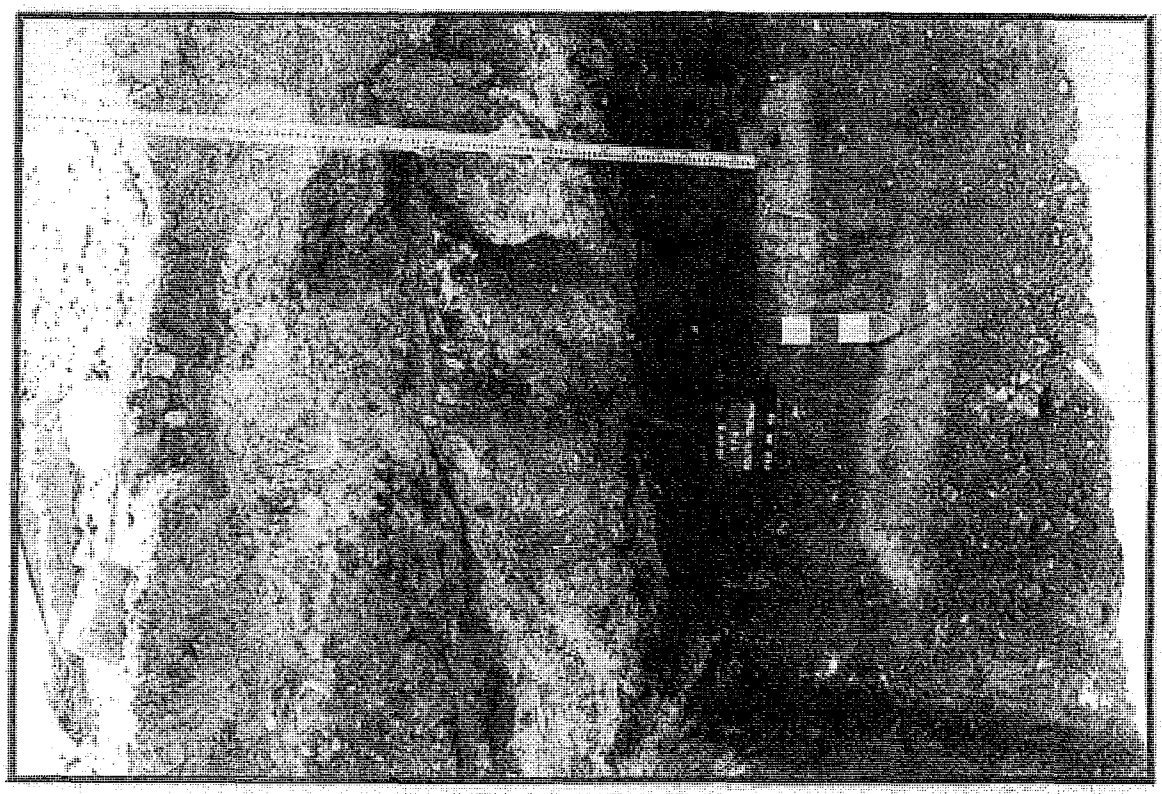


Figure 64. French Lick, Tunnel Pit 3, south trench, showing intact prehistoric deposits at base of historic overburden.

those encountered on other sites in Middle Tennessee. In an effort to achieve total recovery of this area, a block of twelve 2-x-2-m units was laid out and excavated. In addition, five 1-x-2-m units and a single 1-x-1-m unit were opened to expose portions of features. A total of 59 sq m was hand excavated in this area (Figures 66 and 67).

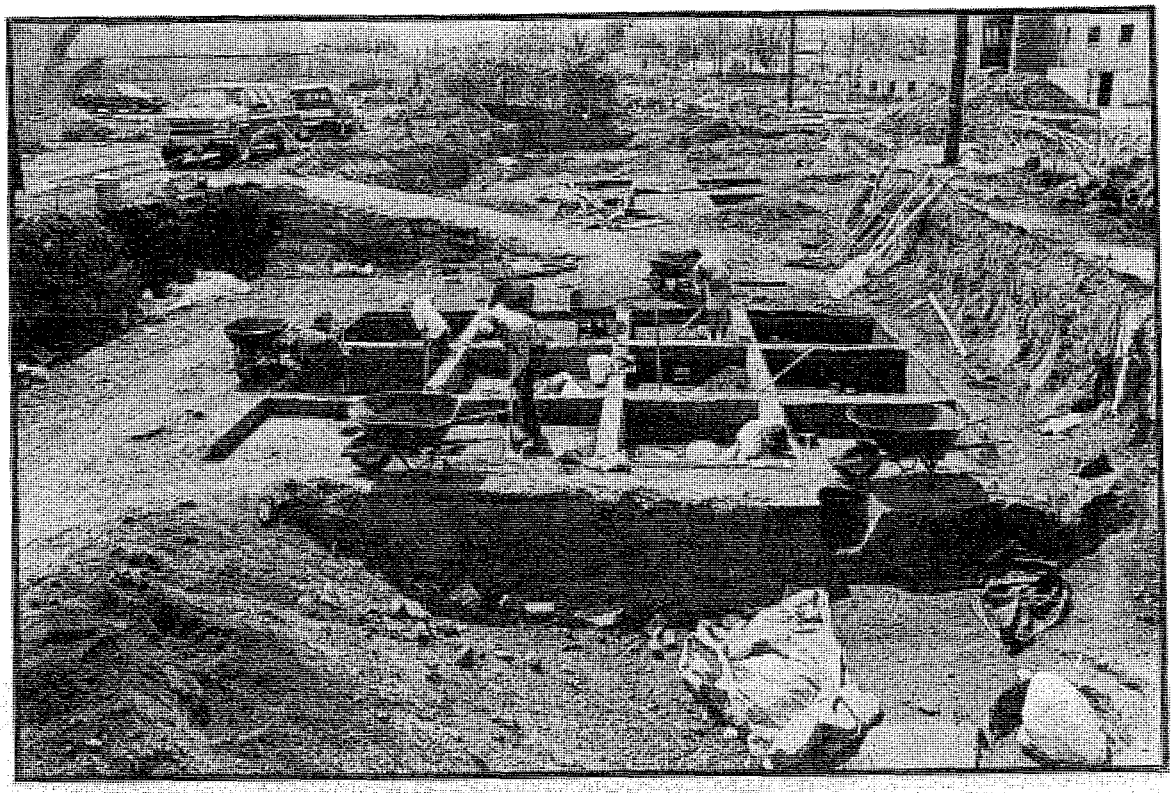


Figure 66. French Lick, Tunnel Pit 2 central block, facing south.

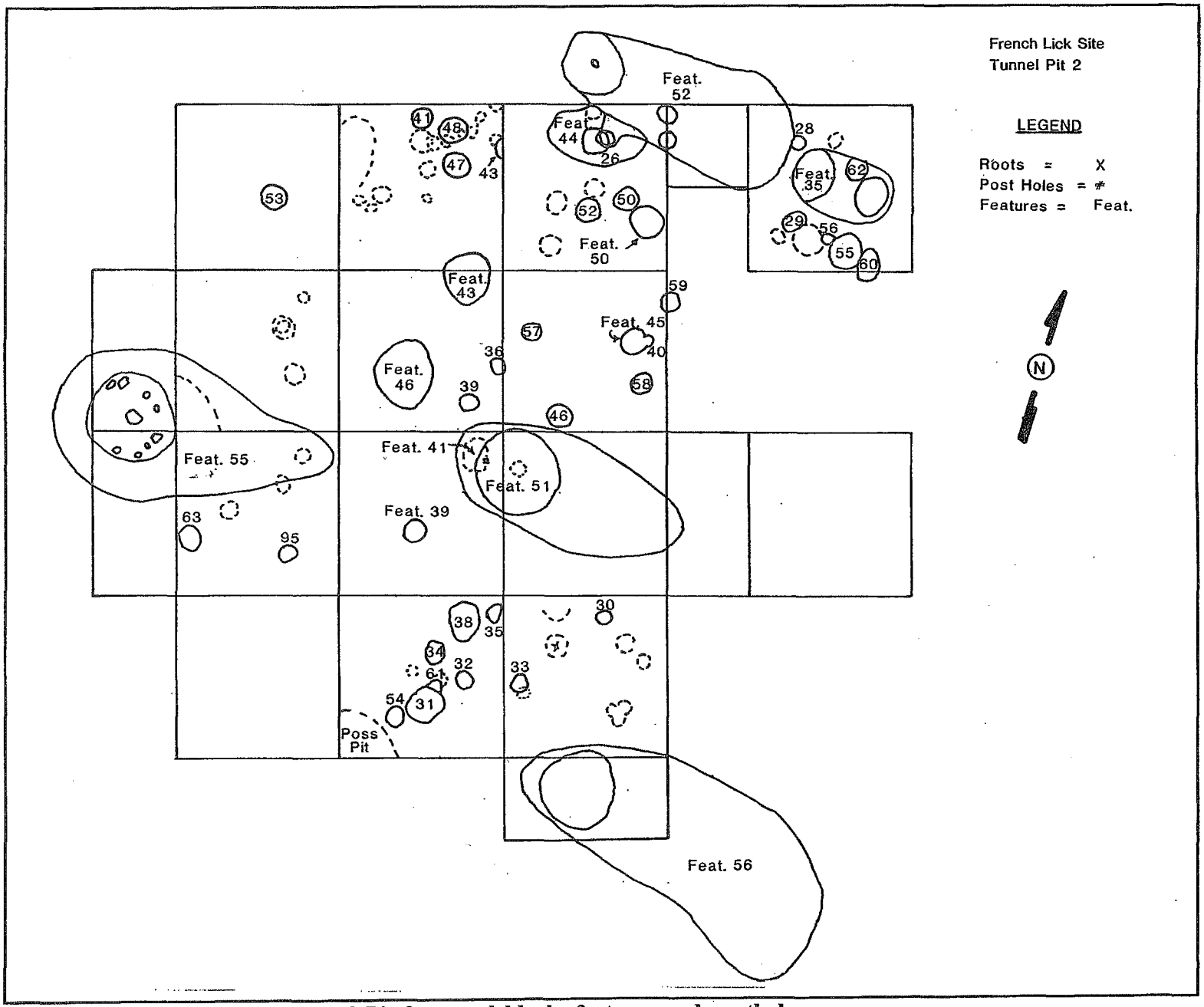


Figure 67. French Lick, Tunnel Pit 2 central block, features and postholes.

On the western end of Tunnel Pit 2, six 2-x-2-m units, 24 sq m, were hand excavated; it was in this area that the deepest deposits on the site were encountered. Additional investigations were carried out within the western abutment pit area. The majority of this location had been previously impacted by the original Jefferson Street bridge on the north and the basement of a historic structure on the south (Figure 68). A very thin and dispersed midden deposit between these two areas was investigated, with limited results. Additional deep impacts to the site resulting from older construction was observed in a deep cut within Tunnel Pit 1 in what appears to be an old brick-lined drain (Figure 69). A waterline trench was cut across the general project area, and a partially disturbed burial was encountered and excavated. Excavation of an additional waterline trench was excavated west of the project area proper to 4th Avenue. This activity was completely contained within the historic overburden, and it is unknown if intact prehistoric deposits extend that far west.

Following hand recovery, the remainder of the midden was mechanically stripped, and all additional features and postholes were excavated. Additional minor excavations were conducted at the abutment pit to recover a previously disturbed burial within a waterline trench. In all, 149 sq m of midden was hand excavated. Fifteen features, 22 postholes, and two burials were identified and excavated.

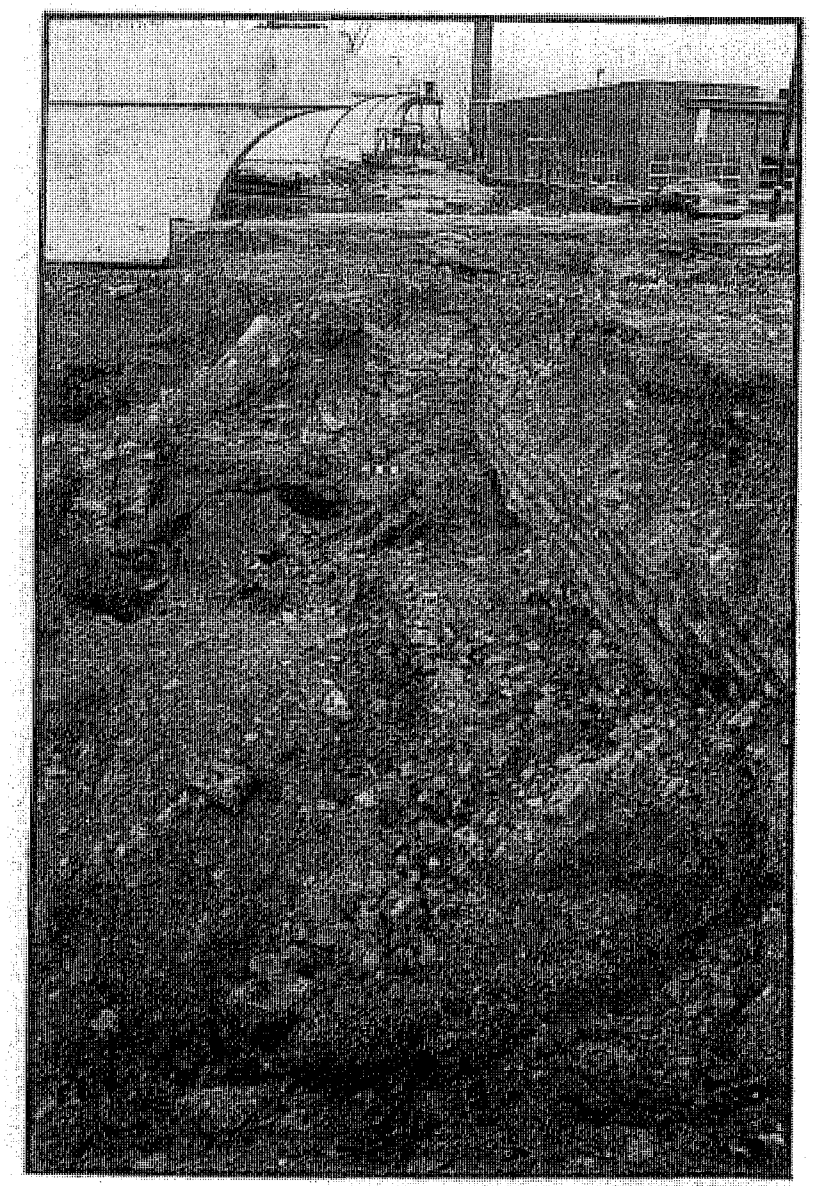


Figure 68. French Lick, abutment pit area, historic feature/ foundation.

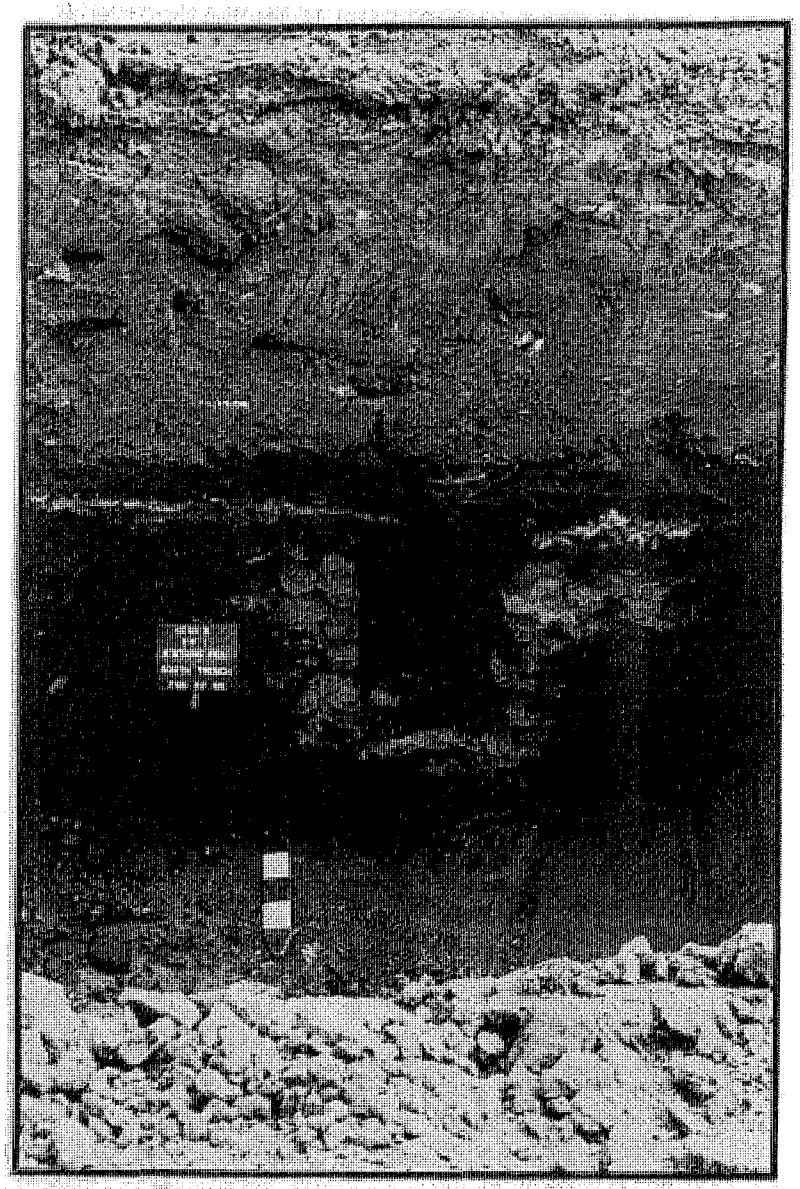


Figure 69. French Lick, Tunnel Pit 1, deep cut, showing brick-lined drain.

DESCRIPTION OF FEATURES (WALLING & PEACOCK)

Feature 1A

Provenience: Bent 3 Right, 5N 132W
Dimensions: > 150 cm NS x 106 cm EW
Depth: ca. 4 cm
Origin: Level 1

Feature 1A was a shell concentration found during the excavation of Feature 1B. While the main concentration, a shell layer about 4 cm thick, was located directly beneath Feature 1B (Figure 70), scattered shell and smaller concentrations were found at the same depth across a large area of the unit. Both Features 1A and 1B had been impacted on the north by historic disturbance. Feature 1A continued beyond the excavated area to the south.

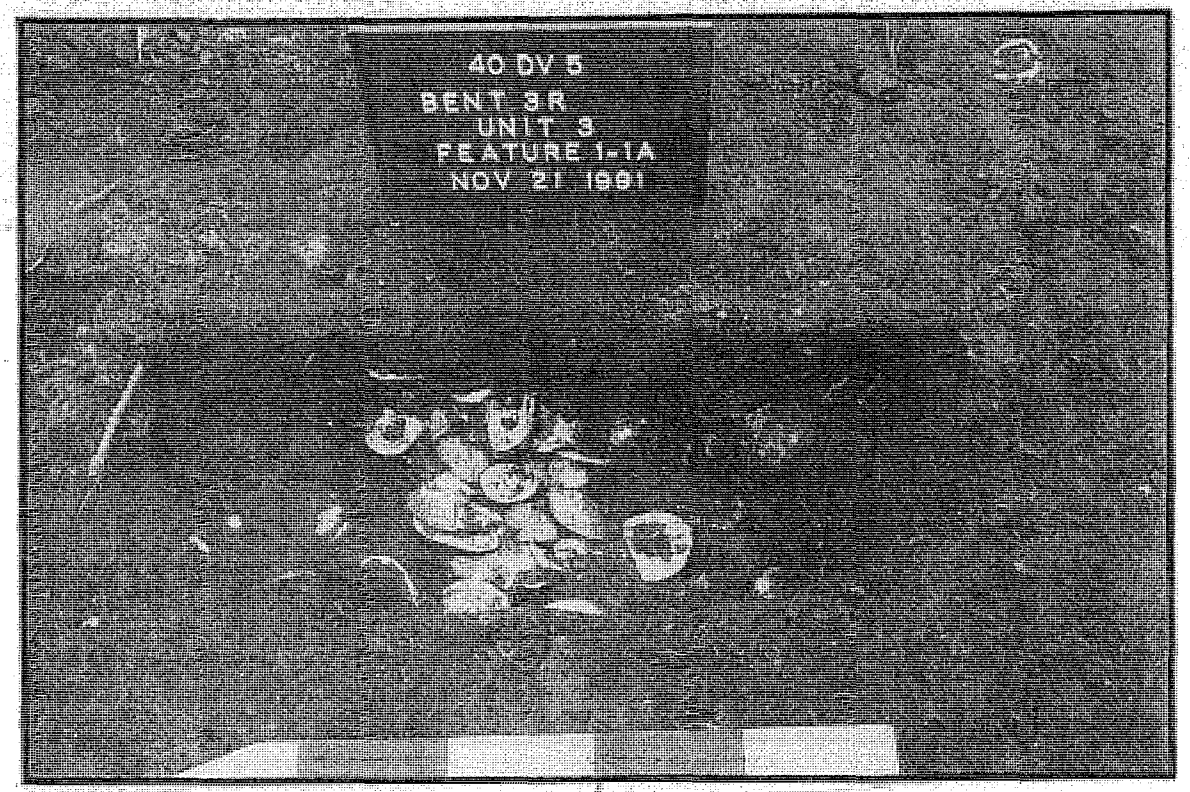


Figure 70. French Lick, Feature 1A, shell concentration.

Feature 1B

Provenience: Bent 3 Right, 5N 132W
Dimensions: 36 cm NS x 46 cm EW
Depth: 10 cm
Origin: Level 1

This feature was a small pit, square in plan with a rounded base. The main part of the feature was a dark, mottled clay loam with bits of shell, charcoal, and sherds. In the center was a darker area of sandy clay loam which was extensively root disturbed. Given the square shape, this feature was probably a historic posthole which had been truncated by construction activities in the past. It intruded into the top of Feature 1A, a concentration of mussel shell.

Feature 1C

Provenience: Bent 4 Right, 8N 107W
Dimensions: 40 cm NS x 52 cm EW
Depth: 6 cm
Origin: Level 1

This feature was an ovoid dark spot which contained large numbers of very friable pot sherds, as well as numerous other artifacts including flakes, bone, and shell. The feature was disturbed by a tree root which penetrated the central portion. The true shape of the feature was undetermined, as the fill was difficult to distinguish from the surrounding matrix, and no clear edges could be discerned.

Feature 2A

Provenience: Bent 4 Right, 8N 107W
Dimensions: 80 cm NS x 90 cm EW
Depth: 2 to 4 cm
Origin: Level 1

Feature 2A was a dark area with patches of lighter, hardened sandy clay. These clay patches ranged from a few cm to 30 cm across and had no distinct edges. Flecks of charcoal, burned bone, and sherds were found during excavation of this feature. This feature was partially underneath and extending south and west of Feature 1C.

Feature 2B

Provenience: Bent 7 Right
Dimensions: Inside diameter: 132 cm
Outside diameter: 184 cm
Depth: 24 cm
Origin: unknown

This feature was a circular brick construction that was partially destroyed during the trackhoe excavation of Bent 7. The feature intruded through intact prehistoric midden. Excavation showed it to be an access port for a sewer system; a sewer line led from just above the concrete floor of the feature to the east toward the Cumberland River.

Feature 3

Provenience: Bent 7 Right

Feature 3 was a historic rock pile intruding into the aboriginal midden.

Feature 4

Provenience: Bent 7
Dimensions: 100 cm NS x 72 cm EW
Depth: 27 cm
Origin: unknown

Feature 4 was a cache of historic ginger beer bottles found during the trackhoe excavation of Bent 7. No pit outline was observed, and it is assumed that these were simply dumped in as part of the fill that was used to extend the bank of the river in this area.

Feature 5

Provenience: Bent 5 Right, 105N 83.5W
Dimensions: 250 cm NS x 160 cm EW
Depth: 48 cm
Origin: Level 2

This feature was a large pit with several distinct layers of ash and fired clay. It was discovered during the excavation of 105N 83.5W, where it took up approximately the northeastern quarter of the unit (Figure 71). Upon completion of 105N 83.5W, the profile showing Feature 5 was drawn, and the midden overlying the remainder of Feature 5 was removed to allow complete excavation of the feature.

The feature originated in the Mississippian stratum, which overlay 120 cm of earlier deposits and extended 30 cm deep into these deposits. Multiple episodes of firing were suggested by two distinct ash layers: a lower layer of white ash about 12 cm thick overlain by a gray ash layer averaging 20 cm thick. A thin (1 to 2 cm) layer of fire-hardened sandy clay, similar to the house floor features excavated at the French Lick site, ran between the two ash layers. The soil around and beneath Feature 5 had been oxidized from heat, forming a bright red band as much as 20 cm thick. Reuse of the feature is suggested by areas of mixed ash and this oxidized soil; presumably such mixing took place as the feature was cleaned out for reuse.

Figure 71. French Lick, Postholes 1-7, Feature 5, 10.5N 83.5W.

The feature had been severely impacted on the northern end by past construction activities. A large area of recent rubble stretching from the northeast corner of 105N 83.5W was cleaned out, and the profile was extended to include the end of Feature 5, which reached that far north. The white ash layer continued farther to the north than the gray ash; there was also a posthole originating in the white ash and extending 15 cm down into the oxidized soil. The layer of fired clay overlay this posthole. Many pieces of rock, sherds, bone, and shell were found either upon or adjacent to the fired clay. These artifacts were collected separately as field specimens.

When the fired clay layer was removed, a number of postholes were found in the layer of white ash (Postholes 1 through 7). Three of these postholes (1, 3, and 5) had no depth, suggesting that they had been truncated prior to the placement of the fired clay layer. The other four postholes (2, 3, 6, and 7) ranged in depth from 10 to 30 cm. The postholes ranged in diameter from 6 cm to 14 cm, were straight sided, and had slightly rounded to pointed bases.

The function of Feature 5 is unknown. The obvious evidence of great heat and signs of reuse suggest it may have been a large earth oven or kiln. Another explanation is that the

feature represented some kind of structure that burned, was rebuilt, and burned again. If this is the case, then the type of structure is unknown. The feature is certainly too small to be a house.

Feature 6

Provenience: Bent 3 Right, 5N 132W
Dimensions: > 75 cm NS x > 100 cm EW
Depth: 24 cm
Origin: Level 2

Feature 6 was a shallow pit containing sherds, bone, shell, and limestone rock. The center of the feature was a dark brown stain with higher artifact density than either the remainder of the feature or the surrounding matrix. The feature had been partially impacted on the west by historic disturbance; unexcavated portions continued to the north and east of 5N 132W.

Feature 7

Provenience: Bent 3 Right, 5N 132W
Dimensions: > 20 cm NS x > 36 cm EW
Depth: 40 cm
Origin: Level 1

Feature 7 was a basin-shaped pit containing rock, bone, and several salt pan sherds. Approximately half to a quarter of the feature occurred within 5N 132W and was excavated; the remainder extended beyond the unit to the south and east and was not excavated.

Feature 8

Provenience: Bent 7 Right, 7N 41W
Dimensions: > 25 cm NS x 67 cm EW
Depth: 24 cm
Origin: recent

This feature was a recent historic intrusion into the Mississippian midden.

Feature 9

See posthole descriptions below.

Feature 10

See posthole descriptions below.

Feature 11

Provenience: Bent 7 Right, 7N 41W

Feature 11 was the number given to a small (8 (8 cm) circular brown stain within Feature 12. Excavation showed this to be a root hole, and the number was discontinued.

Feature 12

Provenience: Bent 7 Right, 7N 41W
Dimensions: 59 cm NS x 80 cm EW
Depth: 39.5 cm
Origin: Level 3B

This feature was a large, deep hearth with gently sloping sides and an irregular, rounded bottom. The fill consisted of mottled tan and brown sand surrounded by fired orange sand. Features 13 and 14 intruded into the south and east edges of Feature 12, respectively.

Feature 13

Provenience: Bent 7 Right, 7N 41W
Dimensions: 22 cm NE-SW x 40 cm NW-SE
Depth: 16.5 cm
Origin: Level 3B

Feature 13 was a small, irregularly shaped pit filled with brown sand, mixed brown sand, and charcoal, rock, and lenses of ash and burned shell. It intruded into Feature 12, a large hearth.

Feature 14

Provenience: Bent 7 Right, 7N 41W
Dimensions: 24 cm NS x 31 cm EW
Depth: 8 cm
Origin: Level 3B

Feature 14 was a small, irregularly shaped pit similar to Feature 13. The fill consisted of soft, tan sand with fine pieces of rock, charcoal, and some ash. This feature intruded into Feature 12, a large hearth.

Feature 15

Provenience: Bent 7 Right, 7N 41W

Feature 15 was a circular stain located adjacent to Feature 16, a large pit. During excavation, it was decided that Feature 15 was the remnants of a root hole.

Feature 16

Provenience: Bent 7 Right, 7N 41W
Dimensions: 107 cm NS x 96 cm EW
Depth: 26 cm

Origin: Level 7

Feature 16 was a large, circular pit with gently sloping sides and a fairly flat base. The fill was a dark brown, sandy silt loam. Bone, charcoal, and flakes were noted in the fill during excavation. Feature 17, a large posthole, was located near the eastern edge of Feature 16. Posthole 8, which lay halfway in Feature 16, was encountered after half of the feature had been removed. Postholes 9 and 10 were found in the bottom of Feature 16.

Feature 17

See posthole descriptions below.

Feature 18

Provenience: Bent 5 Left, 20N 83.5W
Dimensions: > 61 cm NS x > 16 cm EW
Depth: 40 cm
Origin: Level 3

This feature was a pit, most of which occurred outside 20N 83.5W to the east and south. This pit was difficult to define and excavation beyond the limits of the unit were not carried out.

Features 19–21

Provenience: Bent 7 Right, 7N 41W

These numbers were assigned to stains that could not be defined in profile and were assumed not to be features.

Feature 22

Provenience: Bent 7 Left, 26N 42W
Dimensions: 28 cm NS x 24 cm EW
Depth: 13 cm
Origin: Level 6

This feature was a small hearth with a mixed ash and fired earth fill.

Feature 23

Provenience: Bent 7 Left, 26N 42W
Dimensions: 60 cm NS x 70 cm EW
Depth: 43 cm
Origin: Level 7

Feature 23 was a large, circular pit with a rounded bottom (Figure 72). The pit was lined with a clay layer 5 to 8 cm thick; lenses of oxidized soil occurred against the inner boundary

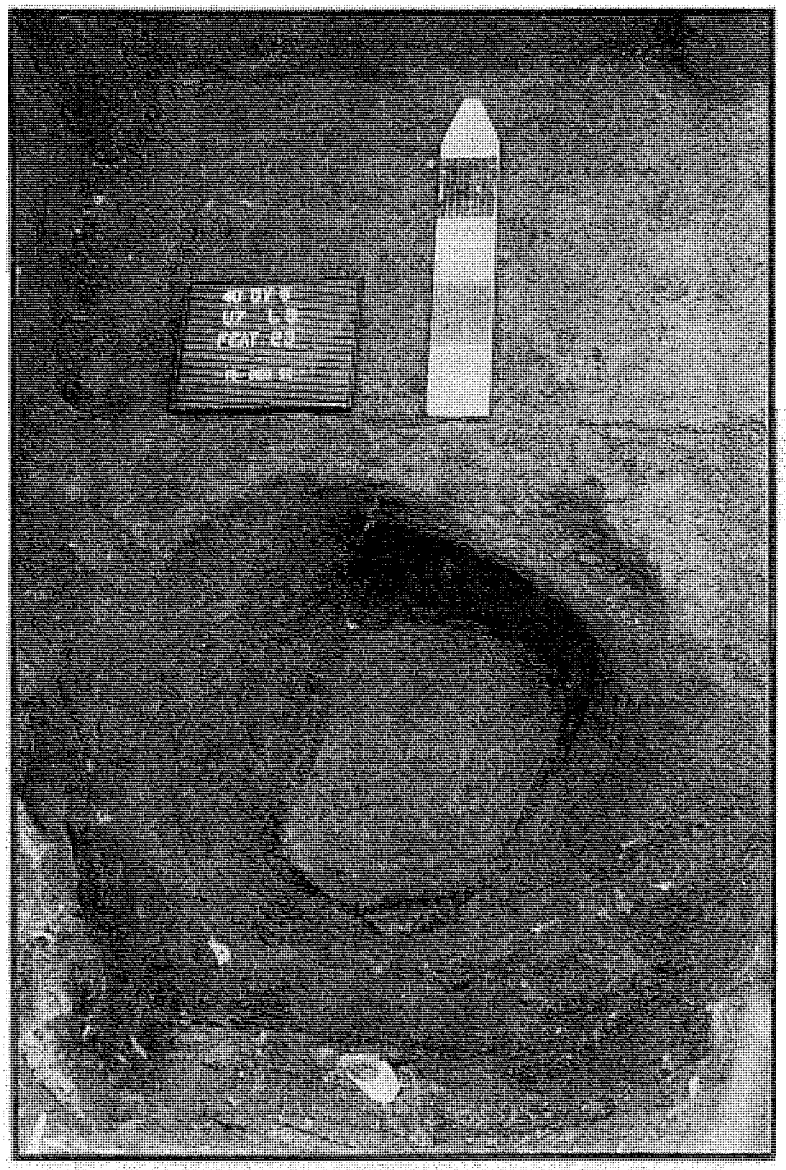


Figure 72. French Lick, Feature 23, 26N 42W.

of this clay. The pit contained large quantities of rock, shell, and carbonized material, especially near the center of the feature. In the bottom was a rectangular limestone slab, 32 x 22 cm, aligned toward the northeast. This slab was covered with ash and oxidized soil.

Feature 24

Provenience: Bent 5
Dimensions: 76 cm NS x 68 cm EW
Depth: 20 cm
Origin: unknown

Feature 24 was a rock cluster found during the stripping of the midden deposits from Bent 5. It was originally designated Burial 9, as it resembled a disturbed stone box. Excavation proved it to be a shallow pit with a rounded bottom. The fill, which was very difficult to distinguish from the surrounding matrix, contained several small pieces of limestone, charcoal, flakes and sherds.

Feature 25

Provenience: Bent 5
Dimensions: 68 cm NS x 108 cm EW
Depth: 68 cm
Origin: unknown

Feature 25 was located during the stripping of the midden deposits from Bent 5. Several large pieces of limestone slab were clustered around the top of the feature, which was originally denoted as Burial 10. Excavation proved it to be a large fire pit, similar in many respects to Feature 5, which was located to the southeast.

Feature 25 had sloping sides and a rounded bottom. The limestone slabs at the top of the feature had no apparent orientation, although some drag from the blade of the trackhoe might have occurred. Shell, sherds, bone, flakes, and rock were noted in a fill of oxidized soil and charcoal.

Excavation of the feature revealed complex stratigraphy. It appeared that a smaller trash pit intruded through Feature 25. The clay floor was not intact throughout the feature; rather, a cluster of artifacts, including ceramics and shell, penetrated the central portion over an area of about 45 cm NS x 70 cm EW. Adjacent to this cluster on the north was an area of mixed clay and artifacts, probably the remnants of the clay floor which was removed by the placement of the later feature. In addition to this disturbance, a fired clay lens ran halfway across the pit, covering the main fill of mixed ash, fired clay, and limestone rock. This lens was similar to the one in Feature 5, and likewise suggested reuse of the fire pit through time. A thin layer of charcoal was found at the bottom of the feature. Unlike Feature 5, no postholes were found.

Feature 26

Provenience: TP1, 45.5N 141.5W
Dimensions: 40 cm N/S, 41 cm E/W
Depth: 38 cm
Origin
(Recognition): base of level 4

Feature 26 was a small basin-shaped pit recognized at the base of Level 4, the midden/sterile soil interface. No diagnostic material was recovered. The pit was evidenced by a dark (10YR 2/2) circular stain, similar to the overlying midden, in the subsoil. Abundant carbonized hickory nut hull fragments were observed within the fill. The pit probably originated within the Woodland midden; similar flecks of carbonized material were noted in the area during the excavation of Level 4, but no pit outline was observable.

Feature 27

Provenience: TP1, 40N 139W and 46N 133.5W
Dimensions: 50 cm N/S, 51 cm E/W
Depth: 41 cm
Origin: Level 3

Feature 27 was a small, circular, basin-shaped pit originating within Level 3, the Woodland midden. Pit fill (10YR 2/2) was slightly darker than the matrix (10YR 3/4). Material recovered indicated a Middle Woodland genesis.

Feature 28

Provenience: TP1, 46N 131.5W and 48N 131.5W
Dimensions: ca. 2 x 2 m
Depth: 10 cm
Origin: Level 1

Feature 28 was a concentration of burned limestone and charcoal. No pit outline was observed; dimensions were defined by limits of material. Associated material indicated a Mississippian affiliation. It was apparent that the limestone was being burned, or at least heated; beyond this any assumptions as to function would be merely that.

Feature 29

Feature 29 was observed in the north profile of a soil test trench but was not observable in plan after stripping.

Feature 30

Provenience: TP1, 50N 132W and 49.5N 134W
Dimensions: 25 to 30 cm N/S, 2.4 m E/W
Depth: 30 cm

Origin: Level 1
(Recognition): base of Level 2/subsoil interface

Feature 30 was a shallow trench oriented NE/SW. The trench was defined by the dark (10YR 2/2) fill within the Woodland midden of Level 3. In profile, it was obvious that Feature 30 originated within Level 1, but it could not be defined until the midden/subsoil interface. No diagnostic material was recovered. No function is implied, though the lack of perpendicular trenches and the depth of the feature argue against labeling it as a wall trench.

Feature 31

See Burial TP1-1

Feature 32

Provenience: TP2, 42N 123W
Dimensions: n/a
Depth: n/a
Origin: Level 6

Feature 32 was a collection of three grinding stones; no pit outline was observed. The depth of this feature suggested an Archaic affiliation.

Feature 33

Provenience: TP2, 46N 95W
Dimensions: 33 cm diameter
Depth: 13 cm
Origin: Level 7

Feature 32 was a small, basin-shaped pit with a slightly flattened base. No cultural material was observed within the pit. Charcoal flecks were present, though in no greater concentration than in the matrix. Pit margins were regular and easily defined, but were more a change in texture than in color.

Feature 34

Provenience: TP2, 42N 105W
Dimensions: 28 cm N/S, 26.5 E/W
Depth: 12 cm
Origin: Level 6

Feature 34 was a small, basin-shaped pit. There was a light soil color change (10YR 3/2) as compared to the matrix (10YR 4/4). A few small flakes were the only cultural material observed.

Feature 35

See posthole descriptions below.

Feature 36

Provenience: TP2, 46N 105W

As excavation proceeded, it was determined that Feature 36 was the result of root action.

Feature 37

Provenience: TP2, 42N 99W
Dimensions: 60 cm diameter
Depth: 24 cm
Origin: within level 2
(Recognition): base of level 2

Feature 37 was a small, basin-shaped pit which was first observed as an amorphous stain (10YR 2/2) against the matrix (10YR 3/3). Burned limestone, flakes, and fired clay were observed. This feature was apparently associated with Feature 38. Features 37 and 38 had the same point of origin and were within 5 cm of one another.

Feature 38

Provenience: TP2, 42N 99W
Dimensions: 50 cm N/S, 53 cm E/W
Depth: 8 cm
Origin: within level 2
(Recognition): base of level 2

Feature 38 was a lens of burned clay, apparently associated with Feature 37.

Feature 39

See posthole descriptions below.

Feature 40

Provenience: TP2, 46N 110W
Origin
(Recognition): initial stripped surface

Feature 40 was a observed as a pronounced, amorphous discoloration at the base of the stripped overburden. It was interpreted to be the result of root/rodent action, or a midden-filled depression. Cultural material associated included a Benton PP/K fragment, a Morrow Mountain PP/K, and salt pan sherds.

Feature 41

Provenience: TP2, 42N 110W
Dimensions: 35 cm N/S, 26 cm E/W
Depth: 18 cm
Origin: within level 3

Feature 41 was defined by the relatively softer texture of this small, basin-shaped pit as opposed to the matrix. Both the pit and the matrix were the same color (10YR 3/3). Observed material included limestone-tempered ceramics, flakes, charcoal flecks, bone, and fired clay. Feature 41 was intrusive into Feature 51, one of the large postholes. Feature 41 was possibly a small, oblong, basin-shaped, trash-filled pit, but could also have been a posthole that was not observable in higher levels. Mississippian affiliation is suggested.

Feature 42

Provenience: TP2, 46N 110W
Dimensions: 177 cm N/S, 50 cm E/W
Depth: 6 cm
Origin: unknown
(Recognition): Level 2

Feature 42 was an elongated depression with a concentration of flakes, charcoal flecks, and pebbles, a Big Sandy PP/K, and sand-tempered pottery. The western edge was poorly defined.

Feature 43

See posthole descriptions below.

Feature 44

Provenience: TP2, 46N 108W
Dimensions: 59 cm N/S, 115 cm E/W
Depth: 16 cm
Origin: Level 2
(Recognition): base of Level 2

Feature 44 was an oval, flat-bottomed, basin-shaped pit. Material observed included a shell-tempered sherd in contact with the edge at the top of the pit (20 cm bd). Feature 44 was intruded by Postholes 36 and 37 and intruded Feature 52, one of the large posts.

Feature 45

See posthole descriptions below (Posthole 40).

Feature 46

Provenience: TP2, 44N 110W
Dimensions: 80 cm N/S, 56 cm E/W
Origin: Level 1
(Recognition): 18 cm bd (Level 1)

Feature 46 was indeterminate and nebulous. It was impossible to define the limits during excavation. No collection was made.

Feature 47

Provenience: TP2, 42N 108W
Origin
(Recognition): Level 2

Feature 47 fill could not be separated from Feature 51, the central large post, which it appeared to intrude. It is possible that Feature 47 was a large post within Feature 51. No collection was made.

Feature 48

Provenience: TP2, 46N 112W
Depth: 1 cm
Origin: 14 cm bd, Level 2

Feature 48 was an amorphous linear lithic concentration; no pit outline was observable. The scatter had no depth to speak of. It is likely that this and other similar areas in this portion of the site represented redeposited Archaic material in the (aboriginal) backdirt from the excavation of the large posts.

Feature 49

Provenience: TP2, 44N 112W
Origin: Level 1
(Recognition): Level 2

Feature 49 could never be quite defined. It is possible that this represented the first hit of the later defined Feature 55, the westernmost large post.

Feature 50

Provenience: TP2, 46N 108W
Dimensions: 41 cm N/S, 44 cm E/W
Depth: 21 cm
Origin: Level 2
(Recognition): Base of level

Feature 50 was recognized as a very dark (10YR 2/2) stain. This was a straight-sided, flat-based feature (Figure 73). Material recovered included 1 Benton-like PP/K, 1 biface flaked knife, flakes, small fragments of burned bone, and fired clay. It is possible that this was a cooking pit reused as a refuse pit with a possible Archaic affiliation. However, it is also noted that this feature lined up with a NE/SW row of what are interpreted as Mississippian posts. The point of origin was the same as Feature 44, which intruded the large post Feature 52, located to the north in this unit.

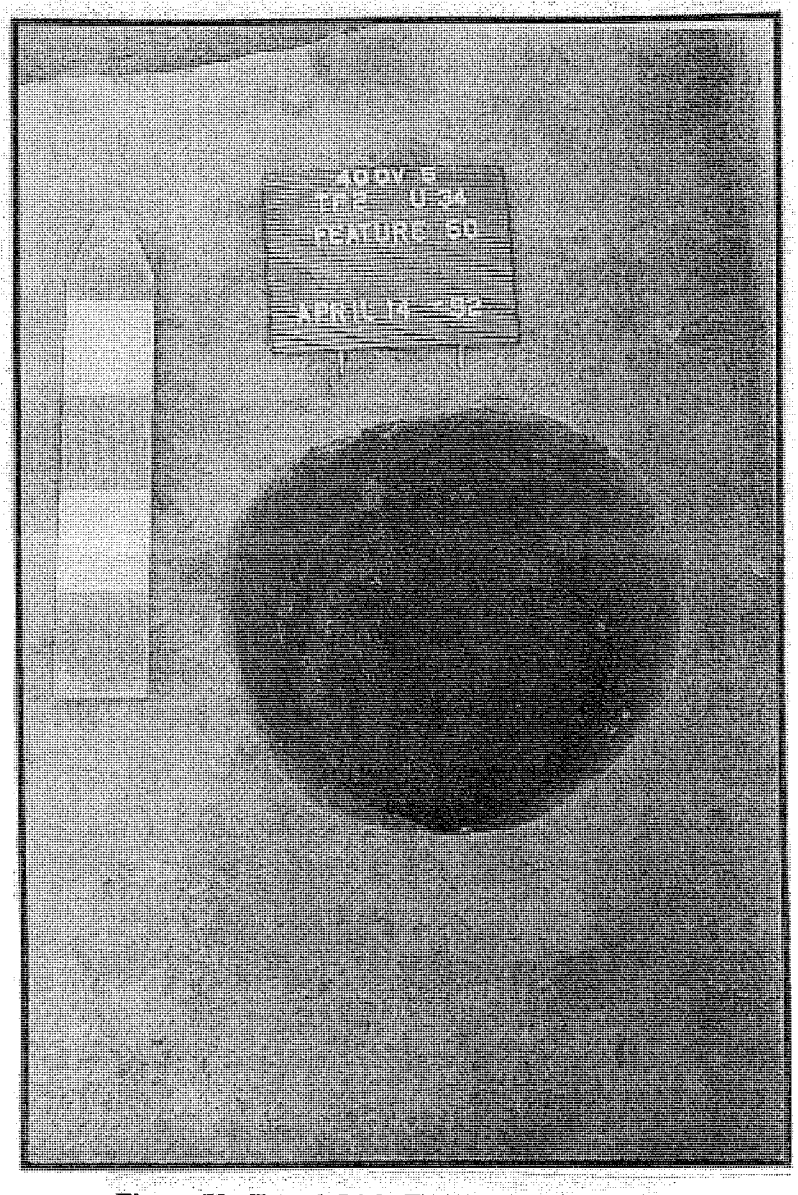


Figure 73. French Lick, Feature 50, 46N 108W.

Feature 51

See posthole descriptions below.

Feature 52

See posthole descriptions below.

Feature 53

Provenience: TP2, 44N 110W
Dimensions: 34 cm N/S, 32 cm E/W
Depth: 72 cm
Origin: Level 4

Feature 53 was recognized as a more organic, darker fill (10YR 2/1) than the matrix. Flakes, charcoal, and fired clay were observed in the fill. This was a possible posthole, though there was no indication of a high point of origin. Depth might indicate an Archaic affiliation.

Feature 54

See Feature 52.

Feature 55

See posthole descriptions below.

Feature 56

See posthole descriptions below.

Feature 57

Provenience: TP2, stripping
Dimensions: 70 cm N/S, 80 cm E/W
Depth: 3 cm
Origin
(Recognition): base of final stripping

Feature 57 was a flake concentration observed at the midden/ subsoil interface after final stripping of the area. No pit outline was observed.

Feature 59

Provenience: TP2, stripping
Dimensions: 156 cm NS, 165 cm EW
Depth: 39 cm
Origin
(Recognition): base of final stripping

Feature 59 was a large, basin-shaped pit observed at the midden/subsoil interface after final stripping of the area. The one Benton PP/K recovered and the lack of ceramics suggest an Archaic affiliation. Feature 59 was intruded by Posthole 86.

DESCRIPTION OF POSTHOLES *(WALLING & PEACOCK)*

Posthole 1

Provenience: Bent 5 Right, 105N 83.5W, Feature 5
Dimensions: 14 cm N/S x 14 cm E/W
Depth: none
Origin: Feature 5

Posthole 1 was one of a group of six postholes found within Feature 5 during its excavation (see Figure 71). No clear pattern was discerned among these postholes, and only three had sufficient depth to allow the recording of a cross section. Although it was easily visible in plan, Posthole 1 had no depth. This suggested that it was truncated as the feature was reused, or that it was indistinguishable from the higher fill levels of Feature 5 and was unrecognized until the lighter Level 3 was reached.

Posthole 2

Provenience: Bent 5 Right, 105N 83.5W, Feature 5
Dimensions: 10 cm N/S x 10 cm E/W
Depth: 30 cm
Origin: Feature 5

Posthole 2 was another of the group of postholes found within Feature 5. This posthole had straight, vertical sides and tapered slightly to a flat bottom (see Figure 71).

Posthole 3

Provenience: Bent 5 Right, 105N 83.5W, Feature 5
Dimensions: 12 cm N/S x 12 cm E/W
Depth: 24 cm
Origin: Feature 5

Posthole 3 was part of the group found within Feature 5. This posthole tapered to a pointed base (see Figure 71).

Posthole 4

Provenience: Bent 5 Right, 105N 83.5W, Feature 5
Dimensions: 6 cm N/S x 6 cm E/W
Depth: none

Origin: Feature 5

Posthole 4 was one of the group found within Feature 5. Like Posthole 1, it was easily visible in plan but had no depth when cross sectioned.

Posthole 5

Provenience: Bent 5 Right, 105N 83.5W, Feature 5
Dimensions: > 8 cm N/S x > 8 cm E/W
Depth: none
Origin: Feature 5

Posthole 5 was another of the group found within Feature 5. Like Postholes 1 and 4, it had no depth when cross sectioned. At least half of this posthole had been destroyed by a recent historic pit to the northeast (see Figure 71).

Posthole 6

Provenience: Bent 5 Right, 105N 83.5W, Feature 5
Dimensions: 8 cm N/S x 8 cm E/W
Depth: 10 cm
Origin: Feature 5

Posthole 6 was one of the group found within Feature 5. This posthole had straight sides and a rounded base (see Figure 71).

Posthole 7

Provenience: Bent 5 Right, 105N 83.5W, Feature 5
Dimensions: 12 cm N/S x 12 cm E/W
Depth: 12 cm
Origin: Feature 5

Posthole 7 was also found within Feature 5. It had straight sides and a rounded base. Unlike the other postholes with depth from the group, the fill of Posthole 7 was nearly indistinguishable from Level 3 of Feature 5, and the profile was very hard to discern in the field.

Posthole 8

Provenience: Bent 7 Right, 7N 41W
Dimensions: 21 cm N/S x > 12 cm E/W
Depth: 24 cm
Origin: Level 8

Posthole 8 was one of a group of four (Postholes 8 through 10, Feature 17) which were found beside or adjacent to Feature 16, a large pit. Posthole 8 was intruded by Feature 16,

having been bisected by the digging of that pit. It was at the same elevation as Feature 17, suggesting the two were contemporaneous.

Posthole 9

Provenience: Bent 7 Right, 7N 41W
Dimensions: 16 cm N/S x 16 cm E/W
Depth: > 5 cm
Origin: unknown; probably Level 8

Posthole 9 was found at the bottom of Feature 16. Its bottom elevation was exactly the same as that of Posthole 8, suggesting that they were contemporary. If that was the case, then an estimated 19 cm of this posthole was destroyed when Feature 16 was dug.

Posthole 10

Provenience: Bent 7 Right, 7N 41W
Dimensions: 16 cm N/S x 16 cm E/W
Depth: > 7 cm
Origin: unknown; probably Level 8

Posthole 10 was found at the bottom of Feature 16, adjacent to Posthole 9. It was the same diameter as Posthole 9, and almost exactly the same depth, suggesting it was contemporary with Postholes 8 and 9 and Feature 17.

Feature 9

Provenience: Bent 7 Right, 7N 41W
Dimensions: > 10 cm N/S x 16 cm E/W
Depth: 14 cm
Origin: Level 4

Feature 9 was a posthole with straight to slightly inward-sloping sides and a slightly rounded base. Sherds and charcoal were found within the clayey fill of this posthole. The feature was unrecognized until the lighter Level 5 had been reached, as the fill was nearly indistinguishable from the surrounding matrix. Once the feature was noticed, it was possible to trace the profile in the south wall of the unit.

Feature 10

Provenience: Bent 7 Right, 7N 41W
Dimensions: 21 cm N/S x 23 cm E/W
Depth: ca. 14 cm
Origin: Level 3B

Feature 10 was a posthole similar to Feature 9. The fill was a compact, clayey loam difficult to distinguish from the surrounding matrix. This feature extended down into the dark

midden zone of Bent 7. Once it reached this zone, it became indistinguishable from the matrix, and the bottom could not be discerned.

Feature 17

Provenience: Bent 7 Right, 7N 41W
Dimensions: 28 cm N/S x 31 cm E/W
Depth: 26.5 cm
Origin: Level 8

Feature 17 was a large posthole with gently sloping sides and a constricted, rounded base. It was adjacent to and probably associated with a group of postholes (Postholes 8, 9, and 10) which were found within Feature 16.

Feature 35

Provenience: TP2, 46N 105W
Dimensions: 172 cm NW/SE, 96 cm NE/SW
Depth: > 40 cm
Origin: Level 4
(Recognition): top of Level 5

Feature 35 was a large, albeit the smallest, ramped posthole. Originally observed at the top of Level 5, it was extremely rodent disturbed; rodent hair was recovered and discarded. Subsequent excavation showed the true nature of the feature. Feature 35 was the northeasternmost large post.

Feature 39

Provenience: TP2, 42N 110W
Dimensions: 34 cm N/S, 31 cm E/W
Depth: 32 cm
Origin: Level 1

Feature 39 was probably a posthole; the sides were parallel to about 34 cm bd, and the base was conical. Contents included burned rock, fired clay, flakes, and charcoal near the bottom.

Feature 43

Provenience: TP2, 46N 110W and 44N 110W
Dimensions: 22 cm N/S, 46 cm E/W
Depth: 16 cm
Origin: Level 2

Feature 43 was interpreted as a posthole upon analysis.

Feature 45 (Posthole 40)

Provenience: TP2, 44N 108W
Dimensions: 50 cm diameter
Depth: 53 cm
Origin
(Recognition): base of Level 1.

Feature 45 was recognized as a posthole upon excavation and renumbered Posthole 40. It was intruded by Posthole 42.

Feature 51

Provenience: TP 2, 42N 110W, 44N 110W, 44N 108W, and 42N 108W
Dimensions: 115 cm N/S, 291 cm E/W
Depth: 99 cm
Origin
(Recognition): base of level 4

Feature 51 was a large ramped posthole (Figure 74) with dark fill (10YR 3/3). This post contained abundant cultural material within the fill, though context was probably secondary deposit; given the nature of the feature. A small limestone slab was recovered at the base of this posthole, but no secondary pit was associated.

Feature 52

Provenience: TP2, 46N 108W and 47N 108W
Dimensions: 100 cm N/S, 240 cm E/W
Depth: 150 cm
Origin: base of overburden
(Recognition): Level 4

Feature 52 was the most northerly of the large ramped postholes (Figure 75). Part of this feature was originally designated Feature 54. A small jar was recovered in a secondary pit at the base of this posthole (Figure 76). Feature 52 was intruded by Feature 44 and Postholes 26, 27, 45, and 90.

Feature 55

Provenience: TP2, 42N 112W, 44N 112W, 44N 113W, and 42N 113W
Dimensions: 332 cm NW/SE, 170 cm NE/SW
Depth: 175 cm
Origin: Level 1
(Recognition): Level 2

Figure 74. French Lick, Feature 51, large post.

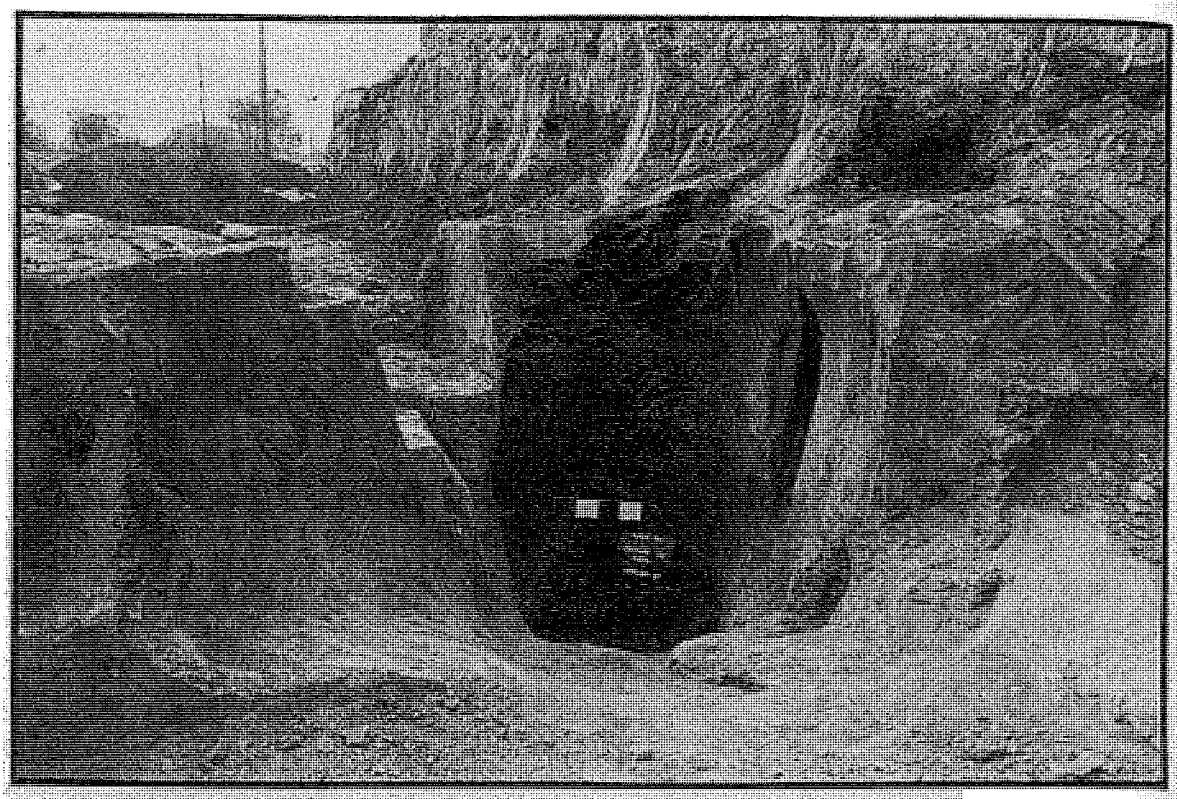


Figure 75. French Lick, Feature 52, cutaway of large post, from ramp (east) side.

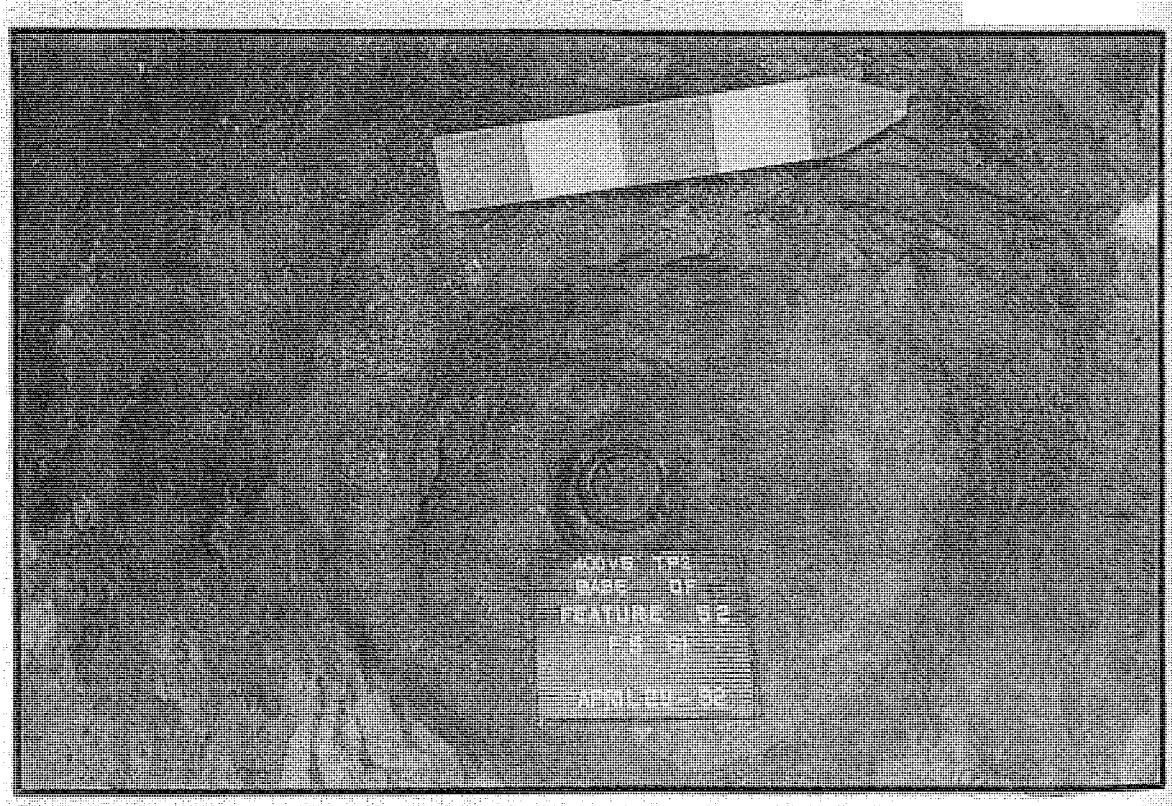


Figure 76. French Lick, Feature 52, large post, showing small jar at base.

Feature 55 was the westernmost of the large ramped postholes encountered (Figure 77). A small peaked rim jar was recovered from the base of this posthole (Figure 78). Feature 49 was possibly a higher expression of this feature, or was intrusive.

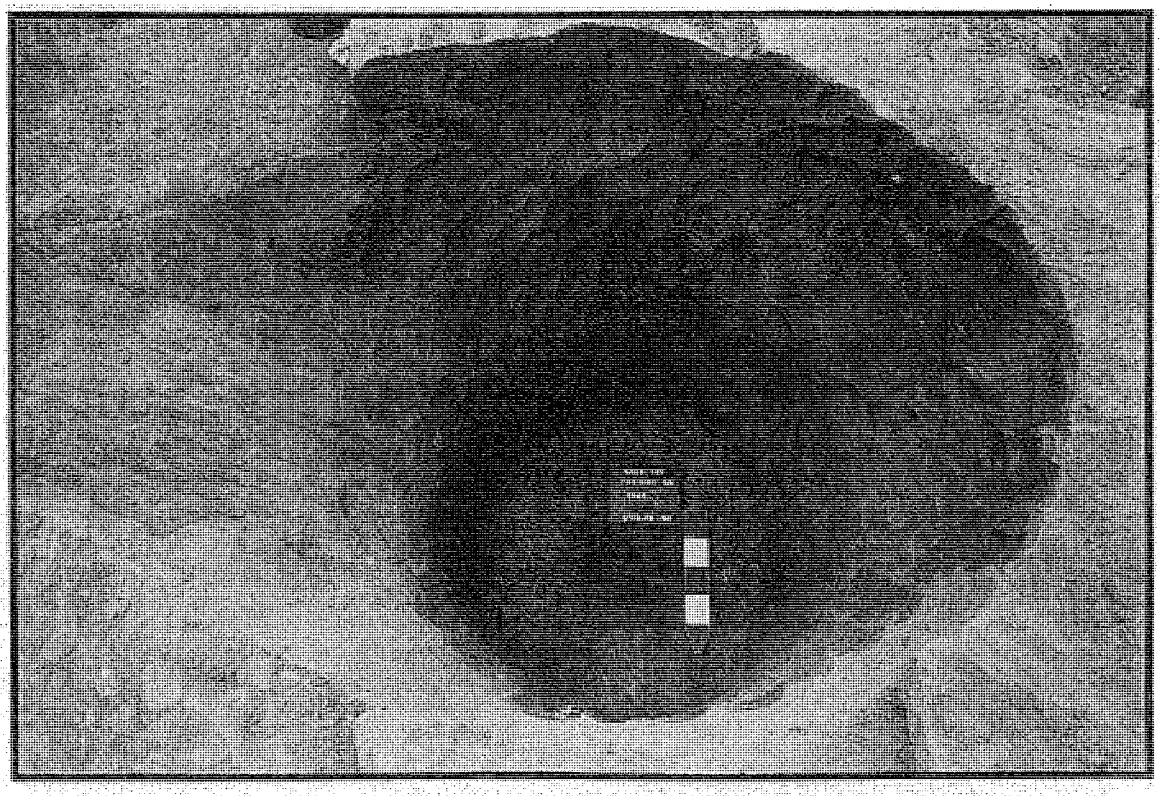


Figure 77. French Lick, Feature 55, large post.

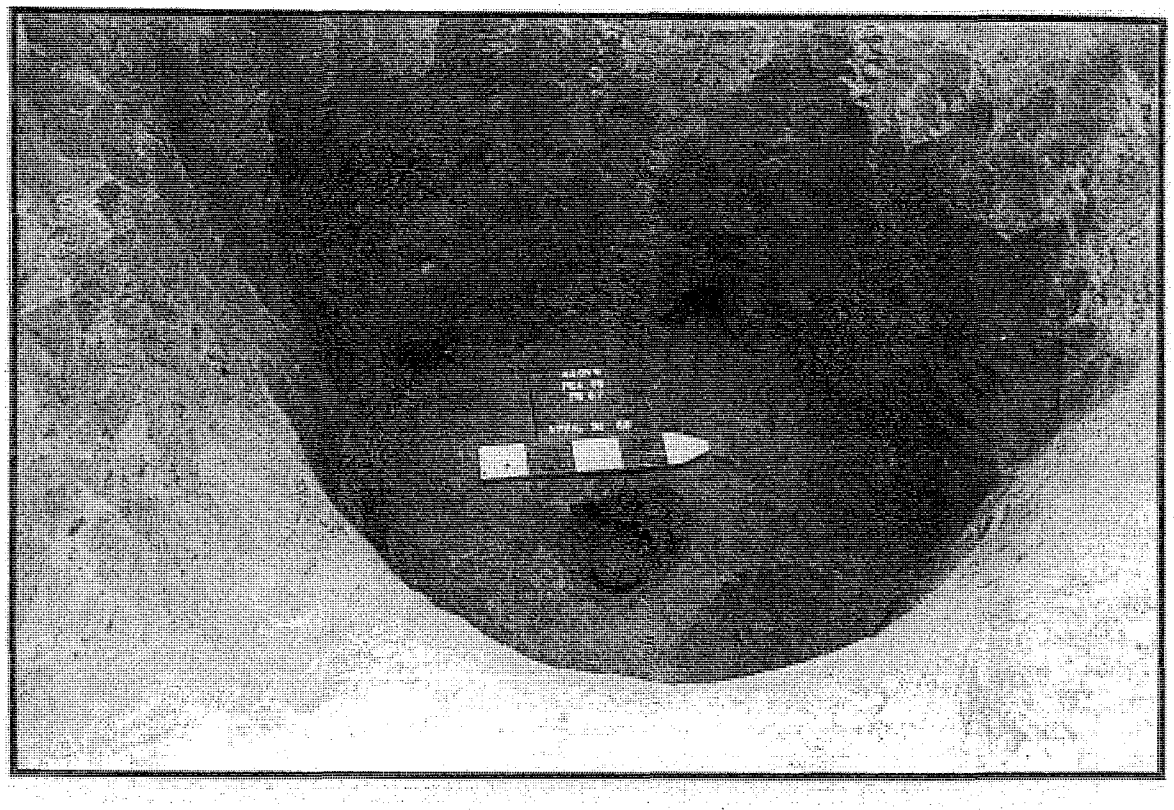


Figure 78. French Lick, Feature 55, large post, showing small peaked rim jar at base.

Feature 56

Provenience: TP2, 39N 108W
Dimensions: 480 cm NW/SE, 170 cm NE/SW
Depth: 210 cm
Origin:
(Recognition): Base of level 2

Feature 56 was the southernmost of the large ramped postholes (Figure 79).

Figure 79. French Lick, Feature 56, large post, showing presumed chinking stones.

DISCUSSION *(WALLING)*

Excavations at the French Lick site revealed the presence of substantial prehistoric remains at a site that had been assumed to be completely destroyed. In addition to the well-known Mississippian deposits, substantial Archaic, Gulf Formational, and Middle Woodland deposits were investigated. These materials are discussed in greater detail below.

Perhaps the most intriguing result of the investigations at the French Lick site, beyond the actual presence of substantial intact deposits, was the feature concentration encountered within the central portion of Tunnel Pit 2. As noted above, because of the apparent truncation of the Mississippian deposits caused by past construction in this area of the site, it was assumed that we had encountered a Middle Woodland feature and posthole complex. Upon excavation it became apparent that we were dealing with a series of fairly large to normal-sized postholes of Mississippian origin. As excavations progressed, the large posts described above were revealed. An interpretation of this concentration is hampered by the limited excavations in this area of the site. This was a north/south trending concentration cutting across the excavated area. It does not seem likely that these postholes resulted from a large structure. It is more probable that this represents a palisade line, though this interpretation is less than secure because of the limited nature of these investigations.

CHAPTER 9
LABORATORY PROCEDURES

Camille Stanley

Analysis of recovered material commenced concurrently with the beginning of Phase III investigations at East Nashville Mounds and the subsequent initial investigations at the French Lick site. A laboratory was set up at the field house in Nashville, and washing and rough sorting of recovered material were conducted at this location. Following this initial processing, material was sent to the permanent laboratory at PCI headquarters in Tuscaloosa for preliminary analysis. For the data recovery of the stormwater runoff drain area of the French Lick site, washing, sorting, and preliminary analysis were conducted at the Tuscaloosa lab.

All recovered material was washed, cataloged, analyzed, and tabulated in accordance with professional standards. Standardized catalog forms were used to record pertinent data and to maintain provenience information. Material was analyzed within the constructs of the local and regional typologies; special attention was given to those aspects of the data thought to hold potential for providing particular insights into the research questions developed by the TDOA. Final analysis was conducted by PCI staff or consultants with specialized training or knowledge for each particular aspect of the material culture recovered.

PROCEDURES

All material, except human skeletal remains and material designated for fine screening or flotation, was washed in screens lined with 1/4" wire mesh (see Chapter 15 regarding the handling of human remains). It was then spread on paper-lined trays to dry.

After the material dried, it was screened through 1/4" wire mesh and size-graded. Everything that passed through the screen was weighed, bagged, and labeled as debris. Material remaining in the screen was rough-sorted into the following categories:

ceramic	pottery, fired clay, daub
lithic	modified, debitage
faunal bone	modified and unmodified
shell	modified and unmodified
charcoal	--

historic	ceramics, glass, metal, other
rock	fire-cracked, sandstone, quartzite, pebbles/cobbles

Ceramics, lithics, bone, shell, and charcoal were boxed separately and sent to consultants for final analysis. Historic material, rock, sherdlets, and debris were boxed as "miscellaneous material."

CERAMICS

Ceramic material was size-graded through a 1/2' screen; that which passed through the screen was weighed, bagged, and labeled as sherdlets. Fired clay and daub were sorted from the 1/2" ceramics, weighed, and bagged.

Remaining ceramics were sorted by temper and surface treatment. Rims, bases, podal supports, handles, etc.) were separated, counted, and bagged separately from sherds. Ceramics were entered on the catalog form in reverse chronological order. Fired clay, daub, and sherdlets were recorded last.

All bags from the same provenience were placed in a single bag and boxed to await further analysis (see Chapter 10).

LITHICS

Modified lithics were sorted into categories; artifacts were then counted, bagged, and listed on the catalog form in reverse order of reduction trajectory (i.e., PP/Ks were listed first, followed by bifaces, preforms, cores, other tools, and debitage). Raw materials were recorded for each category, both on the catalog form and on the bag.

Flakes were size-graded using 1/2" and 1" screens into groups of 1/4" (those which passed through the 1/2" screen), 1/2" (those which were retained by the 1/2" screen), and 1" (those which were retained by the 1" screen). Each group was sorted into categories based on type and utilization. The following definitions were used to sort flakes:

primary flake	retains 75 percent or more cortex
secondary flake	retains 25 percent or less cortex
pressure flake	small, interior flake with no cortex
biface thinning flake	retains evidence of biface edge

These categories were subdivided into utilized and nonutilized flakes, based on the presence of consistent notches or grooves on the sides and/or ends of a flake.

As with the ceramics, lithics were bagged by category and provenience and boxed until further analysis was conducted (see Chapter 11).

FAUNAL BONE

Modified bone was sorted from unmodified. The former was counted. The former was counted, and the latter was weighed. Each category was listed on the catalog form and bagged separately. Bags from the same provenience were then combined, and all material was sent to a consultant for further analysis (see Chapter 13).

SHELL

As with the faunal bone, modified and unmodified shell were counted and weighed, respectively, then bagged and listed separately on the catalog form. All shell was boxed and sent for intensive analysis (see Chapter 12).

CHARCOAL

Charcoal was sorted, weighed, bagged, and recorded before being sent to a botanical consultant for analysis (see Chapter 14).

Charcoal collected in the field for use as radiocarbon samples was evaluated as to sample size, context, and information potential. Selected samples were submitted to professional radiocarbon laboratories for processing (see Chapter 16).

ROCK

Fire-cracked rock was sorted from other categories and weighed, bagged, and recorded separately. Other rock categories were combined and recorded as "rock."

HISTORIC

Each type of historic material was recorded and bagged separately.

FINE SCREENING

Soil samples of a minimum of 2 liters were taken from each provenience level from both East Nashville Mounds and the French Lick site. These samples were washed using a screen lined with 1/16" hardware cloth. At least twenty percent of each sample was sorted. Bone, shell, and charcoal were sent to consultants for analysis; remaining material was weighed and bagged as debris.

FLOTATION

Two-liter (minimum) soil samples were taken from features and selected units from both sites for flotation. These samples were floated in a standard flotation device. If a sample was greater than 2 liters, the excess was retained for curation. As with the fine screen material, bone, shell, and charcoal were sorted out and sent to consultants; the rest of the material was weighed, bagged, and labeled as debris.

CURATION

All recovered material and associated documentation are curated at the TDOA facility located at Pinson Mounds State Archaeological Area.

CHAPTER 10
CERAMICS

Richard Walling

Investigations at East Nashville Mounds and the French Lick site resulted in the recovery of 49,938 and 6,701 ceramic artifacts, respectively. The majority of the material recovered is easily accommodated by existing type descriptions developed from investigations in the Tennessee and Mississippi River Valleys. Given the nature of this project, no varieties are defined or suggested as a result of this analysis. Only varieties defined for or in use within the Cumberland River Valley are employed. All other material should be considered *variety unspecified.* In two cases sorting varieties were established. These should not be viewed as being at the level of segregation generally applied to the variety designation. They were devised, for the most part, in an attempt to provide one more level at which to discern differences between the collections from these two sites.

Analytical methods employed during this phase of the Jefferson Street Bridge project have been outlined by Stanley (this volume). Sherdlets, daub, and material recovered from mixed contexts are not discussed in the following section. All recovered ceramics are listed by category and provenience in the tables in Appendix A.

Although little that was new in the way of ceramic material was recovered during the project, these investigations do provide some good contextual information for types previously reported. The previously known ranges of certain types and varieties can now be extended as a result. The recovered ceramics are assignable to three periods of occupation at the two locations. The major components at both sites, in terms of ceramic collections, result from intensive and extensive use of these locations by Mississippian peoples. At the French Lick site, an apparently small Middle Gulf Formational component is suggested by the recovery of several fiber-tempered sherds, while a more extensive use of the site during the Middle Woodland is indicated. At East Nashville Mounds, there is an indication of possible very limited use during Middle or Late Woodland times, though this is far from secure. In the following presentation and discussion, we will generally treat the non-shell–tempered (for the most part, the pre-Mississippian portions of the collections) separately from the shell-tempered (Mississippian) portions.

The non-shell–tempered portions of the collections include 1,165 sherds from the French Lick site and 16 sherds from East Nashville Mounds. This accounts for 17.4 percent and .03 percent, respectively. The majority of this material results from the Middle Gulf

Formational (the fiber-tempered sherds) and the Middle Woodland (mostly the assorted mineral-tempered material).

FIBER-TEMPERED CERAMICS

As previously detailed, fiber-tempered ceramics have a long use span and a wide spatial distribution in the southeastern United States. These materials date as early as 2550 B.C. with the Stallings series (Sassaman et al. 1990), and perhaps slightly later with the Orange series of Florida (Bullen 1972). Wheeler is the defined fiber-tempered series for the Middle South. The original type definitions were based on material recovered during WPA investigations in the Middle Tennessee River Valley (Haag 1939, 1942; Sears and Griffin 1950a). Jenkins (1981, 1982) and Jenkins and Krause (1986) have more recently refined and subdivided the types into assorted varieties based on material from the Tombigbee River Valley.

Wheeler ceramics are most commonly reported for the Upper and Central Tombigbee and Middle Tennessee River drainages, but have also been reported in lower frequencies from the eastern Central and Lower Mississippi River drainages (Phillips 1970; Walling and Roemer 1993; Williams and Brain 1983). The most northerly occurrences of fiber-tempered ceramics documented in the general Mid-South area, prior to these investigations, were from the Spring Creek site in Perry County, Tennessee (Peterson 1973), the Mason (Faulkner 1968a) and Brickyard (Butler 1968) sites located in the upper Elk River drainage, and a single sherd from Savage Cave in south-central Kentucky (Railey 1990).

Phillips (1970) refrained from naming varieties in the Lower Yazoo Basin because of the low frequency of occurrence of this material. Because of the limited sample size for the Wheeler material from French Lick, we decline to impose variety nomenclature. Neither will we use Jenkins's (1981) nomenclature, because of the distance between this site and his area of definition. It is noted that, with the exception of one sandy-pasted, fiber-tempered sherd, the French Lick site material most closely corresponds to Wheeler Plain, *var. Wheeler* (Jenkins 1981) in paste characteristics.

WHEELER PLAIN

French Lick site, n=9; Figure 80

Wheeler Plain was originally defined from material from the Middle Tennessee River Valley (Haag 1939, 1942). The majority of this material from the French Lick site is tempered with abundant fiber in a sandless paste. One sherd has a sandy paste and numerous fiber casts. Sherds are generally too small to provide secure information on vessel form or size, though one rim sherd may be from a beaker, a form known for this type.

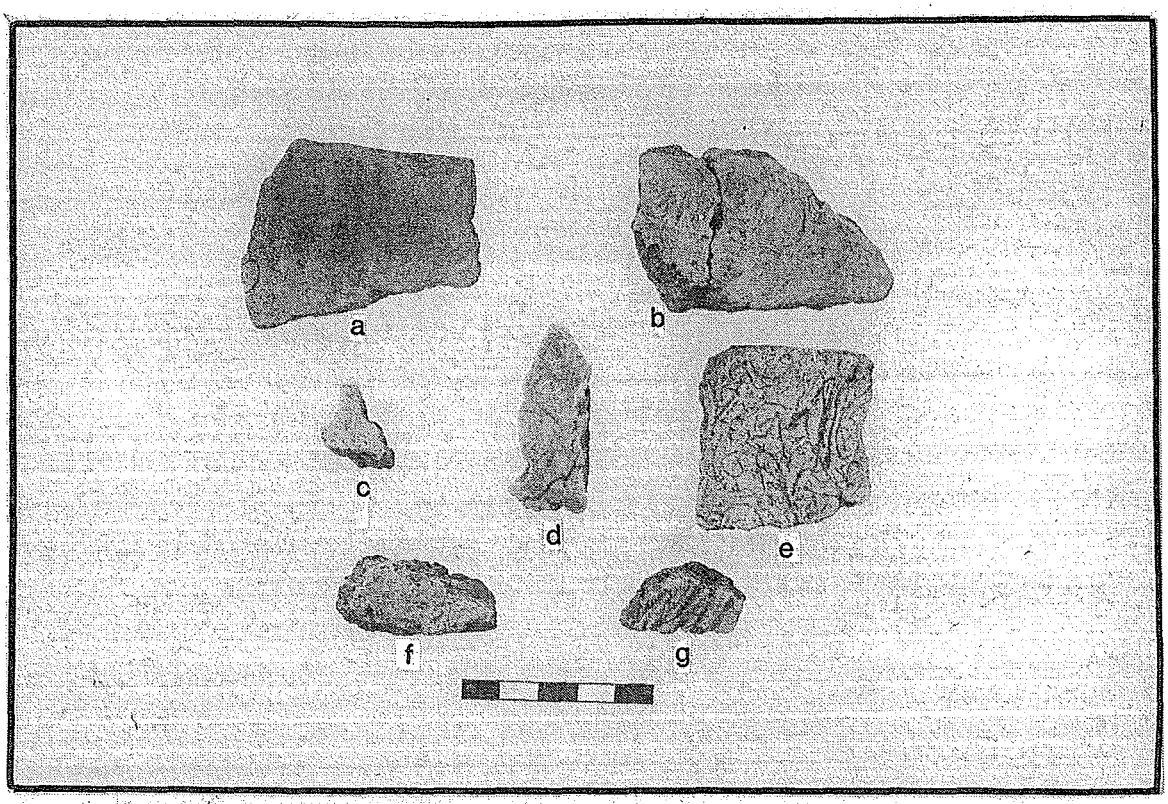


Figure 80. French Lick: a-f, Wheeler Plain; g; Wheeler Simple Stamped.

WHEELER SIMPLE STAMPED
French Lick site, n=1; Figure 80

The paste characteristics are the same as those for the majority of the Wheeler Plain sherds noted above. Surface treatment consists of a series of more or less parallel linear impressions resulting from striking the vessel exterior with (presumably) the edge of a paddle. This type was originally named Pickwick Simple Stamped (Haag 1939, 1942) but was later changed to Wheeler Simple Stamped (Ford et al. 1955; Sears and Griffin 1950a).

ERODED FIBER-TEMPERED
French Lick site, n=2

These sherds, as with all sherds subsequently categorized as eroded, had sustained surface damage by weathering or other agents. The erosion was to such a degree that confident sorting by surface treatment was not possible.

MINERAL-TEMPERED CERAMICS

An assortment of mineral-tempered ceramics is present in the collection from the French Lick site. These include limestone, grit (generally crushed quartz/quartzite), chert, and sand (including fine, medium, and coarse). All these tempers have been previously reported for the Middle South (see Chapter 4).

LIMESTONE-TEMPERED CERAMICS

Limestone-tempered pottery has a wide spatial range and a considerable chronological distribution within the south-central United States. It occurs as primary types throughout the Tennessee River Valley, across Middle and East Tennessee, Kentucky, southeastern Missouri, and the American Bottoms, for example. Limestone-tempered material is associated with Early, Middle, and Late Woodland as well as Mississippian contexts across its range.

Closer to the project area, radiocarbon dates indicate that limestone tempering was introduced into the ceramic technology sometime around 300 B.C. In East Tennessee, radiocarbon dates for this material include 340±150 B.C. (6X5 74) for the Westmoreland-Barber site (Faulkner and Graham 1966b) and 100±250 B.C. (BPM-516) at the Camp Creek site (Griffin 1974; Lewis and Kneberg 1957). In northern Alabama at Russell Cave (Griffin 1974), a date of 150±200 B.C. (BPI-824) was obtained for limestone-tempered material (all dates uncorrected). In Middle Tennessee, several dates for the early end of the occurrence of this material have been reported. These are summarized by Kline et al. (1982) and Faulkner (1988). These authors suggest a date of ca. 100 B.C. for the beginning of the Middle Woodland McFarland phase, which is characterized by the predominance of limestone-tempered ceramics. McNutt and Weaver (1983) suggest a beginning date of 200 B.C. for the earlier Middle Woodland component identified at the Duncan Tract site.

A terminal date of A.D. 600 has been suggested for the late Middle Woodland Owl Hollow phase of the Upper Duck and Elk River drainages, where the Late Woodland Mason phase is characterized by chert-tempered ceramics. To the south of the project area, in northwestern Mississippi and northeastern Alabama, a terminal date of between A.D. 600 and 800 has been suggested for limestone tempering (O'Hear et al. 1985).

In the American Bottoms, limestone-tempered ceramics occur in early Mississippian Linderman (Maher 1987), Merrell, Lohman, and Sterling (Emerson and Jackson 1987) phase contexts. Closer to the project area, limestone-tempered ceramics are not uncommon on Mississippian sites in Middle Tennessee, East Tennessee, and Kentucky, especially in early contexts. Use of limestone tempering probably continued until later in areas of limited shell resources (Kline 1978; H. E. Smith, personal communication 1993).

A pre-Mississippian provenience for the limestone-tempered material recovered is suggested by the virtual absence of mixed shell-tempered material, particularly shell mixed with limestone or grog, two hallmarks of Early Mississippian in the Middle Cumberland area (Moore et al. 1993; Smith 1993). This seems especially probable given the abundance of mussel shell available to the prehistoric residents of East Nashville Mounds and the French Lick site. At the other end of the temporal scale, the very low frequency of limestone-tempered fabric-impressed sherds argues against the presence of an Early Woodland component here.

Based on the evidence at hand, we will assign this class of material to a Middle Woodland context. The choice of type names in the following presentation should probably be taken with some caution. The use of these type designations has gradually spread from their inception during the WPA investigations of the Middle Tennessee River Valley to the present area and beyond. The material presented here conforms to those definitions. In the Middle Cumberland area, Middle Woodland limestone-tempered ceramics have been recovered from a number of sites (Jolley 1980; Moore and Smith 1993; Moore et al. 1993).

Bluff Creek Simple Stamped

French Lick site, n=8; Figure 81

As with the other limestone-tempered types, Bluff Creek Simple Stamped was originally defined for material from the Middle Tennessee River Valley (Haag 1939). This type designation has been used in northern Alabama (Knight 1990), East Tennessee (Cridlebaugh 1981a; Faulkner 1968c), and Middle Tennessee (Faulkner 1988; McNutt and Weaver 1983). Keel (1976) points out that while cord marking dominates in Candy Creek contexts, simple-stamped and brushed treatments are also present.

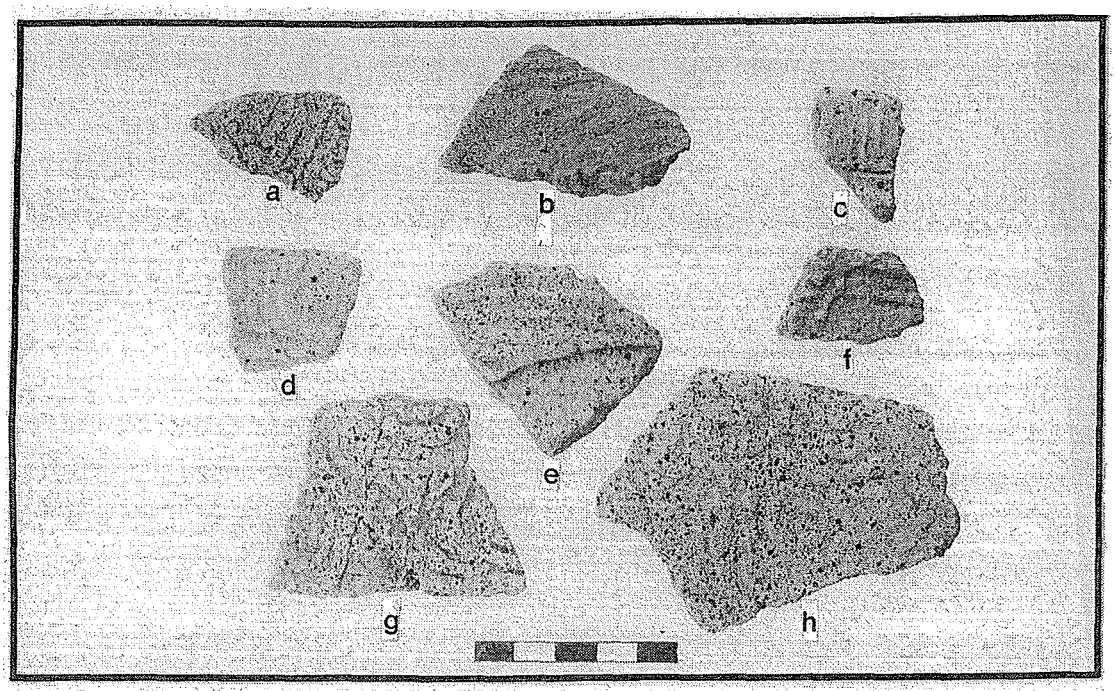


Figure 81. French Lick: a and e, unidentified limestone-tempered incised; b-d, Bluff Creek Simple Stamped; f-h, Pickwick Complicated Stamped.

FLINT RIVER BRUSHED

French Lick site, n=4

Flint River Brushed was originally defined in the Guntersville Basin of the Middle Tennessee River Valley (Heimlich 1952). This type, while more often associated with a Late Woodland provenience (cf. Faulkner 1968a), is known to have its genesis in Middle Woodland contexts (Knight 1990; Walthall 1980). Sand-tempered McVay Brushed has been reported from late Middle Woodland contexts in the central Tombigbee Valley (Atkinson et al. 1980; Jenkins 1981).

Faulkner (1968c) suggests that this is one of the types in need of revision, because the original definition by Heimlich (1952) is too broad, as it includes a variety of surface modifications. Faulkner notes that discrimination between scraped and brushed is necessary; he suggests that limestone-tempered brushed sherds with fine striations not over 1 mm in width be designated Flint River Brushed, while sherds with scraped surfaces be included as Mulberry Creek Plain with scraping noted. The material designated Flint River Brushed in the present analysis would meet Faulkner's criteria for brushed material.

Walthall (1980) notes that Copena ceramic assemblages are dominated by limestone-tempered plain and paddle-stamped ceramics, with minor amounts of fabric-impressed,

cordmarked, brushed, and rocker-stamped material. He further notes that the cordmarked, rocker-stamped, and brushed material is spatially restricted to the area east of the Flint River. Walthall (1980) suggests that these last three types were introduced into the eastern Copena assemblage through contact with northern Hopewell sources. Walthall (1980) also suggests that the connection was accomplished by the use of trails. He notes that the Great South Trail, which entered the Tennessee Valley near the mouth of the Flint River, connected with a series of other trails in the Nashville Basin, which in turn led to the Ohio Valley. The importance of the Nashville area as a hub in the prehistoric trail system and the probable antiquity of the system has been noted by a number of other researchers (Faulkner 1968b; Jeffries 1976; Myer 1928b).

Brushed-surfaced sherds are apparently not common in Upper Duck and Elk River drainage assemblages. None were reported from the Middle Woodland components at Duncan Tract. It is possible that the few sherds of this type recovered at the French Lick site represent vessels brought in from the south over the Great Southern Trail and were not a part of the local manufacturing regime, though in paste qualities they do not differ from the remainder of the limestone-tempered portion of the collection. They could represent the actions of individuals who visited the site from the Guntersville Basin area and who were involved in the north/south trade network of the Hopewellian system. For that matter, the same could be true for virtually all the Middle Woodland material. At any rate, this material suggests that a late Middle Woodland component is represented by at least a portion of the limestone- and related mineral-tempered material.

Flint River Cord Marked

French Lick site, n=76; Figure 82

Flint River Cord Marked was also defined for the Middle Tennessee River Valley (Heimlich 1952). The type is reported as a major constituent of collections from sites throughout the Middle and Western Tennessee River drainage with Middle Woodland components. This type is also associated with Late Woodland components in the Middle Tennessee River Valley.

Faulkner (1968c), in his review of pottery types of the eastern Tennessee Valley, suggests that Flint River Cord Marked is a variant of limestone-tempered Candy Creek Cord Marked (Lewis and Kneberg 1946, 1957) and has proposed dropping the former as a type. The latter is the more often used designation in East Tennessee, and is occasionally used in Middle Tennessee. Lewis and Kneberg (1946) distinguished Candy Creek Cord Marked from the Late Woodland type Hamilton Cord Marked by the narrower cordage and deeper impressions in the former.

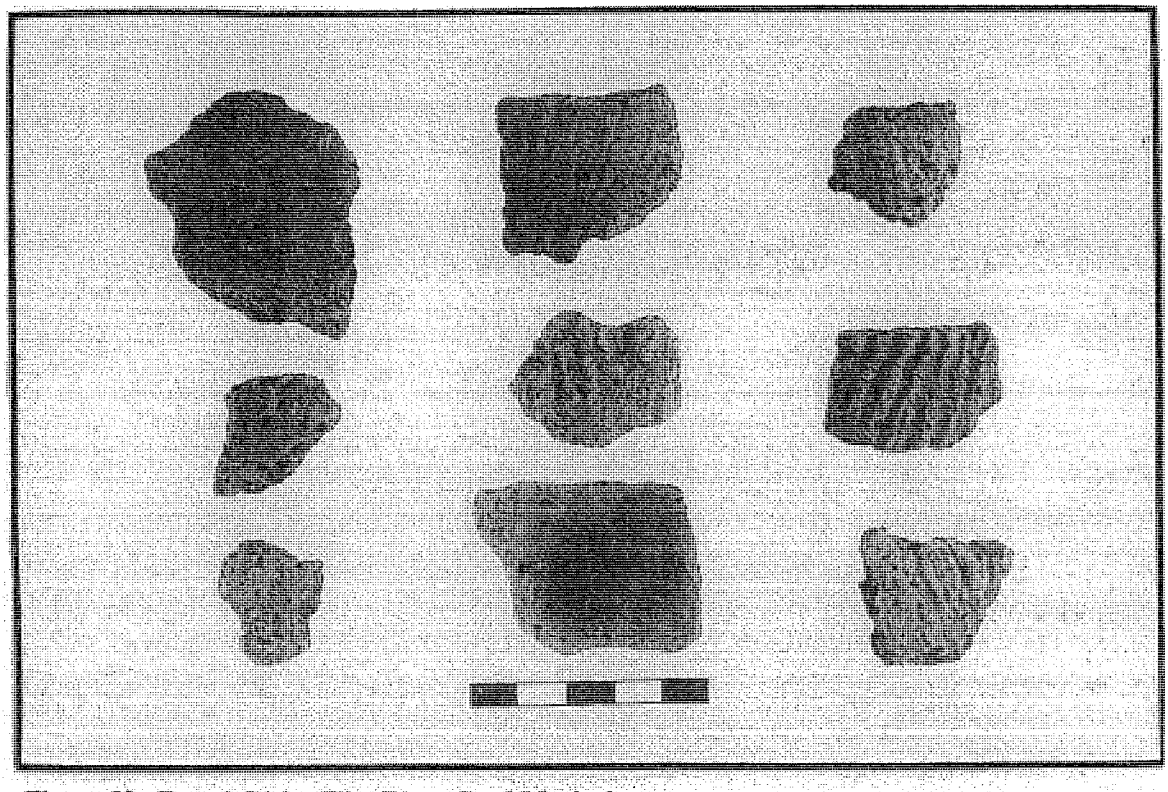


Figure 82. French Lick: Flint River Cord Marked.

Long Branch Fabric Marked

French Lick site, n=4

Long Branch Fabric Marked was also originally defined based on material from the Middle Tennessee River Valley (Faulkner 1968c; Haag 1939, 1942; Heimlich 1952; Sears and Griffin 1950b). Unlike the case with most fabric-impressed ceramics, Long Branch is not the initial expression of the ceramic arts in that area. Based on the present study, the same is true in the Middle Cumberland area as well. In both cases fiber-tempered material predates Long Branch, and in the former case it is also preceded by the sand-tempered Alexander series.

In the Middle Cumberland and the immediate surrounding area, particularly to the north, limestone and mixed limestone-tempered materials are also referred to as Baumer Fabric Marked, a type originally defined for southern Illinois, southwestern Indiana, and northwestern Kentucky (Sears and Griffin 1950b). Long Branch Fabric Marked is generally associated with Early Woodland contexts when it occurs as a majority type, but production of this type at reduced frequencies carries over into the Middle Woodland. Here we prefer a Middle Woodland assignment for reasons already presented. This is not to rule out either the possible presence of a very minor use of the site during the Early Woodland, or the

possibility that sample bias has resulted in our not investigating a spatially isolated Early Woodland component at the site.

MULBERRY CREEK PLAIN

East Nashville Mounds, n=3; French Lick site, n=275

Mulberry Creek Plain was originally defined on the basis of material recovered from the Pickwick and Guntersville Basins of the Middle Tennessee River Valley (Haag 1939, 1942; Heimlich 1952). This designation has since been used for most of the plain limestone-tempered material reported for the Middle South. Mulberry Creek Plain has been reported for Early and Middle Woodland contexts. Haag (1939) includes within this category examples with opposing semicircular areas of incised horizontal lines (see also Haag 1942:Plate 206). One example from the French Lick site (see Figure 81a) appears virtually identical to Haag's illustrated specimen (1939:16, 1942:Plate 206). We have assigned this sherd to the "unidentified incised" category. Faulkner (1968c) notes that body sherds of Mulberry Creek and Hamilton Plain are not sortable. He therefore suggests that the latter be dropped as a type designation, and that Hamilton be considered a late variety of Mulberry Creek Plain (Faulkner 1968a).

The initial appearance of this type is attributed to an Early Woodland context in the Middle Tennessee/northern Alabama area. Production of this type apparently continued into the Mississippian stage in areas north of the Tennessee River Valley. This is a major type in both McFarland and Owl Hollow Middle Woodland assemblages in the Upper Duck and Elk River Valleys.

Within the Jefferson Street collections, the vast majority of this material is tempered with limestone only. A small amount, not quantified during this analysis, also included minor additions of other varieties of grit in the paste. Small podal supports were recovered during these investigations (Figure 83).

PICKWICK COMPLICATED STAMPED

French Lick site, n=10; see Figure 81

Pickwick Complicated Stamped, also originally defined on the basis of material from the Middle Tennessee River Valley (Haag 1939, 1942; Heimlich 1952), has a fairly wide distribution throughout Middle Tennessee and northern Alabama. This type includes both curvilinear- and rectilinear-stamped motifs.

Pickwick occurs as a minor, though persistent, constituent in McFarland and Owl Hollow assemblages in the Upper Duck and Elk River Valleys (Faulkner 1978, 1988; Kline et al. 1982), at Copena sites in the Middle Tennessee River Valley (Knight 1990; Walthall 1980), and at the Duncan Tract site in the Middle Cumberland Valley (McNutt and Weaver 1983).

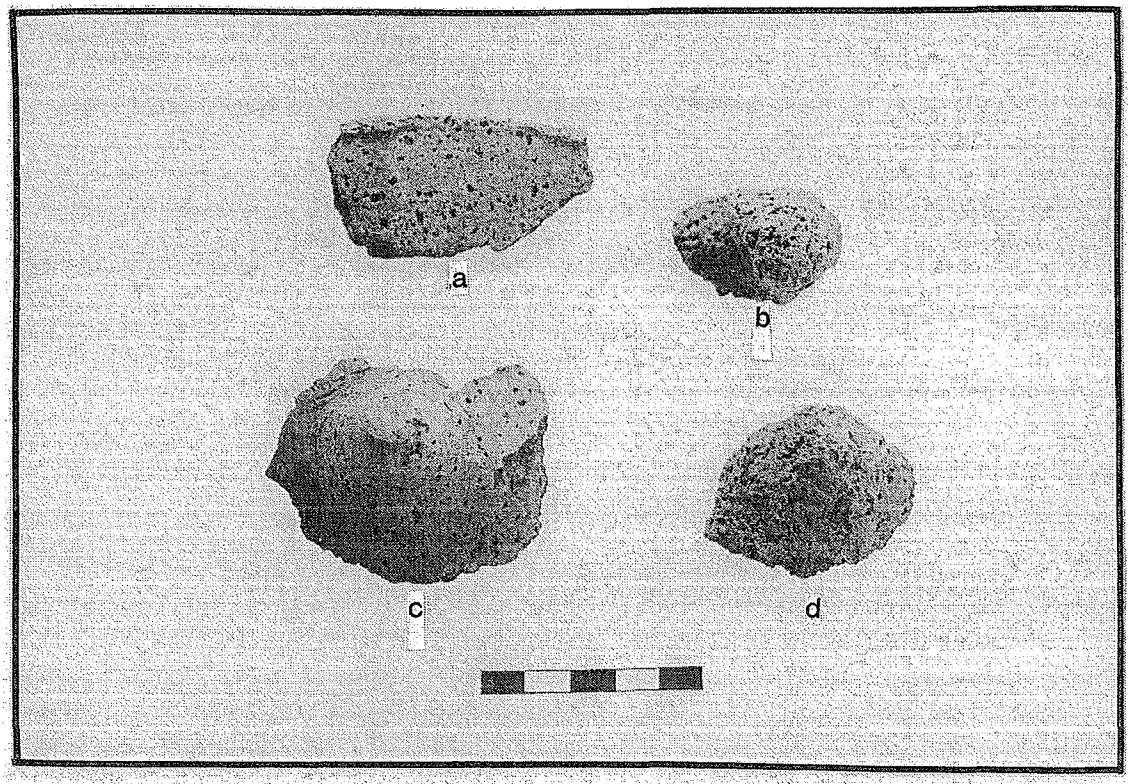


Figure 83. French Lick: a, Mulberry Creek Plain rim; b-d, Mulberry Creek Plain podal supports.

Knight (1990) uses the presence of Pickwick Complicated Stamped in Middle Tennessee assemblages as a temporal marker for the early end of his Walling phase, and also for suggesting an approximate date of A.D. 100 for the early end of the Middle Woodland component at Wright Village.

Faulkner (1968c) suggests that this is another type in need of extensive overhauling regarding description and use. At present, Pickwick is the only defined limestone-tempered complicated-stamped type in the Middle South; no varieties have been proposed or defined.

Wright Check Stamped

French Lick site, n=139; Figure 84

Again, originally defined for the Middle Tennessee River Valley (Faulkner 1968c; Haag 1939, 1942; Heimlich 1952), this type also has a wide distribution throughout Middle Tennessee and northern Alabama. Several variations in the style and form of the check stamping have been reported, though no chronological or spatial significance has yet been demonstrated. Wright is the only defined limestone-tempered check-stamped type for the Middle South.

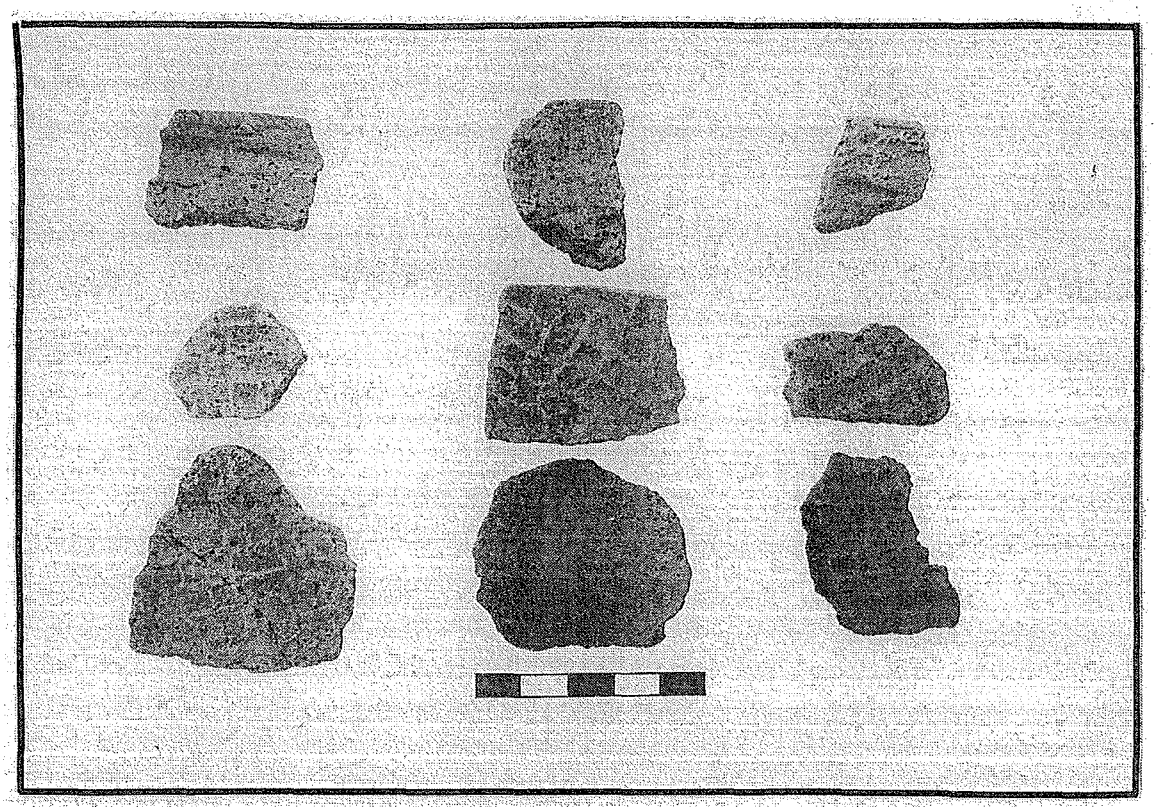


Figure 84. French Lick: Wright Check Stamped.

Brown (1982) has compiled a summary for check-stamped pottery in the Southeast and fringes thereof. Brown points out that this surface treatment first appeared at about 500 B.C. in the Early Woodland Deptford and related complexes. With the decline of Deptford, the popularity of check stamping also waned in many areas, and it either disappeared altogether from the local assemblages or fell in frequency to become a minor constituent. In northern and central Georgia, complicated stamping eclipsed check stamping in importance during the Middle Woodland (Brown 1982). In the Middle Tennessee Valley, the Early Woodland sand-tempered Sauty/Deptford, which occurred infrequently within local assemblages, was replaced by Wright Check Stamped. With the advent of Wright, check stamping became a major surface treatment within assemblages of northern Alabama, Middle Tennessee, and East Tennessee (Brown 1982; Knight 1990). Because of a lack of contextual information, Jolley (1980) assigned Wright Check Stamped to his Middle Woodland I or II, being unable to distinguish beyond that level. Jenkins (1981) has suggested a late Miller II (late Middle Woodland) assignment for sand-tempered McLeod Check Stamped in the Central Tombigbee Valley.

It should be noted that, because of the unique nature and facility of identification of this surface treatment, this type may be slightly over-represented in the counts and relative frequencies. That is, it is probable that proportionately fewer check-stamped sherds ended

up in the unidentified surface treatment and eroded categories than sherds with other surface treatments.

Unidentified Limestone-Tempered
East Nashville Mounds, n=1; French Lick site, n=13

Several sherds could not be assigned to previously designated types. These included sherds that exhibited obvious surface alterations but which could not be typologically assigned because of sherd size, vessel portion, or lack of comparable material. Included in this category are various incised, undesignated stamped, and undesignated surface-roughened specimens.

Eroded Limestone-Tempered
French Lick site, n=583

This category includes all limestone-tempered material on which the exterior surface was too damaged by weathering or other factors to determine surface treatment. A substantial number of these were surface altered, but neither the method nor the type of treatment could be confidently identified.

Grit-Tempered Ceramics

A number of types tempered with crushed quartz/quartzite have been defined for the Middle South, East Tennessee, western North Carolina, north Georgia, and the Ohio Valley. These types occur on sites with Early Woodland, Middle Woodland, and Mississippian components. As noted above, grit-tempered sherds occur as consistent minorities at Middle Woodland sites in the Upper Duck and Elk River drainages. Grit-tempered ceramics have been reported for Brandywine Pointe (Moore and Smith 1993) and 40DV35 (Moore et al. 1992) nearer the present project area.

Grit-Tempered Plain
East Nashville Mounds, n=2; French Lick site, n=4

No attempt has been made to assign the few crushed quartz/ quartzite-tempered sherds recovered from the French Lick site to a previously defined type. At present the information on context within the site matrix is less than secure. However, there is enough evidence, based on surface-modified types and the reported occurrence of similar material from other sites in the Middle South (see above), to suggest with some degree of certainty that this material is a product of the Middle Woodland component(s) at this site.

The material tempered with crushed quartz or quartzite may have sandless pastes or may include fine sand and/or coarse sand. A few sherds contain crushed quartz/quartzite and

limestone. These latter examples are included in the appropriate limestone-tempered type based on surface finish/condition.

GRIT-TEMPERED CHECK-STAMPED
French Lick site, n=4; Figure 85

Except for surface treatment (malleation of the surface of the vessel with a gridded paddle), the preceding statement pertaining to grit-tempered plain is true for this category as well.

GRIT-TEMPERED CORDMARKED
French Lick site, n=3; Figure 85

Again, except for the obvious difference in surface treatment, the above statement for grit-tempered plain holds true.

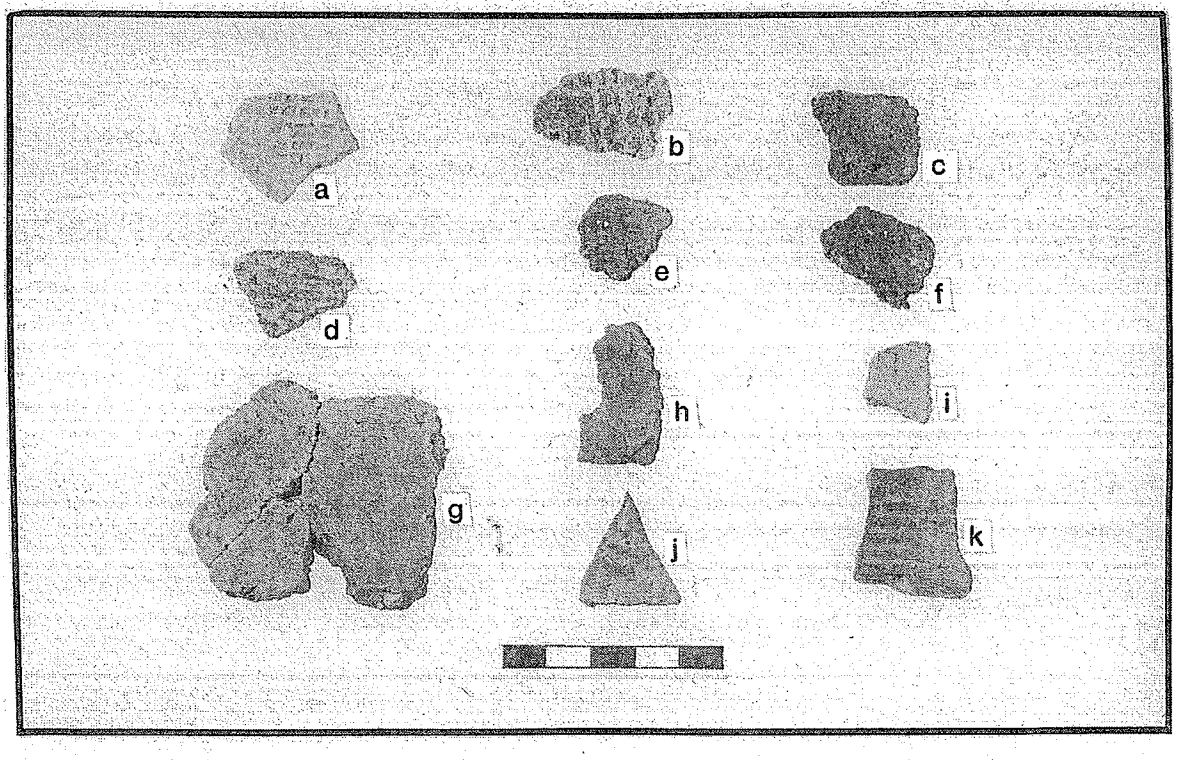


Figure 85. French Lick : a-b, sand-tempered check-stamped; c-f, grit-tempered check-stamped; g-i, grit-tempered cordmarked; j-k, sand-tempered incised.

GRIT-TEMPERED COMPLICATED-STAMPED
East Nashville Mounds, n=45; Figure 86

The majority of these sherds form a significant portion of a jar. The stamping is curvilinear and has been smoothed over below the shoulder to the point that the surface is merely roughened. The occurrence of this material in Zone 2, Level 1 strongly suggests that it is assignable to the Thruston phase component at East Nashville Mounds.

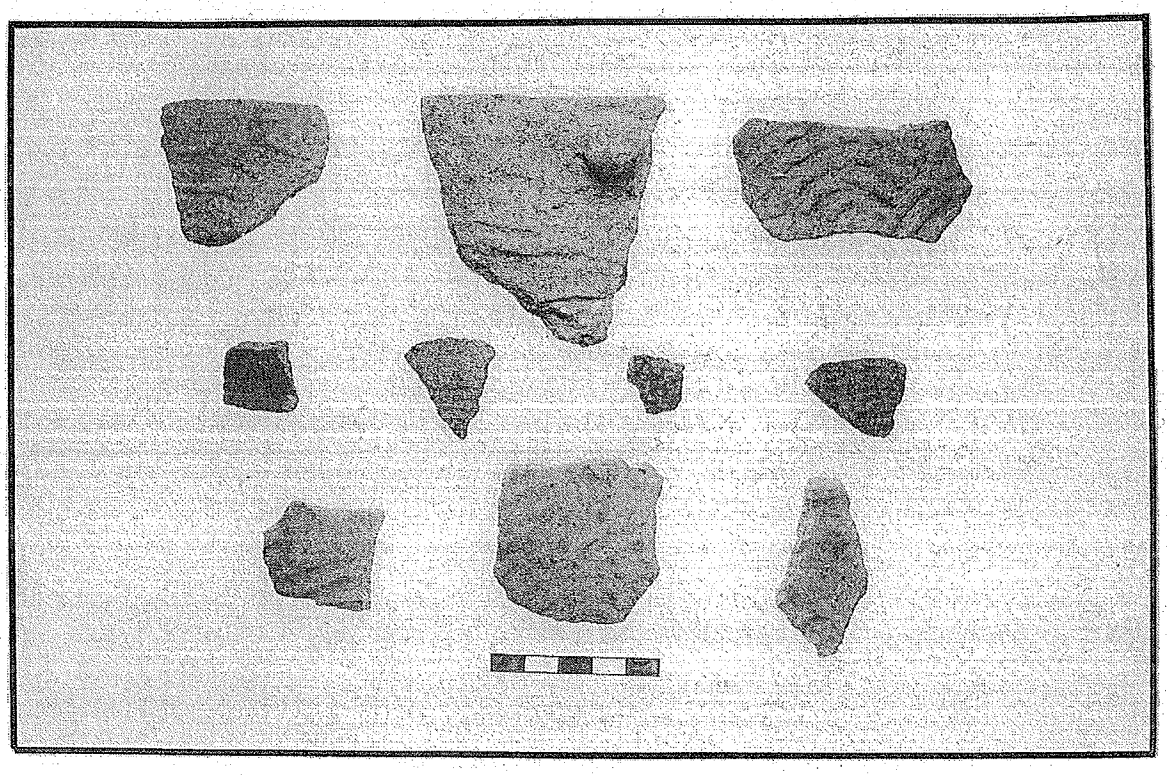


Figure 86. East Nashville Mounds: grit-tempered complicated-stamped.

GRIT-TEMPERED ERODED
French Lick site, n=4

As with the other eroded categories, surface treatment could not be assessed for this material.

CHERT-TEMPERED CERAMICS

As previously noted, chert-tempered material is reported as a consistent minority in early and late Middle Woodland assemblages in the Duck and Elk River drainages. Faulkner (1968a) defined the Late Woodland Elk River ceramic series for which the dominant tempering

material is chert. Surface treatments within Faulkner's (1968a) Mason complex Elk River series include, in order of decreasing frequency, cordmarked, plain, knot-roughened and net-impressed, and check-stamped. When sample size allowed comparison, vessel forms are noted as being closer to those of the Late Woodland Hamilton series of East Tennessee than to those of the Middle South limestone-tempered Middle Woodland types. Two uncorrected dates reported for Mason site Elk River features are 1180±85 B.P. (A.D. 770) for Feature 15 and 1060±90 B.P. (A.D. 890) for Feature 9.

Based on the types of surface treatments encountered within the present collection, we prefer a Middle Woodland assignment for the chert-tempered material from the French Lick site. This is not to exclude out of hand the possibility of a Late Woodland component at the site, but the evidence for such a component here, and indeed at most other locations in the Middle Cumberland area, is equivocal. At the Mason site, Faulkner (1968a) notes a very low frequency for clay grit-tempered material, which does not resemble the Middle Tennessee Valley McKelvey series. If this general lack of grog tempering in Late Woodland contexts holds for the Middle Cumberland, as appears to be the case, it is likely that an assemblage including limestone-tempered and chert-tempered material will be defined for this area in the future.

Within the Middle Cumberland, chert-tempered sherds have been reported from Lock 3, Spencer (Moore et al. 1993), Brandywine Pointe (Moore and Smith 1993), and 40DV35 Moore et al. (1992) sites.

CHERT-TEMPERED PLAIN
French Lick site, n=4

This material is characterized by the presence of small chunks (and often what appear to be small flakes) of chert in a paste that occasionally contains sand, either fine or medium, and/or crushed quartz/quartzite. As was the case with other mixed-tempered material, sherds that are predominantly limestone-tempered but contain small amounts of other mineral tempers, in this instance chert, are included in the appropriate limestone-tempered category.

CHERT-TEMPERED CHECK-STAMPED
French Lick site, n=1+

Except for surface treatment (malleation of the surface of the vessel with a gridded paddle), the preceding statement pertaining to chert-tempered plain is true for this category as well.

CHERT-TEMPERED CORDMARKED
East Nashville Mounds, n=1; French Lick site, n=2

Again, except for the obvious difference in surface treatment, the above statement for grit-tempered plain holds true.

SAND-TEMPERED CERAMICS

A variety of sand-tempered types and series have been defined for the Southeast. Sand initially occurred as the temper of choice in the Tomms Creek and Alexander series of the Late Gulf Formational and in the subsequent Early Woodland Deptford-related series. Within the Middle Tennessee Valley, the coarse-sand—tempered Alexander series is the earliest of the mineral-tempered ceramics. This series was apparently followed by the early limestone expression, with Longbranch Fabric Marked and the fine-sand-tempered types Benson/Dunlap Fabric Marked (Faulkner 1968c; Heimlich 1952) and Dunlap Fabric Marked (Faulkner 1968c; Jennings and Fairbanks 1940; Sears and Griffin 1950b), along with their attendant plain wares, in Georgia and East Tennessee. Saltillo Fabric Impressed (Jennings 1941) and its attendant plain wares appear to have followed the Alexander series in the Tombigbee drainage.

Keel (1976) described the Middle Woodland Connestee phase (A.D. 1/200–600/650) of the Appalachian Summit as being characterized by brushed, simple-stamped, and plain-surfaced ceramics. The series also includes cord marking and complicated stamping treatments. This material is described by Keel (1976) as being tempered with very fine to medium sand and occasionally containing small amounts of crushed quartz. At the Ice House Bottoms site (40MR23), Cridlebaugh (1981a) reported, as did Keel (1976), that the majority of the sherds of this series are tempered with fine sand only, while a small percentage are tempered with coarse sand and crushed quartz and/or small pebbles, unlike the original North Carolina descriptions. Small podal supports occur on ceramics of this series. Local point types include medium triangulars, while Copena Triangular points are noted as nonlocal artifacts found in Connestee contexts. Platform substructure mound construction and Hopewellian contact is noted by Keel (1976) for the Connestee phase.

Keel (1976) uses the "virtual identical" (1976:222) nature of the ceramics from Tunacunnhee site in northwest Georgia to those of Connestee phase material, and the uncorrected radiocarbon dates of A.D. 150±95 and A.D. 280±125, as well as data from other Middle Wood land sites, to argue for a beginning date of no later than A.D. 200 for Connestee. Keel (1976) further suggests that Connestee is generally contemporary with late Cartersville, Early Swift Creek of Georgia, the Candy Creek focus of the Tennessee River Valley and the western foothills of the Appalachians, and Middle and Late Hopewell.

Cridlebaugh (1981a) reports only a single sherd of Connestee Brushed from the 1977 excavations at Icehouse Bottoms. In addition to Connestee Simple Stamped and Connestee

Brushed, Cridlebaugh (1981a) uses a third type, Connestee Simple Stamped/Brushed, to segregate material that appeared to be surface modified by overlapping the simple stamping and possibly dragging the paddle over the surface of the vessel. This distinction is not used by Keel (1976) or Chapman (1973). Cridlebaugh (1981a) suggests that the higher frequency of brushed material reported for Icehouse Bottoms by Chapman (1973) results from the listing of some material as brushed that would actually fit better into her simple-stamped/brushed category.

At the Icehouse Bottoms site, Cridlebaugh (1981a) includes the types Mulberry Creek Plain, Bluff Creek Simple Stamped, Wright Check Stamped, and Pickwick Complicated Stamped, along with undesignated incised, punctated, cordmarked, and red-filmed wares, within the Candy Creek series. At Icehouse Bottoms, these materials are seen as contemporary with the Connestee series and with the imported Hopewellian material recovered from the site, such as Chillicothe Rocker Stamped and Plain Rocker Stamped ceramics and Flint Ridge chalcedony prismatic blades. Cridlebaugh (1981a) suggests that the Middle Woodland occupation at Icehouse Bottoms fell between A.D. 386 and 534.

Sand-tempered ceramics occur as persistent minority constituents at Middle Woodland sites in Middle Tennessee. Butler (1977) reported minor numbers in possible Neel phase contexts. Faulkner (1978) suggests that the infrequent occurrences of sand-tempered material in Owl Hollow assemblages represent the remains of imported vessels. To the north of the present study area, there does not seem to be a sand-tempered series that could be a possible progenitor for the material from the French Lick site. It is noted that this material does not conform to Alexander variant material as it is expressed in the Tennessee, Tombigbee, and Coosa River drainages.

In the collections for this project, this material is variously tempered with fine, medium, and/or coarse sand, with the tempering size forming a continuum. The variety of surface treatments includes plain, incised, and check-stamped (see Figure 85). The origin of this material is unknown, though as with the other mineral-tempered material, sand tempering is known to occur in other Middle Woodland collections in the Middle South that are dominated by limestone-tempered material.

UNTEMPERED CERAMICS

French Lick site, n=3

Three sherds from the French Lick site could not be identified as to tempering material using a 20x hand lens. These included one example each of plain, unidentified roughened, and fabric-impressed surfaces. It is assumed that this material is part of the Middle Woodland component at this site.

Discussion of Pre-Mississippian Ceramics

In all, 1,165 sherds are believed to have resulted from Middle Gulf Formational and Middle Woodland period occupations at the French Lick site (Table 6). In addition, 16 sherds recovered from East Nashville Mounds may have resulted from Middle to Late Woodland use of this locality (Table 7).

The 12 Wheeler sherds were found at several locations across the French Lick site (Table 8). This suggests that we have an actual component resulting from the local manufacture of fiber-tempered ceramics rather than just a pot or two that found their way to the site. No fiber-tempered material was recovered from East Nashville Mounds.

The 1,113 limestone-tempered sherds form the second largest temper group recovered from the French Lick site. Slightly over half of the 530 sherds for which confident surface treatment identification could be made were classified as Mulberry Creek plain, while slightly over one quarter were identified as Wright Check Stamped (Table 9). Flint River Cord Marked was the only other type with a significant showing. In comparing this collection to assemblages defined for other areas of the Middle South, we have the advantage of a general uniformity of type designations used, but the time spans for these assemblages do not always correspond, making it difficult to speak in more than general terms.

McFarland phase assemblages, in spite of their great internal variations, show some general trends that do not compare well with the French Lick site collection. For the former, the frequencies for plain, complicated-stamped, and cordmarked varieties are lower, while the relative frequency for check-stamped is higher than for the French Lick site (Cobb 1982; DuVall 1977, 1982; Kline et al. 1982). Indeed, Wright dominates early McFarland samples, and fabric marking is an important surface treatment (Faulkner 1978; Kline et al. 1982), though by late McFarland, Mulberry Creek Plain is marginally the majority type, followed by Wright Check Stamped.

Kline et al. (1982) do not report any brushed material from features at the McFarland site (40CF48), and only square and rectangular check stamping are reported. However, DuVall (1977) notes the presence of diamond, linear, and rectangular check stamping at the early McFarland Ewell III site (40CF118).

Faulkner (1978) notes that the ceramic assemblage from the late Owl Hollow phase is dominated by plain-surfaced ware, and only traces of paddle-stamped and cordmarked treatments are present.

Table 6. Pre-Mississippian Ceramics, French Lick Site.

Type	Count	Total less eroded
Wheeler Plain	8	
Wheeler Simple Stamped	1	
eroded fiber-tempered	2	
total fiber-tempered	**11**	**9**
Bluff Creek Simple Stamped	8	
Flint River Cordmarked	76	
Flint River Brushed	4	
Long Branch Fabric Marked	4	
Mulberry Creek Plain	275	
Pickwick Complicated Stamped	10	
Wright Checked Stamped	139	
unidentifiable limestone-tempered incised	10	
unidentifiable limestone-tempered stamped	3	
eroded limestone-tempered	583	
total limestone-tempered	**1,103**	**520**
grit-tempered plain	4	
grit-tempered check-stamped	4	
grit-tempered cordmarked	3	
grit-tempered eroded	4	
total grit-tempered	**15**	**11**
chert-tempered plain	4	
chert-tempered check-stamped	1	
chert-tempered cordmarked	2	
chert-tempered complicated stamped	1	
chert-tempered eroded	2	
total chert-tempered	**10**	**8**
sand plain	11	
sand incised	1	
sand check-stamped	5	
eroded sand	6	
total sand-tempered	**23**	**17**
untempered plain	1	
untempered roughened	1	
untempered fabric-impressed	1	
total untempered	**3**	**3**
Total	**1,165**	**568**

Table 7. Pre-Mississippian Ceramics, East Nashville Mounds.

Type	Count
grog-tempered plain	3
Mulberry Creek Plain	3
unidentified limestone stamped	1
grit-tempered plain	2
chert-tempered cordmarked	2
coarse-sand–tempered plain	1
coarse sand/grit plain	1
sand-tempered plain	3
Total	**16**

Table 8. Fiber-Tempered Ceramics from Units, French Lick Site.

Level	Wheeler Plain	Wheeler Simple Stamped	Eroded Fiber	Total
6	1	1		1
3				1
5	3			3
6	1			1
7	2			2
2	1			1
2			1	1
3	1			1
1			1	1
Total	**9**	**1**	**2**	**12**

Table 9. Relative Frequencies for Limestone-Tempered Ceramics, French Lick Site.

Type	Total	%
Mulberry Creek Plain	276	52.1
Wright Check Stamped	139	26.2
Flint River Cord Marked	76	14.3
Pickwick Complicated Stamped	10	1.9
unidentified incised	10	1.9
Bluff Creek Simple Stamped	8	1.5
Flint River Brushed	4	0.8
Long Branch Fabric Marked	4	0.8
unidentified stamped	3	0.6
Total	**530**	

(Does not include the 583 eroded limestone-tempered sherds.)

A single Flint River Brushed sherd was recovered from a feature at the Shofner site (40BD55) and is attributed to a late Owl Hollow component. Two radiocarbon dates returned for Feature 2 at this site were 1385±60 B.P. (A.D. 565 uncorrected) and 1485±95 (A.D. 465 uncorrected). At the Owl Hollow site (40FR7), limestone-tempered brushed/scraped is reported, though no count is provided for this category. Nineteen sherds of Wright Check Stamped with a diamond check are also reported. Multiple occupations of the site by Owl Hollow populations include one early occupation dating between A.D.200–300, followed by sporadic middle and late Owl Hollow phase reuse of the site for the following 200 to 400 years. These occupations are believed to be responsible for the deposition of this material (Cobb and Faulkner 1978).

Knight (1990) has noted that by the early Middle Woodland Green Mountain phase of the eastern Guntersville Basin, Mulberry Creek Plain had become the numerically dominant type, with a decrease in Long Branch Fabric Impressed within the ceramic assemblage. Carved paddle stamping became important, and Pickwick Complicated Stamped and Bluff Creek Simple Stamped were introduced into the local assemblages (Knight 1990). By the middle Middle Woodland Walling phase for that area, Mulberry Creek Plain accounted for 70 percent of the assemblages; Flint River Cord Marked became an important type, and Bluff Creek Simple Stamped was the dominant stamped type. The importance of Wright Check Stamped within the local assemblages had waned by this time (Knight 1990). By the late Middle Woodland Bell Hill phase, Mulberry Creek Plain accounted for 90 percent of the ceramic assemblage. Flint River Cord Marked and Bluff Creek Simple Stamped were the dominant decorated types. Pickwick Complicated Stamped remained a minority type, while Wright Check Stamped was rare (Knight 1990).

McNutt and Weaver (1983) report diamond, or rhomboidal, stamping on examples of Wright Check Stamped from the Duncan tract site. The limited samples of limestone-tempered ceramics reported for their Middle Woodland component A, Areas S and T, and especially their component B, Area A, do not provide much for comparison beyond the presence or absence of particular surface treatments. The high frequency of check-stamped material in their component A, which is suggested to date between 200 B.C. and A.D. 75/150, is more reminiscent of McFarland assemblages. Their component B (A.D. 75/150–400) sample consists of only 25 sherds and has a very high frequency of Bluff Creek Simple stamped, 76 percent of the limestone-tempered material from Area A. There is no plain material reported for this last area. It is suggested that both of these components predate the Middle Woodland use of the French Lick site.

Lewis and Kneberg (1946) note the similarity of their Candy Creek focus material to that of Copena. The authors also note the presence of check-stamped, which they liken to Wright, and complicated-stamped, which they compare to Pickwick. Also present in the assemblage, which they note is only possibly associated with Hamilton, were podal supports.

A summary of the information presented in Chapter 4 of this report suggests the following trends for the Middle Woodland in the Middle South. Prior to ca. 200 B.C., during Early Woodland and into the early Middle Woodland, fabric marking was uniformly an important, or even dominant, surface treatment throughout the region. For the span of ca. 100 B.C. to A.D. 100, fabric marking rapidly fell in popularity and was replaced by plain and paddle-stamped treatments in the assemblages. Complicated- and simple-stamped wares were introduced into the eastern Middle Tennessee Valley at this time.

For the span of ca. A.D. 100 to 400, plain materials were the majority categories in assemblages throughout the region. This varied from a slight majority early to as much as 85 percent of assemblages late in this span. In the northern part of the region, check stamping was an important early type, while in the eastern Middle Tennessee Valley this treatment began to wane early and was replaced by cord marking as an important constituent. Check stamping no longer appeared to be an important surface treatment after ca. A.D. 200 for the region as a whole. Simple stamping became the most important stamped type, while complicated stamping remained a minority treatment in the assemblages.

Assemblages from after ca. A.D. 400 are more than 90 percent plain; simple-stamped is a distant second in frequency. Brushing was apparently introduced into the repertoire across the Middle South at this time.

As reflected in Table 9, the French Lick assemblage is characterized by a dominance of Mulberry Creek Plain (ca. 52 percent), and the relatively strong showing for check-stamped would not be uncharacteristic for an early/middle Middle Woodland component. Indeed, the significant presence of the latter could argue for a placement of prior to A.D. 200 for this collection. A placement fairly early in the middle Middle Woodland is also supported by the low frequency of simple stamping. Complicated stamping was apparently introduced into the area sometime shortly after A.D. 100, and it constitutes a slightly higher percentage of the French Lick site collection than does simple stamping; this may argue for a placement in the early late Middle Woodland. However, the fairly substantial showing for cord marking suggests a slightly later placement. The first century A.D. dates for the Yearwood site, at which cord marking was a significant surface treatment, could be used to suggest a late early Middle Woodland placement. It should be recalled that Butler (1977) has posited that the ceramic assemblage at Yearwood suggests a later placement than that indicated by the radiocarbon dates. The presence of brushed ceramics indicates a late Middle Woodland placement.

As noted, the relative frequencies for Middle Woodland ceramics recovered from the French Lick site do not correspond well with other assemblages reported for the Middle South. It is apparent that there is no Early Woodland component represented, or at least not one of significance. It is likely that there are multiple Middle Woodland components or, perhaps less likely, a long-term, continuous occupation represented by the French Lick collection.

As previously mentioned, we suggest a Middle Woodland assignment for the mineral-tempered sherds recovered from the French Lick site. As noted above, chert, quartz, and other types of grit temper, often in combination with limestone, form consistent minority wares within the limestone-tempered–dominated Middle Woodland McFarland (Cobb 1982; Faulkner 1978; Faulkner and McCollough, eds. 1977) and Owl Hollow (Cobb 1982; Faulkner 1978) assemblages. All these tempers are reported from earlier and/or later periods as well. Crushed grit of both igneous and metamorphic materials are reported from Early Mississippian Merrell phase contexts in the American Bottoms (Maher 1987), while chert is the predominant temper in the Elk River series of the Late Woodland Mason phase in the upper Elk River drainage (Faulkner 1968a).

In the Tombigbee Valley, a flurry of minority temper types have been identified in Middle Woodland components. This could have resulted from experimentation or from contact with other groups. Included within these tempers are bone, which Jenkins (1981) described as the Turkey Paw series. Bone tempering in the Tombigbee Valley was combined with a variety of other tempers including fiber, grog, and petrified wood. Petrified wood has also been reported as the main temper in unnamed minority ceramics from two sites in the Central Tombigbee Valley (Atkinson et al. 1980; Solis and Walling 1982). Based on contextual data, these tempers have been assigned to the late Miller II (Middle Woodland) and Miller III (Late Woodland) (Atkinson et al. 1980; Jenkins 1981; Solis and Walling 1982).

Based on the available information, the minority temper types identified for Middle Woodland components in the Middle Cumberland and adjacent areas do not appear to reflect a late Middle Woodland spate of experimentation with assorted tempers. The consistent presence reported for various mineral tempers in early Middle Woodland contexts argues against such a conclusion. At present it is unknown if these materials represent variation in the local manufacturing regime, result from interaction with other groups outside the immediate area, or represent undefined earlier or later cultural unit(s). The ubiquitous presence of these minority elements throughout the area could be used to argue any of these possibilities, though the lack of "pure" feature contexts argues against as yet undefined local complexes. Indeed, Faulkner (1978) suggests that the sand-tempered material in Owl Hollow assemblages is nonlocal.

Within the Middle Cumberland area, mineral-tempered ceramics have been reported for a number of sites (Jolley 1978, 1980, 1983b; Moore et al. 1992; Moore et al. 1993; Moore and Smith 1993). At those sites the collections tended to be small, and no temporal assignment was attempted.

The 51 sherds from the French Lick site tempered with chert, grit, and sand, combined with untempered sherds, account for 6.8 percent of the total assumed Middle Woodland ceramic collection. If eroded material is included, the combined relative frequency for this material falls to 4.6 percent of the total assemblage. Comparing this collection with other

Middle Woodland collections for this general area, the presence of minor amounts of assorted tempers is expected.

If we look at the frequencies of the various surface treatments within each of these temper groups, the small sample size and lack of diversity within each group do not provide much food for thought. The general trend is for plain wares to occur in the highest relative frequency, followed by check-stamped, then cordmarked. However, if we look at this material as a single entity and run relative frequencies by surface treatment, even this small sample mimics the frequencies for the limestone-tempered group (Table 10).

Table 10. Relative Frequencies for Grit, Chert, Sand, and Untempered Ceramics as a Group.

Surface Treatment	Total	%
plain	19	52.8
check-stamped	10	27.8
cordmarked	5	13.9
complicated stamped	1	2.7
fabric-impressed	1	2.7

The type ordering by relative frequency is identical for the limestone and other mineral-tempered groups for this collection. Taking into account the lack of diversity within the assorted temper groups, the relative frequencies are extremely close for the two groups. We feel that this, along with the reported occurrence of low frequencies of material of assorted mineral tempers in other, better-documented Middle Woodland collections, adds credence to the assignment of this material to the Middle Woodland component at the French Lick site.

The mineral-tempered material can, with little trepidation, be assigned to a Middle Woodland provenience. However, based on the various surface treatments and the paucity of Middle Woodland features, it is less than clear just how many components we are dealing with. While stratigraphy at the French Lick site does not illuminate this situation, a comparison of the northern portion of the project area (Tunnel Pits 1 and 2) and the southern portion (Bents 3, 4, 5, and 7) does suggest some differences. Though the counts become quite small once the collection is divided in this way, the horizontal distribution of surface-modified types does suggest the presence of more than one Middle Woodland component at the site.

Though few in number, all the Bluff Creek Simple Stamped and Flint River Brushed sherds were recovered from the tunnel pits. The relative frequency of Wright Check Stamped is significantly high in this area, while that for Flint River Cord Marked is considerably lower here than in the bent areas. In the tunnel pit area, Wright Check Stamped accounts for 63 percent of the material, Flint River Cord Marked 23 percent, and Bluff Creek Simple

Stamped and Pickwick Complicated Stamped, 4.5 percent each. Flint River Brushed and Long Branch Fabric Marked account for 2.2 percent and 1 percent, respectively.

In the bent area, Flint River Cord Marked and Wright Check Stamped account for 48.5 percent and 47 percent, respectively, while Pickwick Complicated Stamped makes up 3 percent and Long Branch accounts for 1.5 percent of the collection. Again it is stressed that the small numbers involved may make it appear that a particular type is more important than it actually is, and these figures are provided simply to show the horizontal distributions of selected types at this site. Here again, these frequencies to not reconcile well with previously reported assemblages.

As for the 59 sherds of mineral-tempered material from the East Nashville Mounds, little can be deduced. Based on the occurrence of the grit-tempered complicated-stamped material in Zone 2, Level 1, a Mississippian provenience is suggested. The remaining 14 sherds are not as easily explained, unless we concede a very minor Middle to Late Woodland component at this site. It is possible that these sherds result from contact between the Thruston phase people and other groups, though given the nature of the material, this is does not seem very likely.

SHELL-TEMPERED CERAMICS

Shell-tempered pottery forms the bulk of the ceramic collections for each site. Shell tempering is the hallmark for most of the Mississippian stage in the Middle South. With few exceptions, such as early Mississippian sites or atypical sites such as Obion (Garland 1992), the presence or absence of shell-tempered ceramics is used to assess the presence or absence of Mississippian components at given locations. Mississippi Valley typology is generally used in reporting material from this area (Smith 1993), as it is for the Middle South as a whole.

BARTON INCISED

East Nashville Mounds, n=1; French Lick site, n=1; Figures 87 and 88

It seems a shame to start this portion of the report with one of the smallest minority types in the collections, but a listing by more or less alphabetical order for designated types is a time-honored and practical approach to this kind of presentation. This type was originally defined for the Mississippi Valley by Phillips et al. (1951), and Phillips (1970) later defined several varieties for the type. Smith (1993) notes that this type is extremely rare in the Middle Cumberland area.

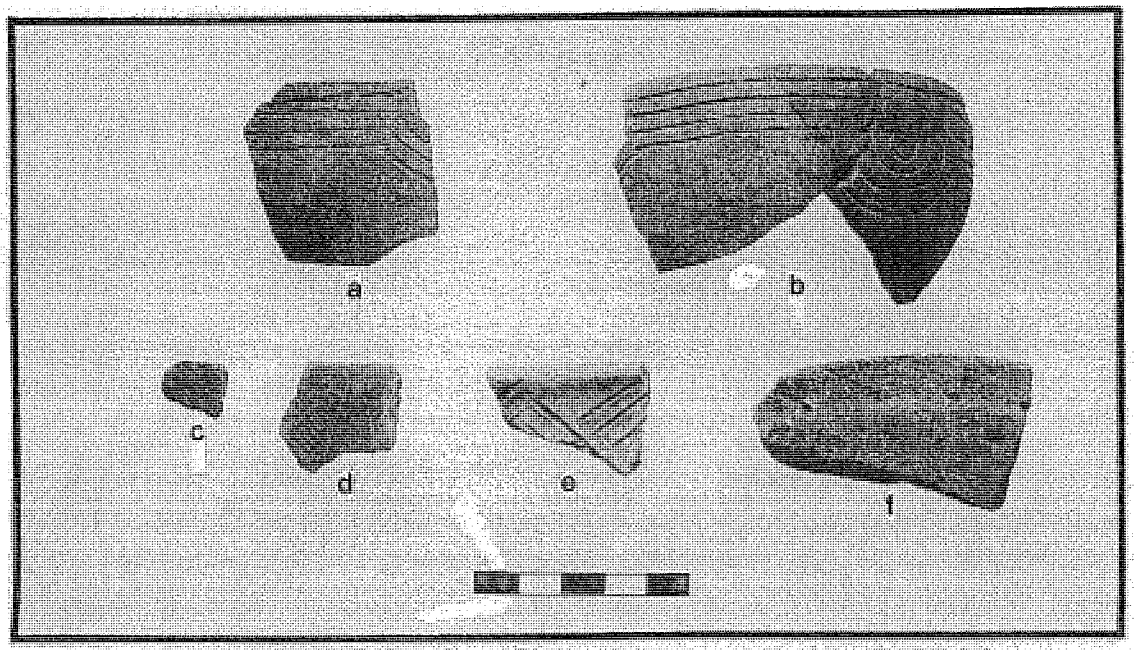


Figure 87. East Nashville Mounds: a-b, Mound Place Incised, *var. Chickasawba*; c, unidentified engraved; d, O'Byam Incised, *var. Stewart*; e, Barton Incised, *var. unsp.*; f, unidentified punctated and incised plate fragment.

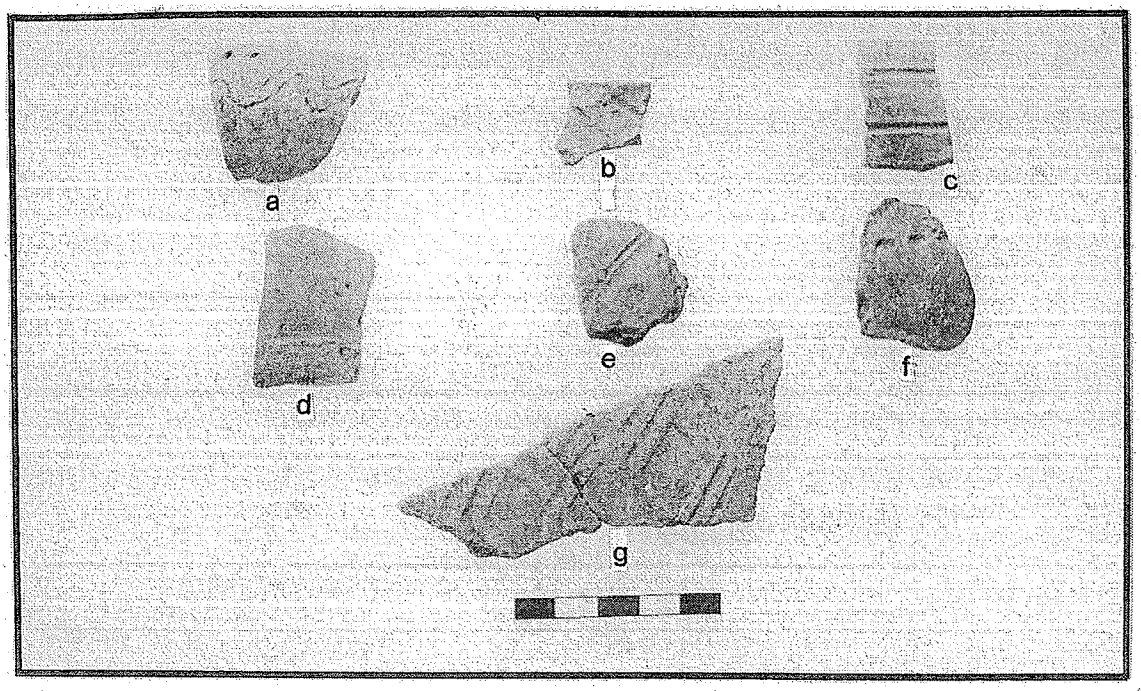


Figure 88. French Lick: a, d, and e, unidentified incised; b, Barton Incised, *var. unsp*; c, Mound Place Incised, *var. unsp.*; f, unidentified punctated; g, unidentified complicated stamped.

The examples of Barton Incised from East Nashville Mounds and the French Lick site are probably comparable to *var. Barton* as proposed by Phillips (1970), though the size of the sherds does not allow a more confident statement.

Bell Plain

East Nashville Mounds, n=98; French Lick site, n=4

Bell Plain, like Mississippi Plain, is a type for which numerous varieties have been designated, few of which have more than geographical meaning. These variety designations are dependent on rim and vessel form for any degree of sortability, meaningful or not.

Here we have used the original definition for the type as presented by Phillips et al.: "...very fine shell particles; minute in size, never approaching even 1 mm...characterized by well smoothed surface... Many sherds are highly polished..." (1951:122–127). In a later publication, Phillips (1970) warned against using the impermanent and clay source-dependent criterion of luster as a sorting device. Phillips (1970) also noted that the types Bell Plain and Mississippi Plain grade into one another using the available sorting criteria.

Smith (1993) proposed Bell Plain, *var. Noel* to include all shell-tempered wares with a burnished surface and fine shell temper. He noted that temper size is not always distinct from Mississippi Plain, thus establishing burnishing as the primary sorting criterion. The most common vessel forms are the semi-hemispherical or simple bowls and bottles. The notched horizontal applique strip on bowls is a common feature, and effigy appendages are also common. Smith (1993) notes that the distribution for this variety is unknown, but that it is reported for the Central Basin and Western Highland Rim between A.D. 1250 and 1450. Smith (1993) suggests that this variety is probably most comparable to *var. New Madrid* defined for south east Missouri (see Phillips 1970).

As noted above, we prefer not to use burnishing, polishing, etc. as sorting criteria. While these may be suitable for use with cemetery samples, these forms of surface treatment are less than stable in general midden samples. The majority of the bowls with notched rims, and possibly those with noded rim treatments, could potentially be counted under this variety. The various treatments to the lip and rim area of bowls are discussed below.

Campbell Applique-like

East Nashville Mounds, n=1; Figure 89

The notched vertical fillet was included as a rim mode by Phillips et al. (1951), but was proposed as a type, along with arcaded handles, by Chapman and Anderson (1955) for material from the Campbell site in southeast Missouri. Phillips (1970) would prefer to treat this as a rim mode, as it was originally designated. An essentially identical treatment is reported in Alabama and eastern Mississippi as Alabama River Applique (Cottier 1970;

Jenkins 1981; Sheldon 1974; Solis and Walling 1982). This mode is a consistent late Mississippian to protohistoric marker.

The single example of Campbell Applique-like from East Nashville Mounds has a single vertical notched fillet located on the rim sherd from a jar. Given the size of the sherd, it is impossible to determine spacing of the fillets, though it is obvious that the examples from the Campbell site are spaced more closely. To our knowledge, no similar material is reported for the Middle Cumberland area.

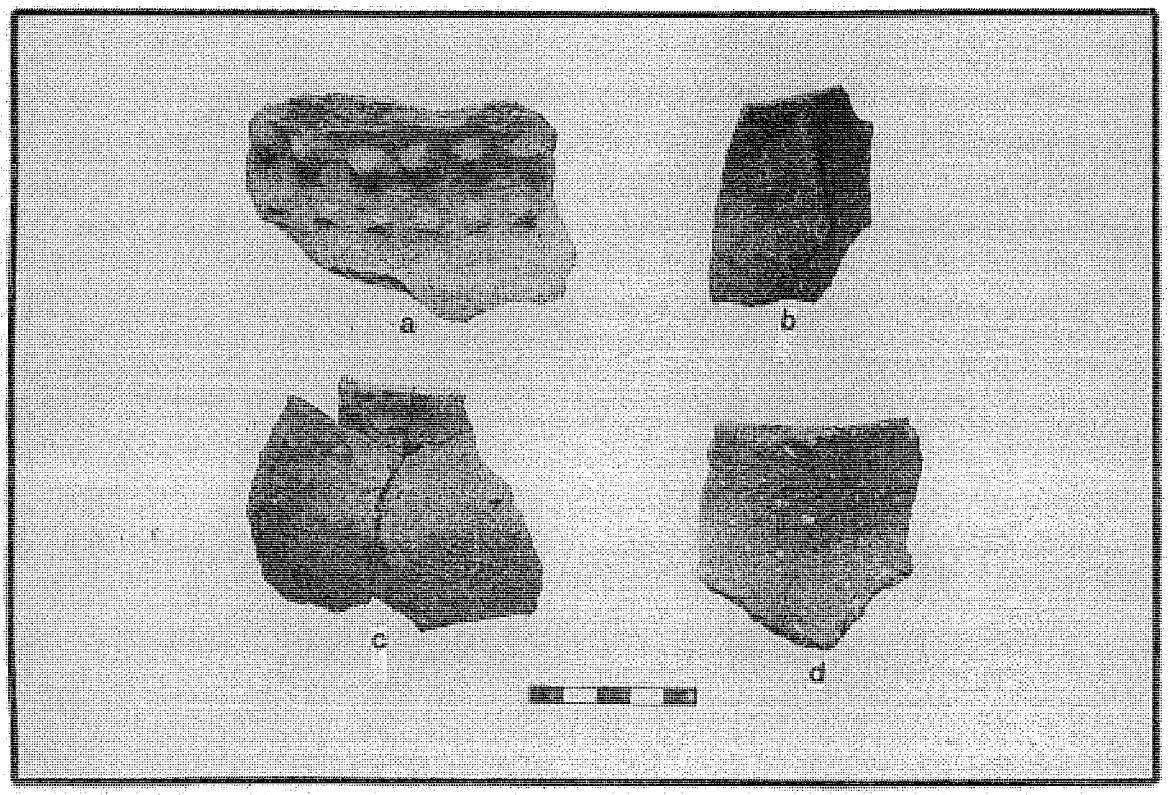


Figure 89. East Nashville Mounds: a, noded jar fragment; b, Campbell Applique-like; c, short-necked jar fragment; d, lobed jar, Matthews Incised, *var. Matthews* A.

Kimmswick Fabric Impressed

East Nashville Mounds, n=834; French Lick site, n=286; Figure 90

Phillips (1970) has provided an account of the development of this type. A number of analyses of the fabric impressions found on this class of material in this general area have recently found their way into the archaeological literature (Drooker 1990, 1991; Kuttruff and Kuttruff 1992). Jenna Kuttruff is undertaking an analysis of the fabric impressions on the sherds recovered during this project, the results of which will be published in the future.

Thruston (1973[1890]:Plate X, 157-158) illustrates and describes a fragment of a Kimmswick Fabric Impressed pan that he recovered from the immediate vicinity of the French Lick. This vessel was described as being 31 inches in diameter and 12 inches high with a capacity of 12 to 15 gallons. While Phillips (1970) indicates that a typical vessel size for this type is 20 to 30 inches in diameter, in most examples in the present collection vessels were apparently so large that size estimates cannot be derived from the sherds. Jones (1876) reported a 43-inch diameter fabric-impressed pan from the large burial mound at East Nashville Mounds. John Dowd (Smith 1993) recovered a large portion of a Kimmswick Fabric Impressed pan, greater than 8 feet in diameter, that had been used to form the box of a grave. Smith (1993) suggests differentiation between these mortuary types and general domestic types, and theorizes that differences in size, quality of construction, and quality of surface treatment may lead to discrimination of function for this class of vessels. At the present level of analysis, this does not appear to be the case for East Nashville Mounds, based on the sample of one with direct mortuary association.

