CREATING THE CAHOKIAN COMMUNITY:
THE POWER OF PLACE IN EARLY MISSISSIPPIAN SOCIOPOLITICAL DYNAMICS

BY

ALLEEN MAE BETZENHAUSER

DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Anthropology
in the Graduate College of the
University of Illinois at Urbana-Champaign, 2011

Urbana, Illinois

Doctoral Committee:

Professor Timothy R. Pauketat, Chair
ISAS Interim Survey Director Thomas E. Emerson
Assistant Professor Christopher C. Fennell
Associate Professor Lisa J. Lucero

ABSTRACT

This study is an examination of how sociopolitical change occurs, particularly the formation of large scale polities from culturally diverse populations. Drawing on Benedict Anderson's concept of "imagined communities" and recent developments in archaeological theory, particularly agency and practice theory, I contend that the social construction of space and community identities at multiple scales were instrumental in the creation of the Cahokia polity in the American Bottom region of southwestern Illinois around A.D. 1050.

In this study, I employ a multi-scalar perspective that includes detailed analyses of material culture, architecture, and spatial organization at five sites located in the American Bottom floodplain near the monumental Mississippian site of Cahokia. All five sites include occupations dating to the Mississippian Transition (A.D. 975–1100) which spans the Terminal Late Woodland Lindeman and Edelhardt phases (A.D. 1000–1050) and the early Mississippian Lohmann phase (A.D. 1050–1100). The mapping, geophysical survey, excavation, and material analyses for each of these sites combined with regional comparisons using a Geographic Information System provide evidence for changes in the construction of space, movement of people into and around the region, and the simultaneous dissolution of local communities and the construction of a large–scale community identity centered on Cahokia.

ACKNOWLEDGEMENTS

Countless people have contributed to the completion of this dissertation and I am indebted to them all. Firstly, I must thank my committee members; Dr. Timothy Pauketat, Dr. Thomas Emerson, Dr. Chris Fennell, and Dr. Lisa Lucero; for all of their guidance and advice, particularly my advisor and committee chair, Tim. Tim took me on when I was still pretty green and has been a constant supporter and an endless source of information on all things archaeological. Tom Emerson has also been with me since the beginning when I worked as a Research Assistant at ISAS in my first two years in graduate school. He has provided me with plenty to ponder through his insightful comments and probing questions. Chris and Lisa were more recent additions but have contributed much to this dissertation and my professionalization in general. I would also like to thank Liz Spears, the Graduate Secretary, who has helped me throughout the years.

My interest in archaeology became entrenched during my undergraduate studies at Boston University. Dr. Patricia McAnany and Dr. Julie Hansen were particularly influential in my early development as an archaeologist through their classes, guidance, and as strong female role models. I completed my first field school with Dr. McAnany who filled her project with a bevy of knowledgeable (and entertaining) specialists, grad students, and staff members. The graduate students and other field school students made a lasting impression on me and I will never forget them or our times at Yam Wits and Cheers! In particular, I'd like to thank Ben Thomas, Kim Berry, Polly Peterson, Ellie Harrison, Steve Morandi, Dan Welch, Kevin Acone, Jess King, Erol Kavountzis, and Tara Bermingham.

As I transitioned into graduate studies at the University of Illinois I was surrounded by incredibly intelligent and incredibly fun people. I appreciate the advice bestowed upon me by the students who came before me including Jeff Kruchten, Phil Millhouse, Susan Alt, and Margaret Brown-Vega. You all have contributed to my growth as an archaeologist in many ways. My co-hort included two of the smartest and funniest people I know, Andy Bryan and Eva Pajuelo. I have to single out Eva for some extra thanks for always being there when I needed her, making me laugh harder than anyone else, and bringing me a little farther out of my shell. Eva, you're awesome! I've also been lucky enough to become great friends with several students who entered the program more recently. Melissa Baltus, Sarah Otten, and Amanda Butler have continued to push me to be better and stretch boundaries in my research.

Several former and current staff members at ISAS in Champaign and the American Bottom division have been instrumental in the completion of the research included in this dissertation. I learned a lot from my co-workers in Champaign, Stephanie Glienke and Paolo Gujilde, during those years as a Research Assistant. Eve Hargrave, Stephanie Daniels, Laura Kozuch, and Andy Fortier assisted me in my use of the collections stored at ISAS and provided me with information and insights into American Bottom archaeology. Countless staff and crew members from the American Bottom division of ISAS have contributed to this dissertation and my growth as an archaeologist. The most influential were Brad Koldehoff, Jeff Kruchten, Tom Zych, and Julie Bukowski. Brad provided me with opportunities to hone my skills in the field as well as in the lab. Jeff helped me expand my knowledge and use of ArcGIS and I couldn't ask for a better "dirt" archaeologist to learn from in the field. He also digitized all of the plan maps from the Fish Lake site. I was lucky enough to co-direct excavations at several sites and co-author conference papers with Tom during our time together at ISAS. Julie is one of the hardest working people I know and her dedication to her work, family, and friends is a great inspiration. I have to thank Joe Galloy for allowing me to take significant chunks of time off from work while conducting field work for the dissertation and while writing. Charlie Witty, Tricia Wright, and Mera Hertel also helped in many ways. Mera was particularly helpful and gave me pointers for making figures and was always willing to answer any questions I had. She also photographed several artifacts from Fish Lake and Washausen in some of the figures included in this dissertation.

The field work associated with this dissertation would not have been possible without the help and hard work of many individuals. Firstly I'd like to thank Don Divers and Ellery Hawkins for allowing me to work on their property. Don also generously allowed me to photo his collection of artifacts from the site and provided me with a partial map of the excavations. I would like to extend my thanks to the field school supervisors including Mark Rees, Kitty Roberts, and Greg Wilson who supervised the University of Oklahoma excavations at the Morrison. The Washausen and Peiper field school students also deserve mention for their contribution to this research as well as Meghan Buchanan and Marissa Dietrich who volunteered. I would also like to extend thanks to the ISAS crew chiefs and crew members who excavated the Fish Lake site in 2007, particularly Jeff Kruchten, Tom

Zych, Julie Bukowski, Kim Fach, and Mat Terry. The geophysical surveys conducted for this project would not have been possible without Dr. Michael Hargrave who was very generous with his time and knowledge. Several volunteers assisted with the excavations at Washausen. Kyle Mullen and Franklin R. Moore each spent an entire week digging and helping me work through my frustrations. Colin Postlewaite, Melissa Baltus, Tom Zych, Eva Pajuelo, Steph Glienke, Liz Watts, Mat Terry, Julie Bukowski, Kim Fach, and Frank Cowan also generously volunteered their weekends to dig with me.

None of the research would have been possible without the financial support from several sources. A University of Illinois Summer Research Grant provided funds necessary to initiate investigations at Washausen. The geophysical survey and excavations at Washausen were partially funded through the Illinois Association for the Advancement of Archaeology Permanent Fund. The Morrison site excavations were funded through the National Science Foundation. My analysis of the Fish Lake ceramics and a portion of the writing was supported by Research Assistantships through ISAS.

Several other researchers analyzed materials from these investigations. Katie Parker of Great Lakes Ecosystems analyzed the botanical remains and Steve Kuehn of ISAS analyzed the faunal remains from the Fish Lake and Washausen sites. Loryl Breitenbach of ISAS analyzed the lithic materials from Fish Lake. Liz Watts at the University of Illinois analyzed the lithic materials from Morrison. Dan Marovitch at the University of Illinois and Shari McAlister analyzed the Morrison site ceramics. Julie Bukowski analyzed the human remains recovered from the Peiper site. John

Kelly of Washington University permitted me to look over his surface collection materials from Washausen and allowed me to adapt his Washausen maps including the topographic map. I would also like to acknowledge the Illinois State Archaeological Survey and the Illinois Department of Transportation for use of their collections including all of the artifacts, paperwork, and maps from the 2007 excavations at Fish Lake (Log # 07017) and the field notes from James Porter's excavations at the Divers site.

Finally, I want to thank my family. My parents, Paul and Sheila, never wavered in their support of me and my ridiculous obsession with archaeology. My siblings; Matt, Kristin, and Paulie; were always willing to listen and distract me with a good laugh when I needed one. Lastly, I am deeply grateful for my husband, Colin. He has sacrificed much these last few years so that I could accomplish what I set out to do. I would not have made it this far without his love and support. Thank you!

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1
INTRODUCTION

Much archaeological research conducted throughout the world has been devoted to the primary focus of the study presented here. Namely, how are large–scale sociopolitical formations created? Explanations can vary from environmental causation to charismatic leaders, from the gradual evolution of society to rapid revolutions. These widely ranging views are largely dependent upon the theoretical underpinnings of the researcher as well as the specific data sets they attempt to understand (see Chapter 2). In order to address this topic, I investigate the roles changing notions of space, community, and identity played in effecting sociopolitical change during the Mississippian Transition in the American Bottom region of southwestern Illinois. I focus specifically on four sites located in the southern reaches of the floodplain near Columbia, Illinois and an early mound center located only a few kilometers from the largest earthen mound in north America located at the site of Cahokia.

Recent research suggests that changes in sociopolitical complexity are causally related to shifts in community identities (Anderson 1991; Canuto and Yaeger 2000; Clark 2004; Joyce 2004; Joyce and Hendon 2000:144). Community identities, it is asserted, are not isomorphic with physically bounded settlements. In contrast, multiple community identities may exist within a single site while a single community composed of individuals from many different locations may exist within a region (Joyce and Hendon 2000:144). The construction of space at multiple scales is also implicated in community construction and sociopolitical change (e.g., Ashmore and Knapp 2003; Smith 2003). Space and places are social constructions that are also inextricably linked to power, community formation, and identity through memory, shared experiences, and the space of social and political interrelationships (Joyce and Hendon 2000; Pauketat and Alt 2003; Van Dyke and Alcock 2003). These new approaches to community and identity are firmly rooted in agency and practice theory which acknowledge the roles individuals and groups play in culture construction.

Here I draw on Benedict Anderson's (1991) concept of "imagined communities" and their role in the creation of large scale (in terms of population and spatial extent) polities. Since it is impossible for all members of a nation (or even a large village) to know each other personally, a sense of camaraderie exists only as it is believed to exist (Anderson 1991). This type of community is inherently fluid and political since it is in a constant state of being created and (re)imagined by multiple people with potentially opposing interests at multiple scales (Anderson 1991; Hobsbawm 1990; Isbell 2000; Pauketat 2000a,b).

For example, Creed (2004) concludes from his analysis of Mumming in Bulgaria that the ritual performances demonstrate local notions of collectivity that included the accommodation of conflict. Mumming not only reflects nationalistic views but reinforces such views through the inclusion of "others" (e.g., Roma) in such performances. Similarly, Tooker (2004) documented changing notions of collective identity in the mountainous region of Thailand that occurred in relation to an increase in capitalism, intensification of integration, and increased communication and contact between the lowland and highland groups as well as rural residents and bureaucracies. The increased economic, political, and social interaction as well as the commodification of the land altered how local residents interacted and undermined local sources of power while simultaneously connecting rural residents into a larger, nationalistic community.

In these examples, the community (or collective identity) is "imagined" in the sense that its members do not interact face to face or on a daily basis. Although the concept of imagined community has proven useful when dealing with large scale communities and polities, the use of the word "imagined" may connote that the community is not "real". In contrast, these communities are very real with material and historical implications and are often actively maintained or promoted through periodic events and interaction. Therefore, I propose the term "constructed communities" to denote large scale communities that are actively constructed and maintained through periodic communal activities, economic integration, and shared material culture and symbols that act as loci for interaction among community members. These interactions can unite disparate groups (including classes and ethnic groups) through appeals to a shared identity, past, or ideology. It is also important to note that inequity may also be reaffirmed through the juxtapositioning of high and low status groups, urban and rural residents, as well as local and foreign people (Yaeger 2003).

CREATING THE CAHOKIAN COMMUNITY

In the American Bottom and neighboring uplands there is evidence for both disruptions to the local community (eg. site abandonment) *and* participation in communal feasting and mound–building events that appears to be essential to the formation of the Cahokian community and large–scale complex polities in general (Clark 2004; Joyce 2000; Stein 2001; Yoffee 2005). Change and continuity in settlements, architecture, and material culture are evident at the onset of the Mississippian period as well.

During the 11th century A.D., significant shifts occurred in settlements that appear to be associated with the founding of an urbanized center at the multi-mound site of Cahokia (Emerson 1998a, b; Milner 1998; Pauketat 2003, 2004). Included in these changes was the construction of multiple plazas with flanking mounds that possibly represent separate "subcommunities" at Cahokia during the Lohmann and Stirling phases (AD 1050-1200) (Dalan et al. 2003; Fowler et al. 1999). However, the proximity of these various plaza/mound groups within the Cahokia site and commonalities in material culture likely indicate that the individuals in these smaller subcommunities united for various festivals and feasts, connecting them in a larger community, not only with other Cahokian residents but with those living in the countryside as well (Pauketat 2000a:19; see also Pauketat and Koldehoff 2002; Pauketat et al. 2002).

The materials found in the sub-Mound 51 borrow pit at Cahokia including high concentrations of mid-utility cuts of white-tailed deer, ritual plants (e.g., tobacco seeds, red cedar, bald cypress), large cooking jars, and items associated with craft production (e.g., celt debitage, quartz crystal debitage, wood working debris) indicate repeated, large–scale feasting events associated with centralized production and mound or plaza construction took place at Cahokia, possibly on a yearly basis (Pauketat et al. 2002). These gatherings were a fundamental aspect of integrative activities that served to unite diverse peoples through participation in communal events. In the act of building together and participating in communal events, highly diverse people created a sense of belonging, a pan-Cahokian identity (Pauketat 2000a, 2003; Pauketat et al. 2002).

This Cahokian community did not completely erase other forms of identity as evidenced by research in the uplands east of Cahokia (Alt 2002, 2006; Pauketat 2003). Continuity in spatial organization and architectural methods is evident at several rural sites in the uplands east of Cahokia. The ceramic data indicate people from as far away as southeast Missouri and southern Indiana immigrated to the uplands bordering the American Bottom at approximately the same time Cahokia underwent a massive reorganization and expansion in size (Alt 2001, 2006; Pauketat 2003). These residents continued building houses with single–post construction with structures arranged in courtyard groups (Alt 2001; Pauketat 2003). The concentration of items associated with craft production (e.g., microblades, celt debitage, spindle whorls) at different sites and the intensity of agricultural production as suggested by a high incidence of Mill Creek hoes and flakes that were used in maize agriculture suggest localized production for supra-site consumption (i.e., provisioning). The appearance of possibly administrative villages with evidence of commemorative events and feasting activities and architecture and site organization that conform to a Cahokian style suggest rural residents were integrated into the Cahokian community (Alt 2006a).

In the Cahokia case, the changes in community are obvious in terms of settlement patterns and site layout. At the end of the Terminal Late Woodland (or Emergent Mississippian) period, many settlements were abandoned, others became mound centers, and many single–family farmsteads were established (Betzenhauser 2006; Emerson 1997a,b; Pauketat 2000a, 2003). Pauketat contends that some of the social changes associated with this shift include a shift in focus from courtyard–centered activities to household activities centered on the single–family domestic zones (2000a:32). Concurrently, the manipulation of communal symbols from disparate groups and the influx of "foreign" groups into the American Bottom seem to indicate the creation of a new regional identity, a "constructed community" that served to unite dispersed people with different backgrounds for a common purpose (Anderson 1991; Pauketat 2003; Pauketat and Emerson 1992). The fact that diverse people made and used similar technology and material culture even though they did not interact on a daily basis provides further evidence for the existence of a constructed community.

In the remainder of this dissertation, I assert that alterations to the social construction of space, community, and identity at multiple scales were crucial to the creation of a regionally integrated polity centered at Cahokia in the American Bottom at the beginning of the Mississippian period (AD 1050–1375). In order to access these changes, I compare site layout, site types and locations, architecture, material remains, depositional contexts, and the differential distribution of specific artifact classes between and among late Terminal Late Woodland (AD 975–1050) and early Mississippian (AD 1050-1100) settlements.

The results of the research presented here provide information concerning the degree to which material culture and architecture differ between northern and southern American Bottom sites and the extent to which southern peoples engaged in and identified with Cahokian religious and political practices. Few things are more pervasive than the lived spaces experienced on a daily basis and it is via these spaces and the repetition of practices within them that individuals and communities are created (Hodder and Cessford 2004; Joyce and Hendon 2000). Through the analysis of local and regional changes in settlement and site layout combined with an analysis of ceramic and lithic materials and production techniques it is possible to address how people with differing backgrounds were able to create larger community identities through changes in daily practices and lived space.

With this approach, it is possible to measure the degree to which communities were altered in an effort to explain how Cahokia became a political, economic, and social center within the American Bottom region. Through the identification and delineation of rapid alterations or continuity in daily practices as evidenced in settlement histories (including abandonment or maintenance of courtyards and changes in site layout) and production activities and techniques (including ceramics, celts, cloth, architectural methods, etc.) it is possible to determine whether communities located outside the immediate area surrounding Cahokia were involved in the creation of a regional community identity or maintained local identities that challenged new political formations.

In this specific case, it appears that the formation of a large–scale sociopolitical entity centered on Cahokia at the beginning of the Mississippian period is directly related to changes in community identity and the construction of space on both local and regional scales. Region–wide movements of people occurred as evidenced by the abandonment, establishment, and reorganization of Terminal Late Woodland sites. Concurrently, there were changes in architectural forms and construction techniques that appear to be related to the integration of rural communities and the marking of differences in status or power. Similarly, pottery and stone tool styles and resource procurement changed as well. The differential distribution of some types of objects and materials are suggestive of production for tribute in rural areas as well as the participation in communal events and material exchanges not only at Cahokia but in the countryside at administrative villages and nodal farmsteads. Although these changes did not occur at exactly the same time or at the same pace throughout the region, they did happen throughout the region within two generations (50 years) suggesting this "transition" is more aptly thought of as a "transformation". By the Stirling phase, pre-Mississippian ways of life are virtually absent from the entire region. It is my contention that these movements of people and reorganization of settlements served to disrupt local ties and sources of power while simultaneously aiding in the formulation of newly created community identities through participation in events and exchanges in the urbanized center as well as the rural floodplain and uplands.

ORGANIZATION OF THE STUDY

The following three chapters (Chapter 2, 3, and 4) provide background data necessary to situate the study within regional and theoretical contexts.

Physiographic data including description of the various local environments and resources within the American Bottom and neighboring uplands are presented in Chapter 2. Chronological data and the history of studies concerning the Mississippian Transition in the American Bottom region are also included in that chapter. In Chapter 3 I discuss the history of thought and theoretical perspective I employ concerning the relationships among space, identity, community, and polity formation. The methods employed during field and laboratory investigations and analyses are presented in Chapter 4.

Chapter 5 and 6 are concerned with the case–specific data derived from field investigations and laboratory analyses. The results of mapping, geophysical survey, and feature excavations are presented in Chapter 5. The results of material analyses including the analysis of ceramic, lithic, ethnobotanical, faunal, and human remains as well as the results of radiocarbon dating are presented in Chapter 6.

Chapter 7 includes regional comparisons of site distribution, type, and layout as well as architectural forms and construction techniques between the late Terminal Late Woodland and early Mississippian periods. Sub-regional comparisons provide data concerning variation in the pace of change throughout the region. These data are supplemented by an analysis of the differential distribution of certain types of materials and objects that indicate interactions between rural residents and Cahokians or their representatives that aided in the integration of rural communities into the Cahokian community. In Chapter 8 I conclude with a summary of the results and ideas for future research.

CHAPTER 2: REGIONAL CONTEXT AND PROBLEM ORIENTATION

In this chapter, I define of the area of interest in terms of physiography and environmental data including locally available resources. The subsequent section is a review of the American Bottom chronology with particular focus on the Terminal Late Woodland through Mississippian period. The final section is a discussion of the debates and problems associated with the Terminal Late Woodland to Mississippian Transition in the American Bottom region and how the current project aims to address them.

REGIONAL SETTING AND NATURAL RESOURCES

The American Bottom refers to the wide expanse of floodplain east of St. Louis, Missouri (Bareis and Porter 1984; Figure 2.1). The region was initially defined as such by the French after the Northwest Territory became part of the United States and Americans began to settle in the area (Reynolds 1879). The region is also defined in part in natural terms as a highly fertile floodplain with natural boundaries including the Mississippi River on the west, the bluff line to the east, and the confluence of the Mississippi River with the Illinois and Kaskaskia Rivers to the north and south. In between, various smaller rivers (e.g., Meramec River), creeks (e.g., Fountain Creek), and streams drain into the Mississippi as well.

In geomorphological terms, the American Bottom region may be split into northern and southern sub-regions. The northern section extends from Alton south to Dupo, Illinois where the floodplain drastically reduces in width (Milner 2006).

The southern American Bottom extends from Dupo to Chester, Illinois and is characterized by a thinner floodplain and dramatic limestone bluffs[1].

Two major physiographic zones comprise the American Bottom and the surrounding region: the floodplain and the uplands. The floodplain is relatively flat but has been altered through the changing course of the Mississippi River and repeated flooding events. Physical effects of the movement of the river include meander scars, backwater and oxbow lakes, terraces, and ridges and swales (White et al. 1984). Prior to the construction of levees, the floodplain was frequently inundated with some areas underwater for a large portion of the year forming swamplands and lakes (Milner 2006; Schroeder 1997; White et al. 1984). The frequent flooding resulted in the formation of fertile soils, probably the greatest natural resource in the floodplain. Bottomland soils rich in clay deposits are common and are an excellent source material for pottery production. Lithic resources within the floodplain are limited to chert and igneous cobbles transported by the rivers and streams.

The various habitats including rivers and streams, marshy areas, and areas of higher elevation (e.g., terraces and ridges) provide a wide range of natural resources, particularly biotic (Table 2.1). The higher areas that were not at risk for flooding could support floodplain forests including a variety of trees such as black walnut, sycamore, and honey locust. Other areas were sufficiently dry to support climax oak–hickory forests. Low–lying areas that experienced the most flooding

[1] John Kelly (2007) and colleagues (Bailey 2006; Stahlman and Mertz 2006) have proposed a third region, the central American Bottom, that encompasses the area from Dupo, IL south for an indeterminate distance (possibly near Fults, IL). The distinction is largely based on the prevalence of limestone tempering as seen in surface collections (see Milner 2006; Schroeder 1997).

supported trees, shrubs, and herbaceous plants (e.g., American lotus and cattail). Some portions of the floodplain can be classified as prairie and are characterized by wild grasses and sedges. These same habitats were also occupied by a variety of small mammals, rodents, migratory birds, fish, mussels, and turtles.

The bluff edge and uplands to the east provide a similarly diverse array of habitats and resources. Oak–hickory forests, prairie, and a multitude of streams and creeks (both intermittent and permanent), as well as niche biomes (e.g., glades) on the bluff edge characterize the uplands and support a wide range of flora, fauna, and lithic resources. The bluffs vary in terms of slope and composition. At the northern and southern ends of the American Bottom the bluffs are comprised of exposed limestone and rise dramatically whereas near the middle of the region the bluffs slope more gradually and are capped by large deposits of windblown loess.

The uplands located immediately adjacent to the bluffs are characterized by karstic limestone with sink holes and caverns. Glades, prairies, and desert biomes are present atop the limestone bluffs south of Dupo, Illinois. In contrast, the interior uplands are relatively flat with a few prominent ridges and several intermittent and permanent streams and creeks. Clay used for pottery production is available in streambeds although outcrops of a distinct type of clay, Madison County Shale, are located only in the northern uplands (Pauketat 1996; Porter 1985). Lithic resources are more plentiful in the uplands in the form of chert outcrops in the limestone bluffs as well as chert, glacial till, sandstone, limestone and some minerals and mineraloids (e.g., limonite) in streambeds. Aquatic flora and fauna are not as plentiful as in the bottomlands but there are more deer, nuts, prairie lands, oak–

hickory forests, and ritually significant red cedar available in the uplands (Simon 2002).

Other raw materials important to American Bottom residents during the Terminal Late Woodland and Mississippian periods are available within 100 km of Cahokia. The St. Francois Mountains located in the Ozark region of southeast Missouri are the source area for a variety of lithic raw materials including Burlington chert, hematite, galena, flint clay, and diabase (Emerson et al. 2003a; Pauketat 2004; Walthall 1981). These materials were used to create a variety of tools (formal and expedient chipped stone tools and groundstone celts, grinding stones, and discoidals), pigments, or ritually significant objects including the highly symbolic flintclay figurines (Emerson et al. 2003a). More distant resources include Mill Creek and Kaolin chert from southern Illinois, marine shell from the Gulf Coast, and copper and silicified sandstone (Hixton) from the Great Lakes region and northern Midwest (Pauketat 2004).

The American Bottom region as described above is significant in not only natural but cultural terms as well. The fertile land and differentially distributed natural resources were utilized to varying degrees at different times over the past 12,000 years. To those who lived there, the landscape was important not only for the plentiful resources, but because it too was a social construction that could be mobilized in effecting social and political change. As will be discussed later, alterations to the political landscape (*sensu* Smith 2003) played a prominent role in the creation of the Cahokian Community and early Mississippian sociopolitical formations in the region.

AMERICAN BOTTOM CHRONOLOGY: PAST AND PRESENT

Although speculation concerning the origins of the mounds located in the American Bottom was common in European and early American accounts, scientific attempts at developing a Cahokian chronology did not begin until the early 20th century (Brackenridge 1814; Collot 1924; Long 1823; Wild 1841). Salvage excavations were conducted at the Powell Mound (Mound 86) and a nearby mound (Mound 84) under the direction of Thorne Deuel, W.C. McKern, and Gene M. Stirling (Kelly 1933). Through these excavations, the first stratigraphic evidence at Cahokia came to light. A.R. Kelly reported the existence of sub-mound village deposits below both mounds with the occupation below Mound 84 pre-dating that of Mound 86. Kelly tentatively called these sequential occupations the pure village site culture and the bean pot–effigy bowl culture. As may be surmised by the name of the latter, these two occupations were distinguished based on ceramic evidence, namely the inclusion of bean pots (beakers) and duck effigy bowls below Powell Mound and with burials intrusive to the earlier pure village occupation below Mound 84. During this period, discussions of culture change in archaeological terms were based in the tenets of culture history. Archaeological "cultures" were thought to be bounded and static, therefore the only way for culture change to occur was through contact with other cultures through migration or diffusion (Trigger 2000).

Within a decade, James B. Griffin (1949) modified the terminology slightly by referring to the earlier and later Mississippian occupations as Old Village and Bean Pot (Hall 2000). A further revision resulted in changing Bean Pot to Trappist, or the Trappist Focus of the Monks Mound Aspect of the Middle Phase of the Mississippian

Pattern in the Midwest Taxonomic System terminology (Hall 2000). John W. Bennett attempted to create a "chronological and cultural sequence" for all of southern Illinois including the American Bottom (Bennett 1944:12). He did not alter the Old Village and Trappist division although he attempted to assign calendrical dates that were later proven to be substantially inaccurate. While these early attempts should be commended for recognizing change over time, there was still very little known in terms of how changes occurred or the calendrical dates associated with these phases. They also lacked information from outside of Cahokia proper.

In the 1960s, the term "Bluff Culture" was used to refer to the period between the Middle Woodland and Mississippian periods (Kelly 1980; Vogel 1975). This term is based on Titterington's (1935) "Jersey Bluff Culture" which he defined for the Lower Illinois River Valley. Due to ceramic similarities between Jersey Bluff assemblages and those observed in the American Bottom (i.e., grit or grog–tempered cordmarked bowls and jars with lip impressions), the post–Middle Woodland and pre-Mississippian occupations in both regions were referred to as Bluff Culture (Vogel 1975).

Wittry and Vogel (1962) divided the Bluff Culture into three phases (Early, Middle, and Late) based on ceramic differences including temper, surface treatment, and decoration. Generally, the Early Bluff vessels were grit or grog–tempered and cordmarked. The Middle Bluff phase witnessed the introduction of limestone temper as well as red–slipped or plain surfaces to ceramic assemblages. Late Bluff vessels included shell–tempered jars, smooth surfaces, and decorated rims (Kelly

1980). Munson (1971) and Harn (1971) simplified the Bluff period into Early and Late based on data from the northern American Bottom as well as Cahokia.

The Old Village and Trappist terms were still in use in Cahokia studies until the first formal Cahokian chronology was created in the early 1970s. In 1971, Melvin Fowler and Robert Hall organized the Cahokia Ceramic Conference (Fowler and Hall 1975). Their goal was to discuss ceramic trends combined with stratigraphic data and radiocarbon dates in order to develop a chronology for the Cahokia site. The participants drew on data from prior excavations as well as their own research in association with several universities and museums.

The outcome of the conference included the definition of seven precolumbian phases tentatively dated to between AD 800–1500 (Figure 2.2). The Patrick phase, formerly known as Early Bluff, is the first in the sequence and referred to the pre-Mississippian Late Woodland occupation (Fowler and Hall 1975; Kelly 1980). Old Village and Trappist were replaced by the Stirling and Moorehead phases, respectively. A late Mississippian phase (Sand Prairie) was added after Moorehead while an early Mississippian phase (Fairmount) was added before Stirling. The Mississippian period was flanked by two unnamed phases, the first was thought to be transitional between Patrick and early Mississippian and the latter was added as a possible Oneota phase.

Joseph O. Vogel, one of the conference participants, proposed a two part division within the early Unnamed phase based on ceramic trends he identified in the assemblages recovered from Tracts 15A and B at Cahokia (Vogel 1975:68-70). He referred to the period between Middle Woodland and Mississippian as Bluff but defined two overlapping phases; Loyd and Merrell. According to Vogel, the Loyd phase is characterized by grit or grog–tempered, cordmarked or plain–cordmarked jars and small single–post structures. In contrast, Merrell phase assemblages exhibit jars with elaborated upper rims, red slip on bowls and jars, plain bowls, limestone–tempered and red–slipped bowls and seed jars (also known as Monks Mound Red), a few shell–tempered jars, and larger single–post structures. Vogel interpreted these ceramic changes as the result of interaction between Late Woodland and Mississippian groups (Vogel 1975:70).

Most mid-century Cahokian researchers thought Mississippian culture was brought to the region fully formed from one of various hypothesized source areas including Mesoamerica, the Caddoan region, or lower Mississippi Valley (Freimuth 1974; Perino 1971; Porter 1969, 1974; Vogel 1964, 1975). Interaction with local Late Woodland peoples through trade was often invoked as the means by which culture was transported (e.g., pochteca traders cited in Porter 1974) and Mississippian became entrenched in the region. This period of interaction and transformation from a Late Woodland way of life to Mississippian was thought to be a long and gradual process of acculturation (see Freimuth 1974; Hall 1975; Porter 1974; Vogel 1975). Those who viewed the Mississippian Transition in this way identified external forces and prolonged interaction as the causes of social change.

Although the external source view dominated discourse during this period, a few researchers proposed that Mississippian developed directly from local Late Woodland groups within the American Bottom (Benchley 1974; Fowler 1974; Gregg 1975; Hall 1966). Factors including a reliance on agriculture, increased population, resource competition, and risk management were thought to have resulted in a ranked society where status was marked by the construction of mounds and access to exotic resources. External factors including trade and the movement of foreign Mississippian groups into the area (referred to as “later arrivals” by Hall [1975:18]) were at times acknowledged but in situ evolution was given explanatory preference (Benchley 1974).

John Kelly (1980:170) proposed an “integration model” that combined the external source and in situ evolution hypotheses for the appearance of Mississippian society in the American Bottom region. He expanded upon Vogel’s two phases based on his analysis of features and artifacts from the Merrell Tract excavations at Cahokia (Kelly 1980). He suggested the earliest phase in his sequence (subphase 1) was equivalent to Vogel’s Loyd phase which was represented by grit or grog–tempered cordmarked vessels that lacked lip impressions. Subphase 2 was roughly equivalent to Vogel’s Merrell phase with jars that included lip impressions but lacked classic Monks Mound Red vessels. Subphase 3 would have been subsumed under Vogel’s Merrell phase but Kelly suggested it was equivalent to the early part of the Fairmount phase. Subphase 3 assemblages were more diverse and included a proliferation in red–slipped vessels. Kelly considered the Late Fairmount phase as more Mississippian–like due to the large proportion of vessels that exhibited shell temper (Kelly 1980).

In his integration model, Kelly cited population increase and sedentism that began as early as the Middle Woodland period as the initiation of the changes that ultimately resulted in the development of Mississippian society. He postulated that population increase was the result of agricultural intensification and use of native starchy seeds as a major food source. Changes in pottery that had to occur in order to make gruel for feeding infants resulted in shorter birth spacing and increased population. The addition of maize as a superior food crop (greater yield and storage potential) encouraged further population growth and sedentism. The reliance on agriculture resulted in compact settlements and the management of land and other differentially distributed resources. He assumed that this situation led to increased competition over resources including land. Social stratification (as evidenced by site layout and community organization) developed as individuals or kin groups began to manage these resources and their distribution in order to minimize conflict (Kelly 1980, 1990a). He incorporated external sources of change in the form of interaction and trade throughout the Mississippi valley. He viewed Cahokia as a "gateway center" where elites lived and were able to control the movement of goods due to Cahokia's strategic location near the confluence of major rivers (Kelly 1991:61).

The 1970s through the 1980s witnessed a boom in archaeological fieldwork throughout the American Bottom. Large–scale excavations conducted prior to highway construction provided a vast amount of new data, particularly from outside Cahokia proper. The FAI–270 project completed in conjunction with the Illinois Archaeological Survey (IAS), Federal Highway Administration, National Park Service, the Illinois Department of Transportation (IDOT), and the University of Illinois resulted in the collection of data through a wide swath of the American Bottom and bluff edge (Bareis and Porter 1984:xiii).

Two of the four initial goals set forth by the organizers have direct bearing on the current project: to delineate Late Woodland and Mississippian community plans and what they represent in terms of changing complexity, and what Mississippian occupations looked like outside of Cahokia and how they related to the changes seen at Cahokia (Bareis and Porter 1984). In order to address these questions changes in methodology were emplaced. Sampling at the regional scale was considered insufficient. The organizers deemed it necessary to excavate the entire site area within the project limits and to collect all associated materials; what they termed a "total site recovery plan" (Bareis and Porter 1984:9).

As a result of the extensive and intensive investigations conducted as part of the FAI–270 project, archaeologists were able to refine the Cahokia chronology and expand upon it to include the entire American Bottom region as a whole (Figure 2.2). Major differences include the re-naming and division of the Fairmount phase with the last third named the Lohmann phase (AD 1000–1050), the first Mississippian phase. The Stirling and Moorehead phases were unaltered but the Sand Prairie phase was reduced to approximately 150 years (AD 1250–1400). The later Unnamed phase was pushed 100 years earlier (AD 1400–1600) and named the Vulcan phase of the Oneota period.

The early Unnamed phase that was thought to be a transitional Late Woodland–Mississippian phase underwent the most dramatic transformation. The newly defined Emergent Mississippian period included what previously would have been classified as Late Bluff, the early Unnamed phase, or the early portion of the Fairmount phase. This period was thought to span approximately 200 years (AD

800–1000) and referred to the time between the pure Late Woodland Patrick phase and subsequent Mississippian period (Fowler and Hall 1975; Kelly et al. 1984; Wittry and Vogel 1962; Vogel 1975). Kelly and colleagues decided to name the period Emergent Mississippian because of the presence of some traits considered diagnostic of the Mississippian period at pre-Mississippian sites. It was assumed that the development of Mississippian society at Cahokia was a culmination of trends begun during this earlier period (Kelly et al. 1984).

The first formal description of the Emergent Mississippian was published in 1984 as a chapter in Bareis and Porter's edited volume, *American Bottom Archaeology*. The authors, led by John Kelly, built upon prior work conducted at Cahokia and at a handful of outlying sites in Madison, St. Clair, and Monroe counties excavated as part of the FAI–270 project, particularly the Range site (Kelly et al. 1984). They defined separate phases for the northern and southern American Bottom (three in the north and four in the south) based on ceramic differences. A fourth Emergent Mississippian phase (Collinsville) was added in 1991 and represented the early half of the Loyd phase in the northern American Bottom (Fortier et al. 1991).

A possible fifth phase (Sponemann) was proposed for the northern American Bottom between the Late Woodland and early Emergent Mississippian periods (Fortier and Jackson 2000; Fortier et al. 1991). Sponemann pottery includes Patrick–like vessels as well as jars with castellated rims and chert temper that are similar to those found outside of the American Bottom region to the north (Fortier and Jackson 2000). Because of this similarity, Fortier and Jackson suggested

Sponemann phase occupations represent the migration of northern groups into the American Bottom near the end of the Patrick phase. Although lithic assemblages and some ceramic vessels are identical to Patrick phase examples, the presence of Z-twist cordmarking on pots, higher maize ubiquity at some sites, and cooking–jar rims decorated with plain dowel impressions suggested a relationship to later Emergent Mississippian assemblages. To date there is no evidence for a Sponemann phase occupation south of the Cahokia site.

The primary distinction made by Kelly and colleagues (1984) between the northern and southern regions was a difference in pottery tempering agents. Emergent Mississippian (also known as Late Bluff) vessels from the northern area are tempered with grog or grit while the vast majority of vessels from the southern region are tempered with limestone. They defined two ceramic traditions based on these distinctions: Late Bluff in the north and Pulcher in the south. The latter is named after the largest mound center in the southern region.

Kelly identified a possible boundary between the north and south at the Goose Lake meander near Prairie du Pont Creek (see Figure 2.1; Kelly 1990a, 2002). This was a relatively wide, swampy area that would hinder travel across it. The concurrent phases within each region were delineated mostly based on different proportions of vessel types although ceramic innovations including new vessel forms (e.g., stumpware, seed jars), surface treatments (e.g., red slip), and decoration (e.g., punctates, extruded and notched rims) were also cited as criteria used to differentiate phases (see Table 2.2 for a comparison of each phase).

The use of limestone temper continues into the early Mississippian period in the southern American Bottom although vessel morphology, architecture, and site structure are largely similar to Mississippian occupations in the northern American Bottom (Finney 1985; Hanenberger 2003). Kelly (1990a, 2002, 2006) viewed and still views the differences as a continuation of the traditions delineated for the Emergent Mississippian period leading him to assign a different name to the earliest Mississippian phase in the southern American Bottom, namely the Lindhorst phase.

The initial observations after the FAI–270 project indicated the transition from Late Woodland to Mississippian was a slow and gradual process that occurred throughout the Emergent Mississippian period, at that time thought to span 200 years (Emerson and Jackson 1985; Kelly 1985; Kelly et al. 1984; Milner 1985). For instance, Emerson and Jackson (1985) stated that;

> ". . . the Emergent Mississippian period (800–1000 AD) . . . involves the incorporation of a number of diverse traits, influences from extralocal groups, and transformations of the social, political, and religious organization of the indigenous Late Woodland peoples to create a totally new system that we recognize as Middle Mississippian . . ." (177).

The terminology itself also presupposes gradual change. In fact, Andrew Fortier and Dale McElrath (2002) critically evaluated the Emergent Mississippian concept by focusing on six criteria expounded by John Kelly as evidence of a gradual *in situ* model of Mississippian emergence. These included increased community size and complexity, population increase, increased interaction and trade, increased reliance on maize, material culture changes that were progressive and interrelated, and an increase in the complexity of political, social, and ritual life (Fortier and McElrath 2002:183).

On all accounts Fortier and McElrath revealed archaeological and documentary data that contradicted or called into question the idea of gradual directional change that resulted in Mississippian society. They indicated that the period between the Patrick phase and Mississippian Lohmann phase was characterized by a great deal of diversity and *non-directional* change in terms of site layout, site size, population fluctuations, and only limited evidence for trade and exotic goods. Although reliance on maize did increase, the crop did not become a dominant staple until the Mississippian period. Since the process of becoming Mississippian did not appear to be gradual but abrupt, Fortier and McElrath proposed the term Terminal Late Woodland to define the period and avoid evolutionary connotations associated with the Emergent Mississippian terminology.

In 2006, Fortier, Emerson, and McElrath replaced Emergent Mississippian with Terminal Late Woodland in the revised American Bottom chronology based on this reanalysis of the archaeological evidence and calibrated radiocarbon dates (Figure 2.2). The calibrated dates indicated that the Terminal Late Woodland period is 50 years shorter than previously thought, dating from approximately AD 900 to 1050. They maintained the regional distinction as well as the eight subphases in the chronological chart but with a few major modifications.

The first major difference in the chronological chart was the division of the Terminal Late Woodland period into two halves (Terminal Late Woodland I and II) because of readily identifiable ceramic differences between early and late Terminal Late Woodland ceramic assemblages, namely elaborated jar rims and red–slipping in later assemblages. They cite the high degree of spatial variability and diversity of ceramic assemblages and the sheer number of phases for such a short span of time as reasons for the simplification. George Holley and colleagues (2001a) employed a similar approach in their investigations of Emergent Mississippian occupations in the Scott Joint–Use Archaeological Research Project. In their analyses, they split the period into early (EM I) and late (EM II) phases based on similar ceramic criteria. They also indicated that the EM I and EM II occupations in the uplands appeared to parallel those in the floodplain in terms of settlement types, structure types, and pottery styles (Holley et al. 2001a).

The second difference is the lack of labels indicating a distinction between the north and south. The early phases were listed together within Terminal Late Woodland I and the later phases within Terminal Late Woodland II. Fortier and colleagues (2006) combined the north and south within Terminal Late Woodland I and II because although tempering agents differ, they assert vessel forms, subsistence practices, and site layout are largely similar at both northern and southern Terminal Late Woodland sites.

Other developments in terms of refining the regional chronology included focusing on specific locales and documenting varying rates of change within the region. Timothy Pauketat (1998a) provided a location–specific chronology for Cahokia's Tract 15A and Dunham Tract located west of Monk's Mound. Pauketat divided the Terminal Late Woodland and Lohmann phases into three subphases each based on a seriation using percentage of body sherd weight (1994; 1998). The Terminal Late Woodland subphases roughly corresponded to the late Loyd, late Merrell to early Edelhardt, and late Edelhardt phases. The resultant refined chronology for a single locale within the Cahokia site is a demonstration of the utility of resisting equating chronological phases with static cultures or traditions and acknowledging ceramic and cultural diversity, particularly on a regional scale.

Several sites with early Mississippian occupations as well as a few with Terminal Late Woodland occupations were investigated in the interior uplands through the Richland Archaeological Project, also directed by Pauketat. The results of the fieldwork and subsequent analyses indicated that although the sites were occupied during the early Mississippian period, they exhibited a great deal of diversity in terms of ceramic assemblages, lithic assemblages, site layout, and house construction techniques (Alt 2001, 2002, 2006b; Pauketat 2003; Wilson 1998). Although these sites were occupied concurrently, the assemblages did not correspond exactly to what was expected based on the established regional chronology. These investigations provided evidence for the presence of foreign families, Cahokian administrators, and possibly resistant local groups as well as the documentation of differing rates of cultural change that further contributed to cultural pluralism in the region (Alt 2001, 2002, 2006a, b; Pauketat 2003, Wilson 1998).

In the early attempts at constructing a Cahokia chronology, researchers tended to equate phases with cultures following the culture historical framework. With this view, it was logical to search for evidence of the wholesale transportation of Mississippian "culture" into the region. With the combination of new archaeological data and shifts in theoretical perspectives during the 1960s and 1970s, American Bottom archaeologists sought to identify causation within cultural systems. Researchers during this period attempted to identify why Mississippian culture "evolved" within the region by identifying antecedent groups from which Mississippian culture emerged as well as environmental differences or changes that may have been the root cause of culture change. In both perspectives, culture change is considered the result of outside factors, be they other "cultures" or environmental conditions.

Both approaches neglect to take into account historical processes or the roles of people and communities as agents of social change. Recent theoretical developments since the 1990s placed history and agency to the fore and allowed for diversity and varying rates of change in specific locales. With this new perspective, it is possible to use chronologies to situate data while simultaneously identifying diversity, resistance, and the construction and maintenance of local community identities within the region.

TIMING THE MISSISSIPPIAN TRANSITION

Although there is general agreement today that Mississippian has its roots in local Late Woodland populations, American Bottom researchers continue to disagree about the impetus and rates of change. In the following section I describe and critique these opposing views concerning the timing of the Mississippian Transition. I conclude with a brief introduction to the theoretical and methodological approaches I employ in order to delimit the varying rates of change and investigate the mechanisms by which culture change occurred during the Mississippian Transition.

Several researchers continue to view the rise of Cahokia and the development of Mississippian society in the American Bottom as a gradual evolutionary process (Kelly 1980, 1990a, 1990b, 2002; Milner 1990, 1991, 1996, 2006; Milner and Schroeder 1999; Muller and Stephens 1991; Schroeder 1997; Smith 2007). As previously mentioned, early American Bottom Mississippianists assumed Mississippian culture was transported from a heartland, possibly by traders who then interacted with local Late Woodland populations. When it became clear that Mississippian culture was not an external phenomenon but locally derived, researchers began to look for evidence of a gradual evolution of Mississippian society within the American Bottom.

Those who interpreted the archaeological data within a neoevolutionary framework reasoned that because Cahokia was a complex chiefdom and Mississippian culture developed from local populations, then there must have been a long term, gradual evolution of complex society from smaller (simple) chiefdoms (Kelly 1990a; Smith 2007). Therefore, the groups that occupied the American Bottom during the period immediately preceding the Mississippian period (i.e., Terminal Late Woodland) must have been organized as simple chiefdoms (see Smith 2007; Milner 2006). For example, Smith (2007:xxii) believes that researchers have begun to focus on how complex chiefdoms arose as opposed to how "tribal societies" became simple chiefdoms. Working within the framework of neo-evolutionary theory, he refers to Cahokia as a complex chiefdom and *assumes* there must have been earlier, smaller, simple chiefdoms from which it developed.

Gradualists also suggest that Mississippian period sites with mounds and plazas other than Cahokia were independent chiefdoms with elites who would interact with Cahokian elites only on religious occasions (Kelly 2002; Milner 2006). For instance, John Kelly states the following in reference to the relationship between what he considers a complex chiefdom at Cahokia and a simple chiefdom located to the south at Pulcher;

> ". . . Pulcher remained on the edge of the Cahokia sphere, yet was a willing participant in the ritual activities occurring in the centers to the north, including Cahokia's Grand Plaza" (Kelly 2002:137).

Although he considers them to be independent political units, he infers that elites at other sites would periodically mobilize labor and goods for use at Cahokia when asked as long as they were compensated with exotic goods or status objects (Kelly 2002).

The criteria cited as preconditions necessary for the evolution of complex society often revolve around environmental conditions in combination with intensification of agriculture and population growth. This process would necessarily take a long time because it depends on the gradual increase in population and increased dependence on agricultural production. George Milner (2006) and Sissel Schroeder (1997) provide a variant on the differential distribution of resources as a causal factor in the development of Mississippian society in the American Bottom. They compared the size and distribution of mound centers with the distribution of floodplain resources (i.e., dry land, aquatic resources) using a geographic information system (GIS). They concluded that mound centers were established in areas with a diverse range of resources within one kilometer which allowed for lengthy occupations with the least chance of shortfall in lean years. They suggested the size of a mound site (defined as those with the most mounds) is the result of the length of time a site was occupied which is predicated on the distribution of resources. While purporting to utilize an integrative approach that includes history of site occupation, they exclude excavation data and prioritize environmental factors. For example, Schroeder states:

". . . it was possible to *control for* the natural environment with any *residual* patterns in the data accounted for by political and social factors" (Schroeder 1997:18, emphasis added).

Related to the differential distribution of resources is evidence for trade and external contacts as indicated by the presence of exotic goods and raw materials. Kelly interprets the distribution of extraregional objects and materials during the Terminal Late Woodland as evidence for increased interaction outside the American Bottom (Kelly 1990a, 1991). He reasons that Cahokia became the center of American Bottom Mississippian society because of its location near the confluence of the Mississippi, Missouri, and Illinois rivers. Other mound centers, including those in the southern American Bottom, were located near particular resources and on or near important rivers and streams that could have been used to transport goods and other resources between the Ozarks of Missouri and the uplands to the east (Kelly 1990a, 1991).

Mississippian settlement patterns, in particular the dispersed farmsteads located on floodplain ridges, have been interpreted as an agriculturally based adaptation to floodplain and riverine environments (Mehrer 1995; Milner 2006; Muller and Stephens 1991). Those who support this interpretation suggest it evolved in the Cahokia area because of population increase, a decrease in violence, changes in the distribution of power, or all of the above. For instance, Muller and Stephens (1991:300) indicate;

> "Mississippian was primarily an adaptive response to floodplain environments based on a combination of particular natural and sociocultural conditions [that] included sedentism, relatively high population density in critical floodplain environments, a degree of social and environmental circumscription, a localized mode of production, and the development of hierarchical sociopolitical organization."

The proponents of a gradual, evolutionary development of Mississippian society are to be commended for providing important data concerning the differential distribution of natural resources and land with high agricultural productiveness. However, when they privilege the environment as a causal factor for social change over the agency of past people and their relationships with each other, they ultimately deny these people an active role in culture–construction and their own history.

Since the 1980s, new data from excavations outside Cahokia, analyses of collections from large scale excavations at Cahokia during the 1960s and 1970s, and theoretical shifts caused some researchers to question the gradual, evolutionary explanations for the development of Mississippian society in the American Bottom region (see Fortier and McElrath 2002; Pauketat 1994, 1998a; Pauketat and Emerson 1999; Emerson 1997a). They began to view the Mississippian Transition as a historical process rather than evolutionary response. This change in viewpoint stems from not only the additional data, but theoretical shifts that considered past people as active agents in the historical processes of social change.

Pauketat has been the most vocal proponent for a historical perspective and the rapid transformation associated with the beginning of the Mississippian period (Pauketat 1994, 1997, 1998a, 2000a,b, 2002, 2003, 2004). Through his analyses of large–scale excavations at Cahokia and his investigations in the Richland Complex in the uplands, Pauketat and his colleagues have documented changes in material culture, architecture styles, and scale of mound and plaza construction at Cahokia and at rural villages that indicate a more rapid transition at the onset of the Mississippian period, virtually overnight in archaeological terms (Alt 2006a; Fortier et al. 2006; Fortier et al. 2006; Fortier and McElrath 2002; Pauketat 1994, 1997, 2000a, 2002, 2003, 2004; Pauketat and Emerson 1992, 1997, 2008).

These well–documented changes include new construction techniques, the appearance of specialized architectural forms, the intensification of monumental construction, the reorganization of site layout, changes in pottery production (forms, temper, surface treatments), greater quantities of exotic chert and mineral resources; new tool types and forms (e.g., microdrills, hoes, and celts), and evidence for large–scale feasting as well as the abandonment or establishment of entire sites (Collins 1990; Dalan et al. 2003; Emerson 1997a; Holley 1989; Pauketat 1998a,b; Pauketat et al. 1998). The fact that these changes occurred over a wide expanse of the northern American Bottom floodplain and uplands at nearly the same time points to a region–wide change in community and identity at the local level as well as regional level. These changes are presumably associated with the founding of a sociopolitical and religious center at Cahokia (Emerson 1997a, b; Milner 2006; Pauketat 2003, 2004).

This historical perspective places local and non-local pre-Mississippian people at the forefront in terms of the creation of Cahokia as a sociopolitical and religious center within the region. Although those who advocate a gradual evolution of Mississippian society claim to take history into account, they use history as a synonym for the duration of site occupation. For example, Schroeder (2004) advocates starting

> ". . . with the ecology, the locality of settlements small and large, and the particular history of places . . ." but goes on to state simply that " . . . persistent places became prominent places" (822–824).

In contrast, those who view the transition as a historical process are interested in how it happened through the actions and interactions of individuals with each other and their surroundings and the historical repercussions of those actions rather than simply how long a site was occupied.

THE STATUS OF MISSISSIPPIAN TRANSITION STUDIES TODAY

In order to address the timing of the Mississippian Transition, it is necessary to investigate both pre-Mississippian and early Mississippian sites throughout the American Bottom region. Although several early Mississippian sites have been excavated (including villages, mound centers, and farmsteads), much less data have been generated on the period immediately preceding the Lohmann phase (i.e., TLW2). There are a few instances where the transition is clear in terms of occupation history and site layout. For example, the Range site Lindeman phase occupation was virtually abandoned and supplanted by a series of small Lohmann phase farmsteads (Hanenberger 2003; Kelly et al. 2007). To date, most research concerning the Terminal Late Woodland period has been focused on fitting the data to the existing chronology in order to determine the phase in which the site was occupied. However, the changes in the chronology and the documented diversity throughout the period suggest that equating specific characteristics at a site with a particular phase is insufficient (Fortier et al. 2006; Fortier and McElrath 2002).

Also lacking in this research are comprehensive large–scale comparisons at the regional level. A large scale comparison of site layout, architectural methods, occupational history, and material remains will greatly aid in the identification of patterns and the delineation of diversity within the region at the site level. A comparison such as this will provide data with direct implications for addressing whether or not it is useful to consider the northern and southern American Bottom as separate cultural units as well as the pace of the Mississippian Transition. By looking at these issues at the level of individual sites within the overall region we should be able to determine whether the residents of the southern American Bottom were willing participants in the Mississippian social and political sphere centered at Cahokia or maintained distinct identities in the face of such drastic change. In all likelihood, it was probably a mixture of both.

There also remains the possibility that not all groups accepted such changes at the same time. While alterations in daily life appear drastically at the beginning of the Mississippian period in the northern American Bottom floodplain, there is also evidence for the continued use of single–post construction with houses arranged in courtyard groups similar to those from the late Terminal Late Woodland period that have been documented in the uplands east of Cahokia. However, Cahokia–style

Mississippian vessels are also present in the assemblages at these sites which suggests regional interaction and membership in Mississippian society while actively maintaining local or "traditional" identities and social relations in daily interactions (Alt 2006a; Pauketat 2003, Wilson 1998).

Other complications include variations in atmospheric carbon during the short 150 year time span (AD 900–1050) of the Terminal Late Woodland period that can result in erroneous radiocarbon dates (Blakeslee 1983; Hall 2000). The vast difference in the quantity of dates obtained from features identified as dating to different phases of the Terminal Late Woodland period based on artifact assemblages further compounds the problem (Fortier et al. 2006). For example, of the 39 dates obtained from Terminal Late Woodland contexts, only 12 (31%) are from the latter half of the period (see Fortier et al. 2006, Figure 10). The short time period may render radiocarbon dates ineffective as well because the duration of phases (approximately 35 years) is beyond the current capabilities of chronometric dating techniques (Fortier and Jackson 2000). The mixing of materials at multi-component sites used to define phases and the continued use of single–post construction, limestone temper, and red slip in early Mississippian occupations at southern sites further muddies the picture (Hanenberger 2003; Kelly et al. 2007).

In this analysis, I will use the most recently published chronology and terminology with respect to occupations in the southern American Bottom while addressing place–based community construction and documenting the pace of change south of Cahokia. When discussing the American Bottom region as a whole or comparing between sub-regions, I will use Terminal Late Woodland I (TLW1 or early TLW) and II (TLW 2 or late TLW) instead of Emergent Mississippian. I will also use Lohmann phase instead of Lindhorst phase because of the convincing argument Fortier and McElrath (2002) proposed in their reassessment of this distinction. However, when the feature data and material culture from specific components at individual sites are consistent with that defined for specific subphases, I will refer to the subphase name (e.g., Lindeman or Edelhardt) in order to identify site–specific changes over time. I take this approach because of the great deal of diversity throughout the region in the time between the Patrick phase and the Mississippian period. This approach allows for comparison on the regional scale and the documentation of change on the local scale.

In order to fully investigate the timing and extent of the Mississippian Transition, it is necessary to approach the topic from multiple perspectives and scales. In this analysis I employ a spatial perspective because lived space is relatively easy to access archaeologically through mapping and excavation. Also, changes in lived space, especially on a regional scale, suggest dramatic changes in society including community identities, political organization, social relations, and ideology. In order access changes in space and hence changes associated with the initiation of a Mississippian political and social formation in the American Bottom I employ multiple lines of evidence to identify architectural styles, the (re)organization of space as seen in site layout and occupation history, and ceramic and lithic production and consumption at individual sites. The methods used to access these data include GIS, geophysical survey, feature excavation, and artifact analyses. Through this research, it is possible to identify how Cahokia came to be a sociopolitical center on a regional scale through the severing of local ties and construction of a large–scale community within the region. In the next chapter, I discuss the theoretical underpinnings of this research and the principles that guide the interpretations of the data that follow.

FIGURES

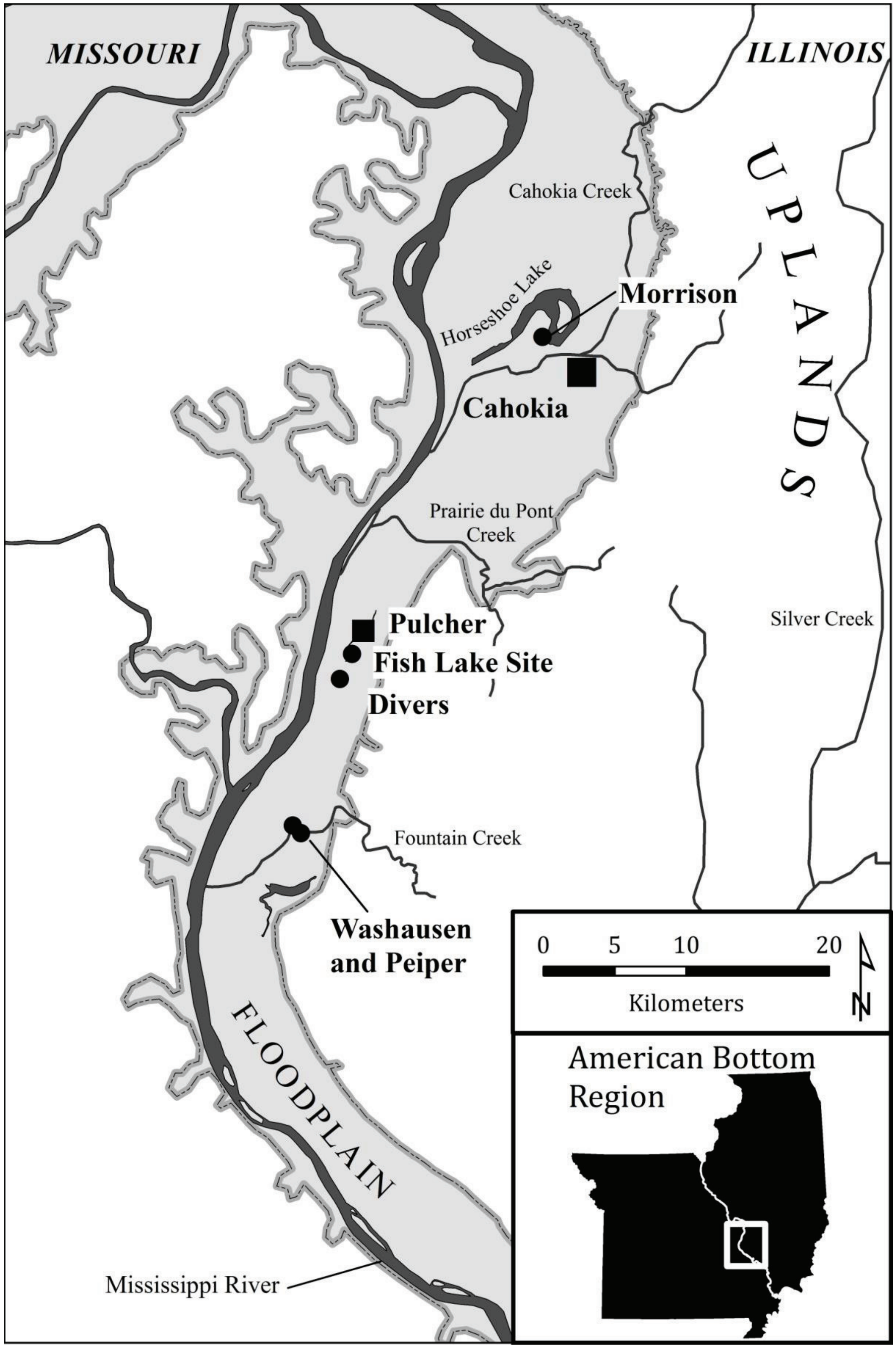
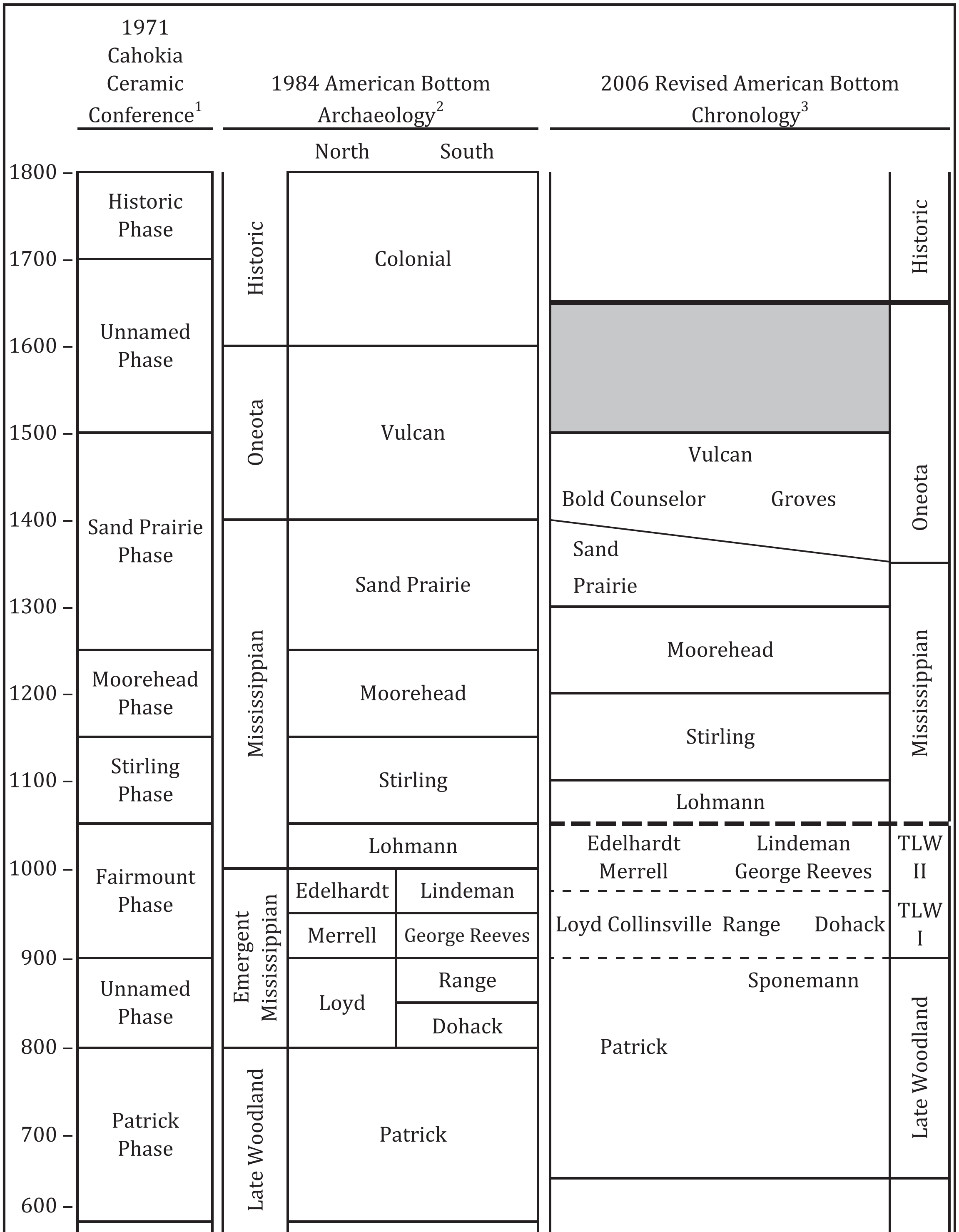


Figure 2.1. American Bottom Region and Locations of Sites in the Study.



1 Adapted from Fowler and Hall 1975 Figure 1; Cahokia data only

2 Adapted from Bareis and Porter 1984 Figure 3; Cahokia data and FAI-270 data used

3 Adapted from Fortier, Emerson, and McElrath 2006 Figure 3; Cahokia data, FAI-270 data, and subsequent research used

Figure 2.2. Comparison of Chronological Charts for Cahokia and the American Bottom Region.

TABLES

Table 2.1. American Bottom Geographic Zones and Resources (after White et al. 1984).

	Floodplain	Uplands
Zones	river edge; floodplain forest; lake, slough, and pond; bottomland prairie; oak-hickory	talus and alluvial fans, bluff edge, interior uplands
Lithics	river cobbles and minerals sandstone	limestone, chert, salt, glacial till, limonite
Clays	montmorillonite clays, gumbo	North = Shales; clays in streambeds
Flora	willow, cottonwood, maple, box-elder, elm, hackberry, pecan, ash, oak, sycamore, mulberry, black walnut, persimmon, honey locust; bushes; cattail, American lotus, sweet potato; sedges, grasses, knotweed, pokeweed, wild bean; herbs; grapes	oak, hickory, basswood, elm, ash, sugar maple, pawpaw, black walnut, hackberry, butternut, persimmon, mulberry, cherry, red cedar; herbs; prickly pear (in glades); shrubs, grasses, forbs (prairie); hickory, acorn nuts
Fauna	migratory birds (duck, geese, swan, heron, crane, bittern, egret, rail, gallinule); catfish, sunfish, gar, bowfin; deer, raccoon, wolf, fox, bear, bobcat, squirrel, skunk, opossum, turkey, rodents, beaver, mink, muskrat, river otter; frogs, turtles, mussels; badger, coyote, wolf, squirrel, gopher, prairie chicken, turtle; rabbit, squirrel, woodchuck, weasel, quail, passerines, raptors	forest = migratory birds; deer, raccoon, wolf, fox, bear, bobcat, squirrel, skunk, opossum, turkey, rodents; prairie = badger, coyote, wolf, squirrel, gopher, prairie chicken, turtle;rabbit, squirrel, woodchuck, weasel, quail, passerines, raptors

Table 2.2. Terminal Late Woodland Phase Comparison.

	Northern American Bottom Late Bluff Tradition			
Phase	Collinsville AD 800-850	Loyd AD 850-900	Merrell AD 900-950	Edelhardt AD 950-1000
Ceramics				
Temper	GG or GT	GG or GT	GG, GT, some LS, SH	GG, GT, SH, LS
Clay	upland	MCS	some MCS	some MCS
Surface	PL-CM CM	PL-CM CM	PL CM Red wash PL-CM	PL CM PL-CM RS
Decoration	interior lip impressions	lugs lip exterior	appliques ext. lip notches punctates suspension holes	appliques, notched lips; red slip punctates suspension holes
Innovations	PL-CM Bluff jar	stumpware	seed jars hooded bottles Cahokia Red Filmed	thickened or appliqued lips often notched; red slipped GG or GT jars and bowls
Non-local		Pulcher Tradition vessels	early MMR	MMR
Exotic Items		Cahokia only	SH seed jars and hooded bottles	Coles Creek vessels at Cahokia
Lithics	Burlington	Burlington Mill Creek	Burlington Mill Creek Ste. Genevieve	Burlington Mill Creek less Ste. Genevieve
Settlements	homestead, hamlet	homestead, hamlet village*	hamlets village*	hamlets village* mounds**
Structures	single post in basin	single post in basin square	single post in basin rectangular rare L-shaped	single post in basin rectangular small storage courtyards

GG = grog; GT = grit; LS = limestone; SH = shell; int. = interior; ext. = exterior; sup. = superior; MCS = Madison County shale; PL = plain; CM = cordmarked; RS = red-slipped; MMR = Monks Mound Red

* only present at Cahokia and/or Range sites ** only verified at Morrison site

Figure 2.2, continued. Terminal Late Woodland Phase Comparison.

	Southern American Bottom Pulcher Tradition			
Phase	Dohack AD 800-850	Range AD 850-900	George Reeves AD 900-950	Lindeman AD 950-1000
Ceramics				
Temper	LS some GG and GT	LS some GG and GT	LS some GG, GT, SH	LS some GG, GT, SH
Clay		some MCS	some MCS	some MCS
Surface	CM	CM PL-CM (<50% jars)	PL-CM CM Red wash PL	PL PL-CM RS
Decoration	PL dowel int. lip impressions	PL dowel impressions on lip int., ext., or sup. lugs on lip ext.	lip lugs, notched ext. lip punctates suspension holes	lugs lip ext. lip depressions punctates suspension holes
Innovations	limestone temper	stumpware	bottles, RS (wash)	MMR bowls and seed jars
Non-local		Late Bluff Tradition vessels	Late Bluff vessels SH vessels	Late Bluff vessels
Exotic Items	Range only	Range only		SH vessels hooded water bottles
Lithics	Burlington Mill Creek Ste. Genevieve	Burlington Ste. Genevieve Mill Creek	Burlington Mill Creek	more Burlington Mill Creek
Settlements	homestead, hamlet village* courtyards, central features	hamlets* village* courtyards, central features	hamlets, village* central plaza courtyards	farmsteads, hamlets, village* central plaza courtyards possible mounds
Structures	single post in basin small, square, deep basin	single post in basin small, square, deep basin	single post in basin rectangular large single post*	single post in basin possible wall trench rectangular

CHAPTER 3
SPACE, IDENTITY, AND POLITICS IN ARCHAEOLOGY

Developments within social archaeological theory indicate that there are connections between space, identity, and sociopolitical change. These developments include the recognition that space and identity are social constructions that are open to negotiation and manipulation. Also, in contrast to traditional views that treat landscapes as the static backdrop within which action occurs, landscapes are increasingly treated as social constructions that can influence change. These changes in approach to space and identity place the interrelationships among human and non-human agents as opposed to environmental factors as motivators of sociopolitical change. These developments stem from more general theoretical positions (agency theory and practice theory) that acknowledge the roles that past people played in their own histories and that identities, communities, and political formations are continually forming and never static.

In this chapter, I will discuss these theoretical developments within the context of American Bottom archaeology with particular focus on the Mississippian Transition. I will begin by demonstrating how identities (personhood and community identities in particular) are formed and negotiated. I then discuss the relationships between spatial organization and the construction and renegotiation of identity at multiple scales and how they are implicated in sociopolitical change. I conclude with examples demonstrating these connections and a discussion of how this relates to the Mississippian Transition in the American Bottom region.

AGENCY, PRACTICE, AND POLITICS

Agency theory first entered archaeological discourse with post-processualists who drew from the work of Bourdieu (1977) and Giddens (1984) in their attempts to shift the focus of archaeological research from cultural systems to the actual people who in lived in the past who contributed to culture construction (Dobres and Robb 2000). Bourdieu's concepts of *doxa* (the largely unquestioned world order) and *habitus* (routines of daily life or dispositions) draw attention to the dialectical relationship between people (agents) and the social order that exists outside of conscious thought and their direct control as enacted through daily activities within lived space. Similarly, Giddens indicates that people unintentionally create structures through their actions in an ongoing process that is never complete. The application of these concepts in archaeological research has resulted in placing past agents (or subjects) as the impetus for culture construction and changes in sociopolitical order. All people, past and present, have agency (Ortner 2001). These agents are complex subjects created through the relationships and interactions between people, their surroundings, and their historically constructed world (Ortner 2001; Pauketat 2000b, 2001). As such, agency (and agents) is inextricably linked to power through the interrelationships between all subjects, groups, and classes involved in sociopolitical dynamics, including commoners (Pauketat 2000b).

Practice theory is related to agency in that practices are the activities that agents perform, or what Pauketat refers to as "the phenomenon at the *intersection* of thought and action" (Pauketat 2000b:115, emphasis added). Practice is historically contingent and continuously constructed through the actions and interactions of people, places, and things (Pauketat 2000b). Practice is linked to social order and *doxa* through a dialectical relationship whereby *doxa* constrains or enables certain practices while the enactment of those practices reinforces or alters *doxa*. By examining the material remains associated with such actions in the past (including pottery, architecture, spatial organization, etc.) archaeologists are able to trace continuity or changes in practice, and hence sociopolitical order, in a historical context (as well as spatial). These changes may at times be intentional (as in the case of revolutions) although unintended consequences of actions can have equally transformative results (Pauketat 2000b, 2001; Pauketat and Alt 2005).

Style is implicated in the construction of identity and communities as well. Style refers to the ways in which people create objects (e.g., houses, pots, personal adornment) and the forms and decorations associated with those objects (Conkey 1990). Style is historically contingent in that the practices involved with the production of objects are learned and are constrained by what is thought of as acceptable in terms of form and decoration (Plog 1990; Sackett 1990; Wiessner 1990). Style can also be active as in cases where people pronounce or assert group membership and distinction from other groups through material culture (DeBoer 1990; Wiessner 1990). In this way, analyses of material culture in terms of style can be informative in identifying social boundaries and changes in community membership over time. The maintenance of styles or the existence of similar styles over a large geographic area may indicate the active promotion of a shared community identity or the inculcation of new members into a community (Pauketat and Emerson 1992). This is particularly effective when such styles include elements of disparate subgroups that are included in the larger community (Pauketat and Emerson 1999). It is important to note that style is not merely a reflection of identity but part of the process of creating identity and community relationships.

Traditions, much like style, are historically contingent and are created and maintained through the practices of people and groups. Traditions are implicated in culture construction and are subject to politicization because they are continuously negotiated at multiple scales (Pauketat 2001). The creation of traditions can serve to promote community membership, legitimate authority, and socialize new members into a group through the repeated enactment of those traditions (Hobsbawm 1983). The maintenance of local traditions in spite of the promotion of new traditions may signify resistance to new sociopolitical orders as well (Alt 2001; Scarry 2001). In the research presented here, I focus on the practices of past people and acknowledge their roles in culture construction and sociopolitical change as mediated through material culture and the built environment.

IDENTITY, COMMUNITY, AND POLITICS

Recent research (stemming from agency and practice theory explicated above) suggests the development of regionally integrated polities is causally related to shifts in community identities at multiple scales (Anderson 1991; Canuto and Yaeger 2000; Clark 2004; Joyce 2004; Joyce and Hendon 2000:144; Pauketat 2000a). Traditionally, archaeologists have equated communities with sites (Johnson 1977; Kolb and Snead 1997; Parsons 1972; Trigger 1967). Communities defined in such a way are treated as bounded units that are internally cohesive and separate from other equivalent units (Yaeger and Canuto 2000). For instance, Kolb and Snead (1997:611) define community as " . . . a minimal, spatially defined locus of human activity that incorporates social reproduction, subsistence production, and self–identification" and suggest starting with the smallest sites in order to investigate communities.

Associated with viewing communities in this way is the tendency to in essence personify sites. It is common in the archaeological literature to refer to sites interacting in some way. For example, John Kelly identified ". . . types of evidence [that] serve to document *Cahokia's* interaction with *its* neighbors . . ." (1991:64, emphasis added). Talking about the past in this way further removes past people from their own history. By treating sites as cohesive, bounded units, it becomes simple to generalize from small samples and hypothesize what the entire "community" did or how they acted. In contrast to traditional conceptions of "community" in archaeology, it is asserted here that community identities are not isomorphic with physically bounded settlements or sites. Multiple communities may exist within a single site while a single community composed of individuals who live in many different locations may exist within a region (Joyce and Hendon 2000:144).

Identity can also be conceived of at the scale of the individual person. Similar to communities, archaeologists have tended to view the people of the past as individual, bounded entities that interacted with others, that is if individuals were considered at all. In general, prior to the 1990s archaeologists were more concerned with identifying cultures or over–arching laws than investigating the lives of those in the past (Fowler 2004). When people were considered, it was often in relation to burials and the possible social roles that person assumed. Conceiving of the individual as a physically bounded person who assumed social roles when interacting with others presupposes that people exist separate from their relationships with other people and their surroundings (Fowler 2004). The focus shifted to the individual in archaeology during the 1990s through post–processual critiques. Fowler notes that during this period individualism was taken to an extreme. He asserts that discussions of individuals were based on modern, western notions of the individual as independent and "indivisible" that were projected into the past (Fowler 2004:5).

Fowler (2004) proposes that persons as social beings are in a constant state of formation in relation to the places in which they live, people with whom they interact, and material items they create, use, exchange, and discard. Personhood is constructed through daily practice, social interactions, in relation to particular places, as well as in contrast to constructed "others" (Casella and Fowler 2004). Personhood is always becoming and is therefore susceptible to manipulation and negotiated daily. The malleability of personhood means it has a historical component as well. By tracing this history in different contexts, archaeologists are able to trace changes in how people interacted which has implications for social and political transformations as well (Brück 2006; Gillespie 2001; Strezewski 2009). Personhood conceived of in this way can also be extended to objects and places. Fowler states that; "Animals and objects and even natural phenomena may be persons; not just *like* people, but actually persons in their own right sharing the same social and technological world" (Fowler 2004:6). This becomes important when considering the built environment and conceptions of the landscape (see below). Similarly, Hastorf (2003) demonstrated that communities during the Formative period in Bolivia were created through ritual performances associated with ancestors. Participation in these performances by the descendents and neighbors of ancestral figures fostered the creation of social memories and community identity.

Much like personhood, communities are social constructions that are context dependent and malleable. Yaeger and Canuto (2000) draw attention to the temporality and spatiality of social *interaction* that create communities. They suggest archaeologists study "instances" of community over time. These instances exist as moments at the intersection of social interaction within a particular space at a particular point in time. Different communities can exist concurrently at multiple scales including those centered on households or kin groups, within neighborhoods, sites, and regions (Casella and Fowler 2004; Fowler 2004; Van Dyke and Alcock 2003; Yaeger and Canuto 2000).

Appeals to collective memories of a shared past (social memory) can be an effective method for the creation of large scale communities (Van Dyke and Alcock 2003). This shared past, be it actual or asserted, can be used to naturalize or legitimate authority. Conversely, shared memories can also be mobilized by the disenfranchised to resist such authority and inequality (Van Dyke and Alcock 2003; Wilson 2010). Related to social memory are the concepts of memorialized, commemorative, and monumental space. Carol Burns (1991) indicates that sites are perceived at multiple scales and have a temporal component. In discussing cleared sites, she asserts the act of clearing is in essence an attempt to conquer, however it is impossible to completely clear a site due to the memories shared by those who previously experienced it. She also indicates that space is inherently political because it is created by people. In Lovell's (1998) discussion of locality and belonging she indicates that people develop a loyalty to particular places through shared experience as well as appeals to history and origins. She suggests the sense of belonging created through such activities is essential to create community identities as well as political claims based on those identities.

For example, Ruth Van Dyke (2004) indicates that differences between Classic and Late Bonito architecture include the construction of great houses over a shorter period of time through the use of a standardized plan which required less labor. However, the great houses referred to the Classic great houses through lines of sight, roads, and the incorporation of cosmographic ideals such as verticality, symmetry, horizontal directions into the design of individual great houses and in the relationships among great houses within the canyon. In one case, the new North–South road was slightly off true north and ended at a new great house not far from a Classic period great house. In this way, Chacoans of the Late Bonito period asserted ties to the past while creating a new ordered landscape. She states that the greater degree of formality and order in the Late Bonito constructions and landscape served to project an image of confidence and stability in a period where conditions were deteriorating as compared to the earlier Classic period. The referencing of Classic Bonito ideals and material representations of those ideals evoked social memory as a way to unite people living in the Late Bonito period.

Gregory Wilson (2010) identifies changes in spatial layout of habitation areas at Moundville as an example of how space, social memory, and identity are related to political formations. During the early Mississippian period, habitation at Moundville is characterized by small groups of structures built using a variety of architectural techniques with limited evidence of reconstruction or formal organization. This period is followed by a large increase in population, more compact settlement areas with standardized architectural methods and formalized spatial layout, and a great deal of reconstruction. In the final Mississippian period, population decreased drastically with residents moving out to rural farmsteads while Moundville became the center of mortuary activities. The placement of cemeteries in formerly residential areas in arrangements comparable to houses suggests to Wilson that the former residents were asserting continuity with prior kin groups possibly in an attempt to validate claims to land inheritance or other privileges associated with belonging to a particular kin group.

The previous discussion indicates that identities at all scales are continually constructed. Because they are in a constant process of formation, they are subject to manipulation and negotiation and hence are political. The changing of identities at various scales and through various means (e.g., appeals to social memory, commemoration) is therefore implicated in polity formation and social change. For instance, interruptions in daily interaction via the relocation of people and their households could result in the severance of local community ties. When this is paired with participation in large–scale events (e.g., feasting or monumental construction), a new sense of belonging to a larger imagined community can be created.

This combination of a disruption in local community ties and the fostering of imagined community identities appears to be essential to the formation of new political orders (Clark 2004; Joyce 2004; Pauketat 2003). However, the historical nature of identity means later identities are based on or created in reference to earlier identities. Therefore the local and familial connections may not be fully erased (e.g., slavery). The remembrance and enactment of past identities can result in cleavage planes along which polities later disintegrate. The same can be said for invented identities. Newly constructed community identities that exist within a larger imagined community (e.g., classes) also create new contentions that may lead to the destruction of a sociopolitical entity.

SPACE, IDENTITY, AND POLITICS

Identities are also constructed in relation to the spaces people experience. Although space has been an integral part of archaeological research since the field's inception, most researchers consider space as a given, ". . . the physical setting within which everything occurs" (Preucel and Meskell 2007). In other words, space exists separate from (and prior to) human action but also contains all human action. In this sense, space as object can be quantified, classified, and controlled but cannot be destroyed or altered (Preucel and Meskell 2007; Thomas 1999).

Recently, archaeologists have begun to view space as a socially constructed phenomenon that actively influences how people and communities are formed and transformed (see Ashmore and Knapp 2003; Bradley 2002; Buikstra and Charles 2003; Pauketat and Alt 2003, 2005; Thomas 1999). In their introduction to a volume of the Journal of Social Archaeology dedicated to spatiality, Robin and Rothschild (2002) identify a recursive relationship between socially constructed places (and spaces between) that people create (through building, dismantling, rebuilding, site layout, etc.) and how they in return alter or create social realities in which people as members of communities are formed in relation to these places and other people. This is similar to Fowler's conception of personhood stated above.

Similarly, landscapes are increasingly treated as social constructions (Ashmore 2007; Bradley 2002; Ingold 1993; Knapp and Ashmore 2000). People select things (e.g., lithic resources, plants, tempering agents) and modify the environment through construction and destruction thereby creating and changing landscapes. Natural places are also imbued with meaning through stories of what happened there, origin myths, or by referencing them with constructions, for example the Sacred Rock at Machu Picchu that mimics the shape of the mountain behind it (Bradley 2002; Stone-Miller 1995). As Ingold states, "through living in it, the landscape becomes a part of us, just as we are a part of it" (1993:154).

This new conception of space is based in part in postmodern and phenomenological conceptions of space which identify space as socially constructed and intimately involved with power relations as well as societal change. Space is not a benign object but is experienced through daily life and social interaction and can be changed and manipulated, and is therefore political (Foucault 1997a, b; Heidegger 1997; LeFebvre 1991). For example, Foucault indicates that power resides not in individuals themselves, but in the distribution of (or spatial relationship among) bodies, surfaces, and visibility (1997a). According to LeFebvre (1991), space is a social construction that "embodies social [and political] relationships" (p. 27). Spaces are created by the members of each society and so are able to be changed or manipulated. Concomitantly, space is historical because of this ability to change. Therefore, alterations in how societies, communities, and individuals construct space should be visible over time. In this way, space and society are inextricably linked so that in order to effect a change in society, there needs to be a change in space. Even unintended changes is space could lead to changes in society.

The change in definition of space from a static backdrop or environmental setting within which human activities occur to an actively constructed phenomenon that also has a direct affect on how people identify themselves and others is crucial to understanding how changes in space that are visible in archaeological contexts can aid in understanding how polities form. Space is socially constructed through human interactions, building, and clearing even when no physical modifications made by humans exist (Bradley 2002). As Bradley notes, the naming of a place even without physically modifying the location is related to the creation of social memories. Commemorations including the telling of stories about particular locales can keep the memory of that place alive. In cases such as these, memories are more susceptible to manipulation because the stories are not constrained by the material world but by the memories of others.

The landscape is yet another way in which people orient themselves in the world through mapping places as well as how it is experienced through the human body. Phenomenological approaches to archaeological landscape studies advocated by Julian Thomas (1999, 2001) and Christopher Tilley (1994) stress the experiential aspect of landscape. Thomas invokes Heidegger's concept of "Being-in-the-world" to draw attention to the bodily experience of space. He contends that space is made meaningful through human inhabitation and practices. Tilley (1994, 2004) also notes that because landscapes (and space in general) are a medium for action they are necessarily valued and political. Tilley suggests that through the construction of Neolithic stone tombs, ancestral power and the meaning of the landscape were appropriated with the tombs themselves providing a visual connection between ancestors and the land.

The built environment and spaces created through the style and positioning of architectural forms restrain, enable, and pattern movement and activities that often go unquestioned (particularly in terms of vernacular or household architecture). These patterns are often related to gender, ethnicity, status, and power. Space and the built environment are also inextricably linked to power, community formation, and identity through memory, shared experiences, and the space of social and political relationships (Joyce and Hendon 2000; Pauketat and Alt 2003; Van Dyke and Alcock 2003). In this sense, places, as well as persons, are socially constructed and are formed and re-formed as a result of social interactions, daily practices, and communal events.

Martin Locock (1994) discusses the role of structures as arenas for social action in the formation of society. The way in which buildings are constructed, including the forms, contain ideals or statements about how buildings *should* be built. Forms vary with ethnicity, therefore some differences in architecture, particularly vernacular architecture, may be attributable to ethnic differences and identity. These differences may be accentuated in order to express ethnic differences. One caveat Locock includes is that often it is difficult to determine whether architectural forms and styles are intentionally planned or unintended patterns. However, whether or not certain "rules" of architecture are intentional or not they would have similar effects by virtue of creating a particular type of space that would restrict or inhibit certain activities and social and power relations. For example, in Clark Cunningham's description of the Atoni house he asserts the organization, segmentation, and points of order represented all aspects and relationships within the Atoni universe (1973). Because this society was non-literate and rituals were infrequent, he believed the house was an excellent way for members of the community to convey ideas, information, and social order on a daily basis.

According to Lawrence and Low (1990), anthropological approaches to architecture and the built environment (defined as any physical alteration to the environment) can be traced back to Henry Morgan (1965) and Emile Durkheim (see Morgan 1965; Durkheim 1965; Durkheim and Mauss 1963). They viewed the built environment as integral to the construction and maintenance of society and as a representation of societal forms as well as the means by which people lived within their environment. Amos Rapoport (1969) first defined social factors as the major contributing force that influence structural forms (in particular vernacular architecture) although climate and environmental factors limited the materials used. Since the 1990s anthropological studies of the built environment have expanded further to include analyses of social, political, and economic forces that affect the built environment *and* the effects the built environment has on such forces (Lawrence and Low 1990). In particular, many address how architecture affects power and social relations.

All actions have a spatial dimension occurring in relation to the placement of structures, activity areas, pathways, and places between as well as in relation to other people, animals, and objects. Those who interact on a regular basis, especially when they live in close proximity, continuously negotiate their identities vis-à-vis each other and their surroundings including the built environment and spaces between (Nanoglou 2008; Robin 2002). For instance, Joyce and Hendon (citing Bourdieu 1973, 1977) indicate that " . . . 'communities' are realized in daily routinization of passage through material settings, including buildings" (Joyce and Hendon 2000:143). They go on to say "Community is incorporated in the body through the repetition, or *citation*, of the practices of others who move through the same spatial locations carrying out the same range of practices" (Joyce and Hendon 2000:143). Therefore, changes in architecture and the relationships among structures (i.e., houses, communal structures, mounds) and space (e.g., courtyards and plazas) are implicated in the construction and renegotiation of persons and identities on various levels, from the individual to local communities and beyond (Locock 1994; Morton 2007; Nanoglou 2008; Van Gijseghem and Vaughn 2008).

For instance, Van Gisjeghem and Vaughn (2008) delineate changes in domestic architecture, community organization, and settlement patterns in the Nasca Valley associated with the Paracas to Early Nasca transition. The Paracas settlements in the valley were relatively isolated, included a community plaza, and were located in defensible areas. During the subsequent Nasca period, a regional center was established at the site of Cahuachi, domestic architecture became more standardized without plazas, and several Paracas sites were abandoned with Nasca sites established in non-defensible areas. They suggest these changes were related to increased integration within the valley centered on the religious rites and pilgrimages at Cahuachi. They interpret these changes in space as representative of changes in ethnicity and the scale of social integration.

Emerson (1997a) states that a great deal of diversity in architecture and material remains existed among the smallest Mississippian sites in the American Bottom known as farmsteads. He delineated four types based on evidence for variations in practices performed at such sites; rural farmsteads and household, civic, and ceremonial nodes. He identifies the nodal sites as evidence for Cahokian power in rural areas dispersed among agricultural producers. The fact that the appearance and disappearance of these different types of sites are concurrent with the rise and fall of Cahokia leads Emerson to conclude that a certain degree of hegemonic power extended from elites at Cahokia to the countryside through these nodes. Emerson offers the American Bottom as an example of a society that changed through the actions of individuals and that evidence of sociopolitical complexity and differential power can be seen in the spatial relationships among not only sites but practices performed at different sites.

Notions of space also vary depending on scale and distance (Casella and Fowler 2004; Hutson 2002; Robin 2002). For example, Joyce and Hendon (2000) discuss different scales of spatial organization in terms of intimacy, visibility, and circulation frequency. They indicate that activities that occur in locations that are more visible and hence less intimate would create a sense of community among the participants and observers by virtue of shared experiences. Whereas at the household level, activities within and around these households are less visible and more intimate but are also the most frequent. Hence, conformity in household architecture results in daily activities that are constrained and repeated in a less conspicuous way than periodic public events and may be the best means for controlling identity and the formation of communities.

Recent architectural theory builds on the idea that space is socially constructed and political. Parker Pearson and Richards (1994) consider architecture on multiple scales, from monumental constructions to individual houses. Following LeFebvre they indicate that monumental structures conceal expressions of power through symbols or ideals that appeal to the general public or greater good. At the opposite end of the spectrum, they indicate that the architectural form of individual houses at once embody the personal, social, and even cosmological. The organization and form of houses often mimic ideals of how the world is ordered but at a much smaller scale that is experienced on a daily basis.

The movement of people also creates a space for the renegotiation or manipulation of identities and social relations because people are extracted (voluntarily or otherwise) from the places and people with which they most closely identify (Alt 2006b; Bender 2001; Nanoglou 2008; Pauketat 2003, 2007). Abandoning old settlements, constructing new settlements, and altering existing residences necessitate (re)constructing communities and sociopolitical relations since the daily experiences of community members are also altered in terms of changes in social, political, religious, and economic relationships (Van Gijseghem and Vaughn 2008, see LeFebvre above). Maintenance of social and spatial relations in spite of such movements is significant because it may indicate resistance to new political and social orders (Alt 2002, 2006a; Hutson 2002; Paynter and McGuire 1991; Silliman 2001; Wilson 1998).

Sociocultural discussions of diaspora are informative for archaeological studies of movement and identity. For example, James Clifford (1997) discusses diaspora in terms of dwelling in displacement where individuals who travel in exile or for other reasons attempt to create a new home, identity, and community in a new place through appeals to a shared homeland. He views this creation of identity in relation to movement as always influenced by gender, power, and status. In studies of diaspora we see an attachment to multiple places and communities concurrently. Appadurai (1996) discusses a related phenomenon in terms of the “production of locality” in a global world characterized by increased movement of people and goods. In this case, locality is not necessarily tied to a particular place but is produced through practices and materiality that have a spatial component. He defines several techniques for producing locality including building houses and mapping space. It is through such practices that not only localities but identities and communities are formed and transformed.

Politically, the organization or control of space is one method by which those in power can legitimize or reinforce newly formed or reformed political structures. The citation of the past, distant centers, or cosmological space through spatial layout and construction of monuments and plazas at central sites can reify or establish social and political order (Joyce 2004; Lekson 1999). This point is particularly salient when we consider the role of commoners in the construction of these centers. Through their participation in construction, they too become a physical part of new political formations (Alt 2006a, b; Joyce 2004; Pauketat 2000a, 2003).

For example, Arthur Joyce (2004) indicates that political instability and population shifts occurred in the Valley of Oaxaca during the formative period when Monté Albán was founded as a regional center in a highly visible part of the valley. Different groups from throughout the valley, including some from San Jose Mogote, likely contributed to its construction. A new corporate identity was created by nobles and their followers from San Jose Mogote through the construction and use of Monté Albán as a sacred center. The large open plaza that was also visible from the eastern slopes allowed for the congregation of many individuals as participants or observers in religious events and/or feasts thereby making them part of the community.

ARCHAEOLOGIES OF SPACE, IDENTITY, AND COMMUNITY AT THE MISSISSIPPIAN TRANSITION

If space is a social construction that is inextricably linked to identities at multiple scales and sociopolitical orders, then we can look for changes in space in the archaeological record in order to identify how sociopolitical formations are created, altered, and experienced. From the previous discussion it is clear that changes in space and the creation of communities on a large–scale are integral to the formation of new polities. This requires uniting different groups including those with different ethnicities, status, and ideas of what constitutes a community. One way to achieve this goal is by combining a disruption in local ties through the movement of people and changes in spatial organization with large–scale construction projects and religious activities at a central site. This is exactly what we see in and around Cahokia at the beginning of the Mississippian period. With the remainder of this dissertation I intend to measure the degree to which persons and places were altered at the onset of the Mississippian period in the American Bottom by comparing settlement histories, site layout, and material culture at several Mississippian transition sites with a focus on the southern American Bottom region.

I consider changes in the social construction of identities and space as causally related to sociopolitical change. It is possible to identify such changes over time and at multiple scales in order to determine how this Mississippian polity was formed. In the American Bottom region, this may be accomplished via comparisons of the organization of space, architecture, material culture, and activities for occupations that date to immediately before and after Cahokia's "Big Bang" (Pauketat 1997:31). Specifically, these comparisons are made between sites with late Terminal Late Woodland Lindeman and Edelhardt phase occupations and those with early Mississippian Lohmann phase occupations. In the next chapter I explicate the field and analytical methods employed in this approach.

CHAPTER 4
METHODOLOGY

With the current research project, I aim to determine how changes in identity and community as indicated by changes in space and material culture are implicated in the creation of new political formations. Specifically, through delineating changes in the construction of space and material culture during the Terminal Late Woodland to Mississippian transition in the American Bottom, I contend that changes in local and imagined communities also changed. These changes occurred throughout the American Bottom region and were crucial to the formation of Cahokia as a regionally integrated polity. In order to accomplish this task, I will compare the following variables among the five sites in the sample before including them in regional comparisons:

1. site location, size, occupation density, layout, architectural methods
2. ceramic materials and vessel production
3. lithic materials, tool production, resource exploitation
4. ethnobotanical and faunal remains indicative of subsistence data or with medicinal or ritually significant properties.

Both fieldwork and laboratory analyses are critical to all four sets of variables. Topographic and geophysical maps, surface collection, and feature excavation provide data concerning site layout, occupation density, and architectural methods. Ceramic and lithic analyses provide data concerning chronology, production techniques, resource utilization, and subsistence practices. Ethnobotanical and faunal remains provide data concerning subsistence practices, resource utilization, food ways, and chronometric dates. The specific methods employed during fieldwork and laboratory analyses are described below.

FIELD METHODS

Specific field methods varied from site to site because the excavations at each site were directed by different individuals or entities with their own methods depending on the project goals and time limits. However, most of the excavations followed methods established during the FAI–270 project (Bareis and Porter 1984). In the following section I will relate the general methods that were consistent for all sites and enumerate my involvement with the investigations and analyses. Site specific deviations from these methods will be recounted in the following chapter.

SURFACE AND SUBSURFACE MAPPING

Topographic maps were completed for all of the sites except Peiper. I created the topographic map for the Divers site while Dr. Pauketat created Morrison's map, Dr. Robin Machiran of the Archaeological Research Center created the map for Washausen, and Jeffrey Kruchten from the ISAS American Bottom Field Station created the map for Fish Lake. UTM location and elevations were collected using a Total Station. Topographic maps were produced based on these data in programs including ArcMAP and Surfer. The maps provide data concerning mound height and location, spatial relationships between mounds and plaza areas, and the natural topography. This information is useful in discerning site layout and the physical modification of the landscape. Mapping also allowed for the establishment of control points used to set up surface collection, geophysical survey grids, and excavation units.

Geophysical mapping consisting of magnetic (gradiometric) and resistivity surveys were conducted at Divers and Washausen. Dr. Michael Hargrave of the Corps of Engineers Research Laboratory and I co-directed the magnetic and resistance surveys at Washausen and a magnetic survey at Divers. Dr. Jarrod Burks of Ohio Valley Archaeology, Inc. also conducted a separate magnetic survey at Washausen with the assistance of Dr. John Kelly. While these maps are not an exact depiction of all cultural features, they do provide data concerning feature patterning and, combined with groundtruthing and excavation, the results can be extrapolated to unexcavated portions of a site (Hargrave 2002). In this respect, geophysical prospection combined with targeted excavation is one way to elucidate community spatial patterns at the site level and diachronic changes in this patterning without excavating the entire site.

The gradiometric readings were recorded at a density of eight readings per meter at 0.5 to 1 meter intervals with Geoscan gradiometers. The density was adjusted based on site conditions and the magnetic susceptibility of the soils at each site. At Washausen, the surveys focused on the mound and plaza area. The survey at Divers is restricted to the northeast area of the site closest to the road edge. A resistivity survey was conducted over the southern mound at Washausen. Readings were recorded at 2 readings per meter at half-meter intervals with a Geoscan RM15 resistance meter fitted with a PA5 probe array and MPX multiplexer. The use of two different geophysical methods in this area at Washausen was beneficial because some features detected by resistivity were not detected by the gradiometer and the presence of historic debris (e.g., fired brick or metal) interfered with the collection of magnetic data. Also, anomalies identified by both methods are more likely to be features detectable with the naked eye.

Once the data were uploaded to a field laptop, maps of anomalies were produced in a matter of minutes using Geoplot 3.0. Possible house and pit features were identified in the maps and some were tested with an Oakfield core to determine if the anomalies were the product of past human activity or the result of more recent or non-cultural phenomena. The gradiometry maps from Washausen were used to determine the placement of test units. With the data that resulted from the geophysical surveys, it is possible to address changes in site layout, the possible existence of courtyard groups, and feature and mound orientation at Divers and Washausen. The geophysical data also provide a means for assessing changes in site layout for the entire site when the information from the maps is combined with data derived from feature excavations (see Chapter 5).

SURFACE COLLECTION

Surface collections were conducted at all of the sites except Peiper. A detailed surface collection at Morrison was conducted by Dr. Neal Lopinot. University of Illinois graduate and field school students completed a surface collection directed by Glen Freimuth and Dr. James Porter at Divers. Two surface collections at Fish Lake were completed in association with the FAI–270 project and most recently, by ISAS staff from the American Bottom Field Station. Grids were established prior to the surface collections to control spatial information. Collection methods include 100 percent collection of some site areas (Fish Lake, Washausen), piece-plotting individual artifacts, random sampling, and stratified systematic sampling. The differential distribution of artifacts on the surface of these sites has been used to determine site limits, components present at the site, activity areas, plazas, and possible subcommunities.

FEATURE EXCAVATION

The areas opened for excavation were chosen based on the surface collections, geophysical data, or the project limits depending on the project and the available data. Excavations commenced with the removal of the plowzone using hand tools (shovels) or heavy machinery (backhoe or track hoe with a smooth bucket). Anomalies identified below the plowzone were investigated with hand tools (shovels and trowels) to determine if they were natural (rodent burrows or tree roots) or cultural (archaeological features). Cultural features, excavation block (EB) limits, utilities, and landmarks (e.g.,, roads, driveways) were mapped with a Total Station. Features were then individually plan mapped at a 1:20 cm scale. I directed and completed most of the excavations at Washausen with the assistance of several volunteers. I also supervised excavations at the Fish Lake site while employed with ISAS and at Peiper as a Teaching Assistant through the University of Illinois. The Divers site excavations were completed by University of Illinois students and Glen Freimuth. A University of Oklahoma field school directed by Dr. Timothy Pauketat completed the excavations at the Morrison site.

Pits were generally bisected along the long axis and the first half was excavated as a single unit. All artifacts from the first half were bagged together or in arbitrary levels and no flotation samples were collected. The profile was then photographed and mapped at a 1:10 scale. The second half of each pit was excavated according to fill zones, with artifacts and flotation samples collected separately for each zone. The feature fill was screened through ¼ inch wire mesh at all sites except Fish Lake where a standard of at least one 10-liter flot sample was collected for each zone to recover small artifacts as well as ethnobotanical and faunal remains. Charcoal–rich zones were more intensively sampled. All zones and sterile soil were described in terms of color (using the Munsell soil color chart) and texture.

The structure basins were excavated to the floor in halves or quarters allowing for the documentation of at least one axis of the basin in profile. At least one 10-liter flot was collected from each zone in the remaining sections. After all basin fill was excavated, the floor was photographed and the architectural elements (i.e.,, postmolds) and all artifacts on the floor were mapped in plan and elevated (piece–plotted). Postmolds were bisected, sketched in profile, and the diameter and depth were recorded. Window cuts were excavated near the center of wall trenches. Trenches were subsequently bisected along the long axis and mapped in profile. Flotation samples were collected from the second half of each wall trench as well. All fill zones, including those associated with postmolds and wall trenches, were described in terms of color and texture. The excavations provide data concerning architectural methods and site layout as well as a sample of the material culture at each site.

LABORATORY METHODS

The laboratory analyses include the analysis of features, artifacts, and ethnobotanical, faunal, and human remains. Feature analysis included feature size, shape, fill zones, and material contents as well as the creation of site maps in ArcMAP using the plan maps created during fieldwork. Material analyses began with the washing, labeling, and initial sorting of materials into gross artifact categories and the processing of flotation samples. The light fractions from flotation samples were sent for ethnobotanical analysis. The heavy fractions were picked using a 10x lens. Diagnostic ceramic and lithic materials as well as all bone were pulled from the heavy fractions. Ceramic and lithic materials were analyzed in detail to obtain data concerning resource utilization and production techniques.

FEATURE ANALYSIS AND SITE LAYOUT

I completed the feature site analyses for Washausen, Peiper, Fish Lake, and Morrison and reanalyzed the features at Divers. Features were classified according to feature type (e.g., pit, structure, post). Metric and nominal data recorded for all features include maximum dimensions (length, width, depth, bottom length), number and types of fill zones, and plan and profile shapes. Feature volume (dm^3) and material density (g/dm^3) were calculated for pits, posts, and structure basins using formulas developed for specific feature shapes. Pits were further classified according to types established by Koldehoff and Galloy (2006) based on the orifice and profile shapes and maximum depth. The five types are as follows: Type 1, shallow basins; Type 2, deep basins; Type 3, shallow vertical–walled pits; Type 4, deep vertical–walled pits; and Type 5, belled pits or pits with outslanting walls.

Structures were classified according construction methods as either single post or wall trench. Metric data recorded and calculated for structure floors include post spacing, floor area, and width-to-length ratio (W/L). Other information noted for structure floors includes long axis orientation, items that were piece-plotted possibly corresponding to activity areas, evidence for burning including charred timbers and thatch, and the location of interior posts and features if present.

Fill zones for all features were categorized based on color, texture, material content, and evidence for burning. Zones that are similar in color and texture to sterile soil, contain little or no material, and often occur along the edges or bottoms of features were classified as slump zones. Light zones are similar to slumps but may be slightly darker and contain more material. Dark zones are significantly darker than the sterile soil and often contain a high concentration of material. These zones likely correspond to midden fill. Oxidized burned zones are red and usually contain burned clay. The presence of oxidized burned zones is usually an indication of in situ burning. Reduced burned zones are close to black in color and may contain large concentrations of charcoal. These zones are usually associated with hearth cleansing. Ashy fill zones are similarly associated with the secondary disposal of burned soil and organic matter.

Radiocarbon dates were obtained for several features. Samples of burned botanical material (e.g., wood, thatch) were sent to the University of Illinois for radiometric analyses. The results are reported with the component with which the features are associated. The dates are helpful in refining chronological data and in identifying mixing with prior components.

The maps created from the excavations and geophysical surveys were combined with the feature analyses in order to identify site layout and changes in site layout over time. Structure size and morphology in the excavated areas of Divers and Washausen were used to establish criteria for assigning geophysical anomalies to specific phases when possible thereby extending the spatial organization to the unexcavated portions of these sites. Topographic maps and surface collection information aided in the delineation of site layout at the sites that were not surveyed with geophysical equipment.

CERAMIC ANALYSIS

I completed the ceramic analyses for Washausen, Peiper, and Fish Lake. The ceramic materials from Morrison were analyzed by Elizabeth Watts of the University of Illinois while Glen Freimuth completed the ceramic analysis at Divers. The data obtained through these analyses provide comparative information concerning chronology and differences in pottery–making practices and styles over time *and* space. The ceramic analyses for most of the sites followed methods established for the FAI–270 project (see Finney 1984 and Ozuk 1987) and modifications initiated by Holley (1989) and Pauketat (1998a) for Cahokia.

Ceramic items were initially divided into three categories; fired clay, body sherds, and rim sherds. Fired clay includes incidentally burned soil (burnt clay), tempered burnt clay, burnt clay with plant impressions (daub), mud dauber nests, shaped or molded clay doodles, pinch pot sherds, and ceramic objects. Pinch pot sherds were further analyzed to identify vessel type if possible.

Ceramic objects include items made from sherds or formed from untempered clay. These items include discoidals, sherd disks, spindle whorls, clay balls, and pipe fragments. Discoidals were categorized based on profile shape according to types identified at the Range site (Ozuk 1987). Sherd disks that may have served as gaming pieces were identified based on their circular shape and ground edges. Spindle whorls are sherd disks with drilled holes or perforations through the center that are associated with the production of fiber. Maximum diameters were estimated for spindle whorls and disks. The clay balls and pipe fragments are hand formed objects. The purpose of the balls is unknown but the pipes were likely used to smoke tobacco.

Body sherds were counted and weighed to the nearest 0.1 g according to temper and exterior surface treatment. The interior surface treatment was noted if it was slipped. Tempering agents include crushed limestone, sherds (grog), shell, grit (rock), and chert. Surface treatments include plain, cordmarked, plain and cordmarked, smoothed over cordmarks, red slip, red slip over cordmarked, and red slip over plain and cordmarked. If the surface was too damaged to identify the surface treatment it was recorded as eroded. Sherds measuring less than 1 cm were not included in the analysis. Sherds from jar shoulders were included with the body sherd analysis but their shape, temper, and surface treatment were also noted.

Rim sherds that correspond to individual vessels were analyzed in the most detail due to their utility in determining feature components and stylistic change over time. Each rim sherd was compared with other rim sherds and body sherds from the same feature and between features to identify refits. Once all of the associated sherds were glued together, vessel forms were completed. Data recorded for each vessel include the count and weight of all sherds associated with that vessel; temper and surface treatments; orifice diameter and percent present; vessel, rim, lip, and shoulder form if possible; decoration; and evidence for thermal alteration. The same temper and surface treatments present in the body sherd assemblage are also present on vessels with the addition of a few vessels with burnished or partially burnished necks.

Orifice diameter was obtained by using an orifice diameter sheet consisting of arcs spaced 2 cm apart. The percent of orifice present was also estimated. Orifices with less than 5 percent present are considered estimates. Rim profiles and sketches of the exterior and interior surfaces were drawn. Wall thickness along the profile was measured to the nearest millimeter using calipers. Measurements were obtained from the profile drawings in order to calculate ratios (lip protrusion, rim curvature, and lip shape) and angles (rim curvature, rim angle, and lip bevel) following methods established by Pauketat (1998a).

Vessel forms include jar, bowl, seed jar, bottle, and stumpware. Form was determined based on the profile shape. If vessels have orifice diameters less than 10 cm and enough of the vessel is present to determine the entire vessel is small, then it is classified as a minivessel. Rim form refers to the shape of the rim and neck for jars and just the rim for bowls. All of the jars and bowls fall into the types established by Ozuk for the Range site vessel analysis (1987, 1990a, 1990b). The six jar types include those with inslanted rims and outcurved necks (Type 1), inslanted rims (Type 2), inslanted rims and incurved necks (Type 3), vertical rims and incurved necks (Type 4), outslanted rims and incurved necks (Type 5), and flared or everted rims (Type 6). The bowl types include bowls with inslanted rims (Type 1), vertical rims (Type 2), and outslanted rims (Type 3).

Lip form refers to the treatment of the lip portion of the rim. Round rims are considered unmodified. Modified lips include squared, flattened, thickened, interior or exterior beveled, extruded, and rolled. Shoulder forms include round, slight angle, and sharp angle. Decoration includes lip and vessel wall modifications. Lugs, tabs, appliqués, and effigies were attached to the lips and/or rims of some of the vessels. Lugs include triangular, circular, paired, and bifurcated/notched varieties. Continuous notches are present on the exterior lips of some vessels. Most notches appear to have been formed using a stick or plain dowel. Lip depressions or pinched lips are rare. These are characterized by a slight deformation of the lip formed from the exterior. This depression alters the shape of the vessel suggesting it may represent a gourd or shell effigy vessel. A few vessels have large appendages attached to the lip and rim superior and exterior that may also correspond to effigies. Modification of vessel walls includes perforations and trailed or engraved lines. Perforations are holes punched through the vessel wall while the clay is still wet. Trailed lines are formed with a rounded tool while the clay is still wet. Engraved lines are formed with a sharp tool when the clay is fully dried or after the vessel has been fired.

Thermal alteration may result from the firing process or subsequent use of the vessel over an open flame. Thermal alteration associated with the firing process includes fire clouds on the exterior surface and oxidized or reduced paste that result from the atmospheric conditions during firing. Sooting and reduced areas on vessels may result from use in cooking over or in a fire. Charred organic residue (COI) may be found on vessel interiors or exteriors if the contents were boiled over or were spilled and burned during the process of cooking. Post–breakage alterations can also occur. This is evident in cases where sherds that are reduced are refit to sherds that are oxidized or unaltered and vice versa.

LITHIC ANALYSIS

I completed the analysis of lithic materials from Washausen and Peiper. Daniel Marovitch of the University of Illinois analyzed the Morrison site materials and Loryl Breitenbach of ISAS analyzed the lithics from Fish Lake. Glen Freimuth provides a preliminary lithic analysis for the Divers site. These analyses provide information concerning tool production and maintenance as well as resource exploitation. Lithic materials were divided into groundstone and chipped–stone tools and debris based on raw material and morphological or technological attributes. When artifacts exhibited signs of more than one use, they were classified according to their original use, and their secondary or tertiary use was noted. For example, a hoe fragment that was reused as a core was recorded as a hoe but the secondary core usage was noted.

Groundstone includes fire–cracked rock (FCR), formal and informal tools, and unmodified rock and minerals. Raw materials in this category include locally available granitic cobbles, pebbles, limestone, sandstone, limonite, and Missouri River Clinker. These materials are present in till deposits in the uplands and along upland drainages as well as gravel bars in the Mississippi River. Non-local resources include diabase, hematite, and galena from the Ste. Francois Mountains of southeast Missouri. Limestone, sandstone, igneous–metamorphic, and chert items that do not appear to be modified intentionally but show signs of contact with heat including discoloration and fractures are classified as FCR. These items were counted and weighed to the nearest gram, then discarded. There were likely used for stone boiling.

Formal groundstone tools include a spud fragment, celts and celt fragments or flakes, and discoidals. The spud and celts were formed through flaking, pecking, and finally grinding in order to smooth and sharpen the bit. Flakes can result from the initial forming stages or from re-working fractured tools. Depending on the size, quantity, and surface of the flakes it is possible to determine if they were struck from finished tools or if they could possibly be associated with celt production. Celts are typically associated with felling trees and may be indicative of land clearing activities for agricultural purposes. The spud is a unique item that may be indicative of high status individuals or contacts with groups living to the north in the Illinois River valley. The discoidals are similar in shape to the ceramic items although they tend to be larger and more finely made. These items are associated with the historically documented Chunkey game (Catlin 1841).

Informal groundstone tools include hammerstones, abraders, and a metate fragment. Hammerstones exhibit ground or pecked surfaces associated with core reduction, chipped–stone tool production, or processing foodstuffs including nuts. Both flat and slot abraders made from locally available sandstone are present. Flat abraders have one or more surfaces ground smooth, possibly from reworking celts or producing pigments by grinding minerals. The metate fragment is made from a large piece of sandstone. It may have been used to process corn. Minerals include locally available limonite and near–local hematite and galena. Very few minerals were recovered and most show no evidence of use. Unmodified groundstone includes a few, small cobbles and pebbles that may be incidental inclusions.

Chipped–stone artifacts were similarly divided into formal tools and informal tools and debris (debitage). Chert items were examined with the unaided eye supplemented by a 10x hand lens when necessary in order to identify usewear and raw material. A large comparative collection housed at the American Bottom Field Station in Wood River aided in raw material identification. In cases where the item is too burned or too small to confidently identify raw material, chert types is recorded as indeterminate.

The closest available chert resources to floodplain sites include glacial till and gravel available from Mississippi River sandbars. Salem and Ste. Genevieve chert and Yankeetown Orthoquartzite are available in the adjacent bluffs and uplands and along local drainages. Fern Glen, Burlington, and Salem chert (among others) outcrop near Salt Lick Point in the southern American Bottom near Valmeyer, Illinois. The Crescent Hills Quarry region of Missouri is a well utilized near–local source of Burlington and Fern Glen chert. Extra–regional chert with source areas greater than 70 km from the sites in this analysis include Mill Creek, Kaolin, and Cobden chert from Union County, Illinois as well as Blair chert from Randolph County, Illinois.

Formal chipped–stone tools include projectile points, bifaces, adze fragments and flakes, and hoe fragments and flakes. When possible, points were identified according to type. Projectile points include dart and arrow points that were either bifacially flaked or retouched flakes. Bifaces include fragments that could not be assigned to a particular biface type. Adze fragments and flakes typically exhibit low–gloss polish. These tools are associated with woodworking. Hoe fragments and flakes typically exhibit high–gloss polish from use. Hoes were likely used in excavating basins and wall trenches for house construction and in agricultural production, specifically maize agriculture. Flaking techniques and metric data were recorded for individual tools when possible.

Informal chipped–stone tools include flake tools, cores, and chert hammers and fragments. Flake tools are expedient tools made from unmodified or minimally retouched flakes. Flake edges were examined with the naked eye and a 10x hand lens for usewear (polish or damage) or retouching in order to identify these tools. Flake tools were further categorized by the task(s) for which they were used including cutting, scraping, drilling, or use as a perforator. Use was determined based on the type of use wear and shape of the retouched flake.

Cores are minimally chert cobbles or nodules from which at least two flakes have been removed. These include freehand and bipolar cores as well as tested blocks or cobbles. The type of core was determined by the type and quantity of flake scars or evidence for crushing associated with bifacial core reduction. Several items including hoes and adzes were reused as cores. Chert hammers are nodules that were used to peck groundstone tools (e.g., celts) into shape. Heavily used chert hammers will become spherical in shape with crushing evident over the entire exterior surface. Fragments were identified based on the evidence for grinding on the exterior surface.

ETHNOBOTANICAL AND FAUNAL ANALYSES[1]

The analysis of hand–collected botanical remains and remains recovered from flotation samples taken from features at the Fish Lake and Washausen sites was completed by Kathryn Parker of Midwestern Ecosystems while the faunal analyses were completed by Steven Kuehn of the Illinois State Archaeological Society (ISAS). Hand–collected botanical samples from Fish Lake were not analyzed. The ethnobotanical materials from Divers, Morrison, and Peiper were not completely analyzed.

Together, these data provide information concerning local resource exploitation for subsistence, house construction, and fuel. They can also contribute to the delineation of food ways as well as the identification of possible feasting events. Agricultural and horticultural activity is also evident in the botanical remains as indicated by seed assemblages, the ubiquity of corn, and the kernel to cob ratio. Plants with medicinal or hallucinogenic properties or ritual significance

[1] For a complete discussion of methods of analysis for ethnobotanical, faunal, and human remains, see Appendices C, D, and E.

include tobacco, black nightshade, jimsonweed (datura), morning glory, and red cedar. The red cedar wood was used in ritual contexts and for the construction of sacred spaces including the Woodhenges at Cahokia, litter burials in Mound 72, and temples (Emerson 1997a:228; Pauketat 2004:60; Whalley 1984:325). Historically, the smoke was used as a purifier while the wood was associated with fire, water, and protection (Emerson 1997a:229).

Since soil conditions in the region (typically acidic) are not conducive to bone preservation, the faunal samples are small, consisting mostly of small fragments of unidentified bone. The small quantity of identifiable faunal remains precludes analyses concerning the provisioning of mound center residents. However, the samples included in this analysis do indicate that a wide variety of locally available resources were relied upon. The few modified bones (awls) indicate the working of hides.

HUMAN REMAINS

Fragmentary human remains were recovered during feature excavation at the Fish Lake site and from the surface of the Peiper site. All human remains were inventoried and analyzed by Julie Bukowski of ISAS. The isolated human remains from Fish Lake and the complete details concerning methods of analysis are reported in Bukowski 2008a and 2008b. All human remains will be sent for curation at the Illinois State Museum. The presence of human remains and burial features provide data concerning mortuary programs and the treatment of the dead.

Curation of human remains in the past including heirloomed crania may be indicative of ancestor veneration.

DISCUSSION

The combination of mapping, geophysical and pedestrian surveys, excavation, and laboratory analyses will provide several lines of evidence necessary to determine the role of local American Bottom communities in the rise of sociopolitical complexity in the American Bottom. A comparison of these data with other sites in the region and with sites to the north will indicate whether architectural construction methods, tempering agent preference, vessel shape, or lithic raw material procurement were altered concurrent with changes in the northern American Bottom. Radiocarbon dates are important for timing the site occupations and will be used to reassess the chronology of the southern American Bottom. Shifts in raw material preference to non-local resources (i.e., Mill Creek chert hoes) or items with ritual significance (i.e., quartz, hematite, mica, copper, marine shell) combined with similar changes in house construction and site organization would suggest participation in a Cahokian community. The faunal and botanical samples will provide data concerning possible feasting or provisioning as well as local resource exploitation. Fragmented human remains encountered during excavation provide information concerning burial programs and possible ancestor veneration.

Mapping, surface collections, and geophysical surveys will provide spatial data and artifact and feature patterning that will delimit site layout (e.g., possible plaza and mounds, courtyards) and identify possible activity areas (e.g., celt production at Washausen). Excavations at multiple sites resulted in the collection of artifact and botanical samples as well as the identification of architectural construction methods for comparative purposes. The analysis of recovered materials provides data concerning production methods, the scale of production (intensity of craft production), resource utilization (local vs. exotic), and chronometric dates. In the following two chapters I will detail the results relating to features and site layout (Chapter 5) and material culture (Chapter 6). These data will then be placed within regional context through comparisons with previously excavated sites located throughout the American Bottom and neighboring uplands in Chapter 7.

CHAPTER 5
CONSTRUCTING COMMUNITIES (AD 1000–1100)

In this chapter I present case specific mapping, geophysical, and excavation data from five sites; four located within the southern American Bottom (Fish Lake, Divers, Washausen, and Peiper) and one in the northern American Bottom (Morrison). I will detail the history of investigations at each site followed by the results of field research conducted or analyzed as part of this project. The chapter is organized geographically, beginning with the northernmost site in the southern American Bottom (Fish Lake) and ending with the only site in the northern American Bottom (Morrison). The chapter concludes with a brief discussion of how the construction of space changed at these five sites coinciding with the rise of Cahokia as a political center.

FISH LAKE (11MO608)

The Fish Lake site is a large habitation area that covers about 11 ha of two parallel east–west oriented point bar ridges along the east bank of Fish Lake in the southern American Bottom (see Figure 2.1). The current channel of the Mississippi River is located 2 km to the west, and the bluff line is 2.5 km to the east. The Pulcher site is located less than two kilometers to the north and the Divers site is 2 km to the southwest.

Investigations conducted on the northern ridge during the FAI–270 project in the early 1980s resulted in the excavation of over 100 Late Woodland Patrick Phase features. Although surface materials indicated the presence of Terminal Late

Woodland and Mississippian components, no features from either period were identified within the excavated area at that time (Fortier et al. 1984; Fortier and Jackson 2000; Kelly et al. 1979). Twenty-five years later, in the spring and summer of 2007, the site was again investigated for the Illinois Department of Transportation (IDOT) for additional highway work (Figure 5.1). Personnel from the American Bottom Survey Division (ABSD) of the Illinois Transportation Archaeological Research Program (ITARP)[2] undertook Phase III investigations to mitigate potential impacts associated with the planned replacement of the existing Fish Lake Road overpass with an interchange.

In total, 27 Terminal Late Woodland features including eight structures, 17 pits, and two posts were identified and excavated as part of the 2007 investigations. Two late Terminal Late Woodland occupations dated to the George Reeves and Lindeman phases were identified on the eastern edge of the southern ridge (Figure 5.2). Early and late Mississippian occupations were also identified just west of the Lindeman phase occupation. These periods are minimally represented by a single Lohmann phase pit and a Moorehead phase wall trench structure. It is likely that more Mississippian features are present in unexcavated portions of the site to the west on the southern ridge based on the location of these features and the data from the original surface collection. Components were determined by construction technique, size, and shape of structures and ceramic assemblages recovered from

[2] In 2010, ITARP became part of the Institute of Natural Resource Sustainability at the University of Illinois and was renamed the Illinois State Archaeological Survey. ITARP and ISAS are considered to be the same in this report.

pits and structures. In cases where the ceramic assemblage is insufficient, feature location and superpositioning were used to assign phase level components.

GEORGE REEVES

The George Reeves phase occupation is comprised of two rectangular, single post in basin structures with possible entry posts and two exterior pits (Fish Lake Figure 5.3). Both structures exhibit an orientation slightly east of north. Interestingly, the occupation is located at the eastern limits of the Patrick phase occupation, suggesting the residents may have intentionally avoided the northern ridge and the central area of the southern ridge that were littered with Patrick phase features. The only exception is the excavation of a George Reeves phase pit into the center of a Patrick phase pit (see below).

The northern structure, Feature 316, was probably occupied first due to the superpositioning of Feature 315 on Feature 333. The basin of Feature 316 is relatively shallow with a maximum depth of 16 cm and total volume of 1.5 m^3 (Table 5.1). The basin fill is comprised of two light zones and one burned zone (Figure 5.4a). The burned zone is an area of reduced soil with charcoal concentrations located along the outer edge of the south half of the structure basin. The shape of this zone and the fact that is was deposited on the floor of the structure as indicated by the profile suggests this structure, or the walls of the south half of the structure, may have burned although there is no indication of burning in the postmolds (see below).

Artifact density is fairly low with most material recovered from the south half of the structure in the final fill zone. Although small, the ceramic assemblage is consistent with a George Reeves phase occupation (see Chapter 6). The minimal amount of material and the prevalence of light fill zones in the basin suggest the structure may have been left open for a period of time during which it filled naturally after the charcoal-rich zone was deposited. The lack of any faunal or ethnobotanical materials in flotation samples further support this assertion.

The floor of the structure is defined by a single row of posts along the perimeter of an area measuring approximately 6 m^2 (Figure 5.5a, Table 5.2). The W/L ratio of 0.57 indicates the structure is strongly rectangular in shape. No artifact concentrations or activity areas were identified on the floor. The wall posts are relatively regularly spaced with an average distance between posts of 21 cm. They typically contain a single light fill zone similar in color and texture to the surrounding sterile soil. The absence of burning and material in the posts combined with the low density of material in the basin suggest the structure filled in naturally.

Four interior posts were identified within the structure. Two posts may have been used to add support to the eastern wall. The third post is more centrally located suggesting it served as a central support post for the roof. These interior postmolds are similar in size and shape to the structural posts. A small adze fragment from the central post is the only material recovered from the interior postmolds. Feature 334 is a large, flat-bottomed post identified on the floor of Feature 316. It is 32 cm in diameter with a depth of 26 cm. The three fill zones include a slump zone, a light zone, and a dark zone that caps the feature. The morphology of the post and its location adjacent to the southeastern wall suggest it may have served as a stepping-in post related to an entrance. Very little material was recovered from the feature.

Although the southern structure, Feature 315, is also a rectangular single post structure, it differs from Feature 316 in several ways. The basin is much deeper at 57 cm resulting in a volume that is over four times larger. The basin also contained significantly more material with a total density over 1 g/dm^3. The basin was filled with several distinct zones including alternating light and dark zones as well as an artifact-rich burned zone of reduced soil in the center of the structure (Figure 5.4b).

The complex filling of the structure began with the deposition of three alternating dark and light zones four to five centimeters thick that covered the bottom of the basin and contained very little material. These fills raised the floor a total of approximately 15 cm. The excavation of the postmolds through these three zones as indicated by their visibility in plan view at the higher elevation and in the profiles of the structural posts, suggesting the floor was intentionally raised. It is possible this was done for structural reasons because the sterile soil at the bottom elevation is very loose, loamy sand that likely would not be a stable construction surface and would compromise the walls. However, the alternating bands of light and dark fill have been noted in other contexts including mound construction episodes that suggest this intentional filling may have had cosmological or ritual significance (Kelly 1980; Kruchten et al. 2009; Pauketat 1993). It also suggests the interior living surface of the structure was intentionally prepared.

The fill immediately above the prepared floor is comprised of dark sandy soils with a high concentration of material. Several large segments of vessels and lithic items including an intentionally fragmented groundstone spud were recovered from the floor and within the fill immediately above the floor. A series of smaller, dark and burned fill zones were deposited above this initial fill zone. A final fill zone comprised of dark sandy soil with a high artifact density ranges between 20 and 35 cm in thickness. This final episode of filling appears to have occurred over a short span of time.

The dimensions of the floor of Feature 315 indicate it is slightly larger and less rectangular than Feature 316 (Figure 5.5b, Table 5.2). The 42 structural posts comprising the structure walls were spaced relatively regularly with an average spacing of 26 cm between posts. A small gap of 46 cm near the center of the eastern wall may correspond to an entrance. The average post diameter is only slightly larger but the average depth of wall posts is more than twice that observed for Feature 316. There is no evidence for burning and none of the posts have flared profiles indicating they were not pulled. As previously mentioned, the posts cut through the lower dark and light fill zones within the basin. Most of the posts were filled with bands of similarly alternating fills but they do not correspond exactly to those identified in the basin. Only one post contained material, a single Burlington flake tool. Two posts were identified within the structure. PM 1 is a large post located along the center axis of the southeastern wall and may be associated with the entrance. The other post is shallow and located near the southern wall. The shallow depth suggests it is not structural.

Only two pits are associated with the George Reeves occupation. Although the ceramic assemblage of Feature 333 is insufficient to determine a phase-level component, the superpositioning with Feature 315 and the location of the pit suggest it predates Feature 315 and is associated with Feature 316. Also, the distance between features 316 and 333 (35 m) is nearly identical to the distance between features 316 and 351 (36 m), further suggesting the contemporaneity of the structures with the respective exterior pits.

Feature 333 is a shallow pit with vertical sidewalls and a flat bottom (Type 3) and a maximum depth of 15 cm (Table 5.3, see figure 5.4b). It filled with a single, light sandy loam fill. Material remains are sparse but include a large rim sherd from a limestone-tempered jar with a cordmarked exterior surface. Feature 351 is a deep pit with vertical walls (Type 4) that was excavated into the center of a Patrick phase pit (Figure 5.6). The pit filled with sequentially deposited zones of approximately equal thickness. The zones are predominantly dark or burned with reduced soil and charcoal deposits. A single slump zone that rings the outer edge of the bottom of the pit suggests the pit was left open for a short period of time before filling with refuse. With the exception of the slump zone, a tremendous amount of material was recovered from all of the fill zones, particularly the burned zones. Ceramic refits between zones B, C, D, and E indicate the filling episodes occurred over a short period of time.

Although the size and shape of the pit are consistent with storage pits, it is possible that Feature 351 served a more specialized secondary function. The act of excavating directly into the center of a defunct Patrick phase pit suggests the location of the pit was chosen specifically for this association with the past. The excavation itself may have been an act of citation or a referencing of past occupants and possibly ancestors (Butler 1993; Jones 2001). The large amount of debris deposited in stratified layers over a short period of time and associated with burning suggests the disposal of these materials in this pit may be associated with a purging or feasting event.

The George Reeves features identified at the Fish Lake site correspond to the smallest form of habitation site identified for the Terminal Late Woodland period. The initial George Reeves occupation is minimally comprised of a single structure with an entry post and an exterior pit. The amount of material recovered from these features is small suggesting this occupation was not permanent, possibly representing a temporary settlement occupied during the summer months associated with tending horticultural fields. The shallow depth of the structure, lack of an interior hearth and subsistence remains, and comparatively few stone tools and ceramic vessels support this assertion.

The later George Reeves occupation is quite different from this early settlement. Although it is comprised of the same number and type of features as well as a similar spatial configuration, the later occupation appears to be more substantial and possibly related to an important individual or family. The structure is much deeper with a prepared floor. The diversity of materials and high incidence of ceramic vessels, stone tools, and subsistence remains in comparison to the number of features are suggestive of practices related to non-domestic activities.

The exterior pit excavated into the center of an earlier pit feature and the prepared floor of the structure suggest those involved with the construction of this settlement referenced past occupants, possibly ancestors while creating a new, more formalized space. The end of this settlement coincides with the deposition of a large amount of material remains. The concentrations of debris and apparently fast pace with which these features were filled suggests an intentional purging of utilitarian and high status or ritually significant items. If this location was specifically chosen and prepared for non-domestic purposes associated with a prominent figure or family, as the exterior pit and structure suggest, then the purging associated with the end of the occupation may be related to the death of such an individual or a ritual closing of this occupation. Similarly, the lack of later features in this area may indicate this closing act extended beyond the structure to include this area of the site in general.

LINDEMAN

The subsequent Lindeman component is located immediately west of the George Reeves features (Figure 5.7). It is much larger with a total of six structures, one interior pit, and 15 exterior pits. Eleven exterior pits (Features 403–406, 472, 502, 503, 511, 524, 539, 646, and 704) were assigned to the Lindeman component based on their location and the presence of Terminal Late Woodland pottery within their fills although no diagnostic Lindeman phase sherds were recovered. The minimal superpositioning hinders the ability to determine contemporaneity of the structures. However, the features are roughly grouped into two spatially segregated clusters separated by approximately 15 m with no contemporary features located in between. The northern cluster includes structure Features 382, 388, and 703. Pits associated with the northern cluster include an interior pit (F 547) within Feature 382, a pit that superimposes Feature 703 (F 704), and six exterior pits (F 472, 502, 503, 511, 539, and 646). The southern cluster is comprised of structure Features 452, 522, and 715. Interior pits are absent but eight exterior pits are located within close proximity to all three structures (F 403, 404, 405, 406, 411, 412, 424, and 524).

STRUCTURES

The three structures in the northern cluster are arranged in a roughly northeast-southwest trending line with between 16 and 20 m separating the structures (Figure 5.8). All of the exterior pits with the exception of Feature 704 are located north of the structures. The top elevations of these structures indicate they were built at a higher elevation than those in the southern cluster. The three structures in the northern cluster have the smallest basins associated with the Lindeman component. This is largely due to the shallower depths. The basins are comprised of multiple zones including dark, light, and slump fills. Most of the fill zones are rather thick suggesting a short filling period. None of the structure floors appear to have been prepared like that seen in Feature 315.

Feature 382 is has the second smallest basin in terms of volume of all the Lindeman phase structures. This structure has the deepest basin in the northern cluster with a maximum depth of 44 cm. The fill includes two dark zones and two sandy slump zones (Figure 5.9a). The final filling episode, zone A, is the largest and contained the majority of the material. Although the structure was quite small, the basin contained a high concentration of material. Much of the material is ceramic with as many as 61 vessels recorded. The lithic items recovered from the basin are suggestive of celt production or maintenance. The slump zones and the final artifact–rich dark fill zone suggest the structure was left open for an indeterminate period of time before rapidly filling with midden–like debris.

The long axis orientation of Feature 382 is NW-SE, parallel to the shoreline of Fish Lake (Figure 5.10a). This structure has the smallest floor area of all the Terminal Late Woodland structures with a value of 4.3 m^2 (Table 5.4). The floor is delimited by regularly spaced posts with a mean interval of 25 cm. A gap in the southern wall that measures 72 cm may correspond to an entrance. The wall posts are approximately 9 cm in diameter with an average of 27 cm. The posts filled with soils very similar in color and texture to sterile soil. Although the basin contained a high density of material, no activity areas were identified and no materials were recovered on the floor of the structure. Evidence for burned posts and material within post fills are absent as well.

A single interior post and a pit were identified on the floor. Both are located on the south end of the structure. The postmold is similar in size and morphology to the structural posts. Feature 547 is a shallow basin–shaped pit comprised of one dark fill zone similar in color and texture to the basin fill. Unlike the basin fill, Feature 547 is nearly devoid of any material. Its location near a possible entrance and the shallow depth of only 8 cm suggest it may be a depression that resulted from repeated movements into the structure.

Feature 388 is located approximately 16 m west of Feature 382. In plan view, these two structures appear to be very similar in size and shape (Figure 5.10b). However, the basin of Feature 388 is much shallower with a maximum depth of 23 cm resulting in the smallest basin volume of all the Lindeman phase structures. The basin was filled with three sandy zones including two light zones and one slump (Figure 5.9b). The light fill zones are large with only a small amount of charcoal flecking present. The basin contained a small amount of material in stark contrast to Feature 382. In fact, the entire assemblage from this feature is comprised of only 46 items, the most notable of which is a celt fragment.

The structure floor is larger and slightly more rectangular than Feature 382 with an approximate area of 5.8 m^2 and W/L ratio of 0.76. The long axis is oriented NE-SW. The wall posts in Feature 388 were very difficult to discern from sterile soil due to the light, silty fill and some may not have been detected resulting in relatively wide spacing of posts. Post diameters are similar to those from Feature 382 but depths are much shallower with an average of 12 cm. There is no evidence for burning or post extraction and materials were absent from the post fills. No activity areas or artifacts were identified on the floor of the structure.

Feature 703 is the largest structure in the northern cluster with a basin volume over 3 m^3. The basin is comprised of five fill zones including four dark and one light zone (Figure 5.9c). Although no burned zones were identified, a charcoal lens was recorded within Zone B. All of the zones were neatly stratified in roughly level layers varying in thickness between 10 and 15 cm. A moderate amount of material was present in the basin, most of which is ceramic.

The floor of Feature 703 measures approximately 6.2 m^2 with a W/L ratio of 0.76 indicating the structure is rectangular. The wall posts are similar to those in Feature 382 with an average diameter of 10 cm and depth of 34 cm and relatively regular spacing with a mean interval of 32 cm. There are no gaps in the walls that would suggest an entrance (Figure 5.11a). A few wall posts contained a small amount of material including a sherd and chert. A single interior post was identified in the center of the floor suggesting it served to support the roof. There is no evidence indicating the posts were burned or forcibly removed. Material recovered from the floor of Feature 703 is limited to a few large vessel segments near the northeast corner.

An unusual aspect to the floor of Feature 703 is the presence of shallow, linear depressions above and adjacent to the wall posts along the northern, southern, and western walls. During excavation, a window cut was placed in the western depression in order to determine if it was a wall trench. In profile, the depression is very shallow and does not appear to be a true wall trench. Excavations at early Mississippian sites in the uplands east of the American Bottom revealed a similar phenomenon termed “faux” wall trenches (Alt 2006b:301). Alt (2006a,b) describes these as shallow, linear depressions below which individually set postmolds were identified. If the depressions in Feature 703 are faux wall trenches, then their presence in a Lindeman phase structure would indicate early experimentation with a construction technique that became common during the subsequent Mississippian period.

The southern cluster is more compact with three structures and eight pits occupying a circular area measuring approximately 310 m^2 (Figure 5.12) The feature density is much higher at one feature per 28 m^2 in comparison to one feature per 132 m^2 for the northern cluster. The structures in the southern cluster are deeper with larger floor areas than those in the northern cluster. Also, Features 452 and 715 are the only structures with a roughly E–W orientation. The structures line a possible courtyard with an opening to the southeast. All of the pits are located within this courtyard area between the structures.

Feature 452 is the smallest and deepest structure in the southern cluster with a basin volume of 3.6 m^3. It is partially superimposed on two Patrick phase pits. The basin is comprised of eight fill zones. Light zones with little associated material were identified in the lower third and along the southern edge of the basin (Figure 5.13a). The center and upper two-thirds of the basin fill are comprised of three dark zones and a large, artifact-rich burned zone with reduced soil. Most of the artifacts recovered from Feature 452 derive from this burned zone and include several vessel fragments and a partial human cranium (Bukowski 2008a). A linear charcoal concentration was noted along the southeastern corner of the structure and an area of oxidized fill was recorded in the northeastern corner within a dark zone. Over 18 kg of material were recovered from this feature alone, yielding a material density of 5.2 g/dm^3, the highest material density of any Terminal Late Woodland structure at the site.

The floor measures just over 5 m^2 with a W/L ratio of 0.78 indicating it is rectangular (Figure 5.14a). The posts that comprise the walls were difficult to discern from sterile soil and the southwestern section of the structure was excavated well below the floor suggesting several posts were not recorded in the field. If we exclude the large gap in wall posts in the southwestern corner then the spacing of posts is comparable to the other Lindeman phase structures with an average spacing of 30 cm. The posts are slightly smaller in diameter but significantly shallower than the other structures. All of the posts filled with light soil although a few had traces of charcoal flecking. Material is absent from all of the posts. Four posts are aligned with the northern half of the eastern wall and may represent a bench or possibly a rebuilding episode. Although a large amount of material was recovered from the fill, no artifacts were recovered from the structure floor. The lack of material on the floor combined with the presence of light fill zones immediately above the floor suggest the structure was emptied and left open for an indeterminate period of time before being filled with midden–like deposits.

Feature 715 is located 20 m west of Feature 452. This feature is the largest structure dated to the Lindeman phase with a basin measuring nearly 5 m^3. The basin was filled with four dark and one burned zone. Similar to the basin of Feature 703, the four dark zones are neatly layered and range in thickness between 5 and 25 cm (Figure 5.13b). The last filling episode is the largest and contained the most material. The burned zone is a spatially restricted concentration of reduced soil and charcoal flecks located in the center of the basin. Small quantities of red cedar and maize were recovered from this zone in a flotation sample (see Appendix Ebot).

Although the basin is deep, it contained a relatively small amount of material resulting in a material density of only 0.3 g/dm^3.

Twenty-seven posts were identified on the floor of Feature 715 and delimit an area of approximately 7.3 m^2. The structure is rectangular as indicated by the W/L ratio of 0.70 and shares an E-W orientation with Feature 452 (Figure 5.14b). The sandy subsoil made postmold definition difficult on the northern and southern walls resulting in a lighter density of posts in these areas. However, the gap along the north wall may correspond to an entrance. The posts are comparable in diameter and depth to those recorded with Feature 703. A single limestone-tempered cordmarked sherd was recovered from one postmold. Several lithic items including a point, flat abraders, and cores were found on the floor of the structure near the middle of the southern wall possibly indicating this area was associated with activities involving lithic technology.

The final structure located in the southern cluster is Feature 522. It is approximately 8 m southwest of Feature 715 and marks the western edge of the possible courtyard. The basin is the shallowest of the southern cluster but is equivalent to the deepest basin in the northern cluster. The total volume is approximately 3.8 m^3. A little over 2 kg of material were recovered from the basin resulting in a material density of 0.62 g/dm^3.

The basin filled with five zones including three light and two reduced zones. The zones are stratified in layers ranging between 10 and 25 cm in thickness (Figure 5.13c). The lowest level of fill (ZF) is light with very few artifacts. The subsequent filling episode is a large dark zone of reduced soil and charcoal, also with few artifacts (ZE). This layer is followed by another light zone that covers the entire feature. Most of the material derives from this zone (ZD). Immediately above Zone D are two pockets of reduced fill (ZC) and a final light fill zone (ZA). This pattern of filling might indicate the structure was left in place when sterile–like light fill washed in or was deposited purposefully. The subsequent burned layer includes carbonized giant cane stem and wood that may be associated with the burning of a structure. The lack of oxidized soil in the structure suggests these materials did not derive from the burning of Feature 522. The source is as yet unidentified since none of the Lindeman phase structures appear to have been incinerated.

The floor area of Feature 522 is approximately 6.5 m^2 with a NE-SW long axis orientation (Figure 5.11b). The W/L ratio of 0.62 indicates this structure is strongly rectangular and more similar to the George Reeves structures at the site in terms of shape. Forty-eight postmolds comprise the structure walls. The posts are evenly spaced with an average spacing of 29 cm. The size and depth of posts are consistent with the other Lindeman phase structures. The northern and southern walls include two rows of posts that are similar to the other wall posts. The presence of these posts suggests the northern and southern walls were rebuilt, increasing the length of the structure and making it more rectangular. The posts were easily discernible in comparison to the sterile soil suggesting the 70 cm gap in the southwest corner corresponds to an entrance. There were no materials or activity areas identified on the floor. Two interior posts, one shallow and one deep, were recorded on the floor near the eastern wall. They do not appear to be entrance posts but may have provided structural support along this wall.

PIT FEATURES

Fifteen Lindeman phase exterior pits and one interior pit were excavated at the Fish Lake site (Table 5.3). Each cluster includes pit types 1, 2, and 4. A single Type 5 pit is located in the southern cluster. Most are curvilinear in plan shape although there are several pits with rectilinear orifices. Only two shallow, basin-shaped pits (Type 1) with depths less than 20 cm were identified. These include the only interior pit (F 547) in the northern cluster and a small exterior pit (F 524) in the southern cluster. These pits are the smallest features with total volumes around 12 dm^3. Both pits filled with a single zone and contain very little material.

All of the other pits are much deeper with most pits reaching depths over 30 cm. With a total of seven features, deep basin pits (Type 2) are the most prevalent type. These pits tend to have multiple fill zones with predominantly dark and light fill. A single burned zone comprised of reduced soil and charcoal was present near the bottom of Feature 539. Depths range between 24 and 62 cm with an average of 45 cm. Pit volumes range between 119 to nearly 600 dm^3. Material content varies from a few items to over 4 kg of material with an average material density of 4.4 g/dm^3. Fire-cracked rock is the most prevalent type of material. Four Type 2 pits are located in the southern cluster while the remaining three are located in the northern cluster. Most pits have circular orifices but three exhibit square plan shapes.

Six pits exhibit straight sidewalls and flat bottoms with depths over 20 cm (Type 4). Most are located in the northern cluster. These pits are the largest in terms of volume with an average of 453 dm^3. Most plan shapes are circular with only one pit each exhibiting an oval, square, or rectangular orifice. These pits tend to have fewer zones than Type 2 pits with an average of three zones per feature. Fills are predominantly dark or light with only one slump and burned zone identified. Total material recovered ranges widely. Material density for Type 4 pits tends to be much lower than that observed for Type 2 pits with an average of 2.0 g/dm^3. Once again, fire-cracked rock is the most common material recovered. A highly fragmented and eroded jar was dispersed along the eastern and western perimeter of the bottom of Feature 411, a Type 4 pit (Figure 5.15). This deposit appears to be an intentionally fragmented vessel that may have been burned before being deposited on the floor of the pit.

A single pit exhibits outslanting sidewalls and a flat bottom (Type 5). Feature 405 is located in the southern cluster near Feature 452. Six zones including four dark, one light, and one slump zone were identified. The pit is circular in plan shape with a total volume of nearly 750 dm^3. Although a moderate amount of material was recovered from the pit, the large volume results in a small material density of 0.8 g/dm^3. A significant portion of the material is comprised of fire-cracked rock.

The Lindeman occupation is much larger than the previous George Reeves component and may be considered a small hamlet comprised of six structures 16 pits arranged into two courtyard groups. Hearths and entry posts are absent from all of the structures and most also lack identifiable entrances. However, the number, arrangement, and construction of features are suggestive of a permanent habitation.

The occupation is divided into northern and southern courtyard groups with the northern cluster likely dating slightly earlier than the southern based on the ceramic assemblages. Unlike most other courtyards identified within the region, the northern courtyard is defined by structures and pits as opposed to only structures. The northeast end of the courtyard remains open. Two pit features are located within the courtyard area although they are not centrally located like the features identified within courtyards at Range (Kelly et al. 2007). Also, the northern cluster appears to include paired structures and exterior pits, an arrangement identified in the George Reeves occupation. The distances between the three structures and their associated pits range between 26 and 30 m. These figures are similar to that noted for the George Reeves component (33 and 35 m). The structures in the northern courtyard are smaller and less rectangular than those in the southern courtyard. Other differences include fewer material remains and burned deposits.

The southern courtyard is much more compact and comparable to contemporary hamlets within the region, including the Marge site (see Chapter 7). Features in the southern cluster tend to be deeper and contain more material than those in the northern cluster. Structure floors are also larger and more rectangular on average than those in the northern courtyard. Two out of three structures exhibit an east–west orientation. The southern cluster contains material items and depositional sequences that are suggestive of non-domestic activities associated with feasting or supra-household events (see Chapter 6).

MISSISSIPPIAN COMPONENT

The Mississippian component at the Fish Lake site is limited to Features 525 and 454. Feature 525 is a Lohmann phase pit located beneath the floor of Feature

454, a Moorehead phase structure (Figure 5.16a). More Mississippian features are probably present to the west on the southern ridge as suggested by surface data and the location of the Mississippian features along the western edge of the EB (Kelly et al. 1979). In the following discussion I will focus on Feature 525 since the structure does not date to the early Mississippian period.

LOHMANN PHASE PIT

Feature 525 has a circular orifice with vertical sidewalls and a flat bottom (Type 4). Three thick fill zones include two light and one dark zone (Figure 5.16b). With a maximum depth of 66 cm, Feature 525 is the deepest of all the pits discussed thus far. Diagnostic materials include Lohmann phase rim sherds and a Cahokia side-notched point.

A small, isolated cemetery that may date to the early Mississippian period was also excavated as part of the 2007 project. The Ramsey Road Section of the Fish Lake Site (11MO608-A) lies approximately 200 m east of Feature 525. The size, shape, and spatial arrangement of the 15 burial pits are consistent with rural, non-elite cemeteries associated with the Lohmann and Stirling phases of the Mississippian period (Bukowski 2008b).

It is difficult to say much about the Lohmann phase component due to the fact that only one feature has been excavated. The presence of the pit and the lack of a contemporary structure in the excavated area seem to indicate that at least one Lohmann phase structure is located to the west along the southern ridge. However, without further field investigations the size of the Lohmann phase occupation remains indeterminate. It is significant that the Lohmann occupation is located immediately west of the northern Lindeman cluster and only 30 m northwest of the southern cluster. This movement west continues the trend noted for the Terminal Late Woodland period. Also significant is the presence of an early Mississippian cemetery nearby. The association of farmsteads or small villages with rural cemeteries has been noted at other sites within the region including the Stemler Bluff and Knoebel sites (see Chapter 7). The presence of the cemetery and the single pit at Fish Lake suggests the Lohmann phase occupation at Fish Lake may be considered a nodal farmstead or village associated with mortuary activities.

DIVERS (11MO28)

The Divers site is located only 2 km south of the Fish Lake site along the same floodplain terrace on the east side of Fish Lake (see Figure 2.1). The site was first recorded in 1950 after Griffin and Spaulding visited the site as part of their Central Mississippi Valley Archaeological Survey although at that time it was known as the Otten site (11MO4). Visibility was poor but Griffin indicated the surface debris could be "quite heavy" (IAS Site Files). The presence of celts, discoidals, and Monks Mound Red sherds suggested a Late Woodland to early Mississippian habitation site. When Porter and Freimuth revisited the site 18 years later, they corrected the location, changed the name to reflect the name of the landowner, and assigned the new IAS site number (11MO28). The original site limits are much smaller than the surface distribution of artifacts suggests as noted by Wolforth in the site file revisit form from 1987 and in my own observations.

Divers is bordered on the north by Palmer Creek and the west by the former east bank of Fish Lake. The high floodplain terrace extends to the east and south, thus it is likely the precolumbian occupations extend farther in these directions as well. The distribution of piece plots and the geophysical investigations presented below corroborate this inference (Figure 5.17).

During the late 1960s and 1970s, James Porter and Glen Freimuth conducted excavations at the Divers site under the auspices of the Canadian National Research Council and the University of Illinois. In total, they exposed approximately 1,900 m^2 by hand and with heavy machinery. They identified and excavated over 100 features including several structures, pits, and posts dated to the Patrick phase through Stirling phase thus making it only the second site excavated in the southern American Bottom that was continuously inhabited throughout the Terminal Late Woodland period. As part of the initial investigations at the site, Porter placed a 2 m x 2 m unit into a possible mound located southwest of the site area. The presence of a few sherds, a pipe fragment, and what appeared to be basketload stratigraphy suggested this rise was a precolumbian mound likely associated with the Divers site due to its proximity (notes on file at ISAS). The rise is still quite prominent today although a modern house sits atop it.

EXCAVATION RESULTS

The following discussion of feature excavations at Divers is drawn from Freimuth's recently completed dissertation and will focus on the Lindeman and Lohmann phase occupations. I have noted where my interpretations differ from those of Freimuth (2010). In total, 38 percent of the numbered features date to these two phases. Although the excavation blocks are not continuous, they do provide information concerning site layout and occupation density including evidence for possible courtyards during the Lindeman phase. A lengthy discussion of the excavation results is warranted because these data will aid in the interpretation of the geophysical survey data collected as part of the current project.

LINDEMAN

The Lindeman phase occupation at the Divers site is represented by at least eight structures (three of which Freimuth interpreted as ramadas) and 13 pits (Figure 5.18, Table 5.5). The pits include seven exterior storage pits, one earth oven, two possible entry posts, two interior pits, and two hearths. There are only a few instances of superpositioning including a storage pit (F 25) on a structure (F 26)[3] and a structure (F 125) on a large storage pit (F 130). However, two structures interpreted as single constructions may actually be superimposed structures. Feature 125 appears to be a single post in basin structure superimposed on a less well defined single post in basin structure (F 125A) that is oriented perpendicular to Feature 125. Feature 65 is a rectangular single post in basin structure possibly superimposed on an earlier square single post in basin structure (F 65A). Two features interpreted as ramadas (F 49 and F 64) are likely habitation structures due

---

[3] Due to superpositioning, Freimuth thought F 26 was a George Reeves phase structure but the size and shape of the structure are more consistent with Lindeman phase features at this site and I will include it in the Lindeman discussion.

to the presence of four walls and a hearth in each as well as artifacts on the floor of one (F 49) although basins were not identified.

All of the Lindeman phase structures were built using single set posts. Two structures (F 64 and F 49) lacked basin fill. The remaining seven structures had basins ranging in depth between 10 cm and 50 cm with an average depth of 33 cm (Table 5.6). The basin of F 26 was likely much deeper but the subsequent construction of at least three Mississippian structures in the same location probably destroyed the upper layers. The structures are rectangular with most long axes oriented northeast – southwest, parallel to Fish Lake and the terrace edge. There are a few examples where the long axis is perpendicular (F 50, F 125) or oriented north – south (F 64). The average width to length ratio (W/L) is .58 with most structures falling between .50 and .58 indicating they are strongly rectangular. Floor areas tend to be smaller than the subsequent Lohmann phase structures with an average of 8.1 m^2. Feature 36 is the largest structure in terms of floor area and is almost 50 percent larger than the next largest structure (F 26).

Several structures appear to have burned. Features 36, 65, and 117 exhibit evidence for burning with floor assemblages intact beneath basin fill. A radiocarbon sample taken from Feature 36 resulted in a calibrated date of AD 1042 +/- 66 indicating the structure burned near the end of the Lindeman phase. Freimuth suggests the presence of a large cobble directly on top of the burned thatch might be a “final act” (Freimuth 2010:125). This intentional deposition could represent a ceremonial closing of the structure. The lack of superpositioning on this structure supports this assertion.

A similar phenomenon occurred in Feature 49 in which two chipped–stone tools, an adze and a gouge, were left on the floor of the structure next to the hearth suggesting they were left intentionally. Feature 65 is significant in terms of the types of artifacts recovered from the feature fill and found in situ on the structure floor. These items include a human mandible, discoidals, pipe fragment, and several spindle whorls. Alternatively, the burning of structures with floor assemblages intact may indicate Lohmann phase residents forcefully usurped the settlement.

Pits are not numerous but this might be a factor of the limited area exposed around some structures. Feature 4, an exterior pit located immediately adjacent to Feature 26, contained a total of 70 vessel segments with more bowls represented than jars. Interior pits were present in four structures, Features 26, 49, and 125. Feature 23 is a possible entry post located along the southeastern wall of Feature 26. Feature 49 contained a hearth and a shallow storage or processing pit (Feature 51). Feature 128 is a large rectangular pit located on the west end of Feature 125. Unlike the other interior features, Feature 128 contained a significant number of body sherds and nine pottery vessels.

The spatial distribution of features suggests the presence of at least one courtyard group minimally comprised of structure Features 36, 64, 65, 117, 125 and pit Features 4, 25, 34, 35, and 63. Feature 26 is likely also part of this group although it apparently was abandoned before the other structures due to the superpositioning of Feature 25. The presence of several other structures in unexcavated areas between these features is suggested by the distribution of the structures.

Features 49 and 50 might be part of another courtyard group southwest of the main excavation area. It is a significant distance from the structures in the previously identified courtyard group and the lack of Lindeman phase features in the unit located between the other two units corroborate this possibility. Likewise, Feature 72 is isolated to the east of the Feature 65 complex. Features are present nearby but were not excavated.

To summarize, the Lindeman occupation within the excavated area at the Divers site minimally consists of up to ten structures arranged in one to three courtyard groups. Due to superpositioning, the maximum number of structures in use at one time is seven. Seven structures are oriented NE–SW, parallel to Fish Lake, two exhibit the opposite orientation, and one is oriented north – south. Four structures exhibit interior features including two hearths, one entry post, and storage and/or processing pits. Three structures were burned with intact floor assemblages. The majority of material derives from these structures (with the exception of Feature 50 that contained 35 of the entire vessel assemblage). Pits, both interior and exterior, are not common and the majority contain very little material. A few exceptions include Feature 4 and Feature 128 that contained the remains of several vessels and several kilograms of limestone.

LOHMANN

The Lohmann phase occupation at the Divers site is comprised of at least six structures, four interior pits, and nine exterior pits (Figure 5.19). All of the structures are rectangular and built with wall trenches. Although Freimuth indicates that Feature 105 had an extension resulting in a T–shaped structure with single-set posts forming the walls of the extension, in this analysis I consider the single post "extension" as an earlier, Terminal Late Woodland structure that was superimposed by a wall trench Lohmann phase structure (Feature 105). The fact that a wall trench extends across the supposed entrance to the extension and the presence of a possible entry post along this wall support this interpretation. At most, only four structures could have been occupied concurrently. Three structures include interior pits while Feature 96 is the only structure with an identified hearth.

Freimuth identified two clusters of Lohmann phase features suggesting two farmsteads comprised of at least one structure and associated exterior pits (Freimuth 2010:221). The western cluster includes two structures (F 16 and 24) and seven exterior storage pits while the eastern cluster includes five structures (F 91, 94, 96, 105, and 114), two hearths, and two exterior pits. Both pits in the eastern cluster are superimposed by structures suggesting the latest Lohmann phase occupation in this area did not have associated pits. The lack of storage could be due to the possible association of the features in the eastern cluster with suprahousehold activities. The large size of Feature 96 and the presence of two discoidals and a galena cube support Freimuth's designation of the eastern cluster as a nodal farmstead.

The western cluster includes two superimposed structures indicating only one structure in this cluster was occupied at one time. Both structures are superimposed on Feature 26 (a Lindeman structure) and are superimposed by Stirling phase structures. The paucity of artifacts is probably related to these subsequent constructions. Most material remains recovered from the western cluster were recovered from a few of the deep storage pits. Some of these items are also suggestive of suprahousehold activities associated with this farmstead. These “special” items include a possible Coles Creek bowl (F 32), a large chunk of hematite (F 33), and two ceramic pipe stem fragments (F 131, 132).

The Lohmann phase structures are less rectangular, slightly larger, and shallower than those identified for the Lindeman phase. The average floor area increases to 12.4 m^2 with a range of 8.8 m^2 to 18.5 m^2. The Lohmann structures appear to fall into two size categories with floor areas less than or greater than 10 m^2. The larger structures include Features 16 and 24 in the western cluster and Feature 96 in the eastern cluster. All of the smaller structures are in the eastern cluster. The size difference might be related to when the structures were in use. The largest structure is Feature 96 which superimposes a small structure (F 94). If larger structures date to later in the Lohmann phase as is suggested by excavations at Cahokia and outlying settlements (Collins 1990; Milner et al. 1984; Pauketat 1998a), then the entire western cluster might date to later in the Lohmann phase and be contemporaneous with Feature 96 since both structures are in the large category. The W/L ratio increases to .69 but is less variable than the Lindeman structures with a range between .49 and .76 possibly suggesting more standardized construction.

Most structures are oriented perpendicular to the terrace edge, the opposite trend seen for Lindeman structures. Only two of seven structures are oriented parallel to the terrace edge. Basins, when present, were significantly more shallow than Lindeman figures. Three structures (Features 16, 24, and 95) are represented by wall trenches only with no basin identified. Three of the remaining structures have basins measuring 10 cm deep with the deepest basin measuring only 15 cm deep. None of the structures exhibit any evidence for burning.

The Lohmann phase occupation at the Divers site is more restricted than the Lindeman phase with all of the features located at the highest elevation within the excavated area. Lohmann phase features were identified within only two of Freimuth's EBs. Freimuth interprets these occupations as two separate farmsteads (Freimuth 2010:221). It is also possible that the Lohmann phase occupation is more extensive, continuing into the unexcavated areas north and east of these EBs. The number of deep storage pits associated with the western feature cluster and the close proximity of the two clusters suggest they might be less separate than the farmstead interpretation implies. If they are two farmsteads, then it is significant that the activities associated with each cluster differ and possibly complement each other. For example, the western cluster lacks discoidals, galena, and celts but includes pipes, hematite, and a possible non-local vessel. The eastern cluster lacks pipes and non-local vessels but includes multiple seed jars, discoidals, galena, a celt, and ceramic disks.

GEOPHYSICAL SURVEY RESULTS

In the spring of 2006, Betzenhauser and Hargrave conducted a gradiometric survey of the Divers site. The survey covered an area of 3,600 m^2 at the north end of the site just south of DD Road (Figure 5.20). Although the survey was not extensive, the geophysical results are very revealing. The anomalies appear to be limited to the area of higher elevation (higher than 499.5 m) at the edge of the floodplain terrace as seen in the lack of features to the north where the terrace gradually descends to Palmer Creek. Those anomalies with the strongest magnetic signatures were digitized and separated into those that might be structures and those that are likely pits (Figure 5.21). In total, 42 anomalies appear to be rectangular structure basins while another 138 possible pits were identified within the surveyed area alone. Feature density remains high on the eastern and southern edges of the surveyed area suggesting the site extends for some distance in both directions and well beyond the original site limits to the east.

Porter (1974) and Freimuth (2010) both noted trends in structure orientation based on the results of their excavations. As previously mentioned, the excavated Lindeman phase structures were mostly oriented northeast to southwest (parallel to Fish Lake). The opposite trend appears to characterize the early Mississippian structures that exhibit a northwest to southeast orientation (perpendicular to Fish Lake). Feature 15, a Stirling phase structure, is the only one in the excavated area that is oriented to the cardinal directions with the long axis oriented east – west. The rectangular anomalies in the geophysical data share all three of these orientations with the addition of a north–south orientation suggesting both the Lindeman and early Mississippian occupations extend north and east of the excavated areas. There appears to be a high degree of superpositioning as well, a trend also noted in Porter and Freimuth's excavations where as many as six structures were superimposed.

Although these trends in orientation are evident, orientation alone is insufficient to assign possible components to the unexcavated structures in the geophysical data. In order to better interpret the geophysical data and in turn, site layout and spatial organization during the Lindeman to Lohmann transition, it was necessary to compile comparative data from the excavations conducted by Freimuth. More specifically, since the anomalies likely represent basin fill as opposed to architectural elements (i.e., posts or wall trenches), I compiled length and width measurements and calculated area and W/L ratios for the excavated Lindeman, Lohmann, and Stirling phase structures at Divers. Once all these measurements and calculations were assembled, I calculated averages and standard deviations of basin size (area) and shape (W/L) for each phase.

The possible pits were excluded from the analysis because pit features spanning from the Patrick phase through the Stirling phase were excavated at the site and it is impossible to determine which component they belong to based solely on plan size and shape. The only possible exception is rectangular or square pits. These features likely date to the Terminal Late Woodland or early Mississippian period. However, the only way to further refine this designation is through excavation. Pit features were also excluded from the maps because they unnecessarily complicate the map, making the structure distribution more difficult to interpret.

The next step was to obtain length and width measurements of the possible structure basins. Approximate measurements were obtained using the measure tool in ArcMAP. Because the anomalies themselves are averages and because of the scale at which we are dealing, these measurements are at best an approximation. However, the signals were strong and the survey was conducted at a small enough interval that these measurements are likely close (less than 50 cm) to what would be observed during excavation. Also, the ratios would likely not change because the data were processed the same way in all directions and were not stretched in any one direction.

Once the length and width measurements were obtained, I calculated the area and W/L ratio for the possible structures in the geophysical results (Table 5.7). By comparing the area and W/L ratio for each of the anomalies I was able to tentatively assign components initially by area alone, then by W/L alone, and finally using the combined data. Final components were assigned based on the average, standard deviation, minimum, and maximum values for area and W/L for each component (Table 5.8). The final component was added to each possible structure in the GIS attribute table. I then created maps in the GIS combining the excavated features with the geophysical anomalies separated by component in order to identify spatial patterns and the distribution of structures for the Lindeman and early Mississippian phases. The maps are presented at the same scale for ease of comparison.

Figure 5.22 illustrates the distribution of the excavated Lindeman phase features and all possible Lindeman phase structures identified in the geophysical data. The latter group includes basins assigned to the Lindeman phase, TLW1 or TLW2, Lindeman or Lohmann, and indeterminate features to present the maximum number of structures that might date to the Lindeman phase. The quantity and distribution of the geophysical anomalies are similar to the excavated sample. Possible Lindeman phase structures far outnumber earlier TLW and later Mississippian structures. Also, there are multiple possible structures located at elevations lower than 500.5 m (arbitrary) including an entire cluster on the western end of the survey area. The structures also appear to be arranged into possible courtyards and are spread throughout the surveyed area. The possible courtyards are similar in size and composition (in terms of number of structures) to the proposed courtyard in Freimuth's excavations. The proposed courtyards are generally oval shaped with a long axis orientation running northwest to southeast. Unlike the excavated examples, the possible Lindeman structures exhibit all four orientations, namely north–south, east–west, northwest–southeast, and northeast–southwest. However, most exhibit a northwest–southeast long axis orientation which is opposite the trend noted in the excavated sample. In general, there does not appear to be a predominant structure orientation for the Lindeman phase.

Figure 5.23 illustrates the distribution of the excavated Lohmann phase features and all possible Lohmann and Stirling phase structures identified in the geophysical data. The latter group includes those assigned to the Lohmann or Stirling, Lindeman or Lohmann, and indeterminate features to present the maximum number of structures that could date to the Lohmann phase. In comparison with the Lindeman phase, the possible Lohmann or Stirling phase structures are fewer in number, more restricted in distribution, and appear to be clustered rather than arranged into courtyard groups. There are only four possible structures located below 500.5 m and all of these are either indeterminate or could be Lindeman phase structures. All four anomalies that were assigned to only the early Mississippian period are located above 500.5 m and appear to follow the northern edge of the ridge extending to the east. Also, the possible Mississippian structures are either closely clustered together or dispersed individual structures representing at least two possible farmsteads. Possible early Mississippian structure orientations include all but northeast–southwest. There is a slight trend for structures to be oriented northwest–southeast. All of these patterns are consistent with the excavated sample. All of the excavated structures are located above 500.5 m and are either clustered (eastern cluster) or individual structures (western cluster). They also exhibit variety of orientations but most are oriented northwest – southeast.

PEIPER (11MO31)

The Peiper site occupies approximately 0.04 km^2 of a floodplain ridge 10 km south of the Divers site and only 600 meters northwest of the Washausen site (see Figure 2.1). It lies within a deep bend of Fountain Creek almost due east of the mouth of the Meramec River. Prior to channelization and the construction of the levee, Washausen and Peiper were located on the same side of the creek (Figure 5.24). This site has been impacted by continuous agricultural production as well as flooding. The flood of 1993 significantly eroded the only mound identified at the site to the point that the mound is not visible on the surface today.

Peiper first entered the IAS site files in June of 1968. The surface collection conducted by Glen Freimuth was dominated by Late Woodland artifacts including cordmarked grit– and grog–tempered sherds. The presence of a single red–slipped, limestone-tempered sherd suggested a Mississippian occupation. The single mound was visible although a height is not given. Subsequently, in 1971 and 1973 James Porter led the Historic Sites Survey in this region, a project focused on the identification and documentation of archaeological sites in the American Bottom and uplands. The surface collection at Peiper yielded results that support the initial 1968 survey findings.

George Milner (2006) re-examined the ceramics from the Peiper site in the early 1990s. Of the 113 sherds examined, the great majority fall within the Late Woodland period with Mississippian sherds comprising only 21 percent of the assemblage. Very few sherds suggest a late Terminal Late Woodland occupation. This pattern suggests the site was most intensively occupied during the Late Woodland period followed by a period of abandonment and then re-occupied during the early and late Mississippian period. Several fragments of human bone from at least two adults were recovered from the surface near the mound by a collector shortly after the flood of 1993 suggesting burials may be present within the mound (see Appendix E). However, the significant erosional damage may have disturbed or destroyed any such burials.

Although Peiper was well-known to local collectors for decades, systematic archaeological investigations did not occur until the summer of 2004. Timothy Pauketat initiated field investigations with a University of Illinois field school in June. Pauketat directed ten students and several volunteers in the excavations at

Peiper. The main goal was to identify subsurface features related to the Mississippian occupation and, if possible, determine if the mound was still intact.

EXCAVATION RESULTS

The excavations at Peiper began with the machine–aided removal of the plowzone in a continuous excavation block measuring approximately 230 m^2 near the location of the mound (Figure 5.25). Most of the features defined at the machine–scraped surface are Late Woodland storage or processing pits (Figure 5.26). A few possible house structures and a large, amorphous area of dark soil were also identified. None of the excavated features belong to a Terminal Late Woodland occupation. In the following discussion of features I will briefly address the Late Woodland features and focus on the Mississippian occupation.

Twenty-one pits were investigated during the 2004 excavations (Figure 5.27). Eight were partially excavated to varying degrees (Table 5.9). Deep pits with vertical or incurving sidewalls predominate. Depths for deep storage pits range between 24 and 96 cm with an average of 46 cm. Only four pits could be considered shallow basins measuring less than 20 cm deep. Most pits have between one and five fill zones. Features 2 and 4 have nine and 14 fill zones, respectively. Most deep pits contain a large amount of debris including sherds, limestone, and burned refuse suggesting secondary use for disposal. Although the material remains recovered from these pits were not analyzed, field observations and a cursory look at the ceramics suggest that nearly all of the sherds recovered were tempered with grog or grit indicating that these pits were in use during the Late Woodland period.

A large area of fill measuring approximately 40 m^2 was defined on the north end of the EB (Figure 4.28). Four slot trenches were excavated by hand in order to determine if feature edges could be delineated within the fill. Definition was complicated by a high degree of superpositioning. The four slot trenches were excavated through the western, northern, and southern walls of a Lohmann phase structure (Feature 1) as well as a possible structure basin (F 11), a small single–post structure (F 21), and several pits. The only feature that is definitively dated to the Mississippian period is Feature 1. Although shell–tempered sherds were recovered from Features 11 and 15, the majority of sherds from these features derive from the Late Woodland occupation. The small proportion of Mississippian sherds in these features, high degree of superpositiong, and extensive rodent activity suggest they date to the Late Woodland period. However, it remains possible that Features 11 and 21 are earlier Mississippian single–post structures including a possible sweatlodge (Feature 21).

Although no architectural elements were identified, Feature 11 appears to be a structure basin. It is roughly square in plan shape with a relatively flat bottom. It measures 3.8 m by 3.6 m with a maximum depth of approximately 30 cm (Table 5.10). The basin is comprised of two dark fill zones heavily disturbed by rodent and root action. It is superimposed by Feature 1 and on Features 15 and 21 as well two unexcavated pits. It appears to cut through the amorphous fill area on the north end. Feature 21 is a small, subrectangular single post in basin structure. This feature was not identified as a structure until the floor was reached and postmolds were defined. The western edge of the basin was mapped in the northern profile of ST 1 but due to the similarity in fill, it was initially thought to be part of Feature 11. The eastern basin edge was destroyed by the construction of Feature 11 but was extrapolated based on the distribution of posts. The basin measures approximately 2.8 m in diameter with a maximum depth of 13 cm. Sixteen posts were identified on the floor. All of the posts are shallow, the deepest measuring only 7 cm.

The Mississippian occupation within the excavated area is represented by a single structure, Feature 1. Due to the difficulty in defining features in plan, Feature 1 was not bisected. Therefore, a complete profile map is not available. Although slot trenches 2 and 4 were excavated through the structure, all of the basin was removed before mapping the eastern profile of ST 4 resulting in a profile of the wall trenches and Feature 11 fill but not the Feature 1 basin. The maximum dimensions and all of the wall trenches were initially identified in the slot trench profiles. The areas between the slot trenches were then scraped by hand to define the limits of basin fill and wall trenches in plan.

The basin is shallow and the southern edge was destroyed, likely due to years of farming and damage from flooding. The basin is comprised of a single dark sandy loam fill zone. The material density is approximately 2,218 g/m^3 (2.2 g/dm^3). Nearly two-thirds of the body sherds and more than half of the vessels pre-date the structure indicating a high degree of mixing. However, the presence of sherds and vessels tempered with shell or limestone from the basin and a large portion of a shell-tempered jar in a wall trench support a Lohmann phase association.

The west and south walls were reconstructed once resulting in a total of six wall trenches. Several postmolds were identified in the longitudinal profiles of the inner western wall trench, outer southern wall trench, and the northern wall trench. The floor area of the smaller construction is approximately 11 m^2 with a W/L of 0.59. The outer construction episode increased the floor area to 12.4 m^2 but the rectangular shape was maintained as indicated by a W/L of 0.58. The structure superimposes directly on Feature 11 and several pits.

The amorphous fill area may correspond to the previously reported mound. This fill is visible in the east and west profiles of Slot Trench 3 (Figure 5.29a and b). A thick band of indeterminate mottled fill was identified below the structure which would seemingly indicate that the wall trenches and basin of Feature 1 were excavated into what may be mound fill. Based on the two profiles from Slot Trench 3, I argue that the structure was built after the mound and likely on a mound surface.

WASHAUSEN (11MO305)

The Washausen site is a multi-mound center located along Fountain Creek in Monroe County, Illinois. It lies approximately 35 km southwest of Cahokia Mounds and 15 km southwest of the Pulcher site near the confluence of the Meramec and Mississippi Rivers. As previously mentioned, Washausen and the Peiper site were located on the same side of the creek prior to channelization of Fountain Creek and the construction of the levee. Today, Washausen is located south of the Fountain Creek levee and east of an elevated rail line (Figure 5.30).

The Washausen site entered the IAS site files as a result of the Historic Sites Survey. At that time, three 1 m high mounds were clearly visible at Washausen.

Continuous agricultural production has significantly reduced the height of the mounds but they are still visible on the surface today. The presence of a Mill Creek hoe fragment with polish, a plethora of limestone-tempered red-slipped sherds, and a single shell-tempered rim suggested an early Mississippian component. Porter noted a possible connection with Pulcher in his field notes that state Washausen is particularly interesting because of “a Pulcher flare” (IAS site files). Porter also noted the presence of basalt and granitic rock fragments, including some that were battered. George Milner’s (2006) re-examination of the sherds collected during the Historic Sites Survey indicates that the majority of sherds derive from late Terminal Late Woodland occupations. Early Mississippian sherds are limited to about 17 percent of the sample suggesting the site was most extensively occupied during the late Terminal Late Woodland period. However, a large portion of the sherds in the sample may be associated with either the late Terminal Late Woodland or early Mississippian period.

Porter subsequently listed Washausen as one of several “links” in his chain settlement model (1974). He hypothesized that Washausen was an early mound center established in a strategic location before the Mississippian period in order to control the movement of resources (Porter 1974). John Kelly (1980) echoed this sentiment in his dissertation suggesting Washausen acted as the conduit through which Crescent Hills Burlington chert entered the American Bottom during the Mississippian period (1980). Most importantly, the site is one of several mound sites in the southern American Bottom that appears to date mostly, if not entirely, to the Mississippian transition.

Although Washausen features prominently in discussions of settlement patterns in the American Bottom (Fowler 1978; Kelly 1980; Milner 2006; Porter 1974; Schroeder 1997), little research has been conducted at the site. Recent work conducted by John Kelly and students from the University of Missouri St. Louis (UMSL) and Washington University includes surface collection, mapping, and geophysical survey (Bailey 2007; Burks et al. 2004). They established a grid oriented to the levee and created a topographic map that clearly indicates the location of Mounds A (northern mound) and B (southern mound). The third mound (Mound C), reportedly located east of Mounds A and B, has been severely deflated but is suggested by a slight rise. Preliminary analyses of the distribution of materials collected from the surface and the Kelly and Burks geophysical data suggest the area between the mounds is a generally rectangular or oval plaza (Bailey 2007; Chapman 2005). Kelly indicates the original site limits appear to be accurate for the west and southern edges of the site due to a dramatic drop off in the amount of prehistoric materials identified on the surface (personal communication 2009). However, the northern limits are inaccurate as demonstrated by the geophysical survey and excavation data presented below.

GEOPHYSICAL SURVEY RESULTS

The research associated with this dissertation project commenced in 2004 with a brief field visit to Washausen by myself and Dr. Timothy Pauketat. Since John Kelly had already initiated a surface collection and site mapping, we decided to begin with a geophysical survey. The first survey was conducted with the following goals: 1) to assess the quality of results gained from magnetic survey at the site; 2) to identify anomalies that potentially correspond to pre-Columbian structural features; 3) to obtain subsurface limits and shapes of mounds A and B; and 4) to ascertain whether the area between the three mounds was indeed a plaza.

With support from a University of Illinois Urbana-Champaign Anthropology department summer funding grant, the voluntary efforts of Dr. Michael Hargrave of the Corp of Engineers Research Laboratories, and permission from the landowner, Ellery Hawkins, I conducted an initial geophysical survey at Washausen in April of 2004. Over the course of two days, Dr. Hargrave and I surveyed a total of 9,600 m^2 with a Geoscan FM 36 gradiometer. We programmed the gradiometer to take eight readings per square meter in order to cover the greatest area possible in the least amount of time while maintaining an adequate density of readings.

We initially set up a series of grids measuring 60 m northwest to southeast and 120 m northeast to southwest that crossed the northern mound and the plaza area (Figure 5.31). Immediately noticeable in the data is the extreme quietness of the site, magnetically speaking. Anomalies generally hover around the +/- 1 to 2 nT range. We extended the grid another 40 m to the south in order to cover the southern mound. Mound B was not discernible in the magnetic data due to a large historic scatter that includes metal and burned brick. The initial magnetic survey was successful in addressing all four of the aforementioned goals. The results indicate that magnetic survey was successful in identifying potential pre-Columbian features at the site even though the site is magnetically quiet. Mound A is discernible as a large rectangular anomaly although Mound B was not detected due to the presence of historic debris. Finally, the small number of features identified between the mounds supports the assertion that the area is a plaza.

Dr. Hargrave and I returned to the site in 2007 with several volunteers in order to continue the gradiometric survey and to test the southern mound area with a resistivity meter. The resistivity meter measures electric properties of soil and is unaffected by magnetically susceptible historic debris like the gradiometer making it ideal for the mapping of the southern mound. We decided to continue the magnetic survey immediately east of the previously surveyed area just south of the levee but with a higher density of readings (8 readings per meter at ½ meter intersects). The first two blocks were mapped but the results were not as good as the first survey (Figure 5.32). We decided to attempt to replicate the survey of six blocks mapped in 2004 at the same reading density of the original survey. These results were similarly disappointing indicating the differences in the quality of data were not related to the density of the survey but were likely the result of differing field conditions. In 2004 the field was planted with young corn while in 2007 the field had been plowed resulting in deep furrows that featured prominently in the magnetic survey results.

We then moved to the area southeast of Mound B because there appeared to be a higher concentration of prehistoric materials on the surface in this area and features were likely present beneath the surface in this area. The five blocks surveyed revealed basin-like anomalies, however other issues including an unexplained phenomenon located in opposing corners of one of the grids were present. In total, 2,580 m^2 that were not subject to survey in the previous visit were mapped while 2,400 m^2 were resurveyed, resulting in 12,180 m^2 of the site area subject to geophysical survey on at least one occasion. When combined with Burks's surveys, the total site area subject to geophysical survey is approximately 20,258 m^2 or 26 percent of the site area.

Even though the site is magnetically quiet and more recent disturbances could be interpreted as prehistoric anomalies, the results are promising. Initial processing of the data clearly show what appears to be a rectangular mound where the northern mound is located. Several clusters of multiple rectangular and circular anomalies, most likely houses and pits, are present in the northernmost and southeastern grids. The resistance data reveal a square to rectangular anomaly similar in size to the northern mound. A projection visible on the north end of the mound may correspond to a ramp that faced the plaza. The mounds and plaza are oriented roughly northeast to southwest, similar to that seen at Cahokia in the Grand Plaza (Fowler 1975). The light density of anomalies overall may indicate the site was occupied for a short period of time although the magnetic quietness is likely adversely affecting the results.

Similar to the Divers site data, I digitized the strongest (darkest) anomalies identified in both gradiometric surveys and the resistivity survey (Figure 5.33). I also added the anomalies identified by Jarrod Burks in order to identify site-wide spatial patterning (Bailey 2007; Burks 2004). Between the three sets of data, over 264 anomalies corresponding to mounds and possible structure basins, pits, post pits, and historic pits, foundations, or wells were identified. These anomalies were irregularly distributed throughout the surveyed area in dense clusters separated by areas with few or no anomalies identified.

The low density of anomalies located between the mounds in the results from all of the surveys provides further evidence supporting the interpretation that the mounds flank a plaza. There are a few possible structures located in the plaza and in close association with mounds A and B. The size, shape, and location of several anomalies located within the plaza area are suggestive of large post pits associated with marker posts. Similar "bathtub" shaped features were identified and excavated at other mound centers including Cahokia, the Mitchell site, and the East St. Louis Mounds (Pauketat 1998a; Porter 1974; Kruchten and Galloy 2010). Many such posts are associated with plazas or other ritual areas including Mound 72 and the Woodhenge at Cahokia (Fowler 1999; Pauketat 1998a). The possible post pit anomalies at Washausen are located near the center of the plaza in a line parallel to the short axis of the plaza and along the northern and southern edges near mounds A and B. A similar pattern has been noted for Cahokia's Grand Plaza just south of Monks Mound (Alt et al. 2010).

The areas west of the plaza, north of Mound A, and east of Mound B contain the highest density of features. The western cluster identified by Burks is comprised of 66 pits and no structures. However, it is likely that at least some of these anomalies correspond to structures. The anomalies are well distributed and do not appear to be associated with courtyard groups. The anomalies are dispersed along and define the western edge of the plaza. The area east of the plaza between Mounds A and C contains only a few sparsely distributed possible pits and structures.

The southeastern cluster is comprised of a high density of anomalies that appear to correspond to structure basins along with a few possible pits. These anomalies are problematic in that although they appear to be strong anomalies associated with prehistoric features, a few soil probes did not confirm this. However, the high concentration of surface debris previously noted suggests such features are present in this area. A similarly dense area of possible structures is located immediately northwest of Mound B. It is unlikely that such structures would be present in such close proximity to an actively maintained mound. Therefore it is likely these features were occupied prior to the mound or at least before the mound reached its final dimensions. The northern cluster is comprised of anomalies interpreted as pits and structures. The structures in this area appear to be arranged into two to three small courtyard groups comprised of five to 10 structures and associated pits. The possible courtyards measure between 10 m and 20 m in length.

The comparative sample of excavated features at the site is small (n = 2) precluding an in depth analysis of rectangular anomalies similar to that conducted for the Divers site. However, the surface data and materials from excavation indicate the site was most extensively occupied during the TLW2 and early Mississippian periods and possibly for a very short span (Bailey 2007). There is anecdotal evidence for limestone box graves from later occupations however, the lack of surface materials dated to later periods suggests a non-intensive occupation possibly related to mortuary activity. Therefore, I will treat all of the rectangular anomalies in the Washausen data as possible Lindeman/Lohmann structures in the following interpretation of site layout.

The rectangular anomalies range in size between 1.7 m^2 and 91.4 m^2 with an average of 6.6 m^2 (Table 5.11). If we exclude the outlier (JB n/a), circular anomalies, and the anomalies that are smaller than all of the structures excavated at Range, then the average falls to 5.9 m^2. The more limited sample measures range between 3.3 m^2 and 16.3 m^2. The majority fall between 4.0 and 6.0 m^2. These figures are well below the averages for excavated structures associated with TLW2 and early Mississippian phases within the region and at Washausen itself (see below and chapter 7). The larger structures are located near Mounds A and B with four at the north end of the site and one just east of Mound B. One of the anomalies on the north end corresponds to Feature 1, a Lindeman phase structure (see below). The largest anomaly is located on the northeast corner of Mound A.

Although the sizes of the rectangular anomalies are smaller than expected for the late Terminal Late Woodland and early Mississippian periods, the difference may be attributable to several factors. First, there is a great deal of variation in terms of structure size in general, particularly during the late Terminal Late Woodland period. For example, the Divers site Lindeman phase structure basins ranged between 5.27 and 13.86 m^2 (Freimuth 2010). Similarly, the structures dated to the latest Edelhardt component at Cahokia's Tract 15A have area measures that range between 3.7 and 17.0 m^2 (Pauketat 1998a). The small size of anomalies at Washausen may be a local trend specific to this site or more southerly sites in general. Second, the magnetic data from Washausen may only be detecting portions of structures as opposed to the entire structure. This is likely the case for many of the anomalies due to the overall magnetic quietness of the soils at the site. If there is burned material or soil located in only a portion of a structure basin, then it is likely that portion will be detected but possibly not the areas without any evidence of burning.

In terms of shape, most of the anomalies are strongly rectangular with an average W/L of 0.61 and ranging between 0.5 and 0.6. The distribution is fairly normal ranging between 0.35 and 1.0. These figures are similar to the early Mississippian components at the Range site and the Edelhardt and Lohmann phase components at Cahokia's Tract 15A (Hanenberger 2003; Pauketat 1998a).