In an effort to gain as much information as possible from these two collections, the fabric-impressed shell-tempered material was sorted into five subcategories. It is stressed that these are not proposed as varieties, but were simply devised to serve the purpose already proposed. The 1,120 sherds of fabric-impressed material from these two sites place this surface treatment comfortably in second place with regard to relative frequency.

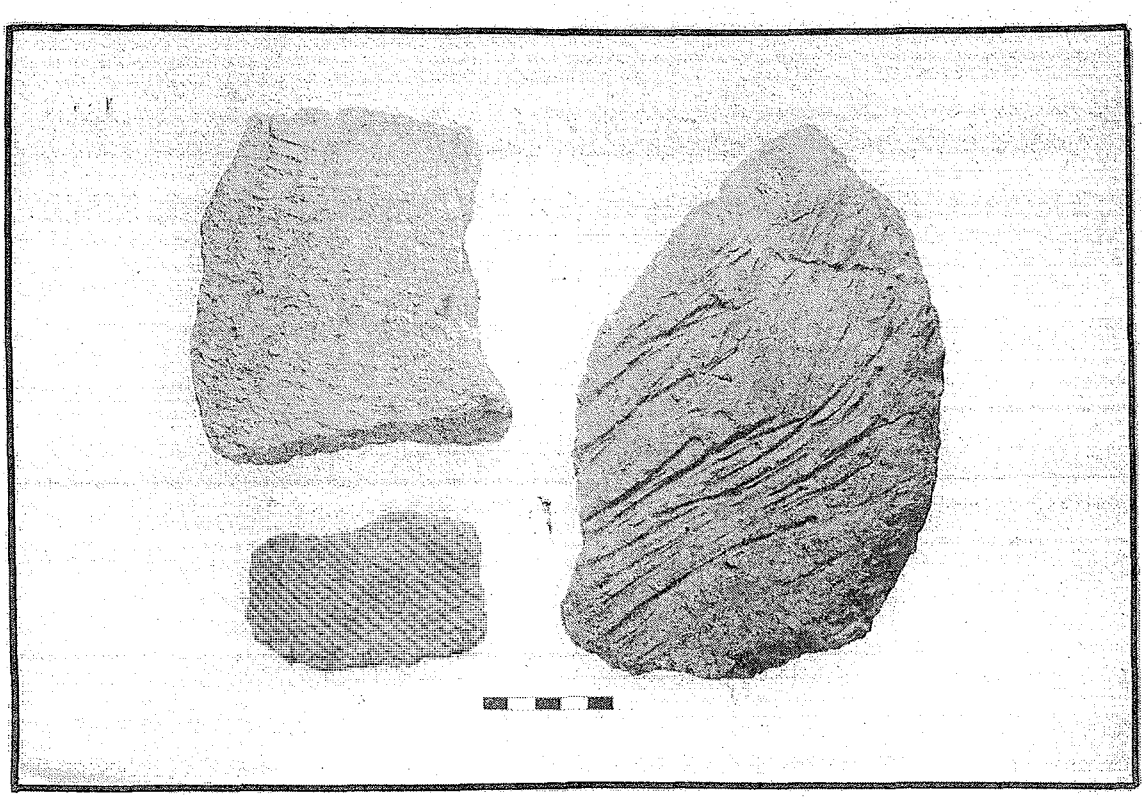


Figure 90. French Lick: Kimmswick Fabric Impressed, sorting var. A.

Sorting variety A (East Nashville Mounds, n=548; French Lick site, n=220). Our sorting variety A generally corresponds to Phillips's (1970:95–96) *var. Kimmswick.* Vessel size may be an exception to this correspondence, at least in some cases. As used here, Kimmswick Fabric Impressed, sorting variety A is sorted by the presence of abundant, very coarse shell temper, with an assortment of fabric impressions on the exterior. Impressions of widely spaced cords used to secure what appears to have been grass are occasionally visible on the surface. It is assumed that this "fabric" served the same purpose as the "real fabric," the impressions of which are observed on other specimens.

Sherds are 1 cm or greater in thickness. Rims are generally thickened to the exterior, and there is often a plain band below the lip, usually corresponding to the thickened area of the rim. Lips are usually rounded but occasionally flattened. Vessel shape is pan, generally assumed to have served as evaporative vats for salt production and probably for other purposes as well. A portion of a Kimmswick Fabric Impressed vessel was used as a burial box in place of limestone at East Nashville Mounds, but again even with the large size of these sherds, no vessel size can be estimated. There is a sharp break between the side and the bottom for at least some of this material (Figure 91). The complete absence of sherds with a more gradual transition to the base suggests that this is the majority form, if not the only form for this class of vessels.

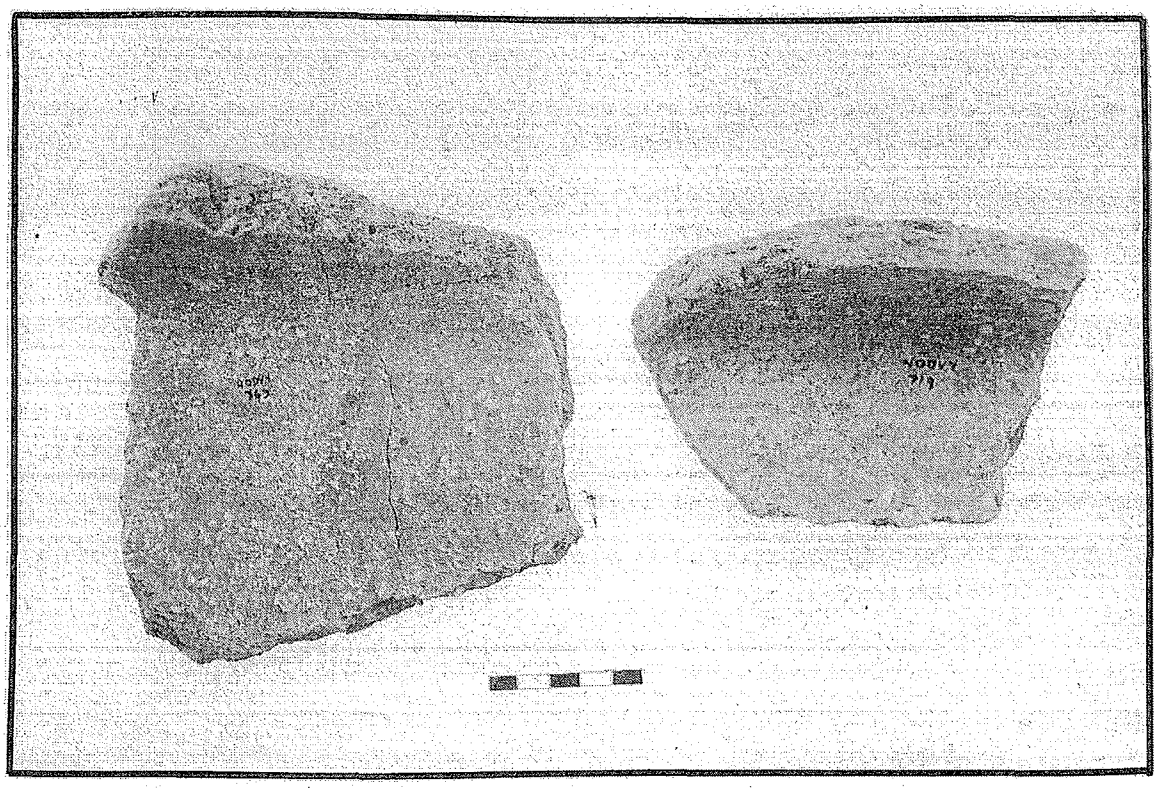


Figure 91. French Lick: Kimmswick Fabric Impressed, var. A, shoulder.

Sorting variety B (East Nashville Mounds, n=239; French Lick site, n=60). Our sorting variety B occurs on a Mississippi Plain paste. Sherds are less than 1 cm thick. Vessel form is assumed to be exclusively pan, but this is less than secure for all examples. Vessel size is unknown but is considerably smaller than the maximum for sorting variety A.

Sorting variety C (East Nashville Mounds n=40, French Lick site n=6). Our sorting variety C is less than 1 cm thick, but is tempered with very coarse shell. Thus it is a cross between sorting variety A with its very coarse shell tempering and the relatively thin-walled sorting variety B.

Sorting variety D (East Nashville Mounds n=6). Our sorting variety D has the same paste and other ware characteristics as sorting variety A, but with a somewhat different surface treatment. The surface is impressed with widely spaced cords instead of fabric.

Kimmswick Plain

East Nashville Mounds, n=15

Phillips (1970) supports the utility of defining separate types for plain and fabric-impressed pans, but does not treat the former beyond that point. Kimmswick Plain is the type name traditionally given to plain-surfaced sherds that appear to have originally been portions of pans (Smith 1993; Trubbit 1988). Less is known about the size and configuration of plain pans than is known for fabric-impressed pans. It is likely that some of the material (particularly rims) counted as this type is actually from otherwise fabric-impressed vessels. Plain and fabric-impressed sherds occurred together as part of the burial box from East Nashville Mounds.

Matthews Incised

Figures 92 and 93

Three varieties of Matthews Incised have been defined for the Mississippi Valley. Each of these varieties has found wide usage throughout the Mississippi Valley and adjacent areas. These varieties have previously been used to categorize material from the Middle and Lower Cumberland area, though not always to describe the same type of decoration (Clay 1963; Reed 1984; Smith 1993). We have followed Smith's (1993) usage of these varieties in this analysis.

Similar surface treatment is covered in other areas of the Southeast under various rubrics, including Moundville Incised, Lake Jackson Decorated, *var. Cool Branch*, and Dallas Decorated. Morse and Morse (1983) suggest that the Matthews horizon ranges from A.D. 1200 to 1400.

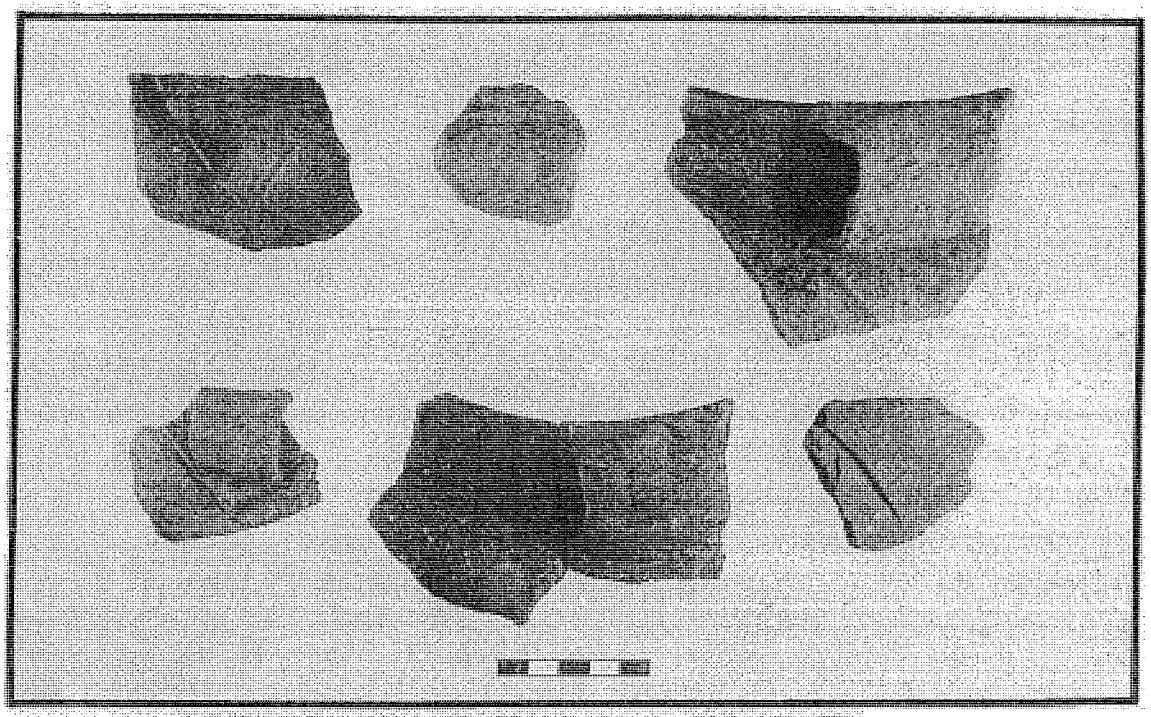


Figure 92. East Nashville Mounds: Matthews Incised, *var. Matthews* C.

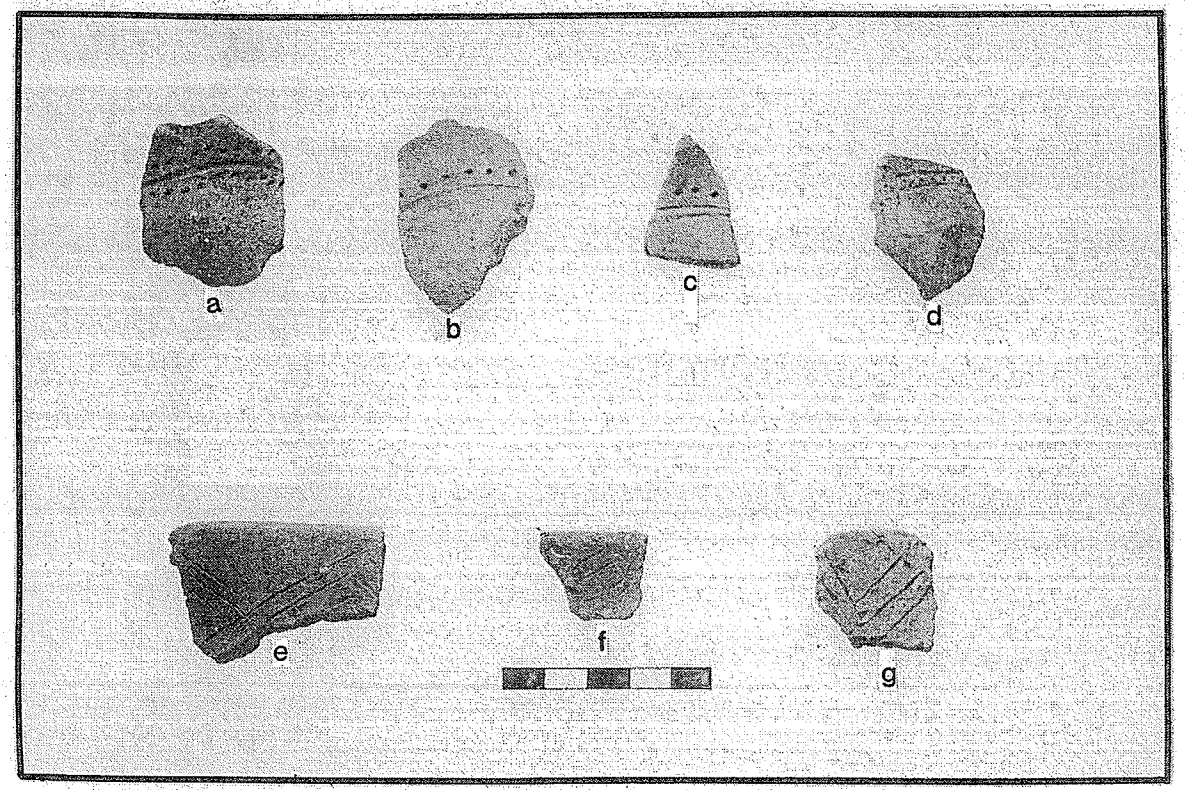


Figure 93. East Nashville Mounds: a-c, Matthews Incised, *var. Manly* B; d-g, Matthews Incised *var. Beckwith*.

MATTHEWS INCISED, VAR. MATTHEWS
East Nashville Mounds, n=53; French Lick site, n=2

As with Kimmswick Fabric Impressed (see above), sorting categories (in this case, subvarieties) were defined for *var. Matthews* in an attempt to elucidate possible differences between and within the collections from these sites. As used by Smith (1993) and as used here, *var. Matthews* is sorted by the presence of a series of connected incised arches on the rims of standard jars with a coarse shell-tempered paste. Because of the portion of decoration remaining, nine of these sherds could not be sorted beyond gross variety level. When handles occur on specimens of this variety and *var. Manly*, they are invariably located above the junction of arches (see Figure 92).

Matthews Incised, var. Matthews A (East Nashville Mounds, n=15). This sorting subvariety was set up to include examples that were decorated with a single incised line. One of the examples of this category, recovered from 136N82E, Zone 2, Level 3, occurred on a lobed jar (see Figure 89).

Matthews Incised, var. Matthews B (East Nashville Mounds, n=8). This sorting subvariety was set up to include examples decorated with double or stacked incised arches.

Matthews Incised, var. Matthews C (East Nashville Mounds, n=21; French Lick site, n=2). This sorting variety was set up to include examples decorated with an excised arch.

MATTHEWS INCISED, VAR. MANLY
East Nashville Mounds, n=20; French Lick site, n=3)

Originally set up as a provisional type by Phillips et al. (1951), Manly was included as a variety of Matthews Incised by Phillips (1970) to sort those examples that include punctations in the decorative arch motif.

Smith (1993) has established two subunits for this variety. These were set up to distinguish those examples that include an incised line in combination with paralleling punctations from those on which the running arch is defined by punctations alone. Nine sherds either could not be confidently sorted beyond the gross variety level, or did not conform strictly to the subvarieties proposed by Smith (1993).

Matthews Incised, var. Manly A (East Nashville Mounds, n=1). This subvariety, as set up by Smith (1993), includes examples on which the arch is defined by punctations only.

Matthews Incised, var. Manly B (East Nashville Mounds, n=10; French Lick site, n=3). This subvariety as set up by Smith (1993) includes that material on which the arch is defined by a combination of incised lines and paralleling punctations.

MATTHEWS INCISED, VAR. BECKWITH

East Nashville Mounds, n=6; French Lick site, n=6

Originally set up as Beckwith Incised by Williams (1954), *var. Beckwith* was later included as a variety of Matthews by Phillips (1970). Decoration consists of a running angular guilloche on the rim of a jar.

MCKEE ISLAND BRUSHED

French Lick site, n=2; Figure 94

McKee Island Brushed was originally defined on the basis of material from the Guntersville Basin of the Middle Tennessee River (Heimlich 1952). This type was assigned a very late temporal position at that time, and may therefore be one of the more unfortunate choices of a type name for the present collections. However, no more suitable alternative type designation is available, and the companion type McKee Island Cord Marked was originally assigned a similar provenience and has been used to denote local coarse shell-tempered material.

The only sherds of this type recognized within the collections are apparently from two separate jars. The shapes of these vessels appear to differ slightly from the majority of the collection, which is the standard jar form, although precise description of these vessels is not possible based on the sherds present. One example has a peaked rim and strap handle attachment that appears to result from a fairly wide but short handle (Figure 94). The other example appears to lack the characteristic break at the shoulder of the standard jar form. On both examples the brushing was applied to the exterior. On one example, it extends to the exterior thickened lip; on the second example, brushing does not appear to reach the lip, but this could be a result of the handle's being located at this position. These two sherds do not appear to come from the same vessel, though we cannot be absolutely certain of this.

MCKEE ISLAND CORD MARKED

East Nashville Mounds, n=7; French Lick site, n=8; Figure 94

McKee Island Cord Marked was originally defined for material from the Guntersville Basin of the Middle Tennessee River (Heimlich (1952). This type name has been applied to shell-tempered cordmarked material over a wide area of the Southeast. It is possible that some of the material in these collections results from the historically documented Shawnee presence at this location. In that instance, the choice of Madison Cord Marked as a type name might have been more appropriate. If we are to choose a more northerly designation that would be contemporary with the Mississippian occupations at these sites, then Fox

Farm Cord Marked (Griffin 1943; Turnbow and Henderson 1992) might be appropriate, and not necessarily too far fetched.

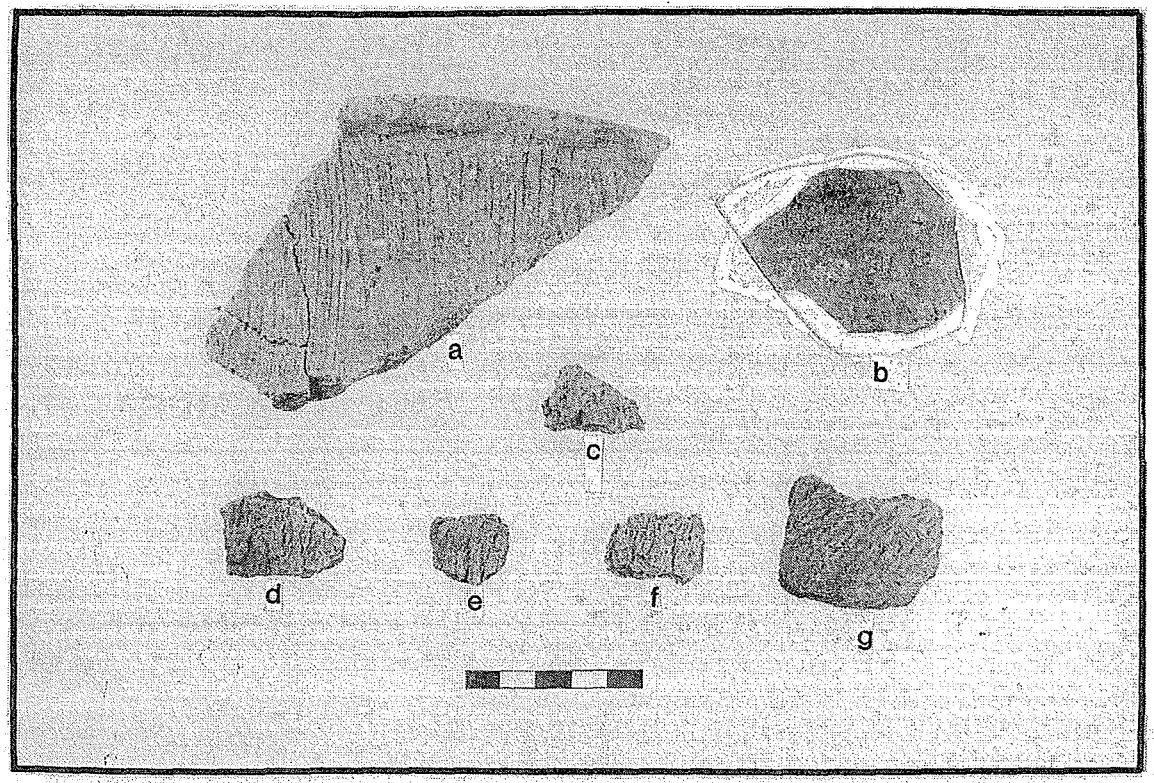


Figure 94. French Lick: a-b, McKee Island Brushed, var. unsp. East Nashville Mounds: c-g, McKee Island Cord Marked, var. unsp.

Mississippi Plain

East Nashville Mounds, n=24,688; French Lick site, n=2,985

Mississippi Plain is, as previously noted, the majority type within the collections. This is the ubiquitous type for Mississippian in the central South and is the only diagnostically Mississippian type present in small collections from many sites. The evolution of the concept of this type has been treated by Phillips (1970) and does not need to be repeated here. Phillips (1970) provided the initial "official" variety definitions for this type, but to date no local variety has been described. This is seen as no great encumbrance to analysis, as in most cases the varieties of Mississippi Plain are merely geographical and have no incumbent temporal or analytical value. We feel, as did Smith (1993), that setting up varieties for this or other types at this stage would be unfeasible and nonproductive.

Sorting criteria used here were those established by Phillips et al. (1951) for Neeley's Ferry Plain *cum* Mississippi Plain, *var. Neeley's Ferry* (Phillips 1970). These same criteria

are generally (though not universally) used where this type occurs throughout the Southeast and Midwest. The presence of moderate to abundant amounts of relatively coarse crushed shell tempering in fairly thin-walled vessels of various shapes are the general sorting criteria.

Jars, bowls, and bottle forms are represented by sherds of Mississippi Plain in these collections. Handle forms associated with this type include loop, strap, lug, and bifurcate lug. These will be discussed in greater detail below.

Mound Place Incised

East Nashville Mounds, n=4; French Lick site, n=1; see Figures 87 and 88

Mound Place Incised was originally proposed as a provisional type for the Mississippi Valley by Phillips et al. (1951). Phillips (1970) later defined it as a type with two varieties. The defining characteristic is a series of incised lines paralleling the lip on the exterior of shell-tempered bowls. Two examples from East Nashville Mounds correspond to *var. Chickasawba*, which Smith (1993) notes as the only variety identified in the Middle Cumberland area. One of the examples has the pendant loop that characteristically occurs on local examples. The remaining examples could not be identified to the variety level.

O'Byam Incised

East Nashville Mounds, n=1; see Figure 87

Williams (1954) originally proposed two distinct O'Byam types. The criterion used to separate these types was the distinction between fine-line (O'Byam Engraved) and broad-line (O'Byam Incised) surface treatment. Phillips (1970) later included both types under the latter classification. This type is defined for the Mississippi Valley on the basis of surface treatment on the interior rim of flaring rim bowls. Clay (1963) used the designation Stewart Engraved to identify a similar treatment placed immediately below the lip on the interior of non-flaring rim bowls. This type is now used as a variety of O'Byam Incised in the Lower Tennessee/Cumberland and Western Kentucky areas (Pollack and Railey 1987). Smith (1993) notes that engraving, or fine-line incising, is extremely rare in the Middle Cumberland area. The single example from East Nashville Mounds most closely resembles material assigned to *var. Stewart.*

Old Town Red

East Nashville Mounds, n=1

This is another type originally defined for the Mississippi Valley (Phillips et al. 1951; Williams 1954). Phillips (1970) later described several varieties based on paste and distribution. Smith (1993) has noted that this type is extremely rare in the Middle Cumberland area.

Unidentified Complicated-Stamped
East Nashville Mounds, n=3; French Lick site, n=1

Though the samples are small, these sherds echo the subtle differences between the collections for these two sites. All of the examples from East Nashville Mounds are curvilinear (see Figure 86), while the example from French Lick (see Figure 88) is rectilinear (stacked diamonds). The 45 grit-tempered, curvilinear, complicated-stamped sherds described above for East Nashville Mounds deserve mention here. As noted above, most of these are from a single vessel, and we believe that these also belong with the Mississippian component.

Unidentified Engraved
East Nashville Mounds, n=1; see Figure 87

This small sherd is interior engraved, or fine-line incised, with a cross-hatched design on a fine, shell-tempered paste. Not enough of the motif is present to provide assignment to an existing type. As previously noted, Smith (1993) has pointed out that engraving is extremely rare in local assemblages.

Unidentified Incised
East Nashville Mounds, n=53; French Lick site, n=3

Given the lack of diversity in decorated ceramics in this area and the nature of these collections, the vast majority of these sherds are almost certainly portions of Matthews Incised vessels. However, the size of the sherds and the location of the decoration on those sherds preclude any confident assignment to a given type. Of the 53 sherds from East Nashville Mounds, one has a fine shell paste; the rest are tempered with coarse shell. The three examples from the French Lick site are all tempered with coarse shell.

A notable exception to the probable assignment to Matthews Incised is a double-line meandering motif that occurs on a small bowl form (see Figure 88).

Unidentified Punctated/Incised
East Nashville Mounds, n=2

Little can be said about these small sherds beyond what the category label implies. One sherd appears to be from a plate form and has short incisions set diagonally to the lip, ending in a punctation (see Figure 87). Some examples are almost certainly variants of Matthews Incised, *var. Manly* jars.

Unidentified Punctated
East Nashville Mounds, n=10; French Lick site, n=2

For the same reasons given immediately above, we believe that most of these sherds are portions of Matthews Incised, *var. Manly* vessels. One of the sherds from East Nashville Mounds is fine shell tempered, and the remainder are tempered with coarse shell.

Unidentified Excised
(East Nashville Mounds, n=2)

All that can be said concerning these two coarse shell-tempered sherds is that they retain a portion of an indiscernible excised design.

Unidentified Surface Roughened
East Nashville Mounds, n=1

The exterior surface of this coarse shell-tempered sherd has been modified by an undiscerned process. It cannot be determined whether this finish is the result of smoothing over of a more detailed treatment such as stamping, or if this is the initial treatment.

Ceramic Earplugs
East Nashville Mounds, n=24; Figure 95

The 24 earplugs recovered from East Nashville Mounds are all of the dumbbell-shaped variety. No ceramic earplugs were recovered from the French Lick site.

Ceramic Discs
East Nashville Mounds, n=40; Figure 96

As with earplugs, all the ceramic discs recovered were from East Nashville Mounds. Five of these were formed on sherds of Kimmswick Fabric Impressed, sorting category B, while the remainder were formed from Mississippi Plain sherds. A single example of the latter has been quartered by perpendicular incised lines. The resulting impression is of an equal-arm cross within a circle. One disc is centrally perforated.

Ceramic Bead
East Nashville Mounds, n=1; Figure 95

The single ceramic bead recovered during these investigations occurred in general site matrix at East Nashville Mounds.

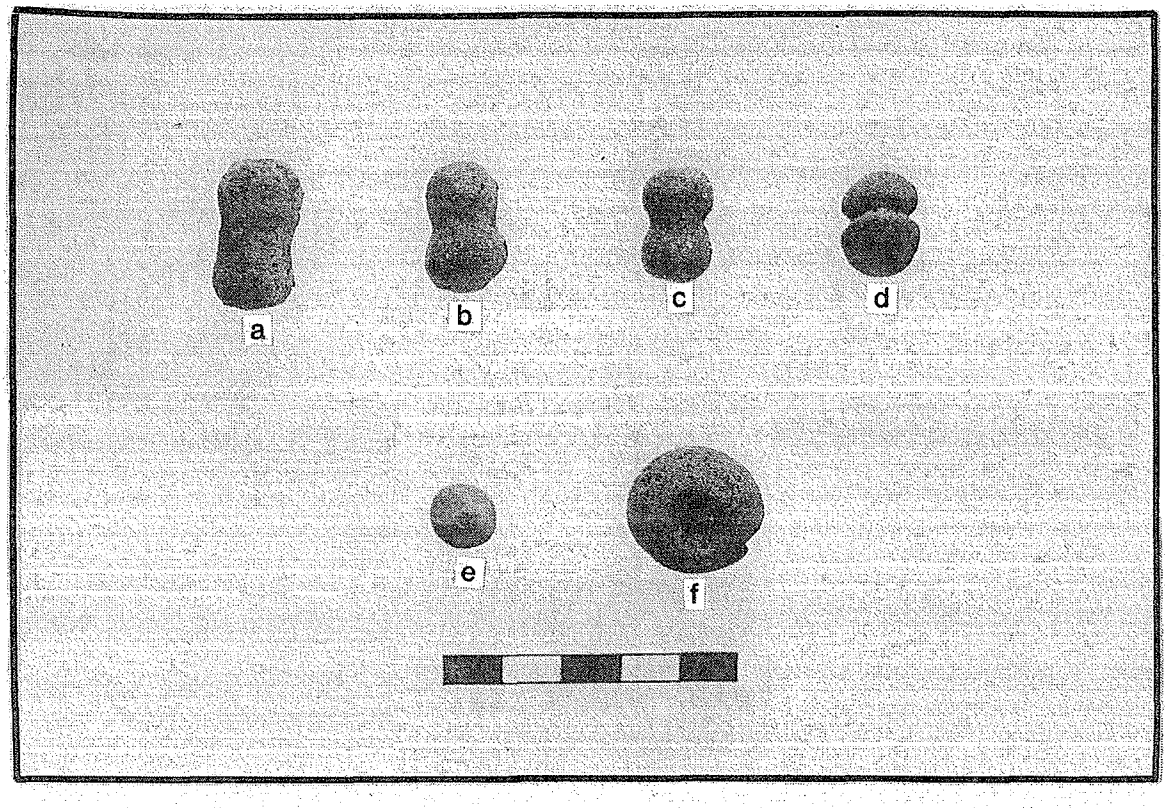


Figure 95. East Nashville Mounds: a-d, ceramic earplugs; e, ceramic bead; f, ceramic sphere.

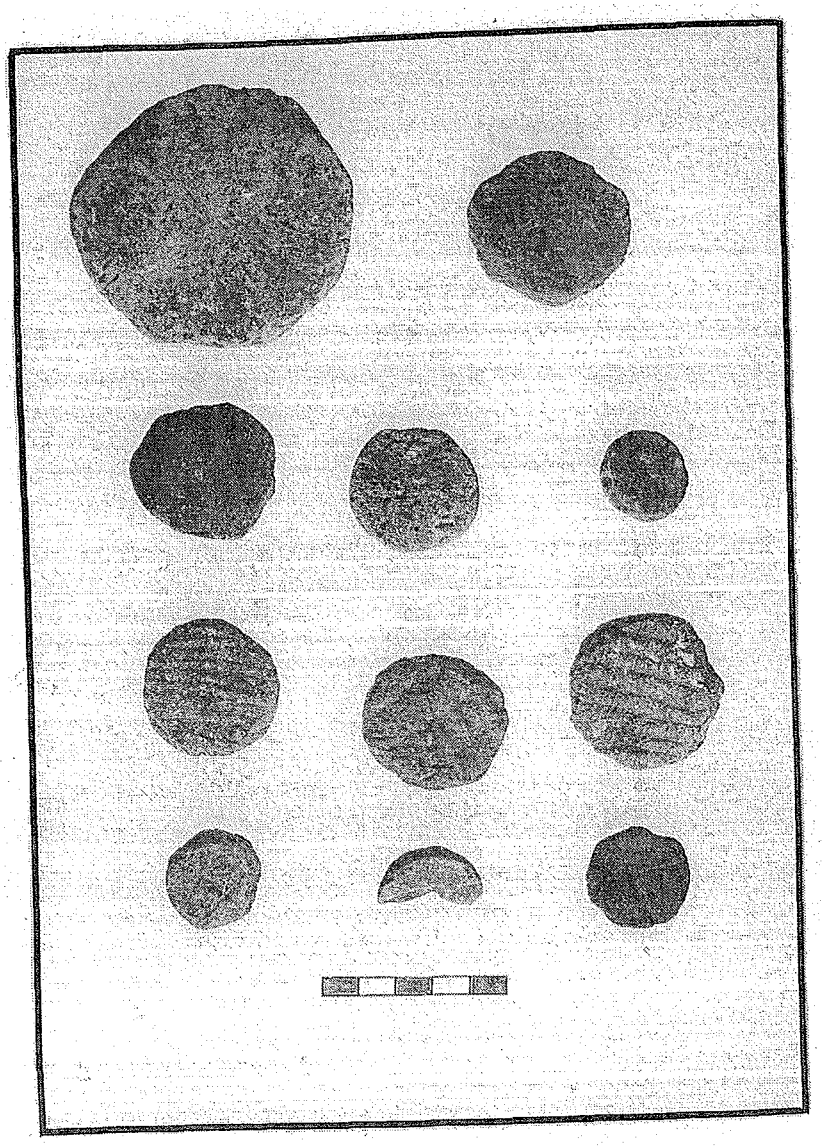


Figure 96. East Nashville Mounds: ceramic discs.

CERAMIC EFFIGIES & FIGURINES

East Nashville Mounds, n=62; French Lick site, n=7; Figures 97, 98, and 99

In the collections for the two sites are several fragmentary examples of human figurines, human effigy bottles, and other representations of assorted animal forms. These include rim riders, structural effigies, and modeled effigies protruding from immediately below the lip. Fragments of six modeled solid human figurines were recovered from East Nashville Mounds.

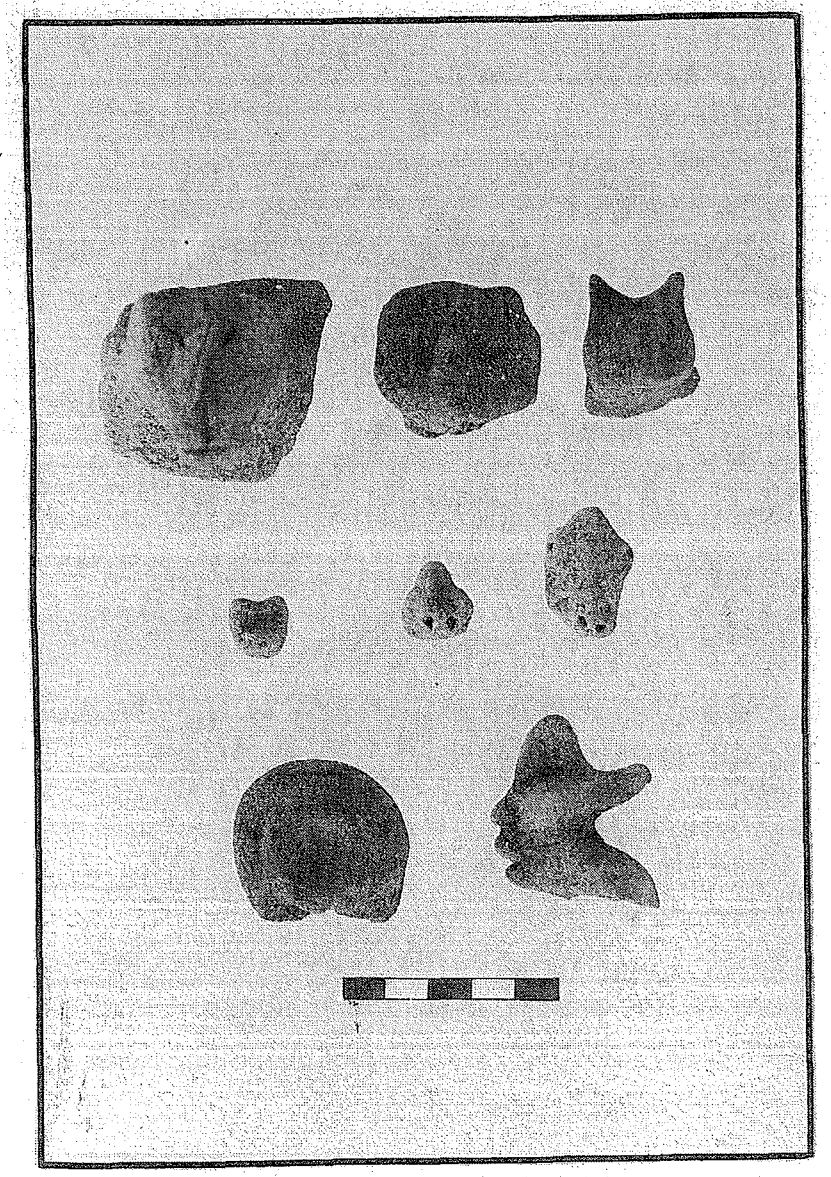


Figure 97, East Nashvile Mounds: shell-tempered adorno fragments.

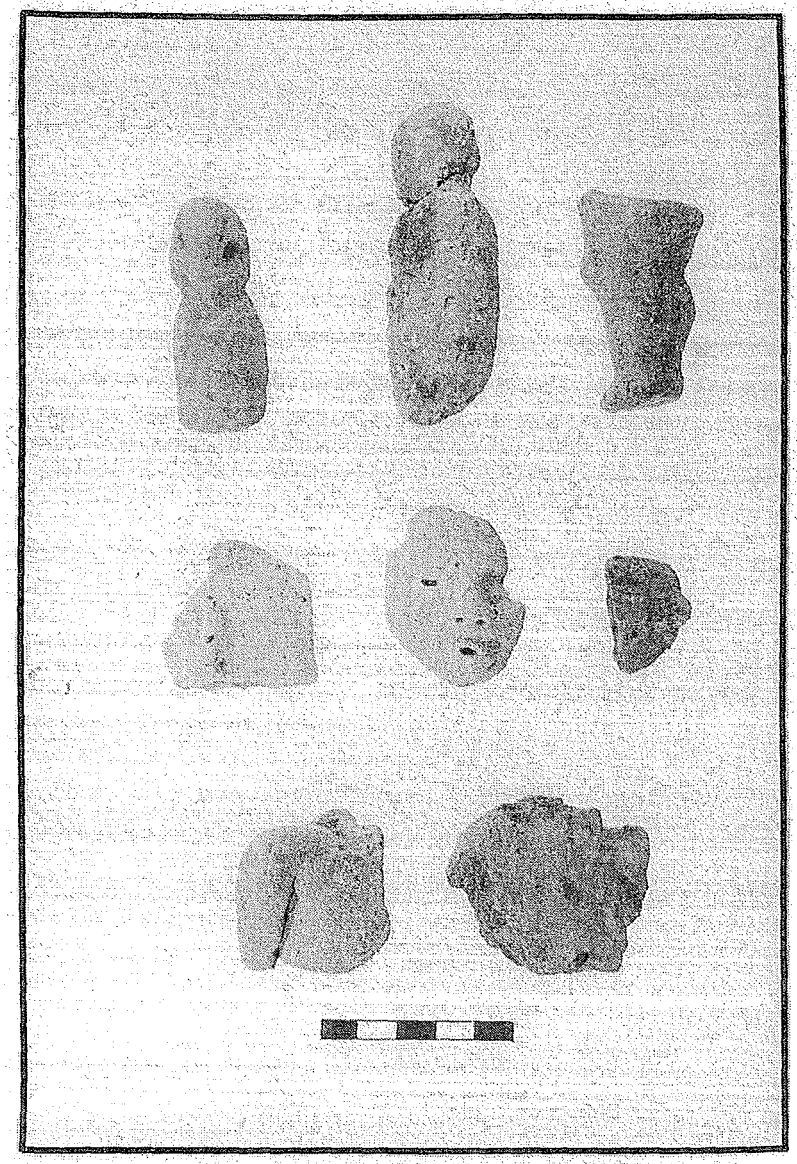


Figure 98. East Nashville Mounds: shell-tempered human effigy and figurine fragments.

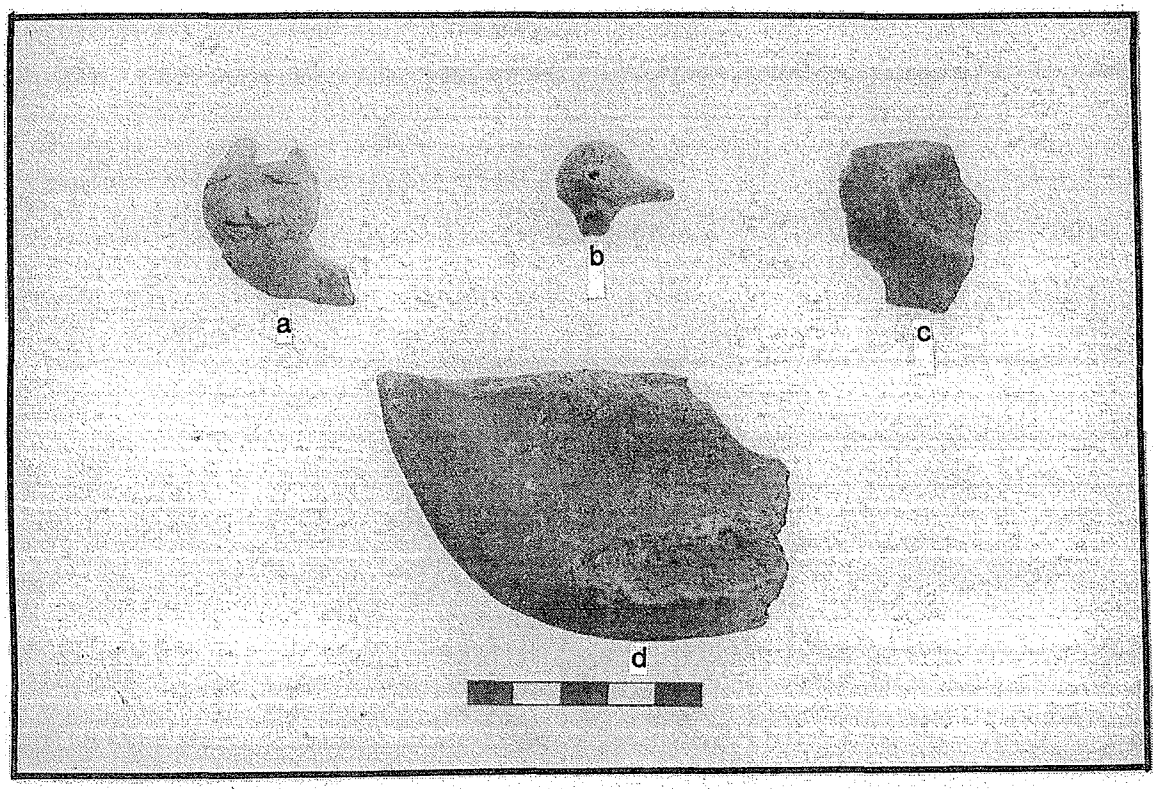


Figure 99. French Lick: a-b, adorno fragments; c, modeled effigy fragment; d, pottery trowel fragment.

Ceramic Trowels

East Nashville Mounds, n=1; French Lick site, n=2; see Figure 99

Fragments of each of Thruston's (1973[1890]) pottery and plastering trowels were recovered from the French Lick site. The former is of the perpendicular-handled mushroom shape; the other is of the larger D-handle variety. The single fragmentary example from East Nashville Mounds is of the mushroom-shaped variety.

INTERPRETATION OF MISSISSIPPIAN COMPONENTS

Unlike the situation encountered in searching for comparative information for the Woodland ceramics, there is a fairly well-developed scheme for the local Mississippian. As pointed out above, this is largely the result of Smith's (1993) recent synthesis of the available data, both published and unpublished. Although a great deal of digging has been carried out in the general area, most of the early work focused on recovery of mortuary material. Most recently, with the enactment of Tennessee burial protection statutes, the focus has again turned largely to mortuary contexts. In reality, there are few large collections of material from controlled excavations with which to directly compare the present collections. There are a few notable exceptions to this, though those sites also produced rather extensive mortuary collections. There are also a number of smaller collections resulting from limited investigations at large sites or more ambitious efforts at small sites.

As noted by other researchers, the "Middle Cumberland Culture" has, until recently, been known as a mortuary complex (Reed 1984; Smith 1993; Trubitt 1988). This situation has slowly changed over the last decade as a number of sites have been investigated, at varying levels, through CRM projects and directed research.

Also noted by other researchers in the Middle Cumberland area (cf. Reed 1984; Smith 1993; Trubitt 1988), the variety and relative frequencies of recognized diagnostic material from local Mississippian sites is quite limited. Smith (1993) points out that more than 95 percent of any local assemblage is generally likely to be plain. This leaves less than 5 percent of the material for the Middle Cumberland area sites available for sorting beyond the level of coarse or fine shell tempered. These two sites are no exception.

Material tempered with crushed mussel shell makes up the bulk of the ceramic collections for each of these sites. The shell-tempered ceramics recovered during these investigations number in excess of 56,000 items (Table 11). These collections share a number of common features, but also provide some interesting, though not unexpected, divergences. Within the shell-tempered portions of the collections, Mississippi Plain constitutes an overwhelming majority. If one ignores the eroded material, as we will, Kimmswick Fabric Impressed is the second most abundant type identified within the collections.

Table 11. Ceramic Artifacts by Gross Analytical Category.

Category	East Nashville Mounds		French Lick	
	Count	%	Count	%
Mississippi Plain	24,688	47.900	2,985	57.00
Bell Plain	98	0.200	4	0.08
eroded shell-tempered	24,048	46.600	1,588	30.60
Kimmswick Fabric Impressed	816	1.600	286	5.50
Kimmswick Plain	15	0.030	0	—
eroded pan	1,528	3.000	344	6.60
fabric-impressed, fine shell	1	0.002	0	—
all decorated	165	0.300	25	0.50
figurines	5	0.010	0	—
effigy fragments, coarse shell	55	0.100	7	0.10
effigy fragments, fine shell	10	0.020	0	—
earplugs	24	0.050	0	—
discs	38	0.070	0	—
tablet	1	0.002	0	—
Total	**51,546**		**5,239**	

If we remove the eroded sherds, discs, and nonvessel material from the equation, we are left with 25,848 identified sherds from East Nashville Mounds and 3,303 identified sherds for the French Lick site (Table 12). This breakdown does allow some comparisons between the collections at a rather gross level. Both samples are overwhelmingly dominated by Mississippi Plain at 95 percent and 90.4 percent, respectively. If we eliminate the pan sherds, which could be considered reflective of techno-functional differences between the sites, the resulting relative frequencies for Mississippi Plain are 98.6 percent from East Nashville Mounds and 98.9 percent from French Lick. However, other than an obvious over-representation of Kimmswick at the French Lick site, the significance of other variations within the collection were not so apparent. It therefore seemed appropriate to test this data. Once again the data were collapsed and a 4x2 chi-square was performed The counts and categories used in this manipulation are provided in Table 13.

Table 12. Ceramic Artifacts by Selected Gross Analytical Category.

Category	East Nashville Mounds		French Lick	
	Count	%	Count	%
Mississippi Plain	24,688	95.000	2,985	90.4
Bell Plain	98	0.400	4	0.1
Kimmswick Fabric Impressed	816	3.200	286	8.7
Kimmswick Plain	15	0.060	0	—
fabric-impressed, fine shell	1	0.004	0	—
all decorated	165	0.600	25	0.8
effigy fragments, coarse shell	55	0.200	7	0.2
effigy fragments, fine shell	10	0.040	0	—
Total	**25,848**		**3,303**	

Table 13. Ceramic Artifacts by Selected Gross Analytical Category for Chi-Square Computation.

Category	Count	
	East Nashville Mounds	French Lick
Mississippi Plain	24,688	2,985
Bell Plain	98	4
Kimmswick Fabric Impressed	816	286
all decorated and effigies	230	32
Total	**25,832**	**3,303**

The resulting chi-square value of 136.999 (G^2=114.211) suggested significance at the .05 level. However, the large frequencies involved made this a less than secure finding Most of this value was for the Kimmswick from the French Lick site. By removing the Kimmswick from the process, the results were not significant at the .05 level. A number of tests of strength of association, including PHI, Cramer V, contingency, etc., all indicated that the strength of association is very low.

Statistics aside, there are some interesting comparisons that can be made between these collections and among others for the area and the region. Once we subdivide the collections for intra- and intersite comparisons, the same caveat applies as noted for the previous section of this chapter. In general, the numbers for specific types, and especially varieties and subvarieties or sorting categories, become quite small. It is also reiterated that only small samples of each site, at this time unquantifiable, were investigated. At the French Lick site, this latter situation is exacerbated by the truncation of the Mississippian deposits within the tunnel pit areas excavated. If we are to make any intra- and intersite comparisons, meaningful or not, we must ignore the potential biases within these collections, though it is stressed that they are not forgotten.

Contrary to the alphabetical ordering of the preceding portion of this section, we will present, and dispense with, the plain-surfaced and fabric-impressed wares first. As shown in Table 12, the 24,688 Mississippi Plain sherds account for 95.0 percent of the East Nashville Mounds collection, and the 2,985 sherds make up 90.4 percent of the French Lick site collection. The slightly lower showing for Mississippi Plain at the latter site is a direct result of the higher incidence of Kimmswick Fabric Impressed within that collection. As previously mentioned, Smith (1993) has pointed out that plain wares are likely to account for 95 percent of local Thruston phase assemblages. The same, or nearly so, will apparently hold true for Dowd phase assemblages as well.

The 98 Bell Plain sherds from East Nashville Mounds account for 0.4 percent of that collection, and the 4 sherds from French Lick make up only 0.1 percent of that collection. While one could look at the relative frequencies for this type within the collections and use

this data to posit an increase through time of the importance of Bell, the small numbers, particularly for French Lick, would render this exercise dubious at best. Though it has long been held that Bell Plain increases in relative frequency within assemblages through time, this has not been demonstrated for the Nashville area (Smith 1993), and is now seen not to be the case in certain areas of the Central Mississippi Valley (Robert Mainfort, personal communication 1993). We will therefore simply present the numbers and point out that this type forms an insignificant portion of each collection. One hope that we entertained as analysis was begun was the possibility of sorting out obvious examples of nonlocally produced wares. As it turned out, there is so much variability in the collections that it took rather extreme examples to elicit even a classification of possibly nonlocal. Two sherds of Bell from East Nashville Mounds are thought to be from vessels of nonlocal origin.

At Averbuch, Reed (1984) notes that 1.62 percent of the collection of 19,210 sherds were tempered with fine shell, though the sorting criteria are not noted. At Gordontown (Trubitt 1988), Bell constituted 13 percent of the assemblage. Smith (1993) has suggested that, although ratios of Bell to Mississippi are used to define differences between phases, in the Middle Cumberland and other areas these ratios may be skewed due to differential deposition, cemetery versus village deposits, and post-depositional processes. Again this is a good place to note the prevalence of whole and well-preserved vessels recovered from mortuary contexts in the Middle Cumberland area and reiterate the cautions put forth by Smith (1993) and others that Mississippian culture in this area is best known as a mortuary complex. Childress (1992b) has treated the mortuary versus general midden context comparison in some detail for the Chucalissa site (40SY1) located in extreme southwest Tennessee.

Fifteen Kimmswick Plain sherds were identified within the East Nashville Mounds collection, whereas none were recorded for the French Lick site. This situation provides support for Smith's (1993) position that plain-surfaced pans are later than the fabric-impressed version in this area. At the same time, if this position is accepted, it adds support to the assertion that the French Lick site is the earlier of the two sites. At 0.06 percent of the collection, this type does not appear to have been important even in the Thruston phase, at least at East Nashville Mounds. Given the apparent importance of pans within the French Lick collection, it is suggested that the absence of Kimmswick Plain is more than a result of sample bias, and that it was in fact not being produced by the site occupants.

Smith (1993) notes that only rim sherds and large vessel portions can be sorted from Mississippi Plain, thus diluting the counts. It should be noted here that in many cases, the thickened rim area of Kimmswick Fabric Impressed material is often plain. Smith (1993) tentatively suggests that Kimmswick Plain slowly replaced Kimmswick Fabric Impressed. At Mound Bottom, fabric-impressed greatly outnumbered plain, while the opposite was true for Gordontown (Smith 1993). Reed (1984) reports only 72 sherds, or 0.26 percent of the collection, of this type from the Averbuch site. Smith (1993) suggests median percentages of 1 for fabric-impressed and 1.5 for plain for Thruston phase components. Clay (1963:252)

suggests that Kimmswick Plain has a shorter span as suggested by Tennessee-Cumberland dates.

At East Nashville Mounds, the 816 Kimmswick Fabric Impressed sherds accounted for 3.2 percent of the Mississippian sherds, while the 286 sherds from French Lick account for 8.7 percent of that collection. If we momentarily ignore our ban on the inclusion of eroded material, the frequencies rise to 4.6 percent and 12.1 percent, respectively, within the total collections for these sites. The substantial showing for this type at the French Lick site can be attributed to the presence of a salt spring at this location, though, as pointed out by Smith (1993), pans appear to form larger portions of local collections from relatively early sites.

As detailed above, Kimmswick Fabric Impressed was subdivided into four sorting categories with the hope of identifying subtle differences within and between the collections. It is apparent from the breakdown by sorting category for this type by site that our sorting variety A, which most closely corresponds to the established *var. Kimmswick*, is the most popular at both sites (Table 14). Additionally, these figures show slightly greater diversity in the East Nashville Mounds sample, though it is stressed that this could be a result of collection size—816 Kimmswick Fabric Impressed sherds from East Nashville Mounds as compared to only 286 examples from the French Lick site. Chi-square values of 9.55 for the distribution of sorting types A and B and 13.92 for A. B. and C for these two sites are significant at the .05 level.

Table 14. Counts and Relative Frequencies Within Kimmswick Fabric Impressed.

Sorting Variety	Relative Frequency			
	East Nashville Mounds		French Lick	
	Count	%	Count	%
A	530	65.0	220	76.9
B	240	29.4	60	21.0
C	40	4.9	6	2.1
D	6	0.7	0	0.0
Total	**816**		**286**	

It is suggested, though by no means fully supported by the data at hand, that this difference is probably the result of the construction of smaller pans at East Nashville Mounds. Recall that categories B and C are relatively thin walled and presumably represent smaller vessels. This is likely a result of the functional difference between the two sites rather than a function of temporal setting, though the latter cannot be ruled out entirely (cf. Smith 1993).

Thruston (1973[1890]:Plate X, and pages 157–158) illustrates and describes a fragment of a Kimmswick Fabric Impressed pan, 31 inches in diameter and 12 inches high with a capacity of 12 to 15 gallons, which appears to correspond to our sorting category A. Thruston not

only provides a brief description of the use of the spring, but also gives his impressions and opinions of this type.

> The large vessel was found within a few yards of the "Sulphur Spring" or old "French Lick,[5]" at Nashville, in excavating for the foundation of the new spring house. This sulphur and salt spring was doubtless the central feature of a populous aboriginal settlement for centuries. Extensive burial grounds were found on both sides of the "Lick Branch," and many fine implements and specimens of earthenware have been obtained there. These large vessels, or "salt pans," were probably used in the boiling of saline water of the spring, to make salt [Thruston 1890:157–158].

In a footnote Thruston continues:

> The workmen, in excavating, had removed this large vessel a few yards from its bed in the bank, a short time before the author reached the spot, so that he was unable to ascertain exact details as to its position. Some bones and fragments of similar vessels were found with it.
>
> The early white settlers also manufactured salt there in considerable quantities. The vessels were rudely but strongly made, being sometimes an inch thick below the heavy rim. Pieces of coarsely pounded mussel shells, an inch long, are frequently mixed with the clay. As will be shown by the plate [Plate X] the large earthenware pots or boilers were built up or molded in sacks or bags of fine matting or cloth, or of some woven fabric, that has left a lasting impression on the surface of the clay.
>
> When the vessel was molded, it was probably left standing or dried in the sun until it was hard enough to permit the removal of the cloth before burning. From the fineness and regularity of the imprints, some of these fabrics must have been skillfully woven. The variations of the thread also show that patched or separate pieces of the cloth were used to hold the sides of the vessels during the formative process. The large kettles were not all used as "salt pans," as we find many sections and fragments of them in other aboriginal cemeteries near Nashville. The graves are frequently lined and covered with them, instead of slabs of stone. They may have been used as sugar boilers, or cooking kettles, or for other purposes in the domestic economy of the Stone Grave race [Thruston 1890:159].

He goes on to note the presence of similar vessels at other saline springs in southern Illinois and Missouri.

Kimmswick Fabric Impressed has been reported from virtually every Mississippian site recently investigated in the Nashville area (for example, Jolley 1983a; Reed 1984; Smith 1993; Trubitt 1988). It has also appeared at numerous sites in the upper Middle South outside the Nashville Basin (cf. Phillips 1970; Wesler 1991). The prevalence of this type/vessel form has led Smith (1993; Moore and Smith 1993) to reassert the conclusion put forth by Thruston that these vessels must have served other uses besides salt production. Wesler (1991) notes that, based on personal observation in Africa, pans are used as general purpose cooking vessels, boiling pans, and griddles, rather than as special purpose vessels. There is a decline in the occurrence of pans as well as jars at Wickliffe. Wesler (1991) suggests that this coinciding decrease in the two forms strengthens the case for general cooking use of pans. Smith (1993) also notes that pans never occur in graves, though they were sometimes used to line them.

Smith (1993) suggests that, based on the work of Kuttruff and Kuttruff (1986) and Drooker (1990) and contrary to Phillips's notion, the impressions probably represent whatever fabric was at hand that could be used and are not useful diagnostic criteria. Nevertheless, variations in the weaves and/or decorative patterns may eventually be found to have chronological significance.

Extrasite comparisons by sorting category are hampered by the lack of reported comparable data. As a result, we must perform this exercise at the type level. Smith (1993) notes that at Mound Bottom, an early Mississippian site, Kimmswick Fabric Impressed substantially outnumbers its plain counterpart in the small sample cited, while at Gordontown, a later site, the reverse is true, though not as dramatically in a smaller sample. While Smith (1993) is comparing minimum numbers of vessels, a data set that we are unable to duplicate, sherd counts from East Nashville Mounds and the French Lick site tend to support the notion that plain pans increase in importance through time; however, the small sample from East Nashville Mounds suggests that this type was never particularly important to the Thruston phase occupants of this location. As pointed out by Smith (1993), it is often difficult or impossible to sort Kimmswick from Mississippi Plain, and it is likely that the counts for pan sherds should actually be higher here, though it is of course impossible to quantify this.

Only 19 sherds of Kimmswick Fabric Impressed, 0.1 percent of the sample, are reported for Averbuch (Reed 1984). At Gordontown the relative frequency is only 0.54 percent of the collection (Trubitt 1988).

Reed (1987) notes that fabric-impressed wares are common on sites in the Little Tennessee River Valley and throughout that area. Similar material is reported as Langston Fabric Impressed (Heimlich 1952) for the Middle Tennessee River Valley. Brown (1980) and Phillips (1970) provide a good summary information relative to the distribution of what is generally interpreted as salt pan.

This seems an appropriate point at which to note that we are aware of Brown's hypothesis of the use of *briquetage* within a Late Mississippian salt production technology. A number of the fragments of *briquetage* illustrated by Brown (1980:Figure 17) appear quite similar to the handles of "pottery trowels" [cf. Thruston (1973[1890]:Figure 65)]. From the two sites under consideration here, excluding the potential use of the Kimmswick vessels, and the possibility that the miniature vessels served as *augets*, the only artifacts that resemble those described and depicted by Brown (1980) are a single example of a cylinder, here interpreted as a handle similar to those described for Tippets bean pots, and a spouted lip from a bowl or ladle.

Though the counts for Matthews Incised are quite small, and indeed in some cases minuscule once the varieties and subvarieties are segregated (Table 15), some interesting differences are observable. Again, it is stressed that the possibility of sample bias looms

large. For this reason we will not comment on the sample from the French Lick site other than to note that four of the *var. Beckwith* sherds were recovered from a single provenience. This variety should therefore not be considered as important a constituent of the sample as Tables 15 and 16 might seem to indicate. Though the East Nashville Mounds sample is larger and much more varied than that for the French Lick site, in each case Matthews Incised accounts for 0.3 percent of the sample. Within the East Nashville Mounds collection, *var. Matthews* is the most numerous, with our sorting subvariety C, the excised arch, the most numerous. Just over one-half of the *var. Manly* from this site could be assigned to one of the subvarieties established by Smith (1993). Subvariety B is the more numerous in these collections. *Var. Beckwith* occurs as a minority within this portion of the collection.

Table 15. Matthews Incised.

	East Nashville Mounds		French Lick	
	Count	%	Count	%
Matthews Incised, *var. Matthew*	9	11.4		
A	15	19.0		
B	8	10.1		
C	21	26.6	2	18.2
Matthews Incised, *var. Manly*	9	11.4		
A	1	1.3		
B	10	12.7	3	27.3
Matthews Incised, *var. Beckwith*	6	7.6	6	54.5
Total	**79**		**11**	

Table 16. Matthews Incised, Relative Frequencies at the Variety Level.

	East Nashville Mounds		French Lick
Matthews Incised, *var. Matthews*	17.0	(34.1)*	
A	28.3	(18.2)	
B	15.1	(47.7)	
C	39.6		100
Matthews Incised, *var. Manly*	45.0		
A	5.0	(9.1)	
B	50.0	(90.1)	100

* Relative frequency excluding sherds not identifiable to the subvariety level.

Smith (1993) points out that Matthews Incised, *vars. Matthews* and *Manly* are consistently present in Thruston phase contexts. For Averbuch, Reed (1984) reports 14 sherds and 1 subglobular jar of Incised Type I, which correspond to our Matthews Incised, *var. Beckwith.* She also lists a single subglobular jar and one vessel section as Incised Type II, which is described as having a single, unaccompanied incised line; though described by Reed (1984) as *var. Manly*, this would correspond to our *var. Matthews* A.

One lobed body jar and possibly two or four sherds from the Averbuch (Reed 1984) collection correspond to *var. Manly*, though assignment to a subcategory would be pushing the available information. Seven lobed body jars with three deeply incised arches have no counterpart in the Jefferson Street collections.

Jolley (1983b) reported *vars. Matthews* and *Manly* for the Brick Church Pike Mound site. Apparently no *var. Matthews* occurs in an Early Wickliffe context (Wesler 1991).

Smith (1993) has suggested that this type gained in popularity through time in the Middle Cumberland area. Morse and Morse (1990:158) suggest a "Matthews horizon" with *vars. Matthews and Manly* spanning the interval of A.D. 1200 to 1400 in the late middle Mississippian in the Central Mississippi Valley. Matthews was replaced by Barton Incised and Parkin Punctated ca. A.D. 1400. All the examples of this type from French Lick were recovered from Levels 1 and 2, which does lend some support for this position. Stratigraphic distribution for the type at East Nashville Mounds does not offer much information.

The remaining decorated sherds total only 131 for East Nashville Mounds and 16 for the French Lick site, with the majority of these being unidentified as to type (Table 17). While the list is long, it is not particularly impressive, and few surprises are evident. Types and surface treatments noted by Smith (1993) as rare for this area, such as Mound Place Incised, Old Town Red, and engraved wares, are indeed rare in these collections. A few sherds representing types that have not appeared in the literature for this area were recovered. For the most part, however, little beyond reporting this fact can be added to the record.

Vertical applique strips on the rim are not uncommon for the Central Mississippi Valley. These are variously treated as a type, Campbell Applique, or as a rim mode of Mississippi Plain. An essentially identical treatment, Alabama River Applique, is well known for eastern Mississippi, across Alabama, and into western Georgia. In all instances, this treatment is considered a hallmark of Late Mississippian and protohistoric assemblages. As noted above, this type/mode has not been previously reported for the Middle Cumberland area, and the single example from East Nashville Mounds is not of the normal countenance for this material. It differs from most reported examples in that the spacing between the vertical fillets is apparently wider than the norm. The location of recovery for this sherd of Zone 2, Level 2 does not support a very late date for this piece, but it is of course possible that the sherd has undergone downward migration within the site deposits through aboriginal disturbance, or was within a feature or posthole that was not discerned during these investigations.

As detailed above, complicated stamping is well represented in Middle Woodland components in the Middle South. This situation does not hold true for Mississippian contexts except at the eastern and east-central margins of the region. A single coarse shell-tempered complicated-stamped sherd was recovered from the French Lick site. This sherd

Table 17. Other Decorated Ceramic Types.

Type	East Nashville Mounds	French Lick
Campbell Applique-like	1	
Complicated stamped		
coarse shell	3	1
grit	45	
McKee Island Brushed		2
McKee Island Cord Marked	7	8
Mound Place Incised		
var. Chickasawba	3	
var. Unspecified	1	
O'Byam Engraved		
var. Stewart	1	
Old Town Red		
coarse shell	1	
Unidentified engraved		
fine shell	1	
Unidentified incised		
coarse shell	52	3
fine shell	1	
Unidentified punctated/incised		
coarse shell	2	
Unidentified punctated		
coarse shell	9	2
fine shell	1	
Unidentified excised		
coarse shell	2	
Unidentified surface roughened		
coarse shell	1	
Total	**131**	**16**

has a stacked diamond motif, but the diamond is not divided as is usually the case (see Figure 88). Forty-eight curvilinear complicated-stamped sherds recovered from East Nashville Mounds were assigned to the Mississippian component. Forty-five of these are grit-tempered, and most result form a single vessel. The remaining 3 sherds are tempered with coarse shell (see Figure 86). Again, an extremely small sample is at hand, 1 and essentially 7 examples respectively, but there is a rectilinear versus curvilinear dichotomy between these collections.

Dickens (1976) has described the Pisgah phase ceramics of East Tennessee and beyond. A tentative range of A.D. 1000 to 1450, subdivided at 1250 into early and late subphases, has been proposed. The grit-tempered complicated-stamped examples from East Nashville Mounds (fine grit/coarse sand) resembles Pisgah Complicated Stamped material illustrated by Dickens (1976), who proposed a late sub-phase placement for the illustrated sherds. Though usually tempered with coarse sand, this type is occasionally tempered with crushed shell (Dickens 1976). Shell-tempered and grit- or sand-tempered complicated-stamped, curvilinear, and rectilinear motifs are well known for Mississippian assemblages throughout East

Tennessee, and are more at home in northern Georgia and northeastern Alabama. This material occurs throughout the Mississippi period into the historic period. Shell-tempered complicated-stamped sherds, including stacked diamonds and curvilinear motifs, are reported for the Toqua site in East Tennessee (Polhemus 1987), though they are assigned to the type Overhill Complicated Stamped and given an eighteenth-century provenience. Grit-tempered complicated-stamped from the same site is assigned to the Qualla phase.

Both of these temporal assignments are probably a bit late for our site, as we do not suggest that this material originates with the historically documented Cherokee presence at French Lick. The idea of a connection to the Toqua site area is far from novel or outlandish, as Reed (1987) has suggested a direct connection between the areas in relation to a negative painted dog bottle recovered from that site. The owl effigy vessel illustrated in that same report is remarkably similar to one that was once on display at the Wickliffe site in western Kentucky. The only additional post-Middle Woodland complicated-stamped material from the area of the Middle Cumberland is reported by Childress and Buchner (1993) for the Wiley site (40PM90) in Putnam County. That material is sand-tempered, is given the attribution Napier-like, and is apparently associated with the late Late Woodland occupation of the site dating to the early ninth century A.D.

Reed (1987) reported the presence of three shell-tempered brushed sherds from the Toqua site in East Tennessee. She likens these to the type McKee Island Brushed. Though the chronological position of the sherds at Toqua is less than certain, Reed (1987) notes the presence of this type in other East Tennessee contexts dating after A.D. 1250. In the Guntersville Basin this type is assigned a late prehistoric to early historic provenience (Heimlich 1952).

Moore and Smith (1993) note a steady decrease over time for McKee Island Cord Marked. As a result, cord marking is suggested to be virtually absent at sites postdating A.D. 1150. Smith (1993) has suggested that cordmarked ceramics are absent from Thruston phase contexts. This conclusion is not supported by these investigations, unless the cordmarked material from East Nashville Mounds is a result of the Shawnee presence in the immediate area.

A small amount of cordmarked material is recorded for Early Wickliffe (up to 0.1 percent), with a bit more in Late Wickliffe contexts (up to 0.4 percent). None is reported for Middle Wickliffe (Wesler 1991). Reed (1987) reports the presence of McKee Island Cord Marked at Toqua and remarks that this is a marker type for Late Mississippian in East Tennessee, where its occurrence is common.

As previously stated, Smith (1993) notes that Mound Place Incised is extremely rare in the Nashville Basin, contrary to the notion put forth by Phillips et al. (1951). Smith does note that rim rider effigies without lines are common in this area and suggests that the presence of Mound Place Incised is a result of trade. As Smith (1993) points out, all

examples from the Middle Cumberland area correspond to *var. Chickasawba* as proposed by Phillips (1970), and that in this area the type may be limited to bowls with rim rider effigies.

No O'Byam Incised has previously been reported for the Nashville area. Clay (1963) defined as a distinct type what is now commonly referred to as O'Byam Incised, *var. Stewart* for collections from the Lower Tennessee-Cumberland area. A substantial portion of a deep bowl of *var. Stewart* is reported from the northern wall trench of a mound summit structure at 40LK1 in the Reelfoot Basin of extreme northwestern Tennessee. This structure has been dated to A.D. 1280 (calibrated) (Lawrence and Mainfort 1993). *Var. Stewart* is reported at the comparatively higher relative frequency of 0.36 percent of the shell-tempered ceramics from the Chambers site, believed to date between A.D. 1250 and 1350 (Pollack and Railey 1987).

Interior cross-hatched sherds have been recovered from Chucalissa, where they are, with some hesitation, referred to as Walls Engraved, *var. Hull* (C. Wharey, personal communication 1993). This material is apparently a variant of Walls Engraved, based on motif, and not O'Byam (C. Wharey, personal communication 1993). The two "engraved" sherds do not offer much with which to work, but do point out the apparent extra-areal connections that the inhabitants of these sites, at least East Nashville Mounds in this instance, must have enjoyed.

Smith (1993) has reported that red-slipped wares (Old Town, etc.) are absent from Thruston phase contexts. In the Lower Tennessee-Cumberland area to the north and in western Kentucky, Old Town Red is more common than in the Middle Cumberland area (cf. Kreisa 1991b; Pollack and Railey 1987; Wesler 1991). Indeed, Wesler (1991) uses this type as a major point of intersite and inter-areal comparison.

A notable exception to the probability of assignment of most of the unidentified incised sherds to Matthews Incised (see above) is a double-line meandering motif that occurs on a small bowl form (see Figure 88). This portion of a constricted orifice bowl was recovered from the French Lick site. A similar motif is reported for Averbuch (Reed 1984).

A variety of vessel forms occurs within these collections. These include jars, pans, assorted bowls, hooded bottles, full figure effigy bottles, and bottles, more or less in order of descending relative frequency. Because of the nature of the collections, it was difficult or impossible in most cases to assign vessel forms to the recovered sherds. In an attempt to avoid overcounting jars, only rim sherds were assigned to a vessel form. In most instances it was not possible to confidently assign even rims to a vessel form. Indeed, little can be said in detail concerning this portion of the analysis. We will again depart from what might seem a logical order of presentation and deal with the pans, bottles, and plate first, as these have the least diversity and/or fewest examples, and lend themselves to quick discussion.

A single plate was recovered from East Nashville Mounds. This sherd has an incised and punctated motif on the rim (see Figure 87). Smith (1993) notes that the plate form is rare in the Middle Cumberland area.

Smith has described pans as "outsized shallow round- or flat-bottomed vessels with distinctive thickened rims. Both exterior and interior fabric-impressed and plain-surfaced forms are known..." (1993:94). Within these collections, exterior thickened rims (usually plain bands) with rounded or, less frequently, flattened lips are the predominant forms within our Kimmswick Fabric Impressed, sorting category A. A few examples of sorting category A are direct to the lip, and the fabric impressions extend to the lip, but this is a more common trait for sorting categories B and C. Though the sample is extremely limited, it appears that flat-bottomed pans are at least the dominant vessel form within this class. Because of the limited occurrence and nature of the sherds, little can be said as to the form of Kimmswick Plain pans. As for the Fabric-impressed counterpart, even on our largest sherds, one of which is more than 50 cm across, any curvature is so slight as to render an attempt at ascertaining vessel size futile.

Bottle forms can be divided into three distinct categories based on physical characteristics. The low count for these vessel forms, and the lack of fragments identifiable beyond the general class level, reflect the limited mortary sample within these collections.

Three fragments of blank faced hooded bottles were recovered from East Nashville Mounds (Figure 100). As described by Smith (1993), this vessel form is characterized by the location of the orifice below the top of the vessel. The characteristic "features include modeled, occasionally pierced, ears on the sides of the vessel, and the features that have been variously described as topknot, hair bun, and helmets. The general suggestion is an intent to create a blank-faced human effigy in most cases, although this is somewhat speculative" (Smith 1993:120). The three examples from East Nashville Mounds are all coarse shell-tempered. As illustrated in Figure 100, these examples are rather typical of this class of vessel. As an early temporal assignment is attributed to hooded bottles, the absence of this class of vessel form at the French Lick site is probably attributable to sample bias.

Three sherds identifiable as fragments of full figure effigy bottles were recovered from East Nashville Mounds (see Figures 98 and 100). Sherds assigned to this class tend to be small, but their form is fairly obvious. In each case these were portions of apparently human forms. No evidence of negative painting was observed on any of these, though this is not unexpected, given the fragile nature of this treatment and the non-mortuary proveniences for these examples. It is likely that other small, unidentified effigy fragments result from this class of vessel. Sample bias is the probable explanation for the low count in one case and the absence of this form in the other.

Three sherds from East Nashville Mounds represent one rim and neck sherd and two body fragments of other bottle forms (Figure 101). Because of the low number for this class

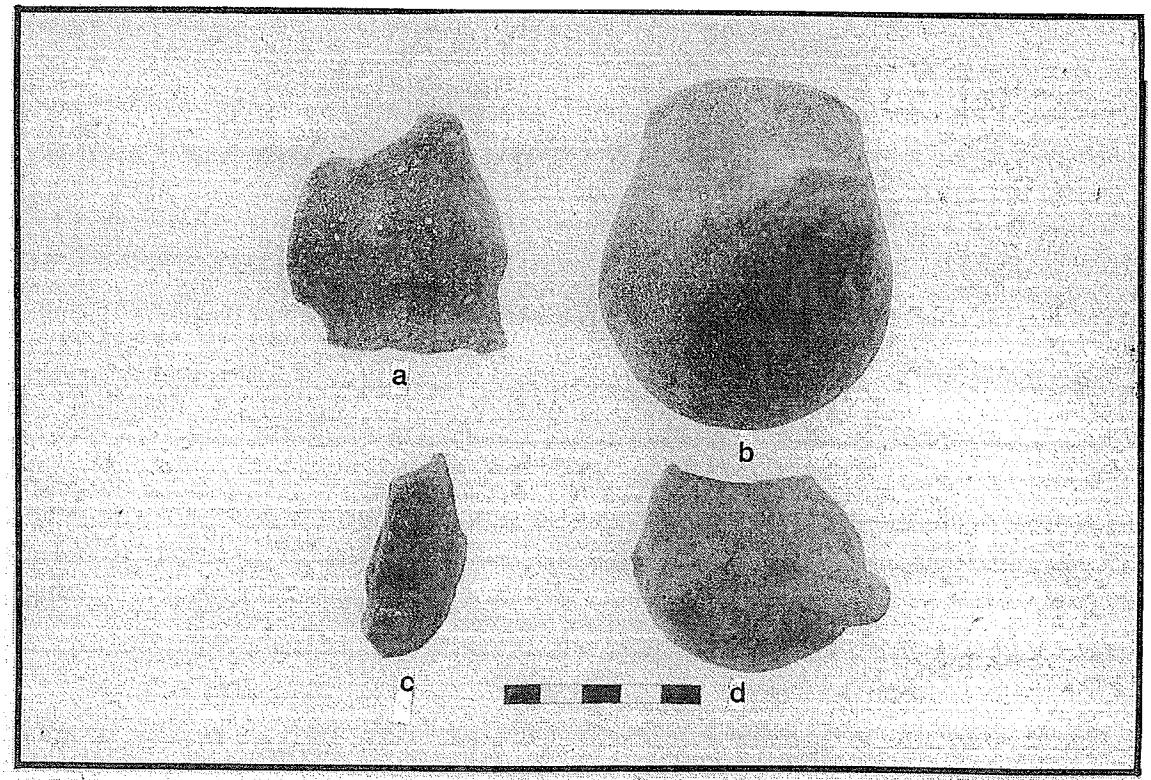


Figure 100. East Nashville Mounds: a, b, and d, blank faced hooded bottle fragments; c, human effigy bottle fragment.

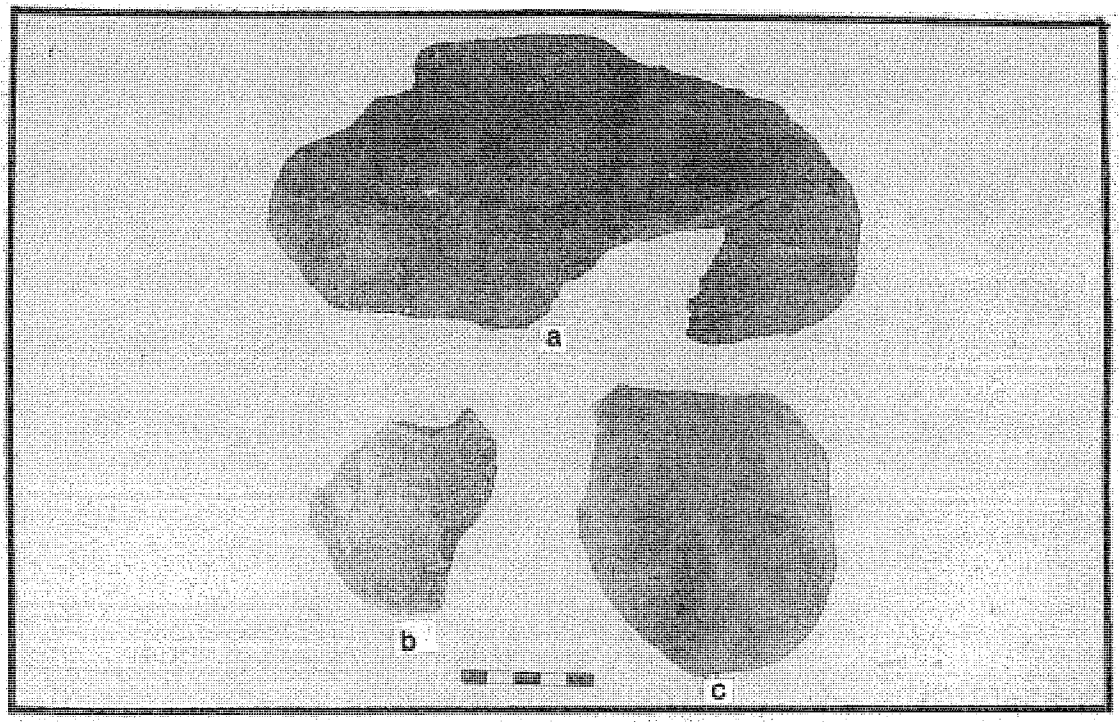


Figure 101. East Nashville Mounds: a, shell-tempered large jar fragment; b and c, shell-tempered globular bottle fragments.

of vessel form, we have diverged from the rims-only rule. For the neck and one of the body fragments, it is apparent that these do not result from carafe-necked bottles, as described by Smith (1993). To go beyond this would be stretching the available data. The remaining sherd is from a flat-based globular bodied vessel that, based on ware characteristics, is assumed to be a bottle. No portions of either the neck or the neck-body junction are present for this last example. Again, sample bias is the probable explanation for this low representation.

The number of sherds from these collection that could be identified as jars based on morphology alone is rather low, 136 from East Nashville Mounds and 35 from the French Lick site. It should be remembered that only 4 complete to nearly complete vessels were recovered, 2 of which were jars, and that assignment to a vessel form was generally limited to rim sherds in an effort to avoid over-representing jars.

The majority of the jars represented in the samples would fall into Smith's (1993) standard jar category. Within these collections, this form is generally represented by rather small sherds. Size varied widely within this class, from miniature forms to very large forms.

Rims varied from vertical to outslanting. Lips were primarily rounded or flattened, though 5 folded rims were recovered from East Nashville, and 1 from the French Lick site. Other forms recognized from sherds included one example each of a short-necked version and a lobed version from East Nashville (see Figure 89), as well as the McKee Island Brushed examples from the French Lick site discussed above (see Figure 94). Two examples recovered from large postholes at the French Lick site represent the most complete vessels of this class and are distinct forms (Figure 102). The vessel from Feature 55 is a small peaked rim jar. The rim is outslanting to a flat lip, and a series of three nodes has been applied below each of the four opposing peaks. The second vessel from Feature 56 is another small jar; the rim is out-slanting to a rounded everted lip. There is a distinctive break at the shoulder that is not observed on other specimens within the collections. Two opposing loop handles were originally applied to this vessel, but neither was present at the time of recovery. This latter vessel form is typical for early Mississippian contexts (V. J. Knight, personal communication 1993).

The number of bowls identifiable based on simple rim sherd morphology is rather low (54 from East Nashville Mounds and 7 from the French Lick site). A breakdown by morphology within this class is again hampered by the nature of the sample. Based more on intuition than on hard data, it appears that simple bowls are the predominant type, occasionally with rim rider adornos (Figure 103). Also represented in the sample are deep, vertical-walled examples, modeled effigy bowls, and two examples of constricted orifice bowls (Figure 103). Both examples of this last type were recovered from the French Lick site. Seven peaked or scalloped rim sherds were recovered from East Nashville Mounds; however, confident assignment to this vessel form is possible for only two of these. One sherd from East Nashville Mounds is spouted. Vessel form for this item cannot be discerned, but it is possible that it originated from an ogee bowl or even a conch shell effigy vessel.

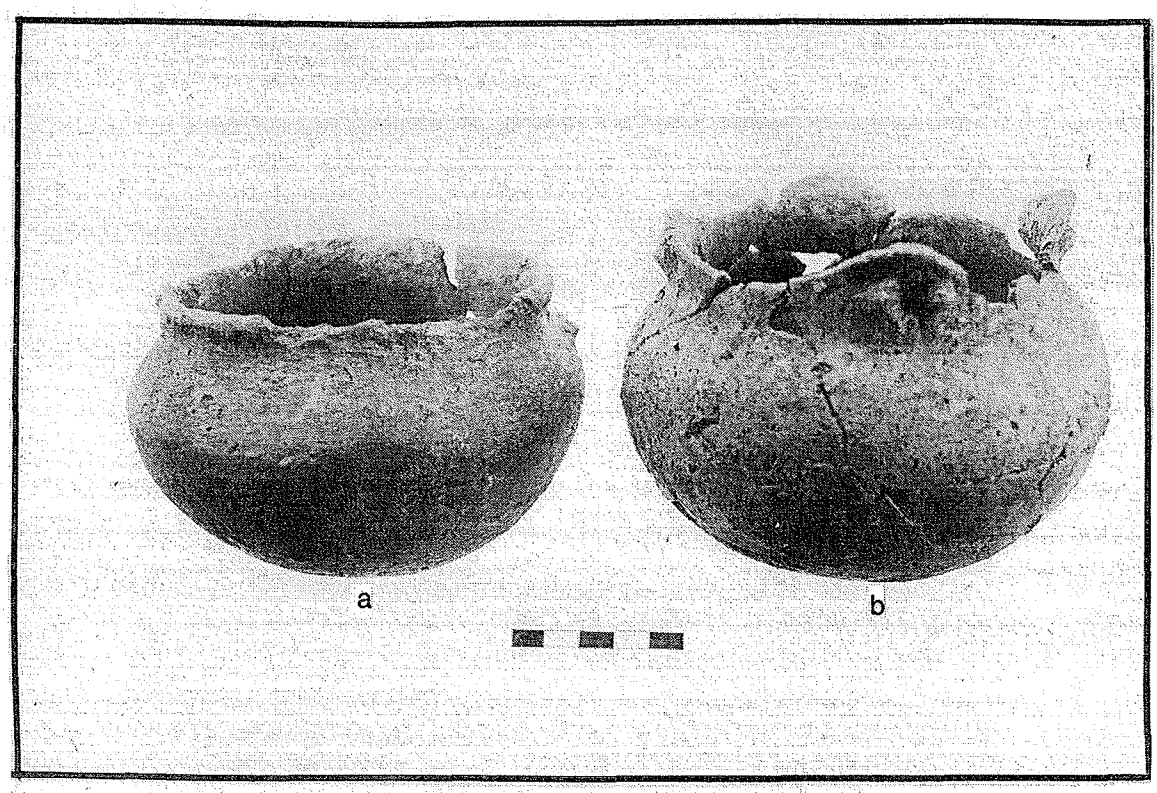


Figure 102. French Lick: a, jar with outslanting rim; b, peaked rim jar.

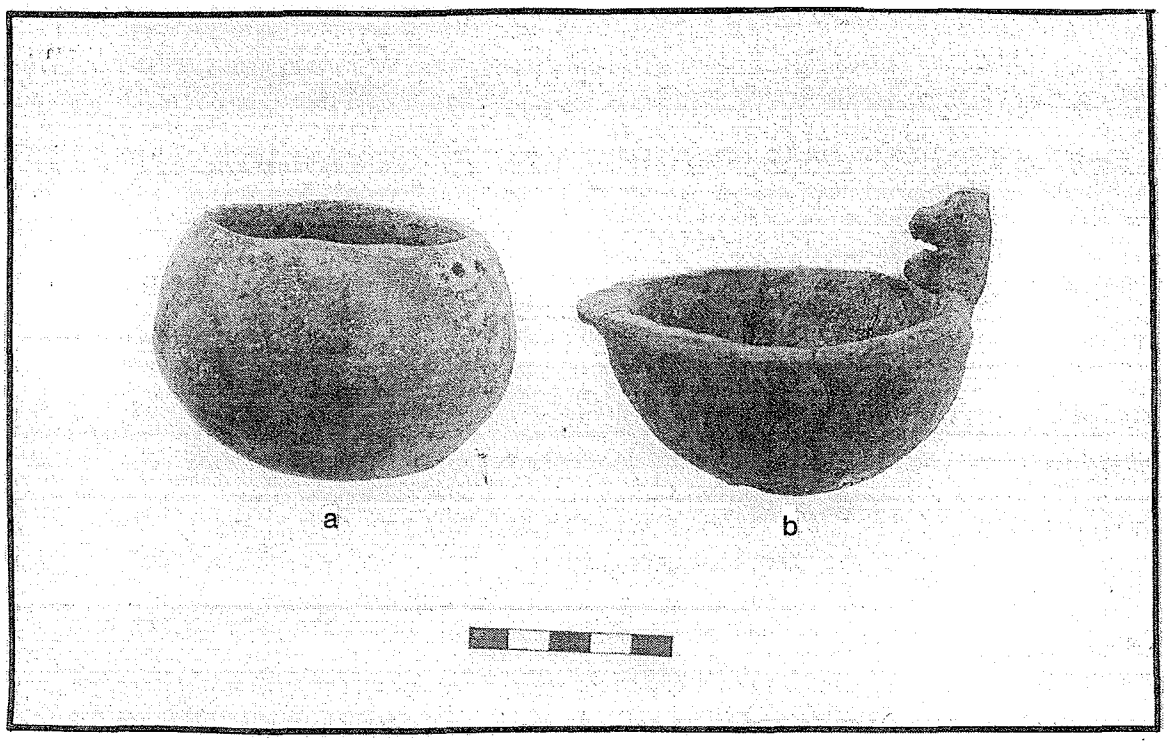


Figure 103. French Lick: a, constricted orifice bowl; b, rim rider adorno bowl.

Excluding modeled and appliqued effigies and certain rim modes, few examples of this class of vessel are embellished. For East Nashville Mounds, 4 sherds of Mound Place Incised are probably from simple bowl forms, the single sherd of O'Byam Incised, *var. Stewart* is on a deep bowl form, and 1 sherd has an unidentified incised treatment. Another possible bowl fragment is curvilinear complicated-stamped. For the French Lick site, the aforementioned constricted orifice bowl sherd with a parallel meandering motif and a single sherd of Mound Place Incised are the only decorated bowls.

The most common treatments applied to bowls within these collections involve rim and lip attributes. These include horizontal applique notched strips below the lip (Figure 104), a continuous row of nodes below and parallel to the lip (Figure 105), and notched or nicked lips (Figure 106). It is noted that notched lips are also reported for jars in this area (Smith 1993), but the physical characteristics of these sherds suggest that they all originated from bowls. A single example of a plain horizontal strip was recovered from East Nashville Mounds, as was an example of a truncated notched strip (Figure 104). This latter is almost certainly a portion of a modeled fish effigy bowl.

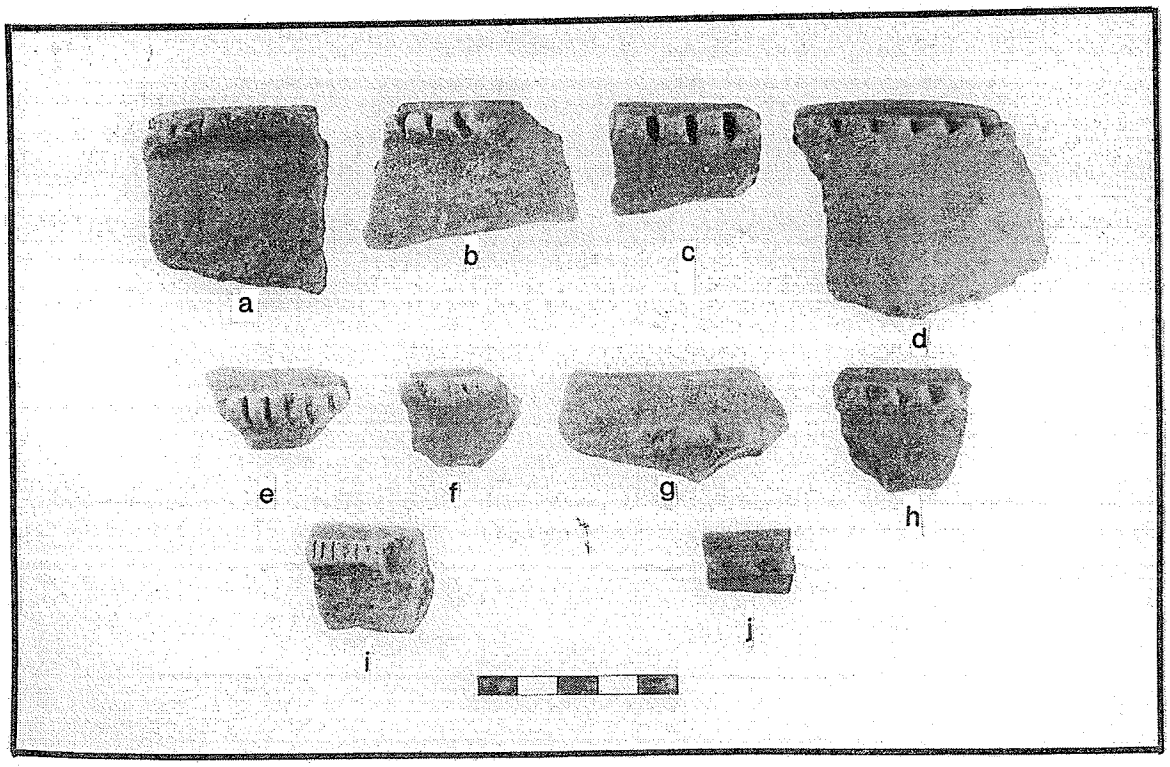


Figure 104. East Nashville Mounds: a-f and h-j, bowl fragments with horizontal appliqued notched strips; g, fish effigy bowl fragment.

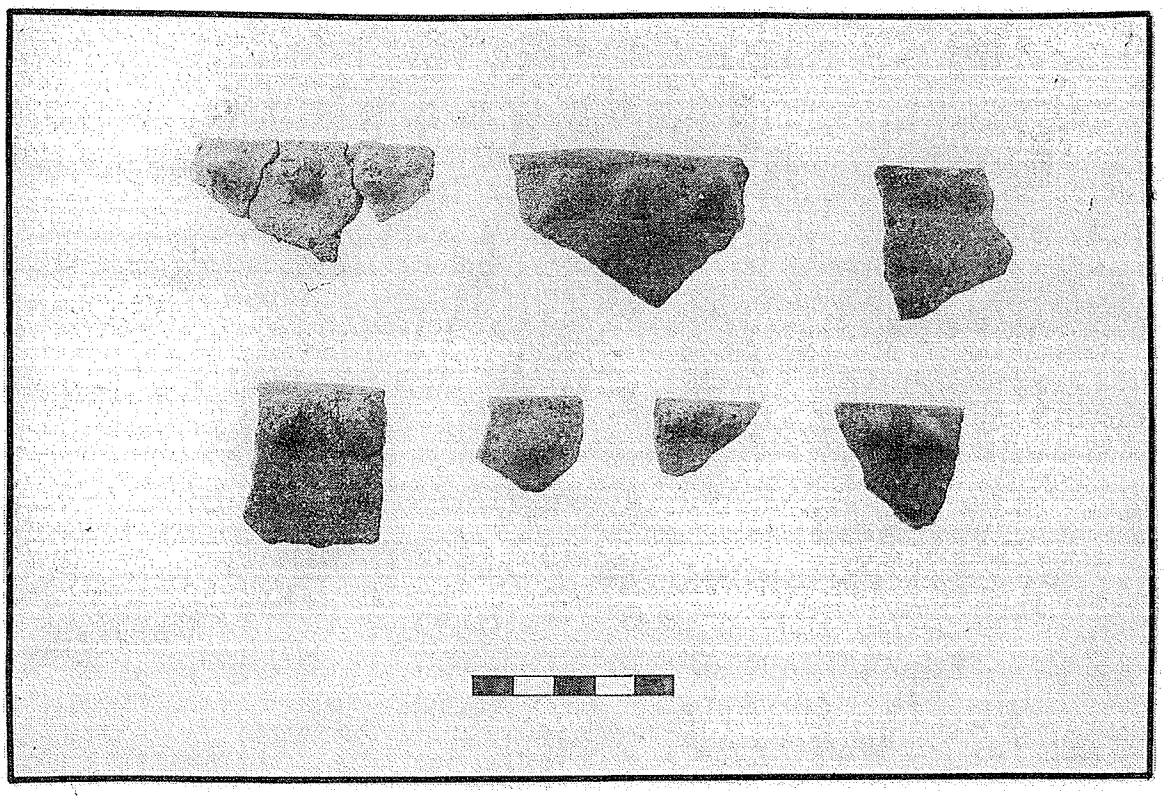


Figure 105. East Nashville Mounds: noded rims.

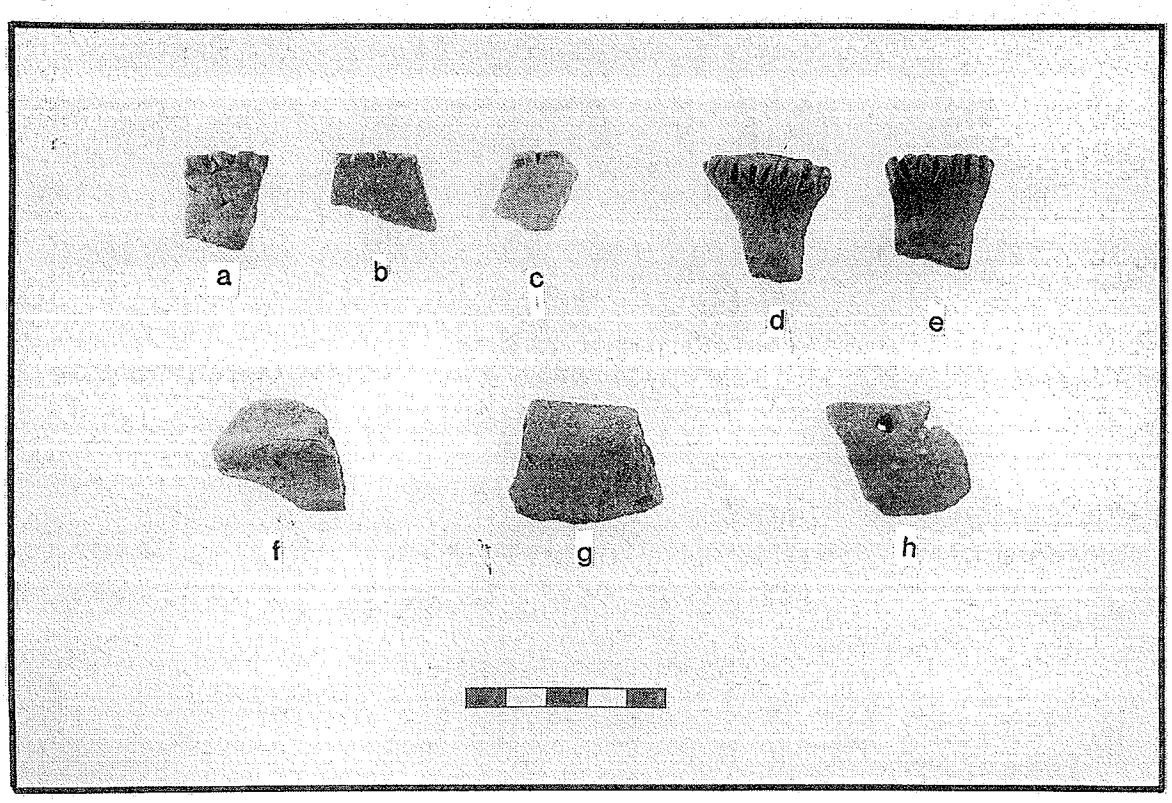


Figure 106. East Nashville Mounds: a-e, notched lip; f-g, plain horizontal strip; h, sherd with suspension hole.

Again, very low counts preclude many meaningful comparisons, either intra- or intersite (Table 18). At the risk of overusing the available date, we will observe that if one compares the relative frequencies of only the attributes that occur at both sites, the ratios become quite close. Vertical distribution at East Nashville Mounds also hints at a later placement for the notched lip treatment. Seventy-nine percent of the examples of this class were recovered from Zone 2, Level 1 or above; 71 percent of the horizontal notched strips came from Zone 2, Level 1 or below. Noded rims were more evenly distributed; 69 percent occurred in Zone 2, Level 1 or below.

Smith (1993) suggests that the horizontal notched strip is the most common of these treatments and is a consistent marker of the Thruston phase, while the notched lip is rare in local assemblages. Although these treatments occur in minuscule numbers, it is obvious that notched lips are not rare, relatively speaking, in the East Nashville collection. Smith (1993) does not distinguish the noded treatment, the most common treatment in these collections, though he may have included it with the notched strip.

Table 18. Rim Attributes of Bowls, East Nashville Mounds and French Lick, Percentage by Site.

Attribute	Fine	Coarse	Fine	Coarse	ENM/FL
horizontal strip					
notched	2	22	2	1	33.3/42.9
plain		1			1.4/—
notched lip	1	19			27.8/—
noded		27		4	37.5/57.1
Total	**3**	**69**	**2**	**5**	

In comparing the ratio of occurrence for jars and bowls, we are again faced with relatively small samples (Table 19). However, if we add to these totals attributes that can be fairly confidently assigned to a specific vessel morphology, the numbers increase dramatically (Table 20). This includes adding to the count for jars all Matthews Incised sherds, lug, bifurcate lug, loop, and strap handles, etc., for which vessel morphology was not otherwise obvious. To bowls we add horizontal appliqued strips, notched lips, noded rims, rim rider adornos and lugs, etc. Though the counts increase dramatically, the ratios of jars to bowls within and between the collections do not. Admittedly, the relative frequency for jars at East Nashville Mounds increases by approximately 10 percent with the addition of other attributes, but the ratio of jars to bowls in both of these collections can be characterized as about 4:1.

Table 19. Jars and Bowls, Rim Sherd Morphology.

	Jars			Bowls		Jars/Bowls
	Shell Temper					
	Coarse	Fine	%	Coarse	%	%
East Nashville	136	5	9.3	49	90.7	71.6/28.4
French Lick	35	1	11.1	8	88.9	79.5/20.5

Table 20. Jars and Bowls.

	Jars			Bowls		Jars/Bowls
	Shell Temper					
	Coarse	Fine	%	Coarse	%	%
East Nashville	610	11	8.1	124	91.9	81.9/18.1
French Lick	82	3	13.6	19	86.4	78.8/21.2

Both sites share a number of handle forms which fall into the following five categories: loop (Figure 107), strap (Figure 108), simple lug, bifurcate lug (Figure 109), and rim rider lug (Figure 110). Twenty handle fragments from East Nashville Mounds could not be identified as to morphology and will not be included in the following discussion. Though we are again dealing with low counts in most cases, there are some interesting divergences between these two collections (Table 21). A single loop handle recovered from East Nashville Mounds accounts for only 0.4 percent of this class of material, while at the French Lick site loop handles account for 30 percent of the sample. The latter is not surprising and adds support to the notion of an early placement for that site. Strap handles are the most numerous type at the French Lick site, but are outnumbered by simple lug handles in the East Nashville Mounds collection. Strap handles from East Nashville Mounds tend to be much wider than those from the French Lick site. Bifurcate lugs and rim rider lugs account for small percentages of each sample, though the former are more frequent at East Nashville Mounds.

Strap handles vary from 2.5 cm to 10.5 cm long by 1.7 cm to 9.5 cm wide by 0.4 cm to 1.8 cm thick. Though few are available for a complete suite of measurements, loop handles vary from 1.7 cm to 4.5 cm long by 1.2 cm to 2.7 cm wide by 0.7 cm to 1.3 cm thick. Bifurcate lugs vary in length from 3.5 cm to 12.5 cm and extend 1.6 cm to 4.3 cm from the lip; simple lugs vary from 7.6 cm to 10 cm long and extend 2 cm to 4 cm from the lip. Most handles are unadorned. One example from East Nashville Mounds has a central groove and extends above the lip of the vessel, terminating in two squared nodes; one is a small owl (?) effigy strap, and one is notched/noded. One loop handle from the French Lick site extends above the orifice of the jar and terminates in a crest.

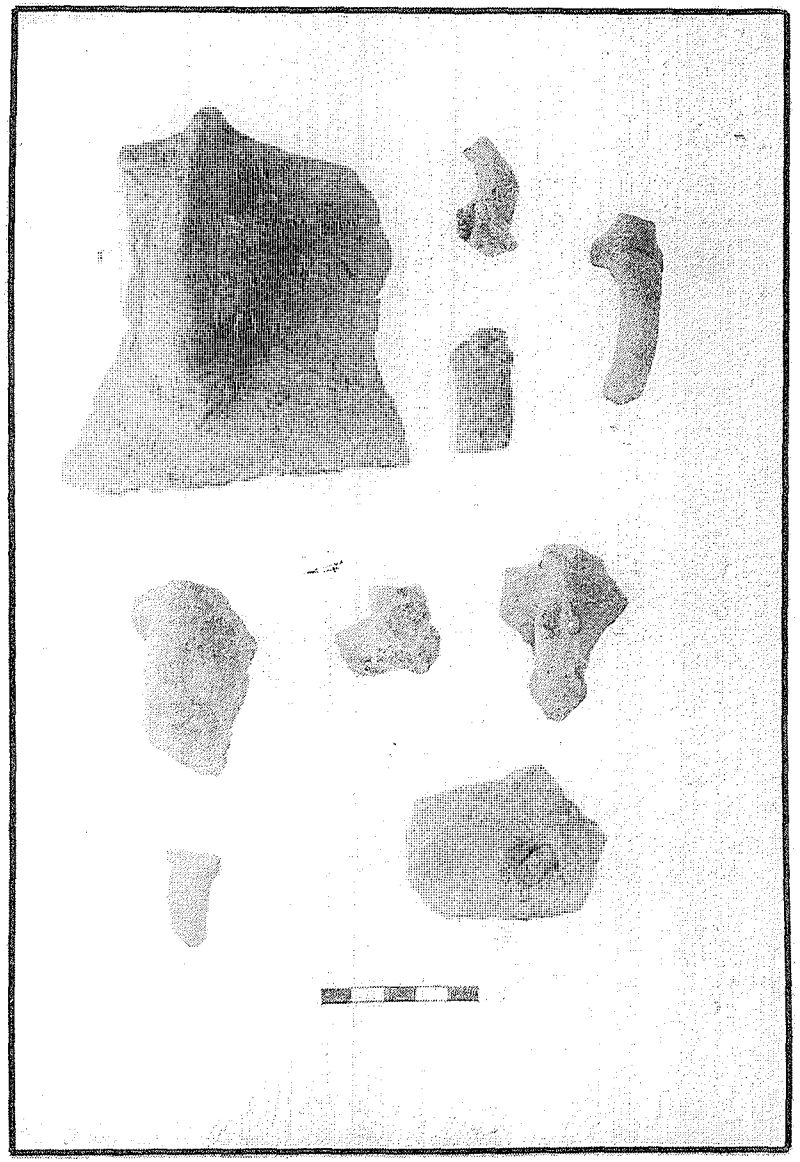


Figure 107. French Lick: loop handles.

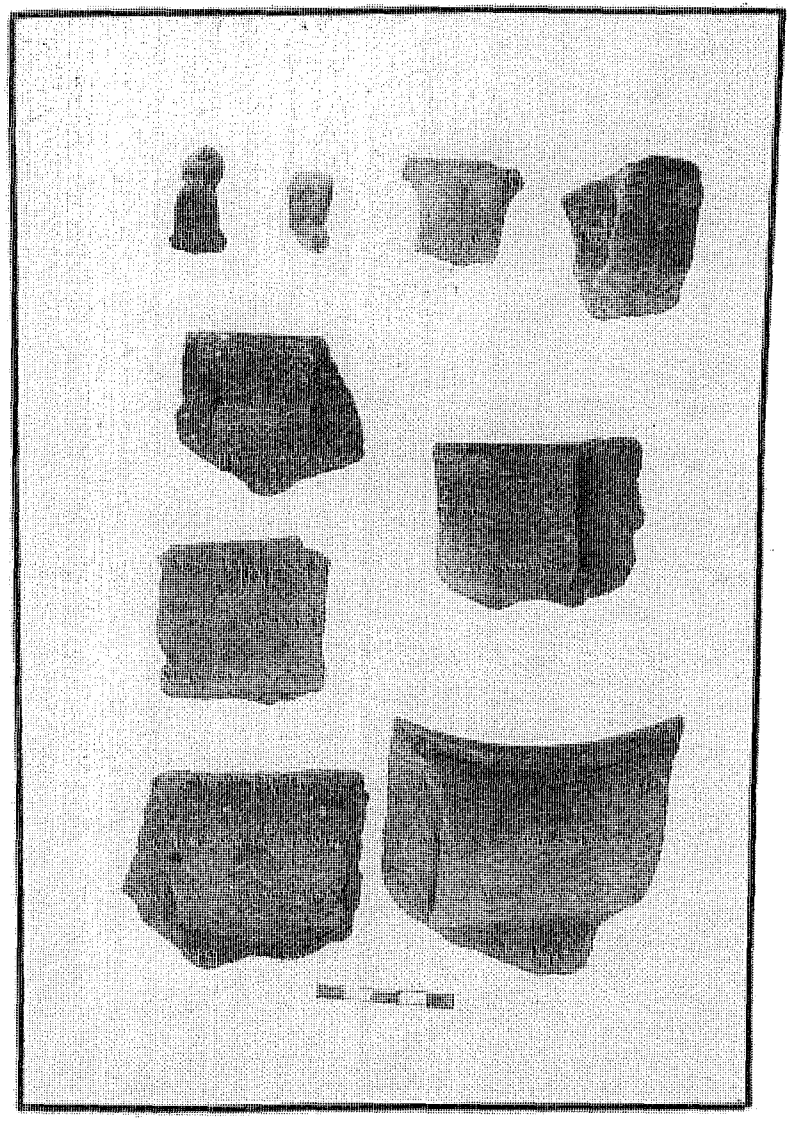


Figure 108. East Nashville Mounds: strap handles.

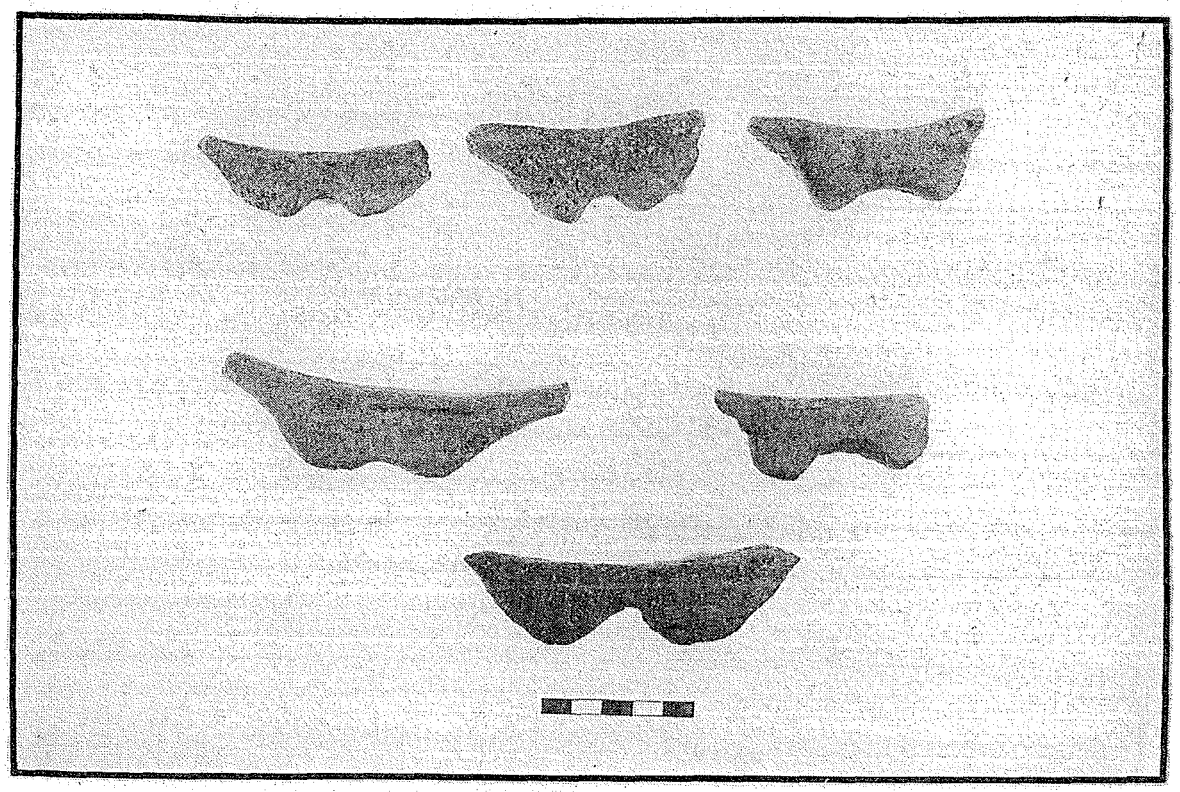


Figure 109. French Lick: bifurcate lug handles.

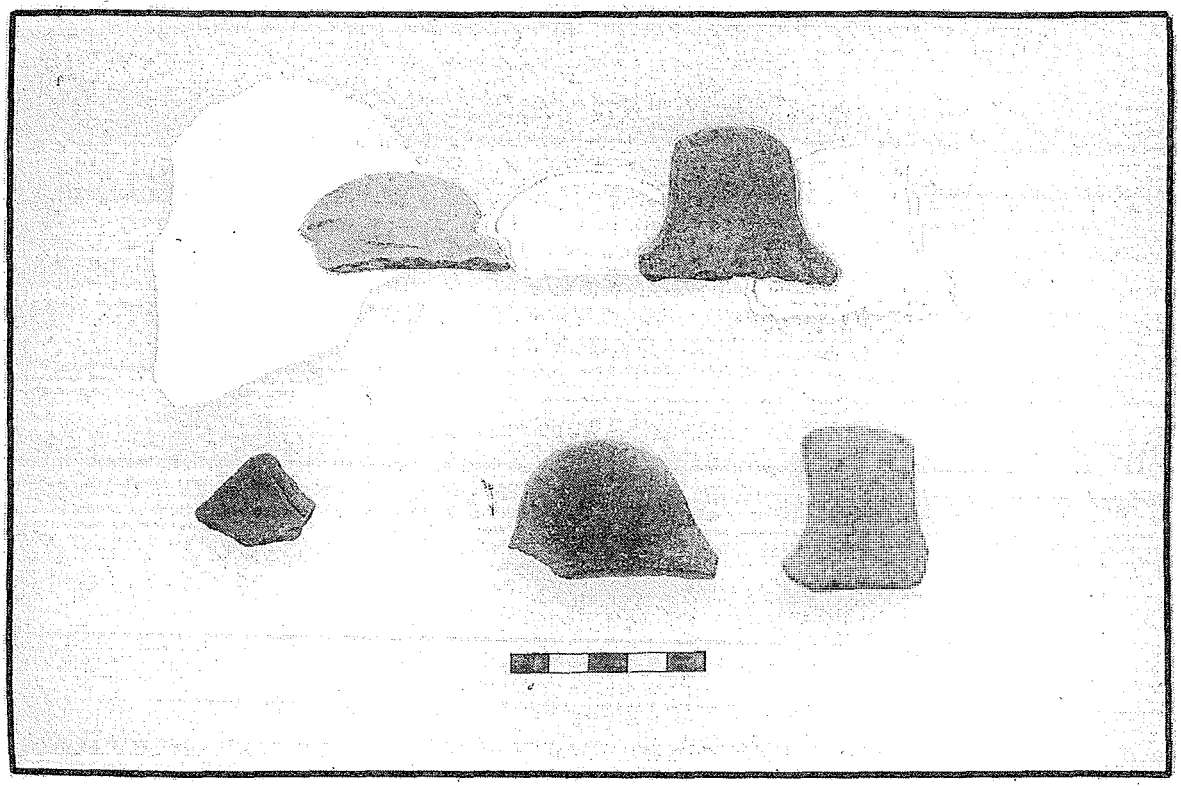


Figure 110. East Nashville Mounds: rim rider lug handles.

Table 21. Handles.

Handle Type	East Nashville Mounds		French Lick	
	Count	%	Count	%
Loop	1	0.4	9	30.0
Strap	60	22.2	12	40.0
Simple lug	175	64.8	7	23.3
Bifurcate lug	29	10.7	1	3.3
Rim rider lug	5	1.9	1	3.3
Total	**270**		**30**	

Only six rim rider or tail lugs were identified within these collections. On of these is on a (probable) bird adorno bowl from the French Lick site, Burial 14 (see Figure 103). The remaining examples were recovered unattached. At Chucalissa (40SY1), tail lugs are restricted to wood duck and Mound Place Incised, *var. Mound Place* human effigy bowls (C. Wharey, personal communication 1993). Lumb and McNutt (1988) classify tail lugs from Chucalissa as their type 5.

A constricted orifice bowl from the French Lick site, Burial 14 (see Figure 103) had opposing paired holes usually interpreted as suspension holes. One rim sherd from East Nashville Mounds is also from a bowl with paired holes (see Figure 106).

Dealing with a larger collection of whole vessels, Reed (1984) notes that straps and bifurcate lugs occur together on jars as opposed handle sets. Also present in the Averbuch collection were simple lugs. One jar with alternating strap handles and lugs was also recovered from Chucalissa (C. Wharey, personal communication 1993). Lumb and McNutt (1988) suggest that the vertical strips on jars are applique handles.

Included within the collections for the two sites are several fragmentary examples of human figurines, human effigy bottles, and other identifiable animal representations. These include rim rider, structural effigy, and modeled effigy forms protruding from immediately below the lip. Though most are unidentified, represented in the samples are frog, owl, fish (Figure 111), birds (wood ducks, possible pileated woodpecker and/or swan), opossum (probable), bear (probable), dog (possible), and polliwog (possible). Regarding the polliwog, Smith (1993) suggests that the local style often interpreted as head vases may in reality depict polliwogs, that magical transmutation from tadpole to frog; this was obviously an important constituent of the effigy regime. The East Nashville Mounds sample includes 64 effigies or fragments thereof, at least 9 of which are modeled effigy bowl fragments. Only 7 examples were recovered from the East Nashville Mounds site.

As with the rest of the collection from these two sites, coarse shell is the temper of choice for effigies and figurines. The shell is generally crushed more finely than that in jars and plain

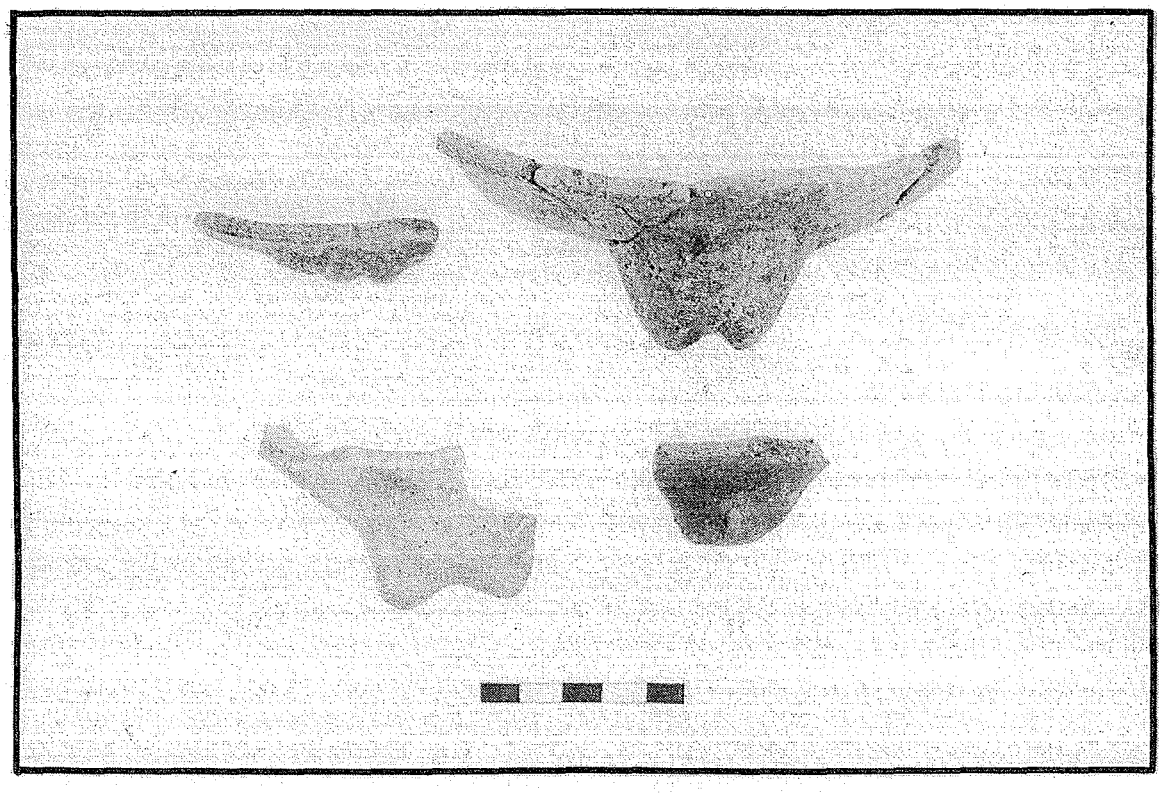


Figure 111. East Nashville Mounds: modeled fish effigy bowl fragments.

bowls; however, this material does not meet the sorting criteria defined for Bell Plain (Phillips 1970; Phillips et al. 1951). Figurines are often sand-tempered or temperless.

Six modeled solid human figurines were recovered from East Nashville Mounds. Two styles are present; one is the familiar, more or less naturalistic representation of the human form. The four examples of this style are fragmentary (see Figure 98). One is a well-modeled leg, one is a head (presumed to come from a figurine), and the other two are torso fragments. These last two retain portions of the torso and an arm, and both represent hunchbacks. Because of the portions recovered, it is not possible to determine the sex of either of these examples.

The two figurine fragments interpreted as hunchbacks differ in one major respect from other Southeastern hunchbacks. In most cases, the spine, clavicle, arm, and hand bones are visible (cf. Dye and Wharey 1989). These figures are generally on bottles or are solid modeled figures depicted in a kneeling or sitting position. From the pieces present, the position of the East Nashville Mounds hunchbacks is indeterminate. The only visible bones are the spines, and the effigies are solid figurines rather than jars.

Thruston, in describing figurines from the Nashville area, stated

> It will be observed that a number of these statuettes [his Plate III] are hunchbacks. This is also a characteristic of many of the clay figures representing the human form found in Missouri and Arkansas. The hump is so large, so invariably of the same form, and so common a feature, that there must have been some special design or object in its use, but we have not been able to discover it. The humps are generally beaded or ornamented, perhaps in imitation of vertebrae [1890:101–102].

Interpretations vary as to the meaning and significance of the hunchback form. Cosmological interpretation assigns this form to an expression of the Upper World (Dye and Wharey 1989), while a biocultural interpretation suggests that this form is potential evidence of precontact incidents of tuberculosis in the New World (Blakely and Matthews 1986).

In addition to those noted by Thruston (1973[1890]), figurines or statuettes have been reported for a number of sites in this area. Dowd (1974) reported several figurines and fragments thereof, and Jolley (1983b) reported a possible figurine fragment from the Brick Church Pike site (40DV39). That site is located a little less than 6 km north of our sites.

A second style of figurine is a lozenge-shaped representation on which the head and body are defined by a constriction interpreted as the neck. Facial and related features are indicated by incising and punctating. No limbs are suggested, and the figures are androgynous. While Smith (1991) notes that the majority of figurines from the Nashville area do not incorporate Southeastern Ceremonial Complex motifs, one lozenge-shaped figurine from these collections, in addition to depicting a trailing or ponytail hair style, includes weeping eye surrounds. To our knowledge, this form has not been previously reported for this area.

All the ceramic earplugs and discs, the single ceramic bead, and the single ceramic sphere were recovered from East Nashville Mounds (Table 22). The total absence of earplugs and discs from the French Lick site and the occurrence of 11 of the 12 earplugs recovered from general level contexts in Zone 2, Level 1 or higher within the site matrix might suggest that these classes of artifacts are relatively late additions to the local assemblage. As noted above, all the earplugs are of the double lobed or dumbbell form; none is longitudinally perforated.

Table 22. Earplugs and Discs, East Nashville Mounds.

Earplugs	
coarse shell	20
fine shell	1
untempered	3
Discs	
Kimmswick FI, *var.* B	4
coarse shell	36

Artifacts listed as clay beads, two each from Arnold (Ferguson 1972) and Ganier (Broster 1972), are very similar in gross morphology to our "ear plugs," but the examples from Arnold and Ganier appear to be perforated.

Of the 40 ceramic discs (see Figure 96) recovered from general site matrix from Zone 1, Level 1 through Zone 2, Level 4, 21 were recovered from Zone 2, Levels 1 and 2. Though no precise date range can be established for this portion of the site, a middle Thruston phase assignment is probably not out of order for this apparent peak in popularity. Jolley (1983b) reported the recovery of two ceramic discs from the Brick Church Pike Mound area.

Three pottery trowel, or anvil, fragments were recovered during these investigations. Thruston (1973[1890]:73, 163, Figures 13 and 66) illustrates what he terms plastering trowels and pottery trowels (1973[1890]:162, Figure 65). One example of each of these was recovered from the French Lick site, and both are fragmentary. The single fragmentary example from East Nashville Mounds corresponds to Thruston's pottery trowel.

THE JEFFERSON STREET BRIDGE PROJECT:

ARCHAEOLOGICAL INVESTIGATIONS AT THE EAST NASHVILLE MOUNDS SITE (40DV4) AND THE FRENCH LICK/SULPHUR DELL SITE (40DV5) IN NASHVILLE, DAVIDSON COUNTY, TENNESSEE

Volume II
Text

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with contributions by

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Volume II
Text

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James K. Polk Building, Suite 900
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IN COORDINATION WITH
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UNDER
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ABSTRACT

Archaeological investigations at East Nashville Mounds (40DV4) and the French Lick/Sulphur Dell Site (40DV5) were conducted by Panamerican Consultants, Inc. under contract with the Tennessee Department of Transportation. These investigations were carried out in conjunction with the proposed replacement of the Jefferson Street Bridge over the Cumberland River, Davidson County, Tennessee. Investigations included Phase II testing at East Nashville Mounds and data recovery excavations at both East Nashville Mounds and French Lick/Sulphur Dell. Archaeological investigations at East Nashville Mounds were limited to sampling that portion of the site contained within the existing and proposed rights-of-way for the Jefferson Street Bridge. Initial data recovery at French Lick/Sulphur Dell was restricted to specified bent locations. Subsequent data recovery was conducted in conjunction with the construction of a stormwater runoff system at French Lick/Sulphur Dell.

These Mississippian mound and village centers occupy opposite banks of the Cumberland River in what is now Nashville, Tennessee. East Nashville Mounds is apparently single-component Mississippian, while the French Lick Site also has Early through Late Archaic, Gulf Formational, and Middle Woodland components.

PREFACE

The report that follows presents the results of Phase II and Phase III investigations of portions of the East Nashville Mounds (40DV4) and French Lick/Sulphur Dell (a.k.a. Lick Branch and Sulfur Dell) sites. This project was carried out by Panamerican Consultants, Inc. under contract with the Tennessee Department of Transportation. Interestingly, Ralph W. E. Earl's excavations of the mound at the French Lick site (Haywood 1959[1823]) were begun 170 years, almost to the day, before we hit the field for the Phase II of the present project. Ours has been a project of some duration.

PROJECT SCHEDULE

May 1991:	40DV4 Phase II Request for Proposal (RFP)
	Submission of 40DV4 Phase II Proposal
June 1991:	40DV4 Phase II Notice to Proceed
	Right of Entry signed
July 1991:	Request for State Archaeological Permit
	Issuance of State Archaeological Permit
	Begin 40DV4 Phase II field investigations
August 1991:	Modification of field methods approved
	Complete 40DV4 Phase II investigations
	RFP and Scope of Work 40DV4 Phase III
September 1991:	Proposal 40DV4 Phase III
	Approval of Proposal and Notice to Proceed 40DV4 Phase III
October 1991:	Begin 40DV4 Phase III Field investigations
	Initial visit to 40DV5 and suspension of construction activities there
	Begin assessment of construction impacts at 40DV5
November 1991:	Complete assessment of construction impacts at 40DV5
	RFP and Scope of Work 40DV5 Phase III (Bents)
	40DV5 Data Recovery Proposal submitted
	Begin monitoring of construction 40DV5 Bents
	Begin 40DV5 (Bents) fieldwork
December 1991:	Fieldwork 40DV5 Bents continues
	40DV5 mitigation proposal approved
	Issuance of Court Order for Termination of Use as a Cemetery, 40DV4 and 40DV5
	Begin burial removal
January 1992:	Complete burial removal and Phase III field investigations 40DV4 and 40DV5

February 1992:	40DV5 Stormwater Phase II RFP
	40DV5 Stormwater Phase II Proposal
	40DV5 Stormwater Phase II Notice to Proceed
	40DV5 Stormwater Phase II fieldwork
	40DV5 Stormwater Phase III RFP
	40DV5 Stormwater Phase III Proposal
	40DV5 Stormwater Phase III Notice to Proceed
	Begin 40DV5 Stormwater Phase III fieldwork
June 1992:	Complete 40DV5 Stormwater Phase III fieldwork
November 1993:	Submission of Draft Report of investigations 40DV4 and 40DV5
February 1997:	Receipt of comments on Draft Report
April 1997:	Notice of Proceed with Final Report
May 1997:	Submission of Final Report and curation of artifacts and documentation
September 1999:	Receipt of final editorial comments for publication in TDOT series
January 2000:	Submission of response to final editorial comments

As can be gathered from the above list of project milestones, the archaeological investigations at East Nashville Mounds (40DV4) and French Lick (40DV5) sites included almost one year of fieldwork and an additional year and a half to complete laboratory analysis and draft report preparation. The individuals who conducted the excavations persevered through all extremes of climatic conditions that one could expect to endure during a project that spanned the four seasons, and they worked under the sometimes harrowing conditions of being surrounded by a rather furious construction effort of the engineering contractor. These investigations took place early in the implementation phase of the NAGPRA process and gained national exposure during a period of interested and involved individuals from near and far. In the end, on at least a local level, an amicable and workable solution was achieved, and work proceeded in an atmosphere of cooperation.

This report is to a great degree unchanged from the draft. During the intervening period from submission of the draft and final reports much new information has been gleaned from the archaeological record and new interpretations of the data have been developed. However, in most instances the report stands as a 1993 effort with some revision to the references for those that have come to press since we cited prepublication manuscripts and expanded discussion of particular aspects of the project (particularly the bathtub-shaped features and the summary chapter). The authors thank all of those involved in bringing this project to a hopefully successful conclusion that will contribute something of use to the community at large.

Richard Walling
Bath, New Hampshire
January 2000

ACKNOWLEDGMENTS

A project this size necessarily entails the efforts of a large number of people. We wish to express a sincere thanks to those whose efforts, sweat, and shivering made these investigations possible. It is of course feasible that we have forgotten to mention some of those involved, particularly those citizens of Nashville who visited the site and encouraged us with their interaction.

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Evan Peacock served as project director for the duration of the East Nashville Mounds (40DV4) investigations, initial investigations at the French Lick Site (40DV5), and burial removal, and as project paleomalacologist. Lawrence Alexander served as project geomorphologist. Dr. Mary Cassandra Hill served as project physical anthropologist and supervised the burial removal phase. Dr. David Lentz served as project paleobotanist. Dr. Emanuel Breitburg conducted the faunal analysis. Steve Ruple served as field supervisor for the Phase II investigations and compiled the historic background information for 40DV4. Dr. Scott D. Kirsh carried out the soil analysis during Phase II investigations at 40DV4. Tim Mistovich directed the second half of the Phase II investigations at 40DV4. Shari Moore compiled the historic background information for 40DV5. Camille Stanley served as laboratory supervisor, edited the manuscript, and coordinated the report production phase. Richard Walling served as principal investigator for the duration of the project, and directed the initial Phase II at 40DV4 and the stormwater drain investigations at 40DV5.

Many members of the Panamerican staff were indispensable in seeing this project to completion. Terry Lolley assisted in the final ceramics analysis; and he and Paul Jackson, with the assistance of Susan Nielsen and Joy Brown, produced the final ceramics and lithics tables. Paul Jackson also assisted in the final lithics analysis. Geoffrey Herbert and Susan Nielsen assisted with proofreading. Lorraine Stevens also helped with proofreading and spent countless hours photocopying the report. Steve Hack, in addition to his field duties, prepared the appendix diskettes, the photographs, and, with Jeff Motz and Tim Rice, the drafting. Jeff Motz also produced the cover illustration, a human effigy bottle fragment recovered from East Nashville Mounds. Amy Starks helped with the final analysis of the 40DV4 ceramics and with preparation of the ceramics chapter. Lorraine Stevens and

Cecile Mistovich kept the project going by handling the myriad of paperwork, payrolls, etc. Tim Mistovich, in addition to his field stint, provided administrative and immeasurable other support.

From the Tennessee Department of Transportation, Gerald Kline, assisted by Zada Law and Shari Moore, provided support, information, and insights without which this project could not have endured. Don Jones of the UT Transportation Center handled the contract end of the project. Project Engineer Joe Eply assisted in innumerable ways.

From the Tennessee Division of Archaeology, Nick Fielder, Mike Moore, John Broster, Suzanne Hoyal, the late Patricia Coates, and especially Kevin Smith were forthcoming with help, ideas, and information. Katherine Sanford initiated the editing of the report for TDOT in its preparation for publication.

Caroline Albright-Simpson, under contract with Parsons Engineering Science, Inc., completed the final editing of the report and coordinated its final production for TDOT's *Publications in Archaeology* series.

From the Middle Cumberland Archaeological Society, Kevin Smith, John Dowd, Roger Armes, and George Heinrich were founts of information about the history of the sites and local archaeological data and interpretation--not to mention plain old southern hospitality.

Margaret Hunter and George Chase, representatives of the Alliance for Native American Indian Rights, maintained a positive and helpful interest and involvement for the duration of the project.

A number of colleagues, in addition to those mentioned above, have provided help, information, and/or advice. These include Charles McNutt, Sr., Bob Mainfort, Drew Buchner, and Eric Albertson, who also assisted with statistical analysis, as well as Ken Carlton, Jeff Chapman, Mitch Childress, John Dowd, David Dye, Jim Knight, Carl Kuttruff, Jenna Kuttruff, Janet Rafferty, Harold E. "Trip" Smith, Guy Weaver, Camille Wharey, and Stephen Williams. Kevin Smith, Mike Moore, and Gerald Kline reviewed the draft report. The authors are grateful for their insights and suggestions--most of which we heeded.

As is always the case, we truly thank all those who have aided in the completion of this project and apologize to those we have inadvertently failed to note. In spite of all the help and suggestions, there are certain to be shortcomings and mistakes; for these the authors take full responsibility.

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CHAPTER 11
LITHIC ARTIFACTS

Lawrence Alexander

This chapter describes the background and laboratory investigation of the stone artifacts recovered from East Nashville Mounds and the French Lick site. The methods used in artifact analysis are described in detail. Information is included regarding lithic raw materials, stylistic chronology of projectile points, and tool production sequence. Observations are also made concerning the functions of artifacts at the sites.

First, a description of Middle Tennessee geology is presented. Such a description is critical to understanding the archaeological parameters of settlement patterns, lithic resource procurement, and the fluvial history of the Cumberland River. This discussion deals with the geological framework of Middle Tennessee and the local, regional, and exotic lithic resources in the Middle Cumberland River Basins of Tennessee.

Prior to the discussion of archaeological chert types, a brief review of yet another controversy in archaeology will be presented. The macroscopic visual identification of chert parent geological formations, used by most field archaeologists, has been championed by Blakeman (1977). He argues that thin section or trace element analysis is time consuming and cost prohibitive. Sampling problems also prohibit dealing with most archaeological collections, and specialized personnel are required for the analysis. Blakeman feels that solid geological and geographic work are the basis for a sound chert study. In contrast, Luedtke (1979) argues that macroscopic identification cannot be replicated, that it results in a distortion of the significance of some variables used for chert formation identification. Furthermore, Luedtke argues that macroscopic identification requires expertise in geology and chert identification. This study follows Blakeman's approach to chert identification.

Lithic raw materials available to the inhabitants of East Nashville Mounds and the French Lick site will be discussed in terms of the geological formations of origin, as well as potential source areas where the raw material could have been obtained. A tacit weakness of this study is that no fieldwork has been conducted by archaeologists in the Nashville area to define specific lithic resource areas. Consequently, the chert identification is based on geological studies and archaeological lithic studies in the Duck River Basin. In the Nashville Basin, studies by Brassler (1932) and Wilson (1991) were available; in the Highland Rim, geological studies by Marcher (1962a, 1962b), Marcher and Stearns (1962), and Milici (1979) were consulted. Geological quadrangle maps from the Tennessee Division of Geology from

Middle Tennessee were also consulted to locate geological outcrops near the site area. Pough (1955) was used for some of the mineral specimen identification.

Archaeological accounts of chert types from the Normandy Reservoir on the Upper Duck River include Faulkner and McCollough (1973), Penny (1974), Penny and McCollough (1976), and Prescott (1978). These studies defined and named the chert on the basis of morphology, color, fossil inclusions, and structure. The geological references were identified when they were located. Amick (1987) conducted extensive studies of chert in the Middle Duck River Basin. Amick's description and photography of the Ordovician chert types were critical to this study.

Analysis of raw material provides the basis for describing interregional exchange systems and cultural priorities of lithic choices through time. Lithic raw materials available to the inhabitants of East Nashville Mounds and the French Lick site are discussed in terms of the geological formations of origin, as well as potential source areas. Three arbitrarily defined concentric circles surrounding Nashville were used to define the chert resources: local, 0–20 km; regional, 20–75 km; and exotic, 75 km or more.

STRATIGRAPHY & GEOLOGICAL HISTORY

This discussion of the massive limestone deposition of the Paleozoic era and its subsequent erosion is based on Wilson (1962, 1991) and Luther (1979). During the Cambrian-Ordovician period, an estimated 600 to 435 million years ago (Figure 112), Middle Tennessee was covered by a shallow sea. Lying to the east and trending northeast-southwest was the Appalachian Anticline. The Appalachian mountains are the remnant core of this structural anticline.

The Stones River group of formations including the Ridley, Lebanon, and Carters limestones were deposited in these shallow seas. Late in the middle Ordovician period, the Nashville group consisting of the Bigby, Cannon, Catheys, and Leipers limestones were deposited. The underlying Cambrian and Precambrian basement bedrock are not exposed in the Nashville Basin of Middle Tennessee.

LOCAL RESOURCES

Lithic material found at sources located within a 20-km radius of the sites is defined as locally available material. This includes the Ordovician and Mississippian age cherts which are available from the Inner and Outer Nashville Basin, as well as alluvial gravels along the Cumberland River.

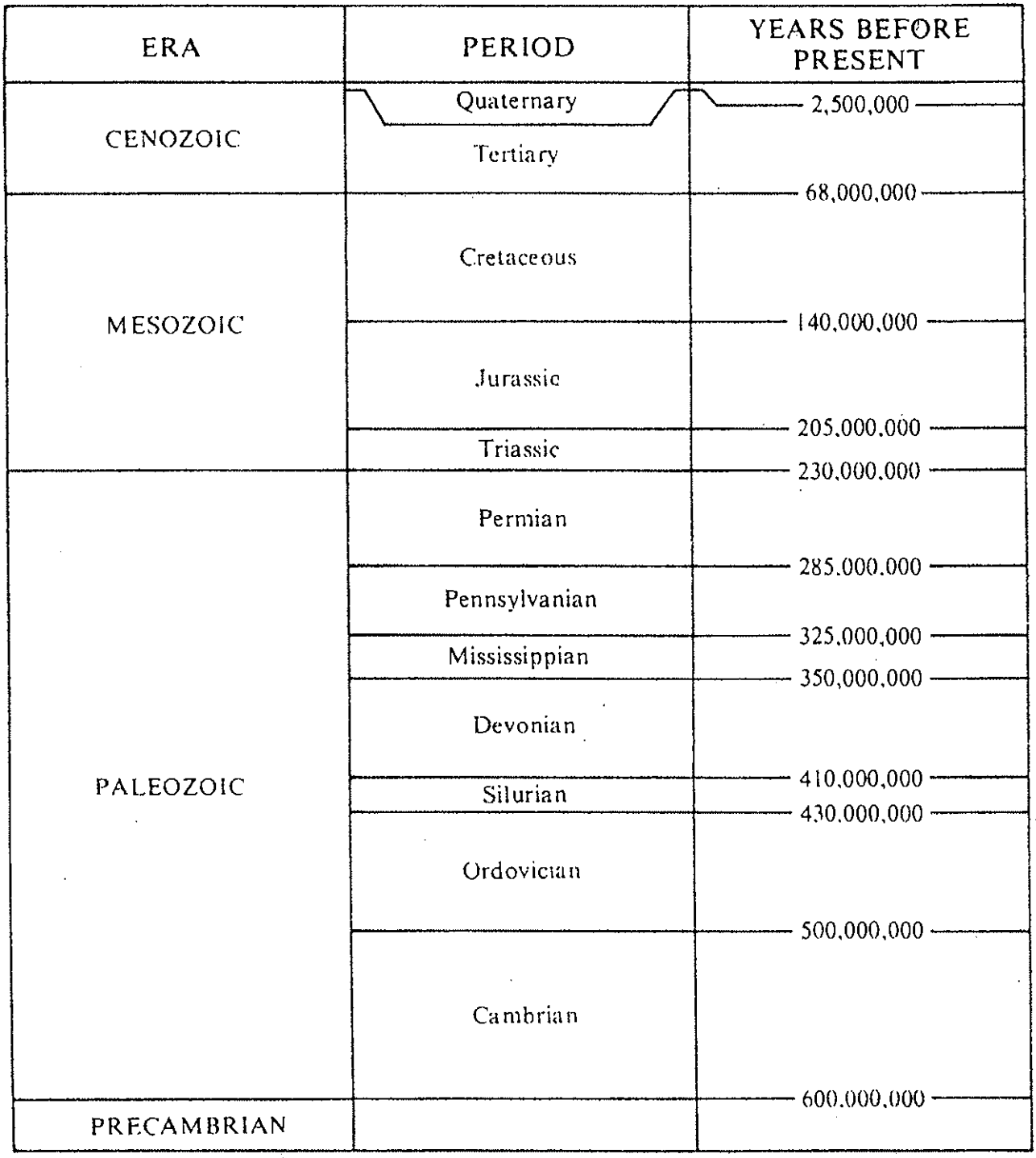

Figure 112. Geologic timetable.

Ordovician, Ridley (Ord). Ridley chert outcrops occur extensively south of Nashville in the Inner Basin, but they are not represented on the geological quadrangle maps (Wilson 1966a, 1966b) or on the geological map of West Tennessee (Hardeman et al. 1966a, 1966b). It might not be a local resource in the geological formation; however, it might occur in the Pleistocene gravel. Wilson (1949:36–37) describes two varieties of the Ridley chert: "1) ...stringers, nodules and blebs of dense black or dark brown chert that is found in fresh exposures... and 2) irregular masses of brown to light brown or white chert coinciding with zones of concentrated fossils." Amick (1987:Figures B.2-B.5) clearly illustrates the mottled variant of Ridley chert. The brown to white variants occur as rare specimens in the collections from both East Nashville Mounds and the French Lick site.

Ordovician, Carters (Oc). Carters formation chert also occurs extensively in the Nashville Basin to the south, and its presence is limited to the Browns Creek drainage in east Nashville (Wilson 1966a, 1966b). Wilson (1949:51) offers a description of Carters formation chert. At most exposures, the lower Carters limestone contains lenslike stringers and nodules of white to dark gray chert, the long dimensions of which are parallel to the bedding. The chert is often banded concentrically with different shades of gray, and it can occur along a bedding plane or within a stratum. Amick (1987: 35) notes that Carters, like Ridley, ranges in color from medium gray to white; vugs filled with quartz and calcite are common. Amick (1987:36) further compares Carters chert to Ridley chert, noting that both are grainy and blocky, and that both occur as residuum on slopes and in alluvial gravel. The grainy texture and irregular to linear mottling illustrated by Amick (1987:Figures B.7-B.10) and the hollow vugs (Hofman 1984a:Figure 7.2) leave little margin for error in identifying Carters chert.

Ordovician, Bigby-Cannon (Obc). The Bigby-Cannon limestone formation contains the familiar "gray banded chert" which was described at Normandy (Faulkner and McCollough 1973). The gray banded chert is described as

> even-textured and lustrous material with opaque diaphaneity. Its color is dark gray with wavy black bands. The gray banded chert derives from Ordovician deposits, apparently from a distinct stratum ten feet in thickness...at the interface of the Catheys and Bigby-Cannon limestone formations. The chert occurs in the form of flattened nodules with diameters of four inches to at least one foot... [Faulkner and McCollough 1973:53–54].

The Bigby-Cannon chert is well known in the southern edge of the Nashville Basin. Exposures of gray banded chert at the northern edge of the Nashville Basin have been noted by Penny and McCollough (1976:160) as occurring on the east fork of the Stones River and at Castalian Springs.

Wilson (1991:34) notes that chert is present in the Bigby-Cannon formation, although he fails to describe it. A distinct facies change occurs from east to west, and the gray banded chert might be part of an undefined north-south facies change.

Silurian, Brassfield (Sbr). The Silurian age Brassfield outcrops in a narrow band beneath the Fort Payne formation on the western boundary of the Nashville Basin. Its limited distribution and its proximity to the Fort Payne formation have largely confused and obscured this chert type. Wilson (1949) has described the cherty Brassfield formation as follows:

> The Brassfield everywhere contains lines, beds, or nodules of light gray to dark gray or black chert that averages between 1 and 3 inches in thickness. In the southern counties of the western valley the chert is not as common as to the north and east [(Wilson 1949:240].

Amick further defined the Brassfield from Columbia as follows:

> Brassfield is typically fine grained and highly tractable. It possesses a wide variety of inclusions and colors. There appear to be two distinctive characters to Brassfield chert: (1) a compact, smooth, cream colored cortex (about 5 mm thick) and (2) faint maroon tinting which often forms a thin subcortex band... [Amick 1987:40].

Brassfield is generally gray and tan, mottled with some occasional blue-gray patches. White flecks (approximately 1 mm long) are common throughout.

Tectonic forces operating during the Ordovician also caused the vertical uplift of the Nashville dome. The Nashville dome is the southern segment of what geologists call the Cincinnati arch. Tectonic stress has caused repeated shifting and uplifting of the Nashville dome on its axis. The dome created a series of barrier islands protecting the Appalachian uplands, and several environments were created which affected the marine life and depositional facies. The following Silurian and Devonian periods, 435 to 360 million years ago, also covered Middle Tennessee. Luther (1979) described the complex and regionally discontinuous limestone and chert formations. Due to the uplift of the Nashville dome, the Silurian-Devonian deposits were eroded and generally absent from Middle Tennessee. The Brassfield formation, present in outcrops to the west of the Nashville Basin, is a Silurian period deposit.

Mississippian, Chattanooga Shale (Mfp). This is a grayish black carbonaceous shale which occurs as a laminated bed up to 20 feet in thickness. The shale occurs at the base of the Fort Payne formation, and it is a marker bed separating the Fort Payne from the underlying Silurian age formations. The Chattanooga shale is readily available throughout the Highland Rim in Middle Tennessee. It grades into the Maury Shale to the south and west of Nashville. Chattanooga shale typically occurs as soft laminae which were readily worked into bar gorgets throughout the upland Southeast.

Mississippian, Fort Payne (Mfp). The Mississippian period Fort Payne formation was deposited in a different environment from that of the preceding Ordovician period. Marcher (1962a) has suggested that during the Fort Payne limestone deposition, the sea floor was deeper and more tranquil. Milici (1979) have discussed the distinct Fort Payne facies

and their regional deposition. Of concern to archaeologists, Marcher (1962a, 1962b) and Milici (1979) discuss the Fort Payne formations in northwest Tennessee. The Dover chert has been discussed as part of the Fort Payne or the overlying St. Louis-Warsaw formations.

The Mississippian age Fort Payne is massive, erosion resistant, and ubiquitous throughout the upland South. Ranging up to 300 feet thick, the Fort Payne limestone caps the interior low plateau of northern Alabama, central Tennessee, and central Kentucky. Chert within the Fort Payne formation is regionally variable (Alexander 1982; Faulkner and McCollough 1973; Johnson 1981; Kline 1978; Penny and McCollough 1976). Blue-gray and tan Fort Payne chert were the types most commonly used by aboriginal flint knappers. This chert consists of a background color with contrasting irregular lenticular mottling.

Geologists and archaeologists have defined five distinctive groups of Fort Payne chert: bedded Fort Payne, salt and pepper Fort Payne, fibrous Fort Payne, crinoidal Fort Payne, and quartz geodes (Amick 1987; Marcher 1962a, 1962b; Marcher and Stearns 1962).

Quaternary, Alluvium (Qal). During the Tertiary period, Middle Tennessee was reduced to a lowland plain corresponding to the present surface of the Highland Rim (Wilson 1991). Resistant chert at the base of the Fort Payne formation formed escarpments which surround the Nashville Basin. By the close of the Pliocene epoch five million years ago, the Cumberland River had cut through the Fort Payne chert, meandering across a lower surface within the central Nashville Basin. A local base level was formed northwest of Nashville where the Cumberland River crosscut the resistant Mississippian formations.

Meandering of the Cumberland River deposited high, level gravel terraces. These Pliocene terraces consist of isolated deposits of chert within deposits of gravel, sand, silt, and clay up to 50 feet thick. The terraces and slopes occur on the banks of the Cumberland River and its major tributaries. These deposits are between 490 to 510 feet AMSL and 110 to 170 feet above the present river bed. Crinoid stems and other Mississippian age fossils have been recovered from these deposits (Wilson 1991).

The gravel deposits contain chert nodules ranging up to 8 inches in diameter. The chert nodules gradually become smaller in size and more rounded as the distance from their source increases.

The Quaternary period, with its four glacial advances and retreats, created another set of Pleistocene terraces along the Cumberland River. As the Cumberland intermittently degraded and aggraded its floodplain, a series of Pleistocene terraces were deposited. As with the earlier terraces, water-tumbled chert, quartz, and local sandstone pebbles were deposited in unconsolidated beds.

The Cumberland River's meandering is restricted by limestone outcrops; a large number of these Pleistocene terraces were eroded and reworked by the river. Today only isolated remnants of the early and middle Pleistocene terraces can be observed up and down the valley.

REGIONAL RESOURCES

Regionally available lithic resources, including the Dover chert outcrops and the Highland Rim resources, occur within a 20- to 75-km radius of the sites. These resources include the upper Mississippian chert which occurs as isolated remnants in the Highland Rim surrounding the Nashville Basin. Slate occurs sporadically in the Cumberland Plateau.