EXCAVATION RESULTS

The geophysical fieldwork provided a map of anomalies used to direct test unit excavations during the UIUC Summer Field School in July 2004 directed by Pauketat and larger unit excavations conducted during 2007 and 2008 under my direction with the assistance of several volunteers. The 2004 testing includes the excavation of four test units (TUs) in the area between the levee and the northern edge of the field (Figure 5.34). The main goal of this testing was to ground truth a few of the previously mentioned rectangular anomalies on the north end of the site. Three 1 X 1 m units were excavated at the north edge of the 2004 geophysical grid. All three of these units were negative for feature fill. We then extended the initial units by 1 m to the south and opened a fourth 2 X 1 m test unit to the west of the first three. TUs 3 and 4 and the southern extensions of TUs 1 and 2 were not excavated to sterile soil due to regulations concerning excavating too close to the levee. None of the areas excavated to sterile soil had any evidence for feature fill.

The profile of TU 1 demonstrates that the levee fill is about 40-50 cm deep with multiple wash episodes on top of a very compact plow zone that is about 20 cm thick (Figure 5.35). The interface between the base of the plow zone and subsoil is about 70 cm below the surface. This depth is within the range of the gradiometer suggesting we should have seen feature fill if it were present. We later found out the grid points used to set up the units was incorrect. However, when the placement of the geophysical grid was adjusted to correct for this error, it appears that TUs 2 and 3 were located over a rectangular anomaly. It remains possible that the anomalies identified immediately north of the field edge are actual features since TUs 2 and 3 were not excavated to below plow zone. However, there will not be any future testing near the levee due to restrictions and concerns about compromising its function.

In 2007, three more test units were opened within the field just north of the site limits and south of the field edge. Using a corrected map of the geophysical data I identified several anomalies to test. I then set out points using a Total Station. Three 1 m x 2 m test units were excavated (TUs 5, 6, and 7). TU 5 was devoid of feature fill. The western profile wall was mapped indicating the plowzone in this area undulates a bit with a depth ranging between 31 and 34 cm deep.

TU 7 was placed just north of the Mound A and appears to have been placed over midden fill. Due to time constraints we were unable to completely excavate this unit. However, it was expanded to 2 m x 2 m and excavated to 45 cm deep. Although the bottom of the midden was not reached a soil probe indicates the maximum depth is approximately 60 cm below the plowzone. The horizontal extent is currently unknown. The west and south profile walls were mapped (Figure 5.36). The plowzone in this area is relatively flat with an average depth of 25 cm. Beneath the plowzone is dark, artifact-rich fill that covered the floor of the entire unit. In profile this fill appear to be comprised of two to three zones. The fill is very dark (organically enriched) compared to other feature fill identified at the site. The location just north of Mound A, the horizontal extent, depth, and material density suggest this fill is part of a midden. No magnetic anomalies were identified in this area suggesting there are more features that were not detected by the geophysical surveys.

Test Unit 6 was placed on the eastern edge of a rectangular magnetic anomaly (Figure 5.37). Feature fill was identified on the western edge of the unit floor where the anomaly was located. This unit was expanded by hand to expose the feature in its entirety resulting in an excavation block (EB 1) measuring approximately 28 m^2. The feature fill corresponded to two superimposed structures and became the main priority because excavation would provide comparative data in terms of architectural methods, structure size and shape, and there was a high probability of finding radiocarbon datable material, especially burned thatch. Feature 1, the earlier structure, was nearly completely excavated while ¾ of Feature 2 remains unexcavated (Figure 5.38). The excavation of Feature 2 was pre-empted by the flooding of Fountain Creek in the late spring of 2008. The location of the excavation block near the levee posed a risk, therefore the levee commissioner had it backfilled.

STRUCTURES

Feature 1 is a relatively large Lindeman phase single post structure with an intact basin measuring 46 cm deep. The basin volume measures 5.9 m^3 with a material density of approximately 1,004 g/m^3 (1.0 g/dm^3). The basin is comprised of ten fill zones including light, dark, and burned fill. Fill zones are predominantly dark and artifact-rich (Figures 5.39, 5.40). The depositional sequence begins with a thin zone of dark fill (ZH) directly above the floor that was subsequently covered with light fill (Z C). A dark layer of reduced soil (zone J) likely comprised of burned fill derived from elsewhere was deposited on top of the light and dark layers along the northern and southern walls and across the short axis of the basin approximately one-third of the length of the basin from the west. The reduced fill was followed by a series of thick fill zones, mostly dark and artifact-rich.

There is approximately 8.5 m^2 of floor area with a W/L ratio of 0.59 indicating the structure is larger and more square than most of the contemporary structures at Range (see Chapter 7). These figures are more comparable to Lohmann phase structures at Range. The floor contained deposits of chert, sherds, and burned thatch (Figure 5.41). Lithic items were concentrated on the east end of the structure while sherds were scattered across the floor. The burned thatch was deposited along the northern and southern walls near the center axis of the structure. Kathryn Parker notes that the thatch samples include flattened masses of unidentified grass and giant cane (*Arundinaria gigantea*) stems along with twigs and sticks of willow or poplar wood (see Appendix C). These materials were likely deposited at abandonment but do not appear to be directly associated with the structure due to the lack of evidence for *in situ* burning. A sample of the thatch was sent for radiocarbon dating at the Institute of Natural Resource Sustainability at the University of Illinois and a calibrated date of AD 960 +/- 70 was returned (Appendix F). This date places the abandonment of the structure during the late Terminal Late 1 to early Terminal Late Woodland 2 period or Range to George Reeves phases according to the most recent chronological chart. This date is slightly too early when compared to the ceramic data which clearly indicate a Lindeman phase component for Feature 1 (see Chapter 6). However, at the 1 σ range, the latest date falls within the Lindeman component (AD 1017).

A total of 39 posts were identified on the structure floor. Thirty-seven form the complete northern and eastern walls and portions of the western and southern walls. Posts in the northwestern corner of the structure were identified in plan but were not bisected. Similarly, the southwestern corner of the basin was not excavated, therefore posts were not defined in this area. The excavated posts were clearly discernible as dark loamy soil in contrast to the light silty clay sterile soil. The posts are regularly placed along the basin edge. If we extrapolate the distribution of posts to the unexcavated area based on the post spacing, then the total number of structural posts would be 45. A gap of 43 cm is present in the center of the southern wall and likely represents an entrance.

The posts have an average diameter of 11 cm and average depth of 35 cm. Six of the 10 deepest posts are located along the center portions of the northern, eastern, and southern walls and show evidence for burning. These postmolds have a dark fill zone with a high concentration of charcoal corresponding to the actual post surrounded by a light zone, possibly representing the backfill of the postmold once the post was in place. It is unlikely the entire structure burned with walls in place due to the lack of evidence for burning in most of the postmolds and the presence of flared postmolds. Twelve of the postmolds are flared at the top in profile suggesting the posts were forcibly removed. Also, over half of the excavated posts positioned along all three walls contained material including large sherds and chert flakes, vessel fragments, and ceramic disks. The vessel fragment was distributed among three adjacent postmolds. The ceramic disks were recovered from two postmolds on the south wall. The dark fill and material present in the postmolds combined with the evidence for the removal of the posts suggests the structure was purposely disassembled.

The remaining three postmolds are located in the southern half of the structure near the gap in the southern wall. Two of the interior posts are similar to the structural posts in diameter but are much more shallow with depths of 18 cm. Postmold 16 is much larger than all of the posts in terms of diameter but is comparable to the structural posts in depth. This postmold likely represents an entry or stepping–in post due to its morphology and placement near the wall opening.

Feature 2 is a rectangular structure that was built into the west end of the Feature 1 basin. It is also of single post construction with a deep basin (38 cm) that is slightly more shallow than Feature 1. The basin volume and area were estimated due to the fact that the basin was not completely excavated. The estimated volume is 3.4 m^3 and the W/L ration is 0.66. This structure is much smaller than Feature 1 and appears to fall between the average measures of area and W/L ratio of Lindeman and Lohmann basins from Range. The Feature 2 basin contained less material than Feature 1 however, the presence of two complete celts combined with the smaller volume results in a higher material density of 1,344 g/m^3 (1.3 g/dm^3). The density is most likely much higher since only one-quarter of the basin has been excavated completely. The material density for the excavated area is actually closer to 4,242 g/m^3 (4.2 g/dm^3). If we exclude the celts, then the density is more similar to Feature 1 (2,463 g/m^3 or 2.5 g/dm^3 for the excavated area) but still much higher. The basin filled with six zones (see Figures 5.39, 5.40). Most are comprised of dark, silty clay loam soil with the exception of ZE which is a light, silty clay loam. All of the zones are large and do not exhibit the patterning of deposition identified in Feature 1. Zone B, located in the center of the basin, contained the most material.

The estimated floor area and W/L ratio are 6.6 m^2 and 0.61, respectively. These figures indicate this structure is smaller and slightly less rectangular than Feature 1 and is more comparable to the Lindeman phase structures at the Divers site. The floor was relatively clean with exception of two celts placed directly on the floor at the midsection of the eastern wall. The placement of one complete celt atop another on an otherwise debris-free floor suggests they were intentionally cached immediately before abandonment.

Only 21 postmolds were identified on the excavated portion of the structure floor. These include 20 structural postmolds comprising half of the northern wall and the entire eastern wall and a single interior postmold. The interior postmold was not excavated precluding the collection of data concerning depth or fill descriptions. The postmolds were difficult to identify within the fill of Feature 1. Therefore, the Feature 1 basin fill was removed before the postmolds for Feature 2 were identified resulting in the loss of the top 6 to 11 cm. Once below feature fill the postmolds were more readily distinguished from the sterile soil. The postmolds from Feature 2 were less regularly spaced and much less substantial than those from Feature 1 with an average diameter and depth of 8 cm and 14 cm, respectively. The postmolds are shallower and smaller in diameter compared to those from Feature 1 even if we adjust the depth to include the portion of the postmolds removed with the excavation of Feature 1 fill. With the adjusted values, the average measures for diameters and depth are 8 cm and 22 cm, respectively. All of the postmolds were comprised of a single dark fill zone and were devoid of any material. It appears that the posts decomposed in place due to the lack of material and evidence indicating burning or post extraction.

MORRISON (11MS1548)[4]

The Morrison site is a small Terminal Late Woodland village with two low mounds located on the Horseshoe Lake peninsula 3 km northwest of Monks Mound in Madison County, Illinois (Figure 5.42). The area is characterized by pronounced ridge and swale topography and an environment rich in various aquatic resources including fish, amphibians, waterfowl, and bottomland plant species. Oddly, although adjacent to the well-known and extensive Cahokia site complex, which covers 16 km^2, much of the Horseshoe Lake peninsula remained unsurveyed until

[4] The Morrison site sections of this chapter and Chapter 7 are based on an article currently in manuscript form and co-written with Timothy Pauketat, Neal Lopinot, Daniel Marovitch, and Elizabeth Watts.

recent times. The first formal archaeological survey of this area was undertaken by F. Terry Norris in 1975. At the time, access was denied to the area in which the Morrison site was later discovered. However, the landowner did show Norris a series of objects, including a sandstone pipe, two chunkey stones, three celts, and various projectile points and potsherds that may have been found at or in the vicinity of Morrison (Norris 1975:11, plate 3).

The site was first recorded in 1991 by Neal Lopinot as part of a second intensive cultural resources survey for the St. Louis District, U.S. Army Corps of Engineers (Lopinot et al. 1998). He documented the site as covering approximately 0.03 km^2 of a north-south trending ridge. The mounds are at opposite ends of that ridge, oriented north-south and appear to flank either side of a wider flat area suggesting an associated plaza (Lopinot et al. 1998:59).

Lopinot suspected that, in all likelihood, the Morrison site and mounds were constructed during the Terminal Late Woodland period (AD 900-1050) as opposed to the Mississippian period (AD 1050-1350). At the time of Lopinot's investigations, the northern mound was barely visible due to plow damage but the southern mound (Mound A) rose above the surrounding area about one meter. As part of his larger Horseshoe Lake survey, Lopinot created a topographic map and initiated a controlled surface collection of the site. The site was gridded into 10 m x 10 m blocks and the southwestern quarter of each block was collected. He found a light density of ceramic and lithic items on the site surface between the two mounds which further suggested the presence of a plaza (Figures 5.43 and 5.44[5]). The analysis of the surface collection materials indicated a strong late Terminal Late Woodland Edelhardt phase component suggesting construction of the mounds occurred immediately prior to the Mississippian period. This temporal association is consistent with the sites in the vicinity, a majority of which also date to this pre-Mississippian era (Lopinot et al. 1998).

EARLY CAHOKIA PROJECT INVESTIGATIONS AT THE MORRISON SITE

Between June 6th and 23rd, 1994, Pauketat conducted block excavations at the site in conjunction with a National Register District nomination for the Corps of Engineers and University of Oklahoma "Early Cahokia Project" excavations (Pauketat et al. 1998). These excavations consisted of the machine-aided removal of an asymmetrical excavation block (EB) covering approximately 360 m^2 (Figure 5.45). This block extended from the edge of the presumed mound to the base of the swale to the east, and was intended to test whether or not the Morrison mounds were pre-Columbian features, to recover material sufficient to establish the chronological placement of the site, and to provide some preliminary insight into what or whom the near-mound features represented.

Up to 1994, when it was taken out of production by the U.S. Army Corps of Engineers, the site had been in agricultural production for over 100 years. During that time, the fine sandy loam plowzones were subject to wind erosion, a fact that

[5] The grid illustrated in Figures 5.43 and 5.44 is the grid setup in 1994 during the Early Cahokia Project investigations. This grid differs from the grid used by Lopinot in that it is arbitrary (including elevations) and is oriented to magnetic north.

appears to have deflated the site's western side and resulted in two plowzones, up to 50 cm in depth, on the eastern side of the site ridge. These were evident in the 1994 EB.

Following the removal of plowzone in the EB, the stripped area was shovel-scraped to define features in plan, a task complicated by low artifact densities in difficult to discern sandy fills. All possible features were mapped in plan, bisected, and profiled. A small trench measuring 1 m by 8 m was placed down slope on the east edge of the site exposing an apparent midden area in the swale (F 5). The trench was excavated to sterile soil by hand in five 1 m x 1 m units.

In general, the excavations confirm the inferences drawn from Lopinot's surface data. The presence of mound fill was confirmed, as was a domestic occupation similar in many respects to other Terminal Late Woodland sites in the Horseshoe Lake locality. Notably, artifacts found in all fills, save one, were consistent with an early Edelhardt phase occupation (ca. AD 1000-1030). A minor Lohmann phase component, represented by only a single sherd and two igneous-rock (celt-production) flakes in an upper zone of the downslope midden (F 5) suggest a limited, possibly commemorative re-visit to this site (see below).

FEATURES

In total, 17 features were excavated during the 1994 field season (Figure 5.46). These include the feather edge construction fills of Mound A, exposed in a trench unit excavated along the northeast perimeter of that tumulus (F 16), a single post structure with basin fill (F 2) and associated interior pit and post (F 6, 9), two amorphous fill areas (F 3, 4), two isolated posts (F 13, 18), and nine exterior pits (F 7, 8, 10, 11, 12, 14, 15, 17). Superpositioning is limited to five instances including mound fill over an isolated post, midden fill over pits, and pits excavated through midden fill. The low feature density, limited superpositioning, and the existence of one primary component in the excavated area suggest a short-term occupation.

The excavations into Mound A began with the machine stripping of the plowzone off the northeast corner, followed by shovel scraping of a 20 m^2 area to define the lower fills of the northeastern feather edge of this mound in plan view. The result is that the exposed edge of the mound appears to show an undulating corner of a rectangular lower mound stage (see Figure 5.46). A trench was placed along the western edge of the excavation block and was hand excavated to sterile soil resulting in the production of three profile maps of the mound with views to the west and south (Figure 5.47). The profile maps indicate the presence of two plowzones with a total depth up to 50 cm.

The mound fill is visible in profile as a 10 to 30 cm thick layer showing loading directly below the deeper plowzone (Figure 5.48). The fill was easily distinguished from the sandy plowzone as a dark, sandy clay zone with light silty clay mottles. The interface between the mound fill and sterile subsoil below was blurred due to leaching in the sandy matrices. The mound fill was distinguished from the plowzone and sterile soil mostly by the high clay content. The high clay content combined with the single zone of fill suggests that, minimally, the lower mound stage was constructed in a single episode of basket–loading using clay–rich soils most likely obtained from the swales directly east and west of the site area (see also Pauketat et a. 1998). Grit-tempered cordmarked sherds were present in the mound fill suggesting the mound was constructed using Terminal Late Woodland fills.

An isolated postmold (Feature 18) was identified immediately below the mound fill. It is 18 cm in diameter and extends to a depth of 36 cm into subsoils 1 and 2 (Figure 5.49a). The postmold is comprised of three light sandy fill zones. The lack of material precludes the assignation of component but the post pre-dates mound construction and likely was emplaced during the Terminal Late Woodland period immediately prior to mound construction.

Feature 2 is the only structure identified during excavation. It is a small, rectangular structure built using single-set posts in a shallow basin. The plan and profile shapes are a bit amorphous due to the difficulty in reading the sandy soils, but the basin was comprised of a single, sandy, light fill zone with an approximate total volume of 1.2 m^3. Nineteen possible postmolds were defined on the basin floor but do not clearly delimit the walls of the structure. If we assume that the basin measurements are an approximation of the floor, then the estimated area is 12.2 m^2 and W/L ratio is 0.80, indicating it is larger and more square than typical Edelhardt phase structures at Cahokia (Pauketat 1998a). The long axis of the structure, having an angle of 115 degrees of azimuth, is not oriented in reference to the ridge (north–south) but appears to be oriented toward Mound A (northwest–southeast). The material density (1.0 g/dm^3) in the basin is relatively high compared to the other features at the site.

Two interior features were identified while excavating Feature 2. Feature 6 is a shallow basin pit located on the floor in the eastern corner of the structure. The pit is comprised of one light sand fill zone and contained no material (Table 5.12). Feature 9 is a cylindrical flat-bottomed post located along the northeastern wall near the center axis of the structure. Like Feature 6, Feature 9 did not contain any material. The location and morphology of Feature 9 suggest it might be an entry post.

EXTERIOR PITS AND POSTMOLDS

Eight exterior pits were identified and excavated. These include one bell-shaped pit (Feature 8), two shallow basins (Features 12 and 14), and five deep basins (Features 7, 10, 11, 15, and 17). Feature 8 is a deep bell-shaped pit with a square orifice superimposed on Feature 4. With a total volume of 734.6 dm^3 it is the largest pit in the excavated area. The zones are comprised of light sandy silt and clayey silt soils with very little material. It likely served as a storage pit that filled in naturally due to the lack of dark midden fill zones. Feature 8 is located just off the northwest corner of F 2 suggesting it was used by the structure inhabitants. Features 12 and 14 are shallow basins with circular orifices. Feature 12 is relatively large in plan view but the shallow depth results in a small volume of only 23.6 dm^3. Feature 14 was superimposed on Feature 3 and is the smallest pit excavated. The pits were filled with one dark and one light zone, respectively. Neither pit contained a large amount of material, however the small volumes result in high material density figures.

Deep basin pits are the most common pit type identified. Depths range between 16 cm and 56 cm with an average of 41 cm. Most pits of this type at the site are characterized by multiple fill zones with the exception of Feature 11 that appears to have been filled in one episode. Fill types include midden–like fill, light fill with few artifacts, and slump zones indicating multiple filling episodes and periods of natural in-filling. These features likely served as storage or processing pits before becoming receptacles for general refuse. Deep basin pits are distributed throughout the excavated area. Only two instances of superpositioning are evident with Feature 7 superimposed by Feature 3 and Feature 17 superimposed by Feature 5.

Two exterior postmolds include the previously mentioned post identified under Feature 16 mound fill (Feature 18) and an isolated post located near the center of the excavated area (Feature 13). Both postmolds have a similar morphology with straight sidewalls and convex bases (Figure 5.48a,b). Both features filled with three light sandy and silty zones and lacked any cultural material. Although similar features have been interpreted as milling posts used to process plant foods (Fortier 1984), their location outside of structures and, in one instance, superimposed by a mound suggest they were used to mark specific, and presumably significant, locations within the site.

FILL AREAS

Two amorphous fill areas (Features 3 and 4) were located directly north of the structure. They were initially thought to be structure basins but upon excavation, it became apparent that they were indeterminate fill areas. Feature 4 is superimposed by the northern corner of Feature 2 as well as the other fill area (F 3) and a pit (F 8). Feature 3 contained a relatively large amount of chert recovered suggesting this area was associated with the use and maintenance of chipped-stone tools. A slope midden (Feature 5) was located along the eastern edge of site and extended from the top of the ridge into the swale. A 1 x 5 m trench was excavated into this midden, the profile of which indicates the presence of at least two plowzones atop a thick (up to 30 cm), silty sand midden or slopewash layer containing a dense array of artifacts. At the base, a deep basin pit, Feature 17, was defined (Figure 5.50).

The structure morphology and construction technique (i.e., single post in basin) are consistent with a Terminal Late Woodland occupation rather than Mississippian. The pits, activity areas, midden fill, and isolated postmolds that likely represent marker posts are consistent with both Terminal Late Woodland and Mississippian occupations. However, the ceramic data obtained from the features indicate a single early Edelhardt phase component (see Chapter 6). The lack of evidence for Mississippian habitation in the excavated area and the fact that the Edelhardt phase structure is oriented toward Mound A as opposed to the ridge suggest Mound A (and Mound B by association) was constructed during the Edelhardt phase before or concurrent with the construction of Feature 2. The presence of Terminal Late Woodland pottery and the lack of Mississippian ceramics in the mound fill further support this assertion. The predominance of light fill zones and relatively small amount of material indicate the site was abandoned and most features filled in naturally with surrounding soils.

DISCUSSION

The data derived from feature excavations at the Fish Lake site indicate the site was most intensively and extensively occupied during the Late Woodland Patrick phase. It was apparently abandoned prior to the early Terminal Late Woodland period. The southern ridge was reoccupied during the late Terminal Late Woodland George Reeves phase. This occupation appears to be a small, single family farmstead. Several polished Mill Creek hoe flakes and the presence of cultigens including Eastern Complex seeds and maize suggest a focus on horticultural or agricultural activities. However, the extra effort expended to prepare the floor of Feature 315 and the excavation of a pit into a Patrick phase pit are suggestive of a more specialized habitation, possibly associated with a prominent individual or family.

The subsequent Lindeman occupation indicates an increase in population and the establishment of courtyard groups. This occupation includes some elements noted for the George Reeves phase while diverging in other ways. Evidence for suprahousehold and possible ritual activity includes the concentration of high quality serving vessels, seeds, and faunal remains that may suggest feasting (see Chapter 7). Rare, ritually significant or heirloomed items including red cedar, the cranial fragment, effigy vessels, and evidence for pigment production in the form of stained flat abraders suggest at minimum suprahousehold and likely ritually significant activities occurred during this occupation in the southern courtyard.

The Lindeman phase occupation is followed by an early Mississippian habitation of indeterminate size that begins less than 30 m to the west and likely extends westward along the highest part of the southern ridge. A small cemetery consistent with early Mississippian rural cemeteries identified elsewhere in the region may be contemporary with Feature 525 suggesting the Mississippian component may correspond to a small village or nodal farmstead.

Although the Divers site was occupied from the Patrick phase through the Stirling phase, the excavation and geophysical results indicate it was most intensively and extensively occupied during the Lindeman phase. During this phase multiple structures were built using single set posts with most in deep basins. They were also arranged into roughly oval courtyard groups. The features are dispersed throughout the investigated areas including lower elevations to the north and west. There are apparently few pits associated with this occupation. The site was continuously occupied during the Lindeman phase as evidenced by a few instances of superpositioning.

The subsequent early Mississippian period represented by the Lohmann and Stirling phase occupations differs from the Lindeman phase occupation in several ways. There are significantly fewer features associated with this time period even though it is approximately twice as long. The courtyard groups are replaced by scattered individual structures or clusters of multiple structures corresponding to farmsteads. These structures were presumably built using wall trenches and were restricted to the highest elevation along the northern edge of the ridge. Those structures with basins were shallower than their Lindeman counterparts.

Direct evidence for the Terminal Late Woodland to Mississippian transition exists in the form of two Lindeman phase structures (Features 26 and 105) that were superimposed by Lohmann phase structures (Features 16 and 105). In both instances the single post Lindeman phase structures were partially superimposed by wall trench structures that exhibited the opposite orientation. The building of one structure on top of another implies continuity in terms of the people who occupied the structures. The later structure could have been occupied by the same people or by members of the same lineage. It might also indicate that the Lohmann phase residents were referencing the former inhabitants (or ancestors) and possibly local sources of power. If this is the case, then the reversing of orientation might indicate the Mississippian inhabitants appropriated this local source of power through referencing the past while concurrently creating a new spatial, and hence social and political, order.

The information gained from the feature excavations indicates a high density of features including structures and pits during the Late Woodland period followed by a period of abandonment corresponding to the Terminal Late Woodland period. The site was then reoccupied during the Lohmann phase. However, the occupation is very small as suggested by the single feature within the excavated area. Most of the pits surrounding the structure also date to the Late Woodland period suggesting the occupation was not intense. The construction of a Mississippian building in close proximity to a Late Woodland burial mound may indicate the Mississippian residents established their occupation in an area that was known to be significant. The fact that a multi-mound center (Washausen site) is located a few hundred meters away further supports this assertion.

The data gained through geophysical mapping and excavation at Washausen indicate the site was most intensively and extensively occupied during the Lindeman phase. Although some aspects of the material assemblage from Feature 2 suggest a possible Lohmann phase association, in every other respect the feature appears to date to the Lindeman phase (see Chapter 6). The clustering of geophysical anomalies at the Washausen site is suggestive of courtyard groups and possibly neighborhoods located north, east, and west of the mounds and plaza. More formalized site planning is evident in the mound and plaza area. The plaza itself appears to be more flat than the surrounding natural topography seen in the topographic map suggesting the plaza is a prepared, leveled surface. The mounds flank this plaza and share an orientation with the long axis of the plaza. Rows of possible post pits with plaza further suggest the formalized segmentation of space within this area.

Due to the lack of excavations into the mounds, it is still unclear whether their construction was initiated during the Lindeman or Lohmann phase. The predominance of Lindeman phase material at the site and the evidence for mound and plaza construction during the late Terminal Late Woodland period elsewhere in the region (see below) suggest the mounds may date to the Lindeman phase. The small size of the mounds suggest they were not built over a long period time further confirming the short occupation span for the site. If the mounds predate the transition, then it is possible the site was a local sociopolitical or religious center that became depopulated through the movement of people to other sites or out of the region.

The mapping and excavation data from the Morrison site indicate a significant although not very intense or long term use of the site area during the early Edelhardt phase. The most significant aspect of this site is the evidence for mound-building and plaza use immediately prior to the Mississippian period. The Morrison site is one of the largest among many late Terminal Late Woodland sites within the Horseshoe Lake locality. It is also the only one with evidence for mound construction and an associated plaza suggesting it served as a local political, religious, and/or administrative center for the Edelhardt phase occupants of the Horseshoe Lake peninsula. Also significant is the fact the site was abandoned prior to the beginning of the Mississippian period. Of course, the single Lohmann phase potsherd might suggest that Morrison was not entirely forgotten.

Evident in the data presented here is the diversity in terms of the construction of space during the late Terminal Late Woodland period. In terms of architecture, structures within sites can vary widely in size and shape. Similarly, variation in site layout is considerable. The sites in this analysis include isolated structures (Fish Lake), hamlets with courtyard groups (Fish Lake, Divers, and Washausen), and mound and plaza groups (Morrison and possibly Washausen). Features at several sites are clustered into courtyard groups of varying size, shape, composition, and density. The documentation of mound and plaza construction and use during this period is significant because prior to the excavations at Morrison, definitive evidence had not been recorded for the Terminal Late Woodland period.

Also evident is the variety that exists in terms of changes in the construction of space and communities during the Mississippian transition. These range from the abandonment of a mound center (Morrison) to the establishment of a farmstead in an area not occupied during the Terminal Late Woodland period (Peiper). Divers, Fish Lake, and Washausen fall somewhere between these extremes with decreases (Divers and Washausen) or increases in population (possibly Fish Lake) accompanied by changes in site usage including the establishment of a cemetery or nodal farmsteads.

At minimum, these occupational histories indicate the movement of people, families, or even entire communities within and around the American Bottom. Similar occupational histories have been documented for sites throughout the American Bottom and uplands. These changes are likely linked to alterations in community identities and power relations on both the local and regional scale. As will be discussed more fully in Chapter 7, the fact that these shifts in settlement and presumably sociopolitical relations occurred at the same time that mound and plaza construction accelerated at Cahokia suggests they are related to region–wide changes in political and social organization associated with the creation of a regionally integrated polity.

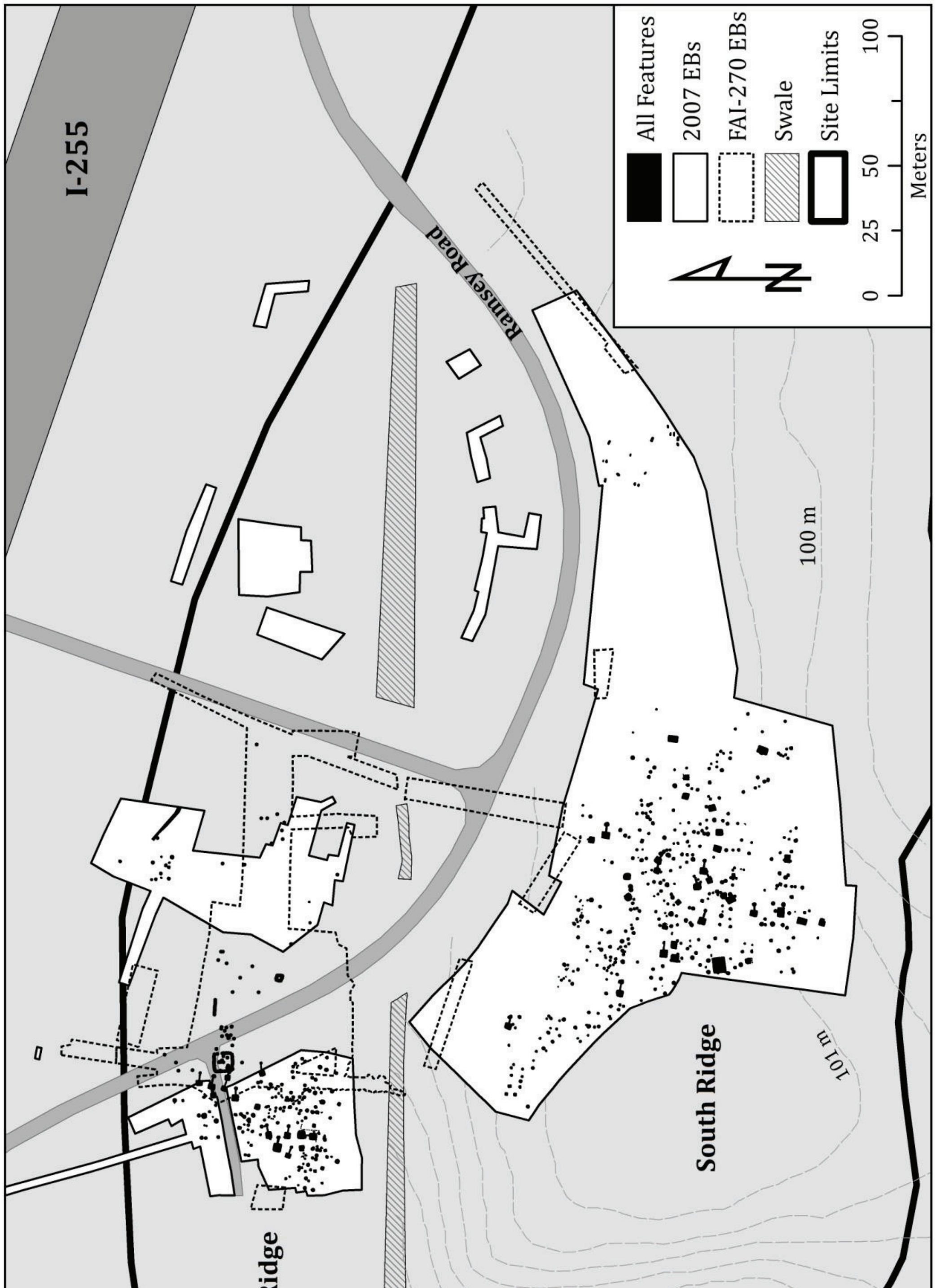


Figure 5.1. FAI-270 and ITARP 2007 Excavations at the Fish Lake Site (11MO608).

Figure 5.2. Fish Lake South Ridge with Patrick, Terminal Late Woodland, and Mississippian Features.

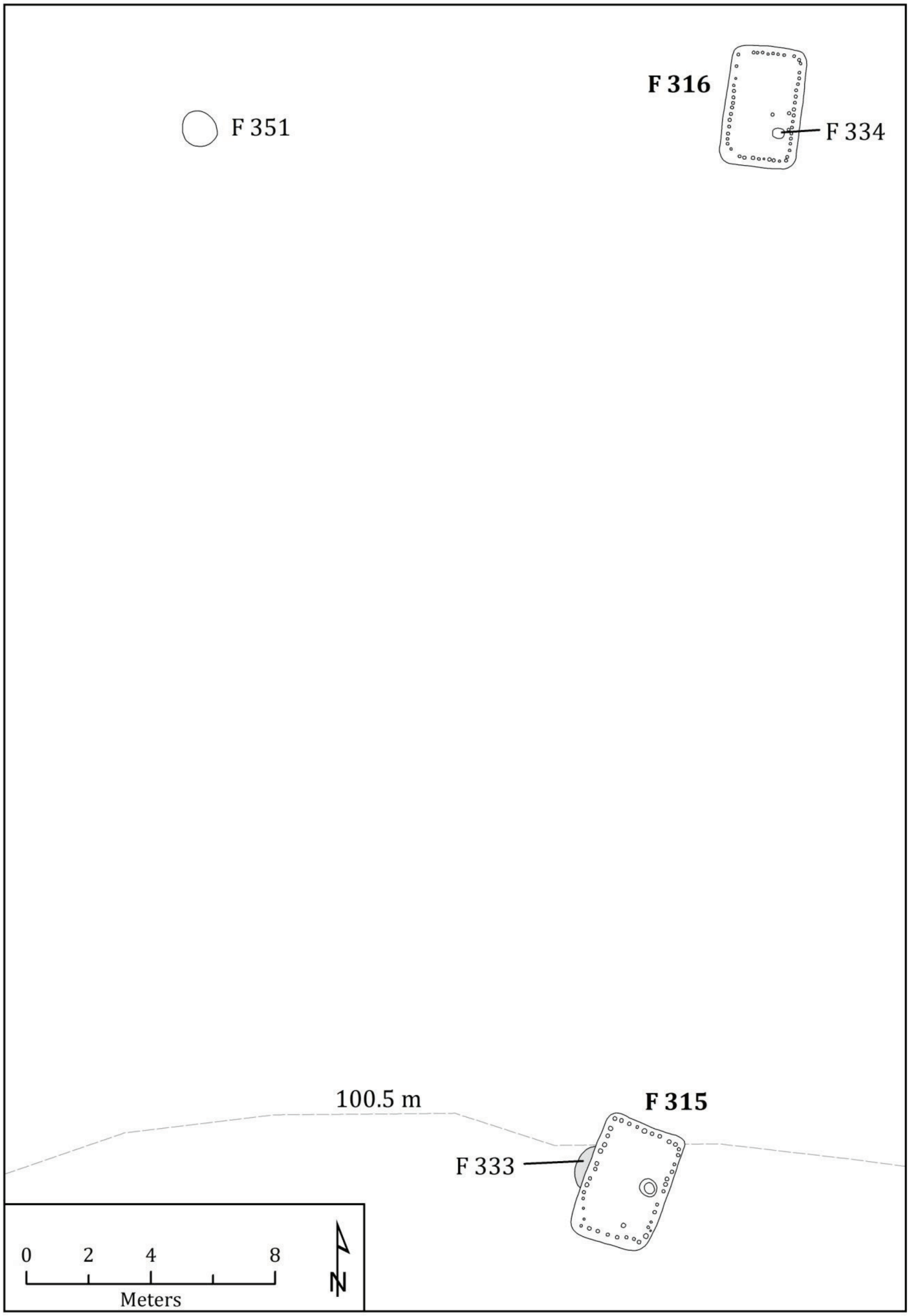


Figure 5.3. George Reeves Phase Occupation.

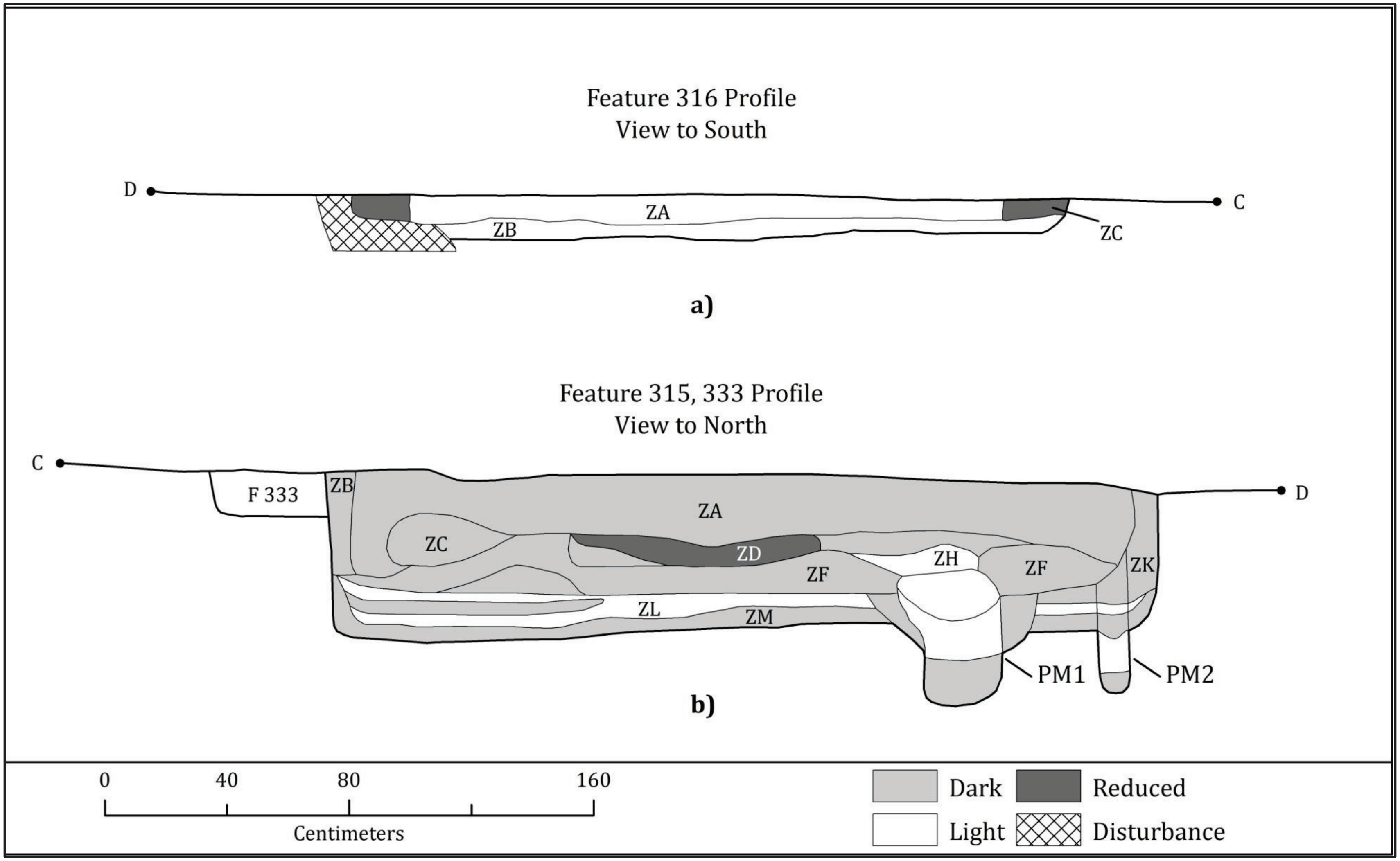


Figure 5.4. George Reeves Phase Structure Profiles: a) F 315; b) F 316.

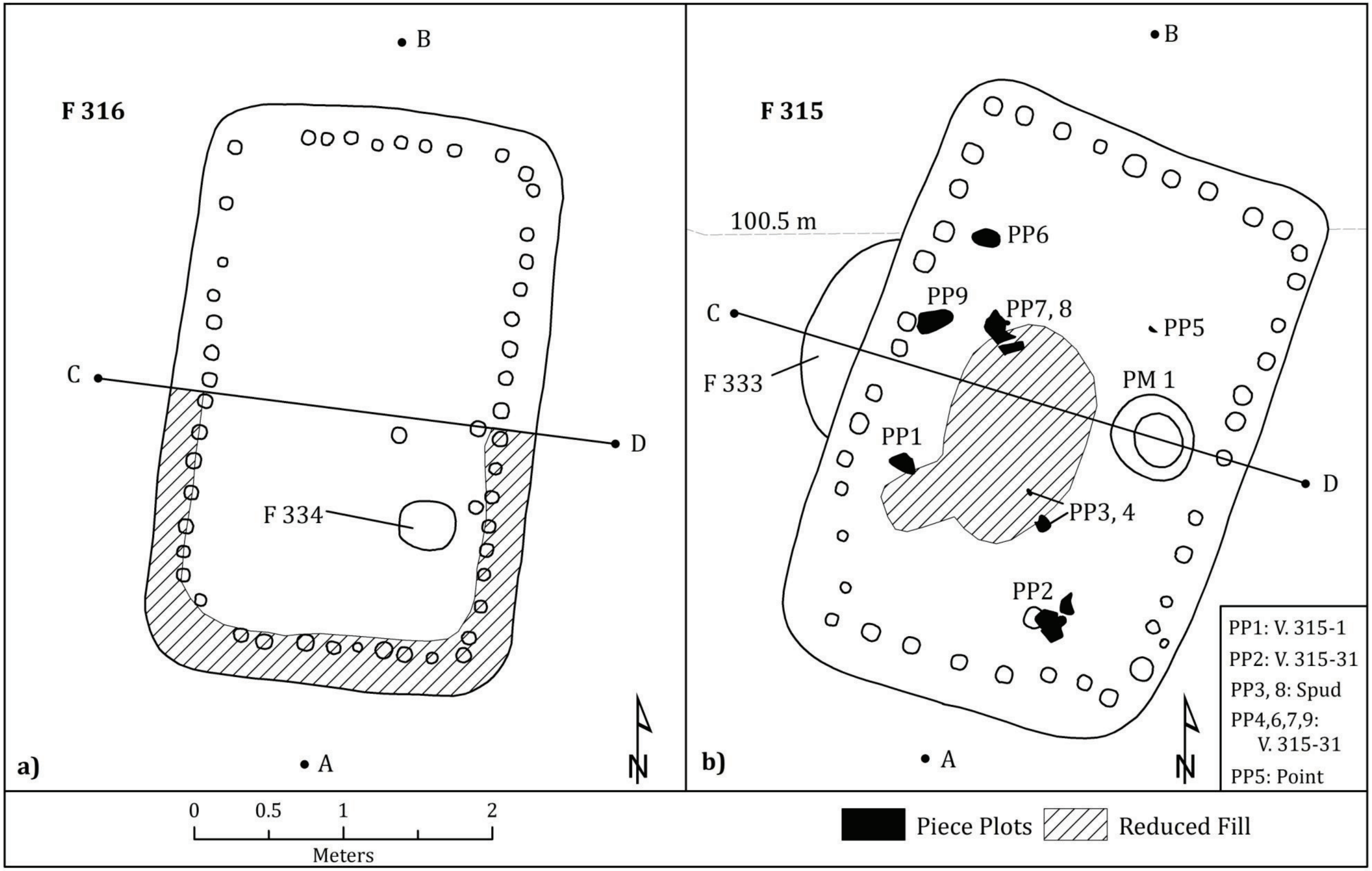


Figure 5.5. George Reeves Structure Floors: a) F 316; b) F 315.

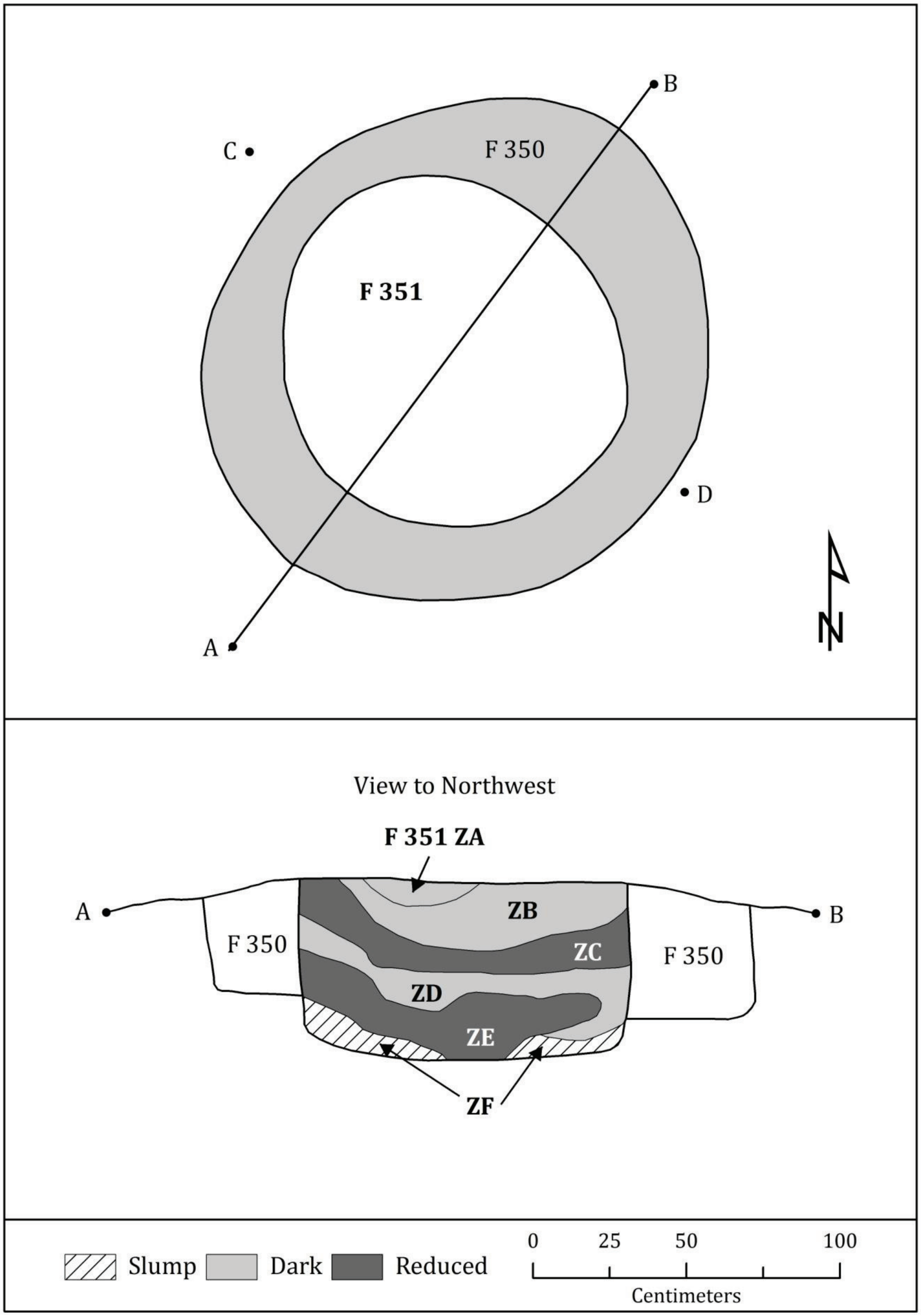


Figure 5.6. Feature 350, 351 in Plan and Profile.

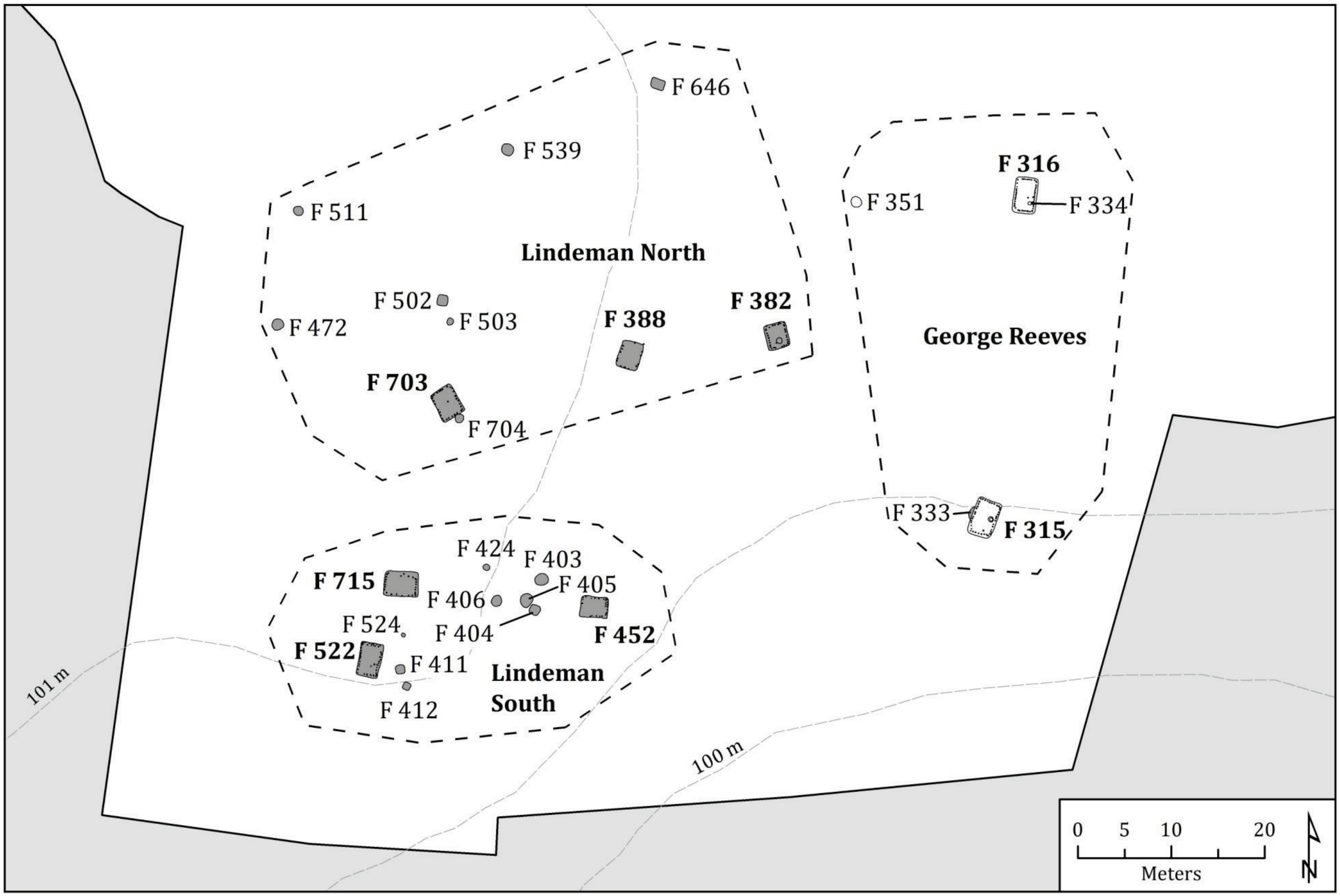


Figure 5.7. George Reeves and Lindeman Phase Features.

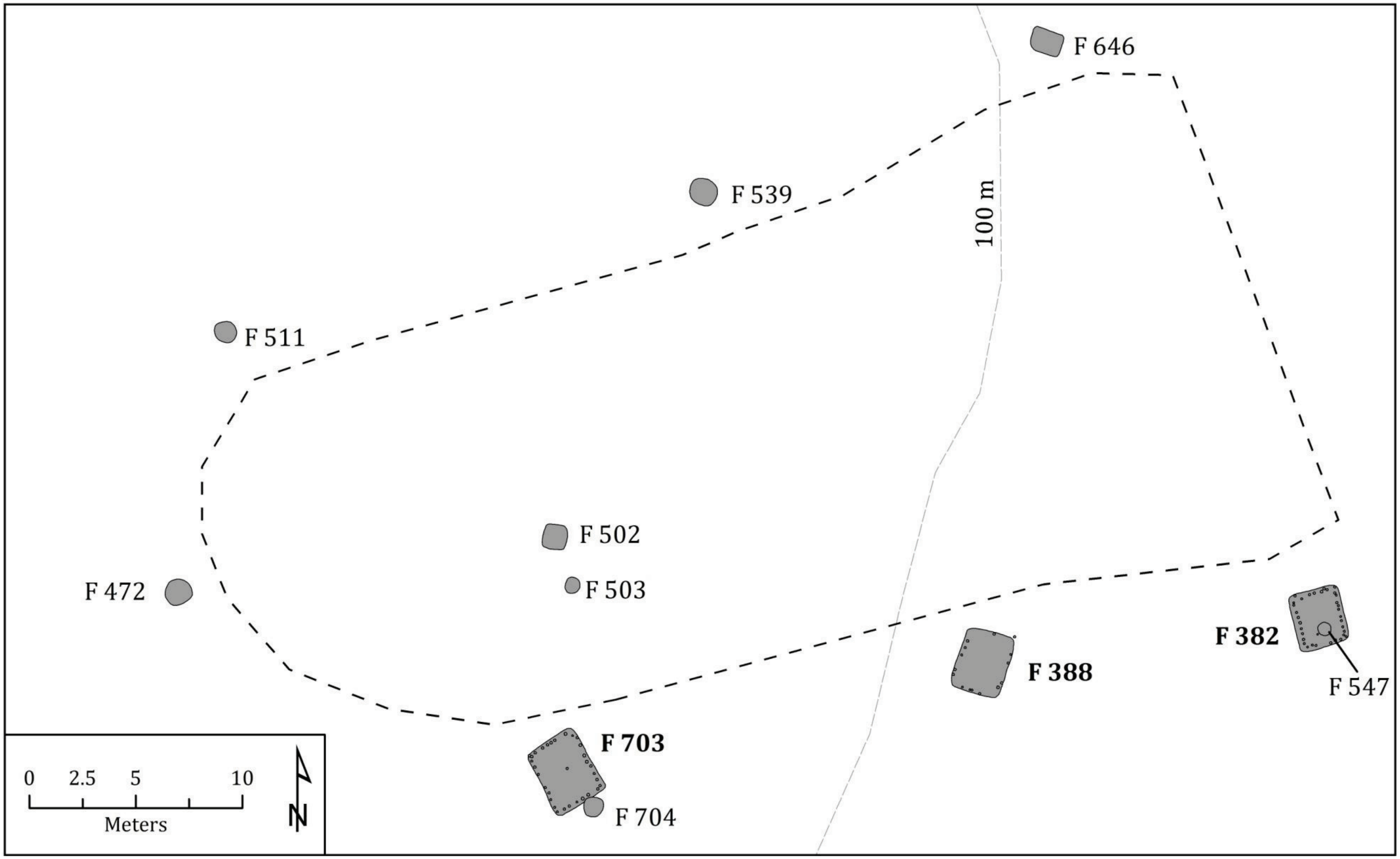


Figure 5.8. Lindeman North Cluster.

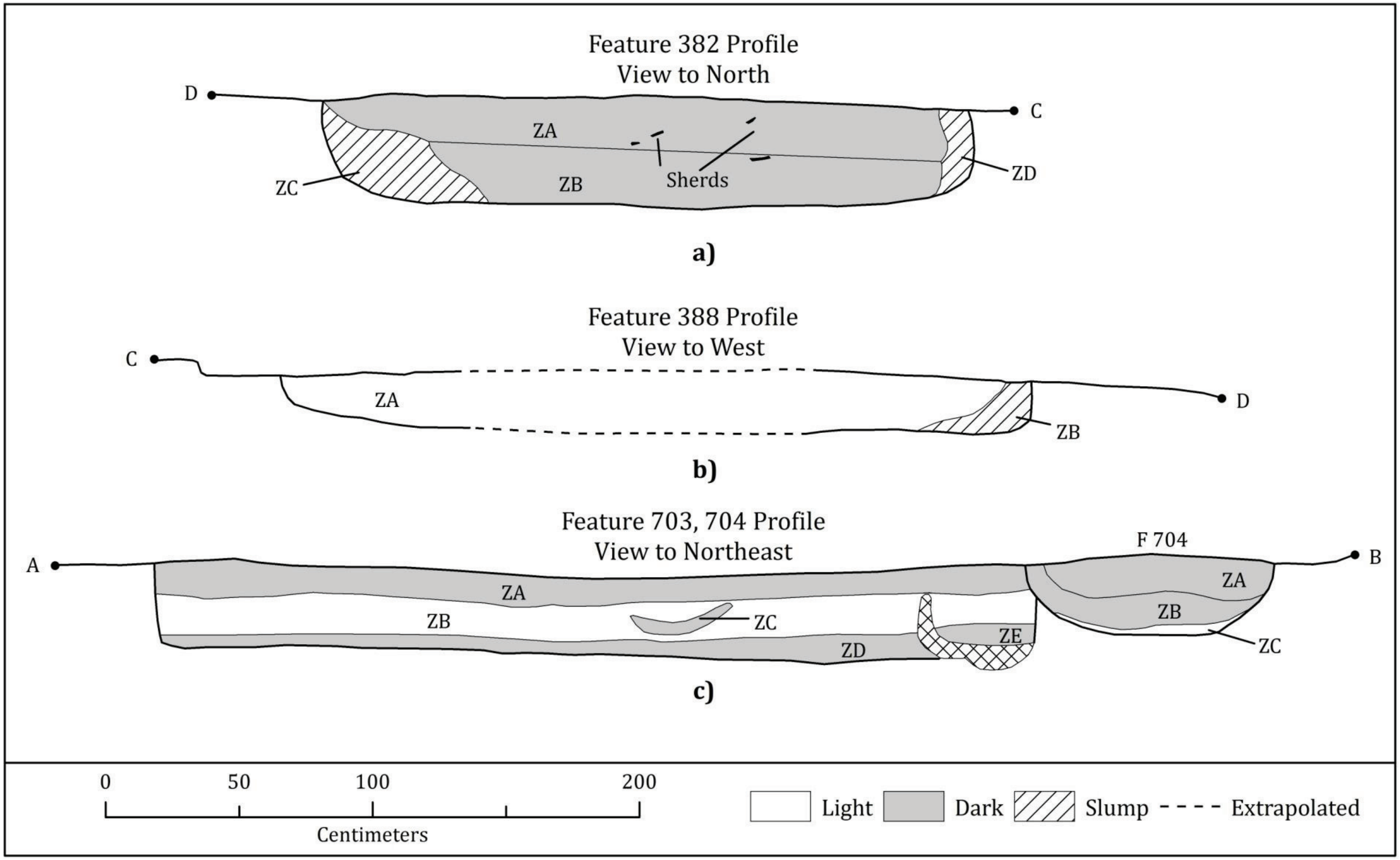


Figure 5.9. Lindeman North Structure Basin Profiles: a) F 382; b) F 388; c) F 703.

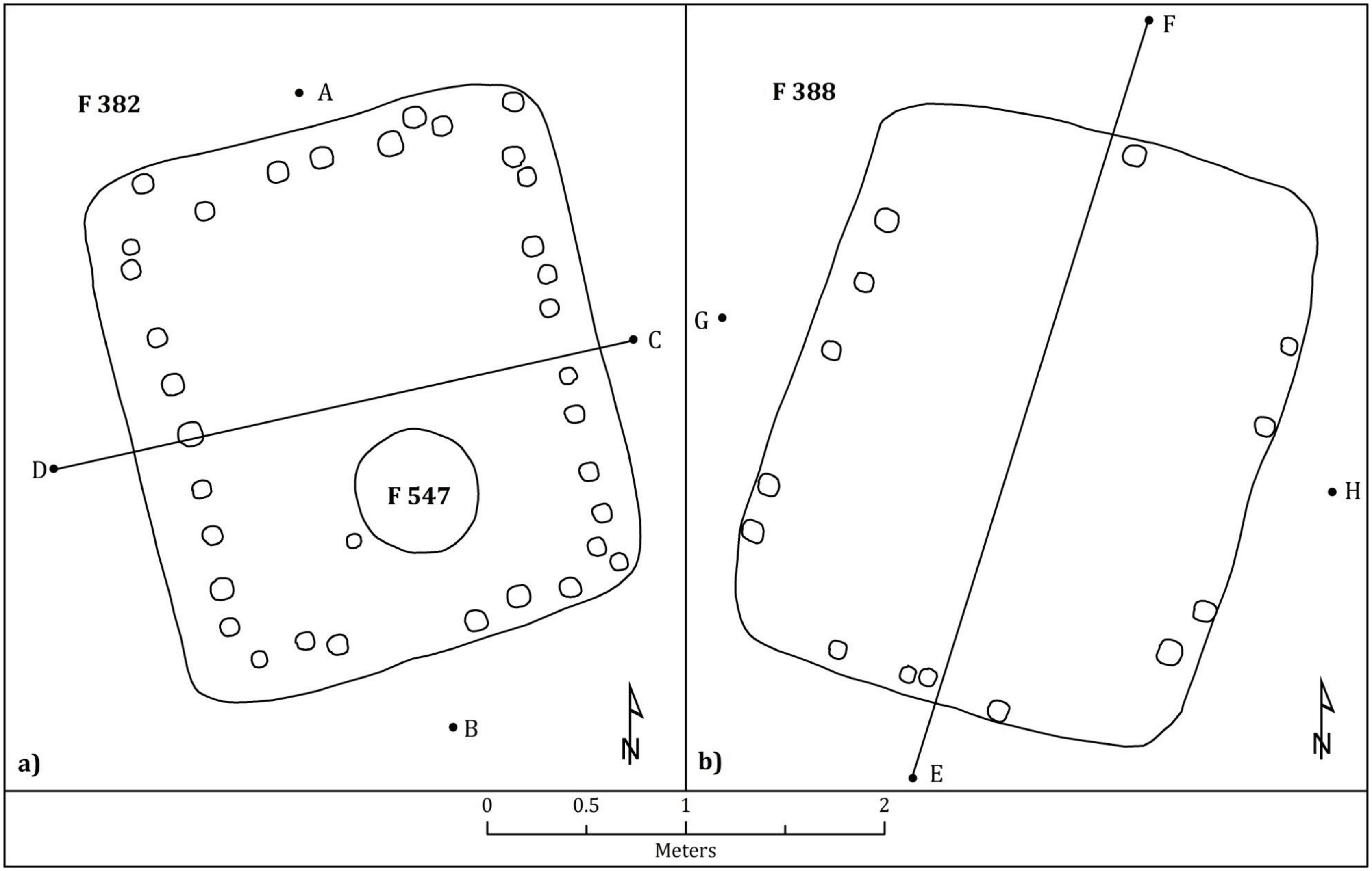


Figure 5.10. Lindeman Phase Structure Floors: a) F 382; b) F 388.

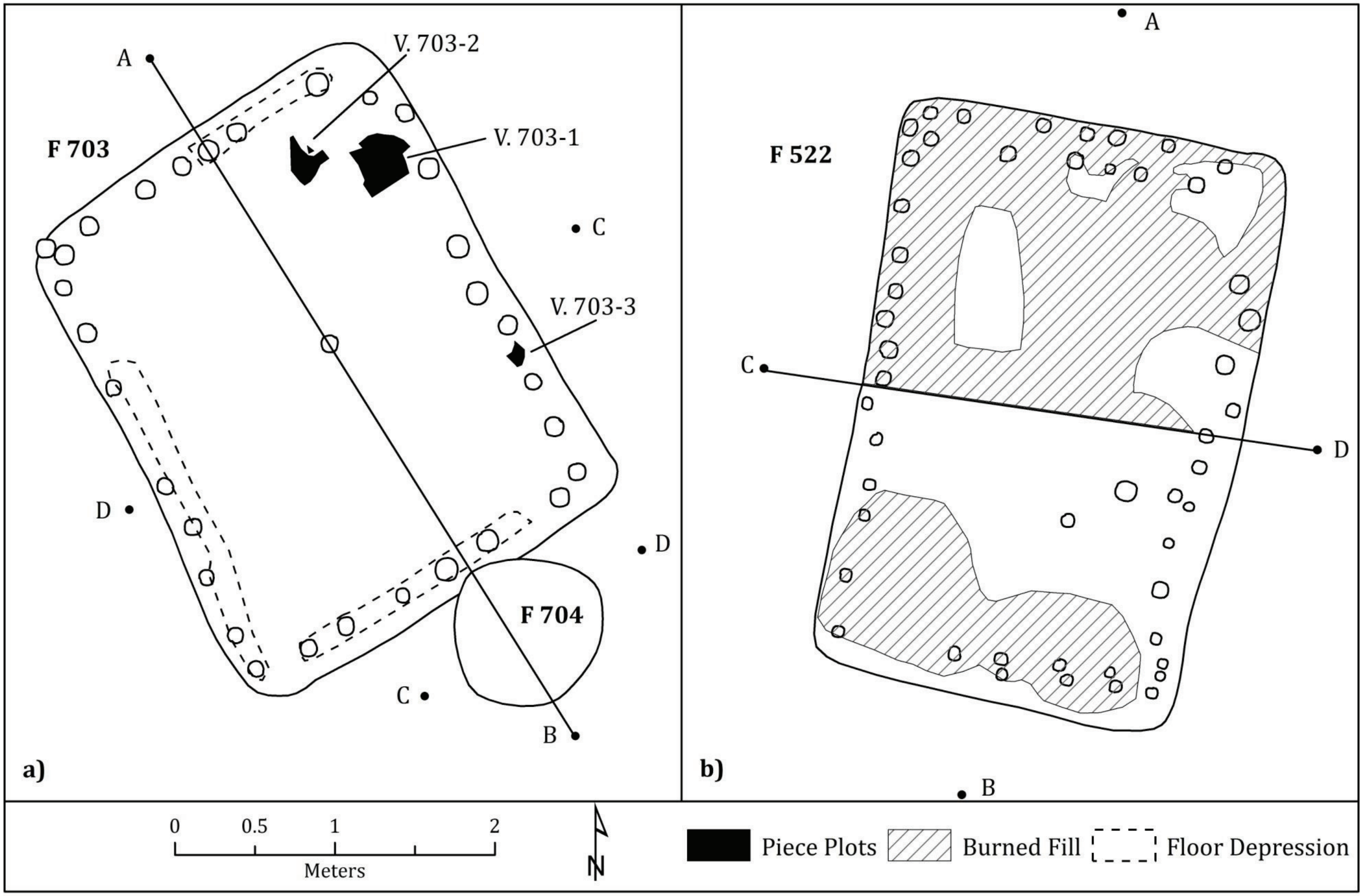


Figure 5.11. Lindeman Phase Structure Floors: a) F 703; b) F 522.

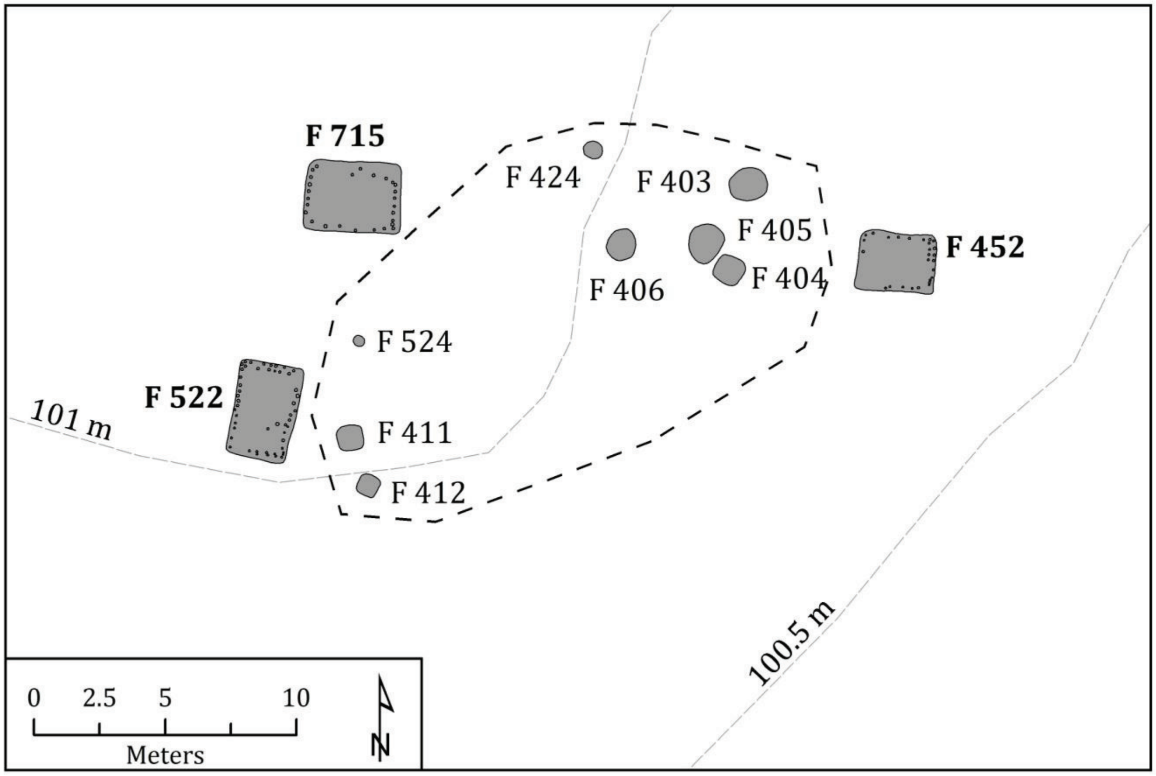


Figure 5.12. Lindeman South Cluster.

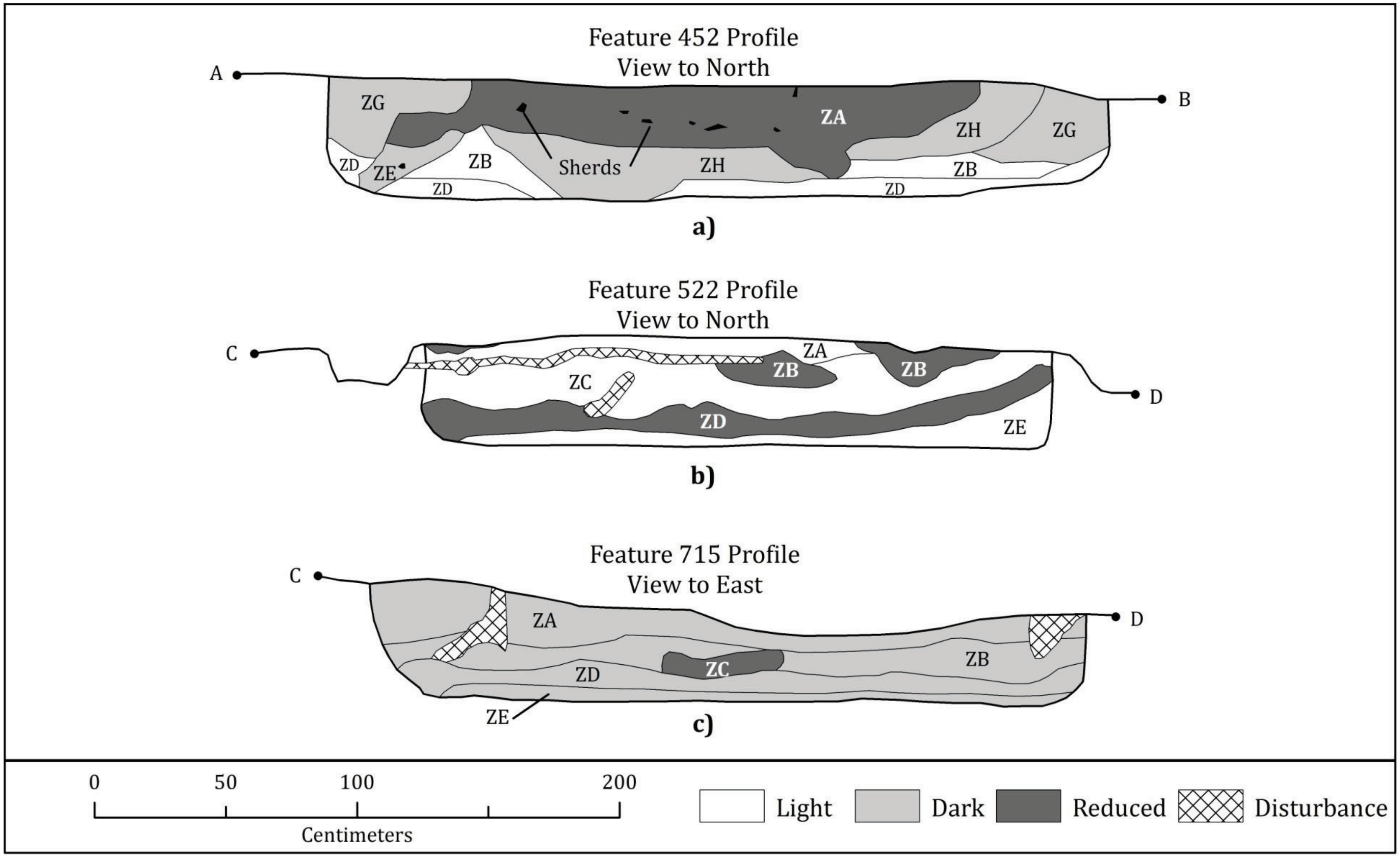


Figure 5.13. Lindeman South Structure Basin Profiles: a) F 452; b) F 715; c) F 522.

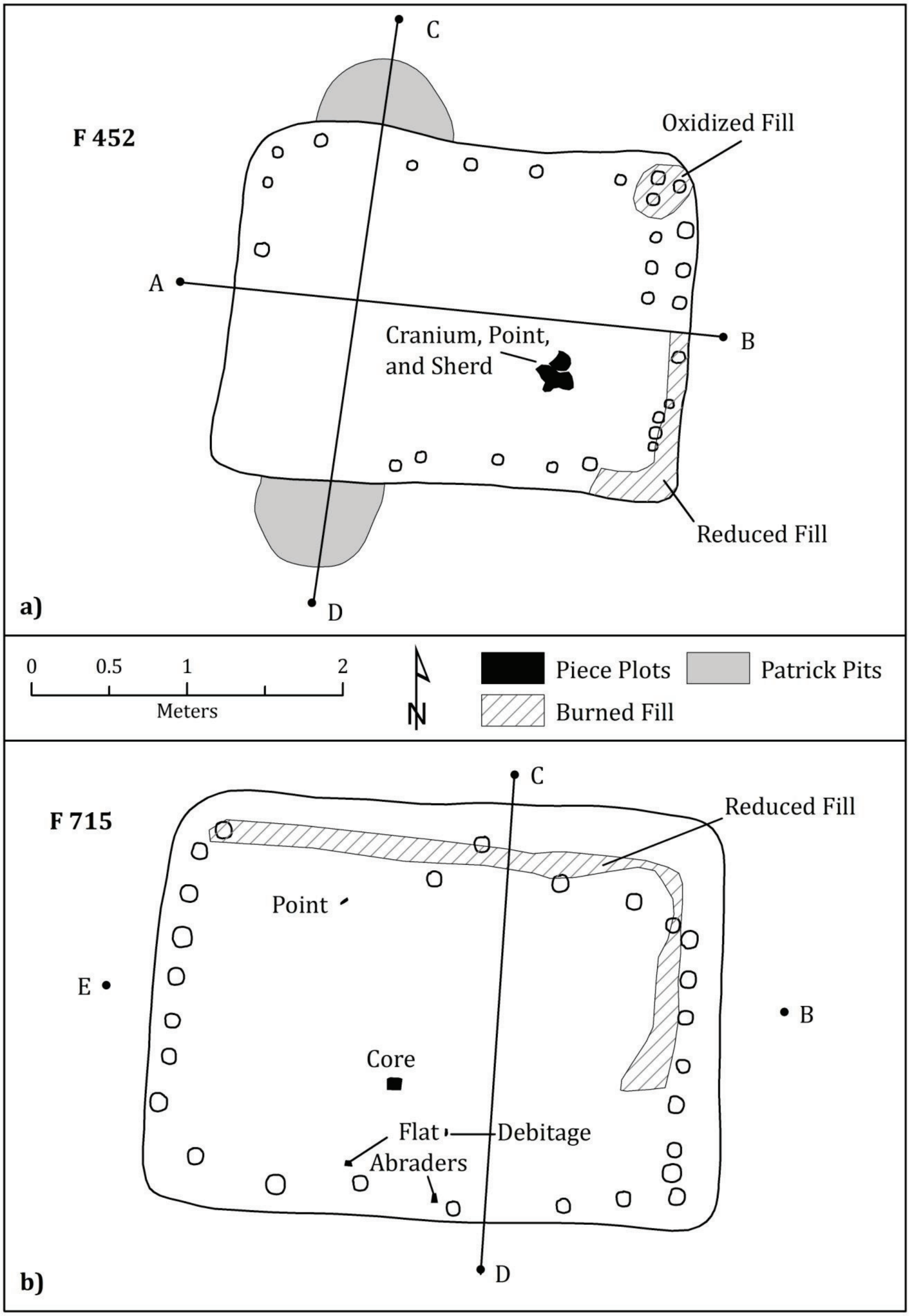


Figure 5.14. Lindeman Phase Structure Floors: a) F 452; b) F 715.

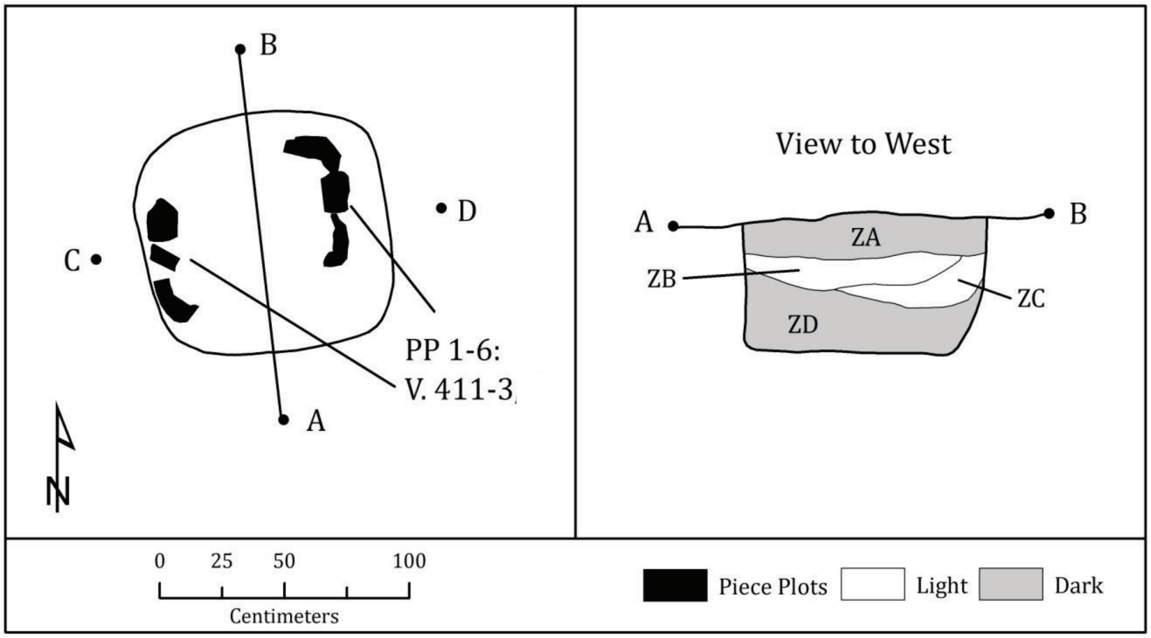


Figure 5.15. Feature 411 Plan and Profile.

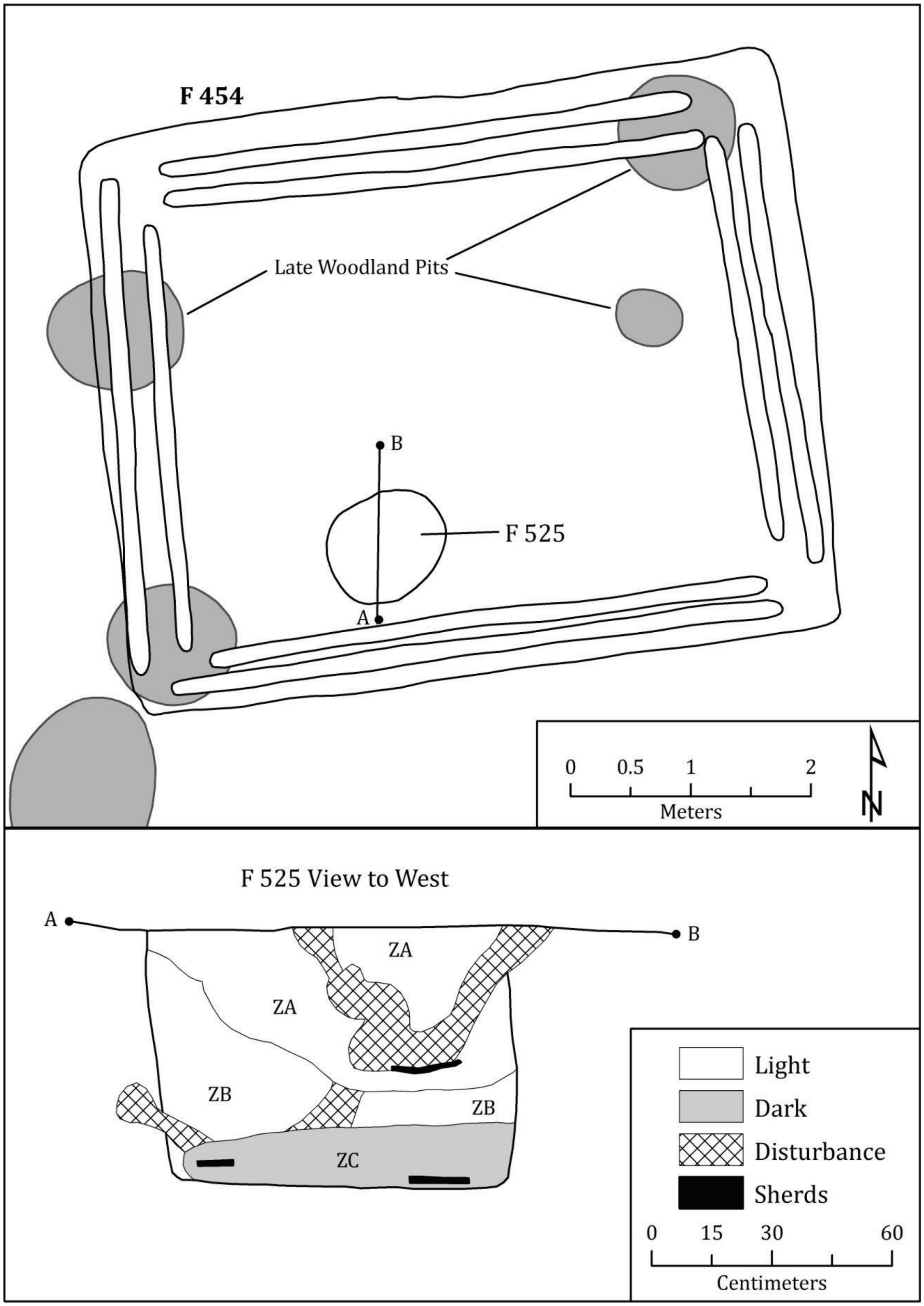


Figure 5.16. Mississippian Features and Feature 525 Profile.

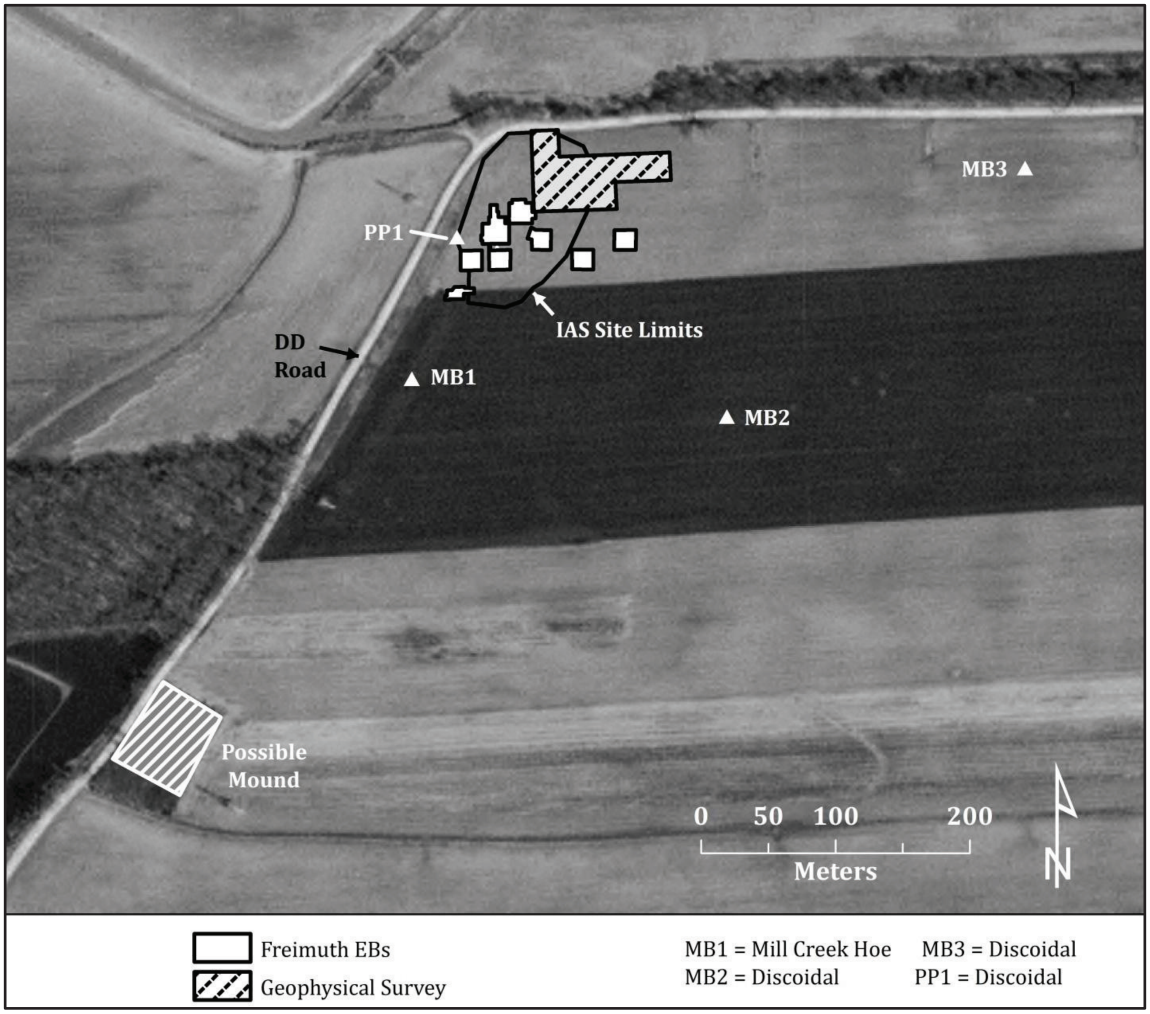


Figure 5.17. Divers Site (11MO28) Area.

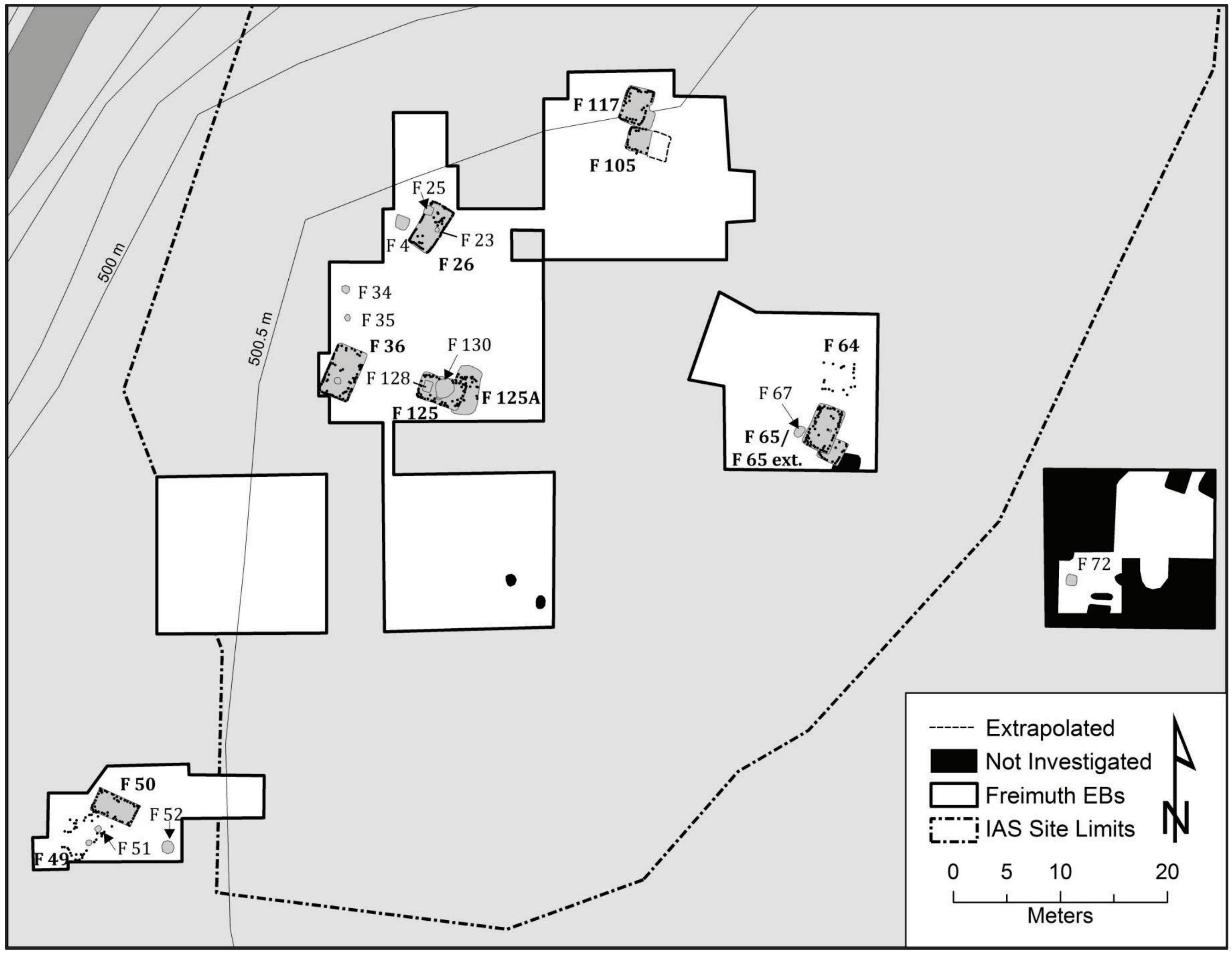


Figure 5.18. Lindeman Phase Features Excavated by Glen Freimuth.