Upper Mississippian, Newman Limestone (Mn). Milici (1979) have referred to this as the Newman Limestone (Mn), upper and lower parts. The lower Newman formation (Mnl) contains the Monteagle, St. Louis, and Warsaw formations; the upper Newman formation (Mbh) contains the Bangor limestone and the Hartselle sandstone. With the exception of the Hartselle, all these formations contain cherts which were exploited by the aboriginal populations. Marcher (1962a) discussed the open shoal environment of the St. Louis deposition. The chert nodules suggest increased stability and deep water conditions.

In the Highland Rim, segments of the St. Louis formation are preserved on top of the Fort Payne formation (Hardeman et al. 1966a, 1966b; Marcher 1962a, 1962b). To the east, at the base of the Cumberland Plateau, the full exposure of these upper Mississippian formations is encountered.

The St. Louis cherts have been described by Marcher (1962a, 1962b) as three distinctive varieties. The fossiliferous chert is porous, and it resembles the fossiliferous Warsaw chert. The semi-banded St. Louis chert resembles the laminated Fort Payne chert, but it differs in that it contains distinctive fossils (Marcher 1962a, 1962b). The Dover chert identified in the collection from East Nashville Mounds appears to be St. Louis rather than Fort Payne chert.

The third variety of St. Louis chert is the Cannonball pale blue to blue-gray chert. Marcher (1962a) describes the Cannonballs as ranging from 4 to 10 cm in diameter with poorly developed concentric layering. On the eastern Highland Rim, the St. Louis-Cannonball chert has been referred to as "blue-green nodular" or "gray nodular" (Faulkner and McCollough 1973; Penny and McCollough 1976) and "blue-gray nodular" (Kline 1978). The St. Louis chert readily patinates to an opaque milky surface.

Mississippian, Upper Newman (Mbh). The Bangor limestone occurs stratigraphically above the Hartselle sandstone; it ranges from 100 to 150 feet thick. The Bangor chert consists of black chert nodules up to 10 cm in diameter which commonly contain red chert cores. "Bangor Red Heart" has a limited distribution on the upper slopes of the Cumberland Plateau. It may also occur as nodules in the alluvial gravel.

Pennsylvanian, Gizzard Group (Pg). This formation contains the coal seams which occur on the Cumberland Plateau. More than five well-known coal seams occur in this formation in Kentucky and Tennessee. The later Pennsylvanian period sandstones and coals are absent from Middle Tennessee; however, they are present as the cap on the Cumberland Plateau to the east. It has been hypothesized that these formations covered Middle Tennessee in the past. Marcher (1962a) discusses this potential massive erosional episode and crustal upthrusting.

The coal is dark gray to black, and it is fragmentary in small plates. This coal may occur as tabular fragments in the Pleistocene gravel beds along the Cumberland River, but it is more likely that aboriginal groups collected coal during forays to the east. This soft fissile coal was used for disks and possibly ceramic smoothers.

Cretaceous, Tuscaloosa (Kt). The Cretaceous period formation was deposited on the High land Rim west of the Nashville Basin 138 to 66 million years ago. Marcher and Stearns (1962) have described the Tuscaloosa sea which covered the Mississippian embayment, lapping the western edge of the Nashville dome. The Tuscaloosa formation rests upon the truncated and weathered Paleozoic era, Mississippian age formations. The Tuscaloosa gravels consist of chert and quartzite pebbles, as well as locally available rounded sandstone cobbles, about 1 to 15 cm in diameter (Marcher and Stearns 1962). The Ozark dome and its extension, the Pascola Arch in northeastern Arkansas, were sources of a large part of the Tuscaloosa gravel. Other local formations, including the Devonian Fort Payne and St. Louis, also contributed pebbles to the Tuscaloosa formation. During this period, Nashville was not far above sea level.

The Tuscaloosa formation occurs on the western Highland Rim. The poorly sorted formations consist of chert and quartzite cobbles weakly cemented in a silt and sand matrix (Marcher and Stearns 1962). The quartzite hammerstones in this collection might be from this formation.

Following the Late Cretaceous deposition, the Nashville dome continued its gradual upwarping, cracking, and subsequent erosion. The present physiography and topography of Middle Tennessee and the Cumberland Plateau have been discussed by Fenneman (1938), Hack (1966), and Luther (1979). The exposed softer Ordovician age limestones are porous and cavernous. Limestone solution has slowly undercut the resistant chert and sandstones which break off to form bluffs and steep slopes.

EXOTIC RESOURCES

Exotic materials, defined as those recovered from locations 75 to 500 km distant from the sites, include the following materials.

Greenstone. Hillabee chlorite schist or greenstone is composed of metamorphic chlorite and epidote schists of green, gray-green, or gray color. It occurs in flat slabs with inherent thin, sheetlike fractures formed by bedding planes and small veins of secondary quartz. It is coarse- to medium-grained, flakes poorly, and exhibits a dull luster. The material was often roughly shaped by percussion, then pecked to a finished form and polished to a high luster. Greenstone was widely used for Woodland and Mississippian period celts in the upland Southeast.

Sources of chlorite schist occur on the western edge of the Piedmont Province from central Alabama through northeast Tennessee. In Alabama, the Hillabee schist has been mapped by Tull et al. (1978). Greenstone formations are also known on the Hiwassee River at Reliance, Tennessee. Greenstone artifacts occur as trade items in small quantities throughout the Tennessee River Valley.

Galena. Galena might have been ground to produce either ceramic slips or a white body paint by southeastern aboriginal groups. Walthall et al. (1979) and Walthall (1980) conducted trace element analysis of galena samples recovered from Woodland contexts and determined that the Upper Mississippi Valley ore district was the geological source area for the samples recovered. In Middle Tennessee, Jewell (1947) and Fulweiler and Gilbert (1992) have described the production of lead and zinc in the upper Nashville Basin.

Walthall (1981) notes that extensive galena samples have been recovered from Middle Woodland Hopewell and Copena burial mortuary contexts; galena is rarer in Mississippian contexts. Smith (1992) notes that galena was recovered from a child's burial at the West site in Nashville; Kline (1984a:43) reports a single galena crystal from a child's burial in Nashville. Lewis and Kneburg (1946) note galena from other Dallas culture sites in southeast Tennessee. Roberts (1982, 1987) reported faceted galena from a Mississippian-Cherokee context on the Little Tennessee River. Black (1967) reported forty-three galena fragments at the Angel site.

Metadiorite. This is a blackish stone which polishes to a hard black surface; it was occasion ally employed to make discoidals and celts. Roberts (1987) reports extensive use of metadiorite for polished artifacts at Toqua in eastern Tennessee. Alexander examined a large surface collection of celts and axes from the lower Hiwassee River; metadiorite artifacts from the Archaic through the Mississippian periods comprised approximately 20 percent of this collection. The Appalachian Mountains have extensive metamorphosed lithic outcrops, and we may assume that a source of this material lies in the Appalachians.

Unknown Mineral. This is an unknown iron-lead mineral which was not identified during the preliminary analysis. The two specimens are heavy and galenalike, although they lack the shiny crystalline structure of galena. The samples are small, subrounded stones. One of the specimens retains a bubblelike surface on the unground areas. Roberts (1982, 1987) reports magnetite from Mississippian contexts in the lower Little Tennessee River.

Magnetite was ground to produce a black pigment. A second possibility is that these two specimens are meteorite fragments.

Mill Creek Chert. Two fragments of this yellowish pink fossiliferous chert were observed in the collection. Cobb (1989) discusses the Mill Creek chert outcrops that occur in southern Illinois; the material was widely traded throughout the region (May 1981). One Mill Creek flake has a well-polished dorsal surface, and the second is a large biface hoe-wedge.

Quartz Crystal. Quartz crystals were commonly used by shamans and diviners in divination rituals to contact the collective unconscious. Predictions regarding matters of hunting, illness, love, and war were made by conjurers using various colors of crystals. Small crystals are found in areas of the Fort Payne formation, and larger crystals are found in the Piedmont of Georgia and Alabama, as well as in south-central Arkansas (Lauro and Lehmann 1982).

Slate. Slate is metamorphosed shale which occurs as primary and alluvial deposits throughout the Appalachian Mountains. It is much harder than shale, and it takes a high polish. It was used primarily for ornamental artifacts. Roberts (1982:372) illustrates a ground slate fragment with a circular incised design.

SUMMARY

Table 23 provides an outline of the lithic resources available to the inhabitants of East Nashville Mounds and the French Lick site.

Table 23. Summary of Available Lithic Resources, East Nashville Mounds and French Lick.

Residual	Alluvial
Local	
Fort Payne blue-gray	Fort Payne chert variants
Brassfield-unknown	Minor amounts of Ordovician
Leipers-Cathey	chert
Bigby-Cannon gray banded	
Carters	
Galena	
Regional	
Dover chert	St. Louis, Cannonball chert
Bangor chert	Pennsylvanian, Cannel coal
Exotic	
galena (Missouri)	Mill Creek chert
greenstone	quartz crystal
metadiorite	unknown leadlike mineral

ARTIFACT ANALYSIS

The analysis of the PP/Ks was conducted along two distinct lines of inquiry. The cultural and historical index for the region was established by Cambron and Hulse (1964), and this descriptive inventory remains the most pragmatic means of discussing stylistic themes at the regional level. The inherent wide range of variability within each group and the idiosyncratic descriptions of each analyst render the Cambron and Hulse analytic system difficult to use in comparing assemblages. A second analytic method used in this report consists of describing the artifacts by a series of formally defined attributes (Futato 1977, 1983). This formal analytical system alleviates some of the problems inherent in the use of the traditional morphological classification system.

Two salient difficulties, essentially interface problems between the two descriptive systems, were encountered during the formal projectile point analysis. The formal analysis considers nine variables which are specified with an abstract alphanumeric code. These classes often crosscut the traditional types so that one class can be subsumed under several traditionally named artifact groups. In addition, the formal analysis does not consider elements such as flaking or preform preparation which are subsumed under the tacit definitions of the traditional Cambron and Hulse artifact groups. These two classification systems are, however, complementary when treated as hierarchically distinct levels of analysis.

The formal classification system employs nine variables with several potential states for each variable. These variables include: (1) the number of edge segments or vertices; (2) the kind of haft element; (3) the shape and orientation of the various blade edge segments; (4) the shape of the base; (5) the orientation of the base; (6) the shape of the shoulder; (7) the orientation of the shoulder; (8) the shape of the lateral haft element edges; and (9) the orientation of the lateral haft element edges (Futato 1977). The definition of each class is a model which can explicitly convey morphological elements of the class members. Certain aspects of some projectile point classes, however, are not considered in this analysis. These aspects include serration, edge grinding, and distinctive flake scar patterns.

The projectile point analysis is presented in a hierarchical arrangement of class, variety, type, and cluster. The classes contain the least variability, and the clusters contain the greatest. The necessary criteria for inclusion at each level are not always specific, and the necessary and sufficient criteria are not always evident. Dating and regional variation are usually expressed at the type and cluster level. A summary of the recovered projectile points is included in Tables 24 and 25. The complete classification of the specimens, detailed metric data, raw material types, and other observations are presented in the respective discussions of each site.

Table 24. Summary of East Nashville Mounds PP/Ks.

PP/K TYPE	VRTX	HTE	BLS	BAS	BAOR	SHSH	SHOR	LHE	LHO
MADISON	3	X	S	E	X	X	X	X	X
	3	X	S	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	S	I	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	S	E	N	X	X	X	X
	3	X	E	S	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	S	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	S	E	N	X	X	X	X
	3	X	S	I	N	X	X	X	X
	3	X	S	I	N	X	X	X	X
	3	X	E	I	N	X	X	X	X
	3	X	E	I	N	X	X	X	X
	3	X	I	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	E	S	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	5	D	I	I	N	I	T	I	E
	3	X	I	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	E	S	N	X	X	X	X
	3	X	E	I	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	I	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	I	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	I	N	X	X	X	X
	5	D	S	S	N	I	T	I	V
	3	X	S	S	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
	3	X	S	I	N	X	X	X	X
	3	X	E	E	N	X	X	X	X
Wood. Triangular	5	D	E	I	N	I	T	I	T
	3	X	E	S	N	X	X	X	X
Sublet Ferry	7	L	E	S	N	I	T	I	E

Table 24. Summary of East Nashville Mounds PP/Ks.
Continued

PP/K TYPE	VRTX	HTE	BLS	BAS	BAOR	SHSH	SHOR	LHE	LHO
Lanceolate Spike	3	X	E	E	N	X	X	X	X
Sublet Ferry	3	X	E	E	N	X	X	X	X
McIntire	3	X	E	E	N	X	X	X	X
Flint Creek	7	D	E	E	N	I	T	I	E
Cotaco Creek	7	D	E	E	N	I	T	I	E
Wade	7	D	S	I	N	S	B	S	C
	7	D	E	S	N	I	B	I	T
Little Bear Creek	5	D	I	E	N	I	T	I	T
Sykes/White Springs	7	D	E	E	N	I	T	I	E
	5	D	E	S	N	I	T	I	T
Big Sandy	7	L	E	I	N	I	T	I	E

Note: vrtx=vertex; hte=haft element; bls=blade shape; bas=base shape; baor=base orientation; shsh=shoulder shape; shor=shoulder orientation; lhe=lateral haft element; lho=lateral haft orientation

Table 25. Summary of French Lick Site PP/Ks.

PP/K TYPE	VRTX	HTE	BLS	BAS	BOAR	SHSH	SHOR	LHE	LHO
Madison	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	E	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
Knight Island	7	L	S	E	N	I	T	A	P
	7	L	S	E	N	I	T	A	P
Fort Ancient	3	X	S	I	N	X	X	X	X
Copena	5	X	S	I	N	X	X	X	X
	3	X	R	E	N	X	X	X	X
	3	X	R	E	N	X	X	X	X
	3	X	S	E	N	X	X	X	X
	3	X	R	E	N	X	X	X	X
Copena Triangular	5	U	S	S	N	X	X	S	C
	3	X	S	S	N	X	X	X	X
	3	X	E	S	N	X	X	X	X
	3	X	E	R	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	E	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	E	N	X	X	X	X
	3	X	S	E	N	X	X	X	X
	3	X	E	S	N	X	X	X	X
	3	X	S	I	N	X	X	X	X
	3	X	R	I	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	E	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	S	S	N	X	X	X	X
	3	X	E	S	N	X	X	X	X
Coosa	5	L	E	E	N	I	T	I	E
	5	D	E	E	N	I	T	I	E
Flint Creek	7	D	S	I	N	I	T	E	E
	5	D	S	E	N	I	T	E	E
	5	D	E	E	N	I	T	S	T
	5	D	E	E	N	I	T	I	E
	5	D	I	E	N	I	T	I	V
	7	D	E	S	N	I	T	I	E
	5	D	E	E	N	I	T	I	T
	5	D	I	E	N	I	T	E	T

Table 25. Summary of French Lick Site PP/Ks.
Continued

PP/K TYPE	VRTX	HTE	BLS	BAS	BOAR	SHSH	SHOR	LHE	LHO
Flint Creek (con't)	5	D	I	E	N	I	T	E	T
Swan Lake	3	X	R	E	N	X	X	X	X
Sublet Ferry	7	L	E	I	N	I	T	I	T
	7	L	E	I	N	I	T	I	T
	7	L	E	I	N	I	T	I	T
McIntire	7	D	E	E	N	I	T	I	E
	7	D	E	S	N	I	T	S	T
	5	D	E	S	N	I	T	I	E
	5	D	E	S	N	S	H	S	E
	7	D	E	R	N	I	T	I	V
Motley	5	D	E	S	N	I	T	R	C
Cotaco Creek	7	D	E	E	N	A	B	S	C
	5	D	S	I	N	I	T	S	E
Wade	7	D	S	E	N	S	B	I	C
	7	D	E	E	N	I	T	S	C
	7	D	E	E	N	I	T	S	C
	7	D	I	I	N	I	T	I	T
	7	D	E	E	N	I	T	I	V
	7	D	E	E	N	I	T	I	T
	7	D	S	E	N	S	B	S	C
	7	D	E	E	N	I	T	S	E
	5	D	E	E	N	I	B	I	T
Little Bear Creek	7	D	I	E	N	S	H	S	T
	7	D	E	E	N	S	H	S	T
	5	D	E	E	N	I	T	S	T
	5	D	E	E	N	I	T	S	T
	7	D	E	I	N	I	T	I	T
Pickwick	7	D	E	E	N	S	H	S	T
Ledbetter	7	D	E	E	N	I	T	I	T
	7	D	I	S	N	S	T	S	T
Benton	5	D	E	S	N	I	T	I	E
	7	D	E	E	N	I	T	I	E
	7	D	E	S	N	I	B	I	E
	7	D	E	S	N	I	B	I	E
	5	D	E	I	N	I	T	I	E
	7	L	E	E	N	I	T	I	V
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	E
	7	D	E	E	N	I	T	I	E
	7	D	E	I	N	I	T	I	E
	7	D	E	S	N	I	T	S	P
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	E
	7	D	E	S	N	I	T	I	E
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	T
	7	D	E	E	N	I	T	I	E
	5	D	E	S	N	I	T	I	E

Table 25. Summary of French Lick Site PP/Ks.
Continued

PP/K TYPE	VRTX	HTE	BLS	BAS	BOAR	SHSH	SHOR	LHE	LHO
Big Slough	7	D	I	E	N	I	T	S	P
Buzzard Roost Cr.	7	D	E	I	N	I	T	I	E
	5	D	E	I	N	I	T	S	P
	7	D	E	I	N	A	T	I	E
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	E
	7	L	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	V
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	I	C
	7	D	E	I	N	I	T	I	E
	7	D	E	I	N	I	T	S	P
Sykes/White Sp.	7	D	E	E	N	I	B	I	E
Morrow Mountain	7	B	I	S	N	S	B	S	E
	3	X	E	E	N	X	X	X	X
Eva	7	B	S	S	N	S	B	S	P
	7	B	E	S	N	S	B	S	P
	7	B	E	S	N	A	B	I	T
	7	B	E	S	N	A	B	I	T
	7	B	I	S	N	S	B	S	E
	7	B	E	S	N	A	B	I	T
	7	B	E	S	N	A	B	I	T
Stanley	7	D	S	I	N	I	T	I	E
Kirk	7	D	I	I	N	I	B	I	T
	7	D	S	S	N	I	B	I	E
	5	D	E	S	N	I	B	S	E

Table 25. Summary of French Lick Site PP/Ks.
Continued

PP/K TYPE	VRTX	HTE	BLS	BAS	BOAR	SHSH	SHOR	LHE	LHO
Kirk (con't)	5	D	E	S	N	I	B	S	E
	5	D	E	S	N	I	B	S	E
	7	D	E	I	N	I	T	I	T
	5	D	E	S	N	I	B	S	E
	7	L	E	I	N	I	T	A	E
Pinetree	5	L	E	E	N	I	T	A	E
	5	L	E	S	N	I	T	A	E
	7	D	I	S	N	I	T	I	E
	5	D	E	S	N	I	B	S	E
	5	L	E	E	N	I	T	I	E
Crawford Creek	5	D	E	S	N	I	B	S	E
Plevna	5	D	E	E	N	I	B	I	E
Big Sandy	7	L	E	I	N	I	T	A	E
	7	L	E	I	N	I	T	A	E
	7	L	E	I	N	I	T	A	E
	7	L	E	S	N	I	T	A	E
	5	D	E	S	N	I	B	S	E
Big Sandy Ari.	7	D	E	I	N	I	B	I	E

Note: vrtx=vertex; hte=haft element; bls=blade shape; bas=base shape; baor=base orientation; shsh=shoulder shape; shor=shoulder orientation; lhe=lateral haft element; lho=lateral haft orientation

EARLY ARCHAIC PROJECTILE POINT CLUSTERS

The Early Archaic in the upland South can be dated from 8000 B.C. to 6000 B.C. It has four developmental horizons, each with a specialized temporal and regional development. First is the Big Sandy horizon, followed by the Kirk. The final horizons are the Bifurcate Base and the Cypress Creek. The bifurcate base projectile points are most common in eastern Tennessee and along the Appalachian Mountains; they become less common to the west. Each horizon is named for a distinctive projectile point cluster, and each one can be assigned a 500- to 1,000-year time span until more definitive work can be done.

BIG SANDY CLUSTER

The Big Sandy projectile point cluster includes a variety of projectile points with side notches, an expanding lateral haft element, and a straight to incurvate base. Big Sandy projectile points are often serrated on the biface edges, and reshaping of the distal edges is common.

The Big Sandy is a well-known Early Archaic projectile point. Lewis and Lewis (1961) excavated a multicomponent Big Sandy site on the Lower Tennessee River. DeJarnette et al. (1962) also discuss Big Sandy artifacts in association with Dalton projectile points at

Stanfield-Worley. The Cache River and the Kessell Side Notched projectile points (Broyles 1971) are similar to the Big Sandy. Big Sandy points tend to occur stratigraphically above Dalton point types, and they predate the Kirk projectile points. Big Sandy likely dates from 8000 to 7500 B.C.

KIRK CLUSTER

The Kirk cluster in this report includes the Kirk Corner Notched, Plevna, Decatur, Palmer, and Pine Tree projectile point types. The stratified Early Archaic sites in the Little Tennessee River area excavated by Chapman (1975, 1977, 1978, 1979) provide the most comprehensive information regarding the Kirk cluster artifacts. Analysis of the Kirk materials from several sites has established a dated radiocarbon sequence from 7500 B.C. to 6000 B.C. (Chapman 1975:256–259, 1978:45). In northern Alabama, Kirk Corner Notched projectile points have been recovered from Zone D at Stanfield-Worley Bluff Shelter and from Lower Layer G at Russell Cave. At Russell Cave, radiocarbon dates ranging from 6550±320 B.C. (I-2239) to 6145±275 B.C. (I-828) were associated with Big Sandy, LeCroy, and other Early Archaic projectile points (Griffin 1974:13). At Stanfield-Worley, radiocarbon dates from 7690±450 B.C. to 6870±400 B.C. were obtained from mixed Early Archaic components (DeJarnette et al. 1962:85–87).

BIFURCATE BASE CLUSTER

The late Early Archaic Bifurcate Base Cluster includes the Kanawha Stemmed, LeCroy Bifurcate Based, MacCorkle Stemmed, and St. Albans Side Notched, and possibly the Stanley point type. Broyles (1971) and Chapman (1975) have described and discussed the stratigraphic distribution of these projectile points along the western perimeter of the Appalachian Province. The radiocarbon dates for these specimens appear to range from 7000 to 6000 B.C. These artifacts occur only sporadically in Middle Tennessee. In the collections from East Nashville Mounds and the French Lick site, one specimen, a Stanley, which is only tangentially associated with this cluster, has been recovered.

CYPRESS CREEK CLUSTER

The Cypress Creek cluster consists of the Cypress Creek and Crawford Creek projectile point types. The Cypress Creek type was originally described by Lewis and Lewis (1961:40) and later by Cambron and Hulse (1964). These projectile point types resemble the Stanley type of the Little Tennessee River (Chapman 1977) and certain Kirk cluster types (Futato 1983). The similarity between the Kirk Stemmed projectile points from Russell Cave (Griffin 1974) and the Crawford Creek type should also be noted. The temporal and cultural relationship is unknown, but appears stylistically to be between the late Early Archaic Kirk cluster and the Middle Archaic Eva/Morrow Mountain cluster. A date of 6000 B.C. for the Cypress Creek cluster would thus be appropriate.

MIDDLE ARCHAIC PROJECTILE POINT CLUSTERS

The Middle Archaic period is characterized by a stylistic and stratigraphic seriation of projectile point/knife types from Eva to Morrow Mountain, Sykes/White Springs, and Benton. This development of PP/K types has been dated from approximately 6000 to 3000 B.C.

EVA/MORROW MOUNTAIN CLUSTER

The Eva and Morrow Mountain types appear to represent discrete horizon markers throughout the upland South. The Eva and Morrow Mountain individual projectile point types have somewhat different distributions, and they may in part represent two distinct cultural assemblages (Faulkner and McCollough 1973:419; Futato 1977:233, 1983). The Eva projectile points are found throughout the Lower Tennessee Valley (Lewis and Lewis 1961) and become increasingly infrequent throughout Middle Tennessee and north Alabama (Alexander 1979, 1982). The Morrow Mountain projectile points, in contrast, are common throughout Middle and East Tennessee and northeast Mississippi, and they represent a very significant occupation in the North Carolina Piedmont (Coe 1964:122–123).

The radiocarbon dates for Eva and Morrow Mountain types range from 5500 B.C. to 4000 B.C. An antler from the bottom of the Eva site on the Lower Tennessee River, from a stratigraphically mixed context, was radiocarbon dated at 5200±500 B.C. (M-357) (Lewis and Lewis 1961). Flexed burials recovered at the bottom of the Mulberry Creek shell mound in the Pickwick Reservoir area (Webb and DeJarnette 1942:235–266) contained Morrow Mountain PP/Ks lodged in the bone. In the Buttahatchee River Valley at the Stucks Bluff site, a Morrow Mountain projectile point was recovered from a hearth dated to 4500±120 B.C. (GX-0907) (DeJarnette et al. 1975b:113). The Stanfield-Worley bluff shelter contained a Morrow Mountain component which was given an estimated date of 5000 B.C. to 4000 B.C. (DeJarnette et al. 1962). Griffin (1974:112) states that at Russell Cave the Morrow Mountain occupation was the first component in which storage pits occur, and that there is a significant decrease in the proportion of uniface tools relative to biface tools in this component.

At the Westmoreland-Barber site, Faulkner and Graham (1966b) located a stratum 7 to 8 feet below surface which contained both Sykes and Morrow Mountain projectile points. In the Normandy Reservoir, a radiocarbon date of 4575±165 B.C. (Uga-777) was obtained from a shallow, basin-shaped, Morrow Mountain phase feature (Faulkner and McCollough 1977:281). Sealed Morrow Mountain strata on the Little Tennessee River have been dated at Icehouse Bottom and at the Howard site. The date for this stratum at Icehouse Bottom was 5045±245 B.C. (GX-4124) (Chapman 1976:164), while a date of 5305±165 B.C. (GX-4704) was assigned to the Morrow Mountain stratum at the Howard site (Chapman 1979:79). In the Columbia Reservoir area of Middle Tennessee, the Cave Springs site (40MU141) yielded

radiocarbon dates of 6540 B.P., 6885 B.P., and 7250 B.P. (Hofman 1982:2–4). At the Ervin site (40MU174), Hofman (1984b:3–5) reported radiocarbon dates associated with the Eva/Morrow Mountain component of 6645 B.P. Amick (1983) reported radiocarbon dates of 6240 B.P. from the Clay Mine site (40MU347).

Perhaps one of the best examples of a Middle Archaic component associated with a shell midden is the Anderson site (40WM9). The lithic components from the site are described by Lindstrom and Steverson (1987). If we assume that the "Anderson Corner Notched" is another variant of Benton projectile points occurring stratigraphically above the Morrow Mountain series, the Sykes/White Springs component can readily be integrated with the Benton component. Radiocarbon dates of 5230 B.C., 4770 B.C., 4750 B.C., 4545 B.C., and 3730 B.C. have been reported by Dowd (1989). This set of radiocarbon dates is also associated with Benton components elsewhere in the upland Southeast. The Morrow Mountain cluster should consequently be dated from approximately 5000 B.C. to 4000 B.C.

Sykes/White Springs Cluster

The White Springs projectile point type is short and relatively wide with very small corner removals used to form the haft element. The Sykes/White Springs cluster is a loosely defined continuum of projectile point forms which have been recovered in stratigraphic association with Morrow Mountain types and with Benton projectile points. A stylistic resolution of Sykes/White Springs projectile point subtypes into restricted regional or temporal variants has not been achieved. The White Springs specimens represent the early part and the Sykes examples the later portion of a cultural continuum. The haft element morphology of the Benton projectile points is practically indistinguishable from that of many of the Sykes/White Springs projectile points. Benton projectile points have beveled flaking on the basal area.

Isolated strata with Sykes/White Springs components have been identified at sites along the Upper Tombigbee River. The Sykes/ White Springs cluster can be dated from ca. 4500 B.C. and might belong to a much larger generalized late Middle Archaic lithic assemblage. Several specimens were associated with the Morrow Mountain component at the Stanfield-Worley Bluff Shelter where the type was originally defined (DeJarnette et al. 1962). White Springs projectile points were recovered in stratigraphic association with Morrow Mountain projectile point types in the Pickwick Reservoir area (Cambron and Hulse 1964; Webb and DeJarnette 1942:Plates 292–2, 302–1). The Sykes projectile point type was recorded in an Eva phase context at the Eva site (Lewis and Lewis 1961), where it was estimated to date to approximately 5200 B.C. This type has also been recovered in association with Morrow Mountain projectile points at the Westmoreland-Barber site (Faulkner and Graham 1966a:121). From the Ervin site (40MU174), radiocarbon dates of 6115 and 6160 B.P. were reported in association with a Sykes/White Springs component (Hofman 1984b:3–5).

On the Upper Tombigbee, Sykes/White Springs projectile points were consistently found with Benton projectile points within features and at specific sites. Benton projectile points were separated from the Sykes/White Springs projectile points based on the criterion of haft element beveling. By definition, the Benton specimens had beveled haft elements, and more significantly, they were consistently made of blue-gray Fort Payne chert. The unbeveled Sykes/White Springs projectile points were consistently made from Tuscaloosa gravel. A radiocarbon date of 3350±60 B.C. (DIC-1479) was obtained for the Sykes/White Springs component at Site 1FR538 (Futato 1983). A number of other radiocarbon dates have recently been reported for Sykes/White Springs components from the Upper Tombigbee River. These dates range from 4200 B.C. to 4000 B.C. (Bense and Rodeffer 1982:7.45–7.50; Ensor and Studer 1982:5. 240–5.241; Galm et al. 1982:8.38–8.44).

BENTON CLUSTER

For East Nashville Mounds and the French Lick site, the Benton cluster includes Benton, Big Slough, and Buzzard Roost Creek projectile point types. Benton projectile points are common throughout central and western Tennessee, northern Alabama, and northeastern Mississippi. Lewis and Lewis (1961:36) illustrated several examples of Benton PP/Ks from the Eva site. The Benton projectile point type has been divided into Benton Narrow Stemmed and Benton Broad Stemmed varieties (Cambron and Hulse 1964:12–13). In the Normandy Reservoir, Faulkner and McCollough (1973:118) combined both the barbed and round-shouldered varieties of the Benton type into one group.

Wherever Benton projectile points have been recovered throughout Middle Tennessee, western Alabama, and northeastern Mississippi, certain aspects of style, lithic technology, and raw material selection combine to produce a distinctive horizon marker. Two distinct chert types must be considered, however, when considering the Benton projectile points as such a marker. First, a large percentage of Benton projectile points are made of blue-gray Fort Payne chert from along the Tennessee River of north Alabama and west-central Tennessee and east-central Mississippi (Johnson and Brookes 1989). This chert is readily available throughout the area and is very tractable. These Benton projectile points are thin, well flaked, and relatively large, with beveled edges on the stem. In any Benton component, these projectile points can be distinguished from those made from locally available chert. The local chert, Benton-type projectile points are generally smaller, less well flaked, and more variable. The Benton projectile points from these assemblages grade into the Sykes/White Springs cluster in a stylistic continuum.

Near Nashville at the Hart site, 40WM14, amateurs recovered over 500 flexed burials; at least two caches of fire-cracked Benton bifaces were recovered (Parker 1974:2). At site 40DV34 near Nashville, cremations containing fire-cracked Benton bifaces were recovered (Carl Kuttruff, written communication May 5, 1982). Lindstrom and Steverson (1987:21) illustrate a burial cache containing four Bentons, one Buzzard Roost Creek, and one double-pointed biface, clearly another example of this mortuary association of large Benton bifaces.

In Morgan County, Alabama, Fundaburk and Foreman (1957:123) reported a burial containing 11 fire-cracked bifaces. Fundaburk and Foreman (1957:121) also reported a second cache of turkey tail and biface knives recovered from a shell mound burial in Limestone County on the Tennessee River of north Alabama.

Another aspect of Benton distribution is the significance of series of Benton preform caches recovered from sites along the Tombigbee River (Bense 1982). Alexander (1983:226–230) described a crematory pit at the Emmett O'Neal site with 15 to 18 intentionally fire-cracked Benton preforms. At Site 22IT623 in northeast Mississippi, a series of 11 fire-cracked bifaces has been described by Bense (1982:73–78). The occurrence of a Turkey Tail and a double notched biface with nine other bifaces suggests that this cache dates to the Late Archaic period rather than the Middle Archaic Benton horizon. Johnson and Brookes (1989:134–145), in an excellent summary of the occurrence of Benton points, bipointed knives, and Turkey Tails recovered from caches in northeast Mississippi, concluded that an extensive Middle Archaic exchange network and social system involving Fort Payne chert from the Tennessee River area was active down the Tombigbee River during the Benton horizon.

At the Spring Creek site on the Lower Tennessee River, a stratum containing Benton projectile points was dated to 2645±210 B.C. (GX-2746). A lower stratum at the same site was dated at 3055±260 B.C. (GX-2931) (Peterson 1973:38–39). From the Ervin site, Hofman (1984b:3–7) reported a date of 5765 B.P. associated with a Benton component. At the East Aberdeen site on the Tombigbee River, radiocarbon dates of 3575±75 B.C. (Uga-2633) and 3695±100 B.C. (Uga-2634) were reported (Rafferty et al. 1980:184). Radiocarbon dates of 3570±65 B.C. (DIC-1478) and 3350±60 B.C. (Uga-2634) were associated with Benton and Sykes/White Springs material from the Bear Creek drainage in northwest Alabama (Futato 1983). Futato (1983) also reported a date of 2990±140 B.C. (DIC-1477), which was considered too late for a Benton occupation. Russell Cave produced several Benton specimens from Layer E, which was radiocarbon dated at 3540±200 B.C. (I-830) (Griffin 1974:14). More recently, excavations at the Moore's Creek site, 22AL521, produced a radiocarbon date of 3600±85 B.C. (Uga-3872) for the Benton occupation (Weinstein 1981:3.19). Alexander (1983:85) reported a series of five radiocarbon dates ranging from 5380–5570 years B.P. associated with the Benton component.

LATE ARCHAIC PROJECTILE POINT CLUSTERS

The Late Archaic period is characterized by a stylistic continuation of projectile point attributes from the late Middle Archaic Benton types to the Ledbetter, Little Bear Creek, Flint Creek, and Round Base clusters. The occurrence of Wheeler and Alexander ceramics in

association with the Little Bear Creek, Wade, and Flint Creek projectile point types has resulted in the assignment of these types to the Gulf Formational stage. This stage appears to represent the initial addition of ceramics to the existing material cultures, with no change in the lithic technology (Futato 1983). The Late Archaic temporal range is from approximately 3000 B.C. to 1000 B.C., though the period may have lasted until 500 B.C. in isolated areas of Middle Tennessee. The traits shared by the Little Bear Creek and the succeeding Flint Creek types include narrow, thick blades with a trend toward parallel blade shapes, and a distinctive pressure flaking retouch pattern along the blade edges.

LEDBETTER CLUSTER

The Ledbetter cluster includes the Ledbetter and Pickwick projectile point types. These two types are generalized Late Archaic stemmed projectile point styles. The distinctive features which separate these two groups are the recurvate blade edges which are bilaterally symmetrical on the Pickwick projectile points and asymmetrical on the Ledbetter points. In addition, the haft elements of the Ledbetter type are straight or expanded, while those of the Pickwick type are contracting (Cambron and Hulse 1964; Futato 1983). The blade edge recurvature and asymmetry are more likely due to use and resharpening than to any cultural, historical, or regional variation.

The Ledbetter cluster projectile point types have a temporal range from approximately 3000 B.C. to 2000 B.C. In the Normandy Reservoir of Tennessee, they have been dated to 2080±260 B.C. (Uga-710) (Cobb 1982:83). A chipping station at the Okashua site near Aberdeen, Mississippi yielded radiocarbon dates of 2220±90 B.C. (Uga-1272) and 2055±80 B.C. (Uga-1272) (Wynn and Atkinson 1976:58). Although no direct association of Ledbetter cluster materials with these dates was reported, the general stemmed Late Archaic assemblage from the site was similar to the Ledbetter projectile point type. On the Elk River in south-central Tennessee, Bentz (1988) reported a mixed-component Big Sandy-Benton-Ledbetter-Little Bear Creek assemblage. Radiocarbon dates of 4,960 years (3010 B.C.), 4,450 years (2500 B.C.), and 4,780 years (2830 B.C.) were obtained from features at this site. At the Fatty Bread Branch site, Amick (1987:390) reported radiocarbon dates of 4,040 years (2890 B.C.), 4,390 years (2440 B.C.), 4,210 years (2260 B.C.), and 3,880 years (1930 B.C.).

LITTLE BEAR CREEK CLUSTER

The Little Bear Creek cluster is comprised of the Little Bear Creek, Mulberry Creek, and Perry projectile point types. These types have been divided into varieties based upon the orientation of the lateral haft element edges. The varieties include Little Bear Creek (parallel haft elements), Mulberry Creek (expanding haft elements), and Perry (contracting haft elements). The division of this type into three subtypes based upon one attribute may have no temporal or cultural significance.

Little Bear Creek projectile points are found throughout northern Alabama Middle Tennessee, and adjacent areas. They have been radiocarbon dated in the Bear Creek drainage at 1650±180 B.C. and 1070±75 B.C. (Oakley and Futato 1975:79–82). At the Spring Creek site (22PY207) on the Lower Tennessee River, Little Bear Creek PP/Ks were associated with a stratum dated to 1370±60 B.C. (GX-3104) (Peterson 1973:18).

WADE CLUSTER

The Wade cluster includes a series of projectile point types with expanding stems and rounded or barbed shoulders. These points are generally thin with expanding to contracting haft elements. The major Wade cluster projectile point types include Cotaco Creek, Limestone, McIntire, Motley, and Wade. The distinctive criterion which defines the respective types in this cluster is the shoulder configuration: barbed for Wade projectile points, rounded for Cotaco Creek, and incurvate horizontal for Limestone. The Wade cluster projectile point types are most common in central and west Tennessee and northern Alabama. These point types are associated with Late Archaic period and Gulf Formational ceramic assemblages.

In the Normandy Reservoir, the terminal Archaic Wade phase dates from ca. 1100 B.C. to 700 B.C. Wade phase dates are 1075±75 B.C. (Uga-999) and 970±215 B.C. (Uga-935) at the Nowlin II site (40CF35) (Keel 1978:133–134); 1010±135 B.C. (Uga-569) at the Banks III site (40CF108) (Faulkner and McCollough 1974:473); and 840±80 B.C. (Uga-939) at the Ewell III site (40CF118) (DuVall 1977:54). At the Penitentiary Branch site (40JK25), Cridlebaugh (1986:67–69, 215–222) reported a mixed component site with a predominant Late Archaic shell midden. Five radiocarbon dates for this site ranged from 3600 to 2957 B.P. (1650 to 1007 B.C.). The well-developed shell middens on the Upper Cumberland drainage were also described by Morse (1967:143–149, 317–318), who reported three additional radiocarbon dates of 1265 B.C., 973 B.C., and 555 B.C. from a Late Archaic shell midden on the Cumberland River in Smith County. Wade projectile points were predominant in the mixed assemblage recovered by Bentz (1986:65) from the Chapman site. A radiocarbon date of 2400 B.P. (450 B.C.) in association with the Wade horizon is the latest date known at this time.

On the Duck River, west of Columbia, Tennessee, Herbert (1986:158) reported a radiocarbon date of 2575±85 years (625 B.C.) for a feature containing a Wade projectile point and an Alexander pinched ceramic vessel. Herbert (1986:193) also reported steatite vessels associated with the Wade component. In the Lower Tennessee River Valley, two Cotaco Creek projectile points, a Wheeler Plain vessel, and other artifacts have been found in association with a burial (Benthall 1965:43–46). This association of Gulf Coast Formational ceramics with Late Archaic projectile points after 1000 B.C. has drawn attention to the phenomenon of Late Archaic and Early Woodland cultures residing contemporaneously in contiguous regions in the upland Southeast.

EARLY-MIDDLE WOODLAND PROJECTILE POINT CLUSTERS

ROUNDED BASE CLUSTER

The Late Archaic Rounded Base cluster is a significant phenomenon in the southern Nashville Basin, where it is diagnostic of an Early Woodland assemblage associated with quartzite-tempered ceramics dated from ca. 700 B.C. to 400 B.C. (Faulkner and McCollough 1973, 1974; Keel 1978:163). The Rounded Base cluster is composed of Adena, Gary, and undifferentiated expanded stemmed Early Woodland types. At the Spring Creek site on the Lower Tennessee River, Rounded Base cluster projectile points were found stratigraphically above Little Bear Creek projectile points (Peterson 1973:28–38). This projectile point cluster was not significant at the Jefferson Street Bridge excavations.

FLINT CREEK CLUSTER

The Flint Creek cluster as defined in this report consists only of the Flint Creek projectile point type. This type is distinguished from the other Late Archaic-Gulf Formational tradition lanceolate projectile points by its expanding haft element and distinctive pressure flaking along the blade edges. The Sublet Ferry projectile point type is also tentatively associated with this cluster. Two varieties of the Flint Creek projectile point type were recognized by Ensor (1981). Flint Creek type, Tombigbee, has a more lanceolate blade and horizontal to tapered shoulders, whereas Flint Creek is characterized by a wider blade and barbed shoulders.

The Flint Creek projectile point type is associated with both Gulf Formational and Woodland ceramics in the Upper Tombigbee and adjacent Tennessee River Valleys. At the L.A. Strickland site (22TS765) in the Upper Tombigbee River project, Flint Creek projectile points were recovered from two Middle Woodland features dated to A.D. 715±90 (Uga-1434) and A.D. 560±75 (Uga-1435) (O'Hear and Conn (1977:40). In the Bear Creek watershed, Flint Creek points were associated with Middle Woodland ceramics at Site 1FR507, which dated to A.D. 695±190 (GX-3337) (Oakley and Futato 1975:154).

The association of Flint Creek points with Wheeler and Alexander ceramics has been noted at several sites throughout the region. At the Crump site in Lamar County, Alabama, Flint Creek, Wade, and Cotaco Creek projectile points were recovered in association with Wheeler and Alexander ceramics (DeJarnette et al. 1975a, 1975b). Flint Creek projectile points were also recovered in association with Alexander ceramics at the Yarborough site, 22CL814 (Solis and Walling 1982:41). The most significant association between Flint Creek points and Alexander ceramics in the upper Tombigbee River Valley was at Site 22IT563. A radiocarbon date of 429±50 B.C. (DIC-2037) was obtained for this occupation (Galm et al. 1982:6:96).

LANCEOLATE EXPANDING STEMMED CLUSTER

The Lanceolate Expanding Stemmed cluster includes the Bakers Creek, Coosa, Coosa Notched, Mud Creek, and Swan Lake projectile point types. With this analysis, the Sublet Ferry projectile point will be included with the Lanceolate Expanding Stemmed Cluster. These artifacts types are taken from the Lanceolate Expanding Stemmed cluster defined by Faulkner and McCollough (1973) in the Normandy Reservoir area. Cobb and Faulkner (1978) associated it with the Owl Hollow phase A.D. 200–600. Ensor (1981) also defined a tapered shoulder cluster associated with the Middle Woodland Miller I and Miller II phases.

This series of artifacts consists of Lanceolate projectile points with broad, shallow side notching. The Mud Creek and Swan Lake points are separated on the basis of lateral side notching, as opposed to diagonal side notching.

LANCEOLATE SPIKE CLUSTER

The Lanceolate Spike cluster in these assemblages consists only of the Bradley Spike type. This cluster also includes the Flint River Spike, Ebenezer, and New Market types elsewhere. In the southern Nashville Basin area, the Lanceolate Spike cluster is associated with the lanceolate expanding stemmed types of the Middle Woodland Owl Hollow phase at A.D. 200–600 (Cobb and Faulkner 1978:129; McCollough 1978:26). At Gainesville Lake, the cluster is associated with the Miller I and Miller II phases with an estimated date range of 100 B.C. to A.D. 400 (Ensor 1981:94). In northeast Alabama at the Bellefonte site, 1JA300, the cluster has been reported in association with limestone-tempered plain, check stamped, simple stamped, and complicated stamped ceramics dated to A.D. 420±60 (DIC-536) (Futato 1977:242). The Lanceolate Spike cluster thus dates from approximately A.D. 1 to A.D. 600.

WOODLAND TRIANGULAR CLUSTER

This series of medium-sized triangular projectile points is associated with the Early to Middle Woodland cultures throughout the Tennessee Valley. In the Normandy Reservoir, Faulkner and McCollough (1973) referred to the McFarland cluster, which was stylistically associated with the Copena cultures of north Alabama (Cole 1981). Larson (1959) described a similar Middle Woodland assemblage in northern Georgia. These horizon markers appear as early as 600 B.C. on the Holston River of upper East Tennessee (Lafferty 1981). Here they are associated with Watts Bar and Long Branch ceramics. Farther west, Woodland Triangular types are associated with limestone or sand-tempered check-marked and fabric-marked ceramics. These date from ca. 200 B.C. to A.D. 400. Point types include Camp Creek, Copena, Copena Triangular, Greenville, Nolichucky and Benjamin. We are concerned with the Copena and Copena Triangular PP/Ks at the French Lick site.

LATE WOODLAND-MISSISSIPPIAN PROJECTILE POINT CLUSTERS

MISSISSIPPIAN TRIANGULAR CLUSTER

Late Woodland to Mississippian triangular projectile points have been recorded throughout the Southeast with date ranges from about A.D. 700 to 800; they were replaced by European technologies during the eighteenth century. Four major types which may have a general temporal significance have been defined. The Late Woodland Hamilton type is characterized by incurvate edges (Kneberg 1956). The Mississippian Madison type has edges which are straight to nearly straight (Cambron and Hulse 1964). The Sand Mountain is a triangular projectile point with serrated edges. The Guntersville type has a straight base with excurvate sides, and it is associated with Late Mississippian through early historic occupations.

In the Upper Ohio River drainage, the Fort Ancient culture triangular projectile points have recently been analyzed and seriated by Railey (1992:137–169). Of specific significance to this analysis are the "fine triangular flared base" projectile points which Railey has discussed as part of the early Fort Ancient period from A.D. 1000 to 1200. Railey's "fine triangular, coarsely serrated triangular" type of point, which appears to date from the middle Fort Ancient, A.D. 1200 to 1400, can also be found in the collections from the Jefferson Street Bridge sites. Railey's illustrations (1992:159) make it possible to stylistically separate the Sand Mountain and serrated Fort Ancient triangular projectile points.

While discussing Mississippian lithic artifacts, both Kline (1984a, 1984b) and Smith (1992:155) have observed the frequent occurrence of nontriangular points on Mississippian sites. At the Averbuch site, only 30 out of a total of 132 PP/Ks were the triangular Mississippian types (Kline 1984b:II.8.36).

OTHER CHIPPED STONE

BIFACE PREFORMS

The biface preforms at both East Nashville Mounds and the French Lick site were analyzed following the method developed by Collins (1975) and Ensor (1987). Analytic groups are designed to facilitate models of lithic reduction stages. Each bifacially flaked artifact was evaluated as to the extent of modification from the original chert fragments, and as to the type of flake shaping conducted. Preforms discarded as unusable prior to

completion of hafted or finished artifacts may be analyzed as a series of production failures. Johnson (1979, 1981) has developed a structure for analyzing production failures.

Stage I includes the biface Preform I group which has been used in lithic analysis elsewhere (Alexander 1983; Futato 1983; Johnson 1981). Core/biface Preform I artifacts exhibit only primary flaking with hard percussion. Artifacts are roughly rectangular to triangular in outline, with segments of the original cortex remaining. Preform II bifaces exhibit both hard-hammer percussion and shallow, soft-hammer secondary flaking scars. These preforms are thinner and more regular in cross section and outline than the Preform I category. The preform cortex is largely removed at this stage of manufacture. Preform III bifaces are secondarily modified, and these artifacts are prepared as finished products. Manufacturing steps at this level include serration, edge straightening, and hafting.

Analysis of biface production flakes at Yellow Creek in northeast Mississippi by Johnson (1979, 1981) has provided a model to be tested using the biface preforms from the French Lick site. (The limited number of biface preforms from East Nashville Mounds precluded any inclusion of material from that site.) Previous work by Ahler (1971), Crabtree (1972), and Purdy (1975) formed the basis for this study.

Johnson (1979) placed production failures into two categories: (1) direct fractures originating from the point of impact; and (2) indirect fractures which are removed from the area being worked. Direct fractures include hinge fractures, reverse fractures, perverse fractures, and impact fractures. Impact fractures are not really production failures, but more likely resulted from the use and discarding of artifacts. Remote fractures include lateral snap, incipient fracture plane, and haft snap.

Johnson (1981) also developed a thinning index which is essentially a single number representing the ratio between biface thickness and biface width. The thinning index was defined as the quotient obtained by dividing the weight of an artifact by its planar area. This is expressed in grams per square centimeter. A critical assumption is that all raw materials have the same density. Johnson (1981:18) suggested that volume by displacement could be substituted for weight. The thinning index was used to divide the biface production trajectory into segments. Stage I bifaces have a thinning index of greater than or equal to 3.1 g/cm^2; Stage II bifaces range from 1.7 g/cm^2 to 3.1 g/cm^2; and Stage III specimens have a thinning index of less than 1.7 g/cm^2. Johnson's sample was temporally limited to late Middle Archaic Sykes/White Springs and Benton horizon occupations. The chert was from a single-source Fort Payne outcrop.

The lithic material from the French Lick site used to conduct the biface production study fails to conform to a number of the variable parameters which Johnson was able to control. First, the temporal span ranges from Early Archaic through Mississippian components. Second, the chert ranges from Ordovician through Late Mississippian period chert, approximately 170 million years. The thinning index on these biface preforms was not

calculated, but the initial goal of developing a thinning index is implicit in placing the artifacts in the biface preform, Stages I, II, and III classification system. The sample of biface preforms includes 46 Stage I, 131 Stage II, and 165 Stage III. The core/biface Preform I artifacts were selected from a large collection of amorphous cores. These specimens are reasonably complete and exhibit enough hard-hammer percussion flaking to warrant the assumption that biface production was the intended goal. The categories defined and discussed below follow those used in Alexander (1983).

AMORPHOUS CORES

These artifacts are pieces of lithic raw material, usually chert, which have one or more negative scars resulting from the removal of flakes or blades. Hard hammer percussion flake scars are the most common evidence of flake removal. Cores rarely exhibit platform preparation and systematic flake removal; more commonly, the flakes are randomly removed. These cores are generally more than 5 cm in diameter and are manufactured on unheated local chert.

SPECIALIZED CORES

Bipolar Core. A bipolar core is produced by resting lithic raw material on an anvilstone and striking it with a percussor. The bulb or cone of force is confined to one end, and it is usually shattered or separated from the opposing end. Battering or crushing usually appears on the ends opposing the platforms, and blade-like scars extend along the length of the perimeter. These cores are usually small, up to 4 cm, and they are manufactured on local material. This lithic technology is commonly restricted to chert-poor areas where it was adopted as a specialized resource conservation measure. The occurrence of bipolar cores at Nashville suggests that they might have been part of an unidentified lithic technology or specialized tool type.

Blade Core. Polyhedral cores are employed in the specialized lithic production of blades used for microtools. These artifacts have flat ventral surfaces which were used as striking platforms, and a cone-shaped dorsal surface with parallel-sided negative flake scars. These artifacts are associated with the production of microlith tools.

DRILLS

Drills include thick, elongated, narrow bifaces which appear diamond-shaped to triangular in cross section. The blade width is normally equal to the thickness due to the steep-angled, fine bifacial retouch. The distal end may show blunting and smoothing from being used for penetration and rotary motion. Three groups of drills have been defined in the collection based on haft element forms.

Shaft Drill. Shaft drills have long, narrow, rodlike forms with straight sides and pointed to rounded proximal ends. They show no evidence of haft elements.

Expanding Base Drill. These drills also have narrow, rodlike bits with straight sides and rounded to pointed distal ends. The proximal end of an expanding base drill flares out and expands, apparently for hafting. These are also called "T" drills.

Stemmed Drill. Like the above drills, these have narrow, rod-like bits with rounded distal ends. The hafting elements on these tools are similar to those on projectile points. These artifacts are probably resharpened projectile points which were used in a rotary manner.

Distal and Medial Drill Fragments. These consist of unclassifiable medial and distal fragments of drills.

GRAVERS, MICROLITHS, PERFORATORS, & REAMERS

Graver. A graver is characterized by a very small, sharp projection made on a flake or lithic fragment by very fine pressure flaking. These tools were often made at the point on a flake or fragment where the ridge scar met the flake edge. This produced a strong, triangular cross section capable of withstanding heavy use. These tools were used for very fine incising or engraving.

Microliths. The microliths recovered from East Nashville Mounds and the French Lick site could readily be integrated into the three southeastern microlith industries. The Late Archaic microlith industry from Poverty Point has been described by Ford et al. (1955), Webb (1968), and Webb and Gibson (1981). Throughout the eastern United States, Middle Woodland assemblages also have a distinctive microtool industry (Ensor 1981; Chapman 1973; Cridlebaugh 1981b; Keel 1976). Kline (1985) analyzed a collection of Middle Woodland microliths from the southeast corner of the Nashville Basin. The production and the distribution of blade cores, blades, and microliths in the Ohio and Upper Mississippi River area are considered a specialized Hopewell interaction sphere (Hofman and Morrow 1985). Specialized Middle Woodland blade cores and blades were produced in resource areas with access to high-quality chert; these tools were extensively traded. Local cherts were also used to produce blades, although the results varied.

Mason and Perino (1961), Morse (1974), and Yerkes (1983) described a shell-working craft specialization at Cahokia during the Early Mississippian (900–1200 A.D.). Morse (1974), Morse and Sierzchula (1977), and Sierzchula (1980) described a microlith assemblage at the Zebree site. Experiments in microlith reproduction and use on shell, wood, and bone by Morse and Sierzchula led to the definition of an Early Mississippian microlithic industry similar to Cahokia. Pope (1989) defined a microtool industry from the Moundville settlement in the Black Warrior Valley. More recently, Ensor (1991) summarized the

microlithic industry in the southeastern Early Mississippian societies. At Lubbub Creek, Ensor (1991) described the production of specialized cores from local resources, preforms, and finished microdrills.

Within the Nashville Basin, Kline (1984a, 1984b) reports four microtools recovered at the Averbuch site. No microliths were reported for the Gordontown site, 40DV6 (TDOA 1979). O'Brien (1977) does not report any microliths from Mississippian sites. Without more specific context, it is difficult to determine whether the eight microtools and five specialized polyhedral cores recovered at the French Lick site are associated with the Middle Woodland or the Mississippian component. The absence of recovered microtools from East Nashville Mounds suggests a Middle Woodland context for these artifacts.

Perforator. Typically, these are bifacially retouched tools with short, tapering triangular projections. The bit of a perforator is generally thinner or flatter in cross section than that of a drill. They do not appear to have any haft elements. These artifacts are smaller and more delicate than drills, and were not used in a rotary manner.

Reamer. These are thick bifacial tools with distal ends that are long, often tapering, and triangular to diamond-shaped in cross section. These artifacts are normally thicker, larger, and more crudely made than drills. The proximal portion is left unfinished, and little or no retouch is evident. These were probably hand-held tools, used in a rotary manner.

ADZES, CHOPPERS, & WEDGES

Commonly associated with woodworking, these specialized artifacts have elsewhere been associated with male mortuary offerings. The location of East Nashville Mounds and the French Lick site adjacent to the Cumberland River suggests the hypothesis that canoe-building might have been a specialized part of the lithic technology during the Mississippian period.

Biface Adze. The biface adze is a thick, rectangular, elongated tool with a normally steep (45–75 degrees) transverse bifacial working edge and a convex bit. The end opposite the working edge may show modification for hafting, such as notching and grinding on the lateral edges. Use wear may appear as step fractures and crushing on the working edge, in addition to a polish of the flake ridge scars and surfaces slightly above the working edge. Biface adzes occur in Middle and Late Archaic contexts throughout the upland Southeast. Large biface hoe/adzes were recovered from a Wade horizon context in the Duck reservoir (Faulkner and McCollough 1974:233, 322). Also from a Wade horizon context on the Duck River, Herbert (1986:187–194) reports Dover chert adzes from mortuary contexts. These artifacts are also extensively discussed by Kline (1984a, 1984b) and Smith (1992) as part of the Mississippian elite trade items in Middle Tennessee.

Dover Chert Adze. On Mississippian sites in the central Cumberland Basin, a large number of Dover chert artifacts have been observed by archaeologists. From the data at Averbuch, Kline (1984b) has developed the following hypothesis:

> The data, therefore, indicate that Dover chert was not being brought into Averbuch in the form of masses of raw material intended for subsequent modification into a variety of tool forms. Instead, finished Dover artifacts in the form of large chipped and ground stone celts and specialized biface forms were being brought into the site. The former of these were being subjected to heavy use and were frequently broken. Subsequently, the tool remnants and spalls were either discarded or were recycled in other uses. In view of the relationship between debitage and tool forms (excluding the primary imports—celts and specialized bifaces), however, there was apparently no concerted effort to recycle Dover chert [Kline 1984b:I.11.2–I.11.4].

Smith (1992:144–146) has observed that the distribution of Dover chert artifacts reflects a two-tiered system of artifacts and social status. At one level, specialized Dover chert artifacts included ceremonial items such as maces, swords, daggers, hooks, and various claw forms. At the second level, Dover chert was used for the manufacture of special woodworking tools. Adzes and chisels have been recovered from both midden and mortuary contexts. Smith (1992:167–169) noted that sets of chisels have been recovered in association with male burials at Averbuch, Gordontown, and Horseshoe Bend in the Nashville area. Smith observed:

> The use of these artifacts as mortuary inclusions suggests that they were personal possessions, and quite probably those of highly skilled craftsmen. The primary use of Dover chert suggests a perception of wood-working as a high-status profession, in marked contrast to the perceptions of agriculture as an "everyday" task—evidenced by the absence of Dover hoes as mortuary offerings [Smith 1992:169].

The large number of Dover chert adzes or wedges, and fragments thereof at East Nashville Mounds, along with Dover chert debitage with polish on one surface, further strengthens the above hypotheses regarding the Mississippian use of Dover chert at Nashville.

Chopper. This is a large tool with a broad, steeply angled working edge produced by hard-hammer percussion flaking. Little or no secondary retouch is present, and there was no attempt to regularize the edge. These artifacts were made on rounded river cobbles, and two specimens were made on large chert chunks. The artifacts were further divided depending upon whether the working edge was unifacial or bifacial.

Wedge. This tool type exhibits a steep transverse working edge on the distal end and a battered striking platform on the proximal end. The tool body is generally slightly longer than it is thick and wide. These tools are made on flakes, lithic shatter, and biface fragments. Wear is usually apparent in the form of crushing, heavy battering, and step fractures.

Scraper. Scrapers were defined on the basis of being unifacially or bifacially worked tools possessing a continuous retouched transverse and/or lateral working edge. Scrapers

were further classified based on the orientation of the working edge with respect to the central axis of the chert blank or flake. The working edges included side, end, or a combination of the two. The type of flake or core used to make the scraper was the third variable in the analysis. Edge angles ranging from about 35 to 100 degrees were noted. Scraper angles greater than 90 degrees were due to excessive resharpening. The fourth observation was the extent of the flaking prior to edge retouching and use.

Of special interest were the unifacial end-side or "teardrop" scrapers. These artifacts have a continuous excurvate working surface which continues around the lateral edges of the artifact. Roberts (1987) notes these artifacts at Toqua on the Little Tennessee River. Morse and Morse (1983) describe these scrapers as a horizon marker in the Late Mississippian cultures of eastern Arkansas. Railey (1992) describes them as the late Fort Ancient horizon marker in the Ohio Valley area.

FLAKE TOOLS

Retouched & Utilized Flakes. These are flakes exhibiting a series of three or more pressure flake removals. There is no flaking pattern or any other characteristic that permits assignment to any other tool category. These are generally spurious flakes with a relatively straight edge which were used for a short time and then discarded.

PECKED & GROUND STONE

Abrader/Grooved Sandstone. This is a coarse- to fine-grained stone, normally sandstone, with grooves and/or trenchlike gouges resulting from scratching or sharpening another object against the surface. These could be the result of sharpening bone, wood, or stone, as well as platform preparation in flint knapping.

Bifacially Ground Sandstone. One artifact in the collection is the distal end of a large sandstone biface which has beveled blade edges produced by abrasion on both flat surfaces.

Core/Hammerstone. These are compound tools, generally made of chert, which have more than two large flakes removed by hard hammer percussion. Extensive battering is present around the edges.

Hammerstone. This is a cobble of a resilient material such as quartz, quartzite, or local chert which is not easily broken. The perimeter and edges of the cobble show signs of battering and crushing, with occasional flake scars originating in the impact area. These localized patches of wear indicate repeated battering from use as a percussor.

Hoe. These are large, chipped stone bifaces which have wear abrasion on the raised flake scar surfaces. Hafting notches and abrasion are also evident near the proximal end. These artifacts are associated with Mississippian agriculture throughout the upland Southeast.

Cobb (1989) discusses the technological and sociological factors of Mill Creek chert hoes from southern Illinois. Although these tools were most often made of chert, limestone and shale hoes were reported for the Wade horizon components in the Duck River Basin (Herbert 1986:188; Keel 1978:130).

Muller. This is a hand-held artifact with one or more flat to slightly convex ground surfaces. Battering and crushing are also evident on the edges or smaller surfaces of these artifacts. These specimens were likely used in conjunction with concave stones to pulverize seeds and grains. They are made from flat river cobbles, and sandstone is the preferred raw material.

Pitted Anvilstone/Muller. These artifacts are flat on one or more surfaces with a round depression produced by repeated pounding. The flat surfaces of these stones have been smoothed by repeated abrasion against other flat surfaces.

Pitted Anvilstone/Mortar. This is a cobble or larger stone fragment with a flat side or sides and localized pitted depressions from repeated pounding. Pits may appear on more than one side, and there may be more than one pit per side. These specimens are made from sandstone or quartzite. They are commonly referred to as nutting stones, based on the belief that nuts were placed in the depressions and crushed.

Tabular Groundstone Fragments. These are sandstone fragments on which one or both surfaces show polish from abrasion. They are fragments of broken flat milling stones.

Discoidal. These artifacts are rounded in outline, with the cross sections being excurvate, flat, or concave. Concave specimens may be perforated in the center. The specimens have been pecked and ground into their final shapes. The sample was arbitrarily split into large and small discoidals and fragments thereof. The large discoidals might have functioned as gaming stones or "chunky stones." The smaller discoidals might also have been a type of gaming stone. The wide range of the sizes of these specimens recovered from Mississippian contexts suggests a diversity of potential uses.

Kline (1984a:8.40) reported 32 specimens recovered from the Averbuch site. One chert and two limestone discoidals were recovered from the 40DV6 site (TDOA 1979). Turnbow (1992:174–176) reports an interesting series of discoidals which are similar to the specimens recovered from the Jefferson Street Bridge excavations.

GROUND & INCISED STONE

Fragments of sandstone, shale, or slate which are either ground or polished were recovered during the project. These artifact fragments have been biconically drilled and are probably pendant fragments. Chattanooga shale fragments which have been edge ground and partially shaped were used extensively during the Late Archaic and Early Woodland periods in the

Tennessee and Cumberland Valleys; these are generally gorget fragments. Examples of incised slate and shale gorget/pendant fragments from Mississippian contexts in East Tennessee have been reported by Lewis and Kneberg (1946), Lafferty (1981), and Roberts (1982, 1987).

POLISHED STONE

Bar Gorget. These artifacts are made of Chattanooga shale, with one or two biconically drilled holes in the center. The edges of the specimens may be notched, or the flat surfaces may be inscribed. Herbert (1986:192) illustrates a similar specimen associated with a Wade burial at Site 40HI131. Dowd (1970) illustrates an interesting association of a bar gorget in a Late Archaic burial along with Cotaco Creek and Wade projectile points and red ochre. From the Anderson site, Dowd (1989) and Lindstrom and Steverson (1987) illustrate numerous bannerstones and atlatl weight specimens from the Middle Archaic context. Although a large Benton horizon is present at the French Lick site, no bannerstones were recovered. Kwas (1981), in her review of bannerstones, does not deal specifically with bar gorgets, although a generalized Middle to Late Archaic sequence is suggested. In East Tennessee, bar gorgets have been extensively recovered, and Lafferty (1981) provided a clear Early Woodland context for the manufacture of bar gorgets. As discussed earlier, the Early Woodland of upper East Tennessee is contemporaneous with the Late Archaic Wade horizon in Middle Tennessee. The northeast Mississippi Site 22TS954, a reasonably clear Middle Archaic component, contained atlatl weights but no bar gorgets (Alexander 1983). From this we may conclude that bar gorgets are associated with the Late Archaic-Early Woodland period.

Cannel Coal. These faceted pieces of coal were recovered from the French Lick site. The specimens are shaped into irregular disks with flat surfaces. One specimen is extensively polished. Cannel coal has been reported from Averbuch in association with females, although one male burial and one subadult burial also had coal disks associated (Kline 1984a). These artifacts might have been used as ceramic smoothers. Lindstrom and Steverson (1987) and Dowd (1989) also illustrate Cannel coal artifacts from a Middle Archaic context.

Celt. Celts are typically made from greenstone, with the second choice material being black metadiorite. Celts are associated with Woodland as well as Mississippian cultures throughout the Tennessee River Valley. Woodland celts are typically large, ovoid in cross section, lenticular in plan view, with an excurvate bit. Cole (1981) has described Copena mortuary celts with no wear on the bits, and she suggests that they were freshly dressed prior to interment. Mississippian celts are smaller, having flatter surfaces with squared corners; they are rectangular in cross section.

Celt bits are typically polished on one surface, with the opposite surface having a conchoidal flake scar and no polish. Often, a segment of the beveled bit or pole end is preserved on the flake.

Celts recovered from the Gordontown excavations include two siltstone, two greenstone, and four Dover chert specimens (TDOA 1979). Benthall (1983) reports that two limestone and three schist celts were found in the Noel Cemetery. At the Averbuch site, Kline (1984a:8.33) described six complete and twenty-six fragments of celts.

Grooved Maul

These polished and ground tools have a groove three-quarters around the midsection. These artifacts are found on Middle and later Archaic sites throughout the upland South. Cridlebaugh (1986:199), at the Penitentiary Branch site, reported seven complete, fully grooved axes. On the Upper Tombigbee River, Alexander (1983:167) reported a fully grooved maul; Futato (1983:281) reported a fully grooved axe from Cedar Creek.

Faceted Minerals

These are fragments of galena and an unknown leadlike mineral ground for the colored pigment they produce. The nodules are typically ground with facets. One fragment of a quartz crystal was also recovered from the Jefferson Street Bridge excavations.

Thermal Alteration

Thermal alteration of chert is an important aspect of biface and core production technology. The attributes used to determine if thermal alteration has occurred are (1) partial or complete color change, generally to warmer colors; (2) increased luster; (3) conchoidal ripple scars on flake surfaces of different "texture" than the pretreatment surfaces; and (4) evidence of heat crazing. Pot lid and crenelated fractures are the salient criteria used by researchers to determine if artifacts have been heated (Crabtree and Butler 1964; Morrow 1981; Purdy 1974). Accidental heating of artifacts, in which the temperature is not controlled, produces pot lid fractures. Both sets of observations are included in the artifact descriptions.

Biface Production

Bifacial artifact production models developed by Johnson (1979, 1981), Morrow (1984), Purdy (1975), and Robinson (1977) have defined a series of biface fracture types. These fracture types are the result of physical properties of the chert employed, lithic flaking techniques, and the skill of the flint knapper. The first two variables can be evaluated by the lithic technologist. In this analysis, ten fracture types were observed. Those types include (1) hinge, (2) reverse, (3) perverse, (4) impact, (5) lateral snap, (6) basal thinning, (7) incipient fracture plane, (8) crenelated, (9) pot lid, and (10) haft snap. Complete bifaces with

no obvious error made for an eleventh category. Biface production errors were compared to the stage of biface reduction. As previously discussed, the biface production sequence consists of: (1) amorphous core/biface Preform I; (2) biface Preform II; (3) biface Preform III/blank; and (4) finished projectile point/knife. This biface production analysis was performed only on the lithic collection from the French Lick site, as the assemblage from East Nashville Mounds was too small to warrant similar study.

EAST NASHVILLE MOUNDS ARTIFACT DESCRIPTIONS

PROJECTILE POINTS

BIG SANDY

n=1; Figure 113a; blue-gray Fort Payne

The only Big Sandy projectile point recovered has well-developed side notches and a shallow basal notch. One of the basal edges is broken, and the distal end has been broken with a lateral snap. Minor basal grinding is evident, along with serration on the blade edge.

SYKES/WHITE SPRINGS

n=2; Figure 113b, c; 1 tan Fort Payne, 1 heated Bigby-Cannon

Two Sykes/White Springs specimens were recovered. One has weak side notching with an unfinished basal edge, weak serration, and a minor impact fracture at the distal end. The second specimen has well-developed corner notches, a straight base, and minor basal grinding. It was fractured diagonally, possibly with a lateral snap.

LITTLE BEAR CREEK

n=1; Figure 113e; heated Fort Payne

The single Little Bear Creek projectile point specimen has a long, asymmetrical stem with an unfinished base. The blade has been broken with a lateral snap fracture.

COTACO CREEK

n=1; Figure 113g; heated Fort Payne

The Cotaco Creek specimen has been fire spalled, and one shoulder with the haft element remains. The basal edge is slightly ground, and the blade edge has been resharpened.

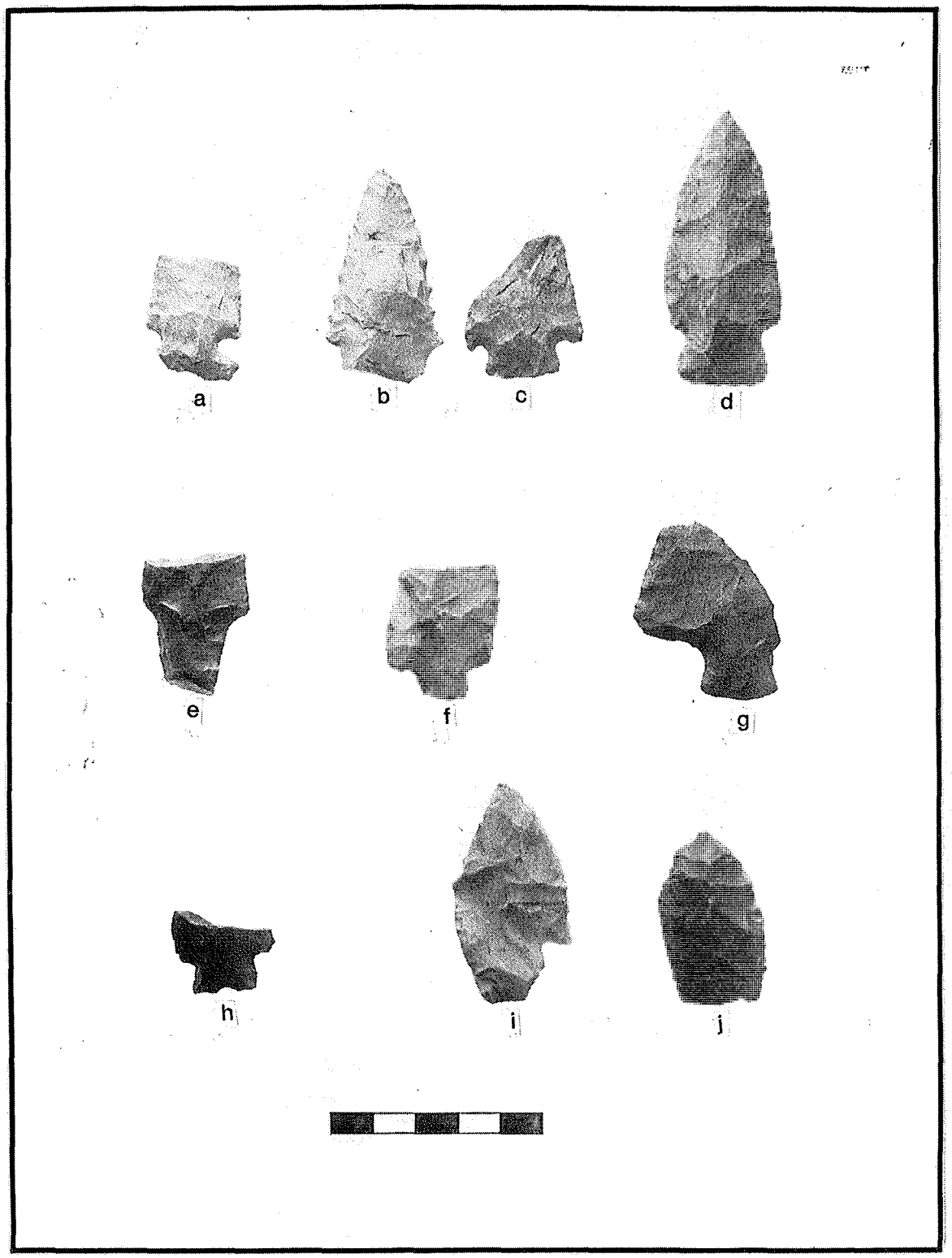

Figure 113. a, Big Sandy; b and c, Sykes/White Springs; d, Flint Creek; e, Little Bear Creek; f, Late Archaic stemmed; g, Cotaco Creek; h, Woodland stemmed; I and J, Woodland triangular.

Wade
n=1; Figure 113i; St. Louis

The single Wade projectile point has distinctive corner notches; the base and one blade edge have been broken. The artifact has been resharpened, and the distal end is asymmetrical.

Late Archaic Stemmed
n=1; Figure 113f; Brassfield

The specimen has asymmetrical rounded shoulders with an expanding, unfinished stem. The base has been broken with an end- shock fracture; the blade edge has been resharpened, with one beveled surface. Edge wear suggests use as a scraper or knife.

Flint Creek
n=1; Figure 113d; Fort Payne

The single Flint Creek specimen has tapered shoulders, an expanding stem, and a straight base. The blade is excurvate, and the distal end is acute.

McIntire
n=1; Fort Payne

This complete specimen has excurvate blade edges and an excurvate haft element base.

Sublet Ferry
n=1; Figure 113h; Fort Payne

This specimen has rounded shoulders and a concave base. The blade has been broken with a crenelated fracture.

Lanceolate Spike
n=1; Fort Payne

The one specimen has rounded shoulders, an expanding stem, and a concave base. The base is broken due to a material flaw combined with an indirect fracture.

Woodland Triangular
n=2; Figure 113j; Fort Payne

The two specimens are triangular projectile points or biface preforms.

Unidentified Projectile Point
n=5; 3 Fort Payne, 1 heat-treated St. Louis, 1 St. Louis

One point has been extensively heated; consequently, it has spalled and split. The second may be part of the Benton Cluster; however, it has a lateral snap fracture with later impact fractures along one surface. The other two specimens have haft fractures.

MISSISSIPPIAN TRIANGULAR

FINE TRIANGULAR FLARED BASE-FORT ANCIENT FLARED BASE
n=9; Figure 114a; Fort Payne

Three specimens are complete, one specimen has a distal impact fracture, three specimens have lateral snap fractures, and two have end shock fractures. Three of the specimens have concave bases, one has an excurvate base, and seven have straight bases. All specimens have incurvate sides with a distinctive flare on the lateral edges near the base.

TRIANGULAR COARSE SERRATION-FORT ANCIENT
n=4; Figure 114b; Fort Payne

Two of the specimens are complete, one has an impact fracture, and one specimen is unfinished with a lateral snap fracture. Three specimens have straight bases, and one has a concave base. All of the specimens are distinguished by being long relative to their width, with coarse serration along the blade edge.

TRIANGULAR FINE SERRATION-SAND MOUNTAIN
n=8; Figure 114c; Fort Payne

Six specimens are complete, two have impact fractures, and one has a transverse fracture. One specimen is heat treated. Four specimens have concave bases, three have straight bases, and one example has an excurvate base.

TRIANGULAR STRAIGHT TO EXCURVATE SIDES & STRAIGHT BASE-MADISON
n=11; Figure 114d; Fort Payne

Nine specimens are complete; two have lateral snaps. Two specimens are heat treated. These projectile points have wide bases and are similar to isosceles triangles.

TRIANGULAR STRAIGHT SIDES & EXCURVATE BASE-MADISON
n=10; Figure 115a; Fort Payne

Two specimens are complete, one has a transverse fracture, four have lateral snap fractures, and one has an impact fracture. Two specimens with lateral snap fractures are production failures; hinge fractures and chert knots resulted in the lateral snaps. One specimen is broken with heat spalls. These projectile points are similar to the previously defined Madison group with the exception of the distinctive straight bases.

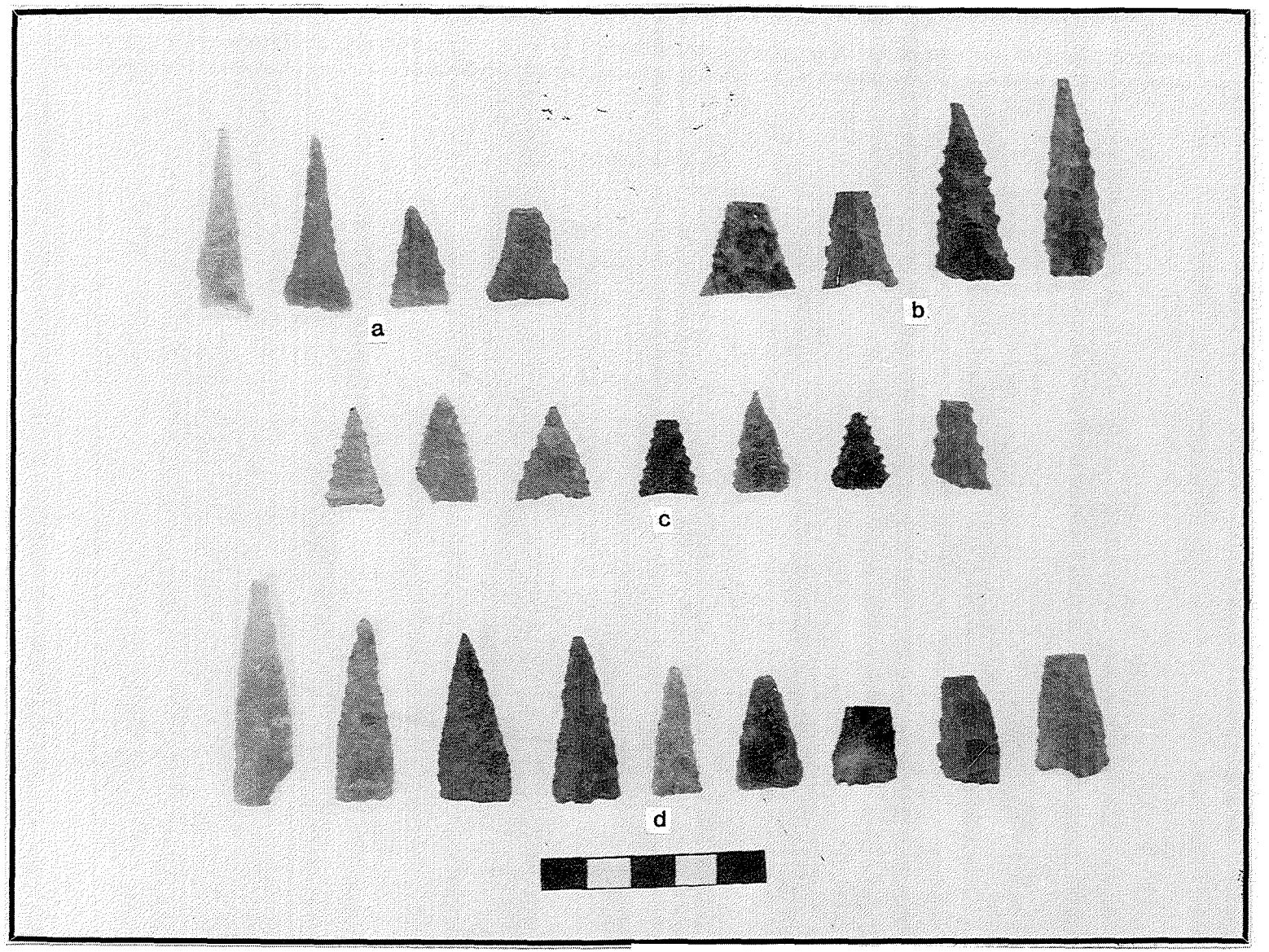

Figure 114. Mississippian triangular: a, Fort Ancient flared base; b, Fort Ancient, coarse serration; c, Sand Mountain, fine serration; d, Madison.

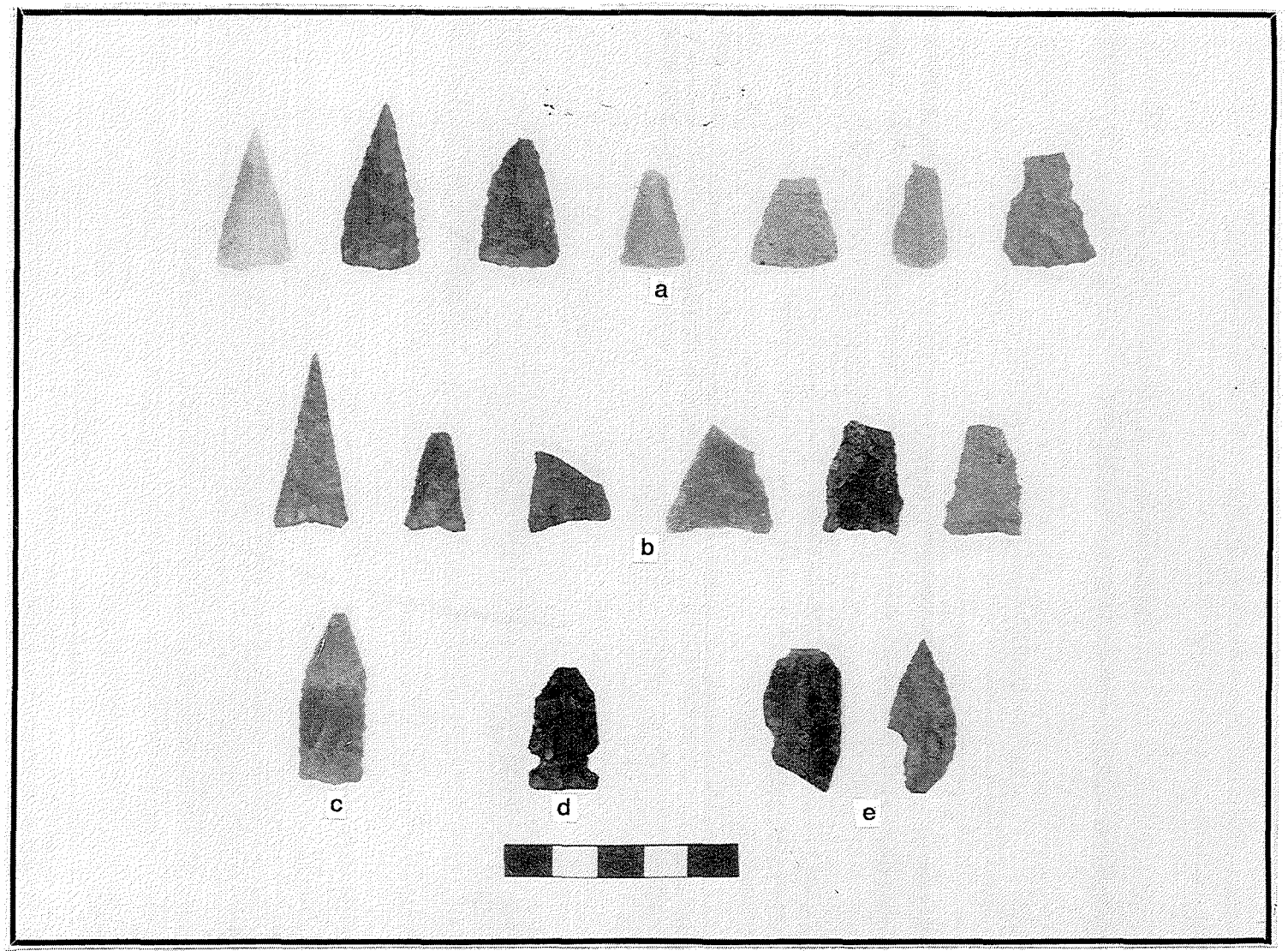

Figure 115. Mississippian triangular: a and b, Madison; c, Guntersville; d, Sublet Ferry/Knight Island; e, small Lanceolate.

Triangular with Straight Sides & Concave Base-Madison
n=6; Figure 115b; Fort Payne

Two specimens are complete; four have transverse fractures, and two have impact fractures. Two specimens have been heat treated.

Triangular with Excurvate Sides & Straight Base-Guntersville
n=1; Figure 115c; Fort Payne

This specimen is triangular and long relative to its width. The distinctive excurvate sides are characteristic of the late Mississippian period.

Triangular with Side Notches-Sublet Ferry/Knight Island
n=1; Figure 115d; black Fort Payne

This specimen has well-developed side notches and a straight base. Several pot lid fractures are evident on the artifact. The distal end is broken, and it may have been resharpened.

Small Lanceolate
n=2; Figure 115e; Fort Payne

The first specimen is anomalous. It is lanceolate with excurvate blade edges; the base is unfinished. One edge is broken, and one shoulder is present. The second specimen was made on a blade flake with excurvate sides; the base is unfinished. There is a lateral snap on the distal end. On both specimens the blade surfaces have been ground or water polished, and the flake scars are extensively rounded. One corner has been broken from the point base, and the flake scar is polished over. The second specimen has a fragment of the cortex remaining on the basal end; the distal end has a lateral snap fracture.

Summary

Table 24 provides a summary of the PP/Ks from East Nashville Mounds.

Biface Preforms

Biface Preform III
n=4; 1 Carters, 1 Brassfield, 1 Fort Payne, 1 unknown

These are triangular artifacts which were fractured or discarded prior to completion. All are triangular with straight bases and excurvate sides. One specimen has concave sides. Three are broken at the distal ends, and one specimen is complete.

Biface Preform I & II Fragments
n=11; 1 Bigby-Cannon, 1 Brassfield, 5 Fort Payne, 2 Dover, 1 St. Louis, 1 unknown

This group consists of biface fragments which have had the cortex removed and have been partially reduced; the preliminary bifacial shaping had been started. These specimens are irregular, and there was no attempt to thin them. The production failures include five transverse fractures, two heat crenelations, and two material flaws.

Biface Distal Fragment
n=35; 2 Carters, 2 Brassfield, 5 Ridley, 7 Fort Payne, 6 heated Fort Payne, 7 St. Louis, 6 unknown

These artifacts are distal fragments from biface Preform IIIs and finished projectile points. Twenty-one specimens are from small triangular finished projectile points, and twelve specimens are from the larger Archaic-Woodland lithic technology.

Biface Medial Fragment
n=22; 14 Dover, 1 Carters, 5 Fort Payne, 1 heated Fort Payne, 1 unknown

These specimens are the medial and lateral fragments from biface Preform IIIs and finished projectile points. Ten specimens are from smaller Mississippian projectile points, and eight are fragments of the Archaic-Woodland assemblage.

This is the first time in the lithic reduction sequence that Dover chert has been identified in the collection from East Nashville Mounds.

Drills

Expanding Base Triangular Drill
n=2; Figure 116b; Fort Payne

These two specimens are triangular with concave blade edges and rounded cross sections. These artifacts may be triangular projectile points which were sharpened after they were hafted and then employed as perforators.

Gravers, Microliths, Perforators, & Reamers

Perforator
n=6; Figure 116d; 5 Fort Payne, 1 Carters

These specimens have small, sharp projections with fine pressure flaking on one or more edges, adjacent to the flake ridge. This yields a somewhat triangular cross section which is

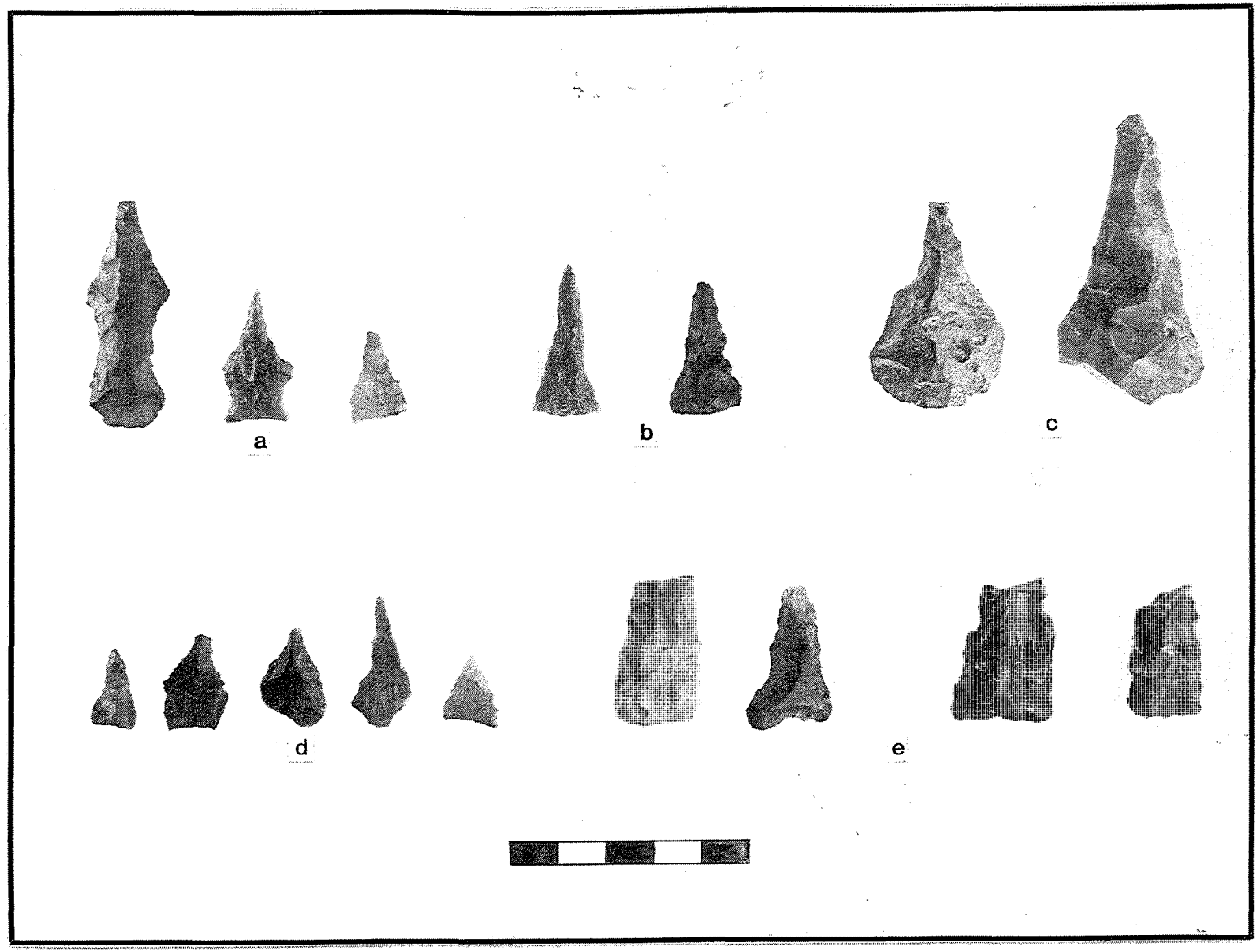

Figure 116. a, hafted perforators; b, expanding base drills; c, reamers; d, perforators; e, biface preforms.

strong and durable. These artifacts are made on flakes and chert fragments with no consistent production techniques; they were probably used for engraving and fine incising.

Perforator Fragment
n=6; 4 Fort Payne, 1 heated Fort Payne, 1 St. Louis

These artifacts are medial and distal fragments from small drills and perforators. They all have rounded to triangular cross sections.

Hafted Perforator
n=3; Figure 116a; Fort Payne

One specimen has recurvate blade edges with shallow, wide lateral haft modifications and rounded shoulders. The blade edge is concave, and the distal end is broken. This artifact may have been designed as a hafted drill. However, there is no wear modification at the distal end. The second specimen is small (length 2.8 cm) with wide, shallow side notches and rounded shoulders. The blade edge is concave with a sharpened distal end. The third specimen is a triangular projectile point which has been sharpened into a perforator.

Reamer
n=2; Figure 116c; Fort Payne

These two artifacts are thick and bifacially flaked with elongated, tapering distal ends. One is diamond-shaped and the second is triangular in cross section. In both specimens, the distal and proximal ends are unfinished. One specimen has pot lid fractures.

Hoes, Choppers, & Wedges

Hoe
n=1; Figure 117c; Fort Payne

This artifact is bifacially flaked around its perimeter. The dorsal and ventral surfaces both have extensive wear polish. One of the lateral edges, which has not been resharpened, is also rounded and polished. The artifact exhibits a transverse fracture which removed the distal end.

Chopper
n=2; Figure 118c; 1 quartzite, 1 Carters

These artifacts are bifacially flaked on 60 to 80 percent of their perimeters. Repeated step-fracture flake removal scars are present on both faces of the artifacts. These specimens were used for heavy battering.

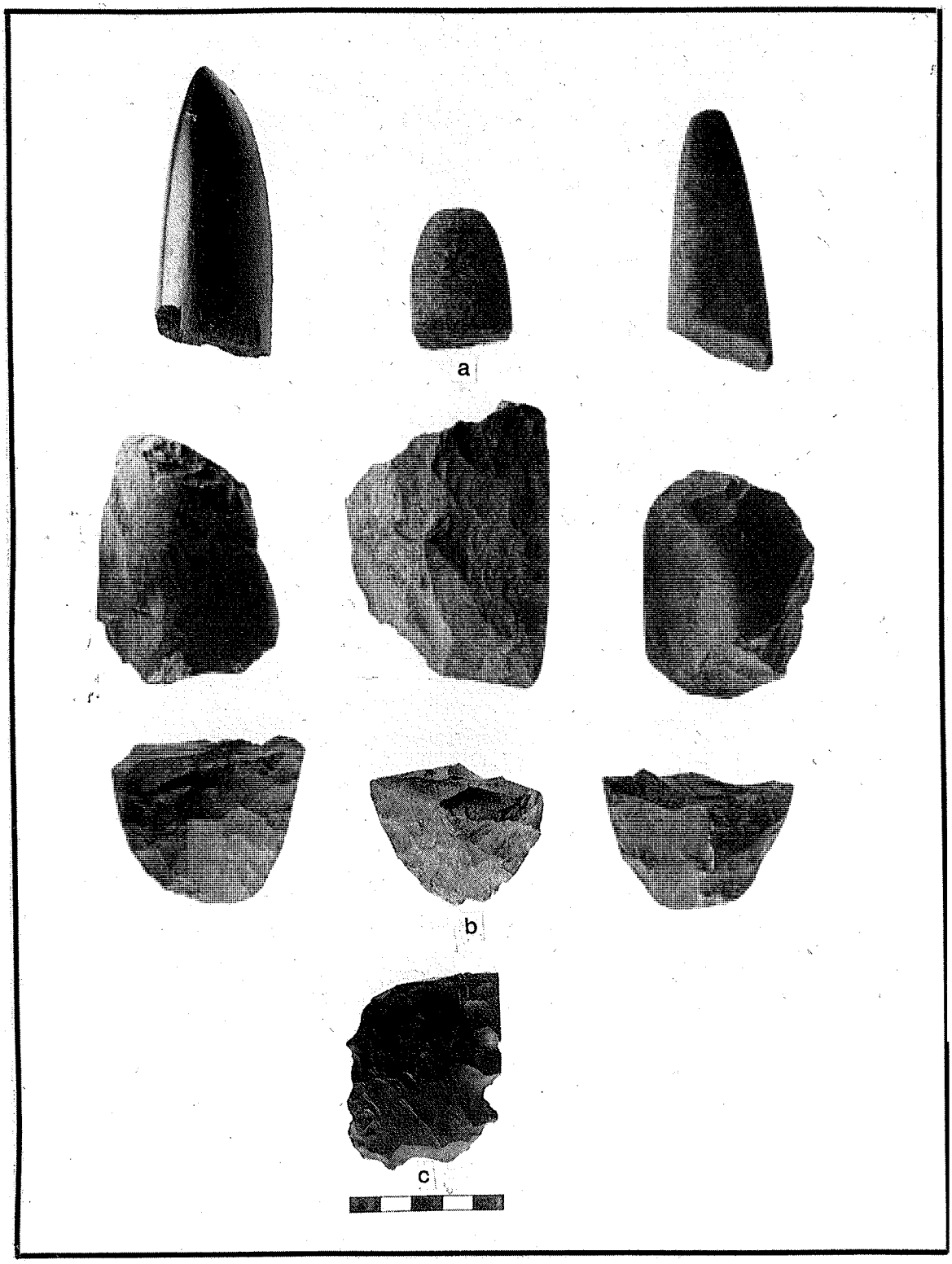

Figure 117. a, celts; b, wedges; c, hoe.

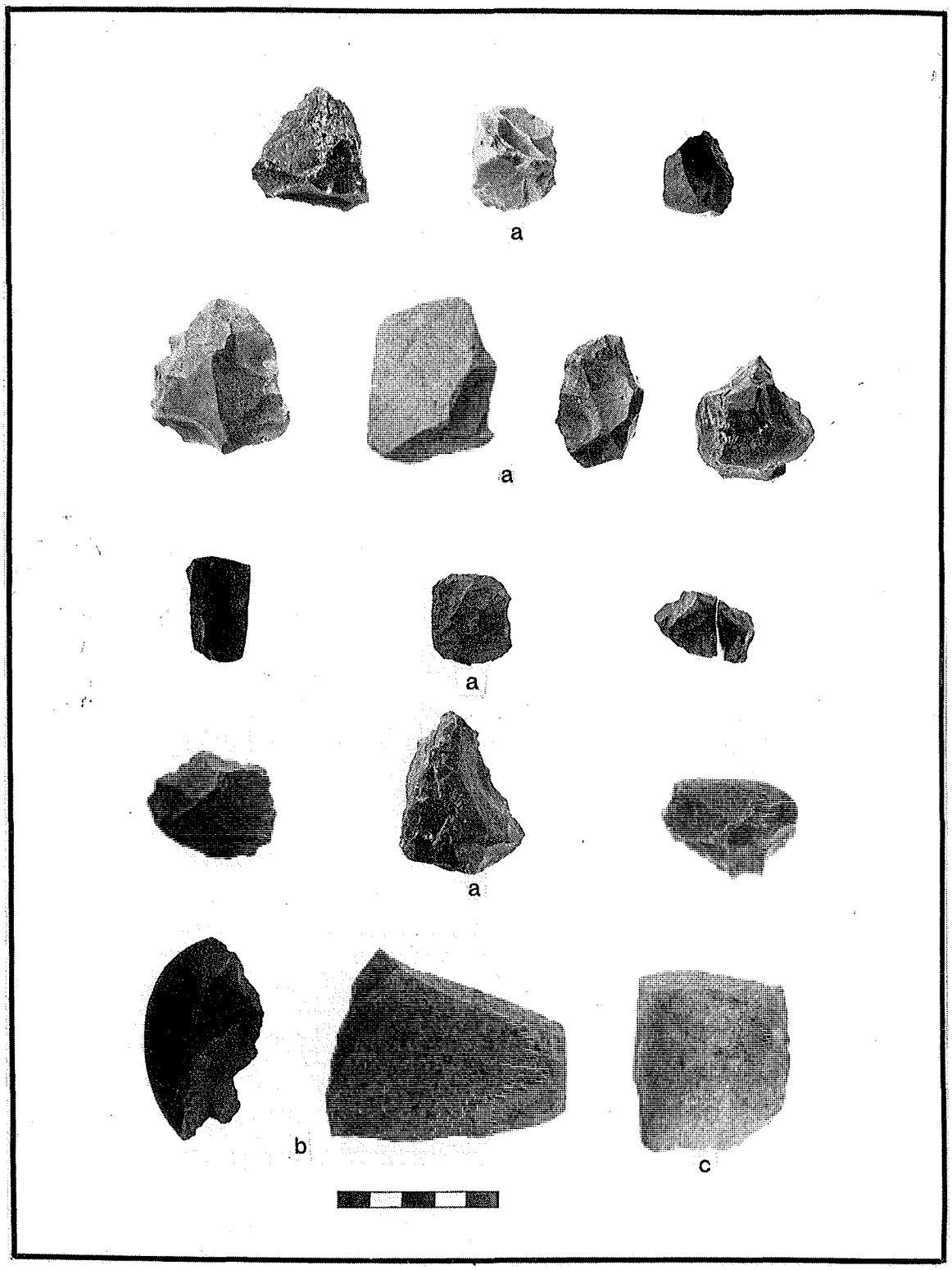

Figure 118. a, wedges; b, celt bits; c, chopper.

WEDGE

n=19; Figures 117 and 118; 2 limestone, 17 Fort Payne.

These artifacts are bifacially flaked and have obtuse angle bits. The ends opposite the bits have evidence of battering or polishing. Both limestone specimens and two of the chert specimens have evidence of wear polish on the lateral edges or flat surfaces. These artifacts are part of the woodworking complex discussed earlier.

REGIONAL CHERT-DOVER WEDGE

n=19; Figure 117b; 18 Dover chert (10 complete specimens, 2 pole end, 2 bits, 4 polished bit fragments), 1 Mill Creek chert bit

This collection of stone tools represents an Early to Middle Mississippian specialized craft and is unique to East Nashville Mounds. This artifact group contains almost all the Dover and exotic chert material from East Nashville Mounds. These wedges have no indications of hafting.

The sample consists of six complete wedges, twelve battered or pole ends, and three bifacially flaked bits. Four fragments with beveled and polished bits are also included in the sample. All the artifacts are bifacially flaked with no systematic polish; the bits are symmetrically beveled with no attempt to create an unbeveled adze edge. The four bit fragments are exceptions; they are symmetrically beveled with polished excurvate edges. These are more like celt fragments than wedges; the sample size is too small to preclude this possibility. Three of the specimens are small, under 4 cm, and they are identical to the previously described limestone and chert wedges.

Polish is present on the elevated facets and ridges surrounding the flake scars. The lateral edge of each wedge exhibits the most extensive rounding and polishing. The end opposite the bevel shows extensive battering, and a rounding polish suggests a soft hammer impact. One of the elliptical specimens has battering on two surfaces, opposite the working edges. One of the polished bit fragments has battering on the fractured surface, suggesting that the artifact was further used as a small wedge after it was broken.

The sizes of these tools range in weight from 7.5 grams to 218 grams on incomplete specimens.

WEAR-POLISHED DOVER CHERT FLAKES

n=111; 65 Dover flakes (< 1/2"), 44 Dover flakes (> 1/2"), 1 black Fort Payne chert, 1 unknown chert

These flakes with surface polish are fragments from the shattering and resharpening of wedges such as those described in the previous category. Examination of the debitage from

East Nashville Mounds reveals that almost all the Dover chert flakes exhibit wear facets on one surface.

Exotic Chert Hoe/Wedge

n=2; Figure 119; Mill Creek Chert

One specimen is a Mill Creek chert hoe which was broken in midsection with a lateral snap; it was later recycled into a wedge. The distal edge is well polished with minor resharpening/wear flaking scars on the bit. The flat midsection fracture surface exhibits shallow flake scars on both dorsal and ventral surfaces. Burinlike fractures are present on one of the lateral biface edges. The second specimen is a Mill Creek chert flake with extensive polish on one surface.

Figure 119. Mill Creek hoe/wedge.

CORES

AMORPHOUS CORE
n=1; Brassfield

This specimen is a tabular chert nodule with limestone matrix adhering to the cortex. Flakes have been struck from one end.

FLAKE TOOLS

BLADE FLAKE
n=1; Carters

This specimen is an end-struck blade flake with a platform remaining at one end, and it is triangular in cross section.

UTILIZED FLAKE
n=13; 1 Carters, 2 Bigby-Cannon, 2 Dover, 6 Fort Payne, 2 unknown

This group of artifacts consists of flakes with use wear scars on one or more edges. These tools are fortuitous and possess no evidence of intentional flaking, hafting, or resharpening. These are primarily bifacial thinning flakes.

PECKED & GROUND STONE

ABRADER
n=3; Figure 120a, c; 1 sandstone, 1 limestone, 1 siltstone

This group consists of unshaped stone fragments which have grooves or abrasions incised into their surfaces. One, a siltstone fragment, has a shallow V-shaped groove. The second, a sandstone fragment, has three grooves on one side and two grooves on the opposite surface. Each groove is .5 to .7 cm wide with a V-shaped cross section. These artifacts were likely used to sharpen stone tools. The limestone fragment has short abrasion scratches on one surface. These artifacts are similar to a modern flint knapper's abrader.

SANDSTONE BIFACE FRAGMENT
n=1; Figure 120d; sandstone

This tabular sandstone has been ground on both surfaces; the edges are beveled and polished. This is the distal fragment of a large sandstone knife.

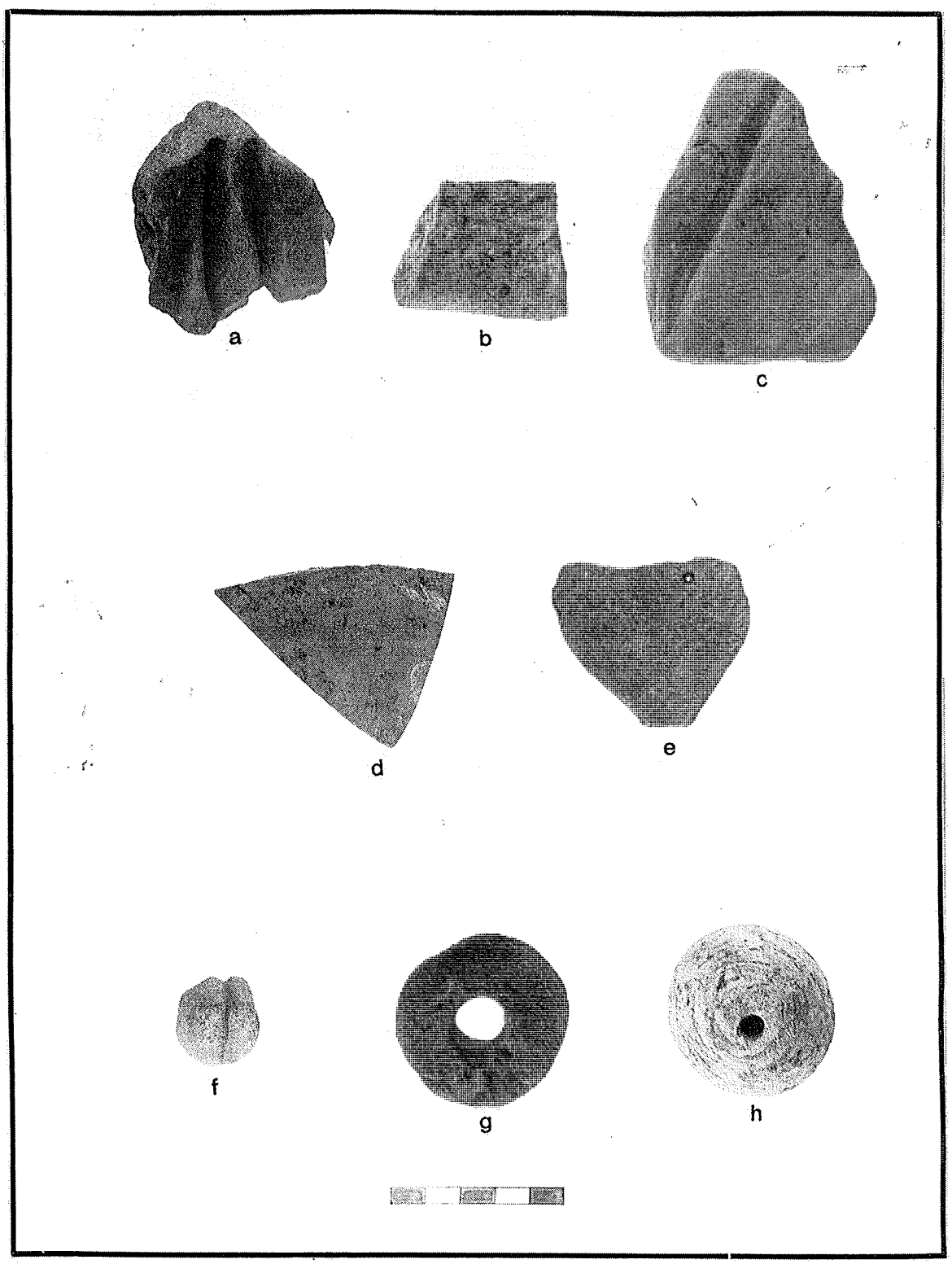

Figure 120. a and c, abrader; b, ground limestone; d, sandstone biface fragment; e, drilled sandstone fragment; f, net sinker; g, perforated sandstone; h, elliptical limestone nodule.

DRILLED SANDSTONE
n=1; Figure 120e; sandstone

This is a water-tumbled sandstone fragment, roughly triangular, with a biconically drilled hole .45 cm in diameter.

NET SINKER
n=1; Figure 120f; sandstone

This is a shaped and polished sandstone fragment which has a notched groove across the end and along one lateral surface. This is similar to a shaped net sinker fragment.

PERFORATED SANDSTONE
n=1; Figure 120g; reddish sandstone or tuff

This is a doughnut-shaped specimen, 4.9 cm in diameter, with a 1.42-cm-diameter interior hole. The perimeter has been shaped, and intentional edge grinding has been completed.

ELLIPTICAL LIMESTONE NODULE
n=1; Figure 120h; limestone

This specimen is a spherical limestone nodule with two preliminary biconical holes .55 cm in diameter on the long axis. Minor polishing and shaping is evident on the outside of the nodule.

BEAD
n=1; slate

This fragile bead, .72 cm in diameter and .42 cm in thickness, is biconically drilled.

GROUND LIMESTONE
n=2; Figure 120b; limestone

These limestone fragments have curved surfaces and have been shaped and ground. These artifacts are segments of chunky stones or celts too small to recognize.

HAMMERSTONE
n=7; Figure 121a-f; 4 Fort Payne, 2 quartz, 1 unknown

These seven specimens are irregular river cobbles which have been used as hammerstones. All the specimens exhibit extensive battering rounding and impact fractures along their edges.

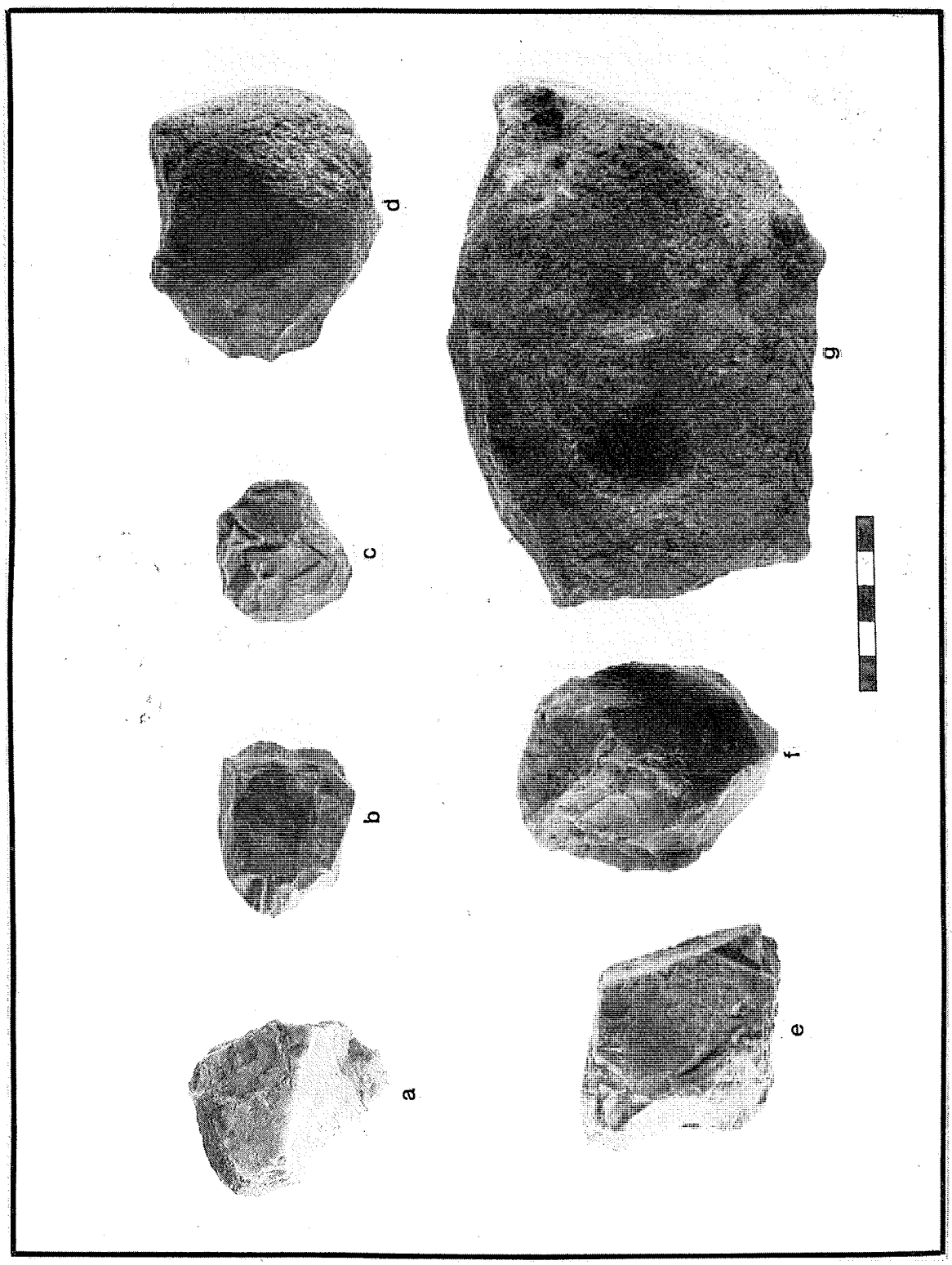

Figure 121. a-f, hammerstones; g, pitted anvilstone.

Milling Stone
n=2; sandstone

These are circular sandstone pebbles which have been abraded on one or both surfaces. One fragment is abraded on the edge.

Pitted Anvilstone
n=2; Figure 121g; sandstone

These artifacts are made of tabular sandstone with one or more shallow, circular depressions on the flat surfaces. Each pit ranges from 2.0 to 3.0 cm in diameter.

Tabular Ground Stone
n=22; 14 sandstone, 8 limestone

These tabular, water-worn stone fragments have been ground on one or both flat surfaces. These are fragments of milling stones or paint pallets.

Polished Stone

Cannel Coal Fragment
n=8; Figure 122d through f; coal

This group of artifacts consists of coal fragments which have been water tumbled and rounded. Two specimens have been intentionally shaped through edge grinding. One specimen is an irregular circle 3.7 cm in diameter and .92 cm thick. Two conical holes have been initiated near the perimeter of this artifact. The second specimen is a circle 7.39 cm in diameter and 1.16 cm thick. Broken through the middle, this artifact may have been a segment of a stone disk.

Celt
n=9; Figure 117a; 4 celt fragments, 5 celt edge chips, 5 chlorite schist greenstone, 3 metadiorite, 1 siltstone

This sample consists of two bit fragments, three pole ends, and four flakes. All the specimens exhibit extensive shaping and polishing. One of the specimens is a complete bit which is 1.78 cm wide.

Discoidal
n=14; Figure 122a, b; 10 limestone, 4 sandstone

Eleven specimens are complete enough for measurement, and three are fragmentary. All the disks have preliminary shaping on the perimeter. Minor edge grinding is evident on every specimen. Two whole and two fragmented disks have grinding over their existing perimeters.

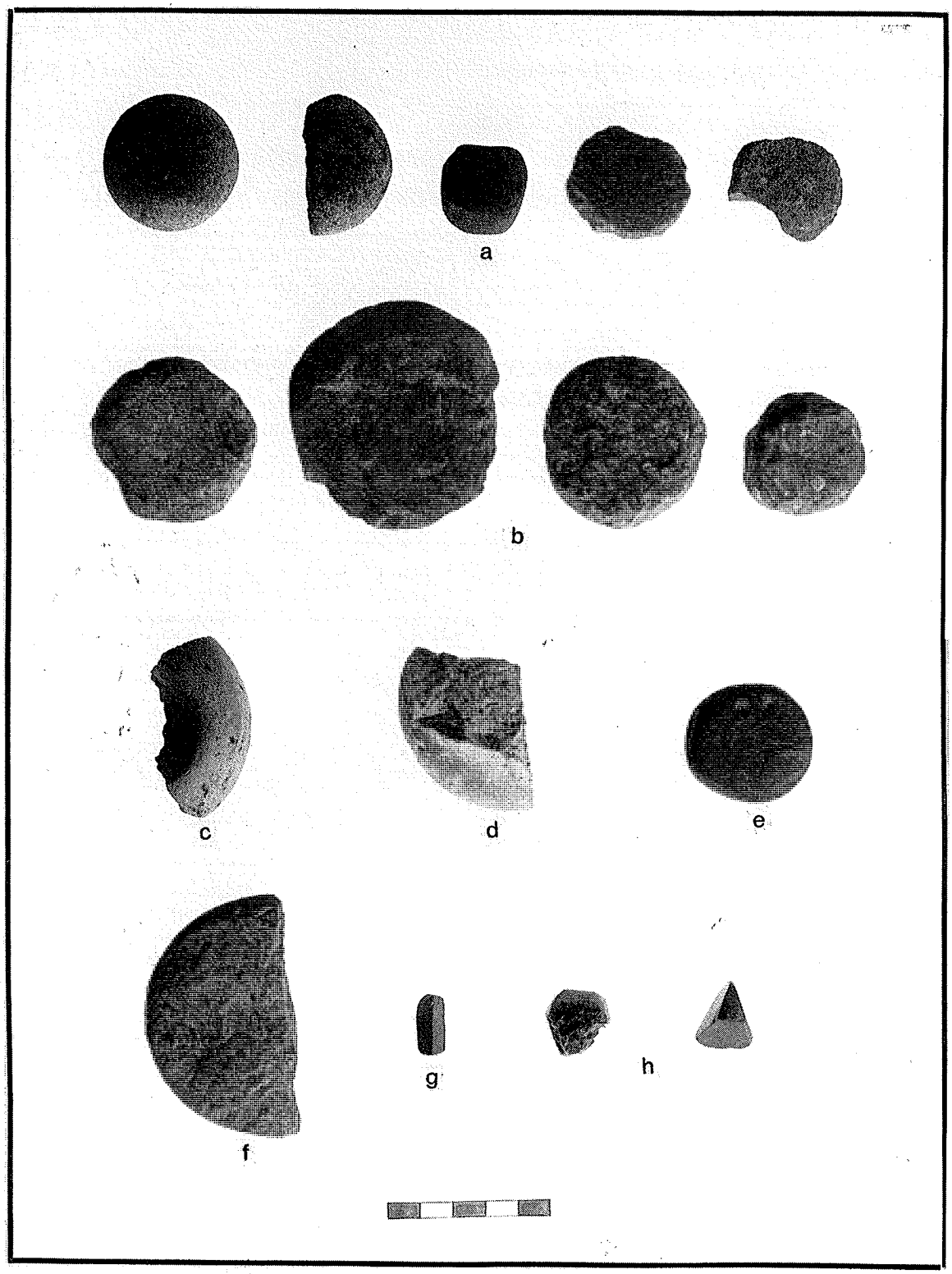

Figure 122. a, small discoidals; b, discoidals; c, large discoidal fragment; d, discoidal fragment; e and f, Cannel coal fragment; g, faceted galena; h, faceted leadlike mineral.

Large Discoidal Fragment
n=1; Figure 122c; limestone

This stone fragment is concave on both surfaces, and its perimeter is well rounded and polished. This specimen is approximately 25 percent complete. A chert nodule is on the interior of the limestone pebble. This is a chunky stone fragment.

Ground and Polished Limestone Fragment
n=2

These are probably stone disks or chunky stone fragments.

Ground Slate Fragment
n=8; Chattanooga shale

This is a tabular slate fragment which has been water tumbled. The perimeter of this artifact has been pecked and slightly ground. One edge, diagonal to the long axis, has been chipped and edge ground. Seven additional slate fragments are also from the same provenience.

Faceted Minerals

Crystal Fragment
n=1; quartz

This is an angular fragment of a quartz crystal.

Ground Galena
n=1; Figure 122g

This galena fragment has been ground and polished to create irregular facets on the stone.

Unknown Leadlike Mineral
n=2; Figure 122h

These two specimens are not attractive to metal. One specimen retains its conglomerate effect; the second is completely faceted.

DISCUSSION OF EAST NASHVILLE MOUNDS LITHIC ARTIFACTS

Ceramic and stratigraphic analysis supports the hypothesis that East Nashville Mounds represents primarily a Thruston phase Mississippian occupation.

Kline (1984a, 1984b) and Smith (1992) describe the Mississippian Dover chert procurement system as a specialized industry involving complete artifacts imported into the Nashville Mississippian settlements. Use and consumption of Dover chert and lesser amounts of more exotic materials by Mississippian groups in the Nashville Basin has been the focus of several studies. Largely from mortuary contexts, Smith (1992) has modeled a two-tiered hierarchy of Dover chert artifacts. Sociotechnic artifacts such as swords, maces, and other eccentric forms were displayed and consumed by the elite. The second tier is specialized woodworking tools made from Dover chert. These tools were resharpened and dressed prior to inclusion as mortuary items with male burials. Kline (1984a, 1984b) has described the system whereby finished Dover chert celts and specialized biface forms were imported into the site as completed artifacts. These artifacts were distributed as symbols of power and authority with the specialized maces, swords, and claws. The skilled woodworkers/craftsmen used Dover chert adzes. In both mortuary consumption environments, there was little effort to recycle Dover chert or other exotic material. However, both Smith's and Kline's samples involved primarily complete mortuary items, with a lesser focus on the midden deposits. The Dover chert lithic assemblage from East Nashville Mounds consists of discarded workshop debris; complete artifacts are rare. This affords a different view of the Dover lithic industry.

The Dover chert assemblage consists of broken wedges and other unidentified chert fragments. In this sample only one beveled bit fragment was polished; the remainder of the sample had wear polish only. Dover chert is somewhat brittle, and it readily fractures. The fracture patterns evidence lateral snap fractures as well as end shock fractures. Opposite the bit, the pole end of these wedges also show heavy battering and abrasion. This was possibly from a heavy wooden billet. Impact fractures from hard hammer percussion are not readily apparent. These specimens were broken during heavy use and possibly during resharpening. The Dover chert flakes recovered also reflect the abrasion polish on one surface opposite the positive bulb of percussion.

Nineteen chert and limestone wedges were recovered, in addition to the Dover chert wedges. These specimens were smaller than the Dover chert specimens; however, the wear and fracture patterns were similar. In addition, one specimen of Mill Creek chert, with a lateral snap fracture, was reworked into a wedge. A second specimen of Dover chert, with a well-polished bit, was also reworked into a wedge. Both specimens have billet-type fractures on the fracture surface opposite the beveled bit.

The woodworking industry at East Nashville Mounds contained an assemblage of regional and exotic raw materials. The wedges, exotic chert wedges, and polished stone-wedge chips will be considered as a single woodworking industry. Wedges made from local material are smaller and have less evidence of shatter and battering than do the exotic material specimens. This may be a result of the local Fort Payne chert and limestone being more resilient and showing less wear. The Dover chert specimens have a great deal of wear polish on the ridges separating flake scars as well as on the distal edges of the bit. Dover chert is more brittle, and it easily flakes from battering and resharpening; it is not well suited to heavy woodworking tasks.

All the specimens are heavily fractured and resharpened, so there is no means of estimating the size or shape of the original artifact. No evidence could be observed for haft notches or edge grinding in preparation for hafting. A question exists as to whether these artifacts were hafted as adzes or used as wedges. All specimens are extensively battered on the bit and pole ends.

Mill Creek chert is clearly an exotic material. One of the two Mill Creek chert specimens is the flake from the bit of an adze or wedge. The second specimen exhibits extensive battering on the proximal edge, and burinlike fractures on the lateral tool edges (see Figure 119). It appears to have been a hoe which was broken with a lateral snap, then recycled for use as a wedge. This may not follow the same use and discard model as the Dover chert specimens.

The celts recovered from East Nashville Mounds were all constructed from exotic materials, with one specimen made from siltstone. All the specimens have been well shaped and polished prior to use. No complete specimens were recovered.

The aforementioned models of Dover chert tools and consumption in Middle Cumberland Mississippian society appear to be relevant to the assemblage from the East Nashville Mounds as well. This new information contributes evidence that the woodworking industry was more developed, with extensive use and recycling of wedges until the artifacts were fractured beyond any further use. Judging from the mortuary specimens from Averbuch, the celts and adzes were highly valued items that were refinished and placed with the dead. Wedges were not valued, but were discarded in the midden.

The woodworking industry at East Nashville Mounds included celts and wedges. The large number of Dover chert adzes or wedges, and fragments thereof, and Dover chert debitage with polish on one surface further strengthens the above statements regarding the Mississippian use of Dover chert at Nashville. From the specimens observed in the collections, it is not clear whether these artifacts were hafted as adzes or used as wedges. There is no clear evidence of hafting on the specimens, and all specimens are extensively battered on the bit and pole ends. Dover chert artifacts are brittle; for this reason, it is not well suited to heavy woodworking tasks.

This entire discussion now leads to the question, what focus of the woodworking industry were these artifacts used for? The location on the Cumberland River suggests dugout canoe manufacture. A cursory literature review does not locate an extensive Dover chert wedge complex at other sites in the Nashville area. If canoe manufacture was significant along the Cumberland River, this incidence of wedges should be repeated at other sites.

The projectile points recovered included 75 percent Mississippian Triangular and the remainder Archaic and Woodland projectile points. The miscellaneous Archaic and Woodland projectile points are made from the locally available cherts, with three examples of regionally available cannon ball and blue-gray Fort Payne cherts. As Smith (1992) noted, in the Nashville Basin the Mississippian populations curated earlier projectile points. These points were likely collected from earlier sites as objects of curiosity or as heirlooms. There is no evidence in this collection of the reworking of these points into different artifacts. At East Nashville Mounds, 25 percent of the assemblage is likely to have originated from earlier sites. With the focus on wedges, a woodworking industry on the Cumberland River during the Mississippian occupation is readily suggested. The low number of reamers and perforators in the collection lends no credibility to the argument for boat building at this location.

The triangular projectile points recovered were analyzed according to morphology. The sample was compared to a collection of artifacts associated with the Ft. Ancient cultures of the Ohio River Valley. Twenty-nine percent of the triangular projectile points recovered were specimens which have been identified with the Fort Ancient assemblages on the Ohio River drainage. The flared base triangular and coarse serrated triangular projectile points have been dated by Henderson et al. (1992) to the period A.D. 1000 to 1400. The remainder of the triangular point assemblage contains Madison, Sand Mountain, and Guntersville types which are clearly associated with the Middle to Late Mississippian. All the specimens recovered were made from locally available Fort Payne chert.

The perforated sandstone disk and bifacially beveled and ground biface are part of an enigmatic sandstone industry at East Nashville Mounds. The sandstone disk resembles an unused spindle whorl. This specimen is made from a nonlocal sandstone or tuff; it is well shaped but not polished or abraded. The sandstone biface is the distal fragment of an artifact which would have been 15 to 25 cm long if complete.

Discoidals and stone disks manufactured from locally available materials, primarily limestone and small amounts of sandstone, were also recovered. None has been completed and polished. These artifacts were manufactured locally, and they were broken and discarded in the same village midden. Judging from the more complete fragments in the collection, the discoidals ranged from 3 to 5 cm to 10 cm or more. One sample, part of a "chunky stone," was concave on both dorsal and ventral surfaces. The rest of the specimens were excurvate to straight on both surfaces. The function of these artifacts in Mississippian society is traditionally discussed as "game pieces" (Eisenberg 1989).

The faceted minerals recovered included one fragment of galena and two fragments of a heavy leadlike mineral. These two specimens do not have the crystalline structure of galena. Both specimens have been edge ground, and they appear to have been a source of pigment.

FRENCH LICK SITE PP/K DESCRIPTIONS

BIG SANDY CLUSTER

BIG SANDY

n=5; Figure 123a; Fort Payne

These Big Sandy projectile points have straight to slightly incurvate bases and developed side notches. Four of the five specimens are broken with lateral snaps which are diagonal to the long axis. One specimen has burin spalls on both surfaces. The complete specimen has irregular serration on the blade edges. One of the specimens has basal grinding.

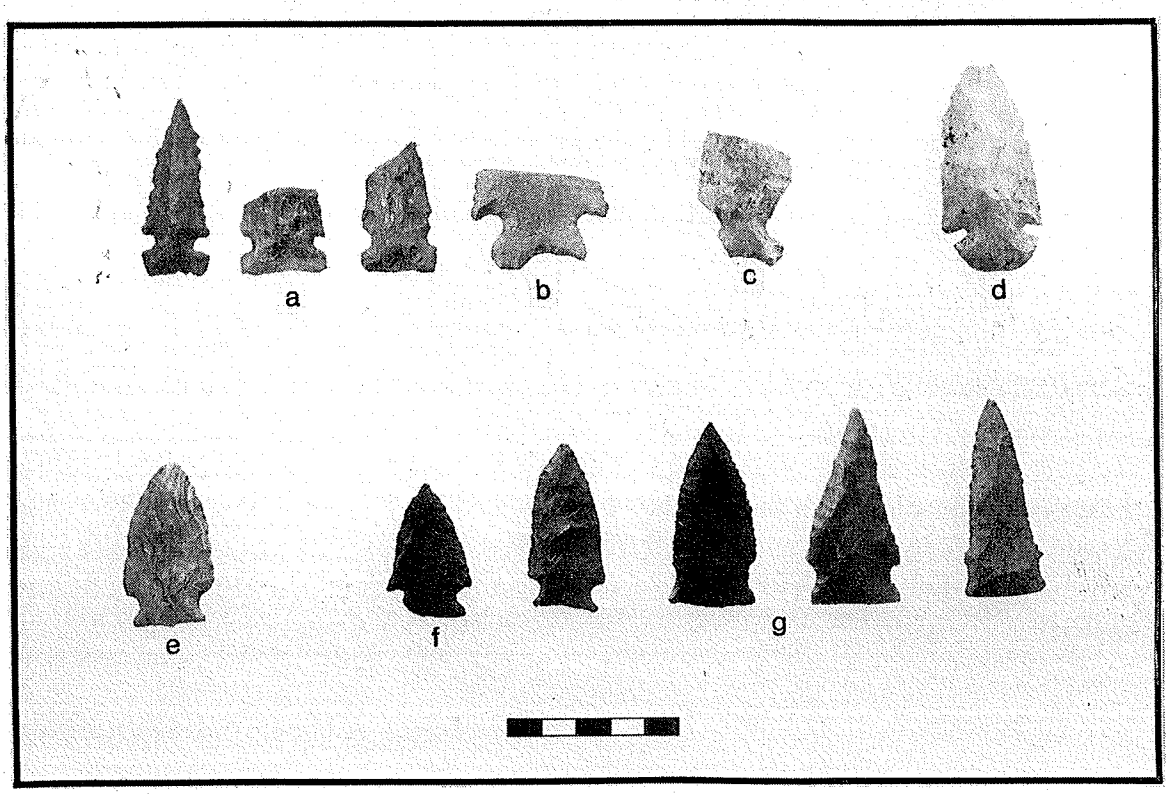

Figure 123. a, Big Sandy; b, Big Sandy auriculate; c, Osceola; d, Plevna; e, Crawford Creek; f, Kirk; g, Pine Tree.

Big Sandy Auriculate

n=1; Figure 123b; Fort Payne

This example is tentatively identified with the Big Sandy projectile point series. It has a rounded concave base with side notching. One lateral haft element edge has been removed with a burinlike flake. The entire basal edge and notch has been well ground. The distal end has been broken with a lateral snap fracture.

Kirk Cluster

Plevna

n=1; Figure 123d; blue-gray Fort Payne

The one Plevna specimen has alternating beveled blade edges, and the distal tip has been broken and slightly rounded. The excurvate base is well ground and rounded.

Pine Tree

n=4; Figure 123g; 2 Fort Payne, 1 Brassfield, 1 unknown

The four specimens are all complete. One has been heat treated; one has a serrated edge. Two of the projectile points have excurvate blade edges, and two have asymmetrical resharpened blade edges. Basal grinding is evident on one specimen.

Kirk Corner Notched

n=8; Figures 123f and 124a; 5 Fort Payne, 1 St. Louis, 1 Bigby-Cannon, 1 Bangor

These artifacts are hafted knives. Two were made of heat-treated chert. Five are complete, and four are broken. Three are broken with lateral snaps, and one has an irregular fire fracture. This group may be further subdivided into two functional groups. Two of the artifacts are lanceolate, and their length-width ratio exceeds 2:1. One of these specimens has a recurvate blade edge with an unfinished distal end. The second specimen has alternating beveled blade edges. The remaining three complete specimens are projectile points and have a length-width ratio of approximately 1:1. These three artifacts are shorter and have wide bases.

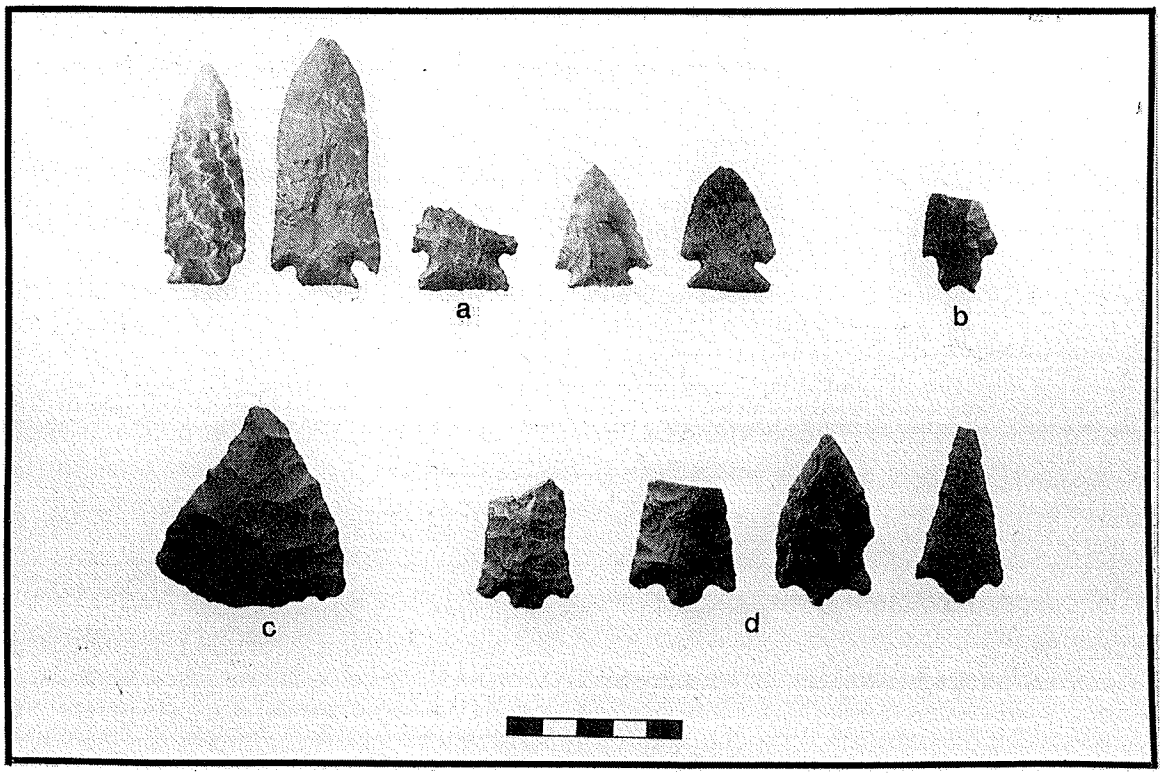

Figure 124. a, Kirk; b, Stanley; c, Morrow Mountain; d, Eva.

Cypress Creek Cluster

Crawford Creek

n=1; Figure 123e; heated Bigby-Cannon

The specimen has an excurvate base and blade edge. The distal end of the lateral edges is well rounded.

Bifurcate Base Cluster

Stanley

n=1; Figure 124b; Fort Payne

This specimen has a lateral snap fracture. The blade edges have minor serration.

Eva-Morrow Mountain Cluster

Eva

n=8; Figure 124d; 5 Fort Payne, 1 Brassfield, 1 heated Brassfield, 1 Bigby-Cannon

Two of the specimens have been heated. Two are complete, three have lateral snap fractures, and two have pot lid fractures from heating. One specimen has breakage across the blade and the lateral haft element due to material impurities.

The specimens can be divided into Eva I and Eva II on the basis of haft element. Five of the specimens belong to the Eva I group with well-developed, rounded haft elements, while two specimens belong to the Eva II group and have smaller, weakly developed haft elements.

Morrow Mountain

n=2; Figure 124c; Fort Payne

One specimen is complete, and the second has a lateral snap across the blade. The larger specimen is an isosceles triangle with no indication of hafting. The second specimen has only weakly developed notches.

Sykes-White Springs Cluster

Sykes/White Springs

n=1; Fort Payne

The one specimen has a lateral snap across the blade, and one part of the haft element has been broken.

Benton Cluster

Benton

n=21; Figures 125 and 126; 15 Fort Payne, 1 Dover, 1 St. Louis, 2 Bigby-Cannon, 1 Ridley, 1 unknown

Four of the twenty-one specimens are complete. Thirteen have lateral snaps; one is broken from fire spalling. One is broken due to material failure, and one has a transverse fracture. Three of these specimens appear to be late-stage production errors. Three have been modified to hafted drills, and one is modified into a hafted scraper. These artifacts are not listed in the above counts.

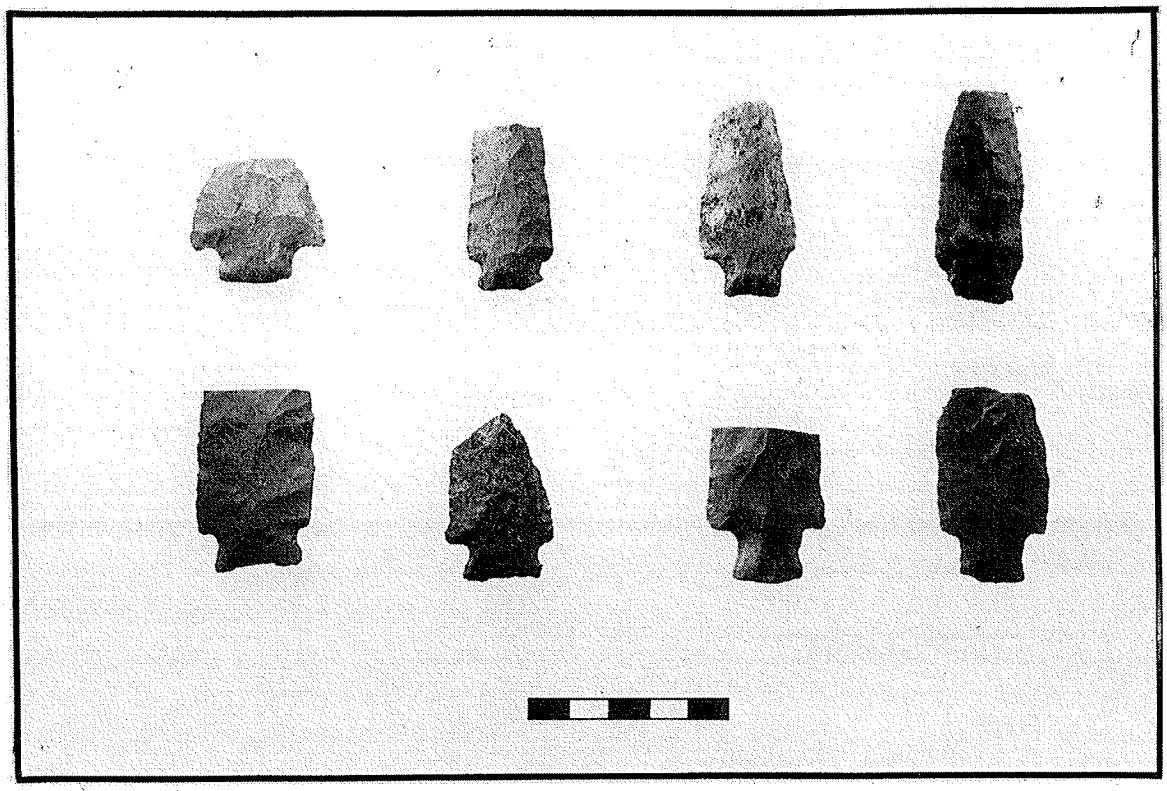

Figure 125. Benton points.

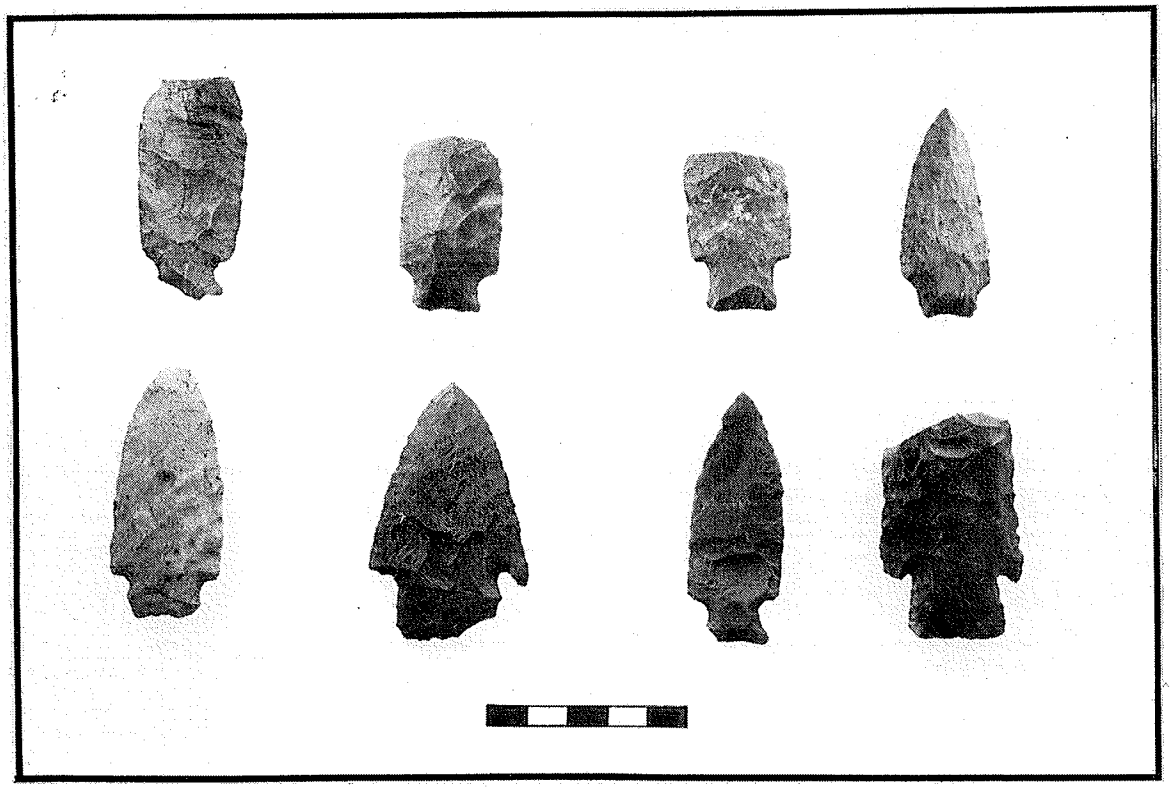

Figure 126. Benton points.

Buzzard Roost Creek

n=36; Figures 127 and 128; 23 blue-gray Fort Payne, 2 salt and pepper Fort Payne, 1 heated Fort Payne, 1 Bigby-Cannon, 1 St. Louis, 8 unidentified chert

Ten projectile points are complete. Seventeen examples have lateral snap fractures; two have thermal spall fractures. Three specimens have helical snaps, and two have distal end burination fractures. One additional Buzzard Roost Creek point is a hafted end scraper. This group has the greatest diversity of chert types in the entire collection.

Big Slough

n=1; Figure 129a; salt and pepper Fort Payne

This projectile point is beveled on the haft element. The base is similar to the other members of the Benton cluster. This specimen has been resharpened while hafted, and the blade edge is asymmetrical.

Ledbetter Cluster

Ledbetter

n=2; Figure 129c; 1 Fort Payne, 1 Bangor

Both Ledbetter projectile points have excurvate, asymmetrical blades. One specimen has extensive wear patterns on the distal end and on the resharpened area. The second specimen has an unfinished base.

Pickwick

n=1; Figure 129d; Fort Payne

This projectile point, like the Ledbetter specimens, has a recurvate blade. This specimen has an unfinished basal edge.

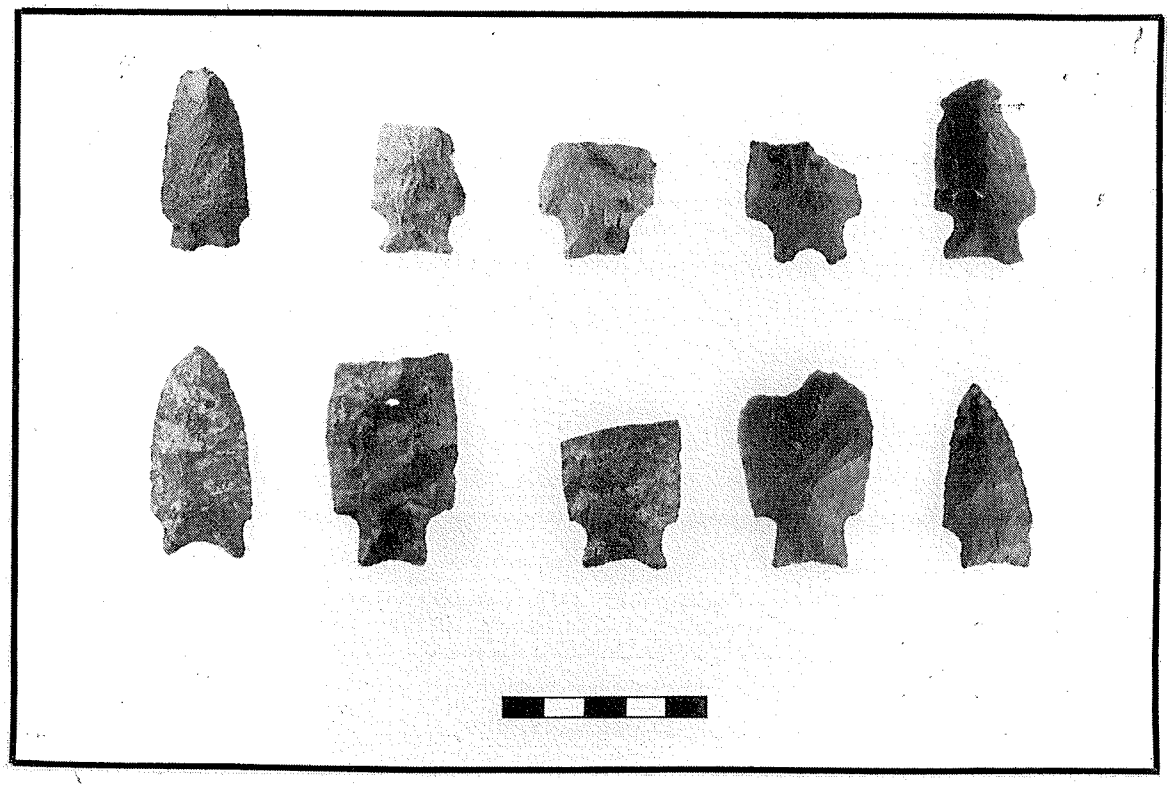

Figure 127. Buzzard Roost Creek points.

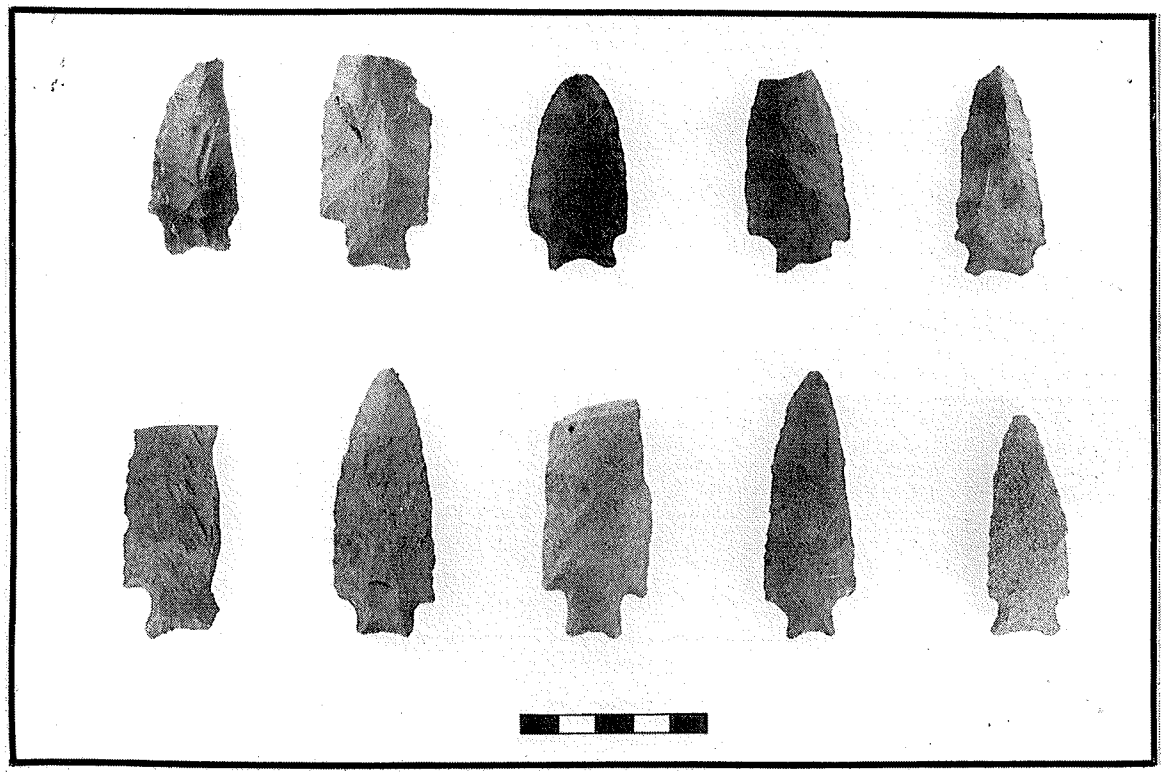

Figure 128. Buzzard Roost Creek points.

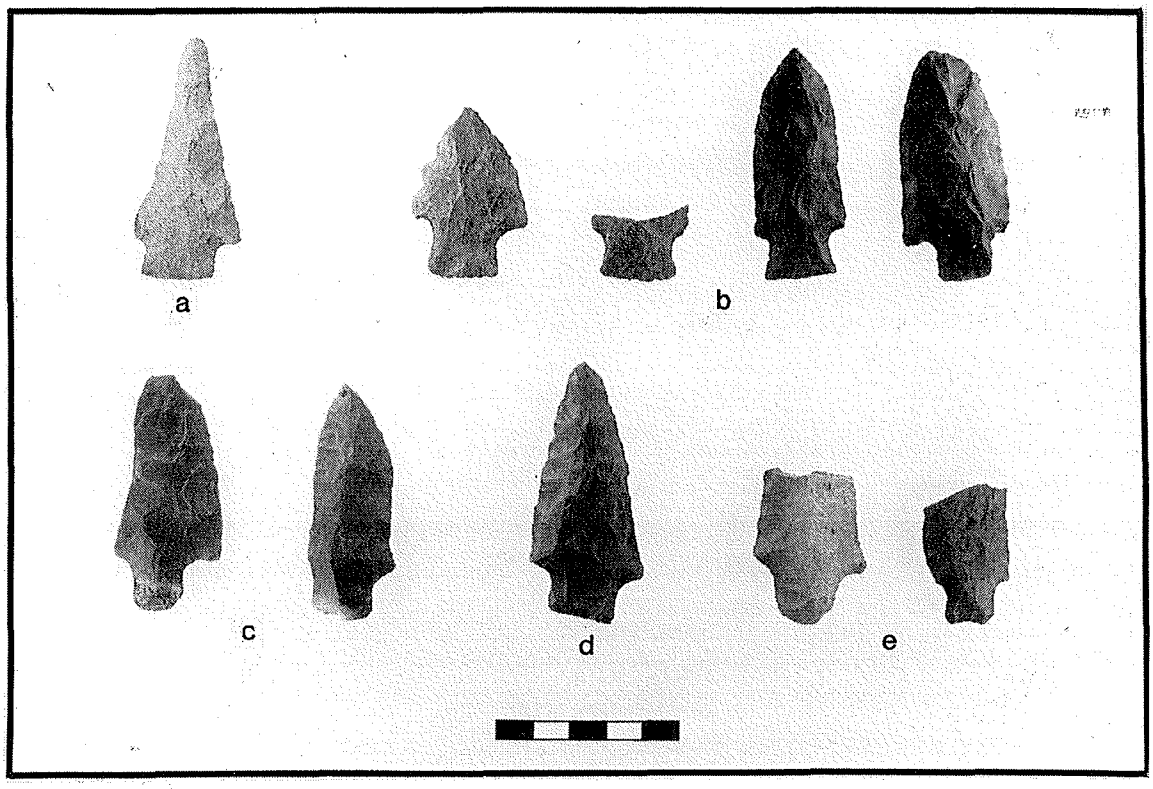

Figure 129. a, Big Slough; b, McIntire; c, Ledbetter; d, Pickwick; e, Little Bear Creek.

Little Bear Creek Cluster

Little Bear Creek

n=5; Figure 129e; 3 Fort Payne, 1 Brassfield, 1 Carters

Four of the five specimens have been broken across the blade with lateral snap fractures. The complete specimen has extensive fire spalling damage on both surfaces. The basal edges of two of the specimens are incomplete. One of the specimens has a contracting stem with an unfinished base. It may be more correctly identified as a Perry projectile point.

Flint Creek Cluster

Flint Creek

n=10; Figure 130; 3 Fort Payne, 1 black Fort Payne, 1 Bigby-Cannon, 1 Brassfield, 1 Ridley, 2 Carters, 1 St. Louis

Three specimens are complete. Five have lateral snap fractures across the blade; one has a material flaw fracture. One specimen's basal edge is incomplete. Six specimens have expanding stems with rounded bases. One has a straight base and one a concave base. These artifacts exhibit poorer craftsmanship and a lesser degree of finishing than the other similar groups.

Figure 130. Flint Creek points.

WADE CLUSTER

COTACO CREEK

n=2; Figure 131a; 1 Fort Payne, 1 fossiliferous Fort Payne

The two Cotaco Creek specimens are complete. One has asymmetrical shoulders, and the second has a pointed basal edge which was created by burin flake removal from the base.

MOTLEY

n=2; Figure 131b; Fort Payne

One specimen is complete. The second has wide, shallow side notches and has been resharpened with an asymmetrical blade.

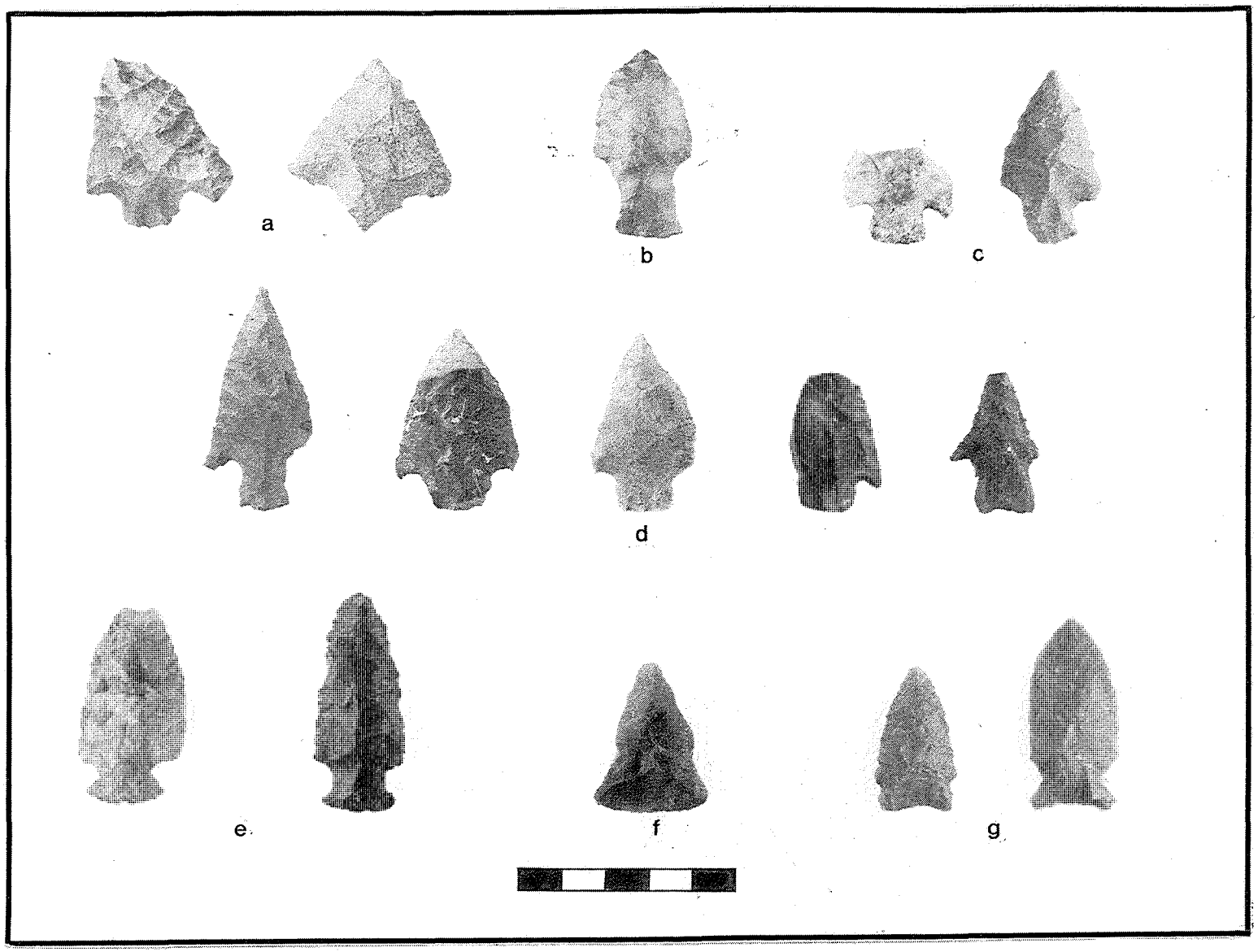

Figure 131. a, Cotaco Creek; b, Motley; c and d, Wade; e, Coosa; f, Swan Lake; g, Sublet Ferry.

McIntire

n=5; Figure 129b; 3 Fort Payne, 1 Bigby-Cannon, 1 Dover

Three of the five specimens are complete, and two are broken. One of the broken points has a lateral snap; the second has a flaw in the material. One of the complete specimens has a rounded distal end. Another specimen has two wide notches in the blade edge.

Wade

n=9; Figure 131c and d; 4 Fort Payne, 1 Bigby-Cannon, 2 Brassfield, 1 Ridley, 1 unidentified

Five of the nine specimens are complete. Two specimens were broken due to material flaws; one has a lateral snap, and one has an impact burination at the distal end and shoulder.

Lanceolate Expanding Stemmed

Sublet Ferry

n=3; Figure 131g; Fort Payne

Two specimens are complete, and the third has a lateral snap across the blade. Two have straight bases. One specimen has small serrations on the blade edge.

Swan Lake

n=1; Figure 131f; Fort Payne

This is a triangular, shallow side-notched projectile point with an excurvate base. The point has been resharpened, and the blade edges are concave with a shortened distal end.

Coosa

n=2; Figure 131e; 1 Fort Payne, 1 Brassfield

The one complete point has moderate side notches and an excurvate blade edge. The other sample has been broken at the distal end. Both have light use wear and resharpening on the distal ends. Both projectile points were made on flakes and are curved in longitudinal cross section.

Woodland Triangular Cluster

Copena

n=5; Figure 132a; 1 Fort Payne, 1 fossiliferous Fort Payne, 2 Bigby-Cannon, 1 Carters

Four of the five specimens in this group are complete. The fifth specimen was broken due to a flaw in the material.

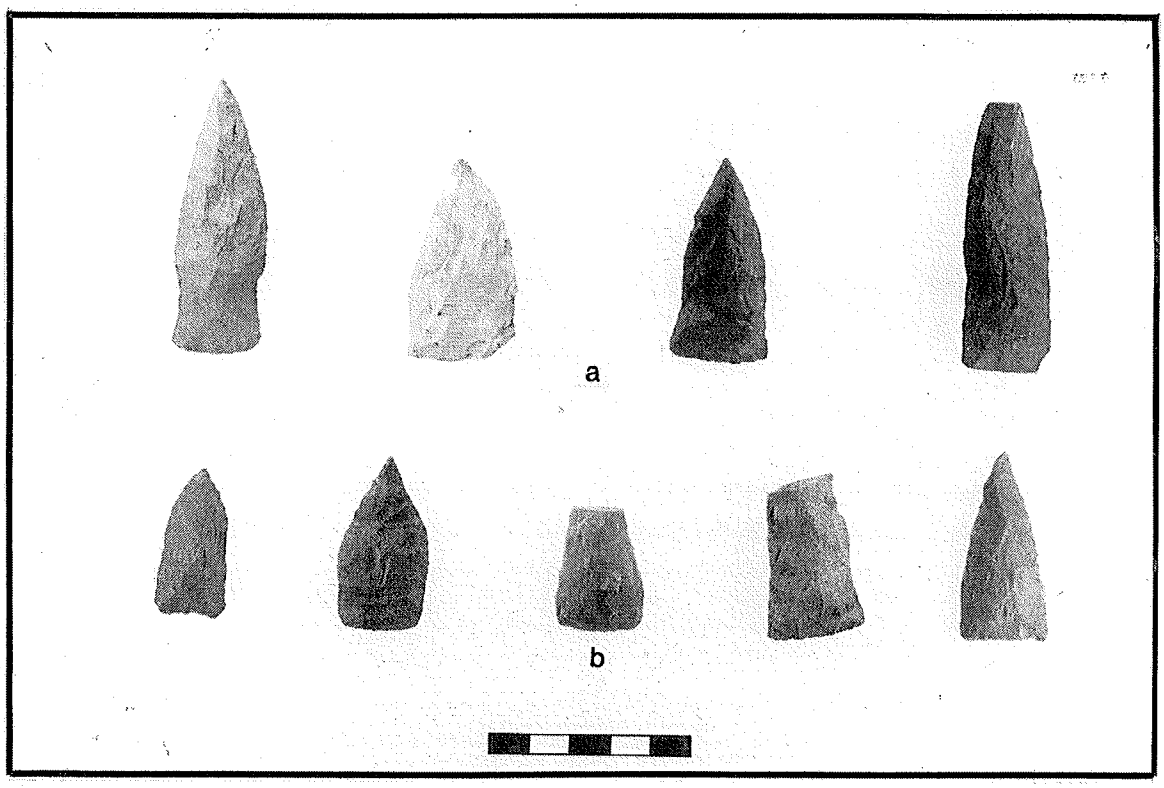

Figure 132. a, Copena; b, Copena Triangular.

COPENA TRIANGULAR

n=25; Figures 132b and 133; 14 Fort Payne, 3 Carters, 2 Bangor, 2 St. Louis, Leipers, 3 unknown

Six specimens are complete. Eight have lateral snap fractures, three have material flaws, two have impact fractures, and three have diagonal fractures. Two specimens of blue St. Louis chert were made from end struck blades.

MISSISSIPPIAN TRIANGULAR CLUSTER

TRIANGULAR STRAIGHT SIDES, STRAIGHT BASE-MADISON

n=5; Figure 134a; 4 Fort Payne, 1 Carters,

Three specimens are heated. Three specimens are complete, one has a diagonal snap, and one has an impact-burinlike fracture associated with a material flaw in the stone.

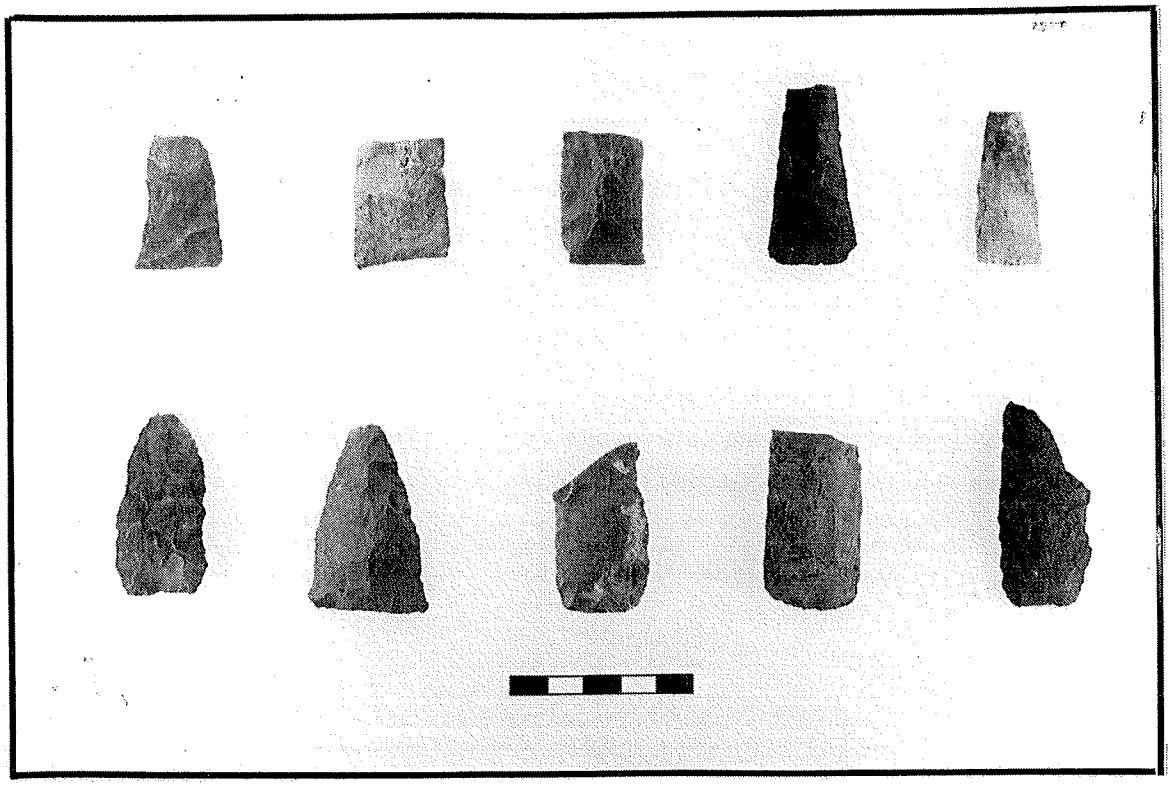

Figure 133. Copena Triangular points.

Triangular Straight Sides, Excurvate Base-Madison
n=2; Figure 134b; 1 Black Fort Payne, 1 Ridley

Both specimens are complete; one has fire spalls.

Triangular Concave Base
n=3; Figure 134c; 2 Fort Payne, 1 Ridley

Two specimens are heat treated and complete.

Triangular Flared Base-Fort Ancient
n=1; Figure 134d Brassfield

This specimen has an incurvate base and sides and formally resembles a Hamilton PP/K. However, its size and workmanship suggest it is a modified Madison. The artifact is a hafted microdrill with an acute tip that shows evidence of resharpening and use rounding.

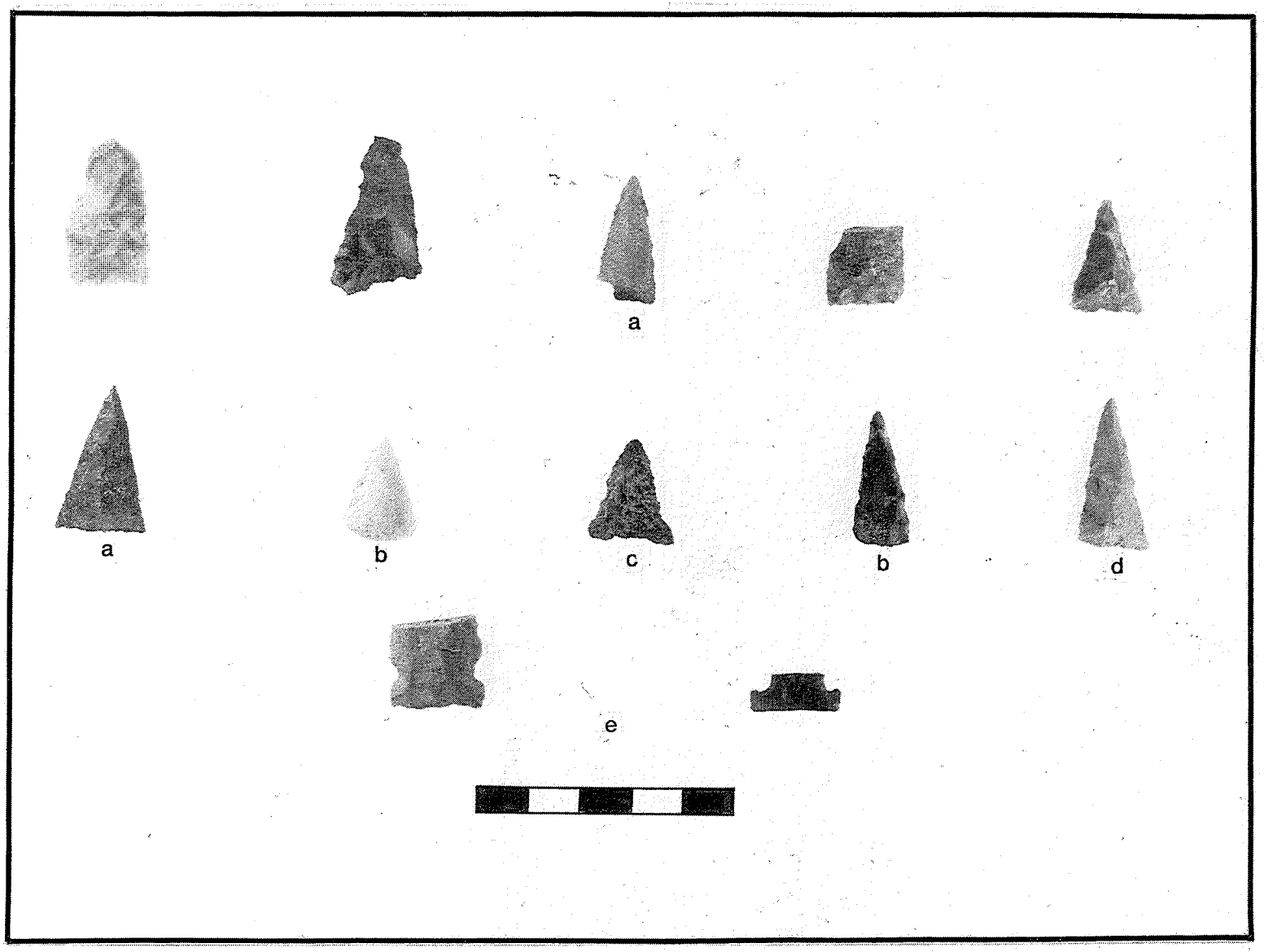

Figure 134. Mississippian triangular: a, straight sides and straight base; b, excurvate base; c, concave base; d, flared base/hafted drill; e, side notched.

TRIANGULAR SIDE NOTCHED-KNIGHT ISLAND
n=2; Figure 134e; Fort Payne

These two specimens are fragmentary. One has a lateral snap, and the other has a haft element snap. Both have straight bases with well-developed side notches.

SUMMARY OF PP/KS

Table 25 provides a summary of the projectile point/knives recovered from French Lick .

OTHER CHIPPED STONE, FRENCH LICK SITE

BIFACE PREFORMS

Preforms are artifacts at intermediate stages of manufacture, not completed artifacts. Finished specimens are subjectively defined as artifacts with fine retouch flaking, modification for hafting, a specialized working edge, or evidence of use. However, it is difficult to distinguish between evidence for further reduction from platform edge preparation and artifact edge wear.

BIFACE PREFORM I
n=9; Figure 135; 4 Fort Payne, 1 Bigby-Cannon, 1 St. Louis, 3 unknown

These artifacts represent the initial stage of biface reduction. All the specimens are triangular to oval in outline and are usually thick, with remnant unflaked surfaces or cobble cortex remaining. A majority show inherent flaws such as fracture planes, large hinge fractures, or end shock fractures. A number of amorphous cores could also be placed in this group.

BIFACE PREFORM I FRAGMENT
n=39; 21 Fort Payne, 1 black Fort Payne, 2 Bigby-Cannon, 6 Carter, 3 Ridley, 3 St. Louis, 3 unknown

This group consists of biface Preform I fragments including proximal, medial, and distal segments.

BIFACE PREFORM II
n=16; Figure 136a; 12 Fort Payne, 1 Bigby-Cannon, 1 Carter, 2 unknown

This is the next progressive stage of biface lithic reduction. These artifacts are normally thinner in cross section and more regular in outline than the Preform I group. The flaking is

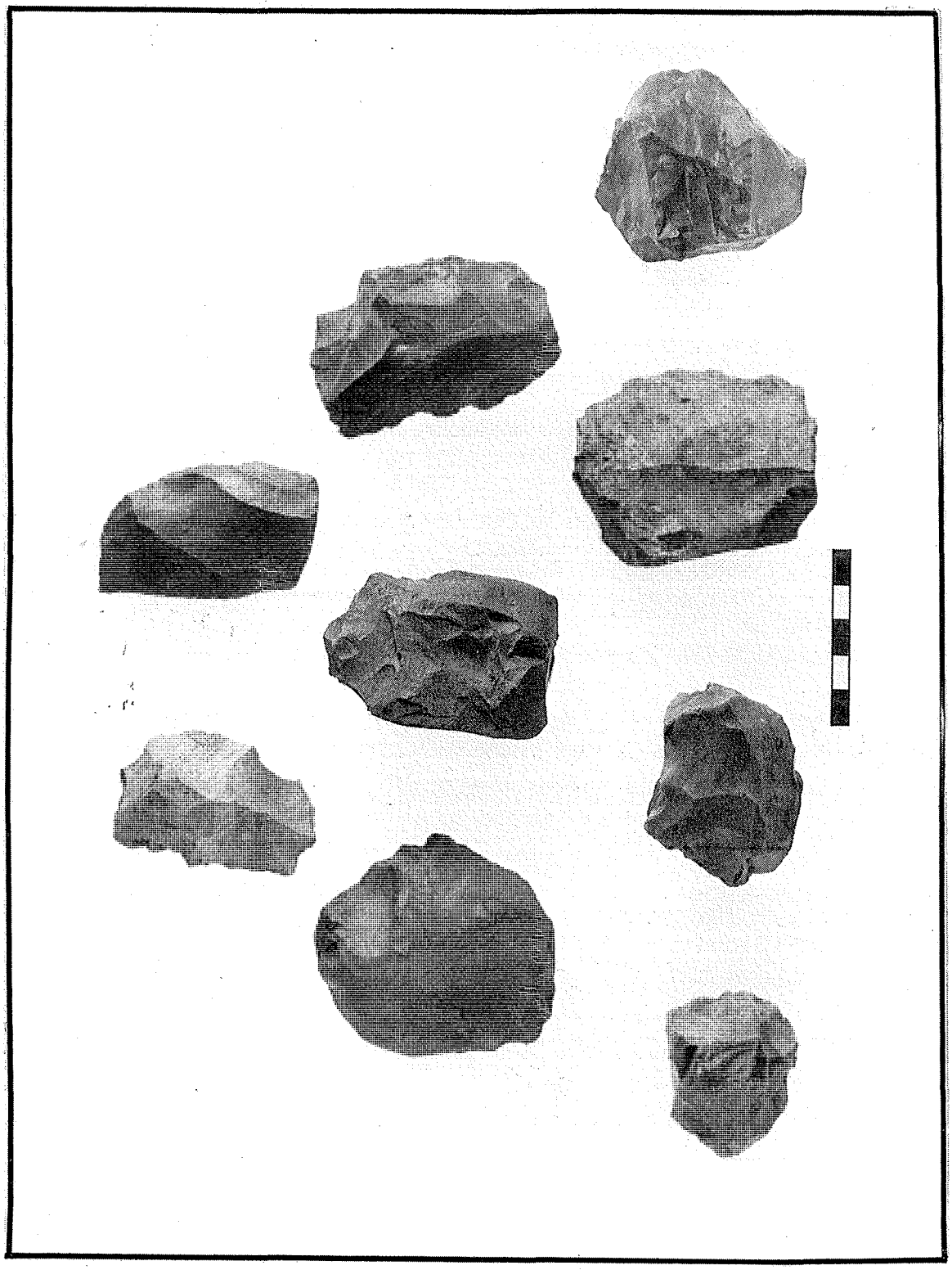

Figure 135. Biface Preform I.

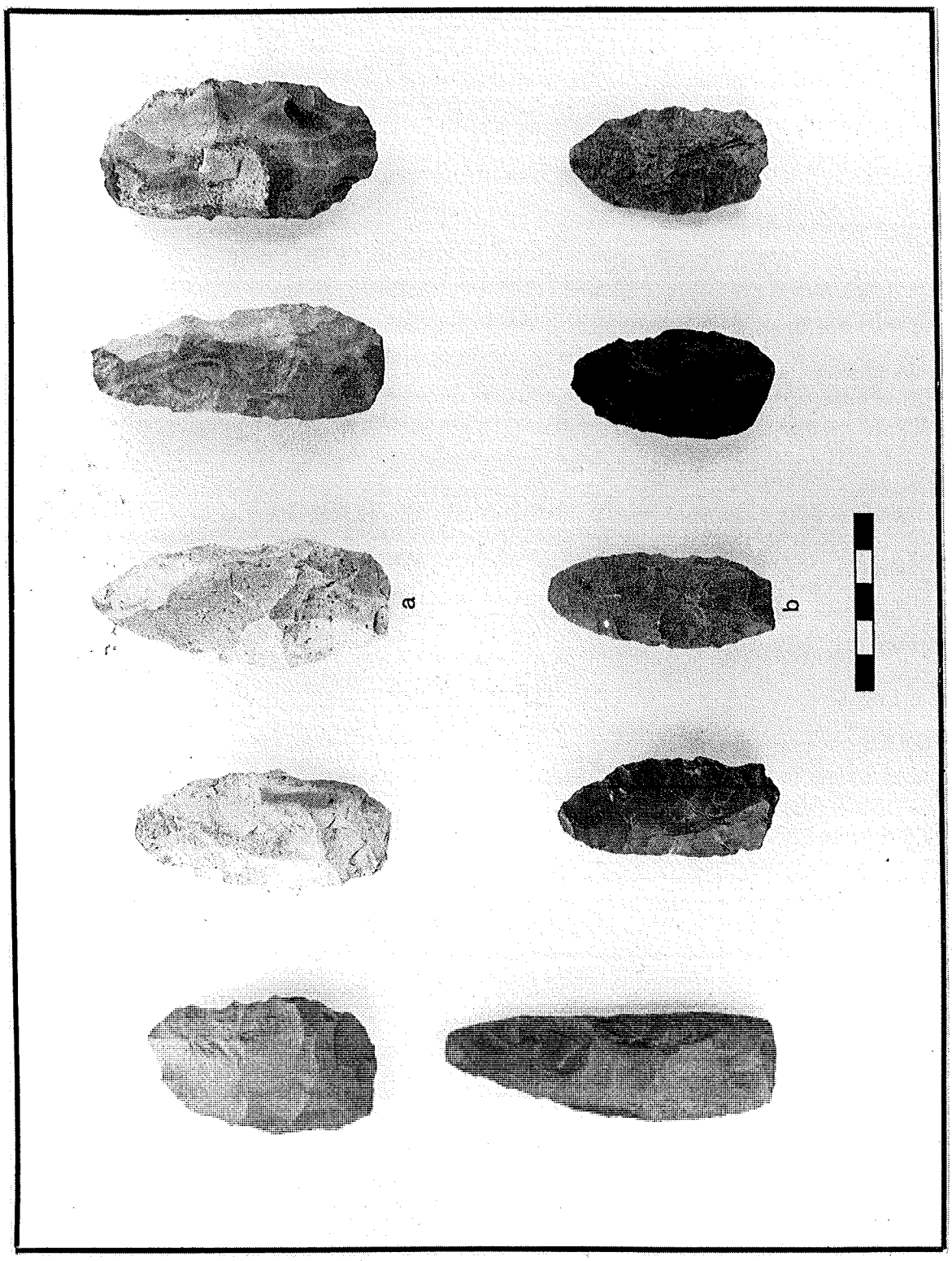

Figure 136. a, Biface Preform II; Biface Preform III.

primary, with some secondary soft hammer percussion flaking evident. Little if any of the original cortex remains on the artifact.

Biface Preform II Fragment

n=115; 82 Fort Payne, 1 Bigby-Cannon, 10 Ridley, 5 Carters, 1 Brassfield, 6 St. Louis, 10 unknown

This group consists of biface fragments which have had the cortex removed and have been partially reduced; the preliminary bifacial shaping had been started. These specimens are irregular, and no attempt to thin the specimens had been initiated.

Biface Preform III

n=9; Figure 136b; 3 Fort Payne, 3 Ridley, 2 Carters, 1 St. Louis

These artifacts are triangular biface artifacts which were fractured or discarded prior to completion. All specimens have regular edges with secondary retouch evident. One specimen has concave sides. Six are complete, one is broken with a basal snap, one is broken with a perverse fracture, and one specimen is broken with a hinge fracture.

Preform III Fragment

n=156; 93 Fort Payne, 1 black Fort Payne, 16 Ridley, 29 Carters, 3 St. Louis, 7 Bigby-Cannon, 1 Brass field, 6 unknown

These specimens are the medial, distal, or lateral fragments from biface Preform IIIs and finished projectile points.

Drills

Shafted Drill

n=3; Figure 137a; 2 Fort Payne, 1 quartz

These specimens are long, narrow, rodlike bit forms with slightly expanding bases. There is no indication of hafting. They are rounded with diamond-shaped cross sections.

Expanding Base Drills

n=3; Figure 137b; Fort Payne

The bits are narrow and rodlike with expanding bases. These specimens are rounded with biconvex cross sections. All specimens have evidence of hafting and resharpening.

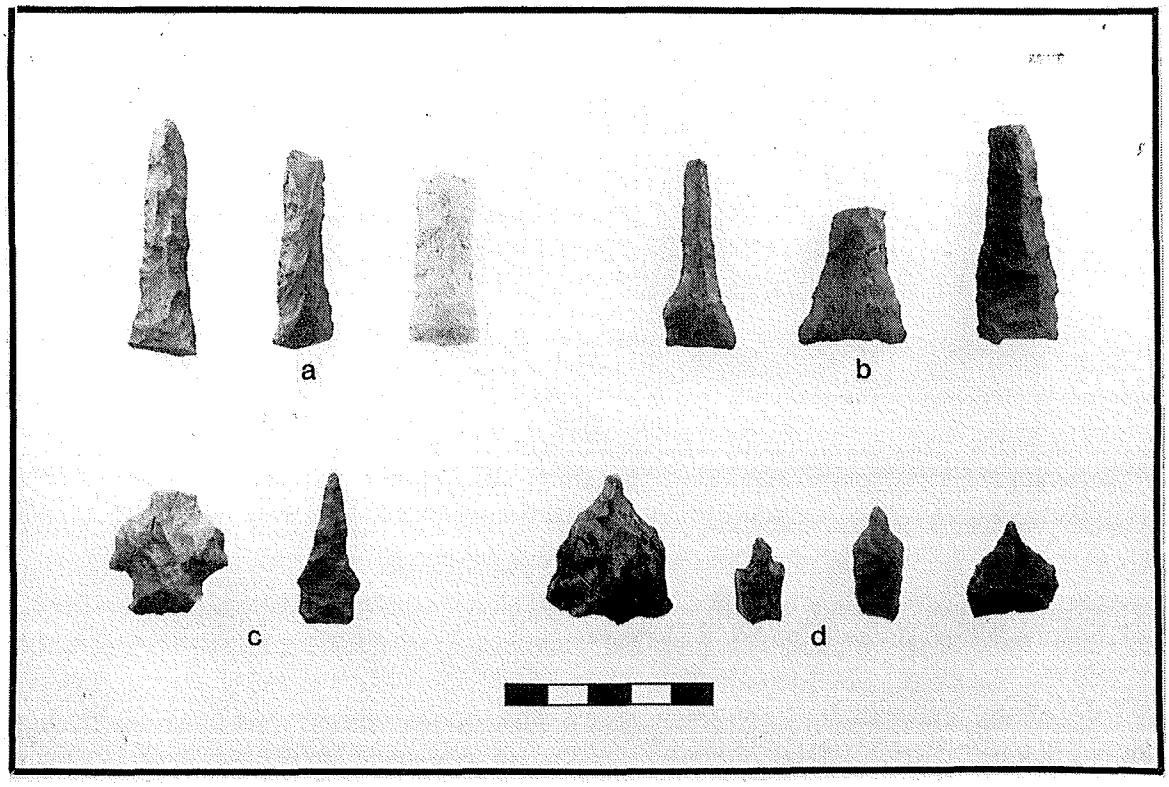

Figure 137. a, shafted drills; b, expanding base drills; c, hafted drills; d, perforators.

Hafted Drills
n=3; Figure 137c; 1 Carters, 2 Fort Payne

The three specimens have biconvex bits, and all display evidence of resharpening. Two specimens have lateral snaps at the juncture of the bit haft element. Two are Bentons, and one is a Mississippian triangular point.

Drill Medial Fragment
n=6; Fort Payne

These are unclassified medial drill segments. All specimens are excurvate to rounded in cross section.

Drill Distal Fragments
n=7; Fort Payne

All these specimens are unclassified distal drill fragments.

GRAVERS, MICROLITHS, PERFORATORS, & REAMERS

PERFORATOR

n=5; see Figure 137d; 4 Fort Payne, 1 Carters

These specimens are finely flaked bifaces and have short, tapering, triangular projections. They are thin and flat or triangular in cross section. These artifacts are smaller and more delicate than drills, and were not used in a rotary manner. There is no evidence of hafting. Two specimens are made on flakes, and two were made on preform fragments.

REAMER

n=4; 3 Fort Payne, 1 Ridley

These are thick, bifacially flaked artifacts with elongated, tapering distal ends. They are triangular in cross section and thicker and more crudely made than a drill.

GRAVER

n=6; Figure 138a; 3 Fort Payne, 3 Dover

Two of the six artifacts have small, sharp projections which were made with minute pressure flaking. They all have triangular bits, and all were made on thick flakes.

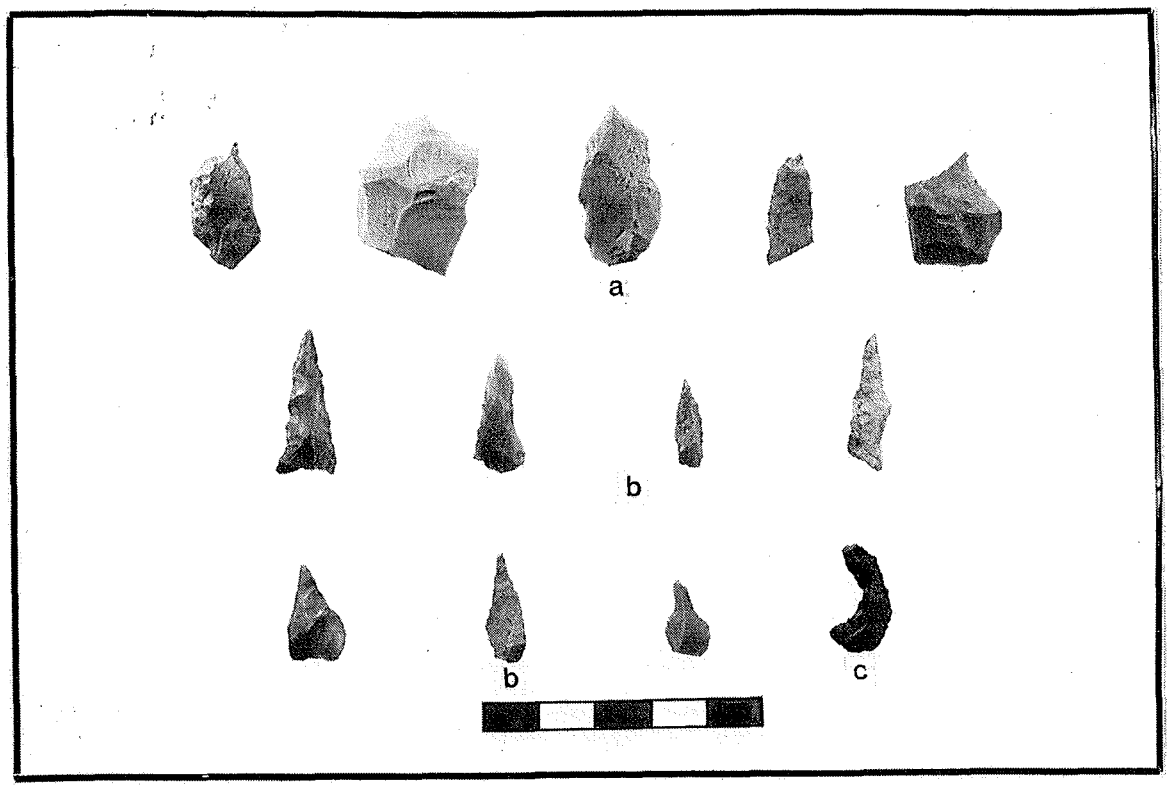

Figure 138. a, gravers; b, microliths; c, crescent.

Microliths

n=8; Figure 138b; 4 Fort Payne, 3 Dover, 1 Carters

These are small flakes or blade tools with fine retouching on one or both edges. These artifacts range from rounded to triangular in cross section. One specimen is made on a small blade flake, and one specimen is indeterminate. Two specimens are incomplete.

Adzes, Axes, Choppers, Hoes, & Wedges

Adze

n=5; Figure 139b; 3 Fort Payne, 2 Dover

These are thick, rectangular bifaces with bifacial beveled working edges at one or both ends; these are convex and perpendicular to the long axis of the artifact. The working edge ranges from 30 degrees to 75 degrees. Use wear appears as step fractures and crushing on the working edge or as polish on the flake ridge scars and surfaces adjacent to the working edge. Hafting areas are indeterminate on the lateral edges. Should evidence of hafting be determined, it would consist of a change in the artifacts' profiles, with small hinge fractures and grinding.

Adze Bits

n=2; 1 Fort Payne, 1 Dover

These are two rounded bits with beveled working edges ranging from 20 to 40 degrees. Both have extensive wear polish on the top edges of the flake scars. These two specimens are thinner and more finished than those in the preceding category. One is made from Dover chert, and it is similar to the Mississippian woodworking industry tools at East Nashville Mounds.

Axe

n=1; Figure 139c; Carters

This specimen is bifacially flaked with an asymmetrical beveled bit. The opposite end is flat with cortex remaining. Two well-developed hafting notches are on the lateral edges.

Wedge

n=7; Figure 139a; 5 Fort Payne, 1 Bangor, 1 Carters

These specimens are small, under 4 cm, and they are all made from local chert. They exhibit steep, transverse bifacial working edges. Battering is present on the striking platform opposite the bifacial edges of all artifacts.

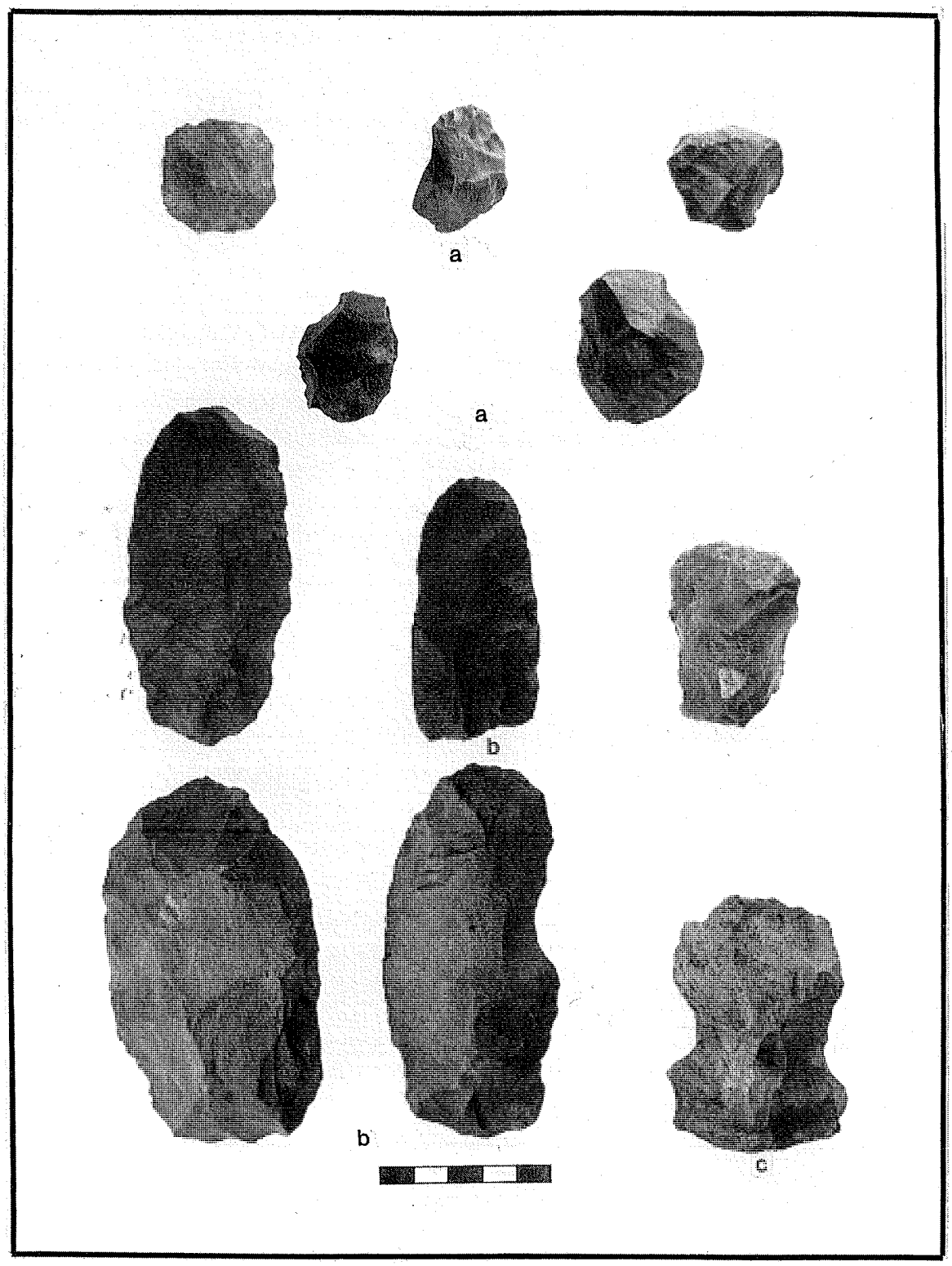

Figure 139. a, wedges; b, adzes; c, axe.

Wedge Bit Fragment
n=2; 1 Dover, 1 unknown

These are the bit and lateral surfaces of a large wedge-maul. The edges are bifacially flaked and exhibit heavy battering and wear polish. The elevated flake scars are also well polished.

Chopper
n=4; Figure 140a; quartz

This is a series of large tools with broad, steeply angled working edges with little or no secondary retouch. The working edges are either unifacial or bifacial. Battering and edge-rounding is evident on the working edge. Three are made from river cobbles, and the forth is a tabular piece of Carters chert.

Core Chopper
n=2; Figure 140b; Carters

This is a group of compound tools with wide-angled working surfaces and evidence of battering along the edges.

Cores

Amorphous Cores
n=4

These specimens are pieces of lithic raw material, primarily chert, with one or more negative flake scars resulting from the removal of flakes with a hard hammer percussor. In this sample, the flakes illustrate a tendency of the knapper to exploit the readily flaked edges, rather than use a strictly random process of flake removal. The cores are normally larger than 4 cm, and nonheated material was used. The raw material consists of subangular river cobbles as well as tabular to angular residual cherts.

Specialized Cores

Bipolar Core
n=2; Figure 141a; Fort Payne

The bipolar cores in the collection are small polyhedral chert nodules. Parallel bladelike flake scars extend along the length of the cores. Each specimen has a cone-shaped point with evidence of battering. The opposite surface also exhibits battering.

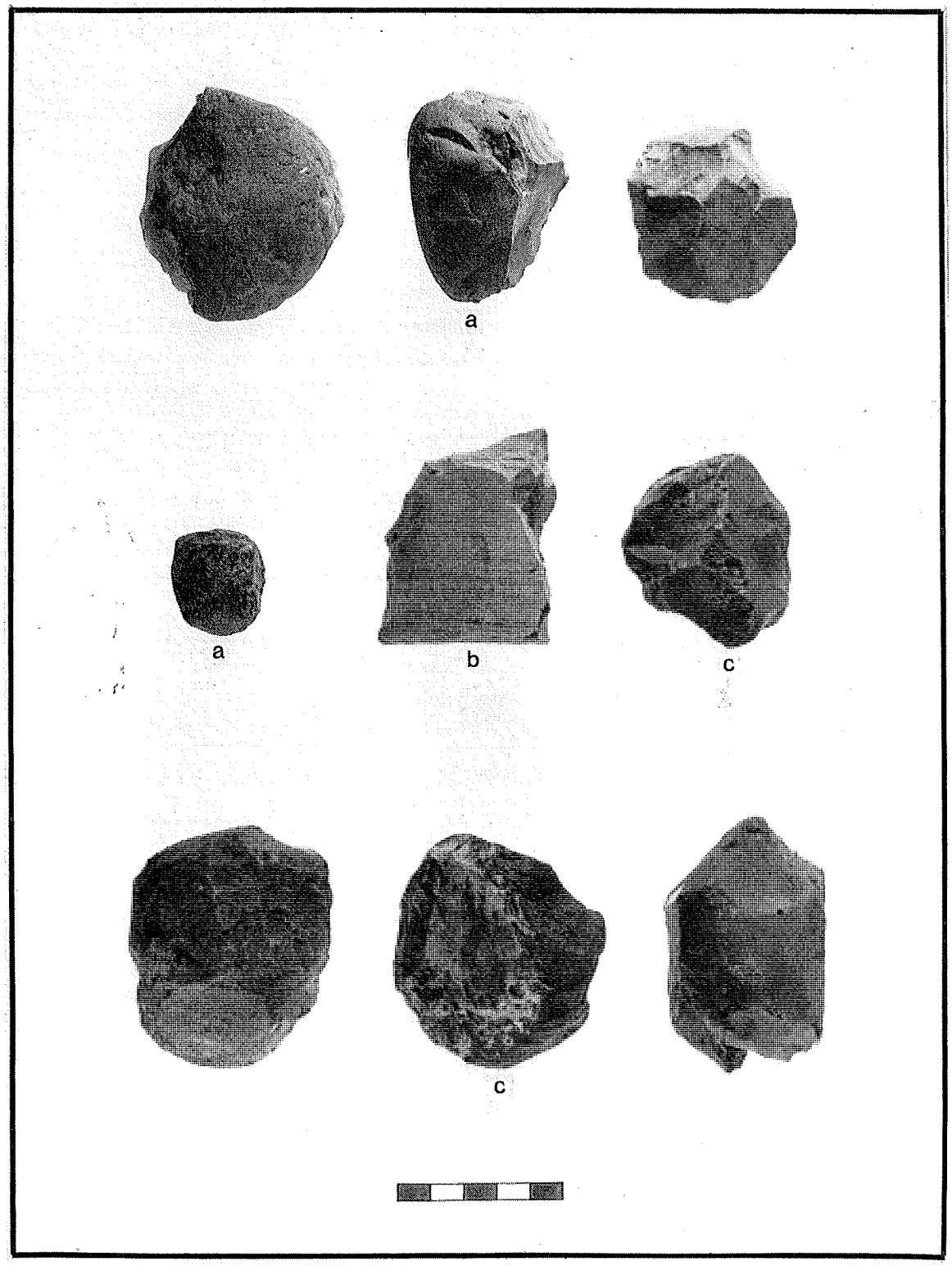

Figure 140. a, choppers; b, core chopper; c, hammerstones.

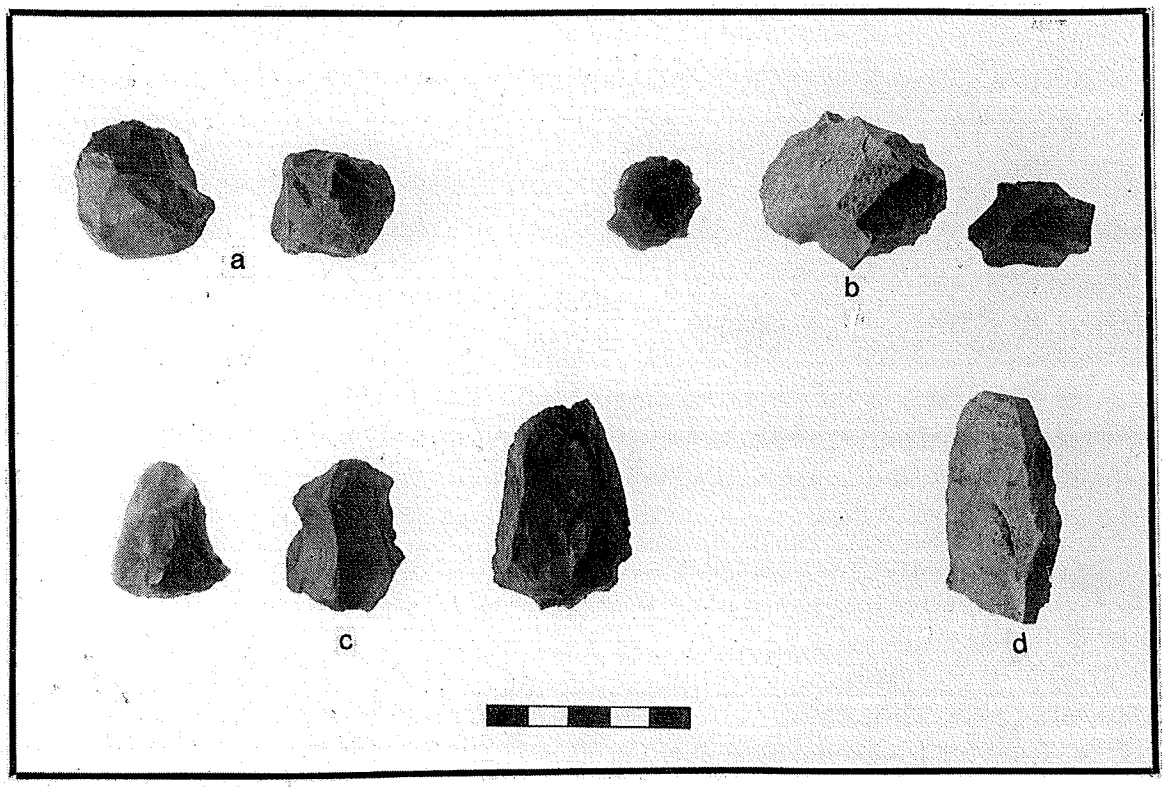

Figure 141. a, bipolar core; b, blade core; c, uniface side scrapers; d, triangular scraper.

Blade Core

n=5; Figure 141b; 4 Fort Payne, 1 Carters

These specialized cores have flat striking platforms and cone-shaped dorsal surfaces. Parallel flake scars extend from the striking platform through the dorsal side.

Scrapers

Uniface Side Scraper

n=6; Figure 141c; 5 Fort Payne, 1 Dover

These artifacts are unifacially retouched tools with a blade edge angle of 60 degrees to 90 degrees. The working edge is parallel to the long axis of the flake. One specimen is made on a core trim flake; one is made on a biface preform fragment.

Triangular Scraper
n=1; Figure 141d; Fort Payne

This specimen is made on an expanding flake which has been specialized into a triangular steep-angle scraper. It is triangular in cross section, and the excurvate basal segment angle exceeds 90 degrees due to resharpening. The two lateral edges converge to a perforatorlike point. These types of artifacts are associated with the Paleoindian-Early Archaic and Late Mississippian lithic assemblages in Tennessee.

Uniface Concave Scraper
n=1; Fort Payne

This spokeshave is steeply retouched and has a concave surface. It is made on a flake.

Uniface Side & End Scraper
n=26; Figures 142c and 143; 14 Fort Payne, 7 Dover, 5 Carters

These unifacially flaked scrapers have steeply angled working edges which range from 35 degrees to 100 degrees. Worked surfaces are excurvate to rounded; the working edge ranges from 50 to 100 percent of the total available edge space. Eleven specimens are made from core trim flakes with segments of the cortex remaining. Four are made on flat expanding flakes. Three are made on tabular chert chunks.

Scrapers on a Blade
n=3; 2 Dover, 1 unknown

These three specimens are made on a specialized blade flakes with parallel lateral edges. The artifact manufacture consists of marginal retouch along the lateral blade edges. This specialized blade form is associated with a Paleoindian and Early Archaic lithic assemblage.

Uniface Spurred Scraper
n=3; Figure 142a; 2 Fort Payne, 1 Dover

These specimens have uniface flaked edges ranging from 60 degrees to 90 degrees. One specimen is an end scraper, and one is a side and end scraper. All specimens have specifically shaped protuberances which exhibit resharpening and use as short perforators. One specimen is made on a core trim flake, and the second is a tabular chert fragment. One is made on a flake.

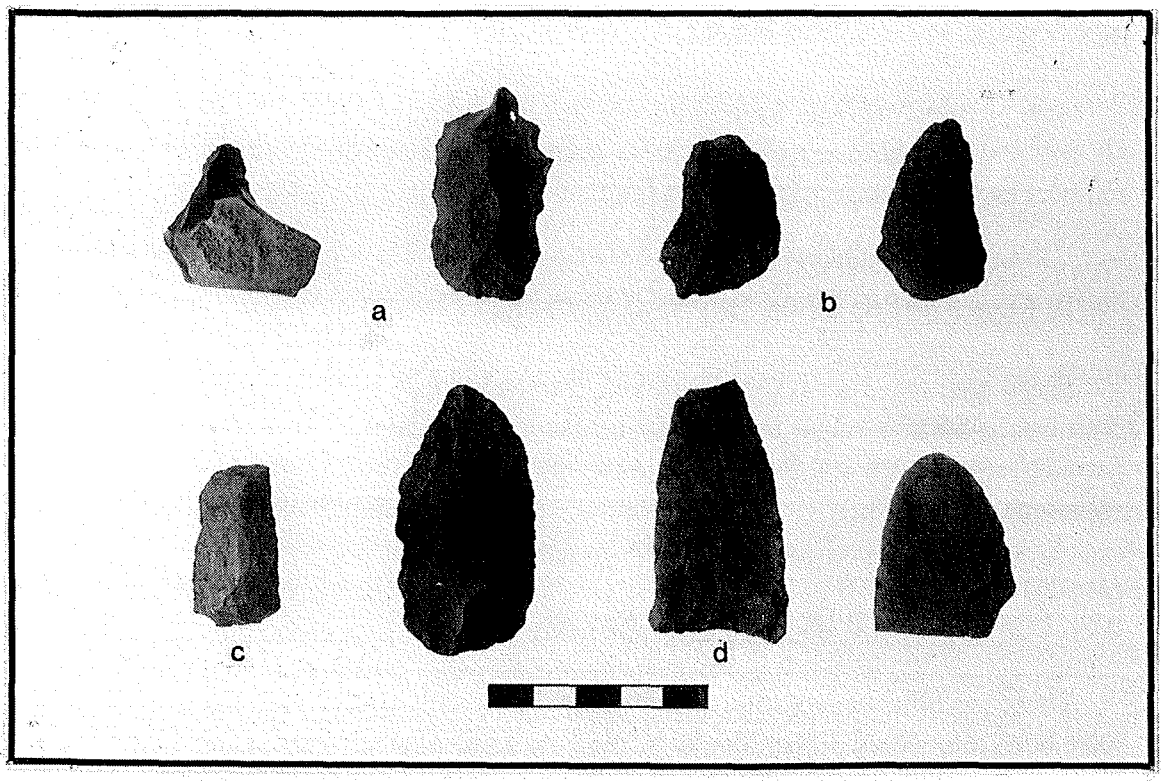

Figure 142. a, spurred scrapers; b, concave scrapers; c, biface side and end scraper; d, triangular biface scraper

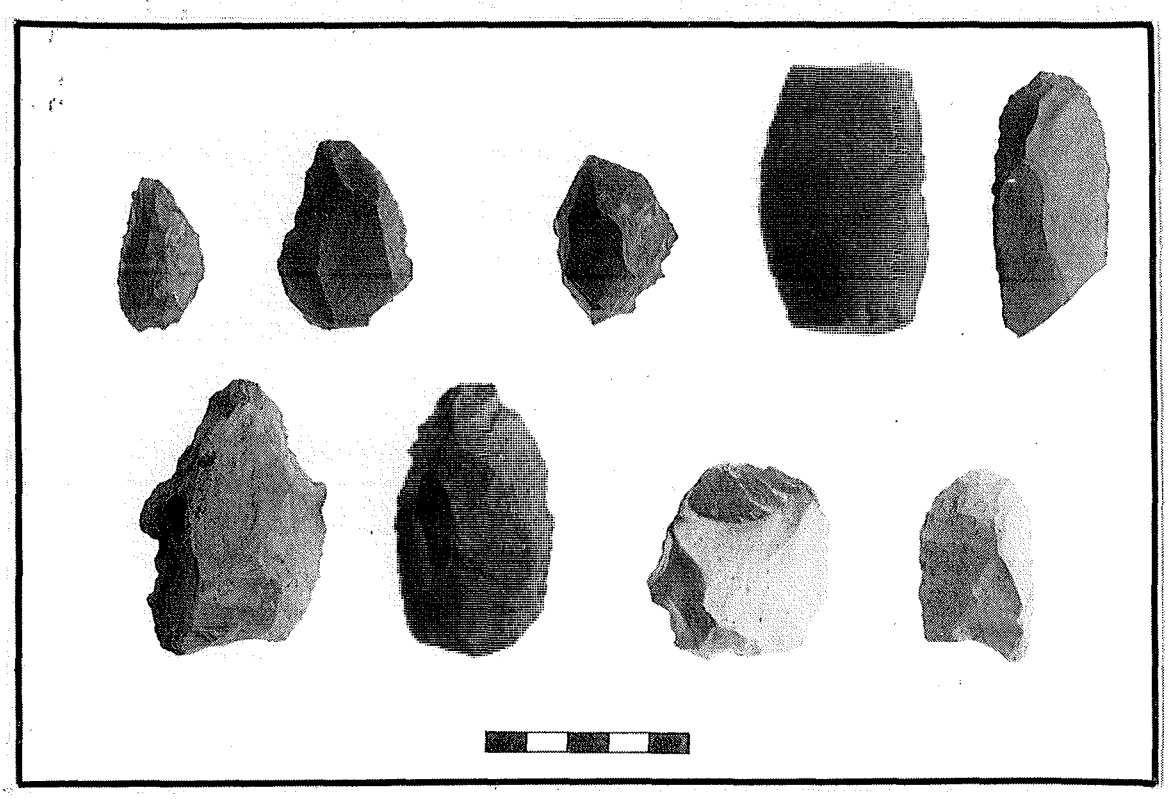

Figure 143. Uniface side and end scrapers.

Biface Side & End Scraper
n=4; Figure 142c; 3 Fort Payne, 1 Bangor

Both pictured artifacts have bifacially flaked working surfaces ranging from 25 degrees to 60 degrees, and both specimens have straight to excurvate working surfaces. All these scrapers are made on biface preform fragments.

Triangular Biface Scrapers
n=10; Figure 142d; 7 Fort Payne, 2 Carters, 1 Bangor

These specimens are bifacially flaked, rounded to triangular in outline and made on biface preforms. Working edges are straight to excurvate and range from 20 degrees to 80 degrees. Two specimens are on flakes, and two are made on cores with segments of the cortex remaining.

Hafted End Scraper
n=4; Figure 144b; 2 Dover, 2 Fort Payne

These are bifacial proximal ends of hafted projectile points and knives. The distal ends have been retouched, perpendicular to the long axis. One specimen is a Benton, one is a Buzzard Roost Creek, one is a Flint Creek, and one is a Woodland Triangular.

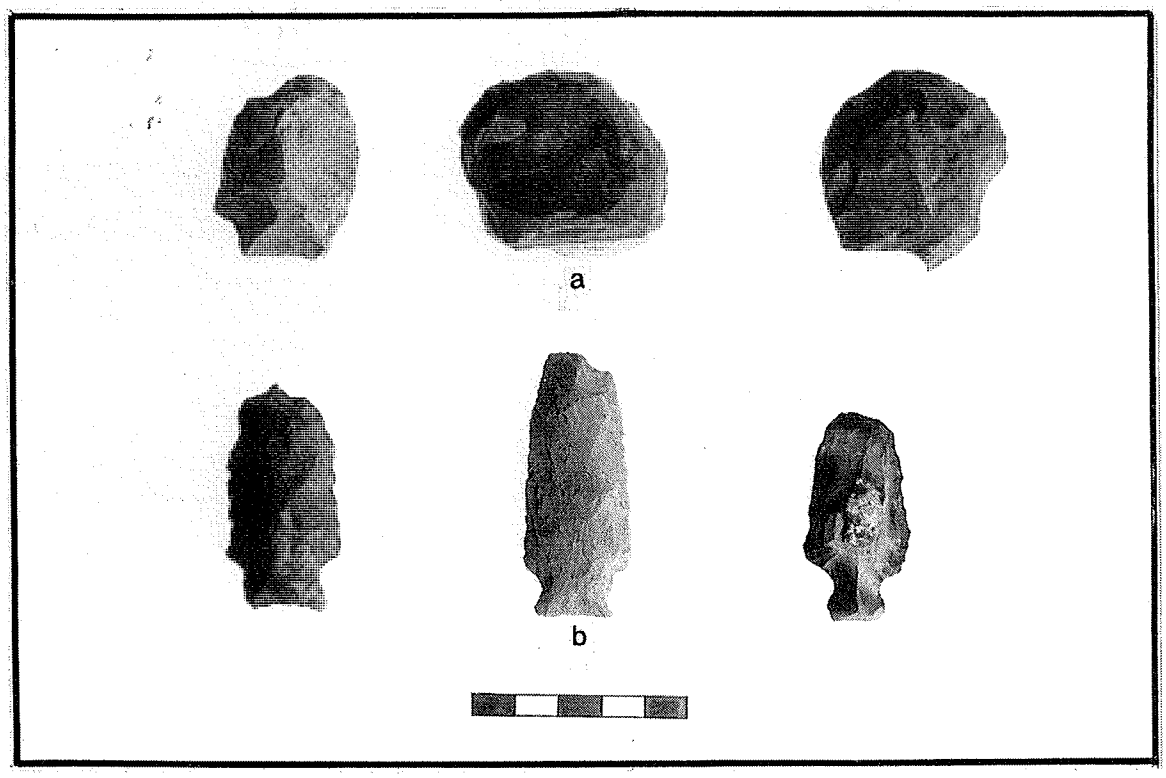

Figure 144. a, oval biface scrapers; b, hafted end scrapers.

FLAKE TOOL

CHIPPED STONE CRESCENT

n=1; Figure 138c; Fort Payne

This is a small piece of chert (2.0 x .37 cm) flaked into a shallow crescent.

UTILIZED FLAKES

n=72; 63 Fort Payne, 2 Carters, 1 Bigby-Cannon, 2 Brassfield, 1 Dover, 2 Newman, 1 unknown

These are fortuitous flakes which illustrate use wear; they have small, shallow flake scars along one or more sharp edges. Thirty-seven specimens were made on primary flakes; thirty-five were made on biface thinning flakes.

PECKED & GROUND STONE

ABRADER/GROOVED SANDSTONE

n=1; Figure 145c; sandstone

This is a tabular sandstone fragment with U-shaped grooves incised across one surface. These grooves are the result of sharpening bone tools or grinding other artifacts across the surface.

HAMMERSTONE

n=9; Figure 140c; 4 Fort Payne, 2 Carters, 2 chalcedony, 1 quartzite

This group consists of river cobbles with irregular flake scars originating from the impact area and evidence of battering and crushing. These artifacts range in size from 3.2 to 6.5 cm in diameter. The cobbles selected are resilient material consisting of four Fort Payne chert, two Carters chert, two chalcedony, and one quartzite.

PITTED ANVILSTONE/MULLER

n=3; Figure 145a and b; river cobble

Each pitted anvilstone is a flat river cobble with a central pit in both the dorsal and the ventral surfaces; these pits range from 2.0 to 3.1 cm in diameter. All specimens have abrasions and polish on the flat surfaces from use as milling stones; all have pecking and abrasions on the edges.

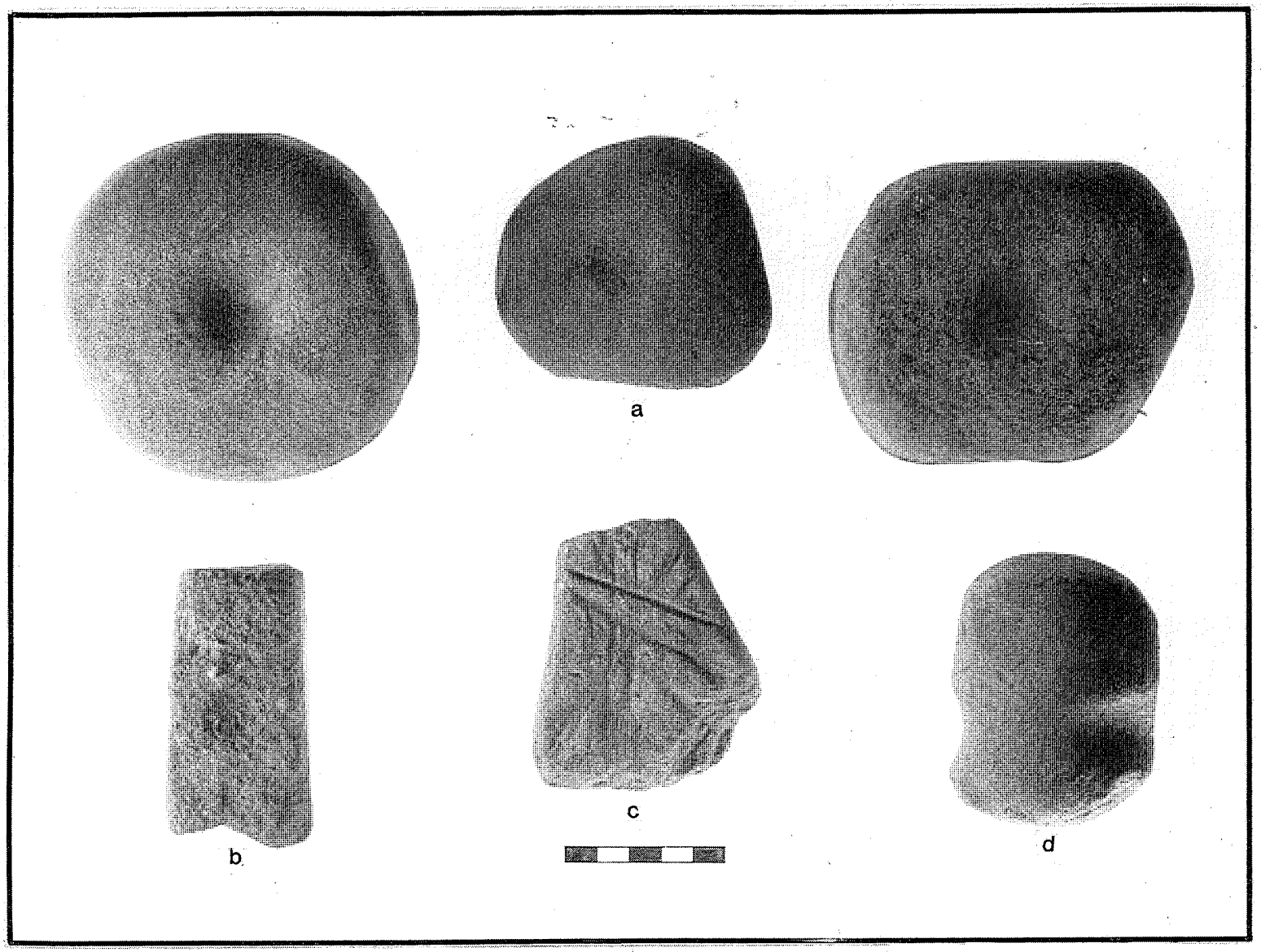

Figure 145. a, pitted muller; b, tabular ground stone fragment; c, grooved abrader; d, maul.

Pitted Anvilstone
n=4; Figures 146 and 147b; sandstone

This is a group of sandstone cobbles and larger subangular sandstone with flat surfaces. One or more surfaces contain localized pitted depressions made by repeated pecking. The depressions range from 2.8 to 4 cm in diameter.

Sandstone Pebble
n=1; coarse sandstone

This specimen is a water-tumbled pebble which has been extensively battered on the outside perimeter, with slight battering and grinding on both dorsal and ventral surfaces.

Tabular Ground Stone Fragment
n=2; Figure 147a; 1 limestone, 1 sandstone

These are tabular fragments of flat milling stones with smooth abrasion on both dorsal and ventral surfaces. One is limestone and the other sandstone.

Polished Stone

Bar Gorget Fragment
n=1; Figure 148c; Chattanooga shale

This is a flat, bar-shaped gorget fragment with one biconically drilled hole at the midsection. The artifact is made from Chattanooga shale and is split. It is planoconvex in cross section. Both surfaces and the edges have been shaped and polished; both top and bottom edges have irregularly spaced notches. The dorsal surface also has irregularly spaced paired lines.

Cannel Coal Disk
n=4; Figure 148b

These disks have been shaped into irregular circles with two flat surfaces. One specimen has extensive polish on both surfaces. Two of the specimens are fragmentary.

Celt Bit
n=1; Dover chert

This is a bit from a celt or an ax made from Dover chert. It has an excurvate working edge and is biconvex in cross section. The bit and flake scars have been well rounded and polished. The artifact is likely part of the Mississippian Dover chert woodworking tool assemblage which is more completely represented at East Nashville Mounds.

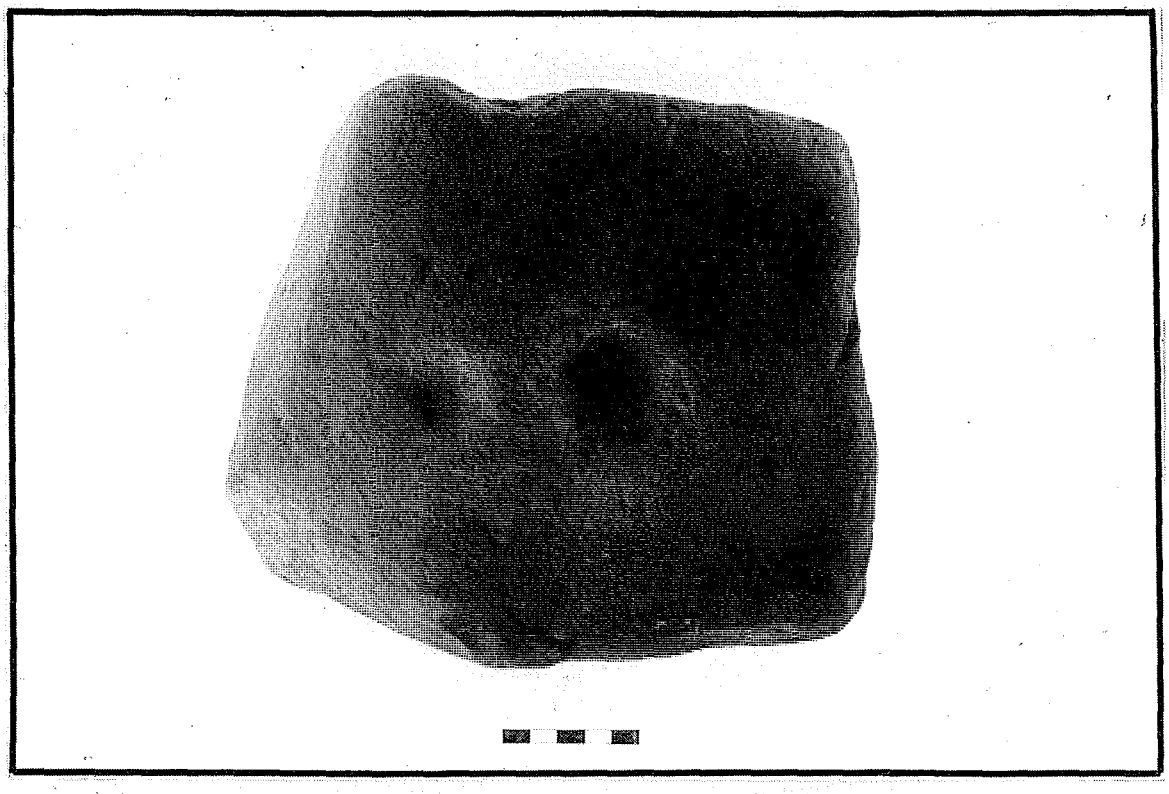

Figure 146. Pitted anvilstone.

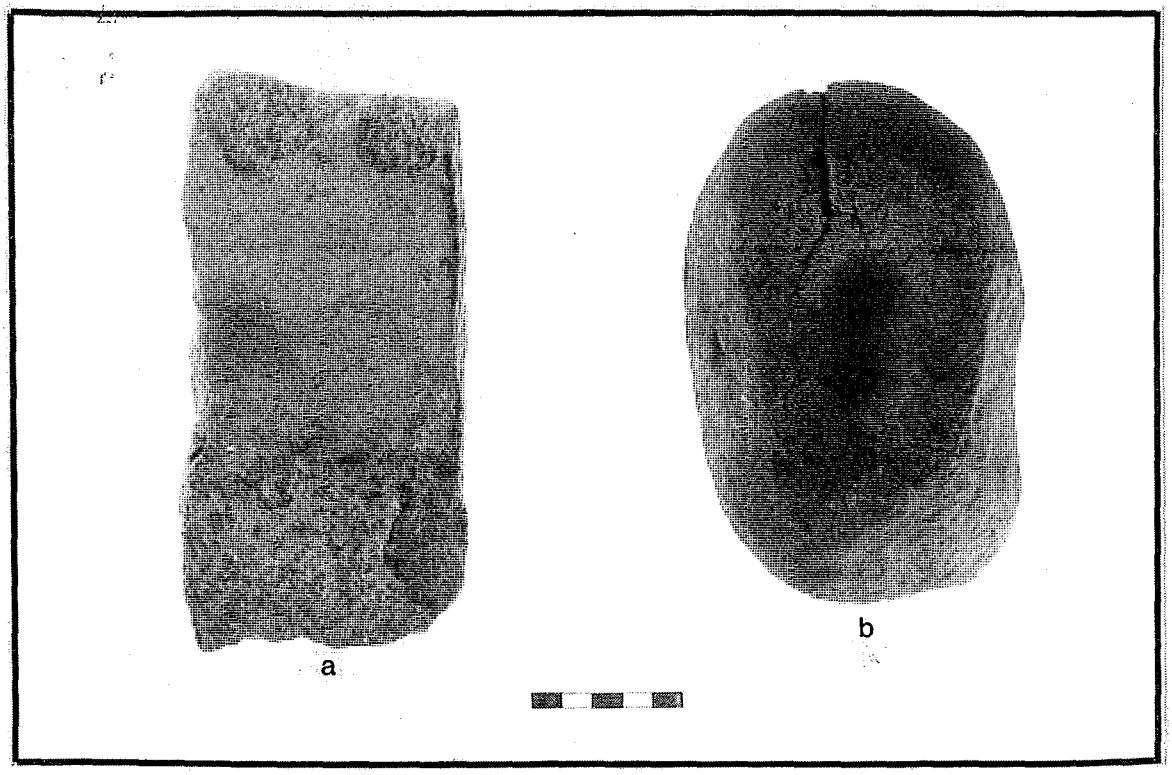

Figure 147. a, ground limestone; c, pitted anvilstone.

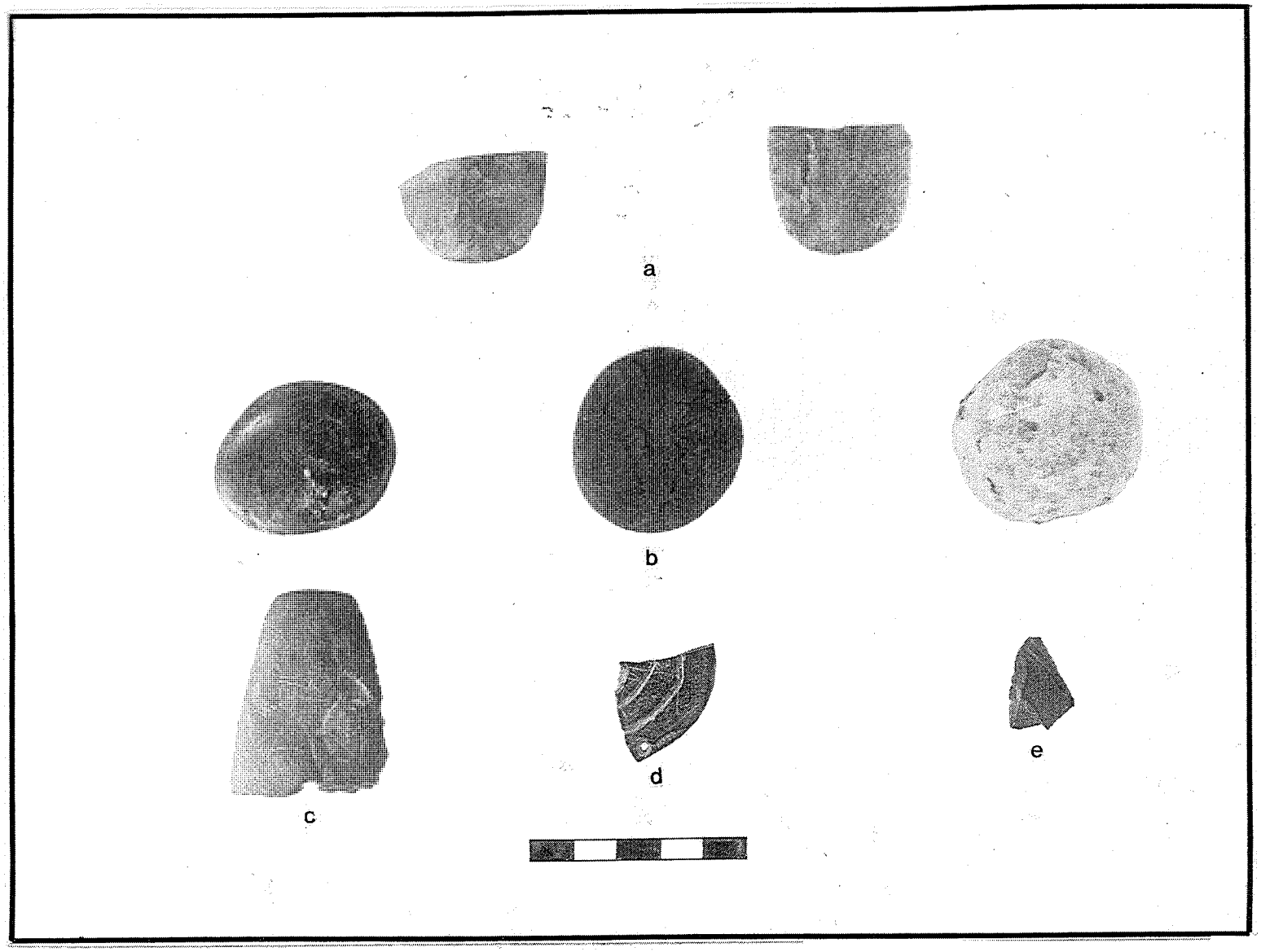

Figure 148. a, adze bits; b, coal disks; c bar gorget; d, pendant disk; e, incised slate.

Discoidal

n=2; 1 limestone, 1 sandstone

These circular limestone and sandstone disks have been shaped by pecking. Each has minor abrasion polishing on both surfaces and on the circumference. They are part of the Mississippian assemblage which is well represented at East Nashville Mounds.

Ground/Incised Shale & Slate Fragments

n=3; Figure 148e

One fragment is made of tabular slate and has been polished on one surface. Three closely spaced parallel lines are incised across the corner of the slate fragment. Two parallel lines are incised at a 60 degree angle to the first set of lines.

The second artifact is a tabular piece of slate which has been shaped and ground; minor polishing is evident. A biconically drilled hole is located on the perimeter. Two concentric circular line segments, 1.5 mm wide, are incised on one surface. The opposite surface has also been polished, and some abrasion lines remain. The artifact resembles segments of other Mississippian gorget fragments.

The third specimen is a tabular Chattanooga shale fragment which is roughly triangular in outline. The surfaces are exfoliating. One surface has an irregularly flaked edge; one has been polished and has irregular scratched lines. These lines are not patterned, and they may be fortuitous.

Grooved Maul

n=1; Figure 145d; sandstone

This artifact has a blunt, short, rounded bit and a flat, well-beveled pole end. It is rectangular in cross section, and a shallow groove has been pecked on three of the four surfaces. The bit is well rounded and battered. This was a hafted hammering tool made from nonlocal sandstone.

Thermal Alteration, French Lick Site

Chert was heat-treated during the biface production process to improve tractability. The attributes of surface gloss, color change, and conchoidal ripple scars on flake surfaces have been used in this study to determine if artifacts were heat-treated. Accidental heating of artifacts, in which temperature is not controlled, produces pot lid fractures or fire spall from uncontrolled cooling on the specimens. Table 26 contains a summary of the biface production stages and incidence of heat treatment observed in the lithic collection from the French Lick site.

Table 26. French Lick Site, Biface Production Stages, Heat Treatment.

	Biface Preform I	Biface Preform II	Biface Preform III	Projectile Points	Total
Not Heated	46	115	132	151	444
Heat-treated	-	19	25	9	53
Fire Spall Fracture	-	19	7	8	34
Crenelated Fracture	-	3	1	-	4
Total Heated	46	41	33	17	
Percent Heat-treated	-	26.2	20	10.1	

As shown in Table 26, heat-treated chert is first noted in the Preform II and Preform III categories, with 26.2 and 20 percent, respectively. With both biface production stages combined, approximately 45 percent of the artifacts exhibit evidence of heat treatment. In the finished projectile points, 10.1 percent of the artifacts have evidence of heat treatment. Fire spall fractures are noted in the Preform II, Preform III, and finished projectile points categories. Fire spalling on the artifacts, as noted by Johnson (1979), is the result of too rapid heating and expansion of the chert. Spalling might also be due to unintentional heating following completion, and therefore not related to the manufacturing process.

In Table 27, the incidence of heat treatment within each projectile point cluster is illustrated. Although the sample size is a limiting factor in the conclusions, a notable occurrence of heat treatment can be observed in the Kirk cluster with 28.5 percent, and in the Eva/Morrow Mountain cluster with 25 percent. Over 62 percent of the Mississippian Triangular cluster has specimens that were heat treated. The incidence of heat treating at East Nashville Mounds is only 10 percent. The discrepancy between the evidence of heat treatment between the two sites using similar lithic resources remains an enigma.

Table 27. French Lick Site Projectile Point/Knife Clusters, Heat Treatment.

Cluster	No Heat Treatment	Heat-Treated	Percent Heat-Treated
Big Sandy	6		
Kirk	10	3	28.50
Bifurcate	1		
Cypress Creek		1	100.00
Eva/Morrow Mountain	8	2	25.00
Benton	57	1	0.02
Ledbetter	3		
Little Bear Creek	5		
Flint Creek	10		
Wade	18		
Lanceolate Expanding Stemmed	6		
Woodland Triangular	29		
Mississippian Triangular	8	5	62.50
Total	**163**	**12**	

BIFACE PRODUCTION, FRENCH LICK SITE

The biface production stages and fracture types have been summarized in Table 28. The technological aspects of biface production at the French Lick site are similar to those encountered elsewhere in the upland Southeast. Despite the diversity of lithic raw materials, the primary source of material is the locally available residual and alluvial Fort Payne chert. The Preform I group is under-represented in this analysis system. The amorphous cores and core fragments contain over 300 specimens. A large number of these specimens may be redefined as incipient Stage I preforms. Nevertheless, the biface preform I group contains over 80 percent hinge fractures. This preform group is defined on the basis of hard-hammer percussion to remove irregularities. Hinge fractures resulted from unsuccessful attempts to remove large "chert knots" or irregular masses of chert.

The Preform II group contains 56 percent of the fire spall and heat crenelation fractures. Heat treatment obviously began during this stage, and it continued into the following preform stage. Incipient fracture plane fracture was also observed in 59 percent of the biface preforms. Lateral snap and tangent lateral snap also reached 55 and 57 percent, respectively, in the Preform II group. This group also contained all of the reverse fractures encountered in this collection. These overshot fractures are the result of excessive force employed to reduce the overall preform thickness.

Within the Preform III stage, the lateral snap, tangent lateral snap, and fire spalling continue to be the primary causes of biface production failures. Material failures and discard in the projectile point group include lateral snap, tangent lateral snap, and incipient fracture plane.

Table 28. French Lick Site, Fracture Types of Biface Preforms and Projectile Points.

Fracture Types	Biface Preform I	Biface Preform II	Biface Preform III	Projectile Point	Total
hinge	24	6			30
reverse		11			11
perverse	1	12	9		22
impact				6	6
lateral Snap	4	142	48	63	257
tangent lateral snap	5	24	6	7	42
incipient fracture plain	4	22	1	10	37
crenelated		3	1		4
fire spall		19	7	8	34
haft snap			1	1	2
complete specimens	7	16	9	162	194

* Specimens may exhibit more than one type of fracture error

DISCUSSION OF FRENCH LICK SITE LITHIC ARTIFACTS

The projectile points from the French Lick Site have been summarized in Table 25. This artifact collection has a 10,000-year time depth, and a greater diversity of lithic resources are represented than at East Nashville Mounds. The Early Archaic Big Sandy, Kirk, Bifurcate Base, and Cypress Creek projectile point clusters are made from predominately locally available chert types. The Big Sandy cluster contains examples of Newman Cannon Ball chert, Bangor chert, and a unknown chert type. One Kirk specimen (see Figure 124) is made from a very distinctive gray and white striped Bigby-Cannon chert.

SUMMARY

The preceding analysis has focused on the identification, description, and metric observations of the lithic artifacts from the French Lick site. Raw lithic material types have been tentatively identified, and fracture patterns have been noted. The following will be an archaeological synopsis of the data presented.

The archaeological periods represented include Early Archaic through Mississippian. The Paleoindian horizon was not indicated with projectile points; however, the three end-struck blade flakes which were used as informal scrapers are characteristic of the Paleoindian through Early Archaic period.

The Big Sandy, Kirk, and Eva/Morrow Mountain cluster projectile points were recovered in low numbers. The sporadic occurrence of these projectile point types as a background frequency is common on elevated terraces throughout the Tennessee River Basin settlements. The French Lick site was extensively truncated during the middle Holocene Hypsithermal erosion cycle, and these projectile points remained within the sites.

The Benton horizon is the first significant occupation preserved in the archaeological deposits; this occupation postdates the Hypsithermal truncation (Alexander 1982). Stratified late Middle Archaic deposits were encountered in Strata 8 and 9 (Bent 4) from 90 to 145 cm below surface. The Benton horizon contained a unique ratio between the Benton and Buzzard Roost Creek projectile points. Elsewhere within Benton horizon occupations, the Buzzard Roost Creek point types are a minority, comprising under 10 percent of the assemblage. At the French Lick site, the Buzzard Roost Creek points comprise 67 percent of the assemblage. The extensive collection of scrapers and adzes recovered can be partially assigned to this Middle Archaic component, as well. This component also contains the largest variety of chert, and the lithic technology represents an apex not obtained since the Paleoindian period.

The Late Archaic Flint Creek and Wade projectile point clusters are another significant component at the French Lick site. These projectile points are associated with the Alexander ceramic series recovered from Bent 4 in Strata 6 and 7, 45 to 92 cm below the site surface.

The Middle Woodland triangular projectile point cluster, including the Copena and Copena Triangular types, is associated with the limestone-tempered plain and complicated stamped ceramics recovered from the site. The microtools and polyhedral cores recovered can also be assigned to this assemblage.

The Mississippian triangular projectile points are under- represented at the French Lick site when one examines the volume of Mississippian period midden and the large postholes that were present. These projectile points were recovered from Strata 2 and 3, 0 to 20 cm below the site surface in the bent excavations, and they were recovered from the site foreslope deposition excavations. This assemblage is significantly different from the East Nashville Mounds excavations in that the Fort Ancient projectile point types are minimally represented. The side notched Knight Island projectile points are also part of the Mississippian assemblage from this site. The local chert small wedges may also be a segment of the Mississippian woodworking assemblage which is more completely represented at East Nashville Mounds.

ACKNOWLEDGMENTS

The laboratory analysis was conducted by Paul Jackson and Lawrence Alexander. Paul Jackson entered the observations into the computer and compiled the statistical summaries included in Appendix B. Terry Lolley was the computer consultant for this chapter. Jeff Thompson and Blaine Ensor are gratefully acknowledged for their consultations during the projectile point analysis. Errors in observation and reporting are, of course, the responsibility of the authors.

CHAPTER 12
MOLLUSCAN ANALYSIS

Evan Peacock

The Cumberland River was once an ideal habitat for freshwater mollusca, as attested by the large numbers of specimens reported from archaeological contexts (e.g., Breitburg 1983, 1986) and from historic collections (e.g., Neel and Allen 1964; Wilson and Clark 1914). It is not surprising, therefore, that the excavations at East Nashville Mounds and the French Lick site yielded great quantities of shell. A total of 31,872 individual mussel valves, aquatic and terrestrial gastropod shells, and shell artifacts were analyzed. The samples are notable not only for their richness, but also for their diversity: 35 species of bivalve representing 18 genera, 6 genera of aquatic snail, and 6 genera of terrestrial gastropods were recovered. Modified shell was recovered from both sites. The assemblages can be viewed in terms of Mississippian exploitation patterns, as only a negligible amount of shell was present in the Woodland and Archaic strata at the French Lick site.

METHODS

The shell analyzed from both sites is that which was recovered in the 1/4" mesh screens. All the shell thus recovered from features at East Nashville Mounds was analyzed, as well as that from five excavation units considered to be representative (125N 88E, 125N 89E, 125N 95E, 140N 118E, 145N 79E). The data from the unit levels have been combined into stratigraphic zones for ease of presentation. All the shell recovered in 1/4" mesh from the French Lick site was analyzed.

A cursory examination of several flotation and fine screen samples showed that these contained mostly platy fragments of mussel shell and occasional fragments of aquatic gastropods. Given the numbers involved, it is doubtful that analysis of these fragments would significantly alter the species proportions as represented in the 1/4" material. These samples also contained moderate numbers of small terrestrial gastropods. While site and/or context-specific information might be obtainable from these specimens (e.g., Barber 1988; Hajic 1990), analysis was restricted to the land snails recovered from the 1/4" mesh, as accurate identification of the smaller gastropods is extremely difficult, and adequate ecological information is generally lacking for such species in the Southeast.

Bivalves were sorted to the species level when possible. Left and right valves were counted separately, with the larger number for each species being used as the minimum

number of individuals (MNI) for each particular provenience. Identification was carried out using several reference guides (Bogan and Parmalee 1983; Buchanan 1980; Burch 1975; Dubois 1985a; Oesch 1984; Parmalee 1967), the author's comparative collection, and a large comparative sample from both sites which was identified by Dr. Paul W. Parmalee, University of Tennessee.

Aquatic and terrestrial gastropods were identified to genus using standard reference guides (Bogan and Parmalee 1983; Burch 1962, 1982; Dubois 1985b; Pilsbry 1939–1948). In order to avoid counting fragmentary specimens more than once, specimens of aquatic gastropods were counted only if they retained the aperture; terrestrial gastropods were counted if the apex was present. In general, preservation of gastropods was such that most identified specimens were whole, or nearly so.

Modified shell was recovered in the field and during laboratory sorting of all materials. All modified shell thus located was analyzed.

BIVALVES

Although no one mussel species dominated the assemblages, some were more common at both sites. These include *Actinonaias ligamentina*, *Elliptio dilatata*, *Dromus dromas*, *Epio blasma arcaeformis*, and various species of *Pleurobema*, especially *P. plenum*, *P. pyrimidatum*, and *P. cordatum*. With the exception of *E. arcaeformis*, species identification in *Epioblasma* and *Pleurobema* is quite difficult, especially with archaeological specimens (Casey 1987; Parmalee and Klippel 1986; Parmalee et al. 1980). The discussions which follow will thus focus primarily on these species as members of their particular genus, rather than as individual species.

The common bivalves noted above are all characteristic of medium to large rivers with good current. While most are adaptable to a wide range of water depth and substrate type (e.g., *E. dilatata*—Buchanan 1980:38; Casey 1987:121; Morrison 1942:358; Oesch 1984:131; Parmalee 1967:29), the abundance of *Epioblasma* suggests the presence of shoals or riffles (Bogan and Parmalee 1983:19, 32; Casey 1987:120; Parmalee et al. 1982:85–86).

Overall, the sites appear similar. However, when the minority species and total *Epioblasma* are compared some interesting differences emerge, as Table 29 shows.

Table 29. Comparison of Total Valves,Selected Minority Bivalve Species, East Nashville Mounds and French Lick.

	East Nashville Mounds		French Lick	
	#	%	#	%
Cyclonaias tuberculata	121	2.19	72	3.0
Cyprogenia stegaria	35	0.63	29	1.0
Elliptio crassidens	24	0.43	19	0.8
Epioblasma spp.	561	10.15	306	12.6
Fusconaia subrotun da	26	0.47	18	0.7
Lampsilis ovata	42	0.76	31	1.3
Ligumia recta	1	0.02	9	0.4
Obovaria subrotunda	174	3.15	31	1.3
Quadrula metanevra	15	0.27	19	0.8
Quadrula pustulosa	66	1.19	34	1.4
Truncilla truncata	0	0.00	3	0.1
Villosa trabalis	1	0.02	37	1.5

Several of the species listed above are proportionately more common at the French Lick site and are characteristic of deeper water. These include *Elliptio crassidens* (Morrison 1942: 358), *Fusconaia subrotunda* (Morrison 1942:354), and *Lampsilis ovata* (Morrison 1942:362; Parmalee 1967:72). In contrast, *Obovaria subrotunda*, more common at East Nashville Mounds, prefers shallower water (Casey 1987:120; Parmalee 1967:80). While the smaller proportion of *O. subrotunda* at the French Lick site might be a result of sampling error due to the smaller size of the sample from that site (5,525 valves from East Nashville Mounds compared to 2,420 valves from the French Lick site), small sample size would not be expected to cause an over-representation of minority species, and thus does not explain the larger proportions of deep water species recovered from the French Lick site (Table 30 [insert], Tables 31-32, Table 33 [insert]). Thus, it seems that the prehistoric inhabitants of the French Lick site had greater access to deep water mussel species. Several possible conclusions which can be drawn from this phenomenon:

1. The river was lower during some of the time when the French Lick site was occupied. The presence of deep water species in archaeological contexts is often taken as evidence that mussels were collected during periods of drought (e.g., Morrison 1942:354–358).

2. The Mississippian inhabitants of the French Lick site used a different collection technique than the inhabitants of East Nashville Mounds. It is usually assumed that aboriginal populations gathered molluscs by hand; however, it is not implausible that branches or some other form of "rake" were used in a manner analogous to modern shellfishing techniques (Claassen 1985).

Table 31. Bivalves from Provenience Units, East Nashville Mounds.

		112N 89E Zone 1	125N 88E Zone 1	125N 88E Zone 2	125N 95E Zone 2	140N 118E Zone 2	145N 79E Zone 1	145N 79E Zone 2	Total Valves		Total MNI	
Actinonaias ligamentina	right		2	6		31		16				
(Lamarck, 1819)	left	5	2	7	2	19	1	23	114	5.32%	71	5.59%
	MNI	5	2	7	2	31	1	23				
Amblema plicata	right			1		1		1				
(Say, 1817)	left					2		3	8	0.37%	6	0.47%
	MNI			1		2		3				
Cumberlandia monodonta	right					3	1					
(Say, 1829)	left			1				4	9	0.42%	9	0.71%
	MNI			1		3	1	4				
Cyclonaias tuberculata	right		3	3		5		3				
(Rafinesque, 1820)	left		1	4		8		3	30	1.40%	18	1.42%
	MNI		3	4		8		3				
Cyprogenia stegaria	right			1		2						
(Rafinesque, 1820)	left					7		1	11	0.51%	9	0.71%
	MNI			1		7		1				
Dromus dromas	right		23	64	1	53	2	35				
(I. Lea, 1834)	left	1	17	52		61	2	36	347	16.21%	188	14.81%
	MNI	1	23	64	1	61	2	36				
Elliptio crassidens	right			1		1		2				
(Lamarck, 1819)	left					1		2	7	0.33%	4	0.32%
	MNI			1		1		2				
E. dilatata	right		4	13	3	44	1	53				
(Rafinesque, 1820)	left		7	19	4	54	1	68	271	12.66%	153	12.06%
	MNI		7	19	4	54	1	68				

Table 31. continued.

		112N 89E Zone 1	125N 88E Zone 1	125N 88E Zone 2	125N 95E Zone 2	140N 118E Zone 2	145N 79E Zone 1	145N 79E Zone 2	Total Valves		Total MNI	
Epioblasma arcaeformis	right	1	1	8		14	1	25				
(I. Lea, 1831)	left		2	4	1	11		21	89	4.16%	52	4.10%
	MNI	1	2	8	1	14	1	25				
E. brevidens	right			1								
(I. Lea, 1831)	left			1		1			3	0.14%	2	0.16%
	MNI			1		1						
E. flexuosa	right					1						
(Rafinesque, 1820)	left					3		1	5	0.23%	4	0.32%
	MNI					3		1				
E. haysiana	right											
(I. Lea, 1833)	left					1			1	0.05%	1	0.08%
	MNI					1						
E. propinqua	right					6		1				
(I. Lea, 1857)	left					3		1	11	0.51%	7	0.55%
	MNI					6		1				
E. cf. ipropinqua	right			1								
(I. Lea, 1857)	left			3					4	0.19%	3	0.24%
	MNI			3								
E. stewardsoni	right					1						
(I. Lea, 1852)	left								1	0.05%	1	0.08%
	MNI					1						
E. torulosa	right					5						
(Rafinesque, 1820)	left					1		1	7	0.33%	6	0.47%
	MNI					5		1				

Table 31. continued.

		112N 89E Zone 1	125N 88E Zone 1	125N 88E Zone 2	125N 95E Zone 2	140N 118E Zone 2	145N 79E Zone 1	145N 79E Zone 2	Total Valves		Total MNI	
E. spp.	right			4		12		7				
	left		1	9	1	16		5	55	2.57%	34	2.68%
	MNI		1	9	1	16		7				
Fusconaia subrotunda	right			4		1						
(I. Lea, 1831)	left			1				3	9	0.42%	8	0.63%
	MNI			4		1		3				
Lampsilis fasciola	right											
Rafinesque, 1820	left					1			1	0.05%	1	0.08%
	MNI					1						
L. ovata	right					1		1				
(Say, 1817)	left			1		1		1	5	0.23%	3	0.24%
	MNI			1		1		1				
L. spp.	right			2		2		1				
	left								5	0.23%	5	0.39%
	MNI			2		2		1				
Ligumia recta	right											
(Lamarck, 1819)	left							1	1	0.05%	1	0.08%
	MNI							1				
Obliquaria reflexa	right							2				
Rafinesque, 1820	left					3	1		6	0.28%	6	0.47%
	MNI					3	1	2				
Obovaria retusa	right			2		3	1	1				
(Lamarck, 1819)	left					4		1	12	0.56%	8	0.63%
	MNI			2		4	1	1				

Table 31. continued.

		112N 89E Zone 1	125N 88E Zone 1	125N 88E Zone 2	125N 95E Zone 2	140N 118E Zone 2	145N 79E Zone 1	145N 79E Zone 2	Total Valves		Total MNI	
O. subrotunda	right			1	1	9		11				
(Rafinesque, 1820)	left			5		12		11	50	2.34%	29	2.29%
	MNI			5	1	12		11				
Plethobasus cicatricosus	right				1							
(Say, 1829)	left			1				1	3	0.14%	3	0.24%
	MNI			1	1			1				
P. cyphyus	right	1		1		3						
(Rafinesque, 1820)	left							3	8	0.37%	8	0.63%
	MNI	1		1		3		3				
P. sp.	right											
	left							1	1	0.05%	1	0.08%
	MNI							1				
Pleurobema clava	right	1		5	1	11		10				
(Lamarck, 1819)	left	1		6	1	10		15	61	2.85%	34	2.68%
	MNI	1		6	1	11		15				
P. cordatum	right		1	1	2	10		16				
(Rafinesque, 1820)	left					12		3	45	2.10%	32	2.52%
	MNI		1	1	2	12		16				
P. plenum	right			1		3		1				
(I. Lea, 1840)	left		1	5	1	21		11	44	2.06%	39	3.07%
	MNI		1	5	1	21		11				
P. pyramidatum	right	1	2	6		7		18				
(I. Lea, 1840)	left	1		4		8		6	53	2.48%	35	2.76%
	MNI	1	2	6		8		18				

Table 31. continued.

		112N 89E Zone 1	125N 88E Zone 1	125N 88E Zone 2	125N 95E Zone 2	140N 118E Zone 2	145N 79E Zone 1	145N 79E Zone 2	Total Valves		Total MNI	
P. spp.	right		4	3	2	43	4	54				
	left	4	4	9	6	46	5	55	239	11.16%	129	10.17%
	MNI	4	4	9	6	46	5	55				
Ptychobranchus fasciolaris	right			1		2		1				
(Rafinesque, 1820)	left							2	6	0.28%	5	0.39%
	MNI			1		2		2				
P. subtentum	right			1		2						
(Say, 1825)	left			1					4	0.19%	3	0.24%
	MNI			1		2						
P. sp.	right											
	left	1							1	0.05%	1	0.08%
	MNI	1										
Quadrula cylindrica	right											
(Say, 1817)	left	1		1				1	3	0.14%	3	0.24%
	MNI	1		1				1				
Q. metanevra	right					1		3				
(Rafinesque, 1820)	left								4	0.19%	4	0.32%
	MNI					1		3				
Q. nodulata	right							1				
(Rafinesque, 1820)	left								1	0.05%	1	0.08%
	MNI							1				
Q. pustulosa	right			3		6		4				
(I. Lea, 1831)	left		1	2		1		1	18	0.84%	14	1.10%
	MNI		1	3		6		4				

Table 31. continued.

		112N 89E Zone 1	125N 88E Zone 1	125N 88E Zone 2	125N 95E Zone 2	140N 118E Zone 2	145N 79E Zone 1	145N 79E Zone 2	Total Valves		Total MNI	
Tritogonia verrucosa	right											
(Rafinesque, 1820)	left			1					1	0.05%	1	0.08%
	MNI			1								
Villosa trabalis	right							1				
(Conrad, 1834)	left								1	0.05%	1	0.08%
	MNI							1				
Villosa sp.	right											
	left					1			1	0.05%	1	0.08%
	MNI					1						
Unidentified	right	3	23	25	3	73	23	141				
	left	1	19	23	5	104	24	118	585	27.32%	325	25.61%
	MNI	3	23	25	5	104	24	141				
Total Valves:		22	118	319	35	768	67	812	2141	100.00%		
Total MNI:		19	70	194	26	455	37	468			1269	100.00%

Table 32. Bivalves from Features, French Lick.

		F1a	F1b	F3	F5	F6	F23	F24	F25	F52	F56	BA	B1	B3	B4	B5 lid	B6	B6a	B7	BWL-1	Total Values		Total MNI	
Actinonaias ligamentina	right	15	1		2	2	18		1				1	1										
(Lamarck 1819)	left	16	1		2		13		4									2			79	7.80%	47	7.37%
	MNI	16	1		2	2	18		4				1	1				2						
Amblema plicata	right	1			1		2																	
(Say 1817)	left	2					2												1		9	0.89%	6	0.94%
	MNI	2			1		2												1					
Cyclonaias tuberculata	right	2			1	3	2																	
(Rafinesque 1820)	left	4			4	3	3														22	2.17%	14	2.19%
	MNI	4			4	3	3																	
Cyprogenia stegaria	right	1				1	2																	
(Rafinesque 1820)	left	2			1	2	2							1							12	1.18%	8	1.25%
	MNI	2			1	2	2							1										
Dromus dromas	right	14	1		4	8	41		2								2		3					
(I. Lea 1834)	left	11			3	6	38		1								1		5		140	13.82%	77	12.07%
	MNI	14	1		4	8	41		2								2		5					
Ellipsaria lineolata	right						2																	
(Rafinesque 1820)	left				1		1														4	0.39%	3	0.47%
	MNI				1		2																	
Elliptio crassidens	right	3				1	2																	
(Lamarck 1819)	left	3				1	1														11	1.09%	6	0.94%
	MNI	3				1	2																	
E. dilatata	right	13	1		6	6	27		6						2	1	2		4					
(Rafinesque 1820)	left	8	2	1	6	2	28		6										7	1	129	12.73%	75	11.76%
	MNI	13	2	1	6	6	28		6						2	1	2		7	1				
Epioblasma arcaeformis	right	5	1			7	7		1					1					1					
(I. Lea 1831)	left	7			2	3	6							1					1		43	4.24%	27	4.23%
	MNI	7	1		2	7	7		1					1					1					
E. brevidens	right						1																	
(I. Lea 1831)	left						1														2	0.20%	1	0.16%
	MNI						1																	
E. capsaeformis	right				1		1																	
(I. Lea 1834)	left						2														4	0.39%	3	0.47%
	MNI				1		2																	

Table 32. continued.

		F1a	F1b	F3	F5	F6	F23	F24	F25	F52	F56	BA	B1	B3	B4	B5 lid	B6	B6a	B7	BWL-1	Total Values		Total MNI	
E. cf. capsaeformis	right						2														5	0.49%	3	0.47%
	left						3																	
	MNI						3																	
E. flexuosa	right						5														10	0.99%	9	1.41%
(Rafinesque 1820)	left	3				1	1																	
	MNI	3				1	5																	
E. cf. flexuosa	right					1															1	0.10%	1	0.16%
	left																							
	MNI					1																		
E. florentina fm. florentina	right				1		1														3	0.30%	2	0.31%
(I. Lea 1857)	left						1																	
	MNI				1		1																	
E. propinqua	right	3			1	1	12														28	2.76%	19	2.98%
(I. Lea 1857)	left	1					8												2					
	MNI	3			1	1	12												2					
E. cf. propinqua	right	1																			1	0.10%	1	0.16%
	left																							
	MNI	1																						
E. stewardsoni	right																		1		2	0.20%	2	0.31%
(I. Lea 1852)	left						1																	
	MNI						1												1					
E. torulosa	right						2		1												7	0.69%	5	0.78%
(Rafinesque 1820)	left						3												1					
	MNI						3		1										1					
E. spp.	right	1			1		12												1		36	3.55%	22	3.45%
	left	1			5		11		2								1		1					
	MNI	1			5		12		2								1		1					
Fusconaia subrotunda	right	2				2	1														9	0.89%	6	0.94%
(I. Lea 1831)	left	3					1																	
	MNI	3				2	1																	
Lampsilis fasciola	right																				1	0.10%	1	0.16%
Rafinesque 1820	left						1																	
	MNI						1																	

Table 32. continued.

		F1a	F1b	F3	F5	F6	F23	F24	F25	F52	F56	BA	B1	B3	B4	B5 lid	B6	B6a	B7	BWL-1	Total Values		Total MNI	
L. ovata	right					2	6												1					
(Say 1817)	left				2	1	10		1												23	2.27%	16	2.51%
	MNI				2	2	10		1										1					
L. spp.	right	1				4	1		1															
	left	2				3															12	1.18%	8	1.25%
	MNI	2				4	1		1															
cf. *Lexingtonia dolabelloides*	right						2																	
(I. Lea 1840)	left																				2	0.20%	2	0.31%
	MNI						2																	
Ligumia recta	right					1	3												1					
(Lamarck 1819)	left						3														8	0.79%	5	0.78%
	MNI					1	3												1					
Obliquaria reflexa	right																							
Rafinesque 1820	left	1																			1	0.10%	1	0.16%
	MNI	1																						
Obovaria retusa	right			1			2		1															
(Lamarck 1819)	left																		2		6	0.59%	6	0.94%
	MNI			1			2		1										2					
O. subrotunda	right	7			1	4			1										1					
(Rafinesque 1820)	left	3			1	5															23	2.27%	15	2.35%
	MNI	7			1	5			1										1					
Plethobasus cicatricosus	right																							
(Say 1829)	left						1														1	0.10%	1	0.16%
	MNI						1																	
P. cyphyus	right	1			1																			
(Rafinesque 1820)	left	3																			5	0.49%	4	0.63%
	MNI	3			1																			
Pleurobema clava	right						15					1							1					
(Lamarck 1819)	left			1			16							1			1		1		37	3.65%	21	3.29%
	MNI			1			16					1		1			1		1					
P. cordatum	right	7				1	4							1										
(Rafinesque 1820)	left	10				3	4		1												31	3.06%	19	2.98%
	MNI	10				3	4		1					1										

Table 32. continued.

		F1a	F1b	F3	F5	F6	F23	F24	F25	F52	F56	BA	B1	B3	B4	B5 lid	B6	B6a	B7	BWL-1	Total Values		Total MNI	
P. plenum (I. Lea 1840)	right	4			1	1	1														20	1.97%	13	2.04%
	left	7			1	4	1																	
	MNI	7			1	4	1																	
P. pyramidatum (I. Lea 1840)	right	19			1	4	5							1							58	5.73%	36	5.64%
	left	12			2	5	5		1			1							2					
	MNI	19			2	5	5		1			1		1					2					
P. spp.	right	13			2	2	1		4		1								3		61	6.02%	39	6.11%
	left	17	1		3	3	7		3										1					
	MNI	17	1		3	3	7		4		1								3					
Ptychobranchus fasciolaris (Rafinesque 1820)	right	1					3		1												7	0.69%	5	0.78%
	left						1		1															
	MNI	1					3		1															
P. subtentum (Say 1825)	right						1														1	0.10%	1	0.16%
	left																							
	MNI						1																	
Quadrula cylindrica (Say 1817)	right						1														2	0.20%	1	0.16%
	left						1																	
	MNI						1																	
Q. metanevra (Rafinesque 1820)	right						1														1	0.10%	1	0.16%
	left																							
	MNI						1																	
Q. nodulata (Rafinesque 1820)	right				1																1	0.10%	1	0.16%
	left																							
	MNI				1																			
Q. pustulosa (I. Lea 1831)	right	5			1		1												1		16	1.58%	11	1.72%
	left	3			1	3	1																	
	MNI	5			1	3	1												1					
Tritogonia verrucosa (Rafinesque 1820)	right						1														2	0.20%	1	0.16%
	left						1																	
	MNI						1																	
Truncilla truncata Rafinesque 1820	right	2																			3	0.30%	2	0.31%
	left	1																						
	MNI	2																						

Table 32. continued.

		F1a	F1b	F3	F5	F6	F23	F24	F25	F52	F56	BA	B1	B3	B4	B5 lid	B6	B6a	B7	BWL-1	Total Values		Total MNI	
Villosa trabalis (Conrad 1834)	right						7																	
	left						8														15	1.48%	8	1.25%
	MNI						8																	
Unidentified	right	4	1		9	6	20		2		3		2	1	1		5		7					
	left	7			10	3	8	2	9	3	8			2	1		1		4		119	11.75%	83	13.01%
	MNI	7	1		10	6	20	2	9	3	8		2	2	1		5		7					
Total Valves:		252	9	3	79	105	409	2	50	3	12	2	3	10	4	1	13	2	53	1	1013	100.00%		
Total MNI:		153	7	3	51	70	235	2	36	3	9	2	3	8	3	1	11	2	38	1			638	100.00%

3. The river was deeper on the west side, allowing more immediate access to deep water species than was available on the east side.

4. The mussel assemblage from the French Lick site represents animals collected from sources other than or in addition to the Cumberland River adjacent to the sites. While this is a possibility, it is usually assumed that mussels in archaeological assemblages were collected from nearby sources, due to the weight of any appreciable amount of live bivalves (Robison 1983:118). Given that the vast majority of the bivalves are large river species, it seems likely that shoals and/or deep water adjacent to the sites were the main source being exploited. While further evidence exists for the exploitation of a wider range of habitats by the occupants of the French Lick site (see below), it can probably be safely assumed that the deep water species were obtained from the Cumberland River, the largest and deepest watercourse in the area.

Of 1 and 3 seem most tenable, given the overall similarity between the assemblages. Since there is no particular pattern of occurrence with depth noted for the deep water species recovered from the units at the French Lick site (see Table 33 [insert]), collection during a period of low water is not supported as an explanation of the differences between the two sites. It is likely, then, that the river was indeed deeper on the west side adjacent to the French Lick site.

Another interesting difference is the slightly greater diversity of species at the French Lick site (see Tables 30 through 33). *Epioblasma florentina*, *E. capsaeformis,* and *Truncilla truncata* occur at the French Lick site but not at East Nashville Mounds. Two valves tentatively identified as *Lexingtonia dolabelloides* were recovered from the French Lick site, while none was noted at East Nashville Mounds. In addition, only one valve of *Villosa trabalis* was recovered from East Nashville Mounds, as compared to fifteen from the smaller sample obtained from the French Lick site. This difference can be taken as evidence that the inhabitants of the French Lick site were indeed exploiting a wider range of aquatic habitats than were the East Nashville Mounds inhabitants. Another possibility is that the available mussel fauna had undergone slight changes between the time when the inhabitants of the French Lick site were collecting them and the later exploitation by people living at East Nashville Mounds. This hypothesis will be explored in more detail below.

One additional item of note is that practically every valve examined showed characteristic breakage on the anterior margin of the shell. This pattern has been noted elsewhere by researchers who questioned whether it represented intentional as opposed to natural breakage (Charles 1973:156). Given the consistency with which it occurs on the mussel shells examined herein, it seems certain that the breakage was an intentional means of facilitating meat extraction.

AQUATIC GASTROPODS

It has become evident that freshwater snails were a common food source for aboriginal inhabitants of the Tennessee and Cumberland River basins (Klippel and Morey 1986; Morrison 1942). They are often found in staggering quantities at archaeological sites. For example, Klippel and Morey estimate that approximately one-half million aquatic gastropods were recovered from one 1 m^2 excavation unit at the Hayes site in the Nashville Basin (Klippel and Morey 1986). Despite the large numbers gathered, nutritional analysis suggests that these animals contributed relatively little to the diet (Klippel and Morey 1986), and they are thus commonly regarded as a supplemental food source of minor importance (Klippel and Morey 1986:809; Parmalee and O'Hare 1989:39).

Three genera, *Pleurocera*, *Lithasia*, and *Leptoxis*, make up the vast majority of the specimens recovered from East Nashville Mounds and the French Lick site. The proportions are generally similar at both sites: *Lithasia* was most common, comprising about 40 percent of the total, followed by *Leptoxis* at about 25 percent and *Pleurocera* averaging about 16 percent (Tables 34 through 37). *Campeloma* occurs in small numbers at both sites, while *Elimia* occurs almost exclusively at the French Lick site, as does *Amnicola.* The *Campeloma* indicate the presence of a muddy substrate (Charles 1973; Morrison 1942; Parmalee and O'Hare 1989), while the *Pleuroceridae* (including *Leptoxis*, *Pleurocera*, and *Elimia*) suggest good current and a substrate of gravel or sand (Parmalee and O'Hare 1989:39). This is further evidence that a variety of aquatic habitats were being exploited. In particular, it suggests that some gathering may have been taking place in smaller waterways than the Cumberland River, as species of the families Pleuroceridae and Viviparidae (including *Campeloma*) tend to inhabit small to medium streams (Charles 1973; Morrison 1942; Parmalee and O'Hare 1989). It is interesting to note in this regard that gastropods made up 83.2 percent of the aquatic mollusca from the French Lick site, as compared to 64.4 percent at East Nashville Mounds.

Unlike the bivalves, no intentional breakage was noted on the aquatic gastropods. This supports the suggestion that boiling was the means of preparation for consumption (Klippel and Morey 1986; Parmalee and O'Hare 1989:39).

DISCUSSION

While changes in biotic assemblages are often ascribed to environmental differences, human impact undoubtedly also played a role. As Casey says:

> In truth, many species of freshwater pelecypods are more flexible in their habitat demands than they are often purported to be; thus, not all Unionid assemblages will provide precise environmental data. Paleoenvironmental reconstructions often are weak also due to an inability to state exactly the degree to which cultural factors may have influenced sample assemblages [Casey 1987:117].

Table 34. Gastropod Genera from Features, East Nashville Mounds.

Feature #	*Campeloma*	*Pleurocera*	*Lithasia*	*Leptoxis*	Unid.	Total
Fea. 4	5	256	313	187	229	990
Fea. 7	1	36	61	64	45	207
Fea. 8		3	5	7	2	17
Fea. 11	7	113	191	85	13	409
Fea. 11, Z.A	1	27	54	31	3	116
Fea. 18		17	39	16	5	77
Fea. 20			5	3	1	9
Fea. 24	6	107	153	69	19	354
Fea. 26		1			1	2
Fea. 27	8	160	143	122	3	436
Fea. 28		8	15	8	2	33
Fea. 29		10	16		6	32
Fea. 30		1				1
Fea. 31		1				1
Fea. 33			1	2		3
Fea. 44	10	101	61	17	140	329
Fea. 45					4	4
Fea. 47		3	5	3	2	13
Fea. 49		1	2			3
Fea. 51	10	139	333	159	26	667
Fea. 52		2	5	12	1	20
Fea. 53	3	100	740	640	2	1485
Fea. 54	1	21	29	8	6	65
Fea. 55		1	7	2		10
Fea. 57	1	21	48	13	20	103
Fea. 57, Z.B		7	4		6	17
Fea. 57, Z.C		4	4	2	2	12
Fea. 57, Z.D & F			18		2	20
Fea. 58	1	15	18	5	8	47
Fea. 60		2	6	2		10
Fea. 63			6	2	2	10
Fea. 65		2	1			3
Fea. 66		16	15	13		44
Fea. 68		28	57	18	1	104
Burial 1		4	6	5	2	17
Burial 2	1	65	123	47	32	268
Burial 3			1			1
Burial 4		36	45	29	1	111
Burial 5	2	70	93	63	8	236
Burial 6		4	8	5		17
Burial 8		7	5	2	6	20
Burial 9		37	138	92	3	270
Burial 9, 4A &4B fill		9	14	14	3	40
Burial 10		4	9			13
Burial 11		16	26	12		54
Total	**57**	**1455**	**2823**	**1759**	**606**	**6700**
Rel. Freq. (%)	0.85	21.72	42.13	26.25	9.04	100.00

Table 35. Gastropod Genera from Provenience Levels, 40DV4.

Provenience	Elimia	Campeloma	Pleurocera	Lithasia	Leptoxis	Unid.	Total
112N89E							
Zone 1			19	23	21	7	70
125N88E							
Zone 1				5	2	11	18
Zone 2		2	44	68	17	76	207
125N95E							
Zone 2			22	27	10	37	96
140N118E							
Zone 2	1	14	380	1244	668	7	2314
145N79E							
Zone 1		2	5	11	4	46	68
Zone 2	2	7	300	667	330	928	2234
Total	**3**	**25**	**770**	**2045**	**1052**	**1112**	**5007**
Rel. Freq. (%)	**0.06**	**0.50**	**15.38**	**40.84**	**21.01**	**22.21**	**100.00**

That cultural activities can affect riverine fauna is amply demonstrated by the enormous impacts that have taken place in historic times (e.g., Ellis 1933; Miller and Harris 1987; Parmalee et al. 1980; Parmalee et al. 1982; Stansberry 1970; Taylor and Spurlock 1982; Way et al. 1989). Freshwater mussels and snails are particularly vulnerable to changes resulting from anthropogenic factors (Aldridge 1983; Burky 1983; Fuller 1974; Harman 1974). Alteration of mussel bed compositions is attributed to a number of factors, including siltation, slowed current from impoundment, pollution, dredging, and overharvesting (Ellis 1993; Isom 1969; Miller and Harris 1987; Parmalee et al. 1980; Stansberry 1970; Taylor and Spurlock 1982).

Table 36. Gastropod Genera from Features, 40DV5.

Feature #	*Elimia*	*Campeloma*	*Pleurocera*	*Lithasia*	*Leptoxis*	Unid.	Total:
Posthole 2					2		2
Posthole 3					2		2
Fea. 1A		1	24	20	19	9	73
Fea. 1B			2	6	5	7	20
Fea. 2B				1		2	3
Fea. 3		1	11	31	7	4	54
Fea. 5	3	2	22	81	75	70	253
Fea. 6	1	2	17	75	50	6	151
Fea. 18			2	2	2	3	9
Fea. 23		1	28	276	77	31	413
Fea. 24				4		4	8
Fea. 25	7		23	35	29	30	124
Fea. 56						4	4
Burial 1						1	1
Burial 4			2	8	6	7	23
Burial 3			1	4	8	4	17
Burial 5							0
Burial 6	1	1	14	51	29	69	165
Burial 6A			1	9	2	11	23
Burial 7			6	12	10	6	34
Total :	**12**	**8**	**153**	**615**	**323**	**268**	**1379**
Rel. Freq. (%)	**0.87**	**0.58**	**11.10**	**44.60**	**23.42**	**19.43**	**100.00**

Table 37. Gastropod Genera from Provenience Levels, French Lick.

Unit/Level	*Amnicola*	*Elimia*	*Campeloma*	*Pleurocera*	*Lithasia*	*Leptoxis*	Unid.	Total
General surface coll.			2	13	14	3		32
Bent 1L								
FS 4					1			1
Bent 3R								
5N132W, Lv 1				5	1		2	8
5N132W, Lv 2			1	4	10	3	11	29
5N132W, Lv 3		1	1	38	97	61	63	261
5N132W, Lv 4A	2			8	9	8	9	36
5N132W, Lv 5		1	2	15	17	21	7	63
5N132W, Lv 6				1	2	1	7	11
5N132W, Lv 7				5			2	7
5N132W, Lv 8							1	1
Bent 4R								
8N107W, Lv 1					3	3	7	13
8N107W, Lv 2				1	1		6	8
8N107W, Lv 3							5	5
8N107W, Lv 4							1	1
Bent 5R								
10.5N83.5W, Lv 1			5	59	226	160	215	665
10.5N83.5W, Lv 2		7	12	174	482	396	467	1538
10.5N83.5W, Lv 3		11	6	130	248	254	165	814
10.5N83.5W, Lv 4		1		14	26	19	10	70
10.5N83.5W, Lv 5				5	19	22	17	63
10.5N83.5W, Lv 6		2			9	3	3	17
10.5N83.5W, Lv 7					2		1	3
10.5N83.5W, Lv 9					1	1		2
10.5N83.5W, Lv 12					1		1	2
Bent 5L								
20N83.5W, Lv 1		1		15	44	22	85	167
20N83.5W, Lv 2				12	13	13	22	60
20N83.5W, Lv 4				2	5	5	8	20
20N83.5W, Lv 5					2	1	3	6
20N83.5W, Lv 6							2	2
20N83.5W, Lv 8				9	9	7	17	42
20N83.5W, Lv 9							1	1
20N83.5W, Lv 14						1		1
Bent 7								
7N41W, Lv 1			3	681	194	198	70	1146
7N41W, Lv 2A		2	1	72	123	94	48	340
7N41W, Lv 2B				38	34	45	16	133
7N41W, Lv 3B		2	1	18	16	21	14	72
7N41W, Lv 4				5	10	13	3	31
7N41W, Lv 5				1	7	4	6	18
7N41W, Lv 6				1	4	4	2	11

Table 37. Gastropod Genera from Provenience Levels, French Lick.
Continued

Unit/Level	*Amnicola*	*Elimia*	*Campeloma*	*Pleurocera*	*Lithasia*	*Leptoxis*	Unid.	Total
7N41W, Lv 7					2	1	7	10
7N41W, Lv 8				5	8	2		15
7N41W, Lv 9					4	2	1	7
7N41W, Lv 10				2		2		4
7N41W, Lv 11					1			1
18N41.5W, Lv 1		23	7	173	835	556	261	1855
18N41.5W, Lv 2		13	4	80	305	194	127	723
26N42W, Lv 1		5	7	76	318	132	332	870
26N42W, Lv 2			3	64	232	217	49	565
26N42W, Lv 3		1		20	98	69	42	230
26N42W, Lv 4		1	2	34	79	48	75	239
26N42W, Lv 5			1	25	56	57	57	196
26N42W, Lv 8			1	6	13	5	1	26
TP1								
45.5N141.5W, Lv 1							2	2
45.5N141.5W, Lv 4							1	1
44N132W, Lv 2							1	1
44N132W, Lv 3							1	1
40N139W, Lv 1					1			1
50N132W, Lv 1							1	1
49.5N134W, Lv 2							1	1
46N135.5W, Lv 1							2	2
TP2								
42N105W, Lv 1					1			1
46N105W, Lv 1							1	1
46N127W, Lv 1					1		1	2
46N123W, Lv 1					1			1
46N108W, Lv 4							1	1
40N112W, Lv 3					1			1
46N112W, Lv 1					1			1
Abutment Pit								
6S205.5W, Lv 1		1	1	11	37	21	33	104
6S205.5W, Lv 2				6	13	10	37	66
Total	**2**	**72**	**60**	**1828**	**3637**	**2699**	**2331**	**10629**
Rel. Freq. (%)	**0.02**	**0.68**	**0.56**	**17.20**	**34.22**	**25.39**	**21.93**	**100.00**

In contrast, aboriginal impact is usually assumed to have been negligible, despite millennia of shellfish harvesting and habitation adjacent to the waterways of the Southeast. This view has been expressed by several authors:

> The prehistoric naiad (freshwater mussel) fauna of the Tennessee and Cumberland River systems was one of the richest in the world and consisted of at least 90 species. Although the Indians harvested vast quantities of mussels over a period of thousands of years, there is no evidence to suggest that this activity brought about the extinction of even one species or was detrimental to naiad populations in general [Parmalee et al. 1982:75].

> Pardue (1981), by considering presence/absence of species recovered from the upper Tennessee between 1918 and 1980, has clearly delineated the magnitude of change that has taken place in less than a century. Our data, recovered from archaeological contexts, suggests [sic] that comparatively little change took place over as much as two millennia preceding Euro-American settlement along this section of the [Tennessee] river [Parmalee et al. 1982:89].
>
> The Ohio River is a much different river from the pristine Ohio that freely flowed for eons of time prior to the coming of European man. Native Americans, in apparently large numbers, had lived in harmony with the river utilizing its resources in moderation and adding nothing which would seriously harm or modify the river [Taylor and Spurlock 1982:49].

The data from East Nashville Mounds and the French Lick site present an ideal opportunity for examining this assessment. Based on ceramic and chronometric dating (Walling, this volume), the Mississippian component at the French Lick site predates that at East Nashville Mounds by a relatively short span of time. If it is assumed that the occupants of both sites obtained the bulk of their freshwater molluscan species from the Cumberland River in the immediate vicinity, then it is reasonable to postulate that changes incurred in the molluscan fauna by runoff resulting from agricultural clearance, burning, and general midden effluents might be detectable by a detailed comparison on the two assemblages. Given the sort time span involved, it is likely that such differences would be due to factors other than environmental fluctuation.

Mussel species that are easily affected by siltation are those that are adapted to a sand and/or gravel bottom environment (Parmalee 1967:87). Among the minority species noted above, these include *Cyprogenia stegaria* (Parmalee et al. 1982:87), *Villosa trabalis* (Bogan and Parmalee 1983:77), *Quadrula metanevra* (Oesch 1984:96; Parmalee 1967:39), *Ligumia recta* (Oesch 1984:198; Parmalee 1967:75), *Lexingtonia dolabelloides* (Bogan and Parmalee 1983:53), and species belonging to *Epioblasma* (Parmalee et al. 1980:100; Parmalee et al. 1982). Of these, *Q. metanevra* is evidently capable of adapting to adverse conditions (e.g., Parmalee et al. 1982:84–85); however, the others have all been negatively impacted by and unable to adapt to modern activities in various watercourses (Bogan and Parmalee 1983; Parmalee 1967; Parmalee et al. 1980; Parmalee et al. 1982; Taylor and Spurlock 1982). Thus, it is possible that their lesser relative abundance at East Nashville Mounds is due to changes wrought by the actions of earlier inhabitants of that stretch of the Cumberland River.

While this is an intriguing hypothesis, there is a simpler explanation for the differences noted between the two sites. While *Ligumia recta* and *Truncilla truncata* have rather general habitat requirements (Buchanan 1980; Oesch 1984; Parmalee 1967), many of the other minority species prefer small rivers and streams to large waterways. These include *Villosa trabalis* (Bogan and Parmalee 1983:77), *Epioblasma capsaeformis*, and *E. florentina* (Parmalee et al. 1982:86). Thus, it may be that the differences noted between the assemblages from East Nashville Mounds and the French Lick site reflect different exploitation patterns in that the inhabitants of the French Lick site were gathering shellfish from a smaller stream (or streams) in addition to the Cumberland River. This is supported by the greater proportion of aquatic gastropods from the French Lick site, as noted above. It is

interesting to note that while several small streams and branches were historically recorded in the vicinity of the French Lick site (Moore, this volume), the nearest tributaries of appreciable size on the west side of the river are Mill Creek and Richland Creek, located several miles to the east and west of the French Lick site, respectively.

In sum, the molluscan assemblages from East Nashville Mounds and the French Lick site do not yield any definite indications of significant prehistoric human impact on the molluscan fauna of the Cumberland River. If such impact took place, it is possible that the molluscs recovered from the impact between periods of exploitation (see Miller and Harris 1987:23). There is also an interesting possibility, raised by Breitburg (1986), that human activities actually invigorated molluscan populations in the river:

> The later appearance of large quantities of mollusc [Penitentiary Branch, Cumberland River] may possibly indicate a concomitant development of mussel beds at the confluence of the Cumberland River and Penitentiary Branch and site processing activities that enriched the organic quality of adjacent aquatic habitats, allowing populations to thrive [Breitburg 1986:92].

Such invigoration has been noted historically, where minor amounts of sewage or other organic waste have entered waterways (Harman 1974). If anthropogenic processes such as invigoration or impact were in operation prehistorically, distinguishing their effects from differential habitat exploitation will be difficult and may be accomplished only through detailed allometric comparisons of site assemblages.

TERRESTRIAL GASTROPODS

Land snails made up a very small proportion of the total shell recovered from the 1/4" mesh: 35 specimens were recovered from East Nashville Mounds, and 25 from the French Lick site (Table 38). While land snails in the Southeast are generally not considered to be part of the subsistence base (Charles 1973:49; Parmalee and O'Hare 1989:37), analysis can provide information pertaining to environmental conditions on or near a site (Barber 1988; Hajic 1990; Parmalee and O'Hare 1989:37).

The most common terrestrial gastropod genus at both sites was *Mesodon*. *Anguispira* and *Stenotrema* also occurred at both sites. One specimen of *Bulimulus* was recovered from the French Lick site, while a few specimens of *Mesomphix* and *Ventridens* were recovered from East Nashville Mounds. Given the small numbers recovered, no meaningful intra- or inter-site comparisons can be made.

Anguispira and *Ventridens* are catholic genera, living in a wide range of habitats. *Stenotrema* is primarily a woodland genus (Burch 1962). The remaining genera are indicative of deciduous woodland. *Mesodon*, *Haplotrema*, and *Mesomphix* "typically inhabit dense shaded forest stands on limestone soils covered with rotted logs, leaf litter and other debris.

Table 38. Terrestrial Gastropods from 1/4" Mesh.

	Anguispira	*Bulimulus*	*Mesodon*	*Mesomphix*	*Stenotrema*	*Ventridens*	Unid.
East Nashville Mounds							
140N118E, Z.2, L.1	1						
140N118E, Z.2, L.2			1			1	
Feature 11			2	2		1	
Feature 27				1	1		
Feature 58, L. 1-3							1
Burial 5			18				5
Burial 11			1				
French Lick							
7N41W, L.1			6				1
7N41W, L.8			2				
10.5N83.5W, L.1			5				
10.5N83.5W, L.2			2				
10.5N83.5W, L.5	1						
10.5N83.5W, L.7							1
18N41.5W, L.1			1				
18N41.5W, L.2			1				
18N41.5W, L.2A			1				
26N42W, L.5	1						
Feature 23					1		
Burial 7		1					1

Most species reach their greatest abundance in stands composed of oak, hickory, elm, beech and other miscellaneous hardwoods" (Parmalee and O'Hare 1989:39).

MODIFIED SHELL

The modified shell recovered from East Nashville Mounds and the French Lick site is shown in Table 39. While the majority of shell artifacts were recovered from burials and burial fill, a surprising number were found during screening of the general midden from the sites. This may have been the result of cleaning and reuse of stone box graves, the nonrecognition and subsequent general excavation of some features in the dark midden, or both.

As far as could be determined, all the shell artifacts (except for a few irregular beads) were manufactured from mussel valves; no intentionally modified gastropods were noted. Few of the modified specimens are identifiable to species. Three valves (two right and one left) of *Actinonaias ligamentina* recovered from the French Lick site had holes cut or punched through the anterior portion of the shell (Figure 149a). These holes ranged from 1.7 to 2.5 cm

Table 39. Modified Shell.

	cut marks	circular flat bead	barrel bead	tubular bead	sub-rectangular bead	irregular bead	holed valve	shell spoon
East Nashville Mounds								
125N88E, Z.2, L.2		1						
126N87E, Z.2, L.1		1						
126N88E, Z.2, L.3		1	1					
134N79E, Z.2, L.3		1						
135N80E, Z.2, L.1		1						
136N79E, Z.2, L.2		1	1					
139N90E, Z.2, L.2		1						
140N118E, Z.2, L.2	1							
140N118E, Z.2, L.3		1						
141N77E, Z.2, L.1		1						
145N79E, Z.2, L.1			1					
145N82E, Z.2, L.2				1		1		
Feature 11		1						
Feature 27		1						
Burial 1		1						
Burial 2				1				
Burial 5		94	10	4				
Burial 10		1						
French Lick								
Bent 1L, GSC							1	
Bent 3R, 5N132W, L.3					1			
Bent 3R, 5N132W, L.4A							1	
Bent 5L, 10.5N83.5W, L.2							1	
Bent 5L, 10.5N83.5W, L.4					1			
Feature 1A	1							
Feature 5					1			
Burial 4		5	1					1

in diameter and were roughly circular. While such artifacts are commonly referred to as "hoes," the small size of the holes suggests that they served some other purpose.

One shell "spoon" was recovered from near the head of Burial 4, French Lick. This artifact was produced from the left valve of a *Lampsilis ovata* by cutting and rounding of the anterior margin of the shell (Figure 149b).

Two valves were recovered that displayed what are evidently cut marks. One is from the French Lick site; this is a left valve of *Pleurobema* sp. with seven parallel incisions on the anterior margin, running between the shell edge and the pallial line (Figure 149c). The cuts are deep and range from 0.75 to 1.00 cm in length. Distances between the marks are 0.5, 0.5, 0.4,

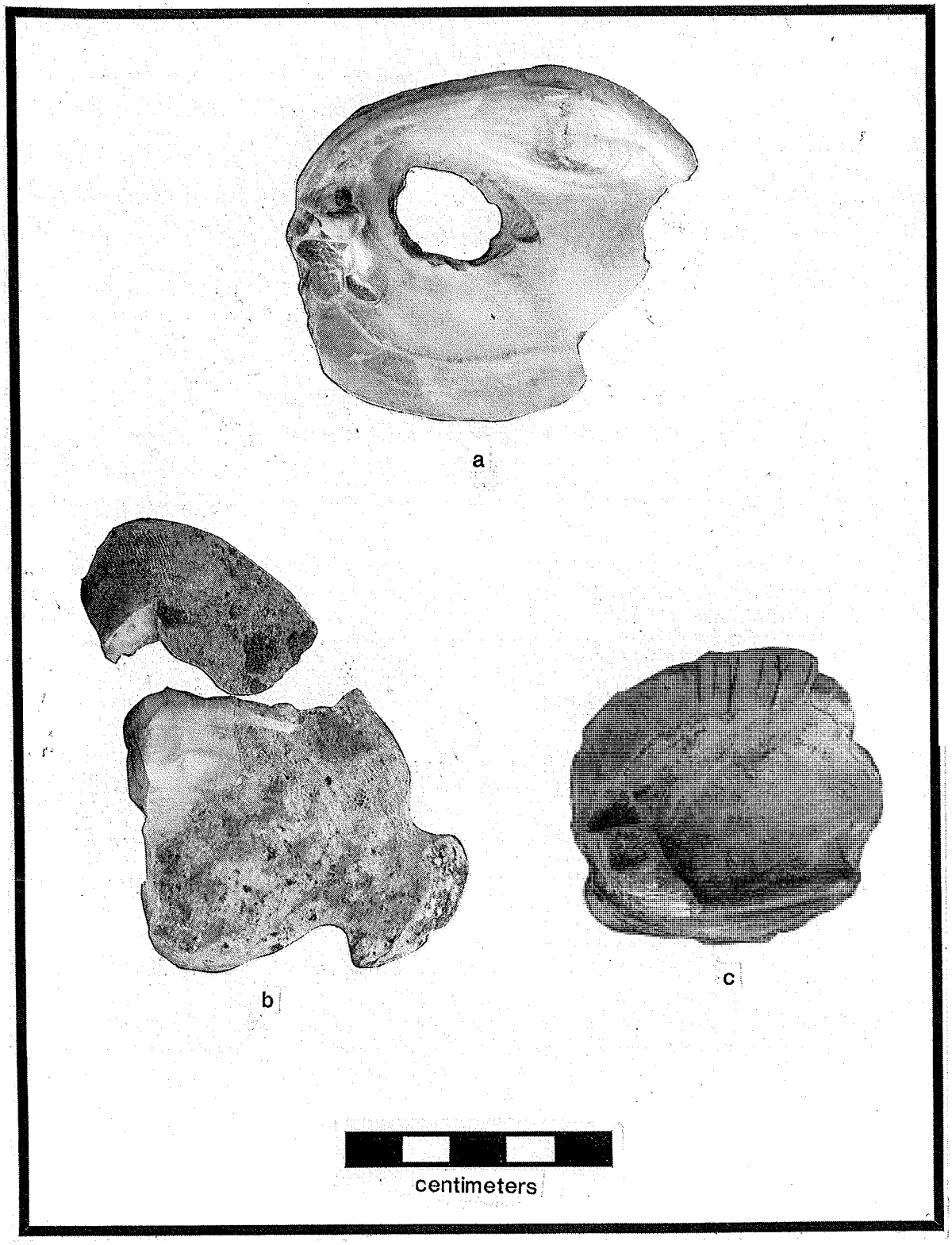

Figure 149. Modified shell: a, punctured *Actinonaias ligamentina* valve; b, *Lampsilis ovata* "spoon"; c, incised *Pleurobema* sp. valve.

0.5, 0.3, and 0.3 cm. The other specimen is a right valve of *Epioblasma torulosa* with four small, parallel cut marks on and perpendicular to the interdentum. Distances between marks are 0.1, 0.2, and 0.1 cm. While the function of the artifacts is unknown, it is suggested that they represent the first stage in the manufacture of small shell beads.

Shell beads were separated based on length (parallel with hole) and width (perpendicular to hole). Flat circular beads are shorter in length than width. Barrel beads are at least twice as wide as long. Tubular beads are at least twice as long as wide. Subrectangular beads are generally flat, rounded squares perforated in the middle. Beads of non-uniform shape were classified as irregular (see Table 39); these were probably manufactured from the columns of whelk shells.

Circular flat beads were the most common at both sites, with the majority (94) coming from around the neck of the largest infant in Burial 5, East Nashville Mounds (Figure 150). Many of these were still fused together by clay and could not be separated without damage. They range in width from 3.00 to 8.00 mm, in length from 2.20 to 7.35 mm, and in hole diameter from 1.40 to 3.95 mm.

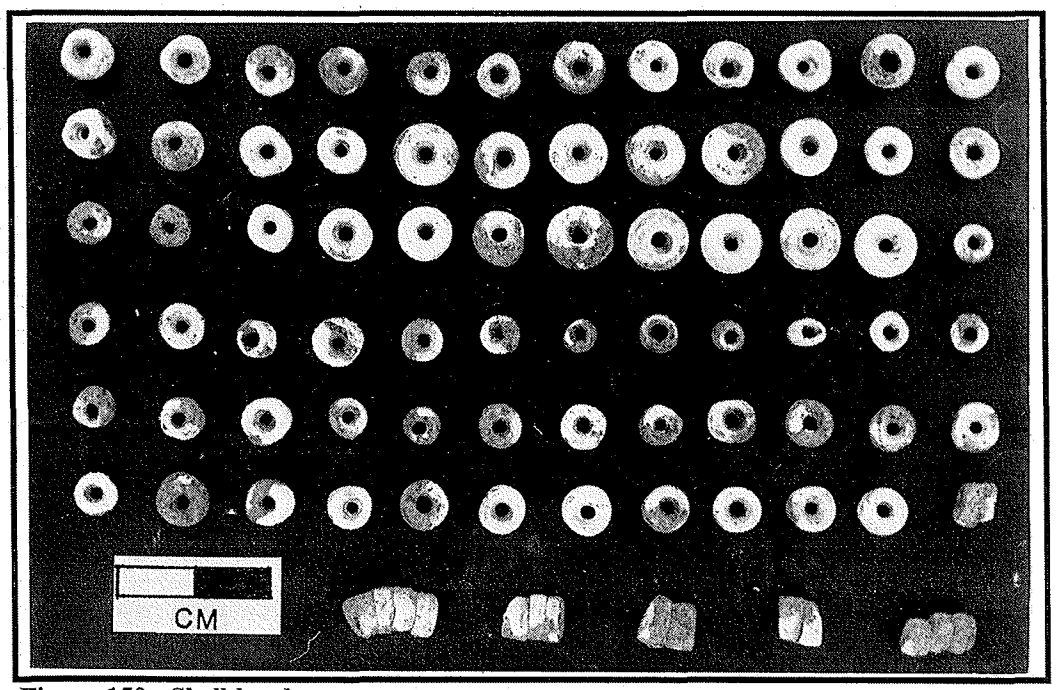

Figure 150. Shell beads.

CONCLUSION

The molluscan assemblages from East Nashville Mounds and the French Lick site are large and diverse. Based on a greater proportion of aquatic gastropods, a greater relative proportion of deep-water mussel species, and a greater diversity of mussel species including several typical of small- to medium-sized waterways, it is suggested that the inhabitants of the French Lick site were exploiting a wider range of aquatic habitats than the later inhabitants of East Nashville Mounds. The Cumberland River during Mississippian times was fairly shallow, swift, and clear, with a variety of substrates ranging from sand to cobble. Based on the terrestrial gastropods, the sites were located in an area of deciduous woodland.

ACKNOWLEDGMENTS

I would like to thank Dr. Paul Parmalee for his prompt identification of several bivalve samples and for his patient replies to numerous pleas for information.

CHAPTER 13
FAUNAL ANALYSIS

Emanuel Breitburg

Archaeological investigations at the East Nashville Mounds and French sites recovered 17,379 and 7,421 skeletal specimens respectively. The sites are located opposite to one another at mile 190 of the Cumberland River. The material remains recovered from French Lick demonstrate that occupation of the area ranged from the Late Archaic through the Mississippian periods, and the East Nashville Mounds site is a single component Mississippian period occupation. The French Lick site has been severely disturbed by nineteenth and twentieth century industrial activity and urban expansion. The faunal remains, although primarily of late prehistoric origin, are commingled with a large amount of historic faunal debris. The East Nashville Mounds site faunal assemblage shows considerably less commingling of historic period faunal remains with those associated with the aboriginal occupation of the site.

The following report on the faunal remains recovered from the two sites is designed to elicit information delineating the local or site-specific patterns of animal use, and to examine those patterns as variants of broader regional exploitative patterns known through the faunal assemblages collected from other similar period sites situated within the Nashville Basin and outlying regions. Finally, although the analysis of historic period remains is not the main focus of this report, the material is noteworthy because it adds an important urban sample of faunal materials to the existing database that refines our understanding of historic period animal use within the Nashville Basin.

METHODS & OBJECTIVES

The analytical methods employed involved the assignment of each specimen as identifiable or indeterminate mammal, bird, reptile, amphibian, fish, or shell. When possible, each specimen was further identified as to species, anatomical element, and position (i.e., left or right side), and observed for evidence of butchering and other types of cultural modification. The data gathered during this phase of analysis were entered in an inventory of faunal remains (Appendix C, Parts I and III) organized according to provenience.

The inventory for East Nashville Mounds enumerates the skeletal frequency of taxa compiled from a 50 percent nonrandom sample of remains greater than a quarter of an inch in

size, and with the exception of unanalyzed flotation samples, the inventory of faunal remains for the French Lick site lists the contents of all the recovered faunal remains.

The information contained in the inventory was employed to generate tables of the frequency of skeletal portions for each category (Appendix C, Parts II and IV). These tables were then used to determine the composition for each represented taxon, and the minimum number of individuals (MNI) present for each species. Additional information noted during this phase of the analysis included the number of burned, cut, and/or modified specimens present for each category. Meat yield estimates and dietary ratios (White 1953) were then calculated for each edible species. Such data are useful in determining the pattern of faunal utilization at this site and comparing that pattern to other similar period sites occurring within Tennessee.

Generating the necessary information for the interregional comparisons of faunal assemblages involves computing several indices. These indices are designed to measure the adaptive capabilities of site inhabitants to local animal resources and the environmental zones from which animal resources were taken. Econiche breadth values (Hardesty 1977:109-120) are calculated to further define the equability of temporal, spatial, and animal resource use by site residents. These values are intended to expose the dynamic pattern underlying the animal procurement strategy. The animal procurement system is delineated on the basis of quantity (i.e., meat yield estimates and dietary ratios), temporal variety (i.e., seasonality of site occupation and procurement), and spatial variety or the environmental zones exploited, and the importance of these zones to site subsistence. Finally, through the use of principal components analysis, the site-specific pattern of faunal use is compared to other similar cultural components located within the Nashville Basin and surrounding regions.

SKELETAL & TAXONOMIC COMPOSITION

The mammal remains recovered from East Nashville Mounds make up the bulk of the assemblage with 11,379 specimens (67.4 percent), and birds, reptiles, amphibians, fish, shell, and miscellaneous undifferentiated remains account for 10.6 percent, 18.5 percent, less than 1 percent, 1.3 percent, less than 1 percent, and 2.3 percent respectively. About 46 percent of the sample was exposed to heat or direct fire, less than 1 percent of the material exhibits cut marks (n=13), and less than 1 percent of the material shows evidence of modification as a result of tool manufacturing processes or modification as a result of human use.

Approximately 13 percent (n=2,309) of the specimens are identifiable to at least family level. Mammals account for the majority of identifiable specimens (n=1,640), percentage of identifiable remains (71 percent), and number of taxa (n=26). Identified mammal remains include human, domestic mammals (cattle, pig, and dog), two cervids (wapiti and white-tailed deer), cats (mountain lion and bobcat), raccoon, black bear, gray fox, two mustelids (striped

skunk and weasel), eleven rodents (e.g., muskrat, vole, woodrat, field mouse, rice rat, beaver, fox and gray squirrels, and woodchuck), rabbit, common mole, and opossum.

Identifiable bird remains (n=170, 7.4 percent) represent 10 taxa and include common crow, barred owl, turkey, bobwhite quail, wood duck, teal-sized ducks, mallard/black duck species, and Canada goose. Reptiles are represented by 10 taxa identified from 407 specimens (17.6 percent of the identifiable sample). Taxa identified from the reptile class include poisonous and nonpoisonous serpents, spiny softshell turtle, map/painted turtle species, box turtle, stinkpot, and snapping turtle. Four elements of salamander make up the only identifiable amphibian remains. Nine taxa of fish, accounting for 3.8 percent (n=88) of the identifiable remains, represent drumfish, catfish species, redhorse species, bowfin, garfish, and sturgeon. Finally, a fossilized shark tooth was also recovered from the site. Further information summarizing the faunal remains recovered from East Nashville Mounds is shown in Table 40.