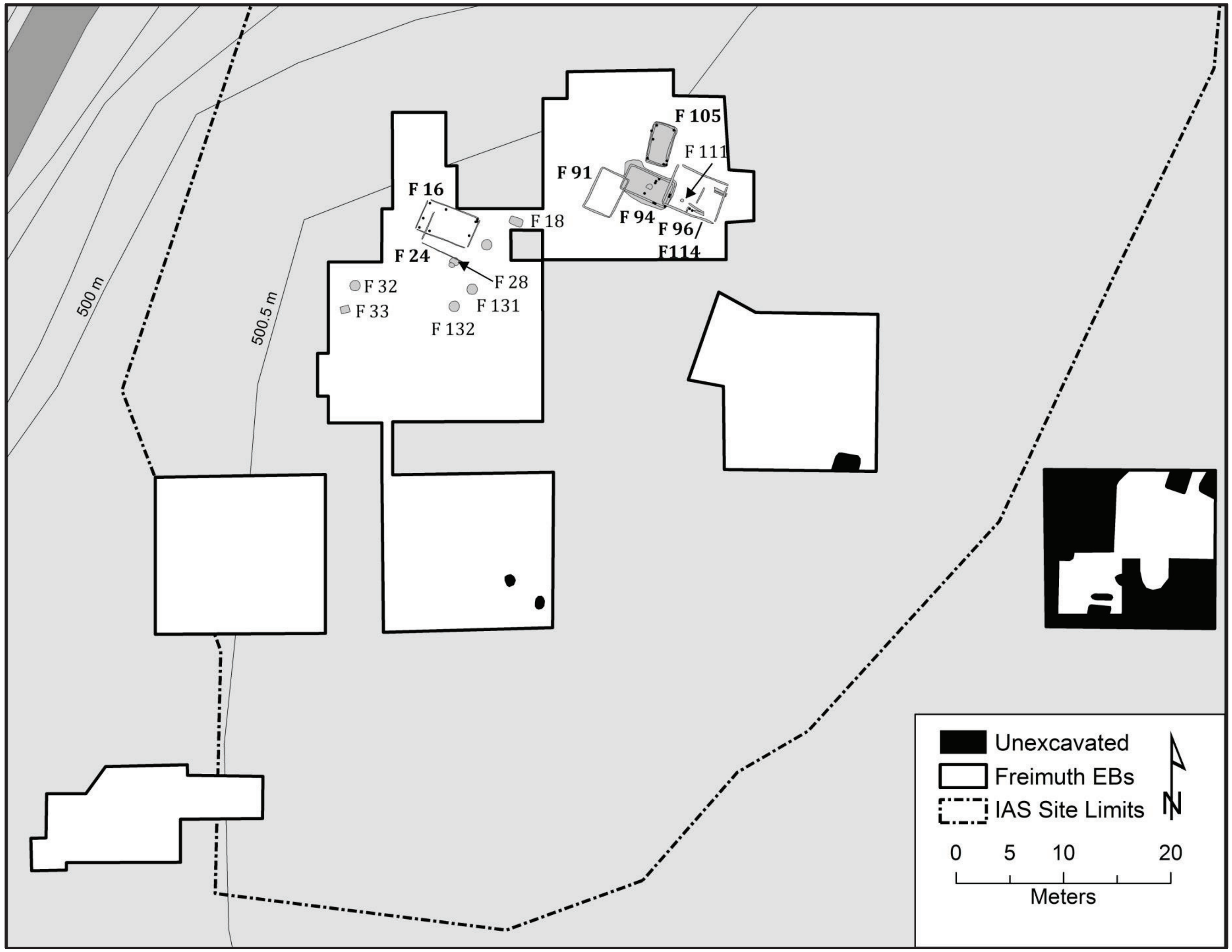


Figure 5.19. Lohmann Phase Features Excavated by Glen Freimuth.

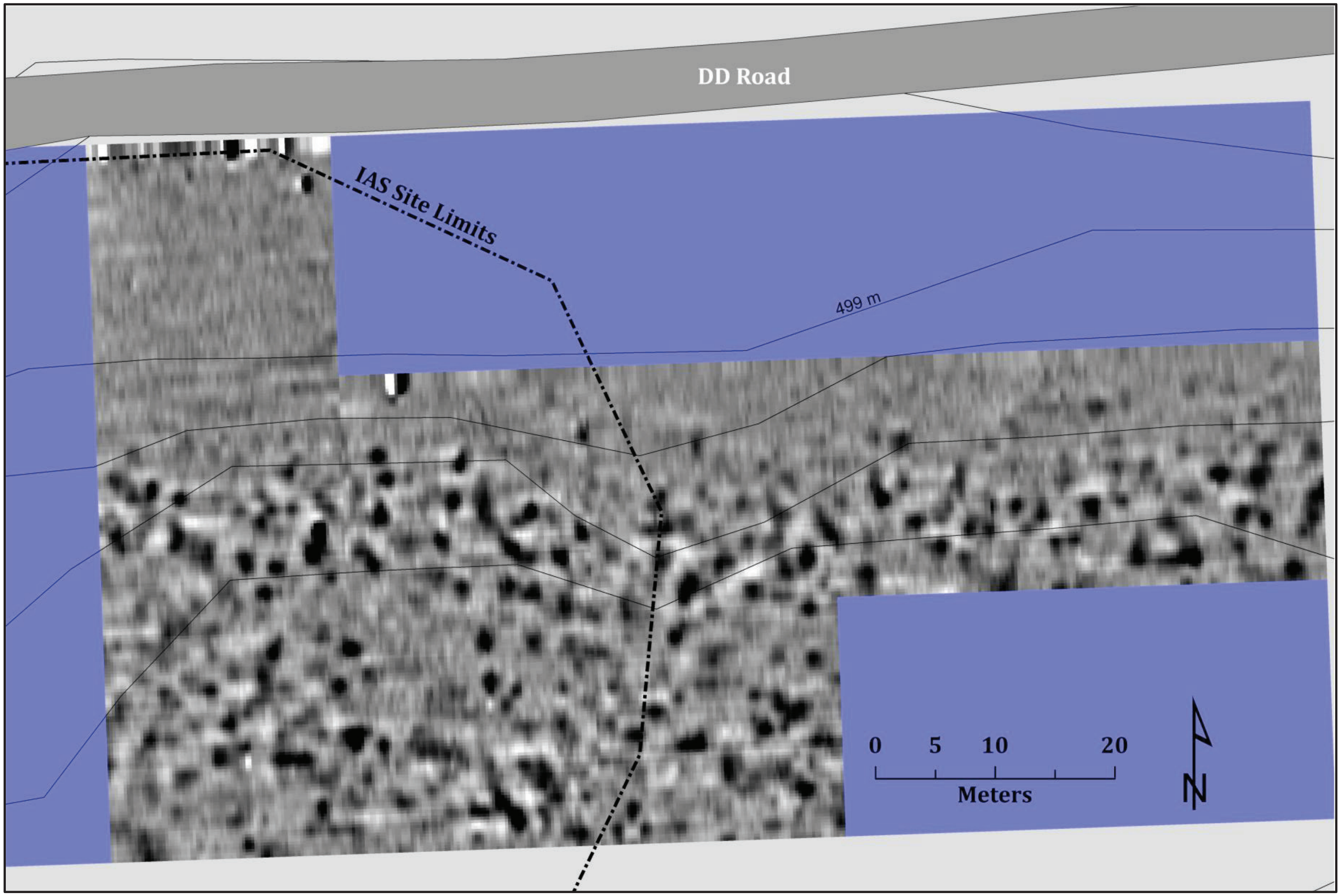


Figure 5.20. Gradiometric Survey Results.

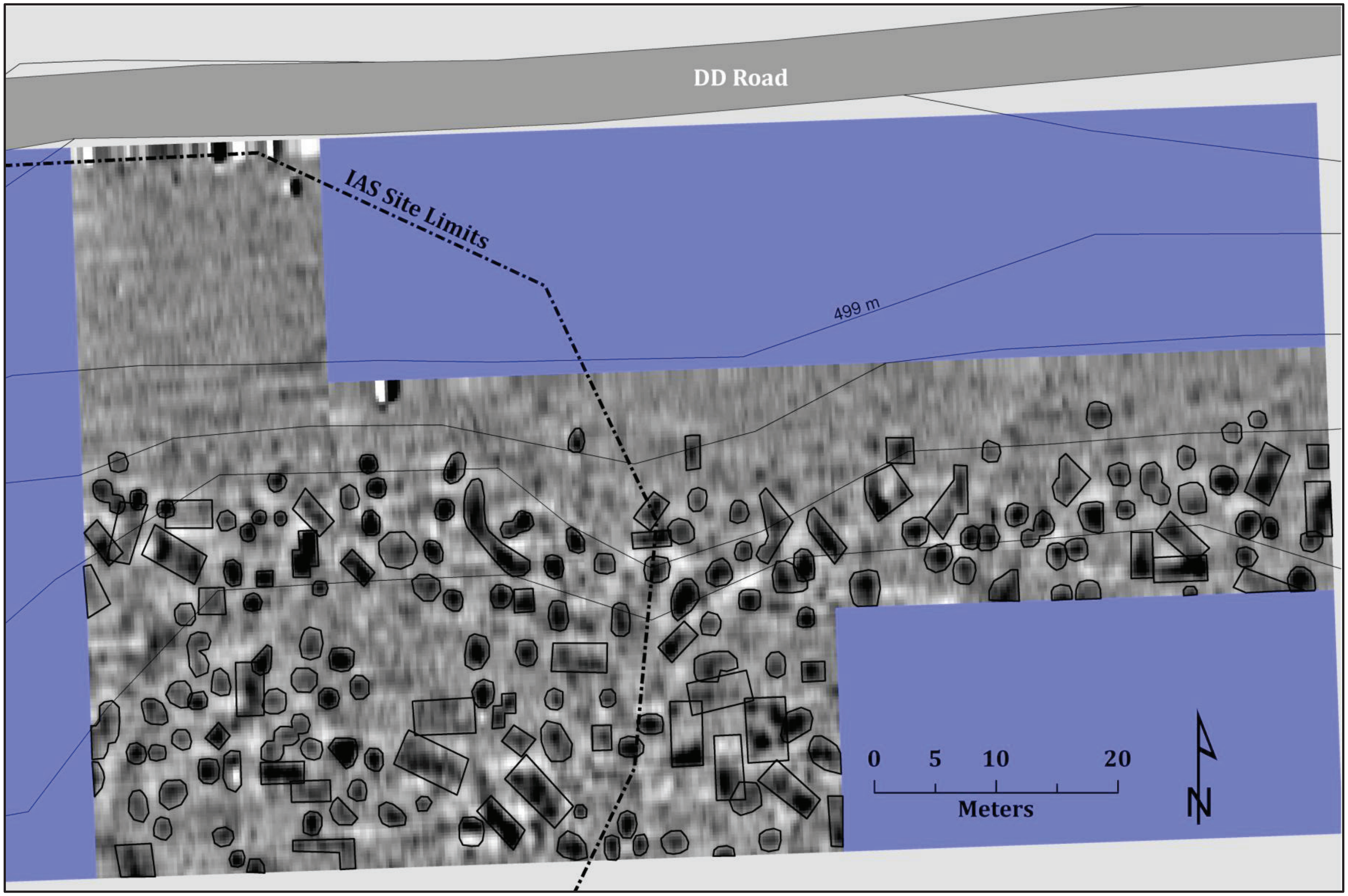


Figure 5.21. Gradiometric Survey Results with Anomalies Outlined.

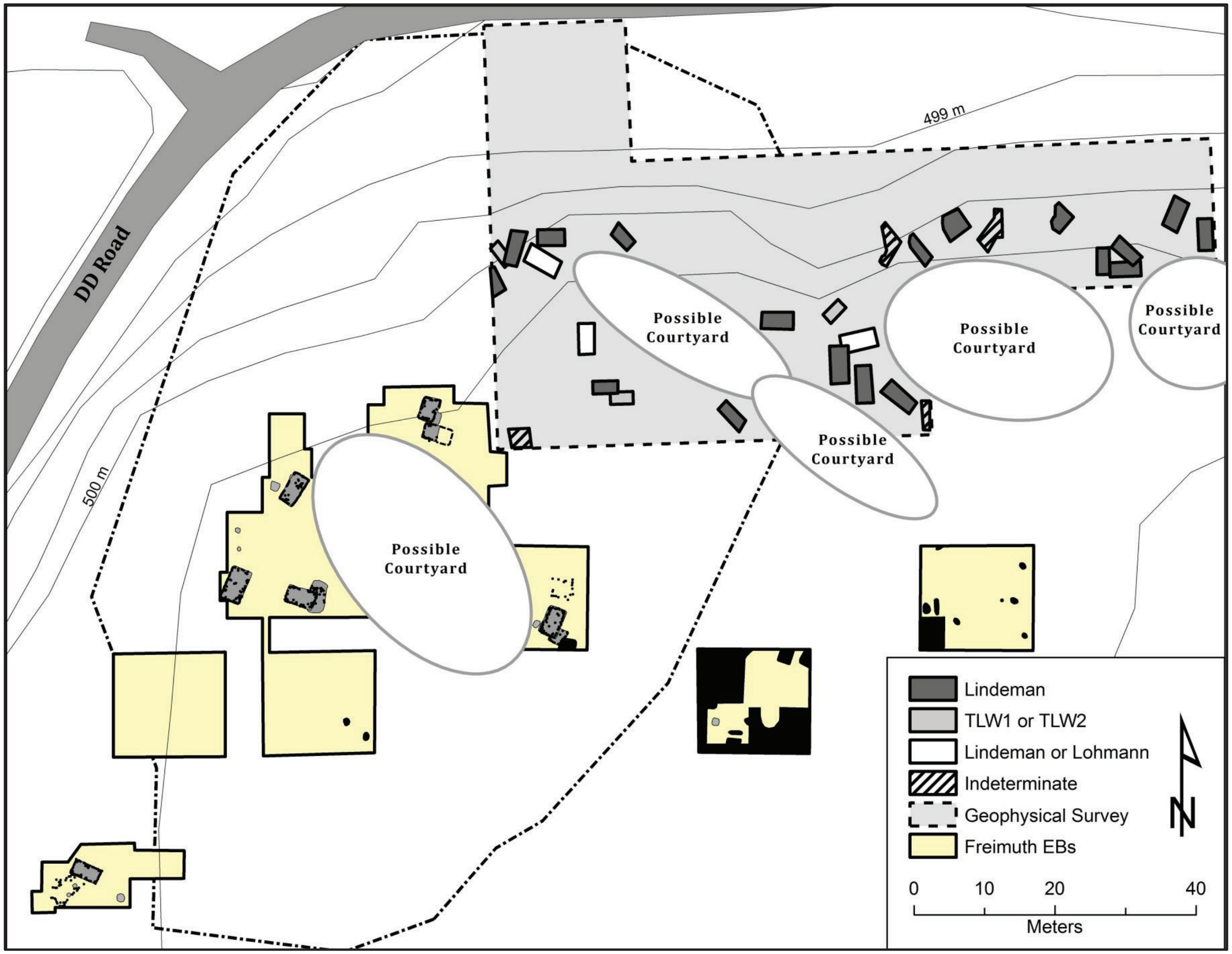


Figure 5.22. Distribution of Lindeman Phase Features and Possible Lindeman Phase Basins.

Figure 5.23. Distribution of Lohmann Phase Features and Possible Lohmann Phase Basins.

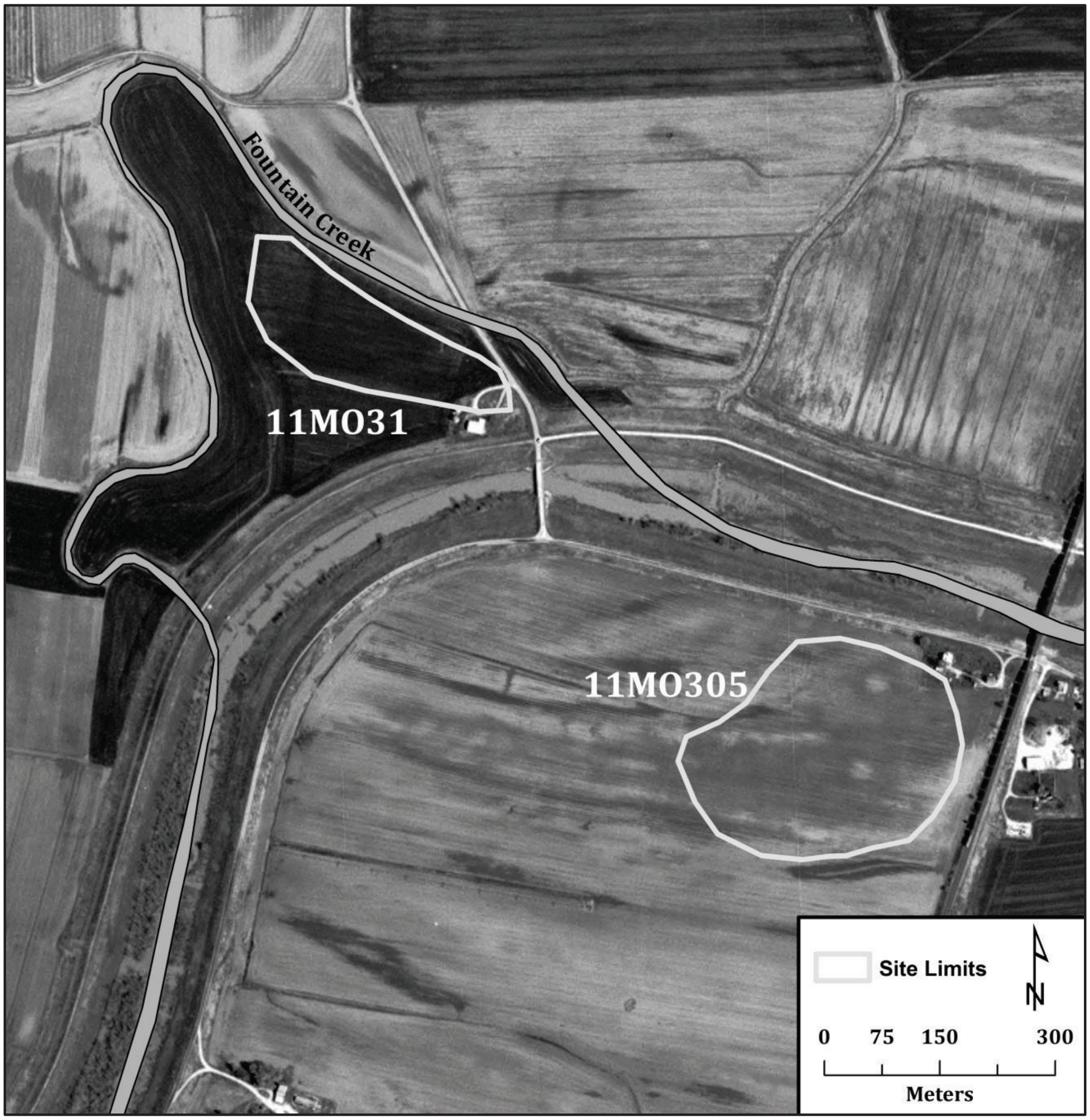


Figure 5.24. Peiper (11MO31) and Washausen (11MO305) Sites.

Figure 5.25. 2004 UIUC Excavation Block at the Peiper Site (11MO31).

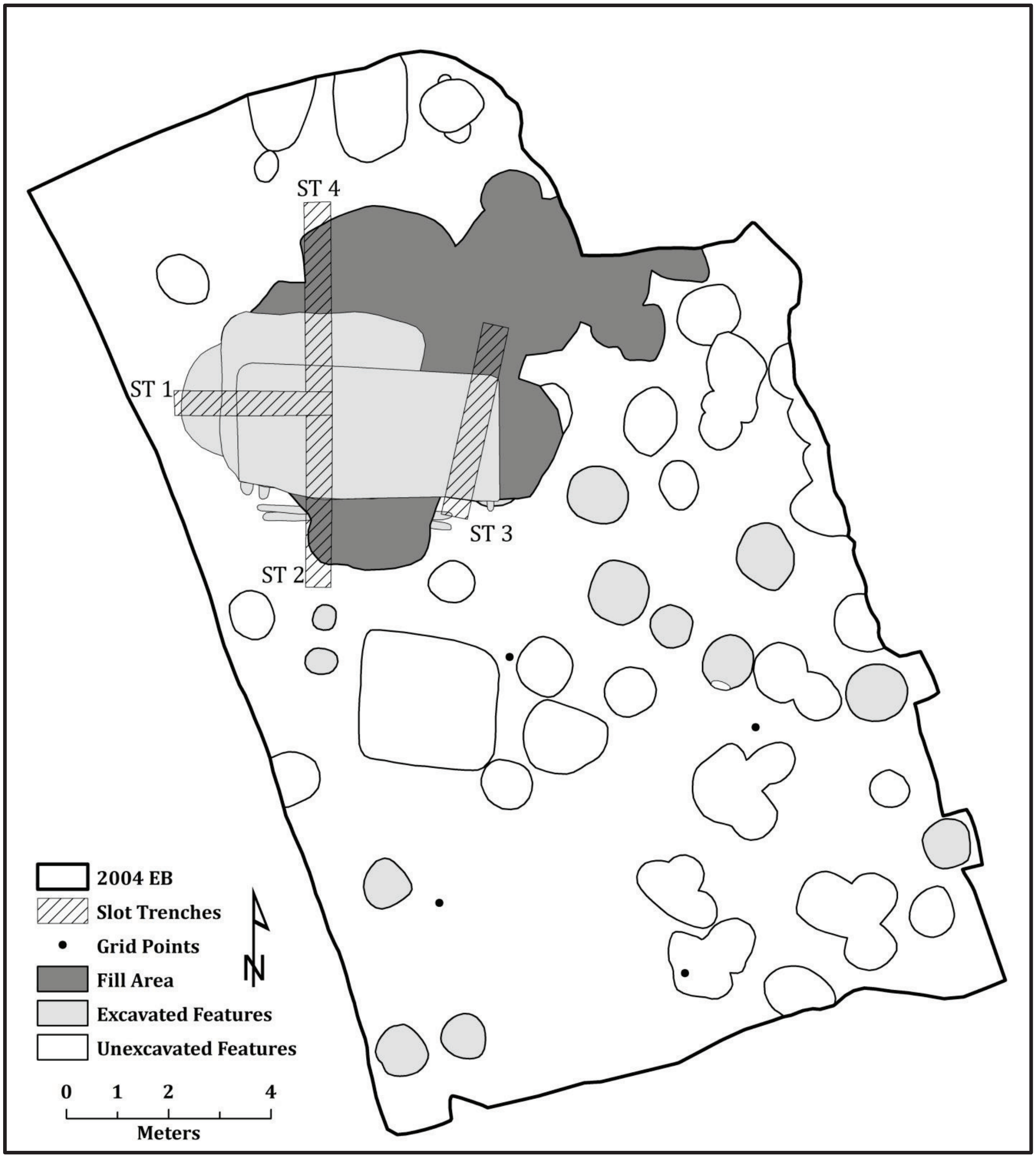


Figure 5.26. Late Woodland and Mississippian Features.

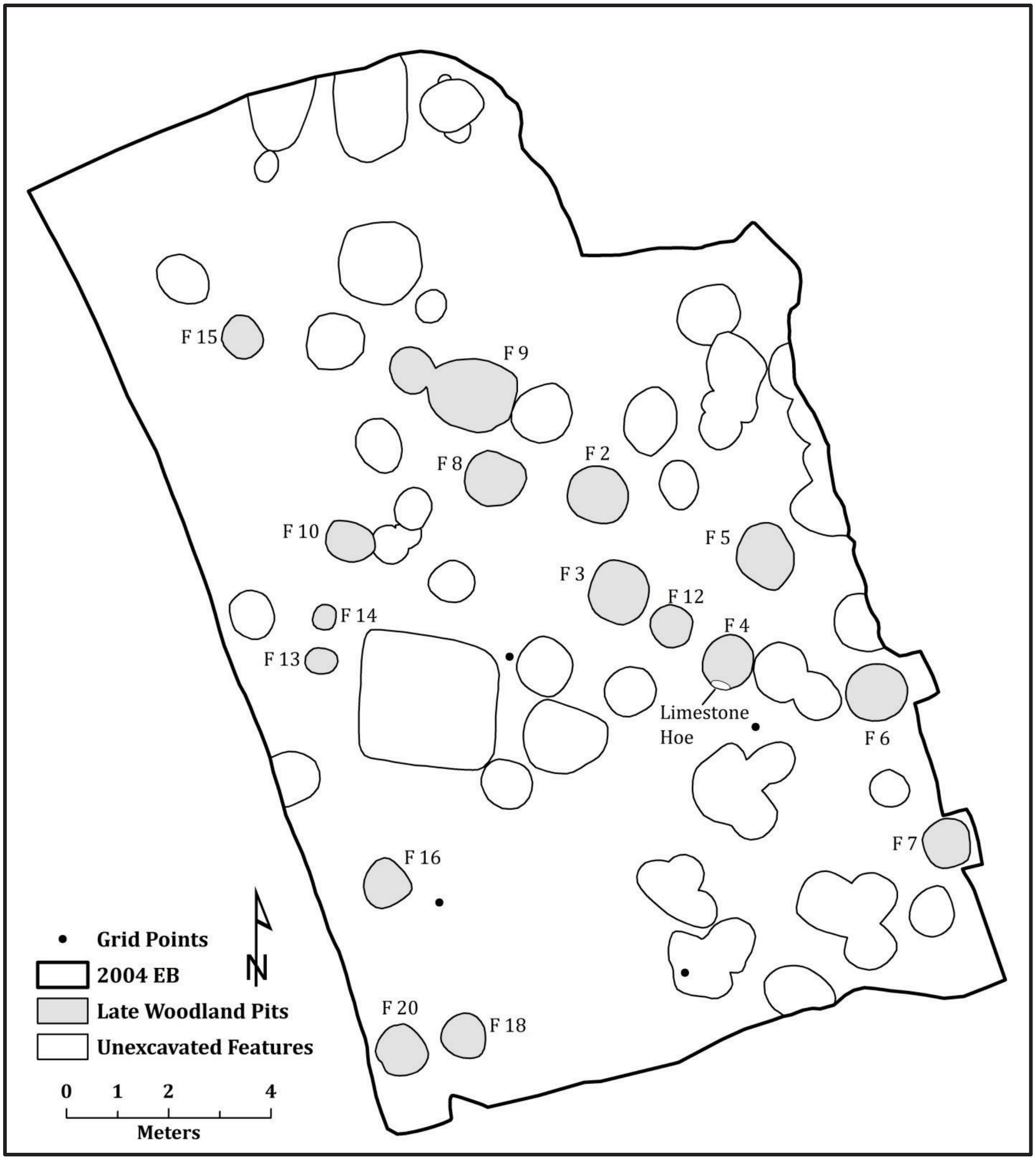


Figure 5.27. Late Woodland Pits and Unexcavated Features.

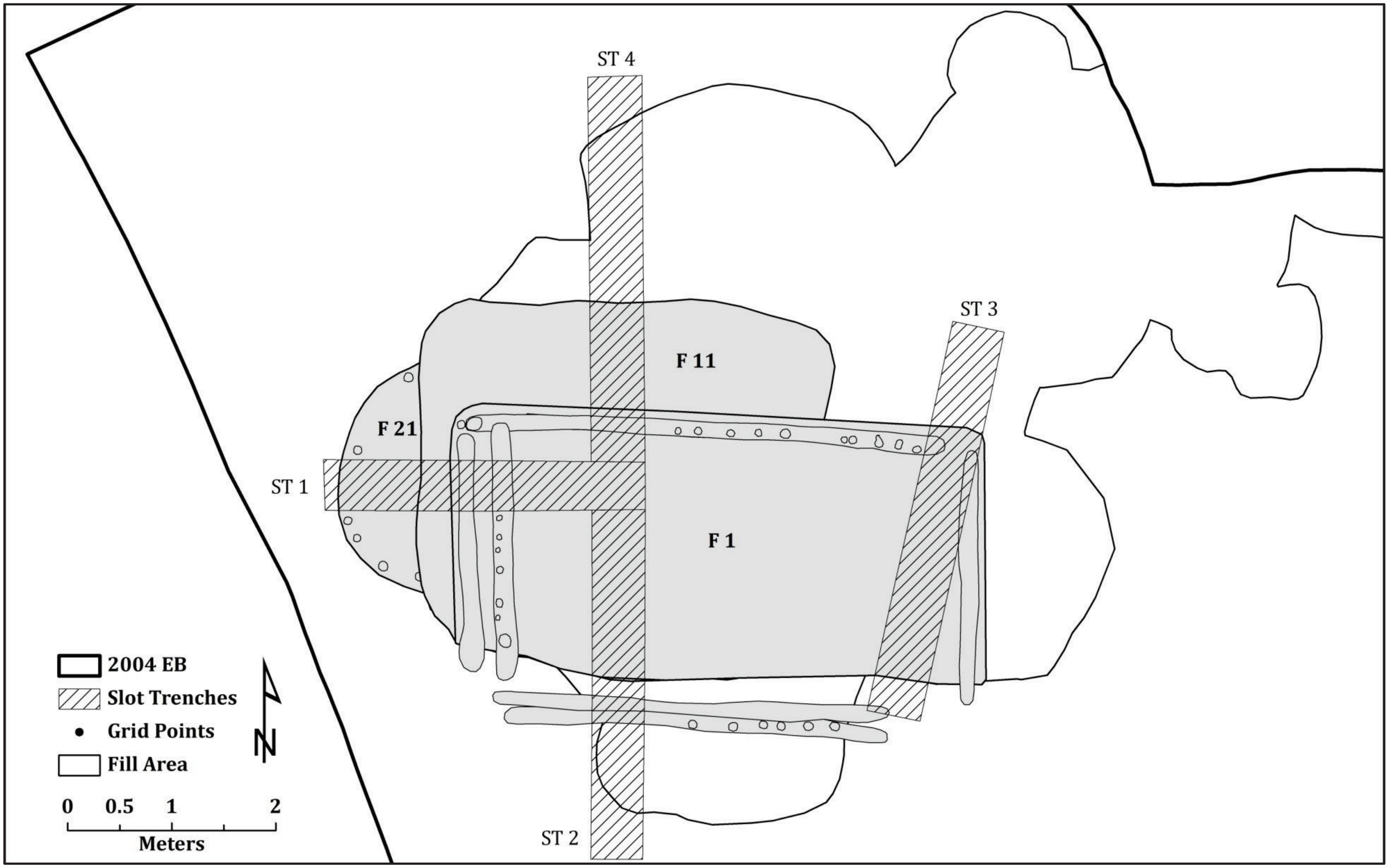


Figure 5.28. Feature 1 Area.

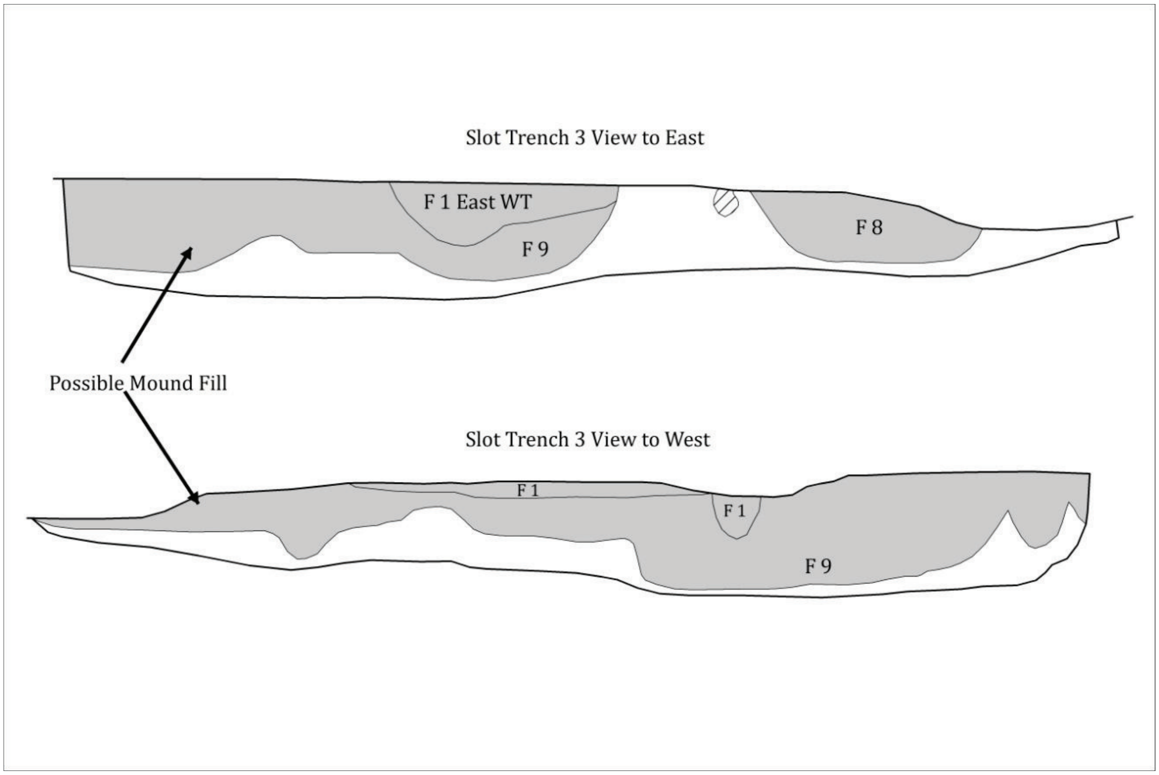


Figure 5.29. Slot Trench 3 Profiles. a) view to East; b) view to West.

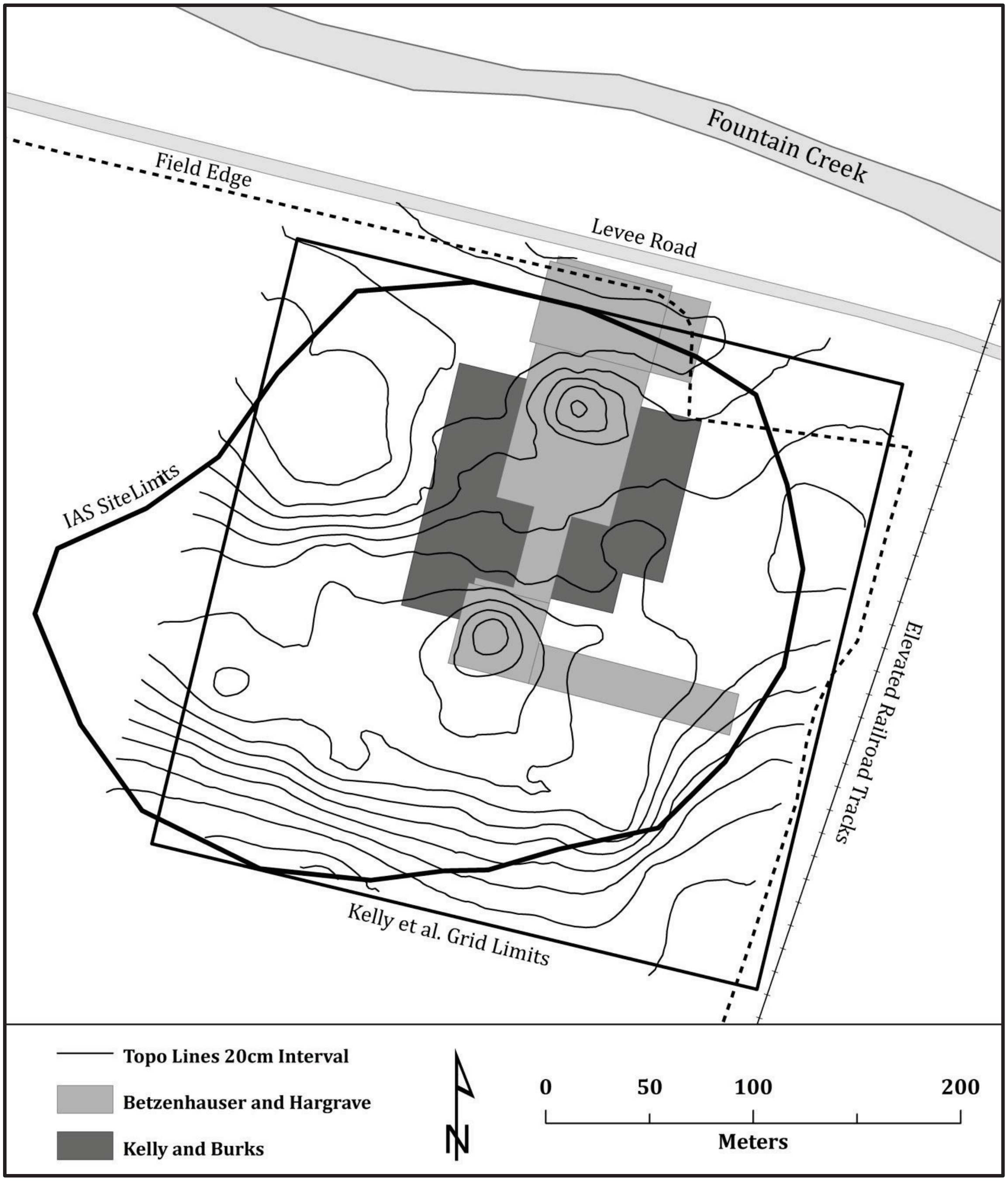


Figure 5.30. Washausen Site Area.

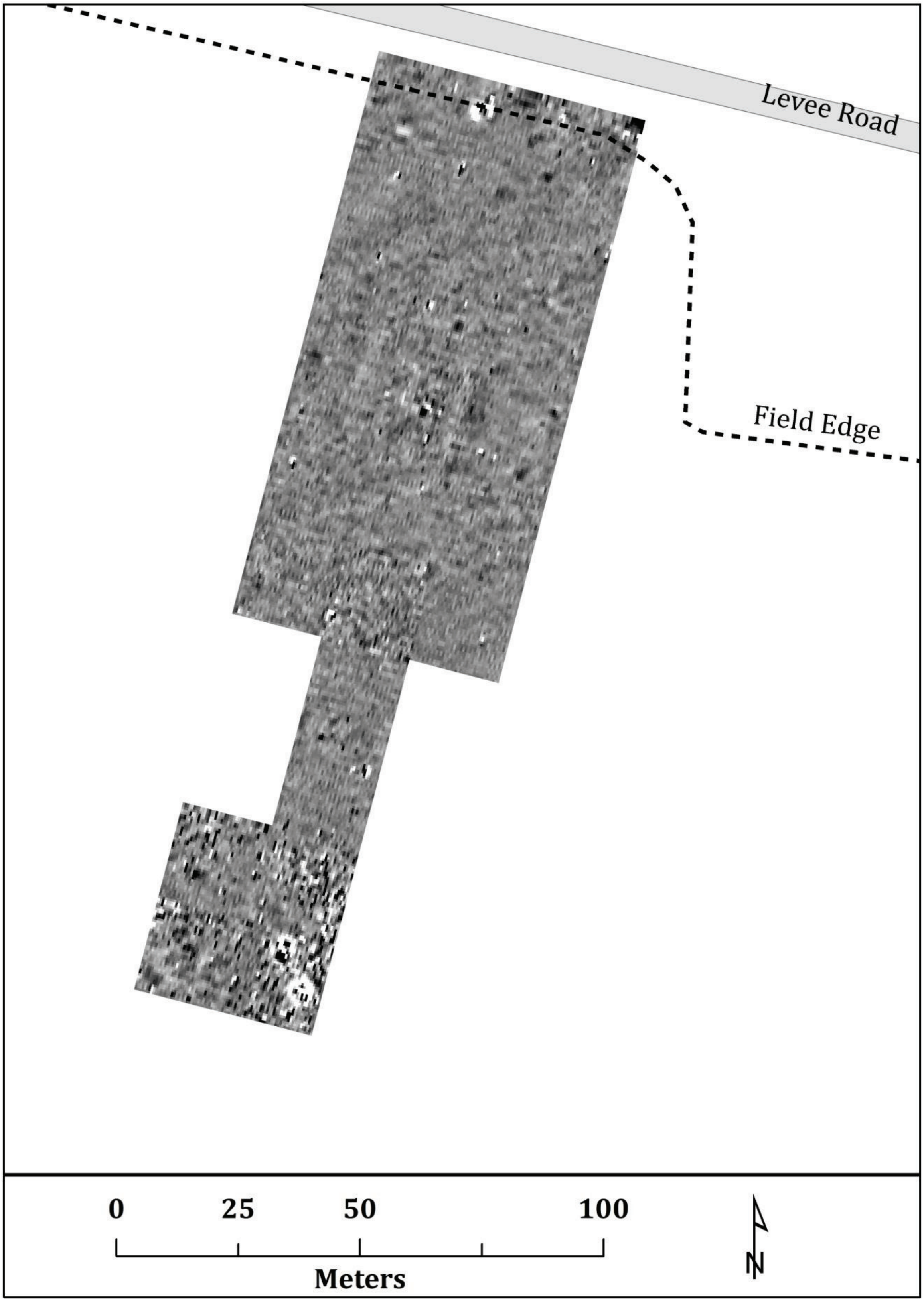


Figure 5.31. Betzenhauser and Hargrave 2004 Magnetic Survey Results.

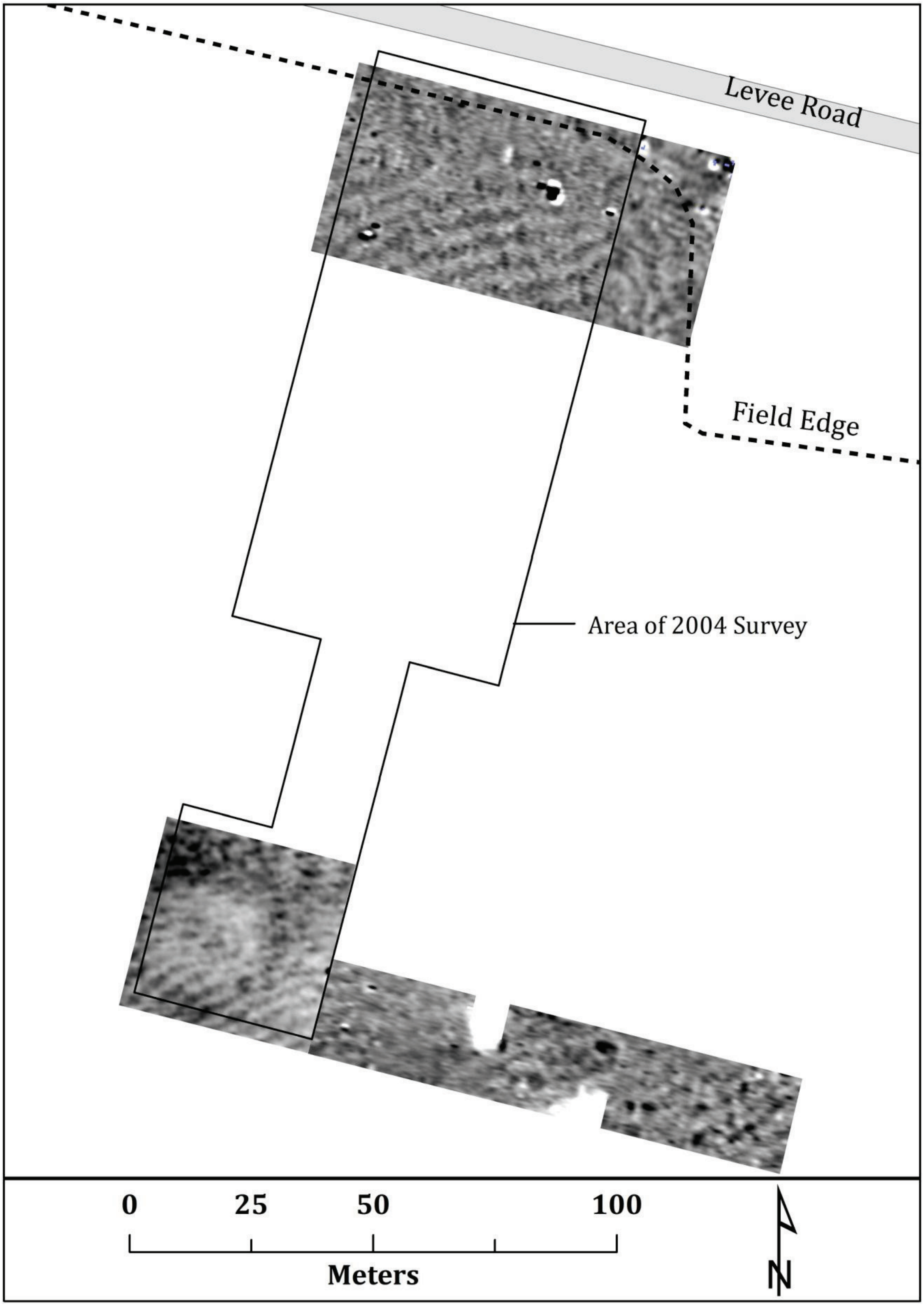


Figure 5.32. Betzenhauser and Hargrave 2007 Magnetic and Resistance Survey Results.

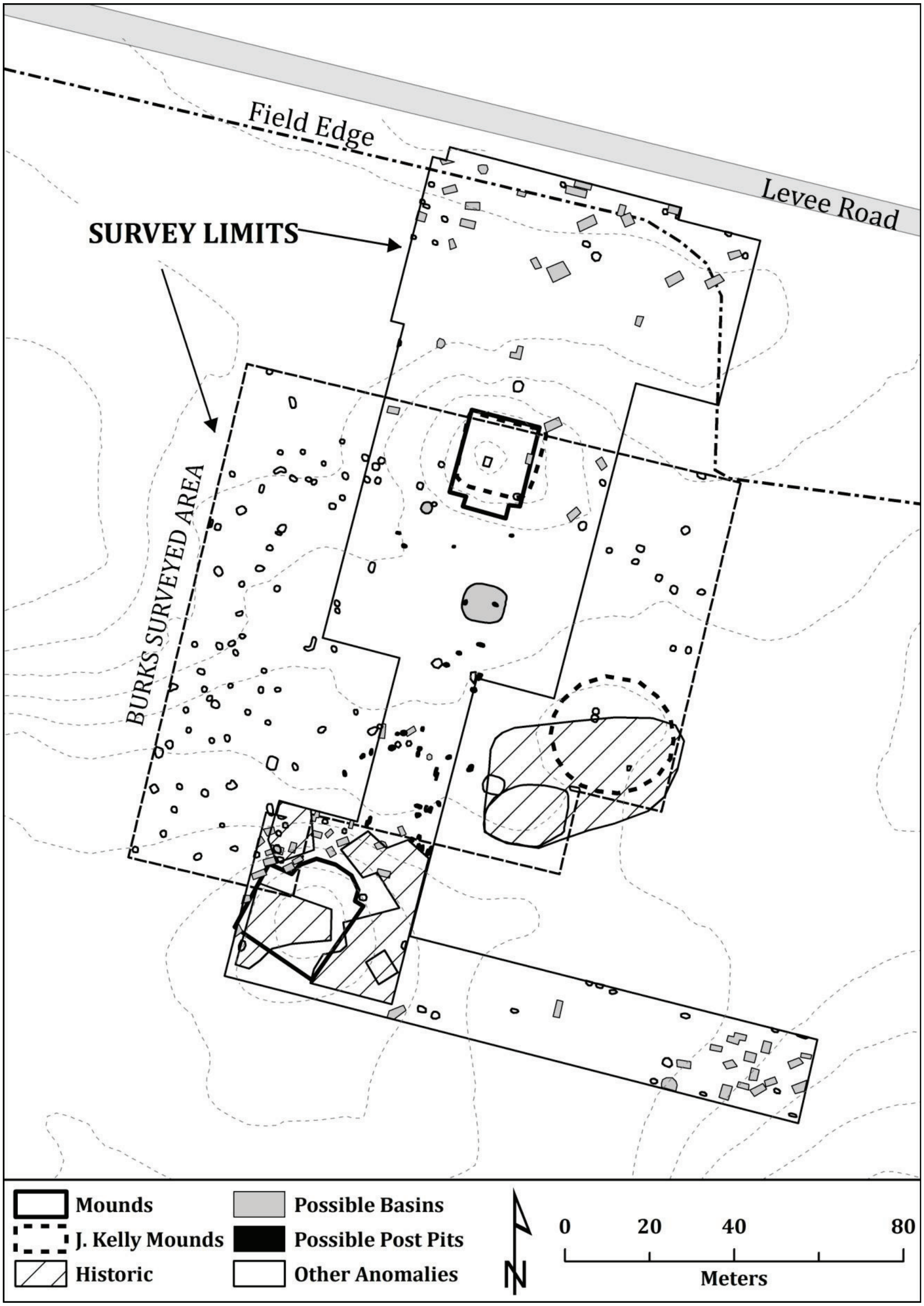


Figure 5.33. Distribution of Geophysical Anomalies.

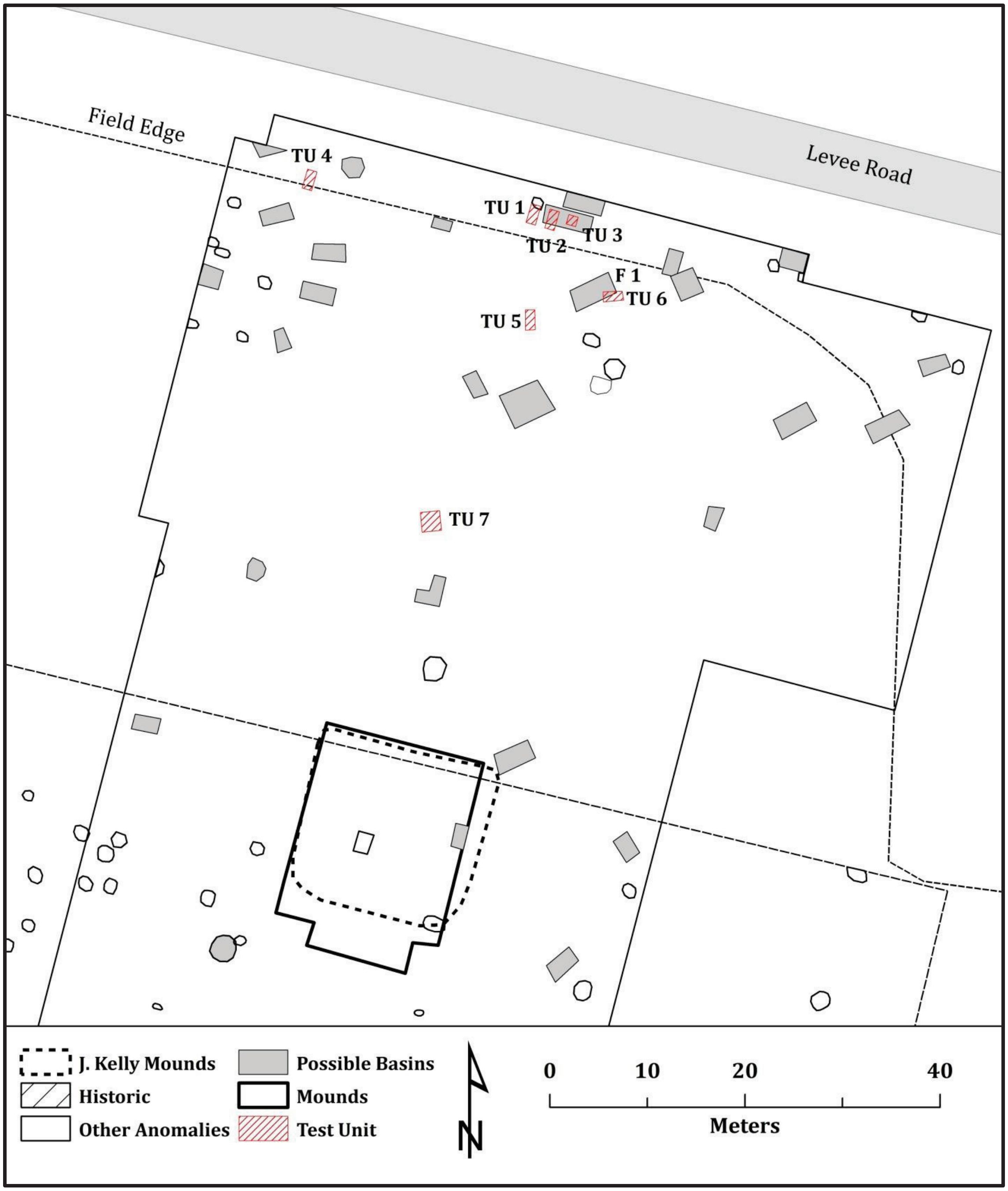


Figure 5.34. Northern Area of Geophysical Survey with Anomalies and Excavated Areas.

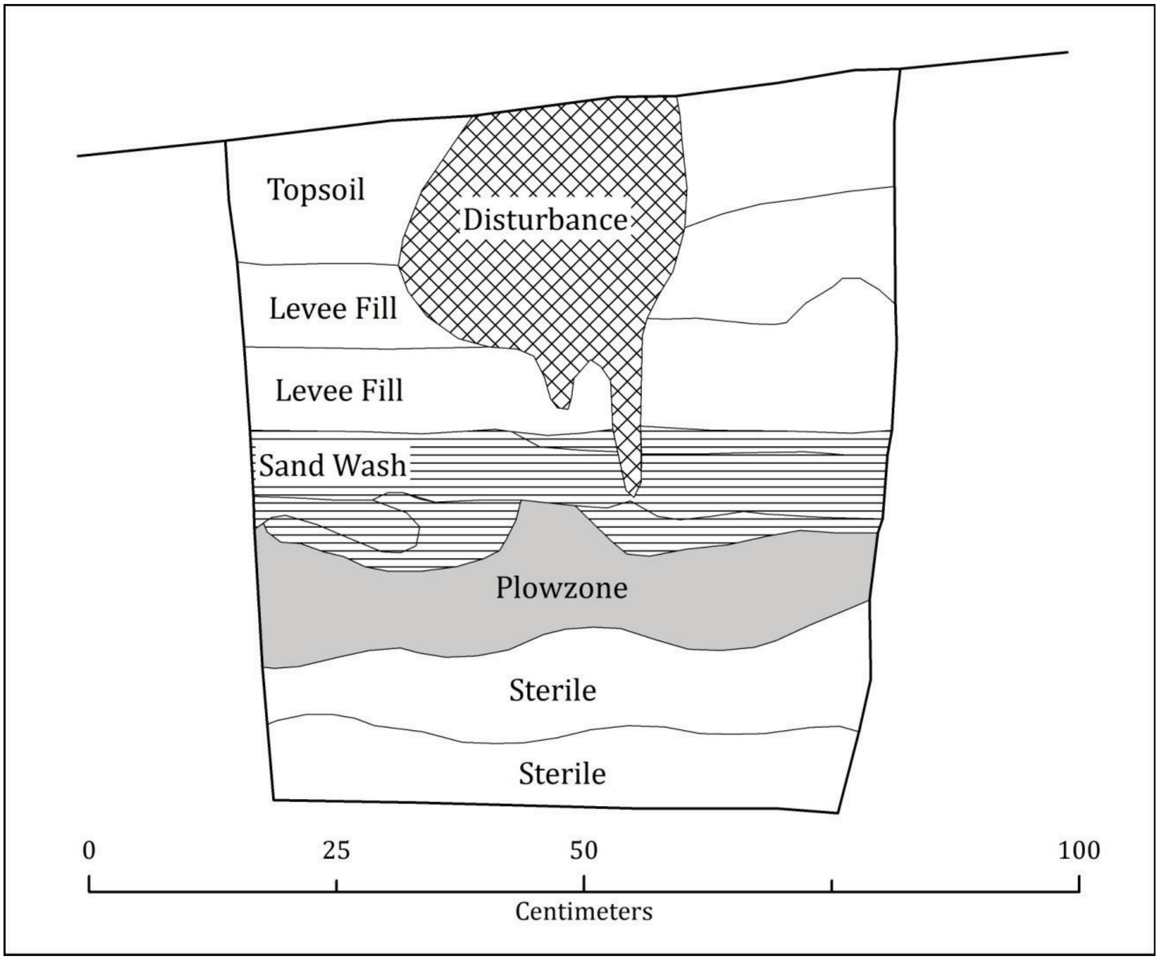


Figure 5.35. Test Unit 1 Profile, View to West.

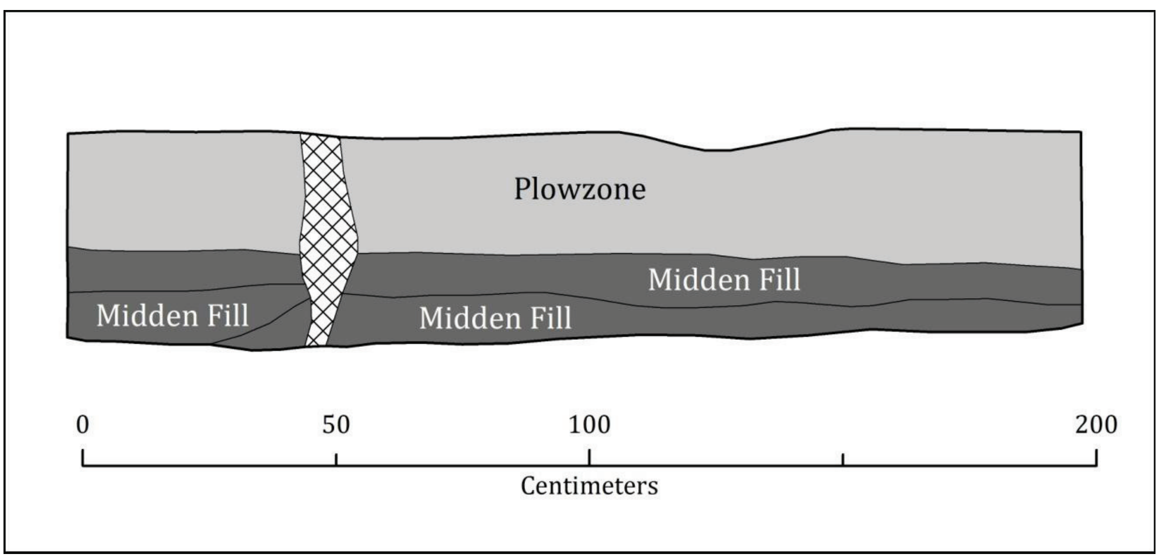


Figure 5.36. Test Unit 7 Profile, View to West.

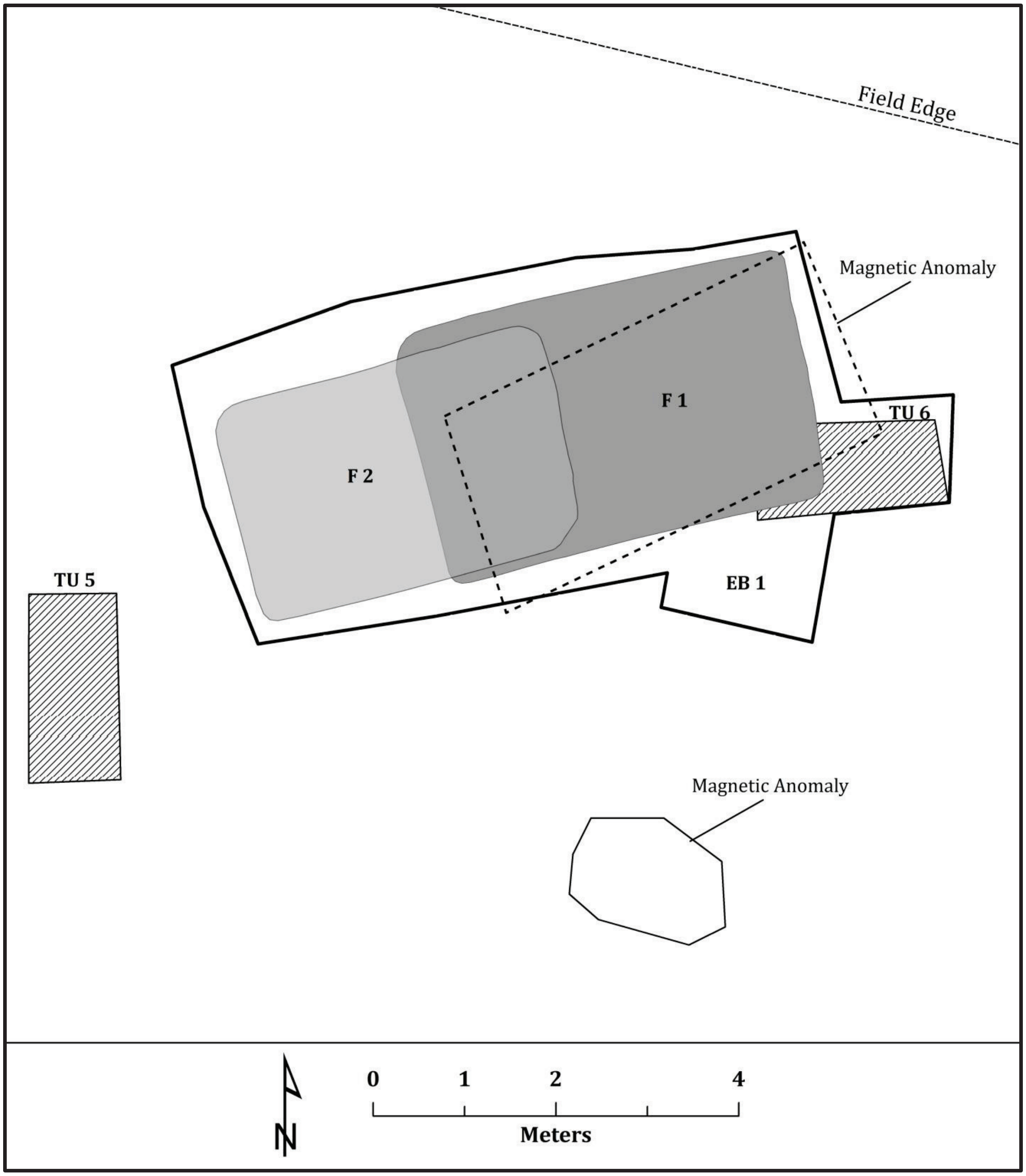


Figure 5.37. Detail of EB 1 with Geophysical Anomalies and Features Identified through Excavation.

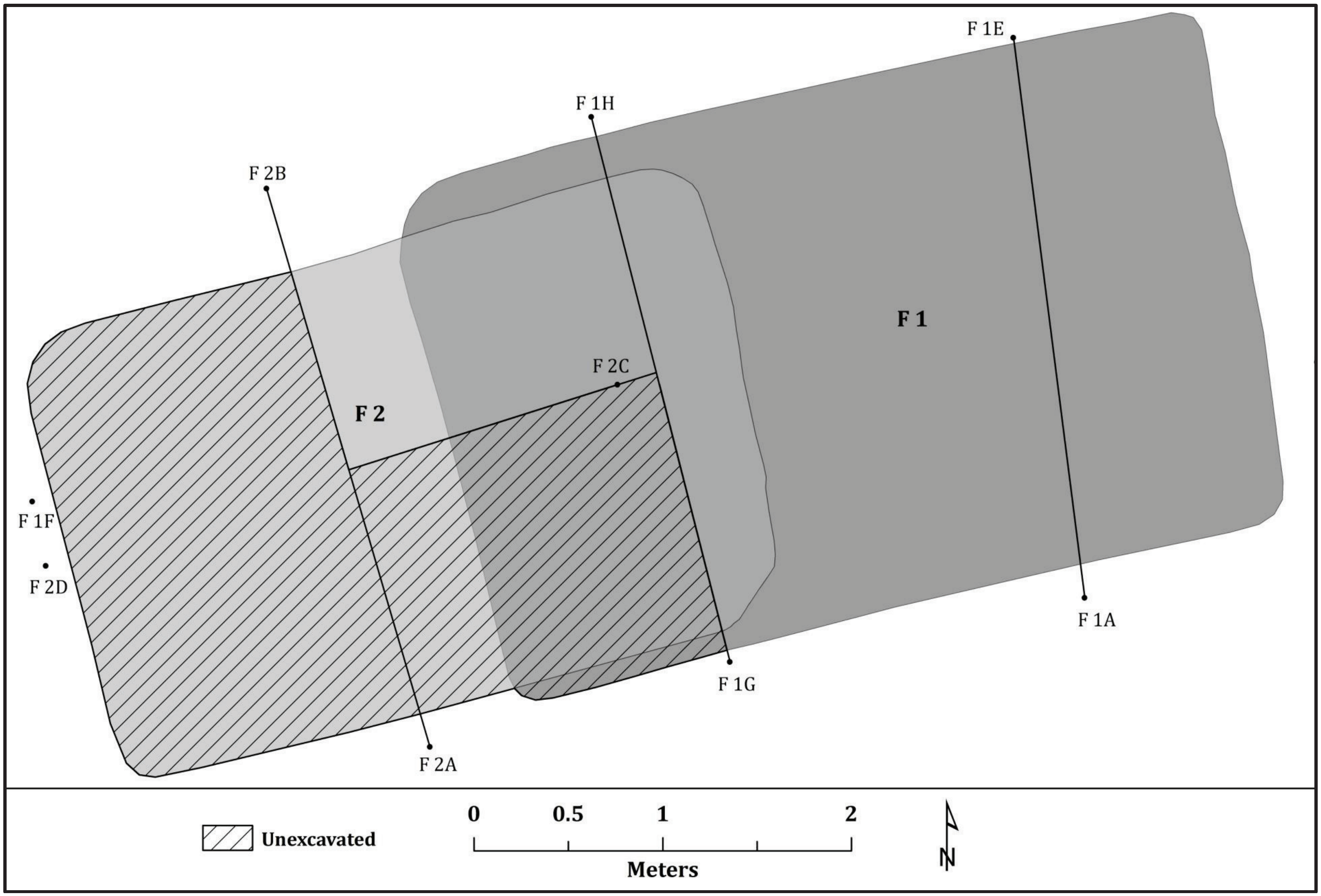


Figure 5.38. Excavated Areas of Features 1 and 2.

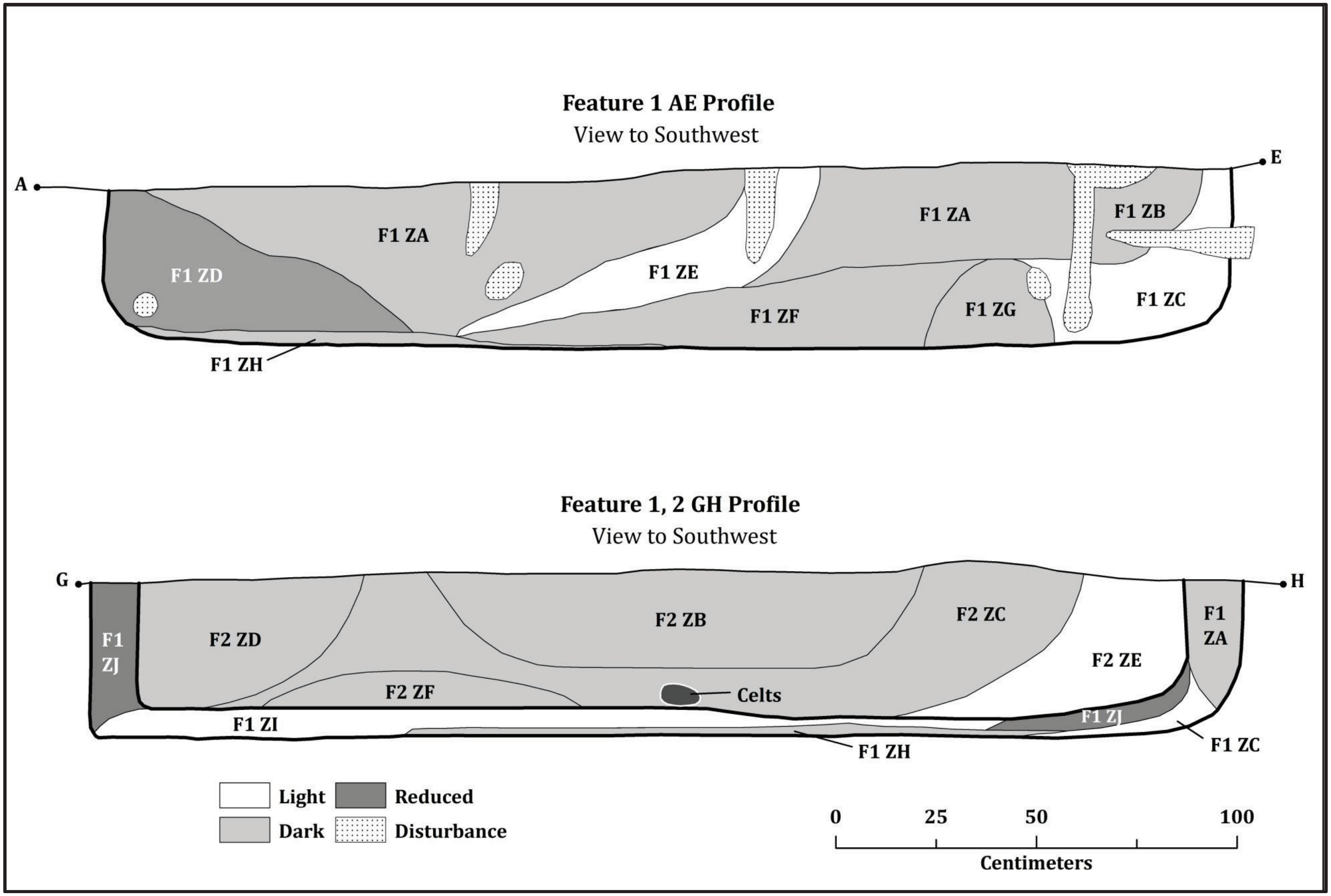


Figure 5.39. Feature 1 and 2 Profiles.

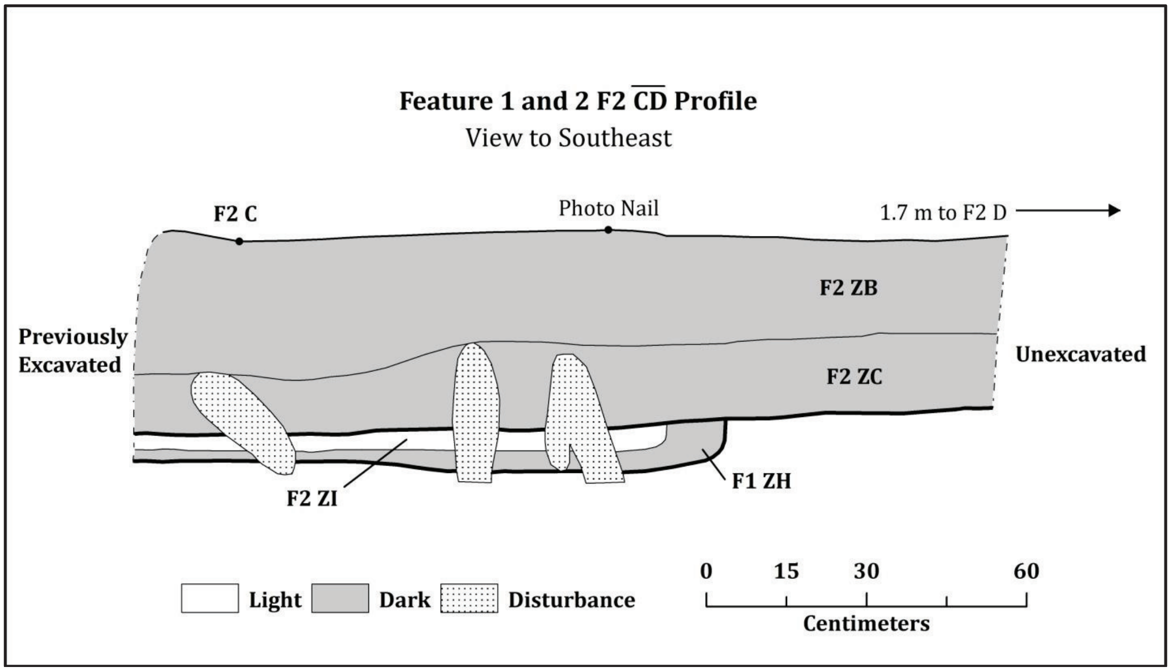


Figure 5.40. Feature 1 and 2 CD profile.

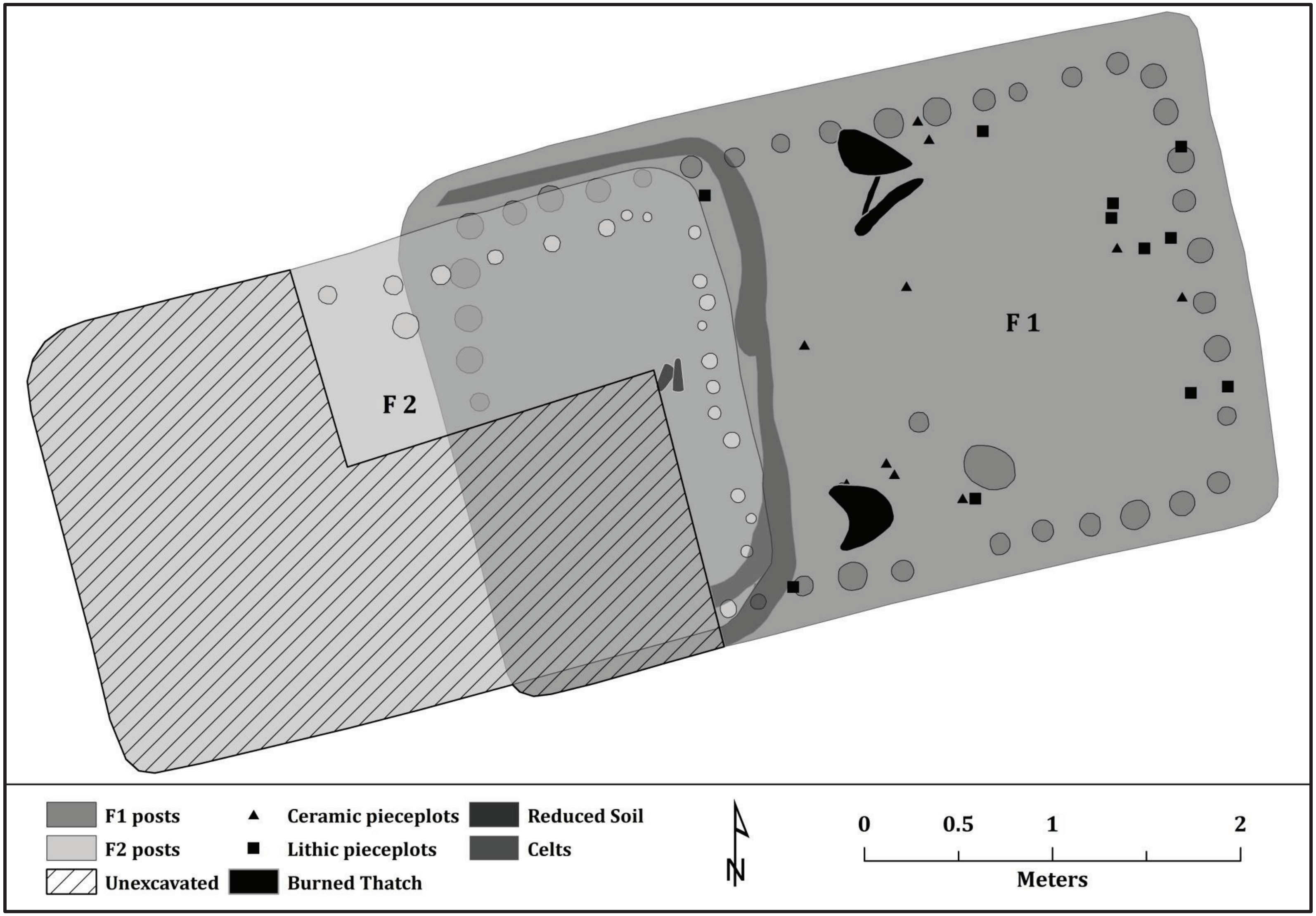


Figure 5.41. Feature 1 and 2 floors.

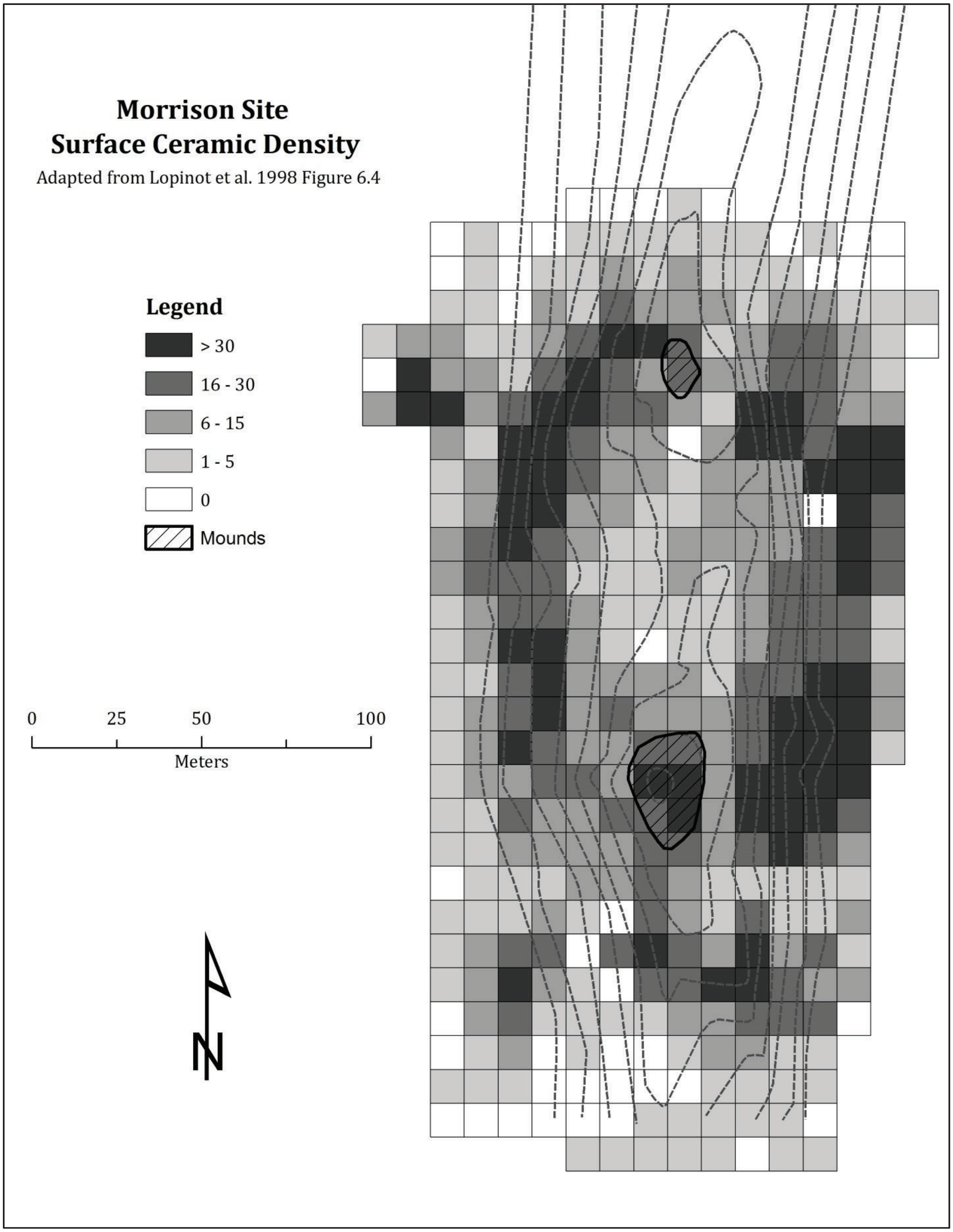


Figure 5.42. Morrison Site, 1994 Topographic Map with Surface Ceramic Density Overlay (adapted from Lopinot et al. 1998 Figure 6.4).

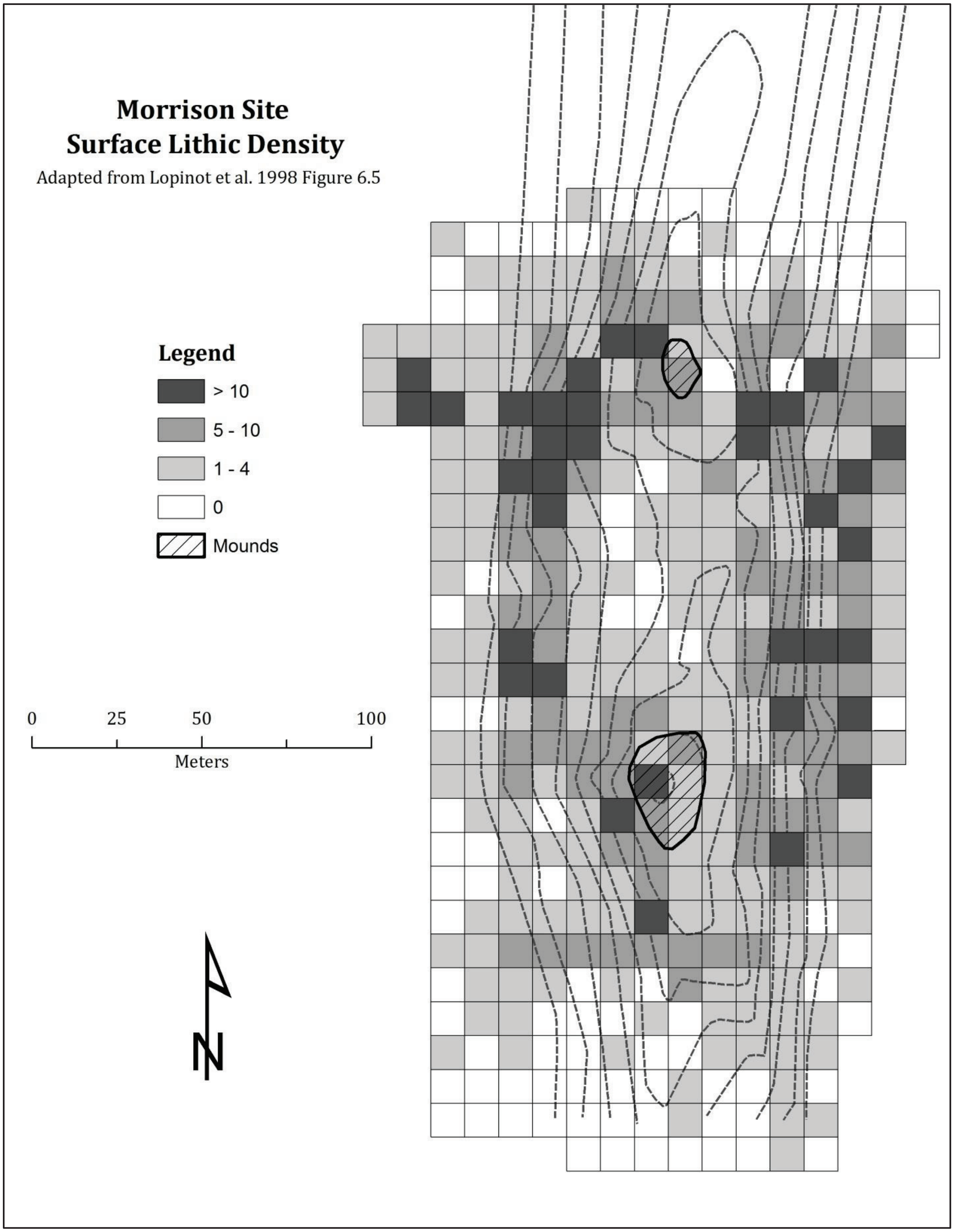


Figure 5.43. Morrison Site, 1994 Topographic Map with Surface Lithic Density Overlay (adapted from Lopinot et al. 1998 Figure 6.5).

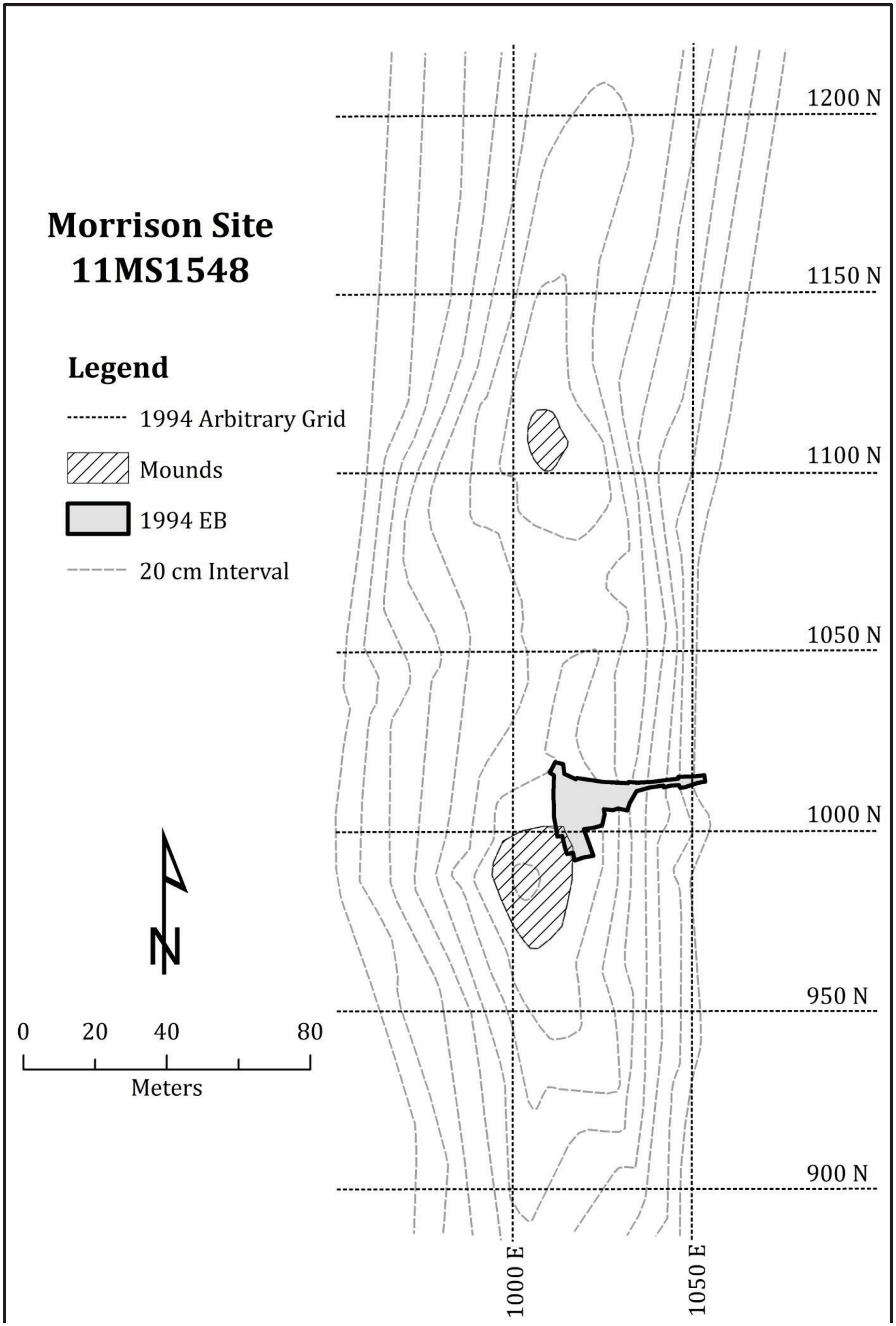


Figure5.44. Morrison Site with 1994 Excavation Block (EB).

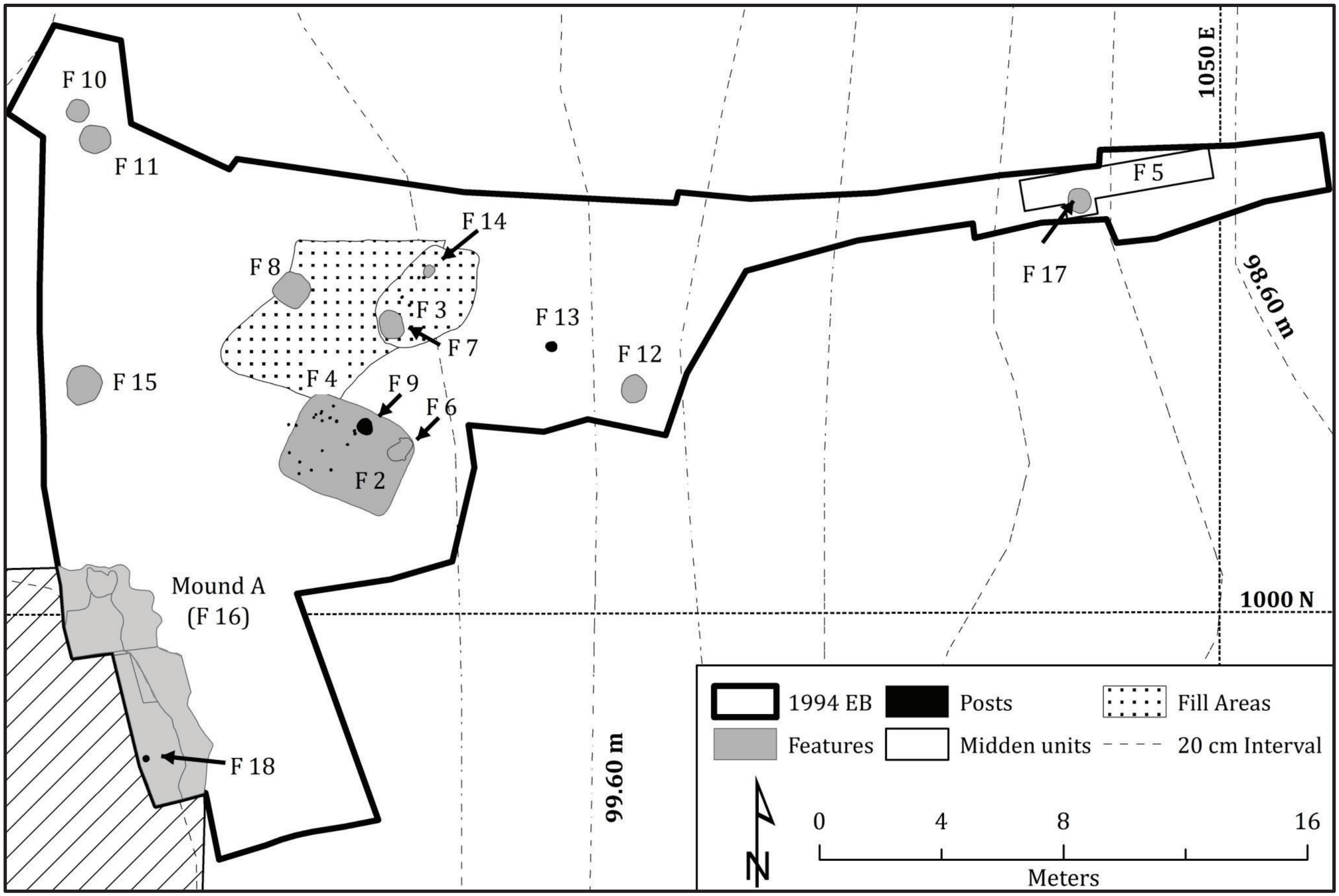


Figure 5.45. Morrison Site 1994 University of Oklahoma Excavations.

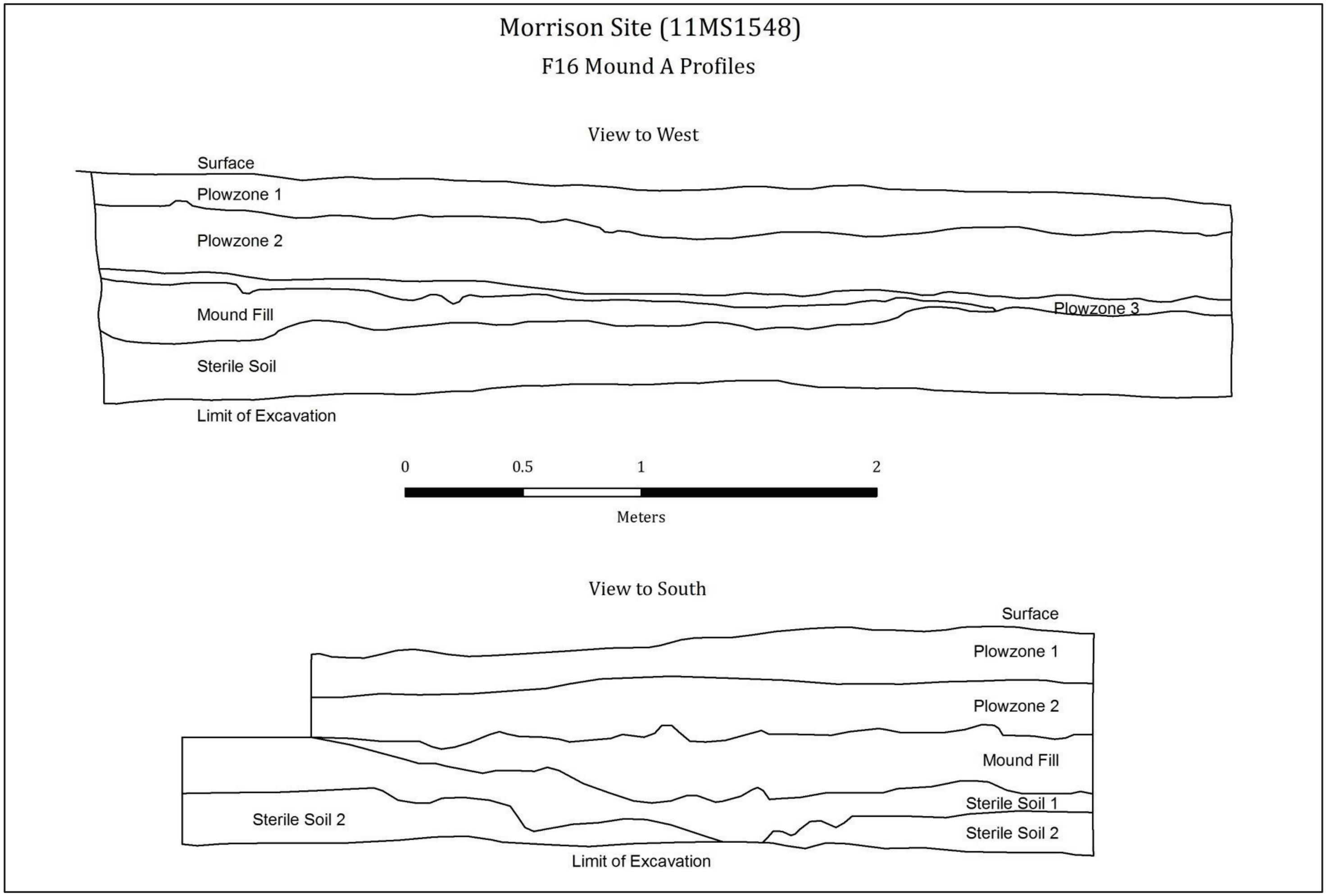


Figure 5.46. Mound A Profiles.

Figure 5.47. Mound A Profile, View to West.

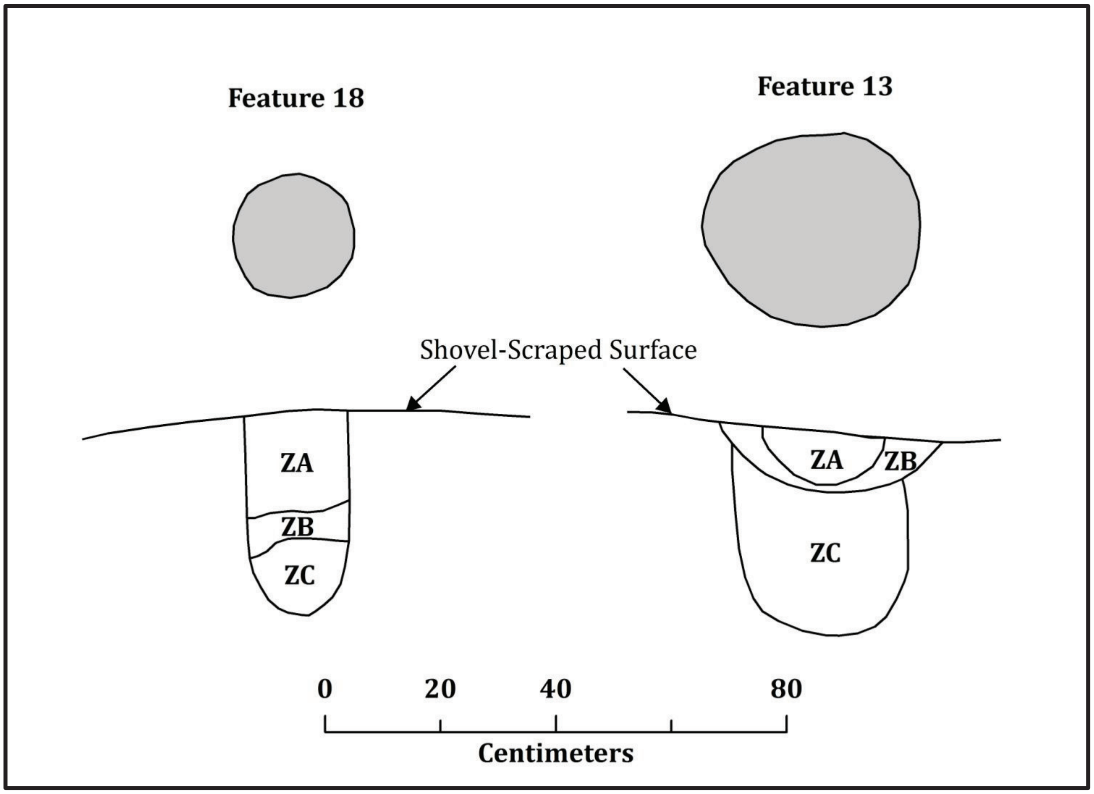


Figure 5.48. Exterior Postmolds in Plan and Profile.

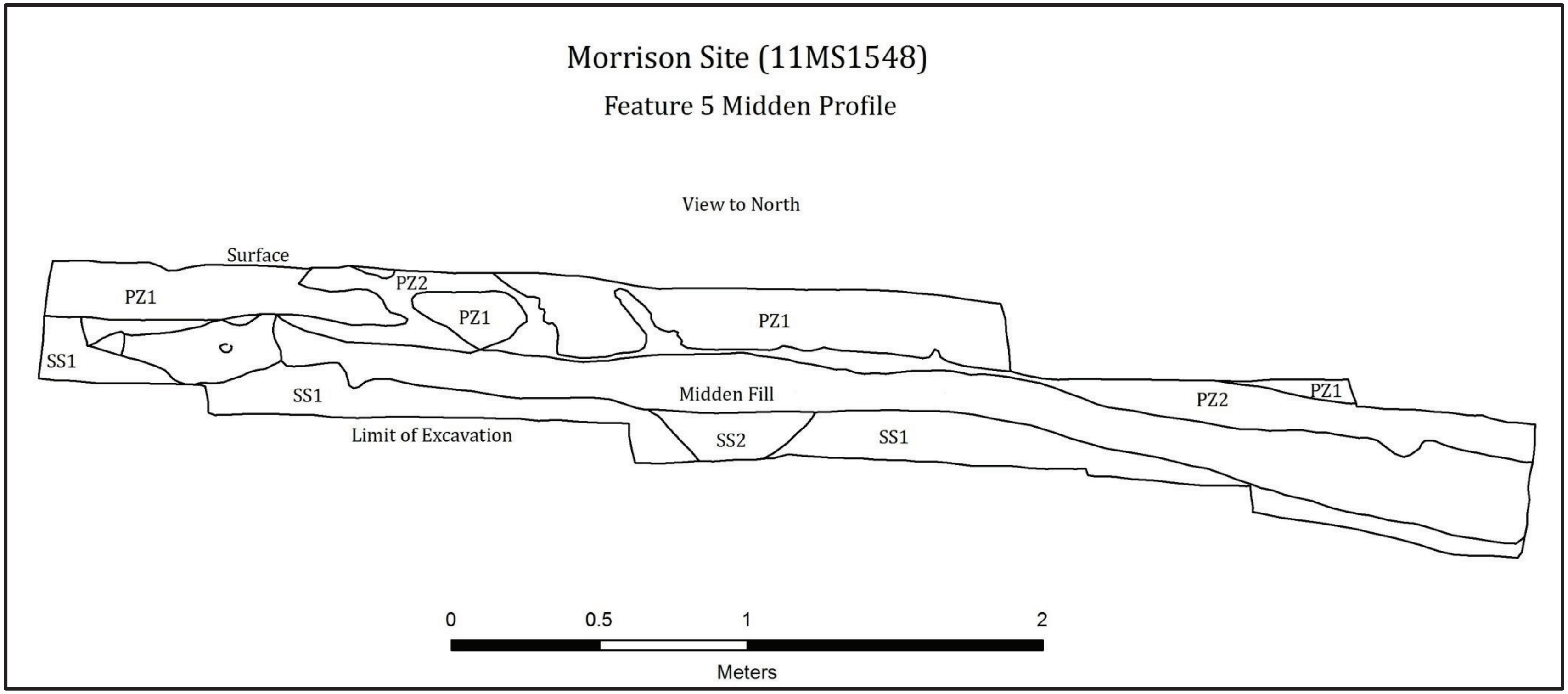


Figure 5.49. Feature 5 Midden Profile.

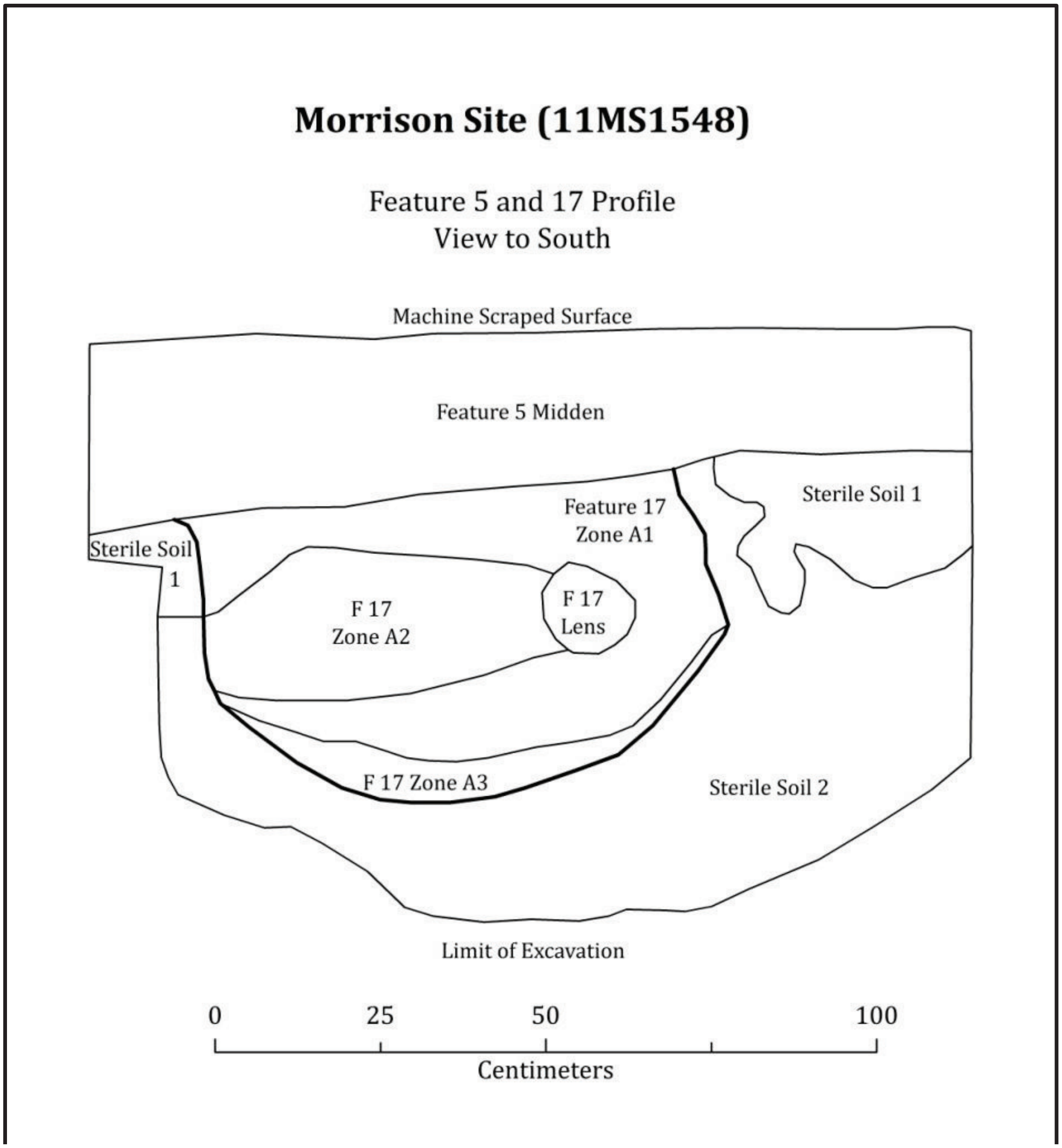


Figure 5.50. Profile of Features 5 (midden) and 17 (pit).

TABLES

Table 5.1. Fish Lake Site Terminal Late Woodland and Mississippian Structure Basin Attributes.

Component	Fill Zones					Top	Length	Width	Depth	Volume	Volume	Total	Material Density	FCR Density	Ceramic Density
Feature	Total	Dark	Light	Slump	Reduced	Elevation (m)	(cm)	(cm)	(cm)	(dm^3)	(m^3)	(g)	(g/dm^3)	(g/dm^3)	(g/dm^3)
George Reeves															
F 315	12	8	3	-	1	100.27	405	273	57	6,302.21	6.30	7,641.0	1.21	0.10	0.80
F 316	3	-	2	-	1	100.47	392	246	16	1,542.91	1.54	424.8	0.28	0.09	0.02
Lindeman															
F 382	4	2	-	2	-	100.46	262	243	44	2,801.30	2.80	11,970.5	4.27	0.95	2.18
F 388	3	-	2	1	-	100.51	285	229	23	1,501.10	1.50	565.8	0.38	0.03	0.14
F 703	5	4	1	-	-	100.49	334	255	36	3,066.12	3.07	2,526.3	0.82	0.00	0.65
F 452	8	3	4	-	1	100.07	296	240	50	3,552.00	3.55	18,420.5	5.19	2.04	2.75
F 522	5	-	3	-	2	99.83	363	237	44	3,785.36	3.79	2,349.8	0.62	0.03	0.39
F 715	5	4	-	-	1	100.21	372	268	49	4,885.10	4.89	2,327.9	0.48	0.05	0.16
Moorehead															
F 454	3	3	-	-	-	100.28	597	480	28	8,023.68	8.16	2,754.1	0.34	0.12	0.09

Table 5.2. George Reeves Phase Structure Floor Attributes.

	Feature 315	Feature 316
Length (m)	3.4	3.28
Width (m)	2.22	1.87
Floor Area (m^2)	7.55	6.13
Width:Length ratio	0.65	0.57
Orientation	NE-SW	NE-SW
No. Structural Posts	42	49
Mean Dist. Between Posts (cm)	26	21
Mean Diameter (cm)	10	9
Mean Depth (cm)	39	18
Burning	none	none
Flaring	none	none
Material	1 Bton Flake Tool	none
No. Interior Posts	1	3
Interior Pits	-	-
Entrance/Step-in Post	SE/PM 1	SE/F334
Piece Plots/Activity Areas	several sherds and partial vessels, arrowpoint, spud fragment; more material including lithics not piece plotted.	none

* distance between posts excludes entrances

Table 5.3. Fish Lake (11MO608) Terminal Late Woodland and Mississippian Pit Attributes.

Component	Fill Zones					Pit		Length	Width	Bottom Length	Depth	Volume	Total	Material Density	FCR Density	Ceramic Density
Feature	Total	Dark	Light	Slump	Burned	Type	Plan	(cm)	(cm)	(cm)	(cm)	(dm^3)	Material	(g/dm^3)	(g/dm^3)	(g/dm^3)
George Reeves																
333	1	-	1	-	-	3	Circular	140	39	-	15	94.32	132.8	1.41	0.34	1.05
334 (post)	3	1	1	1	-	-	Circular	38	32	-	26	22.10	4.4	0.20	0.00	0.14
351	6	3	-	1	2	4	Circular	123	110	-	58	617.94	7,130.9	11.54	3.62	5.67
Lindeman																
North Cluster																
472	1	-	1	-	-	4	Circular	126	119	-	23	270.94	18.2	0.07	0.00	0.03
502	4	2	1	1	-	2	Square	117	117	-	43	402.97	94.8	0.24	0.00	0.03
503	3	1	1	-	1	4	Circular	76	68	-	56	227.89	362.9	1.59	0.14	1.40
511	3	3	-	-	-	4	Circular	106	99	-	27	222.68	410.5	1.84	0.65	0.95
539	8	5	1	1	1	2	Circular	140	131	-	62	571.03	1,393.8	2.44	1.99	0.10
547	1	1	-	-	-	1	Circular	64	60	-	8	12.33	30.2	2.45	0.00	1.11
646	2	1	1	-	-	4	Rectangular	148	118	-	31	541.38	7.9	0.01	0.00	0.01
704	3	2	1	-	-	2	Circular	97	92	-	30	119.21	241.3	2.02	1.56	0.25
South Cluster																
403	4	2	1	1	-	4	Oval	145	125	-	63	901.32	5,841.0	6.48	5.65	0.31
404	2	1	1	-	-	2	Square	110	108	-	24	119.14	220.0	1.85	0.98	0.16
405	6	4	1	1	-	5	Circular	152	124	158	48	748.65	595.9	0.80	0.51	0.13
406	4	2	2	-	-	2	Circular	125	110	-	46	299.20	4,473.1	14.95	14.62	0.15
411	4	2	2	-	-	4	Square	100	98	-	57	558.60	1,095.7	1.96	0.03	1.85
412	1	1	-	-	-	2	Square	81	79	-	58	288.88	2,178.1	7.54	5.18	2.28
424	5	1	3	1	-	2	Circular	74	66	-	56	199.26	283.9	1.42	0.22	1.04
524	1	-	1	-	-	1	Circular	44	39	-	15	11.87	22.9	1.93	0.00	1.80
Lohmann																
525	3	1	2	-	-	4	Circular	100	85	-	66	443.30	1,018.4	2.30	0.81	0.72

Table 5.4. Lindeman Structure Floor Attributes.

	Northern Cluster			Southern Cluster		
	Feature 382	Feature 388	Feature 703	Feature 452	Feature 522	Feature 715
Length (cm)	2.34	2.76	2.85	2.60	3.25	3.22
Width (cm)	1.82	2.10	2.18	2.02	2.00	2.26
Floor Area (m^2)	4.26	5.80	6.21	5.25	6.50	7.28
Width:Length ratio	0.78	0.76	0.76	0.78	0.62	0.70
Orientation	NW-SE	NE-SW	NW-SE	E-W	NW-SE	E-W
No. Structural Posts	33	15	31	23	48	27
Mean Dist. Between Posts (cm)	25	60	32	30	29	34
Mean Diameter (cm)	9	10	10	8	8	9
Mean Depth (cm)	27	12	34	8	21	31
Burning	none	none	none	charcoal flecks	none	none
Flaring	none	none	none	none	none	none
Material	none	none	GG CM sherd, Bton and Ste. Gene. Chert	none	none	LS CM sherd
No. Interior Posts	1	-	1	-	2	-
Interior Pits	F 547	-	-	-	-	-
Entrance/Step-in Post	S/-	-	-	-	-	N?/-
Piece Plots/Activity Areas	None on floor but basin had lots of material	none	Two large segments of ceramic vessels in NE corner	None on floor but basin had lots of material	None on floor	2 cores, arrow point, 2 sandstone flat abraders, debitage, and 1 flake tool concentrated near middle of south wall

* distance between posts excludes entrances

PM 1 excluded from Feature 382 because it was not structural (very shallow 3cm deep)

F 388 posts difficult to identify in field so probably more structural posts that weren't detected, that's why spacing is so large

F 452 SW corner of structure excavated too deep so posts not recorded, posts also difficult to discern in sterile so may be more and may be deep

Table 5.5. Divers Site Features.

Feature Number	Type	Component	Plan Shape	Notes
4	Exterior pit Type 3	Lindeman	Rectangular	superimposed by F1
23	Interior pit	Lindeman	Circular	in F 26; entry post
25	Exterior pit Type 3	Lindeman	Rectangular	superimposed by F1, on F16, 26
26	Structure - domicile	Lindeman	Rectangular	
34	Exterior pit Type 2	Lindeman	Rectangular	
35	Exterior pit Type 3	Lindeman	Circular	
36	Structure	Lindeman	Rectangular	
49	Structure	Lindeman	Rectangular	
50	Structure	Lindeman	Rectangular	
51	Interior pit	Lindeman	Circular	in F49
52	Exterior pit Type 3	Lindeman	Circular	
63	Exterior pit Type 3	Lindeman	Circular	
64	Structure	Lindeman	Square	
65	Structure	Lindeman	Rectangular	
72	Exterior pit Type 3	Lindeman	Circular	
105SP	Structure	Lindeman	Rectangular	partial structure superimposed by WT structure
117	Structure	Lindeman	Rectangular	
125	Structure	Lindeman	Rectangular	
128	Interior pit	Lindeman	Rectangular	in F 125
130	Exterior pit Earth Oven	Lindeman	Circular	superimposed by F125
16	Structure	Lohmann	Rectangular	
18	Exterior Pit Type 3	Lohmann	Rectangular	
24	Structure	Lohmann	Rectangular	
28	Exterior Pit Type 3	Lohmann	Circular	
29	Exterior Pit Type 3	Lohmann	Circular	
32	Exterior Pit Type 3	Lohmann	Circular	
33	Exterior Pit Type 3	Lohmann	Circular	
91	Structure	Lohmann	Rectangular	
94	Structure	Lohmann	Rectangular	
96	Structure	Lohmann	Rectangular	
99	Exterior Pit Type 3	Lohmann	Rectangular	
105WT	Structure	Lohmann	Rectangular	
111	Interior pit	Lohmann	Circular	
114	Structure	Lohmann	Oval	
118	Exterior Pit Type 4	Lohmann	Circular	
131	Exterior Pit Type 4	Lohmann	Circular	
132	Exterior Pit Type 4	Lohmann	Circular	

Table 5.6 Lindeman, Lohmann, and Stirling Phase Structure Attributes.

Component		**Basin**						**Floor**			
Feature	Orientation	Length (m)	Width (m)	Depth (m)	Volume (m^3)	Area (m^2)	W/L	Length (m)	Width (m)	Area (m^2)	W/L
Lindeman											
F 64	N - S	2.58	2.40	-	-	6.19	0.93	2.75	2.10	5.78	0.76
F 50	NW - SE	4.10	2.20	0.35	3.16	9.02	0.54	3.80	1.90	7.22	0.50
F 105 [1]	NW - SE	4.30	2.30	0.15	1.48	9.89	0.53	3.90	2.00	7.80	0.51
F 125	NW - SE	4.34	2.59	0.50	5.62	11.24	0.60	4.00	2.00	8.00	0.50
F 26	NE - SW	4.51	2.50	0.10	1.13	11.28	0.55	4.10	2.10	8.61	0.51
F 36	NE - SW	4.88	2.84	0.10	1.39	13.86	0.58	4.60	2.60	11.96	0.57
F 49	NE - SW	4.20	2.30	-	-	9.66	0.55	4.00	2.20	8.80	0.55
F 65	NE - SW	4.30	2.68	0.50	5.76	11.52	0.62	3.80	2.20	8.36	0.58
F 65 ext	NE - SW	2.33	2.26	*INA*	-	5.27	0.97	2.00	1.50	3.00	0.75
F 117	NE - SW	3.51	2.63	0.37	3.42	9.23	0.75	3.00	2.50	7.50	0.83
F 125A	NE - SW	4.60	2.43	*INA*	-	11.18	0.53	indet	indet	8.00	0.50
Mean		***3.97***	***2.47***	***0.30***	***3.14***	***9.85***	***0.65***	***3.60***	***2.11***	***7.73***	***0.60***
Minimum		***2.33***	***2.00***	***0.10***	***1.13***	***5.27***	***0.48***	***2.00***	***1.50***	***3.00***	***0.50***
Maximum		***4.88***	***2.84***	***0.50***	***5.76***	***13.86***	***0.97***	***4.60***	***2.60***	***11.96***	***0.83***
Standard Deviation		***0.82***	***0.20***	***0.18***	***1.96***	***2.45***	***0.16***	***0.77***	***0.31***	***2.16***	***0.12***
Lohmann											
F 16	NW - SE	5.10	2.90	-	-	14.79	0.57	5.00	2.90	14.50	0.58
F 24	NW - SE	4.65	3.20	-	-	14.88	0.69	4.20	3.20	13.44	0.76
F 91	NE - SW	3.88	2.55	-	-	9.89	0.66	3.80	2.50	9.50	0.66
F 94	NW - SE	4.96	3.10	0.10	1.54	15.38	0.63	4.30	2.30	9.89	0.53
F 96	NW - SE	5.25	4.04	0.10	2.12	21.21	0.77	5.00	3.70	18.50	0.74
F 105	NE - SW	4.00	2.20	0.15	1.32	8.80	0.55	3.60	1.80	6.48	0.50
Mean		***4.64***	***3.00***	***0.12***	***1.66***	***14.16***	***0.64***	***4.32***	***2.73***	***12.05***	***0.63***
Minimum		***3.88***	***2.20***	***0.10***	***1.32***	***8.80***	***0.55***	***3.60***	***1.80***	***6.48***	***0.50***
Maximum		***5.25***	***4.04***	***0.15***	***2.12***	***21.21***	***0.77***	***5.00***	***3.70***	***18.50***	***0.76***
Standard Deviation		***0.58***	***0.63***	***0.03***	***0.41***	***4.45***	***0.08***	***0.59***	***0.68***	***4.28***	***0.11***

[1] Both lengths estimated.

Table 5.7. Divers Site Possible Structure Basin Attributes with Estimated Components.

Anomaly	Length	Width	Area	W:L	Orientation	Estimated Component
Geo 01	4.4	1.9	8.4	0.43	E - W	Lindeman
Geo 02	3.6	1.8	6.5	0.50	E - W	Lindeman
Geo 03	4.5	2.3	10.4	0.51	E - W	Lindeman
Geo 04	3.8	2.3	8.7	0.61	E - W	Lindeman
Geo 05	3.8	1.6	6.1	0.42	N - S	Lindeman
Geo 06	5.2	2.2	11.4	0.42	N - S	Lindeman
Geo 07	5.3	2.3	12.2	0.43	N - S	Lindeman
Geo 08	4.5	2.2	9.9	0.49	N - S	Lindeman
Geo 09	4.9	2.2	10.8	0.45	NE - SW	Lindeman
Geo 10	4.3	2.2	9.5	0.51	NE - SW	Lindeman
Geo 11	3.0	3.0	9.0	1.00	NE - SW	Lindeman
Geo 12	3.5	3.5	12.3	1.00	NE - SW	Lindeman
Geo 13	4.3	1.6	6.9	0.37	NW - SE	Lindeman
Geo 14	4.2	1.7	7.1	0.40	NW - SE	Lindeman
Geo 15	4.9	2.1	10.3	0.43	NW - SE	Lindeman
Geo 16	4.2	1.8	7.6	0.43	NW - SE	Lindeman
Geo 17	3.4	1.8	6.1	0.53	NW - SE	Lindeman
Geo 18	3.7	2.3	8.5	0.62	NW - SE	Lindeman
Geo 19	5.0	2.5	12.5	0.50	E - W	Lindeman or Lohmann
Geo 20	4.3	2.3	9.9	0.53	N - S	Lindeman or Lohmann
Geo 21	4.9	2.5	12.3	0.51	NW - SE	Lindeman or Lohmann
Geo 22	5.0	2.8	14.0	0.56	E - W	Lohmann or Stirling
Geo 23	5.2	3.3	17.2	0.63	N - S	Lohmann or Stirling
Geo 24	5.7	2.5	14.3	0.44	NW - SE	Lohmann or Stirling
Geo 25	5.6	3.1	17.4	0.55	NW - SE	Lohmann or Stirling
Geo 26	3.1	1.4	4.3	0.45	E - W	TLW1
Geo 27	2.9	1.2	3.5	0.41	N - S	TLW1
Geo 28	2.8	1.4	3.9	0.50	N - S	TLW1
Geo 29	2.3	1.4	3.2	0.61	N - S	TLW1
Geo 30	2.7	1.6	4.3	0.59	NE - SW	TLW1
Geo 31	2.7	1.4	3.8	0.52	NW - SE	TLW1
Geo 32	3.2	1.6	5.1	0.50	E - W	TLW1 or TLW2
Geo 33	3.0	1.6	4.8	0.53	NE - SW	TLW1 or TLW2
Geo 34	3.5	1.4	4.9	0.40	NW - SE	TLW1 or TLW2

Table 5.8. Component Assignation Rubric.

If:	Then:	Because:
Area only:		
less than 5.2 m^2	TLW1	smaller than all Lindeman, Lohmann, and Stirling excavated structures
between 5.2 and 7.1 m^2	TLW1/Lindeman	smaller than 1 STDV (STDV) for Lindeman
between 7.1 and 10.1 m^2	Lindeman	within 1 STDV for Lindeman but smaller than 1 STDV for Lohmann
between 10.1 and 12.3 m^2	Lindeman or Lohmann	within 1 STDV for Lindeman and Lohmann
between 12.3 and 17.4 m^2	Lohmann or Stirling	within 1 STDV for Lohmann and Stirling
W/L only:		
less than 0.49	Lindeman	TLW1 structures are more square and the most rectangular structures are Lindeman
between 0.49 and 0.56	Lindeman	within 1 STDV for Lindeman and lower than all Lohmann and Stirling structures
between 0.56 and 0.74	Lindeman or Lohmann	within 1 STDV for Lindeman and Lohmann and smaller than all but one Stirling structure
equal to 1.00	Indeterminate	no excavated structures were exactly square
Combined Data:		
Area is TLW1 and less than 5.2 m^2 but W/L is Lindeman	TLW1	area is smaller than all excavated Lindeman
Area is TLW1 but W/L is Lindeman or Lohmann	TLW1	area is smaller than all excavated Lindeman and Lohmann structures
Area is TLW1 but W/L is early Mississippian	TLW1	area is smaller than all excavated Lohmann and Stirling structures
Area is TLW1 and between 5.2 and 7.1 m^2 but W/L is Lindeman	Lindeman	area is within 1 STDV and range for Lindeman structures
Area is Lindeman and less than 8.8 m^2 but W/L is early Mississississippian	Lindeman	area is smaller than smallest Lohmann and Stirling structures
Area is Lindeman or Lohmann and W/L is less than 0.55	Lindeman	W/L is less than 1 STDV range for Lohmann structures
Area is Lohmann or Stirling between 12.2 and 13.86 m^2 and W/L is Lindeman	Lindeman or Lohmann	area is outside of 1 STDV but within range for Lindeman
Area is Lohmann or Stirling and greater than 13.86 m^2 and W/L is Lindeman	Lohmann or Stirling	area is larger than all Lindeman structures
Area is Lindeman and W/L is indeterminate (square)	Lindeman	square Lindeman structures identified Range
Area is Lindeman or Lohmann and W/L is indeterminate (square)	Lindeman	square Lindeman structures identified Range but not Lohmann

Table 5.9. Late Woodland Pit Attributes.

Feature Number	Pit Type	Length (cm)	Width (cm)	Depth (cm)	Volume (dm^3)	Total Zones	Notes
F 2	4	120	109	96	988.0	9	South half unexcavated
F 3	-	120	115	-	-	-	top 15-20 cm excavated
F 4	2	110	82	39	169.1	5	top 15-20 cm excavated
F 5	4	122	100	62	599.7	14	-
F 6	2	124	120	24	147.4	3	-
F 7	2	101	95	68	420.6	3	-
F 8	2	120	100	25	125.9	1	east half unexcavated
F 9	2	169	140	35	347.5	1	east half unexcavated
F 10	4	96	78	30	178.2	1	-
F 12	4	86	80	53	286.6	3	-
F 13	1	62	52	16	22.4	1	-
F 14	1	47	44	18	17.7	1	-
F 15	1	90	81	16	47.9	1	-
F 16	1	56	50	11	12.8	1	-
F 18	4	83	83	44	237.9	2	-
F 20	2	93	92	32	124.6	1	-
F 22	-	-	-	-	-	-	top 3 cm excavated
F 23	-	-	-	-	-	-	top 3 cm excavated
F 24	-	-	-	-	-	-	top 3 cm excavated
F 25	-	-	-	-	-	-	top 3 cm excavated
F 26	-	110	110	-	-	1	bottom and east half unexcavated

Table 5.10. Late Woodland Structure Attributes.

Feature Number	Length (m)	Width (m)	Depth (m)	Volume (m^3)	Area (m^2)	W/L
F 11	3.75	3.58	0.30	4.03	13.43	0.95
F 21	2.80	2.40	0.13	0.87	6.72	0.86

Table 5.11. Geophysical Anomaly Attributes.

Anomaly	Length	Width	Area	W_L	Orientation	Estimated Component
Burkes 26	2.8	2.6	7.3	0.93	-	Lohmann/Stirling
Burkes1	10.1	9.0	90.9	0.89	E-W	Indeterminate
Geo 002	5.0	1.9	9.5	0.38	E-W	Lindeman
Geo 009	2.2	2.2	5.0	1.00	-	Lohmann/Stirling
Geo 010	3.2	1.6	5.1	0.50	NE-SW	Lindeman
Geo 011	3.4	1.7	5.8	0.50	E-W	Lindeman
Geo 012	3.5	1.8	6.3	0.51	E-W	Lindeman
Geo 013	4.4	3.6	15.8	0.82	NE-SW	Lohmann/Stirling
Geo 015	3.1	1.8	5.6	0.58	NE-SW	Lindeman/Lohmann
Geo 016	2.1	1.9	4.0	0.90	-	Lohmann/Stirling
Geo 017	2.7	1.6	4.3	0.59	E-W	Lindeman/Lohmann
Geo 018	3.9	2.1	8.2	0.54	NE-SW	Lindeman
Geo 019	2.5	1.7	4.3	0.68	NW-SE	Lindeman/Lohmann
Geo 020a	3.1	1.4	4.3	0.45	NE-SW	Indeterminate
Geo 020b	2.6	1.3	3.4	0.50	E-W	Lindeman
Geo 022	2.3	1.4	3.2	0.61	NE-SW	Lindeman/Lohmann
Geo 025	2.4	1.3	3.1	0.54	NE-SW	Lindeman
Geo 029	3.4	1.3	4.4	0.38	N-S	Indeterminate
Geo 035	2.4	1.2	2.9	0.50	NE-SW	Lindeman
Geo 036	1.5	1.2	1.8	0.80	-	Lohmann/Stirling
Geo 046	4.9	2.4	11.8	0.49	NW-SE	Lindeman
Geo 047	2.0	1.0	2.0	0.50	NE-SW	Lindeman
Geo 050a	1.6	1.0	1.6	0.63	N-S	Lindeman/Lohmann
Geo 050b	1.4	1.1	1.5	0.79	NE-SW	Indeterminate
Geo 052	1.9	1.1	2.1	0.58	NE-SW	Lindeman/Lohmann
Geo 063	2.2	1.3	2.9	0.59	NW-SE	Lindeman/Lohmann
Geo 064	2.6	1.5	3.9	0.58	NW-SE	Lindeman/Lohmann
Geo 065	2.0	1.1	2.2	0.55	NW-SE	Lindeman
Geo 067	2.7	1.5	4.1	0.56	NE-SW	Lindeman/Lohmann
Geo 068	2.8	2.5	7.0	0.89	NW-SE	Lindeman
Geo 070	4.1	2.0	8.2	0.49	NE-SW	Lindeman
Geo 071	4.0	2.1	8.4	0.53	NE-SW	Lindeman
Geo 073	2.9	1.7	4.9	0.59	NE-SW	Lindeman/Lohmann
Geo 079	4.0	1.6	6.4	0.40	NE-SW	Lindeman
Geo 085	3.3	1.7	5.6	0.52	E-W	Lindeman
Geo 087	2.8	1.4	3.9	0.50	E-W	Lindeman
Geo 088	2.5	1.8	4.5	0.72	NE-SW	Lindeman/Lohmann
Geo 089	3.3	2.3	7.6	0.70	NE-SW	Lindeman
Geo 090	2.8	1.5	4.2	0.54	NE-SW	Lindeman
Geo 091	2.7	1.9	5.1	0.70	NE-SW	Lindeman/Lohmann
Geo 094	3.1	1.7	5.3	0.55	NE-SW	Lindeman
Geo 095	3.4	1.8	6.1	0.53	NE-SW	Lindeman
Geo 097	2.4	1.1	2.6	0.46	E-W	Indeterminate
Geo 099	2.6	2.2	5.7	0.85	NW-SE	Lindeman

Table 5.11, continued. Geophysical Anomaly Attributes.

Anomaly	Length	Width	Area	W_L	Orientation	Estimated Component
Geo 100	2.8	1.9	5.3	0.68	NE-SW	Lindeman/Lohmann
Geo 101	2.7	1.4	3.8	0.52	NW-SE	Lindeman
Geo 101a	2.9	1.5	4.4	0.52	NW-SE	Lindeman
Geo 101b	2.9	1.5	4.4	0.52	NW-SE	Lindeman
Geo 108	2.2	1.6	3.5	0.73	NE-SW	Lindeman/Lohmann
Geo 113	2.9	1.7	4.9	0.59	E-W	Lindeman/Lohmann
Geo 114	3.2	1.6	5.1	0.50	NE-SW	Lindeman
Geo 116	2.4	1.2	2.9	0.50	NE-SW	Lindeman
Geo 119	3.2	1.6	5.1	0.50	NE-SW	Lindeman
Geo 121	2.4	1.4	3.4	0.58	NW-SE	Lindeman/Lohmann
Geo 123	2.3	1.5	3.5	0.65	N-S	Lindeman/Lohmann
Geo 124	2.4	1.6	3.8	0.67	NE-SW	Lindeman/Lohmann
Geo 125	2.7	1.5	4.1	0.56	NE-SW	Lindeman/Lohmann
Geo 126	2.1	1.6	3.4	0.76	NW-SE	Indeterminate
Geo 128	2.5	1.6	4.0	0.64	NE-SW	Lindeman/Lohmann
Geo 129	3.1	1.6	5.0	0.52	NW-SE	Lindeman

Table 5.12. Morrison Site Pit Attributes.

Feature Number	Fill Zones Dark	Light	Slump	Pit Type	Plan Shape	Length (cm)	Width (cm)	Bottom Length (cm)[1]	Depth (cm)	Volume (dm^3)	Total Material (g)	Material Density (g/dm^3)	FCR Density (g/dm^3)	Ceramic Density (g/dm^3)
Interior Pits														
6	-	1	-	1	oval	92	50	-	10	18.6	0.0	0.0	0	0
9	-	1	-	3	circular	54	49	-	13	14.7	0.0	0.0	0	0
Exterior Pits														
8	-	4	-	5	rectangular	109	107	144	59	734.6	137.0	0.2	0.0	0.2
12	1	-	-	1	circular	93	80	-	8	23.6	239.9	10.2	3.6	6.1
14	-	1	-	1	circular	48	33	-	9	6.0	61.7	10.3	10.1	0.3
7	2	1	3	2	circular	97	75	-	54	236.6	927.4	3.9	0.7	2.8
10	-	2	-	2	circular	75	67	-	16	33.7	164.8	4.9	0.0	4.4
11	1	-	-	2	circular	104	90	-	30	124.3	1405.5	11.3	2.3	8.4
15	2	-	-	2	circular	140	112	-	56	436.6	1498.0	3.4	1.3	1.5
17	1	2	-	2	circular	84	75	-	49	182.7	275.1	1.5	0.0	1.4

[1] Bottom length of Feature 8 estimated because full profile not available

CHAPTER 6
MATERIAL CHANGE AND CONTINUITY (AD 1000–1100)

In this chapter, I present the results of material analyses for each of the five sites in order to facilitate regional comparisons and investigate how production, consumption, and material practices were implicated in the Mississippian Transition. Unless otherwise noted, all ceramic and lithic analyses were performed by the author. Ethnobotanical and faunal remains from three of the sites were not analyzed or the results are unavailable. This chapter is organized geographically in the same manner as the previous chapter and concludes with a discussion of the changes and continuities evident in material assemblages from immediately before, during, and after the establishment of Cahokia as a city and center of a regionally integrated polity.

FISH LAKE SITE MATERIAL REMAINS

Over 9,000 ceramic and lithic items weighing over 74 kg were recovered from Terminal Late Woodland and Mississippian features at the Fish Lake site during the 2007 excavations. In terms of weight, the assemblage is comprised of approximately equal amounts of ceramic and lithic items. Nearly 75 percent of the assemblage derives from Lindeman phase features.

GEORGE REEVES

Over 15 kg of ceramic and lithic material were collected from the five George Reeves phase features. The assemblage is dominated by ceramics including fired clay, body sherds, ceramic objects, and fragments of over 50 vessels. Fired clay includes burnt clay, daub, and a single pinch pot sherd (Table 6.1). Burnt clay is predominant, comprising 88 percent of fired clay. Daub is not as common, comprising only 10 percent of the assemblage. The untempered pinch pot sherd appears to be a small portion of an outslanted rim, possibly from a Type 3 bowl. Both the interior and exterior surfaces are plain. All of the fired clay derives from the later George Reeves occupation, namely Features 315 and 351, with most items recovered from the pit. Most of the fired clay appears to have been incidentally burned.

Only one ceramic object is associated with the George Reeves phase component (Table 6.2, Figure 6.1). A small, fragmented discoidal was recovered from Feature 315. It has a plain surface and lacks temper. The profile shape is similar to the Prairie du Pont style defined by Ozuk for the Range site (1989). This type of ceramic discoidal was recovered from features dated to the Patrick through Lindeman phases at Range. Only one such discoidal was recovered from George Reeves context. That item has a perforation through the center. It is unclear if the item from Feature 315 was perforated due to the small size of the fragment.

The body sherd assemblage is diverse in terms of temper and surface treatment (Table 6.3). Limestone is by far the most common tempering agent representing over 70 percent of the assemblage by weight. Grog and mixed tempers including limestone and grog, grit and grog, and grog and limestone comprise approximately 30 percent of the assemblage. It is likely that many of the grog–tempered sherds derive from the Late Woodland component and represent mixing.

Four of the six grit–tempered sherds from Feature 315 exhibit Madison County Shale pastes indicating they are imports from the northern American Bottom. The remaining two sherds and the only grit–tempered sherd from Feature 351 are from Marion Thick vessels that are diagnostic of the Early Woodland period suggesting further mixing. Two highly fragmented shell–tempered sherds complete the assemblage.

Most of the body sherds with identifiable surface treatments exhibit cordmarked or smoothed cordmarked exterior surfaces (94% by weight). Sherds with plain or plain and cordmarked surfaces comprise only 5 percent of the assemblage by weight. Red–slipped surfaces are rare and comprise less than 1 percent of the assemblage. Two of the polished red–slipped sherds are also shell–tempered suggesting they may derive from a nonlocal, Varney Red–Filmed vessel.

Jars and bowls are the only identified vessel forms from the George Reeves component (Table 6.4). Ten vessels are too small to determine vessel form. Four other vessels are diagnostic of earlier components including the Patrick phase and Early Woodland period. Most vessels are tempered with limestone although grog, grit, and shell are present in small numbers (Figure 6.2). Many vessels exhibit cordmarked or plain exterior surfaces. All cordmarked vessels with identifiable cord twists exhibit Z-twist cordmarks consistent with the Terminal Late Woodland period. Red slip is limited to a single jar with a thin, red slip wash on the interior surface.

Jars are the most common vessel type comprising 59 percent of the assemblage. Jar rims were recovered from all four features but the vast majority is associated with the later occupation (Features 315 and 351). Limestone is the most common tempering agent, identified in over 78 percent of jars (Table 6.5). Four jars are tempered with a mixture of limestone and grog. The remaining three jars are tempered with grit. Two of these jars are made with Madison County Shale paste and have continuously notched extruded lips suggesting they derive from the northern American Bottom (Figure 6.3a).

Inslanting rims predominate, most of which also have incurved necks corresponding to Type 3 rims (Table 6.6, Figure 6.3b). Jars with vertical rims and incurved necks (Type 4) are second in prevalence, comprising one-quarter of the jar assemblage. A single jar exhibits an outslanting–incurved rim profile (Figure 6.3c). Most lips are modified in some way (Table 6.7). These include flattened (41%), squared (38%), thickened (9%), and extruded (9%) lips. There is only one jar with an unmodified, round lip. Decoration is limited to the exterior lip surface of eight jars. Lugs are most common and are present on six jars. The lug on the jar from Feature 316 is perforated (Figure 6.3d). The only other form of decoration is continuous lip notching that is only found on the previously mentioned northern American Bottom vessels.

More than half of the jars have plain necks or plain necks with cordmarked bodies (Table 6.8). Included in this category are plain rims without shoulders and one jar with a burnished neck and cordmarked body (Figure 6.3e). All three of the grit–tempered jars are included in this group. Vessel 316–1 is the only jar with a plain neck and body. It is also the only miniature vessel in the assemblage. A significant portion of the assemblage exhibits cordmarked exterior surfaces (Figure

6.3f). The remaining three jars have smoothed cordmarked necks and cordmarked bodies (Figure 6.3g).

Twelve jars include shoulder sections. Vessel 351–8 is the only jar with a slightly angled shoulder. The remaining jars have rounded shoulders. Five more shoulder fragments are included with the body sherd assemblage (Table 6.9). Four have rounded shoulders and one exhibits a slightly angled shoulder. The shoulder forms do not appear to be associated with any particular temper or jar type.

Metric attributes recorded for jars include orifice diameter, lip protrusion ratio, lip shape, rim curvature, and rim angle. Orifice diameter could be estimated for 19 jars. Diameters range between 8 cm and 35 cm with an average of 22 cm (Table 6.10). The distribution of diameters indicates there are two size modes for the assemblage (Figure 6.4). The smaller vessels cluster around the 11 cm to 13 cm interval while the larger vessels are centered on the 23 cm to 25 cm interval. There are only three jars with orifices larger than 28 cm. The continuous attribute measures, ratios, and angles are consistent with a late Terminal Late Woodland occupation (Table 6.11).

Only eight bowls were recovered from the George Reeves features. With the exception of one bowl tempered with grog, all are tempered with limestone (Table 6.12). All of the bowls have Z-twist cordmarked exterior surfaces and plain interiors (Table 6.13). Half of the bowls exhibit cordmarked superior lip surfaces as well. Most bowls were recovered from the reduced zone in the north half of the Feature 315 basin (Figure 6.5a–b). The remaining vessel (V. 315-1) is a large segment of a bowl that was recovered from the floor of Feature 315 along the western wall

(Figure 6.5c). Most bowls have inslanting rims with outcurved walls (Table 6.14). There is only one bowl each with a vertical (Type 2) or outslanting (Type 3) rim. All lips are modified including six bowls with squared lips and two bowls with flattened lips (Table 6.15). Decoration is not evident on any of the bowls in the assemblage. Bowl orifices tend to be large with an average diameter of 42 cm (Table 6.16). All of the bowls have soot on the exterior vessel surface, likely due to their association with the burned zone.

LITHICS

The lithic assemblage is comprised of groundstone and chipped–stone tools and debris. In terms of weight, FCR is the most prevalent material, comprising 45 percent of the lithic assemblage. However, chert is the most ubiquitous and numerous lithic material recovered, representing over 85 percent of the lithic items by count. FCR is predominantly burned limestone followed by sandstone (Table 6.17). Very few igneous/metamorphic or chert items are included in the FCR assemblage. Feature 351 yielded the highest concentration of FCR with a total of 31 items weighing over 2 kg. A single sandstone item recovered from Feature 351 weighs over 1 kg.

The groundstone assemblage includes formal and informal tools and unmodified pebbles (Table 6.18). The only formal groundstone tool is a fragmentary spud or spatulate–form celt manufactured from diorite that was recovered from Feature 315 (Figure 6.6a). The handle or stem was reworked before the spud was intentionally broken into at least three pieces and scattered on the floor. A similar fragmentary spud was recovered from a George Reeves phase structure basin at the Range site, located a mere 2.5 km from Fish Lake (Kelly et al. 2007). The bit section of the fragment from Range exhibits signs of usewear as well as evidence that it had been reworked. The structure from which the spud fragment was recovered is adjacent to features that yielded discoidals, copper, and pipes suggesting an association with high status individuals or suprahousehold activities at Range.

Titterington (1946) reports the recovery of four complete diorite spuds from Terminal Late Woodland (Jersey Bluff) sites in Jersey County, located at the northern end of the American Bottom. The three largest examples were recovered from bluff–base villages while the smallest example was excavated from a bluff–top mound burial. It was found at the side of an adult male in a primary burial and was probably hafted at the time of interment. This spud appears to be similar in size (about 25 cm long) and shape to the fragments recovered from Fish Lake and Range. The rarity of such artifacts and the recovery of one with a burial indicate that these items, which are typically finely crafted, are specialized axe heads. Thus, the fragments recovered from structures at Fish Lake and Range may indicate that these structures were associated with locally prominent figures or families.

Informal groundstone tools are limited to three hammerstones, eight abraders, and a metate fragment. All three hammerstones were recovered from Feature 315. These include a complete quartzite hammerstone and two fragmented igneous/metamorphic hammers, one of which is a flake (Figure 6.6b). The abraders are made from local upland sandstone and include both flat and slot varieties (Figure 6.6c). None of the flat abraders exhibits mineral staining suggesting they were not used to produce pigment but may have been used to maintain celts. A fragment of a sandstone metate was recovered from Feature 351. The raw material is more course than the sandstone used for abraders. This fragment appears to be a corner of a much larger tool. Unmodified rock is limited to 11 pebbles. Ten pebbles were recovered from throughout Feature 351 indicating they are most likely incidental inclusions.

The chipped–stone assemblage includes formal and informal tools and debitage with seven local and extra–regional raw materials identified (Table 6.19). Flakes with high– or low–gloss polish that result from re-sharpening excavating or woodworking tools are the most common formal tools recovered from the George Reeves occupation (Figure 6.7a). The highest concentration of polished flakes is within Feature 351. Of the 37 polished flakes recovered from Feature 351, all are made from Mill Creek chert and only one exhibits low–gloss polish suggesting they derive from at least one hoe. The 11 flakes from Feature 315 are almost evenly split between low– and high–gloss polish and include Burlington and Salem chert types in addition to Mill Creek. The low–gloss Burlington and Salem chert flakes likely derive from adzes. Several flakes were reused as scraping and cutting flake tools.

Five projectile points or fragments and a single adze fragment complete the formal tool assemblage (Figure 6.7b–f). Three Burlington points, including two possible Archaic dart points and a point tip, were recovered from Feature 351. One of the dart points was retouched and used as a scraper. A fragment of a point made from Salem chert and a heavily burned knifepoint with heat spalls were recovered from Feature 315. A small fragment of a Burlington adze was recovered from an interior postmold within Feature 316. This item exhibits very little polish and appears to be fashioned from a lower quality Burlington chert available in Monroe County, Illinois.

Informal chipped–stone tools are common within the George Reeves lithic assemblage. Flake tools predominate with a total of 87 weighing over 800 g. This total does not include polished flakes reused as flake tools. Most expedient tools are made from Burlington flakes. Only ten were made from other types of chert including Salem, Ste. Genevieve, and indeterminate chert. Twelve Burlington flake tools were recovered from the northern structure (Features 316 and 334). The remaining tools were almost evenly split between Features 315 and 351. Most flake tools were used in cutting tasks although several others were used as scrapers.

All ten of the cores recovered from Features 315 and 351 are freehand cores. Five are made from Burlington chert, three from Salem chert, and one each are made from Ste. Genevieve and Blair chert. A large Salem core from Feature 315 was recovered from the zone just above the floor along with three flakes that refit suggesting this item was left on the floor (Figure 6.7g). The Blair core, also from Feature 315, is the only example of this chert type in the assemblage (Figure 6.7h). It exhibits evidence for heat alteration and use as an anvil as well.

Debitage is the most numerous and ubiquitous chipped–stone material recovered from George Reeves phase features at the site, comprising over three-quarters of the assemblage by count and nearly 40 percent by weight. Debitage was recovered from all four features but is most concentrated in Features 315 and 351. The assemblage from Feature 315 has the greatest diversity in terms of chert type.

Burlington is the most common raw material comprising over 80 percent of the assemblage. Mill Creek is second in prevalence representing nine percent of the debitage by count. Small numbers of indeterminate, Salem, Ste. Genevieve, Fern Glen, and Grover Gravel are present with a combined total of only 10 percent of the debitage.

Local and extra–regional lithic raw materials were utilized. Local and near–local resources include Ste. Genevieve and Salem chert available in the nearby bluffs and Crescent Hills Burlington chert from southeastern Missouri (Figure 6.8). Extra–regional Mill Creek chert is also present but in limited quantities. Raw material usage suggests formal tools are more commonly made from non-local materials. This is particularly true for the Mill Creek chert. Informal tools are made from local and non-local chert resources. The only exception to this pattern is the presence of a projectile point and a low–gloss polished flake of locally available Salem chert. However, Salem chert was the preferred material for formal tool production during the Patrick phase occupation of the site (see Butler et al. nd).

ETHNOBOTANICAL AND FAUNAL REMAINS

Although flotation samples were collected for all five features, ethnobotanical remains were identified only from Features 315, 333, and 351 (Table 6.20). The sample from Feature 333 is very small with only two fragments of honey locust wood and no nutshell, seeds, or maize. The wood samples indicate locally available floodplain species were exploited for use in construction and fuel. Upland species are limited to small amounts of cherry and oak wood recovered from Feature 351.

Nutshell is rare with only five shell fragments present in the sample suggesting limited exploitation of this upland food resource.

Seeds comprise the largest portion of the sample with a total of 500. The majority (78%) is comprised of seeds from Eastern Complex starchy grains, especially Maygrass. Most of the seeds lack the portions that aid in determining whether they are wild or domesticated varieties. However, a few chenopod seeds exhibit characteristics associated with wild plants. Nearly all of the Eastern Complex seeds were recovered from zones C, D, and E of Feature 351. A clump of burned, unidentifiable seeds was also recovered from this feature suggesting the seed count is much higher. The association of all four species in multiple zones of the latest exterior pit suggests they may be associated with a feasting event. At minimum, the George Reeves residents were involved with horticultural production. The only other possible food source represented in the seed assemblage is black nightshade, a wild seasonal berry that may have also had medicinal or ritual uses. The remaining seeds include several species of weeds with limited utility and grasses that may be associated with architectural elements including roof thatch. Maize was recovered from both features although not in high concentrations. The sample includes both kernel and cupule fragments.

A few fragmentary faunal remains were recovered from Features 315 and 351 (Table 6.21). Most elements are from unidentifiable vertebrates. Unidentifiable mammal and fish elements as well as two fragments from an indeterminate catfish species complete the sample. Most items are burned.

RADIOCARBON DATE

A single botanical sample was submitted to the Institute of Natural Resource Sustainability (INRS) at the University of Illinois for radiocarbon dating (Appendix F). The sample is comprised of elm and mulberry wood charcoal recovered from zone D, a burned zone, in the north half of Feature 315. The calibrated date at the 1 sigma range is AD 652–775 and at the 2 sigma range is AD 613–883. These dates fall securely within the Patrick phase suggesting the wood derives from the earlier occupation rather than the George Reeves phase occupation.

LINDEMAN

Over 55 kg of ceramic and lithic materials were recovered from the 22 Lindeman phase features in both the north and south clusters. More than half of the material derives from two structures, Features 382 and 452. Most of the material (68%) was recovered from the south cluster. The south cluster contained over 60 percent of the ceramic materials and 70 percent of the lithic materials. The high percentage of lithic material is due to the higher concentrations of FCR. However, more groundstone and chipped stone were recovered from the north cluster, particularly Feature 382. In the following discussion, I will present the ceramic and lithic data for the Lindeman component as a whole while noting differences between clusters where applicable.

CERAMICS

Ceramic items recovered from Lindeman phase features at the Fish Lake site include over 4,000 fragments of fired clay, ceramic objects, worked sherds, body sherds, and vessels weighing over 23 kg. Fired clay is predominantly untempered burnt clay and daub with a combined total that represents 78 percent of the assemblage by weight (see Table 6.1). Eleven shaped clay items appear to be pinched or rolled pieces of untempered clay. A single mud dauber's nest was recovered from Feature 539 in the north cluster (Figure 6.1).

Pinch pot sherds include both body and rim sherds, most of which do not contain temper and all of which have plain surfaces. Pinch pot sherds range widely in thickness and paste color. Vessel form is indeterminate for most pinch pots, however a few rim and body sherds appear to derive from bowls. The rim from Feature 424 is outslanted suggesting it is from a Type 3 bowl. Two body sherds from Feature 403 and 405 refit suggesting these pits are contemporaneous. Two sherds from Features 411 and 715 contain small amounts of limestone temper and may be from the same vessel. Pinch pot sherds are more commonly recovered from the southern pits than structures.

Four worked sherds including disks and a spindle whorl were recovered from three Lindeman phase features located in the south cluster (see Table 6.2). Five sherd disks include three with ground edges and one fragment with ground edges and a drilled hole through the center (Figure 6.1b–f). The drilled disk from Feature 424 appears to be a spindle whorl fragment fashioned from a limestone–tempered, red–slipped vessel. The two complete disks are suggestive of a wide range in terms of size. The smaller disk has a maximum diameter of 29 mm while the large disk is nearly 47 mm in diameter.

Ceramic objects include a discoidal fragment and a clay ball. The discoidal from Feature 403 is half of a small Prairie du Pont style discoidal with an approximate diameter of 28 mm (Figure 6.1g). The clay ball from Feature 522 appears to be hand-formed from untempered clay (Figure 6.1h). A similar object was recovered from the basin fill of a Lindeman phase structure at the Range site although that item is significantly smaller with a diameter of approximately 18 mm (Kelly et al. 2007).

Body sherds that could not be refit to vessels comprise the largest portion of the ceramic assemblage at 63 percent by weight. Limestone continues to dominate the assemblage at 80 percent by weight (Tables 6.22, 6.23). Grog temper is second in prevalence at 15 percent. Mixed tempers including mixtures of limestone and grog, grog and grit, and shell and grog are not common with a total weight that is 2 percent of the assemblage. Shell increases in prevalence but remains relatively rare at only 2 percent. Grit temper is very rare and comprises less than 1 percent of the assemblage.

There is more grog in the north cluster which may be related to the mixing of material from the higher number of Patrick phase features in this area. Grit is absent from the north cluster. A few grit–tempered sherds were recovered from two structures and a pit in the south cluster. These sherds include four cordmarked sherds from Feature 715 that appear to derive from Marion Thick vessels and a single plain sherd from the same feature with Madison County Shale paste. All of the shell–tempered sherds were recovered from the three structures in the south cluster and Feature 382 in the north cluster. The greatest concentration is in Feature 382. Shell–tempered sherds exhibit red–slipped, plain, cordmarked, or indeterminate surface treatments. The red–slipped sherds may derive from Varney Red–Filmed vessels.

Although still predominant, cordmarked sherds comprise a much smaller proportion of the assemblage than in the George Reeves assemblage. Roughly 70 percent of sherds exhibit cordmarked surfaces compared to the 94 percent observed for the George Reeves phase. This decrease is due to the increase in plain or red–slipped surfaces. Sherds with plain or plain and cordmarked surfaces comprise 12 percent of the assemblage, an increase from 5 percent in the George Reeves phase. The greatest difference is seen in the increase in proportion of red–slipped surfaces from less than 1 percent to 16 percent. Most of the red–slipped surfaces are polished, a diagnostic attribute of Lindeman phase vessels. The south cluster contains a greater proportion of plain or red–slipped surfaces than the north cluster.

The vessel assemblage is comprised of 201 jars, bowls, seed jars, bottles, and several indeterminate and pre-Terminal Late Woodland vessels with a total weight over 7 kg. Once again, jars are the predominant form followed by bowls (see Table 6.4). The seed jars and bottles represent new vessel forms associated with the Lindeman phase. The vessel assemblage from features in the south cluster contains more bowls and seed jars than the north. Bottles are present only in the north cluster.

Limestone is by far the most common tempering agent, present in 87 percent of all vessels excluding the pre-Terminal Late Woodland vessels. Small amounts of grog, shell, grit, and mixed tempers are also present (Figure 6.9). Only one vessel from the north cluster did not contain temper. The north cluster has a higher proportion of grog tempered vessels. Only two vessels from the north cluster are tempered with shell. Both derive from Feature 382. A larger proportion of vessels from the south cluster contain limestone temper.

There are many fewer vessels with cordmarked surfaces than in the George Reeves assemblage (Figure 6.10). This is largely due to the dramatic increase in plain or plain-cordmarked jars and red–slipped bowls. This trend toward plain and red–slipped surfaces is evident in both the north and south clusters although it is more obvious in the south cluster. Plain or plain–cordmarked vessels are present in both clusters in similar proportions but red slip is more prevalent among features in the south cluster. This discrepancy is likely related to the greater number of bowls in the south cluster, as red–slipped surfaces are more commonly associated with bowls.

There is also greater quantity and diversity in terms of decoration than in the George Reeves assemblage. Over a quarter of the vessels exhibit decoration on the lip and/or vessel walls. Decoration is present on all vessel forms except bottles. Lugs and exterior notching remain common while incised and trailed lines, perforations, and effigies are new additions to the decorative repertoire. Certain decorative elements are more commonly associated with particular vessel forms. For example, perforations through the vessel wall are present on seed jars and jars but are absent from bowls and bottles.

Jars comprise the largest portion (47%) of the vessel assemblage with at least 94 identified. Limestone is the predominant tempering agent, present in 87 percent of jars (see Table 6.5). The remaining 13 percent includes a few vessels tempered with grog, grit, shell, and mixed temper. All of the mixed tempers include both limestone and grog. Mixed temper and grog temper are more common in the north cluster. One jar from each cluster is tempered with shell. One jar with grit temper may derive from the northern American Bottom.

Most jars (64%) have plain or plain–cordmarked exterior surfaces (see Table 6.8; Figure 6.11a–b). Two vessels are complete enough to determine the entire exterior surface is plain including the body. Red slip is second in prevalence with 18 percent of jars exhibiting this surface treatment (Figure 6.11c). Red–slipped jars include those with polished red slip and a few with red–slipped necks and cordmarked bodies or red–slipped necks and red slip over cordmarked bodies. Thirteen (76%) red–slipped jars also have red–slipped interior surfaces. Jars with cordmarked or smoothed over cordmarked necks comprise a total of 14 percent of the assemblage (Figure 6.11d). All cordmarked vessels with identifiable cord twist are characterized by Z-twist cordage. Two cordmarked jars also exhibit cordmarked superior lip surfaces. Jars with cordmarked surfaces are more common in the north cluster whereas jars with red–slipped or plain surfaces are more common in the south cluster. This distribution suggests the south cluster was occupied later during the Lindeman phase than the north cluster.

More than half of the jars are characterized as Type 3 jars with inslanting rims and incurved necks (see Table 6.6). Another third correspond to Type 4 jars with vertical rims and incurved necks. All other rim types are present in the assemblage although in small quantities. Type 5 and 6 jars with outslanted or everted rims are more common among jars from the Lindeman component than those from George Reeves phase features (see Table 6.7; Figure 6.11e). Jars with vertical or flared/everted rims are more common in the south cluster. Most lips are squared, flattened, or thickened. A few jars have unmodified round lips. Flattened lips are more common in the north cluster. Extruded, beveled, everted, and rolled lips are rare with only twelve jars exhibiting these lip forms.

Decoration is present on a third of the jars. Decorations similar to those evident in the George Reeves assemblage, namely lip lugs and notches, are also the most common type in the Lindeman assemblage. Vessels with significant portions of the rim present indicate that most jars with lugs probably had a total of four evenly spaced along the orifice. Perforations and incised or trailed lines on vessel walls along with lip appendages appear to be innovations associated with the Lindeman assemblage. Ten jars exhibit more than one form of decoration. For example, several jars have notched lugs and one jar has lugs and an incised line (see below). Decoration is limited to jars with rim Types 3, 4, 5, and 6. Most decorated jars correspond to Type 4 and have plain or red–slipped exterior surfaces. Lugs and tabs are more common among jars from the south cluster whereas perforations are more common in the north cluster assemblage.

Only 20 jars have identifiable shoulders. Nearly all of the shoulders are round. One vessel exhibits a sharply angled shoulder (see below). Forty-two shoulder segments that could not be refit to rims are also present in the Lindeman assemblage (see Table 6.9). Round shoulders are the most common although slightly angled and angled shoulders are also present in both the north and south clusters. Nearly all of the shoulders have plain–cordmarked exterior surfaces although there are a few cordmarked, red–slipped, and red–slipped over plain–cordmarked shoulders as well.

Jar orifice diameters vary widely between 7 cm and 50 cm (see Table 6.10). The average diameter is 18 cm. The size distribution indicates two size modes; 14 to 16 cm and 20 to 22 cm (Figure 6.12). Seven jars are considered mini-vessels due to their diminutive size as indicated by orifice diameter, shoulder diameter, and estimated vessel height. Plain–cordmarked, red–slipped, and red slip over plain–cordmarked surfaces are present. All of the mini-vessels are decorated with all types of decoration represented. Most small vessels derive from the south cluster although the average diameter for north cluster jars is smaller.

Continuous attributes recorded and indices calculated for the Lindeman phase jars are mostly similar to those associated with the George Reeves assemblage (see Table 6.11). However, the lip protrusion index is quite a bit lower with an average of 0.47. The lip shape is higher with an average of 1.24. These values also differ from those obtained from contemporaneous assemblages at Cahokia's Tract 15A and Dunham Tract.

Most jars (72%) exhibit evidence for thermal alteration. Sooting is most common with soot evident on half of the jars. Reduced areas are second in prevalence. A few jars have oxidized areas or charred organic residue. Only one jar exhibits a fire cloud. Several jars (22%) have more than one form of thermal alteration. Jars that lack any evidence for thermal alteration are more common in the south cluster.

A few jars exhibit combinations of unusual rim and shoulder forms and decorative elements. Vessel 382–1 is a limestone–tempered jar with a plain exterior surface, extruded lip with continuous notches, and a sharply angled shoulder (Figure 6.11f). The lip has a cavity running parallel to the rim along the exterior surface. The interior surface of this cavity has impressions that look like rope or twine as if the vessel were fired with twine still present. Vessel 452–6 is a plain, grog–tempered miniature jar with a flared rim and trailed lines on the exterior (Figure 6.11g). Vessel 382–3 is a limestone–tempered, plain–cordmarked jar that is completely oxidized to orange (Figure 6.11h). Decoration on this jar includes perforations and a single incised line that wraps around the neck. Vessel 382–7 is the only jar with an appendage (Figure 6.11i). The red–slipped jar has a large, thick appendage affixed to the rim that may correspond to a duck or gourd effigy.

Bowls are the second most prevalent vessel form, comprising 23 percent of the Lindeman phase assemblage. Their distribution is more restricted than jars. Only two features in the north cluster and four features in the south cluster yielded bowls. Most derive from structures in the south cluster. More than half of the bowls correspond to Monks Mound Red vessels with limestone temper and red–slipped exterior and interior surfaces (see Figure 6.13a and Tables 6.12 and 6.13). One bowl has shell temper and a plain exterior surface (Figure 6.13b). The thickness of the sherd suggests it may be a large bowl or pan. The remaining bowls are cordmarked or smoothed cordmarked and tempered with either limestone, grog, a mixture of limestone and grog, or shell (Figure 6.13c). Cordage impressions are predominantly Z-twist. Shell temper is present only in vessels recovered from the south cluster. Cordmarking is more common among bowls from the north cluster.

Type 1 and 2 bowl rims are most common and comprise an equal percentage of the assemblage (see Table 6.14). Type 3 bowls are present but in much smaller numbers. Type 2 bowls are slightly more common in the south cluster whereas Type 1 and 3 bowls are more common in the north cluster. The vertical rim form appears to be closely associated with the Monks Mound Red bowls. Over 70 percent of bowls with this rim type also exhibit limestone temper and red–slipped surfaces. Most lips are squared or flattened (see Table 6.15). The remaining bowls exhibit round, beveled, thickened, or folded lips. Squared and rounded lips are more common in the north cluster while flattened lips are more common in the south cluster.

Decoration was identified on a quarter of the bowls. Most exhibit the same forms of decoration noted for jars including lugs, tabs, incised lines, and lip appendages. The rim of one bowl appears to have been depressed or pinched suggesting the vessel may be a gourd or shell effigy (Figure 6.13d). One bowl has incised lines on both the interior and exterior surfaces that were added to the vessel post–firing (Figure 6.13e). It is unclear whether the incised lines were added to the vessel post-breakage or while the vessel was still complete. A Monks Mound Red bowl has bird effigy rim riders attached to the lip (Figure 6.13f). The birds face up toward the interior of the vessel. Two bowls, one from each cluster, have large appendages that may also represent gourd or bird effigies (Figure 6.13g). Most decorated bowls have lugs or tabs. Decoration is restricted to Monks Mound Red bowls.

Six Monks Mound Red bowls exhibit prominent fire clouds on the exterior surface. One of these bowls (V. 522–1) also has a large spall that likely formed during the firing process rendering the vessel unusable and possibly indicating vessel production at the site. Soot and reduced surfaces are more common on the larger, cordmarked bowls.

Orifice diameter could be estimated for only 24 bowls, four of which derive from the north cluster (see Table 6.16). Bowl diameters range between 9 cm and 48 cm with an average of 23 cm. The distribution of diameters indicates the presence of three size modes: 12 cm to 14 cm, 21 cm to 23 cm, and 33 cm to 38 cm (Figure 6.14). The largest bowls (greater than 26 cm in diameter) are cordmarked while the smaller bowls are predominantly red–slipped. The sample from the north cluster is too small to make accurate observations in comparison with the south cluster.

Only four seed jars are present in the Lindeman phase assemblage. Three were recovered from the south cluster and one from the north. All four have red–slipped exterior surfaces (Figure 6.14a–d). The interior surface of the vessel from Feature 382 is plain whereas all three from Feature 452 have red–slipped interior surfaces as well. These same three seed jars are limestone–tempered while the vessel from Feature 382 is tempered with shell. All four have inslanted rims. Both identifiable shoulders are round. Lip forms include round, flattened, interior beveled, and thickened/flattened. Perforations were identified on the seed jars from Feature 452. All of the perforations appear to be paired and are located approximately 26 mm below the orifice. Only one seed jar exhibits thermal exposure in the form of a single fire cloud on the vessel exterior that likely occurred during the firing process. Orifice diameters range between 5 cm and 18 cm with an average of 13 cm. A large fragment of another seed jar was recovered from Feature 522 but the rim is absent. It is also limestone–tempered with a red–slipped exterior and plain interior surfaces. Decoration and evidence for thermal alteration are absent.

Two vessels recovered from Feature 382 appear to be short–neck water bottles (Figure 6.15e–f). The height of the rims (4.9 cm and 5.6 cm) and the relatively sharp angle where the neck meets the body support this classification. Both of these bottles are tempered with limestone and have red–slipped exterior and interior surfaces. The rims are vertical to slightly outslanted with squared lips. Decoration is absent from both rims. One bottle exhibits evidence for thermal alteration in the form of a fire cloud and light sooting on the rim exterior. The orifice diameters are relatively small, measuring 15 cm and 18 cm. These vessels are more similar to jugs recovered from early Lohmann phase features at Cahokia and Range than to the hooded water bottles associated with late Terminal Late Woodland occupations. However, a similar vessel was recovered from a Lindeman phase structure at the Divers site (Freimuth 2010; see below).

LITHICS

Over 2,000 groundstone and chipped–stone tools and debris weighing 32 kg were recovered from Lindeman phase features at the Fish Lake site. Chipped stone is the most commonly recovered type of material although FCR predominates in terms of weight. Nearly all of the FCR is limestone in both count (90%) and weight (98%) (see Table 6.17). Features 382 and 539 in the north cluster and Features 403, 406, 412, and 452 in the south cluster yielded over 1 kg of FCR each. In fact, 94 percent of the FCR by weight derives from these six features. Feature 452 contained the most FCR although pit features 403 and 406 yielded over 4 kg of limestone FCR as well. Most of the FCR (82%) derives from features in the south cluster. Limestone is also more common among features in the south cluster than in the north cluster.

Groundstone tools and debris are relatively uncommon in the Lindeman assemblage (see Table 6.18). The only formal tools present are four celt fragments recovered from a pit and structure in each cluster (Figure 6.16). The lack of complete celts suggests celt production did not occur at the site. Four diorite flakes recovered from Feature 382 likely derive from finished celts due to the presence of polish on a few of the flakes. In fact, the raw materials of two of these flakes appear to be similar to celt fragments recovered from Features 388 and 403 although they could not be refit.

The only cobble tools present in the assemblage are hammerstones or hammerstone fragments. Three complete hammerstones were recovered from Features 382, 403, and 522. Fragments derive from Feature 452 and 522. All of the hammerstones are made from igneous/metamorphic cobbles with the exception of the fragment from Feature 452 that is made from a dense limestone. Hammerstones are more common among features in the south cluster.

The most numerous and ubiquitous groundstone tools are sandstone abraders including flat and slot varieties. In total, 28 abraders were recovered from three features in the north cluster and five in the south cluster. Flat abraders were more frequently recovered from structures rather than pits. Flat abraders were most concentrated in the basin fill of Feature 382 that yielded 16. Seven of these exhibit pigment staining on the flat surface as well as a sheen or gloss suggesting they were used intensively in the production of red pigment. Slot abraders were recovered from only three structures, one in the north cluster and two in the south cluster. All of the abraders were made from sandstone available in the uplands to the east.

Minerals are extremely rare. Only one small piece of limonite and Missouri River Clinker were recovered from the south and north cluster, respectively. Neither item exhibits any evidence for modification or use. The lack of hematite and minimal presence of limonite is unexpected considering the pigment staining on the flat abraders. Unmodified cobbles and pebbles are not concentrated in any feature although there are more in the south cluster than the north. They are likely incidental inclusions.

Over 1,400 chipped–stone tools and debitage weighing over 6.5 kg were recovered from Lindeman phase features (Tables 6.24, 6.25). The assemblage is nearly evenly split between the north and south clusters. Formal tools, informal tools and debitage are present. Raw materials include local, near–local, and extra–regional chert including Burlington, Salem, Ste. Genevieve, and Mill Creek.

Formal tools include projectile points, bifaces, and adze fragments as well as re-sharpening flakes with high– or low–gloss polish. The five point fragments include two tips, two arrow points, and one dart point (Figure 6.17). Most are fashioned from Burlington chert although the dart point is heat treated Kaolin. This last item may derive from an earlier Woodland occupation. Only one biface fragment is in the assemblage. This item is made from Burlington chert and appears to have burned. Three adze fragments, two made from Burlington and one made from Salem chert, were recovered from Features 382, 452, and 539. Fourteen Salem chert flakes without polish from Feature 539 derive from the adze fragment from the same feature.

Low–gloss polished flakes that may derive from adzes include nine Burlington flakes and one Kaolin flake. The largest concentration is comprised of only four flakes recovered from Feature 452. Hoe fragments are absent from the assemblage. However, 11 high–gloss polished flakes that may derive from hoes were recovered from five features. Once again, the largest concentration is in Feature 452. Most of these flakes derive from tools made from Mill Creek chert although there are three Burlington flakes and one of indeterminate chert. Formal tools are more common among features in the south cluster than the north cluster. Most of these tools are fashioned from Burlington or extra–regional chert.

Informal tools including flake tools, cores, and a chert hammer are ubiquitous in both clusters. Roughly two-thirds of the flake tools were used in cutting tasks while the remaining third is predominantly comprised of those used for scraping. There are very few informal flake tools that were used as drills or perforators. Although flake tools are nearly evenly split between the north and south clusters, 62 percent derive from only two structures; Features 382 and 452. Scrapers are more common among features in the south cluster. Eighty-three percent of all flake tools are made from Burlington chert. Locally available Salem (6%) and Ste. Genevieve (4%) chert are well represented among flake tools as well. Salem flake tools are slightly more prevalent among features in the north cluster. Excluding the polished flakes, only a few flakes of Mill Creek chert were used as flake tools. A single Burlington chert hammer fragment was recovered from Feature 382. The small fragment may originally have been used in the maintenance or reworking of celts and it likely fractured during use.

Thirty-eight cores weighing nearly 1,800 g were recovered from Lindeman features. Most are freehand cores (74%). Bipolar cores are also common comprising nearly a quarter of the assemblage. Only one tested cobble corresponding to two percent of the assemblage was recovered. Burlington is the most common chert type associated with cores although a large freehand core of Ste. Genevieve chert was found on the floor of Feature 715. Freehand cores are slightly more common among features in the north cluster while the south cluster assemblage contains a larger proportion of bipolar cores.

Chert debitage was recovered from every Lindeman phase feature. Once again, Burlington is the most common chert type comprising 88 percent of the debitage by count and 90 percent by weight. Salem is second in frequency with 8 percent of flakes and 5 percent of the debitage weight comprised of this raw material. Small amounts of Ste. Genevieve, Fern Glen, and Mill Creek chert are also present in the assemblage.

Raw material usage indicates a preference for Burlington chert, and Crescent Hills Burlington in particular, for both formal and informal tools (Figure 6.18). Extralocal chert including Mill Creek, Kaolin, and Cobden are more commonly associated with formal tools and flake tools than other informal tools and debitage. Local chert resources were used for expedient tools more so than formal tools.

HUMAN REMAINS

A partial cranial vault from a probable female adult (30 to 40 years old) was recovered from the upper dark fill zone of Feature 452 (Bukowski 2008a). It was placed upside down in the basin fill amongst large pieces of burned debris. Porosity along the sagittal sulcus and swelling of the endocranial surface may indicate the individual suffered from a non-specific infection of the sinus area. Cut marks and evidence for post mortem processing are absent and the weathering on the fractures indicate the cranium was broken after death. Isolated human remains are not uncommon among Terminal Late Woodland habitation contexts and may indicate the curation of ancestral remains.

ETHNOBOTANICAL AND FAUNAL REMAINS

Ethnobotanical remains were identified in flotation samples collected from seven features in the north cluster and nine features in the south cluster (Tables

6.26, 6.27). Wood is most abundant, comprising half of the sample. Both upland and floodplain species are present in nearly equal proportions although upland species are slightly more prevalent in the north cluster. Red cedar, a ritually significant species only available along the bluff edge, is present in small numbers in a single feature from each cluster. Wood in general and red cedar in particular are more concentrated in features in the south cluster. This is largely due to the burned structural debris present in the basin of Feature 522.

Seeds are second in prevalence, comprising 23 percent of the total botanical assemblage. Seeds are more numerous in structures contrary to contemporaneous assemblages where seeds are more commonly recovered from pit features. Seeds comprise a larger proportion (42%) of the botanical assemblage in the north cluster than in the south cluster (15%), largely due to the small amount of wood recovered from the north cluster.

Eastern Complex seeds dominate the sample. Maygrass is the most ubiquitous and numerous with nearly 80 percent of the Eastern Complex seeds associated with this species. Concentrations of maygrass seeds are present in Features 382, 539, and 452. There is more diversity in terms of Eastern Complex seeds in the south cluster where 44 percent is maygrass, 28 percent is chenopod, and 24 percent is erect knotweed. Little Barley is present only in small numbers. Two oily seeds (sunflower) are also present, one in each cluster.

Seeds from edible wild resources include small amounts of black nightshade, groundcherry, wild bean, and grape. Seeds from the black nightshade fruit are present only in the north cluster. Seeds from grasses are present in both clusters as well. These species may have been used in construction as thatch.

Maize fragments including kernels, cupules, glumes, and embryos comprise another 15 percent of the assemblage. Maize was identified in 10 features in both clusters. However, it was only identified in 39 percent of the samples. There are slightly more cupules than kernels suggesting maize was cultivated and processed at the site. Kernels outnumber cob fragments in the north cluster but by an insignificant amount.

Other botanical items include part of a cucurbit rind from Feature 539 as well as Giant cane and grass from both clusters. Giant cane and grass stems are most concentrated in Feature 522 suggesting they were once part of a structure that burned.

Faunal remains indicate the exploitation of local aquatic resources as well as white–tailed deer and bird species (Tables 6.28, 6.29). Fish species available in Fish Lake and the Mississippi river channel were recovered, including catfish, gar, drum, bullhead, buffalo, and bowfin. Several shell fragments and a few bones from Painted, Musk, and unidentified turtles were recovered. Amphibious specimens are limited to two burned bone fragments from a frog or toad. Mussel shell including a few fragments from at least two Threeridge mussels is present. Several bones from songbirds or indeterminate birds are present in the assemblage as well.

Although the faunal assemblage includes a large amount of mammal bone, white–tailed deer is the only identifiable species. The majority of the mammal bone derives from small to large mammals and is too fragmented to determine species.

Juvenile and adult deer specimens are present with a minimum number of three individuals. The left ulna of an adult was fashioned into an awl measuring 10 cm long and 2 cm wide. Two antler tines are exfoliated and appear to have been smoothed intentionally.

More than half of the assemblage is comprised of burned bone or shell. Other than burning and the previously mentioned modifications of deer bone and antler tines, the only other form of modification is cutmarks. Cutmarks were observed on a single long bone of an unidentified large mammal, possibly deer. All of the modified bones, excluding burned bones, were recovered from the east half of Feature 452 in zones A, B, and H.

Over 70 percent of the faunal assemblage derives from a single structure basin, Feature 452. All of the turtle, mussel, and the majority of fish and bird remains were recovered from three zones in this feature. The highest concentration is in the final fill episode, zone A. At least three deer including two adult and one juvenile are included in this sample. If we exclude Feature 452, then the samples for both the north and south cluster are comparable. However, the high concentration of faunal remains combined with the concentration of seeds from edible plants in the same feature provide evidence for a feasting event, the remains of which were deposited as zone A of Feature 452.

RADIOCARBON DATE

A single botanical sample was submitted to the INRS at the University of Illinois for radiocarbon dating (Appendix F). The sample is comprised of pecan and hickory wood charcoal recovered from a flotation sample from zone E, a burned zone, in the north half of Feature 522. Although the associated materials indicate the structure dates to the Lindeman phase, the radiocarbon sample returned a date of AD 1178–1280 at the 1 sigma range. Even at the 2 sigma range, the earliest the sample dates to corresponds to the early Stirling phase of the Mississippian period. It is possible the burned material derives from the Mississippian occupation that immediately follows the Lindeman phase. However, complications with radiocarbon dating during this period due to atmospheric conditions suggests the wood might be directly associated with the Lindeman component. In either case, it is likely that Feature 522 is among the last Terminal Late Woodland structures occupied at the site.

LOHMANN

All of the materials associated with the Lohmann phase occupation derive from a single pit, Feature 525. As such, the ceramic and lithic assemblages are small with a total weight of just over 1 kg. Although the assemblage is comprised of roughly equal numbers of ceramic and lithic items, the weight of the lithic materials is approximately 69 percent of the total assemblage.

CERAMICS

The ceramic assemblage includes fired clay, body sherds, and vessel segments. Fired clay is limited to a single clay doodle that weighs 0.5 g. The body sherd assemblage is comprised of only 43 sherds that could not be refit to any of the vessels (Table 6.30). This small assemblage diverges significantly from the earlier body sherd assemblages in both temper and surface treatments. Shell is the most common temper, present in 79 percent of the sherds. Sherds tempered with grog are second in prevalence at 12 percent. Most of these sherds probably represent mixing with the earlier Patrick phase occupation. Limestone is present in only seven percent of body sherds, a drastic decrease from the previous Lindeman phase assemblage. A single sherd with chert temper is a bit of an anomaly. Chert temper is predominantly associated with Sponemann phase assemblages that are coeval with the end of the Patrick phase. However, a few vessels from the Patrick phase assemblage from the Fish Lake site exhibit this tempering agent (Zelin n.d.). Thus, this single sherd is also likely present due to mixing.

The exterior surface treatment of most sherds (49%) could not be determined due to weathering. Most sherds with identifiable surface treatments are plain (40%). Cordmarking is the only other surface treatment identified. Cordmarked surfaces are only present on the grog–tempered sherds indicating that none of the sherds directly associated with the Lohmann phase occupation exhibit this type of treatment.

Portions of four vessels were recovered from Feature 525 (Figure 6.19). Two, a jar and an indeterminate vessel form, are represented by only body sherds. Three of the vessels are tempered with shell and one is tempered with limestone. All of the vessels have plain or eroded exterior surfaces. The interior lip and rim surfaces of the limestone–tempered jar are red–slipped. Both of the jars with rims have everted rims (Type 6). None of the vessels exhibit any decoration, other than the red–

slipped lip treatment on Vessel 525–1. The form, temper, and surface treatment of this vessel are consistent with early Lohmann phase jars in the southern American Bottom (Hanenberger 2003). The shell temper, plain surface, inslanted neck, and rolled lip of Vessel 525–2 are typical of Lohmann phase vessels to the north in the area near Cahokia (Pauketat 1998a). Neither jar is particularly large or small in terms of orifice diameter. Vessel 525–3 appears to be a portion of a Lohmann phase jar with only the lip missing. Vessel 525–4 is represented by several, heavily eroded shell–tempered sherds. It is possible that the three shell–tempered vessels are part of the same vessel, however differences in past color and sherd thickness suggest they are from different vessels.

LITHICS

The lithic assemblage includes FCR, informal groundstone tools, and chipped–stone tools and debris (Table 6.31). Five pieces of burned limestone weighing 360 g comprise the majority of the assemblage. Groundstone tools include a hammerstone and two flat abraders. The hammerstone is an igneous–metamorphic cobble that also exhibits use as a sinew stone (Figure 6.20a). Both of the abraders are made from sandstone and appear to have been heavily used due to the degree of smoothing on the worked surface and the small size of the tools (Figure 6.20b–c).

The chipped–stone assemblage is comprised of 32 tools and pieces of debitage with only two identifiable raw material types. A nearly complete Burlington arrow point was recovered from Feature 525 (Figure 6.20d). It is side–

notched and bifacially worked with thin, parallel transverse flaking evident. It is similar to the Cahokia point type although the base is slightly convex. Informal tools are limited to nine flake tools. The six Burlington flake tools were used for scraping or cutting (Figure 6.20e–f). Two of the Salem tools exhibit evidence for use in scraping tasks while one was used for cutting. Twenty-two pieces of debitage were recovered from Feature 525. Thirty-six percent are made from Burlington chert, 55 percent from Salem chert, and 9 percent were made from unidentifiable chert.

Burlington and Salem chert are the only raw materials identified in the small assemblage (Figure 6.21). They are present in equal numbers although the Burlington items weigh slightly more. The only formal tool (arrow point) and most of the flake tools are fashioned from this near–local source. Locally available Salem chert was extensively used during the Patrick phase occupation at the site and the Terminal Late Woodland and Lohmann phase residents continued to use it during subsequent occupations, although not to the same extent.

ETHNOBOTANICAL AND FAUNAL REMAINS

The ethnobotanical remains recovered from flotation samples from Feature 525 total only 17 items (Table 6.32). Although the sample is small, all botanical classes are present. The paltry wood assemblage weighs only 0.03 g and is comprised of bottomland species, namely honey locust and willow or poplar. Nutshell is limited to two acorn fragments. Eastern Complex seeds are absent from the assemblage. The only seeds identified are from a weedy plant and an unidentifiable grass. Three maize kernels are the only edible remains in the assemblage. The only other items are two grass stem fragments. The faunal assemblage is even smaller, consisting of only one fragment of a fish vertebra.

DIVERS SITE MATERIAL REMAINS

The Divers site material assemblage is complicated by the long–term occupation of the site and the high degree of superpositioning resulting in the mixing of material from different components. Also, most data for the ceramic artifacts are provided in Freimuth 2010 but lithic, flora, and fauna were not fully analyzed or reported[1]. Hence the following discussion will summarize Freimuth's findings and will compare the Lindeman and Lohmann phase assemblages to the furthest possible extent. A few items in possession of the landowner were photographed and analyzed by the author and are also included in this discussion where applicable.

LINDEMAN PHASE

The Lindeman phase ceramic assemblage is large compared to the number of features excavated with over 4,500 body sherds and 339 vessels identified. The body sherd assemblage is predominantly limestone–tempered (81%) with a significant portion (11%) exhibiting red–slipped surfaces (Table 6.33). Grog is second in prevalence (15%) followed by shell (2%). Grit comprises a small proportion of the assemblage while mixed tempers including limestone–shell and

---

[1] The fact that the entire lithic, floral, and faunal assemblages were not fully analyzed suggests a lack of certain items does not necessarily mean they were not present in the excavated sample. Also, a full analysis is required to determine what types of lithic resources, in particular chert raw materials, were utilized.

grit–grog complete the assemblage. The vessel assemblage displays a similar trend in temper with limestone comprising 80 percent followed by grog at 11 percent (Table 6.34). Shell and grit are present in small numbers (5% and less than 1%). Eight vessels (4%) exhibit mixed tempers including limestone–shell, limestone–grog, and shell–grog.

The vessel assemblage includes jars, bowls, seed jars, stumpware, and a possible short–neck water bottle. Jars predominate representing 61 percent of all vessels. Bowls are second in frequency at 33 percent. Stumpware comprises 4 percent of the assemblage while seed jars comprise only one percent. The single short–neck water bottle represents less than one percent. Both jars (80%) and bowls (86%) are predominantly tempered with limestone. However, the jar assemblage has a higher proportion of vessels with other tempers, mostly grog (11%) or shell (5%). Bowls include several vessels with mixed tempers, predominantly limestone–grog (5%), and very few shell–tempered (1%).

Vessel surface treatments include plain, red slip, smoothed over cordmarking, and cordmarking (Table 6.35). Smoothed over cordmarked surfaces predominate (33%) followed by roughly equal proportions of cordmarked (29%) and plain (28%) surfaces. Red–slipped surfaces are least frequent but represent ten percent of the entire assemblage. Red slipping is more common on bowls and seed jars with 14 percent of bowls and all four seed jars exhibiting this surface treatment. Red slip is present on only eight percent of jars. Since the surface treatments were not fully reported by vessel form it is difficult to ascertain whether plain, smoothed over cordmarked, or cordmarked surfaces are more commonly associated with a particular vessel form. It is possible that the high frequency of smoothed over cordmarked and cordmarked surfaces might be related to the intermixing of materials from earlier components.

Decoration is fairly common with 16 percent of all vessels exhibiting some form of decoration. Lip impressions and lip lugs are most common followed by a few vessels with spouts and filleted or appliquéd rims. Decoration is more common on jars than bowls with 23 percent of jars exhibiting at least one form of decoration while only three percent of bowls are decorated.

The ceramics are distributed throughout the Lindeman occupation and are present in all but Feature 26. The majority of body sherds and vessels are concentrated in Features 4, 50, and 65 with 69 percent of all body sherds deriving from these three features. Limestone body sherds with red–slipped surfaces corresponding to Monks Mound Red type vessels were present in the majority of features (60%). Features 35, 50, and 65 contained the most Monks Mound Red sherds. Features 35, 52, and 72 contained the highest proportion of Monks Mound Red sherds with over one-third of each feature assemblage comprised of these sherds. Shell is not as ubiquitous as limestone with only seven features containing shell–tempered body sherds. Most were recovered from Feature 65 while the area near the center of the excavations had the most features with shell–tempered sherds. These include Feature 23, 36, 125, and 130.

Feature 50 contained the highest number of discrete vessels with nearly one-third of all vessels. This structure contained the highest number of seed jars (n = 3) and stumpware (n = 6). Although Feature 4 had fewer vessels this pit had the highest number of bowls. In fact, the bowls outnumbered jars which might signify its role in refuse disposal associated with feasting (Dietler and Hayden 2001). Alternatively, this pit may have been a receptacle for the disposal of pottery associated with the cleansing of the Lindeman phase occupation prior to or concurrent with the establishment of the Lohmann phase farmsteads. Feature 65 also contained a significant portion of the vessel assemblage with a total of 53 vessels. The only water bottle and the most pinch pots derive from this feature. The high number of vessels from Features 50 and 65 appears to be directly related to the processes of abandonment because both structures were burned and had intact floor assemblages.