In comparison to the faunal sample recovered from East Nashville Mounds, the faunal remains recovered from the French Lick site consist of 7,421 specimens, representing 73 individuals from 45 taxa. Identifiable and indeterminate large, medium, and small mammal remains make up the bulk of the assemblage with 5,719 specimens (77.1 percent), and birds, reptiles, amphibians, fish, shell, and miscellaneous undifferentiated remains account for 6.4 percent, 7.8 percent, less than 1 percent, 1.7 percent, less than 1 percent, and 6.9 percent of the total assemblage respectively. About 36 percent of the specimens have been exposed to heat or direct fire, about 11 percent (n=80) of the material exhibits butchering marks, and less than 1 percent (n=13) of the material shows evidence of modification as a result of bone toolmaking processes or modification as a result of human use.

Approximately 12 percent (n=877) of the specimens are identifiable to at least family level. Mammals account for the majority of identifiable specimens (n=633), percentage of identifiable remains (about 72 percent), and number of taxa (n=19). Identified mammal remains include human, domestic mammals (sheep, cattle, pig, and dog), white-tailed deer, mink, raccoon, black bear, gray fox, probably brown rat, muskrat, beaver, squirrel species, rabbit, mole, and opossum.

Identifiable bird remains (n=79, 9 percent) represent 10 taxa and include common crow, passenger pigeon, domestic chicken, domestic and/or wild turkey, quail, duck species, and Canada goose. Reptiles are represented by 9 taxa identified from 123 specimens (14 percent of the identifiable sample). With the exception of stinkpot turtle, the taxonomic composition of reptiles is similar to that identified from East Nashville Mounds. Three specimens represent frog or toad genera. Seven fish taxa, accounting for 4.3 percent (n=38), reveal the same basic taxonomic composition as that described for East Nashville Mounds. Additional information summarizing the faunal remains recovered from the French Lick site is shown in Table 41.

Table 40. Summary of Faunal Remains, East Nashville Mounds.

Taxa	Count	MNI	Meat Yield*	% Meat	B	Cut	Mod
Total	**17379**	**125**	**896.9**	**100.00**	**7910**	**13**	**64**
Mammals	**1640**	**68**	**809.5**	**90.25**	**523**	**13**	**28**
Homo sapiens, Human	37				0	0	0
Bos taurus, Domestic cow	2	1			0	2	0
Odocoileus virginianus, White-tailed deer	1274	15	450.0	50.17	358	8	24
Cervus canadensis, Wapiti	1	1	159.0	17.73	0	0	0
Sus scrofa, Domestic pig	5	1			1	1	0
Felis concolor, Mountain lion	4	1	31.5	3.51	1	1	1
Lynx cf. *rufus*, Bobcat	2	1	4.5	0.50	1	0	0
Mephitis mephitis, Striped skunk	9	4	12.8	1.43	9	0	0
Mustela frenata, Weasel	1	1	0.1	0.01	0	0	0
Procyon lotor, Raccoon	20	2	11.5	1.28	9	0	2
Ursus americanus, Black bear	1	1	107.2	11.95	1	0	0
Urocyon cinereoargenteus, Gray fox	6	1	2.2	0.25	1	0	0
Canis familiaris, Domestic dog	7	2			2	0	0
Ondatra zibethicus, Muskrat	2	1	0.8	0.09	1	0	0
Microtus spp., Vole spp.	1	1			0	0	0
Neotoma spp., Woodrat spp.	2	1			0	0	0
Peromyscus spp., Field mouse	3	2			0	0	0
Oryzomys palustri, Rice rat	10	4			1	0	0

Table 40. Summary of Faunal Remains, East Nashville Mounds, Continued.

Taxa	Count	MNI	Meat Yield*	% Meat	B	Cut	Mod
Castor canadensis, Beaver	6	1	11.9	1.33	4	0	0
Sciurus niger, Fox squirrel	49	3	1.5	0.17	27	0	0
Sciurus carolinesis, Gray squirrel	89	9	3.6	0.40	54	0	0
Sciurus spp., Squirrel spp.	6				2	0	0
Marmota monax, Woodchuck	2	1	2.1	0.23	0	0	0
Sylvilagus floridanus, Cottontail rabbit	73	9	5.0	0.56	38	0	1
Scalopus aquaticus, Common mole	9	3			8	0	0
Didelphis marsupialis, Opossum	19	2	5.8	0.65	5	1	0
Birds	**170**	**16**	**53.6**	**5.98**	**55**	**0**	**2**
Corvus brachyrhynchos, Common crow	6	1	0.4	0.04	2	0	0
Strix varia, Barred owl	1	1			0	0	0
Meleagris gallopavo, Wild turkey	152	8	46.4	5.17	50	0	2
Colinus virginianus, Bobwhite quail	2	1	0.1	0.01	1	0	0
Aix sponsa, Wood duck	1	1	0.5	0.06	0	0	0
Anas spp., Teal size	1	1	0.3	0.03	0	0	0
Anas spp., Mallard *et al.*	1	1	0.9	0.10	0	0	0
Anas spp., Duck spp.	2				0	0	0
Branta canadensis, Canada goose	3	1	2.5	0.28	2	0	0
Anser spp., Small goose	1	1	2.5	0.28	0	0	0
Reptiles	**407**	**19**	**4.4**	**0.49**	**204**	**0**	**1**
Colubridae, Nonpoisonous snake family	184	1+	t		134	0	0
Viperidae, Poisonous snake family	34	1+	t		27	0	0

Table 40. Summary of Faunal Remains, East Nashville Mounds, Continued.

Taxa	Count	MNI	Meat Yield*	% Meat	B	Cut	Mod
Serpent spp., Snake spp.	8				3	0	0
Trionyx spiniferus, Spiny softshell	60	4	2.0	0.22	28	0	1
Graptemys spp., Map turtle spp.	4	1	0.2	0.02			
Graptemys/Chrysemys spp., Map/painted spp.	45	2	0.2	0.02	3	0	0
Terrapene carolina, Box turtle	63	7	0.7	0.08	8	0	0
Sternothaerus odoratus, Stinkpot	7	2	0.1	0.01	1	0	0
Kinosternon spp., Mud turtle spp.	1				0	0	0
Chelydra serpentina, Snapping turtle	1	1	1.2	0.13	0	0	0
Amphibians	**4**	**1**	**0.0**	**0.00**	**2**	**0**	**0**
Caudata, Salamander spp.	4	1	0.0	t	2	0	0
Fishes	**88**	**21**	**29.4**	**3.28**	**21**	**0**	**2**
Aplodinotus grunniens, Drumfish	48	10	20.7	2.31	12	0	1
Ictalurus punctatus, Channel catfish	3	2	1.6	0.18	2	0	0
Ictalurus spp., Catfish spp.	14	2		0.00	5	0	0
Moxostoma carinatum, River redhorse	3	3	4.7	0.53	0	0	0
Moxostma spp., Redhorse spp.	12	1	0.0	0.00	1	0	0
Amia calva, Bowfin	2	1	0.8	0.09	1	0	0
Lepisosteus spp., Garfish spp.	2	1	0.8	0.09	0	0	0
Acipenser, Sturgeon	3	1	0.8	0.09	0	0	0
Selachimorpha, Shark	1				0	0	1
Indeterminate	**15070**				**7105**	**0**	**31**
Large mammal	9843				4756		15

Table 40. Summary of Faunal Remains, East Nashville Mounds, Continued.

Taxa	Count	MNI	Meat Yield*	% Meat	B	Cut	Mod
Small mammal	198				86		1
Small rodent	29				1		0
Mammal	6				0		0
Bird	1666				939		1
Turtle	2802				1221		13
Fish	130				62		0
Shell	1				1		0
Miscellaneous bone	395				39		1

B=burned, Mod=modified, t=trace.

*Meat yields in kilograms for prehistoric material only.

Table 41. Summary of Faunal Remains, French Lick Site.

Taxa	Count	MNI	Meat Yield*	% Meat	B	SC	AC	KC	Mod
Total	**7421**	**73**	**441.1**	**100.00**	**2698**	**39**	**15**	**26**	**13**
Mammals	**633**	**38**	**405.2**	**91.86**	**57**	**37**	**13**	**20**	**6**
Homo sapiens, Human	8				0	0	0	0	0
Ovis aries, Sheep	16	1			2	0	1	0	0
Bos taurus, Domestic cow	82	2			0	35	10	2	0
Odocoileus virginianus, White-tailed deer	279	9	270.0	61.21	36	0	1	5	6
Sus scrofa, Domestic pig	125	7			5	2	1	11	0
Mustela vison, Mink	1	1	0.6	0.14	0	0	0	0	0
Procyon lotor, Raccoon	6	1	5.7	1.30	2	0	0	0	0
Ursus americanus, Black bear	2	1	107.2	24.30	1	0	0	0	0
Urocyon cinereoargenteus, Gray fox	1	1	2.2	0.50	0	0	0	0	0
Canis familiaris, Domestic dog	14	1			0	0	0	0	0
Ondatra zibethicus, Muskrat	5	1	0.8	0.18	0	0	0	0	0
Rattus cf. *norvegicus*, Brown rat	15	2			0	0	0	0	0
Castor canadensis, Beaver	2	1	11.9	2.70	0	0	0	0	0
Sciurus niger, Fox squirrel	17	2	1.0	0.23	3	0	0	0	0
Sciurus carolinensis, Gray squirrel	16	3	1.2	0.27	1	0	0	0	0
Sciurus spp., Squirrel spp.	2				0	0	0	0	0
Sylvilagus floridanus, Cottontail rabbit	30	3	1.7	0.38	4	0	0	2	0
Scalopus aquaticus, Common mole	2	1			0	0	0	0	0
Didelphis marsupialis, Opossum	10	1	2.9	0.66	3	0	0	0	0

Table 41. Summary of Faunal Remains, French Lick Site, Continued.

Taxa	Count	MNI	Meat Yield*	% Meat	B	SC	AC	KC	Mod
Birds	**79**	**14**	**16.9**	**3.83**	**6**	**0**	**0**	**6**	**1**
Corvus brachyrhynchos, Common crow	1	1	0.4	0.09	0	0	0	0	0
Ectopistes migratorius, Passenger pigeon	1	1	0.2	0.05	0	0	0	0	0
Gallus gallus, Domestic chicken	33	5			2	0	0	3	
Melegris gallopavo, Turkey	34	2	11.6	2.63	4	0	0	1	1
Colinus virginianus, Bobwhite quail	2	1	0.1	0.02	0	0	0	0	0
Anas spp., Teal size	2	1	0.3	0.07	0	0	0	1	0
Anas spp., Small duck	2				0	0	0	0	0
Anas spp., Mallard *et al.*	1	1	0.9	0.20	0	0	0	0	0
Anas spp., Duck spp.	1	1	0.9	0.20	0	0	0	0	0
Branta canadensis, Canada goose	2	1	2.5	0.57	0	0	0	1	0
Reptiles	**123**	**9**	**2.2**	**0.50**	**14**	**0**	**0**	**0**	**0**
Colubridae, Nonpoisonous snake family	25	1	t	t	3	0	0	0	0
Viperidae, Poisonous snake family	13	1	t	t	0	0	0	0	0
Serpent spp., Snake spp.	2				0	0	0	0	0
Trionyx spiniferus, Spiny softshell	9	1	0.5	0.11	2	0	0	0	0
Graptemys/Chrysemys, Map/painted spp.	12	2	0.2	0.05					
Terrapene carolina, Box turtle	60	3	0.3	0.07	9	0	0	0	0
Chelydra serpentina, Snapping turtle	2	1	1.2	0.27	0	0	0	0	0
Amphibians	**3**	**1**	**0.0**	**0.00**	**2**	**0**	**0**	**0**	**0**
Rana/Bufo spp., Frog/toad spp.	3	1		t	2	0	0	0	0
Fishes	**38**	**10**	**16.8**	**3.81**	**6**	**0**	**0**	**0**	**0**
Aplodinotus grunniens, Drumfish	20	5	11.8	2.68	6	0	0	0	0
Ictalurus punctatus, Channel catfish	1	1	0.8	0.18	0	0	0	0	0
Ictalurus spp., Catfish spp.	6				0	0	0	0	0

Table 41. Summary of Faunal Remains, French Lick Site, Continued.

Taxa	Count	MNI	Meat Yield*	% Meat	B	SC	AC	KC	Mod
Moxostoma carinatum, River redhorse	2	1	2.2	0.49	0	0	0	0	0
Moxostoma spp., Redhorse spp.	5	1	0.4	0.09	0	0	0	0	0
Lepisosteus spp., Garfish spp.	3	1	0.8	0.18	0	0	0	0	0
Acipenser spp., Sturgeon spp.	1	1	0.8	0.18	0	0	0	0	0
Mollusc	**1**	**1**	**0.0**	**0.00**					**1**
Actinonaias carinata, Mucket	1	1	t						1
Indeterminate	**6544**				**2613**	**2**	**2**	**0**	**5**
Large mammal	19				1	1			
Medium mammal	4980				2354	1	2		5
Small mammal	55				12				
Small rodent	32								
Bird	399				97				
Turtle	458				142				
Fish	86				7				
Shell	1								
Miscellaneous bone	514								

B=burned, Mod=modified, SC=saw cut, AC=ax/cleaver cut, KC=knife cut, t=trace.

* Meat yield in kilograms for prehistoric materials only.

At least 31 percent (n=272) of the faunal specimens recovered from East Nashville Mounds represent sheep, cattle, pig, and chicken remains. The remains relate to the nineteenth and twentieth century urban and industrial activity at the site. Domestic pig is the most common domestic animal represented with 125 elements and 7 individuals. Cattle are the next most common (n=82, MNI=2), and sheep are represented by 16 elements and 1 individual. Brown rat remains consist of 15 elements and 2 individuals. Chicken remains were identified in 33 cases and represent 5 individuals. In contrast, the sample from East Nashville Mounds contained a small number of cattle (n=2, MNI=1) and pig remains (n=5, MNI=1), accounting for less than 1 percent of the total sample. The taxonomic composition of historic faunal remains shows that nineteenth and twentieth century urban dwellers, not unexpectedly, typically consumed pork, beef, mutton, and chicken.

BUTCHERING EVIDENCE

Thirteen specimens of cut bone were recovered from East Nashville Mounds, and 80 specimens were recovered from the French Lick site. Cut cattle, pig, sheep, and chicken bones gathered from the French Lick site account for 55 specimens. Specimens of cattle and pig bones show saw cuts in 37 cases, ax or cleaver cuts in 12 cases, and knife cuts in 13 cases. A total of 3 cattle and pig bones recovered from East Nashville Mounds show saw, ax or cleaver, or knife cuts. These latter specimens show that a number of the cattle and pig bones bearing saw cuts are retail cuts of meat (e.g., pig hams, beef round or shoulder steaks). Ax- and cleaver-cut bones probably relate to the gross treatment of animal carcasses at butcher shops or slaughter houses, and the knife cuts probably relate to secondary treatment of carcasses by butchers or cuts relating to the preparation or consumption of retail meat cuts by consumers.

With the exception of one deer element, displaying an ax mark, most of the animal remains exhibiting cut marks represent prehistoric remains of white-tailed deer, other mammals, and birds. Reconstruction of the butchering pattern from the cut bone assemblages from East Nashville Mounds and the French Lick site shows that the dismemberment of deer was conducted in the regions of the shoulder, forelimb, wrist, pelvic area, knee, and ankle. Other cut mammal and bird remains also show that the limbs of other mammals and birds were removed.

MODIFIED BONE

Modified bones recovered from East Nashville Mounds consist of 64 specimens and from the French Lick site, 13 specimens. In most cases, few of these highly fragmented pieces of utilitarian and nonutilitarian objects can be identified to specific tools or objects. Most of the fragments represent pieces of awls, bone pins, antler flaking tools (n=14; Figure 151),

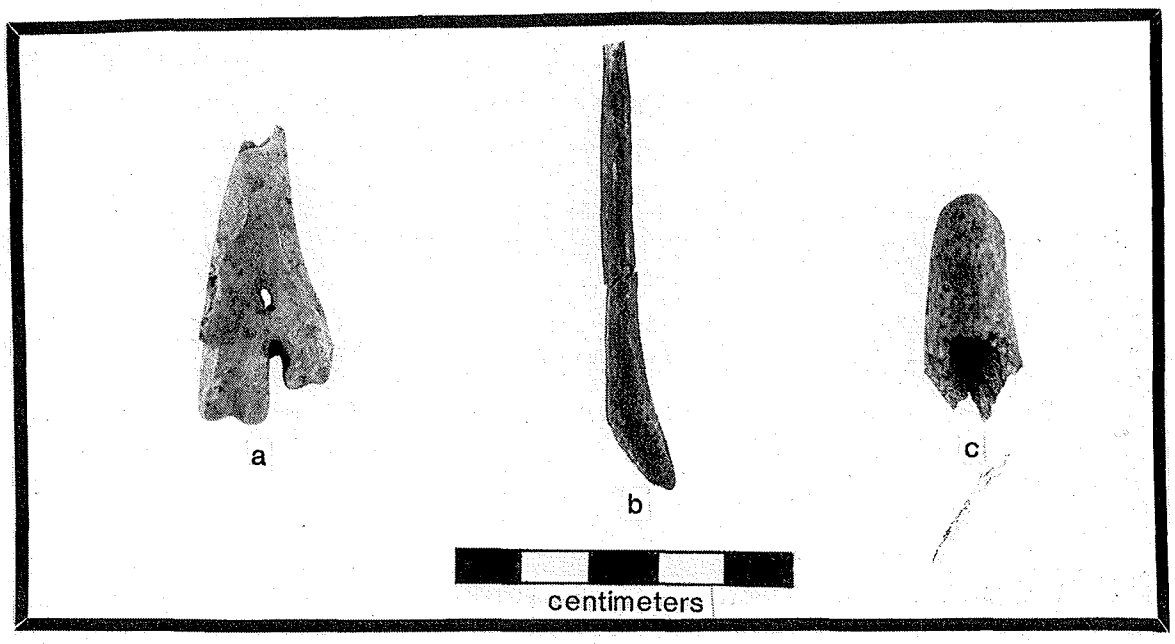

Figure 151. Awls and flaker: a, awl, turkey right distal tarsometatarsus, abraded; b, awl, raccoon baculum; c, flaker, deer antler tine tip.

polished or scored large and small mammal bones (n=21; Figure 152), and polished and scored turtle bones (n=19) and other ground or drilled elements (Figure 153). Other recovered elements represent manufacturing residue produced as a result of awl and fishhook residue.

The sample of faunal remains recovered from East Nashville Mounds produced a fragment of a fossilized shark tooth. The specimen may have been traded in from the coastal areas of the southeast, where fossilized shark teeth are common, or possibly obtained from Cretaceous period marine deposits found in west Tennessee (Corgan 1976:39).

FOOD POTENTIAL & EXPLOITATIVE STRATEGY

Usable meat estimates for edible species and knowledge of the habitats from which resources were procured provide an idea of the variety of resources taken and allow for an estimation of the relative importance of the environmental zones exploited. The estimates, expressed as percentages, are calculated by multiplying the MNI of taxa by the potential amount of usable meat per average-sized animal. When meat ratios for specific animal or animal groups from similar habitats are combined, an estimate of spatial variety is obtained. These latter estimates are determined by squaring the percent of a utilized resource and summing the squared proportions. The inverse of the summed values yields an econiche breadth value (Hardesty 1977:115). The mathematical expression for niche width estimation is

$$\text{niche width} = \frac{1}{\sum_{i}^{n} (pi)^2}$$

where (pi) is the proportion of the total subsistence contributed by the resource i and n is the total number of resources used for subsistence. Resource variety, either total or spatial variety, reflects the importance and equability of resource or environmental use. A value of 1.0 indicates only one resource is depended upon; thus, the procurement pattern would be classified as highly focal or specialized. A higher breadth value suggests a more diffuse procurement pattern and could be viewed as being a generalized adaptation to space and/or available resources. Niche breadth calculations are of significance when identifying the resources that are critical to human population maintenance in an area. Econiche breadth values can be as great as the number of utilized resources, but that would be an exceptional situation.

As is shown in Tables 40 and 41, mammal resources account for about 90 percent of the meat yield at both sites. White-tailed deer was the most significant species taken and accounts for about 50 percent and 61 percent of consumed meat at East Nashville Mounds and the French Lick Site respectively. At East Nashville Mounds, the presence of wapiti and

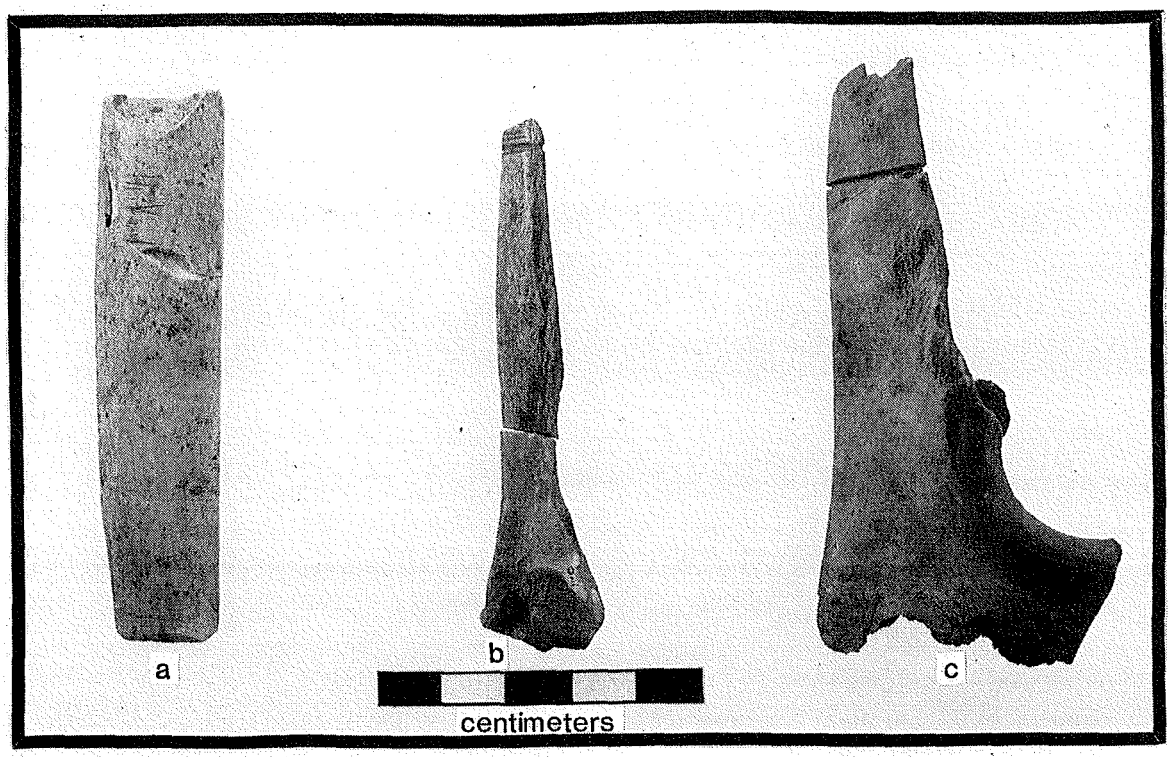

Figure 152. Polished and/or scored bone: a, possible weaving shuttle, polished deer metapodial; b, polished mountain lion fibula portion, scored and snapped; c, deer right proximal ulna with score and snap break.

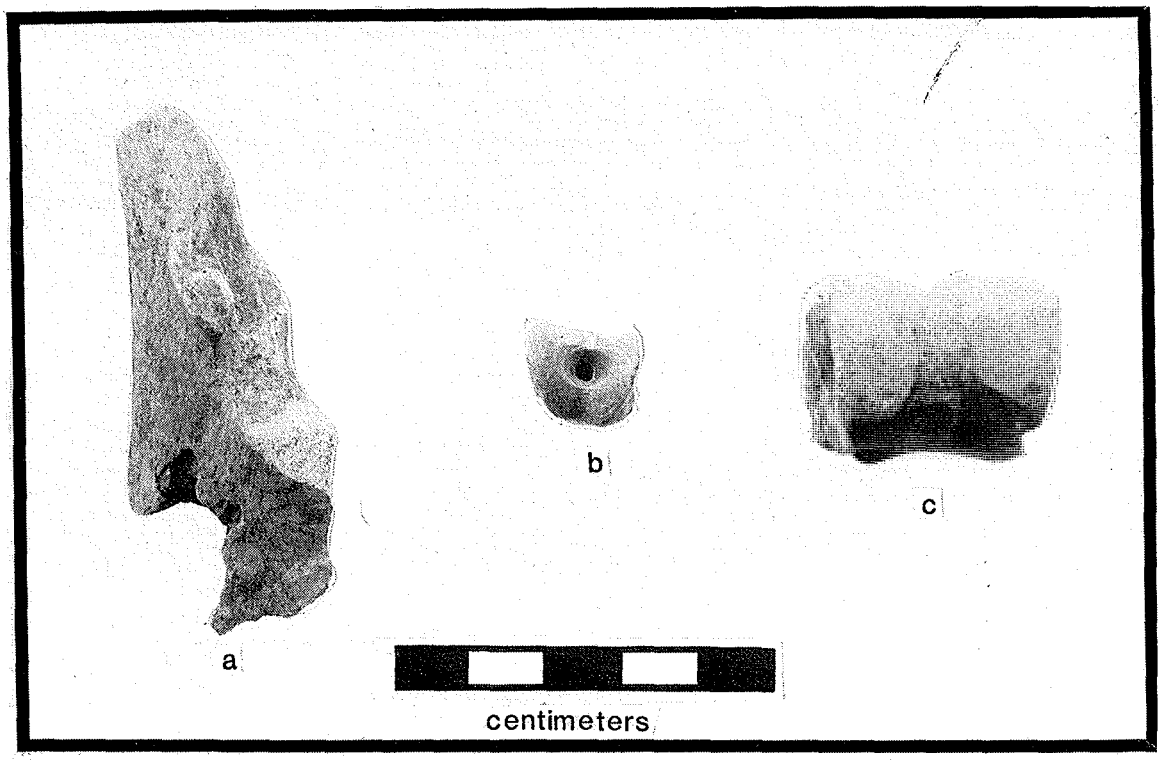

Figure 153. Ground and drilled bone: a, deer left proximal ulna, modified with blunt edge; b, deer 3rd or 4th digit/metapodial, drilled; c, deer left tibial tarsal, ground distal end.

bear remains imply that these species contributed a significant amount of meat. Wapiti and black bear account for about 18 percent and 12 percent of the meat contribution respectively. In contrast, the smaller sample of faunal remains recovered from the French Lick site contains a single individual of black bear and no obvious evidence of wapiti. The species contributed an estimated 24 percent of the meat. Other mammals, such as mountain lion, mustelids, raccoon, squirrels, and opossum, contributed about 10 percent to the diet at East Nashville Mounds and 6 percent at the French Lick site.

Bird consumption (passerine, pigeon, turkey, ducks, and geese) at the two sites amounted to an estimated 6 percent at East Nashville Mounds and 4 percent at the French Lick site. Turkey was the primary species exploited and accounts for about 68 percent of the bird meat yield at East Nashville Mounds and 87 percent at the French Lick site. Ducks and geese make up the remainder. The presence of semiaquatic avifauna shows that site inhabitants were exploiting wintering or migrating populations that frequented the area.

The exploitation of aquatic habitats provided turtles and fish to site residents. The capture of drumfish, catfish species, suckers, garfish, sturgeon, bowfin, map and/or painted turtle, soft-shell, stinkpot, and snapping turtle makes up about 4 percent of the meat at both sites.

The percentage contribution of species to the diet implies that white-tailed deer was the most significant resource exploited, followed by wapiti, black bear, small mammals, reptiles, and fishes. The diversity index for total resource variety at East Nashville Mounds is 3.19 and at the French Lick site, 2.27, suggesting a rather diverse exploitation pattern by East Nashville Mounds inhabitants and a narrower range of resource diversity at the French Lick site. As will be shown later, the narrow range and absence of wapiti remains at the French Lick site may be due to the small sample taken from that site.

The environmental zones frequented to procure animal resources include forest edge/open wooded habitats (deer, skunk, fox squirrel, cottontail rabbit, quail, and turkey), forested habitats (raccoon, opossum), and aquatic/riparian habitats (semi-aquatic avifauna, reptiles, and fishes). At East Nashville Mounds it is estimated about 76 percent of the meat was procured from forest edge, about 19 percent from forest and rugged upland forest, and about 6 percent from aquatic/riparian habitats. An econiche breadth value of 1.64 indicates a moderately diverse use of environmental zones for procuring animal resources. At the French Lick site, forest edge exploitation accounts for about 65 percent, forested and rugged upland forested areas account for 27 percent, and aquatic/riparian habitat exploitation accounts for about 8 percent. An econiche breadth value of about 2.0 reveals a moderately diverse pattern of habitat use.

With regard to the time that these species were taken, the evidence suggests fall/winter exploitation of deer and small mammals, late fall through winter hunting of semiaquatic migratory avifauna, and warm weather months for the exploitation of reptiles and fishes.

INTERREGIONAL COMPARISONS

The site-specific analysis of the East Nashville Mounds and the French Lick site assemblages adds additional information that characterizes animal resource and environmental use during late prehistoric times in the middle Tennessee area. The following discussion explores further the site-specific animal procurement strategy as it is delineated through the investigation of other late prehistoric faunal assemblages. The data are examined further through resource and spatial breadth analyses and principal components analysis of faunal assemblages from eleven prehistoric sites situated within Tennessee. The rationale for the use of principal components, and how and what this robust statistic reveals, has been presented in papers dealing with Mississippi River late prehistoric sites (Breitburg 1992a) and Fort Ancient period sites occurring in Ohio and Kentucky (Breitburg 1992b).

The database used for analysis, in addition to the two sites under examination here, includes the Little Bigby (40MU522) faunal sample (Breitburg 1991), Mound Bottom, Sellars, Gordontown (40DV6) (Breitburg 1978a, 1978b, 1992c), Averbuch (Romanoski 1984), Stone (Breitburg 1978c; Guilday 1958), Banks V and Eoff I (Robison 1978), and Toqua (Bogan 1980). With the exception of Toqua, located along the Little Tennessee River, all the sites are located within, or close to, the Nashville Basin (Fenneman 1938). The Little Bigby, Banks V, and Eoff I sites are small Mississippian hamlets that are characterized by a large single dwelling, a clay borrow pit, and a small number of features. All the other sites are large, substantial Mississippian village settlements.

For the analysis of resource variety, six variables are examined. These include three terrestrial large game animals (deer, wapiti, bear) and three grouped classes of animals (small mammals, birds, and fishes). Reptiles are omitted from the analysis, as they are not significant resources at any of the discussed sites. The zones that were frequented for animals constitute a second set of variables that characterize spatial variety. These variables include the percentage makeup of forest edge/open wooded, forested, and aquatic/riparian habitats, as determined by the combination of animal resources associated with these habitats.

RESOURCE & SPATIAL BREADTH ANALYSIS

Econiche breadth values, shown in Figures 154 and 155, were determined in the same manner as described for the two sites under consideration here. Figure 156 shows the relationships between resource and spatial breadths at the various sites. The plot provides a general picture of the ecological distinctiveness and ecological relationship of these sites to one another. As shown, resource breadth is rather diverse in all cases except Mound Bottom and the Little Bigby (40MU522) sites. Given the larger sample of faunal remains recovered from East Nashville Mounds, it is believed that the faunal assemblage probably reflects the original condition of primary dependence on white-tailed deer. Given the smaller sample

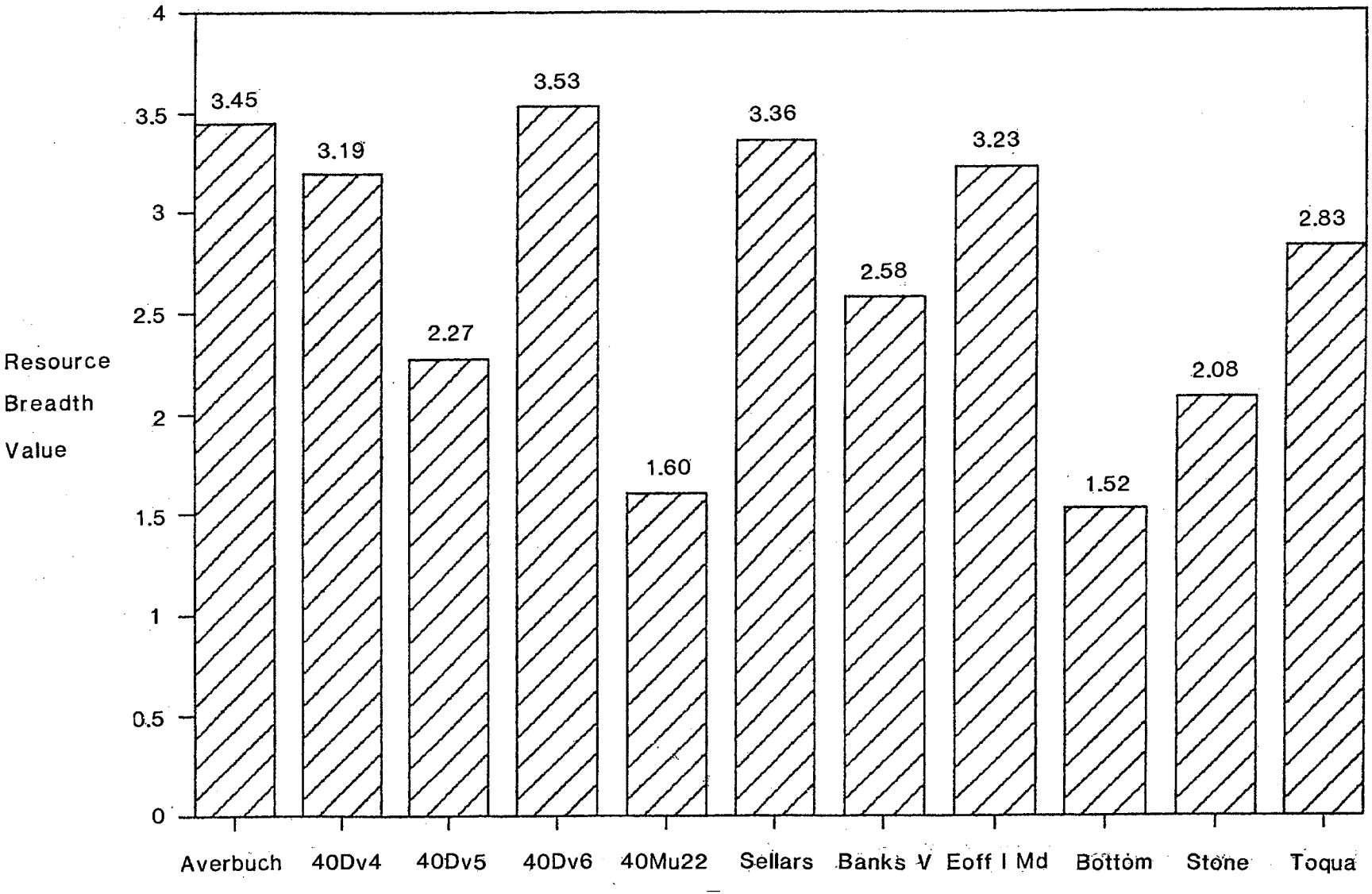

Figure 154. Resource variety at some Tennessee sites.

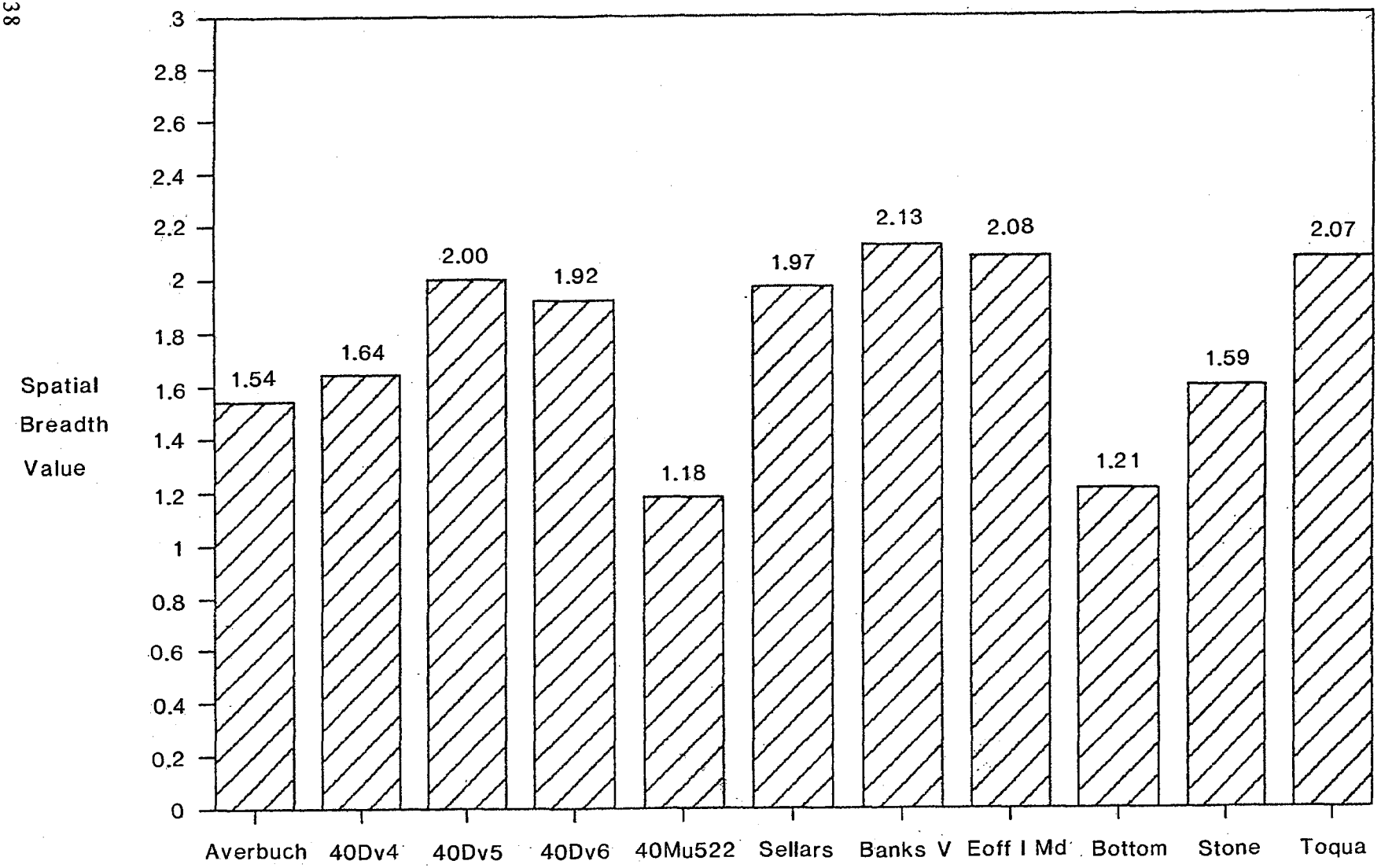

Figure 155. Spatial variety at some Tennessee sites.

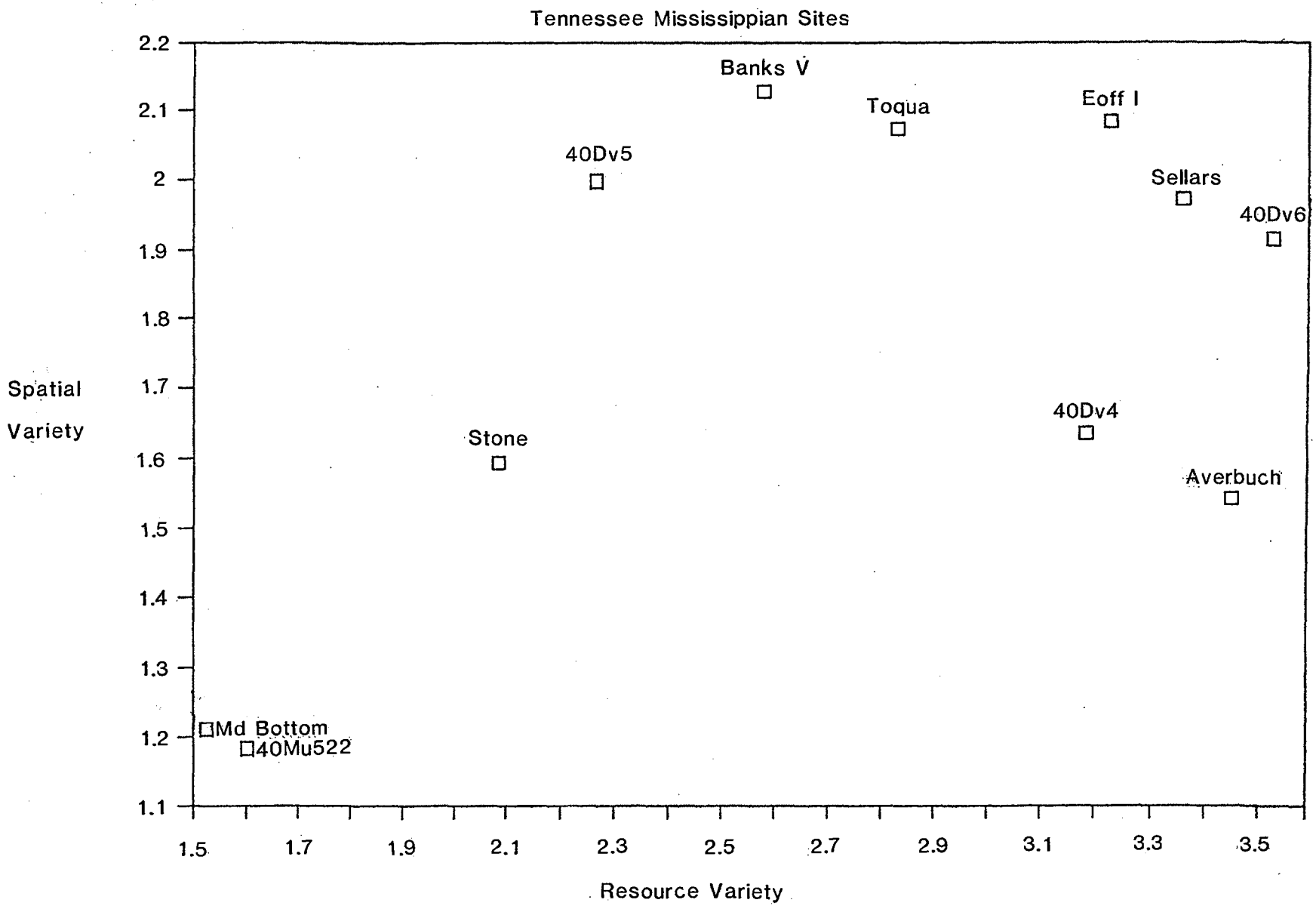

Figure 156. Resource vs. spatial variety.

from the French Lick site, it is less likely that the site faunal assemblage is representative of original subsistence conditions.

It is suggested that the limited assemblage recovered from the French Lick site is biased by the small number of recovered remains and limited number of individuals represented per taxon. However, one can predict that the original subsistence situation, from the standpoint of resource and spatial use, may have been similar to that of the Averbuch, 40DV6, Sellars, or Eoff I. All of these latter sites generally show a strong orientation toward deer, wapiti, and/or black bear exploitation.

PRINCIPAL COMPONENTS ANALYSIS (PCA)

The PCA of the econiche breadth for resource values shown in Table 42 produced the results shown in Table 43. The correlation matrix reveals a negative correlation between deer and wapiti, bear, and small mammals, and positive correlation between deer, birds, and fishes. Thus, as the significance of deer increases, there is decreasing significance of wapiti, bear, and small mammals. High loadings for the first two components explain about 74 percent of the total variance. The plotting of components I to II (Figure 157) generally shows that Banks V, Eoff I, Sellars, Gordontown, and Toqua share in common primary reliance on white-tailed deer, a strong presence of bear, limited or no use of wapiti, and limited or nominal presence of small mammals, birds, and fishes. Mound Bottom appears as an outlier because of the very heavy presence of white-tailed deer (about 80 percent). Averbuch appears as an outlier because of the limited use of deer (about 26 percent) and strong presence of wapiti (about 44 percent). The position of the Stone site is characterized by primary dependence on deer (about 66 percent), absence of wapiti, and relatively greater prevalence of bear, birds, and fishes. The Little Bigby sample, in comparison to these sites, lacks the presence of bear and wapiti. The latter condition, the absence of two terrestrial large game mammals, appears only at the Little Bigby site. Due to the more diverse use of animal resources at other similar period sites, it appears the Little Bigby faunal assemblage is biased by sampling error. The positions of East Nashville Mounds and the French Lick site are affected by the particular combination of deer, wapiti, and bear resource values, and in the case of the French Lick site, further complicated by sampling error.

The PCA analysis of econiche breadth in terms of spatial use shown in Table 44 produced the results shown in Table 45. Forest edge/open wooded habitats are negatively correlated with rugged upland forest and aquatic/riparian habitats. Thus, all the sites examined here show a very strong orientation toward the exploitation of forest edge/open wooded habitats. The significance of this latter combination of habitats at respective sites ranges from 92 percent (Little Bigby) to about 54 percent (Eoff I).

Table 42. Resource Diversity Values and Component Loadings.

Site	*Deer	Wapiti	Bear	Small Mammals	Birds	Fish	Components I	Components II
Averbuch	0.069	0.196	0.010	0.009	0.005	0.001	0.708	20233
40DV4	0.252	0.031	0.014	0.012	0.004	0.001	0.976	0.828
40DV5	0.375	0.000	0.059	0.005	0.002	0.002	0.233	0.043
40DV6	0.153	0.043	0.078	0.008	0.001	0.000	-0.426	0.514
40MU522	0.605	0.000	0.000	0.008	0.0010	0.000	1.609	-1.071
Sellars	0.137	0.030	0.122	0.004	0.002	0.000	-0.938	0.077
Banks V	0.251	0.000	0.128	0.005	0.003	0.000	-0.618	-0.395
EoffI	0.095	0.042	0.171	0.002	0.001	0.000	-1.553	0.181
Md Bottom	0.631	0.003	0.006	0.001	0.002	0.000	0.077	-1.512
Stone	0.430	0.000	0.019	0.009	0.007	0.000	0.982	-0.576
Toqua	0.217	0.005	0.127	0.003	0.001	0.000	-1.040	-0.323

*The square root of the value is the approximate percent of resource.

Table 43. Results of Principal Components Analysis, Resource Diversity.

Correlation Matrix					
Resource	Deer	Wapiti	Bear	Small Mam.	Birds
Deer	1.000				
Wapiti	-0.565	1.000			
Bear	-0.598	-0.177	1.000		
Small Mammals	-0.081	0.321	-0.565	1.000	
Birds	0.553	-0.024	-0.648	0.546	1.000
Fish	0.028	0.203	-0.420	0.419	0.058

Component Loadings		
Resource	1	2
Small Mammals	-0.927	0.009
Bear	0.825	-0.214
Bird	0.719	0.485
Fish	0.565	-0.787
Deer	0.094	0.854
Wapiti	0.479	0.420

Variance Explained by Components	
1	2
3.197	2.112

Percent of Explained Variance	
1	2
43.564	30.109

Factor Score Coefficients		
Resource	1	2
Bear	-0.355	0.005
Birds	0.316	-0.119
Small mammals	0.275	0.269
Deer	0.216	-0.436
Wapiti	0.036	0.473
Fish	0.183	0.232

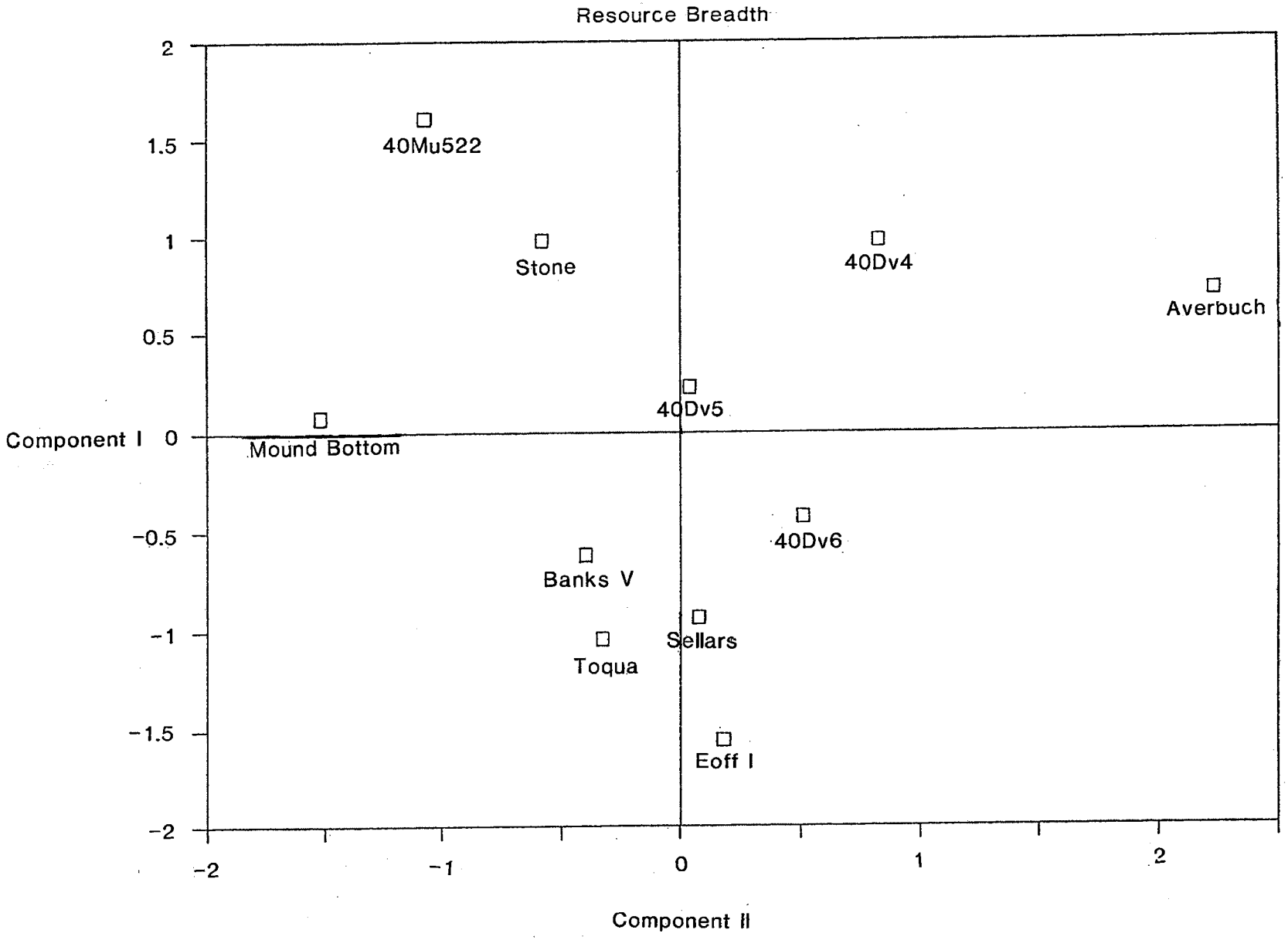

Figure 157. Principal Components Analysis, Resource Breadth.

Table 44. Spatial Diversity Value and Component Loadings.

Site	Forest Edge/ Open Woods	Rugged Upland Forest	Aquatic/Riparian	Component I	Component II
Averbuch	0.616	0.025	0.003	0.794	-0.607
40DV4	0.574	0.034	0.003	0.613	-0.643
40DV5	0.421	0.073	0.006	0.039	-2.358
40DV6	0.399	0.123	0.000	-0.624	0.759
40MU522	0.842	0.003	0.001	1.456	0.815
Sellars	0.354	0.149	0.000	-0.936	0.691
Banks V	0.325	0.142	0.003	-0.868	-0.542
EoffI	0.295	0.184	0.001	-1.344	0.471
Md Bottom	0.811	0.007	0.000	1.314	1.132
Stone	0.578	0.037	0.002	0.561	-0.089
Toqua	0.329	0.152	0.001	-1.004	0.369

*The square root of the value is the approximate percent of spatial use.

Table 45. Results of Principal Components Analysis, Spatial Diversity.

Correlation Matrix			
Habitat	FE	RUF	AQR
Forest Edge/Open Woods	1.000		
Rugged Upland Forests	-0.930	1.000	
Aquatic/Riparian	-0.093	-0.221	1.000
Component Loadings			
Habitat	1	2	
Forest Edges/Open Woods	-0.991	0.089	
Rugged Upland Forests	0.968	0.231	
Aquatic/Riparian	-0.138	0.990	
Variance Explained by Components			
	1	2	
	1.939	1.042	
Percent of Total Variance Explained			
	1	2	
	64.647	34.720	
Factor Score Coefficients			
Habitat	1	2	
Rugged Upland Forest	-0.511	0.085	
Aquatic/Riparian	0.499	0.222	
Forest edge/Open Woods	0.071	-0.950	

Plots of components I and II, explaining 99 percent of the variance, are shown in Figure 158. The position of Averbuch, Stone, and East Nashville Mounds have in common similar use of habitats, especially forest edge/open wooded habitats (about 77 percent) and rugged upland forested areas (about 18 percent). Toqua, Sellars, Gordontown, and Eoff I cluster because of primary dependence on forest edge/open wooded exploitation (about 57 percent), a strong reliance on rugged upland habitats (about 40 percent), and little or no dependence on aquatic and riparian habitats to procure animal resources. The outlying position of the French Lick site is a result of the peculiar combination of habitat use, especially stronger, though comparatively nominal, use of aquatic and riparian habitats. At the French Lick site, aquatic/riparian exploitation shows the highest value (about 8 percent) of all the sites shown.

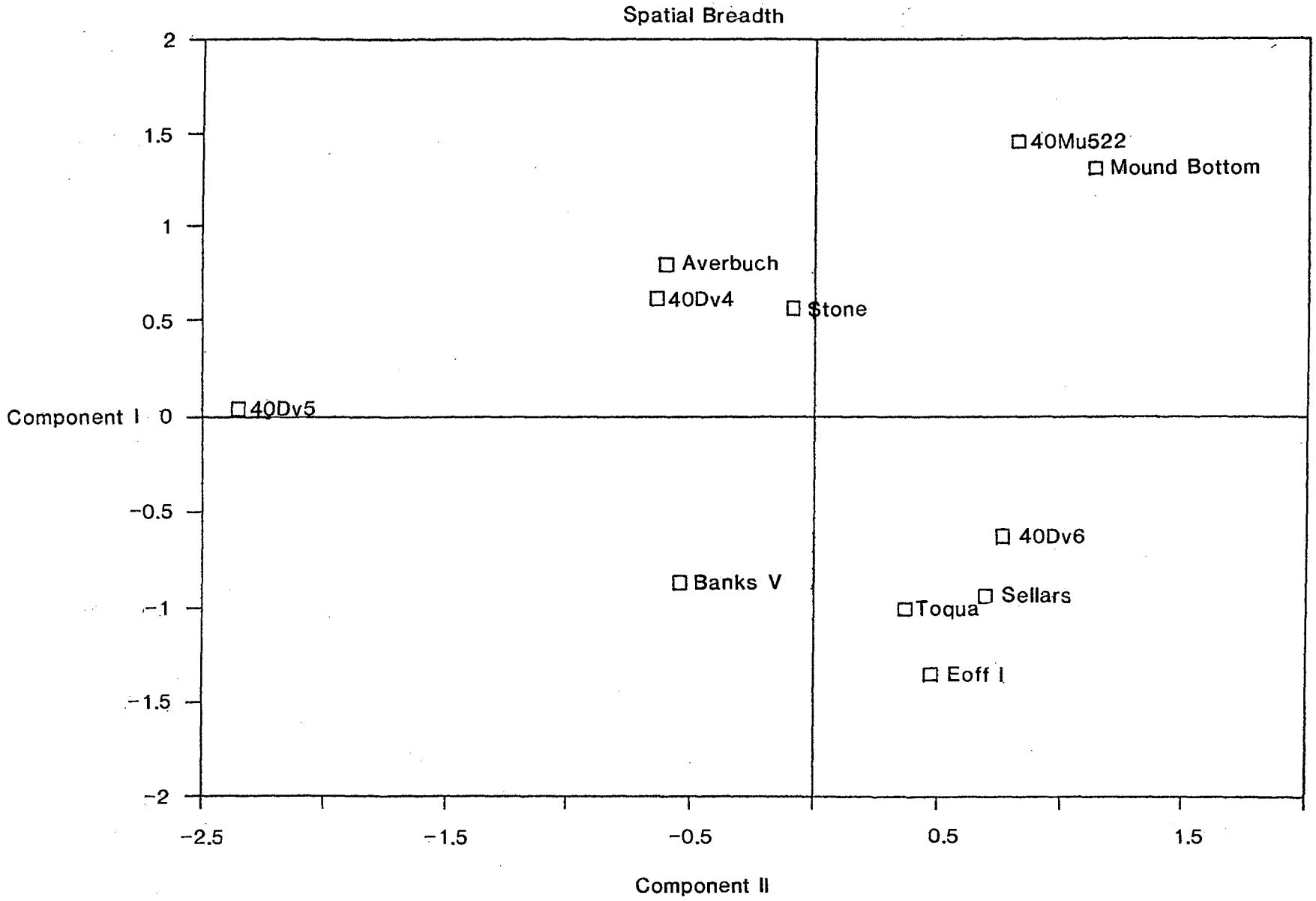

Figure 158. Principal Components Analysis, Spatial Breadth.

CONCLUSION

In conclusion, site-specific analysis of East Nashville Mounds and the French Lick site faunal samples, and principal components analysis of resource and spatial breadths, show that the French Lick site is biased by sampling error and small sample size, and East Nashville Mounds probably presents a rather accurate picture of animal resource and habitat use. Robust statistical analyses suggest that both animal resource use and spatial use at these sites should be similar to those of the Sellars, Gordontown, or Toqua sites. All these latter sites are similar in terms of site makeup—they are large, permanent village settlements that practiced a year-round exploitation of resources and environments. For the most part, the latter situation is also true for the small farmstead sites centered around single rectangular, open-cornered, wall-trench structures, with an irregular trash-filled clay-borrow area nearby (Eoff I, Banks V, Little Bigby). Therefore, it is concluded that the original character of the animal economy at East Nashville Mounds and the French Lick site was centered on the exploitation of large terrestrial game mammals (deer, bear, and/or wapiti) and supplemented through the exploitation of small mammals, birds, reptiles, and fishes. The major focus of exploitation was probably centered on both forest edge/open wooded habitat and rugged upland forested areas. Although no less intensive exploitation of riparian/aquatic habitats may have been achieved at any of the above sites, these habitats are suggested to be of lesser importance and largely limited by seasonal factors (e.g., spring spawning fish, collection of semiaquatic turtles during warm-weather months).

CHAPTER 14
ARCHAEOBOTANICAL REMAINS

David Lentz

The central part of Tennessee is physiographically similar to southern Illinois and is dominated by mixed mesophytic or oak-hickory forest (King 1981). Common species in this plant community include *Quercus alba*, *Q. velutina*, *Q. stellata*, *Q. marilandica*, *Q. coccinea*, *Carya ovata*, and *C. glabra* in the dry upland areas. In the deep mesic ravines, *Quercus rubra*, *Fagus grandiflora*, *Lirodendron tulipfera*, *Acer saccharum*, *Carya cordiforimis*, *Fraxinus americana*, *Juglans nigra*, *J. cinerea*, *Aesculus glabra*, and *Tilia americana* predominate. In the floodplains along the major water courses, swamp forest can be found with tree species such as *Taxodium distichum*, *Nyssa aquatica*, *Acer rubrum*, *Fraxinus pennsylvanica*, *Liquid ambar styraciflua*, and *Ulmus americana*. The prehistoric occupants of the East Nashville Mounds and the French Lick site derived their subsistence from these plant communities and/or from land once covered by them. Their habitation site not only afforded them convenient access to water, but also the availability of resources from several plant communities and the rich, highly diverse ecotone areas between them.

METHODS

Various samples were presented to the archaeobotanical laboratory for analysis, both macro-remains (those preserved plant parts large enough to be seen with the unaided eye) and flotation samples. The latter were extracted by water flotation from two-liter collections of soil from each feature and stratigraphic unit. All flotation samples were scanned at 20x with a binocular light microscope. Samples were identified, weighed on a digital platform balance, and catalogued. Identifications are listed in Tables 46 and 47.

In general, it is necessary to disregard noncarbonized plant remains from archaeological sites in the eastern U.S. because of the possibility of recent contamination. For the purposes of this study, it should be assumed that all noncarbonized plant material is of recent origin and will not be included in the interpretation. Most of the plant remains came from pits, shallow basins, possible house floors, and post holes.

Table 46. Archaeobotanical Remains from East Nashville Mounds.

Unit	Zone	Level	Wt.(g)	Taxon/Part
112N/89E	1	1	0.05	*Juglans nigra* nut shell
112N/89E	1	1	0.01	*Cucurbita* sp. rind
112N/89E	1	1	0.01	*Quercus* sp. charcoal
125N/105E	2	2	0.03	*Carya* sp. nut shell
125N/105E	2	2	0.01	Hardwood charcoal
112N/89E	1	2	0.01	*Carya* sp. shell
125N/105E	2	2	0.20	*Quercus* sp. charcoal
125N/105E	2	2	0.20	Hardwood bark
125N/105E	2	2	0.02	*Zea mays* cupules
140N/118E	2	1	0.38	*Fraxinus* sp. charcoal
140N/118E	2	1	0.16	*Carya* sp. shell
140N/118E	2	1	0.02	*Zea mays* cupules
140N/118E	2	1	0.25	Hardwood charcoal
140N/118E	2	1	0.04	*Croton* (?) seeds*
140N/118E	2	2	0.02	*Croton* (?) seeds*
140N/118E	2	2	0.02	*Zea mays* cupules
140N/118E	2	2	0.13	*Carya* sp. shell
140N/118E	2	2	0.31	*Quercus* sp. charcoal
140N/118E	2	3	0.01	*Amaranthus* sp. seed*
140N/118E	2	3	0.07	*Zea mays* cupules
140N/118E	2	3	0.02	*Carya* sp. shell
140N/118E	2	3	0.02	Hardwood charcoal
145N/79E	1	2	0.04	*Carya* sp. shell
145N/79E	1	2	0.04	Hardwood charcoal
145N/79E	1	1	0.01	*Portulaca oleracea* seeds*
145N/79E	1	1	0.01	*Chenopodium* sp. seeds*
145N/79E	1	1	0.01	Hardwood charcoal
145N/79E	2	1	0.04	*Zea mays* cupules
145N/79E	2	1	0.07	*Carya* sp. shell
145N/79E	2	1	0.14	Hardwood charcoal
145N/79E	2	2	7.31	Bone (human?), shell
145N/79E	2	3	0.06	*Zea mays* cupules
145N/79E	2	3	0.02	*Carya* sp. shell
145N/79E	2	3	0.02	*Carya* sp. shell

* not carbonized

Table 47. Archaeobotanical Remains from the French Lick Site.

Unit	Level	Wt. (g)	Taxon/Part
7N/41W	9	0.02	*Carya* sp. shell
7N/41W	9	0.02	Hardwood charcoal
7N/41W	9	0.02	Spermatophyte tissue
45.5N/141.5W	1	0.21	*Quercus* sp. shell
45.5N/141.5W	1	0.13	*Carya* sp. shell
45.5N/141.5W	1	0.07	*Zea mays* cupules
45.5N/141.5W	1	0.13	Hardwood charcoal
45.5N/141.5W	2	0.22	*Carya* sp. shell
45.5N/141.5W	2	0.08	*Quercus* sp. charcoal
45.5N/141.5W	2	0.07	*Fraxinus* sp. charcoal
45.5N/141.5W	2	0.23	Hardwood charcoal
45.5N/141.5W	3	0.15	*Carya* sp. shell
39N/136W	1	0.05	*Carya* sp. shell
39N/136W	1	0.03	Hardwood charcoal
49.5N/134W	2	0.01	Hardwood charcoal
49.5N/134W	2	0.12	*Carya* sp. shell
39N/134W	2	0.03	*Carya* sp. shell
39N/136W	2	0.02	Hardwood charcoal
39N/134W	3	0.01	Hardwood charcoal
39N/134W	3	0.01	*Carya* sp. shell
49.5N/134W	1	0.03	*Quercus* sp. charcoal
49.5N/134W	1	0.03	*Carya* sp. shell
49.5N/134W	3	0.01	*Carya* sp. shell
49.5N/134W	3	0.01	Hardwood sp. shell
46N/95W	2	0.01	Spermatophyte tissue
46N/95W	5	0.03	*Carya* sp. shell
46N/95W	5	0.01	Monocot stem
46N/95W	6	0.01	*Carya* sp. charcoal
46N/95W	6	0.02	Hardwood charcoal
46N/95W	7	0.01	*Carya* sp. shell
42N/105W	1	0.03	*Carya* sp. shell
42N/105W	3	0.05	Hardwood charcoal
42N/105W	2	0.03	*Carya* sp. shell
42N/105W	2	0.03	Hardwood charcoal
42N/105W	3	0.01	Spermatophyte tissue
42N/105W	5	0.01	*Carya* sp. shell
42N/105W	5	0.01	Dicot rind
46N/123W	2	0.09	*Carya* sp. shell
46N/123W	2	0.01	Hardwood charcoal
46N/123W	3	0.03	*Carya* sp. shell
46N/123W	3	0.06	*Carya* sp. shell

Table 47. Archaeobotanical Remains from the French Lick Site.

Continued

Unit	Level	Wt. (g)	Taxon/Part
40N/112W	1	0.02	Hardwood charcoal
40N/112W	2	0.01	*Carya* sp. shell
40N/112W	3	0.06	*Juglans nigra* shell
40N/112W	3	0.10	*Carya* sp. shell
40N/112W	4	0.05	*Carya* sp. shell
4ON/112W	5	0.04	*Carya* sp. shell
40N/112W	7	0.01	*Zea mays* cupules
40N/112W	7	0.01	Hardwood charcoal
10.5N/83.5W	4	0.02	*Zea mays* kernel
10.5N/83.5W	4	0.01	*Fraxinus* sp. charcoal
10.5N/83.5W	4	0.05	*Carya* sp. shell
10.5N/83.5W	4	0.65	Hardwood charcoal
PH70/TP2	Fea. 58	0.68	*Carya* sp. shell
PH70/TP2	Fea. 58	0.09	Hardwood charcoal

*not carbonized

DISCUSSION

A number of plant remains were identified from the East Nashville Mounds and the French Lick site. By far the most common carbonized plant parts were hickory (*Carya* spp.) nut fragments; these were recovered in quantity from every prehistoric horizon. It was no surprise, of course, to find hickory nuts in a southeastern U.S. archaeological site, since ethnographic sources tell us that all Native Americans of the region used them extensively for food (Swanton 1946). Another wild plant food in evidence at both sites was black walnut (*Juglans nigra*). Both walnuts and hickory nuts would have been readily available in nearby mosaic forests.

Charcoal, or burned wood, remains reflect a similar environment. Among the charcoal retrieved from the sites were fragments of oak (*Quercus* spp.), ash (*Fraxinus* spp.), and hickory. Here again, these woods could have been extracted from the various communities within the nearby mesophytic forest formation.

Evidence for the use of two cultigens, corn (*Zea mays*) and squash (*Cucurbita* sp.), were found at the sites. Numerous cupules were recovered, but only one kernel was identified. It seems to have been of large size with no obvious sign of denting, suggesting that it may have been derived from a Northern Flint race. This race of corn was commonly used in prehistoric times in what is now the northeastern portion of the U.S. These data indicate that the site

occupants had trade interactions with the prehistoric northeastern Native Americans, or at least shared their seed stock. No cob fragments of sufficient size to allow measurement or meaningful discussion were recovered.

Numerous other small edible seeds were retrieved, i.e., purslane (*Portulaca oleracea*), amaranth (*Amaranthus* sp.), and lambsquarter (*Chenopodium* sp.), but none of them appeared to be carbonized. Their antiquity is therefore in question, and no assumptions regarding their involvement in subsistence should be inferred. Another collection of small seeds resembling *Croton* sp. was found in several contexts, but here again the seeds were not carbonized and may be modern.

CONCLUSION

From the evidence at hand, it seems the occupants of the East Nashville Mounds and the French Lick site relied on agriculture for at least part of their subsistence, as indicated by the presence of the well-known cultivars corn and squash. Other kinds of domesticated plants may have been used as well, but evidence for these is lacking.

Undoubtedly the inhabitants of the two sites augmented the plant food portion of their diet with wild gathered foods, as indicated by the walnuts and large numbers of hickory nut fragments. Firewood and building materials came from nearby oak-hickory forests. In general, a diversified subsistence pattern is in evidence; the early occupants of the Cumberland River valley grew some of their food but also relied heavily on the surrounding forests to supply a substantial portion of the caloric intake.

CHAPTER 15
HUMAN BURIALS

Mary Cassandra Hill

There are two principal foci of this chapter. The first is a summary of data obtained from the analysis of the skeletal elements; the second is the presentation of an example of successful interaction among state agencies, professional archaeologists, and representatives of the Alliance for Native American Indian Rights.

The utility of the excavation and subsequent analysis of materials from salvage projects is a constant source of debate between professional archaeologists and the general public. This is particularly true in light of those concerns recently expressed by Native Americans who feel powerless within a socioeconomic system controlled by descendants of European settlers. Many would argue that the artifact and human skeletal samples are virtually useless because they are sparse, frequently badly damaged or fragmented (by construction), and biased, since they represent only small portions of sites.

Archaeology within an urban context, however, is becoming much more common because of the legislation mandating removal of prehistoric and historic cultural remains within areas which will be impacted by construction. These mitigations frequently involve the removal of historic and prehistoric cemeteries.

Throughout the field phase of the project, work was observed (and even videotaped) by Native American representatives. They were told that this was acceptable as long as they did not physically interfere with the work. This author answered all their questions and told them to call with further questions after fieldwork was completed. One representative did place a lengthy call asking about the progress of the skeletal analysis and requesting copies of this author's other research. She also asked for specific examples of research on living populations with foundations in research involving prehistoric skeletal populations.

During the fieldwork, the Native Americans performed rituals associated with the removal of the dead. These were important to them, and did not interfere with the work.

Because of the immediacy of the project, resulting from a combination of the construction being delayed and the emotional underpinnings of the situation, expediency in the removal of the burials was mandated. Individuals with experience in burial excavation were assigned to the project. Burials were quickly defined in situ, mapped, drawn, and photographed. The smaller burials (i.e., infants) were then removed in their entirety, along with most of the soil

surrounding the individuals inside the stone boxes. The burials were subsequently transported to the laboratory facilities at Panamerican Consultants, Inc. in Tuscaloosa, Alabama.

In the laboratory, the author did all the cleaning, restoration, and subsequent analysis. All burials were washed using fine-screen mesh in order to retain as much of each individual as possible. This was particularly important since the samples contained so many infants.

Subadult skeletal elements are, in many instances, quite different in appearance from their mature forms. Many mature bones are actually composed of several parts which are separate in the subadult. Additionally, several pathological conditions and anomalies were recorded by the author which may not have been noticed otherwise.

The analysis followed those guidelines and standardized charts, measurements, etc., provided in Bass (1971), Krogman (1973), Ubelaker (1978), and White and Folkens (1991), which were referenced throughout the project. The pathology texts of Brothwell and Sandison (1967) and Ortner and Putschar (1981) were also consulted.

RESULTS

FRENCH LICK (40DV5)

At the French Lick site, 23 square meters were excavated by hand. Twenty-five features, 10 postholes, and 10 burials were identified in Bent 5 Left (Figure 159). Remnants of 11 individuals were recovered. Of these, five were identified as older adults, one was a juvenile female (approximately 12–14 years), and one was a full-term fetus (perhaps stillborn, or recently newborn infant; Table 48). The others were too fragmented to ascertain age and/or sex. All were interred in stone boxes.

Three of the burials were complete enough to obtain more comprehensive, descriptive data. The juvenile female in Burial 4 had funerary goods: two small bowls and a shell spoon (Figure 160). While washing this individual, one small, tubular shell bead was discovered by this author. It may have been an accidental inclusion in the fill surrounding the burial, however, since no others were found.

Berryman (1981) and Eisenberg (1986) have analyzed another Middle Cumberland population, the Averbuch series, and have noted that life expectancy was not high for these people. In fact, Berryman (1981:67-68) noted that life expectancy for the Averbuch series was among the lowest of any documented historic or prehistoric population series. The average life expectancy for females at Averbuch was 14.6 years. There were no discernible

Figure 159. French Lick, profile of burials in Bent 5 Left.

Table 48. French Lick Site, Bent 5 Left, Mortality Profile.

Burial #	Sex	Age
1	male	older adult (fragments of cranium)
2	unknown	older adult (fragments of cranium)
3	unknown	scattered unidentifiable fragments of box
4	female	juvenile; 12–14 yrs.
5	unknown	scattered fragments of box
6A	male	older adult; 45+ yrs.
6B	male	older adult; 50+ yrs.
7	indeterminate	full-term fetus or recently newborn infant
8	unknown	adult cranial fragments
9	unknown	fragments of bone (not analyzed by Hill)
	unknown	fragments of bone (not analyzed by Hill)

Figure 160. French Lick, Bent 5 Left. Adolescent female in Burial 4 (left); infant in Burial 7 (right).

pathologies on the fragmentary remains of the girl in Burial 4 at the French Lick site, Bent 5L, yet she does fit the mortality profile for Averbuch females.

One of the best-preserved of the burials was one stone box containing two elderly males (Burials 6A and 6B); one was placed as a bundle on top of the legs of the other, which was fully extended (Figures 161 and 162). There are two possible scenarios for the placement of these two individuals in the same interment: (1) Individual 6B died first and was interred in the stone box. When Individual 6A died, the box was reopened, the skeletal elements of 6B were removed, 6A was positioned in the box, 6B was subsequently placed on top, and the box was closed. (2) Individual 6B died and was kept in some sort of repository. His skeletal elements were placed in a basket, blanket, skin, or some other sort of perishable container. When 6A died, they were interred in the box simultaneously. The secondary bundle of 6B was very compactly positioned, and every skeletal element was present; this suggests the use of some sort of container. A container for 6B could have been used in either scenario (Figure 162).

The interment had sustained some destructive impacts from previous historic construction: the eastern end of the box had been pierced by a pole or support of some sort, destroying the upper portion of the cranium of Individual 6A (see Figure 162), and the cover stone on the western end had been displaced laterally. Over the years, water had apparently flowed under the displaced portion of the cover, resulting in erosive damage to the remains of Individual 6B (see Figure 162).

Both individuals were elderly males, yet their skeletal elements indicate that they were quite physically robust. Both had pathologies associated with advanced age (see Appendix D). Individual 6A may have had metastatic carcinoma, although the only skeletal evidence for it is on the endocranial surfaces of the heavily damaged cranium (Figure 163; Appendix D). Individual 6B had auditory exostoses which closed the right auditory canal (Figure 164); this would, of course, have affected his hearing. Interestingly, both males' anterior teeth exhibit highly polished lingual surfaces. This implies the use of their teeth in some sort of repetitive activity, such as stripping plant fibers or sinew between the front teeth (Figure 165).

The other interment which is well preserved is that of Burial 7, containing the remains of an infant which was aged approximately full-term fetus (stillborn) or which died very soon after birth (see Figure 160). Death seems to have been a consequence of the synergistic effects of malnutrition and infection, and/or a metabolic disorder.

Berryman (1981) and Eisenberg (1986) show that infant mortality was high at Averbuch and remained high throughout childhood. They attribute this mortality to a combination of environmental stressors, including infection and malnutrition, as well as endemic pathogens such as treponematoses (Eisenberg 1986: 96-101).

Figure 161. French Lick, Bent 5 Left. Burial 6, closed (right) and open (left).

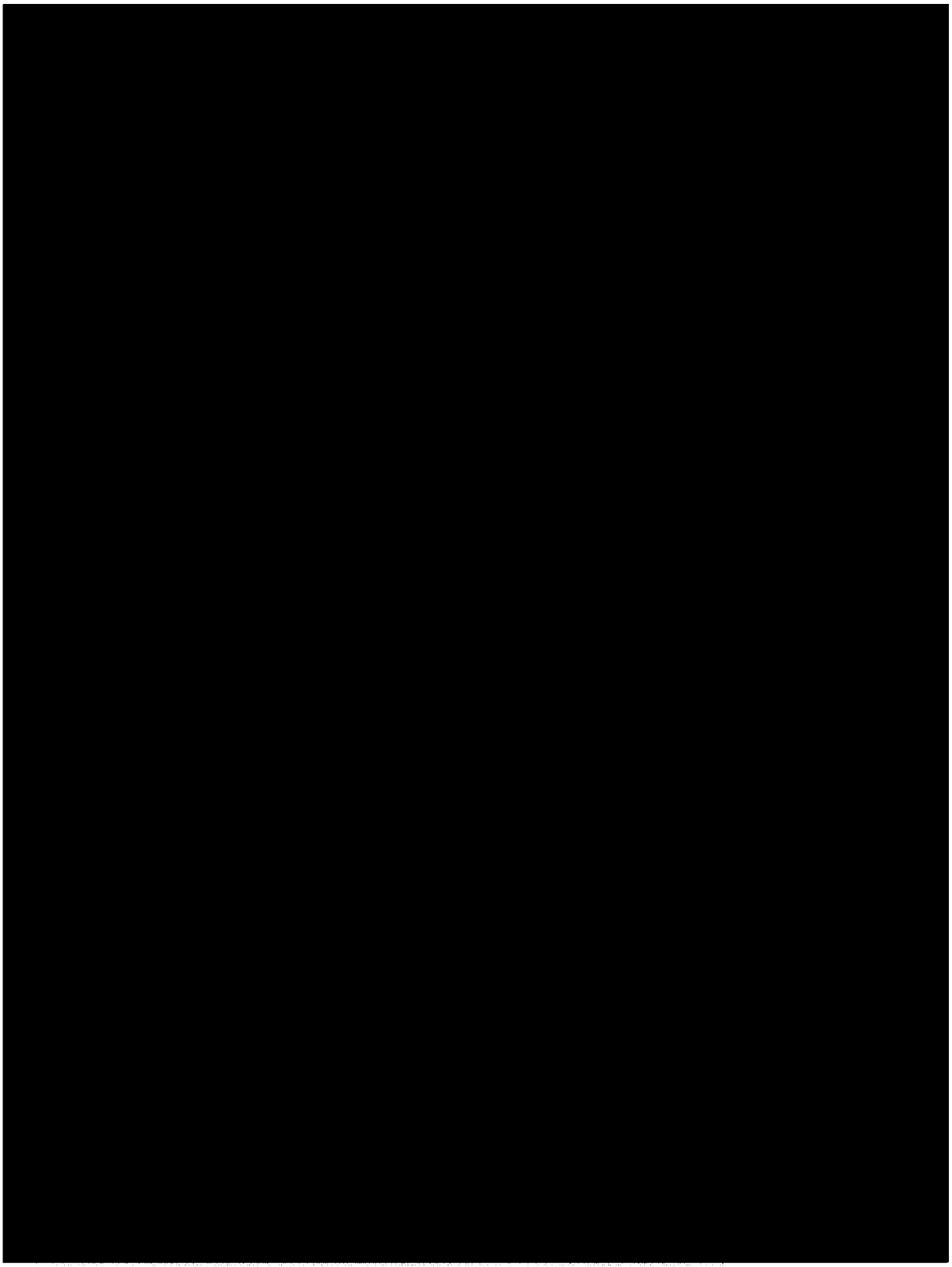

Figure 162. French Lick, Bent 5 Left. Burials 6A (above) and 6B (below).

Figure 163. French Lick, Burial 6A. Endocranial lesion.

Figure 164. French Lick, Burial 6B. Auditory exostosis.

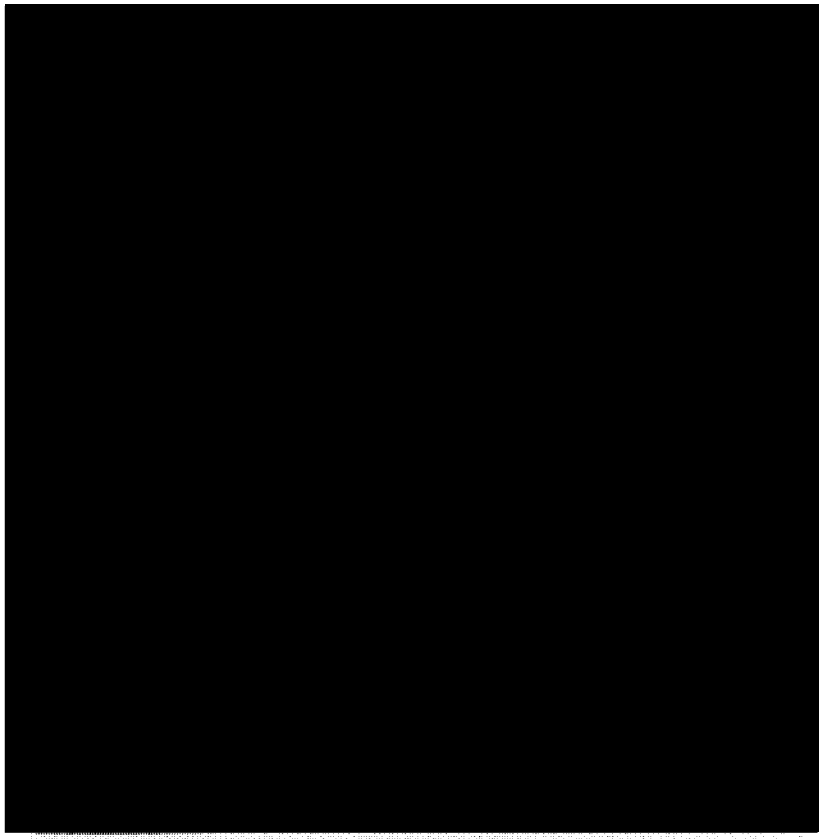

Figure 165. French Lick, Burial A. Polished lingual surfaces of anterior teeth and a supernumerary tooth.

Excavations in other bents and those monitoring the waterline revealed seven additional burials: 6 adults (4 females, 1 male, and 1 unidentified), and 1 infant (Table 49). These interments were too heavily impacted by past construction to obtain comprehensive descriptions of the individuals; the complete analysis of each is in Appendix D of this report. While the mortality data from the French Lick site do not show any secular trends, the data from East Nashville Mounds seem to corroborate findings from other Middle Cumberland skeletal series.

Table 49. French Lick Site, Mortality Profile from Other Units.

Location	Burial #	Sex	Age
TP 1	1	female?	adult fragments
TP 2	2	indeterminate	infant; 9 mos. (±3 mos.)
TP 2	1	female	older adult
Bent 1-R	1	female?	adult fragments
Bent 2-L	1	male	older adult; 50+ yrs.
WL-1	1	female	older adult
Bent 7	1	unknown	adult rib fragments, found in backdirt
Bent 7	2	unknown	historic feature

EAST NASHVILLE MOUNDS (40DV4)

At the East Nashville Mounds site, a single-component Mississippian site, a total of 202 square meters of midden was hand-excavated. Sixty-eight features and 15 postholes were identified and excavated. Eleven burials were identified; two were not included in this analysis because they did not contain any skeletal material. A total of 15 individuals were subsequently identified in the lab. The mortality profile is not normal: ten infants less than two years of age, two older females, one younger female who was approximately 8-months pregnant, an adolescent male, and an unidentified adult (Table 50).

Table 50. East Nashville Mounds, Mortality Profile.

Burial #	Sex	Age
1	indeterminate	infant; 9 mos. (±3 mos)
2	female	older adult; 40+ yrs.
3	unknown	adult; scattered fragments
4A	male	young adult; 15–16 yrs.
4B	female	young adult; 18–22 yrs.
4C	indeterminate	fetus in 4B
5A	indeterminate	infant; 6–9 mos. (±3 mos)
5B	indeterminate	infant; 6–9 mos. (±3 mos)
5C	indeterminate	infant; 18 mos. (±6 mos)
5D	indeterminate	infant; 9 mos. (±3 mos)
6	unknown	tiny fragments (may not even be human)
7		no burial
8	indeterminate	.5–1.5 yrs. (1 yr. average of all maturity meas.)
9	female	older adult; 45+ yrs.
10	indeterminate	18 mos. (±6 mos)
11A	indeterminate	1 yr. (average of all maturity measures)
11B	indeterminate	premature fetus

The burials are unusual in several regards. They would not be considered a representative population sample, based on the mortality profile alone. However, if one views each as an individual interment event, representing a unique combination of biological information about life events, perimortem events, and social behavior during the process of burial, there are some remarkable bits of information which contribute to our knowledge of prehistoric lifeways in the Middle Cumberland.

For example, Burial 11 contained an infant (1 year) and a decidedly premature (aborted) fetus (Figure 166). Fetal remains are not commonly found in archaeological contexts. This is primarily because very young bones are only beginning the ossification process from their origins as a cartilaginous or membranous template. The cortices are literally only a few cells in thickness. Even under the best of preservation circumstances, these tiny, fragile remains quickly deteriorate. Rodents are notorious for gnawing on bones in midden deposits and can devour an entire fetal skeleton.

Additionally, fetal skeletons are frequently unwittingly misidentified as animal bones, in the absence of a trained osteologist. Time and monetary constraints determine the excavation methods in most instances, particularly with salvage projects. If heavy machinery is used for rapid exposure of features, fetal and infant remains may be overlooked. The prehistoric burial protocol (limestone boxes) and the excavation and laboratory techniques employed on this project are the reasons for the successful recovery of the individual in Burial 11, as well as each of the other infants in this population sample.

Fetal remains are not discussed in ethnohistoric accounts. Their absence from archaeological sites, along with the occasional discovery of fetal and/or infant skeletons in garbage middens, has led to the general assumption that these individuals were inconsequential to the groups under discussion. How, then, might this deliberate interment be interpreted? The fact that there was an expelled, premature fetus within a formal interment context indicates that fetuses were recognized as individuals (humans)—at least this one was. Its inclusion with another infant lends credence to this hypothesis. The presence of the two together may also give indication that children were of precious concern at this moment in time. If successful live births were more frequent, one might not expect to see such attention focused on fetuses. However, in the presence of numerous infant interments, with multiple infants in some of them, it appears that there was notable bereavement over the loss of premature and full-term infants alike.

Burial 5 contained the remains of four infants with ages ranging from 6 months to 18 months (see Figure 166 and Appendix D). This is unusual because there were four in a single box, and also because of some unusual pathologies exhibited by at least one of the infants. These pathologies are those of the deciduous dentition—none of the infants had normal enamel formation. The enamel was so hypocalcified that it appeared to be almost translucent and bluish white in color. Additionally, the entire surfaces of the crowns, particularly the occlusal surfaces of the incisors and molars, were eroded as if by some lytic process (Figure 167).

Figure 166. East Nashville Mounds. Multiple infants in Burial 5 (left) and Burial 11 (right).

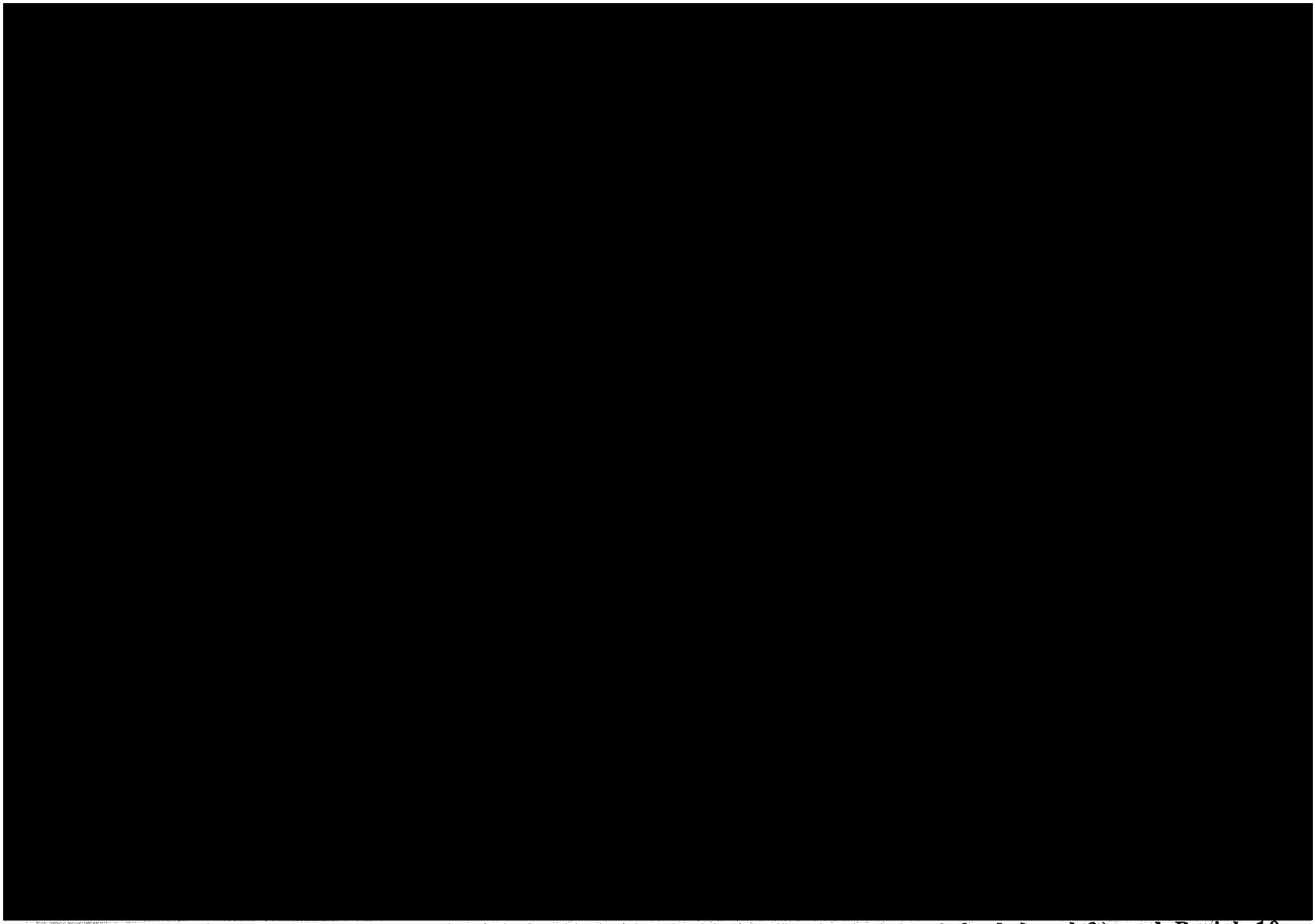

Figure 167. East Nashville Mounds. Similar dental pathology for Burial 5C (above left; below left) and Burial 10 (above right; below right).

This was not a pathology limited to the individuals in this interment alone. The infant in Burial 10 also had the pathology (see Figure 167). Consultation with several dental anthropologists has not provided a specific diagnosis for the condition.

In addition to the dental pathology, Burial 10 had pronounced pathology associated with nutritional stress and systemic infection, and may have had some sort of developmental or congenital pathology as well. This is evidenced by the blastic lesions on the cranial vault and in the orbits (Figure 168), and also by the malformation of the basilar portion of the occipital bone (Figure 168), which is almost bipartite.

Burial 2 and Burials 4A, 4B, and 9 were very close to each other and appear to represent a single postmortem interment episode. They were not interred in stone boxes, and while Individual 2 appears to have had a formal placement, Individuals 4A, 4B, and 9 seem to have been rather hastily interred; they were literally piled on top of one another. A jar fragment containing a charred organic substance was recovered their heads (Figure 169).

Individual 2 was an older female in a fully extended position with the head pointing east. Individuals 9, 4A, and 4B were approximately 118 cm northwest, with their heads pointing west. Individual 9 was also an older female, who was the first to be placed in the interment. She was on her back with her face turned north. Her left arm was extended outward (in a northerly direction), and her right arm was cast over her face such that it covered the face and was also pointing northward.

Individual 4B was a younger adult female who was placed on top of the outstretched arms of #9, such that her face rested on the right hand of #9 and was slightly turned to the north. Her chest rested on the left arm of #9. Her right arm was extended close to her right side, while her left arm was in a flexed position such that her left palm was next to the posterior portion of her head.

Directly on top of #4B was the skeleton of Individual 4A, an adolescent/young adult male. His entire body was prone, with the arms flexed upward toward the head, palms down. During the process of removing #4A, it was discovered that #4B was pregnant at the time of her death. The fetal skeleton was very well preserved and appeared to be fully engaged in the pelvis (see Figure 169).

Such unusual interments are a red flag to a skeletal analyst. Multiple individuals in single interments, particularly if they are placed in seemingly random positions, are usually indicative of some type of catastrophe (such as a disease epidemic) in which there is not enough time for more formal burial protocol. During cleaning, it became apparent that each of the individuals had evidence of violent death. They all had massive cranial trauma in addition to several postcranial fractures which appear to have been perimortem (see Appendix D, Part II.

Figure 168. East Nashville Mounds. Blastic lesions on the cranial vault (below right) and orbit (above left) for Burial 10, and comparison of basilar portion of occipital of Burial 10 to other infants in the skeletal series (above).

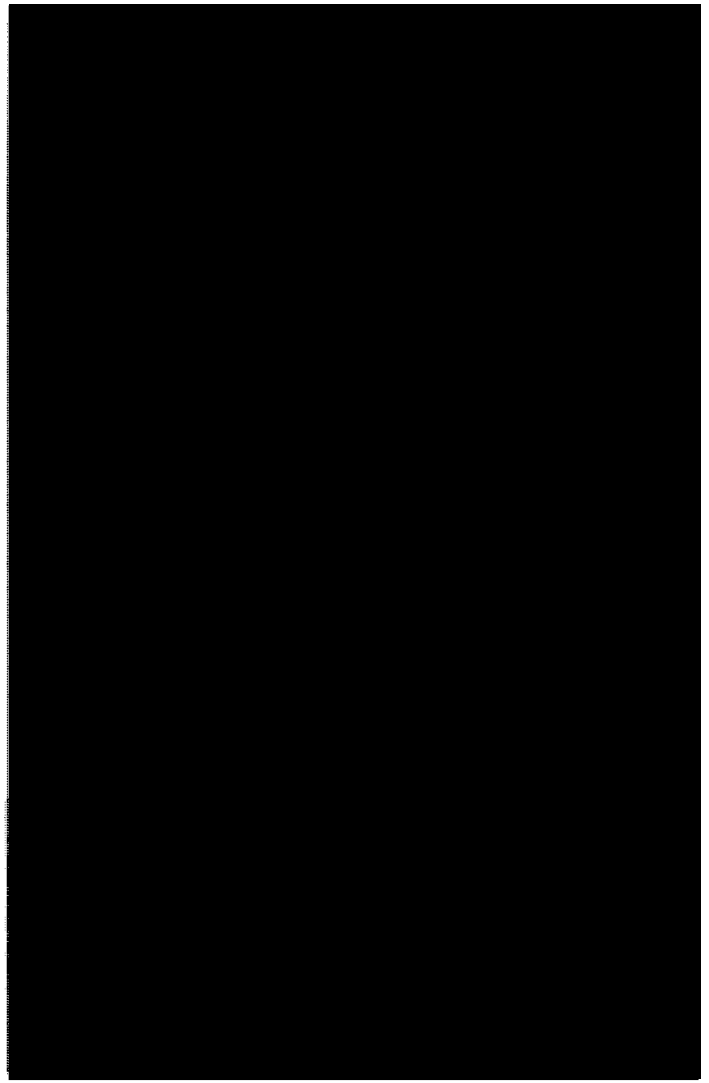

Figure 169. East Nashville Mounds. Burials 2 and 4A, 4B, and 9 (above), showing proximity of interments. Burials 4A, 4B, and 9 (right). Close-up showing fetus (4C) in pelvis of 4B.

The cranial trauma is consistent with two types of fracture patterns: massive blunt-force trauma to the posterior portion of the cranium, and fractures of the bones of the maxillo-facial region. In the first type of injury, the lines of force travel around the curved surface, meeting in the frontal and basilar regions (Figure 170). This results in a "blow-out" fracture of the entire basilar portion of the cranium. In medical texts, the base of the skull is defined as being composed of the cribriform plate of the ethmoid bone, orbital plate of the frontal bone, the sphenoid bone, the petrous and squamous portion of the temporal bone, and the occipital bone, and is frequently fractured after head injury (Cooper 1987:98). When the skull is fractured in this manner (i.e., a basilar fracture), it can be assumed that the head has been struck by a blow of considerable force (Cooper 1987:89; Ommaya 1982).

The second type of fracture patterns are those consistent with Le Fort fractures I, II, and III (Dingman and Natvig 1964:306-310). These fractures occur when a force is applied directly to the face, or the cranium is propelled forward and strikes a stationary object. The fractures of the maxillo-facial area, including the mandible, for these four individuals match the patterns defining each of the three types of Le Fort injury.

The most startling aspect of the analysis of the trauma was the repetitive consistency of the cranial trauma for each individual. In fact, the fracture patterns appear to be almost carbon copies of each other (Figures 171 through 174). All four individuals received at least one very powerful blow, by some type of blunt-force instrument, to the posterior portion of the cranium, resulting in a type of contrecoup injury in which the lines of percussional force traveled around the curved surface. The result in each case was a fracture through the right orbit (across the frontal bone) and a blow-out fracture of the basilar portion of the occipital bone (see Figures 171, 173, and 174). Each individual also has cut marks in positions on the cranium consistent with scalping (see Figures 171, 174, 175, and 176). Of particular interest is the fact that although the cranial trauma appears to have been delivered in a uniform manner, the scalp marks across the frontal bones of #9 and #4A are different. The marks on #9 (a female) indicate a removal of the scalp from front to back, while the marks on #4A (a male) indicate the removal of the scalp from side to side (Dr. Maria Smith, personal communication 1992). The cut marks appear on the frontal and posterior/lateral portions of the crania, indicating the removal of the entire scalp. Berryman (1981:174) noted a similar removal of as much of the scalp as possible from certain individuals in the Averbuch series. The portions of the crania which are missing in situ are consistent with the removal of the scalp as well. After the crania were fractured, pieces would cling to the scalp during hasty removal.

Individual 4A also has evidence of severe lacerations of the throat and neck: bilateral cut marks just posterior to the surfaces of the articular facets of the second cervical vertebra, and on the right external surface of the mandible at gonion (see Figures 171 and 177). The cranium was still in line with the rest of the spinal column in situ, however.

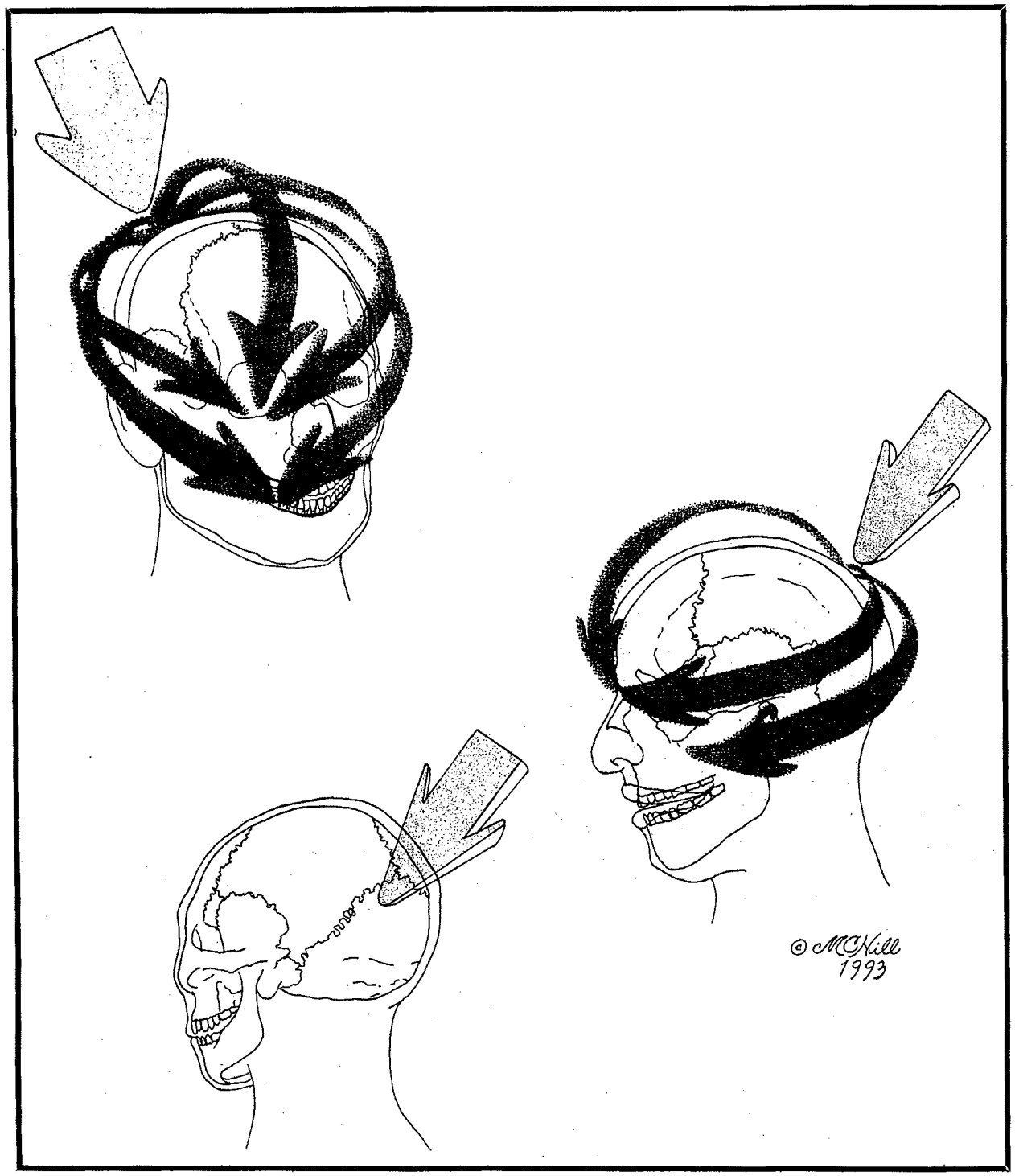

Figure 170. Mechanism of blunt-force trauma to the back of the cranium.

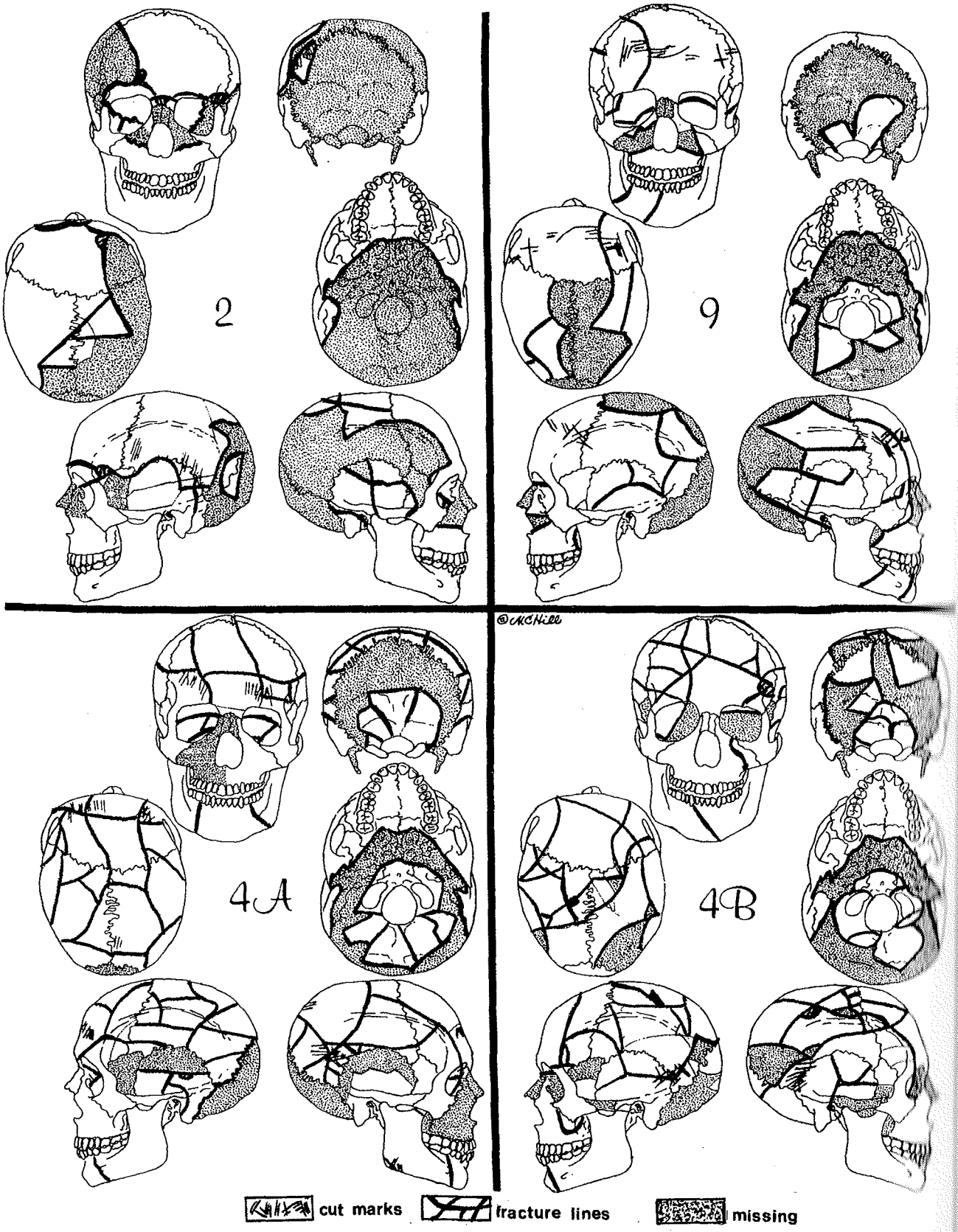

Figure 171. East Nashville Mounds. Comparison of fracture patterns and cut marks on crania, showing similar fractures through the right orbit and base of the cranium for Individuals 2, 9, 4A, and 4B.

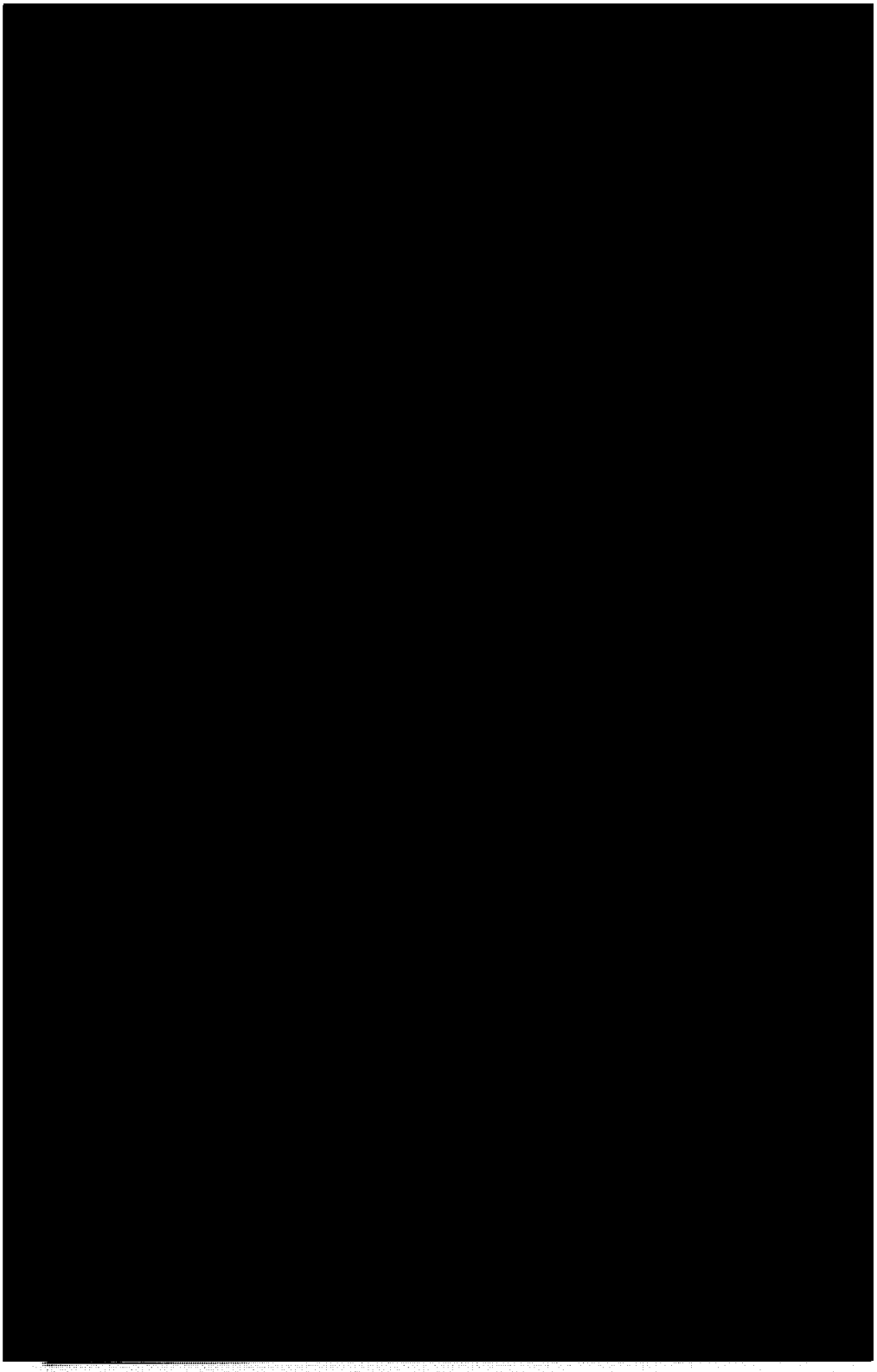

Figure 172. East Nashville Mounds, Burials 4A and 2. Similar fracture patterns across supraorbital regions.

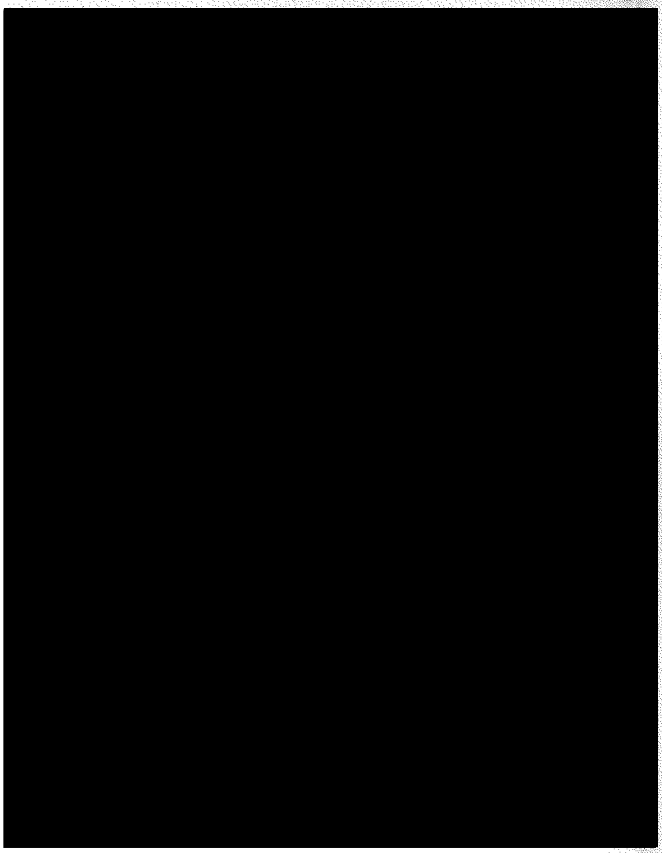

Figure 173. East Nashville Mounds, Burials 4B, 4A, and 9. Blow-out fractures of the basilar portions of the crania.

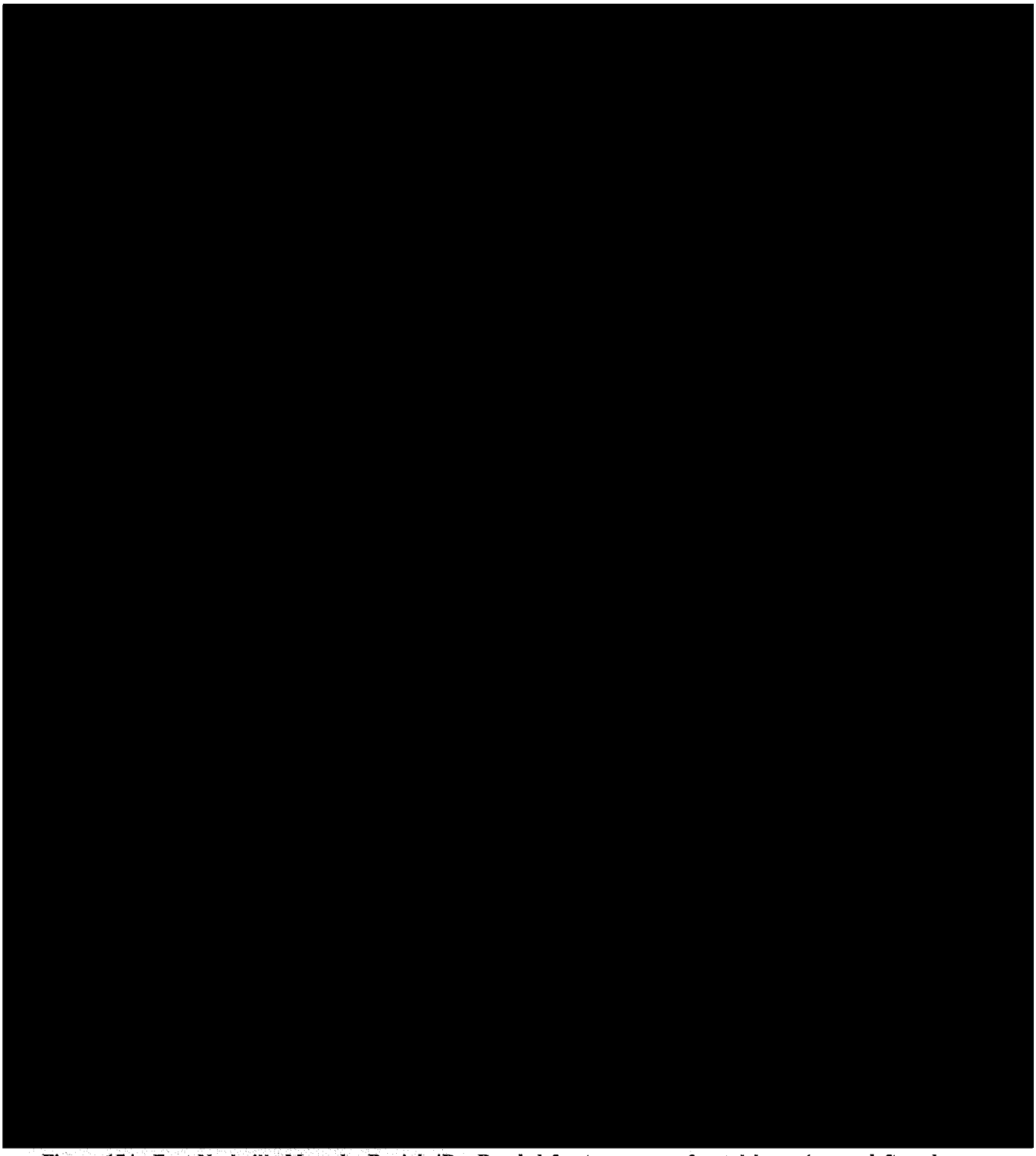

Figure 174. East Nashville Mounds, Burial 4B. Beveled fracture across frontal bone (upper left and lower left) and cut marks on the left parietal (upper right) and right parietal (lower right).

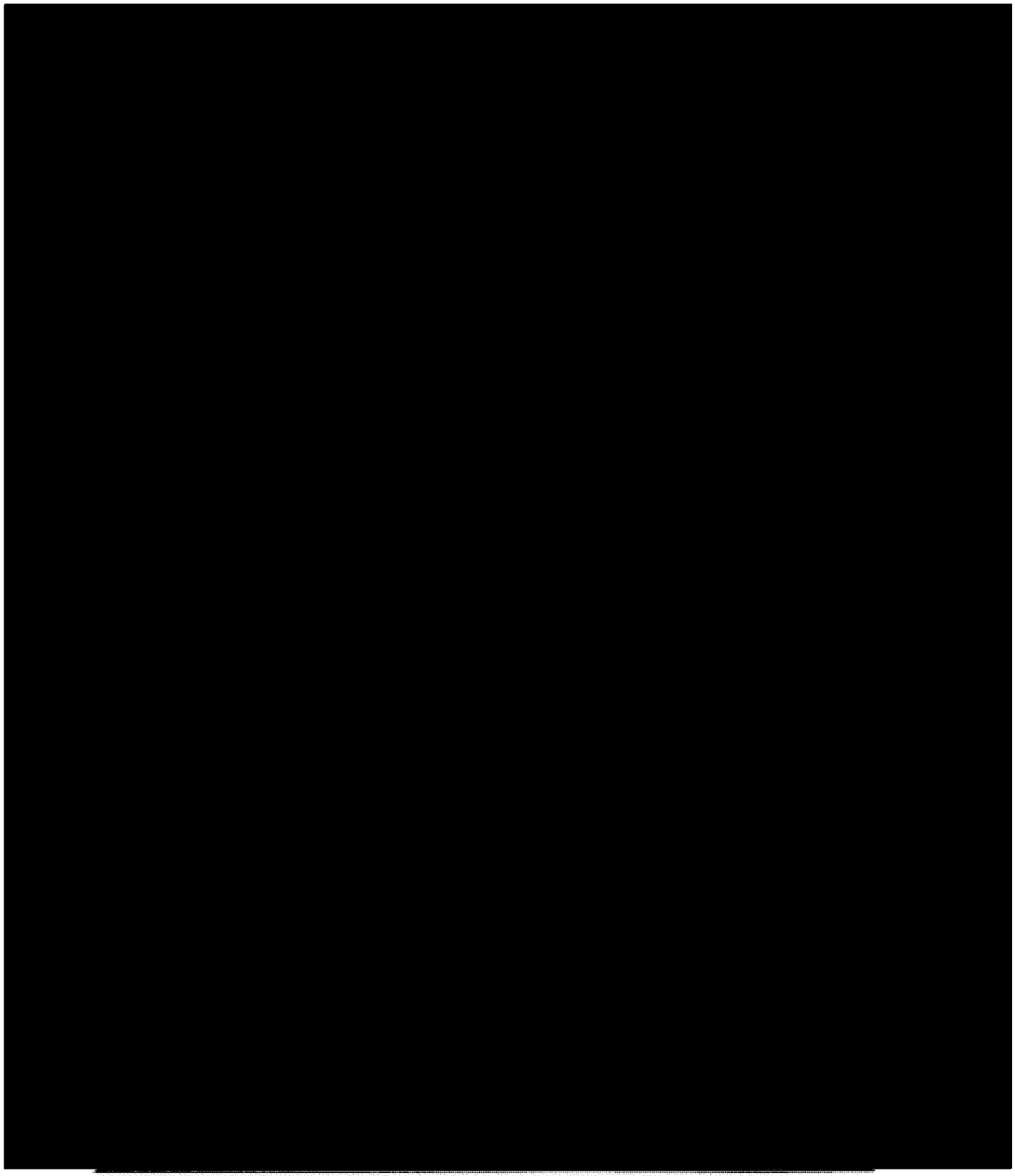

Figure 175. East Nashville Mounds, Burial 9. Fractured cranium, prior to cleaning (above left). Curved, bevel-edged fracture of right frontal (above right). Close-up of cut marks on frontal (below).

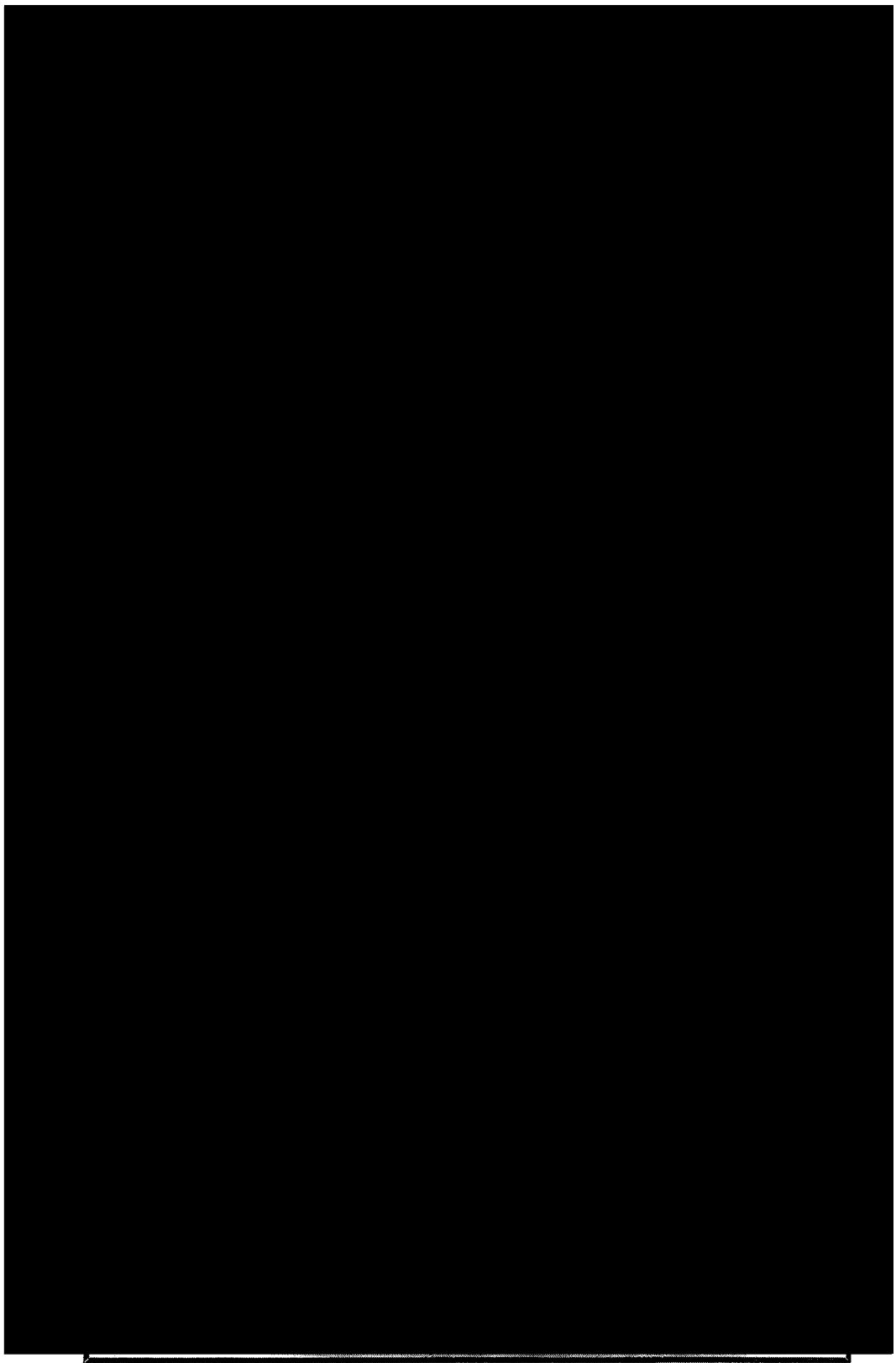

Figure 176. East Nashville Mounds, Burial 4A. Cut marks on right parietal (above). Vertical cut marks across frontal (below).

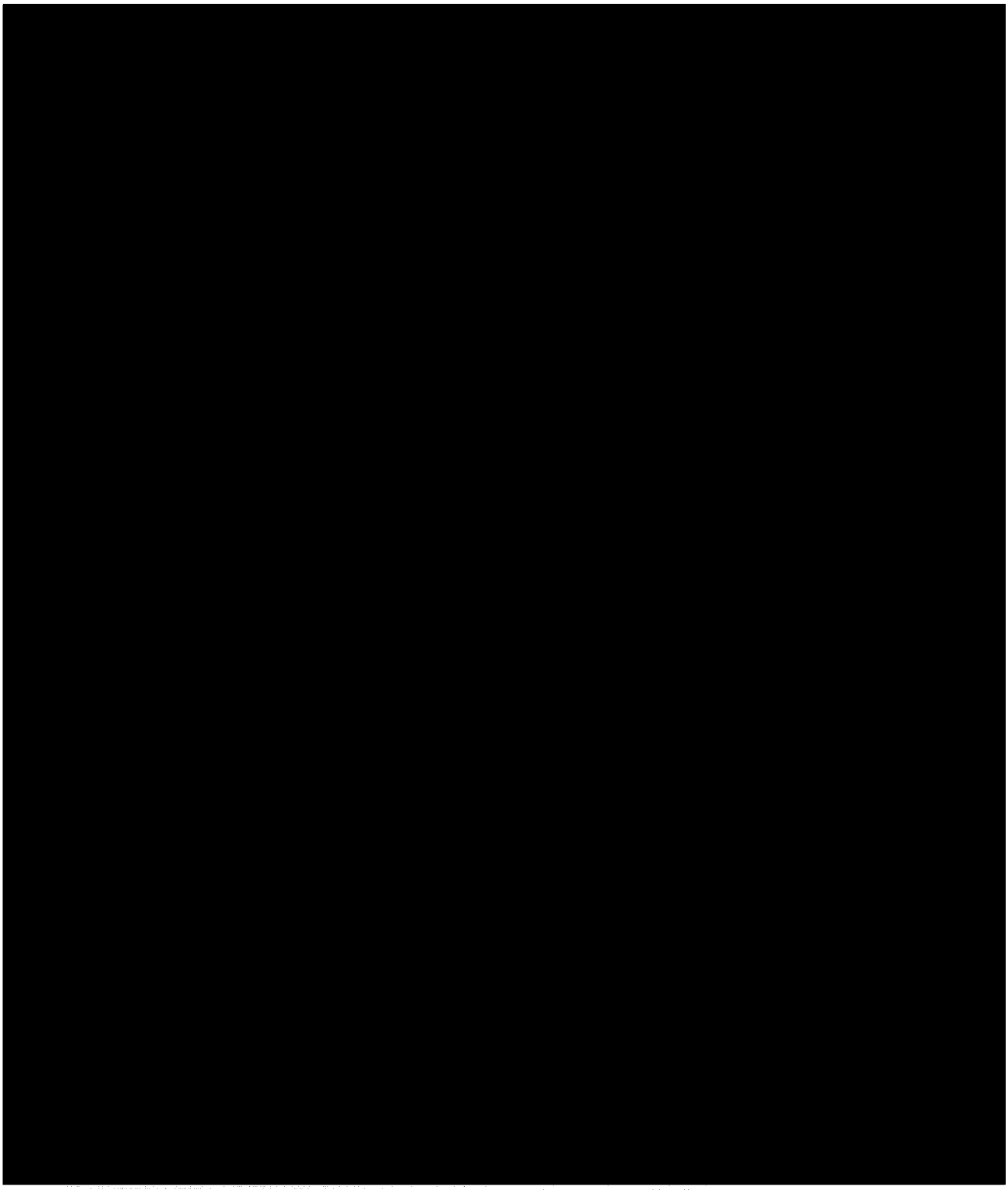

Figure 177. East Nashville Mounds. Bilateral cut marks on the second cervical vertebra of Burial 4A.

This author suggests the following explanation for the combination of fractures and cut marks. First, a blunt-force blow was dealt to the back of the skull. If the individual was standing or kneeling, the facial fractures would have occurred upon impact with the ground surface. If the person was facing a tree or lying face down on the ground, the fractures would have occurred almost simultaneously. The scalps were then removed, and #4A's throat was cut. The assailants may have tried to remove #4A's head and then decided otherwise. None of the other three (all females) had cut marks on the cervical vertebrae. The presence of other postcranial fractures indicates that they tried to defend themselves (i.e., parry fracture on Individual 9; see Appendix D).

Raids on unsuspecting villages and hamlets were apparently not uncommon in the Southeast, particularly the Middle Cumberland region, during late prehistoric and historic time periods (Berryman 1981:173-178). Individuals 2, 4A, 4B, and 9, from East Nashville Mounds, could have been in the village while other members were doing various subsistence tasks, or they could represent a small hamlet or farmstead group who were killed by a raiding party. After their deaths were discovered, they were brought to the village for burial.

Interestingly, the skeletons of #4B and #4C (mother and fetus) and #4A (young male) have evidence of nutritional stress, whereas the older adult females do not.

CONCLUSION

How do these individuals fit into the grand scheme or the big picture? Although the samples are exceedingly small, analysis of individuals at the French Lick site and East Nashville Mounds shows remarkable similarity to the extensive study of the Averbuch skeletal series (Berryman 1981; Eisenberg 1986).

Dental and nutritional pathology (and high mortality in the infants) at East Nashville Mounds indicate severe environmental stress. Evidence of nutritional stress in younger individuals, but not in older ones, at East Nashville Mounds indicates that the population had reached a critical point in terms of stress overload at least by A.D. 1420 (carbon 14 date from posthole next to Burials 4A, 4B, and 9). The unborn fetus of Individual 4B evidenced pathology *in utero*, and #4B had pathology consistent with calcium (osteoporosis) and iron deficiency. This suggests that whatever stressors were in effect, resulting in the high infant mortality for the other individuals in the series, were probably acting on the mothers as well. The evidence for social strife lends additional support for this observation.

Competition for resources (Larson 1972) may have been a significant contributor to social strife. Berryman (1981:185) states that the evidence of extreme stress in the Averbuch series may be related to its location in a more peripheral zone, away from the major waterways, when compared to the more typical Middle Cumberland Culture villages. However, East

Nàshville Mounds is *on* the Cumberland River, and these individuals have the same extreme stress patterns.

The source(s) for the environmental stressors continue to elude us. However, it appears that the late prehistoric period in the Southeast was one of great social and environmental turmoil, from a pan-regional point of view. People inhabiting the central and peripheral zones in the Middle Cumberland region appear to have experienced the same intensity of environmental stress. The information given by the individuals from the French Lick site and East Nashville Mounds provide a small but significant glimpse into the past.

ACKNOWLEDGMENTS

Archaeology in an urban context is becoming much more commonplace. The cooperative efforts of concerned parties, both academicians and Native Americans, must not go unnoticed. I would like to thank the following people and agencies for their assistance, permission, and guidance in completing this analysis; The Tennessee Department of Transportation; Margaret Hunter, Native American spokesperson; and most importantly, the field and laboratory personnel at Panamerican Consultants, Inc., who did excellent work under some very difficult field circumstances. Special thanks go to Mr. Tim Elmore, whose creative talents were put to the test by my showing him a picture of an osteometric board and receiving an excellent finished product a few weeks later; and also to Mr. Steve Hack for his photographic skills. I particularly appreciate the consultations with Dr. Gabriel Fernandez (neurosurgeon) and Dr. John Menard (maxillo-facial and reconstructive surgeon) and the loans of texts from their libraries.

CHAPTER 16
RADIOCARBON DATES

Richard Walling

The selection of particular radiocarbon samples collected during the Jefferson Street Bridge Project for submission to a radiocarbon laboratory for processing was based on several criteria, including site context; apparent lack of contamination by historic material; included material, in the case of features; and amount and nature of available charred material. A preference was given to wood charcoal; in a number of cases, feature samples were excluded because of the presence of cane and/or maize. All samples selected were charred wood, excluding the sample from Burials 4a, 4b, and 9 from East Nashville Mounds. This sample was a charred mass of indeterminate material recovered from a partial jar presumed to be associated with this mass interment.

The University of Texas, Austin, Radiocarbon Laboratory provided corrections for atmospheric ^{13}C, in addition to noncorrected assays. As a result of these corrections, the dates were pushed back about 20 years, not a significant consideration in that it is less than the 1 sigma range in all cases.

EAST NASHVILLE MOUNDS (40DV4)

Thirteen radiocarbon samples collected from ten separate proveniences at East Nashville Mounds were selected for further processing (Table 51; Figure 178). In the following discussion, we will consider only the calibrated ranges (Figure 179).

As noted above, an effort was made to choose contexts for dating that held potential to provide information not only on the span of occupation at the site, but also on specific material types contained within the fill of features. We are, of course, aware that the fill of a pit generally represents its final use as a trash receptacle, and that material included could result from any of a number of unknown spatial/temporal proveniences. It is hoped that, in time, meaningful patterns of occurrence will be deduced, and that the information and data presented here will add to our understanding of the progression of styles and patterns of use that evolved during the late prehistoric period in this region. Mississippi Plain was the predominant ceramic type in every feature chosen for dating, and each feature contained pan sherds.

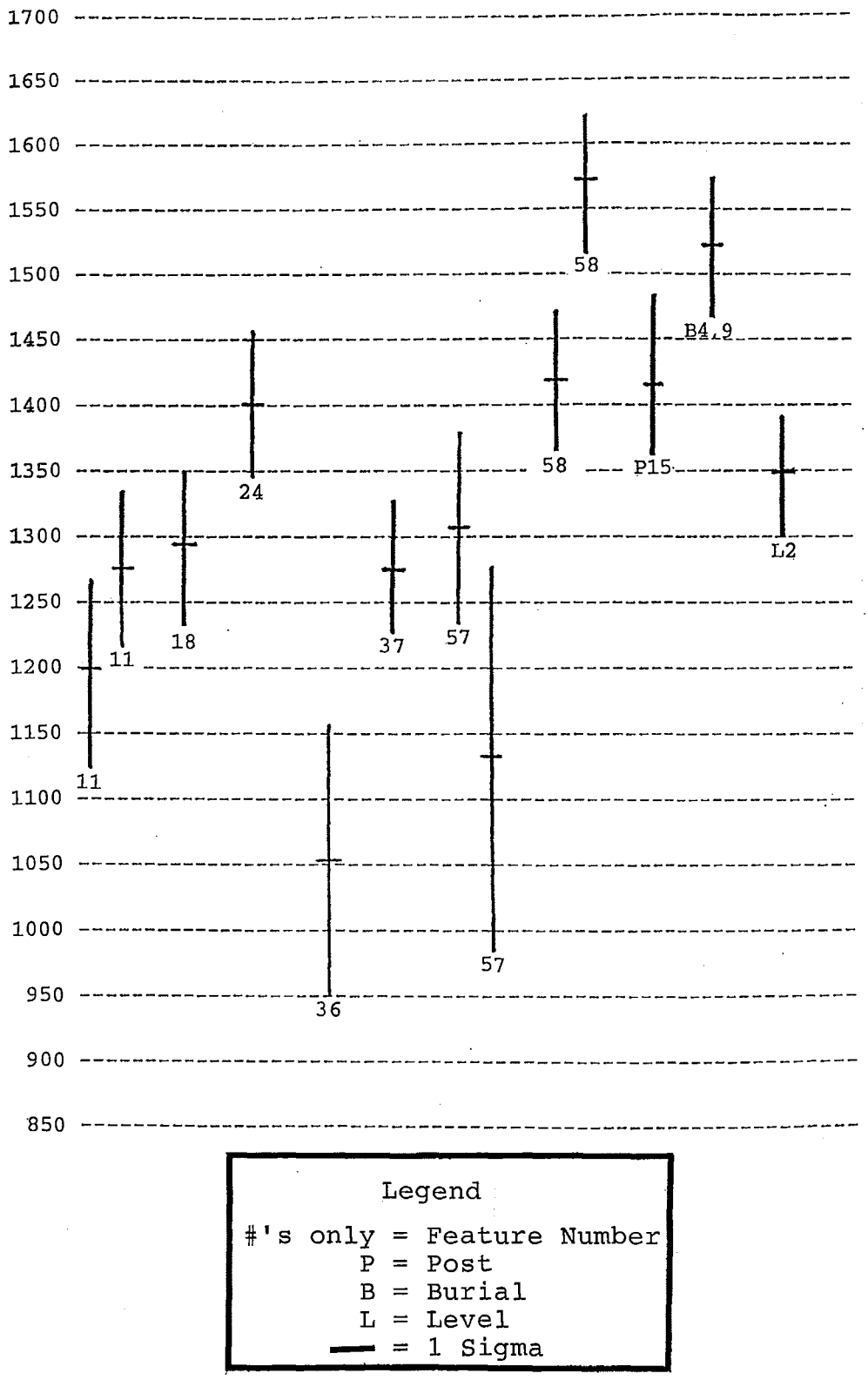

Figure 178. East Nashville Mounds, uncalibrated radiocarbon dates.

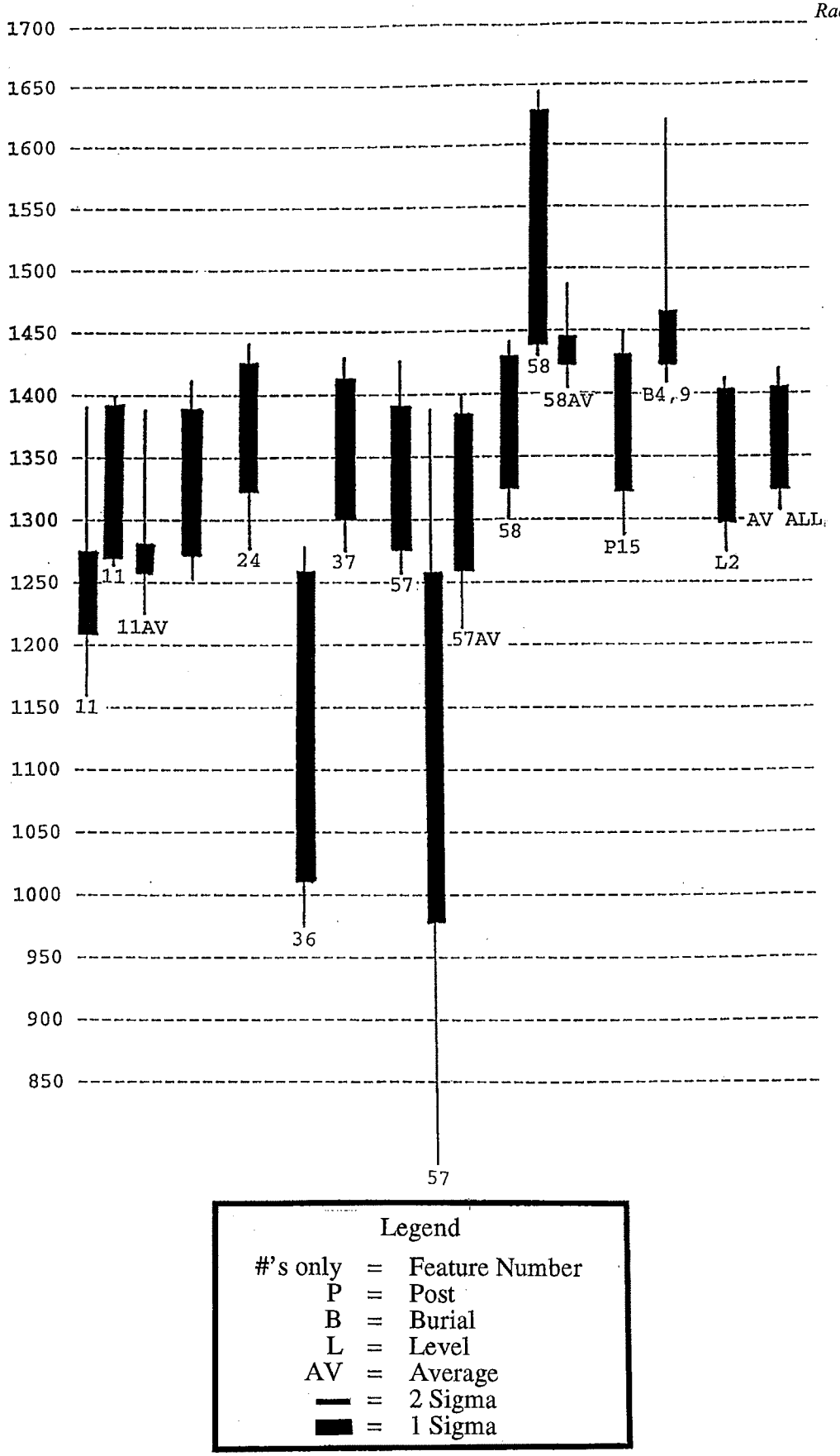

Figure 179. East Nashville Mounds, calibrated radiocarbon dates.

Table 51. Radiocarbon Dates from East Nashville Mounds.

		Radiocarbon Age		
Provenience	Lab No.	B.P.	A.D.	Cal. Age Range A.D.*
Feature 11	Beta-61242	750±70	1200	1218(1264,1268,1276)1283
Feature 11	TX-7855	670±60	1280	1278(1283)1387
Feature 11		703.9±45.6		1264(1280)1285 **
Feature 18	Beta-61243	660±60	1290	1278(1284)1390
Feature 24	Beta-61244	550±50	1400	1325(1407)1424
Feature 36	TX-7856	890±100	1060	1020(1158)1260
Feature 37	TX-7857	580±50	1280	1303(1330,1347,1393)1413
Feature 57	Beta-61250	640±70	1310	1279(1300,1373,1380)1395
Feature 57	TX-7866	910±140	1040	990(1070,1085,1127,1137,1154)1260
Feature 57		694±62.6		1263(1281)1385 **
Feature 58	Beta-61245	530±50	1420	1329(1412)1430
Feature 58	TX-7858	380±50	1570	1440(1476)1626
Feature 58		455±35.4		1424(1436)1444 **
Posthole 15	Beta-61246	530±60	1420	1327(1412)1433
Bur.4a,4b,9	TX-7859	440±50	1520	1425(1439)1466
115N101EZ2L2	TX-7860	600±40	1350	1298(1326,1353,1363,1365,1389)1406

* Calibrations presented are at 1 sigma; calibrations are from Stuiver and Becker (1986).

** Calibrated average for respective feature.

Feature 11 was one of the large subrectangular features and was located in the extreme northwestern corner of the East Nashville Mounds project area. All the ceramics recovered from the fill were coarse shell tempered. Included were one example each of Matthews Incised, *vars. Matthews C* and *Beckwith*; unidentified curvilinear complicated stamped; a bifurcated lug handle; and a strap handle attachment. Kimmswick Fabric Impressed, sorting varieties A and B were also represented. Jars and a fragment of a miniature vessel of indeterminate morphology were the only identified vessel types included within the fill.

Feature 18 originated in Zone 2, Level 3. This was a well-defined pit that might have served as a hearth. All ceramics recovered from the fill were coarse shell tempered. Included in the fill was a sherd of what may be Matthews Incised, *var. Beckwith;* however, the small amount of remaining incising makes this a less than secure assignment. Also included within the fill was an ear-plug fragment.

Feature 24 originated in Zone 2, Level 1. This large pit was originally encountered during Phase II investigations and contained abundant cultural material. Included within the fill were a sherd of a Matthews Incised, *var. Matthews C* jar with a wide (4.8 cm) strap handle, one possible plate fragment (a rare form for this area), and a bowl fragment with a beaded strip.

Kimmswick Fabric Impressed, sorting varieties A and B were present and included both unmodified and exterior thickened rim forms.

Feature 36, originating in Zone 2, is interpreted as a possible house floor segment. Included within the collection was a small sherd of a Mound Place Incised, *var. Chickasawba* bowl. This sherd cross-mended with two sherds recovered from Unit 141N 79E, Zone 2, Level 2 to form a significant portion of the vessel (see Figure 87). Other material recovered from this feature included an effigy head interpreted as a probable owl or dog; strap, loop, and simple lug handles; and Kimmswick Fabric Impressed, sorting varieties A and B.

Feature 37 originated within Zone 2 and was a shallow pit containing abundant cultural material. Included within the fill were two sherds of thick (1.2 and 1.5 cm) Mississippi Plain that could be Kimmswick Plain, a short-necked jar fragment, and Kimmswick Fabric Impressed, sorting variety A. One rim sherd of the Kimmswick Fabric Impressed has an exterior thickened lip.

Feature 57 was the largest of the subrectangular pits; it was located in the north-central portion of the project area. A portion of the feature had been disturbed by a historic trench. A layer of wood charcoal 14 cm thick was encountered in the bottom of this pit. This feature was found beneath the midden after stripping. Material within the fill of Feature 57 included Matthews Incised, *var. Matthews* A, a lug handle, and Kimmswick Fabric Impressed, sorting varieties A and D.

Feature 58 was another of the large subrectangular pits and was located near Feature 57; it was also observed beneath the midden after stripping. A layer of wood charcoal averaging 27 cm in thickness was found at the base of this pit. Recovered material within the fill of Feature 58 included a portion of a human effigy bottle, a noded rim sherd from a possibly nonlocal bowl, a lug handle fragment for which form could not be ascertained, and Kimmswick Fabric Impressed, sorting varieties A and B.

Posthole 15 was located beneath Burial 9 in the large block excavation in the northwest corner of the project area. This posthole contained a burned post and had apparently been truncated by the inhumation of Burials 4a, 4b, and 9, individuals included in the mass burial described by Hill (this volume). It was hoped that this posthole would provide an earliest possible date, or at least an early end bracket, for this interment, and it might.

The sample from Burials 4a, 4b, and 9 was from a Mississippi Plain jar fragment believed to have been associated with this multiple interment. Obviously, it was hoped that this sample would provide a good date for this event, and it might.

The sample from 115N 101E, Zone 2, Level 2 was chosen simply because it was one of the few samples recovered from nonfeature contexts that held any promise of supplying a date for general midden context.

While the picture presented is not as clear as could be hoped for, as is usually the case, some interesting inferences can be drawn. At 1 sigma, all the dates fall within the suggested range for the Thruston phase, A.D. 1260–1450, presented by Smith (1992).

The age ranges for the large rectangular Features, 11, 57, and 58, suggest a long period of use for this type of installation. This makes it hard to explain why this type of feature has not been recorded at other contemporary sites in the area, or in the region for that matter. Considering the averaged, calibrated age ranges at the 2 sigma level for each of these features (Feature 11, A.D. 1226–1389; Feature 57, A.D. 1220–1401; and Feature 58, A.D. 1411–1485), Features 11 and 57 remain nicely paired; however, there is still no overlap with the range for Feature 58. If we consider the results from sample TX7866, (a small, anomalous, and unacceptable sample), we then have a 2 sigma calibrated age range of A.D. 1260–1420 for Feature 57 with an obvious, though minor, overlap with Feature 58.

THE FRENCH LICK SITE (40DV5)

Eight radiocarbon samples collected from separate proveniences of the French Lick site were selected for further processing (Table 52). Figures 180 and 181 present uncalibrated and calibrated radiocarbon dates, respectively. In the following discussion we will consider only the calibrated ranges.

Table 52. Radiocarbon Dates from the French Lick Site.

		Radiocarbon Age		
Provenience	**Lab**	**B.P.**	**A.D.**	**Cal. Age Range A.D.***
Feature 1a	No.TX-7861	1100±170	850	692(910,915,977)1151
Feature 5	Beta-61247	810±50	1140	1164(1223)1275
Feature 23	TX-7862	570±50	1380	1311(1332,1343,1394)1416
Feature 25	Beta-61248	890±90	1060	1022(1158)1256
Feature 27	TX-7863	890±150	1060	990(1158)1280
Feature 28	Beta-61249	1440±60	510	556(608,627,638)650
Unit 13 L2	TX-7864	530±140	1420	1280(1412)1460
Unit 26 L6	TX-7865	1050±120	900	780(990)1151

* Calibrations presented are at 1 sigma; calibrations are from Stuiver and Becker (1986).

The same sample selection criteria employed for East Nashville Mounds were followed for the French Lick site. However, there was an extremely limited number of adequate samples from proveniences with sufficient material in unmixed contexts.

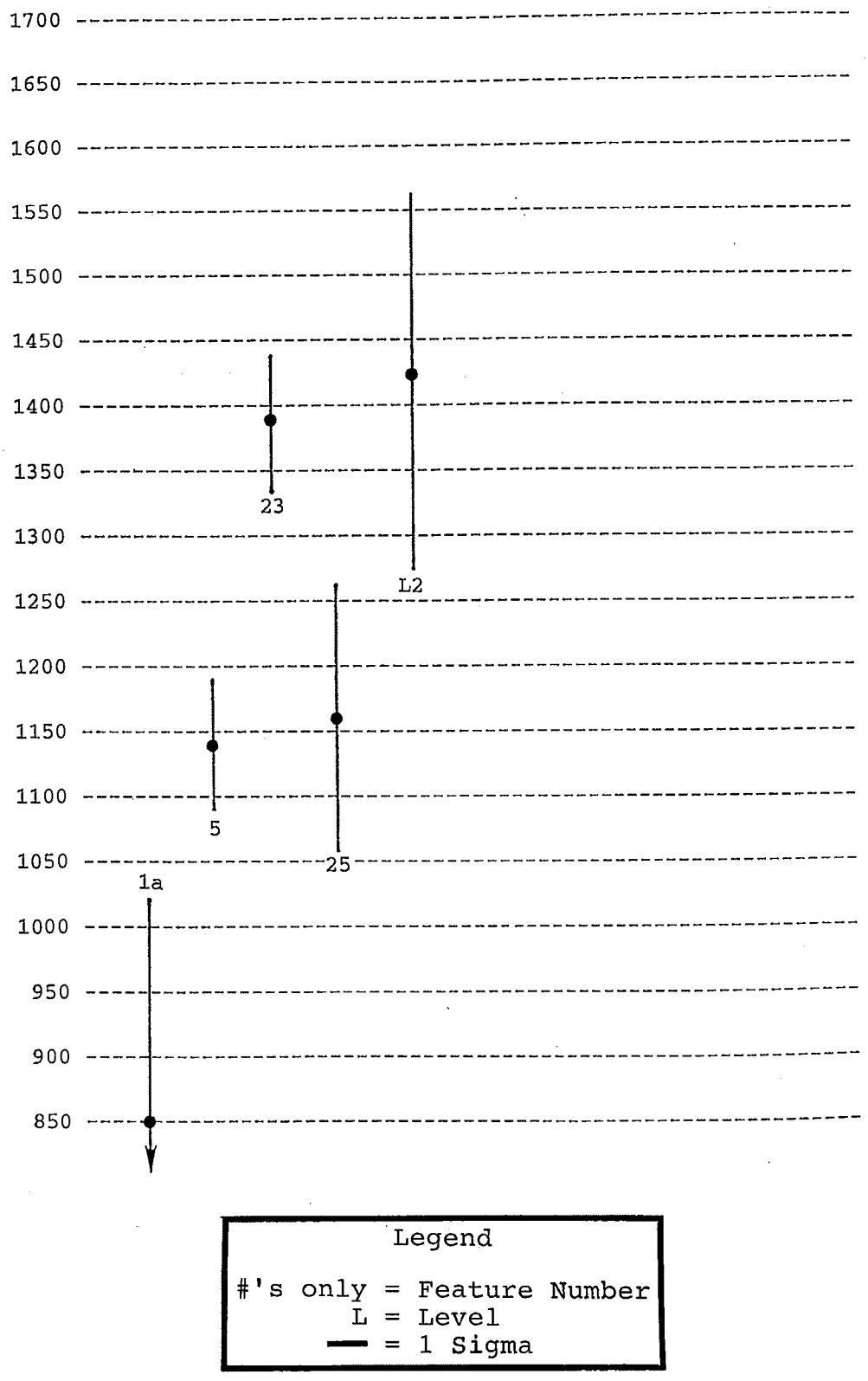

Figure 180. French Lick, selected uncalibrated radiocarbon dates.

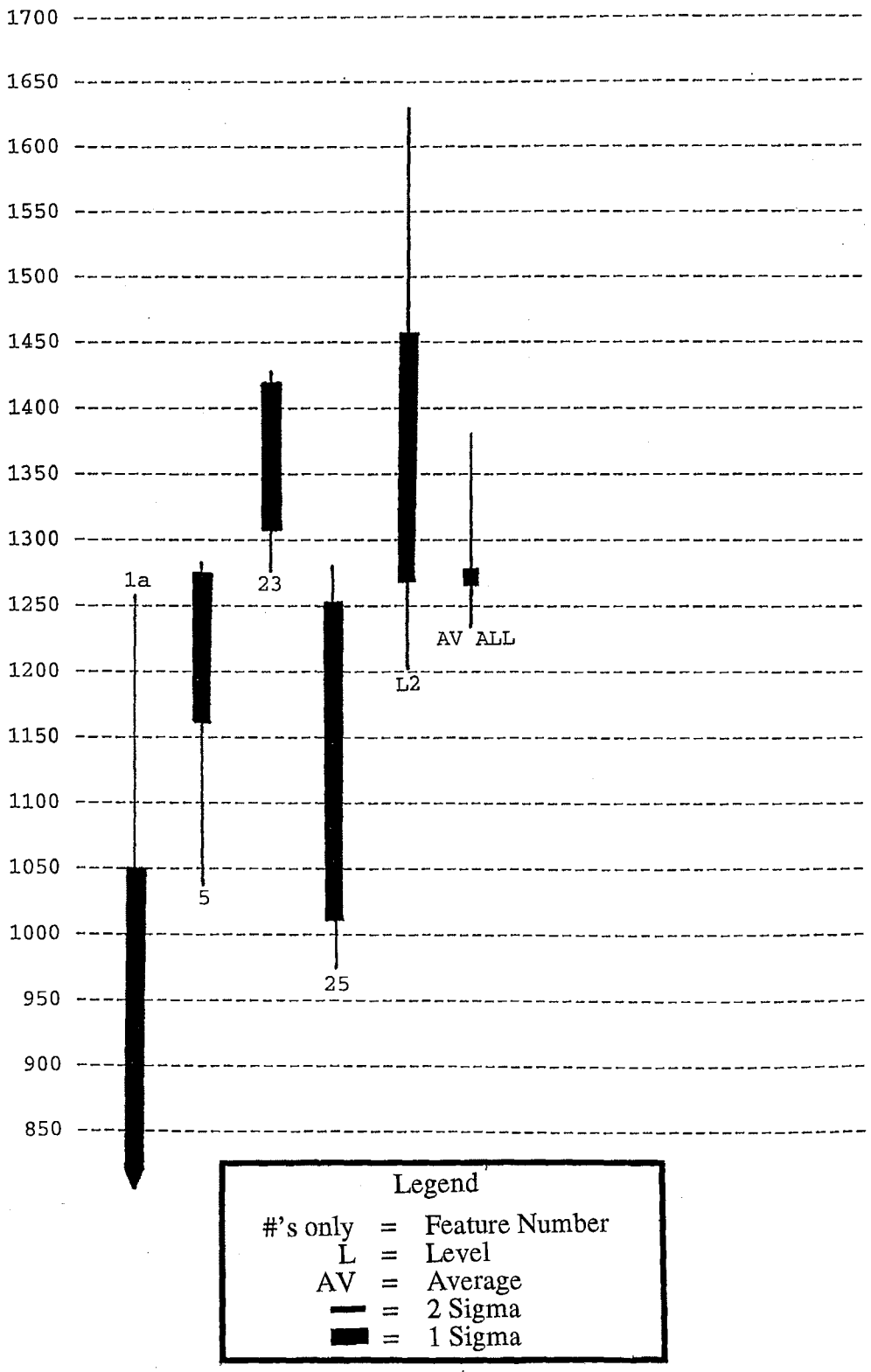

Figure 181. French Lick, selected calibrated radiocarbon dates.

Feature 1a was a large shell concentration originating in Level 1 of Unit 3 located in Bent 3 Right, grid provenience 5N 132W. All recovered ceramics were shell tempered; Mississippi Plain was the dominant type. Also included were Kimmswick Fabric Impressed, sorting variety A.

Feature 5 was a large pit originating in Unit 2, Level 2 (grid provenience 10.5N 83.5W); it contained multiple layers of ash and fired clay. Postholes 1 through 7 were encountered within the fill of this feature. While the function of this pit is unknown, the evidence for extensive heat suggests use as a hearth/earth oven or kiln. In addition to Mississippi Plain, the dominant ceramic type, the fill of Feature 5 also included two strap handle fragments, and Kimmswick Fabric Impressed, sorting variety A. Also included within the fill were thirteen limestone-tempered sherds and one fiber-tempered sherd.

Feature 23 was a large, circular, clay-lined pit. A limestone slab covered with ash and oxidized soil was encountered at the base of Feature 23. This and the oxidized interior of the pit indicate a probable function as a hearth. Mississippi Plain was the dominant ceramic type recovered from the fill; also included were a single sherd of shell-tempered cordmarked (McKee Island Cordmarked), Kimmswick Fabric Impressed, sorting variety A, and Mulberry Creek Plain.

Feature 25 was a large fire pit with a cluster of limestone slabs around the top. Mississippi Plain was the dominant ceramic type included within the fill. Also recovered were several examples of Kimmswick Fabric Impressed, sorting variety A; examples of Mississippi Plain paste lug and bifurcated lug handles (one each); two strap handles; and one eroded limestone-tempered sherd.

Feature 27 was a small, circular, basin-shaped pit apparently originating within the Woodland midden of Tunnel Pit 1. Included within the fill were two sherds of Wright Check Stamped and a Copena Triangular PP/K.

Feature 28 was a concentration of burned limestone and charcoal; no pit outline could be discerned. Five eroded pan sherds were the only ceramics recovered.

The date for Feature 1a is unacceptable, being several centuries too early for this Mississippian pit. The sample for Unit 13, Level 2 (39N 136W) was expected to represent the Middle Woodland occupation of the site, based on the lack of shell-tempered material and the presence of Flint River Cordmarked, Wright Check Stamped, and Pickwick Complicated Stamped; instead, it is a good Thruston phase date. The date for Unit 26, Level 6 (46N 105W) was aceramic, except for 12 grams of sherdlets. Although no diagnostics were recovered from this level, it was hoped that a date related to an Archaic component, at least tentatively, would be returned. However, the date is obviously several centuries too recent.

The dates for Features 27 and 28 are just the opposite of what was expected for these two features. Of course, it is possible that I switched these samples in the lab, though I like to think this is highly unlikely. If that were the case, then we have a good late Middle Woodland date comparable to those for the Owl Hollow and later Middle Woodland component at Duncan Tract, both of which have similar ceramic assemblages. However, "ifs" are not good enough, and the only acceptable recourse is to consider both of these dates anomalous.

The date for Feature 23 may represent a Thruston phase occupation at the site, either continuous or a reoccupation. However, the material recovered from the fill of this pit provided little from which to suggest a relative placement. The presence of a single sherd of McKee Island Cordmarked was thought to be a more likely Dowd than Thruston phase castoff.

Thus, it appears that only Features 5 and 25 provide us with acceptable Dowd phase dates. However, no decorated shell-tempered ceramics were recovered from either of these pits. A single sherd of McKee Island Cordmarked was recovered from Feature 25. Both features contained strap handle fragments and no loop handles. In addition, both features contained Woodland material. Thus, we are left with two dates that are unsupported by the material and the possibility that the dates, if accurate, reflect charcoal that is not associated with the time of pit use. This last possibility is not considered highly probable, as both pits represent large hearths, or at least some type of fire pit, and the abundant charcoal and ash contained within the fill appeared to represent in situ deposits.

CHAPTER 17
SUMMARY & CONCLUSIONS

Richard Walling & Lawrence Alexander

The East Nashville Mounds (40DV4) and French Lick (40DV5) sites are situated immediately opposite one another on the banks of the Cumberland River within the Nashville city limits. These investigations were carried out in conjunction with the replacement of the Jefferson Street Bridge over the Cumberland River. Field investigations included Phase II assessment and data recovery at East Nashville Mounds and construction monitoring, assessment, and data recovery at French Lick.

There were no surface manifestations of prehistoric deposits at either site. In fact, the sites were listed as destroyed in an earlier reconnaissance report (Autry 1982). Phase II investigations at East Nashville Mounds revealed the presence of substantial prehistoric deposits within the proposed ROW, while intact deposits at the French Lick site were reported by the construction contractor fairly early in the construction phase at that location. Subsequent investigations at French Lick showed the presence of extensive prehistoric deposits there as well.

As noted, these sites are within the city limits of Nashville, and both have been heavily impacted by industrial development. Thus, we must rely on nineteenth-century accounts to gain a picture of how the sites appeared. East Nashville Mounds was rather extensively investigated by Joseph Jones in 1868/1869; a report of this work was published in 1876. While no map of the site is presented, Jones describes the site as a chain of four mounds, one flat-topped and three burial mounds, surrounded by an extensive "burying-ground" of stone box graves and a dense scatter of sherds, points, and other stone implements.

The earliest reported investigations at French Lick are Earls's 1821 explorations, described by Haywood in 1823. The description is of a multi-stage flat-topped mound containing shell-tempered pottery and at least one burned structure. A "very large burying ground" was said to have surrounded the mound. By Jones's time, the late 1860s, the mound was no longer extant. By the 1880s, Thruston was able to secure cultural material from the site only during construction activities.

We are indeed fortunate that investigators like Jones and Thruston were active at these two sites--Jones, whom Thruston (1977[1890]) describes as the pioneer of archaeological investigations in Tennessee; and Thruston, himself, who published not only on the material

that he recovered, but also attempted to integrate it with that of previous investigators in the area and region.

More recently, Dowd (1971) provided an evaluation of East Nashville Mounds, identified the platform mound north of the present project area, estimated the location of the burial mounds, and noted that cultural material was occasionally found eroded from the river bank. The Phase I investigations of the impact area failed to locate any evidence that the site existed (Ward 1988). Dowd (1968) provided an evaluation of French Lick and suggested a location for the mound based on the early accounts. Smith's (1992) recent synthesis of the local Mississippian made use of the available information for these two sites. However, as of late July 1991 it was not known if any prehistoric deposits remained in situ at these sites.

During our investigations, total field effort at the two sites was about equal, with approximately 202 square m, about 95 cubic m, of midden hand excavations at East Nashville Mounds, and approximately 163 square m, about 108 cubic m, of midden hand excavations at French Lick. At East Nashville Mounds, 45 features, 27 postholes, and 10 burial loci representing 16 individuals were excavated. Investigations at French Lick resulted in the excavation of 40 features, 32 postholes, and 19 burial loci representing the remains of 20 individuals.

General field techniques proposed for investigations at the French Lick site were the same as those employed at East Nashville Mounds. However, while a relatively large area of East Nashville Mounds was investigated, at the French Lick site excavations were limited to areas of direct impact.

As initially proposed, Phase II investigations were to be limited to bent locations. However, within the first 3 m of the initial backhoe trench we had located human remains, a large trash-filled pit, and intact midden. This led to a modification of approach to test the entire 2,000-square-m ROW in order to better prepare for inevitable data recovery. The Phase II investigations at East Nashville Mounds identified extensive intact deposits extending to the north and south of the of the project area and for approximately 50 m east from top bank of the Cumberland River.

While data recovery was under way at East Nashville Mounds, human remains were encountered and reported by the engineering firm during construction-related excavations of the bent locations on the west side of the river. Following inspection of the construction area at the French Lick site, exposed archaeological deposits were assessed for potential significance, and archaeological monitoring of the unexcavated bent locations was carried out. The construction contractor ceased all activities at bent locations containing intact archaeological deposits, and a data recovery plan was implemented for these areas. Initial data recovery at the French Lick site was restricted to sampling of specified bent locations. Subsequent Phase II investigations and data recovery were conducted in conjunction with the construction of a stormwater runoff system at this site. While monitoring and excavation

were carried out in a number of areas of the greater French Lick site, those in the bent locations and stormwater runoff locations were the most fruitful.

East Nashville Mounds is at the upstream terminus of a series of Holocene river levee deposits that have been subject to repeated alluviation and flood stripping of soils in the past. The cultural deposits were restricted to the narrow levee crest 100 to 150 m wide. Downstream where the alluvial deposits are wider, a significant segment of the Mississippian town is likely to be preserved.

Historic fill varied from 0.75 to 1.70 m thick, but was generally 0.80 to 1.00 m. Midden deposits resulting from the Mississippian occupation were observed for the entire north/south extent of the ROW; these continue for an unknown distance to both the north and the south, extending eastward from the present riverbank for some 50 m. These deposits were spatially restricted to an area of approximately 1,280 square m and varied from 20 to 60 cm in thickness, averaging approximately 30 cm. The density of prehistoric cultural material was relatively more dense on the north and west and became considerably lower to the southeast, where it appears that the prehistoric deposits have been destroyed by multiple building episodes associated with the lumber yard.

Underlying the historic overburden is a truncated layer of silt loam averaging 10 to 20 cm thick; this was designated Zone 1. In some areas, historic material intruded into the upper portion of this zone; this may represent a plowzone. Artifact density in Zone 1 varied across the ROW; it was highest beneath the first and second span of the old bridge (near the river bank), where a large concrete slab had preserved the deposits. Grading from Zone 1, Zone 2 was a dark silty clay loam midden layer averaging 40 cm thick. As in Zone 1, artifact density varied across the ROW and was highest under the western end of the old bridge. In all areas investigated, artifact density was much higher in Zone 2 than in Zone 1. Zone 2 overlaid and graded with Zone 3, a sterile silty clay. Zone 3 was generally lighter and much harder than the overlying midden.

The stratigraphy at the French Lick site has been determined by the alluvial deposition and truncation sequence of the Cumberland River. The highest areas of the river levee contain the most complete Holocene stratigraphic record, with stratified late Pleistocene-early Holocene deposits resting unconformably upon Ordovician bedrock. The Late Archaic through Mississippian components are well represented in this area. At the rear of the river levee the stratigraphic record is compressed; Early Archaic through Woodland components are present in a compressed 60- to 70-cm unit. The alluvial cross section has an erosion-truncated profile and redeposition sequence on the front slope, with deeply stratified deposits on the river levee top, and a compressed stratigraphic sequence on the back slope of the river levee; this cross section may be anticipated throughout the Tennessee River drainage basin.

The collection of projectile points from the French Lick site has a 10,000-year time depth, and a greater diversity of lithic resources is represented than at East Nashville Mounds. Examples from the Early Archaic through Mississippi periods are represented. The Paleoindian horizon was not indicated with projectile points; however, the three end-struck blade flakes which were used as informal scrapers are characteristic of the Paleoindian through Early Archaic period.

The Big Sandy, Kirk, and Eva/Morrow Mountain cluster projectile points were recovered in low numbers. The sporadic occurrence of these projectile point types as a background frequency is common on elevated terraces throughout the Tennessee River Basin settlements. The French Lick site was extensively truncated during the middle Holocene Hypsithermal erosion cycle, and these projectile points remained within the sites. The Early Archaic Big Sandy, Kirk, Bifurcate Base, and Cypress Creek projectile point clusters are made predominantly from locally available chert types.

The Benton horizon is the earliest significant occupation preserved at the site. This occupation postdates the Hypsithermal truncation (Alexander 1982). Stratified late Middle Archaic deposits were encountered in Strata 8 and 9 (Bent 4) from 90 to 145 cm below surface. The Benton horizon contained a unique ratio between the Benton and Buzzard Roost Creek projectile points. Elsewhere within Benton horizon occupations, the Buzzard Roost Creek point types are a minority, comprising under 10 percent of the assemblage. At the French Lick site, the Buzzard Roost Creek points compose 67 percent of the assemblage. The extensive collection of scrapers and adzes recovered can be partially assigned to this Middle Archaic component, as well. This component also contains the largest variety of chert, and the lithic technology represents an apex not obtained since the Paleoindian period.

The Late Archaic/Gulf Formational Flint Creek and Wade projectile point clusters are another significant component at the French Lick site. These projectile points are from Strata 6 and 7, 45 to 92 cm below the site surface. It is likely that these points, particularly the Wade cluster points, are associated with the 12 Wheeler sherds recovered from various locations across the French Lick site. The number of sherds and their dispersal over the site suggest that we have an actual component resulting from the local manufacture of fiber-tempered ceramics rather than just a pot or two that found their way to the site.

There was apparently a hiatus in the use of this location. There is no Early Woodland component represented, or at least not one of significance.

Relatively intensive use of the French Lick site apparently resumed during the Middle Woodland period. Limestone-tempered sherds form the second largest temper group recovered from the French Lick site. The assemblage is composed of Mulberry Creek Plain (52.1 percent), Wright Check Stamped (26.2 percent), Flint River Cord Marked (14.3 percent), Pickwick Complicated Stamped (1.9 percent), unidentified incised (1.9 percent),

Bluff Creek Simple Stamped (1.5 percent), Flint River Brushed (.8 percent), Long Branch Fabric Marked (.8 percent), and unidentified stamped (.6 percent)

The 51 sherds tempered with chert, grit, and sand, combined with untempered sherds, account for about 5 percent of the total assumed Middle Woodland ceramic collection. If we look at the frequencies of the various surface treatments within each of these temper groups, the general trend is the same as that for the limestone-tempered material. If we look at this material as a single entity, the type ordering by relative frequency is identical to that of the limestone-tempered material, and the relative frequencies are extremely close for the two groups. We do note that all these tempers are reported from earlier and/or later periods as well.

While stratigraphy at the French Lick site does not illuminate this situation, a comparison of the northern portion of the project area and the southern portion does suggest some differences. Though the counts become quite small once the collection is divided this way, the horizontal distribution of surface-modified types does suggest the presence of more than one Middle Woodland component at the site.

In the northern area the relative frequency of Wright Check stamped is significantly higher, that for Flint River Cord Marked is considerably lower than in the southern area. All the Bluff Creek Simple Stamped and Flint River Brushed sherds were recovered from the northern area.

In the northern area, Wright Check Stamped accounts for 63 percent of the material, Flint River Cord Marked 23 percent, and Bluff Creek Simple Stamped and Pickwick Complicated Stamped 4.5 percent each. Flint River Brushed and Long Branch Fabric Marked account for 2.2 and 1 percent, respectively. In the southern area, Flint River Cord Marked and Wright Check Stamped account for 48.5 and 47 percent, respectively, while Pickwick Complicated Stamped makes up 3 percent and Long Branch accounts for 1.5 percent of the collection.

The relative frequencies for Middle Woodland ceramics recovered from the French Lick site do not correspond well with other assemblages reported for the Middle South. It is likely that there are multiple Middle Woodland components or, perhaps less likely, a long-term, continuous Middle Woodland occupation represented by the French Lick collection.

The Middle Woodland triangular projectile point cluster, including the Copena and Copena Triangular types, is associated with the limestone-tempered plain and complicated-stamped ceramics recovered from the site. The microtools and polyhedral cores recovered can also be assigned to this assemblage.

If we view this as an assemblage, rather than a collection of assemblages, then a best placement is probably a late early through early middle Middle Woodland occupation.

Possibly a closer tie to the Middle Tennessee Valley than to the Normandy Reservoir area is indicated, though this is proposed with a great deal of trepidation.

There is little evidence for a Late Woodland component at either site beyond the possibility that some of the mineral-tempered sherds may result some such. Crushed grit of both igneous and metamorphic materials are reported from Early Mississippian Merrell phase contexts in the American Bottoms (Maher 1987), while chert is the predominant temper in the Elk River series of the Late Woodland Mason phase in the upper Elk River drainage (Faulkner 1968a).

As for the 59 sherds of mineral-tempered material from the East Nashville Mounds, .03 percent of the collection, little can be deduced. Based on the occurrence of the grit-tempered complicated-stamped material in Zone 2, Level 1, a Mississippian provenience is suggested. The remaining 14 sherds are not as easily explained, unless we concede a very minor Middle to Late Woodland component at this site. It is possible that these sherds result from contact between the Thruston phase people and other groups, though given the nature of the material, this is does not seem very likely.

It is with the Mississippi period East Nashville Mounds reenters the discussion to a meaningful degree. The bulk of the ceramic collections for each site is shell tempered, 51,546 sherds from East Nashville Mounds (about 99.97 percent of the collection) and 5,239 sherds from French Lick (about 86 percent of the collection). Eroded sherds accounted for almost half this material from East Nashville mounds and just over one third from French Lick.

These collections share a number of common features but also provide some interesting, though not unexpected, divergences. As noted by other researchers in Middle Cumberland area, the variety and relative frequencies of recognized diagnostic material is quite limited. These sites are no exception. Both samples are overwhelmingly dominated by Mississippi Plain at 95 and 90.4 percent, respectively, with the difference in these relative frequencies completely accounted for by the over-representation of Kimmswick Fabric Impressed within the French Lick collection. If one ignores the eroded material, as we will, Kimmswick Fabric Impressed is a distant second, with all other types combining for just over 1 percent in each collection.

There are some interesting comparisons that can be made between these collections. Once we subdivide the collections for intra- and intersite comparisons, the numbers for specific types, and especially varieties and subvarieties or sorting categories, become quite small.

Bell Plain accounts for less than .5 percent of the East Nashville Mounds Collection and barely 0.1 percent of the French Lick Collection.

Kimmswick Fabric impressed accounts for about 3 percent of the East Nashville Mounds Collection and almost 9 percent of the French Lick Collection. It does not seem too risky to

propose that the over-representation at French Lick is a result of the location of a major salt spring at this site. We divided the Kimmswick Fabric Impressed into four sorting categories based on physical characteristics of paste, thickness, and in one instance a distinct difference in surface treatment. It was hoped that this might show some differences between the collections that would not be apparent at the more gross type level. While there are some modest differences between the samples, the most notable are a higher occurrence of the thin-bodied, essentially Mississippi Plain paste ware at East Nashville Mounds, and a total lack of our sorting variety D for the French Lick sample. This sorting variety is not, properly speaking, fabric impressed, but has widely spaced cords on a thick, very coarse ware (the same as our A and Phillips's *var. Kimmswick*). Only 15 sherds of Kimmswick Plain were identified, all from East Nashville Mounds.

Matthews Incised is the most abundant decorated type within each collection. There are some rather striking differences between the two collections for this type. Again, to see if we could squeeze some intersite differences from these samples, we established three subvarieties for *var. Matthews* based on line form: sorting subvariety A had a single incised line forming the running arches; B, double or stacked incised arches; and C, arches formed by excision. At East Nashville Mounds, C accounted for almost half the sherds; A, 34 percent; and B, 18 percent (46 sherds identified to subvariety). At French Lick the two sherds of *var. Matthews* are of subvariety C, the excised arch.

Differences also appear in the *var. Manly* portion. Smith (1992) has sorted to subvarieties A, punctations only, and B, line and punctations defining the running arches. At East Nashville, *Manly* B makes up 90 percent of the sample, while the three sherds from French Lick are all B. The greatest intersite difference for this type occurs with *var. Beckwith*, which accounts for 7.6 percent of the Matthews at East Nashville and 54.5 percent of the French Lick sample.

The remainder, less than 1 percent of the sample, is made up of Campbell Applique-like, Complicated Stamped (both coarse shell tempered and grit tempered), McKee Island Brushed, McKee Island Cordmarked, Mound Place Incised *vars. Chickasawba* and *unspecified*, O'Byam Engraved or Incised *var. Stewart*, Barton Incised, Old Town Red (coarse shell tempered), and assorted unidentified punctated, incised, excised, engraved, and surface-roughened material (73 of these).

Of this group, the example of Campbell Applique-like from East Nashville Mounds is probably the most interesting. This sherd is from a jar and retains a vertical notched fillet. Given the size of the sherd and the fact that only one fillet remains, it is impossible to determine spacing, though it is obvious that the examples from the Campbell site are spaced more closely. To our knowledge, no other examples of this late type/mode is reported for the Middle Cumberland area.

There are some differences in the relative frequency of vessel form and modes at these sites. While jars are the predominant form at both sites, bowls occur at a slightly higher level at French Lick than at East Nashville.

There are some rather striking differences in the distribution of handle styles between these collections. At East Nashville Mounds the simple lug is the predominant handle style, followed by strap and bifurcate lugs. At French Lick, the strap is the predominant style, followed rather closely by loops and simple lugs.

There are also some interesting differences in the distribution of rim modes among the bowls from these two sites. Noded rims are the most prevalent in each collection. At East Nashville Mounds these are followed by notched horizontal strip rims and notched lips. Notched horizontal strips are the only other embellishment on the French Lick bowls.

Bottles are rare in both collections.

No ear plugs or sherd disks were recovered from French Lick. Twenty-four, mostly of coarse shell tempering, were recovered from East Nashville, as well as 40 sherd discs, also mostly of coarse shell-tempered ware.

A small but varied collection of effigy fragments was also recovered from these sites. These include various adornos, modeled fish, frogs, a blank-faced and human effigy bottles, and solid figurines. Of this last category, one is a lozenge-shaped figure, and two are hunch backs. The lozenge-shaped figure also has an incised ponytail and single-arm weeping eye surrounds. This is one of only two Southeastern Ceremonial Complex symbols in the collection.

Mississippian Triangular make up 75 percent of the projectile points recovered. Twenty-nine percent of the triangular projectile points recovered were specimens that have been identified with the Fort Ancient assemblages of the Ohio River drainage. Railey (1992) notes that what he describes as "fine triangular flared base" points are associated with early Fort Ancient, A.D. 1000 to 1200 (generally contemporary with the local Dowd phase). Railey's "fine triangular, coarsely serrated" has a suggested date range of A.D. 1200 to 1400 (roughly contemporary with the local Thruston phase). The remainder of the triangular point assemblage contains Madison, Sand Mountain, and Guntersville types, which are clearly associated with the Middle to Late Misissippian. All the specimens recovered were made from locally available Fort Payne chert.

The remaining 25 percent of projectile points the are Archaic and Woodland types made from the locally available cherts. The Mississippian populations of the Nashville Basin apparently collected earlier projectile points (Smith 1992). As there is no evidence in this collection of the reworking of these points into different artifacts, and with little support from the rest of the collection, we assume that these points were likely collected from earlier sites as objects of curiosity or as heirlooms.

The Dover chert lithic assemblage from East Nashville Mounds consists of discarded workshop debris; complete artifacts are rare. This affords a different view of the Dover lithic industry. As a result of available samples, previous studies have focused largely on material from mortuary contexts (cf: Kline 1984a, 1984b; Smith 1992).

The Dover chert assemblage consists entirely of broken wedges and other unidentified fragments. Only one beveled bit fragment was polished; the remainder of the sample had wear polish only. Flakes recovered also reflect the abrasion-polish on one surface opposite the positive bulb of percussion. The fracture patterns on these artifacts evidence lateral snap fractures as well as end shock fractures. Opposite the bit, the pole end of the wedges also show heavy battering and abrasion, possibly from a heavy wooden billet. Impact fractures from hard-hammer percussion are not readily apparent. These specimens were broken during heavy use and possibly during resharpening.

Nineteen wedges of other chert and limestone were recovered. While the wear and fracture patterns were similar to those observed on the Dover chert examples, these specimens were smaller. In addition, one piece of Mill Creek chert with a lateral snap fracture was reworked into a wedge. A second specimen of Dover chert, with a well-polished bit, was also reworked into a wedge. Both specimens have billet-type fractures on the fracture surface opposite the beveled bit.

The woodworking industry at East Nashville Mounds contained an assemblage of celts and wedges of regional and exotic raw materials. Wedges made from local material are smaller and have less evidence of shatter and battering than do the exotic material specimens. This may be a result of the local Fort Payne chert and limestone being more resilient and showing less wear. The Dover chert specimens have a great deal of wear polish on the ridges separating flake scars as well as on the distal edges of the bit. The Dover chert is more brittle, and it easily flakes from battering; for this reason it is not well suited to heavy woodworking tasks but seems to have been the material of choice. From the specimens observed in the collections, it is not clear whether these artifacts were hafted as adzes or used as wedges. There is no clear evidence of hafting on the specimens, and all specimens are extensively battered on the bit and pole ends.

Based on this assemblage, it appears that woodworking industry was well developed, with extensive use and recycling of wedges until the artifacts were fractured beyond further use. It appears that East Nashville Mounds is unique for this area in having an extensive Dover chert wedge complex.

One of the two Mill Creek chert specimens is the flake from the bit of an adze or wedge. The second specimen appears to have been a hoe that was broken with a lateral snap, then recycled for use as a wedge. This may not follow the same use-and-discard model as the Dover chert specimens.

The celts were all of exotic materials and were well shaped and polished prior to use. No complete specimens were recovered.

The perforated sandstone disk and bifacially beveled and ground biface are part of an enigmatic sandstone industry at East Nashville Mounds. A disk of nonlocal sandstone or tuff resembles an unused spindle whorl. It is well shaped but not polished or abraded. The sandstone biface is the distal fragment of an artifact that would have been 15 to 25 cm long if complete.

Discoidals and stone disks manufactured from locally available materials, primarily limestone and small amounts of sandstone, were also recovered. None has been completed and polished. These artifacts were manufactured locally, and they were broken and discarded in the same village midden. One sample, part of a "chunky stone," is concave on both dorsal and ventral surfaces. The remainder are excurvate to straight on both faces.

The faceted minerals recovered included one fragment of galena and two fragments of a heavy lead-like mineral. Both specimens have been edge ground, and they appear to have been a source of pigment.

Mississippian triangular projectile points are under-represented at the French Lick site. These projectile points were recovered from Strata 2 and 3, 0 to 20 cm below the site surface in the bent excavations, and they were recovered from the site foreslope deposition excavations. This assemblage is significantly different from the East Nashville Mounds excavations in that the Fort Ancient projectile point types are minimally represented. The side-notched Knight Island projectile points are also part of the Mississippian assemblage from this site. The local chert small wedges may also be a segment of the Mississippian woodworking assemblage that is more completely represented at East Nashville Mounds.

Floral analysis indicates that the inhabitants of East Nashville Mounds and the French Lick site relied on cultivated and wild gathered foods. Corn was recovered in modest amounts from both sites. While isotopic study has indicated that corn was a significant constituent of the local Mississippian diet, the rule is that cobs or even large cob fragments are not preserved on Middle Cumberland sites (Smith, personal communication 1997). This is the case with the current sample. The single kernel in the sample may have been derived from a Northern Flint race more common in the northeastern portion of the U.S. These data indicate that the site occupants had trade interactions with the prehistoric northeastern Native American Indians, or at least shared their seed stock. In addition to corn, squash was represented in the East Nashville Mounds sample. Other types of domesticated plants may have been used as well, but evidence for these is lacking. In general, a diversified subsistence pattern is indicated. Firewood and building materials came from nearby oak-hickory forests.

Molluscan analysis indicates that the inhabitants of French Lick were exploiting a wider range of aquatic habitats than the later inhabitants of East Nashville Mounds. The

Cumberland River during Mississippian times was fairly shallow, swift, and clear, with a variety of substrates ranging from sand to cobble. Based on the terrestrial gastropods, the sites were located in an area of deciduous woodland.

Analysis of faunal remains from these sites indicates that this facet of subsistence centered on the exploitation of large terrestrial game mammals, supplemented with small mammals, birds, reptiles, and fishes. The major focus of exploitation was probably centered on both forest edge/open wooded habitat and rugged upland forested areas, supplemented seasonally with the resources from riparian/aquatic habitats.

While floral, faunal, and molluscan analyses indicate exploitation of a wide variety of wild resources, in addition to cultivation of at least corn and squash, analysis of human remains indicates, for East Nashville Mounds at least, that the inhabitants were experiencing severe environmental stress. In addition to environmental/nutritional stresses, evidence of execution and scalping from East Nashville Mounds highlights additional challenges faced by the Middle Cumberland populations.

For the most part, East Nashville Mounds corresponds to what Smith (1992) says should come from a good Thruston phase (A.D. 1250-1450) site. This is supported by the radiocarbon dates which conform fairly well to the model. For French Lick, however, the case is not as clear or strong, due in part to the relatively small sample of Mississippian material, and the complete truncation of the Mississippian deposits, excluding the possible palisade line, within the Tunnel Pits 1 and 2 area. Although the French Lick radiocarbon dates do not clarify the situation to a satisfactory level of confidence, it is fairly certain that here we are dealing with a good Dowd phase (A.D. 1050-1250) component, and with a possibly less intense Thruston phase use/occupation of the site. The Dowd component at French Lick probably included the platform mound(s) and almost certainly the large posts, given the early form of the two jars recovered. It is certainly possible that as the point bar on which East Nashville Mounds sat developed into a habitable location, things around French Lick were getting rather unsuitable, and the folks simply moved across the river. There is no indication within the ceramic collections that would support a new group at East Nashville Mounds, though there are differences in the associated projectile points. While French Lick may not have been as attractive as the new ground across the river, use of the salt spring probably continued. Even with a reduced population, the lick would surely have been the focus of much activity and industry throughout the remaining prehistoric occupation--as it was indeed during the early historic period.

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Volume III
Appendices

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40DV5, Bent 5 Left, Burial 6B D.28
40DV5, Bent 5 Left, Burial 7 ..... D.29
40DV5, TP-2, Burial 1 ..... D.30
40DV5, Bent 1 Right D.31
40DV5, Bent 2 Left, Burial 1 ..... D.32
40DV5, Burial WL-1 ..... D.33
40DV4, Burial 1 ..... D.34
40DV4, Burial 2 ..... D.35
40DV4, Burial 4A D.36
40DV4, Burial 4B D.37
40DV4, Burial 4C, Fetus in 4B D.38
40DV4, Burial 5A D.39
40DV4, Burial 5B D.40
40DV4, Burial 5C D.41
40DV4, Burial 8 ..... D.42
40DV4, Burial 9 ..... D.43
40DV4, Burial 10 ..... D.44
40DV4, Burial 11A D.45
40DV4, Burial 11B D.46

APPENDIX A
CERAMIC ARTIFACT TABLES

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.1. 40DV4, Plain Ceramics from Units.

PROVENIENCE	Z	L	Bell Plain body	Bell Plain rim	Miss Plain body	Miss Plain rim	Eroded Shell body	Eroded Shell rim	TOTAL
106N87E	1	1			1				1
106N87E	1	2					7		7
106N89E	1	1			4		4		8
108N87E	1	1			141	6	36		183
108N87E	1	2			28	2	2		32
108N87E	1	4			1				2
108N89E	1	1			80	3	36	1	120
110N87E	1	2			4				4
110N87E	1	1			29	2	12		43
110N89E	1	1			83	6	35	2	126
111N100E	1	1			11		7		18
111N100E	2	1			60	4	59	3	126
111N101E	1	1			1	1	7		9
111N101E	1	2		1	11	1	26	2	41
112N87E	2	1			11	2	15		28
112N89E	1	1			22		14		36
112N89E	1	2			4		3		7
112N100E	1	1			1		3		4
113N101E	2	1	5	1	111	7	124	2	250
113N101E	2	2		2	129	5	83	2	221
115N101E	2	1			132	7	92	7	238
115N101E	2	2	1		143	5	94	4	247
115N101E	2	3			24	1	25		50
121N113E	2	1			8		40	4	52
121N113E	2	2			19		58	3	80
121N113E	2	3			7		9	1	17
123N112E	2	1	12		131	14		16	173
123N112E	2	2			386	22	242		650
123N112E	2	3			54	7	36	1	98
124N86E		1	1		9	2	19		31
124N86E	2	1			24	5	21		50
124N86E	2	2			17	2	11	1	31
124N86E	2	3			25	1	11		37
124N87E	1	1			50	2	34	1	87
124N87E	2	1			32	1	20	2	55
124N87E	2	2			6	1	18	1	26
124N88E	1	1			5		4	1	10
124N88E	2	1		1	9	2	22		34
124N87E	3	1			9		10		19
125N83E	1	1			44	5			49
125N83E	2	1	1		63	3	48	5	120
125N83E	2	2			52	4	48		104
125N83E	2	3			11		12		23
125N84E	1	1			70	9	45	1	125
125N85E	1	1	12		51	3	83	3	152
125N86E	1	1			22	5	47		74
125N86E	1	2	3		71	8	77	3	162
125N87E	1	1			16	3	31		50
125N88E	1	1			6		8		14
125N88E	2	1			27	2	24	2	55

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.1. 40DV4, Plain Ceramics from Units.

Continued

PROVENIENCE	Z	L	Bell Plain body	Bell Plain rim	Miss Plain body	Miss Plain rim	Eroded Shell body	Eroded Shell rim	TOTAL
125N88E	1	2	1		15	1	26	1	20
125N88E	2	2			35	1	19		55
125N88E	2	3			5		3	1	9
125N88E	2	4			1		1		2
125N88E	2	5			1				1
125N89E	1	1	1		2	1	16		20
125N89E	2	1	1		13	1	23		15
125N89E	2	2			6	2	34		42
125N89E	2	3	1		6	1	29		37
125N89E	2	4			11		7	1	19
125N89E	3	1			1		1		2
125N93E	1	1			9	2	61	1	73
125N93E	1	2			12		20	2	34
125N93E	2	1			29		33	4	66
125N93E	2	2			6		11		17
125N94E	1	1			21	1	43		65
125N94E	1	2			30	1	75	2	108
125N94E	2	1			35		51	3	89
125N94E	2	2			14	2	14	1	31
125N94E	2	3			3		3		6
125N95E	1	1			13	3			16
125N95E	2	1			21	1	50		72
125N95E	2	2			19		31	2	52
125N95E	2	3			12		12		24
125N96E	1	1			11	4	45	1	61
125N96E	2	1			8		20		28
125N96E	2	2			12	1	12	4	29
125N98E	1	1			18	1	34		53
125N98E	2	1			47	1	65	2	115
125N98E	2	2			28	2	67	4	101
125N98E	2	3			32	1	54	1	88
125N99E	1	1				2	12		14
125N99E	2	1			15	5	70	3	93
125N99E	2	2			8	3	28	2	41
125N99E	2	3			6	5	14		25
125N99E	2	4			8	2	25		35
125N100E	1	1		2	3		24	1	30
125N100E	1	2			3		20	2	25
125N100E	2	1			8	6	88	2	104
125N100E	2	2			6		47	3	56
125N100E	2	3			22		29	1	52
125N105E	1	1			12	3	31	2	48
125N105E	2	1			119	9	106	3	237
125N105E	2	2			83	5	127	7	222
125N106E	1	1	1		5		20	2	28
125N106E	1	2			5	1	16	1	23
125N106E	2	1			19	2	41		62
125N106E	2	2			18	1	94	8	121
125N106E	2	3			1	2	35		38
125N108E	2	3			65	2	31	6	104

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.1. 40DV4, Plain Ceramics from Units.

Continued

PROVENIENCE	Z	L	Bell Plain body	Bell Plain rim	Miss Plain body	Miss Plain rim	Eroded Shell body	Eroded Shell rim	TOTAL
126N84E	1	1	1	2	9	3	26		41
126N85E	1	1			58	6	81		145
126N85E	2	1			158	13	242	15	428
126N85E	2	2			94	7	55	1	157
126N85E	2	3			85	4	54	1	144
126N86E	1	1	2		48	3	89	4	146
126N87E	1	1			25		20	6	51
126N87E	2	1			161	11	210	5	387
126N87E	2	2			122	5	136	7	270
126N87E	2	3			19	1	21	1	42
126N87E	2	4			6		6		12
126N88E	1	1			3		10		13
126N88E	1	2			14	5	39	2	60
126N88E	2	1			31	1	63		95
126N88E	2	3			38	2	25	5	70
126N88E	2	4			9	1	7		17
126N98E	2	1			20	5	39		64
127N84E	1	1			2	1			3
127N86E	1	1			14		12	4	30
127N86E	2	1			15	2	18	1	36
127N86E	2	2			17	4	21	2	44
127N86E	2	3			6		4		10
128N85E	1	1	4	1	15	7	60	3	90
128N85E	1	2		2	57	2	82		143
128N85E	2	1			137	5	86	12	240
128N85E	2	2			197	12	198	8	415
128N88E	2	1	1		80	4	68	8	161
128N88E	2	2			122	11	125	8	266
128N88E	2	3			154	9	94	5	262
128N88E	2	4			21	2	23		46
128N88E	2	5			3			1	4
130N82E	2	1			139	10			149
130N89E	1	1			7		29		36
130N89E	1	2	1		21	3	46	4	75
130N89E	2	1			26	6	114	1	147
130N89E	2	2			23	4	48	2	77
130N89E	2	3			1			1	2
132N85E	1	1		1	60	2	43	1	107
132N85E	2	1			233	19	189	6	447
132N85E	2	2			100	8	88	3	199
133N80E	2	1			69	7	78	3	157
133N80E	2	2			98	8	57	7	170
133N80E	2	3			56	2	45	5	108
133N80E	2	3			5		10	2	17
133N82E	1	1			11	2	11		24
133N82E	1	2			13	1	32		46
133N82E	2	2			23	8	26		57
133N82E	2	3			91	6	35		132
133N82E	2	4			21	1	18		40
134N79E	2	1	1		339	25	193	15	573

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.1. 40DV4, Plain Ceramics from Units.

Continued

PROVENIENCE	Z	L	Bell Plain body	Bell Plain rim	Miss Plain body	Miss Plain rim	Eroded Shell body	Eroded Shell rim	TOTAL
134N79E	2	2	2			29	432	11	474
134N79E	2	3	4	1	137	13	162	6	323
134N80E	1	1	1		30	4	42	1	78
134N80E	1	2			26	4	19		49
134N80E	2	1			104	7	79		190
134N80E	2	2			109	3	111	9	232
134N80E	2	4			9		20		29
135N80E	1	1			19	4	15	1	39
135N80E	1	2			84	5	65	7	161
135N80E	2	1			100	7	57		164
135N80E	2	2			107	10	149	2	268
135N80E	2	3			35	2	37	1	75
136N79E	1	1			169	9	117	2	297
136N79E	2	1			135	13	173	6	327
136N79E	2	2			264	20	298	15	597
136N79E	2	3			484	38	367	18	907
136N79E	2	3			318	26	204	13	561
136N80E	1	1			11		9		20
136N80E	1	2			112	6	70	4	192
136N80E	2	1			57	8	136	4	205
136N80E	2	2			73	11	75	3	162
136N80E	2	3			16	1	33	1	51
136N82E	1	2			79	5	113	3	200
136N82E	2	1			135	19	222	14	390
136N82E	2	2			371	29	374	8	782
136N82E	2	3			312	23	375	13	723
136N82E	2	4			49	2	103	8	162
136N85E	1	1			68	15	55	1	139
137N80E	1	1			19		12		31
137N80E	1	2			45	3	43	2	93
137N80E	1	3	1		67	7	49	5	129
137N80E	2	1			65	3	54		122
137N80E	2	2			87	10	100	10	207
137N83E	1	1			7	1	6	2	16
137N83E	2	1			32		38	3	73
137N83E	2	2			39	4	31	4	78
137N83E	2	3			25	3	18	3	49
137N83E	2	4			7	1	6		14
138N79E	1	2			138	8	209	17	372
138N79E	2	1			253	16	371	7	647
138N79E	2	2			358	31	329	15	733
138N80E	1	1			15	2	9		26
138N80E	1	2			29	1	29	2	61
138N80E	2	1			66	7	72	4	149
138N80E	2	2			108	11	168	6	293
138N80E	2	3			16	1	5		22
138N82E	1	1			48	2	108	4	162
138N82E	2	1			168	10	93	4	275
138N82E	2	2			210	17	276	9	512
138N82E	2	3			196	21	249	15	481

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.1. 40DV4, Plain Ceramics from Units.

Continued

PROVENIENCE	Z	L	Bell Plain body	Bell Plain rim	Miss Plain body	Miss Plain rim	Eroded Shell body	Eroded Shell rim	TOTAL
138N82E	2	4			92		35	1	128
138N83E	2	1			3		11		14
138N83E	2	2			49	3	54	5	111
138N83E	2	3			37	1	20	1	59
139N80E	1	1			8	2	20		30
139N80E	2	1			11	1	34		46
139N80E	2	1			36	2	32	2	72
139N80E	2	2			48	4	79	1	132
139N80E	2	3			15		6		21
139N80E	3	1			1	2			3
139N88E	1	1			9		11		20
139N88E	2	1			83	11	68	4	166
139N88E	2	2	1		66	4	22	6	99
139N88E	2	3			56	4	69	4	133
139N88E	2	4			14	1	26		41
139N89E	1	1	1		12	1	17		31
139N89E	2	1			15		26		41
139N89E	1	2			38	1	33	2	74
139N89E	3	2			1				1
139N89E	2	2			21	3	34		58
139N89E	2	3			48	7	67		122
139N89E	2	4			35	7	45	5	92
139N89E	3	1			11	1	25		37
139N90E	1	1			2		2		4
139N90E	1	2			5		6		11
139N90E	2	1			11	1	2		14
139N90E	2	2			7		4		11
139N90E	2	3			5	1	7		13
139N90E	2	4			2		14		16
139N91E		1			6	3	16		25
140N80E	1	1			18	2	29		49
140N80E	2	1			38	2	28	1	69
140N80E	2	2			36	7	54		97
140N80E	2	3			49	3	59	1	112
140N82E	1	1			45	2	52		99
140N82E	2	1			86	5	127	7	225
140N82E	2	2			145	9	159	9	322
140N82E	2	3			140	8	123	5	276
140N82E	2	4			9		9		18
140N82E	3	1			48	5	56	1	110
140N88E	1	2			32		58	1	91
139N88E	1	2			52	6	61	7	126
140N88E	2	1			67	5	68	3	143
140N88E	2	2			102	10	53		165
140N88E	2	3			48	5	87	7	147
140N88E	2	4			33	4	60		97
140N88E	3	1			21	2	16		39
140N88E	3	2			2				2
140N89E	1	1			3	1	3		7
140N89E	1	2			4		11	1	16

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.1. 40DV4, Plain Ceramics from Units.

Continued

PROVENIENCE	Z	L	Bell Plain body	Bell Plain rim	Miss Plain body	Miss Plain rim	Eroded Shell body	Eroded Shell rim	TOTAL
140N89E	1	3		1	9		10		20
140N89E	2	1			8	2	12	1	23
140N89E	2	2			21	1	6	1	29
140N89E	2	3	1		11	2	7		22
140N89E	2	4			3		6	4	13
140N89E	3	2	2		16		7		25
140N118E	2	1			104	2	63	3	172
140N118E	2	2	8		222	18	418	8	674
140N118E	2	3			374	30	456	15	875
141N77E	1	1			26		29		55
141N77E	2	1			136	9	131	9	285
141N77E	2	2			94	9	105	4	212
141N79E	1	1			195	12	220	11	438
141N79E	2	1	2		735	67	559	17	1380
141N79E	2	2			434	18	212	10	674
141N80E	1	1			11		14	1	26
141N80E	2	1			34	3	21		58
141N80E	2	2			41	4	20		65
141N80E	2	3			26	1	16		43
142N80E	2	1			44	3	29		76
143N75E	2	1			69	6	78	5	158
143N77E	2	1			237	29	277	15	558
143N77E	2	2			467	22	230	12	731
143N79E	1	1			96	16	167	10	289
143N79E	1	2			167	17	218	13	415
143N79E	2	1			196	24	156	3	379
143N79E	2	2			185	13	170	6	374
143N79E	2	3			65	13	84	1	163
143N80E	1	1			28	1	36	2	67
143N80E	2	1			23	2	68		93
143N80E	2	2			108	2	61	5	176
143N80E	2	3			5	2	11	1	19
143N82E	1	1			96	3	44	5	148
143N82E	2	1			202	18	100	11	331
143N82E	2	2			242	14	149	7	412
143N82E	2	3			140	12	115		267
144N80E	1	1			36	1	54		91
144N80E	2	1			44	4	88	2	138
144N80E	2	2			125	16	76	2	219
144N80E	2	3			25	7	11	2	45
145N75E	2	1			110	7	203	8	328
145N75E	2	2			64	5	85	10	164
145N75E	2	3			31	3			34
145N77E	1	1	1		256	37	395	11	700
145N77E	2	1			227	16	322	18	583
145N77E	2	2			376	21	279	4	680
145N77E	2	3			19	3	16	2	40
145N79E	1	1				18	78	3	99
145N79E	2	1			256	27	293	17	593
145N79E	1	2	1		144	20	238	8	411

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.1. 40DV4, Plain Ceramics from Units.

Continued

PROVENIENCE	Z	L	Bell Plain body	Bell Plain rim	Miss Plain body	Miss Plain rim	Eroded Shell body	Eroded Shell rim	TOTAL
145N79E	2	2			208	27	112	6	353
145N79E	1	3			63	4	31	2	100
145N79E	2	3			25	3	22	3	53
145N80E	1	1			45	7	81	1	134
145N80E	1	2			82	11	85		178
145N80E	1	3			108	7	136	6	257
145N80E	2	1			26	1	23		50
145N82E	1	1			125	15	120	3	263
145N82E	1	2			116	10	150	4	280
145N82E	2	2			356	25	220	11	612
145N82E	2	3			320	28	283		631
145N82E	2	4			83	7	114	7	211
145N82E	2	5			25	2	24	2	53
145N85E	1	1			37	3	41	2	83
TOTAL			75	15	21551	1784	22326	941	46692

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.2. 40DV4, Decorated Shell Tempered Ceramics from Units.

Provenience	Z	L	Matthews Incised var. *Matthews A* body	Matthews Incised var. *Matthews A* rim	Matthews Incised var. *Matthews B* body	Matthews Incised var. *Matthews B* rim	Matthews Incised var. *Matthews C* body	Matthews Incised var. *Matthews C* rim	Matthews Incised var. *Matthews* body	Matthews Incised var. *Matthews* rim	Matthews Incised var. *Beckwith* body	Matthews Incised var. *Beckwith* rim	Matthews Incised var. *Manly A* body	Matthews Incised var. *Manly B* body	Matthews Incised var. *Manly* body	Coarse Shell Incised body	Coarse Shell Incised rim	Coarse Shell Cord Marked body	Coarse Shell Punctate/ Incised body	Coarse Shell Punctate body	Coarse Shell Campbell Applique rim	Coarse Shell Comp. Stamped body	Coarse Shell Comp. Stamped rim	Coarse Shell Excised body	Coarse Shell Painted, Red body	Eroded Applique body	Fine Shell Incised body	Fine Shell Punctate body	Fine Shell Engraved rim	Gallosh Incised body	Mound Place Incised var. *Chickasawba* body	Mound Place Incised var. *Chickasawba* rim	O'Byam Engraved var. *Unspecified* body	TOTAL
108N87E	1	1																2																2
108N87E	1	2													1																			1
111N100E	2	1			1										1																			2
113N101E	2	1				1																												1
113N101E	2	2					1																											1
115N101E	2	2	1																															1
123N112E	2	1														2																		2
123N112E	2	2													1																			2
124N87E	1	1												1																				1
124N88E	1	1																										1						1
125N100E	2	1									1																							1
125N83E	1	1													1																			1
125N83E	2	1																2																2
125N83E	2	2			1													2																3
125N84E	1	1														1																		1
125N85E	1	1														1																		1
125N86E	1	2									1																		1						2
125N93E	2	1	1																																1
125N93E	2	2														1																			1
125N94E	2	1													1																				1
125N95E	1	1					1																												1
125N95E	2	1														1																			1
125N95E	2	2	1	1																															2
125N96E	1	1																	1																1
125N105E	2	1														1											1								2
125N105E	2	2																1		1															2
126N85E	1	1					1										1																		2
126N85E	2	1					1										1			1															3
126N85E	2	2														1																			1
126N85E	2	3	1																																1
126N86E	1	1	1													1																			2
126N87E	2	1						2																											2
126N87E	2	2			1																														1
126N88E	2	4	1																																1
126N98E	2	1														1																			1
128N85E	1	2						1																											1
128N85E	2	2													1	1																			2
128N88E	2	1									1																								1
128N88E	2	3					1																												1
128N88E	2	4					1																												1
132N85E	2	1										1								1															2
132N85E	2	2														2				1															3
133N80E	2	2					1							1																					2
133N80E	2	3												1																					1
134N79E	2	1							1											1															2
134N79E	2	3														1																			1
136N79E	1	1										1																							1
136N79E	2	1											1																						1
136N79E	2	2															1																		1
136N79E	2	3												2																					2
136N80E	1	2							1							1																			2
136N80E	2	2														1																			1
136N82E	1	2														1																			1
136N82E	2	1														1																			1
136N82E	2	2														3				2															5
136N82E	2	3																					2												18
136N82E	2	4														1																			1
137N80E	1	3												1																					1
137N80E	2	2	1																																1
137N83E	2	4	1																																1

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.2. 40DV4, Decorated Shell Tempered Ceramics from Units.

Continued

Provenience	Z	L	Matthews Incised var. *Matthews A* body	Matthews Incised var. *Matthews A* rim	Matthews Incised var. *Matthews B* body	Matthews Incised var. *Matthews B* rim	Matthews Incised var. *Matthews C* body	Matthews Incised var. *Matthews C* rim	Matthews Incised var. *Matthews* body	Matthews Incised var. *Matthews* rim	Matthews Incised var. *Beckwith* body	Matthews Incised var. *Beckwith* rim	Matthews Incised var. *Manly A* body	Matthews Incised var. *Manly B* body	Matthews Incised var. *Manly* body	Coarse Shell Incised body	Coarse Shell Incised rim	Coarse Shell Cord Marked body	Coarse Shell Punctate/ Incised body	Coarse Shell Punctate body	Coarse Shell Campbell Applique rim	Coarse Shell Comp. Stamped body	Coarse Shell Comp. Stamped rim	Coarse Shell Excised body	Coarse Shell Painted, Red body	Eroded Applique body	Fine Shell Incised body	Fine Shell Punctate body	Fine Shell Engraved rim	Gallosh Incised body	Mound Place Incised var. *Chickasawba* body	Mound Place Incised var. *Chickasawba* rim	O'Byam Engraved var. *Unspecified* body	TOTAL
138N79E	1	2							2																									2
138N79E	2	1							1																									1
138N79E	2	2														1																2		3
138N80E	1	2														1																		1
138N82E	1	1																		1														1
138N82E	2	1							1	1						1																		3
138N82E	2	2	1				2									1																		4
138N82E	2	3														2																		2
138N83E	2	3														1																		1
139N80E	2	1	1		1											2				1														5
139N89E	2	1														1																		1
139N90E	1	1														1																		1
139N91E		1														1																		1
140N80E	2	1	1																															1
140N88E	2	1					1																											1
140N88E	2	2					1																											1
140N88E	2	3														2																		2
140N89E	2	2																			1													1
140N118E	2	3																															1	1
141N77E	2	1														1																		1
141N79E	2	1																												1				1
141N79E	2	2																														1		1
143N77E	2	1					1							1		1																		3
143N77E	2	2					1																											1
143N79E	2	1																							1	1								2
143N79E	2	2														1																		1
143N79E	2	3							2																									2
143N80E	1	1														1																		1
143N82E	2	2			1																													1
143N82E	2	3				1																												1
144N80E	2	3														1																		1
145N77E	1	1	1		1									1																				3
145N77E	2	1													1																				1
145N77E	2	2			1		1																1											3
145N80E	1	2	1																															1
145N82E	2	2	1													3																		4
TOTAL			14	1	7	2	14	3	8	1	3	2	1	8	7	44	3	7	1	9	1	2	1	1	1	1	1	1	1	1	1	2	1	150

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.3. 40DV4, Kimmswick Fabric Impressed Ceramics from Units.

			Kimms. Fl _ivar. A_, body	Kimms. Fl _ivar. A_, rim	Kimms. Fl _ivar. B_, body	Kimms. Fl _ivar. B_, rim	Kimms. Fl _ivar. C_, body	Kimms. Fl _ivar. C_, rim	Kimms. Fl _ivar. D_, body	Kimms. Fl Base and Side	Kimms. Plain, body	Kimms. Plain, rim	Eroded Salt Pan, body	Eroded Salt Pan, rim	Coarse Shell Fl, body	Fine Shell Fl, body	TOTAL
PROVENIENCE	**Z**	**L**															
108N87E	1	1	1			1	2	1				3	17				25
108N87E	1	2	1														1
108N89E	1	1	3		1							2	5				11
110N87E	1	1	1										3				4
110N89E	1	1	13	1									4				18
111N100E	2	1	3														3
111N101E	1	2	1		1												2
112N87E	2	1	2										2				4
112N89E	1	1					2										2
112N89E	1	2			1												1
113N101E	2	1	9						1								10
113N101E	2	2	4	1									1				6
115N101E	2	1	3				1						17				21
115N101E	2	2	3		2							3	18				26
121N113E	2	2	1								1		13	1			16
123N112E	2	1	1										1				2
123N112E	2	2	2	2	1							1	26				32
123N112E	2	3	3														3
124N86E	2	2	2	1							1		1	1			6
124N87E	1	1			1						1		11	2			15
124N87E	2	2											1				1
124N87E	3	1											1				1
124N88E	1	1											2				2
124N88E	2	1			1								8				9
125N83E	1	1											2	1	1		4
125N83E	2	1											5				5
125N83E	2	2	2										1				3
125N84E	1	1	2										4				6
125N85E	1	1			1								2				3
125N86E	1	1											4				4

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.3. 40DV4, Kimmswick Fabric Impressed Ceramics from Units.

Continued

			Kimms. Fl _ivar. A_, body	Kimms. Fl _ivar. A_, rim	Kimms. Fl _ivar. B_, body	Kimms. Fl _ivar. B_, rim	Kimms. Fl _ivar. C_, body	Kimms. Fl _ivar. C_, rim	Kimms. Fl _ivar. D_, body	Kimms. Fl Base and Side	Kimms. Plain, body	Kimms. Plain, rim	Eroded Salt Pan, body	Eroded Salt Pan, rim	Coarse Shell Fl, body	Fine Shell Fl, body	TOTAL
PROVENIENCE	**Z**	**L**															
125N86E	1	2			2								2	1			5
125N87E	1	1					2						1				3
125N88E	1	2	1														1
125N88E	2	1	5	1			2						8				16
125N88E	2	2	2				2										4
125N89E	1	1											1				1
125N89E	2	1	2	2									1				5
125N89E	2	2	1		1												2
125N89E	2	3	1										1				2
125N89E	2	4											1	1			2
125N93E	2	1											5				5
125N93E	2	2											4				4
125N94E	2	1											4				4
125N95E	2	1			1								5			1	7
125N95E	2	2	1														1
125N95E	2	3	2	1	1												4
125N96E	1	1														1	1
125N96E	2	1	1										3				4
125N98E	2	1	1		1								1				3
125N98E	2	3			3								1	1			5
125N99E	2	1			1												1
125N99E	2	2	1														1
125N99E	2	3	1														1
125N99E	2	4											7	2			9
125N100E	2	1											1				1
125N100E	2	2			1												1
125N105E	1	1											1				1
125N105E	2	1												1			1
125N105E	2	2		1									6	1			8
125N106E	1	1			1												1

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.3. 40DV4, Kimmswick Fabric Impressed Ceramics from Units.

Continued

			Kimms. Fl	Kimms. Fl	Kimms. Fl	Kimms. Fl	Kimms. Fl	Kimms. Fl	Kimms. Fl	Kimms. Fl	Kimms.	Kimms.	Eroded	Eroded	Coarse	Fine	
			ivar. A,	_ivar. A_,	_ivar. B_,	_ivar. B_,	_ivar. C_,	_ivar. C_,	_ivar. D_,	Base and	Plain,	Plain,	Salt Pan,	Salt Pan,	Shell Fl,	Shell Fl,	
			body	rim	body	rim	body	rim	body	Side	body	rim	body	rim	body	body	TOTAL
PROVENIENCE	**Z**	**L**															
125N106E	1	2											1				1
125N106E	2	1											1				1
125N106E	2	2											1				1
125N108E	2	3											8	1			9
126N85E	1	1											15	1			16
126N85E	2	1											5	4			9
126N85E	2	2	9										4				13
126N85E	2	3	1			1	1						1	1			5
126N86E	1	1											4				4
126N87E	1	1			6								1				7
126N87E	2	1	6				3	1									10
126N87E	2	2	3		10								26				39
126N87E	2	3	3										2				5
126N87E	2	4		1													1
126N88E	1	2			1								3				4
126N88E	2	1			1		1						1	2			5
126N88E	2	3			2								5				7
126N98E	2	1											4				4
127N86E	2	1											1				1
127N86E	2	2					1										1
128N85E	1	1			1												1
128N85E	1	2	2					1					16	3			22
128N85E	2	1			1								6				7
128N85E	2	2	5										10	1			16
128N88E	2	1	2										2				4
128N88E	2	2	4					3					21				28
128N88E	2	3			2					1			4				7
130N82E	2	1											3				3
130N89E	2	1	5					1						1			7
130N89E	2	2	6														6

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.3. 40DV4, Kimmswick Fabric Impressed Ceramics from Units.

Continued

PROVENIENCE	Z	L	Kimms. Fl _ivar. A_, body	Kimms. Fl _ivar. A_, rim	Kimms. Fl _ivar. B_, body	Kimms. Fl _ivar. B_, rim	Kimms. Fl _ivar. C_, body	Kimms. Fl _ivar. C_, rim	Kimms. Fl _ivar. D_, body	Kimms. Fl Base and Side	Kimms. Plain, body	Kimms. Plain, rim	Eroded Salt Pan, body	Eroded Salt Pan, rim	Coarse Shell Fl, body	Fine Shell Fl, body	TOTAL
132N85E	2	1	2		4			1					2				9
132N85E	2	2	1	1			1						7				10
133N80E	2	1	1				1										2
133N80E	2	2											2				2
133N80E	2	3	1		1								1				3
133N82E	2	2	1										11				12
133N82E	2	3	2														2
134N79E	2	1	11	1					2				65				79
134N79E	2	2	16										59				75
134N79E	2	3	5										7				12
134N80E	1	1											2				2
134N80E	2	1		1	2						1		3	1			8
134N80E	2	2	1		2								9				12
135N80E	1	2	1										3				4
135N80E	2	1	1										7				8
135N80E	2	2											8				8
136N79E	1	1	1								1		2				4
136N79E	2	1	1	1									8	2			12
136N79E	2	2	5		5	1							5				16
136N79E	2	3	7		13	1							29	3			53
136N80E	1	2	2										2				4
136N80E	2	1	4										2				6
136N80E	2	2	3										4				7
136N80E	2	3											1	1			2
136N82E	1	2	5														5
136N82E	2	1	1										15				16
136N82E	2	2	10	1									27				38
136N82E	2	3	15										17				32
136N82E	2	4	3		4												7
137N80E	1	2			1												1

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.3. 40DV4, Kimmswick Fabric Impressed Ceramics from Units.

Continued

PROVENIENCE	Z	L	Kimms. Fl _ivar. A_, body	Kimms. Fl _ivar. A_, rim	Kimms. Fl _ivar. B_, body	Kimms. Fl _ivar. B_, rim	Kimms. Fl _ivar. C_, body	Kimms. Fl _ivar. C_, rim	Kimms. Fl _ivar. D_, body	Kimms. Fl Base and Side	Kimms. Plain, body	Kimms. Plain, rim	Eroded Salt Pan, body	Eroded Salt Pan, rim	Coarse Shell Fl, body	Fine Shell Fl, body	TOTAL
137N80E	2	1			1								6	1			8
137N80E	2	2	3										3				6
137N83E	2	3											2				2
137N83E	2	4	1														1
138N79E	1	2			3								11	1			15
138N79E	2	1	1	2	1								15				19
138N79E	2	2	4	2	1								14	1			22
138N80E	2	1											5				5
138N80E	2	2	1	1	1								5				8
138N82E	2	2	5		5								3				13
138N82E	2	3	7	1					1				8				17
138N82E	2	4	1										9				10
138N83E	2	2	1								1		4				6
138N83E	2	3	2										4				6
139N80E	2	1	1														1
139N80E	2	2			1												1
139N80E	2	3			1												1
139N88E	2	2	3	1	2								2	1			9
139N88E	1	3			1												1
139N88E	2	1	1	2									15				18
139N88E	2	3	2	1									2				5
139N89E	1	1	1														1
139N89E	2	1											1				1
139N89E	2	2	2	1					1				5				9
139N89E	2	3	4	2													6
139N89E	2	4											3				3
139N89E	3	1											3	2			5
139N90E	2	3	2		1												3
140N80E	2	1											2	1			3
140N80E	2	2											1	1			2

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.3. 40DV4, Kimmswick Fabric Impressed Ceramics from Units.

Continued

			Kimms. Fl _ivar. A_, body	Kimms. Fl _ivar. A_, rim	Kimms. Fl _ivar. B_, body	Kimms. Fl _ivar. B_, rim	Kimms. Fl _ivar. C_, body	Kimms. Fl _ivar. C_, rim	Kimms. Fl _ivar. D_, body	Kimms. Fl Base and Side	Kimms. Plain, body	Kimms. Plain, rim	Eroded Salt Pan, body	Eroded Salt Pan, rim	Coarse Shell Fl, body	Fine Shell Fl, body	
PROVENIENCE	**Z**	**L**															**TOTAL**
140N80E	3	2											1				1
140N82E	2	2											28				28
140N82E	2	3											4				4
140N82E	3	1											14				14
140N88E	2	1	1										6	3			10
140N88E	2	2			2		2						22				26
140N88E	2	3	1		1								10				12
140N88E	2	4	2										1				3
140N88E	3	1	2														2
140N89E	1	1			1												1
140N89E	1	3											5				5
140N89E	2	1											1				1
140N89E	2	2	4										2				6
140N89E	2	3											6				6
140N89E	2	4	2											1			3
140N89E	3	2											1				1
140N118E	2	1	1										1				2
140N118E	2	2	4		3								27	3			37
140N118E	2	3	9	2									19				30
141N77E	2	1											2				2
141N77E	2	2			2	1							2				5
141N79E	1	1	1	1									8				10
141N79E	2	1	11	1									25				37
141N79E	2	2	14										18				32
141N80E	2	2											3				3
141N80E	2	3			1												1
142N80E	2	1											1				1
143N75E	2	1	2										7				9
143N77E	2	1	1		3	2							6				12
143N77E	2	2	6	2	11	1							98				118

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.3. 40DV4, Kimmswick Fabric Impressed Ceramics from Units.

Continued

			Kimms. Fl	Kimms. Fl	Kimms. Fl	Kimms. Fl	Kimms. Fl	Kimms. Fl	Kimms. Fl	Kimms. Fl	Kimms.	Kimms.	Eroded	Eroded	Coarse	Fine	
			ivar. A,	_ivar. A_,	_ivar. B_,	_ivar. B_,	_ivar. C_,	_ivar. C_,	_ivar. D_,	Base and	Plain,	Plain,	Salt Pan,	Salt Pan,	Shell Fl,	Shell Fl,	
			body	rim	body	rim	body	rim	body	Side	body	rim	body	rim	body	body	TOTAL
PROVENIENCE	**Z**	**L**															
143N79E	1	1	1		3									1			5
143N79E	1	2	3		1												4
143N79E	2	1											10				10
143N79E	2	2	1		3								3				7
143N79E	2	3	1										3	2			6
143N80E	2	1			1								1				2
143N80E	2	2	1		1												2
144N80E	2	1			1								3	2			6
144N80E	2	2	1		3								2				6
144N80E	2	3	4										10				14
143N82E	2	1	1		6									6			13
143N82E	2	2	3	2	4	2		2					14				27
143N82E	2	3	2	1	2												5
145N75E	2	1	5										18				23
145N75E	2	2	1										12				13
145N75E	2	3	2										8				10
145N77E	1	1	5			1											6
145N77E	2	1	8		1												9
145N77E	2	2	19		13	2							13				47
145N77E	2	3											2				2
145N79E	2	1	4										10				14
145N79E	2	2	8		4								9				21
145N80E	1	1			1								8				9
145N80E	1	2	3	1	2												6
145N80E	1	3											7	2			9
145N80E	2	3	4	1	4												9
145N80E	2	1			2												2
145N82E	1	2			1												1
145N82E	2	1	1		1								3				5
145N82E	2	2	2	2	3								11				18

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.3. 40DV4, Kimmswick Fabric Impressed Ceramics from Units.

Continued

			Kimms. Fl _ivar. A_, body	Kimms. Fl _ivar. A_, rim	Kimms. Fl _ivar. B_, body	Kimms. Fl _ivar. B_, rim	Kimms. Fl _ivar. C_, body	Kimms. Fl _ivar. C_, rim	Kimms. Fl _ivar. D_, body	Kimms. Fl Base and Side	Kimms. Plain, body	Kimms. Plain, rim	Eroded Salt Pan, body	Eroded Salt Pan, rim	Coarse Shell Fl, body	Fine Shell Fl, body	TOTAL
PROVENIENCE	**Z**	**L**															
145N82E	2	3	6		3	1	4										14
145N82E	2	4	1	2	8												11
145N82E	2	5	1														1
TOTAL			413	44	187	14	25	10	5	1	6	9	1233	61	1	2	**2011**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.4. 40DV4, Effigies, Earplugs, etc. from Units.

PROVENIENCE	Z	L	Coarse Shell Bead frag.	Coarse Shell Earplug	Fine Shell Earplug	Earplug unid.	Kimms. Fl _ivar. B_ disc	Coarse Shell Disc	Coarse Shell Adorno	Coarse Shell Effigy frag.	Coarse Shell Effigy Leg/arm	Coarse Shell Human Effigy Humpback	Coarse Shell Punctate Effigy nose	Coarse Shell Face Effigy	Coarse Shell Full Body Effigy	Coarse Shell Animal Ear Effigy	Coarse Shell Mammal Head Effigy	Coarse Shell Birdhead Effigy	Fine Shell Effigy Bowl frag.	Coarse Shell Pottery Trowel	Fine Shell Adorno/ Figurine	Fine Shell Effigy Frag.	Fine Shell Owlhead Effigy	Ceramic Human Figurine head/ torso	Fig/ Adorned Head Owl or Human	Full Figure Effigy frag.	Coarse Shell Tabular piece	Coarse Shell Paired Drilled Suspen. Holes	Coarse Shell Sphere	Miss Plain Spout	Miss Plain Hooded Water Bottle frag.	Miss Plain Base	TOTAL
108N87E	1	1						1		1																							2
110N89E	1	1				1																											1
111N100E	2	1				1																											1
115N101E	2	2																							1								1
125N84E	1	1		1															1														2
125N86E	1	2						1													1											1	3
125N87E	1	1							1																								1
125N89E	2	2																								1							1
125N94E	1	2			1																												1
125N94E	2	1		1																													1
125N96E	1	1						1																									1
126N85E	2	1	1																														1
126N86E	1	1		1																													1
126N87E	2	1													1																		1
126N88E	1	2																														2	2
127N86E	2	1				1													1														2
128N85E	2	1																				4											4
128N85E	2	2								1																							1
128N88E	2	1																1															1
128N88E	2	2																						1									1
132N85E	2	1						1			1																						2
134N79E	2	1						1								1																	2
134N79E	2	2						1		2																						2	5
135N80E	2	1								1																							1
136N79E	2	1								1																							1
136N79E	2	2					1												1														2
136N79E	2	3						1		1													1										3
136N80E	2	1		1																													1
136N80E	2	2																	1														1
136N80E	2	3																	1														1
136N82E	1	1								1																							1
136N82E	2	2		1				2		1						1					1										1		7
136N82E	2	3		1				1		1									1														4
138N79E	1	2																														1	1
138N79E	2	1		1				2						1			1																5
138N79E	2	2								2																							2
138N80E	2	2								2										1													3

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.4. 40DV4, Effigies, Earplugs, etc. from Units.

Continued

PROVENIENCE	Z	L	Coarse Shell Bead frag.	Coarse Shell Earplug	Fine Shell Earplug	Earplug unid.	Kimms. Fl _Ivar. B_ disc	Coarse Shell Disc	Coarse Shell Adorno	Coarse Shell Effigy frag.	Coarse Shell Effigy Leg/arm	Coarse Shell Human Effigy Humpback	Coarse Shell Punctate Effigy nose	Coarse Shell Face Effigy	Coarse Shell Full Body Effigy	Coarse Shell Animal Ear Effigy	Coarse Shell Mammal Head Effigy	Coarse Shell Birdhead Effigy	Fine Shell Effigy Bowl frag.	Coarse Shell Pottery Trowel	Fine Shell Adorno/ Figurine	Fine Shell Effigy Frag.	Fine Shell Owlhead Effigy	Ceramic Human Figurine head/ torso	Fig/ Adorned Head Owl or Human	Full Figure Effigy frag.	Coarse Shell Tabular piece	Coarse Shell Paired Drilled Suspen. Holes	Coarse Shell Sphere	Miss Plain Spout	Miss Plain Hooded Water Bottle frag.	Miss Plain Base	TOTAL
138N82E	1	1								1																							1
138N82E	2	1								2																							2
138N82E	2	3																													1		1
139N80E	2	2								3																							3
139N88E	2	1		1																													1
139N88E	2	3								1																							1
140N80E	1	1						1																									1
140N80E	2	2						1																									1
140N88E	2	1								1																							1
140N88E	2	3						1																									1
140N88E	2	4						1																									1
140N89E	2	3										1																					1
140N118E	2	1								1																							1
140N118E	2	3						1		2																							3
141N77E	2	1								1																							1
141N79E	2	1						2		1			1																				4
141N79E	2	2								1																						3	4
143N77E	2	1						2																									2
143N77E	2	2						1																									1
143N79E	1	1								2																							2
143N79E	2	1						1							1																		2
143N79E	2	2						1		1		1																					3
143N80E	2	2								1																							1
143N82E	2	1						1																									1
144N80E	2	3															1										1						2
145N75E	2	1																											1				1
145N77E	1	1						2																									2
145N77E	2	2						3																									3
145N79E	1	2						2										1															3
145N79E	1	3						1																									1
145N79E	2	1						1																									1
145N82E	2	2						1			1																						2
145N82E	2	3						1																									1
145N82E	2	4																										1					1
TOTAL			1	8	1	3	1	36	1	32	2	2	1	1	2	2	2	2	6	1	2	4	1	1	1	1	1	1	1	1	3	7	128

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.5. 40DV4, Miscellaneous Ceramics from Units.

			Nonlocal Bell Plain	Chert Cord Marked body	Coarse Sand Plain	Coarse Sand/Grit Plain	Eroded Fine Shell, body	Grit Plain body	Grit Plain rim	Grog Plain body	Limestone Stamped, body	Mulberry Creek Plain, body	Sand Plain body	Grit Curvilinear Stamped, body	
															TOTAL
PROVENIENCE	**Z**	**L**													
111N101E	1	1		1											1
115N101E	2	2								1		1			2
125N98E	2	2											1		1
126N87E	2	4									1				1
126N86E	1	1			1										1
127N86E	2	3	1												1
128N88E	2	1	1												1
132N85E	2	1												40	40
132N85E	2	2												5	5
133N82E	1	2								1		1			2
136N79E	2	3											1		1
136N85E	1	1										1			1
138N83E	2	1								1					1
139N80E	2	2				1									1
125N106E	2	3					1								1
140N80E	1	1							1						1
140N80E	2	2						2							2
145N79E	2	3											1		1
TOTAL			2	1	1	1	1	2	1	3	1	3	3	45	64

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.6. 40DV4, Rims, Handles, and Lugs from Units.

PROVENIENCE	Z	L	Bell Plain Beaded rim	Bell Plain Peaked rim	Eroded Fine Shell Notched rim	Miss Plain Beaded rim	Miss Plain Folded rim	Miss Plain Notched rim	Miss Plain Noded rim	Miss Plain Peaked rim	Miss Plain Punctated rim	Miss Plain Scalloped rim	Miss Plain Handle	Miss Plain Strap Handle	Miss Plain Lug	Miss Plain Bifurcate Lug	Miss Plain Double Lug	Miss Plain Rim Rider	TOTAL
110N87E	1	1													1	1			2
112N87E	2	1														1			1
113N101E	2	1													1				1
115N101E	2	1							1				3						4
115N101E	2	2												1	2				3
123N112E	2	1							1					2	2				5
123N112E	2	2				2			1			1		2	3				9
123N112E	2	3													3				3
124N87E	1	1							1						2				3
124N87E	2	1													2				2
125N83E	2	2						1						1					2
125N88E	2	1																1	1
125N89E	2	1												1					1
125N89E	2	2													1				1
125N89E	2	4												1					1
125N98E	2	1													1				1
125N98E	2	2												1	1			1	3
126N85E	2	1													2		1		3
125N100E	2	2													1				1
125N106E	1	1				1													1
125N106E	2	1			1									1					2
125N106E	2	2				1													1
125N108E	2	3	1			1										1			3
126N85E	1	1											1						1
126N85E	2	2													1				1
126N85E	2	3													1				1
126N86E	1	1												1	3				4
126N87E	2	1													2				2
126N87E	2	2													2				2
126N88E	2	4													1				1
126N98E	2	1													1				1
127N86E	1	1											1						1
128N85E	1	2												1					1
128N85E	2	1												2	1				3
128N85E	2	2													1				1
128N88E	2	1						1											1
128N88E	2	2													1				1
128N88E	2	3													3				3
125N99E	1	1							2										2
133N82E	2	1						1											1
136N82E	1	1						1											1
136N82E	2	1						1	2										3
136N82E	2	2						1											1
138N79E	1	2						1											1
134N79E	2	2							1										1
135N80E	1	2							1										1
135N80E	2	1							1										1
136N79E	1	1							1										1
136N82E	1	2							1										1
125N94E	2	1				1													1
130N89E	1	1				1													1
130N89E	1	2				1													1

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.6. 40DV4, Rims, Handles, and Lugs from Units.

Continued

PROVENIENCE	Z	L	Bell Plain Beaded rim	Bell Plain Peaked rim	Eroded Fine Shell Notched rim	Miss Plain Beaded rim	Miss Plain Folded rim	Miss Plain Notched rim	Miss Plain Noded rim	Miss Plain Peaked rim	Miss Plain Punctated rim	Miss Plain Scalloped rim	Miss Plain Handle	Miss Plain Strap Handle	Miss Plain Lug	Miss Plain Bifurcate Lug	Miss Plain Double Lug	Miss Plain Rim Rider	TOTAL
137N83E	2	2				4													4
139N90E	1	2				1													1
124N86E	2	2						1											1
125N94E	2	1				1													1
130N89E	2	1													1				1
130N89E	2	2													1				1
132N85E	2	1													3		2		5
132N85E	2	2													1				1
133N80E	2	1													1				1
133N80E	2	2												1					1
133N82E	1	1						1									1		2
133N82E	2	2									1				1				2
133N82E	2	3													1				1
134N79E	2	1								1				1			3		5
134N79E	2	3													3				3
134N80E	2	1												2	1				3
134N80E	2	2												1					1
135N80E	1	2												1	1				2
135N80E	2	2													5				5
136N79E	1	1												2	1				3
136N79E	2	1												1	1				2
136N79E	2	2													4				4
136N79E	2	3							2						4				6
136N82E	1	1				1		1					1						3
136N82E	1	2							1					1					2
136N82E	2	1						1	1						2				4
136N82E	2	2							2					1	2				5
136N82E	2	3																1	1
136N82E	2	4													1				1
137N80E	1	3													2				2
137N80E	2	1												2					2
137N83E	2	3											1	1					2
137N83E	2	4													1				1
138N79E	1	2						1				1	1						3
138N79E	2	1													2		2		4
138N79E	2	2							1						7				8
138N80E	1	2				1									1				2
138N80E	2	1													1				1
138N82E	2	1				1									1				2
138N82E	2	2					1		1				1		1				4
138N82E	2	3												1			1		2
138N83E	2	3													1				1
139N80E	2	2													1				1
139N88E	2	1													2				2
139N88E	2	3													3				3
139N88E	2	4													1		1		2
139N89E	1	2													3				3
139N89E	2	2							1										1
139N89E	2	3										1			2				3
139N89E	3	1													1				1
140N80E	1	1													1				1
140N80E	2	2												2					2

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.6. 40DV4, Rims, Handles, and Lugs from Units.

Continued

PROVENIENCE	Z	L	Bell Plain Beaded rim	Bell Plain Peaked rim	Eroded Fine Shell Notched rim	Miss Plain Beaded rim	Miss Plain Folded rim	Miss Plain Notched rim	Miss Plain Noded rim	Miss Plain Peaked rim	Miss Plain Punctated rim	Miss Plain Scalloped rim	Miss Plain Handle	Miss Plain Strap Handle	Miss Plain Lug	Miss Plain Bifurcate Lug	Miss Plain Double Lug	Miss Plain Rim Rider	TOTAL
140N88E	2	1														1			1
140N88E	2	2													1	1		1	3
140N88E	2	3												1	1				2
140N89E	2	4													1				1
140N118E	2	2													2				2
140N118E	2	3						1	1						2				4
141N77E	2	1				1									1				2
141N77E	2	2												1	1				2
141N79E	1	1							2						1		1		4
141N79E	2	1						2		1	2						2		7
141N79E	2	1												2	2				4
141N79E	2	2											2		1				3
142N80E	2	1												1	1				2
143N77E	2	1													2				2
143N77E	2	2							2					3	3	1			9
143N79E	1	1		3				1	1		1				1				7
143N79E	1	2													2			1	3
143N79E	2	1												1	2				3
143N79E	2	2													1				1
143N80E	2	1				1													1
143N80E	2	2													1				1
143N80E	2	3													1				1
144N80E	2	1													1				1
144N80E	2	3												1	5		1		7
143N82E	1	1													3				3
143N82E	2	1													2				2
143N82E	2	1													1				1
143N82E	2	2													3				3
143N82E	2	3												2					2
136N82E	2	3													1				1
145N75E	2	2											6	1					7
145N77E	1	1						1							6				7
145N77E	2	1				1		1							5				7
145N77E	2	2												1	5				6
145N79E	1	2															1		1
145N79E	2	1													2				2
145N79E	2	2												1			1		2
145N79E	2	3											1		1				2
145N80E	1	3												1					1
145N82E	1	2												1					1
145N82E	2	1																1	1
145N82E	2	2												2	1				3
145N82E	2	3												4	3		1	1	9
145N82E	2	4													3		1		4
145N82E	2	5													1				1
TOTAL			1	3	1	20	1	18	26	4	4	3	18	54	174	6	19	7	359

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.7. 40DV4, Lug and Handle Metrics.

Provenience	Type	Length	Width	Thickness
110N87E	single	7.6	2.7	1
	bifurcate	5.7	2.6	
111N101E	loop	1.4	1.2	
112N87E	bifurcate	12.5	3.5	
115N101E	strap	2.5	1.7	0.4
123N112E	bifurcate	7.3	3	
	strap		4.9	
125N83E	strap		2.9	1
125N88E	bifurcate	8.5	3.1	
	strap		3.6	0.5
125N94E	bifurcate	9.3	2.7	
125N95E	strap			0.4
125N98E	rim rider	1.5	1	
	strap		1.7	
125N106E	strap		2.8	0.7
126N85E	double	8.5	4	
	single	10	4	
126N86E	strap		3	0.6
128N85E	strap		5.1	
133N80E	single	3.5	2.5	
134N80E	strap		5.3	0.6
136N79E	bifurcate	3.9	2.1	
	single	9	2.5	
	single	8	2.1	
	single	3.3	2	
137N80E	strap		4.9	0.6
	strap		3.9	0.4
137N83E	strap		5.3	0.7
	strap		2.2	0.5
	bifurcate	7.1	3.1	
138N82E	strap	6	6	2.5
140N80E	strap		2.3	0.5
140N88E	bifurcate	3.5	2.8	
	strap	4.9	4.5	0.6
141N77E	strap		3.3	1
143N77E	strap		2.9	1.8
	single	10	3.8	
	bifurcate	10	1.6	
143N82E	strap	2.7		0.5
145N82E	rim rider	4.2	2.8	0.9
FEA 11	bifurcate	11.9	4.3	
FEA 24	strap	4.8	4.8	0.6
FEA 27	strap	10.5	9.5	4
FEA 51	strap		5.3	0.7
FEA 60	grooved strap	4.4	2.9	0.8

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.8. 40DV4,Vessel Morphology.

BOWL FRAGMENTS				
Provenience	Z	L	Type	Count
125N106E	1	1	Miss Plain	1
125N106E	2	2	Miss Plain	1
125N108E	2	3	Bell Plain	1
126N87E	2	1	Coarse Shell Effigy	1
126N87E	2	2	Miss Plain	5
127N86E	2	1	Bell Plain	1
127N86E	2	2	Miss Plain	1
128N85E	1	1	Miss Plain	1
128N85E	1	2	Miss Plain	1
136N79E	2	1	Miss Plain	1
136N79E	2	2	Miss Plain	1
136N82E	2	1	Coarse Shell Incised	1
			Coarse Shell Effigy	1
108N87E	1	1	Miss Plain	1
110N87E	1	1	Miss Plain	1
110N89E	1	1	Miss Plain	1
111N101E	1	2	Bell Plain	1
115N101E	2	1	Miss Plain	1
121N113E	2	2	Miss Plain	1
125N88E	1	2	Bell Plain	1
125N94E	2	1	Miss Plain	1
143N77E	2	1	Miss Plain	3
143N77E	2	2	Miss Plain	1
144N80E	2	2	Bell Plain	1
137N80E	2	2	Miss Plain	1
138N79E	2	2	Miss Plain	1
140N88E	2	2	Miss Plain	1
141N77E	2	1	Miss Plain	1
141N79E	2	1	Coarse Shell Comp. Stamped	1
141N79E	2	2	Miss Plain	1
143N82E	2	2	Miss Plain	1
145N77E	1	1	Coarse Shell Effigy	1
			Miss Plain	2
145N77E	2	1	Coarse Shell Effigy	2
			Miss Plain	3
145N77E	2	2	Miss Plain	1
FEA 4			Miss Plain	1
FEA 17			Coarse Shell Fish Tail Effigy	1
FEA 24			Miss Plain	4
FEA 54			Coarse Shell Effigy	1
FEA 58			Miss Plain	1
TOTAL				54

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.8. 40DV4,Vessel Morphology.

Continued

JAR FRAGMENTS				
Provenience	Z	L	Type	Count
126N86E	1	1	Matthews Incised, _ivar. Manly B_	1
			Miss Plain	1
126N87E	2	1	Matthews Incised, _ivar. Matthews C_	2
			Miss Plain	1
126N87E	2	2	Matthews Incised, _ivar. Matthews B_	1
126N88E	2	3	Miss Plain	2
127N86E	1	1	Miss Plain	1
127N86E	2	1	Miss Plain	2
128N85E	1	2	Matthews Incised, _ivar. Matthews C_	1
128N85E	2	1	Miss Plain	2
128N85E	2	2	Coarse Shell Incised	1
128N88E	2	3	Matthews Incised, _ivar. Matthews C_	1
			Miss Plain	5
133N82E	1	1	Miss Plain	1
134N80E	2	1	Miss Plain	1
134N80E	2	2	Miss Plain	3
136N79E	1	1	Miss Plain	2
136N79E	2	1	Miss Plain	2
136N79E	2	2	Miss Plain	8
136N79E	2	3	Miss Plain	4
108N87E	1	2	Miss Plain	2
108N89E	1	1	Miss Plain	1
110N89E	1	1	Miss Plain	2
111N100E	2	1	Miss Plain	3
111N101E	1	1	Miss Plain	2
113N101E	2	2	Matthew Incised, _ivar. Matthews C_	1
			Miss Plain	2
115N101E	2	1	Miss Plain	1
115N101E	2	2	Matthews Incised, _ivar. Matthews A_	1
			Miss Plain	2
112N113E	2	2	Miss Plain	1
123N112E	2	2	Miss Plain	6
123N112E	2	3	Miss Plain	2
124N86E		1	Miss Plain	1
124N86E	2	1	Miss Plain	2
124N86E	2	3	Miss Plain	1
125N83E	2	1	Miss Plain	1
125N86E	1	2	Miss Plain	2
125N89E	2	1	Miss Plain	1
125N94E	1	2	Miss Plain	1
125N95E	1	1	Miss Plain	1
125N95E	2	2	Matthews Incised, _ivar. Matthews A_	2

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.8. 40DV4,Vessel Morphology.

Continued

JAR FRAGMENTS (Con't) Provenience	Z	L	Type	Count
136N82E	2	3	Miss Plain	1
137N80E	2	2	Miss Plain	2
138N80E	2	2	Miss Plain	3
138N83E	2	2	Miss Plain	1
139N88E	1	3	Miss Plain	1
140N80E	2	2	Miss Plain	2
140N88E	2	2	Matthews Incised, _ivar. Matthews C_	1
			Miss Plain	2
140N88E	2	3	Miss Plain	1
140N88E	2	4	Miss Plain	2
140N89E	3	2	Coarse Shell Incised	1
141N77E	2	2	Miss Plain	2
143N75E	2	1	Miss Plain	1
143N77E	2	1	Miss Plain	2
143N77E	2	2	Miss Plain	5
143N80E	1	1	Miss Plain	1
143N82E	2	1	Miss Plain	1
143N82E	2	2	Miss Plain	2
143N82E	2	3	Matthews Incised, _ivar. Matthews B_	1
			Miss Plain	1
144N80E	1	1	Matthews Incised, _ivar. Beckwith_	1
145N77E	1	1	Miss Plain	3
145N77E	2	1	Miss Plain	1
145N77E	2	2	Miss Plain	4
145N79E	2	2	Miss Plain	1
145N82E	2	1	Miss Plain	1
FEA 4			Miss Plain	2
FEA 11			Matthews Incised, _ivar. Matthews C_	1
FEA 14			Miss Plain	2
FEA 24			Matthews Incised, _ivar. Matthews_	1
			Miss Plain	1
FEA 29			Miss Plain	1
FEA 37			Miss Plain	2
FEA 51			Miss Plain	1
FEA 54			Miss Plain	1
TOTAL				**136**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.9. 40DV4, Weights of Sherdlets, Fired Clay, and Daub from Units.

Weights (grams)					
			SHERDLETS	FIRED CLAY	DAUB
PROVENIENCE	Z	L			
106N87E	1	1	27.7		
106N87E	1	2	10.6		
106N87E	1	3	1.0		
106N89E	1	1	6.5		
108N87E	1	1	392.0	79.0	
108N87E	1	3	17.5		
108N87E	1	4	1.3		
110N87E	1	1	69.3		
110N87E	1	2	7.0		
110N89E	1	1	335.0	26.7	
111N100E	1	1	93.7		
111N100E	2	1	199.2	79.0	
111N101E	1	1	6.6		
111N101E	1	2	123.8		
112N87E	1	1	43.2	17.2	
112N89E	1	1	81.6		
112N89E	1	2	21.7	16.1	
112N100E	1	1	14.8	8.8	
113N101E	2	1	470.0	61.4	
113N101E	2	2	603.0		136.0
115N101E	2	1	564.5	171.5	
115N101E	2	2	449.0	169.0	
115N101E	2	3	125.0		
121N113E	2	1	2.0	14.5	
121N113E	2	2	170.0	21.5	
121N113E	2	3	55.0		
123N112E	2	1	1200.0	60.0	
123N112E	2	2	1100.0	124.0	
123N112E	2	3	186.0	16.4	
124N86E		1	39.5	41.0	
124N86E	2	1	91.0	7.0	
124N86E	2	2	96.0		
124N86E	2	3	44.2	14.0	
124N87E	1	1	218.0	557.0	
124N87E	2	1	103.0	4.5	
124N87E	2	2	46.0		
124N87E	3	1	26.0		
124N87E	3	2	4.5	17.0	
124N88E	1	1	36.0	150.0	
124N88E	3	1	4.0	5.0	
124N88E	3	2	1.0		
125N83E	1	1	245.1	184.6	
125N83E	2	1	334.1		
125N83E	2	2	274.0		
125N83E	2	3	68.0	45.0	
125N84E	1	1	278.0	65.0	
125N85E	1	1	273.0	1600.0	
125N86E	1	2	389.0	420.0	
125N87E	1	1	128.0	125.0	
125N88E	1	1	5.0	46.0	
125N88E	1	2	52.0	2100.0	
125N88E	2	1	123.0	492.3	

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.9. 40DV4, Weights of Sherdlets, Fired Clay, and Daub from Units.

Continued

PROVENIENCE	Z	L	SHERDLETS	FIRED CLAY	DAUB
125N88E	2	2	120.0	54.0	
125N88E	2	3	33.0	80.0	
125N88E	2	4	7.0		
125N88E	2	5	1.1		
125N89E	1	1	40.0	168.0	
125N89E	2	1	75.0	223.0	
125N89E	2	2	83.0	139.0	
125N89E	2	3	79.0	55.0	
125N89E	2	4	32.0	26.0	
125N89E	3	1	5.0	8.0	
125N93E	1	1	197.0		
125N93E	1	2	84.0	15.0	
125N93E	2	1	98.0	26.0	
125N93E	2	2	21.0		
125N94E	1	1	273.0	37.0	
125N94E	1	2	261.0		
125N94E	2	1	232.0	59.0	
125N94E	2	2	38.0		
125N94E	2	3	0.5	6.0	
125N95E	1	1	94.8		
125N95E	2	1	110.0	39.0	
125N95E	2	2	117.0		
125N95E	2	3	46.0	22.0	
125N96E	1	1	141.0	10.0	
125N96E	2	1	5.5	6.0	
125N96E	2	2	42.0	4.0	
125N96E	2	3	2.0	1.0	
125N98E	1	1	193.0		
125N98E	2	1	366.0	15.0	
125N98E	2	2	195.0	30.1	
125N98E	2	3	225.0		
125N99E	1	1	71.0	60.0	
125N99E	2	1	217.0	33.0	
125N99E	2	2	140.0	70.0	
125N99E	2	3	50.0	3.0	
125N99E	2	4	56.0		
125N100E	1	1	118.0	36.0	
125N100E	1	2	55.0	5.0	
125N100E	2	1	84.0	43.0	
125N100E	2	2	103.0	6.0	
125N100E	2	3	122.0		
125N105E	1	1	148.0	88.0	
125N105E	2	1	547.0	113.0	
125N105E	2	2	455.0	17.3	
125N106E	1	1	63.0	115.0	
125N106E	1	2	16.0	8.0	
125N106E	2	1	225.0	37.0	
125N106E	2	2	252.0	33.0	
125N106E	2	3	113.0	12.0	
126N84E	1	1	70.0	92.0	21.0
125N108E	2	3	226.0		
126N85E	1	1	353.0	490.0	
126N85E	2	1	1300.0	143.0	
126N85E	2	2	486.0	23.0	

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.9. 40DV4, Weights of Sherdlets, Fired Clay, and Daub from Units.

Continued

PROVENIENCE	Z	L	SHERDLETS	FIRED CLAY	DAUB
126N85E	2	3	357.0	87.0	
126N86E	1	1	396.0	286.0	
126N87E	1	1	146.0	114.0	
126N87E	2	1	688.0	179.0	
126N87E	2	2	522.0	102.0	
126N87E	2	3	108.0		
126N87E	2	4	25.0	27.0	
126N88E	1	1	32.0	118.0	
126N88E	1	2	179.0	269.0	
126N88E	2	1	30.0	1700.0	1100.0
126N88E	2	3	80.0	91.0	
126N88E	2	4	31.0		
126N88E	2	5	2.0		
126N98E	2	1	162.0	16.0	
127N86E	1	1	88.2	68.0	
127N86E	2	1	77.0	56.0	
127N86E	2	2	99.0		
127N86E	2	3	38.0		
128N85E	1	1	185.0	955.0	
128N85E	1	2	300.0	314.0	23.0
128N85E	2	1	605.0	382.0	
128N85E	2	2	684.0	82.0	
128N88E	2	1	392.0	174.0	
128N88E	2	2	545.0	145.0	
128N88E	2	3	583.0	147.0	
128N88E	2	4	101.0	19.0	
128N88E	2	5	12.0		
124N88E	2	1	86.0	400.0	
130N89E	1	1	76.0	75.0	
130N89E	1	2	127.0	9.0	
130N89E	2	1	325.0	42.0	
130N89E	2	2	157.0	21.0	
130N89E	2	3	5.0		
132N85E	1	1	421.0	293.0	
132N85E	2	1	1000.0	162.4	
132N85E	2	2	405.0		
133N80E	2	1	387.0	65.0	
133N80E	2	2	349.0	37.0	
133N80E	2	3	282.0	30.0	
133N82E	1	1	73.0	15.0	
133N82E	1	1	233.0	40.0	
133N82E	1	2	201.0	46.0	
133N82E	2	2	140.0		
133N82E	2	4	82.0		
134N79E	2	1	2.0	735.0	
134N79E	2	2	1600.0	17.6	
134N79E	2	3	785.0	177.0	
134N80E	1	1	201.0	6.0	
134N80E	1	2	231.0	23.0	
134N80E	2	1	514.0	50.0	
134N80E	2	2	577.0	25.0	
135N80E	1	1	42.0		
135N80E	1	2	418.0		
135N80E	2	1	590.0		

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.9. 40DV4, Weights of Sherdlets, Fired Clay, and Daub from Units.

Continued

PROVENIENCE	Z	L	SHERDLETS	FIRED CLAY	DAUB
135N80E	2	2	471.0	40.0	
135N80E	2	3	147.0		
136N79E	1	1	585.0	222.0	
136N79E	2	1	1200.0	198.0	
136N79E	2	2	1750.0	194.0	
136N79E	2	3	2250.0	106.0	
136N80E	1	2	703.0	80.0	
136N80E	2	1	672.0	168.0	
136N80E	2	2	466.0	200.0	
136N80E	2	3	158.0		
136N80E	3	1		0.8	
136N82E	1	2	631.0	27.0	
136N82E	2	1	771.0		
136N82E	2	2	2000.0		
136N82E	2	3	2000.0	390.0	
136N82E	2	4	431.0	23.0	
137N80E	1	1	51.0	99.0	
137N80E	1	2	280.0	82.0	
137N80E	1	3	466.0	39.0	
137N80E	2	1	919.0	150.0	
137N80E	2	2	407.0	14.0	
137N83E	1	1	55.0	7.0	
137N83E	2	1	149.0	83.0	
137N83E	2	2	225.0	41.0	
137N83E	2	3	128.0	88.0	
137N83E	2	4	28.0	13.0	
138N79E	1	2	604.0	223.0	
138N79E	2	1	200.0	338.0	
138N79E	2	2	1868.6	219.7	
138N80E	1	1	100.0	95.0	
138N80E	1	2	262.0	83.0	
138N80E	2	1	356.0	52.0	
138N80E	2	2	584.0	35.0	
138N80E	2	3	71.0	3.0	
138N82E	1	1	331.0	120.0	
138N82E	2	1	1000.0	216.0	
138N82E	2	2	1700.0	601.0	
138N82E	2	3	2000.0	342.0	
138N82E	2	4	192.0	62.0	
138N83E	2	1	41.0	16.0	
138N83E	2	2	222.0	235.0	
138N83E	2	3	72.0	28.0	
139N80E	1	1	57.0		
139N80E	1	2	121.0		
139N80E	2	1	314.0	17.0	
139N80E	2	2	283.0	15.0	
139N80E	2	3	156.0		
139N80E	3	1	4.0		
139N88E	1	1	75.0		
139N88E	1	2	110.0	40.0	
139N88E	1	3	323.0	421.0	
139N88E	2	1	325.0	140.0	
139N88E	2	2	166.0	14.0	
139N88E	2	3	164.0	11.0	

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.9. 40DV4, Weights of Sherdlets, Fired Clay, and Daub from Units.

Continued

PROVENIENCE	Z	L	SHERDLETS	FIRED CLAY	DAUB
139N88E	2	4	66.0	18.0	
139N89E	1	1	139.0	30.0	
139N89E	1	2	127.0		
139N89E	2	1	113.0	120.0	
139N89E	2	2	147.0	20.0	
139N89E	2	3	187.0	12.0	
139N89E	3	1	81.0		
139N90E	1	1	18.0	55.0	
139N90E	1	2	17.0	9.0	
139N90E	2	1	5.0		
139N90E	2	2	10.0		
139N90E	2	3	32.0		
139N90E	2	4	12.0		
139N91E		1	52.0		
140N80E	1	1	150.0	6.0	
140N80E	2	1	249.0		
140N80E	2	2	320.0	34.0	
140N80E	2	3	306.0		
140N88E	1	2	181.0	616.0	
140N88E	2	1	269.0	517.0	
140N88E	2	2	220.0	152.0	
140N88E	2	3	265.0	26.0	
140N88E	2	4	184.0		
140N88E	3	1	65.0		
140M88E	3	2	2.0		
140N89E	1	1	55.0		
140N89E	1	2	41.0	44.0	
140N89E	1	3	43.0	50.0	
140N89E	2	1	54.0	62.0	
140N89E	2	2	46.0	29.0	
140N89E	2	3	105.0		
140N89E	2	4	19.0	59.0	
140N89E	3	2	85.0		
140N118E	1		2255.0	38.0	
140N118E	2	2	1900.0	47.0	
140N118E	2	3	1500.0	41.2	
141N77E	1	1	81.0	44.0	
141N77E	2	1	561.0	126.0	
141N77E	2	2	470.0	37.0	
141N79E	1	1	1000.0	53.0	
141N79E	2	1	3000.0	1000.0	
141N79E	2	2	256.0	162.0	
141N80E	1	1	116.0		
141N80E	2	1	174.0		4.0
141N80E	2	2	220.0		
141N80E	2	3	104.0		
142N80E	2	1	65.0		
143N75E	2	1	427.0		
143N77E	2	1	1272.0	159.0	
143N77E	2	2	1600.0	727.0	
143N79E	1	1	890.0	79.0	
143N79E	1	1	838.0	223.0	
143N79E	2	2	1000.0		
143N79E	2	3	487.2		

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.9. 40DV4, Weights of Sherdlets, Fired Clay, and Daub from Units.

Continued

PROVENIENCE	Z	L	SHERDLETS	FIRED CLAY	DAUB
143N80E	1	1	164.0	25.0	
143N80E	2	1	458.0		
143N80E	2	2	378.0		
143N80E	2	3	59.0		
144N80E	1	1	210.0	42.0	
144N80E	2	1	471.0	20.0	
144N80E	2	2	641.0		
144N80E	2	3	181.0		
143N82E	1	1	549.0	58.0	
143N82E	1	2	918.0	35.0	
143N82E	1	2			
143N82E	2	2	563.0	38.0	
143N82E	3	2	445.0		
145N75E	1	2	778.0		
145N75E	2	2	751.0		
145N75E	3	2	632.0		
145N77E	1	1	3700.0	211.0	
145N77E	1	2	1219.0	205.0	
145N77E	2	2	1600.0	951.0	
145N77E	3	2	123.0	33.0	
145N79E	1	1	241.0		
145N79E	2	1	927.0	85.0	
145N79E	3	1	195.0		
145N79E	1	2	2000.0		
145N79E	2	2	2000.0		
145N79E	3	2	160.0		
145N80E	1	1	402.0		
145N80E	2	1	384.0	2.6	
145N80E	3	1	467.0		
145N80E	1	2	77.0		
145N82E	1	1	260.0	88.0	
145N82E	2	1	617.0	41.0	
145N82E	1	2	458.0	56.0	
145N82E	2	2	1000.0	144.0	
145N82E	3	2	968.0	85.0	
145N82E	4	2	424.0	13.0	
145N82E	5	2	81.0	25.0	
TOTAL			108545.3	29133.2	1284

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.10. 40DV4, Rims, Lugs and Handles from Features.

	Miss Plain rim	Eroded Shell rim	Miss Plain Beaded Strip	Miss Plain Noded rim	Miss Plain Notched rim	Miss Plain Bifurcate Lug	Miss Plain Double Lug	Miss Plain Handle	Miss Plain Loop Handle	Miss Plain Strap Handle	TOTAL
FEATURE											
4	17	4									21
7	7	1					1				9
11	11	9				1				1	22
14	1										1
17				1		1					2
18	5										5
24	7	4	2							1	14
27	12	6							1	1	20
49		1									1
51	7	5								2	14
53	1				1						2
54	1	2									3
57	4							1			5
58	1	2									3
60										1	1
66	6	2						1			9
68	6	1									7
TOTAL	86	37	2	1	1	2	1	2	1	6	**139**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.11. 40DV4, Effigies from Features.

FEATURE	Coarse Shell Adorno	Coarse Shell Earplug	Coarse Shell Effigy Bowl frag.	Coarse Shell Fish Bowl Effigy	Coarse Shell Fish Effigy rim	Coarse Shell Unident. Effigy	Grit/Grog Unident. Effigy	Kimmswick Fl _ivar. B_ disc	TOTAL
4								1	1
7	1	3							4
17				1					1
18		1							1
27		1			1				2
36						1			1
44						1			1
45						3			3
51							1		1
54		2	1					1	4
55		1							1
57		1							1
58		1				1			2
66		2							2
TOTAL	1	12	1	1	1	6	1	2	**25**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.12. 40DV4, Fabric Impressed Ceramics from Features.

FEATURE	Kimmswick Fl _ivar. A_, body	Kimmswick Fl _ivar. A_, rim	Kimmswick Fl _ivar. B_, body	Kimmswick Fl _ivar. B_, rim	Kimmswick Fl _ivar. D_, body	Eroded Salt Pan, body	Eroded Salt Pan, rim	TOTAL
3						1		1
4	5	1	4			10		20
7	1		6			8		15
11	12		5			30		47
18						1		1
20	1							1
22		1						1
23				1				1
24		1	2	1		14		17
26	3							3
27	5		1			19	4	29
31	1							1
36	1	1	3			2	2	9
37	3	1				4		8
39						1		1
42	1					1		2
43	1					1		2
44	5		4			15		24
45	3	1						4
48	1					1		2
51			4			5		9
54	2		1			23		26
55						2		2
57	13				1	69		83
58	2		1			2		5
59	2					8		10
60	2					6		8
63			1					1
66	3							3
68			4			3	2	9
TOTAL	67	6	36	2	1	226	8	**346**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.13. 40DV4, Fabric Impressed Ceramics from Units.

			KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	BELL FI	BELL FI	MISS. FI	MISS. FI
			var. A,	var. A,	var. B,	var. B,	var. C,	var. C,	var. D,	var. D,	body	rim	body	rim
			body	rim	body	rim	body	rim	body	rim				
PROVENIENCE	**Z**	**L**												
108N87E	1	1	1				1	2	1					
108N87E	1	2	1											
108N89E	1	1	3			1								
110N87E	1	1	1											
110N89E	1	1	13	1										
111N100E	2	1	3											
111N101E	1	2	1			1								
112N87E	2	1	2											
112N89E	1	1						2						
112N89E	1	2				1								
113N101E	2	1	9							1				
113N101E	2	2	4	1										
115N101E	2	1	3					1						
115N101E	2	2	3			2								
121N113E	2	2	1											
123N112E	2	1	1											
123N112E	2	2	2	2		1								
123N112E	2	3	3											
124N86E		1				2								
124N86E	2	2	2	1										
124N87E	1	1				1								
124N88E	2	1				1								
125N83E	1	1									1			
125N83E	2	2	2											
125N84E	1	1	2					5						
125N85E	1	1				1								
125N86E	1	2				2								
125N87E	1	1						2						
125N88E	1	2	1											
125N88E	2	1	5	1		2								
125N88E	2	2	2					2						
125N89E	2	1	2	2										
125N89E	2	2	1			1								
125N89E	2	3	1											
125N94E	2	1											1	
125N95E	2	1				1								

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.13. 40DV4, Fabric Impressed Ceramics from Units.
Continued

			KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	BELL FI	BELL FI	MISS. FI	MISS. FI
			var. A,	var. A,	var. B,	var. B,	var. C,	var. C,	var. D,	var. D,	body	rim	body	rim
			body	rim	body	rim	body	rim	body	rim				
PROVENIENCE	**Z**	**L**												
125N95E	2	2	1											
125N95E	2	3	2	1		1								
125N96E	1	1											1	
125N96E	2	1	1											
125N98E	2	1	1			1								
125N98E	2	3				3								
125N99E	2	1				1								
125N99E	2	2	1											
125N99E	2	3	1											
126N85E	1	1	1			3	1							
126N85E	2	1	10			6								
126N85E	2	2	9											
126N85E	2	3	1				1	1						
126N87E	1	1				6								
126N87E	2	1	6					3	1					
126N87E	2	2	3			10								
126N87E	2	3	3											
126N87E	2	4		1										
126N88E	1	2				1								
126N88E	2	1				1		1						
126N88E	2	3				2								
127N86E	2	2						1						
128N85E	1	1				1								
128N85E	1	2	2						1					
128N85E	2	1				1								
128N85E	2	2	5											
128N88E	2	1	2											
128N88E	2	2	4						3					
128N88E	2	3			1	2								
130N89E	2	1	5						1					
130N89E	2	2	6											
132N85E	2	1	2			4			1					
132N85E	2	2	1	1				1						
133N80E	2	1	1					1						
133N80E	2	3	1			1								
133N82E	2	3	2											

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.13. 40DV4, Fabric Impressed Ceramics from Units.

Continued

			KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	BELL FI	BELL FI	MISS. FI	MISS. FI
			var. A,	var. A,	var. B,	var. B,	var. C,	var. C,	var. D,	var. D,	body	rim	body	rim
			body	rim	body	rim	body	rim	body	rim				
PROVENIENCE	**Z**	**L**												
133N82E	2	2	1											
134N79E	2	1	11	1						2				
134N79E	2	2	16											
134N79E	2	3	5											
134N80E	2	1		1		2								
134N80E	2	2	1			2								
135N80E	1	2	1											
135N80E	2	1	1											
136N79E	1	1	1											
136N79E	2	1	1	1										
136N79E	2	2	5			5	1							
136N79E	2	3	7			13	1							
136N80E	1	2	2											
136N80E	2	1	4											
136N80E	2	2	3											
136N82E	1	2	5											
136N82E	2	1	1											
136N82E	2	2	10	1										
136N82E	2	3	15											
136N82E	2	4	3			4								
137N80E	1	2				1								
137N80E	2	1				1								
137N80E	2	2	3											
137N83E	2	4	1											
138N79E	1	2				3								
138N79E	2	1	1	2		1								
138N79E	2	2	4	2		1								
138N80E	2	2	1	1		1								
138N82E	2	2	5			5								
138N82E	2	3	7	1						1				
138N82E	2	4	1											
138N83E	2	2	1											
138N83E	2	3	2											
139N80E	2	1	1											
139N80E	2	2				1								
139N80E	2	3				1								

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.13. 40DV4, Fabric Impressed Ceramics from Units.

Continued

			KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	KIMMSWICK FI	BELL FI	BELL FI	MISS. FI	MISS. FI
			var. A,	var. A,	var. B,	var. B,	var. C,	var. C,	var. D,	var. D,	body	rim	body	rim
			body	rim	body	rim	body	rim	body	rim				
PROVENIENCE	**Z**	**L**												
139N88E	1	3				1								
139N88E	2	1	1	2										
139N88E	2	2	3	1		2								
139N88E	2	3	2	1										
139N89E	1	1	1											
139N89E	2	2	2	1						1				
139N89E	2	3	4	2										
139N90E	2	3	2			1								
TOTAL			**275**	**28**	**1**	**106**	**5**	**22**	**8**	**5**	**1**	**0**	**2**	

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.14. 40DV4, Decorated Shell Tempered Ceramics from Features.

Feature:	7	11	18	24	27	36	44	51	57	TOTAL
Matthews Incised _ivar. Matthews_, body										0
Matthews Incised _ivar. Matthews_, rim										0
Matthews Incised _ivar. Matthews A_, body										0
Matthews Incised _ivar. Matthews A_, rim									1	1
Matthews Incised _ivar. Matthews B_, body										0
Matthews Incised _ivar. Matthews B_, rim										0
Matthews Incised _ivar. Matthews C_, body							1			1
Matthews Incised _ivar. Matthews C_, rim		1		1			1			3
Matthews Incised _ivar Beckwith_, body		1								1
Matthes Incised _ivar. Beckwith_, rim										0
Matthews Incised _ivar. Manly_, body	2									2
Matthews Incised _ivar. Manly_, rim										0
Matthews Incised _ivar. Manly A_, body										0
Matthews Incised _ivar. Manly A_, rim										0
Matthews Incised _ivar. Manly B_, body					1			1		2
Matthews Incised _ivar. Manly B_, rim										0
Mound Place Incised _ivar. Chickasawba_, body										0
Mound Place Incised _ivar. Chickasawba_, rim						1				1
Coarse Shell Incised, body	2		1		1					4
Coarse Shell Incised, rim						1				1
Coarse Shell Comp. Stamped, body		1								1
Coarse Shell Punct/Incised rim						1				1
Coarse Shell Surface Roughened, rim		1								1
TOTAL	4	4	1	1	2	3	2	1	1	**19**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.15. 40DV4, Weights of Sherdlets, Fired Clay, and Daub from Features.

FEATURE	SHERDLET	FIRED CLAY	DAUB
27	435.0	17.0	
29	81.0	46.0	
30			
31			
32			
33			
34			
35			
36	1000.0	245.0	
37	49.0	33.0	
38			
39			
40			
41			
42			
43			170.0
44			
45	3.0		
46			
47	9.0	161.0	
48	1.0		
49	1.0		
50			
51	296.0	66.0	
52	5.0		
53	60.0	15.0	
54	227.0	106.0	
55	16.0	1000.0	
56			
57	512.0	74000.0	
58	176.0	27100.0	
59	5.0		
60	30.0		
63	12.0		
66	9.0	3.8	
68	169.0	76.0	
4	348.0	34.0	
7	752.0	51.0	
8	24.0		
11	553.1	4621.2	
14	2.0		
18	80.0	4000.0	
20	15.0	1.0	
24	307.0	2700.0	
26	12.0	32.0	
TOTAL	**5189.1**	**114308**	**170**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.16. 40DV5, Weights of Sherdlets, Fired Clay, and Daub from Units.

PROVENIENCE	L	SHERDLETS	FIRED CLAY	DAUB
5N132W	1	10.0		
5N132W	2	50.0		
5N132W	3	503.0	31.0	
5N132W	5	124.0		
5N132W	6	35.0		
5N132W	7	18.0		
5N132W	8	4.0		
5N132W	9	2.0		
7N41W	1	1000.0	168.0	
7N41W	2a	548.0	17.0	
7N41W	2b	186.0		
7N41W	3b	94.0		
7N41W	4	216.0		
7N41W	5	91.0		
7N41W	6	53.0		
7N41W	7	8.0		
7N41W	8	104.0		
7N41W	10	4.0		
7N41W	13	2.0		
8N107W	1	241.0		
8N107W	2	78.0		
8N107W	3	104.0		
8N107W	4	120.0		
8N107W	5	97.0		
8N107W	6	7.0		
10.5N83.5W	1	591.0	67.0	
10.5N83.5W	2	2000.0	127.0	
10.5N83.5W	4	94.0	24.0	
10.5N83.5W	5	58.0	11.0	
10.5N83.5W	6	25.0	3.2	
10.5N83.5W	7	3.0		
10.5N83.5W	9	3.0		
18N41.5W	1	802.0	44.0	2.0
18N41.5W	2	361.0	256.0	
20N83.5W	1	162.0	6.0	
20N83.5W	2	51.0		
20N83.5W	3	57.0		
20N83.5W	4	17.0	4.0	
20N83.5W	5	5.0	2.0	
20N83.5W	6	2.0		
20N83.5W	10,11,12,13,14,15	2.0		
26N42W	1	302.0	66.0	
26N42W	2	259.0	76.0	
26N42W	3	130.0	13.0	
26N42W	4	186.0		
26N42W	5	191.0	14.0	
26N42W	8	8.0		
39N136W	1	108		

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.16. 40DV5, Weights of Sherdlets, Fired Clay, and Daub from Units.

Continued

PROVENIENCE	L	SHERDLETS	FIRED CLAY	DAUB
39N136W	2	54		
39N136W	3	19		
40N131.5W	1	52		
40N131.5W	2	4	?	
40N131.5W	3	0.2		
40N139W	1	79	11	
40N139W	2	41		
40N139W	3	9		
40.5N139.5W	1	13		
42N95W	1	5		
42N95W	2	17		
42N95W	3	1	1	
42N95W	4	2		
42N95W	5	2	3	
42N95W	6	1	5	
42N99W	1	68		
42N99W	2	4	5	
42N99W	3	1	73	
42N105W	1	141	24	
42N105W	2	2		
42N105W	3	1		
42N105W	4	3		
42N110W	1	172		
42N110W	2	45		
42N110W	3	26	68	
42N110W	5	2		
44N132W	2	58		
44N132W	3	23	54	
44N132W	4	4	18	
45.5N141.5W	1	86.0	35.0	
45.5N141.5W	2	37.0	6.0	
46N95W	2	65		
46N95W	3	30	3	
46N95W	4	4		
46N95W	5	1		
46N99W	2	113	12	
46N99W	3	42		
46N99W	5	1		
46N99W	6	1		
46N105W	1		1	
46N105W	2	51		
46N105W	4	28	3	
46N105W	5	11		
46N123W	2	3		
46N123W	3	3		
46N127W	1	33		
46N127W	2	5		
46N127W	3	5		

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.16. 40DV5, Weights of Sherdlets, Fired Clay, and Daub from Units.

Continued

PROVENIENCE	L	SHERDLETS	FIRED CLAY	DAUB
46N131.5W	1	151	10	
46N131.5W	2	59.5	3	
46N131.5W	3	4		
46N133.5W	1	24		
46N133.5W	2	9		
46N133.5W	3	1		
46N135.5W	1	34		
46N135.5W	2	26		
48N131.5W	1	39		
48N131.5W	2	12		
49N136W	1	8		
49N136W	2	63	13	
49N136W	3	11	39	
49.5N134W	1	47	12	
49.5N134W	2	47		
49.5N134W	3	12	11	
50N132W	1	93	18	
50N132W	2	51	24	
50N132W	3	7		
TOTAL		11182.7	1381.2	2

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.17. 40DV5, Handle Metrics.

PROVENIENCE	TYPE	LENGTH	WIDTH	THICKNESS
5N132W	loop	1.7	2.7	0.7
	loop	4.2	1.5	1
	lug	7.4	2.3	
	strap		2	0.9
7N41W	loop	4.5	1.2	1.1
18N41.5W	strap	1.5	2.6	0.5
20N83.5W	loop		1.7	0.9
	loop		1.5	1.3
26N42W	loop		1.5	1.3
	strap		2.3	0.9
42N105W	strap		2.1	1.1

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.18. 40DV5, Vessel Morphology.

BOWL FRAGMENTS			
Provenience	L	Type	Count
5N132W	1	Miss Plain	1
5N132W	2	Coarse Shell Incised	1
5N132W	4b	Miss Plain	1
7N41W	2b	Miss Plain	1
10.5N83.5W	2	Miss Plain	1
26N42W	2	Miss Plain	1
46N127W	2	Bell Plain	1
TOTAL			**7**
JAR FRAGMENTS			
Provenience	L	Type	Count
5N132W	2	Miss Plain	4
5N132W	3	Miss Plain	2
5N132W	4b	Miss Plain	1
7N41W	1	Miss Plain	2
7N41W	2a	Miss Plain	2
7N41W	2b	Miss Plain	1
8N107W	2	Miss Plain	1
10.5N83.5W	1	Miss Plain	1
10.5N83.5W	2	Miss Plain	2
10.5N83.5W	3	Miss Plain	1
10.5N83.5W	4	Miss Plain	1
18N41.5W	1	Miss Plain	3
18N41.5W	2	Miss Plain	1
20N83.5W	2	Miss Plain	1
26N42W	1	Miss Plain	2
26N42W	2	Matthews Incised,	
		ivar. Beckwith	1
26N42W	4	Miss Plain	3
26N42W	5	Miss Plain	3
50N132W	1	Miss Plain	1
TOTAL			**3 3**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.19. 40DV5, Limestone Ceramics from Units.

PROVENIENCE	L	Mulberry Creek Plain, body	Mulberry Creek Plain, body	Bluff Creek Simple Stamped body	Bluff Creek Simple Stamped rim	Flint River Brushed body	Flint River Cord Marked body	Long Branch Fabric Impressed body	Pickwick Comp. Stamped body	Pickwick Comp. Stamped rim	Wright Check Stamped body	Wright Check Stamped rim	Limestone Incised body	Limestone Stamped body	Eroded Limestone body	Eroded Limestone rim	TOTAL
5N132W	2	2															2
5N132W	3						1								1		2
5N132W	4														1		1
5N132W	5	1															1
7N41W	1										2				2		4
7N41W	2a	2													2		4
7N41W	2b	3															3
7N41W	3b	9									1						10
7N41W	4	26	2				2				1				29		60
7N41W	5	10					3				3				17		33
7N41W	6	2					4				4	1			8		19
7N41W	7	1									1				1		3
7N41W	8	1															1
7N41W	13						1										1
8N107W	1								1								1
8N107W	2	1													4		5
8N107W	3	16									3		1		7		27
8N107W	4	10	1				7	1	1	3	2	1			44	2	72
8N107W	5	11	1				12				9				20		53
8N107W	6	3					1										4
8N107W	7										1						1
10.5N83.5W	4	3															3
10.5N83.5W	5	6													3		9
10.5N83.5W	6						1								14		15
18N41.5W	1										1				1		2
18N41.5W	2														1		1
20N83.5W	1										1						1
20N83.5W	3														1		1
20N83.5W	5										1				2		3
26N42W	4	1															1
26N42W	5	2															2
39N136W	1	9					1		2		9		5		59	1	86
39N136W	2						2				3				12	1	18
39N136W	3	3					2				3				9		17
40N108W	1	11					3										14
40N110W	1	4							3		5						12
40N112W	1	5					1				9						15
40N139W	1	3				1	1	1	1		2				6		15
40N139W	2	3	1				4				3		3		19	1	34
40N139W	3														4		4

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.19. 40DV5, Limestone Ceramics from Units.

Continued

PROVENIENCE	L	Mulberry Creek Plain, body	Mulberry Creek Plain, body	Bluff Creek Simple Stamped body	Bluff Creek Simple Stamped rim	Flint River Brushed body	Flint River Cord Marked body	Long Branch Fabric Impressed body	Pickwick Comp. Stamped body	Pickwick Comp. Stamped rim	Wright Check Stamped body	Wright Check Stamped rim	Limestone Incised body	Limestone Stamped body	Eroded Limestone body	Eroded Limestone rim	TOTAL
40N131.5W	1	2	1						1		5				24		33
40N131.5W	2	1							1						3		5
40.5N139.5W	1			1													1
42N95W	1							1			2				6		9
42N95W	2										3				6		9
42N95W	3	1									1						2
42N95W	4							1							3		4
42N95W	5	1													1		2
42N99W	1					2					3				15		20
42N99W	2						1										1
42N105W	1			1							5						6
42N105W	2										3						3
42N108W	1	1													4		5
42N110W	1	8					7				6				23	2	46
42N110W	2	2													8		10
42N110W	3										1				3		4
42N110W	4														3		3
42N110W	6														1		1
42N127W	1														16		16
42N127W	2	4									2						6
44N108W	1	2									1				6		9
44N112W	1	3															3
44N132W	2										2				5		7
44N132W	3										2				4		6
44N132W	4														1		1
45.5N141.5W	1	4									4			3	16		27
45.5N141.5W	2						6				3				19		28
45.5N141.5W	3	1									2						3
45.5N141.5W	4														1		1
46N95W	2						1				6						7
46N95W	3										1						1
46N99W	2						3				2						5
46N99W	3				1						1						2
46N105W	1														2		2
46N105W	2										1				2	1	4
46N105W	4														1		1
46N105W	5														1		1
46N108W	1	3										1			6		10
46N112W	2	1															1
46N123W	1	1													3		4

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.19. 40DV5, Limestone Ceramics from Units.

Continued

PROVENIENCE	L	Mulberry Creek Plain, body	Mulberry Creek Plain, body	Bluff Creek Simple Stamped body	Bluff Creek Simple Stamped rim	Flint River Brushed body	Flint River Cord Marked body	Long Branch Fabric Impressed body	Pickwick Comp. Stamped body	Pickwick Comp. Stamped rim	Wright Check Stamped body	Wright Check Stamped rim	Limestone Incised body	Limestone Stamped body	Eroded Limestone body	Eroded Limestone rim	TOTAL
46N127W	1					1	2				3				3		9
46N127W	3	1															1
46N131.5W	1	12		3			3				2		1		23		44
46N131.5W	2	5									4	1			13	1	24
46N133.5W	1											1					1
46N133.5W	2										1						1
46N135.5W	1										1						1
46N135.5W	2						1										1
49.5N134W	1										1				2		3
49.5N134W	2	5		1							2						8
49.5N134W	3	1															1
49N136W	1	2													1		3
49N136W	2										3				14		17
49N136W	3	1					2										3
50N132W	1														2		2
50N132W	2	5			1						4				11		21
50N132W	3														2		2
TOTAL		215	6	6	2	4	72	4	10	3	141	5	10	3	521	9	1011

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.20. 40DV5, Effigies.

		Coarse Shell Duck Head Effigy	Coarse Shell Unidentified Adorno	Coarse Shell Unidentified Effigy	Coarse Shell Head (feline, bat) Effigy	TOTAL
PROVENIENCE	**L**					
10.5N83.5W	2	1		2		3
10.5N83.5W	3		1			1
18N41.5W	1			1		1
18N41.5W	2				1	1
TOTAL		1	1	3	1	6

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.21. 40DV5, Handle and Rim Inventory.

		Coarse Shell Applique Node	Coarse Shell Beaded Rim	Coarse Shell Folded Rim	Coarse Shell Noded Rim	Fine Shell Beaded Rim	Coarse Shell Lug	Coarse Shell Strap Handle	Coarse Shell Loop Handle	Limestone Podal	Mulberry Creek Plain Podal	TOTAL
PROVENIENCE	**L**											
5N132W	1								1			1
5N132W	3						2		1			3
5N132W	4							1	1			2
5N132W	5				1							1
7N41W	4								1			1
7N41W	6										1	1
10.5N83.5W	1			1			1	1				3
10.5N83.5W	2			3								3
10.5N83.5W	3								1			1
10.5N83.5W	6							1				1
18N41.5W	1	1						3	2			6
18N41.5W	2						1	1				2
20N83.5W	4								1			1
26N42W	1		1		2							3
26N42W	2						3		1			4
26N42W	5						1					1
39N136W	3				1							1
42N105W	1							1				1
46N127W	2					1						1
46N127W	2					1						1
49N136W	2									1		1
TOTAL		1	1	4	4	2	8	8	9	1	1	**39**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.22. 40DV5, Untempered Ceramics.

		Unidentified Surface Roughened	Untempered Plain	Untempered Fabric Impressed body	TOTAL
PROVENIENCE	**L**				
42N105W	1	1			1
46N99W	2			1	1
50N132W	1		1		1
TOTAL		1	1	1	**3**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.23. 40DV5, Limestone, Sand, and Fiber Tempered Ceramics from Features.

FEATURE	Mulberry Creek Plain, body	Mulberry Creek Plain, rim	Flint River Cord Marked body	Wright Check Stamped body	Wright Check Stamped, rim	Eroded Limestone body	TOTAL
5	12					1	13
16	7	1	4	4		6	22
23	1						1
25						1	1
27				2			2
35						6	6
44				1		1	2
51	1					10	11
52	6					16	22
55	34	1				15	50
56	18	2	1	2	1	22	46
TOTAL	79	4	5	9	1	78	**176**

40DV5, Miscellaneous Ceramics from Features:

FEATURE	Fiber Plain body	Sand Plain body	Eroded Sand body	TOTAL
5	1			1
52			1	1
55		4		4
56		1		1
TOTAL	1	5	1	**7**

40DV5, Handles and Rims from Features:

FEATURE	Handle Base	Lug	Bifurcate Lug	Strap Handle	Beaded Rim	Folded Rim	TOTAL
1A	1			2			3
5	1					1	2
25		1	1	2			4
55					2		2
TOTAL	2	1	1	4	2	1	**11**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.24. 40DV5, Shell Tempered Ceramics from Features.

FEATURE	Miss Plain body	Miss Plain rim	Eroded Shell body	Eroded Shell rim	Coarse Shell Brushed, rim	Coarse Shell Cord Marked, body	Kimmswick Fl _ivar. A_, body	Kimmswick Fl _ivar. A_, rim	Eroded Salt Pan, body	Eroded Salt Pan, rim	TOTAL
1A	68	1	13		1		16	2	13	3	117
1B	14	2	9				2		3		30
3	3	1									4
4	1										1
5	161	13	63	3			40	6	32	3	321
7	2						1				3
23	21		7			1	1		4		34
24	10	1	1								12
25	115	9	124			1	18	3			270
28									5		5
36			1								1
45			5								5
51	27	3	62				4		13	1	110
52	25	86	4				2				117
55	167	8	61				1	1	1		239
56	106	3	144				2		4	1	260
TOTAL	720	127	494	3	1	2	87	12	75	8	**1529**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.25. 40DV5, Fiber Tempered Ceramics from Features.

		Wheeler Plain	Wheeler Simple Stamped	Eroded Fiber	TOTAL
PROVENIENCE	**L**				
5N132W	6	1			1
8N107W	3		1		1
8N107W	5	3			3
8N107W	6	1			1
10.5N83.5W	7	2			2
42N95W	2	1			1
42N99W	2			1	1
42N108W	3	1			1
46N110W	1			1	1
TOTAL		9	1	2	**1 2**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.26. 40DV5, Grit and Chert Tempered Ceramics.

		Chert Tempered Plain, body	Chert Tempered Complicated Stamped body	Chert Tempered Cord Marked body	Grit Tempered Plain, body	Grit Tempered Check Stamped body	Grit Tempered Cord Marked body	Grit/Limestone Cord Marked body	Eroded Chert, body	Eroded Grit, body	TOTAL
PROVENIENCE	**L**										
5N132W	3	3	1								4
7N132W	1								1		1
7N41W	2b			2					1		3
7N41W	3b				2						2
7N41W	4					3					3
7N41W	5							3		1	4
7N41W	6				1		1			1	3
10.5N83.5W	4				1						1
26N42W	4						1				1
42N105W	1					1					1
46N95W	2									2	2
TOTAL		4	1	2	4	4	2	3	2	4	**26**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.27. 40DV5, Sand Tempered Ceramics from Units.

PROVENIENCE	L	Coarse Sand Plain, body	Coarse Sand Incised body	Coarse Sand Check Stamped body	Coarse Sand Cord Marked body	Fine Sand Check Stamped body	Medium Sand Plain	Medium Sand Check Stamped body	Eroded Sand body	TOTAL
5N132W	4	1								1
7N41W	2a								1	1
7N41W	2b								2	2
7N41W	3b	3	1	3						7
7N41W	5						1			1
18N41.5W	1					1				1
42N95W	2	1								1
42N105W	1							1		1
46N95W	3								1	1
49N136W	2				1					1
TOTAL		5	1	3	1	1	1	1	4	**17**

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.28. 40DV5, Shell Tempered Ceramics from Units.

PROVENIENCE	L	Bell Plain body	Bell Plain rim	Miss Plain body	Miss Plain rim	Matthews Incised *var. Matthews C* body	Matthews Incised _ivar. Beckwith body	Matthews Incised _ivar. Manly B_ body	Coarse Shell Comp. Stamped body	Coarse Shell Cord Marked body	Coarse Shell Incised body	Coarse Shell Incised rim	Coarse Shell Punctate body	Kimmswick Fl _ivar.A_, body	Kimmswick Fl _ivar.A_, rim	Kimmswick Fl _ivar B_, body	Kimmswick Fl _ivar. B_, rim	Kimmswick Fl _ivar. C_, body	Kimmswick Fl _ivar. C_, rim	Mixed Shell Grog, body	Eroded Salt Pan, body	Eroded Salt Pan, rim	Eroded Shell body	Eroded Shell rim	TOTAL
5N132W	1			33	2									7		1			1		7	2	15		68
5N132W	2			77	11							1		7							18		19		133
5N132W	3			156	7				1					13	2	2	2						55		238
5N132W	4			61	2									4	2	2	1				20		18		110
5N132W	5			43	4									11		3	1				10		21		93
5N132W	6			7	2									2							4		4		19
5N132W	7			2																			1		3
7N41W	1			62	9			1		1				7	1	4					10		55		150
7N41W	2a			40	2									5		3					1		32	6	89
7N41W	2b			16	2									1							2		14		35
7N41W	3b			17	3									4				1			1		14		40
7N41W	4			32										2		1	2				12		3		52
7N41W	5			3																	3				6
7N41W	6			1																					1
7N41W	7																						2		2
7N41W	8			1																					1
7N41W	9			1																					1
7N41W	12																				1				1
8N107W	1			46	2					3		1		1		1					3		48	2	107
8N107W	2			20	2					1				1									6	1	31
8N107W	3									1															1
8N107W	5																				1				1
10.5N83.5W	1			135	11		1					1		7				2			2		97	5	261
10.5N83.5W	2			274	18		4				2			20	1	10					58	5	159	5	556
10.5N83.5W	3			189	11								1			3		1			47	3	96	11	362
10.5N83.5W	4			31	1													1			5		15		53
10.5N83.5W	5			18	2																		9		29
10.5N83.5W	6			5	1									2									1		9
10.5N83.5W	7			1																					1
10.5N83.5W	8				1																				1
18N41.5W	1			139	11			1								3	1				18	4	109	6	292
18N41.5W	2	2		83	11			1						2	1	3					6	1	90		200
20N83.5W	1			35		2										1							29		67
20N83.5W	2			10	1									1		1							16		29
20N83.5W	3			10																			10		20
20N83.5W	4			3											1	1					1		1		7
20N83.5W	5			1																					1
20N83.5W	6			1																					1
20N83.5W	9																						1		1
20N83.5W	14																						2		2
26N42W	1			121	8								1	1	1	1					2		74		209
26N42W	2			56	5		1																62	3	127
26N42W	3			29	2									1		1							19		52

APPENDIX A - CERAMIC ARTIFACT TABLES

Table A.28. 40DV5, Shell Tempered Ceramics from Units.

Continued

PROVENIENCE	L	Bell Plain body	Bell Plain rim	Miss Plain body	Miss Plain rim	Matthews Incised *var. Matthews C* body	Matthews Incised _ivar. Beckwith body	Matthews Incised _ivar. Manly B_ body	Coarse Shell Comp. Stamped body	Coarse Shell Cord Marked body	Coarse Shell Incised body	Coarse Shell Incised rim	Coarse Shell Punctate body	Kimmswick Fl _ivar.A_, body	Kimmswick Fl _ivar.A_, rim	Kimmswck Fl _ivar B_, body	Kimmswick Fl _ivar. B_, rim	Kimmswick Fl _ivar. C_, body	Kimmswick Fl _ivar. C_, rim	Mixed Shell Grog, body	Eroded Salt Pan, body	Eroded Salt Pan, rim	Eroded Shell body	Eroded Shell rim	TOTAL
26N42W	4			52	3									5	1	5					2		40	3	111
26N42W	5		1	37	5									2	2	7							43		97
26N42W	8			3																			3		6
39N136W	1																				1				1
39N136W	2																						1		1
39N136W	3			1																					1
40N139W	1			1																					1
42N95W	1																						3		3
42N95W	2			2																					2
42N95W	3																						1		1
42N95W	5																						1		1
42N105W	1													1	1										2
42N110W	1			2																2			6		10
42N110W	2			7																			17		24
42N110W	3			5																					5
42N110W	4																						2		2
44N132W	2			2																			5		7
44N132W	3																						1		1
45.5N141.5W	1																						9	1	10
45.5N141.5W	2																						1		1
46N99W	2																				2				2
46N105W	1			14																			13		27
46N105W	2																						12		12
46N105W	4																						2		2
46N105W	5																						1		1
46N123W	1																						1		1
46N127W	1																						7		7
46N127W	2	1		1																					2
46N131.5W	1			2	1																3		9		15
46N131.5W	2																						2		2
46N133.5W	2																				2				2
46N135.5W	1																				1				1
49.5N134W	1			3	1																1		8		13
49.5N134W	2																				1		2		3
49.5N134W	3																				1				1
49N136W	1			4	1																		4		9
49N136W	2			2																			3	1	6
49N136W	3																						1		1
50N132W	1				1																		9		10
50N132W	2			2																			1		3
50N132W	3			1																			2		3
TOTAL		3	1	1900	143	2	6	3	1	6	2	3	2	107	13	53	7	5	1	2	246	15	1307	44	3872

APPENDIX B
LITHIC ARTIFACT TABLES

APPENDIX B - LITHIC ARTIFACT TABLES

Table B.1. Summary of 40DV4 Lithics.

	Surface	Zone 1	Zone 2	Zone 3	Features	Burials	TOTAL
PROJECTILE POINTS							
Mississippian	2	12	32		2	1	49
Lanceolate Ground PP/K		1	1				2
Small Lanceolate			1				1
Sublet Ferry/Knight Island			1				1
Medium Triangular			1		1		2
Woodland Stemmed			1				1
McIntire			1				1
Flint Creek			1				1
Late Archaic Unident					1		1
Little Bear Creek		1					1
Cotaco Creek		1					1
Wade			1				1
Sykes/White Springs		1	1				2
Big Sandy			1				1
OTHER CHIPPED STONE							
Biface Distal Fragment		14	18		4		36
Biface Medial Fragment		5	14		3		22
Biface Preform III			4				4
Biface Preform I & II		1	10				11
Expanding Base Drill			2				2
Perforator		3	3				6
Reamer			2				2
Drill Perforator Fragment		1	5				6
Chopper		2					2
Hoe	1						1
Wedge		1	13				14
Utilized Flakes		2	8		3		13
POLISHED STONE							
Cannel Coal Fragment		1	7				8
Celt	1	1	1		1		4
Discoidal		2	11			1	14
Large Discoidal Fragment			1				1
Ground/Polished Limestone		2					2
Ground Slate Fragment		3	5				8
Drilled Sandstone			1				1

APPENDIX B - LITHIC ARTIFACT TABLES

Table B.1. Summary of 40DV4 Lithics.

Continued

	Surface	Zone 1	Zone 2	Zone 3	Features	Burials	TOTAL
Sandstone Biface Fragment					1		1
Grooved Sandstone			1				1
Elliptical Limestone Nodule		1					1
FACETED MINERALS							
Magnetite			1		1		2
Crystal Fragment			1				1
Ground Minerals		1					1
PECKED/GROUND STONE							
Abrader		1	2				3
Bead			1				1
Spindle Whorl		1					1
Hammerstone		3	2		1	1	7
Milling Stone			2				2
Pitted Anvilstone			2				2
Ground Limestone			2				2
Tabular Groundstone	1	3	16	1	1		22
TOTAL	5	64	177	1	19	3	**269**

APPENDIX B - LITHIC ARTIFACT TABLES

Table B.2. Summary of 40DV5 Lithics.

	Surface	B3R				B4R											B5												B7													TP1				TP2								Fea.	Bur.	Field Spec.	TOTAL
		L 3	L 4	L 5	L 6	L 1	L 2	L 3	L 5	L 6	L 7	L 9	L 10	L 12	L 1	L 2	L 3	L 4	L 5	L 6	L 7	L 9	L 10	L 11	L 12	L 1	L 2	L 3	L 4	L 5	L 6	L 7	L 8	L 9	L 10	L 11	L 13	L 1	L 2	L 3	L 4	L 1	L 2	L 3	L 4	L 5	L 6	L 7	L 8				
PROJ. POINTS																																																						
Mississippian						2	1								2				1																									1								3			10
Copena Triangle								1															1							1			1							1	1			5	3	4		2				1		3	24
Copena								1																																										2		2	5
Coosa	1																		1																																		2
Swan Lake								1																																												1
Sublet Ferry																																																	1		1	2
Motley																																																		1	1
McIntire						1																					1																1	1					1				5
Cotaco Creek								1												1																																	2
Wade																																											3					4	2							9
Flint Creek																																		1									2	1				2	1	1				2	10
Little Bear Creek										1																																				1	1	1		1				5
Pickwick				1																																																1
Ledbetter				1																																												1				2
Big Slough																											1																										1
Buzzard Roost Creek																																										3	4	2			9	4	5				1		8	36
Benton	1																				1																	1	1		2	2			2		2	3	1	1		3		1	21
Sykes/White Springs																																																1				1
Morrow Mountain				1																																																1
Eva							1																																				2	3		2								8
Stanley																																																		1			1
Kirk Corner Notched	1																																									1				2	1			2		1		8
Pine Tree																																											1						1	1			4
Crawford Creek																																																			1			1
Plevna																																																						0
Big Sandy Auriculate					1																																																1
Big Sandy																																																2	1			2				5
																																																						0
OTHER CHIP. STONE																																																						0
Biface Preform I			1								1		1																															1			4				1			9
Biface Preform II																											1																	4				7		1	1				1	1	16
Biface Preform III																																													2			1	2		1				1	9
Shaft Drill																																																3		1	1					5
Expanding Base Drill																																																1				2				3
Hafted Drill																																																	1		1					3
Drill Medial Fragment																		1																											2	1				1		1				1	7
Drill Distal Fragment																																																1				2	1	1	1				7
Perforator																																																			1						1
Reamer																						1																																1			1	4
Graver																																																1				1	2		1				5
Microlith																																																3				1	1		2			1	8
Adze	1																										1																					1				1					1	5
Adze Bits																																																					1	1			2
Axe	1																																																								1
Chopper Core																																																1								1			2

APPENDIX B - LITHIC ARTIFACT TABLES

Table B.2. Summary of 40DV5 Lithics.

Continued

	Surface	B3R					B4R										B5											B7																TP1				TP2								Fea.	Bur.	Field	
		L 3	L 4	L 5	L 6		L 1	L 2	L 3	L 5	L 6	L 7	L 9	L 10	L 12		L 1	L 2	L 3	L 4	L 5	L 6	L 7	L 9	L 10	L 11	L 12		L 1	L 2	L 3	L 4	L 5	L 6	L 7	L 8	L 9	L 10	L 11	L 13		L 1	L 2	L 3	L 4		L 1	L 2	L 3	L 4	L 5	L 6	L 7	L 8			Spec.	TOTAL
Other Chip. Stone(Con't)																																																								
Wedge																																																						7
Wedge Bit Fragment										1																		1																										2
Chopper		1																								1			1															1											4
Amorphous Core		1																										1																										4
Polyhedral Core																																																					5
Bipolar Core																																																					2
Scraper	1	1											1		1			1						1	1		1							1										2	3	4	2	2	5	3	6	5	6	2	1	1			51
Chipped Stone Crescent																																													1											1
Utilized Flakes							1			1										1			1		2			1	1	1	1									1	1	4	6		5	11	9	10	5	6	3		1			72
PECKED/GROUND STONE																																																						
Abrader/Grooved Sandstone																																																					1
Hammerstone		1																								1			1															1		3			1	1				1			10
Pitted Anvilstone/Muller																										1																						1					2			4
Pitted Anvilstone	1																																																			1		1	3
Tabular Ground Stone Frag																																																					
POLISHED STONE																																																						
Bar Gorget Fragment																																																					1
Cannel Coal Disk																	1																																				1		4
Celt Bit																												1																										1
Discoidal																																																					2
Ground Incised Shale																		1																																				3
and Slate Frags.																																																					
Grooved Maul	1																																																				1
TOTAL	8	4	1	3	1		4	2	4	2	1	1	1	1	1		3	2	1	1	1	1	2	2	4	3	1		10	2	1	3	2	3	3	1	1	1	1	1		32	21	20	2		40	55	37	33	26	24	11	1	23	1	22	432

APPENDIX B - LITHIC ARTIFACT TABLES

Table B.3. PP/K Statistics, 40DV4 and 40DV5.