A shell–tempered red–slipped jar from Feature 130 appears to be a Varney vessel suggesting extra–regional contact. However, vessels produced with Madison County Shale from the uplands east of the northern American Bottom were absent from the assemblage suggesting a reduction in intra–regional interaction from the north.

Other ceramic items in the assemblage include 15 ceramic disks and one each of the following: pipe stem, bead, discoidal, and clay ball (Table 6.36). Fourteen of the 15 ceramic disks were recovered from a single structure (Feature 65) and associated features. Most of these disks exhibit drilled holes suggesting the area near the structure was associated with the production of fiber. The pipe stem was recovered from Feature 65 and indicates smoking occurred although the botanical data do not indicate the presence of tobacco. The bead from Feature 26 is suggestive of adornment. The clay discoidal from Feature 50 along with the lithic examples are suggestive of gaming. The clay ball was recovered from Feature 4, a pit with a high concentration of vessels possibly indicating the ball is related to ceramic production or test firing.

LITHICS

Lithic items recovered from Lindeman phase contexts include over 137 kg of limestone, formal tool fragments and maintenance debris, informal tools, and tools associated with the production of celts and other lithic tools. Seven hoe flakes and one hoe fragment were recovered from five features including pits (Features 4, 51) and structures (Features 36, 50, 65). The presence of hoes including those made from Mill Creek chert, provides evidence for the cultivation of maize and extra–regional contact. Two other chipped–stone tools, an adze and a gouge or chisel, were cached next to the hearth on the floor of Feature 49. These tools are associated with woodworking.

A groundstone celt fragment and a chert hammerstone were recovered from Feature 125 possibly indicating land clearing for horticulture and the reworking of celts, respectively (Figure 6.22a). The final formal lithic items are fragments of discoidals. The item from Feature 125 is a large, white quartzite discoidal (Figure 6.22b) while the item from the floor of Feature 65 is smaller and made from an indeterminate type of rock. The form is consistent with other Late Woodland style discoidals (i.e., Jersey Bluff) but it is higher quality than those typically recovered from residential contexts (DeBoer 1993; Perino 1971). Informal tools are limited to five hammerstones from four structures (Features 36, 49, 50, 65) and two sandstone abraders from two separate structures (Feature 65 and 117).

There are limited data concerning the flora and fauna recovered from the excavations. Maize, a domesticated sunflower seed, burned bulrush thatch, acorn meats, and wild plum were recovered from Lindeman phase contexts. Maize, bulrush, and the sunflower seed were recovered from Feature 36. Maize and wild plum derive from Feature 65 while acorn meats were recovered from Features 64 and 130. Feature 130 also includes burnt grass, most likely also bulrush. The reported faunal remains are limited to modified deer bone. Two of the awls and the deer antler tines derive from Feature 50 while Feature 65 also contained two awls (Figure 6.22c–d). These items indicate the exploitation of deer as a food resource and the use of awls, possibly in the production of clothing. Freimuth notes that one of the awls is very long and fragile suggesting it was used as a pin rather than an awl.

LOHMANN PHASE

The Lohmann phase ceramic assemblage is significantly smaller than the Lindeman phase assemblage with only 989 body sherds and 73 vessels present. The body sherd assemblage is similar to the Lindeman phase in that it is predominantly limestone–tempered (65%) with a significant portion exhibiting red–slipped surfaces (6%) followed by sherds from vessels tempered with grog (25%) (Table 6.37). Grit temper is present in similar proportions as well. However, the Lohmann assemblage differs in that it contains a higher proportion of sherds with shell temper (8%) or grog temper (25%) at the expense of those with limestone or mixed tempers.

Pottery fragments were recovered from 16 Lohmann phase features. The only feature that did not contain pottery remains is a partially excavated wall trench structure (Feature 114). Shell–tempered body sherds were relatively ubiquitous, recovered from 11 features. Most derive from Features 18, 94, and 105. Five of the six features without shell–tempered sherds had small assemblages so the lack of shell temper might be the result of sampling. Feature 33 did not contain any shell–tempered body sherds but fragments of five shell–tempered vessels were recovered. Only four features (Feature 29, 91,118, 132) lacked sherds with red–slipped surfaces. Features 105 and 111 had high proportions of grog tempered sherds. Feature 111 is also the only feature without limestone–tempered sherds while in most other features limestone accounted for at least half of the body sherd assemblage.

The vessel assemblage also reflects these trends with limestone as the dominant temper (66%). However, shell is the second most prevalent tempering agent comprising 20 percent of the assemblage (see Table 6.34). Grog–tempered vessels comprise 13 percent of the assemblage and only 1 percent of vessels exhibit mixed tempers. None of the vessels have grit temper. Limestone temper remains the predominant temper for all vessel forms with 67 percent of jars, 61 percent of bowls, and 67 percent of seed jars exhibiting this temper. Shell temper is second in prevalence with 22 percent of jars, 11 percent of bowls, and 33 percent of the seed jars exhibiting shell temper.

Vessel forms are limited to jars, bowls, seed jars, and a beaker. Stumpware and water bottles are absent. Jars (71%), bowls (24%), and seed jars (4%) comprise the bulk of the assemblage, representing a combined 99 percent of all vessels for this component. A new vessel form, one beaker, comprises the remaining one percent of the vessel assemblage. Plain exterior surfaces are most common (36%) followed by those with red–slipped (29%), smoothed over cordmarked (23%), and cordmarked (12%) surfaces (see Table 6.35). Decoration is present on only 18 percent of jars and eight percent of bowls. Decoration includes lip impressions and lugs, appliqués, punctates, and incising. The only vessel with incising is a grog–tempered bowl from Feature 32 with two lines that run parallel to the rim. This treatment is similar to non-local Coles Creek vessels that were produced in the Lower Mississippi Valley although local reproductions have been identified in the American Bottom (Wilson 1999). Punctates are present on the exterior rim surface of a shell–tempered seed jar from Feature 94.

There are no clear trends in the distribution of vessels with the possible exception of a slight concentration in Feature 33, an exterior pit in the western cluster. The eighteen bowls are well distributed throughout 12 features. Only three seed jars are in the assemblage and they were recovered from three separate features, two pits in the western cluster (Features 33 and 131) and a structure (Feature 94) in the eastern cluster. The distributions of different surface treatments do not indicate any spatial concentrations or trends either. Red slip is fairly common particularly among jars and to a lesser extent bowls. Most vessels lack decoration. Only four features contained decorated vessels.

Other ceramic items are limited to two ceramic disks and two pipe stem fragments (see Table 6.36). The disks include one smoothed over cordmarked sherd from Feature 94 and one plain limestone–tempered sherd from Feature 118. A polished, grog–tempered pipe stem fragment was recovered from Feature 132 while a pipe stem with indeterminate temper was recovered from Feature 131.

LITHICS

Lithic items recovered from Lohmann phase contexts include over 21 kg of limestone, formal tool fragments and maintenance debris, informal tools, minerals, and tools associated with the production of celts and other tools. Ten hoe flakes derive from four features including two exterior pits (Features 18 and 33) and two structures (Features 94 and 105). Feature 105 contained a concentration of seven hoe flakes. At least eight of the flakes are from hoes fashioned from Mill Creek chert. Formal tools include a biface fragment from Feature 131 and the bit end of a celt that was recovered from a wall trench in Feature 94. Three discoidals include one very eroded limestone example from Feature 94 and two sandstone discoidals from Features 96 and 105 (Figure 6.23). The discoidal from Feature 96 appears to be finely made, is very symmetrical, and is closer in shape to the Cahokia style rather than Jersey Bluff (Perino 1971). Informal tools include a single hammerstone (Feature 94), a sandstone slot abrader (Feature 33), and a pebble that may have been used in polishing or burnishing ceramic vessels (Feature 105). Minerals make their first appearance at the site in the form of a large chunk of hematite weighing 48 g from Feature 33 and a galena cube from Feature 96.

ETHNOBOTANICAL AND FAUNAL REMAINS

Faunal items were absent or not analyzed. The floral remains are limited to a few cupule and kernel fragments of maize and a small amount of acorn meats from Feature 105. Thatch, other domesticates, and wild resources were not reported for the Lohmann phase occupation.

PEIPER SITE MATERIAL REMAINS

Since the majority of excavated features at the Pieper site date to the Late Woodland period not associated with the Mississippian transition, I only analyzed the material remains from features that could possibly be Mississippian. These include Features 1, 11, 15, and 21. Upon completion of the ceramic analysis, I concluded that Features 11, 15, and 21 date to the Late Woodland period. However, I will discuss all of the materials recovered from these four features in the following section because diagnostic Mississippian materials were recovered from all of these features. Also, the slot trenches include a mix of material from Feature 1 and others including Late Woodland pits as well as the amorphous fill area to the north and as such, the materials collected from the trenches include a few diagnostic Mississippian materials from unknown context. As expected, most materials derive from Feature 1, the Lohmann phase structure. Due to the high degree of mixing, I did not have the botanical or faunal materials analyzed.

CERAMICS

In total, 1,090 ceramic items weighing 3,612.1 g were recovered from the slot trenches and Features 1, 11, 15, and 21. Fired clay includes burnt clay, daub, and modeled clay (Table 6.38). Burnt clay is most common, comprising more than half of the fired clay by weight. Daub is also fairly common, particularly in Features 1 and 11. The modeled clay includes minimally shaped doodles as well as a pipe fragment, clay disk, and a possible effigy (Figure 6.24). A small clay pipe fragment represented by two pieces was recovered from Feature 11. This item appears to be part of the bowl of a small pipe. It is similar to pipes recovered from Late Woodland context elsewhere in the American Bottom (see Fortier et al. 1984; Kelly et al. 1987). The fired clay disk is minimally shaped and does not appear to be a discoidal. The possible effigy looks like a human fist. The slashes in the small piece of clay form the fingers. The opposing end is broken suggesting this once belonged to a human effigy figurine, several of which have been recovered from Late Woodland context (Fish Lake ref).

The body sherds recovered from slot trenches and Features 1, 11, 15, and 21 include those tempered with limestone, shell, grog, grit, and a few with mixed tempers (Table 6.39). Only five sherds were tempered with a mixture of shell and grog or limestone, grit with grog, or grog with shell. All of the sherds with a mixture including shell derive from Feature 1. Limestone–tempered sherds were recovered from Features 1, 11, and 21 and ST 4 but were most concentrated in Feature 1, comprising nine percent of the body sherds by weight from the structure. Limestone was a minor component of the body sherd assemblage from the other features, ranging from zero to two percent. Slot Trench 4 contained more limestone–

tempered sherds that likely derive from Feature 1. Most limestone–tempered sherds have cordmarked exterior surfaces although plain or red–slipped sherds are relatively common as well.

Shell–tempered sherds exhibit a similar distribution with most recovered from Feature 1 although several sherds were recovered from Feature 11 and 15 as well. Shell–tempered sherds comprise eight percent by weight of the body sherds from Feature 1. Most shell–tempered sherds have plain exterior surfaces although slipped and cordmarked sherds are also present. The slipped sherds include red and dark slips typical of early Mississippian assemblages.

Twenty-nine vessel segments weighing 461.1 g were recovered from Features 1, 11, 15, and ST 4. Most, including many from Feature 1, are typical of Late Woodland assemblages. Mississippian vessels are limited to Feature 1 and the surface of Feature 11. Only four vessels diagnostic of a Mississippian occupation were recovered (Figure 6.25). These include two jars (vessels 1–2 and 1–4), a bowl (vessel 11–1), and a large bowl or pan (vessel 1–3). The remaining vessels are jars or bowls with cordmarked exteriors and grog or grit temper. Several of these jars exhibit decoration in the form of cord–wrapped dowel impressions on the interior or exterior lip surface that is typical of the Late Woodland period.

The two jars are significantly different in terms of temper, morphology, surface treatment, and size. Vessel 1–2 is a fragment of a large limestone–tempered cordmarked jar with an approximate orifice diameter of 40 cm. The form and surface treatment are more similar to Late Woodland or early Terminal Late Woodland jars but the limestone temper is indicative of a Terminal Late Woodland to early Mississippian association. The large size is atypical of Lohmann phase assemblages although a few examples are known from Cahokia and the Range site (Hanenberger 2003; Pauketat 1998a). Vessel 1–4 is a large segment of a shell–tempered jar with plain exterior surface and rounded shoulder. The rim is absent from the vessel, however the shape of the neck and body indicate it is similar to early Mississippian jars.

Vessel 11–1 is a Monks Mound Red bowl with limestone temper and a red–slipped exterior surface. The interior surface was probably slipped as well but the it is too eroded to determine for certain. The bowl has a vertical rim and orifice of approximately 22 cm. Vessel 1–3 is a limestone–tempered pan with a plain exterior surface. The lip and interior surfaces are severely eroded. This example is similar in terms of temper, morphology, and wall thickness to two pans recovered from a Lohmann phase feature at Range. However, the pans from Range have cordmarked exteriors and red–slipped interiors. Plain surfaced pans are more common in northern American Bottom Lohmann phase assemblages (Pauketat 1998).

LITHICS

A total of 2,268 lithic items weighing 5,066.8 g were recovered from the slot trenches and Features 1, 11, 15, and 21. Most of the items are not diagnostic and therefore may derive from the Late Woodland or Mississippian occupation. However, a few diagnostic items and materials are associated with the Mississippian period.

FCR is dominated by limestone which comprises more than 80 percent of the FCR assemblage (Table 6.40). Igneous/metamorphic FCR is second in prevalence followed by chert and sandstone. Non-diagnostic groundstone tools include hammerstones, abraders, minerals, gizzard stones, Missouri River clinker, and unmodified pebbles (Table 6.41). Most of these items were recovered from Features 1 and 11.

Groundstone items that may derive from the Mississippian occupation include sandstone flat abraders, minerals, and unmodified diabase (Figure 6.26). All of these items were recovered from Feature 11. Large, flat abraders are associated with celt production. Minerals include a few small pieces of unmodified limonite and a single specimen of hematite. These items may be associated with pigment production. The two small pieces of unmodified diabase may be associated with celt production.

The non-diagnostic chipped–stone assemblage includes debitage and informal or fragmentary tools (Table 6.42). The debitage is dominated by Burlington chert which comprises over 60 percent in terms of weight. Small amounts of local chert including Ste. Genevieve, Salem, and Fern Glen are also present. Unidentifiable chert comprises a significant proportion of the debitage assemblage at 18 percent by weight. Non-local chert other than Burlington is limited to a few Mill Creek chert flakes, 75 percent of which derive from Feature 1. Non-diagnostic tools include bipolar and tested cobble cores, arrow point tips, and biface fragments. All of the Burlington chert cores are bipolar. Tested cobbles are either Ste. Genevieve or an indeterminate chert type. The point tips from Feature 1 and 11 are made from an unidentifiable chert and Ste. Genevieve chert, respectively. Both are bifacially worked.

Chipped–stone items that are likely associated with the Lohmann phase occupation include a few tools and a few pieces of debitage that are made from non-local raw materials typically associated with Mississippian contexts. These raw materials include Mill Creek, Kaolin, and Cobden chert as well as Hixton silicified sediment. Mill Creek is found in the form of debitage and a single polished hoe flake. The latter three raw materials were only encountered in the form of debitage. Tools associated with the Mississippian component include Burlington flake tools, a projectile point, microblade, and microblade core (Figure 6.27). The flake tools were minimally retouched and were used in generalized cutting and scraping tasks. The point is a very thin flake point with minimal retouching along the edges. The microblade from Feature 1 and microblade core from Feature 15 are associated with the production of microdrills used in shell bead manufacture.

WASHAUSEN SITE MATERIAL REMAINS

The material remains from the Washausen site include those recovered during the surface collection directed by John Kelly and through excavations directed by the author and Timothy Pauketat. Excavated materials derive from test units as well as features including the two structures and possible midden fill located north of Mound A.

SURFACE MATERIALS

The surface collection was conducted in 2004, 2006, and 2007. All materials identified within 457 of the 900 10 m x 10 m squares were collected with the exception of limestone (Figure 6.28). Fifteen squares were collected twice. All of Block A, 75 percent of Block B, half of Blocks C, D, F, and H, and 25 percent of Blocks G and I were collected along with random samples of all nine blocks. Most of Block E was collected with the exception of the southern half that was only sampled due to the high incidence of historic debris. The main goal of the surface collection was to delineate the plaza (Bailey 2007; Chapman 2005).

Although the surface collection was not executed systematically, a few patterns were noted upon analysis of the materials by Washington University students. Ellen Chapman (2005) analyzed the material surface distribution for the units collected in 2004. She identified the possible extent of a plaza based on the distribution of ceramic and chert artifacts. The density of material is lighter between mounds A and B and higher along the edges of the plaza area. She also noted high concentrations of slipped ceramics, basalt, Mill Creek chert, and sandstone southwest and southeast of Mound A and north of Mound C.

Susanna Bailey (2007) analyzed the rim sherds collected from the surface in the plaza area (south half of Block B and north half of Block E). She notes that most of the red–slipped rims and body sherds from the surface derive from within the plaza and along the east and west edges of the plaza. Although Bailey suggests the distribution of Monks Mound Red bowl rims around the edges of the plaza is related to ritual associations and possible feasting within the plaza, their distribution actually mirrors the distribution of all other artifact classes. Also, since the units located outside the immediate area of the plaza were not analyzed, it is impossible to compare rim and sherd distribution with the remainder of the site.

With the permission of John Kelly, I was able to look over all of the materials from the surface collection housed at the archaeology lab at Washington University in Saint Louis. The vast majority of sherds are tempered with limestone. I also analyzed a sample of the collection from Block A that previously had not been analyzed. The distribution of Monks Mound Red rims and sherds is densest in the southeast corner of Block A which generally corroborates Bailey's findings (Figure 6.29).

A few miscellaneous items collected from the surface worthy of note include a stone pot from Block A, a chert hammer, a microblade, and a complete point (Figure 6.30). The stone pot is a small cobble that was pecked to form the interior, neck, and shoulder of the vessel. The vessel and rim shapes are similar to Powell Plain jars typical of early Mississippian assemblages. A small area of pecking at the base but offset from the center allows the vessel to rest at an angle when placed on a flat surface. The small size, shape, and resting position of the vessel suggest it may have been used to contain pigments for use in painting. The chert hammer is a cobble of Burlington chert that was heavily used, likely in the production of celts. Combined with the noted concentrations of basalt flakes and celt fragments on the surface, the presence of the chert hammer provides further support for celt production at the site. The microblade was struck from a Burlington chert core. These specific types of flakes are typically removed from prepared cores in order to produce microdrills. A complete flake point made from Burlington chert does not fit comfortably in the known point types of either the late Terminal Late Woodland or early Mississippian periods. However, the shape is somewhat similar to Terminal Late Woodland points from Missouri known as Scallorn points.

In general, the surface distribution of both chert and ceramic items provide further support for the presence of a plaza between the mounds similar to that observed at the Morrison site (see below). The preponderance of sherds tempered with limestone with only a few shell–tempered sherds indicate the occupation is most extensive during the Lindeman to Lohmann phases. The lack of rims diagnostic of the Stirling phase (i.e., Ramey Incised) or later periods suggests the site was likely abandoned by the end Lohmann phase. However, as previously noted, there is a possible re-occupation during the late Moorehead phase associated with mortuary activity (stone box graves).

EXCAVATION MATERIALS

In total, 3,564 ceramic and lithic items weighing over 13 kg were recovered from test unit and feature excavations at Washausen. In the following section, I will discuss the ceramic and lithic assemblages and provide a summary of the ethnobotanical and faunal materials.

CERAMICS

Fired clay includes burnt clay, tempered burnt clay, modeled clay, and daub (Table 6.43). Features 1 and 2 and TUs 6 and 7 are the only units that produced fired clay. The vast majority is burnt clay with only a few pieces of modeled clay and daub. Daub is restricted to Feature 1 and TU 7. The four pieces of modeled clay include three small "doodles" from Feature 1 and TU 6 and a large squeezed piece of clay from Feature 2 that also appears to have mat or grass impressions. None of the fired clay items appears to be intentionally shaped.

Several worked body sherds and ceramic objects were encountered during the excavation of Features 1 and 2 as well as TU 6 (Table 6.44). These items include sherds that are drilled, perforated, or ground as well as an effigy rim rider (Figure 6.31). Most of the ceramic disks were formed from sherds tempered with limestone with only three tempered with shell. Of the four drilled disks from Feature 2, half were tempered with shell. Disks were concentrated in Feature 1 which yielded seven of the 11 disks. Most have at least one drilled hole with up to a maximum of five. Disks were formed from sherds with red–slipped, cordmarked, or plain surfaces but most are red–slipped. Many of these disks may correspond to spindle whorls although it is unclear how the disks without holes and those with multiple holes were used. Most of the disks from Feature 1 derive from basin fill in the east half. Also, two disks were encountered while excavating PM 30 and 36 of Feature 1 located along the south wall of the structure. The effigy rim rider appears to be an owl head. It is tempered with limestone and red–slipped . It is similar to those seen on a Monks Mound Red bowl from a Lohmann phase pit interior to the single post structure at the Range site (Figure 6.7; Hanenberger 2003).

A total of 1,842 body sherds weighing 4,152.8 g were recovered from TUs 2, 5, 6, and 7 as well as both structures (Table 6.45). The assemblage is dominated by limestone–tempered sherds representing 76 percent of the assemblage by count and 79 percent by weight. Shell temper is second in prominence but comprises only 15 percent by count and 1 percent by weight. Grog, grit, and mixed tempers including shell and grit, limestone and shell, shell and limestone, shell and grog, and limestone and grog complete the assemblage. Shell and limestone is the most common temper mix identified and is most common in Feature 2. Madison County Shale pastes are absent from the body sherd assemblage.

A wide range of surface treatments are present in the assemblage. Cordmarked, plain, and red–slipped exterior surfaces predominate. One-third of the body sherds have cordmarked surfaces. Plain and red–slipped surfaces are present in nearly equal proportions (22% and 21%, respectively). Surface treatment was indeterminate for 19 percent of the sherds due to eroded surfaces. Smoothed cordmarked, burnished, and sherds with interior red–slipped surfaces but plain or eroded exterior surfaces comprise a minor portion of the assemblage.

Forty-nine vessel segments weighing 1,091.8 g were recovered from Features 1 and 2 and TU 7. The surface treatments and tempering agents parallel those identified for the body sherds with the exception of a single example each of two additional mixed tempers from Feature 1 (shell, grit, and limestone and limestone and grit). The most common tempering agent is limestone which is found in 76 percent of all vessels (Figure 6.32). Mixed temper is second in prevalence at 12 percent of the assemblage, followed closely by shell at 10 percent. A single fragment of grog–tempered stumpware comprises two percent.

Most vessels (45%) exhibit a red–slipped exterior surface. Plain and/or plain and cordmarked surfaces are restricted to jars. Only one jar segment with a plain exterior rim surface had a plain body as well (2%). The remaining plain jar rims (n = 14) did not extend past the neck, therefore body surface treatment is indeterminate. Vessels with plain or plain and cordmarked exteriors comprise 39 percent of the vessel assemblage. Cordmarked exterior rims are rare, comprising only 10 percent of the assemblage. Cordmarked rims are limited to bowls and stumpware. Two vessels (4%) had indeterminate exterior surfaces due to erosion or the small size of the rim.

Jars are the most common vessel form comprising 47 percent of the assemblage (Figure 6.33). More than three-quarters of all jars are tempered with limestone. Shell is the next in prominence at 17 percent. Only one jar exhibits a mixed temper that includes shell, grit, and limestone. Exterior surfaces are overwhelmingly plain or plain–cordmarked (87%). Jars with red–slipped exteriors are second in prominence at nine percent. One jar has an indeterminate exterior surface treatment. Thermal exposure in the form of sooting, reduced surfaces, charred organic material, and fire clouds are commonly identified on jar exteriors with 70 percent of jars in the assemblage exhibiting at least one of these.

Most jar rims are inslanted (41%). The remaining jars have flared (23%), vertical (18%), everted (14%), or indeterminate rim forms. Lips are predominantly round (32%) or square (27%) although flattened lips are also common (23%). Extruded lips are also present in small numbers (14%). Folded and rolled lips are absent. Exterior notches are the most common type of decoration. One jar has both lip lugs and a perforation through the wall of the vessel below the lug. Only five jars exhibit shoulders, all of which are rounded.

The jars are relatively small in terms of orifice diameter (Figure 6.34). For the 17 jars with estimated orifice diameters, the diameters range between 8 cm and 28 cm. The average diameter is 17 cm. The diameter distribution indicates a peak in the number of vessels with diameters between 6 and 10 cm and 16 and 20 cm. Very large jars are absent.

Bowls are the second most common vessel form with 19 bowls representing 39 percent of the assemblage (Figure 6.35). Limestone is by far the most common type of temper at 79 percent of the assemblage. Only one bowl is tempered with shell (5%). The only other type of temper identified is mixed and includes shell mixed with limestone (11%) and limestone mixed with shell (5%). Most bowls exhibit red–slipped exterior and interior surfaces (74%). Most of these bowls (58% of all bowls) correspond to the Monks Mound Red type. Cordmarking is second in prevalence with 21 percent of bowls exhibiting this surface treatment. The exterior surface for one bowl is indeterminate due to erosion. However, this bowl has a red–slipped interior suggesting it likely had a red–slipped exterior as well. Evidence for thermal exposure is limited to six bowls. Soot, reduced exterior surfaces, and fire clouds are present.

Most bowls exhibit vertical rim forms (53%), followed by outslanted (32%) and inslanted (16%) forms. Squared lips are most common at 53 percent followed by flattened (31%) and thickened (16%). Unmodified lips are absent. Decorations include lip lugs and tabs. Lugs are more common (28% of all bowls) with only two bowls (10%) exhibiting tabs attached to the lip exterior. Five of the bowls with lip decorations correspond to the Monks Mound Red type. The remaining two bowls are similar to Monks Mound Red with the exception of having a minor amount of shell mixed with the limestone temper. Orifice diameter could be estimated for only nine of the 19 bowls. Bowls have a limited size distribution with an average diameter of 18 cm and a range between 6 cm and 19 cm. Most bowls fall within the 16 to 20 cm range.

Seed jars comprise 12 percent of the assemblage (Figure 6.36). Limestone is the most common type of temper (67%). The remaining two vessels are tempered with a mixture of limestone and grog or shell and limestone. All of the seed jars have red–slipped exteriors and all but two have red–slipped interiors as well. Two seed jars exhibit evidence for thermal exposure in the form of soot and charred organic material on the exterior surfaces. Thickened lips are most common (50%) followed by squared (33%) and round (17%). Decoration is limited to two vessels with double rows of punctates on the exterior surface just below the lip. Orifice diameter could be estimated for only two of the seed jars that have diameters of 10 cm and 14 cm.

The only other vessel form identified in the assemblage is one example of stumpware. The small fragment is tempered with grog and has a cordmarked exterior surface. The lip is thickened and does not exhibit cordmarks. There is no decoration or evidence for thermal exposure.

LITHICS

The lithic assemblage recovered from test unit and feature excavations at Washausen is comprised of 1,487 groundstone and chipped–stone items weighing 7,575.6 g. Raw materials include diabase, sandstone, and a variety of local and non-local chert types.

Groundstone debris and tools comprise 20 percent of the lithic assemblage by count but 57 percent by weight. FCR is predominantly limestone (Table 6.46). Chert is the second most common raw material for FCR, representing 21 percent of the assemblage. It is unusual for chert to comprise such a large proportion of an FCR assemblage. Most of the items identified as chert FCR are low quality chert that at times is more similar to limestone. This material likely derives from an unidentified local source. Igneous/metamorphic rock is rarely used as FCR, representing less than one percent of the assemblage by weight.

The 63 groundstone tools, minerals, and unmodified cobbles and pebbles comprise over one-third of the lithic assemblage by weight (Table 6.47). This is largely due to the two complete celts recovered from the floor of Feature 2 (Table

6.48). The first celt placed on the floor (pp3) is smaller with a maximum length of 15.5 cm weighing 797.4 g (Figure 6.37a). It is formed from fine–grained diabase likely obtained from the St. Francois Mountains of southeast Missouri. The celt appears to have been broken and reworked into its current form. The entire surface with the exception of the bit is pecked but not polished. Small notches in the bit indicate the celt was used. A small piece of the corner on the distal end is broken.

PP1 was placed directly on top of PP3 on the structure floor (Figure 6.37b). This celt is larger with a maximum length of 20.2 cm and weight over 1 kg. Nearly the entire surface of the celt is polished although the majority of the distal end is not. A dark line that spans the width approximately one-third of the length from the distal end is likely the result of hafting and use. Small notches in the bit also indicate the item was used. A small, square area on the distal end is darker than the surrounding, ground surface. It is unclear if this is intentional. PP1 has a broken corner on the distal end similar to that observed on PP3.

The similarity between the celts in terms of width and thickness further supports the notion that PP3 was broken, probably near the point of hafting, and was reworked. The size and shape of both celts are more similar to Mississippian tools than those from Terminal Late Woodland occupations (Koldehoff and Wilson 2011). In fact, both celts are longer than even the longest specimen from the Lindeman phase component at Range (Kelly et al. 2007 Table 14.10). In terms of size, both celts are more similar to Lohmann phase specimens from Cahokia (Pauketat 1998a Table 8.10). A single basalt flake that likely resulted from celt production was recovered from the plowzone in TU 6 above Feature 1.

The remaining groundstone tools include two hammerstones, six flat abraders, and five slot abraders (Figure 6.38). Both hammerstones were recovered from Feature 1 and are made from small, granitic cobbles. Neither is heavily used. The flat abraders are made from locally available sandstone and range in size from very small (less than 4 g) to large (194.4 g). Most derive from the upper fill zones of the east half of Feature1. Several examples are heat altered and fragmentary suggesting reuse as FCR. The largest specimen may have been used to sharpen celts. The slot abraders have one to two shallow to deep U-shaped grooves in one or more surfaces. Similar to the flat abraders, most are fragmentary and exhibit heat alteration suggesting reuse as FCR.

Unmodified non-chert lithic materials include several small pieces of minerals along with Missouri River clinker, cobbles, and pebbles. Limonite and hematite are the only minerals identified. All specimens are very small (<1 g). Two small fragments of Missouri River clinker were recovered from Feature 2. Although sometimes used as slot abraders, these two items do not evidence any such use. The single cobble and 34 pebbles were not modified in any way and represent incidental inclusions or manuports.

The chipped–stone assemblage includes formal and informal tools as well as debitage with at least eight local and non-local raw materials present (Table 6.49). Debitage includes unutilized flakes and shatter. Cortex is not present on most specimens with only five percent exhibiting any amount of cortex (Table 6.50). The majority of these have cortex on less than half of the flake surface. Cortex is more commonly encountered on locally available chert, in particular, Ste. Genevieve.

However, the debitage assemblage is dominated by local and Crescent Hills varieties of Burlington chert which together comprise nearly 40 percent of the assemblage. Four percent of the debitage derives from unidentifiable chert sources. Most of these are probably lower quality locally available materials. Mill Creek chert is the next most prevalent chert type in terms of count and weight representing only three percent of the assemblage. Local raw materials including Ste. Genevieve, Salem, Fern Glen, and Saint Louis chert complete the assemblage.

Chipped–stone tools include expedient flake tools and cores as well as formal bifacial tools. All 22 of the flake tools are made from Burlington chert. They exhibit use associated with generalized cutting and scraping. Nearly half of the flake tools derive from Feature 1 basin fill. Forty-six informal cores including bipolar, freehand, and tested cobble cores were identified in the assemblage. The vast majority are small bipolar cores made from Burlington, Ste. Genevieve, and Salem chert types. Freehand cores are second in prevalence and tend to be larger. The chert types utilized include equal numbers of Burlington, Ste. Genevieve, and Salem. Tested cobbles are the least common core type with Ste. Genevieve, Grover Gravel, and indeterminate chert types associated with this type of core. The pattern of chert utilization for cores indicates non-local raw materials (i.e., Burlington chert) were utilized to the full extent while locally available materials were not as intensively used as indicated by the prevalence of local materials that were only tested or were disposed of even though they could have been used as bipolar cores to extract more flakes.

Formal bifacially worked tools include a single projectile point and adze fragment as well as several polished re-sharpening flakes that were struck from adzes and hoes. A small but nearly complete corner–notched arrow point was recovered from the upper fill zones of the Feature two basin. It is made from a Burlington chert flake and measure 2.6 cm in length. It is similar to Koster points recovered from Lindeman phase contexts at the Range site (Kelly et al. 2007 Plate 14.1). The adze fragment is a very small medial fragment made from Burlington chert. It appears to have been burned due to the discoloration of the chert and pot lids evident on the surface. The low–gloss polished surface, curved shape in bisection, and faint flake scars on the surface indicate it was originally an adze.

There are only two flakes with low–gloss polish that may be associated with re-sharpening adzes. Both derive from Feature 1 with both Burlington and Ste. Genevieve chert represented. Twenty-nine flakes with high–gloss polish were recovered from Features 1 and 2 as well as one each from TUs 5, 6, and 7. Nearly 80 percent of the high–gloss flakes were recovered from Feature 1. All of them derive from Mill Creek excavating tools although such tools are absent from the assemblage.

There is a clear preference for Burlington chert in both the debitage and tool assemblages (Figure 6.39). Mill Creek is more commonly associated with tools in the form of high–gloss polished flakes that likely derive from hoes. Local chert varieties including Ste. Genevieve, Salem, Fern Glen, and St. Louis chert are not common among debitage or tools in comparison to Burlington.

ETHNOBOTANICAL AND FAUNAL REMAINS[2]

Ethnobotanical and faunal remains were collected by hand and in flotation samples obtained from Features 1 and 2 (Table 6.51). Wood fragments were not common in the sample although four species from both the uplands and floodplain were identified. A very small amount of fragmentary nutshell was recovered. These fragments indicate that black walnut and hickory were exploited but not intensively. Seeds are the most common type of botanical material identified in the assemblage. Eastern Complex starchy cultigens are the most prevalent with over 85 percent of the seeds corresponding to little barley, maygrass, and only a few specimens of chenopod and erect knotweed (Table 6.52). Maize is present in very low quantities with only 11 cupule and kernel fragments recovered from both features.

Seeds from plants that are potential food or medicinal resources include a single seed each of tobacco, morning glory, and black nightshade. The tobacco and nightshade derive from Feature 1 while the morning glory was recovered from Feature 2. Non-domesticates include bluestem/beardgrass, panic grass/switch grass, and unidentified grasses that are likely incidental inclusions associated with thatching. Giant cane stems, monocot stems, and unidentified grasses found in association with small diameter sticks of willow or poplar wood on the floor of Feature 1 are the remnants of burned thatching.

The faunal assemblage is similarly small with only 40 pieces of bone recovered from both structures and the midden fill in TU 7(Table 6.53). Most fragments are unidentifiable mammals. A hand–collected mandible and tooth

[2] Botanical remains analyzed by Kathryn E. Parker and faunal remains analyzed by Steven Kuehn.

fragment from Feature 2 derive from a young adult white–tailed deer. Nine bones derive from large–sized birds including Canada goose. Aquatic remains include six fish bones from unidentified species and a fragment of an unidentified turtle plastron or carapace. The remaining 12 items are unidentifiable to the class level. The remains from the midden fill in TU7 are from a large–sized mammal, possibly deer.

MORRISON SITE MATERIAL REMAINS

Over 1,700 ceramic and lithic items weighing a total of 10.4 kg were recovered from the plowzone and features at the Morrison site. All of the materials are consistent with an Edelhardt phase occupation with the exception of a single seed jar rim that may derive from a Lohmann phase revisit to the site area.

CERAMICS

In total, 1,118 ceramic body sherds and vessel segments were recovered from feature contexts at the Morrison site during the 1994 excavations. Of the 1,068 body sherds weighing 4,465.0 g recovered from 13 features, over 40 percent (by count) were tempered with grog (Table 6.54, Figure 6.40.). The second most frequent temper is limestone comprising 28 percent of the assemblage. Shell is less common (20%) and grit is rare (5%). Mixed temper is limited to a combination of grit and grog and is slightly more prevalent than grit alone (6%).

Surface treatments include plain, slipped, and cordmarked surfaces with some too eroded to identify. More than half of the body sherds have cordmarked exterior surfaces. Plain surfaces are the second most prevalent surface treatment representing 34 percent of the assemblage by count. Slipped surfaces represent only 14 percent of the assemblage. Other surface treatments (i.e., cordmarked/slipped or eroded) have a combined total of less than one percent of the assemblage.

Fifty vessel segments weighing 1,455.6 g were recovered from 10 features. Although the assemblage is relatively small, certain trends are identifiable and can be used to determine when the site was occupied. The most common tempering agent is grog (35%). Grit is the least common temper comprising 12 percent of the assemblage. There are roughly equal amounts of limestone and shell temper. Mixed tempers are less common with a total of seven vessels including three with grit and grog and one each of shell and grog, grog and shell, grog with a small proportion of grit, and limestone and grog. Exterior surface treatments include cordmarked, plain, plain and cordmarked, red slip, smoothed over cordmarked, and white and red slip. Interior surfaces are mostly plain but red–slipped interiors are also present. Decoration includes impressed or notched lips, lugs, and lip appliqués.

Jars are the most common and ubiquitous vessel form with a total of 41 jars recovered from 10 features. Although grog is also the most common tempering agent, shell and grit are more common among jars than other vessel types. Limestone is less prevalent, representing only 15 percent of jars. Mixed temper is also more common among jars with five vessels comprising 12 percent of the jars. The higher proportion of grit and mixed tempers is directly related to the presence of jars produced in the uplands northeast of the Morrison site as indicated by the co-occurrence of grit or grit mixed with grog temper and Madison County Shale pastes.

Most jars have inslanting rims while vertical and outslanted or flared rim forms are present in roughly equal numbers. Squared lips predominate comprising 41 percent of jar lip forms. Extruded and flattened lips are the next most common form. Only a few jars exhibit extruded, thickened, or exterior beveled lips with these forms present on only two jars each. Rounded, folded, and rolled lips are completely absent from the jar assemblage. Only two vessel segments include identifiable shoulders with both jars exhibiting rounded shoulders.

Seventy-three percent of the jars (n = 30) exhibit plain exterior surfaces while three others have plain surfaces with patches of red slip or a plain neck and cordmarked shoulder. Of the six remaining jars, five have red–slipped exterior surfaces while one has a smoothed over cordmarked exterior. None of the jars has a cordmarked neck. Nine jars exhibit red–slipped interior and lip surfaces while all of the other jars have plain interiors. One jar has plain exterior and lip surfaces but a red–slipped interior.

Four shell–tempered jars with plain or plain with patches of red slip exterior surfaces and red–slipped lip and interior surfaces correspond to Varney Red–Filmed jars or local variants of such vessels. One of these vessels (V. 11–3) is a small jar with vertical bands of red slip on the exterior surface separated by plain or possibly white–slipped vertical bands (Figure 6.41a). All jars exhibiting red slip were tempered with either shell or limestone indicating the presence of foreign vessels (i.e., Varney Red Filmed) and vessels produced in the southern portion of the American Bottom (i.e., Monks Mound Red).

More than one-third of the jars exhibit decoration in the form of modifications of the lip. Most decoration is located on the lip exterior and takes the form of notches or lip lugs. Six jars have notched exterior lips or notched appliqués applied to the lip exterior. One jar has notches formed on the superior lip surface. There does not appear to be any correspondence between decoration and surface treatment, rim or lip form, or temper.

There appears to be a significant degree of variety in terms of vessel size as indicated by orifice diameter (Figure 6.42). Of the 28 jars with approximate orifice diameter measures, the majority fall within the 21 to 25 cm range. However, only seven jars fall within this range. There is an approximately normal distribution around this size range with the exception of very small jars with diameters ranging from six to 10 cm. Very large jars are absent from the assemblage.

The metric data and calculated ratios are contradictory in that some correspond to trends evident in data derived from Cahokia while others do not (Pauketat 1998a). Lip bevel values are within the expected range for the Edelhardt phase. Rim curvature is higher than expected and is likely related to the presence of Varney Red Filmed jars in the assemblage. Lip protrusion values are lower than expected for the Edelhardt phase but are closer to values evident for the Lohmann phase at Cahokia. These discrepancies may be related to the smaller size of the Morrison site assemblage.

Bowls are the second most common vessel form comprising 14 percent of the vessel assemblage. Limestone is the most common tempering agent with three bowls tempered with only limestone. Grog–tempered bowls are limited to two vessels although two other bowls are tempered with a mix of grog and limestone and grog and shell. None of the bowls is tempered with grit while shell temper is only present in combination with grog. Rim forms include three bowls with outslanted rims, two with vertical rims, and two with inslanted rims. Lip forms are limited to four squared, two flattened, and one exterior beveled.

Plain, cordmarked, and red–slipped exterior surfaces are present in approximately equal numbers (2, 3, and 2, respectively). Two bowls exhibit red–slipped interior surfaces while the remaining five vessels have plain interiors. Only one bowl includes decoration in the form of a lug on the lip exterior. The two limestone–tempered bowls with red–slipped exterior and interior surfaces likely represent Monks Mound Red vessels.

Orifice diameter ranges widely from approximately 6 cm to 46 cm. Although the metric data from Morrison suggest a bimodal distribution, there is only one bowl that can be considered large (greater than 40 cm diameter). Six of the seven bowls fall within the smaller vessel size distribution (i.e., less than 35 cm). One bowl appears to be a portion of a very small bowl with approximate orifice diameter of only 6 cm. This bowl represents a miniature vessel or the fragment is too small to obtain an accurate measure.

STUMPWARE AND NON-VESSEL FRAGMENTS

Stumpware is represented by one rim and two body fragments. All three are tempered with grog and have cordmarked exterior surfaces. Rim form could not be determined for any of the fragments. Three rims were too small to accurately obtain measurements or to determine vessel, rim, and lip form. Two of the rims might represent jars. One is tempered with shell and has red–slipped exterior and interior surfaces corresponding to a Varney Red Filmed vessel. The other is tempered with a mixture of grit and grog and has plain interior and exterior surfaces and Madison County Shale paste. A limestone–tempered vessel with red–slipped interior and exterior surfaces might be an example of a Monks Mound Red bowl. The final pottery fragment is a limestone–tempered, red–slipped effigy lug that likely derives from a Monks Mound Red bowl. It appears to represent the head of an animal with a pointed snout, possibly a dog or bear.

LOHMANN PHASE WHITE-ON-RED SEED JAR

Only one vessel could be classified as a seed jar, and it appears to be the only non-Edelhardt phase vessel fragment. It is tempered with shell and has an interior beveled lip. The orifice diameter of 8 cm is small but falls within the range evident at Cahokia (Pauketat 1998). The exterior surface is white and red–slipped with two separate rows of punctates, one encircling the orifice and the other forming an arc on the neck (Figure 6.41b). Examples of similar vessels have been recovered from Lohmann phase contexts at Cahokia in the sub-Mound 51 feasting pit and the ICT–II as well as at Aztalan, Wisconsin, where they are called Cahokia White on Red or Crawfish White on Red (Holley 1989; Pauketat et al. 2002; Richards 2007). The example from the Morrison site derives from the upper levels of Feature 5, a possible midden. As this sherd was not found in association with early Edelhardt phase remains and is securely dated to the Lohmann phase, it appears to indicate a slightly later Mississippian component at the site. Given the ritual associations elsewhere, especially in the sub-Mound 51 pit, it may indicate a ritual, ephemeral re-use of the site.

LITHICS

The lithic assemblage recovered during the 1994 excavations at the Morrison site is comprised of 621 lithic artifacts with a total weight of 4,446.9 grams. Fourteen raw material types were identified including chert, groundstone, and minerals.

GROUNDSTONE TOOLS AND DEBRIS

Groundstone, including tools and debris, comprises 16 percent of the lithic assemblage by count and 54 percent by weight. The FCR and unmodified rock assemblage is dominated by limestone which comprises 58 percent by count and 88 percent by weight (Table 6.55). Limestone is not available within the immediate area suggesting the residents traveled to the nearest limestone outcrops located along the bluff edge to the east. Sandstone is the next most prevalent raw material but only represents 16 percent by count and 8 percent by weight. The remainder of the assemblage is comprised of a few small pieces of siltstone, silicate, quartzite, crystalline rock, and an unidentified material.

Groundstone tools are limited to basalt flakes, informal tools, and unmodified minerals (Table 6.56). Four basalt flakes were recovered from Features 2 and 5 as well as the plowzone. The basalt derives from the St. Francois Mountains of Missouri

(Pauketat 1994; Pauketat and Alt 2004). The flakes represent small thinning flakes associated with small scale celt production or maintenance (Pauketat and Alt 2004). Two sandstone slot abraders were recovered from Feature 3 and the plowzone. Two hammerstones complete the informal groundstone tool assemblage. Three unmodified cobbles represent manuports. One small fragment of unmodified hematite is the only mineral recovered from the excavations.

CHIPPED–STONE TOOLS AND DEBRIS

The chipped–stone assemblage includes formal tools, informal tools, and debitage associated with the production, use, and maintenance of tools. Debitage and chert debris are limited to flake and block shatter and unmodified and heat–altered chert cobbles (Table 6.57). Burlington chert is the dominant raw material for debitage followed distantly by Mill Creek and indeterminate chert types (Table 6.58). Ste. Genevieve and Salem are present in very small quantities.

Informal chipped–stone tools include flake tools with high– and low–angle usewear and flakes with retouched edges (Table 6.59). Formal tools include a flake from a Burlington chert biface, Mill Creek hoe flakes with high–gloss polish, Mill Creek hoe fragments, and a perforator fashioned from Mill Creek chert. Slight concentrations of chipped–stone tools in Feature 4 and lithic debris in Feature 3 suggest the area immediately north of the structure was the site of lithic activity including tool maintenance. The chipped–stone tools were predominantly fashioned from nonlocal Burlington and Mill Creek chert with only a few flake tools made from locally available Ste. Genevieve chert.

DISCUSSION

The data concerning the material remains presented above provide new information concerning the material practices of late Terminal Late Woodland and early Mississippian residents of the southern American Bottom and on the outskirts of Cahokia. In this section I will discuss trends and diversity in ceramic and lithic technology, resource exploitation, and subsistence practices identified in the assemblages from the five sites. Comparisons will be drawn between the assemblages from TLW2 occupations at the Fish Lake, Divers, Washausen, and Morrison sites and the Lohmann phase assemblages at Fish Lake, Divers, Peiper, and Washausen in an effort to identify evidence for the Mississippian Transition in material remains.

CERAMIC MATERIALS

The vessel assemblages from TLW2 contexts are in general consistent with previously identified characteristics in terms of tempering material, vessel forms, surface treatments, and decorative techniques (Figure 6.42). Limestone temper is the dominant material used at the southern sites while grog dominates in the north. Shell temper is present within the Lindeman and Edelhardt phase assemblages but in varying quantities. At Morrison, vessels tempered with grit, limestone, and shell comprise significant portions of the assemblage. In contrast, the vessel assemblages from Lindeman phase contexts in the southern sites include a very small proportion of shell or grit temper. The well–mixed assemblage at Morrison may indicate the residents were more connected with people living throughout the region including the uplands to the east and residents of the southern American Bottom.

Surface treatments during the TLW2 are quite varied with significant portions of the assemblages comprised of cordmarked, red–slipped, and plain exterior surfaces. At Fish Lake, there is an identifiable decrease in cordmarked surfaces from being the dominant surface treatment in the George Reeves occupation to complete absence in the Lohmann phase assemblage. Plain, plain–cordmarked, and red–slipped exterior surfaces become more common over the course of the Lindeman phase. In fact, red–slipped surfaces increase in frequency from nearly absent in the George Reeves phase to present on 40 percent of vessels at the end of the Lindeman phase occupation at Fish Lake. Red slip is strongly associated with small bowls, seed jars, and bottles. At Morrison, plain surfaces predominate to a much higher degree than contemporary assemblages in the southern bottoms while vessels with red–slipped surfaces are not as common. This is likely related to the fewer bowls and seed jars in the assemblage.

Jars and bowls are the only identified vessels for the George Reeves occupation at Fish Lake. Jars decrease in frequency during the Lindeman phase while bowls become more common, especially small Monks Mound Red bowls. New vessel forms associated with the Lindeman occupations include seed jars and short neck water bottles. Seed jars are commonly recovered from TLW2 contexts but short–neck water bottles are rare. Several hooded water bottles are associated with this phase but thus far short neck water bottles are limited to the Divers and Fish

Lake sites. The close proximity of the sites suggests these vessels may be innovations associated with this specific locality along the east bank of Fish Lake.

Stumpware is commonly recovered from Terminal Late Woodland contexts. However, this vessel form may be less common among southern American Bottom sites located south of Pulcher. Stumpware is included in the Divers site vessel assemblage but is absent or nearly absent from Fish Lake and Washausen. The Marge and Stemler Bluff sites are also located south of Pulcher and stumpware is absent as well (Fortier 1996; Walz et al. 1997). In the case of Washausen, this absence may be due to the small sample size (two structures). However, the entire Lindeman phase occupations at Fish Lake, Marge, and Stemler Bluff were exposed and investigated suggesting this pattern is not simply a sampling issue.

None of the George Reeves phase bowls at Fish Lake are decorated and jar decoration is limited to lip lugs and notches. The Lindeman phase assemblages display a wide range of decorative techniques predominantly related to the modification of the lip and/or vessel orifice. Lip embellishments include lugs, tabs, appliqués, and notches. Modifications to the vessel orifice is predominantly associated with Monks Mound Red bowls. These include spouts, pinched rims, and large effigy appliqués affixed to the rim or lip. Vessel orifice modifications and effigies transform the shape of the vessel. Some interpret these shapes as gourd effigies. Vessel decoration becomes more common on jars and bowls in most of the Lindeman phase assemblages with the exception of the Divers site where a small proportion of the vessels exhibit decoration. Several seed jars also exhibit decoration in the form of punctates or perforations. Another less common type of decoration is incised or trailed lines. These lines have been identified on jars, bowls, and sherds from broken vessels but they are rare.

Most TLW2 jars are inslanted or vertical with clearly defined necks and rounded shoulders. Everted and flared jar rims are more common in the Lindeman phase compared to earlier assemblages. Lip forms tend to be flattened or squared. Extruded lips are more common during the Lindeman phase than George Reeves phase while rolled lips are virtually absent. Many flared or everted jars exhibit notched exterior lips.

Several types of non-local vessels are evident in the TLW2 assemblages. These include shell–tempered red–slipped vessels that appear to be Varney Red Filmed jars from southeastern Missouri or locally produced versions (Lynott et al. 2000). There are also a few jars made with Madison County Shale paste that ultimately derive from the northern uplands. Distinctive Yankeetown pottery from southwestern Indianan was identified in the surface collection at the Morrison site. The presence of these various vessels at sites in both the northern and southern floodplain indicate a certain degree of mobility within the region and farther afield.

Ceramic objects and worked sherds are common among Lindeman phase features (Table 6.60). Objects include tempered or untempered clay formed into pipes, discoidals, and clay balls. Only a few of these objects were recovered from the sites in the analysis and all three are present only at Divers. Ceramic pipes and discoidals have been recovered from Late Woodland contexts beginning in the Patrick phase and throughout the Terminal Late Woodland. Ceramic disks formed by grinding the edges of pottery sherds are present in the assemblages from Fish

Lake, Divers, and Washausen. At Divers and Washausen, there appears to be concentrations of disks within a single structure basin. Disks include possible spindle whorls and sieves that have drilled holes through the sherd. Most appear to have been drilled after grinding the disk into shape although there is one example where the sherd already had a perforation from the original formation of the vessel.

Lohmann phase ceramic assemblages were recovered from Fish Lake, Divers, Peiper, and Washausen. In these assemblages, shell temper is present in a larger percentage of the body sherds and vessels than is evident in the Lindeman phase assemblages. However, Lohmann phase residents in the southern American Bottom region continued to rely on limestone temper for most of the vessels. Most of the assemblages contain grog–tempered vessels as well but many of these likely derive from earlier occupations and some are nonlocal vessels including Coles Creek bowls.

Vessel surfaces are predominantly plain or slipped. Cordmarked surfaces are relatively rare or completely absent. Red–slipped vessels include seed jars and Monks Mound Red bowls. Some Lohmann phase jars exhibit a red–slipped interior rim treatment but very few have the red–slipped exterior identified in the Lindeman assemblages.

Jars dominate most assemblages followed by bowls and seed jars. Feature 2 from Washausen is an exception to this pattern where only three jar rims were recovered. Bottles and stumpware are absent from all of the Lohmann phase assemblages in this sample. Seed jars are relatively common. The beaker is a new type of vessel identified in the Lohmann assemblage at Divers.

Everted and flared jar rims are more common in the Lohmann phase. Decoration is less common at all of the sites with the exception of Washausen. Decoration is present on jars, bowls, and seed jars. Jars are less frequently decorated while more bowls exhibit decoration in the Lohmann assemblages.

Fewer ceramic objects and disks were recovered from Lohmann phase contexts. These items are limited to two pipe fragments from Divers and Peiper and three sherd disks from Divers and Washausen. Ceramic discoidals are absent from all of the assemblages.

LITHIC MATERIALS

The lithic assemblages provide information concerning tool production and maintenance, agricultural and gaming activities, ritual, and resource exploitation. Regardless of site location or period of occupation, the FCR assemblages from all five sites are dominated by limestone with sandstone most often second in frequency. The high incidence of limestone may be expected for sites located in the southern American Bottom because the resource is readily available along the bluffs. However, the Morrison site is located over 7 km west of the loess–covered bluffs suggesting limestone was transported to the site in large quantities, possibly via local waterways. Similarly, sandstone is available in the uplands east of all of the floodplain sites but not in large quantities within the immediate area.

Celts are frequently recovered from Terminal Late Woodland and Mississippian contexts within the region. The presence of celts is suggestive of woodworking or land–clearing activities. Celts and/or celt flakes were recovered from all of the sites except Peiper (Table 6.61). They were recovered from Edelhardt, Lindeman, and Lohmann phase contexts at Morrison, Fish Lake, Divers, and Washausen. The flakes from Fish Lake are indicative of celt maintenance rather than manufacture. The quantity and distribution of flakes on the surface of the Washausen site are suggestive of celt production although it is unclear whether it occurred during the Lindeman or Lohmann phase occupation. The presence of two complete celts within Feature 2 that are consistent with other Mississippian examples seems to indicate celt production is more likely associated with the Lohmann phase occupation. The spud fragment from a George Reeves phase structure is unique and suggestive of a high status individual and possible connections to Jersey Bluff groups located near the confluence of the Mississippi and Illinois rivers during the beginning of the TLW2.

Chert hammers are also indicative of celt production and maintenance. The minimal presence in Lindeman phase contexts at Fish Lake and Divers sites may provide evidence for widespread celt re-working rather than manufacture. The absence from Lohmann phase features may indicate that celt production was limited to a few specialists. The high quality of the celts made from St. Francois diabase recovered from Feature 2 at Washausen and the prevalence of celt debitage, chert hammers, and flat abraders in the surface collection may indicate that Washausen was one locale where celt production occurred during the Lohmann phase.

Discoidals made from granitic rock, sandstone, quartzite, or limestone are often recovered from Terminal Late Woodland and Mississippian contexts.

Mississippian discoidals tend to be made from more durable or finer grade materials (diabase, quartzite) and are finer quality whereas Terminal Late Woodland discoidals include those made from lower quality and more readily available raw materials including limestone and clay. Lithic discoidals were recovered from Lindeman and Lohmann phase contexts at the Divers site but are absent from the other sites. Both high and low quality discoidals are present in both assemblages. However, both of the Lindeman phase discoidals are of the Jersey Bluff type while at least one of the three discoidals from Lohmann phase features is a finely made Cahokia style discoidal made from sandstone. The presence of discoidals suggests gaming activities associated with the historically documented chunkey game occurred during the Lindeman and Lohmann phase occupations.

Flat sandstone abraders were recovered from all of the sites. These items may be associated with celt production and maintenance or the production of pigments from minerals. Flat abraders are more common among late Terminal Late Woodland features than the Mississippian features. Many are small and a few exhibit red staining on the worked surface suggestive of pigment production. Minerals used to produce red (hematite or limonite) or white (galena) pigment were recovered from most of the sites although few of these items exhibit any evidence they were ground. Hematite and limonite are most commonly recovered. Galena is limited to the Lohmann phase occupation at the Divers site.

Chipped–stone tools include hoe and adze fragments and their associated sharpening flakes, points, microblade technology, chert hammers, and flake tools. The hoe flakes indicate the residents were involved with agricultural activities associated with the cultivation of maize and Eastern Complex grains. Microblade technology is first noted during the Lohmann phase and is typically associated with shell bead manufacture.

The preference for Burlington chert and subordinate use of locally available chert types is expected for Terminal Late Woodland as well as Mississippian assemblages (Kelly et al. 1984; Milner et al. 1984). This holds true for most of the sites in the current study (Figure 6.43). The higher frequency of Burlington chert in Lohmann phase contexts compared to earlier assemblages has been noted throughout the region and may indicate centralized control of the distribution of this nonlocal resource. Mill Creek chert is associated with excavating tools (i.e., hoes) in the TLW2 and Lohmann phase assemblages. Hoe fragments and flakes were frequently reused as cores and flake tools.

ETHNOBOTANICAL, FAUNAL, AND HUMAN REMAINS

Data concerning ethnobotanical and faunal remains are available for the Fish Lake site and Washausen. The wood recovered from Fish Lake includes both bottomland and upland species. Floodplain species dominate the George Reeves and Lohmann phase assemblages but upland species are well represented during the Lindeman phase. Red cedar, an upland species with ritual associations, is present only in Lindeman phase features. At Washausen, upland species of oak predominate in Feature 1 and are the only identified wood types present in Feature 2.

Seeds from Eastern Complex cultigens comprise the largest portion of identified seeds in all of the assemblages. Other seeds with possible dietary, medicinal, or ritual applications include black nightshade, tobacco, and morning glory. Nightshade seeds were recovered from George Reeves and Lindeman phase contexts at Fish Lake as well as Feature 1 at Washausen. A single tobacco seed was recovered from Feature 1 as well. The only morning glory seed is from Feature 2 at Washausen.

Maize is present in small quantities at both sites. Most samples include both kernel and cob fragments (cupules and glumes) although only a few small kernels were recovered from Feature 1 at Washausen and the Lohmann phase pit at Fish Lake. Maize ubiquity varies widely, identified in between 27 percent and 55 percent of samples from features at Fish Lake. The kernel to cob ratio decreases over the course of the TLW2 period at Fish Lake from a high of 1.8 during the George Reeves phase down to 0.7 in the southern Lindeman cluster. The kernel to cob ratio for Feature 2 at Washausen is high with a value of 3.5 but this may be the result of the small sample size.

Faunal remains from Fish Lake and Washausen indicate the exploitation of local wild resources and as well as deer from the uplands during the TLW2 and Lohmann occupations. The largest sample is from Lindeman phase contexts at Fish Lake were locally available aquatic resources including fish, turtle, shell, and waterfowl comprised the bulk of the assemblage indicating a focus on the immediate environment for faunal resources. Worked bone including deer bone awls and antler tine billets indicate the use of bone in clothing and chipped–stone tool production. The limited remains from Lohmann phase contexts provide little insight concerning faunal exploitation during this period at these sites.

Isolated human remains were encountered in Lindeman phase contexts at the Fish Lake site. The inclusion of fragmented human remains in midden fill has been noted at contemporary sites throughout the American Bottom region (Hedman 2007; Holly et al. 2001; Milner 1984a). This may indicate that the dead were left exposed and allowed to decompose either on the ground surface, on scaffolding, or possibly in trees (Emerson et al. 2003a; Hargrave and Hedman 2001). Thus far, no formal graves or bounded cemeteries have been identified prior to the Mississippian period. The inclusion of an isolated human cranial fragment with habitation debris may indicate the curation of certain skeletal elements, possibly from an important ancestral figure. Curation in this sense provides a physical connection to the past (Fowler 2004). The disposal in midden fill may indicate the connection to the ancestral figure lost its potency. A formal cemetery including several grave pits located a short distance from the Lohmann phase occupation at Fish Lake may be contemporaneous with the Mississippian occupation. The shift from allowing the dead to decompose naturally to an extended burial program that sometimes included burial, exhumation, and re-burial indicates changes in ritual practices including the way ancestors and communities were viewed.

MATERIAL REMAINS AND CONSTRUCTING THE CAHOKIA COMMUNITY

The TLW2 George Reeves, Lindeman, and Edelhardt phase assemblages are characterized by a great deal of diversity within and between sites and dependence upon local resources. In terms of ceramic vessels, the varying proportions of vessel types, temper frequency, and surface treatments may be related to the existence of localized communities and intra-regional interaction. Potters also appear to be experimenting with vessel construction, material, and decoration particularly during the Lindeman and Edelhardt phases. The high percentage of decorative Monks Mound Red bows may be related to increased communal feasting.

Chert resources include a variety of local types including Ste. Genevieve and Salem chert as well as Crescent Hills Burlington and extra–regional Mill Creek chert. Burlington is dominant in tool and debitage assemblages but Mill Creek is restricted to agricultural implements that likely derive from southern Illinois. Formal groundstone tools including celts and discoidals are typically made from locally available materials including glacial cobbles or in the case of discoidals, sandstone, limestone, and clay.

Ethnobotanical and faunal data indicate TLW2 residents relied upon locally available wild resources in addition to cultivated maize and Eastern Complex grains and a mixture of local and upland woods. The presence of red cedar wood and seeds from possibly medicinal or hallucinogenic seeds is suggestive of ritual activity. The curation of human remains and their presence within habitation areas may indicate an actively asserted connection to the past.

The Lohmann phase ceramic and lithic assemblages are diverse as well but to a lesser extent, particularly in terms of resource utilization. Vessels appear to be less diverse in terms of temper and less elaborately decorated. Red slip is less common on jars and when it is present it is typically located on the rim interior. The continued use of limestone temper in the southern portion of the region suggests there may have been an effort to maintain local communities through shared material culture. Although lithic resource utilization includes local raw materials as well as nonlocal chert resources, formal tools are made with a limited range of raw materials of non-local materials.

The decrease in diversity (or increase in standardization) may be indicative of changing community identities and power relations occurring throughout the American Bottom region. Region–wide similarities in the material culture including the types of vessels, types of lithic raw materials, formal lithic tools, and subsistence and ritual activity provide further support for the existence of a Cahokian imagined community and regionally integrated polity that was created at the beginning of the Mississippian period. Similarly, these changes in material culture are indicative of alterations in daily and ritual practices including tool production, foodways, and mortuary rituals. In the following chapter, the results from this analysis will be compared with contemporary occupations throughout the region in order to address the degree to which these practices changed during the Mississippian Transition and how these changes relate to the level of integration and existence of shared community identities during the Lohmann phase.

FIGURES

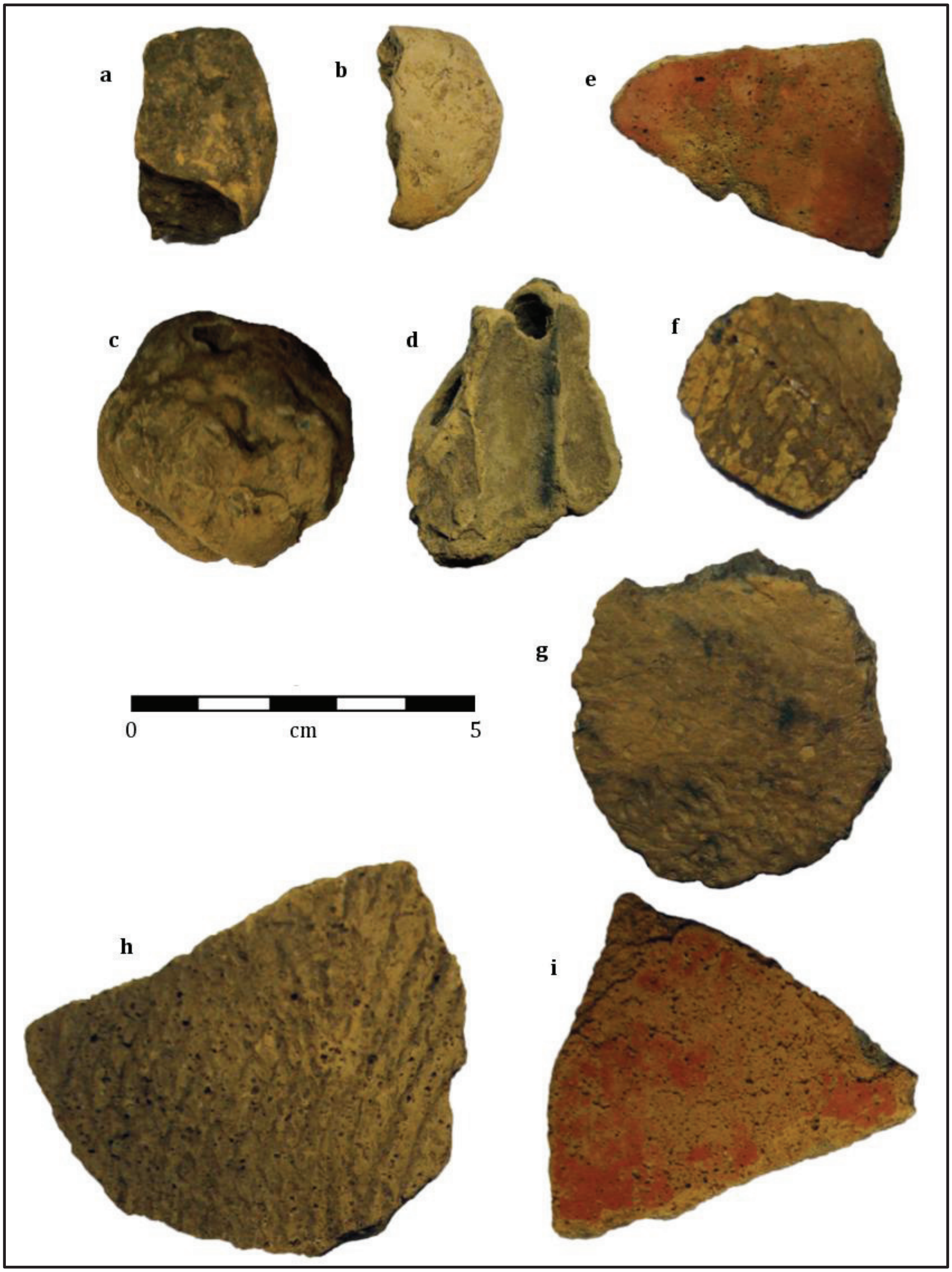
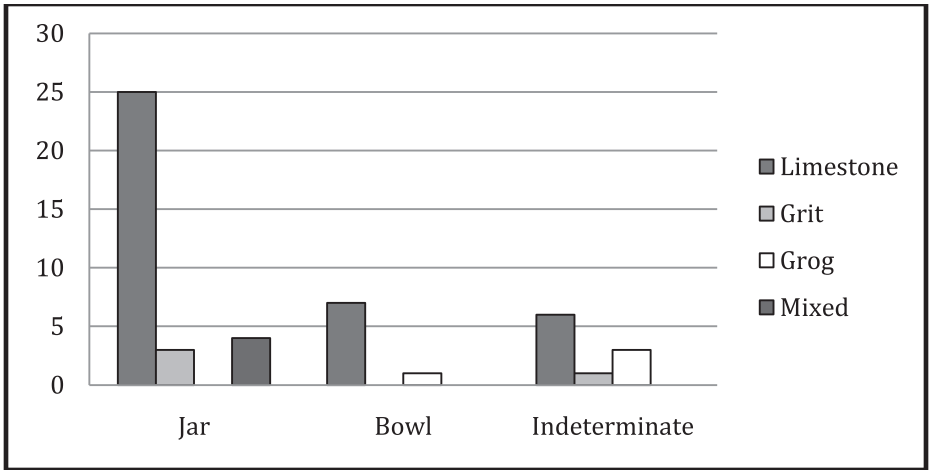
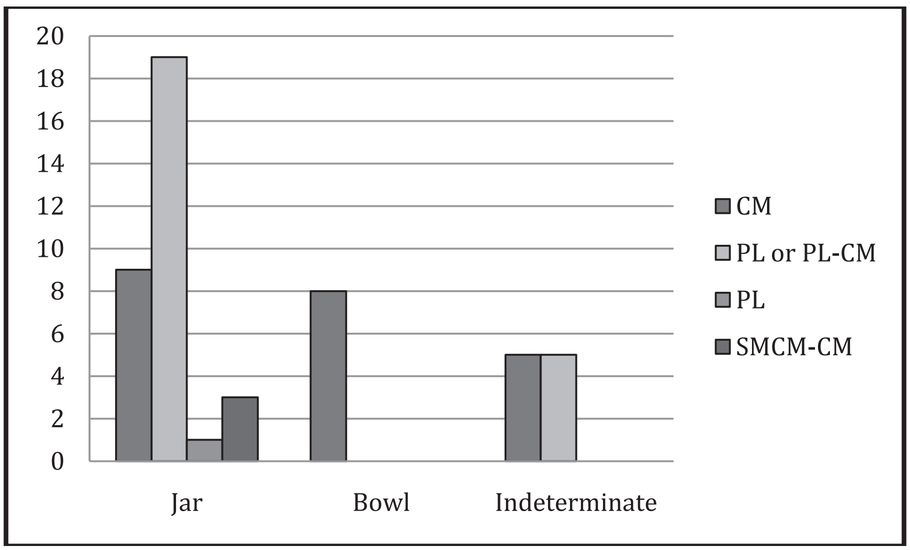


Figure 6.1. Ceramic Objects and Worked Sherds from Terminal Late Woodland Features.



a)



b)

Figure 6.2. George Reeves Vessel Tempers and Surface Treatments.

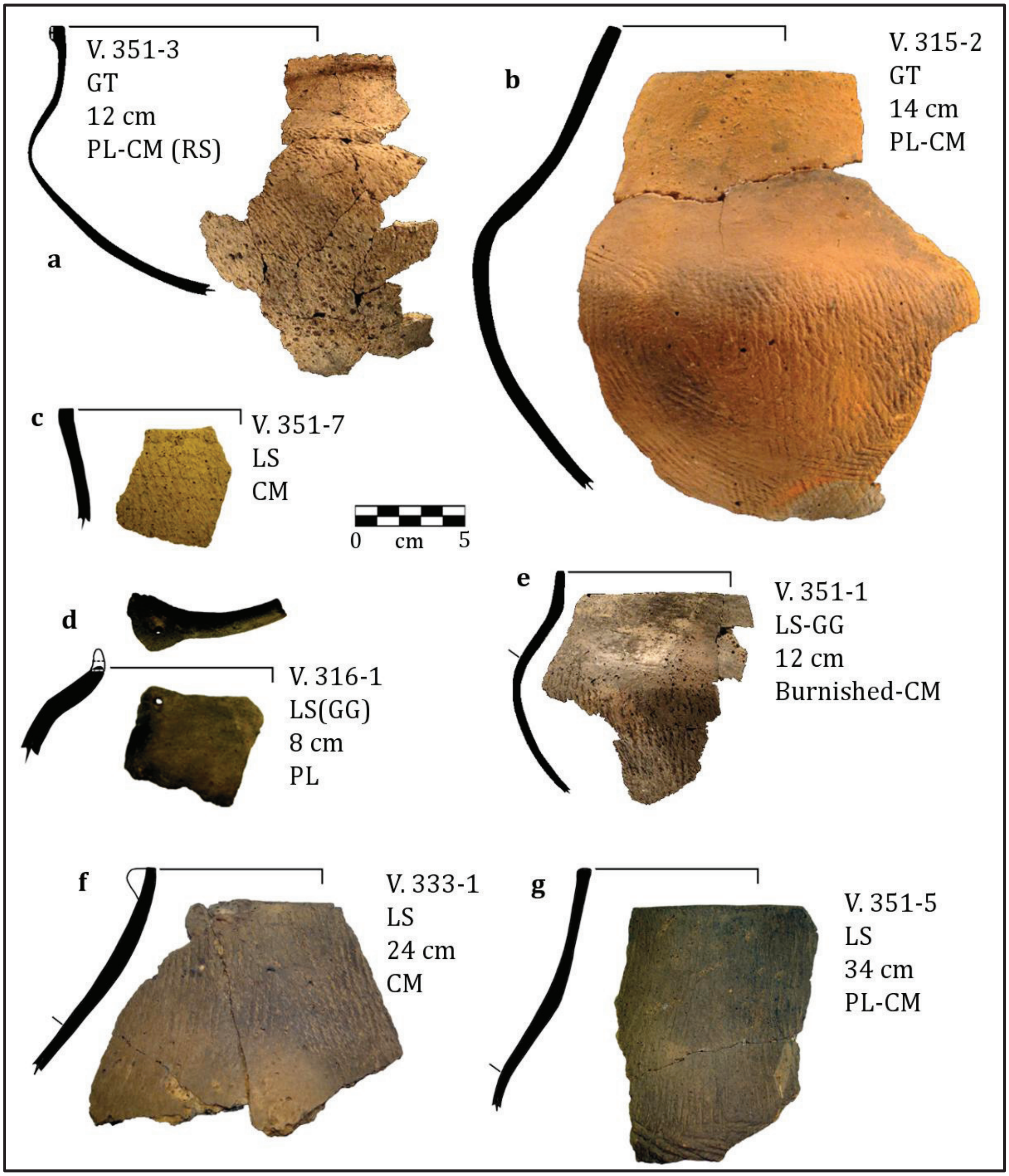


Figure 6.3. George Reeves Jars.

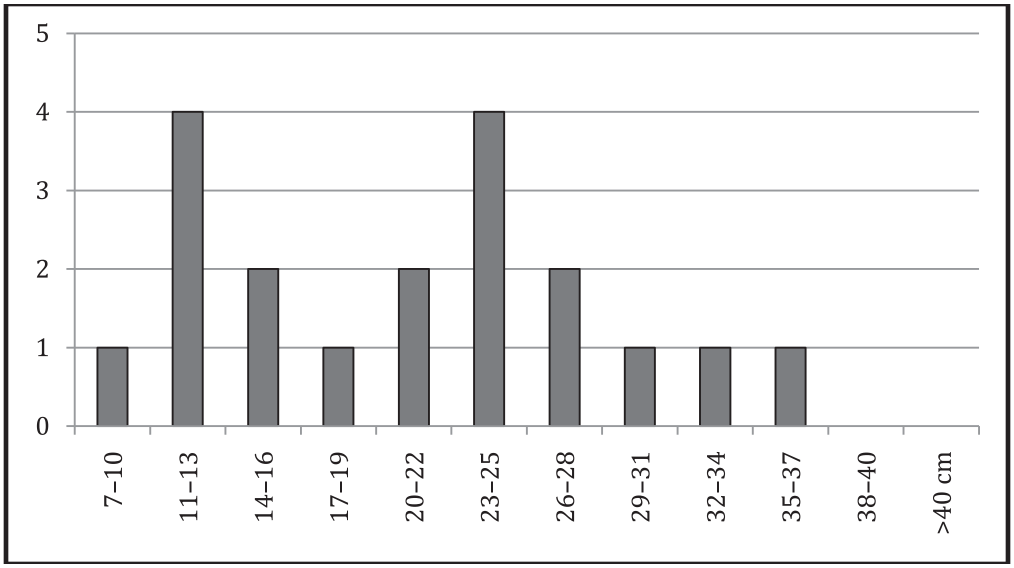


Figure 6.4. George Reeves Jar Diameters.

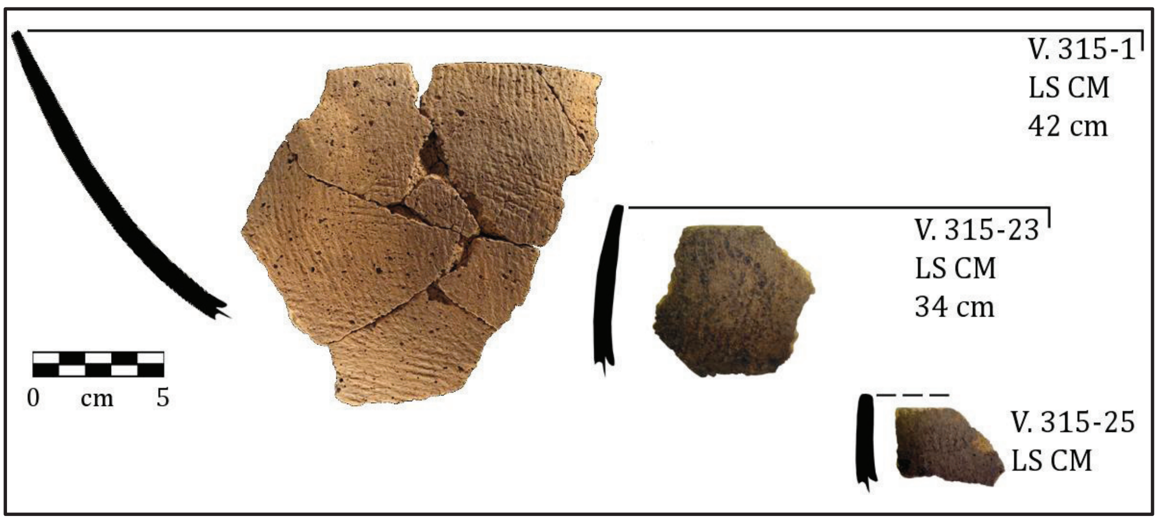


Figure 6.5. George Reeves Bowls.

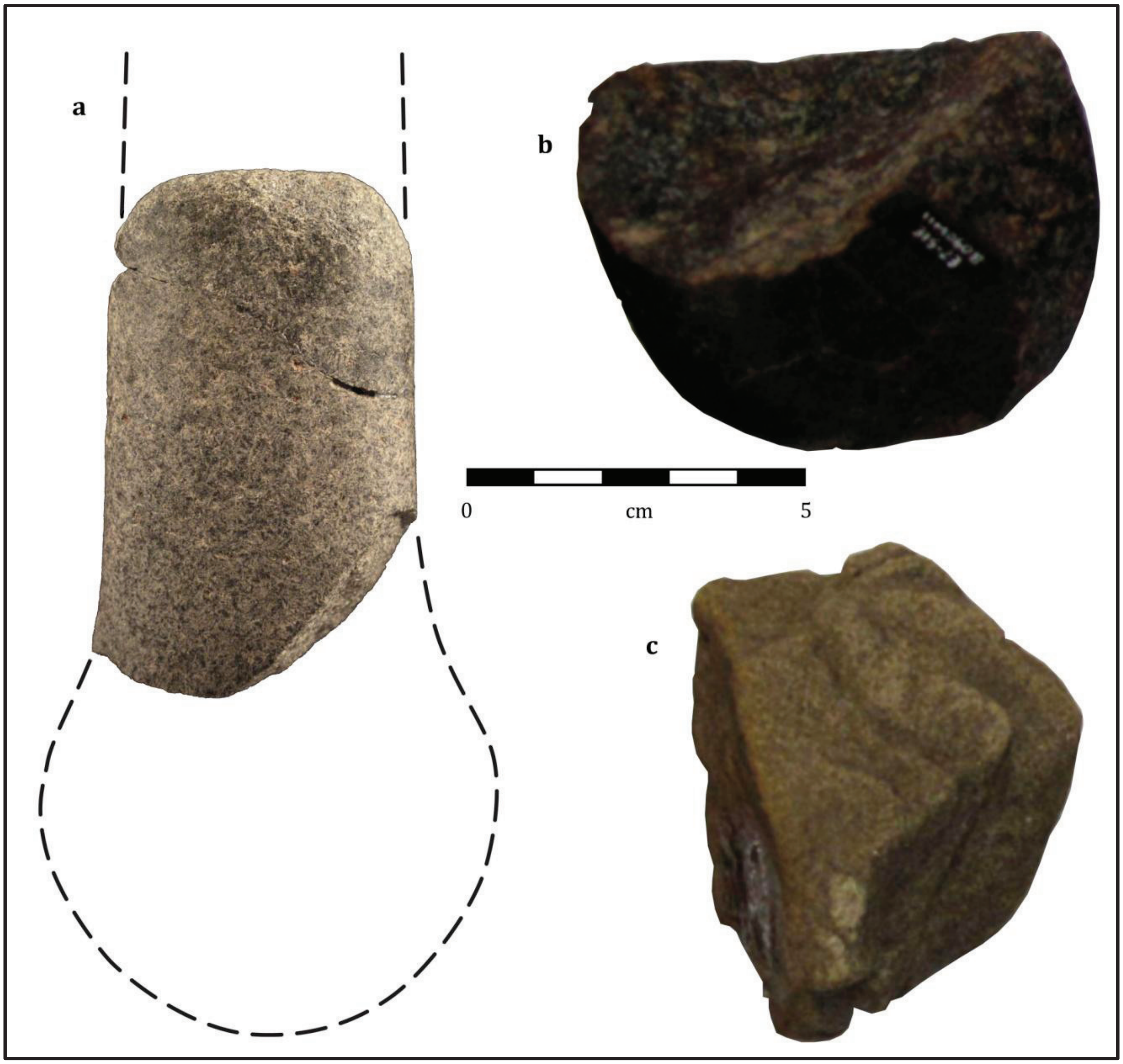


Figure 6.6. George Reeves Groundstone Tools. a) Spud; b) Hammerstone; c) Abrader.

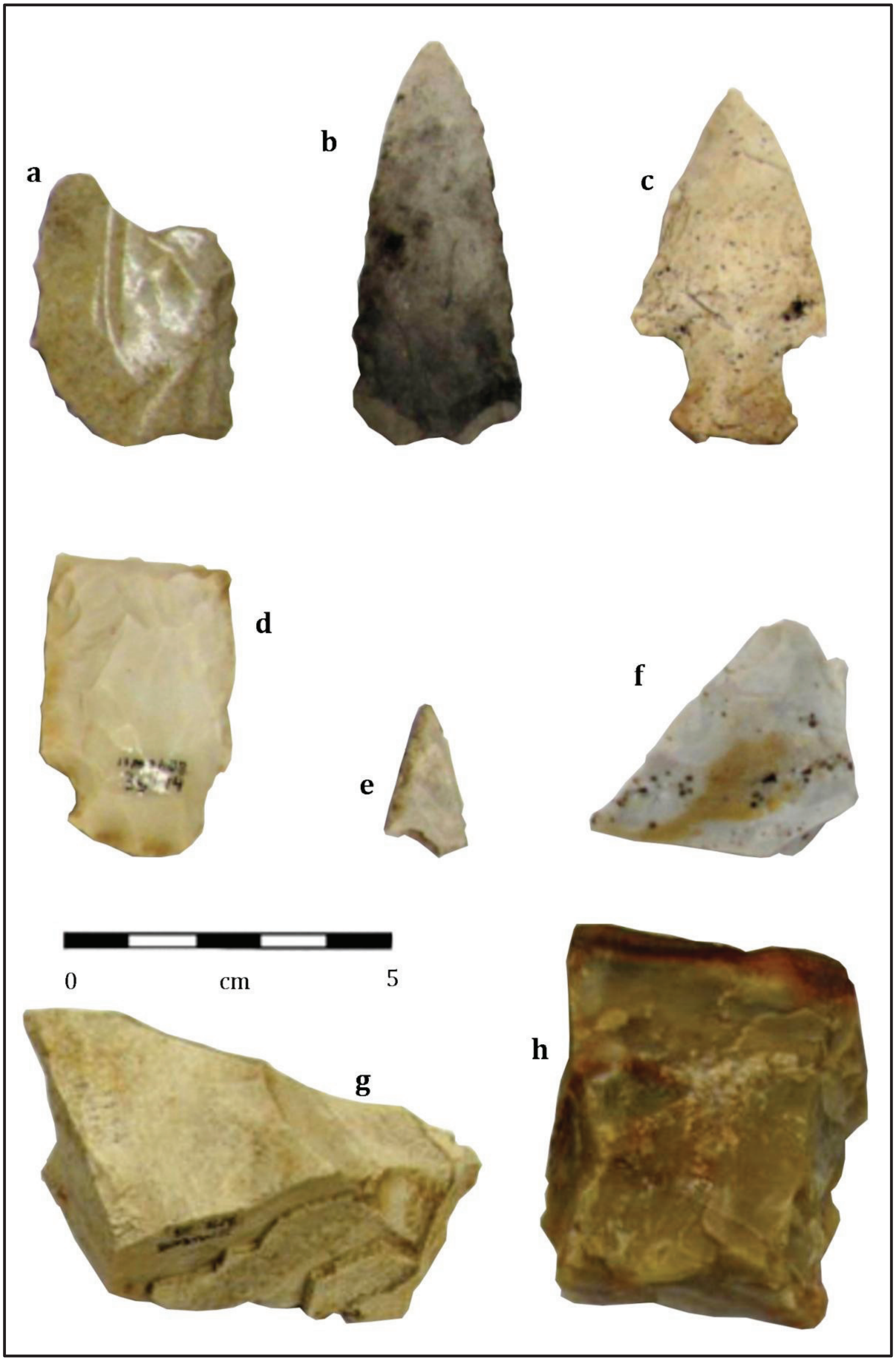


Figure 6.7. George Reeves Chipped–Stone Tools. a) Mill Creek Hoe Flake; b–e) Projectile Points; f) Adze Fragment; g) Salem Core; h) Blair Core.

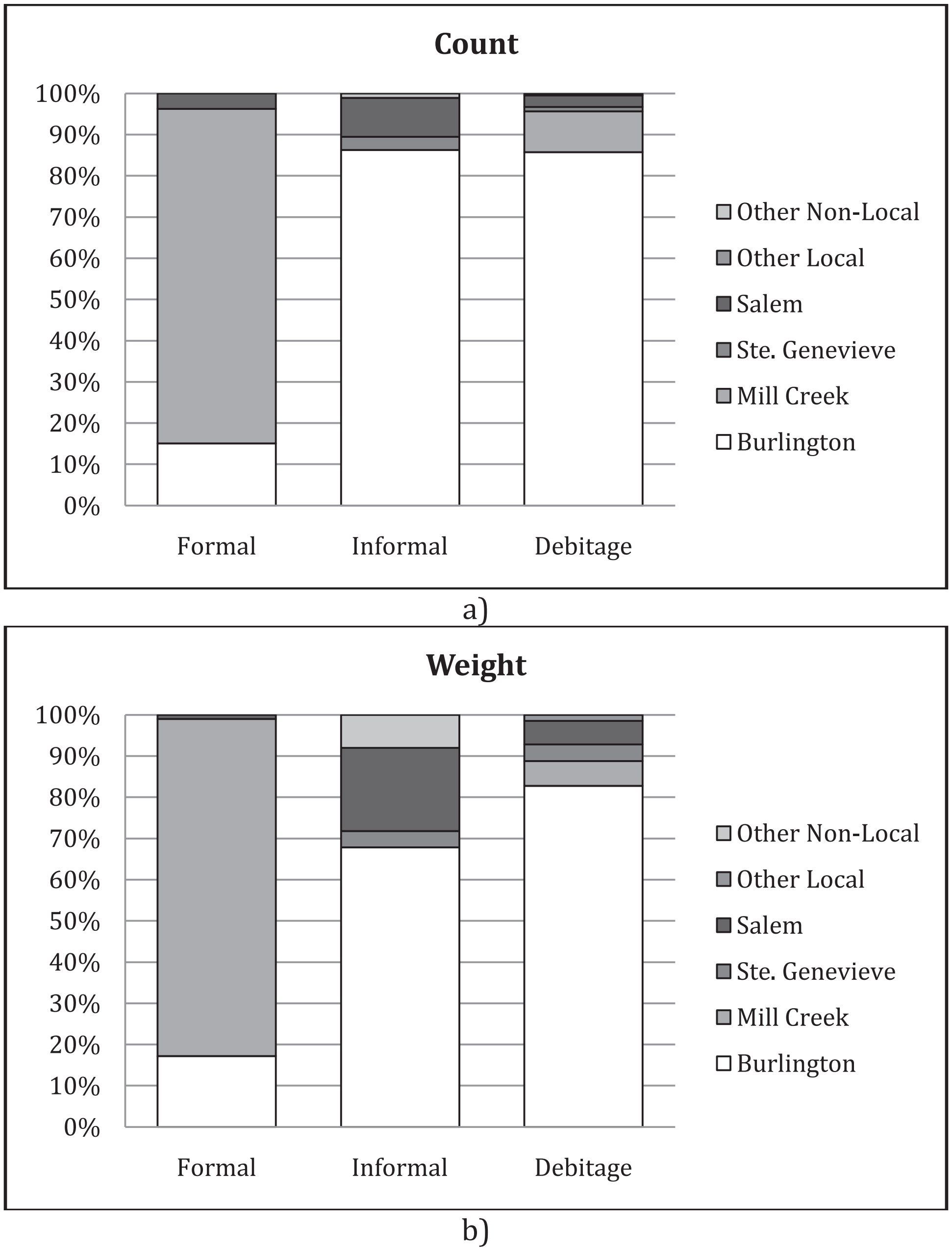


Figure 6.8. George Reeves Chert Types.