40DV4 PP/K STATISTICS

--------- TYPE = **BIG SANDY**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	29.00	0.00	29.00	29.00	0.00
SHLDRWIDTH	1	23.00	0.00	23.00	23.00	0.00
THICKNESS	1	7.00	0.00	7.00	7.00	0.00
BASALWIDTH	1	19.00	0.00	19.00	19.00	0.00
JNCTRWIDTH	1	14.00	0.00	14.00	14.00	0.00
MAXWIDTH	1	23.00	0.00	23.00	23.00	0.00
HAFTLENGTH	1	5.00	0.00	5.00	5.00	0.00
WEIGHT	1	5.000	0.000	5.000	5.000	0.000

--------- TYPE = **COTACO CREEK**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	42.00	0.00	42.00	42.00	0.00
SHLDRWIDTH	1	36.00	0.00	36.00	36.00	0.00
THICKNESS	1	6.00	0.00	6.00	6.00	0.00
BASALWIDTH	1	18.00	0.00	18.00	18.00	0.00
JNCTRWIDTH	1	6.00	0.00	6.00	6.00	0.00
MAXWIDTH	1	36.00	0.00	36.00	36.00	0.00

40DV4 PP/K STATISTICS (Con't)

FIELD	N	MEAN	STD	MIN	MAX	SEM
HAFTLENGTH	1	10.00	0.00	10.00	10.00	0.00
WEIGHT	1	6.400	0.000	6.400	6.400	0.000

--------- TYPE = **LITTLE BEAR CREEK**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	34.00	0.00	34.00	34.00	0.00
SHLDRWIDTH	1	25.00	0.00	25.00	25.00	0.00
THICKNESS	1	9.00	0.00	9.00	9.00	0.00
BASALWIDTH	1	15.00	0.00	15.00	15.00	0.00
JNCTRWIDTH	1	17.00	0.00	17.00	17.00	0.00
MAXWIDTH	1	25.00	0.00	25.00	25.00	0.00
HAFTLENGTH	1	18.00	0.00	18.00	18.00	0.00
WEIGHT	1	8.300	0.000	8.300	8.300	0.000

--------- TYPE = **MADISON**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	51	25.31	9.20	12.00	51.00	1.29
THICKNESS	51	5.61	6.59	3.00	51.00	0.92
BASALWIDTH	51	15.90	3.66	2.00	26.00	0.51
MAXWIDTH	51	16.24	3.06	10.00	26.00	0.43
WEIGHT	51	2.353	2.744	0.400	15.000	0.384

40DV4 PP/K STATISTICS (Con't)

--------- TYPE = **SYKES\WHITE SPRINGS**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	2	41.50	9.19	35.00	48.00	6.50
SHLDRWIDTH	2	28.00	0.00	28.00	28.00	0.00
THICKNESS	2	7.00	1.41	6.00	8.00	1.00
BASALWIDTH	2	18.00	1.41	17.00	19.00	1.00
JNCTRWIDTH	2	18.00	2.83	16.00	20.00	2.00
MAXWIDTH	2	28.00	0.00	28.00	28.00	0.00
HAFTLENGTH	2	5.50	0.71	5.00	6.00	0.50
WEIGHT	2	7.400	1.838	6.100	8.700	1.300

--------- TYPE = **SIDE NOTCHED**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	2	24.00	4.24	21.00	27.00	3.00
SHLDRWIDTH	2	20.50	6.36	16.00	25.00	4.50
THICKNESS	2	5.00	1.41	4.00	6.00	1.00
BASALWIDTH	2	15.00	0.00	15.00	15.00	0.00
JNCTRWIDTH	2	12.50	2.12	11.00	14.00	1.50
MAXWIDTH	2	20.50	6.36	16.00	25.00	4.50
HAFTLENGTH	2	5.00	1.41	4.00	6.00	1.00
WEIGHT	2	2.200	0.566	1.800	2.600	0.400

40DV4 PP/K STATISTICS (Con't)

--------- TYPE = **WADE**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	44.00	0.00	44.00	44.00	0.00
SHLDRWIDTH	1	28.00	0.00	28.00	28.00	0.00
THICKNESS	1	6.00	0.00	6.00	6.00	0.00
BASALWIDTH	1	7.00	0.00	7.00	7.00	0.00
JNCTRWIDTH	1	9.00	0.00	9.00	9.00	0.00
MAXWIDTH	1	28.00	0.00	28.00	28.00	0.00
HAFTLENGTH	1	6.00	0.00	6.00	6.00	0.00
WEIGHT	1	7.700	0.000	7.700	7.700	0.000

--------- TYPE = **UNIDENTIFIED PP/K**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	5	41.20	15.40	28.00	66.00	6.89
SHLDRWIDTH	5	22.50	11.61*	18.00	27.00	5.19*
THICKNESS	5	6.00	2.74	3.00	10.00	1.22
BASALWIDTH	5	16.00	3.94	11.00	22.00	1.76
JNCTRWIDTH	5	14.50	8.80*	11.00	18.00	3.94*
MAXWIDTH	5	21.20	4.92	15.00	27.00	2.20
HAFTLENGTH	5	11.00	8.20*	6.00	16.00	3.67*
WEIGHT	5	4.580	5.431	0.800	14.000	2.429

40DV5 PP/K STATISTICS

--------- TYPE = **BENTON**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	7	57.00	7.05	45.00	65.00	2.66
SHLDRWIDTH	24	26.79	4.80	22.00	40.00	0.98
THICKNESS	24	8.08	1.02	7.00	11.00	0.21
BASALWIDTH	24	17.96	2.94	14.00	25.00	0.60
JNCTRWIDTH	24	17.38	3.47	12.00	26.00	0.71
MAXWIDTH	24	27.21	4.63	22.00	40.00	0.95
HAFTLENGTH	24	9.46	2.86	4.00	17.00	0.58
WEIGHT	24	11.671	3.856	4.000	18.600	0.787

--------- TYPE = **BIG SANDY**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	52.00	0.00	52.00	52.00	0.00
SHLDRWIDTH	5	20.80	2.17	19.00	24.00	0.97
THICKNESS	5	5.40	1.14	4.00	7.00	0.51
BASALWIDTH	5	21.40	2.51	19.00	24.00	1.12
JNCTRWIDTH	5	15.00	2.92	11.00	18.00	1.30
MAXWIDTH	5	21.00	2.12	19.00	24.00	0.95
HAFTLENGTH	5	8.80	3.56	3.00	12.00	1.59
WEIGHT	5	4.660	1.513	2.800	6.400	0.676

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **BIG SLOUGH**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	73.00	0.00	73.00	73.00	0.00
SHLDRWIDTH	1	31.00	0.00	31.00	31.00	0.00
THICKNESS	1	8.00	0.00	8.00	8.00	0.00
BASALWIDTH	1	20.00	0.00	20.00	20.00	0.00
JNCTRWIDTH	1	20.00	0.00	20.00	20.00	0.00
MAXWIDTH	1	31.00	0.00	31.00	31.00	0.00
HAFTLENGTH	1	10.00	0.00	10.00	10.00	0.00
WEIGHT	1	14.400	0.000	14.400	14.400	0.000

--------- TYPE = **BUZZARD ROOST CREEK**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	10	54.10	12.08	31.00	71.00	3.82
SHLDRWIDTH	34	25.82	3.84	20.00	40.00	0.66
THICKNESS	36	7.94	1.29	5.00	11.00	0.21
BASALWIDTH	36	17.72	2.89	12.00	28.00	0.48
JNCTRWIDTH	36	16.64	2.21	12.00	22.00	0.37
MAXWIDTH	36	25.31	4.35	7.00	33.00	0.72
HAFTLENGTH	36	8.42	2.06	1.00	12.00	0.34
WEIGHT	36	10.397	5.012	2.600	23.500	0.835

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **COOSA**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	44.00	0.00	44.00	44.00	0.00
SHLDRWIDTH	1	23.00	0.00	23.00	23.00	0.00
THICKNESS	1	6.00	0.00	6.00	6.00	0.00
BASALWIDTH	1	17.00	0.00	17.00	17.00	0.00
JNCTRWIDTH	1	12.00	0.00	12.00	12.00	0.00
MAXWIDTH	1	24.00	0.00	24.00	24.00	0.00
HAFTLENGTH	1	9.00	0.00	9.00	9.00	0.00
WEIGHT	1	7.900	0.000	7.900	7.900	0.000

--------- TYPE = **COPENA**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	3	64.67	11.02	52.00	72.00	6.36
SHLDRWIDTH	1	23.00	0.00	23.00	23.00	0.00
THICKNESS	4	8.25	0.96	7.00	9.00	0.48
BASALWIDTH	4	24.00	3.56	20.00	27.00	1.78
JNCTRWIDTH	1	23.00	0.00	23.00	23.00	0.00
MAXWIDTH	4	25.50	1.73	24.00	27.00	0.87
HAFTLENGTH	1	19.00	0.00	19.00	19.00	0.00
WEIGHT	4	10.275	4.040	4.900	14.700	2.020

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **COPENA TRIANGLE**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	6	47.50	3.27	43.00	52.00	1.34
SHLDRWIDTH	0	0.00	0.00	0.00	0.00	0.00
THICKNESS	25	7.16	1.40	5.00	10.00	0.28
BASALWIDTH	20	22.60	4.10	17.00	33.00	0.92
JNCTRWIDTH	0	0.00	0.00	0.00	0.00	0.00
MAXWIDTH	25	24.24	3.95	17.00	33.00	0.79
HAFTLENGTH	0	0.00	0.00	0.00	0.00	0.00
WEIGHT	25	8.392	3.739	2.400	16.000	0.748

--------- TYPE = **COTACO CREEK**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	2	43.00	2.83	41.00	45.00	2.00
SHLDRWIDTH	2	36.50	3.54	34.00	39.00	2.50
THICKNESS	2	7.50	0.71	7.00	8.00	0.50
BASALWIDTH	2	14.00	0.00	14.00	14.00	0.00
JNCTRWIDTH	2	16.00	0.00	16.00	16.00	0.00
MAXWIDTH	2	37.50	2.12	36.00	39.00	1.50
HAFTLENGTH	2	9.00	1.41	8.00	10.00	1.00
WEIGHT	2	10.650	0.778	10.100	11.200	0.550

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **CRAWFORD CREEK**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	47.00	0.00	47.00	47.00	0.00
SHLDRWIDTH	1	27.00	0.00	27.00	27.00	0.00
THICKNESS	1	9.00	0.00	9.00	9.00	0.00
BASALWIDTH	1	21.00	0.00	21.00	21.00	0.00
JNCTRWIDTH	1	18.00	0.00	18.00	18.00	0.00
MAXWIDTH	1	27.00	0.00	27.00	27.00	0.00
HAFTLENGTH	1	9.00	0.00	9.00	9.00	0.00
WEIGHT	1	11.100	0.000	11.100	11.100	0.000

--------- TYPE = **EVA**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	50.00	0.00	50.00	50.00	0.00
SHLDRWIDTH	7	28.14	4.06	23.00	36.00	1.53
THICKNESS	8	7.38	1.06	5.00	8.00	0.37
BASALWIDTH	8	14.50	11.03	7.00	36.00	3.90
JNCTRWIDTH	8	11.25	1.58	9.00	14.00	0.56
MAXWIDTH	8	28.75	3.77	23.00	36.00	1.33
HAFTLENGTH	8	4.88	1.13	3.00	6.00	0.40
WEIGHT	8	6.863	3.067	2.500	10.200	1.084

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **FLINT CREEK**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	3	50.33	2.52	48.00	53.00	1.45
SHLDRWIDTH	9	21.56	3.47	18.00	28.00	1.16
THICKNESS	9	7.44	1.42	5.00	9.00	0.47
BASALWIDTH	9	13.44	3.24	9.00	20.00	1.08
JNCTRWIDTH	9	12.44	2.46	9.00	17.00	0.82
MAXWIDTH	9	21.78	3.56	18.00	28.00	1.19
HAFTLENGTH	9	9.22	3.93	3.00	18.00	1.31
WEIGHT	9	7.256	3.254	1.300	11.400	1.085

--------- TYPE = **HAMILTON**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	26.00	0.00	26.00	26.00	0.00
SHLDRWIDTH	0	0.00	0.00	0.00	0.00	0.00
THICKNESS	1	6.00	0.00	6.00	6.00	0.00
BASALWIDTH	1	10.00	0.00	10.00	10.00	0.00
JNCTRWIDTH	0	0.00	0.00	0.00	0.00	0.00
MAXWIDTH	1	10.00	0.00	10.00	10.00	0.00
HAFTLENGTH	0	0.00	0.00	0.00	0.00	0.00
WEIGHT	1	1.300	0.000	1.300	1.300	0.000

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **KIRK**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	8	44.25	17.45	21.00	74.00	6.17
SHLDRWIDTH	9	26.33	3.77	22.00	32.00	1.26
THICKNESS	9	6.44	1.33	4.00	9.00	0.44
BASALWIDTH	9	19.56	3.78	16.00	26.00	1.26
JNCTRWIDTH	9	16.00	1.66	14.00	20.00	0.55
MAXWIDTH	9	26.33	3.77	22.00	32.00	1.26
HAFTLENGTH	9	6.89	2.62	3.00	11.00	0.87
WEIGHT	9	8.256	5.410	4.000	18.300	1.803

--------- TYPE = **KNIGHT ISLAND**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	0.00	0.00	0.00	0.00	0.00
SHLDRWIDTH	1	18.00	0.00	18.00	18.00	0.00
THICKNESS	2	3.50	2.12	2.00	5.00	1.50
BASALWIDTH	2	15.00	4.24	12.00	18.00	3.00
JNCTRWIDTH	2	13.00	2.83	11.00	15.00	2.00
MAXWIDTH	2	15.00	4.24	12.00	18.00	3.00
HAFTLENGTH	2	5.50	3.54	3.00	8.00	2.50
WEIGHT	2	1.200	1.556	0.100	2.300	1.100

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **LITTLE BEAR CREEK**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	60.00	0.00	60.00	60.00	0.00
SHLDRWIDTH	5	25.00	5.52	20.00	31.00	2.47
THICKNESS	5	9.40	1.52	7.00	11.00	0.68
BASALWIDTH	5	13.60	1.14	12.00	15.00	0.51
JNCTRWIDTH	5	16.20	2.59	14.00	19.00	1.16
MAXWIDTH	5	25.80	4.97	20.00	31.00	2.22
HAFTLENGTH	5	10.20	3.03	6.00	14.00	1.36
WEIGHT	5	9.960	3.278	4.800	13.900	1.466

--------- TYPE = **MADISON**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	8	25.25	3.96	19.00	30.00	1.40
SHLDRWIDTH	0	0.00	0.00	0.00	0.00	0.00
THICKNESS	10	5.30	2.16	3.00	10.00	0.68
BASALWIDTH	9	15.22	2.49	11.00	18.00	0.83
JNCTRWIDTH	0	0.00	0.00	0.00	0.00	0.00
MAXWIDTH	10	15.30	2.41	11.00	18.00	0.76
HAFTLENGTH	0	0.00	0.00	0.00	0.00	0.00
WEIGHT	10	1.580	0.673	0.700	2.800	0.213

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **MCINTIRE**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	3	63.00	12.12	49.00	70.00	7.00
SHLDRWIDTH	5	27.60	4.45	22.00	33.00	1.99
THICKNESS	5	8.60	1.67	6.00	10.00	0.75
BASALWIDTH	5	18.40	2.88	14.00	21.00	1.29
JNCTRWIDTH	5	17.80	1.92	15.00	20.00	0.86
MAXWIDTH	5	28.60	2.88	25.00	32.00	1.29
HAFTLENGTH	5	11.60	1.14	10.00	13.00	0.51
WEIGHT	5	13.340	8.490	3.100	24.500	3.797

--------- TYPE = **MORROW MOUNTIAN**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	2	48.00	12.73	39.00	57.00	9.00
SHLDRWIDTH	0	0.00	0.00	0.00	0.00	0.00
THICKNESS	2	8.50	3.54	6.00	11.00	2.50
BASALWIDTH	2	35.50	23.33	19.00	52.00	16.50
JNCTRWIDTH	0	0.00	0.00	0.00	0.00	0.00
MAXWIDTH	2	35.50	23.33	19.00	52.00	16.50
HAFTLENGTH	0	0.00	0.00	0.00	0.00	0.00
WEIGHT	2	16.450	15.203	5.700	27.200	10.750

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **MOTLEY**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	47.00	0.00	47.00	47.00	0.00
SHLDRWIDTH	1	22.00	0.00	22.00	22.00	0.00
THICKNESS	1	9.00	0.00	9.00	9.00	0.00
BASALWIDTH	1	16.00	0.00	16.00	16.00	0.00
JNCTRWIDTH	1	15.00	0.00	15.00	15.00	0.00
MAXWIDTH	1	22.00	0.00	22.00	22.00	0.00
HAFTLENGTH	1	18.00	0.00	18.00	18.00	0.00
WEIGHT	1	10.000	0.000	10.000	10.000	0.000

--------- TYPE = **OSCEOLA**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	0	0.00	0.00	0.00	0.00	0.00
SHLDRWIDTH	1	22.00	0.00	22.00	22.00	0.00
THICKNESS	1	8.00	0.00	8.00	8.00	0.00
BASALWIDTH	1	18.00	0.00	18.00	18.00	0.00
JNCTRWIDTH	1	14.00	0.00	14.00	14.00	0.00
MAXWIDTH	1	22.00	0.00	22.00	22.00	0.00
HAFTLENGTH	1	10.00	0.00	10.00	10.00	0.00
WEIGHT	1	9.700	0.000	9.700	9.700	0.000

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **PICKWICK**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	3	67.67	3.79	65.00	72.00	2.19
SHLDRWIDTH	3	27.67	3.51	24.00	31.00	2.03
THICKNESS	3	10.67	1.53	9.00	12.00	0.88
BASALWIDTH	3	15.67	3.51	12.00	19.00	2.03
JNCTRWIDTH	3	16.33	3.51	13.00	20.00	2.03
MAXWIDTH	3	27.67	3.51	24.00	31.00	2.03
HAFTLENGTH	3	11.33	1.53	10.00	13.00	0.88
WEIGHT	3	18.867	2.967	16.100	22.000	1.713

--------- TYPE = **PINE TREE**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	3	55.67	2.31	53.00	57.00	1.33
SHLDRWIDTH	3	25.00	1.73	24.00	27.00	1.00
THICKNESS	3	8.00	0.00	8.00	8.00	0.00
BASALWIDTH	3	25.00	1.00	24.00	26.00	0.58
JNCTRWIDTH	3	20.67	0.58	20.00	21.00	0.33
MAXWIDTH	3	25.33	1.53	24.00	27.00	0.88
HAFTLENGTH	3	9.33	2.08	7.00	11.00	1.20
WEIGHT	3	10.800	0.755	10.000	11.500	0.436

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **PLEVNA**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	1	63.00	0.00	63.00	63.00	0.00
SHLDRWIDTH	1	30.00	0.00	30.00	30.00	0.00
THICKNESS	1	10.00	0.00	10.00	10.00	0.00
BASALWIDTH	1	24.00	0.00	24.00	24.00	0.00
JNCTRWIDTH	1	17.00	0.00	17.00	17.00	0.00
MAXWIDTH	1	30.00	0.00	30.00	30.00	0.00
HAFTLENGTH	1	13.00	0.00	13.00	13.00	0.00
WEIGHT	1	20.400	0.000	20.400	20.400	0.000

--------- TYPE = **SYKES\WHITE SPRINGS**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	0	0.00	0.00	0.00	0.00	0.00
SHLDRWIDTH	1	25.00	0.00	25.00	25.00	0.00
THICKNESS	1	5.00	0.00	5.00	5.00	0.00
BASALWIDTH	1	16.00	0.00	16.00	16.00	0.00
JNCTRWIDTH	1	17.00	0.00	17.00	17.00	0.00
MAXWIDTH	1	25.00	0.00	25.00	25.00	0.00
HAFTLENGTH	1	8.00	0.00	8.00	8.00	0.00
WEIGHT	1	5.700	0.000	5.700	5.700	0.000

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **STANLEY**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	0	0.00	0.00	0.00	0.00	0.00
SHLDRWIDTH	0	0.00	0.00	0.00	0.00	0.00
THICKNESS	2	4.50	2.12	3.00	6.00	1.50
BASALWIDTH	2	26.00	1.41	25.00	27.00	1.00
JNCTRWIDTH	0	0.00	0.00	0.00	0.00	0.00
MAXWIDTH	2	26.00	1.41	25.00	27.00	1.00
HAFTLENGTH	0	0.00	0.00	0.00	0.00	0.00
WEIGHT	2	2.000	1.273	1.100	2.900	0.900

--------- TYPE = **SUBLET FERRY**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	2	37.00	8.49	31.00	43.00	6.00
SHLDRWIDTH	3	20.00	1.00	19.00	21.00	0.58
THICKNESS	3	6.00	1.00	5.00	7.00	0.58
BASALWIDTH	3	18.67	1.53	17.00	20.00	0.88
JNCTRWIDTH	3	15.00	1.00	14.00	16.00	0.58
MAXWIDTH	3	20.00	1.00	19.00	21.00	0.58
HAFTLENGTH	3	6.67	2.52	4.00	9.00	1.45
WEIGHT	3	4.733	2.542	2.500	7.500	1.468

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **SWAN LAKE**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	2	42.00	11.31	34.00	50.00	8.00
SHLDRWIDTH	2	19.00	1.41	18.00	20.00	1.00
THICKNESS	2	6.50	0.71	6.00	7.00	0.50
BASALWIDTH	2	20.50	6.36	16.00	25.00	4.50
JNCTRWIDTH	2	14.50	3.54	12.00	17.00	2.50
MAXWIDTH	2	22.50	3.54	20.00	25.00	2.50
HAFTLENGTH	2	10.00	0.00	10.00	10.00	0.00
WEIGHT	2	6.250	1.909	4.900	7.600	1.350

--------- TYPE = **WADE**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	5	42.20	7.19	33.00	53.00	3.22
SHLDRWIDTH	8	24.00	3.46	18.00	30.00	1.22
THICKNESS	9	6.44	0.73	5.00	7.00	0.24
BASALWIDTH	9	13.22	1.92	11.00	17.00	0.64
JNCTRWIDTH	9	13.11	2.15	10.00	17.00	0.72
MAXWIDTH	9	23.67	3.39	18.00	30.00	1.13
HAFTLENGTH	9	9.78	1.72	7.00	12.00	0.57
WEIGHT	9	5.333	2.240	2.200	8.100	0.747

40DV5 PP/K STATISTICS (Con't)

--------- TYPE = **UNIDENTIFIED PP/K**

FIELD	N	MEAN	STD	MIN	MAX	SEM
LENGTH	0	0.00	0.00	0.00	0.00	0.00
SHLDRWIDTH	24	24.08	4.40	17.00	35.00	0.90
THICKNESS	27	6.52	1.55	3.00	10.00	0.30
BASALWIDTH	26	15.04	3.48	8.00	22.00	0.68
JNCTRWIDTH	23	14.22	3.00	8.00	20.00	0.63
MAXWIDTH	27	23.22	4.94	13.00	35.00	0.95
HAFTLENGTH	22	7.59	2.68	2.00	12.00	0.57
WEIGHT	27	5.607	4.580	0.500	17.200	0.881

APPENDIX C
FAUNAL REMAINS

APPENDIX C, Part I

Table C.1. Inventory of Faunal Remains, 40DV4.

General Surface Collection

Deer: antler tine broken/healed (flaker ?); lft (B) scapula port; lft dist humerus; lft tibia port; lft Tt (KC); lft Tf (B); 2nd 3/4 (KC) (7)
Ind: 3(1B 1polished) LM (3) Total 10 148.7 gms

Feature 1
Deer: lft (B) prox Mc (1)
Cow: split axis vert (1)
Turkey: cranium (1)
Ind: 4(3B) LM (4) Total 7 wgt 60.0 gms

128N 85E Z1 L1
F. squirrel: rt (B) prox tibia epiph (1)
Colubrid: 1(B) vert (1)
Viperid: 1(B) vert (1)
Ind: 33(B) LM; 1(B) SM; 5(B) bird; 10(B) turtle (49) Total 52 wgt 53.0 g

125N 89E Z1 L1
Deer: alveolar frag; (B) sesamoid (2)
Ind: 14(8B) LM; 1 SM; 1 bird; 3(B) turtle (19) Total 21 wgt 9.1 gms

125N 106E Z1 L1
Deer: antler frag; 2 phalanx frag (3)
Ind: 11(1B) LM; 6(2B) turtle (17) Total 20 wgt 12.5 gms

125N 89E Z2 L1
Deer: 2 dental frags; 1st 3/4 frag; mtp 3/4 frag (4)
Pig ?: lft humerus shaft; rib frag (2)
Turkey: lft cmc; (B) innom port (2)
Colubrid: 1(B) vert (1)
Ind: 35(11B) LM; 7 bird; 11(1B) turtle (53) Total 62 wgt 78.6,21.6 gms

128N 85E Z1 L2
Deer: 2 rib; lft prox Mt (B); (B) Mt shaft; 3 mtp condyles (7)
Squirrel spp: dist femur port (1)
Rabbit: (B) premaxilla port; (B) lft ramus (2)
Ind: 49(10B) LM; 3(B) SM; 11(6B) bird; 16(5B) turtle (79) Total 89 wgt 8.9, 68.7, 40.8 gms

130N 89E Z1 L1
Deer: dental frag (1)
Ind: 25(10B)LM; 6(2B) bird; 2(1B) turtle; 2(1B) fish (35) Total 36 wt 27.1 gms

125N 106E Z1 L2
Ind: 9(1B) LM; 2 SM; 1(B) turtle (12) Total 12 wgt 8.6 g

130N 89E Z1 L2
Deer: 2 dental; (B) alv frag; cervical vert; (B) mtp condyle frag (5)
Dog: lft ulna (1)
Map/painted turtle: 2 marginal (2)
Ind: 54(12B) LM; 2(1B) SM; 9(3B) bird; 10(3B) turtle; 1 fish; 3 misc (79)
Total 87 wgt 43.1,40.6 gms

125N 106E Z2 L1
Deer: dental frag; 3rd 2/5 (2)
Ind: 55(24B) LM; 1 MM; 2(B) bird; 3 turtle; 6 misc (67) Total 69 wgt 78.6 gms

125N 89E Z2 L2
Deer: (B, polished) antler frag; dental frag; Mt shaft port; dist mtp (4)
Graptemys spp: costal; nuchal (1/2 lb) (2)
Softshell: (B) carapace/plastron frag (1)
River sturgeon: scute (1)
Ind: 27(3B) LM; 2(B) bird; 16(2B) turtle (45) Total 53 wgt 25.8, 32.6 gms

130N 89E Z2 L1
Deer: 4 dental; 4 petrous; scapula frag; prox humerus head frag;
lft humerus shaft; lft dist radius; 2 carpal/tarsal frags; lft innom port;
femur shaft frag; rt prox Mt; 1st 3/4; sesamoid (19)
Turkey: cmc frag (1)
Quail: sternum (1)
Colubrid: vert (1)
Map/painted turtle: marginal bone (1)
Ind: 74(9B) LM; 1 SM; 1 SR; 9(2B) bird; 29 turtle (114) Total 137
wgt 54.1,131.3,2.5, 20.1 gms

125N 89E Z2 L3
Deer: 4(B) dental; lft (B) prox tibia (5)
Rice rat: lft femur (1)
F. squirrel: rt (B) max port (1)
Colubrid: 3(B) vert (3)
Map/painted turtle: 2 costal (2)
Softshell turtle: 2(1B) plastron/carapace (2)
Ind: 24(12B) LM; 7(5B) bird; 15(2B) turtle (46) Total 60 wgt 33,10 gms

125N 106E Z2 L2
Deer: lft petrous; lft max dp3; lft tibia shaft polish ?; (B) radius shaft frag;
Mt shaft frag; mtp (B) frag (6)
Gray fox: lft mand M1 (1)
Raccoon: rt ramus (1)
Turkey: (B) rt tbt shaft (1)
Colubrid: vert (1)
Box turtle: fragmented carapace (1)
Ind: 44(29B) LM; 8(5B) bird; 17(2B) turtle; 1 fish; 1 misc bone frag (71)
Total 82 wgt 91.8 gms

125N 89E Z2 L4
Colubrid: vert (1)
Ind: 6(2B) LM; 1 SM; 1 bird; 3(1B) turtle (11) Total 12 wgt 8.1 gms

125N 89E Z2 L4
Skunk: rt (B) ramus (1)
Softshell: plastron port (female) (1)
Ind: 17(1B) LM; 3(2B) bird; 5(1B) turtle (25) Total 27 wgt 37.0 gms
130N 89E Z2 L2
Deer: max M; rt prox radius; rt prox Mc; rt prox ant Mt; rt prox post Mt;
Mt shaft; mtp 2/5 epiph (7)
Turkey: rt dist radius (1)
Opossum: rt (B) prox ulna (1)
Ind: 33(5B) LM; 1 SM; 9(2B) bird; 14(3B) turtle (57) Total 63
wgt 55.4, 149.4 gms

125N 89E Z3 L1
Deer: petrous port; rt femur shaft; (B) Mt (3)
Ind: 1(B) LM; 2 turtle (3) Total 6 wgt 31.1 g

125N 106E Z2 L3
Deer: 3 dental; (B) antler, possible flaker tip; dist humerus frag;
rt (B) prox tibia port; sesamoid (7)
Opossum: occipital port (1)
Ind: 21(14B) LM; 1 SM; 9(3B) bird; 5(2B) turtle; 2 misc (38) Total 46
wgt 43.0, 1.5 gms

130N 89E Z2 L3 Ind: 1 bird; 1 turtle (2) Total 2 wt 2.8 g

126N 88E Z1 L1
Softshell: (B) plastron/carapace frag (1)
Ind: 6(5B) LM; 3(2B) bird; 2(B) turtle; 2 misc (13) Total 14 wgt 5.1 g

126N 88E Z1 L2
Deer: lft (B) T2+3; lft dist tibia epiph; Mt shaft frag; sesamoid (4)
Raccoon: lft mand M2 (1)
Rabbit: lft (B) dist humerus (1)
Turkey: rt tbt shaft (1)
Colubrid: 1(B) vert (1)
Ind: 43(8B) LM; 1 SM; 10(4B) bird; 9(2B) turtle (63) Total 71 wt 34.6, 21.9 gms

126N 88E Z2 L1
Deer: (B) Mc shaft; 1st 3/4; 3rd 3/4; phalanx frag (4)
Colubrid: (B) vert (1)
Ind: 36(17B) LM; 10(9B) bird; 9(7B) turtle; 1 fish (56) Total 61 wgt 41.3 gms

125N 99E Z1 L1
Ind: 17(6B) LM; 1 bird; 1 turtle; 1 misc (20) Total 20 wgt 12.6 g

125N 96E Z1 L1
Deer: petrous port; basioccipital port; occipital condyle frag; 3 dental;
(B) rt Cu; lft (B) dist tibia; (B) 2nd 3/4 (9)
F. squirrel: rt radius port (1)
Crow: lft wing digit III (1)
Turkey: (B) ulna shaft port;; lft cmc; rt tbt shaft (3)
Colubrid: 3 vert (3)
Ind: 62(12B) LM; 2 SM; 6(1B) bird; 27(7B) turtle (97) Total 114 wgt 88.1 gms

125N 88E Z1 L1
Deer: dental frag (1)
Ind: 4(1B) LM; 1 SM; 1(B) bird (6) Total 7 wgt 2.4 g

125N 88E Z1 L2
Deer: lft Tt; (B) 1st 3/4; 1st 3/4 epiph (3)
Rabbit: rt (B) Tf (1)
Ind: 18(9B) LM; 6(B) bird; 10(2B) turtle (34) Total 38 wgt 43.7 gms

125N 99E Z2 L1
Deer: 3 dental; lft (B) premaxilla; (B) rib frag; mtp frag; 2 1st 3/4;
2 (1B) sesamoid (10)
F. squirrel: lft (B) ramus port; rt (B) radius (2)
G. squirrel: lft (B) max I1 (1)
Rabbit: lft innominate port (1)
Colubrid: vert (1)
Viperid: vert (1)
Snake: 2(B) vert frags (2)
Ind: 87(26B) LM; 5 SM; 1 small rodent; 15(3B) bird; 10(5B) turtle; 1 misc (119)
Total 137 wgt 25.6, 71.6 gms

125N 99E Z2 L1
Deer: (B) petrous frag; (B) premaxilla frag; 2 dental; 2 rib; lft (B) Tc+4;
(B) lft ML (8)
Rabbit: (B) rt prox ulna (1)
Turkey: (B) tbt shaft frag; (B) phalanx frag; (B) wing digit (3)
Colubrid: 2(B) vert (2)
Viperid: 1(B) vert (1)
Box turtle: 1(B) plastron port (1)
Ind: 56(B) LM; 2(B) SM; 10(B) bird; 13(B) turtle; 2(B) fish; 3 misc (86)
Total 102 wgt 1.7 g; 76.4 gms

125N 96E Z2 L1
Deer: occipital port; petrous port; 4 cranial frags; 2 vert frags;
femur shaft frag; Ml frag; (B) sesamoid (11)
G. squirrel: lft (B) premax (1)
Box turtle: carapace frag (1)
Ind: 32(2B) LM; 4(B) bird; 5(2B) turtle (41) Total 54 wgt 80.3 gms

125N 99E Z2 L2
Deer: (B) petrous frag; rt (B) prox radius; rt tibia shaft; lft lat Mt port;
Mt frag; lft T2+3; 3rd 3/4; 3rd 2/5 (8)
F. squirrel: thoracic vert (1)
G. squirrel: lft (B) innominate port (1)
Drumfish: pharyngeal arch (1)
Ind: 42(10B) LM; 5(3B) bird; 6(1B) turtle; 4 misc (57) Total 68 wgt 63.1,8.1 gms

125N 96E Z2 L2
Deer: rt C2+3; sesamoid; mtp frag (3)
Ind: 29(7B) LM; 1 bird; 3(1B1M) turtle; 1 (B) misc (34) Total 37 wgt 24.2 gms

124n 88E Z1 L1
Colubrid: 1(B) vert (1)

Ind: 7(B) LM; 1(B) bird; 1(B) turtle (9) Total 10 wgt 5 gms

126N 85E Z1 L1
Deer: dental frag; rt (B) fragmented scapula; rib shaft; innom frag; newborn mtp shaft; (B) mtp shaft (6)
Raccoon: (B) lft mand P4 (1)
F. squirrel: rt (B) prox humerus; (B) lft tibia port (2)
Rabbit: rt (B) prox femur (1)
Turkey: rt (B) coracoid port (1)
Canada goose: rt (B) scapula (1)
Colubrid: 1 vert (1)
Viperid: 1 vert (1)
Softshell: fragmented female costal; fragmented female plastron (2)
Ind: 63(24B) LM; 4(B) M; 17(7B) bird; 28(B) turtle; 1 fish (113) Total 129 wgt 125.6 gms

124N 88E Z2 L1
Ind: 17(3B) LM; 10(3B) turtle; 1(B) fish (28) Total 28 17.2 g

125N 99E Z2 L3
Deer: max M; dental (2)
Ind: 18(6B) LM; 2 SM; 3(2B) turtle (23) Total 25 wgt 17.1, 3.1 gms

125N 96E Z2 L3
Ind: 1(B) turtle (1) 0.4 g

125N 85E Z1 L1
Cow: saw cut humerus shaft 16.7 mm (1)
Deer: (B) fragmented occipital port; 4(B) dental; (B) rib; lft (B) scapula; (B) Cr frag; lft (B) Tf; (B) mtp frag; 1st 3/4 ab (B); (B) 3rd 3/4 (12)
Crow: lft cmc port (1)
Softshell: (B) plastron port (1)
Map/painted turtle: plastron port (1)
Ind: 30(B) LM; 5(4B) bird; 22(B) turtle (57) Total 73 wgt 116.2 gms

124N 87E Z1 L1
Deer: antler tine poss reamed flaker?; dental frag; (B) rib frag; rt humerus shaft; lft (B) C2+3; (B) phalanx frag 3/4 (6)
Beaver: (B) prox mtp (1)
Rice rat: (B) lft innom port (1)
G. squirrel: rt (B) prox femur (1)
Turkey: lft (B) coracoid frag (1)
Colubrid: 2(B) vert (2)
Map/painted turtle: (B) carapace frag (1)
Channel catfish: (B) pectoral port 3 lbs (1)
Drumfish: (B) pharyngeal arch; (B) cranial frag (2)
Ind: 77(B) LM; 1(B) SM; 8(B) bird; 24(B) turtle; 4(B) fish (114) Total 130 wgt 5.0, 77.5 gms

125N 100E Z1 L1
Deer: dental frag; sesamoid (2)
Ind: 40(24B) LM; 2 SM; 4 turtle; 1 fish (47) Total 49 wgt 10.5, 14.4 g

125N 100E Z1 L2
Deer: lft mand P2; dental frag; lft T2+3; lft (B) Tc+4; Mt shaft frag;
phalanx frag (6)
F. squirrel: lft premaxilla (1)
Rabbit: lft ramus port (1)
Ind: 39(9B) LM; 4(1B) bird; 3 turtle; 2 misc (48) Total 56 wgt 28.1,6.2 gms
125N 100E Z2 L1
Deer: dental frag; rt radius shaft; lft dist radius epiph; Ca; carpal frag;
lft femur shaft; 2nd 3/4; 2nd 3/4 epiph; sesamoid (9)
Gray fox: (B) max molar crown (1)
Turkey: scapholunar; (B) rt cuneiform (2)
Snake sp.: vert frag (1)
Box turtle: entoplastron; marginal bone; plastron frag (3)
Softshell: lft femur (1)
Salamander (Hellbender?): vert (1)
Drumfish: pharyngeal arch frag (1)
Ind: 124(24B) LM; 6(1B) bird; 16(3B) turtle; 1 fish (147) Total 166
wgt 155.4 gms

125N 87E Z1 L1
Pig: lft (B) dist dist humerus (1)
Deer: lft (B) Tc+4 (1)
Raccoon: lft (B) ramus port; (1)
G. squirrel: rt (B) rt ramus port (1)
Map/painted turtle: (B) marginal (1)
Ind: 32(B) LM; 1(B) SM; 2(B) bird; 15(8B) turtle; 10 misc (60) Total 65 wgt 60.9 gms

125N 100E Z2 L2
Deer: 2 dental; rt prox ant Mt; 1st 3/4; phalanx frag (5)
Mountain lion: distal mtp epiph (1)
Ind: 53(23B) LM; 1(B) SM; 7(1B) bird; 10(6B) turtle (71)
Total 77 wgt 20.3, 40.6 gms

126N 87E Z1 L1
Deer: lft (B) dist radius epiph; (B) Cr frag; lft (B) prox Mt; mtp epiph;
mtp frag; 1st 3/4 (6)
Viperid: 1(B) vert (1)
Ind: 26(B) LM; 1(B) SM: 8(1B) turtle (35) Total 42 wgt 41.0 g

125N 86E Z1 L1
Deer: (B) rt dist radius; (B) mtp shaft (2)
Ind: 48(24B) LM; 1(B) SM; 3(B) bird; 8(B) turtle (60) Total 62 wgt 69.5 gms

125N 86E Z1 L2
Deer: antler frag (B) polished; rt ramus w/P2P3P4; lft max P2; max M; 3 rib;
lft dist radius; rt (B) Cu; lft tibia shaft; 3rd 2/5; mtp frag (12)
Rabbit: rt ramus (1)
Turkey: rt coracoid frag; rt scapula shaft; lft (B) ulna shaft;
rt dist tmt troch II; dist tbt frag; tarsal; wing digit (7)
Colubrid: vert (1)
Snake sp: vert (1)
Softshell: carapace/plastron frag (1)
Ind: 120(B) LM; 4(B) SM; 19(17B) bird; 23(9B) turtle (166) Total 189

wgt 57.2,116.5 gms

125N 84E Z1 L1
Deer: 1(B) dental; (B) axis vert; (B) rib; (B) thoracic spinous; rt Cu;
(B) lft Tf; 2nd (B) 3/4; (B) carpal/tarsal frag (8)
Skunk: (B) lft ramus port (1)
Softshell: 2(B) carapace/plastron frag (2)
Ind: 31(B) LM; 11(B) bird; 6(B) turtle; 1(B) fish (49) Total 60 wgt 73.5 gms

124N 86E Z1 L1
Deer: lft (B) Ci; (B) lft mand M3 (2)
Ind: 17(B) LM; 2(B) bird; 14(9B) turtle; 1(B) fish (34) Total 36 wgt 21.8 g

126N 84E Z1 L1
Deer: sacral vert (1)
Box turtle: (B) neural (1)
Ind: 26(B) LM; 7(B) bird; 5(4B) turtle (38) Total 40 wgt 21.3 g

125N 83E Z1 L1
Deer: 2(B) dental; vert epiph; lft (B) scapula port; 1(B) carpal/tarsal;
(B) lft T2+3 (6)
Softshell: (B) carapace/plastron frag (1)
Ind: 59(58B) LM; 1(B) SM; 4(B) bird; 6(B) turtle (70) Total 77 wgt 71.6 gms

124N 87E Z2 L1
Deer: dental frag; lumbar vert; mtp condyle (3)
Colubrid: 2 (B) vert (2)
Softshell: 1(B) plastron port; 1 plastron/carapace frag (2)
Ind: 25(B) LM; 1(B) SM; 10(B) bird; 28(B) turtle; 1(B) fish (65)
Total 72 wgt 64.6 gms

125N 100E Z2 L3
Deer: rt ramus w/P2-M3 (ca 5 1/2 yrs); lft femur shaft; femur shaft frag;
ML frag (4)
Rabbit: lft Tf (1)
Opossum: rt prox ulna (1)
Colubrid: 2 vert (2)
Ind: 24(3B) LM; 1 SM; 6 bird; 10(1B) turtle (41) Total 48 131.5 g

125N 99E Z2 L3 Feature 5
Human: 4 pes phalanx (4)
Deer: 2(2B1M pin?) antler frag; lft prox radius; radius shaft; (B) ulna shaft;
2(B) rt prox Mt; (B) mtp frag; 1st 3/4; (B) 2nd 3/4; 3rd 2/5;
sesamoid (12)
G. squirrel: lft (B) dist tibia (1)
Beaver: lft humerus shaft (1)
Opossum: lft (B) humerus shaft (1)
Turkey: (B) pes phalanx (1)
Colubrid: 2(B) vert (2)
Softshell: 3(B) carapace/plastron (3)
Drumfish: 3(B) craniofacial; 1(B) pharyngeal arch frag (4)
Ind: 104(83B)LM; 1(B)SR; 3(B) SM; 38(34B) bird; 54(16B) turtle; 4(B) fish (204)
Total 233 wt 116 g

140N 80E Z1 L1
Deer: (B) rt max dp2; (B) thoracic spinous; lft (B) ML (3)
G. squirrel: lft (B) prox humerus (1)
Ind: 17(B) LM; 1(B) bird; 3(B) turtle; 12(B) misc (33) Total 37 wgt 16 .4 gms

143N 80E Z1 L1
Deer: (B) antler frag; (B) phalanx frag (2)
Drumfish: (B) tooth; pharyngeal frag (2)
Ind: 24(20B) LM; 6(B) bird; 14(8B) turtle; 1 fish (45) Total 49 wt 21.6g

136N 80E Z1 L2
Deer: 2(B) antler frags; dental frag; rt dist humerus; (B) post radius shaft;
(B) femur shaft; (B) tibia shaft; 3rd 3/4; (B) sesamoid (9)
Skunk: rt (B) humerus shaft (1)
F. squirrel: (B) lft occipital condyle; rt (B) ulna (2)
G. squirrel: (B) temporal port; lft (B) scapula; lft (B) dist femur ab (3)
Turkey: (B) pes phalanx (1)
Colubrid: 5(B) vert (5)
Viperid: (B) vert (1)
Box turtle: 2(B) carapace (2)
Map/painted turtle: plastron port 1 lb (1)
Softshell: 2(B) carapace/plastron frags (2)
Drumfish: rt lower pharyngeal arch 5.5 lbs (1)
Ind: 127(126B) LM; 34(B) bird; 19(B) turtle; 1(B) fish; 15 misc (196)
Total 224 wt 122 g

143N 80E Z2 L1
Deer: (B) rib shaft; rt prox (B) Mc; 2(B) sesamoid (4)
Peromyscus sp: rt ramus (1)
Opossum: lft ramus (1)
Turkey: cmc frag; dist tmt frag (2)
Colubrid: 1(B) vert (1)
Ind: 37(14B) LM; 1(B) SM; 15(3B) bird; 17(4B) turtle (70) Total 79
wt 9.9,65.9g

140N 80E Z2 L1
Deer: (B) rib frag; rt (B) Tt (2)
Turkey: lft (B) dist humerus (1)
Ind: 36(21B) LM; 5(4B) bird; 9(B) turtle; 1(B) fish; 5(B) misc (56) Total 59
wgt 39.7 gms

140N 80E Z2 L2
Deer: lft dist humerus port; 2 sesamoid (3)
G. squirrel: (B) lft innominate port (1)
Drumfish: pharyngeal arch port (1)
Ind: 64(18B) LM; 2 SM; 16(3B) bird; 16(B) turtle (98) Total 103 wgt 67.9 gms

143N 80E Z2 L2
Deer: antler tine tip flaker; rib; lft max P2; 1 dental; lft dist humerus;
Mt frag; prox 1st 3/4; (B) sesamoid (8)
F. squirrel: rt (B) Tf (1)
Squirrel sp: prox humerus frag (1)
Turkey: lft (B) coracoid port (1)

Viperid: vert (1)
Map/painted turtle: marginal (1)
Ind: 75(23B) LM; 1 SM; 21(4B) bird; 22(10B) turtle; 20 misc (139) Total 152
wt 109.2 g

138N 80E Z1 L2
Deer: (B) petrous; (B) lft mand P4; 3(2B) rib; rt (B) C2+3; (B) mtp shaft;
2nd 3/4; sesamoid (9)
Rabbit: rt (B) dist femur (1)
Map/painted turtle: nuchal (1)
Softshell: (B) neural (1)
Ind: 68(47B) LM; 14(B) bird; 20(18B) turtle (102) Total 114 wt 64.9 g

136N 80E Z2 L1
Deer: (B) antler frag; (B) petrous frag; rt max w/M123; 2 dental;
(B) prox femur head frag; lft Tt (ground distal end); lft (B) prox Mt;
2(1B) sesamoid; (B) 1st 3/4 (11)
G. squirrel: lft (B) max I; rt radius port; rt (B) humerus port (3)
Rabbit: lft (B) femur shaft (1)
Map/painted turtle: 2 plastron ports (2)
Colubrid: 2(B) vert (2)
Viperid: 1(B) vert (1)
Ind: 117(42B) LM; 5(B) SM; 43(40B) bird; 30(14B) turtle; 1(B) fish (196)
Total 216 wt 168.1 g

140N 80E Z2 L3
Deer: rt C2+3; rt Ci; rt C4; mtp frag; 2nd 3/4; sesamoid (6)
Turkey: lft prox femur head (1)
Box turtle: carapace frag (1)
Sucker: vert (1)
Channel catfish: craniofacial frag 1/4 lb (1)
Ind: 67(16B) LM; 3 SM; 13(1B) bird; 7(4B) turtle (90) Total 100 wgt 51.8,7.2g

143N 80E Z2 L3
Deer: (B) Mt shaft (1)
Drum: lft lower pharyngeal port (1)
Ind: 23(14B) LM; 1(B) turtle (24) Total 26 wt 22.4g

138N 80E Z2 L1
Deer: lft (B, mod w/blunt edge) and rt prox ulna; (B) radius shaft frag;
sesamoid (4)
Skunk: (B) lft ramus w/M1 (1)
F. squirrel: lft (B) ramus; lft (B) mand I1 (2)
Rabbit: lft (B) prox ulna (1)
Mole: lft (B) humerus (1)
Viperid: (B) vert (1)
Ind: 78(12B) LM; 1(B) SM; 6(3B) bird; 10(3B) turtle (95) Total 105 wgt 75.6 gms

136N 80E Z2 L3
G. fox: temporal frag (1)
Ind: 23(11B) LM; 1 bird; 8 turtle (32) Total 33 wgt 13.1 g

136N 80E Z2 L3
Deer: 3 dental; Mt frag (4)
Mountain lion: fibula port w/polish and scored and snapped (1)
Ind: 4(2B) LM; 1(B) turtle (5) Total 10 11.6 g

138N 80E Z2 L2
Deer: lft mand dp3; 1 dental; lft (B) ascending ramus; scapula frag;
rt humerus shaft; rt dist radius; lft prox ulna; Mc frag;
(B) femur head; rt (B) prox Mt; Mt shaft;(B) dist 1st 3/4 (12)
G. squirrel: (B) temporal frag; rt (B) dist humerus (2)
Turkey: manus phalanx (1)
Viperid: (B) vert (1)
Softshell: (B) carapace/plastron (1)
Ind: 65(29B) LM; 17(3B) turtle; 36 misc (118) Total 135 wt 166.6 g

144N 80E Z1 L1
Deer: (B) femur frag; 2(B) Mt (3)
Colubrid: (B) vert (1)
G. squirrel: rt (B) prox femur (1)
F. squirrel: rt (B) humerus (1)
Ind: 38(B) LM; 2(B) SM; 8(B) bird; 2(B) turtle (50) Total 56 wt 38.2g

144N 80E Z2 L1
Deer: lft (B) prox ulna; (B) T2+3 frag; (B) Mt frag (3)
G. squirrel: lft (B) innom port; rt (B) prox femur (2)
Softshell: (B) plastron port female 3 lbs (1)
Colubrid: (B) vert (1)
Viperid: 2(B) vert (2)
Drumfish: tooth (1)
Ind: 114(54B) LM; 12(B) bird; 15(B) turtle; 12 misc (153) Total 163 wt 83.8 g

142N 80E Z2 L1
Deer: lumbar vert port; pelvic frag; dist mtp (3)
Painted/map: costal frag (1)
Ind: 13(7B) LM; 3(B) bird; 13(1B) turtle (29) Total 33 wt 25.7 g
144N 80E Z2 L2
Deer: (B) petrous; lft mand P3, P4, M1, M2; rt (B) humerus shaft;
2 1st (B) 3/4; 2nd 3/4; sesamoid (10)
F. squirrel: lft (B) prox humerus (1)
G. squirrel: rt prox humerus; lft humerus; lft (B) ulna; lft (B) Tf (4)
Rabbit: rt (B) scapula frag; lft (B) Tt (2)
Turkey: cmc frag; rt tbt (B) shaft frag (2)
Colubrid: 3(B) vert (3)
Viperid: (B) vert (1)
Ind: 84(37B) LM; 1(B) SM; 22(19B) bird; 20(10B) turtle (127) Total 150 wt 98g

139N 80E Z1 L1
Turkey: (B) pes phalanx (1)
Ind: 17(B) LM; 1(B) turtle; (18) Total 19 4.0 g

137N 80E Z1 L2
Deer: (B) dental; lft (B) prox ant radius; rt (B) Ci; (B) 2nd 3/4 (4)
Raccoon: (B) mand M2 frag (1)

Rabbit: rt (B) ramus port; lft (B) dist femur (2)
Turkey: lft dist humerus frag (B); (B) lft tbt shaft (2)
Colubrid: (B) vert (1)
Ind: 63(B)LM; 8(B) bird; 14(B) turtle (85) Total 95 wt 43.8g

141N 80E Z1 L1
Deer: max molar frag; carpal/tarsal; mtp (B) condyle frag; 3rd 2/5 (4)
Bobcat: lft (B) mand M1 (1)
Shark: modified tooth (1)
Ind: 20(13B) LM; 2(1B) bird; 2 turtle (24) Total 30 wt 17.9g

144N 80E Z2 L3
Deer: (B) antler frag; lft ant ramus port; rt mand M3; 4 dental; (B) rib frag; scapula frag; rt (B) Tf; 3rd 3/4; sesamoid (12)
F. squirrel: lft (B) prox tibia; lft (B) dist tibia (2)
Rabbit: lft (B) ramus; rt innom port; rt (B) prox femur head (3)
Turkey: (B) tbt shaft frag; rt (B) tmt port male (2)
Colubrid: 6 (B) vert (6)
Map/painted turtle: plastron port 1 lb (1)
Ind: 37(3B) LM; 11(10B) bird; 3(B) fish (51) Total 77 wt 120 g

141N 80E Z2 L1
Deer: (B) scapula frag; 1st 3/4 (2)
Skunk: rt (B) ramus port (1)
Rabbit: 2(B, 1 polish) lft dist humerus (2)
Ind: 11(B) LM; 11(B) bird; 3 turtle; 3 misc (28) Total 33 wt 14.3g

139N 89E Z1 L1
Deer: lft prox ant Mt (1)
Dog: rt mand I3 (1)
Garfish: scale (1)
Ind: 27(1B) LM; 1 SM; 2(1B) bird; 4(B) turtle (34) Total 37 wgt 10.5, 11.5 gm

139N 80E Z2 L1
Wapiti: lft temporal port (1)
Deer: thoracic spinous; (B) rib; rt (B) ML; 2(B) sesamoid; 2nd (B) epiph 3/4 (6)
G. squirrel: rt (B) dist femur (1)
Turkey: lft cuneiform; lft (B) tbt shaft; 1(B) pes phalanx (3)
Ind: 36(19B) LM; 12(B) bird; 11(B) turtle; 2(1B) fish; 4 misc (65) Total 76 wgt 62.1 g

141N 80E Z2 L2
Deer: 1(B) antler frag; 1 dental frag; mtp frag; (B) Tt frag (4)
G. squirrel: (B) lft humerus (1)
Ind: 29(23B) LM; 8(3B) bird; 1(B) fish (38) Total 53 wt 26.4g

137N 80E Z2 L1
Deer: (B) petrous port; 1 dental; scapula frag; humerus shaft; (B) radius shaft; rt prox Mt; 2nd 3/4 (7)
G. squirrel: rt scapula port (1)
Rabbit: rt dist radius; lft (B) Tt (2)
Opossum: lft (B) dist humerus (1)
Barred owl: rt coracoid port (1)

Turkey: coracoid frag; rt (B) dist radius; rt dist tmt abraded possible awl;
(B) pes phalanx (4)
Map/painted turtle: 2 costal (2)
Colubrid: 2(1B) vert (2)
Viperid: 1(B) vert (1)
Ind: 103(32B) LM; 1(B) SR; 17(B) bird: 27(9B) turtle (148)
Total 169 wt 134.5 g

139N 89E Z1 L2
Deer: dental frag; rt fragmented radius; lft prox ulna; lft (B) acetabular port;
lft Tc+4 (5)
Mole: (B) lft humerus; (B) sacrum (2)
Turkey: vertebra (1)
Colubrid: 2(B) vert (2)
Drumfish: craniofacial frag (1)
Ind: 22(13B) LM; 3(1B) SM; 4(2B) bird; 4(2B) turtle (33)
Total 44 wgt 33.6,18.7 gms

141N 80E Z2 L3
Deer: petrous port; post radius shaft; Mc shaft; Ca; lft T2+3; 2nd 3/4;
sesamoid (7)
F. squirrel: (B) lft dist humerus (1)
Map/painted turtle: marginal 1 lb; costal (2)
Ind: 19(4B) LM; 5(4B) bird; 15(2B1polish) turtle (39) Total 49 wt 28.7 g

139N 80E Z2 L2
Deer: rt ascending ramus; rt (B) Cu; 1st 3/4; 3rd 2/5 (4)
Turkey: (B) vert; pes phalanx (2)
Salamander (Hellbender ?): (B) vert (1)
Ind: 55(45B1/scored/snapped) LM; 5(B) bird; 15(4B) turtle (75) Total 82
wt 31.1, 17.6 g

140N 88E Z2 L3
Deer: lft max dp4; lft mand M2; lft mand M3; 3 dental; lft dist humerus;
sacrum (8)
Viperid: vert (1)
Ind: 84(1B) LM; 15 bird; 18(6B) turtle; 1 fish (118) Total 127 wt 45.7, 122.8 gms

139N 89E Z2 L1
Deer: (B) antler; (B) rib frag; (B) lft Tc+4 frag; (B) mtp frag (4)
Ind: 35(20B) LM; 5(1B) bird; 8(6B) turtle (48) Total 52 wgt 19.6, 7.6 gms

145N 80E Z1 L1
Deer: antler frag; maxilla frag; 7 dental; lft (B) prox ulna; lft (B) Cu;
(B) mtp condyle frag; 2nd 3/4; sesamoid (14)
Raccoon: fibula shaft (1)
G. squirrel: (B) rt humerus; rt (B) prox femur (2)
Squirrel sp: tibia shaft frag (1)
Woodchuck: rt mand I (1)
Rabbit: rt (B) humerus (1)
Turkey: rt cmc frag (1)
Colubrid: 2(B) vert (2)
Viperid: 1(B) vert (1)

Stinkpot: nuchal (1)
Drum: lft upper pharyngeal port (5 lbs); pharyngeal frag (2)
Ind: 75(21B) LM; 1(B) SM; 14(B) bird; 14(7B) turtle (104) Total 131 wt 77.2g

135N 80E Z1 L1
Turkey: (B) pes phalanx (1)
Ind: 18(17B) LM; 2(B) SM; 5(B) turtle (25) Total 26 4.0, 7.0 g

140N 88E Z2 L4
Deer: 2 dental; alveolar frag; cervical vert; lft dist humerus shaft (5)
G. squirrel: humerus shaft frag (1)
Rabbit: lft scapula port (1)
Box turtle: carapace frag (1)
Ind: 52(7B) LM; 1 SM; 8(1B) bird; 18(3B) turtle (79) Total 87 wgt 101.3 g

139N 89E Z2 L2
Deer: rt scapula port w/polish; lft dist radius (2)
Turkey: fibula port (1)
Drumfish: 1 craniofacial; rt cleithrum 1.5 lbs (2)
Ind: 37(4B) LM; 1 SR; 8(4B) bird; 18(2B5M w/polish, abraded); 1 fish; 1 misc (66)
Total 71 wgt 33.3 gms

145N 80E Z1 L2
Deer: rib frag; rt (B) dist humerus; lft prox radius; ulna shaft;
2(1B) Mt shaft; mtp shaft; 1st 3/4; sesamoid (9)
Raccoon: baculum (mod, awl?) (1)
G. squirrel: lft (B) ramus frag; lft (B) and rt (B) dist femur (3)
Turkey: lft humeus shaft; (B) scapholunar; pes phalanx (3)
Colubrid: 3(B) vert (3)
Viperid: 1(B) vert (1)
Drumfish: pharyngeal frag (1)
Ind: 85(35B) LM; 1 LM awl tip; 16(4B) bird; 23(3B) turtle; 3(1B) fish;
3 misc (131) Total 152 wt 124.3 gms

135N 80E Z1 L2
Deer: lft Ci; 1st 2/5 (B); 3rd 3/4 (B) (3)
G. squirrel: lft (B) dist humerus; lft (B) and rt (B) femur ports (3)
F. squirrel: (B) I frag; rt (B) prox femur (2)
Rabbit: (B) lumbar; rt (B) prox ulna; 2(B) rt dist tibia (4)
Colubrid: 3(B) vert (3)
Viperid: 2(B) vert (2)
Softshell: (B) carapace/plastron frag (1)
Box turtle: carapace frag (1)
Drumfish: vert (1)
Sucker: 2 vert (2)
Ind: 81(58B1M) LM; 3(B) SM; 13(10B) bird; 8(4B) turtle (105) Total 127
wgt 61.3 gms

139N 91E L1
Deer: (B) antler frag (1)
Ind: 9(2B) LM; 1(B) bird; 3(1B) turtle; 1(B) fish (14) Total 15 4.5 g

140N 88E Z3 L1
Deer: max molar port; lft Tf; Mt frag (3)
Opossum: lft humerus port (1)
Turkey: lft coracoid; (B) fibula port (2)
Ind: 14(7B) LM; 5 bird; (19) Total 25 36.6 g

133N 82E Z1 L1
Ind: 17(1B) LM; 2(B) SM; 1 bird; 3(B) turtle (23) Total 23 wgt 7.6 gms

135N 80E Z2 L1
Deer: 2 dental; imm femur shaft port; mtp frag; 2(1B) 2nd 2/5; 2nd 3/4;
3 sesamoid (10)
F. squirrel: lft Tf (1)
G. squirrel: rt dist femur; lft dist tibia (2)
Squirrel sp: maxilla (1)
Neotoma sp: lft ramus (1)
Rabbit: lft (B) ramus port; mtp (2)
Turkey: 2 scapholunar; dist (B) tbt frag (3)
Colubrid: 2(B) vert (2)
Viperid: 1(B) vert (1)
Box turtle: (B) plastron port (1)
Softshell: (B) carapace/plastron frag (1)
Moxostoma sp: maxilla port 1/2 lb (1)
Ind: 91(47B) LM; 2(B)SM; 3(B) bird; 29(4B) turtle; 1 fish (126) Total 152
wt 20.0, 54.2g

139N 89E Z2 L3
Deer: petrous port; (B) ramus frag; 3 rib; thoracic port; lft dist radius (7)
Raccoon: lft Tf (1)
Rice rat: lft ramus; lft femur (2)
F. squirrel: rt innominate (1)
G. squirrel: rt premax; sacrum; lft ulna; lft innominate (4)
Rabbit: lft dist humerus (1)
Turkey: scapula frag; tbt frag; tmt frag (3)
Colubrid: 2 vert (2)
Garfish: scale (1)
Ind: 65(6B) LM; 3(2B) SM; 5(1B) bird; 4(1M w/polish) turtle; 3 fish (80)
Total 102 wgt 106.6 gms

133N 80E Z2 L1
Deer: 4(2B) dental; (B) dist tibia frag; lft (B) prox Mt; (B) Mt frag;
lft (B) Tt; 3rd 2/5 (9)
G. squirrel: lft (B) scapula; lft (B) tibia (2)
Rabbit: (B) premaxilla; (B) lft ramus (2)
Turkey: rt (B) coracoid; (B) dist tmt condyle (2)
Stinkpot: (B) plastron port (1)
Ind: 118(B) LM; 3(B) SM; 15(B) bird; 24(7B) turtle; 18(B) misc (178) Total 194
97.6 gms

133N 82E Z1 L2
Deer: 2(B) antler (2)
Mole: rt (B) humerus (1)
Turkey: lft (B) tbt shaft (1)

Drumfish: premaxilla frag (1)
Ind: 29(27B) LM; 6(B) bird; 7(B) turtle; 3(B) fish; 1(B) misc (46) Total 51
wt 24.0 g

139N 89E Z2 L4
Human: vert frag; rib frag both F/NB (2)
Deer: (B) fragmented antler; 2 dental frag; 2 lumbar frags; vert epiph;
3 vert frags; lft prox ulna; lft prox Mc; lft innom frag;
lft prox femur shaft; rt femur shaft; 1st epiph 3/4;
2nd phalanx 3/4 (16)
Gray fox: lft temporal port; lft max P4; lft max M1 (3)
Rice rat: ramus frag; lft humerus; rt femur (3)
Turkey: scapholunar (1)
Box turtle: nuchal; 2 plastron frags (3)
Drumfish: pharyngeal tooth (1)
Ind: 63 LM; 3 SM; 11 bird; 7 turtle; 1 fish (85) Total 114
wgt 30.6,15.9,127.0 gms

135N 80E Z2 L3
Map/painted turtle: costal port (1)
Ind: 6(5B) LM; 1(B) bird; 17(7B) turtle; 1 fish (25) Total 26 wt 9.0 g

133N 80E Z2 L3
Deer: vert frag; (B) Mt frag; sesamoid; 1(B) 1st 3/4 (4)
Ind: 21(19B) LM; 2(B) bird; 6(3B) turtle; 2(B) fish (31) Total 35 wgt 22.4

139N 89E Z3 L1
Human: vert body F/NB (1)
Deer: antler frag; 2 lumbar frags; vert epiph; lft radius shaft; (B) 1st 3/4;
(B) 1st 2/5; phalanx frag (8)
Opossum: ramus frag; cervical vert (2)
Turkey: lft scapula frag; prox fibula frag (2)
Ind: 47 LM; 2 SM; 1 bird; 4(1B) turtle (54) Total 67 wgts 52.8, 27.2 gms

133N 82E Z2 L2
Deer: lft (B) mand M3; (B) ramus frag; (B) Mt frag; (B) 2nd 3/4 epiph;
(B) sesamoid (5)
Ind: 22(12B1polish) LM; 1(B) SM; 7 bird; 3(2B) turtle (33) Total 38 wt 28.4g

121N 113E Z2 L1
Deer: dental frag; lft C2+3; femur shaft frag; mtp shaft (4)
Colubrid: 3 vert (3)
Ind: 13(1B) LM; 1 SM; 1(B) bird; 1 fish (16) Total 23 wgt 28.3 gms

133N 82E Z2 L3
Deer: 4 dental; lft prox Mc; patella; rt dist tibia; rt Tt; rt prox Mt;
(B) Mt shaft; 2(B) dist mtp; 1st 3/4 ab; 2nd 3/4 (14)
F. squirrel: 2 rt dist femur epiph (2)
Turkey: lft humerus shaft (1)
Softshell: 3 plastron/carapace frags; 1(B) polished costal male (4)
Box turtle: marginal (1)
Stinkpot: plastron plate (1)
Ind: 74(24B) LM; 1 SM; 2(1B) bird; 13(10B) turtle; 1 fish (91) Total 114

wgt 135.2 gms

140N 82E Z1 L1
Deer: (B) Mt frag; mtp 2/5 epiph (B) (2)
Skunk: rt (B) ramus port (1)
Raccoon: (B) max molar port (1)
G. squirrel: rt (B) dist humerus (1)
Ind: 81(79B) LM; 1 Sm; 4(B) bird; 8(B) turtle (94) Total 99 wgt 53.1 gms

121N 113E Z2 L2
Deer: 4 dental; 2 lft scapula ports; (B) dist humerus frag (7)
Turkey: imm lft scapula port spring/summer kill (1)
Colubrid: 2 vert (2)
Ind: 60(10B) LM; 5(1B) bird; 10(B) turtle (75) Total 85 wgt 149.1 gms

136N 82E Z1 L1
Deer: 2(B) dental; (B) Mt; 1st 3/4; 2nd 3/4 (B); 2nd 2/5 (B) (6)
Mole: (B) rt humerus (1)
Turkey: (B) pes phalanx (1)
Colubrid: 2(B) vert (2)
Softshell: 2(B) carapace/plastron frag (2)
Catfish: rt (B) articular 1 lb (1)
Ind: 142(B) LM; 18(B) bird; 22(B) turtle; 1(B) fish (183) Total 195 wt 103.3g

134N 79E Z2 L1
Deer: rt (B) premaxilla; lft (B) scapula frag; lft (B) dist humerus;
2(B) rib; lft (B) prox radius; lft prox ulna (B), polished, abraded,
smoothed); (B) carpal frag; Mc shaft; lft innom port; lft prox tibia
shaft port; rt (B) Tf; 2 mtp ports (14)
G. squirrel: (B) temporal bone (1)
Rabbit: (B) lft ramus port (1)
Turkey: wing digit; tbt shaft (2)
Colubrid: 2(B) vert (2)
Ind: 60(31B) LM; 5(2B) bird; 8(4B) turtle (73) Total 93 wgt 228.6, 2.0 gms

136N 82E Z1 L2
Deer: (B) antler tine tip; 3(B) dental; lft prox (B) ulna; (B) carpal/tarsal;
dist (B) mtp condyle; 2(B) 1st 3/4 (9)
Raccoon: (B) premolar (1)
Rabbit: (B) rt ramus port; (B) lumbar vert (2)
Colubrid: 4(B) vert (4)
Ind: 67(25B) LM; 24(12B) bird; 30(11B) turtle (121) Total 137 wt ?

145N 79E Z2 L1
Deer: (B) rt mand dp4; rt mand P3; dental frag; thoracic spinous; rib frag;
Mc frag; lft tibia shaft; 2 Mt frags; 2 sesamoid (11)
Ind: 65(53B) LM; 4(1B) SM: 6(B) bird (75) Total 86 wgt 94.7 gms

136N 82E Z2 L2
Deer: 6 dental; (B) petrous port; rt mand condyle; lumbar vert; rib frag;
lft and rt dist humerus; rt Cr; lft prox radius; radius shaft frag;
femur shaft frag; lft Tc+4; T1; (B) prox mtp frag; mtp shaft;
mod mtp shaft awl?; dist mtp epiph; dist mtp 2/5; 1st 3/4 (B);

2nd 3/4; 2(B) 3rd 3/4; 5 sesamoids (32)
Bear: (B) prox Mc II (1)
F. squirrel: lft (B) Tf (1)
G. squirrel: lft (B) prox femur; rt (B) dist tibia; rt (B) prox tibia epiph (3)
Rabbit: lft and rt rami ports; lft and rt scapula; lft dist humerus;
rt (B) prox radius (6)
Crow: rt wing digit II (1)
Turkey: rt scapula; rt ulna; lft dist tbt; rt dist tmt; 3 pes phalanges (7)
Colubrid: 6(B) vert (6)
Viperid: 1(B) vert (1)
Box turtle: marginal; plastron port (2)
Softshell: plastron port (female, 3 lbs); 2 (B) plastron/carapace frags (3)
Drumfish: rt lower pharyngeal (3 lbs); rt lower pharyngeal 10 lbs;
pharyngeal arch frag (3)
River redhorse: pharyngeal arch port 1 lb (1)
Ind: 336(66B) LM; 4 SM; 66(8B) bird; 109(27B) turtle; 3 fish; 42 misc (560)
Total 622 wgt 48.0, 124.2; 218.7, 182.5, 10.4, 9.1 gms

134N 79E Z2 L2 West 1/2
Deer: 3(2B1M) antler frag; 3(1B) cranial frags; 3(B) petrous; rt max w/M1M2;
lft max frag; lft ascending ramus; lft (B) ant ramus; 3 ramus frags;
lft and rt max P2; rt max P3; lft max M1; lft mand dp3; lft mand dp4;
11 dental; 2 lumbar vert; vert frag; 5 rib; lft dist humerus;
2 lft prox Mc; 6 Mc shaft; lft innom port; femur shaft; (B) patella;
rt ant tibia shaft; 5 tibia shaft frags; lft and rt dist tibia; lft Tt;
lft Tc+4; 2 lft T2+3; lft and 2 rt prox Mt; 8(5B) Mt shaft; 7 mtp shaft;
4(1M w/abrasion) dist mtp; mtp 2/5 ab; 4(1B) 1st 3/4; 2nd 3/4;
2(1B) 2nd 2/5; 4(1B) 3rd 2/5; 2 phalange frags; 6(5B) sesamoid (107)
Mountain lion: rt (C) Tf (1)
Weasel: lft ramus port (1)
Rice rat: lft femur (1)
Beaver: (B) phalanx (1)
F. squirrel: lft humerus port (1)
G. squirrel: rt humerus shaft; (B) lft dist humerus; rt (B) innom port;
lft prox femur (4)
Rabbit: lft prox humerus; rt (B) prox tibia epiph; rt prox tibia (3)
Opossum: occipital port (C); rt max port; lft ramus; axis vert; lft femur (5)
Turkey: rt coracoid; rt prox humerus port; lft tbt port; lft dist tbt;
2 pes phalanx (6)
Wood duck: rt ulna (1)
Duck sp: pes phalanx (1)
Colubrid: 7(B) vert (7)
Viperid: 2(1B) vert (2)
Box turtle: 2 nuchal; 2 plastron; costal (5)
Map/painted turtle: 4 marginal ports; 2 plastron ports (6)
Mud turtle: plastron port (1)
Drumfish: pharyngeal arch 6 lbs; 3(B) vert (4)
Catfish sp: vert; cleithrum (2)
Ind: 272(100B1Mw/scoring) LM; 7(3B1M) SM; 1 SR; 86(21B) bird; 203(57B) turtle;
1 misc frag (570) Total 729 wgts 603.6,21.6,431.4,0.4 gms

140N 82E Z2 L4
Deer: 3rd 3/4; mtp frag; T1 (3)

Colubrid: (B) vert (1)
Ind: 14(9B) LM; 1(B) bird; 2(B) turtle (17) Total 21 wt 10.1g

140N 82E Z3 L1
Deer: dental; (B) lft Cr; carpal/tarsal frag; (B) Tt frag; dist mtp frag;
1st 3/4; 2 2nd 3/4; 2(B) sesamoid (10)
Colubrid: 1(B) vert (1)
Ind: 59(35B) LM; 7(3B) bird; 7(5B, 2 polish) turtle; 1(B) fish (74)
Total 85 54 g

136N 82 Z2 L3
Deer: antler tine flaker tip; 2 cranial; (B) petrous; alveolar frag;
4 dental; rib; lft Ci; rt (B) C2+3; 5 radius frags; ulna shaft frag;
(C) femur shaft; rt prox tibia; lft Tc+4; lft (B) prox Mt;
(B) Mt shaft frag; 2 mtp frag; mtp condyle abraded; 1st 3/4; 3rd 3/4;
2 phalanx frags; sesamoid (31)
Skunk: lft (B) and rt (B) ramus (2)
Raccoon: rt imm humerus; ulna shaft frag (2)
Peromyscus sp: lft ramus port (1)
F. squirrel: rt (B) ulna (1)
G. squirrel: rt innominate port (1)
Turkey: coracoid frag; ulna shaft frag; tmt spur; tmt frag (4)
Colubrid: 5(3B) vert (5)
Painted/map turtle: 2 marginal; carapace frag (3)
Catfish sp: cleithrum frag (1)
Drumfish: pharyngeal arch frag (1)
Ind: 148(88B) LM; 2(1B) SM; 26(2B) bird; 79(16B) turtle; 1 fish; 1(B) bivalve
(257) Total 309 wgt 412.3 gms

134N 79E Z2 L3 West 1/2
Deer: 2(1B) antler; (B) petrous frag; rt ramus port; 2 dental; 2(1B) rib;
lumbar vert; caudal vert; lft Cu; dist Mc; lft Tc+4; (B) Mt frag;
3 mtp frag; 2 1st 3/4; 2nd 3/4; 1st 2/5; 3rd 2/5 (22)
G. squirrel: lft scapula; rt (B) prox femur; lft (B) dist femur epiph;
lft (B) Tf (4)
Box turtle: 2 nuchal; plastron port; carapace port (4)
Snake sp: (B) rib (1)
Drumfish: rt upper pharyngeal 40.0 mm, 14.2 lbs (1)
Ind: 105(41B) LM; 8(4B) bird; 50(12B) turtle; 7(1B) fish; 7 misc (177)
Total 209 wt 254 gms

134N 79E Z2 L3 West 1/2
Deer: petrous (B) frag; vert frag; dist Mc; lft Tc+4; rt Tt; mtp condyle;
(B) mtp frag; 1st 3/4 (8)
G. squirrel: lft prox tibia epiph; lft (B) dist femur (2)
Colubrid: 2(1B) vert (1)
Ind: 60(25B) LM; 5(4B) bird; 28(6B) turtle; 3(1B) fish (96) Total 107 wt 88.1g

136N 82E Z2 L4
Deer: 2 dental; 2 Mc frags; lft post radius shaft; radius shaft; lft and rt Cu;
rt Ci; lft Cr; rt C4; rt dist tibia; mtp frag (13)
G. squirrel: rt prox humerus (1)
Rabbit: lft (B) dist tibia (1)

Crow: rt (B) dist humerus (1)
Turkey: lft female tmt; pes phalanx (2)
Colubrid: 3(B) vert (3)
Softshell: (B) carapace/plastron frag (1)
Ind: 87(51B[3M bonepins]) LM; 3 SM; 25(8B) bird; 38(14B) turtle; 1 fish (154)
Total 176 wt 166 g

138N 79E Z2 L1
Human: 2 cranial frags; carpal/tarsal; phalanx (4)
Deer: (B) antler frag; (B) petrous port; lft mand P3; lft mand M1; lft mand M3; 3 dental; alveolar frag; 3 rib; 3 rt dist humerus; rt (B) prox ulna; lft Cu; (B) Ci frag; rt ischium; ischium epiph; tibia shaft frag; rt Tf; lft and rt Tc+4; rt prox post Mt; (B) T1; 4(B) Mt shaft; mtp shaft; (B) mtp condyle frag; 6(2B) 1st 3/4; 2(1ab) 2nd 3/4; 1st 2/5; 3 sesamoid; phalanx frag (45)
Beaver: (B) lft occipital port (1)
G. squirrel: lft scapula; rt prox humerus (2)
Mole: (B) lft humerus (1)
Rabbit: lft ramus port; lft (B) and rt (B) femora (3)
Opossum: rt (B) Tf (1)
Turkey: lft humerus; fibula; manus phalanx; pes phalanx (4)
Goose sp: lft prox cmc (1)
Colubrid: 6(B) vert (6)
Viperid: 2(B) vert (2)
Map/painted turtle: neural; plastron port (2)
Softshell: costal (female); plastron port; carapace/plastron frag (B) (3)
Drumfish: upper pharyngeal arch ca 5 lbs; pectoral spine (2)
Ind: 309(151B) LM; 7(6B) SM; 2 SR; 26(B) bird; 117(63B) turtle; 5(2B) fish (466)
Total 543 wgt 668.7 gms

138N 79E Z2 L2
Human: 4 adult cranial frags (4)
Deer: lft ascending ramus; lft max dp2; dental frag; rt humerus shaft; radius shaft frag; rt prox ulna; ulna shaft awl frag; rt prox Mc; dist Mc; (B) Mt frag; lft innom w/cut rectus femoris depression; (B) T1; mtp condyle; sesamoid; phalanx frag (15)
Raccoon: (B) rt temporal port (1)
F. squirrel: (B) maxilla frag (1)
G. squirrel: humerus shaft frag (1)
Turkey: rt dist tmt (1)
Viperid: 2(B) vert (2)
Box turtle: marginal; (B) plastron frag (2)
Map/painted turtle: nuchal (1 lb); 2 plastron ports (3)
Softshell: carapace/plastron frag (1)
Channel catfish: quadrate ca 1.5 lbs (1)
Ind: 143(42B) LM; 1(BM) LM bone pin frag; 1 SM; 16(8B) bird; 33(15B) turtle; 2(B) fish; 14 misc frags (210) Total 242 wt 105.1,85.2 g

138N 79E Z2 L2
Human: cranial frag; 12 pes/manus elements (12)
Deer: (B) polished antler port; 3(B) shed beam frags; (B) petrous port; 4 dental; atlas vert; 5(2B) rib; (B) thoracic spinous; lft prox ulna; 2(1B) radius shaft; 2 fremur shaft; (B) Mt shaft; 2 mtp frags;

3 2nd 2/5; 3rd 2/5; 2 1st 3/4; 2nd 3/4; 3 sesamoid (34)
Beaver: (B) mtp (1)
F. squirrel: axis vert (1)
G. squirrel: (B) rt dist humerus (1)
Opossum: rt (B) dist humerus (1)
Turkey: humerus shaft; lft prox ulna; ulna shaft; (B) femur shaft (4)
Colubrid: 5(B) vert (5)
Viperid: 2(B) vert (2)
Box turtle: 8 plastron frags (8)
Map/painted turtle: plastron port (1)
Softshell: plastron/carapace frag (1)
Drumfish: pharyngeal arch frag 3 lbs (1)
Sucker: 4 vert (4)Catfish: 2 misc cranial frags; vert (3)
Ind: 181(101B) LM; 10(2B) SM; 56(25B) bird; 90(33B) turtle; 1 fish (338)
Total 417 wgt 51.8, 7.2 gms

138N 82E Z1 L1
Deer: (B) antler frag; 3(2B) dental; rt (B) prox ulna; (B) Mt frag; 1st 3/4;
3rd 2/5; 2 sesamoid (10)
Turkey: 2(1B) pes phalanx; dist (B) tmt frag (3)
Colubrid: 2(B) vert (2)
Softshell: (B) costal male (1)
Ind: 72(28B) LM; 1(B) SM; 17(B) bird; 15(B) turtle; 26 misc (131) Total 147
wt 87.7g

123N 112E Z2 L1
Deer: dental frag; petrous frag; rt dist humerus; lft Ci; rt prox post Mt;
mtp 3/4; 2 3rd 2/5 (8)
F. squirrel: rt dist humerus; lft prox ulna (2)
Rabbit: rt dist humerus (1)
Colubrid: 2(1B) vert (2)
Ind: 153(44B, 1M bone pin frag) LM; 3 mammal; 1 SM; 7 bird; 42(17B) turtle;
1 fish (207) Total 220 wgt 28.1 gms, 129.6 gms

145N 77E Z2 L1 Feature 11
Deer: tibia shaft frag (1)
Catfish sp: cleithrum frag (1)
Ind: 16(2B) LM; 5 bird; 7 turtle (28) Total 30 wgt 25.4 gms

138N 82E Z2 L1
Deer: 1 dental; 3(B) rib frags; (B) scapula frag; lft (B) Cr; (B) femur shaft;
(B) Mt frag; (B) mtp frag; (B) 3rd 2/5 (10)
Colubrid: (B) vert (1)
Softshell: (B) coracoid male 1/4 lb; (B) carapace/plastron frag (2)
Ind: 72(B) LM; 8(B) bird; 19(15B, 1 polished) turtle; (B) fish (100)
Total 110 wt 56.7 g

123N 112E Z2 L2
Deer: 4 dental; rt mand M3; 2 vert frags; rib frag; lft (B) Cu;
rt humerus port; lft dist radius; femur frag; lft prox tibia;
tibia shaft; lft Tc+4; lft Tf frag; rt prox Mt; 2 prox Mt frags;
2 Mt shafts; 3 mtp shaft; sesamoid (25)
Dog: rt ramus port (1)

F. squirrel: rt scapula (1)
Mole: sacrum (1)
Rabbit: lft radius (1)
Turkey: rt dist femur (1)
Colubrid: 4(B) vert (4)
Viperid: (B) vert (1)
Box turtle: carapace port; plastron port (2)
Softshell: 4(2B) carapace/plastron (4)
Drumfish: otolith 20.0 mm (1)
Ind: 153(28B) LM; 2 SR; 6 SM; 26(3B) bird; 48(14B) turtle; 1 fish; 30 misc (266)
Total 308 wt 409.6

140N 89E Z1 L1
Deer: (B) 1st 3/4 frag (1)
Beaver: molar (1)
Ind: 12(8B) LM; 2(B) bird; 5(2B) turtle (19) Total 21 wt 12.9 g

143N 79E Z1 L1
Deer: 1 dental (1)
Turkey: (B) ulna shaft; (B) dist tmt frag (2)
Softshell: 1(B) carapace/plastron frag (1)
Ind: 36(3B) LM; 3(B) bird; 11(9B) turtle (50) Total 54 wgt 31.8 gms

143N 79E Z1 L1
Deer: 7 dental frags; fragmented alv; (B) carpal/tarsal; (B) Mt frag;
mtp condyle; 3(B) phalanx frag; (B) sesamoid (15)
F. squirrel: (B) rt tibia port (1)
G. squirrel: (B) rt dist humerus (1)
Rabbit: lft (B) ramus frag; rt dist tibia (2)
Drumfish: (B) pharyngeal frag; 1 craniofacial (2)
Ind: 215(B) LM; 1(B) bird/mammal awl frag; 1(B) SM; 21(B) bird; 28(B) turtle;
1(B) fish; 10 misc (277) Total 298 wgt 115.5, 8.0 gms

143N 79E Z1 L1
F. squirrel: lft scapula port (1)
G. squirrel: rt (B) dist humerus; rt innom port (2)
Turkey: tmt frag; pes phalanx (2)
False map turtle: neural bone (1)
Ind: 16(12B) LM; 3 bird (19) Total 25 wgt 28.5 gms

134N 79E Feature 7
Deer: dental frag; 3rd 2/5 (2)
G. squirrel: rt dist (B) femur (1)
Ind: 13(9B) LM; 2 bird; 1(B) turtle (16) Total 19 wt 5.1g

134N 79E Feature South 1/2
Deer: 2(1B) rib (1)
Ind: 4(1B) LM; 1 turtle (5) Total 6 wgt 9.2 gms
138N 82E Z2 l2
Deer: (B) I; 2 dental; rt dist humerus; lft (B) and rt prox radius;
Mc shaft; (B) T1; rt prox Mt; dist Mt; (B) mtp condyle;
2(1B1drilled) 1st 3/4; 3rd 3/4; 2-3rd 2/5 (16)
F. squirrel: rt (B) dist humerus (1)

G. squirrel: lft (B) ramus frag (1)
Squirrel sp: (B) cranial frag; (B) dist femur (2)
Crow: lft coracoid (1)
Turkey: sternum; rt coracoid; rt cmc frag (3)
Colubrid: 9(B) vert (9)
Softshell: (B) costal (male) 1/4 lb (1)
Channel catfish: lft (B) and rt (B) pectoral spine 1/2 lb ea (2)
Sucker sp: hyomandibular port (1)
Bowfin: (B) vert (1)
Ind: 210(181B1M) LM; 3 SM; 41(19B, 1 polished) bird; 65(19B) turtle; 2 fish;
80 misc (401) Total 455 wt 316.3 gms

123N 112E Z2 L3
Deer: fragmented beam; antler tine tip; mod antler pin/tool?; rt scapula port;
lft dist humerus; 2 radii shafts; rt prox ulna; rt femur shaft;
rt ant tibia shaft; rt post tibia shaft; (B) phalanx frag; tarsal/carpal;
1st (B) 3/4 (14)
Rabbit: rt ramus port; lft innom port (2)
Turkey: fibula port (1)
Colubrid: vert (1)
Stinkpot: nuchal (1)
Ind: 98(38B) LM; 1 SM; 18(2B) bird; 5(B) turtle (122) Total 141 wt 273.1 gms

139N 90E Z1 L1
Mole: rt (B) humerus (1)
Ind: 1(B) turtle (1) Total 2 wgt 0.2 gms

143N 79E Z1 L2
Deer: (B) petrous; 4(2B) dental; (B) ulna frag; lft C4; lft (B) prox Mt;
(B) Mt frag; dist mtp 2/5; (B) 3rd 2/5; 2 1st 3/4; 2nd 3/4; 3rd 3/4;
(B) sesamoid (16)
F. squirrel: rt (B) prox tibia (1)
G. squirrel: rt prox femur (1)
Rabbit: lft dist humerus; lft dist femur (2)
Mole: (B) humerus frag (1)
Turkey: lft prox coracoid port; rt cmc port (2)
Colubrid: 4(2B) vert (2)
Softshell: (B) carapace/plastron frag (1)
Salamander sp: (B) vert (1)
Ind: 203(42B) LM; 1 SM; 35(12B) bird; 67(13B) turtle; 2(B) fish (308)
Total 335 wgt 485.3 gms

138N 82E Z2 L3
Deer: rt mand M3; 2 dental; thoracic vert; sacral vert; vert frag;
vert epiph frag; rib frag; scapula frag; rt prox radius;
lft post radius shaft; dist radius frag; 2(1B) rt prox ulna;
lft (B) Cu; rt innom port; femur shaft; lft and rt ant tibia shaft;
2 tibia shaft frags; rt dist tibia; rt Tf; rt T2+3; 2(1B) Mt shaft;
dist Mt; mtp shaft; 3(2B) 1st 3/4; 2nd 3/4; 3rd 3/4; 3rd 2/5;
dist (B) mtp 2/5 epiph (35)
Raccoon: rt max M2 (1)
Dog: lumbar vert (1)
F. squirrel: rt dist femur epiph; rt tibia shaft (2)

G. squirrel: rt ulna shaft (1)
Turkey: lft (B) imm dist tmt (1)
Colubrid: 2(B) vert (2)
Viperid: 2(B) vert (2)
Box turtle: nuchal; marginal; carapace frag (3)
Map/painted turtle: costal; plastron port (2)
Softshell: costal (female); 3 carapace frag (4)
Ind: 301(89B) LM; 1 polished LM deer mtp?, possible weaving shuttle; 3 SM;
1 SR; 23(2B) bird; 65(21B, 1 polished) turtle; 2 fish (396)
Total 450 wgt 169.4, 233.0, 13.5 gms

143N 79E Z2 L1
Deer: (B) rib; (B) scapula frag; (B) lft and (B) rt Ci; rt innom port
3(B) Mt frags; 2nd 2/5; 2(B) phalanx frags (11)
Dog: rt (B) occipital port (1)
F. squirrel: rt (B) ramus (1)
G. squirrel: rt (B) prox tibia (1)
Rabbit: lft prox femur (1)
Turkey: cranial port; (B) radius frag; rt (B) coracoid port; lft (B) ulna (4)
Map/painted turtle: marginal bone (1)
Drumfish: (B) vert (1)
Redhorse sp: (B) vert (1)
Catfish sp: 3(B) vert (3)
Ind: 185(102B) LM; 4(B) SM; 31(26B) bird; 47(15B1M) turtle; 1(B) fish (268)
Total 293 wgt 194.4 gms

140N 89E Z1 L3
Deer: lft max dp2 (1)
Peromyscus sp: rt ramus (1)
Neotoma sp: rt ramus (1)
Colubrid: 1 vert (1)
Viperid: 1 vert (1)
Ind: 13(4B) LM; 1(B) bird; 1(B) turtle (15) Total 20 6.5 g

143N 79E Z2 L1
Human: cranial portion (frontal/parietal) (1)
Deer: rt (B) pubic port (1) Total 2 wgt 24.8 gms

143N 79E Z2 L2
Deer: 2(B, polished) antler frags; rt (B) petrous; dental frag;
lft Ci; rt C2+3; rt prox Mc; femur condyle frag; rt Tf; rt prox Mt;
Mt shaft; 5 Mt frags; 2(1B) dist mtp condyle; 1st 3/4; dist 1st 3/4;
2 prox 2nd 3/4; 3rd 3/4 (23)
Raccoon: (B) canine frag (1)
F. squirrel: lft (B) Tf (1)
Rabbit: rt (B) dist humerus (1)
Turkey: prox rt coracoid frag; lft fragmented tbt; rt dist tmt condyle III;
pes phalanx (4)
Colubrid: vert (1)
Box turtle: nuchal port; marginal port (2)
Drumfish: pharyngeal arch 1lb (1)
Ind: 145(89B) LM; 6(2B) SM; 51(25B) bird; 37(B) turtle; 1 fish (240)
Total 274 wgt 253.0 gms

143N 79E Z2 L3
Pig: mandibular premolar (1)
Deer: (B) antler frag; (B) vert epiph; dist humerus frag; (B) pelvic frag;
(B) femur shaft; rt ant tibia shaft; (B) mtp 3/4 condyle; 1st dist 3/4;
3rd (B) 2/5 (9)
F. squirrel: lft (B) premaxilla (1)
G. squirrel: rt (B) prox ulna (1)
Rabbit: dist tibia frag ab; rt (B) Tf (2)
Turkey: lft (B) dist tmt condyle (1)
Colubrid: 3(B) vert (3)
Drumfish: lft upper pharyngeal 40.0 mm (1)
Ind: 81(B) LM; 1(B) SM; 17(B) bird; 26(B) turtle; 3(B) fish (128) Total 147
wt 47.8, 50.1 g

140N 89E Z2 L1
Ind: 6(B) LM; 5 bird; 2(B) turtle (13) Total 13 wgt 5.0 gms

140N 89E Z2 L3
Deer: rt ascending ramus; rt ramus port w/P2-M1 w/polish (2)
F. squirrel: thoracic vert (1)
Rabbit: ramus frag; lft tibia shaft (2)
Turkey: rt wing phalanx I (B); rt coracoid port; vert (3)
Colubrid: vert (1)
Map/painted turtle: costal (1)
Ind: 21(B) LM (21) Total 31 wt 44.7 g

141N 79E Z2 L1
Deer: (B) nasal frag; (B) vert frag; lft ant tibia shaft; lft Tt port;
lft Tc+4; dist mtp condyle; (B) phalanx frag (7)
Viperid: (B) vert (1)
Softshell: (B) carapace/plastron frag (1)
Ind: 35(24B) LM; 3(B) SM; 8(B) bird; 6(B) turtle; 5 misc (57) Total 66 wt 67.2g

130N 90E Z2 L3
Deer: lumbar vert (1)
Ind: 7 LM; 1 Sm; 6 bird; 2 turtle (16) Total 17 wgt 25.1 gms

140N 89E Z2 L4
Deer: I dental frag; axis vert; lft dist humerus; rt prox Mc; lft tibia shaft;
lft Tc+4 (6)
Colubrid: 1 vert (1)
Turkey: lft dist ulna (1)
Ind: 9 LM; 1 SM; 2 mammal; 4 turtle (16) Total 24 wgt 159.6 gms

140N 89E Z2 L5
Stinkpot: plastron port (1)
Ind: 1 LM; 1 SM; 2 misc (4) Total 5 wt 0.9 g

106N 87E Z1 L1
Deer: (B) 2nd 3/4 epiph (1)
Ind: 3 LM; 1 turtle (4) Total 5 wgt 0.4 g

134N 80E Z1 L2

Deer: (B) dental frag; lft (B) prox Mt (2)
Crow: rt (B) prox humerus (1)
Softshell: (B) carapace/plastron (1)
Ind: 32(B) LM; 5(B) bird; 11(7B) turtle; 1(B) fish (49) Total 53 wt 22g

141N 79E Z2 L2
Human: cranial frag; 2 phalanx frags (3)
Deer: rib frag; lft Cu; rt Ml (3)
Rice rat: lft innominate (1)
Channel (?) catfish: (B) prox dorsal spine (1)
Ind: 35(17B) LM; 1 SM; 1 SR; 10(B) bird; 3(1B) fish (50) Total 58 wgt 55.2 gms

134N 80E Z2 L1
Deer: (B) rt prox radius; prox radius frag; rt Tc+4 (3)
F. squirrel: lft scapula port (1)
Rabbit: 1(B) axis vert (1)
Box turtle: 2 plastron ports (2)
Colubrid: 4(1B,2fused) vert (4)
Drumfish: split and abraded dorsal spine (1)
Ind: 84(27B) LM; 3(B) SM; 17(10B) bird; 30(8B) turtle; 2(B) fish (136)
Total 148 wgt 54.1g, 26.4g

106N 87E Z1 L3
Ind: 1 LM (1) 0.2 g

125N 95E Z1 L2
Deer: (B) Tt frag; rt prox Mt; 2 Mt shaft frags; 3rd 3/4 (5)
Woodchuck: lft maxilla (1)
F. squirrel: rt innom port (1)
Squirrel sp: cranial frag (1)
Turkey: scapholunar (1)
Snake sp: vert (1)
Salamander sp: 1(B) vert (1)
Ind: 59(19B) LM; 1(B) SM; 7(B) bird; 13 turtle (80) Total 91 wgt 59.4,26.4 gms

125N 95E Z1 L1
Deer: 2 antler frags; lft C4; lft T2+3; (B) Mt frag; mtp frag; 1st 3/4 (7)
Map/painted: costal; neural (2)
Colubrid: 2 vert (2)
Ind: 31(13B) LM; 1(B) bird; 5(2B) turtle (37) Total 48 wt 44.4 g

125N 93E Z2 L1
Deer: axis vert (C); cervical vert; rib; (B) Mt frag; mtp 2/5 fused;
phalanx frag (6)
Muskrat: (B) rt humerus shaft (1)
Turkey: vertebra (1)
G. squirrel: (B) rt premaxilla w/I1; atlas vert; rt humerus port;
lft dist humerus (4)
Colubrid: 2 vert (2)
Stinkpot: plastron port (1)
Ind: 29(7B) LM; 2 SM; 8(3B) bird; 5(B) turtle; 1 misc (45) Total 60 wgt 129.9 gms

134N 80E Z2 L2

Deer: (B) antler frag; 1 dental frag; (B) sesamoid; 2nd 2/5 (4)
F. squirrel: (B) rt maxilla (1)
G. squirrel: lft prox tibia; lft Tf (2)
Turkey: rt prox radius (1)
Snake spp: 2 vert frags (2)
Colubrid: 2 fused vert (1)
Softshell: costal port; plastron/carpace frag (2)
Box turtle: marginal port; plastron port (2)
Ind: 87(32B) LM; 1 mod LM w/abrasion and smoothing; 2 SM; 3(1B) bird; 24(15B) turtle; 1 fish; 7 misc (125) Total 140 wgt 87.4 gms

133N 80E Z2 L3
Deer: (B) dental; (B) prox radius frag; lft B) prox Mc; 2(1B) Mt; mtp frag sesamoid (7)
Dog: rt (B) ramus port (1)
Box turtle: marginal (1)
Ind: 51(10B) LM; 10(5B) turtle; 4(B) fish (65) Total 74

Surface Collection
Pig (?): SC rib shaft (1)
Deer: lumbar vert (1) Total 2 wgt 14.3 gms

125N 88E Z2 L1
Ind: 13(7B) LM; 3(B) bird; 1 turtle; 1(B) fish (18) Total 18 wt 6.2 g

126N 88E Z2 L1 Feature 28
Deer: rt ramus port; Mc shaft; mtp shaft (3)
Rice rat: lft femur (1)
Rabbit: rt dist humerus (1)
Ind: 1 LM; 1 bird; 1 turtle (3) Total 8 wgt 100.0 gms

110N 87E Z1 L1
Ind: 3 misc bones (3) wgt 0.9 gms

126N 88E L5 Feature 28
Deer: rib frag; lft innominate port (2) wgt 56.7 gms

110N 87E Z2 L2
Deer: lft and 2 rt scapula (3) wgt 56 gms

143N 82E Z2 L3
Deer: dental frag; rt Cr; prox Mt frag; (B) dist 2nd 3/4 (4)
Box turtle: plastron frag (1)
Ind: 50(12B) LM; 3(2B) bird; 9(B) turtle (62) Total 67 wgt 48 gms

115N 101E Z2 L2
Deer: rt innom port (1)
Dog: lft scapula (1)
Turkey: tmt shaft awl (1)
Ind: 1 turtle (1) Total 4 wt 24.1 g

140N 118E Z2 L3
Human: rt temporal bone adult (1)

Deer: dental frag; alv frag; (B) scapula frag; lft C2+3; Mc frag;
femur shaft frag; tibia shaft frag; Mt frag; mtp frag; 1st 3/4; 2nd 3/4;
sesamoid (12)
Colubrid: 2(1B) vert (2)
Box turtle: 2 marginal (2)
Ind: 81(16B) LM; 10(9B) bird; 19(16B) turtle; 1 fish (111) Total 128
wgt 127.2 gms

Feature 51
Deer: 3(1B) dental; prox ulna epiph; rt Ci; rt prox Mc (cut prox ant);
Tt frag; 2 Mt; 1 mtp; 3rd 32/5; sesamoid (12)
Skunk: lft (B) ramus frag (1)
Raccoon: rt mand C; 1(B) dental (2)
Microtus sp: lft ramus (1)
G. squirrel: lft femur port (1)
Rabbit: cranial frag (1)
Opossum: 1(B) molar/premolar (1)
Turkey: wing digit; tmt spur; Mt (3)
Colubrid: 2(2B) vert (2)
Box turtle: marginal; (B) plastron port (2)
Ind: 33(17B1SC1bone pin) LM; 1 SR; 9(2B) bird; 22(12B) turtle; 3 fish (68)
Total 94 wgt 131.5 gms

Feature 55
Teal size: rt tbt shaft (1)
Ind: 2 LM; 1 bird (3) Total 4 wgt 4.5 g

Feature 57
Human: prox phalanx frag (1)
Deer: lft prox Mc; lft innom; rt T2+3; mtp shaft; 1st 3/4 ab; 3(2B) sesamoids;
3rd 2/5 (9)
Raccoon: lft ramus (1)
G. squirrel: lumbar vert; lft (B) and 2(1B) rt innom; rt (B) femur port (5)
Rabbit: thoracic vert; rt innominate (2)
Opossum: thoracic vert (1)
Turkey: 2(B) radius shaft frags; 1(B) lft imm cmc; lft (B) wing digit III;
rt cuneiform; 1(B) fibula; tmt spur (7)
Colubrid: 6(2B) vert (6)
Ind: 55(17B) LM; 2 SM; 13(4B) bird; 22 turtle; 1 fish (93) Total 125
wgt 99.0 gms

Feature 58
Turkey: prox (B) fibula (1)
Ind: 3 LM; 2(B) turtle; 2(B) fish (7) Total 8 wgt 1.8 gms

842 Burial 4
Ind: 5(5B) LM; 2(1B,1M polish) turtle (7) Total 7 wgt 4.8 gms

845 Burial 8
Deer: 1 dental (1)
Bobcat: terminal phalanx (1)
G. squirrel: lft (B) mand I; (B) lft dist tibia (2)
Rabbit: (B) tarsal (1)

Turkey: vertebra (1)
Quail: 1(B) coracoid frag (1)
Mallard et al: rt scapula port (1)
Colubrid: 2(B) vert (2)
Snapping turtle: marginal bone (1)
False map turtle: neural bone (1)
Box turtle: (B) plastron port (1)
Drumfish: 1 craniofacial (1)
Ind: 18(15B) LM; 3(1B) SM; 15(14B) bird; 2(B) turtle; 5 fish (43)
Total 57 wgt 48.5 gms

846 Burial 2
Deer: alveolar frag; thoracic spinous; 2 rib; lft scapula port;
(B) lft dist humerus; lft ant tibia shaft; lft prox Mt;
rt Tf (C) w/epiph; Mt shaft; 2nd 3/4; 2(1B) 2/5; (B) sesamoid (14)
F. squirrel: lft ramus; rt Tt (2)
G. squirrel: (B) lft innominate port (1)
Rabbit: lumbar vert (1)
Turkey: scapholunar (1)
Colubrid: 6(B) vert (6)
Box turtle: 2 marginal; plastron (3)
Map/Painted turtle: (B) marginal (1)
Drumfish: pharyngeal arch frag (1)
Ind: 39(15B) LM; 4(1B) SM; 15(6B) bird; 19(13B) turtle; 4 fish (81)
Total 111 wgt 172.3 gms

136N 79E Z2 L3
Human: 2 mtp frags (2)
Deer: antler frag; 2(B) petrous; (B) dental frag; 2 thoracic spinous;
lft scapula (cut); rt dist humerus; lft prox (C) radius; lft prox ulna;
lft C2+3; rt prox ant Mc; lft ilium; lft femur shaft; T1; 2 lft prox Mt;
Mt frag; dist Mt; mtp shaft; (B) mtp condyle; mtp epiph; 2(1B)1st 3/4;
2nd 2/5; 2 3rd 2/5 (27)
Mountain lion: lft prox Mt III (1)
Raccoon: lft mand M2 (1)
Opossum: parietal bone (1)
Turkey: (B) wing digit II (1)
Colubrid: 6(2B) vert (6)
Box turtle: plastron port (1)
Softshell: plastron frag female (1)
Drumfish: 2 pectoral spines (2)
Sucker: lft max (1 lb); rib (2)
Ind: 203(37B) LM; 4 SM; 1 SR; 59(9B) bird; 96(11B) turtle; 5(B) fish (368)
Total 413 wgt 518.9 gms

850 Burial 5
Ind: 1 turtle (1) wgt 0.5 gms

Feature 66
Deer: rib frag; 2 sesamoid (3)
F. squirrel: lft innom (1)
G. squirrel: sacrum (1)
River redhorse: (B) pharyngeal arch port (6 lbs) (1)

Colubrid: 1 vert (1)
Ind: 12(1B) LM; 1 SM (13) Total 20 wgt 17.8 gms

Feature 65
Box turtle: plastron (1) 1.2 gms

Feature 67
Deer: lft prox radius; dist Mc (2) Total 2 64.7 gms

856 Burial 6
Ind: 1 SR (1) Total 1 wgt 0.2 gms

Feature 66
Deer: atlas vert; rt femur shaft; mtp shaft (3)
Ind: 1 LM (1) Total 4 106.9 gms

Feature 58 South 1/2 L2
Bowfin: 1 vert (1)
Ind: 8 LM; 1 bird; 1 misc (10) Total 11 wgt 6.7 gms

Feature 68 East & West 1/2
Deer: lft scapula port; lft prox radius; lft C2+3; 1st 3/4 (4)
Colubrid: 2(1B) vert (2)
Painted/map turtle spp: marginal (1)
Ind: 28(11B) LM; 4 turtle (32) Total 39 wgts 100.3,51.5,51.8 gms

Feature 58 South 1/2 L1-3(mixed)
Colubrid: 2(B) vert (2)
Ind: 1(B) LM; 1 bird; 2 turtle (4) Total 6 wgt 7.7 gms
870 Burial 10
Turkey: rt (B) tbt shaft frag (1)
Duck sp: cranial frag (1)
Ind: 1(B) turtle (1) Total 3 wgt 1.3 gms

875 Burial 5
Deer: fusing 2nd 3/4 (1) 3.4 gms

Burial 3
Deer: femur shaft (1)
Drumfish: pharyngeal frag (1)
River redhorse: pharyngeal arch port 5 lbs (1)
Ind: 28(8B) LM; 5(1B) SM; 14(1B) turtle; 1 fish (48) Total 51 wgt 30.7 gms

Burial 4
Deer: phalanx frag; (B) sesamoid (2)
Rabbit: max frag (1)
Softshell: coracoid port (1)
Drumfish: pharyngeal arch frag (1)
Canada goose: ulna shaft port (1)
Ind: 8(B) LM; 1(B) SM; 11(10B) bird; 1(B) turtle; 3 fish (24) Total 30
wgt 18.2 gms

Burial 6

Ind: 5(2B) LM; 4(B) turtle (9) wgt 9.6 gms

Burial 8
Deer: lft (B) Mc; lft tibia port (2)
Raccoon: (B) lft prox ulna (polished) (1)
Ind: 1 LM; 14 Sr (15) Total 18

Burial 9
Deer: antler tine flaker tip; max M; rt scapula (3)
Turkey: lft humerus port (1)
Box turtle: carapace port; plastron plate (2)
Ind: 6 LM (6) Total 12 wgt 85.0,36.0 gms

Feature 7
Deer: rt ramus port w/M1M2M3; dist Mc w/epiph (2) wgt 15 gms
Ind: 2(1B) LM (2) Total 4 wgt 36.9 gms

Feature 11 S 1/2
Deer: thoracic vert (1)
Ind: 1 SM; 1 bird; 1 turtle (3) Total 4 wgt 5.9 gms

Feature 57
Deer: 1 dental; rt radius port; femur shaft frag; mtp condyle; 2nd 3/4 (5)
Muskrat: (B) max port (1)
Turkey: rt (B) wing digit III; (B) tmt spur (2)
Canada goose: lft (B) cuneiform (1)
Colubrid: 2(B) vert (2)
Stinkpot: plastron plate (1)
Ind: 34(28B) LM; 1 SM; 5(4B) bird; 2(B) turtle (42) Total 54 wgt 94.2 gms

Other unknown
Deer: scapula port (1)
Map/painted turtle spp: plastron port (1)
Ind: 4(1B) LM; 1 turtle; 1 fish (6) Total 8

APPENDIX C, Part II

Table C.2. Frequency of Faunal Remains, 40DV4.

TAXA	Count	MNI	lft	rt	B	Cut	Mod
Total	*17379*	*125*			*7910*	*13*	*64*
MAMMALS	**1640**	**68**			**523**	**13**	**28**
Human	37				0	0	0
cranial	10	--					
temporal bone	1			1			
vert F/NB	2						
rib F/NB	1						
mtp/phalanx frag	23						
Domestic cow	2	1			0	2	0
axis vert	1					1	
humerus shaft sc 16.7	1					1	
Wapiti	1	1					
temporal port	1		1				
White-tailed deer	1274	15			358	8	24
antler	42				27		13
craniofacial	11				1		
shed beam	3				3		
antler beam	1						
occipital port	2				1		
petrous	30		1	2	18		
nasal	1				1		
maxilla	2		1				
premaxilla	3		1	1	3		
max w/M1M2	1			1			
max w/M123	1			1			
ramus w/P2P3P4	1			1			
ramus port w/P2-M1	1			1			1
ramus w/P2-M3	1			1			
ramus w/M1M2M3	1			1			
ramus port/frag	4		1	2	1		
mand condyle	1			1			
ascending ramus port	8		2	2	1		
ant ramus	2		2		1		
alveolar frags	8				1		
max P2	4		3	1			
max P3	1			1			
max M1	1		1				
mand I	1				1		
mand P2	1		1				
mand P3	3		2	1			
mand P4	2		2		1		
mand M1	2		2				
mand M2	2		2				

Table C.2. Frequency of Faunal Remains, 40DV4.

Continued

TAXA	Count	MNI	lft	rt	B	Cut	Mod
mand M3	7		4	3	1		
max dp2	3		2	1	1		
max dp3	1		1				
max dp4	1		1				
mand dp3	2		2				
mand dp4	2		1	1	1		
dental frags	173				27		
atlas	2						
axis	3				1	1	
cervical vert	3						
thoracic vert	3						
thoracic spinous	8				3		
lumbar vert	12						
sacrum	3						
caudal	1						
vertebra epiphysis	5				1		
vertebra frag	12				1		
rib shaft	59				21		
scapula port/frag	26		10	6	10	1	1
humerus port	1			1			
prox humerus	1						
humerus shaft	8		2	4	2		
dist humerus	22		10	9	4		
radius	2			2			
prox radius	16		9	6	6	1	
prox ant radius	1		1		1		
radius shaft	18		1	1	4		
post radius shaft	4		2		1		
radius dist epiph	2		2		1		
dist radius	8		5	2	1		
prox ulna	16		10	6	7		2
prox ulna epiph	1						
ulna shaft	5				2		1
Cr	10		3	5	5		
Ci	11		6	4	5		
Cu	11		7	4	5		
C2+3	9		6	3	3		
C4	4		2	2			
Ca	2						
prox Mc	15		8	7	3	1	
Mc shaft	16				1		
dist Mc 1w/epiph	5						
innominate	13		8	3	2	1	
ilium port	1		1				
ischium	1			1			
ischium epiph	1						

Table C.2. Frequency of Faunal Remains, 40DV4.
Continued

TAXA	Count	MNI	lft	rt	B	Cut	Mod
pubic port	1		1				
pelvic frag	1						
prox femur	1				1		
femur head	1				1		
femur shaft 1/imm	27		4	4	4	1	
dist femur	1						
patella	2				1		
tibia	2		2				
prox tibia	4		2	2	1		
tibia shaft	20		6	3	1		1
ant tibia shaft	5		2	3			
post tibia shaft	1			1			
dist tibia	7		2	4	2		
dist tibia epiph	1		1				
lateral malleolus	1						
Tc+4	16		14	2	4		
Tt	13		6	3	5	1	1
Tf	10		5	5	5		
Tf pres	1			1			
ML	5		2	2	3		
T1	6				3		
T2+3	11		8	1	3		
prox Mt	26		11	12	9		
prox ant Mt	3		1	2			
prox post Mt	3			3			
prox lat Mt	1		1				
Mt shaft/condyle	76				35		
mtp 2/5 1ab 1F	8				1		
mtp 2/5 epiph	3				2		
mtp 3/4 1NB	58				10		2
mtp 3/4 epiph	3						
dist mtp 3/4	21				8		1
1st 2/5	4				2		
2nd 2/5	11				3		
3rd 2/5	27				5		
1st 3/4 3ab	61				20		1
prox 1st 3/4 epiph	3						
2nd phalanx 3/4 1F 1ab	33				6	1	
2nd 3/4 epiph	3				3		
3rd 3/4	15				3		
sesamoid	73				24		
misc pes/manus	34				13		
Domestic pig (?)	5	1			1	1	0
mand premolar	1						
rib shaft (1SC)	2					1	
dist humerus	1		1		1		

Table C.2. Frequency of Faunal Remains, 40DV4.

Continued

TAXA	Count	MNI	lft	rt	B	Cut	Mod
humerus shaft	1		1				
Mountain lion	4	1			1	1	1
Tf	1			1		1	
fibula	1						1
prox Mt III	1		1		1		
mtp epiph	1						
Bobcat	2	1			1	0	0
mand M1	1		1		1		
terminal phalanx	1						
Striped skunk	9	4			9	0	0
ramus 1w/M1	8		4	4	8		
humerus shaft	1			1	1		
Weasel	1	1			0	0	0
ramus	1		1				
Raccoon	20	2			9	0	2
temporal	1			1	1		
ramus	3		2	1	1		
mand C	1			1			
mand P4	1		1		1		
mand M2	3		2		1		
max M2	1		1				
dental	4				4		
imm humerus	1			1			
prox ulna	1		1		1		1
ulna shaft	1						
Tf	1		1				
fibula	1						
baculum	1						1
Black bear	1	1			1	0	0
prox Mc	1				1		
Gray fox	6	1			1	0	0
temporal	2		1				
dental	1				1		
max P4	1		1				
max M1	1		1				
mand M1	1		1				
Domestic dog	7	2			2	0	0
occipital port	1			1	1		
ramus	2			2	1		
mand I3	1			1			
lumbar vert	1						
scapula	1		1				
ulna ports	1		1				
Muskrat	2	1			1	0	0
maxilla port	1						
humerus shaft	1				1		

Table C.2. Frequency of Faunal Remains, 40DV4.
Continued

TAXA	Count	MNI	lft	rt	B	Cut	Mod
Neotoma sp.	2	1					
ramus	2		1	1			
Microtus spp.	1	1					
ramus	1						
Rice rat	10	4			1	0	0
ramus	2		1				
humerus	1		1				
innominate	2		2		1		
femur	5		4	1			
Permoyscus spp.	3	2			0	0	0
ramus	3		1	2			
Beaver	6	1			4	0	0
occipital	1		1		1		
molar	1						
humerus shaft	1		1				
mtp	2				2		
phalanx	1				1		
Fox squirrel	49	3			27	0	0
occipital	1		1		1		
maxilla	3			2	3		
premaxilla	2		2		1		
ramus	4		3	1	3		
mand l	1		1		1		
dental	1						
axis	1						
thoracic vert	2						
scapula	3		2	1			
humerus	2		1	1	1		
prox humerus	2		1	1	2		
dist humerus	3		1	2	2		
radius	2			1	1		
ulna	3		1	1	2		
innominate	3		1	2			
prox femur	1			1	1		
dist femur epiph	3			3			
tibia port	2		1	1	2		
prox tibia	2		1	1	2		
prox tibia epiph	1			1	1		
tibia shaft	1			1			
dist tibia	1		1		1		
Tt	1			1			
Tf	4		2	1	3		
Gray squirrel	89	9			54	0	0
premaxilla 1w/l	3		1	2	2		
temporal	3				3		
ramus	3		2	1	3		

Table C.2. Frequency of Faunal Remains, 40DV4.

Continued

TAXA	Count	MNI	lft	rt	B	Cut	Mod
max l	2		2		2		
mand l	1		1		1		
atlas	1						
lumbar	1						
sacrum	2						
scapula	5		4	1	2		
humerus	5		2	3	3		
prox humerus	4		1	3	1		
humerus shaft	3			1			
dist humerus	8		3	5	7		
radius	1			1			
ulna	4		2	2	2		
innominate	11		6	5	7		
femur port	8		3	5	6		
prox femur	6		2	4	4		
dist femur	4		1	3	2		
dist femur epiph	1		1		1		
dist femur ab	1		1		1		
tibia	2		2		2		
prox tibia	3		2	1	1		
prox tibia epiph	2		1	1	1		
dist tibia	2		2		1		
Tf	2		2		1		
Tt	1		1		1		
Squirrel spp.	6				2	0	0
cranial frags	2				1		
prox humerus	1						
dist femur frag	2				1		
tibia shaft	1						
Woodchuck	2	1			0	0	0
maxilla	1		1				
mand l	1			1			
Cottontail rabbit	73	9			38	0	1
cranial port	1						
maxilla	1						
premaxilla	2				2		
ramus	15		9	5	8		
axis	1				1		
lumbar	3				2		
thoracic vert	1						
scapula	4		2	2	1		
humerus	1			1	1		
prox humerus	1		1				
dist humerus	8		5	3	3		1
radius	3		1	2	1		
prox ulna	3		1	2	3		

Table C.2. Frequency of Faunal Remains, 40DV4.
Continued

TAXA	Count	MNI	lft	rt	B	Cut	Mod
innominate	4		2	2			
femur ports	2		1	1	1		
prox femur	3		1	2	2		
femur shaft	1		1		1		
dist femur	4		3	1	3		
prox tibia	1			1			
prox tibia epiph	1			1	1		
tibia shaft	1		1				
dist tibia 1 ab	5		1	3	3		
Tt	2		2		2		
Tf	3		1	1	2		
mtp	1						
misc tarsals	1				1		
Mole	9	3			8	0	0
humerus	7		3	3	7		
sacrum	2				1		
Opossum	19	2			5	1	0
occipital	2					1	
parietal	1						
maxilla	1			1			
ramus	3		2				
dental	1				1		
axis vert	1						
thoracic vert	1						
cervical vert	1						
humerus	1		1				
humerus shaft	1		1		1		
dist humerus	2		1	1	2		
prox ulna	2			2	1		
femur	1		1				
Tf	1			1			
BIRDS	**170**	**16**			**55**	**0**	**2**
Common crow	6	1			2	0	0
coracoid	1		1				
prox humerus	1			1	1		
dist humerus	1			1	1		
cmc port	1		1				
wing digit III P I	2			2			
Barred owl	1	1			0	0	0
coracoid port	1			1			
Wild turkey	152	8			50	0	2
cranial port	2						
vert	6				1		
sternum	1						
scapula 1 imm	5		2	2			
coracoid	12		2	8	5		

Table C.2. Frequency of Faunal Remains, 40DV4.
Continued

TAXA	Count	MNI	lft	rt	B	Cut	Mod
prox coracoid	2		1				
humerus port	2		2				
prox humerus	1			1			
humerus shaft	3		2				
dist humerus	1		1		1		
prox radius	1			1			
ulna	2		1	1	1		
prox ulna	1		1				
ulna shaft	5		1		3		
dist ulna	1		1				
radius shaft	3				3		
dist radius	2			2	1		
cmc	8		2	3			
imm cmc	1		1		1		
scapholunar	7						
cuneiform	3		1	2	1		
wing digit II	3				1		
wing digit III	3		1	2	1		
wing digit	3				1		
manus phalanx	1						
innominate	1				1		
prox femur	1		1				
femur shaft	1				1		
dist femur	1			1			
fibula	7				3		
tbt port	1		1				
tbt shaft	13		5	5	8		
dist tbt	4		2		1		
tmt port female	1		1				
tmt port male	1			1	1		
tmt shaft	4						1
tmt spur	4				1		
dist tmt	8			4	3		1
dist tmt troch II	2		1	1	1		
dist tmt imm	1		1		1		
Mt	2						
pes phalanges	21				9		
Bobwhite quail	2	1			1	0	0
coracoid	1				1		
sternum	1						
Teal size	1	1					
tbt shaft	1			1			
Wood duck	1	1			0	0	0
ulna	1			1			
Mallard *et al.*	1	1			0	0	0
scapula	1			1			

Table C.2. Frequency of Faunal Remains, 40DV4.
Continued

TAXA	Count	MNI	lft	rt	B	Cut	Mod
Duck spp.	2				0	0	0
cranial	1						
pes phalanx	1						
Canada goose	3	1			2	0	0
scapula	1			1	1		
ulna shaft	1						
cuneiform	1		1		1		
Small goose	1	1			0	0	0
prox cmc	1		1				
REPTILES	**407**	**19**			**204**	**0**	1
Colubrid	184	1+			134	0	0
vertebra	184				134		
Viperid	34	1+			27	0	0
vertebra	34				27		
Serpent spp.	8				3	0	0
vertebrae	7				2		
ribs	1				1		
Softshell	60	4			28	0	1
coracoid 1F 3lb 1M.25 lb	3						
femur female	1		1				
carapace	3						
carapace/plastron	37				24		
neural	1						
costal 2male/3female	7				2		1
plastron 2male/3fem	8				2		
Graptemys spp.	4	1					
nuchal 1/2 lb	1						
neural bone	2						
costal	1						
Map/painted spp.	45	2			3	0	0
nuchal 1 lb	2						
neural	2						
costal	11						
marginal	15				2		
carapace	2				1		
plastron 2/1 lb	13						
Box turtle	63	7			8	0	0
nuchal	7						
neural	1				1		
costal	1						
carapace	14				2		
marginal	13						
entoplastron	1						
plastron	26				5		
Stinkpot	7	2			1	0	0
nuchal	2						

Table C.2. Frequency of Faunal Remains, 40DV4.

Continued

TAXA	Count	MNI	lft	rt	B	Cut	Mod
plastron	5				1		
Mud turtle spp.	1				0	0	0
plastron	1						
Snapping turtle	1	1			0	0	0
marginal	1						
AMPHIBIANS	**4**	**1**			**2**	**0**	**0**
Salamander sp	4	1			2	0	0
vert (hellbender ?)	4				2		
FISHES	**88**	**21**			**21**	**0**	**2**
Drumfish	48				12	0	1
craniofacial	8				4		
otolith 20.0 mm	1						
cleithrum 1.5 lbs	1			1			
upper pharyngeal 14.2, 5.7, 2/5 lbs	4		2	1			
lower pharyngeal 3,10,5.5 lbs	4		1	3			
pharyngeal 1,3,6lbs	17				3		
pharyngeal tooth	3				1		
premaxilla	1						
dorsal spine	1						1
pectoral spine	3						
vert	5				4		
Channel catfish	3	2			2	0	0
quadrate 1.5 lbs	1						
dorsal spine	1				1		
pectoral spine 3 lbs	1				1		
Catfish spp.	14	2			5	0	0
craniofacial	3						
cleithrum	3						
articular 1.5 lbs	1			1			
pectoral spine 2/1lb	2		1	1	2		
vert	5				3		
River redhorse	3	3					
pharyngeal arch 1,5,6 lbs	3						
Redhorse spp.	12	1			1	0	0
max frag 1/1lb 0.5 lbs	2		1				
hyomandibular	1						
vertebra	8				1		
rib	1						
Bowfin	2	1			1	0	0
vertebra	2				1		
Garfish	2	1					
scale	2						
River sturgeon	3	1					
scute	1						

Table C.2. Frequency of Faunal Remains, 40DV4.
Continued

TAXA	Count	MNI	lft	rt	B	Cut	Mod
Shark	1	--					1
dental	1						1
INDETERMINATE	**15070**				**7105**	**0**	**31**
Large mammal 1 SC	9843				4756		15
Small mammal	198				86		1
Small rodent	29				1		
Mammal	6						
Bird	1666				939		1
Turtle	2802				1221		13
Fish	130				62		
Shell	1				1		
Miscellaneous bone	395				39		1

B=burned, Mod=modified

APPENDIX C, Part III

Table C.3. Inventory of Faunal Remains, 40DV5.

General Surface Collection
Human: max dm1 (1)
Deer: antler port w/mod tine tip polish and wear (1)
Ind: 1 MM (1) Total 3

8N 107 W
Sheep: lft frontal port; lft humerus port (2)
Deer: 1 dental; rt scapula port; lft prox ulna; lft (B) prox radius; lft Cu; rt Tt (6)
F. squirrel: rt scapula (1)
G. squirrel: lft humerus (1)
Opossum: caudal vert (1)
Softshell: 2 plastron/carapace frags (2)
Map/painted turtle: marginal (1)
Drumfish: (B) dorsal spine (1)
Ind: 183(158B) MM; 2(1B) SM; 14 bird; 16(1B) turtle; 1 fish; 39 misc (255) Total 270

10.5 N 83.5 W
Human: cranial frag (1)
Cow: lft SC dist tibia (1)
Pig: lft petrous; lft mand M3; rib frag; 1st epiph 3/4; 3rd 2/5 (5)
Deer: (B) antler port; 2 dental; lft dist humerus; rt prox radius and art ulna; rt ischium port (7)
Dog: rt max P3; 2 phalanges (3)
F. squirrel: lft max port (1)
Rabbit: lft dist humerus (1)
Chicken: rt coracoid port (1)
Colubrid: vert (1)
Viperid: vert (1)
Box turtle: 2 carapace (2)
Ind: 124(32B) LM; 3 SM; 15(3B) bird; 20(4B) turtle; 3 fish; 32 misc (197) Total 221

8N 107 W
Deer: 1(B) mod antler frag; (B) ramus frag (2)
Colubrid: vert (1)
G. squirrel: lft dist femur (1)
Ind: 148(111B1M bone pin frag) MM; 9(B) bird; 10(3B) turtle; 3 misc (170) Total 174

5N 132 W
Deer: rt mand coronoid process; ramus frag; rt dist humerus; 2nd 3/4 (4)
Dog: lumbar vert; rt innom port (2)
Ind: 10(1B) MM; 2 turtle; 1 bird (13) Total 19

10.5N 83.5W
Deer: (B) antler frag; 2 dental; vert epiph; rib; rt prox radius; rt (B) T2+3;
lft and rt post tibia shaft; mtp shaft; phalanx frag (11)
Pig: 1st 2/5 newborn (1)
Gray fox: lft max M1 (1)
F. squirrel: rt scapula port (1)
Squirrel sp: femur head frag (1)
Rabbit: lft dist humerus; (B) rt Tf (2)
Turkey: rt dist radius; radius shaft w/C; rt cuneiform (3)
Chicken: rt femur shaft (1)
Softshell: carapace/plastron frag (1)
Box turtle: 2 marginal frags (2)
Moxostoma spp: pharyngeal arch (1)
Ind: 172(128B1polished) MM; 4 SM; 68(11B) bird; 53(15B) turtle; 5(3B) fish;
17 misc (319) Total 344

8N 107W
Deer: 1 dental; dist femur condyle port (2)
Rabbit: tarsal (1)
Ind: 62(5B) MM; 1 SM; 1 turtle (64) Total 67

5N 132W
Deer: lft inn w/C depression; femur shaft frag; rt ML (3)
Raccoon: rt dist humerus (1)
Rabbit: lumbar vert (1)
Chicken: imm lft humerus port (1)
Box turtle: nuchal; marginal (2)
Snapping turtle: femur port (1)
Ind: 27(1B) MM; 4(2B) bird; 2(1B) turtle (33) Total 42

5N 132W
Deer: lft dist radius; lft C2+3 (2)
Dog: phalanx (1)
Ind: 9(4B) MM; 1(B) bird; 3 misc (13) Total 16

10.5N 83.5W
Pig: rt scapula frag (1)
Deer: 2 dental; rib frag; rt dist humerus; lft Cu; rt pubic port;
3 mtp frags; mtp 3/4 epiph; 3rd 2/5 (11)
Mink (?): rt ascending ramus (1)
Bear: lft ulna shaft port (1)
Beaver: rt temporal frag (1)
F. squirrel: rt (B) prox humerus epiph; rt tibia shaft (2)
G. squirrel: lft humerus; lft and rt dist humerus (3)
Opossum: (B) cervical vert (1)
Turkey: lft dist ulna (1)
Box turtle: plastron frag; marginal frag; costal (B); carapace frag (B) (4)
Colubrid: 3 vert (3)
Map/painted turtle: 3 plastron (3)
Drumfish: 2 (B) pharyngeal frags (2)
Redhorse sp: rt dentary 1 lb (1)
Ind: 164(77B) MM; 1 SM; 22(7B) bird; 38(15B) turtle; 5 fish; fish scale;
21 misc (251) Total 286

Feature 3
Deer: 1 dental; rt ascending ramus port; hyoid; lumbar; rt innom port;
mtp port (6)
Pig: vert body; lft max w/dc; lft mand C; 1 dental; rt radius 2-3 mos C shaft;
rt femur w/transverse KC; mtp 3/4 port (7)
Rabbit: lft dist tibia (1)
Chicken: rt imm humerus; lft imm tmt (2)
Map/painted turtle: marginal bone (1)
River redhorse: rt opercula 6 lbs (1)
Ind: 1 LM; 28 MM (29) Total 47

10.5N 83.5W
Deer: (B) mod antler tine tip (1)
Box turtle: carapace frag (1)
Ind: 8(7B) MM; 1 SM; 2(B) turtle; 1 fish (12) Total 14

8N 107W
Ind: 50(45B) MM; 2 bird; 3(2B) turtle (55) Total 55
Bag 140
Sheep: AC rt dist humerus; (B) sesamoid (2)
Pig: rt max I1; max M3 port; lft ramus port; lft mand dp4; 6 dental;
thoracic spinous; (B) rib frag; prox humerus epiph port; 3 fibula;
lft Tt port; mtp 2/5 pres; dist mtp 3/4 epiph; 1st 2/5 ab;
1st 3/4 fused (21)
Deer: 1 dental; rt (B) innom port; rt Tt (3)
Dog: 2 phalanges (2)
Rat: cranial frag; 2 max; 2 atlas; rt femur (6)
Rabbit: lft (B) prox ulna (1)
Opossum: caudal vert (1)
Chicken: rt humerus shaft; rt coracoid port (2)
Turkey: rt tmt port; lft prox radius (2)
Mallard duck: lft wing phalanx (1)
Duck spp: rt tbt port (1)
Viperid: vert (1)
Box turtle: marginal bone; rt (B) prox humerus (2)
Drumfish: craniofacial frag (1)
Ind: 1SC LM; 309(54B) MM; 9 SR; 28(4B) bird; 35(7B) turtle; 10 fish;
125 misc (517) Total 563

Bent 7R, E/W Trench
Human: cranial frag (1)
Cow: vert frag AC (1)
Pig: lft mand C; 2 rib; 2(1ab) mtp 3/4 (5)
Ind: 2 MM (2) Total 9

Bent 7R, Cleanup
Sheep: rt femur shaft prox and dist ab (1)
Cow: AC atlas vert frag; cervical vert frag; AC thoracic vert w/KC;
4(1SC1AC) rib; rt ilium port; ilium neck; tibia shaft port;
SC femur shaft 19 mm; 2 SC misc (13)
Pig: parietal port; rib frag; rt prox humerus epiph ab KC; rt dist humerus;
rt ulna ca 3 mos; imm radius shaft; lft innom port; rt femur shaft;
rt prox tibia; rt tibia shaft; lft dist tibia; mtp 2/5 ab;
mtp 3/4 frag; 1st 3/4 ab ca 3 mos; 1st 3/4 fused (15)

Deer: lft and rt scapula port; 2(1AC) lft prox radius; rt dist radius ab;
rt prox Mt; 1st 3/4 ab (7)
Rat: rt innom (1)
Chicken: synsacrum; lft humerus; 2(1KC) rt femur; rt tbt port KC dist;
lft tbt shaft; rt tmt port (7)
Turkey: lft femur shaft (1)
Drumfish: dorsal spine (1)
Ind: 1 LM; 17 MM; 2 bird; 1 turtle (21) Total 67

5N 132W
Deer: rt prox ulna w/score and snap break; lft prox radius w/scraping;
3rd 3/4 (3)
F. squirrel: lft (B) innom frag (1)
G. squirrel: rt scapula (1)
Turkey: 2 phalanx pes (2)
Colubrid: vert (1)
Snake sp: rib (1)
Box turtle: 8 anterior plastron plate frag and ports; nuchal bone;
3(1B) marginal (2 inds) (12)
Ind: 18(12B) MM; 2 SM; 1 SR; 5 bird; 9(3B) turtle; 9(1B) fish; 22 misc (66)
Total 87

8N 107W
Deer: rt prox Mc (1)
Ind: 9(7B) MM (9) Total 10

7N 41W
Cow: SC pelvic frag 21.0 mm; SC femur 17 mm; SC misc 17.0 mm (3)
Pig: lft mand dp4 (1)
Deer: (B) antler; rt ramus w/P2P3P4M1; (B) 3rd 3/4 (3)
Rabbit: lft imm femur shaft (1)
Drumfish: 1 dental; 1 craniofacial (2)
Redhorse sp: hyomandibular port 6 lbs (1)
Ind: 67(29B) MM; 1 SM; 3 bird; 4 turtle; 4(1B) fish (79) Total 90

10.5N 83.5W
Deer: axis vert; Tt frag (2)
Opossum: rt (B) ramus frag (1)
Colubrid: 2(B) vert (2)
Box turtle: marginal port (1)
Ind: 37(23B1AC) MM; 1 SM; 2(B) bird; 7(1B) turtle; 2 misc (49) Total 55

5N 132W
Deer: 1(B) antler; (B) petrous; dental frag; rt (B) ascending ramus port;
tibia shaft; Mt shaft; 3rd 2/5; 3rd 3/4; (B) sesamoid (9)
Raccoon: rt ramus; rt (B) humerus shaft port (2)
F. squirrel: rt humerus port (1)
G. squirrel: lft scapula (1)
Rabbit: ramus frag; lumbar vert (2)
Turkey: scapula frag; imm lft dist radius; rt prox tbt; dist tbt frag (4)
Goose sp: rt humerus (1)
Colubrid: 5(1B) vert (5)
Box turtle: anterior and 2 posterior plastron plates; (B) fragmented carapace
port; 1(B) neural; 2(B) marginal; 7 carapace frags; 2 costal; humerus port;

femur port; coracoid port (19)
Snapping turtle: marginal bone (1)
Drumfish: rt (B) lower pharyngeal ca 10 lbs (1)
Ind: 96(41B) MM; 1 SM; 14(2B) bird; 3 fish scales; 6 fish; 20 misc (140)
Total 196

7N 41W
Turkey: lft prox scapula (1)
River redhorse: pharyngeal arch port (1)
Ind: 25(8B) MM; 1 SM; 2 bird; 5(3B) turtle; 1 fish (34) Total 36

10.5N 83.5W
Raccoon: rt (B) prox radius (1)
Ind: 12(B) MM; 2(B) bird; 4(1B) turtle (18) Total 19

8N 107W Ind: 3(B) MM (3)

5N 132W
Deer: lft scapula port (1)
Raccoon: rt dist humerus (1)
G. squirrel: rt humerus (1)
Ind: 1 MM (1) Total 4

10.5N 83.5W
Deer: 1 dental (1)
G. squirrel: temporal port (1)
Ind: 13(B) MM; 1(B) SM; 1 bird; 4(B) turtle; 1(B) fish (20) Total 22

8N 107W Ind: 1(B) MM (1)

7N 41W
Deer: fragmented cervical vert; 2 mtp frags (3)
Rabbit: lft (B) scapula (1)
Ind: 18(15B1M fishhook manu residue) MM; 26(5B) bird; 2(1B) SM; 5(3B) turtle;
7 misc (58) Total 62

5N 132W
Deer: antler frag; ulna shaft frag (2)
Rabbit: temporal port (1)
Box turtle: marginal bone (1)
Ind: 29(23B) MM; 1(B) SM; 1 bird; 1(B) turtle; 9 misc (41) Total 45

10.5N 83.5W Ind: 7(6B) MM; 1(B) bird (8) Total 8

8N 107W Ind: 1(B) MM (1)

10.5N 83.5W Ind: 11(B) MM; 2(B) turtle (13) Total 123

18N 41.5W
Sheep: scapula frag; rt radius shaft; rt C2+3; sesamoid (4)
Cow: 4SC scapula (7.5 11,20,21 mm); SC humerus 9.0 mm; SC vert epiph;
SC rib; AC/SC misc (8)
Pig: rt max dc; rt max I2; 2 dental; rib; carpal frag; rt femur shaft;
mtp 3/4 epiph; 1st 3/4 ca 3 mos; 2-1st 2/5 fused; 3rd 3/4; 3rd 2/5 (13)

Deer: rt max w/P2-M3; lumbar vert; scapula frag (3)
G. squirrel: lft max (1)
Rat: rt frontal; maxilla port; rt ramus; lft scapula; rt humerus; rt innom; lft femur (7)
Muskrat: maxilla; lft and rt ramus; lft scapula; lft femur (5)
Rabbit: lft ulna port; lft innom w/KC (2)
Mole: humerus frag(1)
Opossum: lft prox ulna (1)
Chicken: lft coracoid; lft prox scapula; rt ulna; fibula; rt tbt shaft; tbt frag (6)
Turkey: lft dist tbt; rt tbt shaft (2)
Bullfrog: long bone (B); lft innom (2)
Colubrid: 3 vert (3)
Viperid: 2 vert (2)
Map/painted turtle: 2 marginal; 1 plastron plate; 1 costal (4)
Sturgeon: 1 scute (1)
Garfish: scale (1)
Drumfish: 2 craniofacial; (B) dorsal spine; 2 rt upper pharyngeal (1 28.9 mm 7.0 lbs, 1 21.1 mm 3.5 lbs); (B) pharyngeal frag (6)
Channel catfish: pectoral spine frag (1)
Catfish spp: 5 misc craniofacial (5)
Ind: 1LM; 228(37B1SC) MM; 15 SR; 37(1B) bird; 37 turtle; 20 fish; 90+ misc (428) Total 506

5N 132W
Pig: rt pubic bone; rt ant tibia shaft (2)
Deer: rt dist humerus (C); rt prox radius; (B) 3rd 2/5 (3)
F. squirrel: rt dist tibia (1)
Turkey: rt cuneiform (1)
Box turtle: (B) carapace frag (1)
Ind: 32(15B) MM; 4(1B) SM; 3 bird; 1 turtle; 1 fish; 7 misc (48) Total 56

5N 132W
Deer: 2 dental; rt post humerus shaft; lft prox ulna; Mc shaft; lft ant tibia shaft; Mt shaft (7)
F. squirrel: parietal bone (1)
Rabbit: axis vert (1)
Box turtle: 3 carapace frags (3)
Ind: 21(9B) MM; 1 turtle; 1 fish; 13 misc (36) Total 48

10.5N 83.5W Ind: 1(B) MM (1)

8N 107W Ind: 1(B) SM (1)

5N 132W Deer: rt dist humerus cut lateral (1)

5N 132W
Bear: (B) malar port (1)
Rabbit: lft (B) scapula port (1)
Ind: 3 MM (3) Total 5

18N 41.5W
Deer: dental; lft femur shaft port; tuber calcis; mtp frag (4)
F. squirrel: rt humerus shaft (1)

G. squirrel: rt Tf (1)
Rabbit: lft Tf (1)
Viperid: 6 vert (6)
Colubrid: 1 vert (1)
Snake sp: vert frag (1)
Ind: 62(26B) MM; 1 SR; 5 bird; 13(4B) turtle; 3 fish; 1 bivalve; 13 misc (98)
Total 113

5N 132W
Pig: rib shaft (1)
Deer: lft dist radius; Mc shaft; rt dist tibia epiph; mtp 2/5; mtp frag; 3rd 2/5 (6)
F. squirrel: lft dist humerus (1)
P. pigeon: rt prox coracoid (1)
Turkey: vert port; (B) pes phalanx (2)
Viperid: vert (1)
Box turtle: carapace frag (1)
Ind: 37(10B) MM; 4 SR; 9(5B) turtle; 1 scale; 7(2B) bird; 11 misc (69)
Total 82

10.5N 83.5W Ind: 1 misc (1)

7N 41W
Deer: rt dist radius; rt dist radius epiph (2)
Crow: lft dist tmt (1)
F. squirrel: lft dist humerus (1)
Ind: 104(69B) MM; 8(6B) turtle; 8(2B) bird (120) Total 124

8N 107W Ind: 1 MM (1)

5N 132W
Deer: lft dist radius epiph; 2nd 3/4 frag (2)
Opossum: caudal vert (1)
Ind: 5 MM; 1 bird; 4 turtle (10) Total 12

7N 41W
Cow: 3 SC long bone frags (3)
Deer: dist mtp condyle (1)
F. squirrel: lft prox femur (1)
Ind: 163 (95B 1 bone pin frag) MM; 7(B) bird; 1 turtle (171) Total 176

5N 132W
Deer: lft femur shaft (1)
Colubrid: vert (1)
Ind: 4(B) MM; 1 bird (5) Total 7

7N 41W
Deer: 1 dental; 2nd 3/4 (2)
Ind: 147(79B) MM; 1SM; 3(B) bird; 1(B) turtle (152) Total 154

10.5N 83.5W Ind: 2 MM (2)

20N 83.5W
Deer: (B) Tt frag (1)

G. squirrel: (B) rt humerus (1)
Ind: 67(34B) MM; 4 SM; 7(1B) bird; 15(3B) turtle; 1 fish (94) Total 96

5N 132W Ind: 1 turtle (1)

7N 41W
Deer: lft petrous; 6(1B) dental; alveolar; vert; lft dist radius;
femur head port; 3 phalanx frag (14)
Ind: 173(45B) LM; 1 bird; 1 turtle (175) Total 189

7N 41W
Deer: (B) alveolar frag; 2 rib; rt (B) prox ulna; lft ML cut lateral;
3(1B1M polish/scoring) Mt frags; 1st 3/4 epiph (9)
Rabbit: lft Tf (1)
Turkey: tmt spur (1)
Softshell: 2(B) carapace/plastron (2)
Ind: 124(115B)MM; 12(2B) bird; 1 turtle (137) Total 150

20N 83.5W
Deer: 1 dental; (B) femur shaft frag; (B) tibia shaft frag; lft prox ant Mt;
2nd 2/5 (5)
Softshell: carapace/plastron frag (1)
Box turtle: 2 carapace frags (2)
Ind: 58(33B) MM; 1 SM; 3 bird; 10(3B) turtle (72) Total 80

20N 83.5W
Deer: patella frag; Tt frag; 2nd 3/4 (3)
Rabbit: rt ramus; rt prox femur port (2)
Squirrel sp: dist femur frag (1)
Ind: 33(14B) MM; 1(B) SM; 7(3B) turtle (41) Total 47

20N 83.5W
Deer: lft prox Mc; mtp frag (2)
Ind: 18(6B) MM; 1 bird (19) Total 21

20N 83.5W Ind: 4(3B) MM (3) Total 4

26N 42W Turkey: (B) lft dist femur (1)

20N 83.5W
Viperid: vert (1)
Ind: 2(B) MM; 1 misc (3) Total 4

20N 83.5W Ind: 1(B) MM (1)

5N 132W
F. squirrel: rt innom port (1)
Box turtle: post plastron plate (1)

Bent 3R, Stripping
Deer: lft dist humerus (1)
Turkey: lft prox tmt port w/polish (awl portion)(1)

Bent 3R, Stripping Deer: dist Mc (1)

Bent 5R, Surface
Deer: lft prox radius; lft Tt KC (2)
Pig: 1st 3/4 fused (1)
Ind: 1 LM; 2 MM (3) Total 8

Bent 5L, Surface
Deer: rib; rt (B) scapula port; lft femur shaft; lft tibia shaft (4)
Ind: 2 MM (2) Total 6

Bent 7L, Surface
Sheep: rt Mc port (1)
Cow: rib shaft AC; sesamoid (2)
Pig: lft ramus ca 3 mos w/dp4; caudal vert; rt femur shaft; rt prox tibia ab;
lft Tt w/deep knife cuts ant; mtp 3/4 ab; 1st 3/4 fused; 2nd 3/4 fused (8)
Deer: scapula frag; lft prox ulna; rt prox radius (3)
Rabbit: rt femur shaft (1)
Opossum: cervical vert (1)
Chicken: rt tbt (1)
Map/painted turtle: plastron port (1)
Drumfish: lft lower pharyngeal w/deep cut ca 5 lbs (1)
Ind: 9(1B) MM; 1 SM; 1 fish (11) Total 30

Surface Collection
Cow: incisor port; AC rib port (2)
Deer: lft dist tibia (1)
Pig: rt ramus frag w/dp2dp3; lft dist humerus ab; fused 2nd 3/4 (3)
Turkey: lft tbt shaft (1)
Chicken: lft and rt tbt ports (2)
Drum: rt lower pharyngeal 6 lbs (1)
Ind: 7 MM (7) Total 17

20N 83.5W Ind: 2(B) MM (2)

20N 83.5W Ind: 1(B) MM (1)

7N 41W
Deer: 5 dental; thoracic spinous; lumbar vert; 3 rt scapula ports; rt prox Mc;
rt innom; rt Tc+4; lft w/epiph and rt Tf; Mt frag; dist mtp condyle;
(B) 3rd 3/4 (18)
Opossum: (B) caudal vert (1)
Turkey: lft prox tbt (1)
Softshell: 3 carapace/plastron frags (3)
Ind: 55(B) MM; 1 bird; 9 turtle (65) Total 88

10.5N 83.5W
Deer: rt petrous; rt scapula port; sesamoid (3)
G. squirrel: rt ramus; rt humerus; rt ulna; rt ilium (4)
Quail: rt humerus port; rt ulna (2)
Turkey: vert; (B) scapholunar (2)
Colubrid: vert (1)
Box turtle: 4(1B) carapace (4)
Drum: (B) prox dorsal spine port (1)

Mucket: lft valve mod hoe port (1)
Ind: 33(10B) MM; 9(3B) bird; 15(B) turtle; 2(1B) fish; fish scale (59)
Total 77

10.5N 83.5W
Chicken: lft (B) dist femur frag (1)
River redhorse: pharyngeal frag (1)
Ind: 26(B) MM; 1(B) bird; 4 turtle; 1 misc (32) Total 34

Bent 3R, Backdirt Deer: lft prox post Mc (1)

Bent 7L, Backdirt
Cow: lft ant ramus port (1)
Pig: rt mand I1; rt ulna prox ab (2)

20N 83.5W Ind: 1 turtle; 1 misc (2)

7N 41W
Deer: mand P; rt mand M3; 1 dental; lft Ci; rt innom port; 2 dist mtp;
1st 2/5; (B) 3rd 3/4 (9)
F. squirrel: rt ramus port (1)
G. squirrel: occipital bone (1)
Turkey: pes phalanx (1)
Box turtle: neural bone (1)
Softshell: (B) carapace/plastron frag (1)
Drumfish: dorsal spine frag (1)
Ind: 156(50B) MM; 8(6B) bird; 10(7B) turtle (174) Total 189

7N 41W
Deer: lft Cu; Mc frag; 1 mtp (3)
Rabbit: rt (B) dist humerus (1)
Ind: 53(10B1M w/smoothing/polish) MM; 2(1B) SM; 4(1B) bird; 3 turtle;
1 fish (63) Total 67

26N 42W
Deer: 2 dental; rib; carpal frag; femur shaft frag; lft Tt port; 1st 3/4 port;
2nd 3/4 epiph (8)
Dog: lft max C (1)
G. squirrel: lft innom port (1)
Rabbit: vert; lft scapula port; sacrum port (3)
Opossum: vert; caudal vert; lft prox femur KC prox (3)
Quail: rt prox ulna (1)
Turkey: quadrate (B); 2 radius shaft; lft (B) prox cmc frag (4)
E. green heron: lft dist ulna port (1)
Box turtle: mod costal cup/bowl fragment (1)
River redhorse: pharyngeal arch frag (1)
Drumfish: rt upper pharyngeal ca 39 mm (1)
Ind: 69(20B) MM; 2 SM; 1 SR; 10(2B) bird; 16(5B) turtle; 4 fish; 10 misc (112)
Total 137

7N 41W Ind: 4 MM (4)

26N 42W
Deer: (B) antler; rt C2+3; lft prox Mc; (B) ML frag; (B) 2nd 3/4 frag (5)

Dog: mtp frag (1)
Rat: lft innom (1)
Rabbit: rt scapula (1)
Opossum: atlas vert (1)
Ind: 54(8B) MM; 2 SM; 3 bird; 22(7B) turtle; 3 fish; 39 misc (123) Total 132

26N 42W
Human: max molar crown (1)
Deer: carpal frag (1)
Muskrat: lft humerus port (1)
Box turtle: plastron frag (1)
Frog/toad: long bone (1)
Colubrid: vert (1)
Snake: rib (1)
Ind: 13 MM; 2(1B) SM; 1 SR; 5 turtle; 1 fish; 22 misc (44) Total 51

26N 42W
Deer: vert epiph; sacrum port; rib frag; femur shaft; lft prox tibia port (5)
F. squirrel: parietal port; (B) axis vert; lft prox tibia (3)
Rabbit: lft max I1 (1)
Turkey: (B) scapholunar (1)
Colubrid: 5 vert (5)
Garfish: 2 scales (2)
Ind: 57(23B) MM; 2(1B) SM; 7(3B) bird; 22(10B) turtle; 4 misc (92) Total 109

26N 42W
River redhorse: pharyngeal arch 6 pounds (1)
Ind: 2(1B) MM (2) Total 3

26N 42W
Deer: mod shed antler tine w/scraping,polish; lumbar vert (2)
Ind: 12 MM (12) Total 14

26N 42W
Deer: 2 dental; lft Tf port; 1st 2/5 (4)
Turkey: rt (B) prox tmt (1)
Viperid: vert (1)
Toad/frog: (B) long bone (1)
Drumfish: pharyngeal frag (1)
Ind: 1 LM; 50(26B) MM; 2(1B) bird; 3(1B) turtle (56) Total 64

Burial 5
Human: phalanx frag (1)
Deer: lft fragmented humerus shaft; lft post tibia shaft (2)
Opossum: rt tibia (1)
Ind: 1LM; 75(8B) MM; 1 SM; 4 turtle; 1(B) bird (82) Total 86

Burial 5 Ind: 9(1B) MM (9)

Burial 5 Ind: 1(B) MM; 1(B) turtle (2)

Feature 25 East1/2
Deer: (B) humerus shaft frag (1)
Box turtle: fragmented carapace and nuchal (1)

Ind: 12(10B) MM; 3(B) bird (15) Total 17

Feature 25 West1/2
Cow: SC long bone shaft (1)
Deer: 1 dental; rt dist humerus; (B) carpal frag; 2 scapula frags;
lft ant tibia shaft; mtp condyle; 2 2nd 3/4 (9)
Pig: 1 dental (1)
Raccoon: lft humerus shaft (1)
Colubrid: vert (1)
Ind: 1 LM; 241(109B) MM; 1 SM; 1(B) bird; 2 turtle (246) Total 259

45.5N 141.5W
Cow: 1 dental; rt Tc+4; 2 SC misc (4)
Pig: 1 dental; mtp 3/4 port (2)
Ind: 45(10B) MM; 3 bird; 1 turtle (49) Total 55

40N 139W
Deer: rt femur shaft; 2(B) phalanx frags (3)
Ind_139(5B) MM (139) Total 142

40N 139W
Deer: rt prox radius; sesamoid (2)
Ind: 26(9B) MM (26) Total 28

39N 136W
Deer: rt Tt (1)
Dog: dental frag (1)
Ind: 196(186B1AC) MM; 2 bird (198) Total 200

U13 L3 Ind: 35(15B) MM; 3 SM; 1 bird (39)

46N 131.5W
Sheep: max molar port (1)
Deer: rt Tt; 2 phalanx frags (3)
Ind: 110(63B)MM; 12(3B) bird; 1 turtle (123) Total 127

50N 132W
Deer: 1 dental (1)
Ind: 45(19B) MM (45) Total 46

50N 132W Ind: 1(B) turtle (1)

46N 133.5W Deer: lft fragmented ramus w/M3; rt fragmented tibia shaft (2)

46N 95W
Cow: 7 dental (7)
Pig: 3 dental; 2nd 3/4 ab (4)
Ind: 77(27B) MM (77) Total 88

46N 135.5W
Sheep: 2 max dental; 1 dental (3)
Cow: 2 max molar port; rib frag (3)
Deer: 1 dental; mtp condyle epiph (2)
Pig: 1 dental (1)

Ind: 1 LM; 107(49B) MM; 3(1B) bird; 1 turtle (112)

49.5N 134W
Deer: (B) scapula frag; (B) ML frag (2)
Ind: 63(26B) MM; 3(B) bird (66) Total 68

48N 131.5W Ind: 14(B) MM; 2 bird (16) Total 16

46N 135.5W Ind: 1(B) MM (1)

49.5N 134W Ind: 13(3B) MM (13)

48N 131.5 Ind: 1(B) MM (1)

49N 136W Ind: 10(5B) MM (10)

46N 99W Ind: 7(B) MM (7)

42N 105W
Mole: humerus frag (1)
Ind: 32(17B) MM; 1 bird (33) Total 34

46N 99W Ind: 1 MM (1)

42N 105W Ind: 3(1B) MM (3)

46N 105W Ind: 1(B) MM; 1(B) turtle (2)

46N 105W Ind: 2(B) MM (2)

46N 105W Ind: 15(1B) MM (15)

46N 105W Ind: 1(B) MM; 1 misc (2)

42N 95W Ind: 4(B) MM (4)

46N 127W
Human: cranial frag (1)
Cow: lft ant ramus port w/P2 (1)
Deer: lft innom (1)
Ind: 2(B) MM; 1 bird (3) Total 6

42N 110W Ind: 6(B) MM (6)
Feature 35 Ind: 1 MM (1)

46N 110W Ind: 5(2B) MM (5)

42N 110W Ind: 21(B) MM (21)

Feature 35B Ind: 1(B) MM (1)

42N 123W Ind: 33(B) MM (33)

44N 108W
Pig: dental frag (1)
Map/painted turtle: fragmented plastron (1)
Ind: 13(B) MM (13) Total 15

Abutment pit, south end
Cow: 4 dental; atlas vert; AC lumbar; 2SC rib; lft SC scapula port 146.0 mm; rt prox humerus epiph; rt humerus shaft AC prox and dist; rt radius shaft; dist Mc (13)
Pig: rt ant ramus w/C1-C1; rt mand C (2)
Turkey: rt humerus shaft; lft tbt (2) Total 17

42N 127W Deer: lft Tt port; dist tibia frag (2)

Abutment pit, gen. coll.
Sheep: lft (B) femur shaft (1)
Pig: prox humerus port (1)
Chicken: rt (B) dist femur (1)
Ind: 7(B) MM (7) Total 10

Abutment pit, north wall
Cow: 5(4SC) rib (5)
Pig: lft (B) prox ulna and lft (B) prox radius art; fusing 1st 3/4 (B) (3)

Feature 55 Ind: 9(B) MM; 1(B) turtle (10) Total 10

42N 108W Deer: rt dist radius (1)

Bent 1 Deer: rt dist post humerus shaft (1)

Bent 1L
Cow: cervical vert (1)
Deer: rt scapula port (1
Pig: 1 dental (1) Total 3

Bent 1R
Human: adult: lft humerus shaft port; rt dist tibia (2)
Cow: rib shaft w/SC shaft AC prox (1)

Bent between 2&3 Ind: 1 LM (1)

Bent 3
Turkey: lft cmc (1)
Canada goose: rt dist ulna w/cut process (1)
Ind: 1 LM; 3 MM; 1 SM; 1 bird (6) Total 8

Bent 3L Turkey: lft tmt shaft (1)

Bent 3R
Cow: vert frag (1)
Dog: lft ramus w/P4 (1) Total 2

Bent 4
Cow: dist mtp epiph (1)

Dog: lft max P4 (1) Total 2

Bent 4R Ind: 2 LM (2)

Bent 5L
Opossum: lft humerus port (1)
Ind: 7 MM; 1 bird (8) Total 9

Bent 5R
Cow: lft max P2; rib shaft (2)
Pig: lft humerus KC/AC 5/6 mos; rt prox radius ab; rt (B) femur shaft w/C;
rt Tc; 2 mtp 3/4 ports; 1st 3/4 fused; 2nd 3/4 fused (8)
Ind: 1 LM (1) Total 11

Bent 6L Deer: rt scapula; rt prox Mc (2)

Bent 6R
Deer: lft scapula (1)
Dog: lft ramus w/P2-M3 (1) Total 2

Bent 7R
Cow: rib shaft AC/SC; 1 rib SC (2)
Pig: rt Tf ab C (1)
Rat: lft femur (1)
Chicken: lft femur port; rt tbt port (2)
Teal size duck: rt dist tbt (1)
Ind: 5(3B) MM (5) Total 12

General near Bent 7
Sheep: dist Mt Ac shaft (1)
Cow: 1 dental; vert body sheared lateral; rib; rt prox SC/KC ulna frag;
SC ulna shaft frag; lft Tf (6)
Pig: mand I; thoracic vert port; 8(4KC) rib shaft; rt femur SC midshaft
KC shaft; rt tibia port SC dist; 1st 3/4 ab (13)
Dog: mtp (1)
Rabbit: cervical vert; thoracic vert; rt humerus; rt radius port; rt ulna port;
lft KC innom; rt femur port; rt tibia port (8)
Chicken: cranium; rt imm humerus; rt KC coracoid; rt tbt shaft; rt tmt (5)
Turkey: rt ulna shaft port (1)
Teal size: lft humerus sheared prox process (1)
Small duck: lft dist tbt; lft tmt port (2)
Drumfish: 1 craniofacial; 1 vert (2)
Catfish: cleithrum frag (1)
Ind: 3 LM; 17 MM; 1 SM; 2(1B) bird; 1 fish (24) Total 65

Bent 7 General surface debris
Deer: (B) ramus frag; lft ulna; lft prox ulna; lft (B) femur shaft;
lft prox post Mt (5)
Map/painted turtle sp: fragmented plastron (1)
Ind: 2(1B) LM; 1 SM (3) Total 9

Monitoring collection
Deer: (B) antler port; dist Mc; lft ant tibia shaft; lft dist tibia;
rt prox (B) Mt; 2(B) Mt (7)

G. squirrel: rt dist humerus (1)
Turkey: lft ulna (1)
Ind: 2(1B) MM; 1 turtle (3) Total 12

General surface debris
Deer: rt dist tibia (1)
Ind: 2 MM (2) Total 3

Bu 1
Pig: rib (1)
Chicken: imm rt tbt shaft (1)
Ind: 1(B) MM (1) Total 3

Bu 4
Box turtle: costal port (1)
Ind: 1 fish (1) Total 2

Bu 5 Deer: lft prox Mc (B) (1)

APPENDIX C, Part IV

Table C.4. Frequency of Faunal Remains, 40DV5.