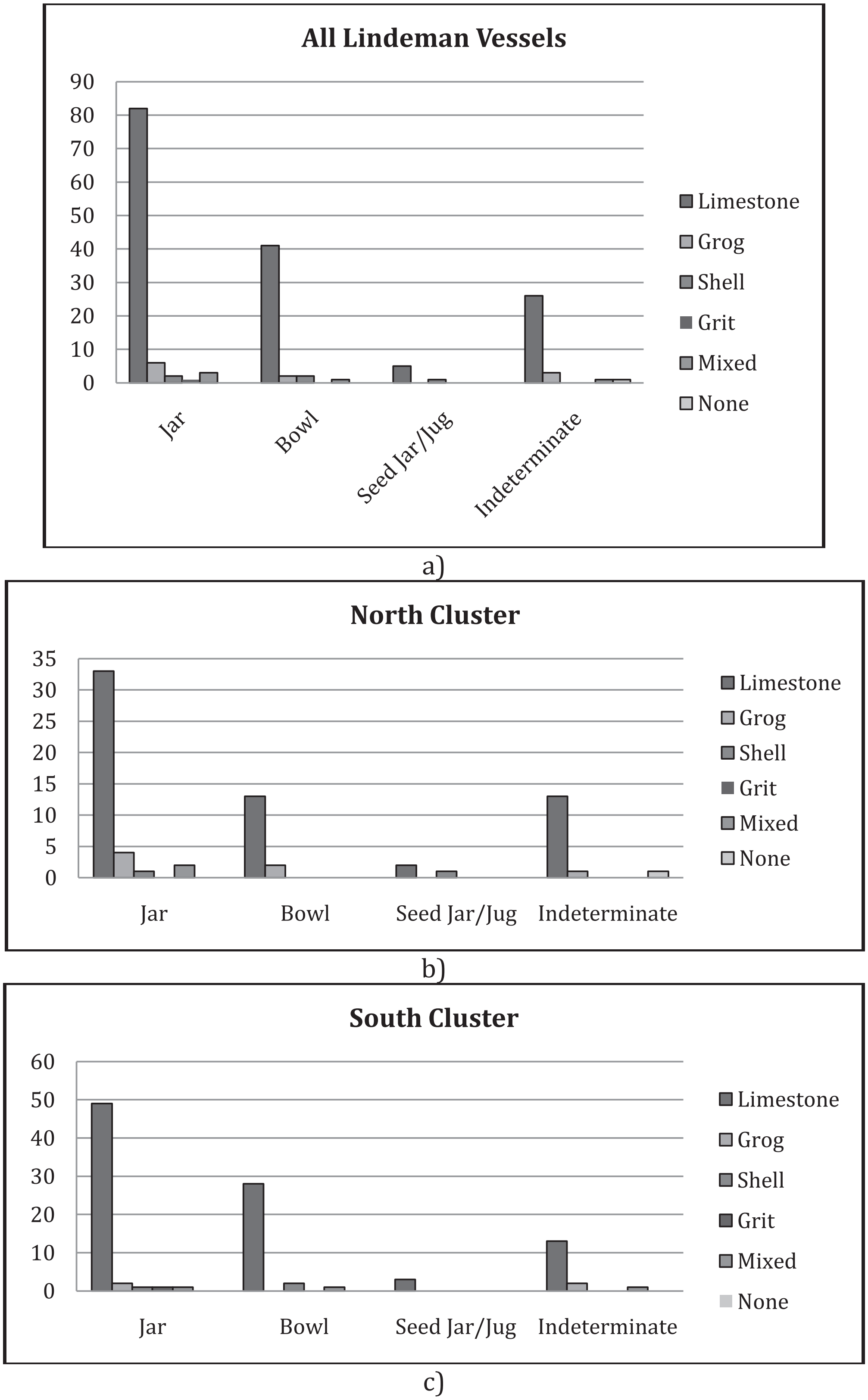
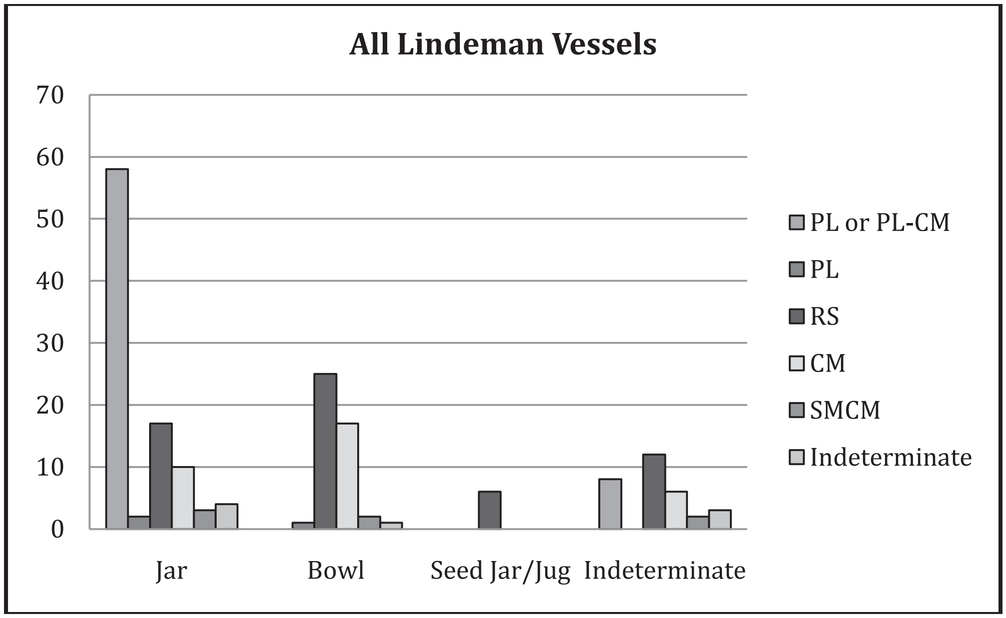
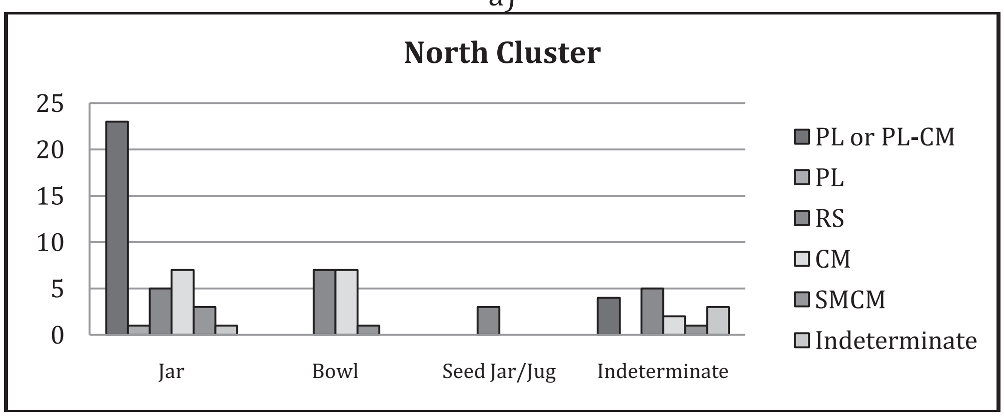


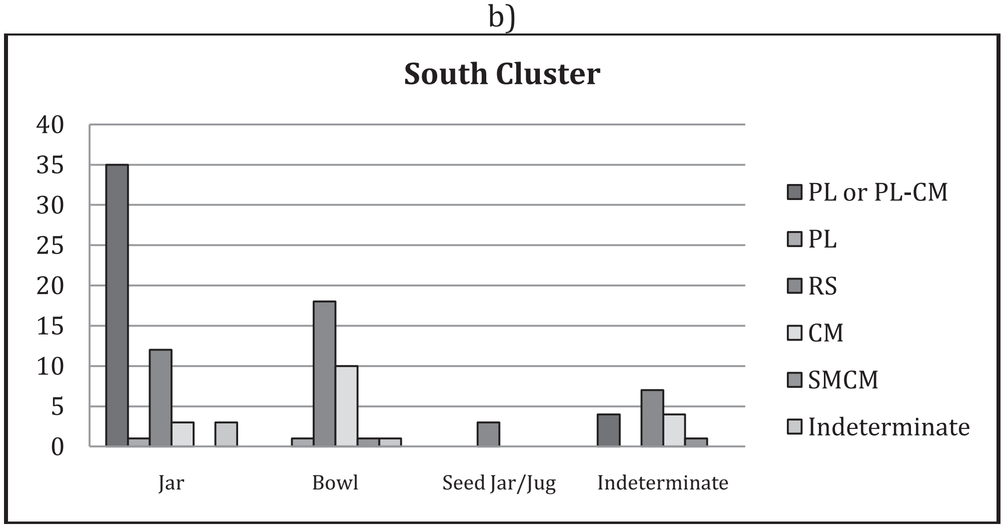
Figure 6.9. Lindeman Vessel Tempers.



a)



b)



c)

Figure 6.10. Lindeman Vessel Surface Treatments.

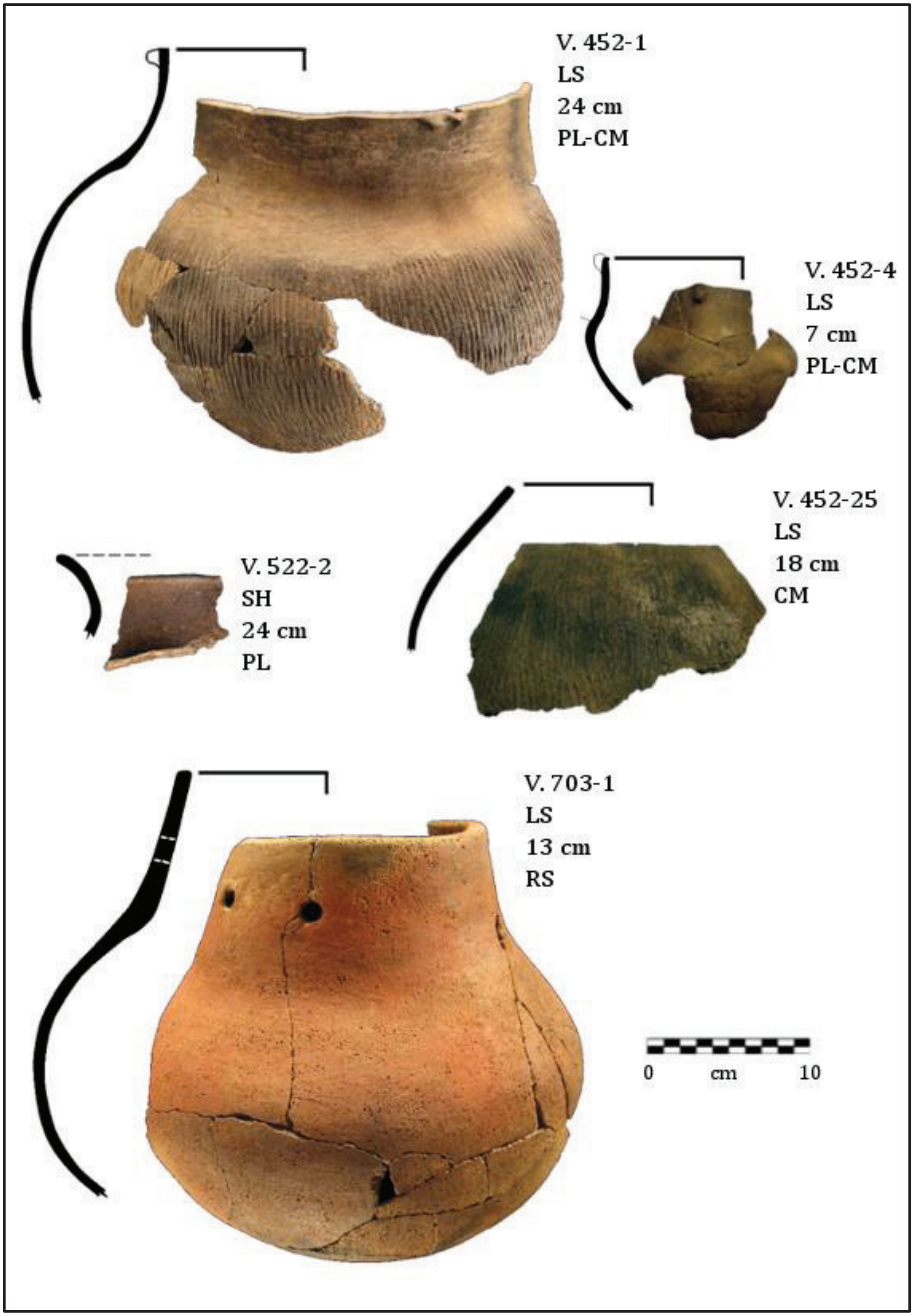


Figure 6.11. Lindeman Jars.

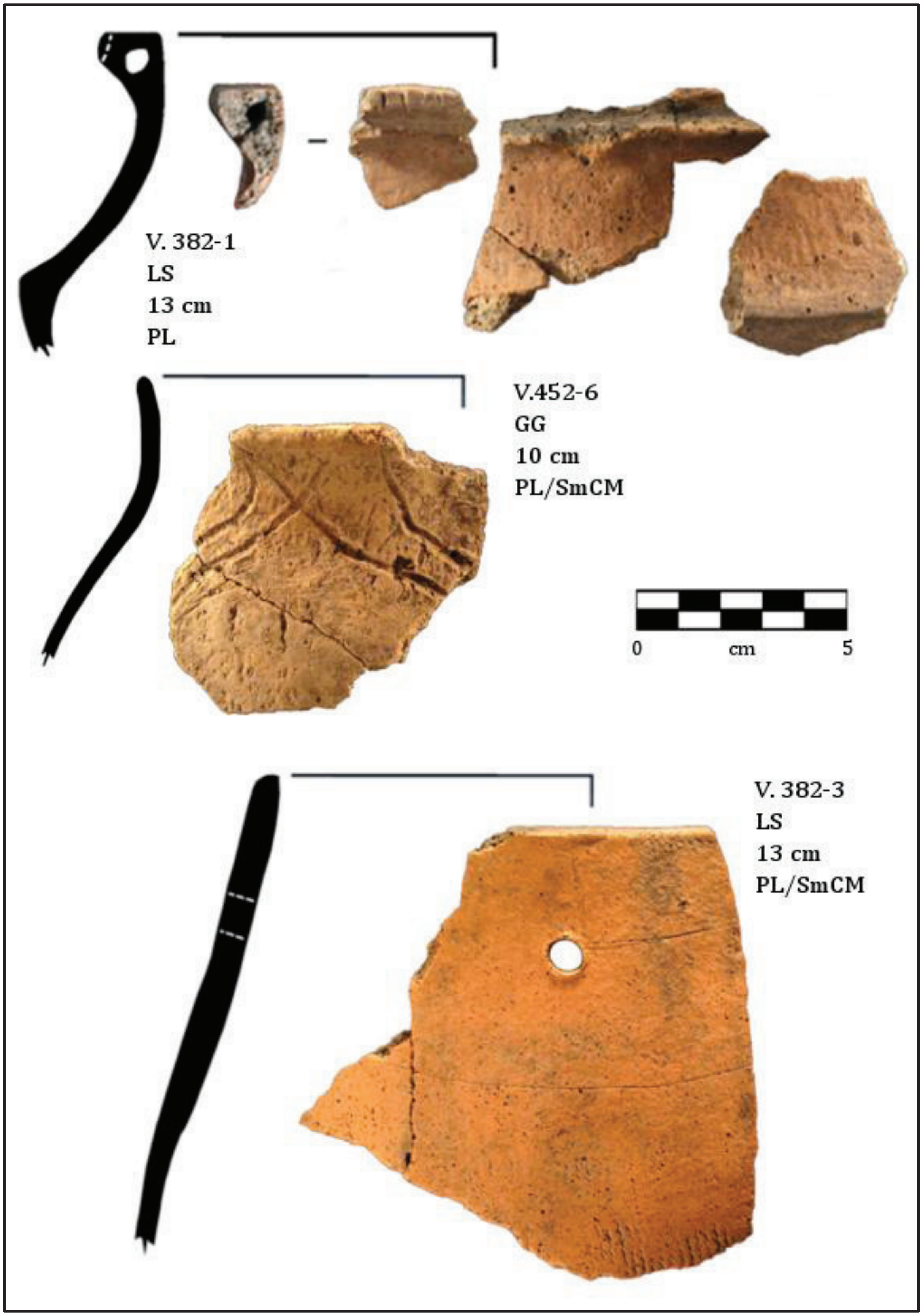
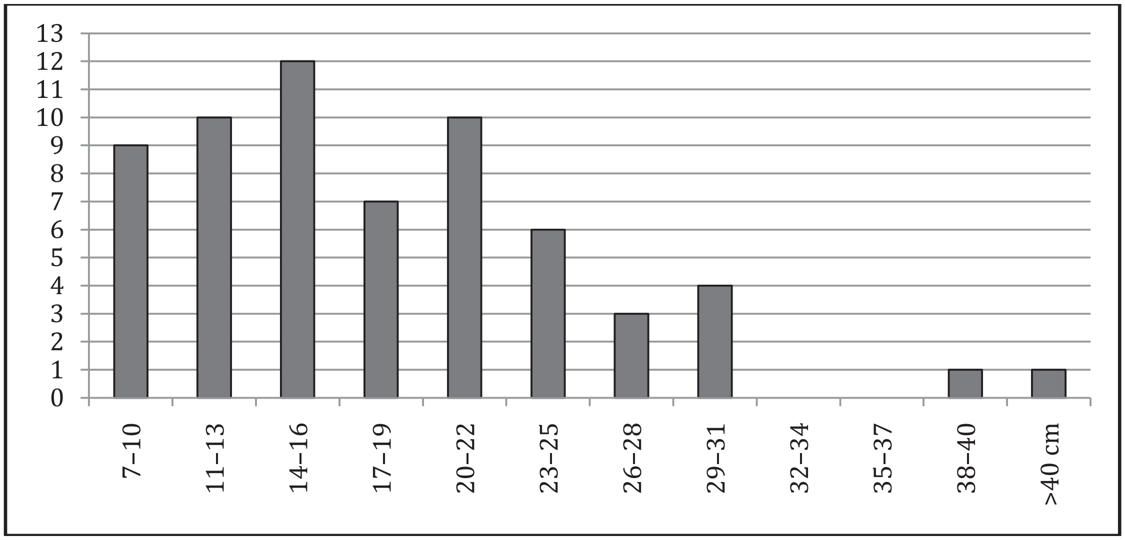
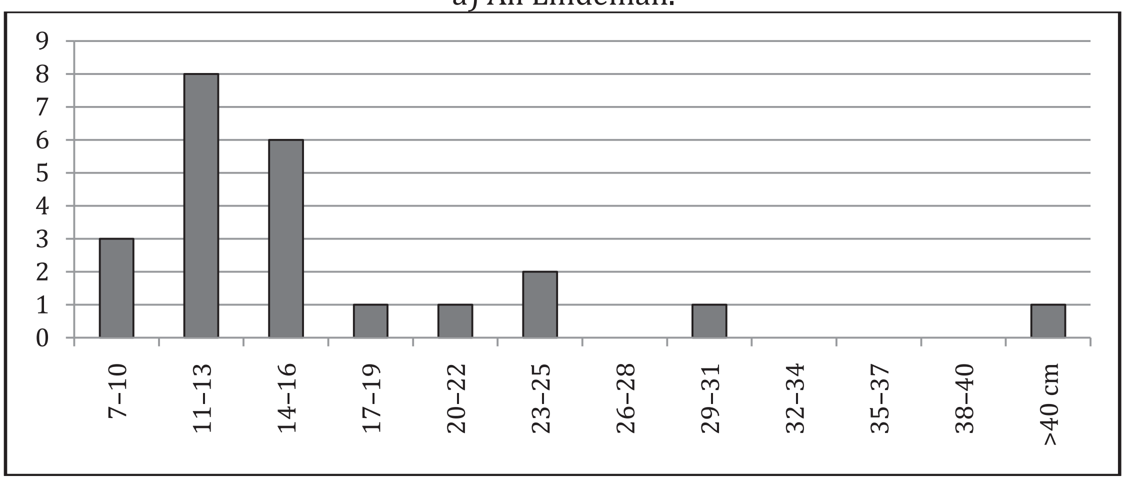


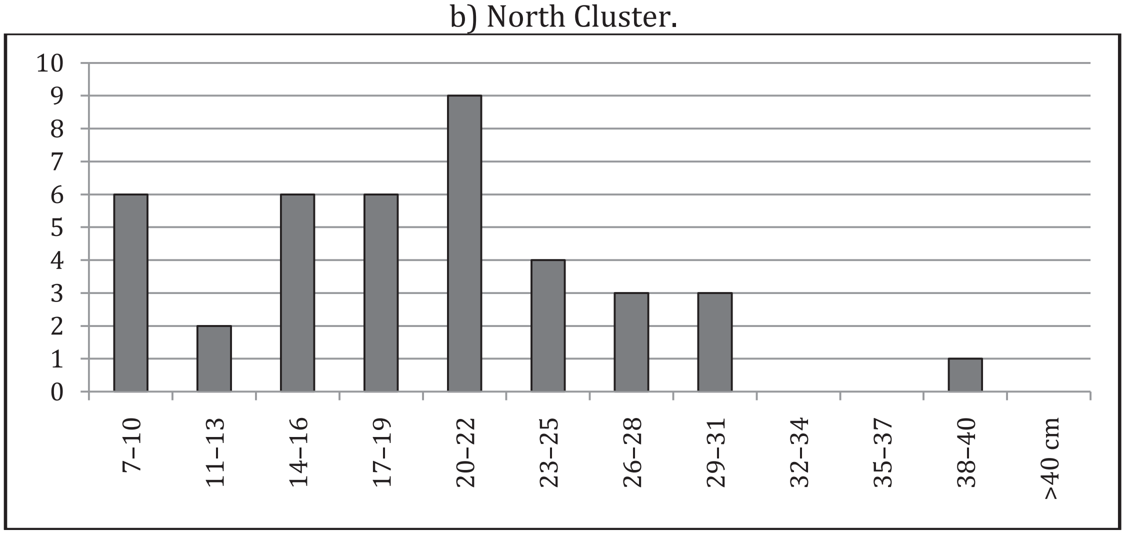
Figure 6.11, continued. Lindeman Jars.



a) All Lindeman.



b) North Cluster.



c) South Cluster.

Figure 6.12. Lindeman Jar Diameter Distributions.

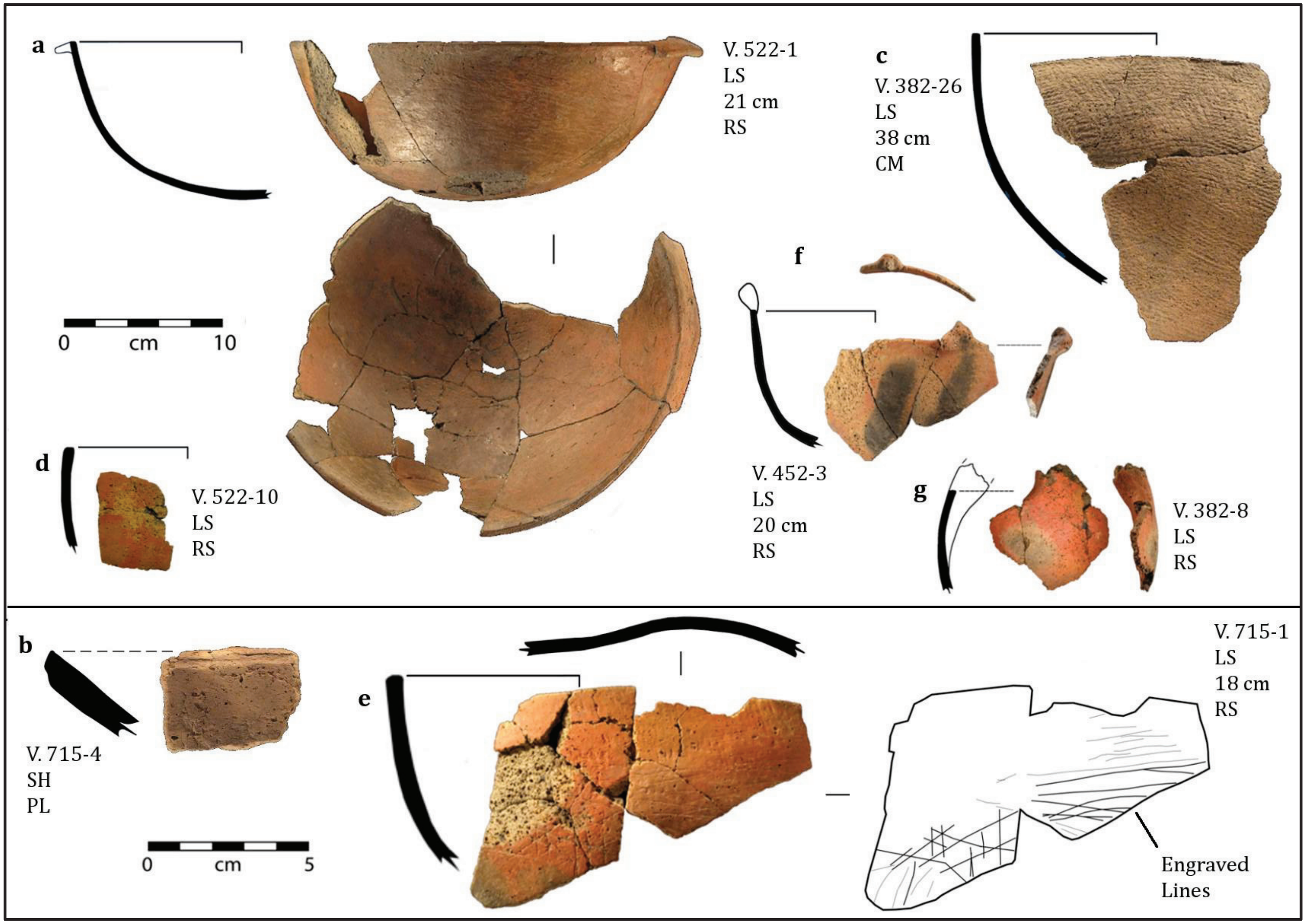


Figure 6.13. Lindeman Bowls.

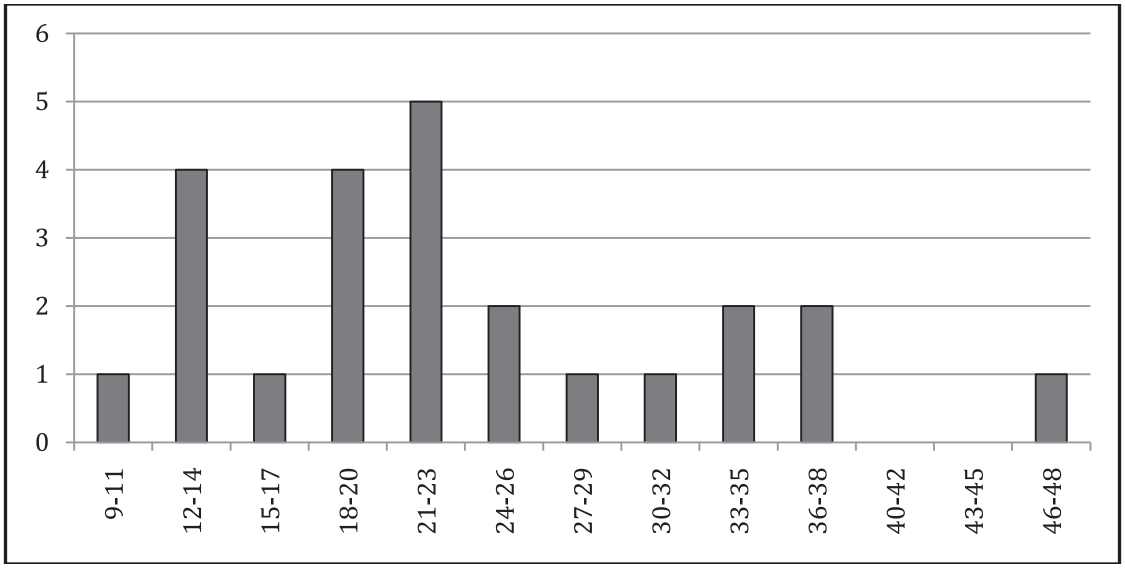


Figure 6.14. Lindeman Bowl Diameter Distribution.

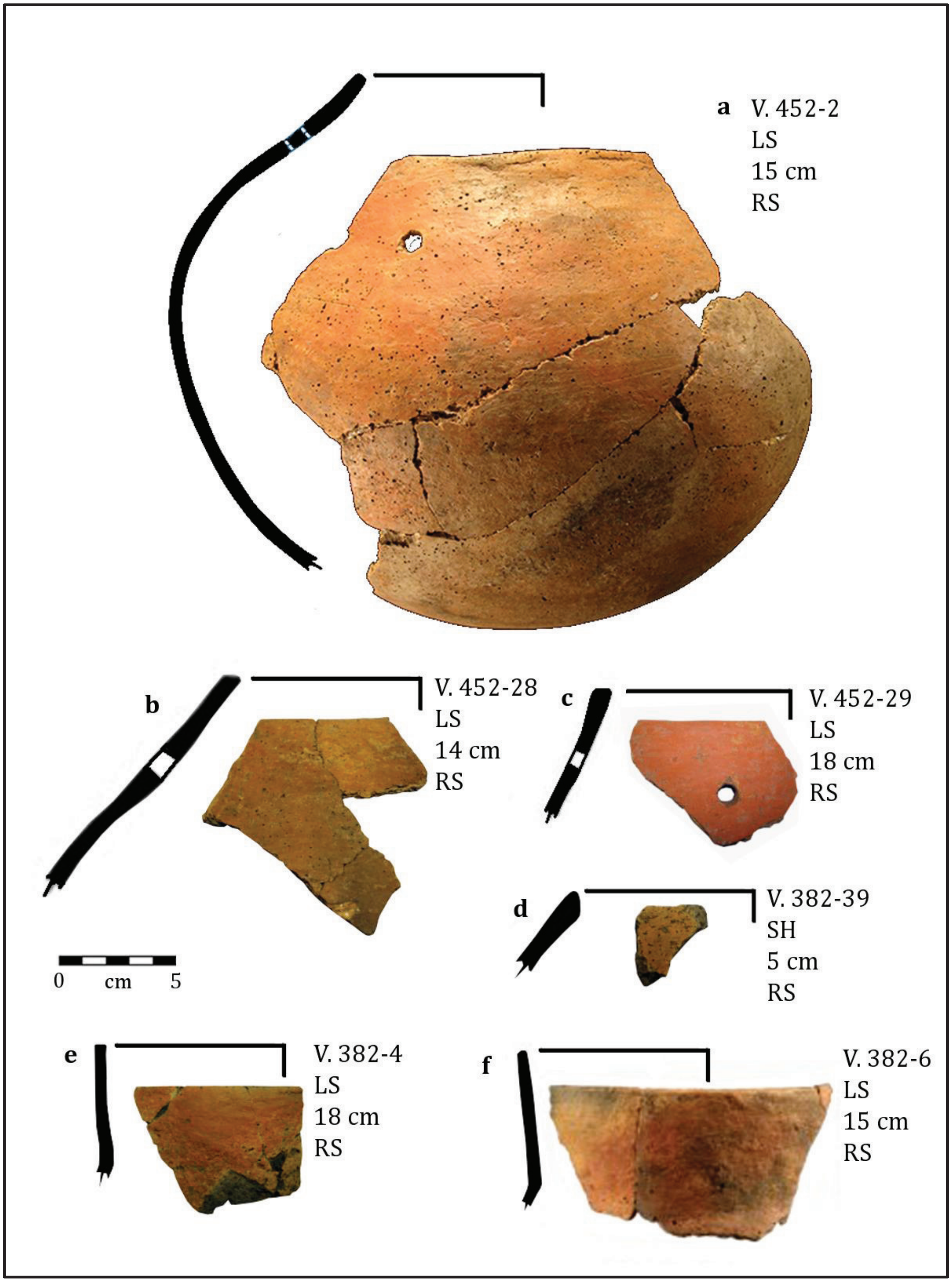


Figure 6.15. Lindeman Seed Jars and Bottles.

Figure 6.16. Lindeman Groundstone Tools. a–b) Celt Fragments; c) Celt Flakes; d) Flat Abraders with Red Staining; e) Flat and Slot Abraders.

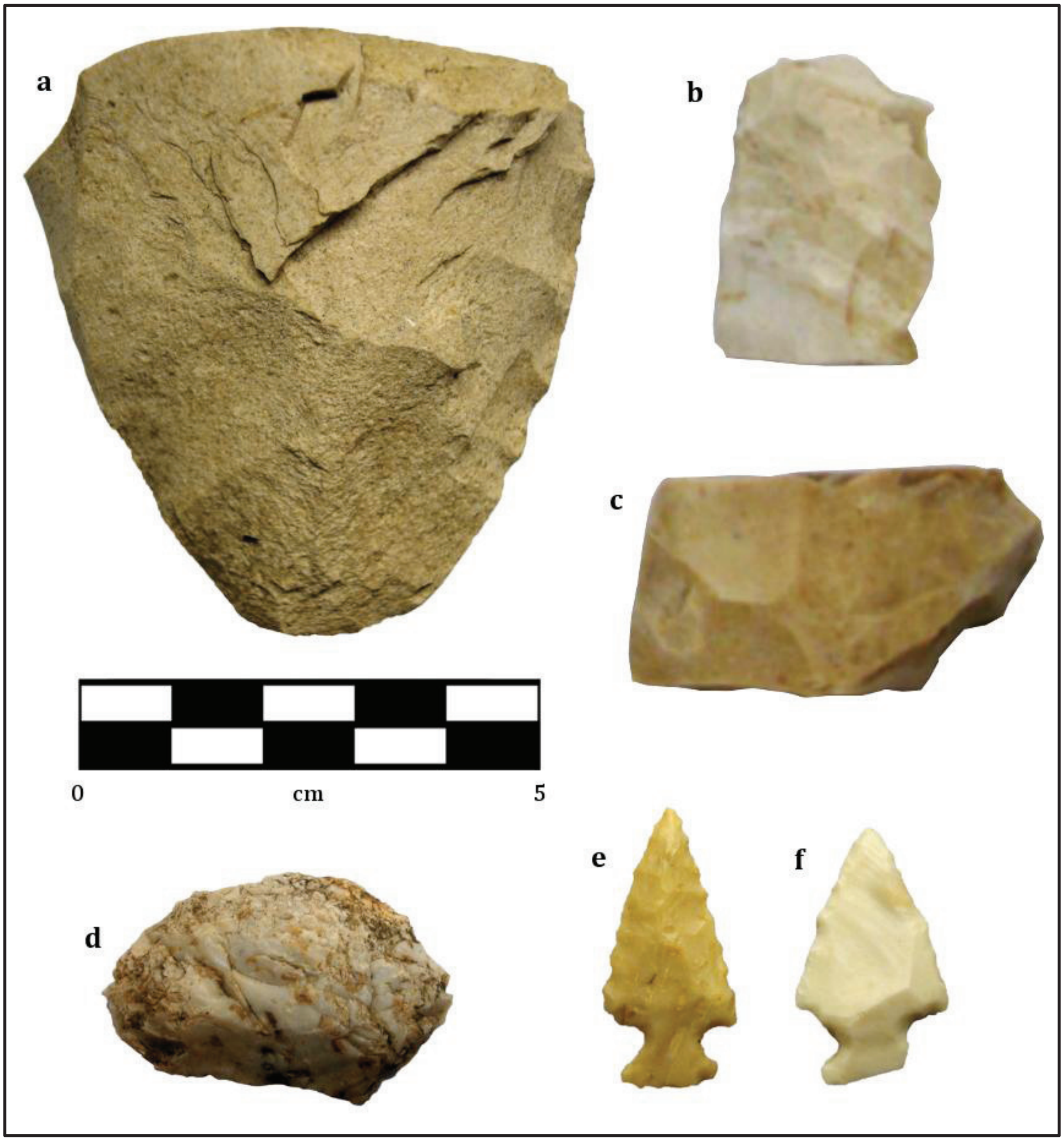
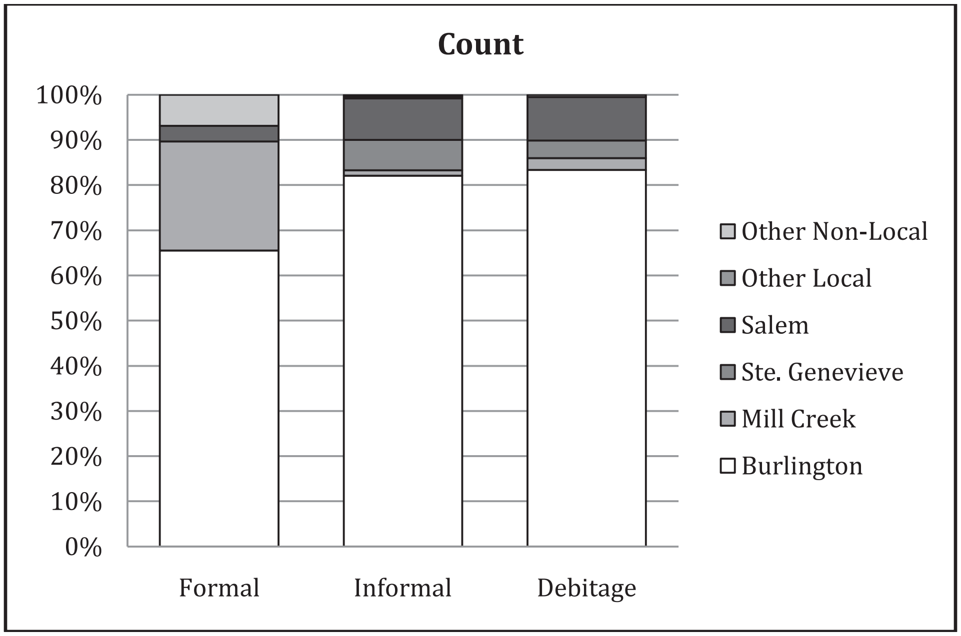
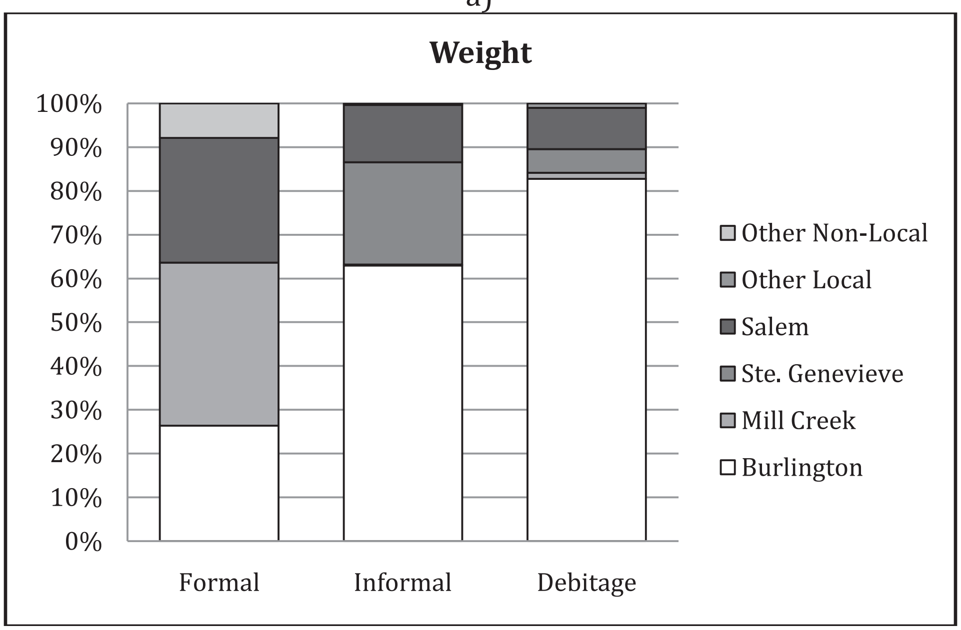


Figure 6.17. Lindeman Chipped–Stone Tools. a) Salem Adze Fragment; b–c) Burlington Adze Fragments; d) Chert Hammer Fragment; e–f) Arrow Points.



a)



b)

Figure 6.18. Lindeman Chert Types.

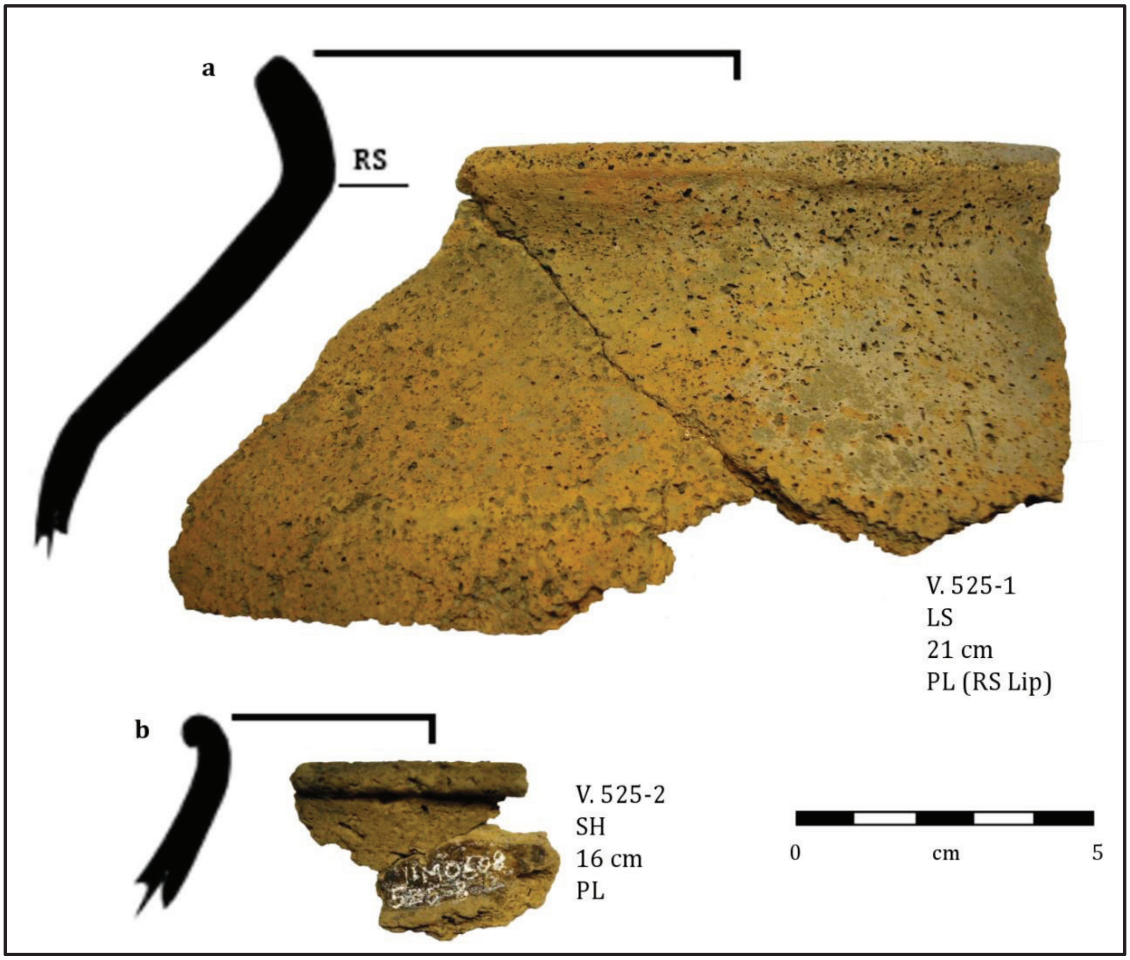


Figure 6.19. Lohmann Vessels.

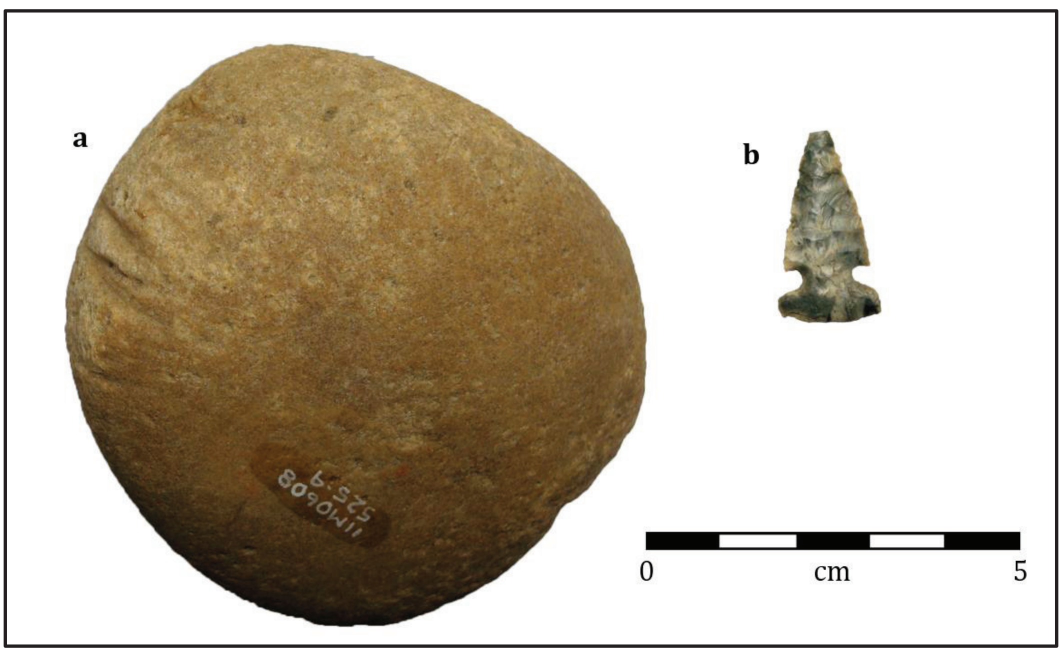


Figure 6.20. Lohmann Groundstone and Chipped–Stone Tools.

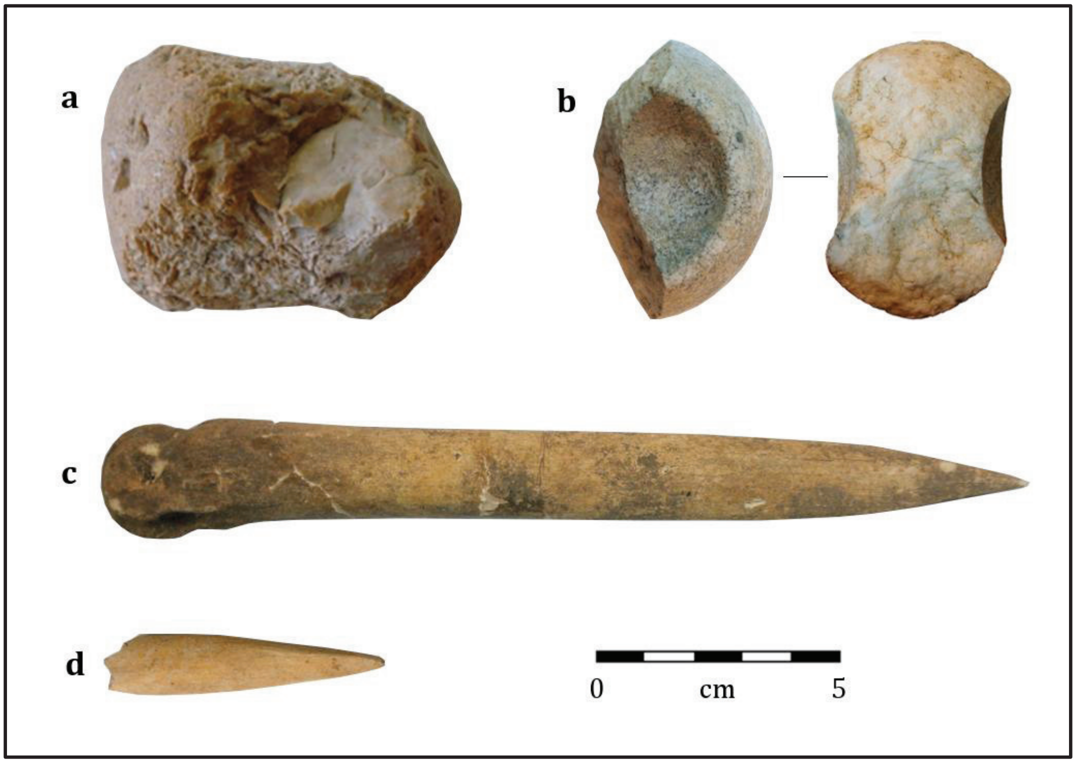


Figure 6.21. Tools from Lindeman Phase Features. a) Chert Hammer from F 125; b) Discoidal from F 125; c–d) Awls from F 50.

Figure 6.22. Discoidals from Lohmann Phase Features. a) Discoidal from F 94; b) Discoidal from F 96.

Figure 6.23. Ceramic Objects. a) Pipe; b) Disk; c) Fist Effigy.

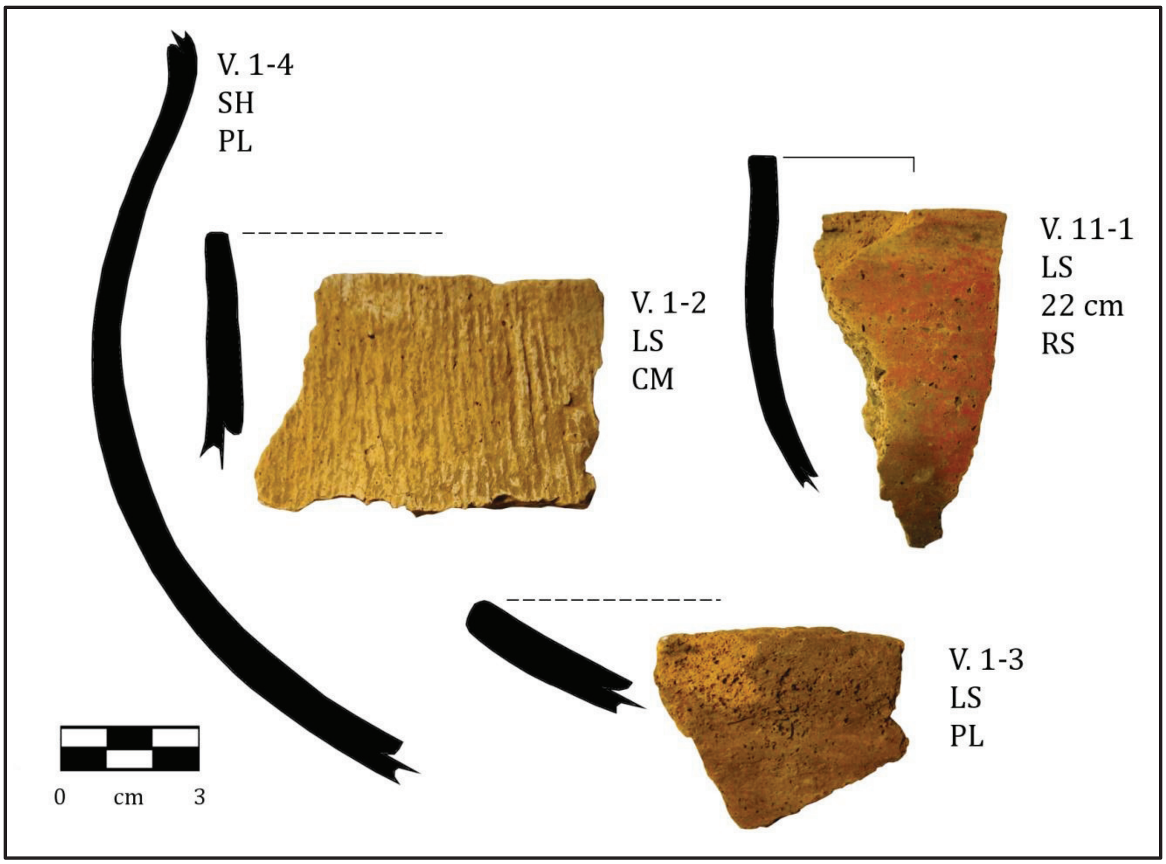


Figure 6.24. Mississippian Vessels.

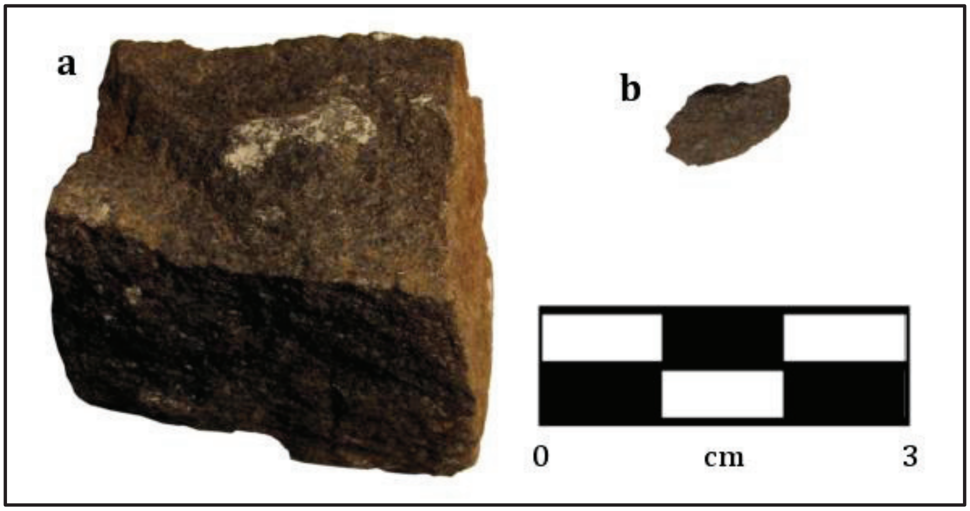


Figure 6.25. Groundstone Tools. a) Diabase; b) Basalt Flake.

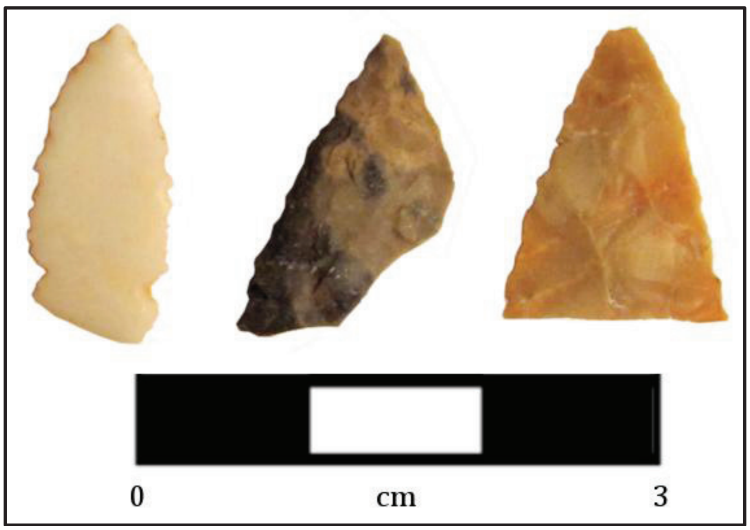


Figure 6.26. Arrow Points.

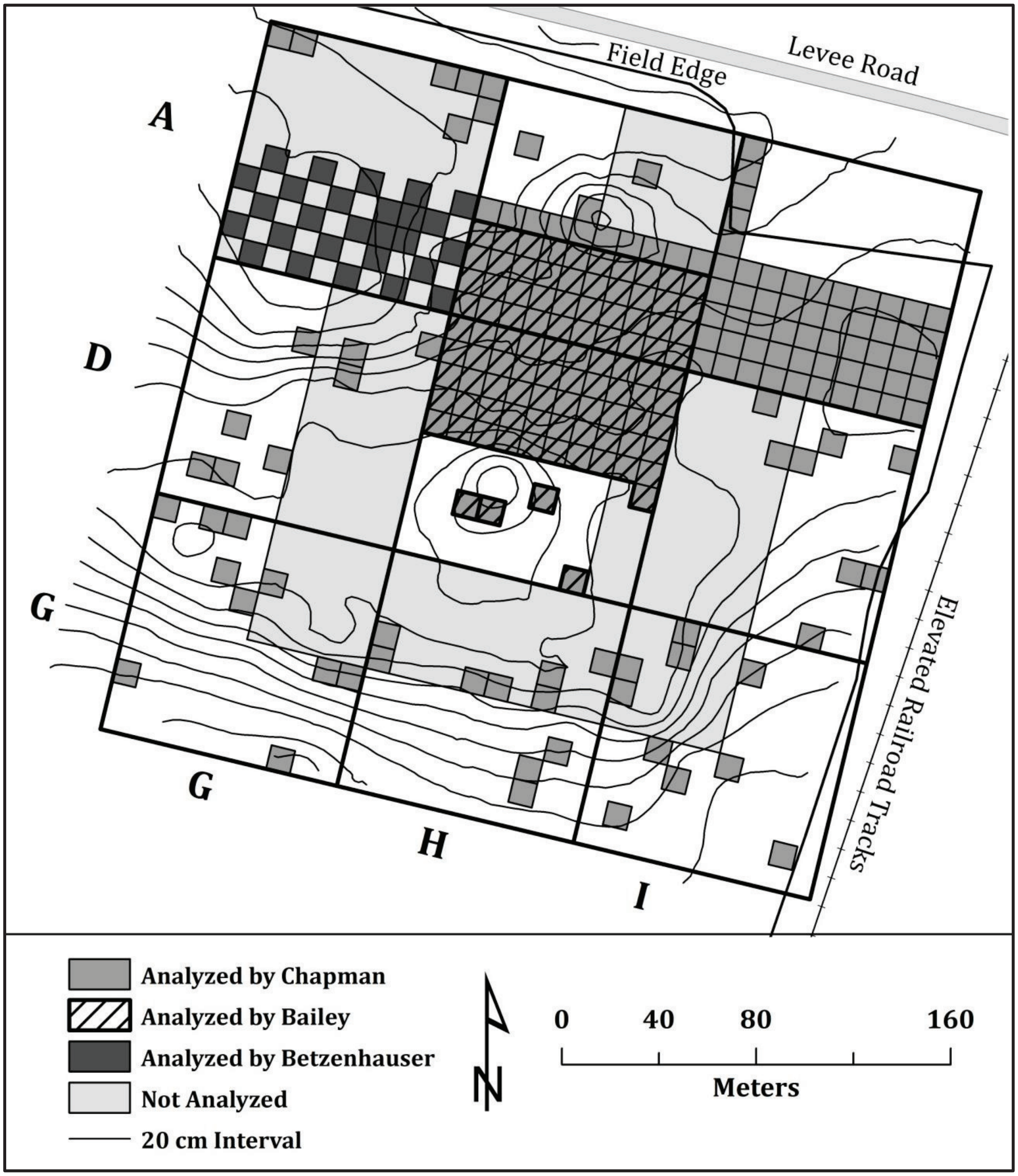


Figure 6.27. Surface Collection Units (partially adapted from Chapman 2005 Figure 2).

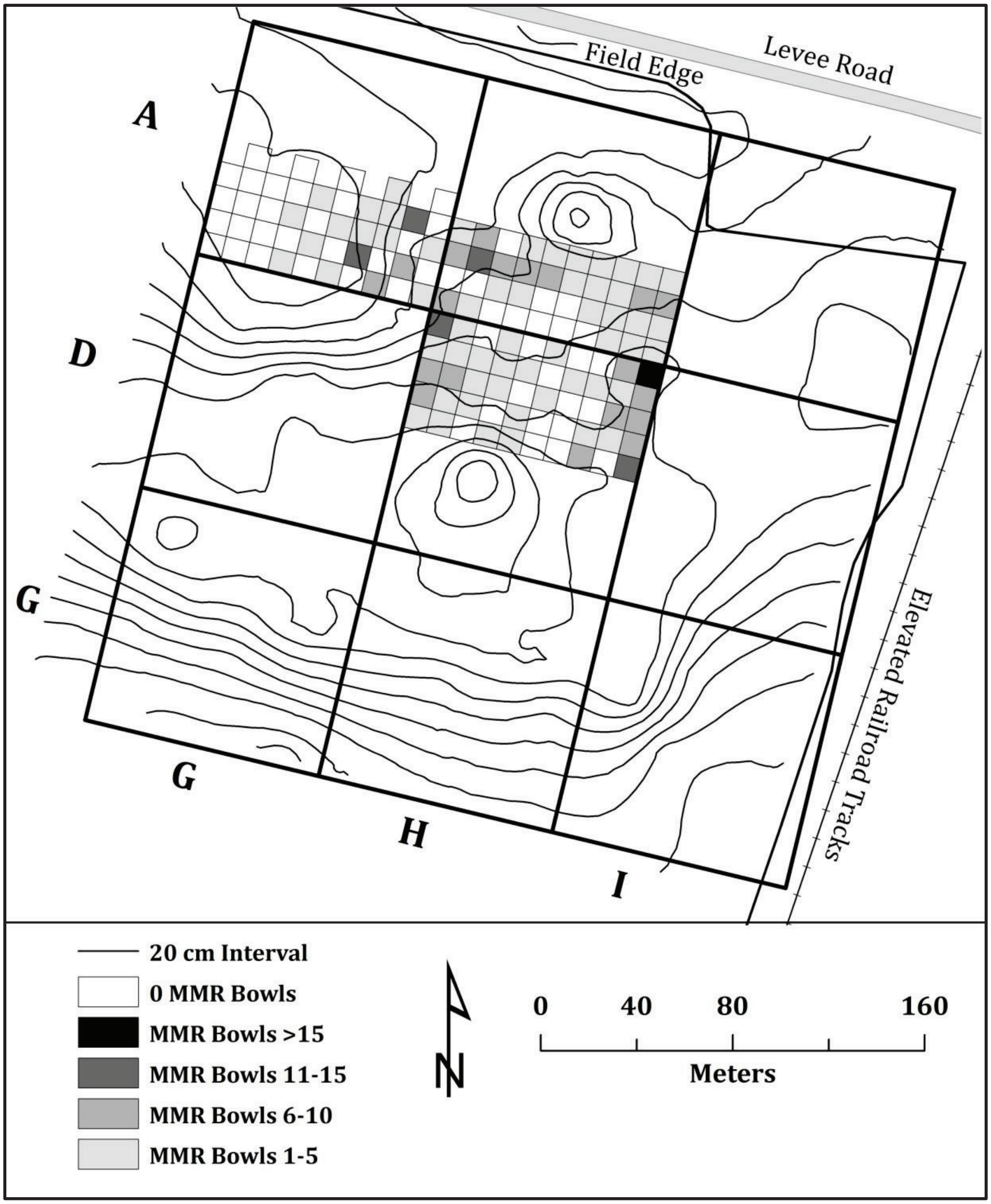


Figure 6.28. Surface Distribution of Monks Mound Red Bowl Rims and Sherds (partially adapted from Bailey 2007 Figure 6.1).

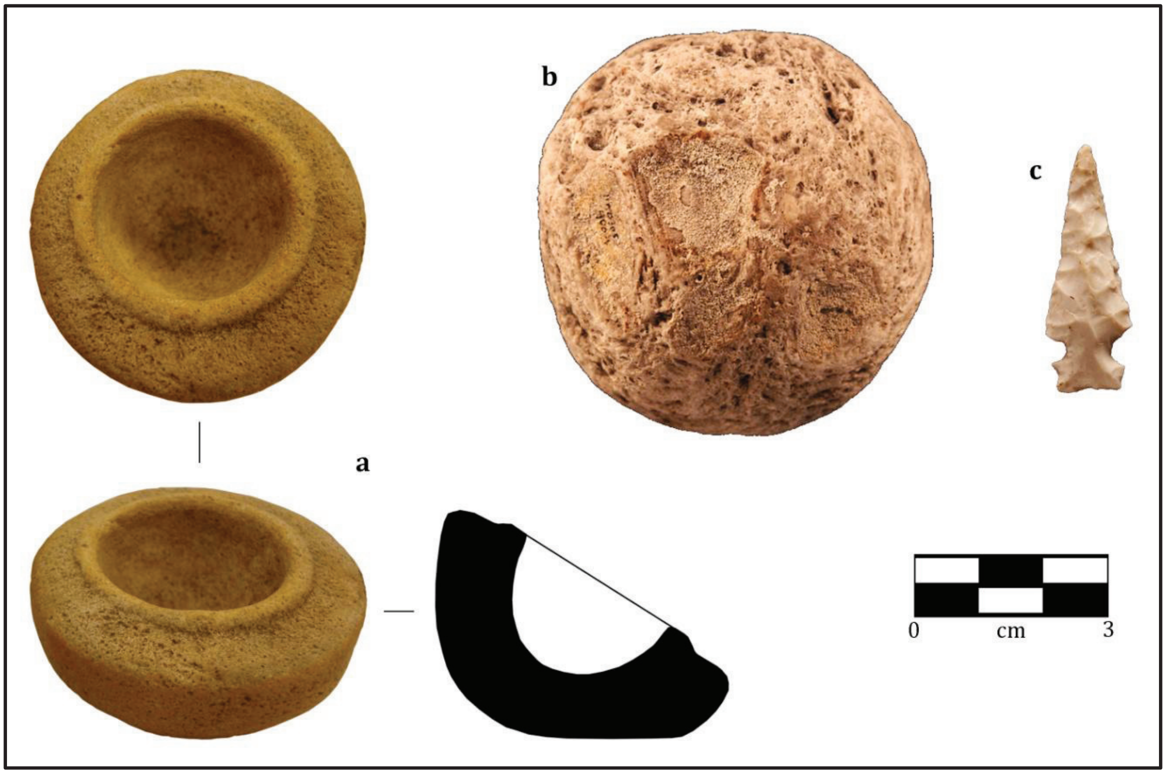


Figure 6.29. Materials from the Surface. a) Stone Pot; b) Chert Hammer; c) Point.

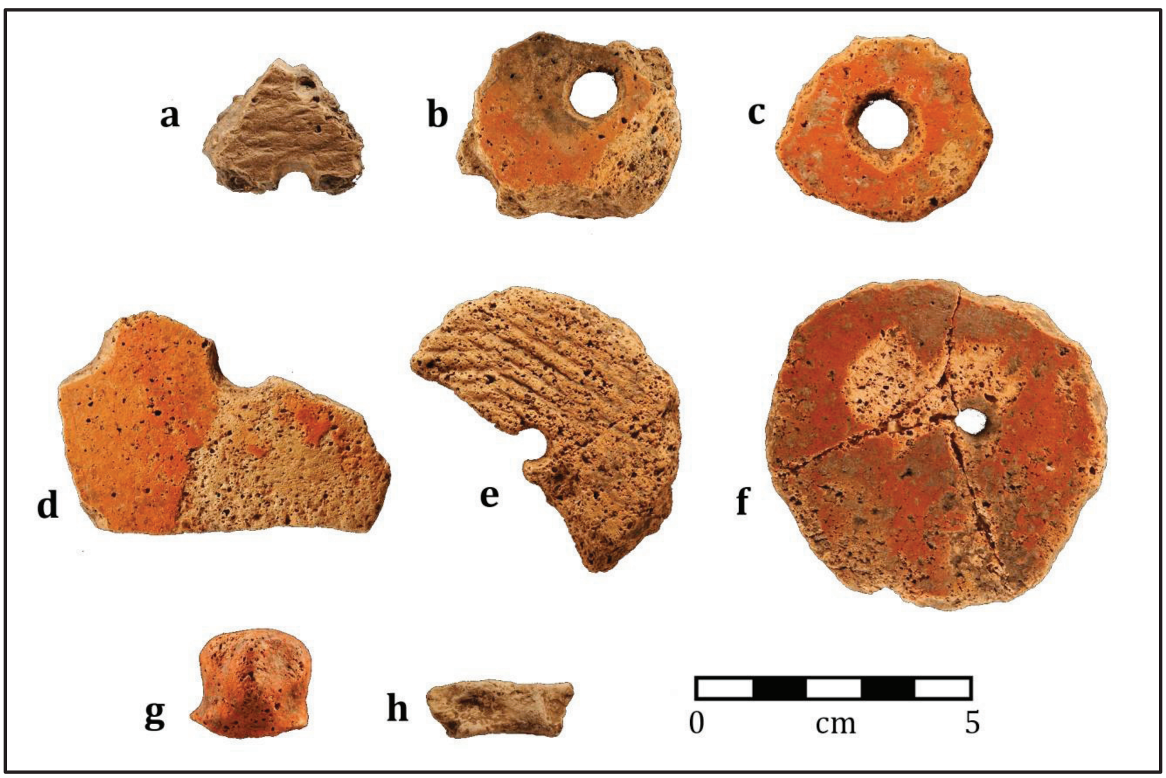


Figure 6.30. Worked Sherds and Ceramic Objects.

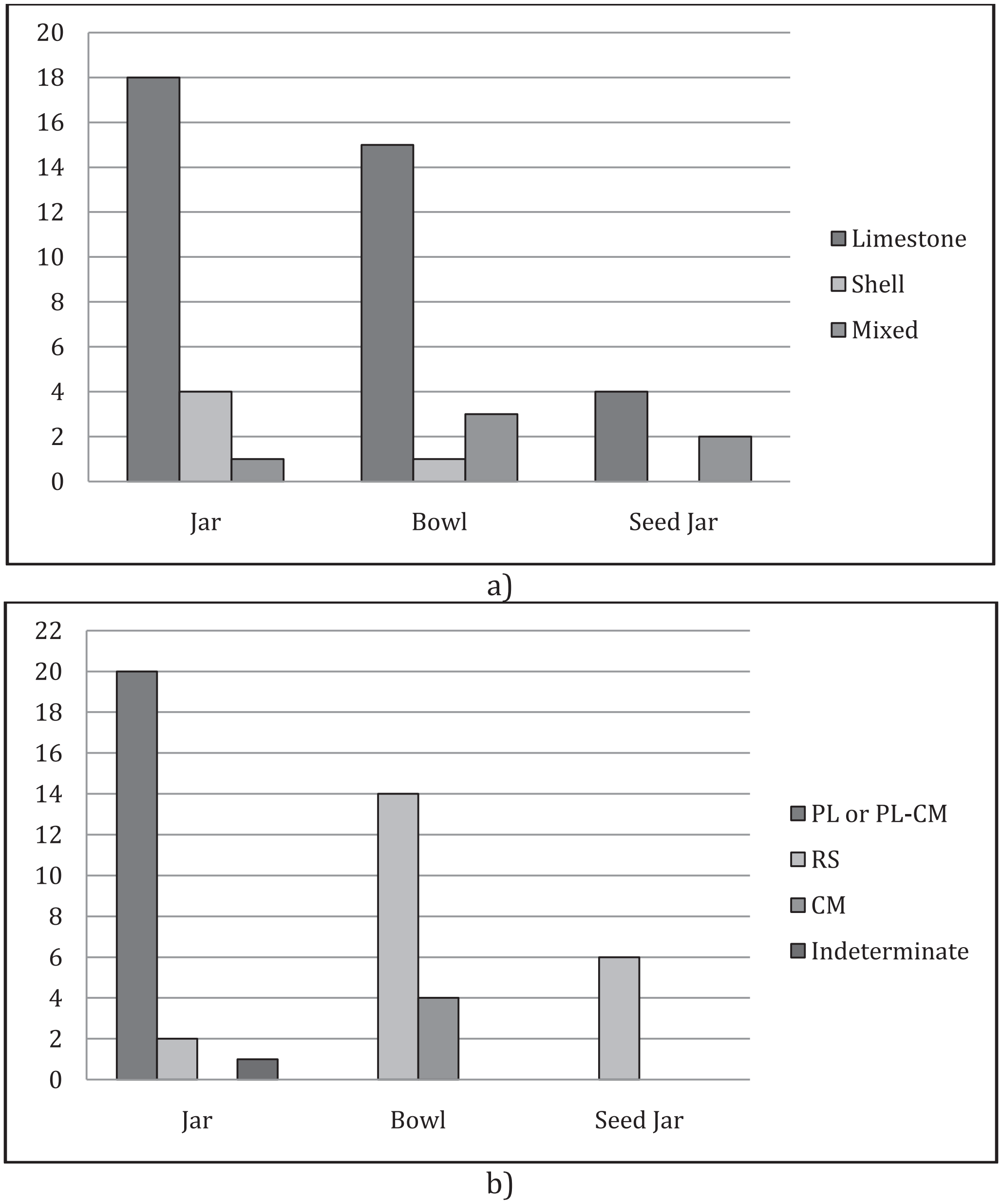


Figure 6.31. Vessel Tempers (a) and Surface Treatments (b).

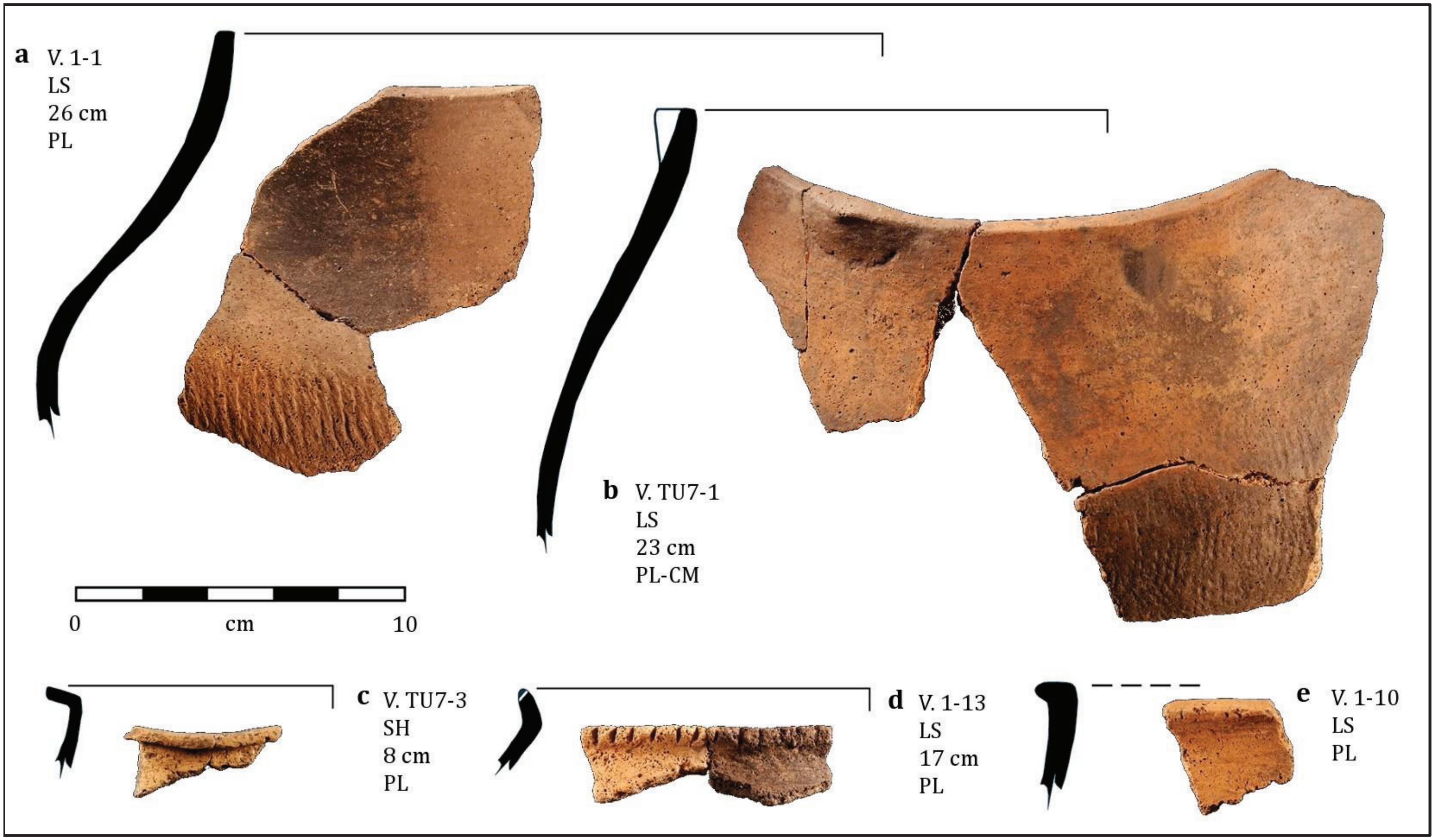
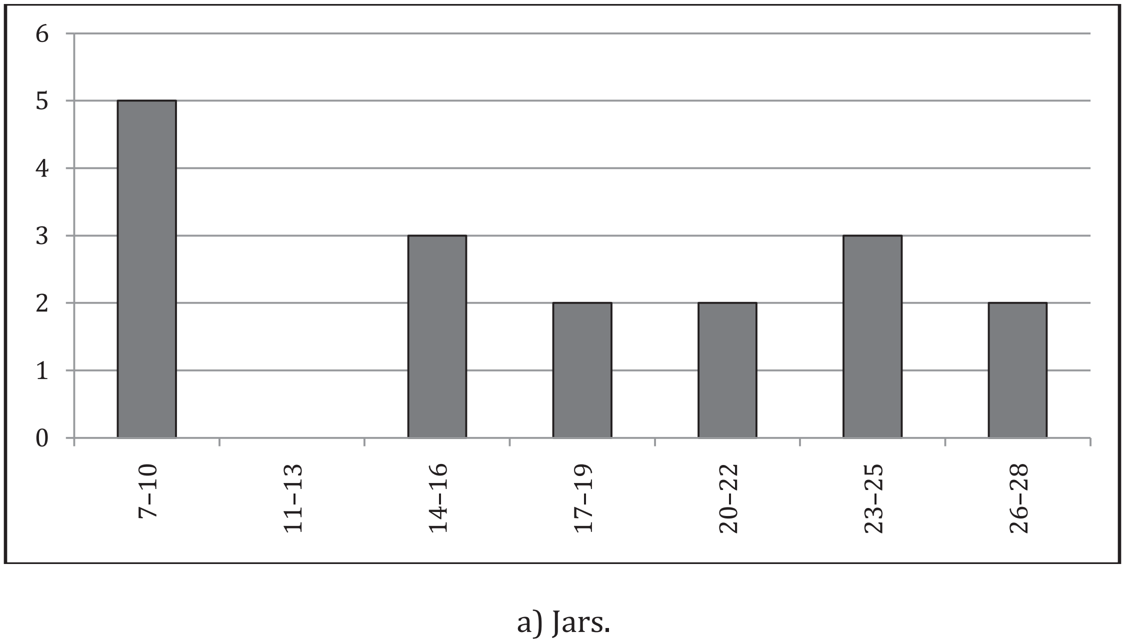
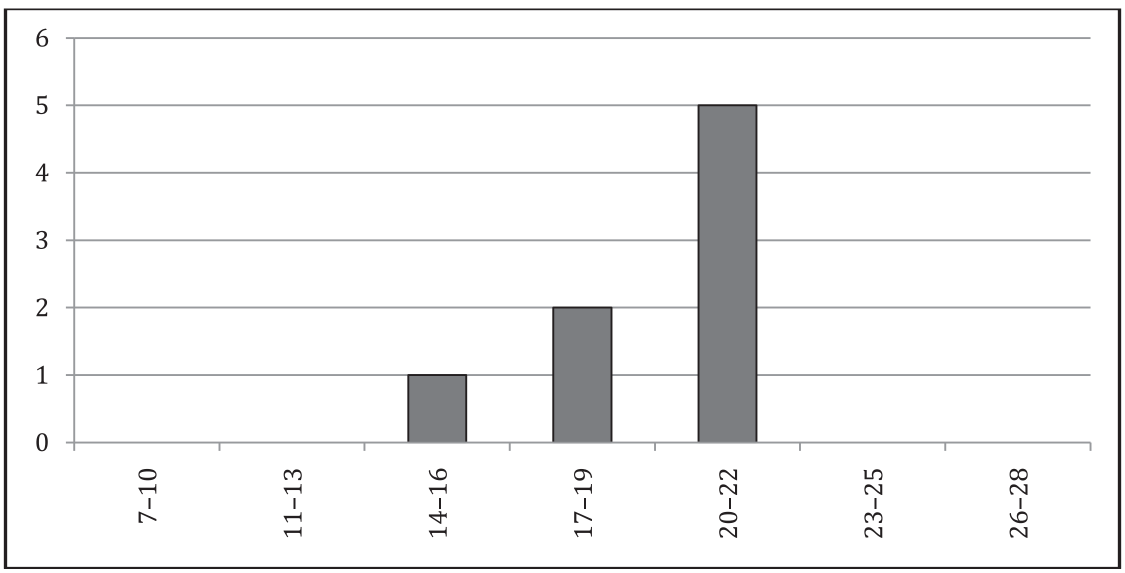


Figure 6.32. Jars.



a) Jars.



b) Bowls.

Figure 6.33. Jar and Bowl Diameters.

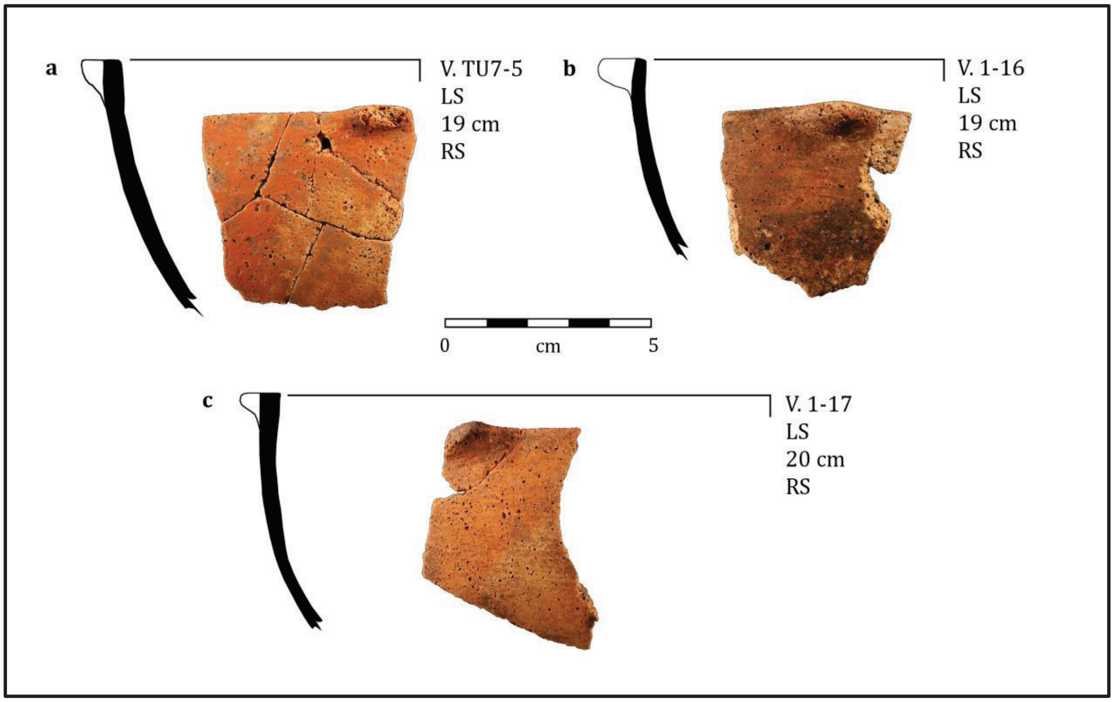


Figure 6.34. Bowls.

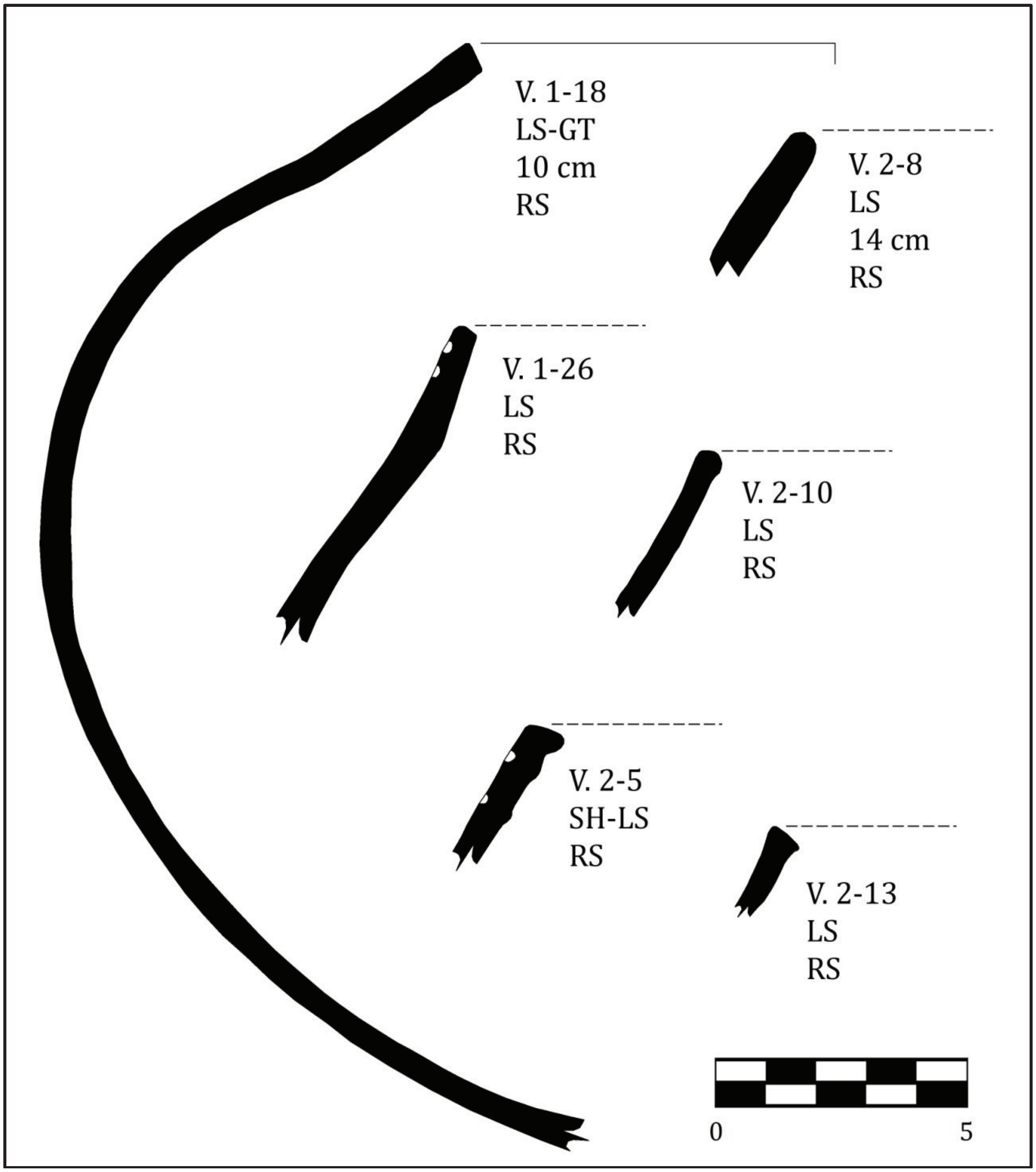


Figure 6.35. Seed Jars.

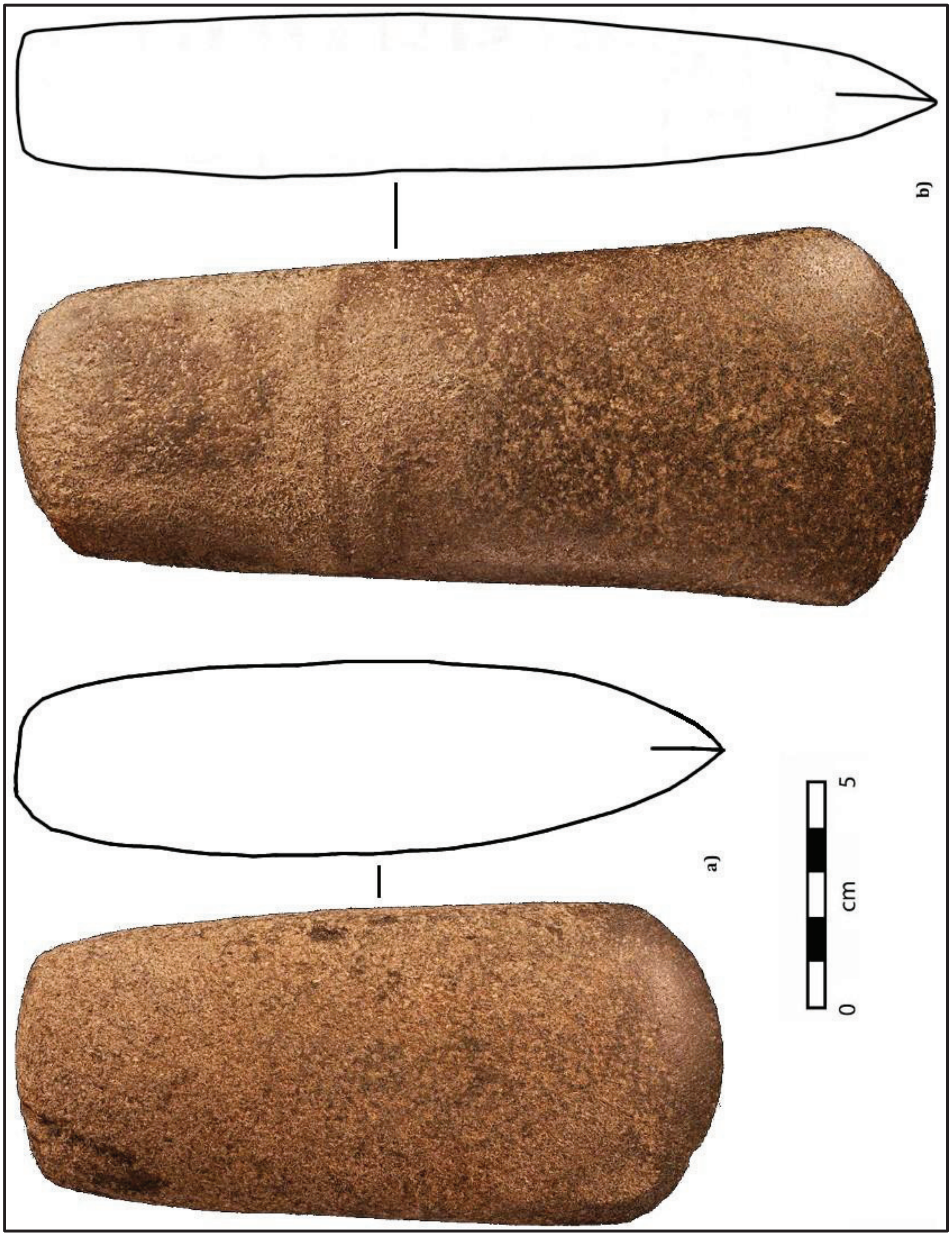
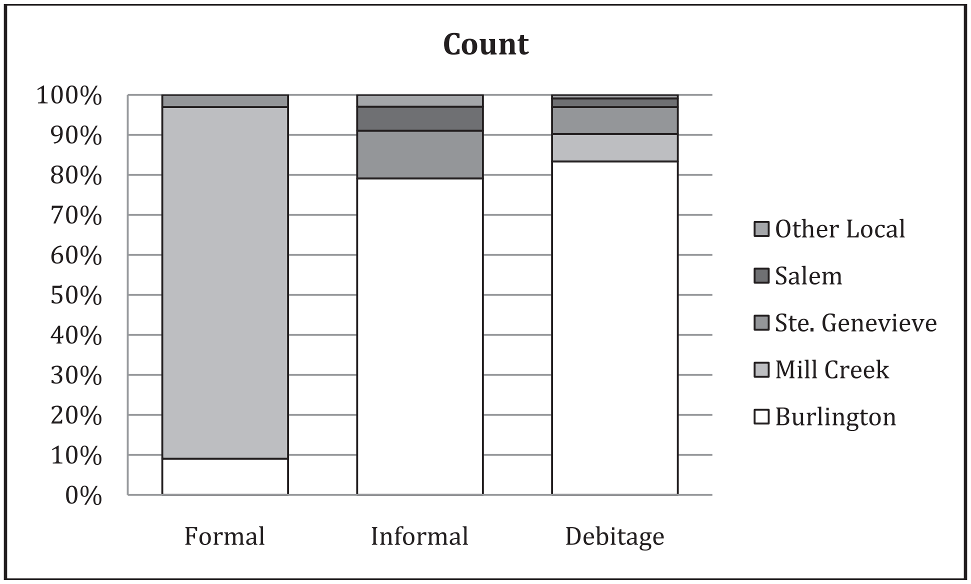
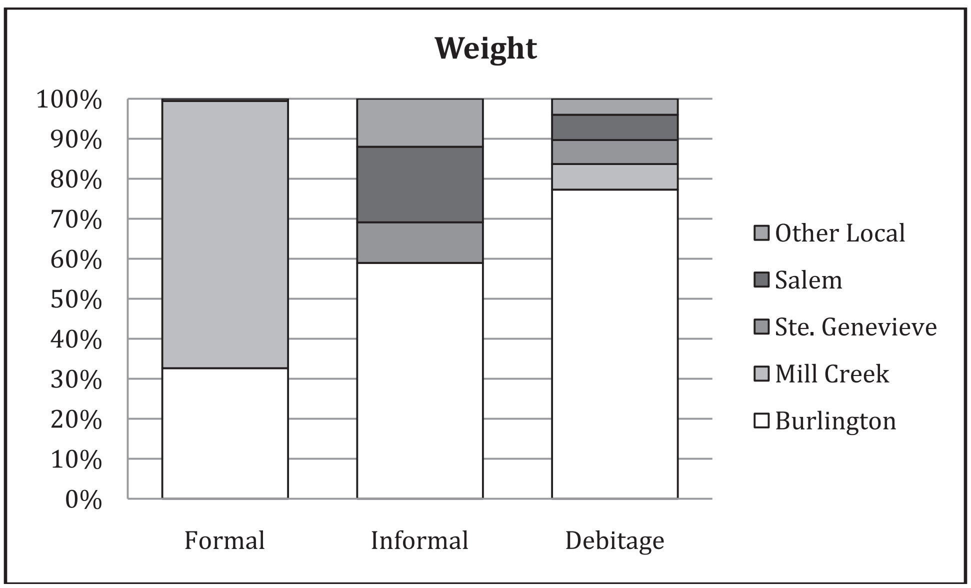


Figure 6.36. Complete Celts from Feature 2. a) PP3; b) PP1.

Figure 6.37. Groundstone Tools.