TAXA	Count	MNI	lft	rt	B	SC	AC	KC	Mod
Total	*7421*	*73*			*2698*	*39*	*15*	*26*	*13*
MAMMALS	**633**	**38**			**57**	**37**	**13**	**20**	**6**
Human	8				0	0	0	0	0
cranial	3								
max dm1	1								
max molar	1								
humerus shaft	1		1						
dist tibia	1			1					
mtp/phalanx frag	1								
Sheep	16	1			2	0	1	0	0
frontal port	1		1						
dental	4								
scapula frag	1								
humerus port	1		1						
rt dist humerus	1			1			1		
radius shaft	1			1					
C2+3	1			1					
dist Mt	1								
femur shaft	1		1		1				
femur shaft pr/dt ab	1			1					
Mc port	1			1					
sesamoid	2				1				
Domestic cow	82	2			0	35	10	2	0
ant ramus w/P2	1		1						
ant ramus	1		1						
incisor	1								
max P2	1		1						
dental	15								
atlas	2								
cervical vert	2								
thoracic vert	1						1	1	
lumbar	1						1		
vert body	1						1		
vert epiph	1					1			
vert frag	2								
rib	20					13	5		
scapula 7.5,11,20,21,146	5		1			5			
prox humerus epiph	1			1					
humerus shaft	1			1			1		
humerus shaft 9.0	1					1			
prox ulna frag	1			1		2		1	
ulna shaft	1								

Table C.4. Frequency of Faunal Remains, 40DV5.
Continued

TAXA	Count	MNI	lft	rt	B	SC	AC	KC	Mod
radius shaft	1			1					
dist Mc	1								
ilium port	2			1					
pelvic frag 1/21mm	1					1			
femur shaft 17,19	2					1			
tibia shaft	1								
dist tibia	1		1			1			
Tc+4	1			1					
Tf	1		1						
dist mtp epiph	1								
sesamoid	1								
misc	10					10	1		
White-tailed deer	279	9			36	0	1	5	6
antler	10				7				3
shed beam	1								1
petrous	3		1	1	1				
max w/P2-M3	1			1					
ramus port w/P2-M1	1			1					
ramus w/M3	1		1						
ramus port/frag	2				1				
mand condyle	1			1					
ascending ramus port	3			2	2				
alveolar frags	2				1				
hyoid	1								
mand M3	1			1					
dental frags	37				1				
axis	1								
cervical vert	1								
thoracic spinous	1								
lumbar vert	4								
sacrum	1								
vertebra epiphysis	2								
vertebra frag	1								
rib shaft	8								
scapula port/frag	17		3	9	2				
humerus shaft	3		1	1	1				
post humerus shaft	1			1					
dist humerus	7		2	5				2	
radius	1			1					
prox radius	9		3	5	1		1		
dist radius ab	1		1						
dist radius	5		3	2					
dist radius epiph	2		1	1					
ulna port	1		1						
prox ulna	7		3	3	1				1
ulna shaft	1								

Table C.4. Frequency of Faunal Remains, 40DV5.
Continued

TAXA	Count	MNI	lft	rt	B	SC	AC	KC	Mod
Ci	1		1						
Cu	3		3						
C2+3	1			1					
carpal frag	3				1				
prox Mc	7		4	3					
Mc shaft	3								
dist Mc	2								
innominate	6		2	4	1			1	
ischium	1			1					
pubic port	1			1					
femur head	1								
femur shaft 1/imm	9		4	1	1				
dist femur	1								
patella	1								
prox tibia	1		1						
tibia shaft	5		2	1	1				
ant tibia shaft	2		2						
post tibia shaft	3		2	1					
dist tibia	4		2	1					
dist tibia epiph	1			1					
Tc+4	1			1					
Tt	10		3	4	1			1	
Tf	2		2						
Tf pres	1			1					
tuber calcis	1								
ML	4		1	1	2			1	
T2+3	1			1					
prox Mt	2			2					
prox ant Mt	1		1						
prox post Mt	1		1						
Mt shaft/condyle	8				3				1
mtp 2/5	1								
mtp 3/4 frag/port	12								
mtp 3/4 epiph	2								
dist mtp 3/4	4								
1st 2/5	2								
2nd 2/5	1								
3rd 2/5	4				1				
1st 3/4	1								
1st 3/4 ab	1								
prox 1st 3/4 epiph	1								
2nd phalanx 3/4	7				1				
2nd 3/4 epiph	1								
3rd 3/4	5				3				
sesamoid	3				1				
misc pes/manus	8				2				

Table C.4. Frequency of Faunal Remains, 40DV5.
Continued

TAXA	Count	MNI	lft	rt	B	SC	AC	KC	Mod
Domestic pig	125	7			5	2	1	11	0
parietal	1								
petrous	1		1						
max w/dc	1		1						
ramus w/dp4 ca 3 mos	1		1						
ramus w/dp2dp3	1			1					
ant ramus C1-C1	1			1					
ramus port	1		1						
max dc	1			1					
max I1	1			1					
max I2	1			1					
max M3	1								
mand dp4	2		2						
mand I1	2			1					
mand C	3		2	1					
mand M3	1		1						
dental	17								
thoracic vert	1								
thoracic spinous	1								
caudal vert	1								
vert body	1								
rib	16				1			4	
scapula port	1			1					
humerus 5/6 mos	1		1				1	1	
prox humerus	1								
prox humerus epiph ab	1			1				1	
prox humerus epiph	1								
dist humerus ab	1								
dist humerus	1			1					
radius 2-3 mos	1			1				1	
prox radius	1		1		1				
prox radius ab	1								
imm radius shaft	1								
prox ulna	1		1		1				
ulna prox ab	1								
ulna ca 3 mos	1			1					
carpal	1								
innom	1		1						
pubic bone	1			1					
femur	1			1				1	
femur shaft	5			5	1	1		2	
tibia port	1			1		1			
prox tibia	1			1					
prox tibia ab	1			1					
ant tibia shaft	1			1					
tibia shaft	1			1					

Table C.4. Frequency of Faunal Remains, 40DV5.
Continued

TAXA	Count	MNI	lft	rt	B	SC	AC	KC	Mod
dist tibia	1		1						
fibula	3								
Tc	1			1					
Tf ab	1			1					
Tt	2		2					1	
mtp 2/5 pres	1								
mtp 2/5 ab	1								
mtp 3/4 port	6								
mtp 3/4 ab	2								
mtp 3/4 epiph	2								
1st 2/5 fused	2								
1st 2/5 NB	1								
1st 2/5 ab	1								
3rd 2/5	2								
1st 3/4 fused	5								
1st 3/4 fusing	1				1				
1st 3/4 epiph	1								
1st 3/4 ab	1								
1st 3/4 ab ca 3 mos	2								
2nd 3/4 fused	3								
2nd 3/4 ab	1								
3rd 3/4	1								
Mink	1	1			0	0	0	0	0
ascending ramus	1			1					
Raccoon	6	1			2	0	0	0	0
ramus	1			1					
humerus shaft port	2		1	1	1				
dist humerus	2			2					
prox radius	1			1	1				
Black bear	2	1			1	0	0	0	0
malar	1				1				
ulna shaft	1		1						
Gray fox	1	1			0	0	0	0	0
max M1	1		1						
Domestic dog	14	1			0	0	0	0	0
ramus w/P2-M3	1								
max P3	1			1					
max P4	1								
dental	1								
lumbar vert	1								
innom	1			1					
mtp	1								
phalanges	5								
Muskrat	5	1			0	0	0	0	0
maxilla port	1								
ramus	2		1	1					

Table C.4. Frequency of Faunal Remains, 40DV5.
Continued

TAXA	Count	MNI	lft	rt	B	SC	AC	KC	Mod
scapula	1		1						
femur	1		1						
Brown rat	15	2			0	0	0	0	0
cranium	1								
frontal	1			1					
max	3								
ramus	1			1					
atlas	2								
scapula	1		1						
humerus	1			1					
innominate	2			2					
femur	3		2	1					
Beaver	2	1			0	0	0	0	0
parietal	1								
temporal port	1			1					
Fox squirrel	17	2			3	0	0	0	0
parietal	1								
maxilla	1		1						
axis	1				1				
scapula	2			2					
humerus	1			1					
prox humerus epiph	1			1	1				
humerus shaft	1			1					
dist humerus	3		2	1					
innominate	2		1	1	1				
prox femur	1			1					
prox tibia	1		1						
tibia shaft	1			1					
dist tibia	1			1					
Gray squirrel	16	3			1	0	0	0	0
maxilla	1		1						
temporal	1								
ramus	1			1					
scapula	2		1	1					
humerus	5		2	3	1				
dist humerus	2		1	1					
ulna	1			1					
ilium	1			1					
dist femur	1		1						
Tf	1			1					
Squirrel spp.	2				0	0	0	0	0
femur frag	2								
Cottontail rabbit	30	3			4	0	0	2	0
temporal	1								
ramus	2			1					
dental	1								

Table C.4. Frequency of Faunal Remains, 40DV5.
Continued

TAXA	Count	MNI	lft	rt	B	SC	AC	KC	Mod
axis	1								
cervical	1								
lumbar	2								
thoracic vert	1								
scapula	2		2		2				
humerus	2		1	1					
dist humerus	2		2						
radius	1			1					
ulna	1			1					
prox ulna	1		1		1				
innominate	2		2					2	
femur ports	1			1					
prox femur	1			1					
imm femur shaft	1		1						
femur shaft	1			1					
tibia	1			1					
dist tibia	1		1						
Tf	3		2	1	1				
misc tarsals	1								
Mole	2	1			0	0	0	0	0
humerus	2								
Opossum	10	1			3	0	0	0	0
ramus	1			1	1				
cervical vert	2				1				
caudal vert	4				1				
humerus	1		1						
prox ulna	1		1						
tibia	1			1					
BIRDS	**79**	**14**			**6**	**0**	**0**	**6**	**1**
Common crow	1	1			0	0	0	0	0
dist tmt	1		1						
Chicken	33	5			2	0	0	3	0
cranial port	1								
synsacrum	1								
scapula	1		1						
coracoid	4		1	3				1	
humerus port	1		1						
imm humerus port	3		1	2					
humerus shaft	1			1					
ulna	1			1					
femur	2			2				1	
femur shaft	2		1	1					
dist femur	2		1	1	2				
fibula	1								
tbt port	3			2				1	
imm tbt shaft	1			1					

Table C.4. Frequency of Faunal Remains, 40DV5.
Continued

TAXA	Count	MNI	lft	rt	B	SC	AC	KC	Mod
tbt shaft	6		2	4					
tmt port	2			2					
imm tmt	1		1						
Passenger pigeon	1	1			0	0	0	0	0
prox coracoid	1			1					
Turkey	34	2			4	0	0	1	1
vert	2								
scapula	2		1						
humerus shaft	1			1					
ulna port	2		1	1					
dist ulna	1		1						
prox radius	1		1						
dist radius	1			1					
radius shaft	1							1	
imm dist radius	1		1						
cmc	1		1						
cuneiform	2			2					
scapholunar	2				2				
femur shaft	1		1						
dist femur	1		1						
prox tbt port	2		1	1					
tbt shaft	3		2	1					
dist tbt frag	2		1						
tmt port	2			2	1				
tmt shaft	1		1						
prox tmt	1		1						1
tmt spur	1								
pes phalanx	3				1				
Bobwhite quail	2	1			0	0	0	0	0
humerus	1			1					
ulna	1			1					
Teal size	2	1			0	0	0	1	0
humerus	1		1					1	
dist tbt	1			1					
Small duck	2				0	0	0	0	0
dist tbt	1		1						
tmt port	1		1						
Mallard et al.	1	1			0	0	0	0	0
wing phalanx	1		1						
Duck spp.	1	1			0	0	0	0	0
tbt port	1			1					
Canada goose	2	1			0	0	0	1	0
humerus port	1			1					
dist ulna	1			1				1	
REPTILES	**123**	**9**		**0**	**14**	**0**	**0**	**0**	**0**
Colubrid	25	1			3	0	0	0	0

Table C.4. Frequency of Faunal Remains, 40DV5.

Continued

TAXA	Count	MNI	lft	rt	B	SC	AC	KC	Mod
vertebra	25				3				
Viperid	13	1			0	0	0	0	0
vertebra	13								
Serpent spp.	2				0	0	0	0	0
vertebrae	1								
ribs	1								
Softshell	9	1			2	0	0	0	0
carapace/plastron	9				2				
Map/painted spp.	12	2							
costal	1								
marginal	4								
plastron	7								
Box turtle	60	3			9	0	0	0	0
nuchal	2								
neural	1				1				
costal	4				1				
carapace	24				3				
marginal	12				3				
plastron	13								
coracoid	1								
humerus port	2			1	1				
femur	1								
Snapping turtle	2	1			0	0	0	0	0
marginal	1								
femur port	1								
AMPHIBIANS	**3**	**1**			**2**	**0**	**0**	**0**	**0**
Frog/toad spp.	3	1			2	0	0	0	0
long bone	2				2				
innom	1								
FISHES	**38**	**10**			**6**	**0**	**0**	**0**	**0**
Drumfish	20	5			6	0	0	0	0
craniofacial	5								
upper phryngl 7,3.5 lbs	2			2					
lower pharyngeal 10/5/6	3		1	2	1				
pharyngeal	4				3				
pharyngeal tooth	1								
dorsal spine	4				2				
vert	1								
Channel catfish	1	1			0	0	0	0	0
pectoral spine	1								
Catfish spp.	6				0	0	0	0	0
craniofacial	5								
cleithrum	1								
River redhorse	2	1			0	0	0	0	0
pharyngeal arch 6 lbs	1								
opercula 6 lb	1			1					

Table C.4. Frequency of Faunal Remains, 40DV5.
Continued

TAXA	Count	MNI	lft	rt	B	SC	AC	KC	Mod
Redhorse spp.	5	1			0	0	0	0	0
pharyngeal arch	3								
dentary 1 lb	1			1					
hyomandibular 6 lb	1								
Garfish	3	1			0	0	0	0	0
scale	3								
River sturgeon	1	1			0	0	0	0	0
scute	1								
MOLLUSC	**1**	**1**							**1**
Mucket	1	1	1						1
INDETERMINATE	**6544**				**2613**	**2**	**2**	**0**	**5**
Large mammal	19				1	1			
Medium mammal	4980				2354	1	2		5
Small mammal	55				12				
Small rodent	32								
Bird	399				97				
Turtle	458				142				
Fish	86				7				
Shell	1								
Miscellaneous bone	514								

B=burned, Mod=modified, SC=saw cut, AC=ax cut, KC=knife cut

APPENDIX D
HUMAN BURIAL ANALYSES

APPENDIX D, Part I

Individual Burial Analyses

French Lick Site (40DV5)

Bent 5 Left

Burial 1
Age: unknown
Sex: unknown

This burial was a small stone box heavily impacted by construction. Small bone fragments were noted in the field records but were not examined by this researcher.

Burial 2
Age: older adult, 45+
Sex: indeterminate

This individual is represented by fragments of left and right parietals, frontal, and occipital bones. There is complete endocranial fusion of the coronal, sagittal, and lambdoid sutures, and semi-complete ectocranial fusion of each of these sutures. The cranial vault is smooth and gracile, with some parietal bossing, possibly indicative of a female. There are remodeled pinpoint cribra formations at lambda, a large pacchionian pit on the endocranial surface of the right parietal, and at least two wormian bones at lambda. Preservation is good.

Burial 3
Age: unknown
Sex: unknown

This was the northeast corner of a box which was heavily impacted by construction. No bones were recorded in the field.

Burial 4
Age: adolescent, 12-15 years (Ubelaker 1978:teeth)
Sex: female?

This individual is represented by the fragmented remains of the upper torso, face, and mandible. The box had been cut in half by construction. Skeletal elements include: left and right humeri; left and right clavicles; left and right scapulae; left and right ribs; cervical and

thoracic vertebrae; frontal; maxillae; mandible; and distal phalanx of thumb. Proximal epiphyses of humeri are separate from diaphyses. Clavicle epiphyses are separate. Scapulae epiphyses are separate. Epiphyseal rings of vertebrae are separate. Coracoid processes of scapulae are separate. There is a remnant trace of the metopic suture on the ectocranial surface of the frontal, although it is completely fused and obliterated endocranially. The neural arches and vertebral centra are completely fused. The components of the humeral head are fused. The mandibular symphysis is fused. The bones have a thin, gracile appearance. The permanent third molars have not erupted through the alveoli of the maxillae or mandible, and there is very little attrition on the posterior teeth. Root formation is incomplete on the maxillary canines, premolars, first molars, and second molars. There is no deciduous dentition present.

The maxillary central and lateral incisors and canines, and the mandibular lateral incisors and canines, exhibit enamel hypoplasias (not severe). The maxillary first and second molars have a 4-cusp pattern. There is a protostylid on the buccal surface of the right maxillary second molar; this tooth also has an enamel pearl between the buccal and lingual roots. The teeth are small in overall size dimensions. There is a slight "crust" of calculus on the distal aspects of the left maxillary first and second premolars and first molars. There are buccal pits on the left and right maxillary first premolars, and buccal enamel fissures on the maxillary and mandibular first molars and mandibular second molars. There is slight maxillary alveolar prognathism with some collapse (sunken appearance) of the maxillary sinuses.

The frontal fragments exhibit a sharp left orbital border, a hint of supraorbital protuberance, a hint of pinpoint cribra orbitalia in the left orbit, and a left supraorbital foramen. The vertebral centra show some hypervascularity.

Supernumerary individuals: There is approximately one-third of an adult premolar (not from this individual). Also, the basilar portion of an occipital (extremely porous) and one-half of a lumbar vertebral neural arch from an infant are present. These elements may have been dragged into the pit fill by construction, or by prehistoric activity.

Burial 5
Age: unknown
Sex: unknown

This was a stone box very heavily impacted by construction activity. No skeletal elements were recovered.

Burials 6A and 6B
Burial 6A:
Age: older adult, 45+
Sex: male

This individual was represented by almost complete cranial and postcranial skeletal elements placed in a limestone box oriented approximately east/west. The cranium was heavily impacted by a support from the previous bridge or some other type of large pole which pierced the cover of the box and the upper portion of the cranium (see Figure 162). The hands and feet are incomplete because of rodent disturbance and water erosion. Sex attributes include a noticeably robust skeleton, large bone size, heavy bone density, pronounced muscle attachments, narrow sciatic notches, pronounced supraorbital torus, blunt orbital borders, large, rounded mastoids, and a squared chin. Age attributes include resorptive pitting of the long bone metaphyses, very thin corpus of the ilia (i.e., there is no diploeic space), and the complete fusion of the medial epiphyses of the clavicles.

The individual exhibits numerous pathologies: platycnemia (m/l flattening) of the tibiae; slight sclerotic linear periosteal striations on the posterior aspects of the tibiae; resorptive pitting of the metaphyses of the long bones of the legs; arthritic erosion, with some lipping, of the sacroiliac articulator platform; pronounced arthritis of the proximal phalanx of the left first toe; a small sesamoid in the right hand; erosion of the articular facets of the lumbar vertebrae, with osteophytic formation; pronounced osteophytosis of the lumbar centra (almost forming a bridge); osteophyte formation on the articular facets of the ribs on the lower thoracic vertebrae; hourglass-shaped centra with moderate osteophyte formation for thoracic vertebrae; osteophyte formation on coronoid process of right ulna; patellar notch on superior medial aspect of right patella; slight anterior/posterior bowing of the femora; shortened femoral necks which approach 90 degrees; slight patellar notch on the left patella; small sesamoid-like bone in the trochanteric fossa of the left femur--this may have originally been a piece of cortical bone which pulled away from the surface and eventually remodeled into a smooth, round shape (Figure D-1). The sternal ends of the first ribs are almost fused to the sternum.

Pathologies of the cranium, mandible, and teeth include impacted mandibular third molars; peg-shaped supernumerary tooth between left maxillary lateral incisor and canine (see Figure 165); pronounced polish on the lingual surface of the maxillary central incisors (see Figure 165); pronounced calculus around the cingula of all teeth; pronounced maxillary alveolar prognathism; a very deep palate; and periodontal disease. The endocranial surface has a lytic, "moth-eaten" appearance which is exceedingly difficult to diagnose because of the extreme fragmentation caused by historic construction. Differential diagnosis would include neoplasia. It seems to appear predominantly on the right lateral and anterior portions of the cranium (right frontal; temporal) and basilar portion of the occipital.

There was a possible kidney or gall stone found in the fill in the abdominal area. Anomalies include supraorbital foramina. The incisors are decidedly shovel-shaped. Despite apparent advanced age, the long bone cortical thicknesses seem to be well maintained.

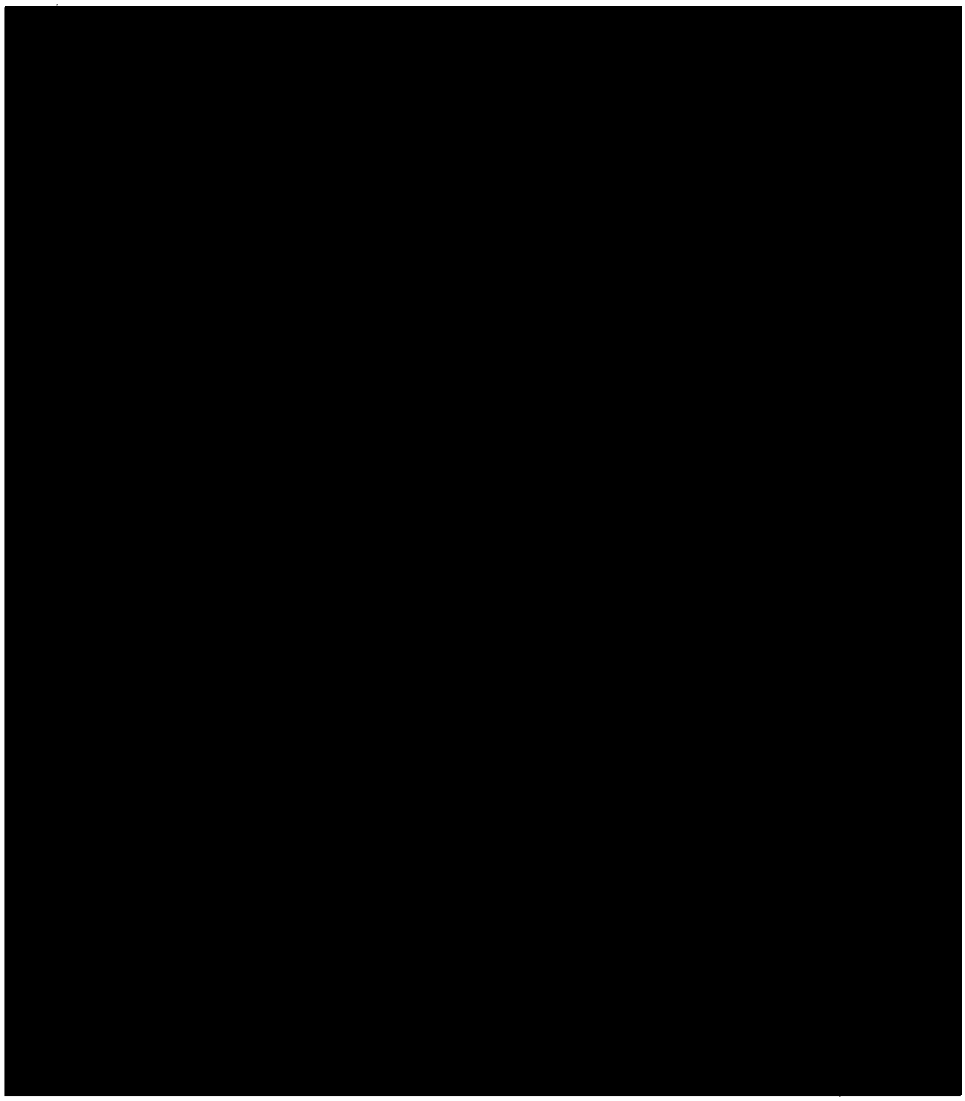


Figure D-1. Burial 6A, 40DV5. Sesamoid-like bone in trochanteric fossa of left femur.

Measurements:
Left Tibia: a/p diameter - 29.5 mm; m/l diameter - 22.5 mm
Right Tibia: a/p diameter - 30.5 mm; m/l diameter - 21.2 mm
Right Fibula: max. length - 36.8 cm
Left Radius: max. length - 24.5 cm
Left Humerus: a/p diameter - 16.0 mm; m/l diameter - 21.0 mm; vert. head diameter - 34.42 mm; least circumference - 63.0 mm
Right Ulna: max. length - 27.6 cm
Right Radius: max. length - 25.0 cm
Right Humerus: a/p diameter - 23.0 mm; m/l diameter - 20.5 mm; vert. head diameter - 34.5 mm; least circumference - 65.0 mm
Right Femur: a/p diameter - 32.0 mm; m/l diameter - 24.2 mm; vert. head diameter - 45.0 mm; mid-shaft circumference - 91.0 mm; max. length - 44.4 cm
Left Femur: a/p diameter - 30.0 mm; m/l diameter - 29.0 mm; vert. head diameter - 45.3 mm; mid-shaft circumference - 93.3 mm; max. length - 44.4 cm
Mandible: left ramus height - 69.0 mm; left corpal length - 88.1 mm; left mid-corpal height - 31.0 mm (between M1 and M2); bigonial breadth - 102.0 mm

Burial 6B:
Age: older adult, 50+
Sex: male

This individual was interred as a bundle on top of the legs of Individual 6A (see more complete discussion in text, and Figure 162). Surprisingly, although it is a secondary interment, almost the entire skeleton is present, except for the hands and feet (which are present, but extremely fragmented). Because of water erosion, the preservation is fair to poor.

The following observations were made. Like Individual 6A, the bones of Individual 6B are extremely robust in overall appearance. The muscle attachments are very pronounced, there are no preauricular sulci, the sciatic notches are narrow, and the linea aspera are quite pronounced. There is a prominent supraorbital torus, and the mastoid processes are short and blunt. Age criteria include complete fusion of the sagittal suture (the coronal and lambdoid sutures may also be fused, but the cranium is too fragmented to tell); fused medial epiphyses of the clavicles; paper-thin corpus of the ilia; thin, brittle rib cortices; and resorptive pitting of the femoral metaphyses.

There are numerous pathologies, including the following: very pronounced platycnemia of the tibiae; slight sclerotic, linear periosteal striations on the long bones of the legs; pronounced "cupping" of the sternal ends of the ribs; slight anterior/posterior bowing of the femora. The right humeral head shows erosion of the lateral aspect--it is difficult to ascertain whether this may be a pseudopathology, although the posterior aspect of the left humeral head appears to show evidence of a similar, much less severe erosive process as well. There is erosion of the inferior anterior border of the glenoid cavity of the left scapula, with some lipping of the most inferior border; this is not bilateral, however. The vertebrae are very

fragmented. The vertebral centra are hourglass-shaped, there is slight osteophytosis of a lumber centrum, and there is pronounced lytic erosion of the right superior facet of a thoracic vertebra. There is a perforation of the radial tuberosity of the right radius--a small, circular hole which penetrates into the tuberosity (possibly an osteochondrytic cyst), with some lipping of the distal margins of the tuberosity. There is resorptive pitting of the metaphyses of the femora and slight resorptive erosion of the femoral heads. The left tibia exhibits resorptive pitting of the articular surface of the anterior aspect of the medial malleolus. The individual had auditory exostosis almost closing the meatus of the right temporal (see Figure 164), which would have affected his hearing. There is arthritic deterioration of the distal end of the proximal phalanx of the right fifth toe.

There are extensive dental pathologies. The maxillae appear prognathic, probably because of extensive resorption and remodeling in the areas of the maxillary sinuses. There is an extensive abscess of the maxillary right first molar (shell of roots still in place). The abscess is related to the remodeled maxillary sinus. There was antemortem loss of the mandibular left second molar with subsequent resorption and remodeling of the alveolus. There was abscess of the mandibular left third molar (the tooth is not present postmortem and may have been lost antemortem, because the socket shows some remodeling). There was antemortem loss of the right mandibular third molar with complete remodeling of the alveolus. The right mandibular first molar has a carious lesion on the lingual surface. The maxillary molars show moderate to pronounced calculus "crust" (buccal, lingual, and interproximal), and there is slight to moderate calculus on the mandibular second premolars and all molars. The buccal surfaces of the maxillary central and lateral incisors and canines are highly polished, perhaps by plant silicates (the teeth appear to have been used as secondary tools for processing fibers). There are numerous fractures of the enamel surfaces as well. Enamel hypoplasias are present on the maxillary central and lateral incisors and canines (most pronounced on the right maxillary canine). There are carious lesions along the interproximal cingula of the maxillary right first premolar and second premolar (the lesion on the first premolar is small; the one on the second premolar is larger). There is a large buccal carie on the right mandibular first molar. There is also evidence of periodontal disease.

Anomalies include a small, oval foramen just inferior to the acromion process of the right scapula, and a large septal aperture on the left humerus.

Measurements:
Left Femur: a/p diameter - 31.5 mm; m/l diameter - 26.6 mm; mid-shaft circumference - 94.0 mm; vert. head diameter - 47.5 mm; max. length - 45.0 cm
Right Femur: a/p diameter - 34.1 mm; m/l diameter - 27.0 mm; mid-shaft circumference - 96.0 mm;
Left Humerus: a/p diameter - 18.0 mm; m/l diameter - 22.0 mm; vert. head diameter - 47.2 mm; least circumference - 63.0 mm; max. length - 33.6 cm
Right Ulna: max. length - 28.55 cm
Left Radius: max. length - 25.6 cm

Burial 7
Age: full-term fetus or recently newborn infant
Sex: unknown

This infant was placed in a limestone box oriented approximately north/south. Several pieces of the cover stone had been dragged away, along with the headstone, by the backhoe. Preservation of skeletal elements was excellent. After the skeleton was well defined for drawing and photographic purposes, the entire platform (with infant) was undercut, placed on a plywood support, wrapped with paper and flagging tape, and transported to the laboratory. The skeleton was subsequently "excavated" and cleaned by the author. The rest of the burial earth was fine-screened. Because of this procedure, approximately 98 percent of the infant was recovered for analysis.

The following observations were made. The sternal metaphyses of the ribs are flared, with slight periosteal striations and "crusty" appearance of periostitis. The distal metaphyses of the tibiae and fibulae are also slightly flared, and the distal metaphysis of the left fibula appears to have a through-and-through perforation or cloaca with smooth, sharp borders and slightly reactive bone just distal and posterior to the perforation. The maxillae are noticeably porous. Two pieces of cranium show hypertrophy of the endocranial surface as an apparent inflammatory response. The sclerotic, blastic lesion also indicates some hypervascularity. Differential diagnosis includes a generalized, systemic infection and/or a metabolic disorder.

The long bone lengths compare to approximately 9 months fetus to newborn, according to charts in Ubelaker (1978). Tooth crown formation indicates an age: birth up to approximately 2 or 3 months (Ubelaker 1978).

Measurements: maximum lengths (in mm)
right humerus: 63.1
left humerus: 63.3
left ulna: 60.0
left radius: 51.0
right femur: 72.3
left femur: 72.5
right tibia: 64.0
left tibia: 65.0
right fibula: 60.5
left fibula: 59.1
right clavicle: 42.0
left clavicle: 42.1

Burial 8
Age: adult?
Sex: indeterminate

This is a stone box with an adult skeleton located east of Burial 1. Only 28 cm of the length of the burial was exposed, because the remainder was under the building/road fill/rubble and ran into the railroad right-of-way. Only one individual could be identified from the portion of the burial that was exposed. Fill collected from the exposed portion contained six small fragments of human cranium, probably adult. The meningeal vessel markings on the endocranial surface indicate that they are parietal fragments, in good state of preservation. One fragment exhibits pronounced thickening of the diploe.

Burial 9
Age: unknown
Sex: unknown

Field notes indicate that this was a cluster of stone, shell, and bone fragments. The bone fragments were not examined by this author.

Burial 10
Age: unknown
Sex: unknown

Field notes indicate that there were tiny fragments of bone present. These were not examined by this author.

TP-1

Burial 1, 49.5N/134W
Age: adult
Sex: female?

These skeletal elements appear to have been interred either as a bundle or as a tightly flexed primary burial. It is difficult to determine which form of interment was used because of the extremely poor preservation and because the burial was heavily impacted by construction activity.

Fragments of arms, legs, and pelvis are present. The left tibia is very petite and gracile, and shows evidence of platycnemia and very slight, sclerotic linear periosteal striations. Two measurements were taken on the left tibia: a/p diameter - 27.0 mm; m/l diameter - 18.9 mm. One left femoral fragment, just inferior to the lesser trochanter, shows pronounced muscle attachment development and platycmeria (anterior/posterior flattening).

Burial 2, 46N/131.5W
Age: infant, 9 mos. ± 3 mos. (Ubelaker 1978:teeth)

Sex: unknown

This individual was "discovered" by the author in the laboratory. It is the extremely fragmented remains of an infant (cranial and postcranial fragments). Deciduous molar crowns indicate an age of approximately 9 months, ± 3 months (Ubelaker 1978). There are four second molars and two first molars--all deciduous. The rest of the cranium for this infant was found among bags of faunal samples and was subsequently sent to the author by the faunal analyst. No discernible pathology was noted on the cranial fragments. There was also a deciduous mandibular central incisor crown in this material.

TP-2

Burial 1, 46N/127W
Age: adult (possibly older adult)
Sex: female?

These were human bone fragments discovered in the lab by the author, among all materials screened for Tunnel Pit 2. The burial number was assigned in the lab. The skeletal elements which were present include fragments of at least one right and one left rib(s); proximal 1/4 of left humerus (fragmented and subsequently reconstructed); distal 1/4 of left radius; portion of midsection of right femoral diaphysis; portion of diaphysis of left clavicle; two left proximal phalanges (one for thumb and one for finger; complete); and right second cuneiform (complete).

The following observations were made. Adult age criteria include fused long bone epiphyses (perhaps an older adult because the bone density is somewhat "light"; the light bone density could also be indicative of osteoporosis). Sex determination was based on the humeral head vertical and transverse diameters and overall gracility of the bone fragments.

Measurements:
Left Humerus: head diameter: vertical - 40.0 mm; transverse - 35.5 mm; diaphysis: a/p diameter - 18.0 mm; m/l diameter - 20.0 mm (both taken above mid-point); circumference: (above mid-point) - 65.0 mm
Right Femur: a/p diameter - 24.5 mm; m/l diameter - 26.5 mm; circumference - 78.0 mm; (all three measurements taken just below mid-point)

Bent 1 Right

Bag 144
Age: adult
Sex: indeterminate

These were human bone fragments found in the backdirt. The area was extremely disturbed by construction activity. There was one fragment of adult distal diaphysis of right tibia (good preservation) which had slight linear periosteal striations, dense cortex, and very thin, gracile overall morphology. There was also a left radius (distal metaphysis and epiphysis missing).

Bent 2 Left

Burial 1
Age: older adult, 50+
Sex: male

These were human bone fragments found around the remnants of a stone box which was extremely disturbed by construction activity. It appears that the skeletal elements are all from one individual, and although they are fragmented, the bone preservation is very good. Those elements which are present include fragments of left femur, left humerus, left radius and ulna, left clavicle, several small fragments of ribs, two complete metacarpals (left first and second), and a portion of the cranium at lambda which includes occipital and left and right parietals.

The bones are extremely robust in overall appearance, with pronounced linea aspera, dense cortices, and "heavy" cortical mass. The sagittal and lambdoid sutures are completely fused and obliterated, endocranially and ectocranially (at lambda).

There are remodeled linear periosteal striations on the long bone fragments and resorptive pitting on the proximal femoral metaphysis. There is some remodeled pinpoint cribra formation at lambda. There is pronounced ossification of costal cartilage of a rib (approximately mid-thorax, #6).

Measurements:
Left Femur: a/p diameter - 38.0 mm; m/l diameter - 29.0 mm; mid-shaft circumference - 101.0 mm

WL-1

Burial 1
Age: adult (older?)
Sex: female

This was a burial which had been disturbed by historic water line construction. There was historic material mixed throughout all soil surrounding the burial. Because of extreme

fragmentation, it was impossible to tell in the field whether it had been a primary interment, but the skeletal inventory indicates that it probably was. It was not a regular excavation unit; it was discovered when the backhoe cut a water line. Bone preservation is fair to good. Several skeletal elements were reconstructed, by the author, from fragments.

The skeletal inventory includes the following: cranial fragments of maxilla, zygomatic, and parietal; and postcranial fragments of femora, ulnae, tibiae, fibulae, humeri, right radius, patellae, innominates, ribs, thoracic and lumbar vertebrae, left scapula, right clavicle, sacrum, 5 metacarpals, 3 proximal phalanges (hand), three medial phalanges (hand), right 5th metatarsal, right talus, right cuboid, right navicular, right 1st cuneiform.

All long bone epiphyses are fused, and there is resorptive pitting of the metaphyses of the tibiae and femora. The bones exhibit thin, gracile overall morphology, small feet, and small patellae.

Pathologies include the following: resorptive pitting of the metaphyses of the tibiae and femora; pronounced parturition pits on the left and right pubic symphyses; a line of resorption just inferior to the right femoral capital epiphysis fusion line on the anterior aspect of the femoral neck; sclerotic linear periosteal striations on the lateral aspect of the right tibia; spinal canal stenosis of the 4th and 5th lumbar vertebrae; and broad and flattened (anterior/posterior) proximal femoral metaphyses and very short femoral necks--possibly related to the vertebral spinal canal stenosis in the lumbar and sacral vertebrae. The difference between the measurements of the right and left leg bones may also be related to the spinal canal stenosis. Anomalies include a medium-sized septal aperture on the left humerus (not bilateral) and platycnemia of the tibiae.

Measurements:
Left Tibia: a/p diameter - 27.0 mm; m/l diameter - 18.0 mm; max. length (with malleolus) - 33.4 cm; min. length - 32.0 cm
Right Tibia: a/p diameter - 29.0 mm; m/l diameter - 19.9 mm;
Right Humerus: a/p diameter - 17.0 mm; m/l diameter - 22.0 mm; vert. head diameter - 38.6 mm
Left Femur: vert. head diameter - 42.0 mm
Right Femur: a/p diameter - 27.0 mm; m/l diameter - 23.5 mm; vert. head diameter - 43.0 mm; mid-shaft circumference - 79.0 mm

Supernumerary individuals: There is an extra right pubic symphysis (very petite and light density) and an extra cuboid (very heavy density - partially mineralized).

Bent 7 Right

Burial 1
Age: adult?
Sex: indeterminate

This appeared initially to be a capped stone box, but after removal of the cap, historic debris was discovered. Human bone found in the backdirt consisted of one small right rib fragment, probably adult. Bone preservation is good, the cortex appears "healthy," and there is a thin, gracile overall morphology. There was evidence of slight rodent gnawing.

Burial 2
Age: unknown
Sex: unknown

This appeared as two layers of limestone slabs, some with squared edges. No bone was found underneath, however.

East Nashville Mounds (40DV4): Individual Burial Analyses

Burial 1
Age: infant, 9 mos., ± 3 mos. (Ubelaker 1978:teeth)
Sex: unknown

This was a small stone box oriented approximately north/south. Almost two-thirds of the box was destroyed by the backhoe (Trench 1) during Phase II investigations. No artifacts were with the burial, although a human effigy head was discovered in the trench below the burial, prior to removal. Most of the infant skeleton was still in the remnants of the box after backhoe impact, but was extremely fragmented. The cortical preservation was good. Those skeletal elements which could be identified include cranium and mandible (with dentition), right femur, right tibia, right fibula, left femur, left tibia, left fibula, right humerus, right radius, right ulna, right and left ilia, ribs, vertebrae, and right hand.

The dentition consists of tooth crowns with very little root formation on the anterior teeth and no root formation on the posterior teeth.

There is extensive pathology: slight inflammatory activity at the elbow of the right arm (evidenced by slight periostitis, with some lytic pitting, of the posterior aspect of the distal humerus and articular areas of the proximal radius--especially pitting of the radial tuberosity); lytic pitting of the dorsal aspect of the metacarpals; hypervascularity of the vertebral centra, with some lytic activity of superior and inferior surfaces of the centra; slight "crusty" periostitis of the ventral surfaces of the ribs (external chest wall); very slight periostitis on the posterior diaphysis of the left tibia; very thin long bone cortices; very slight periostitis of the posterior diaphysis of the right tibia; lytic inflammation at the knees; slight periostitis of the internal surface of the pelvis (pelvic canal). Cranial pathology includes: slight cribra orbitalia in the upper lateral margins of the orbits with accompanying diploeic thickening;

cribra parietalis; cribra occipitalis at lambda; cribra on the greater wing of the sphenoid and superior to the auditory meatus on the right ectocranial surface; cribra at mentale (chin). Each piece of cranial vault has at least slight evidence of cribra formation in a pattern associated with rapid growth from the primary ossification center. Differential diagnosis would include generalized synergism between malnutrition and infection, and scurvy.

Burial 2
Age: older adult, 45+
Sex: female

This was an extended burial with the head oriented east, pointed away from the river. The pit outline was not distinct because of the extensive midden deposits and historic cultural debris. It was in very close proximity to the mass interment containing Individuals 4A, 4B (with 4C), and 9, and subsequent laboratory analysis indicates that the two interments represent a single mortuary event (see discussion in preceding text). Individual 2 was located 118 cm southeast from the right leg of Individual 9. The skeleton is virtually complete except for the cranium, which exhibits massive trauma resulting in certain portions of the cranium being missing in situ. Preservation is fair to good.

Criteria for determining sex include: thin, gracile overall skeletal morphology; small feet and hands; small patellae; wide sciatic notches; preauricular sulcus; pointed mandible (chin); sharp orbital borders; small mastoids; vertical diameters for humeral head and femoral head (see measurements below). Criteria for age determination include: fused medial epiphyses of clavicles with evidence of slight erosive pitting of the articular surface of the epiphysis; resorptive pitting of the long bone metaphyses; fused epiphyses for all long bones; cupping of the sternal ends of the ribs.

Pathology observations include: platycnemia of the tibiae; sclerotic, slight linear periosteal striations of the tibiae; arthritic erosion of the sacroiliac articular platform; (no parturition pits); cupping of the sternal ends of the ribs; hourglass-shaped vertebral centra with some osteophytosis (slight to moderate) along the superior and inferior margins. The first cervical vertebra is broken in half--it looks like an "old" break and may be traumatic in origin. Several of the ribs have "old" fractures along the lateral curvatures of both sides of the individual (see appended skeletal inventory drawings). Additionally, in examining the field drawings and photographs (see Figure 169), the lower thoracic and upper lumbar vertebrae appear to be displaced. They were too fragmented to determine whether the displacement was antemortem or possibly perimortem. The eighth and ninth thoracic vertebrae show small, intervertebral Schmorl's nodes. There is evidence of massive cranial trauma, probably perimortem: curved, beveled fracture lines, with several pieces of the posterior cranium missing. There are thin cut marks along the left side of the cranium, just superior to the temporal bone (see Figure 171).

Dental pathology observations include: pronounced to extreme attrition; enamel fractures (antemortem); abscessing of the right mandibular first and second premolars; periodontal disease; large carious lesion on the buccal cingulum of the mandibular left first premolar; slight buildup of calculus around the cingula of the left maxillary second premolar, first molar, and second molar; and abscess of the left maxillary third molar.

Measurements:
Right Femur: a/p diameter - 25.0 mm; m/l diameter - 22.0 mm; vert. head diameter - 38.0 mm; mid-shaft circumference - 74.0 mm
Left Femur: a/p diameter - 23.5 mm; m/l diameter - 24.0 mm; vert. head diameter - 39.5 mm; mid-shaft circumference - 72.0 mm
Right Tibia: a/p diameter - 26.5 mm; m/l diameter - 19.0 mm
Left Tibia: a/p diameter - 26.0 mm; m/l diameter - 19.5 mm
Right Humerus: a/p diameter - 19.2 mm; m/l diameter - 17.2 mm; maximum length - 29.7 cm; vert. head diameter - 37.0 mm; least circumference - 55.0 mm
Left Humerus: a/p diameter - 20.0 mm; m/l diameter - 17.0 mm; maximum length - 29.4 cm; vert. head diameter - 37.0 mm; least circumference - 56.0 mm
Left Radius: maximum length - 22.3 cm
Mandible: bicondylar breadth - 120.0 mm; bigonial breadth - 91.0 mm; left ramus height - 58.0 mm; left corpal length - 80.0 mm; left corpal height - 28.5 mm (taken between M1 and M2)

Burial 3
Age: adult
Sex: unknown

This was one piece of human left parietal (adult), which exhibits some diploeic thickening and very slight pinpoint remodeled cribra along the sagittal suture. There are also numerous tiny cortical fragments of unknown identification (human or animal). The bone was close to a concentration of shell.

Burials 4A, 4B, 4C

This was a very unusual interment. It consisted of three individuals (4A, 4B, and 9) piled on top of one another, oriented approximately east/west (see discussion in preceding text for more complete discussion of this interment). Individual 4B was pregnant at the time of her death. Her fetus was given the burial designation of 4C. There was no discernible pit outline for this interment. Large pieces of broken pottery, containing a thick lens of black organic substance, were on top of the crania of the three individuals. A large post hole with burned post charcoal was located just to the left side and slightly underneath Individual 9. Carbon samples were taken from the post hole and from the lens of organic debris in the pottery. The entire pelvis of Individual 4B, containing the fetal skeleton, was removed intact, transported to the laboratory, and washed through a fine-screen mesh by this author. Approximately 98 percent of the fetus was recovered, including the ossicles of the inner ear.

Burial 4A
Age: adolescent/young adult, 15-17 years
Sex: male

This was a young male who was placed on top of Individuals 4B and 9, face and chest down, with the arms flexed at the elbows (see Figure 169). He was noticeably larger and more robust than the others. The skeleton was complete, except for the evidence of massive trauma to the posterior region of the cranium. He had other evidence of trauma which indicates that he had an even more violent death than the other three (Individuals 2, 4B, and 9) (see discussion in text).

Criteria for the determination of sex include: squared chin; blunt orbital borders; large, rounded mastoids; very robust long bones; no preauricular sulci; vertical head diameter of femur (see measurements below). Criteria for the determination of age include: proximal epiphyses of humeri are separate and distal ones are fused--the medial epicondyle epiphysis is separate, however; proximal epiphysis of ulna is recently fused; proximal epiphysis of radius is separate, and distal epiphysis is separate; glenoid cavity epiphysis is separate; epiphyseal rings of vertebral centra are separate; innominate components are separate; ischial epiphysis is recently fused (in parts); iliac crest epiphyses are separate; pubic symphyseal epiphyses are separate; epiphyses of posterior calcanea are separate; distal epiphyses of metatarsals are separate; sacral segments are separate; proximal and distal epiphyses of femora, tibiae, and fibulae are separate.

Pathology observations include the following: moderate cribra orbitalia with thickened diploe of the superior orbital borders; hourglass-shaped vertebral centra with hypervascularity; large, deep Schmorl's node on inferior surface of the fourth lumbar vertebra; inflammation of the knee, hip, and ankle joints, especially the posterior aspect of the distal femora; flared metaphyses of the long bones of the legs; slight sclerotic linear periosteal striations of the femora and tibiae; hypervascularity of the sternum (very porous). Dental pathology includes: enamel hypoplasia and pitting on both mandibular canines (several episodes); hypoplasia (one episode, close to the base of the crown) on both mandibular lateral incisors. This individual also has evidence of massive perimortem cranial trauma. There are cut marks across the frontal bone and on the right parietal, cut marks on the right mandible at gonion, and cut marks on both sides of the second cervical vertebra (see Figure 171 and 177).

Measurements:
Left Femur: a/p diameter - 26.0 mm; m/l diameter - 24.5 mm; vert. head diameter - 46.7 mm; mid-shaft circumference - 79.0 mm
Right Femur: a/p diameter - 26.0 mm; m/l diameter - 23.0 mm; vert. head diameter - 45.5 mm; mid-shaft circumference - 78.0 mm
Left Tibia: a/p diameter - 30.0 mm; m/l diameter - 20.0 mm
Right Tibia: a/p diameter - 31.1 mm; m/l diameter - 21.0 mm

Mandible: bigonial breadth - 103.0 mm; bicondylar breadth - 120.0 mm; left ramus height - 57.0 mm; left corpal length - 86.0 mm; left corpal height - 25.5 mm (between M1 and M2)

Burial 4B

Age: younger adult, 18-22 years

Sex: female

This was a young adult female, placed chest down on top of Individual 9, with her face turned to the north. She was pregnant at the time of her death. The skeleton was complete, except for the cranium, which exhibits massive trauma (the occipital region is missing in situ). Criteria for the determination of age include: very recent fusion of the iliac crests; recent fusion of the epiphyseal rings of the vertebral centra; medial epiphyses of the clavicles are not fused; epiphyses for the heads of the ribs are very recently fused; sacral segments 1 and 2 are separate; proximal epiphyses of humeri are recently fused, and distal epiphyses are completely fused; proximal epiphyses of radii are completely fused, and distal ones are recently fused; proximal epiphysis of ulna is completely fused; proximal and distal epiphyses of femora, tibiae, and fibulae are completely fused. Criteria for the determination of sex were only briefly scanned, because of the obvious presence of the fetus. She had a broad, flat face, with the maxillary sinuses slightly "pushed in " in a rather sunken appearance. The long bones were very thin and gracile, with very light bone density (possibly osteoporotic). Both humeri have very large septal apertures.

Pathology observations include the following: arthritic erosion of the glenoid cavities of the scapulae; hypervascularization of the sternum (very porous); hourglass-shaped vertebral centra; hypervascularity of the vertebral centra; arthritic erosion of the femoral heads; very thin long bone diaphyses with flared metaphyses and linear periosteal striations on the legs; lateral/medial bowing of the femora (bowed inward); pinpoint cribra parietalis and occipitalis at lambda. Dental pathology includes periodontal disease and slight to moderate calculus. The right maxillary third molar never erupted through the alveolus or may be congenitally absent. There is an unusual small socket just superior/posterior (buccal) to the left maxillary second molar which may be indicative of a small supernumerary tooth (which is missing postmortem). The internal vaults of the maxillary sinuses are almost filled with sclerotic, blastic spicules of fibrous bone (possibly a severe sinus infection). There is evidence of massive cranial trauma and cut marks of the cranium (see Figure 171).

Measurements:

Left Femur: a/p diameter - 25.0 mm; m/l diameter - 22.5 mm; maximum length - 44.6 cm; vert. head diameter - 41.0 mm; mid-shaft circumference - 74.0 mm

Right Femur: a/p diameter - 24.5 mm; m/l diameter - 21.0 mm; vert. head diameter - 41.4 mm; mid-shaft circumference - 71.0 mm

Left Tibia: a/p diameter - 26.5 mm; m/l diameter - 19.5 mm; maximum length - 36.8 cm; minimum length - 35.7 cm (without medial malleolus)

Right Tibia: a/p diameter - 29.2 mm; m/l diameter - 21.1 mm

Left Humerus: a/p diameter - 19.5 mm; m/l diameter - 18.0 mm; maximum length - 30.32 cm; vert. head diameter - 40.5 mm; least circumference - 59.0 mm
Right Humerus: a/p diameter - 20.0 mm; m/l diameter - 17.5 mm; maximum length - 30.8 cm; vert. head diameter - 40.5 mm; least circumference - 59.0 mm
Left Radius: maximum length - 22.3 cm
Right Radius: maximum length - 22.41 cm
Mandible: bicondylar breadth - 119.0 mm; bigonial breadth - 96.5 mm; left ramus height - 57.0 mm; left corpal length - 84.5 mm; left corpal height - 26.0 mm (taken between M1 and M2)

Burial 4C
Age: fetus, approximately 8-1/2 months
Sex: unknown

This was the unborn fetus of Individual 4B; it was fully engaged in the pelvis. Most of the bones, except the cranium, were complete or could be reconstructed. The cranium was too fragmented to attempt reconstruction. The cortices of the long bones are abnormally dense--almost no marrow space--and the long bone metaphyses are slightly flared. These observations of pathology in utero indicate that whatever stressors were in effect, resulting in the high infant mortality for other individuals on the site, were probably acting on the mothers as well.

Burials 5A, 5B, 5C, 5D
Age(s): infants
Sex: unknown

This was a small limestone box with stone cover and floor, lined with salt pan. The box itself was noticeably deeper than other boxes in the excavation area. It was oriented north/south. It contained the remains of a minimum of three infants. Originally, three individuals were identified in the field. However, in the laboratory the author identified a portion of cranium from a fourth infant. (There are three pairs of temporal bones plus one right temporal from a fourth individual.) The three most complete infants were placed on top of one another with the heads oriented south. Individual 5C was wearing a shell bead necklace. Individual 5C is the largest, 5B is the smallest, and 5A is slightly larger than 5B. Based on the size and overall development of the temporals (petrous portions plus small amount of squama), two of the pairs of temporals plus the one right temporal are approximately the same age. The other child is noticeably larger.

Burial 5A
Age: infant, 6 to 9 mos., ± 3 mos. (Ubelaker 1978:teeth)
Sex: unknown

This infant was on the top. Overall preservation was fair to poor; postcranial preservation was very poor. It is somewhat larger than 5B, but noticeably smaller than 5C.

The sphenoid is in three separate components, the occipital components are separate, and the temporals indicate recent fusion of the petrous and squamous portions.

Pathology includes thickened diploe of the lateral superior borders of the orbits, thickened greater wings of the sphenoid, lytic/blastic endocranial lesion on the lateral and basilar portions of the occipital around the foramen magnum, and thickened diploe along the metopic suture. Differential diagnosis would include metabolic disorder; synergism between malnutrition and infection; scurvy; meningitis.

Burial 5B
Age: infant, 6 to 9 mos., ± 3 mos. (Ubelaker 1978:teeth)
Sex: unknown

The smallest of the three infants, this infant was placed between 5A and 5C. Preservation was fair to poor. The mandibular symphysis is fused.

There is pathological evidence of slightly flared metaphyses of long bones, flared sternal ends of ribs, and slight inflammation of long bone joints (shoulder, elbow, and wrist). Differential diagnosis would include systemic infection and malnutrition.

Measurements: maximum lengths (in mm)
Right Humerus: 76.5
Right Ulna: 70.1
Left Radius: 61.5

Burial 5C
Age: infant, 18 mos., ± 6 mos. (Ubelaker 1978:teeth)
Sex: unknown

This was the largest of the three distinct individuals. It was wearing a shell bead necklace and was underneath Individuals 5A and 5B. Perhaps because of its being placed on the bottom, the preservation of many of the skeletal elements, especially postcranial, was very poor. Overall preservation was fair to poor. The mandibular symphysis is fused, and the petrous and squamous portions of the temporals are well fused.

Pathology observations include broad, thin, flattened cranial bones (perhaps from the weight of the other two infants), pronounced flaring of the metaphyses of the long bones with evidence of inflammation of the joints, and flared sternal ends of the ribs. Differential diagnosis would include systemic infection and malnutrition, or metabolic disorder.

Measurements: maximum lengths (in mm)
Left Femur: 132.5 (approximate)
Right Fibula: 106.5

All three individuals' teeth have very poor enamel formation.

Burial 5D
Age: infant, 9mos., ± 3 mos. (Ubelaker 1978:teeth)
Sex: unknown

This was an unspecified cranium (portions thereof), located along the eastern side of the box, near the south end. Dental development corresponds to approximately 9 months, ± 3 months in Ubelaker (1978). There is thickened diploe of the superior lateral borders of the orbits, and the left zygomatic bone exhibits small, lytic pitting on the internal surface, with thickened marrow/diploeic space (the bone appears "swollen").

Burial 6
Age: unknown
Sex: unknown

These were 15 tiny bone fragments commingled with rocks, sherds, animal bone fragments, and small brick fragments; they may not be human. They were in an area very close to historic ditch debris.

Burial 7
Age: unknown
Sex: unknown

This was a concentration of rocks, ceramic sherds, crushed rock, small brick fragments, and animal bone fragments. No human skeletal elements were examined by this author.

Burial 8
Age: infant, approx. 9 months - 1 year (Ubelaker 1978:teeth, long bones)
Sex: unknown

This was a small stone box, with prepared floor and cover, containing the remains of an infant. It was oriented approximately east/west. The skeleton is complete, although there had been considerable movement of the skeletal elements by rodent activity. Preservation is good, and despite rodent activity, the bones are only partially fragmented. Those skeletal elements which are present include cranium, mandible, humeri, radii, ulnae, hands, femora, tibiae, fibulae, feet, ribs, vertebrae, scapulae, clavicles. Neural arches and centra are separate. However, the halves of the lumbar neural arches are fused, the halves of the thoracic neural arches evidence recent fusion, and the halves of the cervical neural arches are still in two separate pieces. The mandibular symphysis is fused. The dental development corresponds to 9 months to one year, ± 4 months on the dental chart in Ubelaker (1978). The long bone lengths correspond to 0.5 to 1.5 years (approximately one year) (Ubelaker 1978).

Observations of pathology include slight lytic pitting of the metaphyses of the knees (femora and tibiae), ankles, and joints of the toes; flared (trumpet-shaped) long bone metaphyses; expanded marrow space (diaphyseal circumference) of the tibiae; lateral/medial bowing of the femora (bowed inward); hypervascularity of the vertebral centra; flared sternal ends of the ribs with some inflammatory response. Cranial pathology includes: broad, flat nose with deep orbits; very slight cribra orbitalia in the lateral superior borders of the orbits with slightly thickened diploe; broad, flat cranial bones. Differential diagnosis includes metabolic disorder and synergism between malnutrition and infection.

Measurements: maximum lengths (in mm)
Left Femur: 128.0
Right Femur: 128.5
Left Tibia: 103.6
Right Tibia: 102.0
Right Fibula: 96.5
Left Humerus: 103.5
Left Radius: 82.6
Right Radius: 82.1
Right Ulna: 90.1

Burial 9
Age: older adult, 45+ years
Sex: female

This was an older female who was the first to be placed in the interment containing 4A and 4B as well. She was quite petite in stature. The skeleton was essentially complete, except for the cranium, which evidenced a similar pattern of massive trauma to that of Individuals 2, 4A, and 4B.

Sex criteria include: thin, gracile, petite overall skeletal morphology; small hands and feet; pointed mandible (chin); sharp orbital borders; vertical head diameters of the femora; preauricular sulcus; wide sciatic notches. Age criteria include: cupping of the sternal ends of the ribs; resorptive pitting of the long bone metaphyses; fused medial epiphyses of clavicles which also show some erosion of the articular surfaces; pronounced erosion of the sacroiliac articular platforms.

Pathology observations include the following: platycnemia of the tibiae; resorptive pitting of the long bone metaphyses; lateral/medial bowing of the tibiae (bowed inward)--especially the right tibia; sclerotic linear periosteal striations of the long bone diaphyses of the femora, tibiae, and fibulae--especially the medial aspect of the right fibula (there is slight indication of cortical expansion--possible callus of an old green stick fracture); hourglass-shaped thoracic vertebral centra with slight osteophytoses along the margins; pronounced erosion of the sacroiliac articular surfaces. There is what appears to be an "old" (i.e., perimortem) mid-diaphyseal fracture of the left radius and ulna which could be evidence of a parry fracture.

The lateral aspects of the left clavicle and scapula (shoulder) evidence old breaks as well. The distal right ulna is also fractured.

Measurements:
Left Femur: a/p diameter - 21.1 mm; m/l diameter - 23.1 mm; maximum length - 40.5 cm; vert. head diameter - 38.2 mm; mid-shaft circumference - 69.0 mm
Right Femur: a/p diameter - 21.5 mm; m/l diameter - 20.0 mm; maximum length - 40.4 cm; vert. head diameter - 38.1 mm; mid-shaft circumference - 66.0 mm
Left Tibia: a/p diameter - 26.5 mm; m/l diameter - 19.0 mm; mid-shaft circumference - 71.0 mm; maximum length - 31.65 cm; minimum length - 30.6 cm (without medial malleolus)
Right Tibia: a/p diameter - 26.0 mm; m/l diameter - 18.0 mm; mid-shaft circumference - 70.0 mm; maximum length - 31.8 cm; minimum length - 30.65 cm (without medial malleolus)
Left Humerus: a/p diameter - 19.0 mm; m/l diameter - 15.0 mm; least circumference - 54.0 mm
Right Humerus: a/p diameter - 19.0 mm; m/l diameter - 16.5 mm; least circumference - 54.0 mm;
Left Radius: maximum length - 22.0 cm
Right Radius: maximum length - 22.1 cm
Left Ulna: maximum length - 24.0 mm
Mandible: bicondylar breadth - 118.5 mm; bigonial breadth - 93.5 mm; left ramus height - 52.5 mm; left corpal length - 79.5 mm;

No corpal height was taken because of alveolar resorption. While cleaning the thoracic vertebrae, this author found portions of broken lithics.

Burial 10
Age: infant, 18 mos., ± 6 mos. (Ubelaker 1978:teeth)
Sex: unknown

This was a small, narrow limestone box oriented approximately north/south. The burial was located approximately two meters south of Burial 8, oriented at a right angle to it. It was impacted by the backhoe. There were small sherds in the southern half of the box. Because of impact damage, it was not possible to tell if the sherds were originally inside the box or if they were part of the cap. The skeletal remains are very fragmented and in a fair to poor state of preservation. Fragments of cranium, mandible, ribs, vertebrae, fibula, and long bones are present. Deciduous dentition is present, plus the unerupted crowns of the permanent first molars. The mandibular symphysis is fused. The vertebral centra and neural arch components are separate. The dental development compares to 18 months, ± 6 months, according to the dental chart in Ubelaker (1978).

These are very abnormal skeletal remains with pronounced pathology. The cortices are exceedingly thin. The basilar portion of the occipital exhibits lytic pitting and is almost bipartite (see Figure 168). The maxillae and mandible evidence inflammation. There is lytic pitting along the costal grooves of the ribs. There is pronounced cribra orbitalia with accompanying diploeic thickening. There are small, spherical lesions on the cranial vault which evidence blastic activity and hypervascularity (see Figure 168); they look like small blastic polka-dots on the cranial vault. The dental enamel formation is also quite abnormal

(see Figure 167). The enamel has a translucent, milky-white, almost bluish-white coloration, with carious erosion of the occlusal surfaces of the deciduous molars. Almost every cranial fragment has cribra formation on the ectocranial surface, some slight diploeic expansion in the areas of the lesions, and some endocranial inflammation as well. Differential diagnosis is quite problematic. Severe systemic infection and malnutrition were probably contributing factors to the infant's mortality. However, consultation with several experts in dental pathology has not resulted in an absolute diagnosis for the unusual enamel defects. Congenital defects should also be considered (re., the basilar portion of the occipital).

Due to fragmentation, it was not possible to take long bone measurements.

Burials 11A and 11B

This interment was a small limestone box, with cover, oriented approximately north/south, and lined with salt pan. Inside were the skeletal remains of an infant, approximately 9 months old, and a very premature fetus. Fetal remains are rare in archaeological contexts. The fetal skeleton was not discovered until the author was fine-screen washing all the contents of the burial in the laboratory. Examination of the field photographs and drawings indicate that the fetus had been placed on top of the infant, in the chest region (see Figure 166).

Burial 11A
Age: infant, 9 mos., ± 3 mos. (Ubelaker 1978:teeth)
Sex: unknown

This is an almost complete skeleton of an infant, partially fragmented with good to excellent preservation. The neural arch components and vertebral centra are separate. However, the lumbar neural arch halves are fused, the thoracic neural arch halves are almost completely fused, and the cervical neural arch halves are separate. There is recent fusion of the petrous portions of the temporals to the squamous portions. The dental crown and root formations compare to 9 months, ± 3 months (Ubelaker 1978:dental chart). The long bone lengths compare to .5 to 1.5 years (Ubelaker 1978).

Pathologies include flared metaphyses of the long bones. The sternal ends of the ribs show pronounced flaring. There are circular, blastic cribra orbitalia in the upper center of the orbits. The nasal region is broad and flat, with deep orbits. There is "crusty" blastic periostitis on the endocranial surfaces. The femora exhibit anterior/posterior bowing. Differential diagnosis would include synergism between infection and malnutrition and/or a metabolic disorder.

Measurements: maximum lengths (in mm)
Left Femur: fragmented
Right Femur: 92.6

Left Tibia: 83.0
Right Tibia: 81.0
Left Humerus: 77.2
Right Humerus: 77.5
Left Radius: 66.2
Right Radius: 67.1
Left Ulna: 74.2
Right Ulna: 73.2
Left Fibula: fragmented
Right Fibula: 78.1

Burial 11B
Age: premature fetus
Sex: unknown

A fragmented, almost complete premature fetus was also interred. Preservation is excellent, considering that it is so young. The skeletal elements are quite tiny and fall well below published measurement charts for full-term fetuses. The ilium is just slightly larger than a United States dime. All skeletal components are separate; the squamous and petrous portions of the temporals are separate. The long bone metaphyses are noticeably flared. No differential diagnosis was made. Figure D-2 compares sizes of 4C fetus with 11B; 11B was developmentally younger.

Measurements: maximum lengths (in mm)
Left Femur: 61.0
Right Femur: 61.0
Left Tibia: 54.6
Right Tibia: 54.5
Left Ulna: fragmented
Right Ulna: 52.0
Left Humerus: 52.5
Right Humerus: fragmented

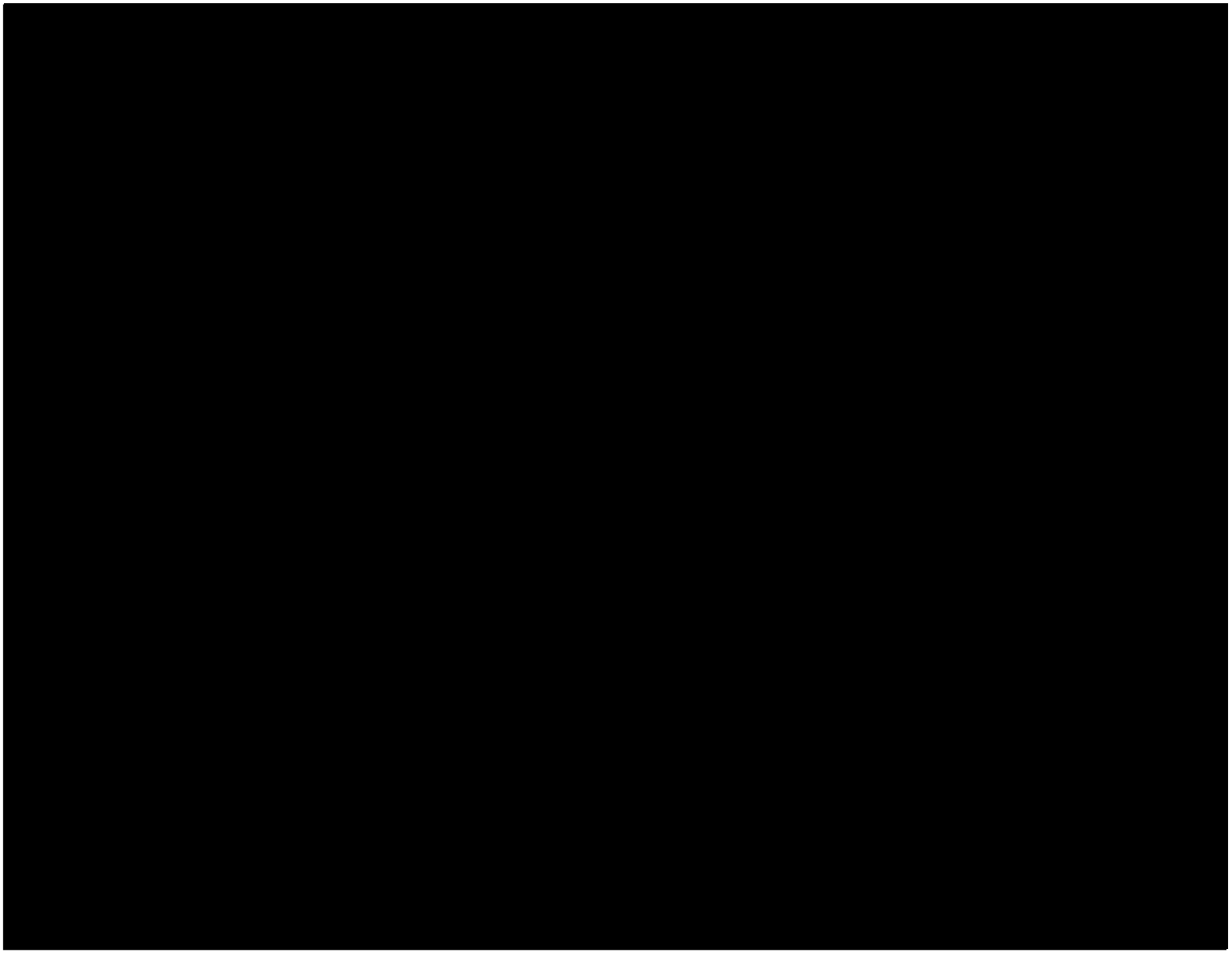


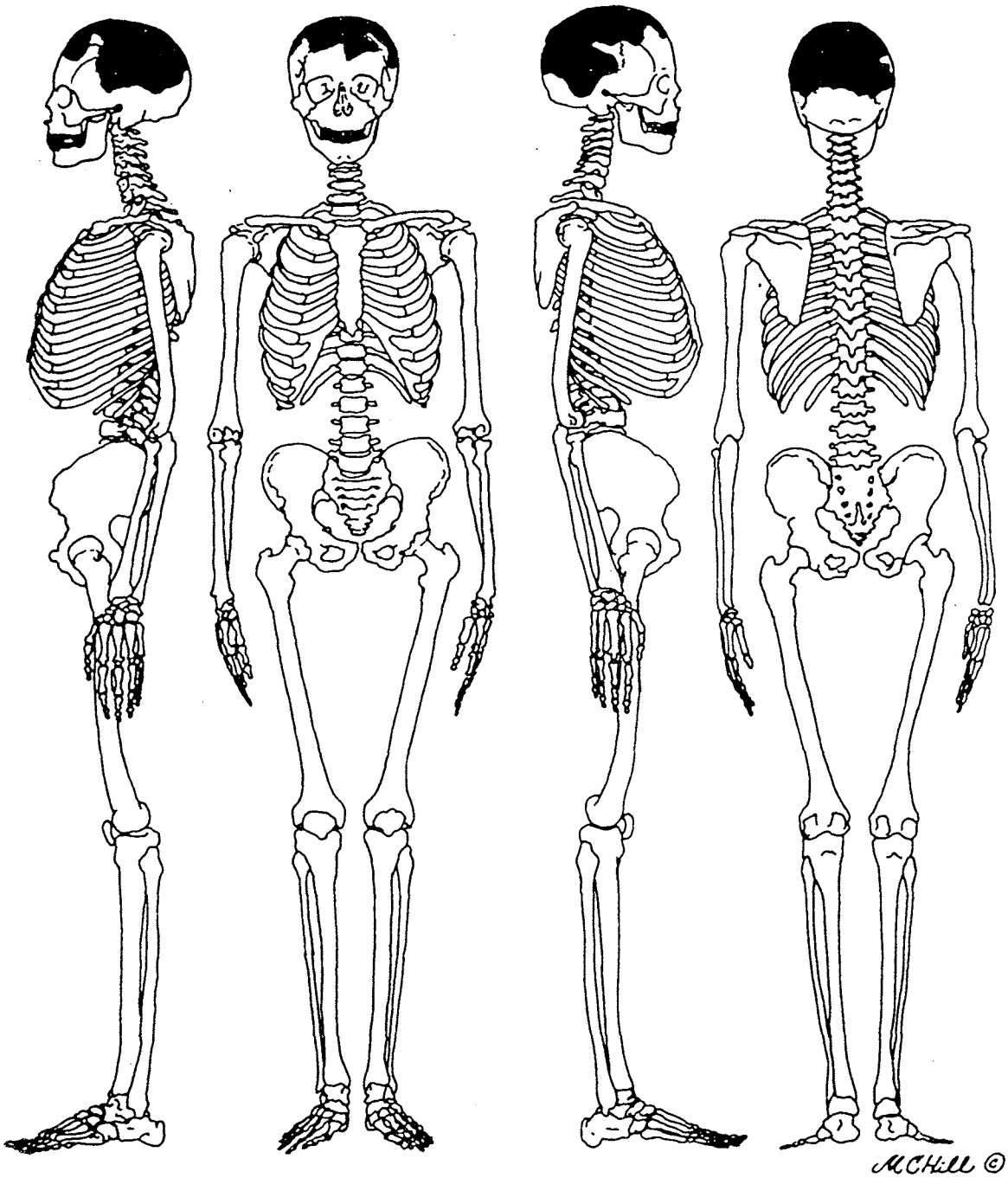
Figure D-2. Comparison of Fetal Burial 11B, 40DV4 (below) to unborn fetus 4C (above).

APPENDIX D, Part II

Skeletal Inventory Drawings

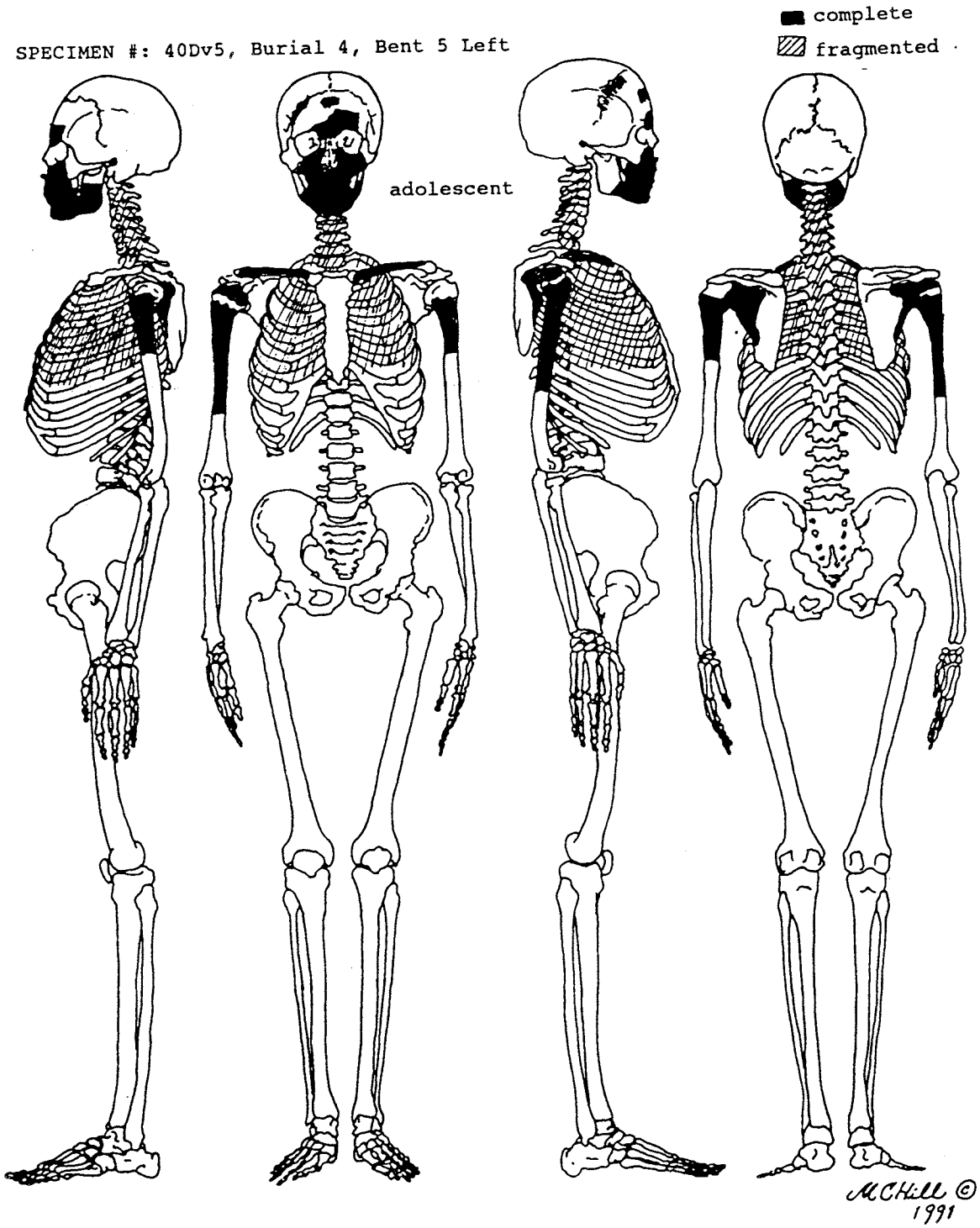
SPECIMEN #: 40Dv5, Burial 2, Bent 5 Left

whole



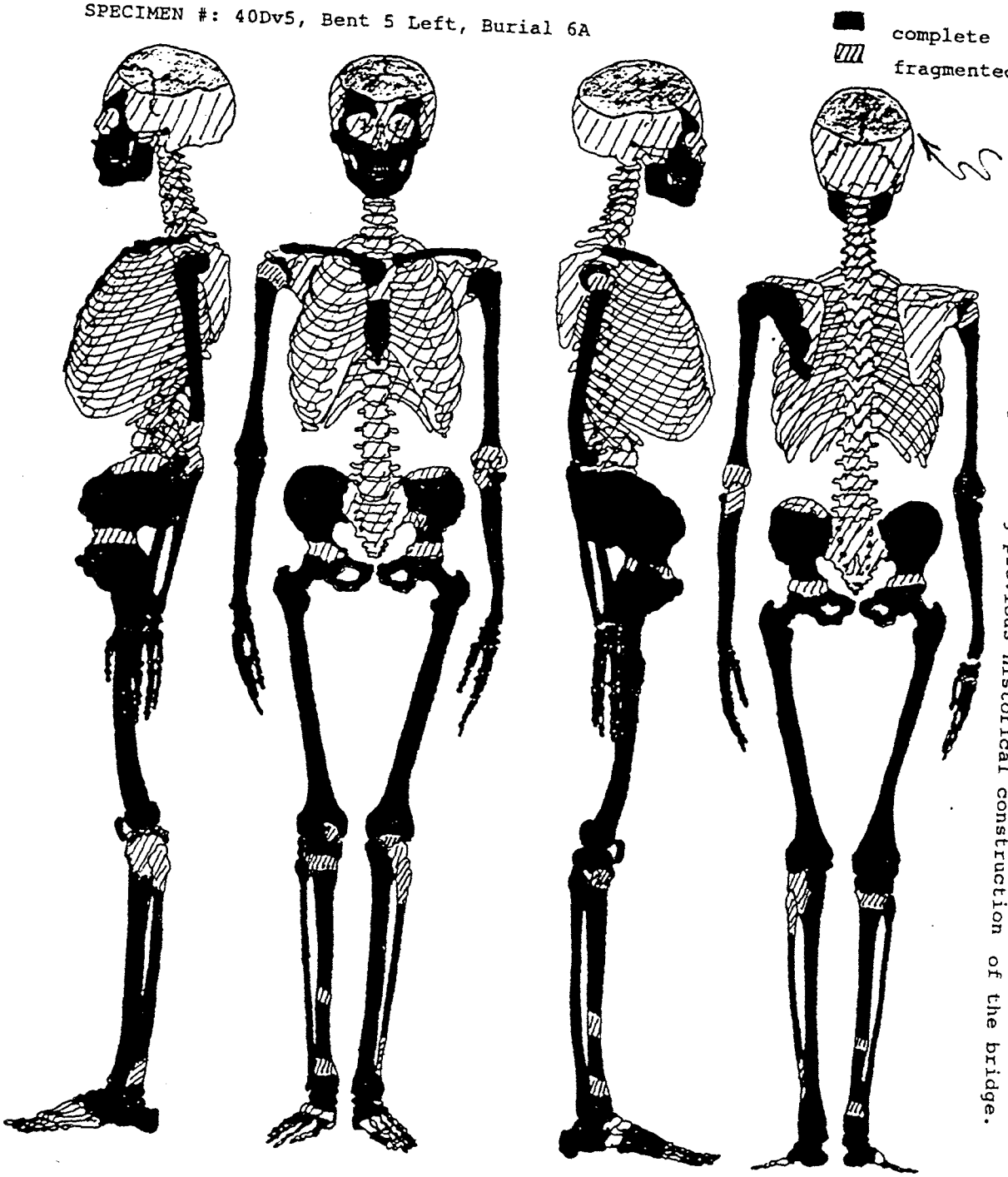
COMMENTS: Bones Present

SPECIMEN #: 40Dv5, Burial 4, Bent 5 Left



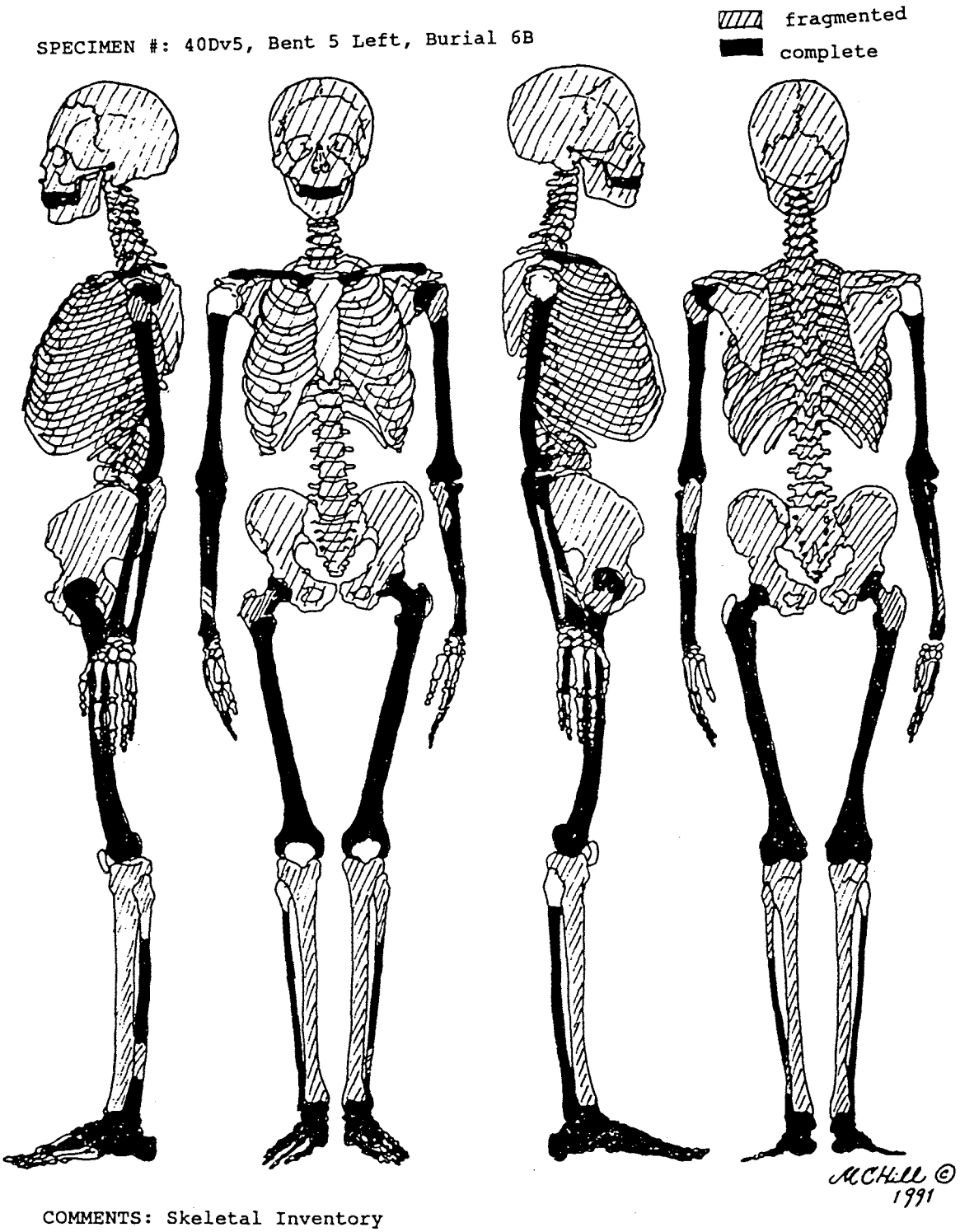
COMMENTS: Bones Present

SPECIMEN #: 40Dv5, Bent 5 Left, Burial 6A



COMMENTS: Skeletal Inventory

SPECIMEN #: 40Dv5, Bent 5 Left, Burial 6B

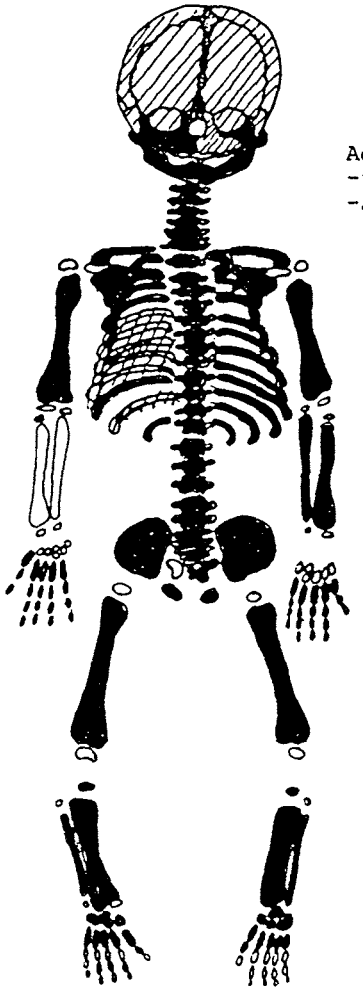


COMMENTS: Skeletal Inventory

SPECIMEN #: 40Dv5, Bent 5 Left, Burial 7

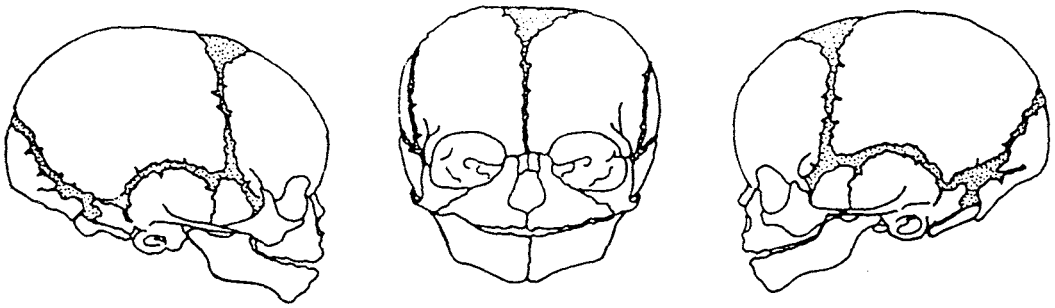
complete

fragmented



Additional elements present:
-three segments of sternum
-auditory ossicles: 2 incus
2 malleus

Right radius and ulna were noted as being present in preliminary excavation notes, superior to a piece of limestone on top of the burial. The burial was subsequently exposed, photographed, and transported to the lab on its earthen pedestal. The radius and ulna were not present when the burial was extracted from the pedestal in the lab.



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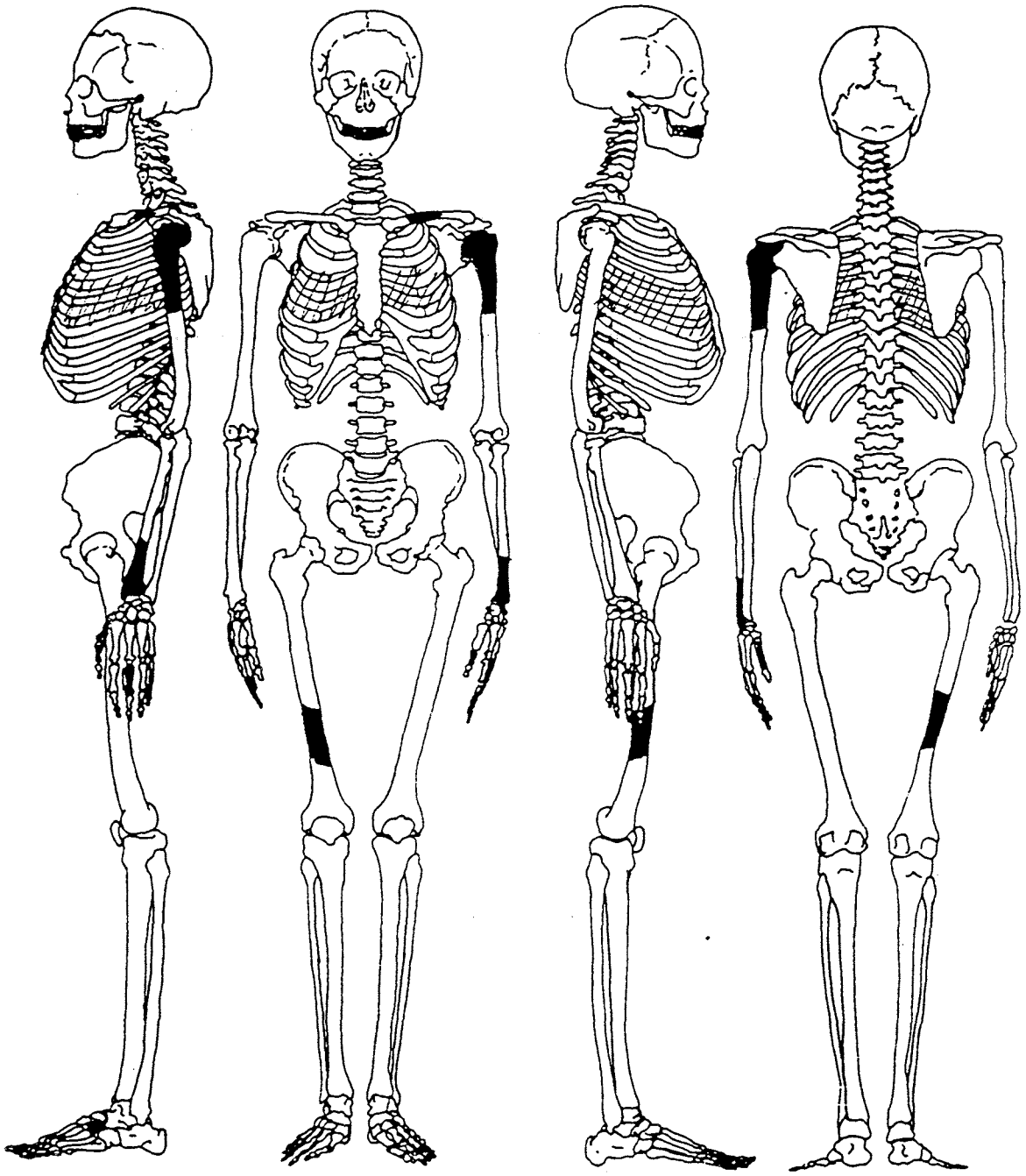
COMMENTS: Skeletal Inventory, Infant

complete

fragmented

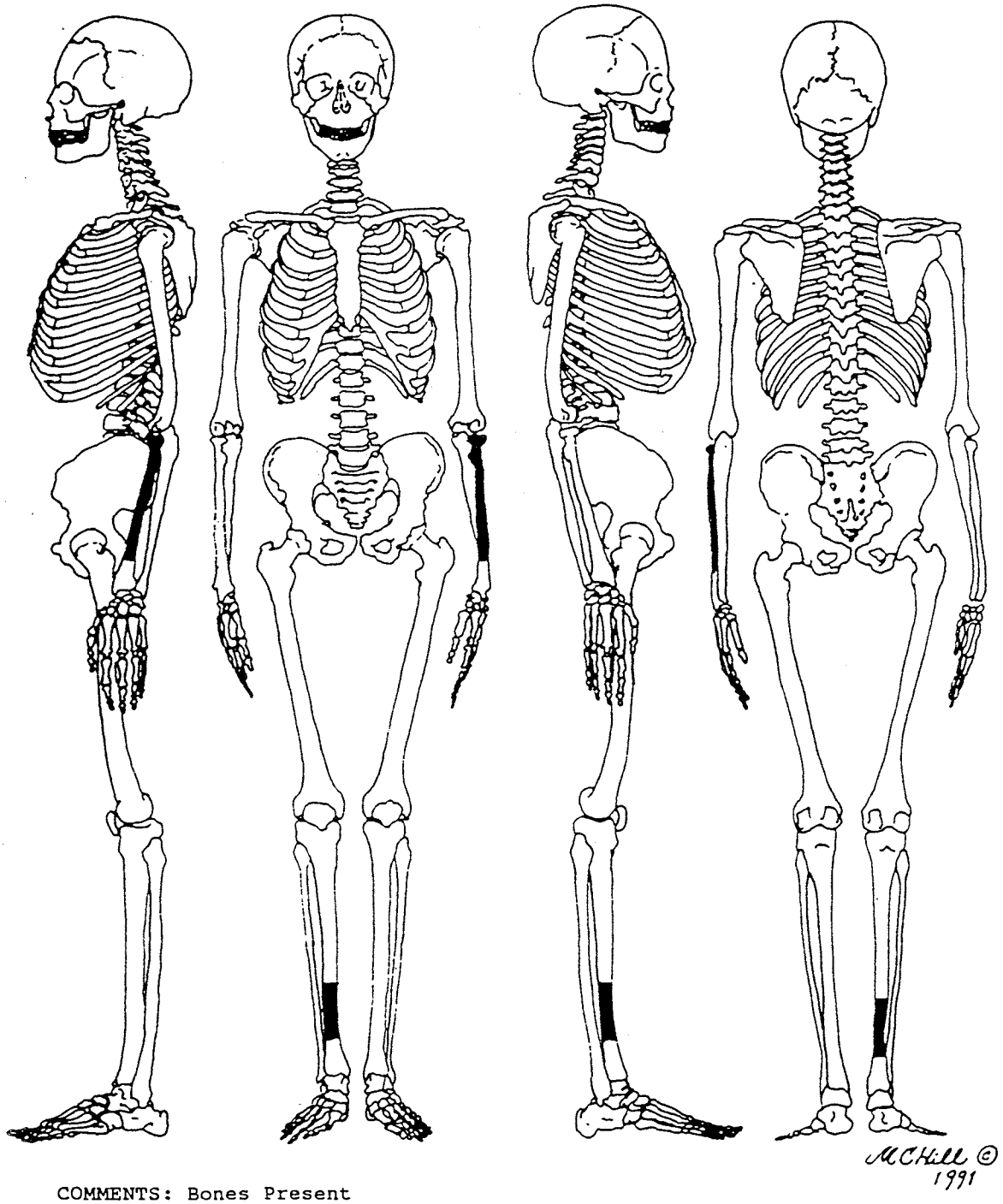
SPECIMEN #: 40Dv5, TP-2, Burial 1



COMMENTS: Bones Present

complete

SPECIMEN #: 40Dv5, Bent 1 Right

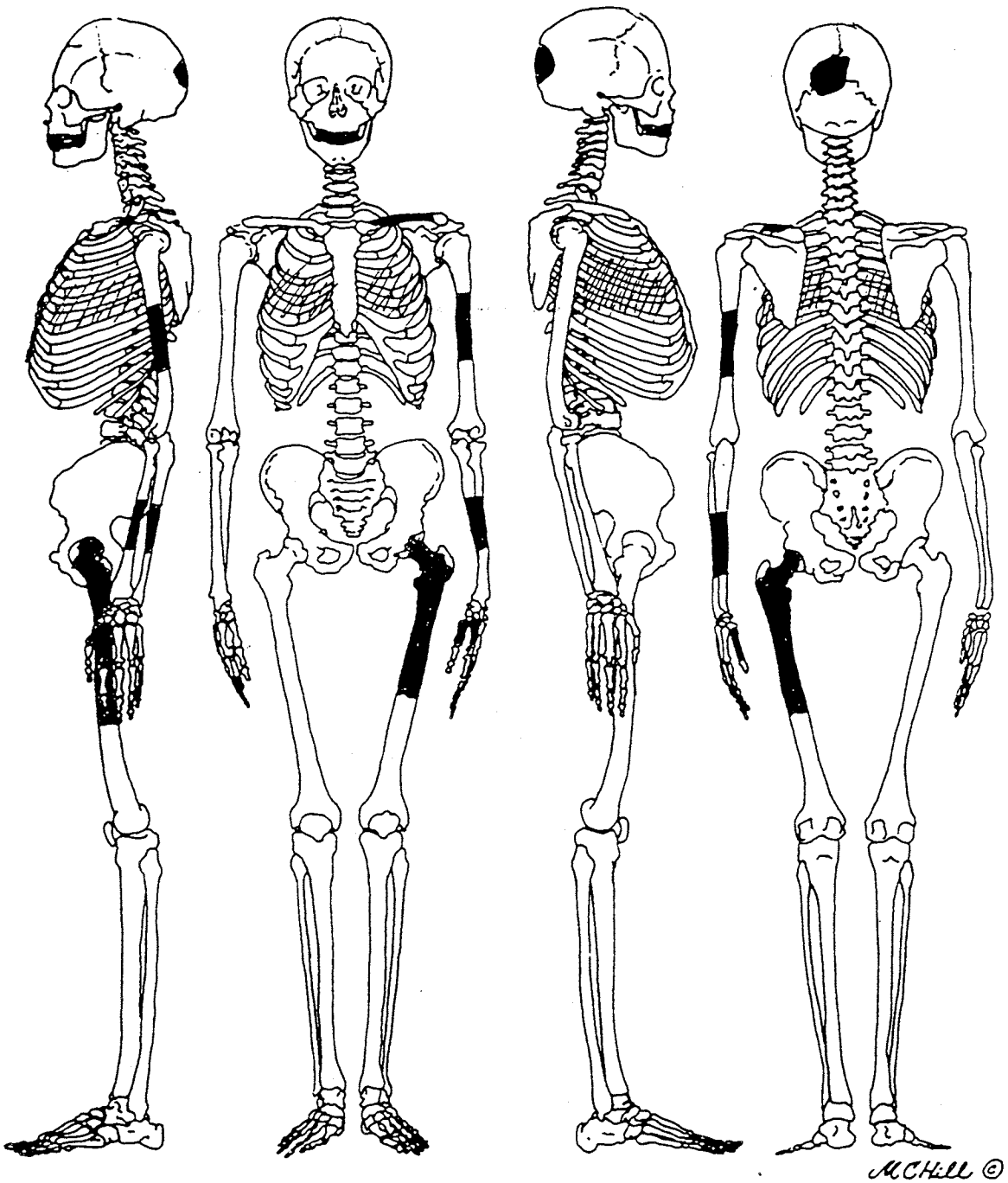


COMMENTS: Bones Present

complete

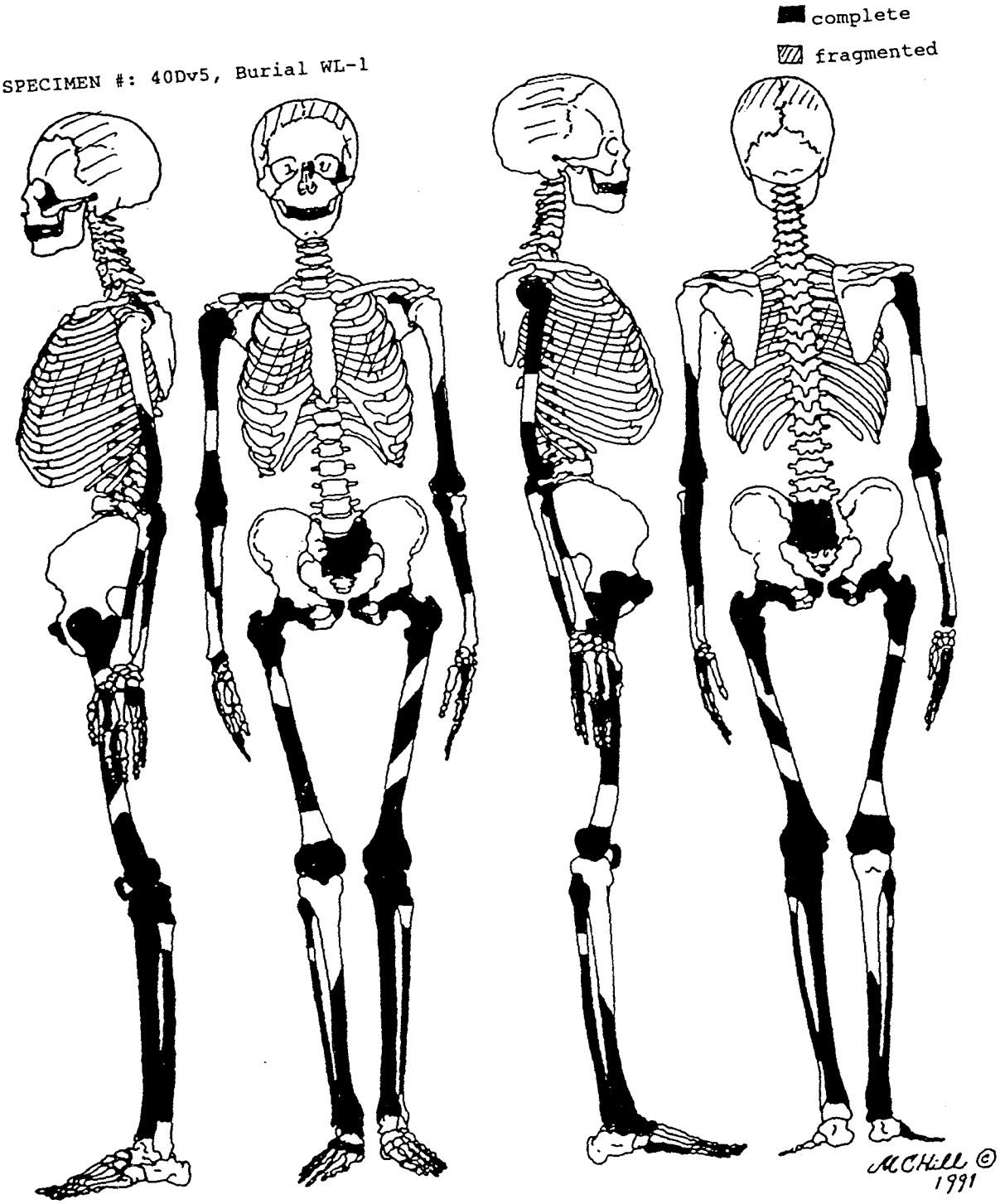
fragmented

SPECIMEN #: 40Dv5, Bent 2 Left, Burial 1



COMMENTS: Bones Present

SPECIMEN #: 40Dv5, Burial WL-1

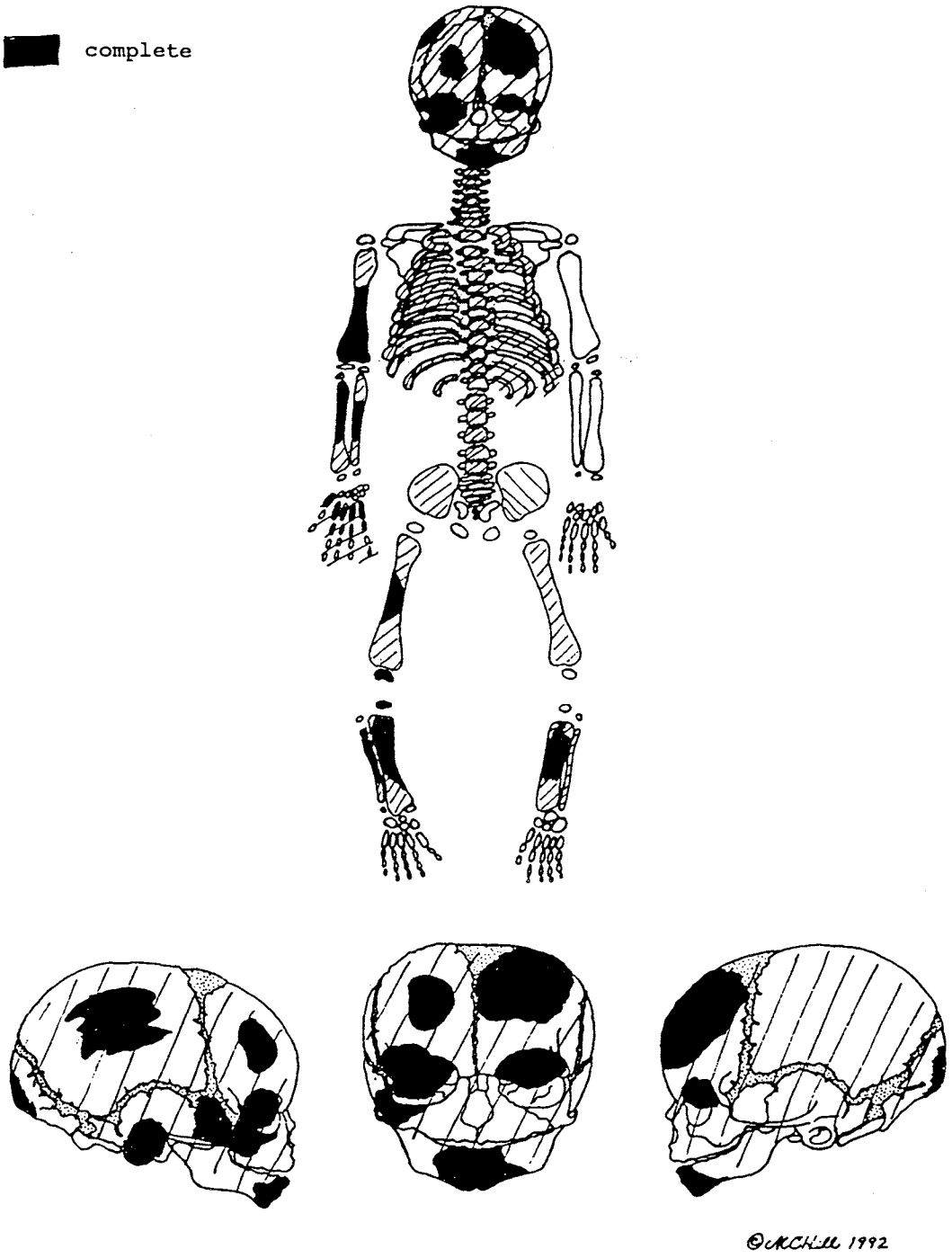


COMMENTS: Skeletal Inventory

SPECIMEN #: 40Dv4, Burial 1

fragmented

complete



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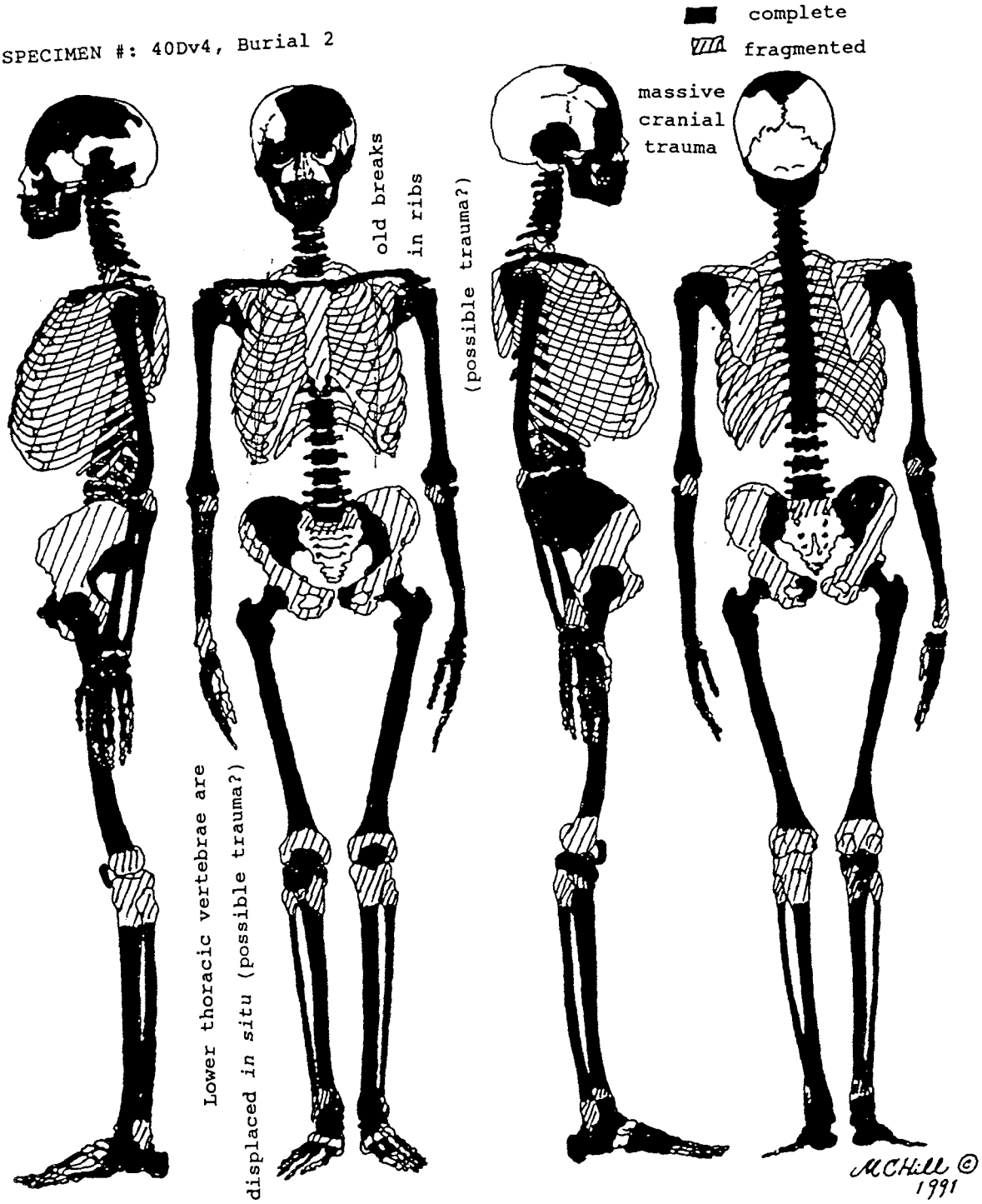
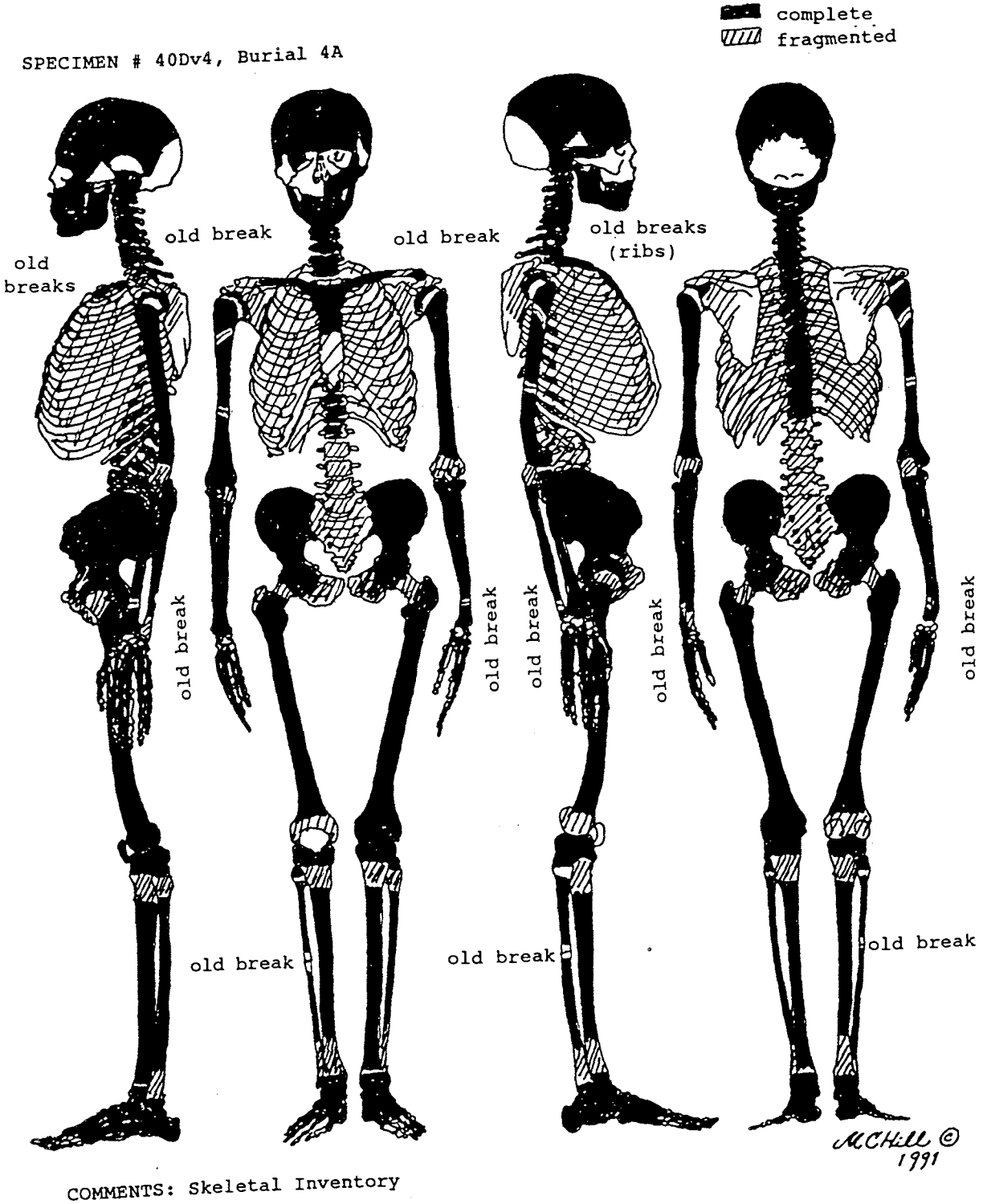
COMMENTS: Skeletal Inventory, Infant

SPECIMEN #: 40Dv4, Burial 2



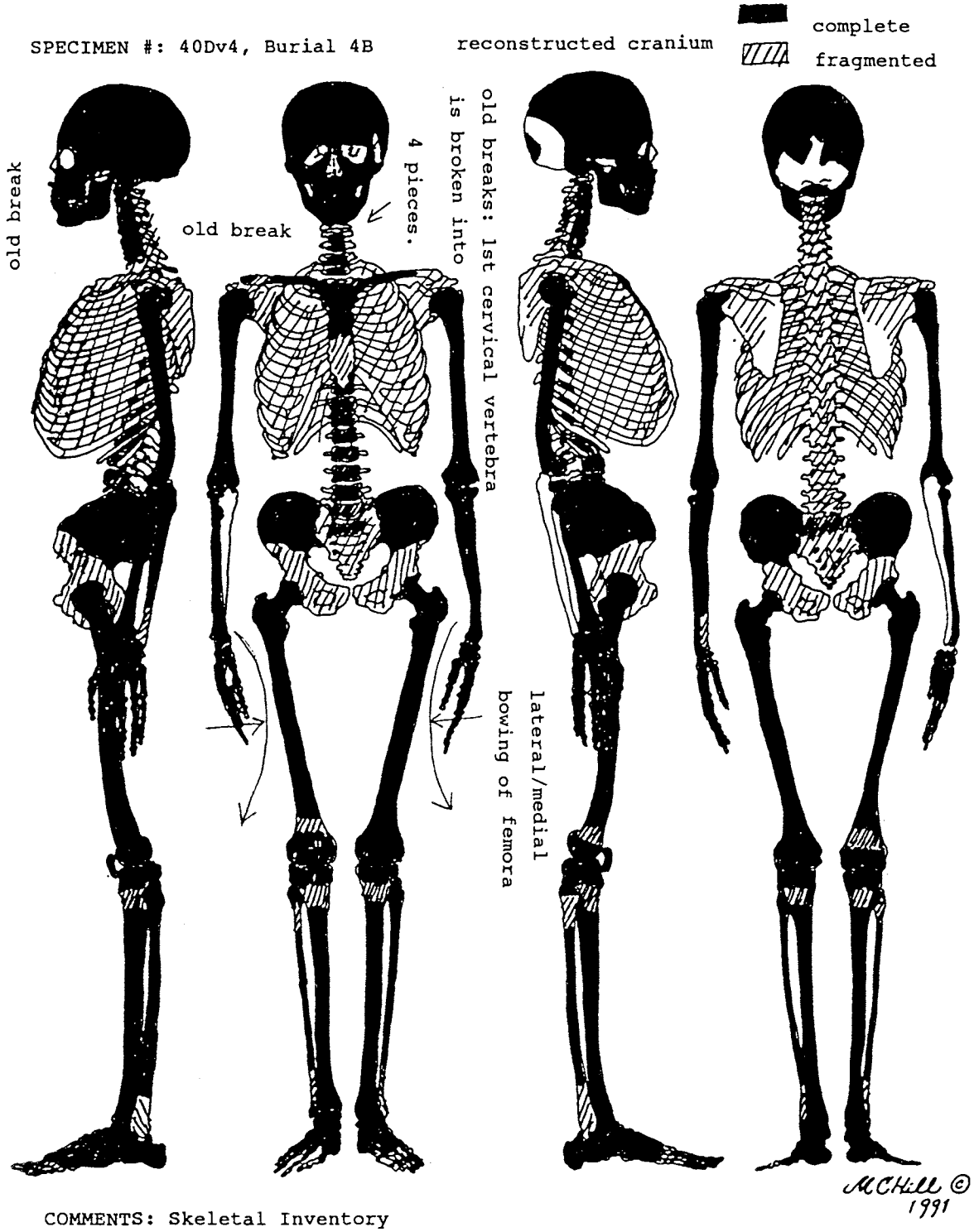
COMMENTS: Skeletal Inventory

"old breaks" = possible perimortem fractures



COMMENTS: Skeletal Inventory

"old breaks" = perimortem fractures



COMMENTS: Skeletal Inventory

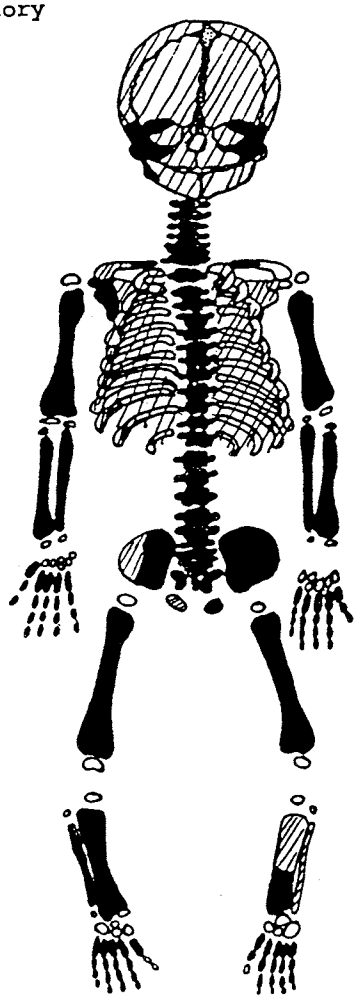
"old breaks" = perimortem fractures

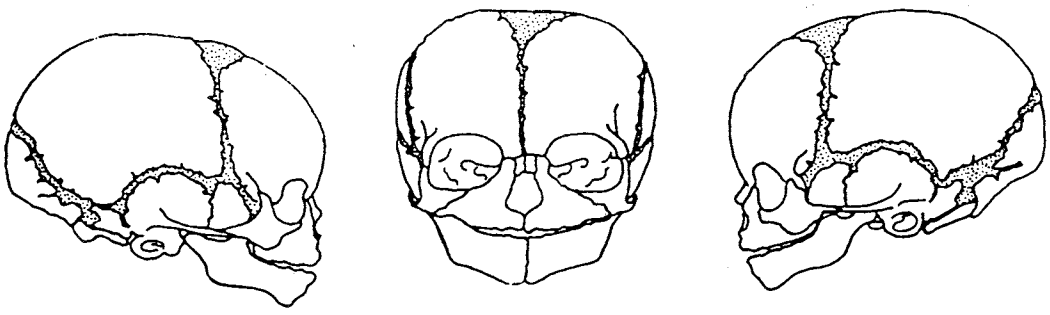
SPECIMEN #: 40Dv4, Burial 4C, Fetus in 4B

COMMENTS: Skeletal Inventory

complete

fragmented





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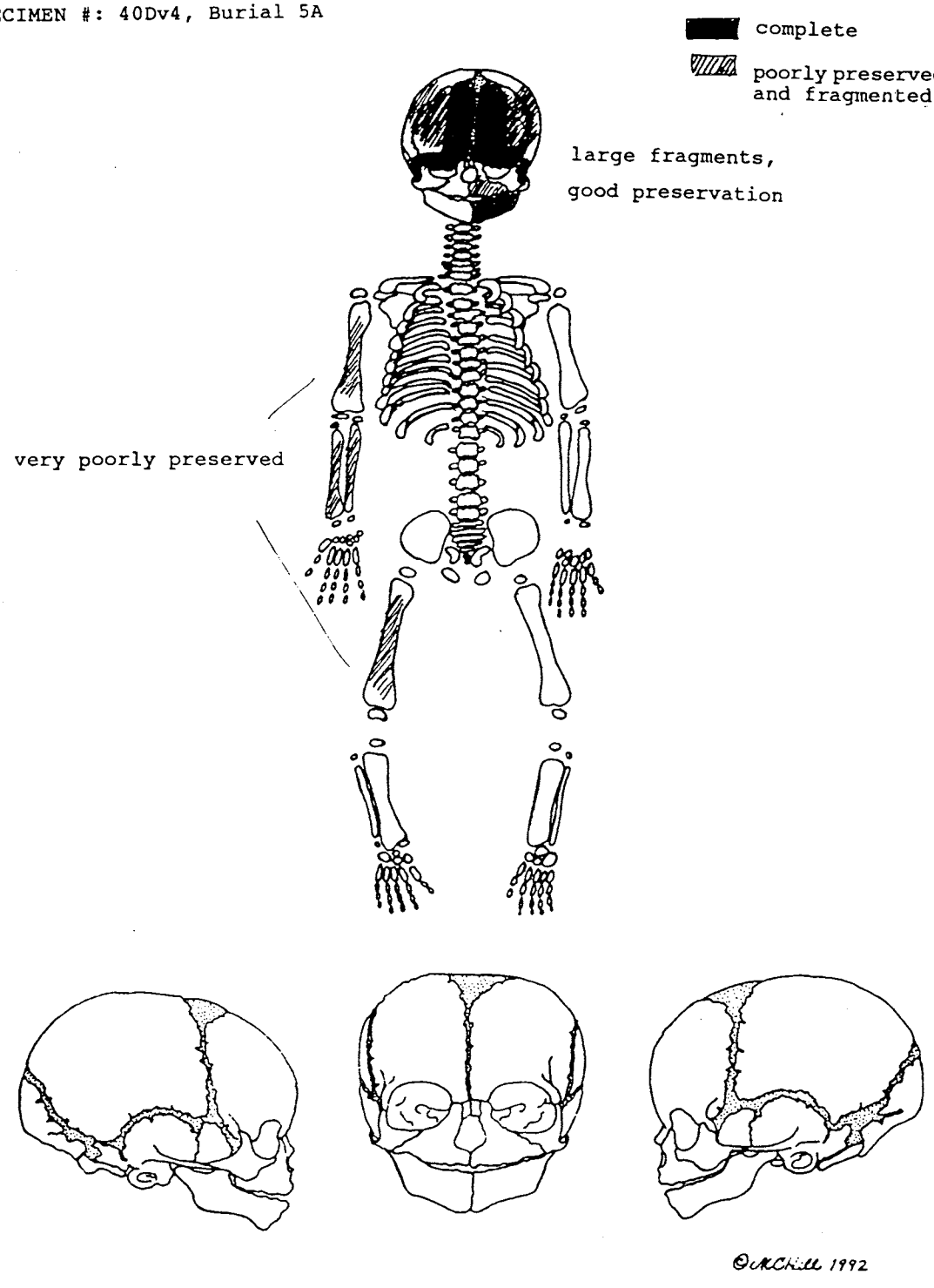
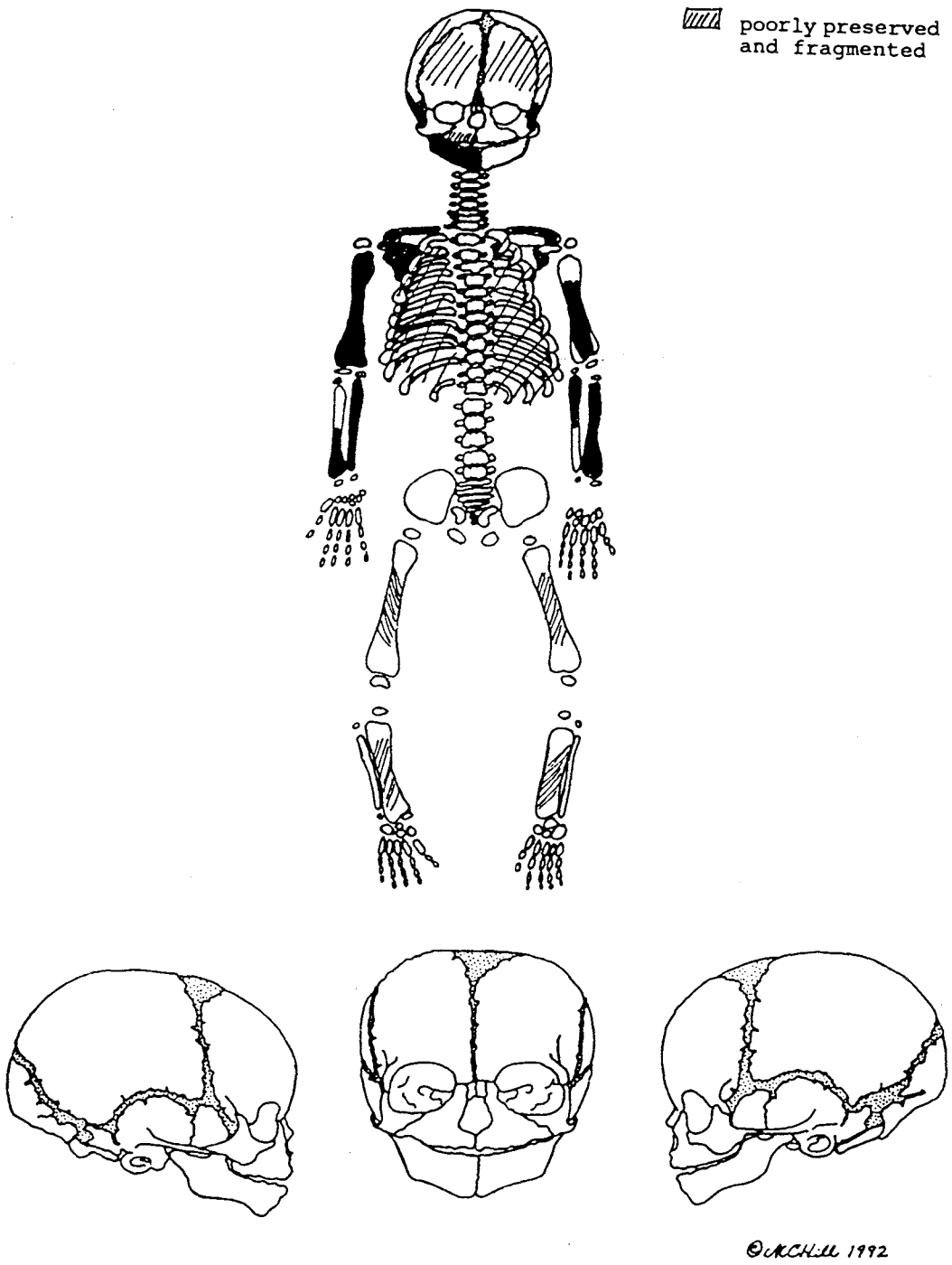
SPECIMEN #: 40Dv4, Burial 5A



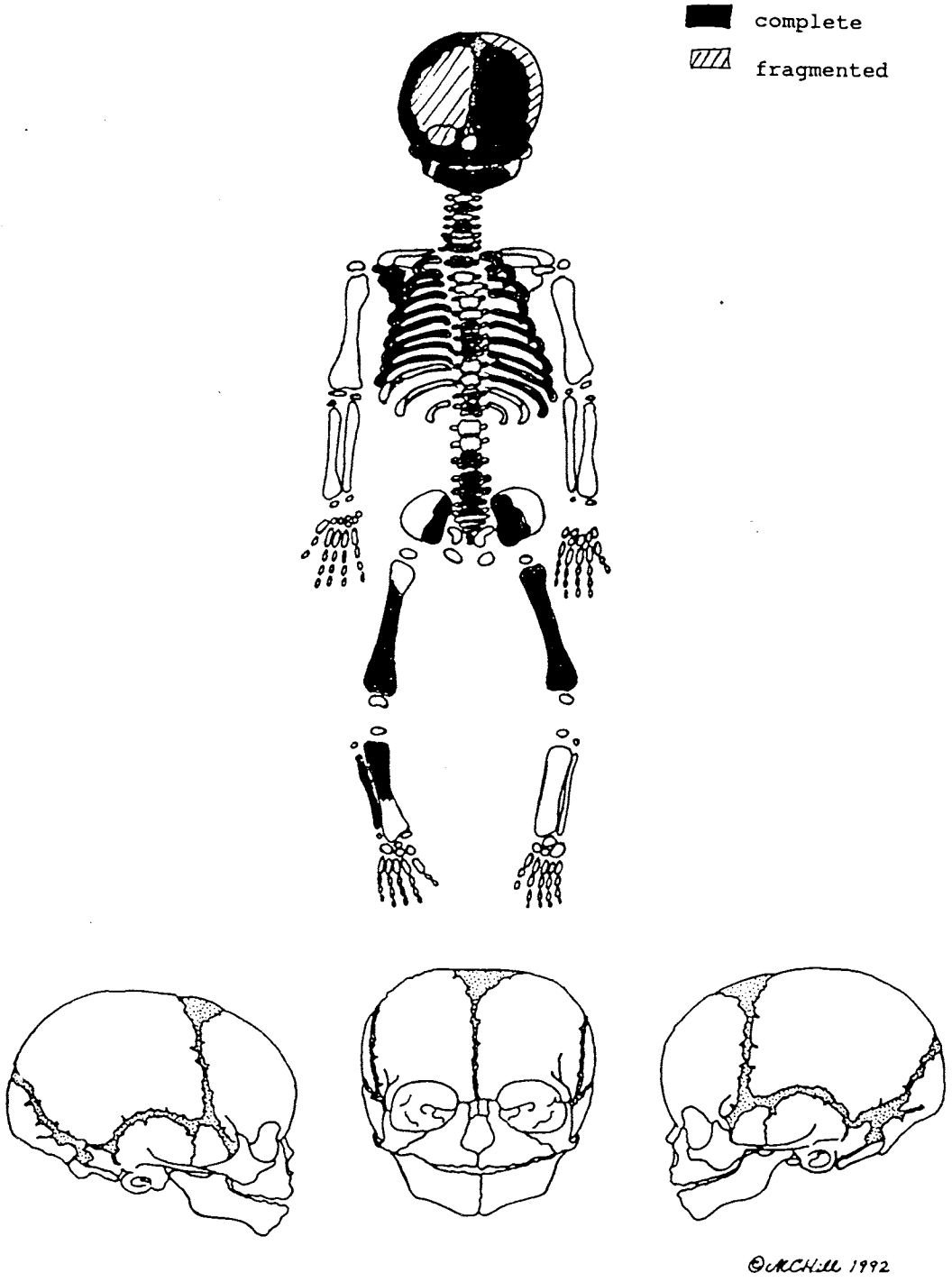
COMMENTS: Skeletal Inventory, Infant

SPECIMEN #: 40Dv4, Burial 5B



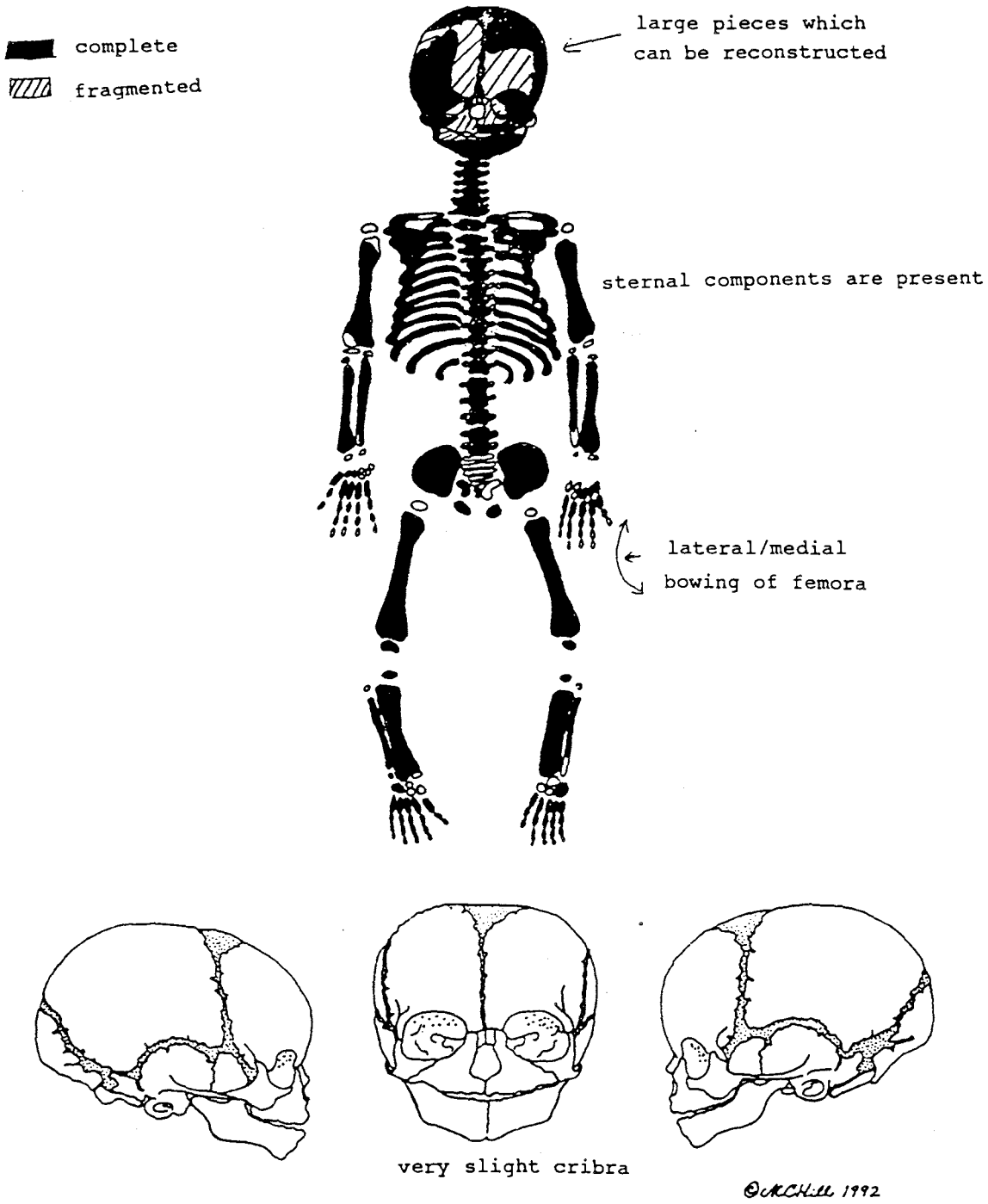
COMMENTS: Skeletal Inventory, Infant

SPECIMEN #: 40Dv4, Burial 5C



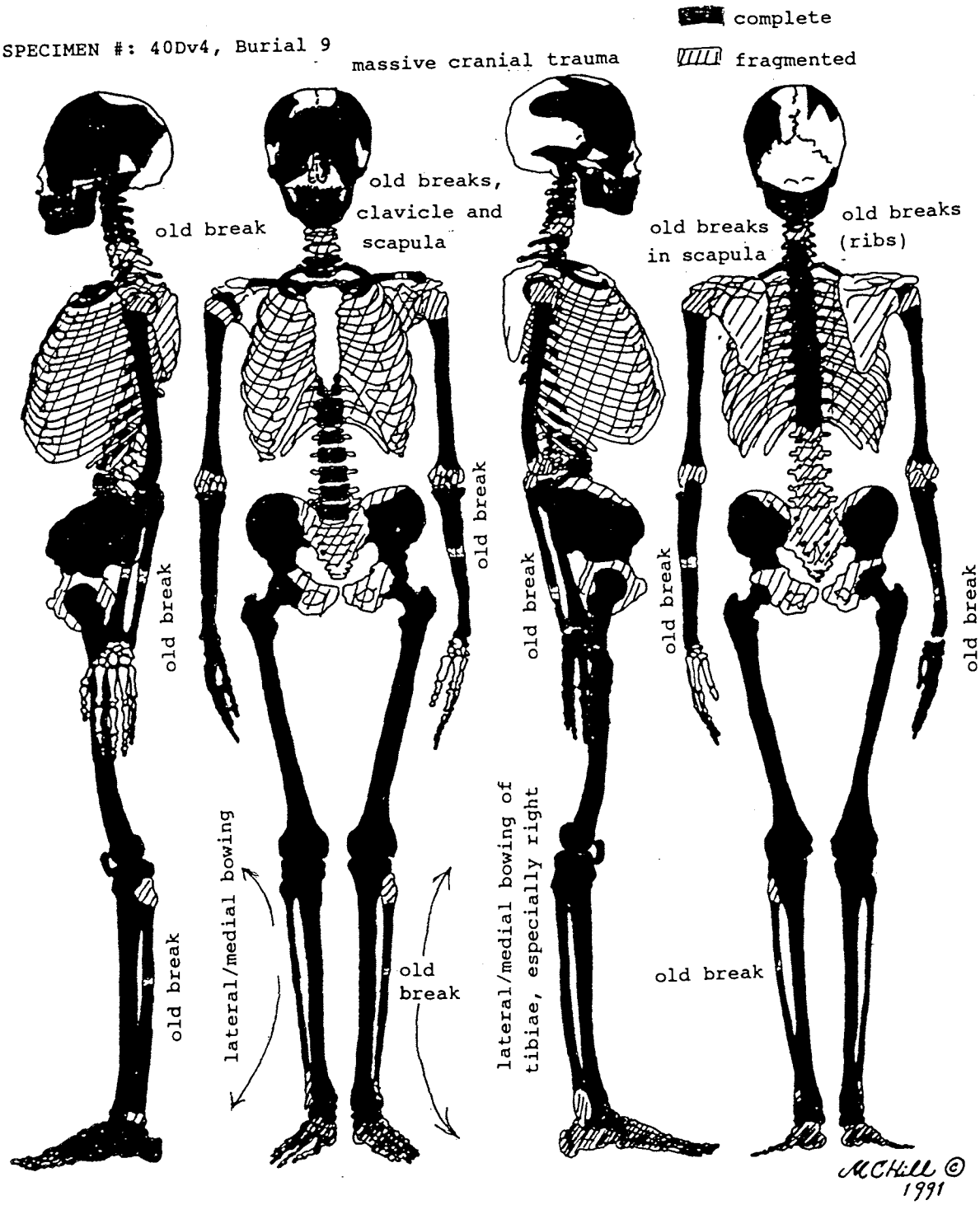
COMMENTS: Skeletal Inventory, Infant

SPECIMEN #: 40Dv4, Burial 8



COMMENTS: Skeletal Inventory, Infant

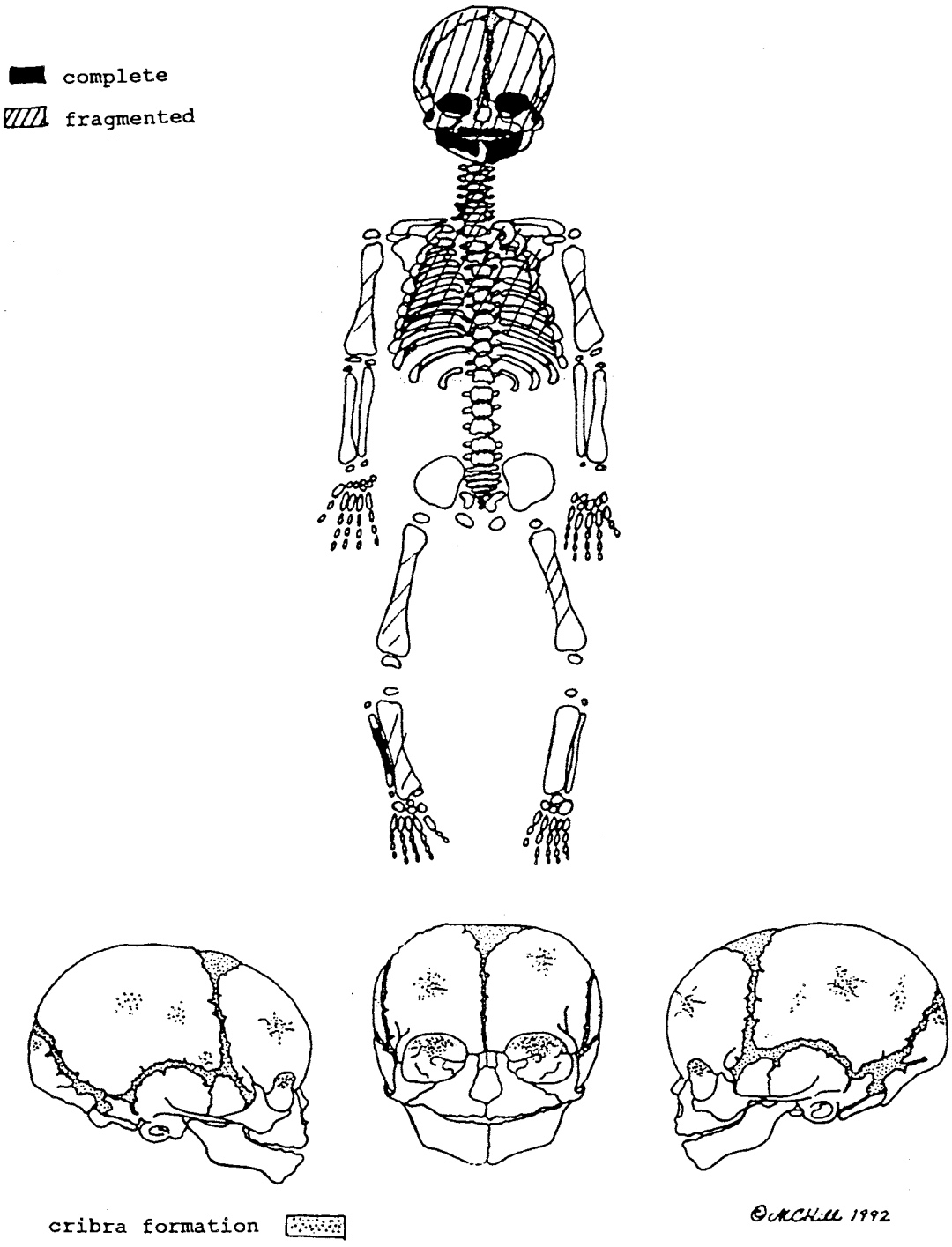
SPECIMEN #: 40Dv4, Burial 9



COMMENTS: Skeletal Inventory

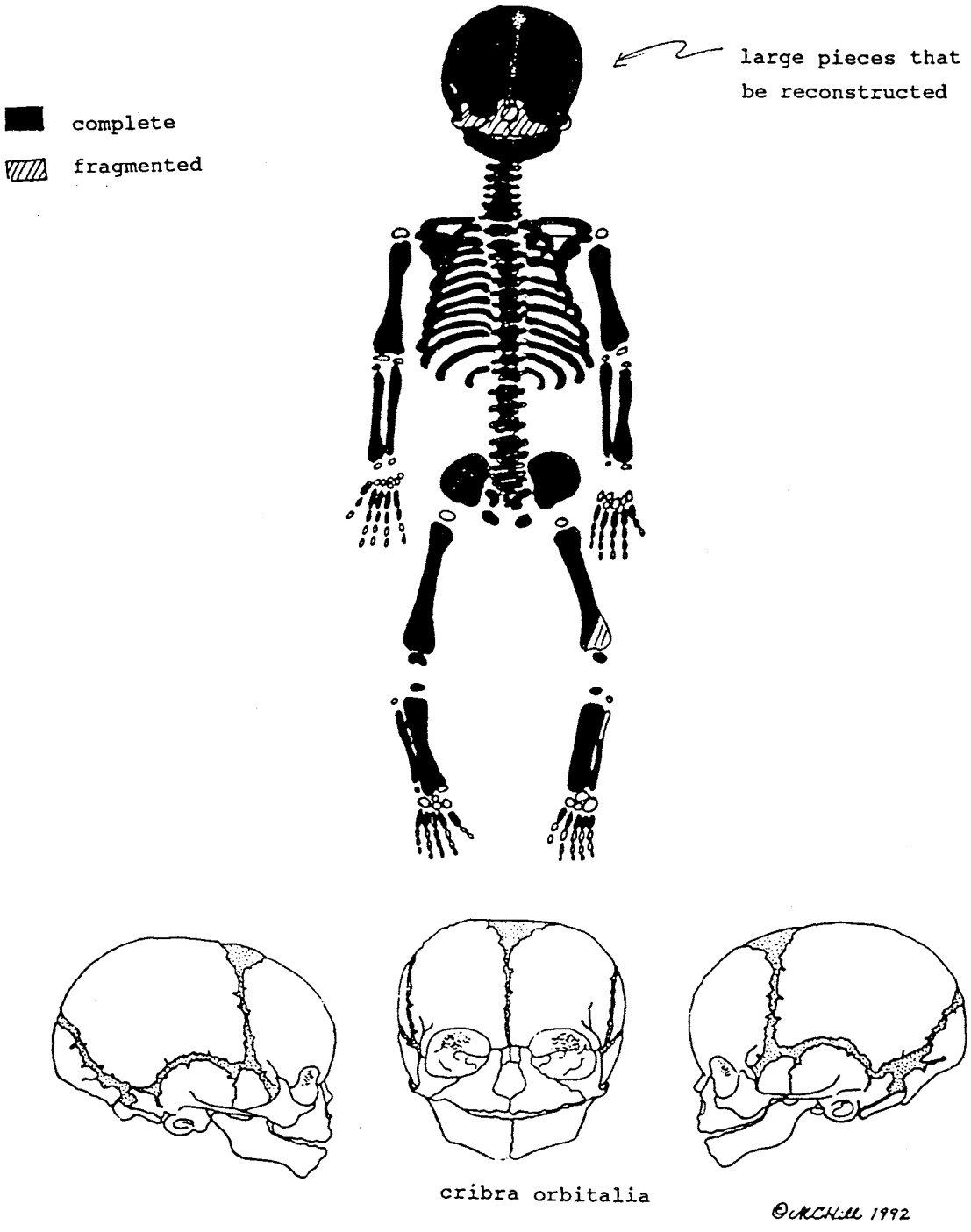
"old breaks" = perimortem fractures

SPECIMEN #: 40Dv4, Burial 10



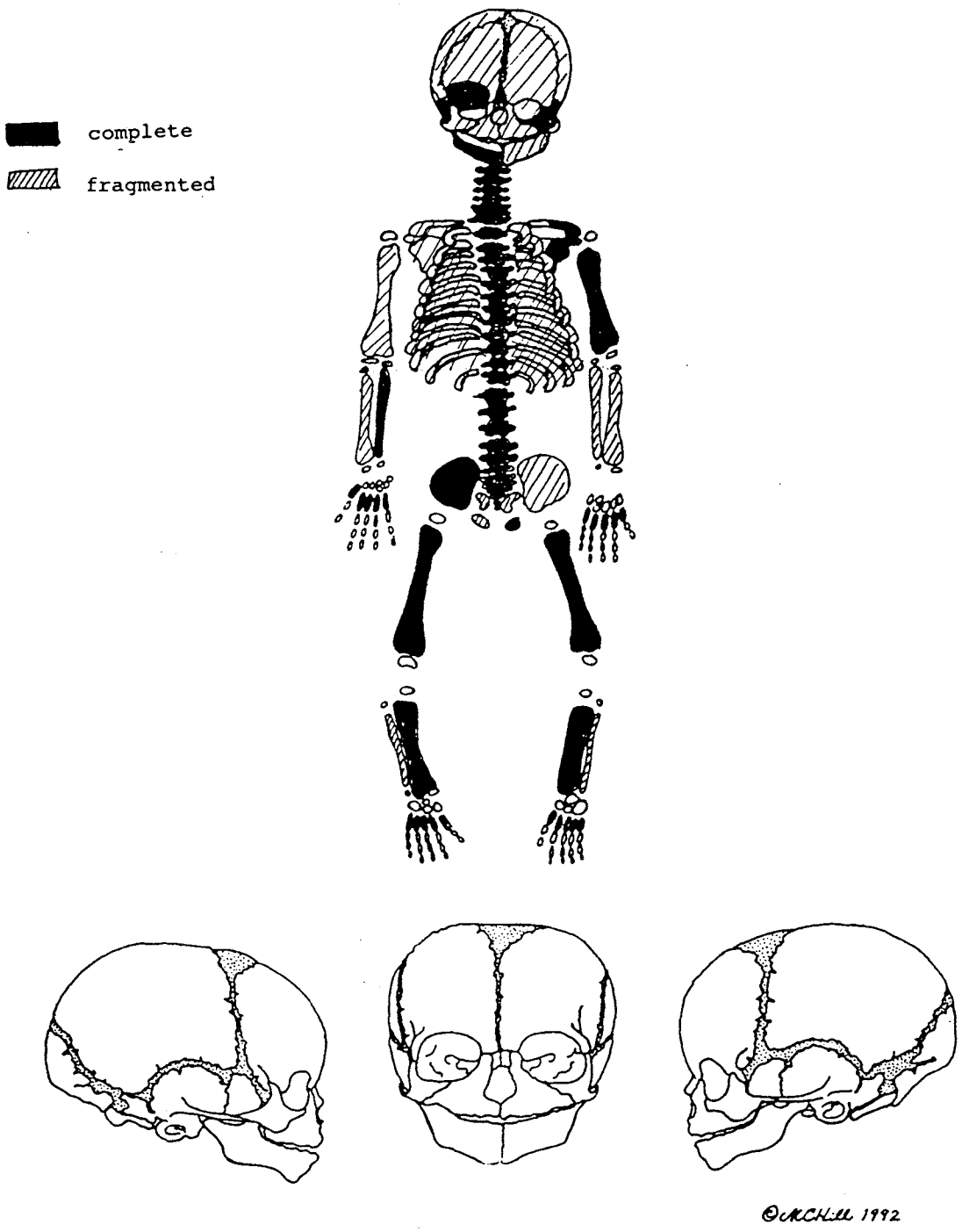
COMMENTS: Skeletal Inventory, Infant

SPECIMEN #: 40Dv4, Burial 11A



COMMENTS: Skeletal Inventory, Infant

SPECIMEN #: 40Dv4, Burial 11B



COMMENTS: Skeletal Inventory, Fetus