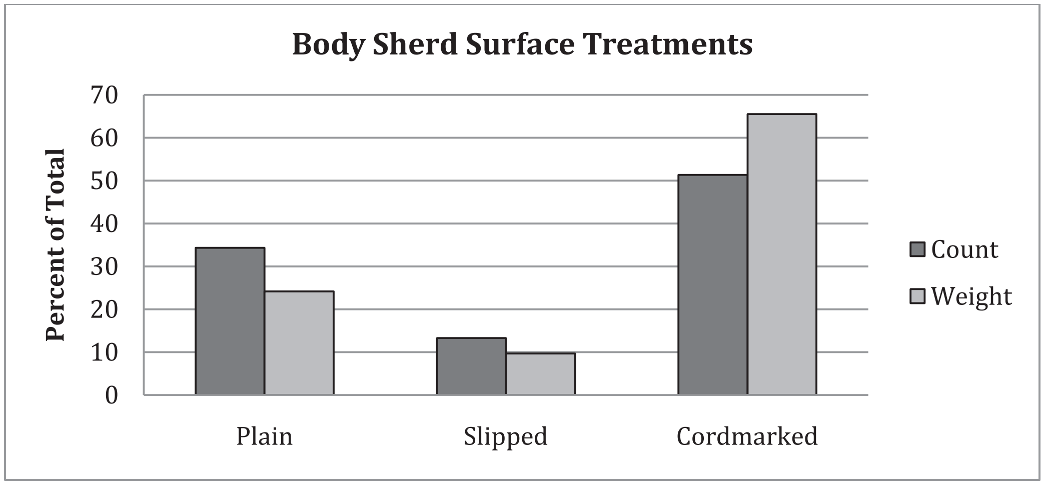


a)

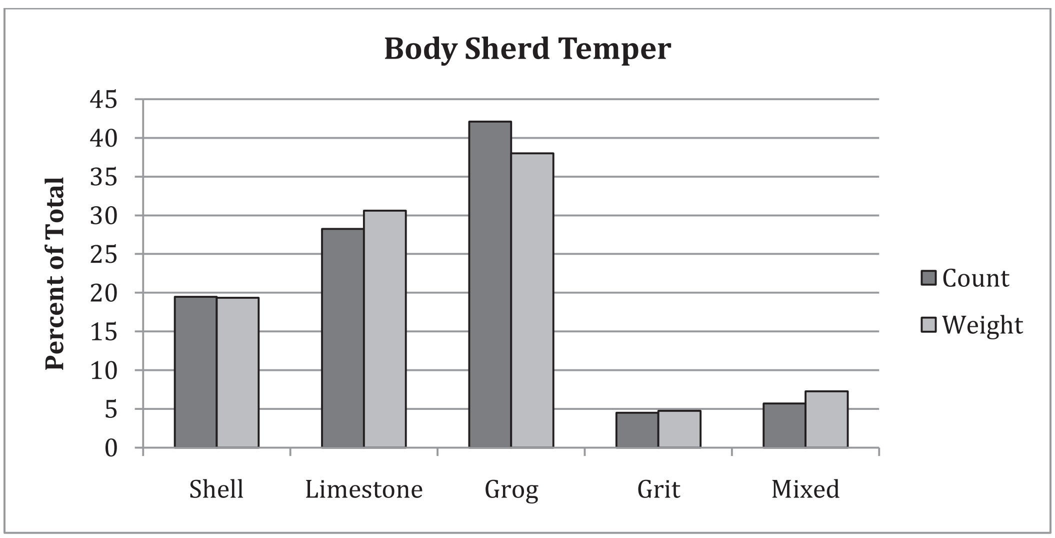


b)

Figure 6.38. Chert Types.



a)



b)

Figure 6.39. Body Sherd Surface Treatment and Temper Proportions.

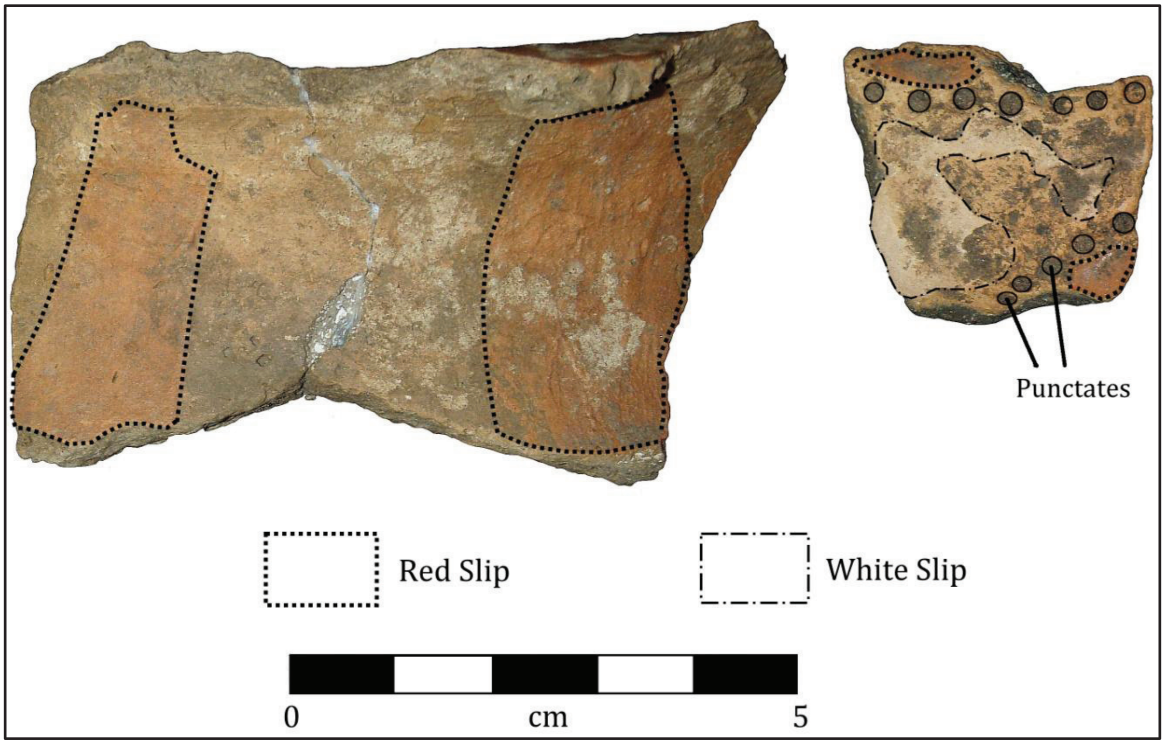


Figure 6.40. Varney-like Jar or Bottle and White-on-Red Seed Jar.

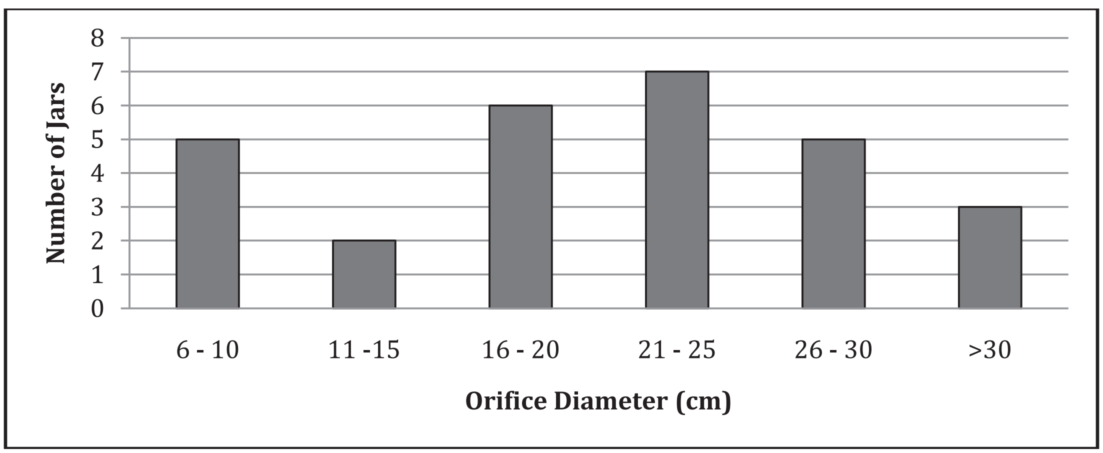


Figure 6.41. Jar Orifice Diameter Distribution.

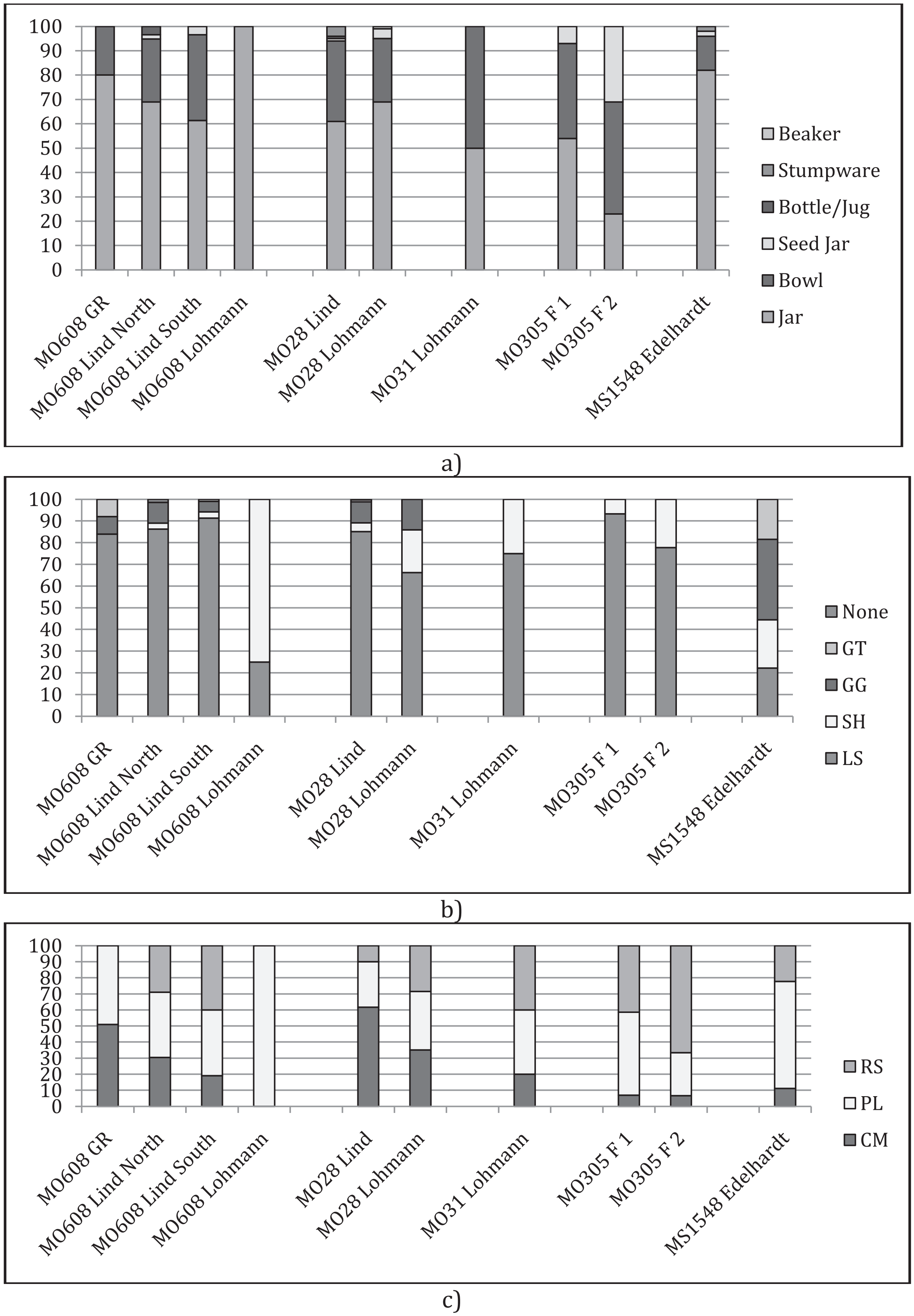


Figure 6.42. Vessel Comparison (%). a) Forms; b) Tempers; c) Surface Treatments.

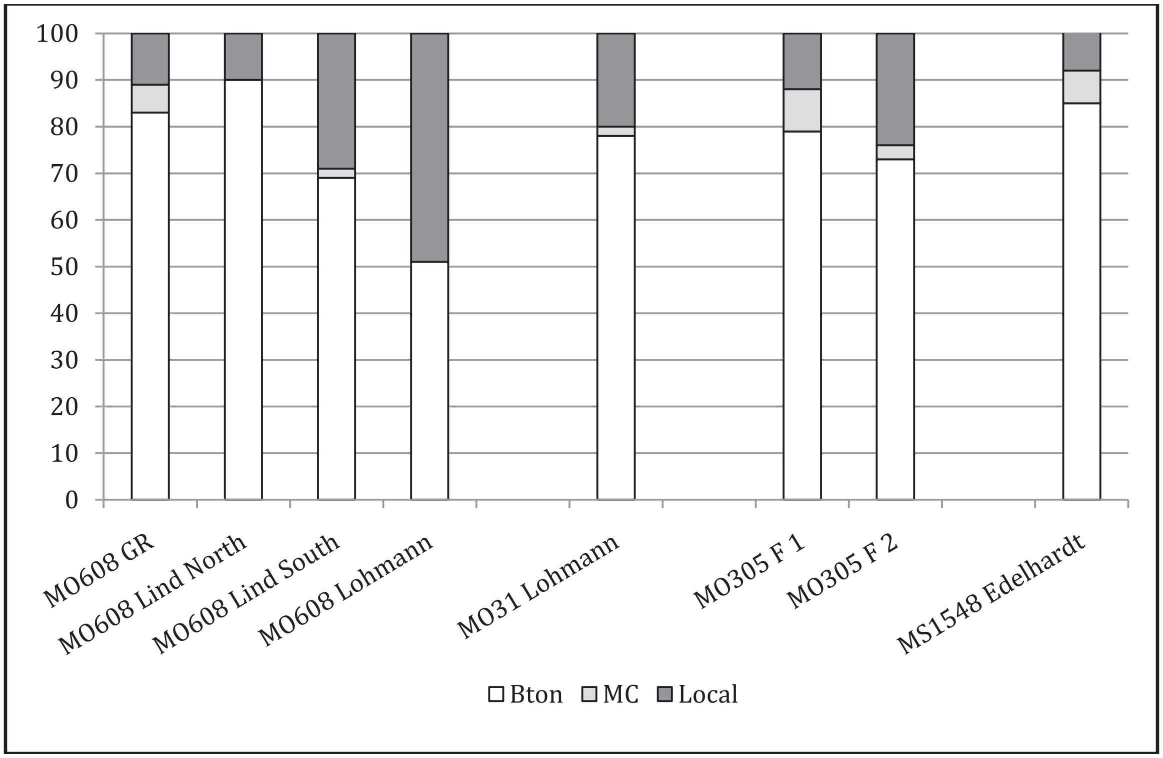


Figure 6.43. Chert Type Density.

TABLES

Table 6.1. Fired Clay from Terminal Late Woodland Features.

Component	Burnt Clay		Daub		Modeled Clay		Pinch Pot Sherds		Mud Dauber		**Total**	
Feature	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
George Reeves												
F 315*	25	30.7	8	13.0	-	-	1	2.1	-	-	34	45.8
F 351	66	148.3	8	8.4	-	-	-	-	-	-	74	156.7
Subtotal	*91*	*179.0*	*16*	*21.4*	-	-	*1*	*2.1*	-	-	*108*	*202.5*
Lindeman												
North												
F 382	95	211.7	12	18.5	1	2.7	4	5.8	-	-	112	238.7
F 388	2	1.4	2	8.0	-	-	-	-	-	-	4	9.4
F 502	-	-	1	1.3	-	-	-	-	-	-	1	1.3
F 503	14	51.7	1	0.7	-	-	-	-	-	-	15	52.4
F 511	3	8.3	-	-	-	-	-	-	-	-	3	8.3
F 539	1	1.2	-	-	-	-	-	-	1	7.9	2	9.1
F 703	4	15.7	1	0.4	-	-	1	2.8	-	-	6	18.9
F 704	1	4.7	-	-	-	-	-	-	-	-	1	4.7
South												
F 403	17	39.3	1	5.9	-	-	10	28.1	-	-	28	73.3
F 404	5	1.6	3	3.5	-	-	-	-	-	-	8	5.1
F 405	-	-	-	-	-	-	2	8.3	-	-	2	8.3
F 406	2	7.5	2	7.6	-	-	-	-	-	-	4	15.1
F 411	5	5.9	-	-	-	-	3	6.4	-	-	8	12.3
F 412	1	1.6	-	-	-	-	-	-	-	-	1	1.6
F 424	1	0.4	-	-	-	-	1	2.7	-	-	2	3.1
F 452	43	102.7	116	488.9	10	20.7	-	-	-	-	169	612.3
F 522	8	5.0	3	4.1	-	-	-	-	-	-	11	9.1
F 715	5	11.2	-	-	-	-	1	2.2	-	-	6	13.4
Subtotal	*207*	*469.9*	*142*	*538.9*	*11*	*23.4*	*22*	*56.3*	*1*	*7.9*	*383*	*1,096.4*
Total	298	648.9	158	560.3	11	23.4	23	58.4	1	7.9	**491**	**1,298.9**

* Feature numbers in bold are structures.

Table 6.2. Worked Sherds and Ceramic Objects from Terminal Late Woodland Features.

Bag Number	Type	Weight (g)	Ground Edges	Maximum Diameter (mm)	Minimum Diameter (mm)	Hole Diameter (mm)	Thickness (mm)	Temper[1]	Ext. Surface[2]	Int. Surface	Notes
Ceramic Disks											
424-2	drilled disk	4.8	yes	indet	indet	4.4	5.0	LS	Pol RS	Pol RS	fragment
452-6	disk	17.4	yes	57.7	indet	n/a	6.3	LS	CM	PL	fragment, z-twist
452-23	disk	3.9	yes	29.2	26.5	n/a	3.5	GG	CM	PL	complete, 2 sherds
452-25	disk	18.0	yes	46.9	44.3	n/a	7.0	GG	CM	PL	complete
522-13	perforated	10.0	yes	n/a	n/a	>4.7	5.8	LS	Pol RS	PL	probably from jar
Other Objects											
315-4	discoidal	8.4	n/a	indet	indet	n/a	16.5	None	PL	n/a	possible, fragmentary
403-1	discoidal	6.1	n/a	28.2	n/a	n/a	12.5	GG	PL	n/a	Plant impressions, fragment
522-12	ball	29.6	n/a	34.5	30.8	n/a	26.1	None	PL	n/a	hand squeezed?

[1] Temper types include Limestone (LS) and Grog (GG)

[2] Surface Treatments include Plain (PL), Cordmarked (CM), and Polished Red Slip (Pol RS)

Table 6.3. Body Sherds from George Reeves Phase Features.

Temper[1]	**Feature 315**[3]		**Feature 316**		Feature 333		Feature 334		Feature 351		**Total**	
Surface[2]	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Limestone												
CM	301	1,269.3	-	-	-	-	1	3.1	353	1,980.3	655	3,252.7
PL	22	78.5	4	7.0	-	-	-	-	59	76.0	85	161.5
PL-CM	2	29.2	-	-	-	-	-	-	4	23.5	6	52.7
RS	-	-	2	2.4	-	-	-	-	-	-	2	2.4
Pol RS	-	-	-	-	-	-	-	-	5	10.6	5	10.6
RS over CM	1	0.9	-	-	-	-	-	-	-	-	1	0.9
SMCM	13	137.6	2	1.1	-	-	-	-	13	18.8	28	157.5
ER	20	8.5	-	-	-	-	-	-	23	7.7	43	16.2
Subtotal	*359*	*1,524.0*	*8*	*10.5*	-	-	*1*	*3.1*	*457*	*2,116.9*	*825*	*3,654.5*
Shell												
Pol RS	-	-	-	-	-	-	-	-	2	0.9	*2*	*0.9*
Grog												
CM	96	236.0	-	-	1	0.7	-	-	74	161.1	171	397.8
PL-CM	1	11.5	-	-	-	-	-	-	-	-	1	11.5
SMCM	2	11.3	-	-	-	-	-	-	1	0.5	3	11.8
ER	28	20.1	-	-	-	-	-	-	19	5.0	47	25.1
Subtotal	*127*	*278.9*	-	-	*1*	*0.7*	-	-	*94*	*166.6*	*222*	*446.2*
Grit												
CM	6	15.1	-	-	-	-	-	-	1	20.5	7	35.6
PL	-	-	-	-	1	6.1	-	-	-	-	1	6.1
ER	-	-	-	-	-	-	-	-	1	2.5	1	2.5
Subtotal	*6*	*15.1*	-	-	*1*	*6.1*	-	-	*2*	*23.0*	*9*	*44.2*
GT/GG												
CM	4	10.0	-	-	-	-	-	-	2	15.5	6	25.5
ER	-	-	-	-	-	-	-	-	7	2.5	7	2.5
Subtotal	*4*	*10.0*	-	-	-	-	-	-	*9*	*18.0*	*13*	*28.0*
GG/LS												
CM	6	27.0	-	-	-	-	-	-	-	-	*6*	*27.0*
LS/GG												
CM	80	935.9	-	-	-	-	-	-	4	1.3	84	937.2
SMCM	-	-	-	-	-	-	-	-	1	0.3	1	0.3
Subtotal	*80*	*935.9*	-	-	-	-	-	-	*5*	*1.6*	*85*	*937.5*
Total	582	2,790.9	8	10.5	2	6.8	1	3.1	569	2,327.0	**1,162**	**5,138.3**

[1] Temper abbreviations are GT (grit), GG (grog), and LS (limestone).

[2] Surface abbreviations are CM (cordmarked), PL (plain), RS (red slip), Pol RS (polished red slip), SMCM (smoothed cordmarked), and ER (eroded).

[3] Feature numbers in bold are structures.

Table 6.4. Vessel Forms.

Component	Jar		Bowl		Seed Jar		Bottle/Jug		Indeterminate		Pre-TLW		**Total**
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	
George Reeves	32	*59*	8	*15*	-	-	-	-	10	*19*	4	*7*	54
Lindeman	94	*47*	46	*23*	4	*2*	2	*1*	31	*15*	24	*12*	201
North	40	*48*	15	*18*	1	*1*	2	*2*	15	*18*	10	*12*	83
South	54	*46*	31	*26*	3	*3*	-	-	16	*14*	14	*12*	118
Lohmann	2	*100*	-	-	-	-	-	-	-	-	-	-	2

Table 6.5. Jar Tempers.

	Limestone		Shell		Grog		Grit		Mixed		**Total**
Component	no.	%	no.	%	no.	%	no.	%	no.	%	
George Reeves	25	*78*	-	-	-	-	3	*9*	4	*13*	32
Lindeman North	33	*83*	1	*3*	4	*10*	-	-	2	*5*	40
Lindeman South	49	*91*	1	*2*	2	*4*	1	*2*	1	*2*	54
Lohmann	1	*50*	1	*50*	-	-	-	-	-	-	2

Table 6.6. Jar Rim Forms.

	T1		T2		T3		T4		T5		T6		**Total**
Component	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	
George Reeves	-	-	1	*4*	19	*68*	7	*25*	1	*4*	-	-	28
Lindeman North	-	-	3	*9*	18	*51*	9	*26*	4	*11*	1	*3*	35
Lindeman South	1	*2*	1	*2*	26	*51*	19	*37*	-	-	4	*8*	51
Lohmann	-	-	-	-	-	-	-	-	-	-	2	*100*	2

Table 6.7. Jar Lip Forms.

	Squared		Flattened		Thickenend		Round		Extruded		Beveled		Everted		Rolled		**Total**
Component	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	
George Reeves	12	*38*	13	*41*	3	*9*	1	*3*	3	*9*	-	-	-	-	-	-	32
Lindeman North	9	*23*	18	*46*	6	*15*	2	*5*	1	*3*	2	*5*	1	*3*	-	-	39
Lindeman South	14	*26*	10	*19*	15	*28*	6	*11*	3	*6*	4	*8*	-	-	1	*2*	53
Lohmann	1	*50*	-	-	-	-	-	-	-	-	-	-	-	-	1	*50*	2

Table 6.8. Jar Surface Treatments.

	CM		PL/PL-CM		PL		SMCM		RS		**Total**
Component	no.	%	no.	%	no.	%	no.	%	no.	%	
George Reeves	9	*28*	19	*59*	1	*3*	3	*9*	-	-	32
Lindeman North	7	*18*	23	*59*	1	*3*	3	*8*	5	*13*	39
Lindeman South	3	*6*	35	*69*	1	*2*	-	-	12	*24*	51
Lohmann	-	-	1	*50*	1	*50*	-	-	-	-	2

Table 6.9. Shoulder Segments.

Component	Shoulder	Sherd	Wt.	Temper			Shoulder Form			Exterior Surface					Interior Surface	
Feature	Count	Count	(g)	LS	GG	SH-	Round	Slight Angle	Angled	PL-CM	PL-SMCM	RS over PL-CM	CM	RS	RS	PL
George Reeves																
F 315	2	3	40.7	1	1	-	1	1	-	2	-	-	-	-	-	2
F 351	3	4	23.5	3	-	-	3	-	-	3	-	-	-	-	-	3
Lindeman North																
F 382	15	22	222.6	13	-	2	12	2	1	12	1	1	1	-	1	14
Lindeman South																
F 411	4	4	33.9	4	-	-	2	2	-	2	-	-	1	1	-	4
F 452	12	15	257.2	12	-	-	12	-	-	11	-	1	-	-	-	12
F 522	8	13	160.8	8	-	-	6	2	-	6	1	1	-	-	1	7
Total	44	61	738.7	41	1	2	36	7	1	36	2	3	2	1	2	42

Table. 6.10. Jar Orifice Diameters.

Component	Range	Average	Mode 1	Mode 2
George Reeves	8-35	22	11-13	23-25
Lindeman North	8-50	17	11-13	23-25
Lindeman South	7-38	19	20-22	7-10
Lohmann	16-21	19	-	-

Table 6.11. Jar Continuous Attributes.

Component	LP	LS	RC	RA	LB
George Reeves	0.73	1.06	0.06	78	-
Lindeman North	0.38	1.22	0.08	76	56
Lindeman South	0.47	1.26	0.06	75	-
Lohmann	0.80	1.40	0.00	54	58

Table 6.12. Bowl Tempers.

Component	Limestone		Shell		Grog		Mixed		Total
	no.	%	no.	%	no.	%	no.	%	
George Reeves	7	*88*	-	-	1	*13*	-	-	8
Lindeman North	13	*87*	-	-	2	*13*	-	-	15
Lindeman South	28	*90*	2	*6*	-	-	1	*3*	31

Table 6.13. Bowl Surface Treatments.

Component	CM		PL		SMCM		RS		Total
	no.	%	no.	%	no.	%	no.	%	
George Reeves	8	*100*	-	-	-	-	-	-	8
Lindeman North	7	*47*	-	-	1	*7*	7	*47*	15
Lindeman South	10	*33*	1	*3*	1	*3*	18	*60*	30

Table 6.14. Bowl Rim Forms.

Component	T1		T2		T3		Total
	no.	%	no.	%	no.	%	
George Reeves	6	*75*	1	*13*	1	*13*	8
Lindeman North	5	*38*	5	*38*	3	*23*	13
Lindeman South	12	*43*	12	*43*	4	*14*	28

Table 6.15. Bowl Lip Forms.

Component	Squared		Flattened		Thickenend		Round		Bevelled		Folded		Total
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	
George Reeves	6	*75*	2	*25*	-	-	-	-	-	-	-	-	8
Lindeman North	9	*64*	2	*14*	-	-	2	*14*	1	*7*	-	-	14
Lindeman South	18	*58*	9	*29*	1	*3*	1	*3*	1	*3*	1	*3*	31

Table 6.16. Bowl Orifice Diameters.

Component	Range	Average	Mode 1	Mode 2	Mode 3
George Reeves	34-45	42	43-45	-	-
Lindeman North	12-38	25	12-14	36-38	-
Lindeman South	9-48	23	12-14	21-23	33-35

Table 6.17. Fire-Cracked Rock from Terminal Late Woodland Features.

Component	Limestone		Sandstone		Igneous/ Metamorphic		Chert		**Total**	
Feature	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
George Reeves										
315	35	576	9	42	-	-	-	-	44	618
316	1	48	4	18	1	68	-	-	6	134
333	5	32	-	-	-	-	-	-	5	32
351	19	899	9	1,277	-	-	3	59	31	2,235
Subtotal	*60*	*1,555*	*22*	*1,337*	*1*	*68*	*3*	*59*	*86*	*3,019*
Lindeman										
North										
382	82	2,118	45	352	1	173	1	5	129	2,648
388	2	10	1	42	-	-	-	-	3	52
503	-	-	-	-	2	32	-	-	2	32
511	18	69	-	-	1	70	1	6	20	145
539	22	1,135	-	-	-	-	-	-	22	1,135
703	2	1	1	1	-	-	-	-	3	2
704	10	185	-	-	1	1	-	-	11	186
South										
403	137	5,090	-	-	-	-	-	-	137	5,090
404	4	117	-	-	-	-	-	-	4	117
405	9	384	-	-	-	-	-	-	9	384
406	54	4,374	-	-	-	-	-	-	54	4,374
411	1	2	3	15	-	-	-	-	4	17
412	63	1,495	-	-	-	-	-	-	63	1,495
424	3	44	-	-	-	-	-	-	3	44
452	233	6,937	13	324	-	-	-	-	246	7,261
522	3	43	4	38	-	-	2	15	9	96
715	12	174	4	73	-	-	-	-	16	247
Subtotal	*655*	*22,178*	*71*	*845*	*5*	*276*	*4*	*26*	*735*	*23,325*
Total	715	23,733	93	2,182	6	344	7	85	**821**	**26,344**

Table 6.18. Groundstone from Terminal Late Woodland Features.

Component	Celt Fragment		Spud Fragment		Diorite Flakes		Hammerstone		Metate		Flat Abrader		Slot Abrader	
Feature	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
George Reeves														
315	-	-	1	177.8	-	-	3	235.8	-	-	2	210.1	1	93.8
316	-	-	-	-	-	-	-	-	-	-	-	-	-	-
351	-	-	-	-	-	-	-	-	1	126.6	2	138.8	3	58.5
Subtotal	*-*	*-*	*1*	*177.8*	*-*	*-*	*3*	*235.8*	*1*	*126.6*	*4*	*348.9*	*4*	*152.3*
Lindeman														
North														
382	-	-	-	-	4	5.7	1	115.3	-	-	16	616.7	1	83.9
388	1	199.0	-	-	-	-	-	-	-	-	-	-	-	-
472	-	-	-	-	-	-	-	-	-	-	-	-	-	-
502	-	-	-	-	-	-	-	-	-	-	-	-	-	-
511	-	-	-	-	-	-	-	-	-	-	1	9.2	-	-
703	-	-	-	-	-	-	-	-	-	-	1	56.1	-	-
704	1	6.0	-	-	-	-	-	-	-	-	-	-	-	-
North														
403	1	203.7	-	-	-	-	1	81.2	-	-	-	-	-	-
404	-	-	-	-	-	-	-	-	-	-	1	30.1	-	-
405	-	-	-	-	-	-	-	-	-	-	1	50.1	-	-
411	-	-	-	-	-	-	-	-	-	-	-	-	-	-
412	-	-	-	-	-	-	-	-	-	-	-	-	-	-
452	1	2.6	-	-	-	-	1	11.5	-	-	2	105.4	1	28.9
522	-	-	-	-	-	-	2	88.3	-	-	1	250.1	-	-
715	-	-	-	-	-	-	-	-	-	-	2	108.7	1	47.0
Subtotal	*4*	*411.3*	*-*	*-*	*4*	*5.7*	*5*	*296.3*	*-*	*-*	*25*	*1,226.4*	*3*	*159.8*
Total	4	411.3	1	177.8	4	5.7	8	532.1	1	126.6	29	1,575.3	7	312.1

Table 6.18, continued. Groundstone from Terminal Late Woodland Features.

Component	Limonite		Missouri River Clinker		Unmodified Cobble		Unmodified Pebble		**Total**	
Feature	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
George Reeves										
315	-	-	-	-	-	-	-	-	7	717.5
316	-	-	-	-	-	-	1	0.5	1	0.5
351	-	-	-	-	-	-	10	13.6	16	337.5
Subtotal	-	-	-	-	-	-	*11*	*14.1*	*24*	*1,055.5*
Lindeman										
North										
382	-	-	-	-	2	28.4	-	-	24	850.0
388	-	-	-	-	-	-	-	-	1	199.0
472	-	-	1	1.7	-	-	-	-	1	1.7
502	-	-	-	-	-	-	1	10.2	1	10.2
511	-	-	-	-	1	14.3	-	-	2	23.5
703	-	-	-	-	-	-	-	-	1	56.1
704	-	-	-	-	-	-	-	-	1	6.0
North										
403	1	0.3	-	-	-	-	-	-	3	285.2
404	-	-	-	-	1	15.9	-	-	2	46.0
405	-	-	-	-	-	-	1	6.6	2	56.7
411	-	-	-	-	-	-	4	11.1	4	11.1
412	-	-	-	-	-	-	1	2.3	1	2.3
452	-	-	-	-	-	-	4	3.6	9	152.0
522	-	-	-	-	-	-	4	2.7	7	341.1
715	-	-	-	-	-	-	3	3.4	6	159.1
Subtotal	*1*	*0.3*	*1*	*1.7*	*4*	*58.6*	*18*	*39.9*	*65*	*2,200.0*
Total	1	0.3	1	1.7	4	58.6	29	54.0	**89**	**3,255.5**

Table 6.19. Chipped Stone from George Reeves Phase Features.

Chert Type	F 315		F 316		F 333		F 334		F 351		Total	
Tool Type	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Burlington												
Projectile Point	-	-	-	-	-	-	-	-	3	32.2	3	32.2
Flake Tool	33	273.8	11	85.8	-	-	1	0.5	32	351.7	77	711.8
Freehand Core	4	62.6	-	-	-	-	-	-	1	62.3	5	124.9
Adze Fragment	-	-	1	14.9	-	-	-	-	-	-	1	14.9
Low-Gloss Flake	3	4.5	-	-	-	-	-	-	-	-	3	4.5
High-Gloss Flake	1	0.1	-	-	-	-	-	-	-	-	1	0.1
Debitage	148	404.7	95	148.7	-	-	2	0.8	151	263.7	396	817.9
Subtotal	*189*	*745.7*	*107*	*249.4*	-	-	*3*	*1.3*	*187*	*709.9*	*486*	*1,706.3*
Mill Creek												
Low-Gloss Flake	-	-	-	-	-	-	-	-	1	0.1	1	0.1
High-Gloss Flake	6	55.4	-	-	-	-	-	-	36	191.0	42	246.4
Debitage	5	18.7	-	-	1	1.7	-	-	40	38.7	46	59.1
Subtotal	*11*	*74.1*	-	-	*1*	*1.7*	-	-	*77*	*229.8*	*89*	*305.6*
Ste. Genevieve												
Flake Tool	1	1.2	-	-	-	-	-	-	1	22.5	2	23.7
Freehand Core	-	-	-	-	-	-	-	-	1	25.7	1	25.7
Debitage	5	40.3	-	-	-	-	-	-	-	-	5	40.3
Subtotal	*6*	*41.5*	-	-	-	-	-	-	*2*	*48.2*	*8*	*89.7*
Salem												
Projectile Point	1	2.6	-	-	-	-	-	-	-	-	1	2.6
Flake Tool	3	35.0	-	-	-	-	-	-	3	20.8	6	55.8
Freehand Core	2	166.4	-	-	-	-	-	-	1	26.1	3	192.5
Low-Gloss Flake	1	0.3	-	-	-	-	-	-	-	-	1	0.3
Debitage	9	45.4	2	4.8	-	-	-	-	2	6.2	13	56.4
Subtotal	*16*	*249.7*	*2*	*4.8*	-	-	-	-	*6*	*53.1*	*24*	*307.6*
Grover Gravel												
Debitage	1	12.8	-	-	-	-	-	-	-	-	*1*	*12.8*
Fern Glen												
Debitage	1	1.5	-	-	-	-	-	-	-	-	*1*	*1.5*
Blair												
Freehand Core	1	99.0	-	-	-	-	-	-	-	-	*1*	*99.0*
Indeterminate												
Projectile Point	1	12.4	-	-	-	-	-	-	-	-	1	12.4
Flake Tool	1	6.0	-	-	-	-	-	-	1	2.9	2	8.9
Debitage	11	16.1	1	1.9	-	-	-	-	16	9.2	28	27.2
Subtotal	*13*	*34.5*	*1*	*1.9*	-	-	-	-	*17*	*12.1*	*31*	*48.5*
Total	238	1,258.8	110	256.1	1	1.7	3	1.3	289	1,053.1	**641**	**2,571.0**

Table 6.20. Ethnobotanical Remains from George Reeves Phase Features.

	F 315	F 333	F 351	**Total**
Wood				
Maple	2	-	-	2
Pecan	-	-	11	11
Ash	4	-	-	4
Honey Locust	12	2	-	14
Willow or Poplar	12	-	-	12
Cherry	-	-	1	1
Hickory	-	-	9	9
Oak	-	-	2	2
Gymnosperm	-	-	1	1
Diffuse porous	3	-	1	4
Ring porous	8	-	3	11
Unidentifiable	11	-	14	25
Total Wood (N)	*52*	*2*	*42*	*96*
Total Wood (g)	*1.51*	*0.02*	*0.84*	*2.37*
Nutshell				
Hickory/Walnut Family	-	-	2	2
(*Juglandaceae*)	-	-	0.03	0.03
Acorn	-	-	3	3
(*Quercus sp.*)	-	-	0.03	0.03
Total Nutshell (N)	-	-	*5*	*5*
Total Nutshell (g)	-	-	*0.06*	*0.06*
Seeds				
Chenopod	-	-	47	47
Little Barley	-	-	13	13
Maygrass	33	-	295	328
Erect Knotweed	-	-	1	1
Black Nightshade	10	-	1	11
Pigweed	-	-	1	1
Bittercress	1	-	7	8
Nodding Spurge	1	-	-	1
Prickly Sida	1	-	1	2
Bean Family	1	-	-	1
Barnyard Grass	-	-	2	2
Broomsedge	-	-	4	4
Panic Grass	10	-	9	19
Grass Family	-	-	1	1
Unidentifiable	7	-	54	61
Total Seeds (N)	*64*	-	*436*	*500*
Maize				
Kernel	25	-	76	101
Cupule	48	-	2	50
Glume	6	-	-	6.00
Total Zea mays (N)	*79*	-	*78*	*157*
Total Zea mays (g)	*0.27*	-	*0.44*	*0.71*
Other				
Fused seed clump	-	-	1	1
Grass stem	1	-	-	1
Insect larva	-	-	1	1
Total (N)	*1*	-	*2*	*3*

Table 6.21. Faunal Remains Recovered from George Reeves Phase Features.

Feature	N	Burned	Taxon	Elements; Section
315	3	3	small-sized mammal	vertebra; zygopophysis, indeterminate fragments
	16	16	mammal, indet.	indeterminate; fragments
	29	29	Vertebrata	indeterminate; fragments
351	2	-	Catfish	pectoral spine; right quadrant fragments
	10	-	fish, indet.	cranial, vertebra, centrum; fragments
	3	3	mammal, indet.	indeterminate; fragments
	34	32	Vertebrata	indeterminate; fragments
Total	97	83		

Table 6.22. Body Sherds from Lindeman Phase Features, North Cluster.

Temper	Feature 382		Feature 388		Feature 472		Feature 502		Feature 503		Feature 511	
Surface	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Limestone												
CM	376	1,940.2	7	43.9	-	-	-	-	20	107.8	-	-
PL	117	452.6	1	3.8	1	1.7	-	-	-	-	-	-
PL-CM	16	161.9	1	17.0	-	-	-	-	-	-	-	-
RS	1	0.5	-	-	-	-	-	-	-	-	-	-
Pol RS	120	310.5	-	-	-	-	-	-	12	21.5	-	-
RS over CM	1	8.7	-	-	-	-	-	-	-	-	-	-
RS over SMCM	2	5.4	-	-	-	-	-	-	-	-	-	-
SMCM	99	490.2	1	1.1	-	-	-	-	1	3.6	-	-
PL/RS	2	1.0	-	-	-	-	-	-	-	-	-	-
RS over PL-CM	1	5.3	-	-	-	-	-	-	-	-	-	-
SMCM/RS	1	12.8	-	-	-	-	-	-	-	-	-	-
ER	36	29.4	-	-	-	-	-	-	3	0.6	-	-
Subtotal	*772*	*3,418.5*	*10*	*65.8*	*1*	*1.7*	-	-	*36*	*133.5*	-	-
Shell												
PL	9	32.3	-	-	-	-	-	-	-	-	-	-
Pol RS	22	99.4	-	-	-	-	-	-	-	-	-	-
ER	16	30.4	-	-	-	-	-	-	-	-	-	-
Subtotal	*47*	*162.1*	-	-	-	-	-	-	-	-	-	-
Grog												
CM	133	610.1	19	78.0	3	4.0	5	10.0	13	61.5	20	134.0
PL	10	21.2	2	1.2	-	-	-	-	-	-	1	1.8
SMCM	6	8.1	1	5.4	-	-	-	-	-	-	-	-
ER	12	11.3	3	1.5	-	-	-	-	-	-	1	0.6
Subtotal	*161*	*650.7*	*25*	*86.1*	*3*	*4.0*	*5*	*10.0*	*13*	*61.5*	*22*	*136.4*
LS/GG												
CM	18	92.5	-	-	-	-	-	-	-	-	-	-
PL	1	4.6	-	-	-	-	-	-	-	-	-	-
SMCM	5	17.1	-	-	-	-	-	-	-	-	-	-
ER	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	*24*	*114.2*	-	-	-	-	-	-	-	-	-	-
GG/LS												
CM	-	-	-	-	-	-	-	-	2	4.7	-	-
SMCM	-	-	1	1.5	2	2.6	1	1.6	-	-	-	-
Subtotal	-	-	*1*	*1.5*	*2*	*2.6*	*1*	*1.6*	*2*	*4.7*	-	-
GT/GG												
CM	1	12.7	-	-	-	-	-	-	-	-	-	-
GG/GT												
CM	-	-	-	-	-	-	-	-	7	59.6	-	-
SH/GG												
PL-CM	5	12.2	-	-	-	-	-	-	-	-	-	-
ER	1	0.8	-	-	-	-	-	-	-	-	-	-
Subtotal	*6*	*13.0*	-	-	-	-	-	-	-	-	-	-
Total	###	4,371.2	36	153.4	6	8.3	6	11.6	58	259.3	22	136.4

Table 6.22, continued. Body Sherds from Lindeman Phase Features, North Cluster.

Temper	Feature 539		Feature 547		Feature 646		**Feature 703**		Feature 704		**Total**	
Surface	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Limestone												
CM	-	-	-	-	-	-	64	153.3	-	-	467	2,245.2
PL	-	-	-	-	-	-	4	2.4	-	-	123	460.5
PL-CM	-	-	2	9.3	-	-	-	-	-	-	19	188.2
RS	-	-	-	-	-	-	-	-	-	-	1	0.5
Pol RS	-	-	-	-	1	4.6	2	3.4	-	-	135	340.0
RS over CM	-	-	-	-	-	-	-	-	-	-	1	8.7
RS over SmCM	-	-	-	-	-	-	-	-	-	-	2	5.4
SMCM	1	0.3	-	-	-	-	-	-	-	-	102	495.2
PL/RS	-	-	-	-	-	-	-	-	-	-	2	1.0
RS over PL-CM	-	-	-	-	-	-	-	-	-	-	1	5.3
SMCM/RS	-	-	-	-	-	-	-	-	-	-	1	12.8
ER	-	-	-	-	-	-	33	18.5	1	1.5	73	50.0
Subtotal	*1*	*0.3*	*2*	*9.3*	*1*	*4.6*	*103*	*177.6*	*1*	*1.5*	*927*	*3,812.8*
Shell												
PL	-	-	-	-	-	-	-	-	-	-	9	32.3
Pol RS	-	-	-	-	-	-	-	-	-	-	22	99.4
ER	-	-	-	-	-	-	-	-	-	-	16	30.4
Subtotal	-	-	-	-	-	-	-	-	-	-	*47*	*162.1*
Grog												
CM	7	38.9	-	-	3	1.4	41	174.9	7	19.5	251	1,132.3
PL	1	0.3	-	-	-	-	3	3.8	-	-	17	28.3
SMCM	-	-	1	4.4	-	-	2	11.8	-	-	10	29.7
ER	3	0.8	-	-	1	0.5	6	4.4	1	0.2	27	19.3
Subtotal	*11*	*40.0*	*1*	*4.4*	*4*	*1.9*	*52*	*194.9*	*8*	*19.7*	*305*	*1,209.6*
LS/GG												
CM	-	-	-	-	-	-	5	31.8	-	-	23	124.3
PL	-	-	-	-	-	-	-	-	-	-	1	4.6
SMCM	-	-	-	-	-	-	-	-	-	-	5	17.1
ER	-	-	-	-	-	-	-	-	-	-	0	0.0
Subtotal	-	-	-	-	-	-	*5*	*31.8*	-	-	*29*	*146.0*
GG/LS												
CM	-	-	-	-	-	-	1	18.9	-	-	3	23.6
SMCM	-	-	-	-	-	-	-	-	-	-	4	5.7
Subtotal	-	-	-	-	-	-	*1*	*18.9*	-	-	*7*	*29.3*
GT/GG												
CM	-	-	-	-	-	-	-	-	-	-	*1*	*12.7*
GG/GT												
CM	-	-	-	-	-	-	-	-	-	-	*7*	*59.6*
SH/GG												
PL-CM	-	-	-	-	-	-	-	-	-	-	5	12.2
ER	-	-	-	-	-	-	-	-	-	-	1	0.8
Subtotal	-	-	-	-	-	-	-	-	-	-	*6*	*13.0*
Total	12	40.3	3	13.7	5	6.5	161	423.2	9	21.2	**1,329**	**5,445.1**

Table 6.23. Body Sherds from Lindeman Phase Features, South Cluster.

Temper	Feature 403		Feature 404		Feature 405		Feature 406		Feature 411		Feature 412	
Surface	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Limestone												
CM	1	9.8	-	-	-	-	2	2.3	179	535.2	97	428.3
PL	-	-	-	-	1	2.7	-	-	18	36.4	7	27.0
PL-CM	-	-	-	-	-	-	-	-	2	22.1	-	-
RS	-	-	-	-	-	-	-	-	2	10.3	-	-
Pol RS	1	0.4	-	-	1	5.4	2	6.3	26	83.6	11	24.4
RS over CM	-	-	-	-	-	-	-	-	-	-	-	-
SMCM	-	-	-	-	-	-	-	-	9	11.2	-	-
ER	-	-	-	-	-	-	1	12.3	36	53.6	19	9.5
RS over PL-CM	-	-	-	-	-	-	-	-	-	-	-	-
SMCM/RS	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	*2*	*10.2*	-	-	*2*	*8.1*	*5*	*20.9*	*272*	*752.4*	*134*	*489.2*
Shell												
CM	-	-	-	-	-	-	-	-	-	-	-	-
PL	-	-	-	-	-	-	-	-	-	-	-	-
Pol RS	-	-	-	-	-	-	-	-	-	-	-	-
ER	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-	-	-	-	-
Grog												
CM	33	111.3	4	10.0	17	75.9	1	5.8	11	20.8	7	24.9
PL	-	-	-	-	-	-	-	-	-	-	-	-
SMCM	-	-	-	-	-	-	-	-	1	4.3	-	-
ER	2	1.1	5	1.0	1	0.7	1	1.1	-	-	1	0.4
Subtotal	*35*	*112.4*	*9*	*11.0*	*18*	*76.6*	*2*	*6.9*	*12*	*25.1*	*8*	*25.3*
Grit												
CM	-	-	-	-	-	-	-	-	-	-	-	-
PL	-	-	-	-	-	-	-	-	-	-	1	2.0
Subtotal	-	-	-	-	-	-	-	-	-	-	*1*	*2.0*
SH/GG												
CM	-	-	-	-	-	-	-	-	-	-	-	-
GG/LS												
PL	1	10.6	-	-	-	-	-	-	-	-	-	-
ER	1	0.5	-	-	-	-	-	-	-	-	-	-
Subtotal	*2*	*11.1*	-	-	-	-	-	-	-	-	-	-
LS/GG												
CM	-	-	-	-	-	-	-	-	-	-	-	-
ER	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-	-	-	-	-
Total	39	133.7	9	11.0	20	84.7	7	27.8	284	777.5	143	516.5

Table 6.23, continued. Body Sherds from Lindeman Phase Features, South Cluster.

Temper	Feature 424		**Feature 452**		**Feature 522**		Feature 524		**Feature 715**		**Total**	
Surface	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Limestone												
CM	32	102.7	499	3,197.1	54	237.3	-	-	67	347.2	931	4,859.9
PL	-	-	115	402.6	7	11.1	1	0.4	19	21.3	168	501.5
PL-CM	-	-	16	279.6	12	154.2	-	-	-	-	30	455.9
RS	-	-			4	24.8	-	-	-	-	6	35.1
Pol RS	3	1.8	337	1,438.7	36	134.4	-	-	11	46.6	428	1,741.6
RS over CM	-	-	1	6.4	-	-	-	-	1	1.1	2	7.5
SmCM	-	-	25	111.5	6	24.2	-	-	6	32.4	46	179.3
ER	5	2.4	32	24.4	16	10.4	-	-	16	7.2	125	119.8
RS over PL-CM	-	-	1	11.1	1	6.8	-	-	-	-	2	17.9
SMCM/RS	-	-	2	9.9	-	-	-	-	-	-	2	9.9
Subtotal	*40*	*106.9*	*1,028*	*5,481.3*	*136*	*603.2*	*1*	*0.4*	*120*	*455.8*	*1,740*	*7,928.4*
Shell												
CM	-	-	-	-	5	3.9	-	-	7	15.5	12	19.4
PL	-	-	3	7.8	15	29.9	-	-	-	-	18	37.7
Pol RS	-	-	6	77.3			-	-	-	-	6	77.3
ER	-	-	-	-	13	13.1	-	-	3	6.5	16	19.6
Subtotal	-	-	*9*	*85.1*	*33*	*46.9*	-	-	*10*	*22.0*	*52*	*154.0*
Grog												
CM	6	26.1	90	328.6	32	121.6	-	-	58	164.6	259	889.6
PL	-	-	4	7.7	1	1.3	-	-	2	2.9	7	11.9
SmCM	-	-	8	58.4	2	6.2	1	2.1	10	13.1	22	84.1
ER	2	0.6	5	5.8	8	17.9	-	-	9	4.2	34	32.8
Subtotal	*8*	*26.7*	*107*	*400.5*	*43*	*147.0*	*1*	*2.1*	*79*	*184.8*	*322*	*1,018.4*
Grit												
CM	-	-	1	11.0	-	-	-	-	8	22.2	9	33.2
PL	-	-	1	1.5	-	-	-	-	1	1.3	3	4.8
Subtotal	-	-	*2*	*12.5*	-	-	-	-	*9*	*23.5*	*12*	*38.0*
SH/GG												
CM	-	-	1	7.2	-	-	-	-	-	-	*1*	*7.2*
GG/LS												
PL	-	-	-	-	-	-	-	-	-	-	1	10.6
ER	-	-	-	-	-	-	-	-	-	-	1	0.5
Subtotal	-	-	-	-	-	-	-	-	-	-	*2*	*11.1*
LS/GG												
CM	-	-	-	-	-	-	-	-	3	18.3	3	18.3
ER	-	-	-	-	3	1.8	-	-	-	-	3	1.8
Subtotal	-	-	-	-	*3*	*1.8*	-	-	*3*	*18.3*	*6*	*20.1*
Total	48	133.6	1,147	5,986.6	215	798.9	2	2.5	221	704.4	**2,135**	**9,177.2**

Table 6.24. Chipped Stone from Lindeman Phase Features, North Cluster.

Chert Type	F 382		F 388		F 472		F 502		F 503		F 511	
Tool Type	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Burlington												
Projectile Point	-	-	1	1.1	-	-	-	-	-	-	-	-
Flake Tool	75	703.2	4	47.1	-	-	-	-	1	3.8	1	5.4
Freehand Core	7	234.0	-	-	-	-	-	-	-	-	-	-
Bipolar Core	-	-	-	-	-	-	-	-	-	-	-	-
Chert Hammer	1	7.1	-	-	-	-	-	-	-	-	-	-
Adze Fragment	1	17.7	-	-	-	-	-	-	-	-	-	-
Adze Flake	1	0.1	-	-	-	-	-	-	-	-	-	-
Hoe Flake	-	-	1	1.3	-	-	-	-	-	-	-	-
Debitage	351	1,144.4	25	53.2	2	7.1	4	25.9	15	6.1	4	2.7
Subtotal	*436*	*2,106.5*	*31*	*102.7*	*2*	*7.1*	*4*	*25.9*	*16*	*9.9*	*5*	*8.1*
Mill Creek												
Flake Tool	1	4.4	-	-	-	-	-	-	-	-	-	-
Debitage	2	4.0	-	-	-	-	-	-	-	-	-	-
Subtotal	*3*	*8.4*	-	-	-	-	-	-	-	-	-	-
Ste. Genevieve												
Flake Tool	1	2.5	-	-	-	-	-	-	-	-	-	-
Freehand Core	1	41.5	-	-	-	-	-	-	-	-	-	-
Bipolar Core	-	-	-	-	-	-	-	-	-	-	-	-
Debitage	2	2.9	2	5.4	-	-	3	44.3	-	-	-	-
Subtotal	*4*	*46.9*	*2*	*5.4*	*0*	*0.0*	*3*	*44.3*	-	-	-	-
Salem												
Flake Tool	1	10.1	-	-	1	0.8	-	-	-	-	-	-
Freehand Core	2	55.6	-	-	-	-	-	-	-	-	-	-
Bipolar Core	1	11.0	-	-	-	-	-	-	-	-	-	-
Adze Fragment	-	-	-	-	-	-	-	-	-	-	-	-
Adze Flakes	-	-	-	-	-	-	-	-	-	-	-	-
Debitage	12	17.9	1	0.9	-	-	-	-	1	1.0	5	21.2
Subtotal	*16*	*94.6*	*1*	*0.9*	*1*	*0.8*	-	-	*1*	*1.0*	*5*	*21.2*
Grover Gravel												
Flake Tool	-	-	-	-	-	-	-	-	-	-	-	-
Fern Glen												
Debitage	-	-	-	-	-	-	-	-	-	-	-	-
Kaolin												
Projectile Point	1	8.4	-	-	-	-	-	-	-	-	-	-
Subtotal	*1*	*8.4*	-	-	-	-	-	-	-	-	-	-
Cobden												
Flake Tool	-	-	-	-	-	-	-	-	-	-	-	-
Indeterminate												
Flake Tool	7	60.6	-	-	-	-	-	-	-	-	-	-
Debitage	17	48.7	2	0.7	1	0.3	1	1.5	2	1.8	1	0.4
Subtotal	*24*	*109.3*	*2*	*0.7*	*1*	*0.3*	*1*	*1.5*	*2*	*1.8*	*1*	*0.4*
Total	484	2,374.1	36	109.7	4	8.2	8	71.7	19	12.7	11	29.7

Table 6.24, continued. Chipped Stone from Lindeman Phase Features, North Cluster.

Chert Type	F 539		F 547		F 646		**F 703**		F 704		**Total**	
Tool Type	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Burlington												
Projectile Point	-	-	-	-	-	-	1	0.6	-	-	2	1.7
Flake Tool	3	14.5	-	-	-	-	10	203.0	1	2.7	95	979.7
Freehand Core	-	-	-	-	-	-	1	40.7	-	-	8	274.7
Bipolar Core	1	6.2	-	-	-	-	-	-	-	-	1	6.2
Chert Hammer	-	-	-	-	-	-	1	25.2	-	-	2	32.3
Adze Fragment	-	-	-	-	-	-	-	-	-	-	1	17.7
Adze Flake	-	-	-	-	-	-	1	0.6	-	-	2	0.7
Hoe Flake	-	-	-	-	-	-	-	-	-	-	1	1.3
Debitage	14	20.4	3	16.5	1	0.3	87	89.0	4	1.8	510	1,367.4
Subtotal	*18*	*41.1*	*3*	*16.5*	*1*	*0.3*	*101*	*359.1*	*5*	*4.5*	*622*	*2,681.7*
Mill Creek												
Flake Tool	-	-	-	-	-	-	-	-	-	-	1	4.4
Debitage	-	-	-	-	-	-	2	0.3	-	-	4	4.3
Subtotal	-	-	-	-	-	-	*2*	*0.3*	-	-	*5*	*8.7*
Ste. Genevieve												
Flake Tool	1	4.2	-	-	-	-	1	1.3	-	-	3	8.0
Freehand Core	-	-	-	-	-	-	1	11.3	-	-	2	52.8
Bipolar Core	-	-	-	-	-	-	1	18.7	-	-	1	18.7
Debitage	2	10.0	-	-	-	-	5	7.5	-	-	14	70.1
Subtotal	*3*	*14.2*	-	-	-	-	*8*	*38.8*	-	-	*20*	*149.6*
Salem												
Flake Tool	1	3.1	-	-	-	-	1	1.1	1	7.6	5	22.7
Freehand Core	1	52.0	-	-	-	-	-	-	-	-	3	107.6
Bipolar Core	-	-	-	-	-	-	1	37.8	-	-	2	48.8
Adze Fragment	1	60.7	-	-	-	-	-	-	-	-	1	60.7
Adze Flakes	11	14.7	-	-	-	-	-	-	-	-	11	14.7
Debitage	15	13.0	-	-	-	-	9	9.4	5	6.8	48	70.2
Subtotal	*29*	*143.5*	-	-	-	-	*11*	*48.3*	*6*	*14.4*	*70*	*324.7*
Grover Gravel												
Flake Tool	-	-	-	-	-	-	1	13.2	-	-	*1*	*13.2*
Fern Glen												
Debitage	-	-	-	-	-	-	1	0.8	-	-	*1*	*0.8*
Kaolin												
Projectile Point	-	-	-	-	-	-	-	-	-	-	1	8.4
Subtotal	-	-	-	-	-	-	-	-	-	-	*1*	*8.4*
Cobden												
Flake Tool	-	-	-	-	-	-	1	2.5	-	-	*1*	*2.5*
Indeterminate												
Flake Tool	-	-	-	-	-	-	-	-	-	-	7	60.6
Debitage	1	1.8	-	-	-	-	7	9.5	1	0.8	33	65.5
Subtotal	*1*	*1.8*	-	-	-	-	*7*	*9.5*	*1*	*0.8*	*40*	*126.1*
Total	51	200.6	3	16.5	1	0.3	132	472.5	12	19.7	**761**	**3,315.7**

Table 6.25. Chipped Stone from Lindeman Phase Features, South Cluster.

Chert Type	F 403		F 404		F 405		F 406	
Tool Type	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Burlington								
Projectile Point	1	0.5	-	-	-	-	-	-
Biface	-	-	-	-	-	-	-	-
Flake Tool	6	20.0	-	-	1	19.1	1	3.2
Freehand Core	-	-	-	-	-	-	-	-
Bipolar Core	-	-	-	-	-	-	-	-
Adze Fragment	-	-	-	-	-	-	-	-
Adze Flake	1	0.7	-	-	-	-	-	-
Hoe Flake	-	-	-	-	-	-	1	0.8
Debitage	15	35.2	6	7.8	7	6.3	1	3.4
Subtotal	*23*	*56.4*	*6*	*7.8*	*8*	*25.4*	*3*	*7.4*
Mill Creek								
Flake Tool	-	-	1	2.1	-	-	-	-
Hoe Flake	-	-	-	-	-	-	-	-
Debitage	3	4.8	-	-	-	-	-	-
Subtotal	*3*	*4.8*	*1*	*2.1*	*0*	*0.0*	*0*	*0.0*
Ste. Genevieve								
Flake Tool	3	13.6	-	-	-	-	-	-
Freehand Core	-	-	-	-	-	-	-	-
Tested Cobble	-	-	-	-	-	-	-	-
Debitage	5	13.6	3	4.0	2	3.4	-	-
Subtotal	*8*	*27.2*	*3*	*4.0*	*2*	*3.4*	*0*	*0.0*
Salem								
Flake Tool	3	28.7	-	-	1	13.9	1	5.6
Freehand Core	1	32.0	-	-	-	-	1	31.6
Bipolar Core	-	-	-	-	-	-	-	-
Debitage	13	14.9	3	10.9	5	16.7	-	-
Subtotal	*17*	*75.6*	*3*	*10.9*	*6*	*30.6*	*2*	*37.2*
Grover Gravel								
Debitage	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-
Glacial Till								
Debitage	-	-	1	13.6	-	-	-	-
Kaolin								
Adze Flake	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-
Indeterminate								
Flake Tool	1	4.6	-	-	-	-	-	-
Hoe Flake	-	-	-	-	-	-	-	-
Debitage	8	17.5	-	-	-	-	1	9.0
Subtotal	*9*	*22.1*	*0*	*0.0*	*0*	*0.0*	*1*	*9.0*
Total	60	186.1	14	38.4	16	59.4	6	53.6

Table 6.25, continued. Chipped Stone from Lindeman Phase Features, South Cluster.

Chert Type	F 411		F 412		F 424		**F 452**	
Tool Type	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Burlington								
Projectile Point	-	-	-	-	-	-	-	-
Biface	-	-	-	-	-	-	1	6.3
Flake Tool	5	8.7	-	-	2	17.4	47	434.6
Freehand Core	-	-	-	-	-	-	2	37.2
Bipolar Core	-	-	-	-	-	-	2	41.5
Adze Fragment	-	-	-	-	-	-	1	10.8
Adze Flake	-	-	-	-	1	4.4	4	4.5
Hoe Flake	-	-	-	-	-	-	1	2.9
Debitage	9	9.2	2	1.0	3	2.5	160	227.0
Subtotal	*14*	*17.9*	*2*	*1.0*	*6*	*24.3*	*218*	*764.8*
Mill Creek								
Flake Tool	-	-	-	-	-	-	1	0.8
Hoe Flake	-	-	-	-	-	-	5	78.0
Debitage	-	-	2	1.6	2	0.4	2	4.0
Subtotal	-	-	*2*	*1.6*	*2*	*0.4*	*8*	*82.8*
Ste. Genevieve								
Flake Tool	-	-	-	-	-	-	2	85.7
Freehand Core	1	13.2	-	-	-	-	1	45.7
Tested Cobble	-	-	-	-	-	-	1	73.9
Debitage	1	0.1	1	2.0	-	-	12	17.3
Subtotal	*2*	*13.3*	*1*	*2.0*	-	-	*16*	*222.6*
Salem								
Flake Tool	-	-	-	-	-	-	1	4.6
Freehand Core	-	-	-	-	-	-	2	115.5
Bipolar Core	-	-	-	-	-	-	-	-
Debitage	-	-	1	17.7	-	-	8	16.5
Subtotal	-	-	*1*	*17.7*	-	-	*11*	*136.6*
Grover Gravel								
Debitage	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-
Glacial Till								
Debitage	-	-	-	-	-	-	1	5.2
Kaolin								
Adze Flake	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-
Indeterminate								
Flake Tool	-	-	-	-	-	-	3	11.5
Hoe Flake	-	-	-	-	-	-	1	2.7
Debitage	2	0.5	-	-	3	7.8	20	25.3
Subtotal	*2*	*0.5*	-	-	*3*	*7.8*	*24*	*39.5*
Total	18	31.7	6	22.3	11	32.5	278	1,251.5

Table 6.25, continued. Chipped Stone from Lindeman Phase Features, South Cluster.

Chert Type	F 522		F 524		F 715		Total	
Tool Type	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Burlington								
Projectile Point	-	-	-	-	1	1.3	2	1.8
Biface	-	-	-	-	-	-	1	6.3
Flake Tool	13	140.1	-	-	16	179.3	91	822.4
Freehand Core	1	22.7	-	-	1	102.2	4	162.1
Bipolar Core	-	-	-	-	3	91.6	5	133.1
Adze Fragment	-	-	-	-	-	-	1	10.8
Adze Flake	-	-	-	-	1	2.5	7	12.1
Hoe Flake	-	-	-	-	-	-	2	3.7
Debitage	61	115.9	1	1.5	91	121.6	356	531.4
Subtotal	*75*	*278.7*	*1*	*1.5*	*113*	*498.5*	*469*	*1,683.7*
Mill Creek								
Flake Tool	-	-	-	-	-	-	2	2.9
Hoe Flake	1	0.7	-	-	1	0.6	7	79.3
Debitage	1	2.1	-	-	-	-	10	12.9
Subtotal	*2*	*2.8*	-	-	*1*	*0.6*	*19*	*95.1*
Ste. Genevieve								
Flake Tool	-	-	-	-	-	-	5	99.3
Freehand Core	1	41.3	-	-	2	543.2	5	643.4
Tested Cobble	-	-	-	-	-	-	1	73.9
Debitage	2	11.3	-	-	1	1.6	27	53.3
Subtotal	*3*	*52.6*	-	-	*3*	*544.8*	*38*	*869.9*
Salem								
Flake Tool	2	57.6	-	-	-	-	8	110.4
Freehand Core	-	-	-	-	-	-	4	179.1
Bipolar Core	-	-	-	-	1	29.9	1	29.9
Debitage	8	41.8	-	-	16	28.0	54	146.5
Subtotal	*10*	*99.4*	-	-	*17*	*57.9*	*67*	*465.9*
Grover Gravel								
Debitage	-	-	-	-	2	4.2	2	4.2
Subtotal	-	-	-	-	*2*	*4.2*	*2*	*4.2*
Glacial Till								
Debitage	-	-	-	-	-	-	*2*	*18.8*
Kaolin								
Adze Flake	1	8.4	-	-	-	-	1	8.4
Subtotal	*1*	*8.4*	-	-	-	-	*1*	*8.4*
Indeterminate								
Flake Tool	-	-	-	-	-	-	4	16.1
Hoe Flake	-	-	-	-	-	-	1	2.7
Debitage	3	4.9	-	-	6	12.9	43	77.9
Subtotal	*3*	*4.9*	-	-	*6*	*12.9*	*48*	*96.7*
Total	94	446.8	1	1.5	142	1,118.9	**646**	**3,242.7**

Table 6.26. Ethnobotanical Remains from Lindeman Phase Features, North Cluster.

	F 382	**F 388**	F 503	F 511	F 539	**F 703**	F 704	**Total**
Wood								
Birch	-	1	-	-	-	-	-	1
Elm Family	-	-	2	-	-	-	-	2
Maple	-	-	-	-	-	3	-	3
Willow or Poplar	-	-	2	-	-	6	-	8
Eastern Red Cedar	-	-	-	1	-	-	-	1
Hickory	-	-	-	-	-	1	9	10
Oak	-	-	-	-	1	4	1	6
Red Oak Subgroup	-	-	-	-	-	-	4	4
Bark	1	-	1	4	-	-	1	7
Diffuse porous	-	1	10	-	-	2	2	15
Ring porous	2	-	-	2	-	-	3	7
Unidentifiable	4	-	5	-	-	4	11	24
Total (N)	*7*	*2*	*44*	*7*	*1*	*20*	*31*	*112*
Total (g)	*0.06*	*0.04*	*0.44*	*0.11*	*0.01*	*0.22*	*0.38*	*1.26*
Nutshell								
Hickory	-	-	-	31	57	-	2	90
(*Carya sp.*)	-	-	-	0.42	0.92	-	0.06	1.40
Hickory/Walnut Family	4	-	-	-	2	-	-	6
(*Juglandaceae*)	0.03	-	-	-	0.02	-	-	0.05
Acorn	1	-	-	-	2	-	1	4
(*Quercus sp.*)	0.01	-	-	-	0.02	-	0.01	0.04
Total (N)	*5*	-	-	*31*	*61*	-	*3*	*100*
Total (g)	*1.03*	-	-	*0.42*	*0.95*	-	*0.07*	*1.49*
Seeds								
Chenopod	-	-	-	3	3	-	-	6
Little Barley	-	-	-	-	1	-	-	1
Maygrass	139	1	2	-	48	-	2	192
Erect Knotweed	1	-	-	2	-	-	-	3
Sumpweed/Sunflower	1	-	-	-	-	-	-	1
Black Nightshade	-	-	1	-	-	-	-	1
Wild Bean	-	-	1	-	-	-	-	1
Grape	-	-	-	-	2	-	-	2
Tick Trefoil	-	-	1	1	-	-	-	2
Purslane	3	-	-	-	-	-	-	3
Panic Grass	-	-	1	-	1	-	-	2
Grass Family	1	-	-	-	-	-	-	1
Unidentifiable	1	-	12	1	6	1	-	21
Total (N)	*146*	*1*	*18*	*7*	*61*	*1*	*2*	*236*
Maize								
Kernel	16	3	39	-	-	-	-	58
Cupule	42	-	6	-	-	-	-	48
Glume	2	-	1	-	-	-	-	3
Embryo	1	-	-	-	-	-	-	1
Total (N)	*61*	*3*	*46*	-	-	-	-	*110*
Total (g)	*0.17*	*0.01*	*0.3*	-	-	-	-	*0.48*
Other								
Giant Cane	-	-	1	-	-	-	-	1
Cucurbit Rind	-	-	-	-	1	-	-	1
Grass Stem	1	-	-	-	2	-	-	3
Processing Residue	-	-	-	-	3	-	-	3
Total (N)	*1*	-	*1*	-	*6*	-	-	*8*

Table 6.27. Ethnobotanical Remains from Lindeman Phase Features, South Cluster.

	F 403	F 404	F 405	F 411	F 412	F 424	F 452	F 522	F 715	**Total**
Wood										
American elm	-	-	-	1	-	-	-	-	-	1
Elm Family	-	-	-	5	-	-	-	-	-	5
Honey Locust	2	-	-	-	-	-	1	-	-	3
Maple	-	-	-	4	-	-	-	-	-	4
Pecan	-	-	-	3	-	-	-	-	-	3
Sycamore	-	-	-	4	-	-	-	-	-	4
Willow or Poplar	-	-	-	-	-	-	-	34	-	34
Cherry	-	-	-	-	-	-	-	7	-	7
Eastern Red Cedar	-	-	-	-	-	-	-	-	21	21
Hickory	-	-	-	1	1	-	-	6	-	8
Oak	3	-	2	-	-	1	-	-	-	6
Red Oak Subgroup	2	-	-	-	-	-	-	-	-	2
Bark	-	-	-	-	-	1	-	-	-	1
Diffuse porous	-	-	-	-	-	-	-	2	-	2
Ring porous	1	-	1	6	2	-	-	-	-	10
Unidentifiable	4	-	-	8	1	3	-	8	-	24
Total (N)	12	-	3	88	4	5	1	455	62	630
Total (g)	*0.05*	-	*0.02*	*1.23*	*0.02*	*0.04*	*0.01*	*11.11*	*0.71*	*13.19*
Nutshell										
Hickory	32	15	27	11	-	-	49	-	5	139
(*Carya sp.*)	0.37	0.14	0.35	0.2	-	-	0.79	-	0.11	1.96
Hickory/Walnut Family	4	-	1	-	-	-	1	3	-	9
(*Juglandaceae*)	0.03	-	0.01	-	-	-	0.01	0.03	-	0.08
Acorn	3	-	-	-	-	-	-	-	-	3
(*Quercus sp.*)	0.02	-	-	-	-	-	-	-	-	0.02
Total (N)	*39*	*15*	*28*	*11*	-	-	*50*	*3*	*5*	*151*
Total (g)	*0.42*	*0.19*	*0.36*	*0.2*	-	-	*0.80*	*0.03*	*0.11*	*2.06*

Table 6.27, continued. Ethnobotanical Remains from Lindeman Phase Features, South

	F 403	F 404	F 405	F 411	F 412	F 424	F 452	F 522	F 715	**Total**
Seeds										
Chenopod	1	1	-	1	-	1	2	17	4	27
Little Barley	-	-	-	-	-	-	3	-	-	3
Maygrass	3	1	1	3	-	5	28	1	-	42
Erect Knotweed	10	1	-	-	1	-	11	-	-	23
Sunflower	-	-	-	-	-	-	1	-	-	1
Groundcherry	-	-	-	-	-	-	3	-	-	3
Wild Bean	-	-	-	-	-	-	-	1	-	1
Smartweed	-	-	-	-	-	-	-	1	-	1
Bean Family	-	-	-	-	-	-	-	2	-	2
Broomsedge	-	-	-	-	-	-	-	1	-	1
Bittercress	-	-	-	-	-	-	3	1	-	4
Sedge	-	-	-	-	-	-	-	1	-	1
Panic Grass	-	-	-	-	4	-	10	-	-	14
Grass Family	-	-	-	-	-	-	2	4	-	6
Unidentifiable	9	4	2	2	2	2	20	11	4	56
Total (N)	*23*	*7*	*3*	*6*	*7*	*8*	*83*	*40*	*8*	*185*
Maize										
Kernel	-	-	-	6	6	1	31	22	-	66
Cupule	-	-	-	9	5	4	43	9	16	86
Glume	-	-	-	3	-	-	2	2	7	14
Embryo	-	-	-	-	1	-	2	-	-	3
Total (N)	-	-	-	18	12	5	78	33	23	169
Total (g)	-	-	-	*0.04*	*0.03*	*0.02*	*0.37*	*0.18*	*0.1*	*0.74*
Other										
Giant Cane	-	-	-	-	-	-	1	85	-	86
Grass Stem	-	-	1	-	-	3	-	28	5	37
Total (N)	-	-	*1*	-	-	*3*	*1*	*113*	*5*	*123*

Table 6.28. Faunal Remains Recovered from Lindeman Phase Features, North Cluster.

Feature	N	Burned	Taxon	Element(s); Section	Comments
382	2	1	White-Tailed Deer	right humerus; distal fragment and left mandible; fragment	Both adult; M23
	1		large-sized mammal	indeterminate; fragment	
502	4		medium-large mammal	indeterminate; fragments	
511	1	1	fish, indet.	vertebra; centrum fragment	
	2	1	Vertebrata	indeterminate; fragment	
539	1	1	White-Tailed Deer	left pelvis; acetabulum fragment	
	33	33	Vertebrata	indeterminate; fragments	
704	34	34	bird, indet.	long bone; shaft fragment and left coracoid; fragment	
	6		fish, indet.	cranial; fragments	
	1		Gar	scale, fragment	
	6	4	Vertebrata	indeterminate; fragments	
Total	91	75			

Table 6.29. Faunal Remains Recovered from Lindeman Phase Features, South Cluster.

Feature	N	Burned	Taxon	Element(s); Section	Comments
403	5		Buffalo fish	cranial, opercular series; fragments	*Ictiobus* sp.
	3		fish, indet.	cranial; fragment	
	1		medium-large mammal	left canine; fragment (maxillary)	possibly Raccoon
	4		mammal, indet.	tooth, indeterminate; fragments	
	3	3	Vertebrata	indeterminate; fragment	
406	1		White-Tailed Deer	right metacarpus; proximal fragment	*Odocoileus virginianus*
	1	1	large-sized mammal	indeterminate; fragment	
411	2	2	Vertebrata	indeterminate; fragment	
412	1		White-Tailed Deer	antler; fragment	*Odocoileus virginianus*
424	1	1	mammal, indet.	indeterminate; fragment	
	1	1	Vertebrata	indeterminate; fragment	
452	8	1	Bowfin	cranial, left and right ectopterygoid, right posttemporal, left circumorbital 4, right opercular, gular plate; fragments	*Amia calva*
	1		Bullhead	right pectoral spine, fragment	*Ameiurus* sp.
	1		Channel Catfish	supraoccipital, left dentary; fragments	*Ictalurus punctatus* ; dentary is only *Ictalurus* level
	1	1	Drum Fish	tooth, fragment	*Aplodinotus grunniens*
	2		Gar	scales; complete	*Lepisosteus* sp.
	44	11	fish, indet.	scale, cranial; fragments and vertebra, spine/rib; centrum, shaft fragments	
	2		Threeridge Mussel	right valve, fragment	mne=2; *Amblema plicata*
	31		mussel, indet.	shell, right and left valve; fragments	mne=2 (2 right valves); 4 shell frag fish or turtle
	9	4	Painted Turtle	complete entoplastron, left hyoplastron, right epiplastron andperipheral, plastron, carapace; fragments	*Chrysemys picta* ; all complete and 1 plastron frag burned
	5		Musk Turtle	plastron and carapace; fragments and complete right femur	multiple plastron fragments refit

Table 6.29, continued. Faunal Remains Recovered from Lindeman Features, South Cluster.

Feature	N	Burned	Taxon	Element(s); Section	Comments
452	8	3	turtle, indet.	carapace and carapace/plastron fragments	
cont'd	2	2	frog/toad, indet.	vertebra; centrum fragment	
	9	4	White-Tailed Deer	right radius, left ulna, right rib; proximal and lumbar vertebra; zygopophysis and metarsus; shaft and antler; tine and sternum fragments and complete sesamoid	*Odocoileus virginianus* ; 2 Adult, 1 Juvenile; left ulna is an awl; alter tines both exfoliated, appear smoothed
	29	19	large-sized mammal	long bone; shaft fragments and indeterminate; fragments	1 long bone with cut marks
	3	2	mammal, indet.	indeterminate; fragments	
	1		Passeriformes	right humerus, distal-shaft fragment	
	3	2	bird, indet.	long bone, left tibiotarsus; shaft, distal fragments	left tibiotarsus is med sized
	165	112	Vertebrata	indeterminate; fragments	
522	7	7	Vertebrata	indeterminate, fragment	
715	1	1	mammal, indet.	indeterminate, fragment	
	1	1	Vertebrata	indeterminate, fragment	
Total	356	178			

Table 6.30. Body Sherds from F 525.

Surface	Limestone		Shell		Grog		Chert		**Total**	
Treatment	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Plain	1	0.5	16	36.8	-	-	-	-	17	37.3
Cordmarked	-	-	-	-	5	8.9	-	-	5	8.9
Eroded	2	7.4	18	9.9	-	-	1	0.4	21	17.7
Total	3	7.9	34	46.7	5	8.9	1	0.4	**43**	**63.9**

Table 6.31. Lithics from F 525.

	No.	Wt. (g)
Groundstone		
Limestone FCR	5	360.0
Hammerstone	1	205.2
Flat Abrader	2	4.7
Subtotal	*8*	*569.9*
Burlington chert		
Projectile Point	1	0.7
Flake Tool	6	37.0
Debitage	8	30.0
Subtotal	*15*	*67.7*
Salem chert		
Flake Tool	3	30.0
Debitage	12	29.2
Subtotal	*15*	*59.2*
Indeterminate chert		
Debitage	*2*	*1.1*
Total	40	697.9

Table 6.32. Ethnobotanical Remains Recovered from Feature 525.

	F 525
Wood	
Honey Locust	2
Willow or Poplar	1
Unidentifiable	2
Total (N)	5
Total (g)	*0.03*
Nutshell	
Acorn	2
(*Quercus sp.*)	0.01
Total (N)	*2*
Total (g)	*0.01*
Seeds	
Smartweed	1
Grass Family	1
Unidentifiable	3
Total (N)	*5*
Maize	
Kernel	3
Total (g)	*0.1*
Other	
Grass Stem	2

Table 6.33. Body Sherds from Lindeman Phase Features.

Feature	Limestone		LS RS		Shell		Shell RS		Grog		Grit		Mixed		**Total**
Number	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.
4	600	*89*	1	*<1*	-	-	-	-	44	*7*	22	*3*	9	*1*	676
23	1	*33*	-	-	1	*33*	-	-	1	*33*	-	-	-	-	3
25	79	*94*			-	-	-	-	5	*6*	-	-	-	-	84
34	12	*39*	-	-	-	-	-	-	19	*61*	-	-	-	-	31
35	67	*52*	55	*43*	-	-	-	-	6	*5*	1	*1*	-	-	129
36	159	*49*	30	*9*	3	*1*	3	*1*	120	*37*	10	*3*	-	-	325
49	-	-	-	-	-	-	-	-	1	*100*	-	-	-	-	1
50	1,353	*82*	64	*4*	8	*<1*	-	-	203	*12*	26	*2*	-	-	1,654
51	3	*33*	-	-	-	-	-	-	6	*67*	-	-	-	-	9
52	4	*50*	3	*38*	-	-	-	-	1	*13*	-	-	-	-	8
63	153	*88*	10	*6*	-	-	-	-	10	*6*	-	-	-	-	173
64	35	*55*	16	*25*	-	-	-	-	13	*20*	-	-	-	-	64
65	475	*58*	158	*19*	38	*5*	2	*<1*	147	*18*	3	*<1*	-	-	823
72	19	*29*	33	*51*	-	-	-	-	13	*20*	-	-	-	-	65
117	66	*54*	12	*10*	1	*1*	-	-	41	*34*	-	-	2	*2*	122
125	107	*61*	33	*19*	7	*4*	1	*1*	22	*13*	4	*2*	-	-	174
125A	12	*55*	-	-	-	-	-	-	8	*36*	2	*9*	-	-	22
128	114	*96*	-	-	-	-	-	-	5	*4*	-	-	-	-	119
130	49	*52*	1	*1*	6	*6*	8	*8*	31	*33*	-	-	-	-	95
Total	3,308	*72*	416	*9*	64	*1*	14	*<1*	696	*15*	68	*1*	2	*<1*	**4,577**

Table 6.34. Vessels from Lindeman and Lohmann Phase Features by Form and Temper.

Component	Total[1]	Limestone		Shell		Grog		Grit		Mixed		None		Indeterminate		
Vessel Form	Vessels	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Notes
Lindeman																
Jar	204	161	*79*	10	*5*	22	*11*	1	*<1*	8	*4*	-	-	-	-	mixed = LS/GG, LS/SH, SH/GG; 2 not reported
Bowl	111	96	*84*	1	*1*	5	*4*	2	*2*	7	*6*	-	-	4	*4*	
Seed Jar	4	4	*100*	-	-	-	-	-	-	-	-	-	-	-	-	
Stumpware	14	5	*36*	-	-	4	*29*	-	-	1	*7*	1	*7*	3	*21*	Indeterminate = not listed in Freimuth 2010
Bottle	1	-	-	1	*100*	-	-	-	-	-	-	-	-	-	-	RS short neck
Total	**334**	**266**	**80**	**12**	**3**	**31**	**9**	**3**	**1**	**16**	**5**	**1**	**<1**	**7**	**2**	
Lohmann																
Jar	49	33	*67*	11	*22*	5	*10*	-	-	-	-	-	-	-	-	
Bowl	18	11	*61*	2	*11*	4	*22*	-	-	1	*6*	-	-	-	-	mixed = GG/SH
Seed Jar	3	2	*67*	1	*33*	-	-	-	-	-	-	-	-	-	-	
Beaker	1	1	*100*	-	-	-	-	-	-	-	-	-	-	-	-	LS RS beaker handle
Total	**71**	**47**	**66**	**14**	**20**	**9**	**13**	-	-	**1**	**1**	-	-	-	-	

[1] Total does not include pinch pots

Table 6.35. Vessels from Lindeman and Lohmann Phase Features by Surface Treatment.

Component	Plain		SMCM		CM		RS		**Total**
	No.	%	No.	%	No.	%	No.	%	No.
Lindeman	90	*28*	104	*33*	93	*29*	32	*10*	319
Lohmann	28	*38*	19	*26*	8	*11*	22	*30*	73*

* Lohmann phase total does not match vessel sum due to discrepancies in the original table.

Table 6.36. Other Items from Lindeman and Lohmann Phase Features.

	Lindeman	Lohmann
Ceramic		
Disk	15	2
Pipe Stem	1	2
Bead	1	-
Discoidal	2	-
Clay Ball	1	-
Groundstone		
Limestone	137.1 kg	21.4 kg
Celt	1	1
Discoidal	2	3
Hammerstone	5	1
Polishing Pebble	-	1
Abrader	2	1
Hematite	-	1
Galena	-	1
Chipped Stone		
Hoe Flakes/Frags	8	10
Adze	1	-
Chisel/Gouge	1	-
Biface Frag	-	1
Chert Hammerstone	1	-
Fauna		
Awl	4	-
Antler	present	-
Flora		
Maize	present	present
Sunflower	present	-
Bulrush	present	-
Acorn	present	present
Wild Plum	present	-

Table 6.37. Body Sherds from Lohmann Phase Features.

Feature Number	Limestone		LS RS		Shell		Slipped Shell		Grog		Grit		**Total**
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.
16	1	*50*	1	*50*	-	-	-	-	-	-	-	-	2
18	89	*75*	3	*3*	14	*12*	4	*3*	8	*7*	-	-	118
24	-	-	1	*33*	1	*33*	-	-	1	*33*	-	-	3
28	5	*45*	1	*9*	-	-	1	*9*	4	*36*	-	-	11
29	1	*50*	-	-	-	-	-	-	1	*50*	-	-	2
32	6	*20*	7	*23*	1	*3*	-	-	16	*53*	-	-	30
33	89	*72*	9	*7*	-	-	-	-	25	*20*	1	*1*	124
91	15	*58*	-	-	-	-	-	-	11	*42*	-	-	26
94	60	*59*	2	*2*	25	*25*	-	-	15	*15*	-	-	102
96	19	*51*	1	*3*	-	-	3	*8*	3	*8*	11	*30*	37
99	2	*40*	2	*40*	-	-	-	-	1	*20*	-	-	5
105	95	*52*	12	*7*	20	*11*	4	*2*	50	*27*	1	*1*	182
111	-	-	-	-	-	-	-	-	56	*100*	-	-	56
118	16	*38*	-	-	1	*2*	-	-	25	*60*	-	-	42
131	86	*75*	-	-	5	*4*	2	*2*	21	*18*	-	-	114
132	119	*88*	-	-	7	*5*	-	-	7	*5*	2	*1*	135
Total	603	*61*	39	*4*	74	*7*	14	*1*	244	25	15	*2*	**989**

Table 6.38. Fired Clay from Possible Mississippian Features.

Feature	Burnt Clay		Daub		Modeled Clay		Pipe Fragment		Effigy		Modeled Clay Disk		**Total**	
Number	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
F 1	40	10.4	35	12.8	-	-	-	-	-	-	1	6.9	76	30.1
F 11	74	99.2	37	46.6	3	5.7	2	0.9	1	2.7	-	-	117	155.1
F 15	24	17.7	4	2.1	-	-	-	-	-	-	-	-	28	19.8
F 21	2	2.0	-	-	-	-	-	-	-	-	-	-	2	2.0
Total	140	129.3	76	61.5	3	5.7	2	0.9	1	2.7	1	6.9	**223**	**207.0**

Table 6.39. Body Sherds from Possible Mississippian Contexts.

Temper	Feature 1		Feature 11		Feature 15		Feature 21		ST3		ST4		**Total**	
Surface	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Limestone														
CM	9	51.5	7	3.9	-	-	-	-	-	-	-	-	16	55.4
PL	6	15.3	3	6.4	-	-	-	-	-	-	-	-	9	21.7
RS	2	21.8	3	3.8	-	-	1	0.4	-	-	1	1.4	7	27.4
Pol RS	4	15.9	-	-	-	-	-	-	-	-	-	-	4	15.9
SmCM	1	1.7	-	-	-	-	-	-	-	-	-	-	1	1.7
ER	2	0.6	4	6.8	-	-	-	-	-	-	-	-	6	7.4
Subtotal	*24*	*106.8*	*17*	*20.9*	-	-	*1*	*0.4*	-	-	*1*	*1.4*	***43***	***129.5***
Shell														
CM	1	0.5	5	10.3	-	-	-	-	-	-	-	-	6	10.8
PL	10	26.3	12	11.7	12	28.4	-	-	-	-	-	-	34	66.4
RS	1	0.7	-	-	-	-	-	-	-	-	-	-	1	0.7
SmCM	1	2.2	-	-	-	-	-	-	-	-	-	-	1	2.2
ER	21	17.1	3	1.1	-	-	-	-	-	-	-	-	24	18.2
Pol DS	3	23.9	-	-	-	-	-	-	-	-	-	-	3	23.9
Subtotal	*37*	*70.7*	*20*	*23.1*	*12*	*28.4*	-	-	-	-	-	-	***69***	***122.2***
Grog														
CM	140	290.3	148	573.6	6	7.3	5	15.7	2	21.8	4	4.0	305	912.7
PL	6	15.9	-	-	2	3.0	-	-	-	-	-	-	8	18.9
ER	21	11.4	9	13.3	4	2.3	-	-	1	0.6	-	-	35	27.6
Subtotal	*167*	*317.6*	*157*	*586.9*	*12*	*12.6*	*5*	*15.7*	*3*	*22.4*	*4*	*4.0*	***348***	***959.2***
Grit														
CM	145	413.8	165	914.9	18	81.3	-	-	-	-	2	12.2	330	1,422.2
PL	3	1.8	-	-	-	-	-	-	-	-	-	-	3	1.8
SmCM	1	8.6	-	-	-	-	-	-	-	-	-	-	1	8.6
ER	26	17.1	9	7.8	-	-	-	-	-	-	-	-	35	24.9
Subtotal	*175*	*441.3*	*174*	*922.7*	*18*	*81.3*	-	-	-	-	*2*	*12.2*	***369***	***1,457.5***
SH/GG														
PL	1	2.0	-	-	-	-	-	-	-	-	-	-	1	2.0
SH/LS														
PL	1	5.8	-	-	-	-	-	-	-	-	-	-	1	5.8
GT/GG														
CM	-	-	-	-	-	-	3	4.1	-	-	-	-	3	4.1
GG/SH														
ER	1	2.4	-	-	-	-	-	-	-	-	-	-	1	2.4
Total	406	946.6	368	1,553.6	42	122.3	9	20.2	3	22.4	7	17.6	**835**	**2,682.7**

Table 6.40. FCR from Possible Mississippian Contexts.

Feature Number	Limestone		Sandstone		Igneous/ Metamorphic		Chert		**Total**	
	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
F 1	107	705	22	61	4	7	3	30	136	803
F 11	276	1,708	16	104	6	217	76	134	374	2,163
F 15	10	130	-	-	-	-	1	9	11	139
ST 3	2	44	-	-	-	-	-	-	2	44
ST 4	3	19	-	-	-	-	-	-	3	19
Total	398	2,606	38	165	10	224	80	173	**526**	**3,168**

Table 6.41. Groundstone Tools and Debris from Possible Mississippian Contexts.

Groundstone	Feature 1		Feature 11		Slot Trench 4		**Total**	
Item	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Hammerstone	-	-	1	145.7	-	-	1	145.7
Flat Abrader	-	-	4	290.0	-	-	4	290.0
Slot Abrader	-	-	1	8.3	-	-	1	8.3
Hematite	-	-	1	0.2	-	-	1	0.2
Limonite	-	-	6	6.2	-	-	6	6.2
Missouri River Clinker	2	2.2	-	-	-	-	2	2.2
Unmodified Diabase	-	-	2	39.8	-	-	2	39.8
Gizzard Stone	1	0.2	-	-	-	-	1	0.2
Unmodified Pebble	16	12.4	25	12.2	1	0.4	42	25.0
Total	19	14.8	40	502.4	1	0.4	**60**	**517.6**

Table 6.42. Chipped Stone from Possible Mississippian Contexts.

Chert Type	Feature 1		Feature 11		Feature 15		Feature 21		Slot Trench 3		Slot Trench 4		**Total**	
Tool Type	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Burlington														
Projectile Point	-	-	-	-	-	-	-	-	-	-	1	0.3	1	0.3
Biface Fragment	1	5.7	2	14.5	-	-	-	-	-	-	-	-	3	20.2
Flake Tool	10	39.1	3	5.8	-	-	-	-	-	-	-	-	13	44.9
Bipolar Core	2	16.8	5	177.8	2	18.8	-	-	-	-	-	-	9	213.4
Adze Flake	1	0.1	1	0.9	-	-	-	-	-	-	-	-	2	1.0
Hoe Flake	-	-	1	0.3	-	-	-	-	-	-	-	-	1	0.3
Microblade	1	1.7	-	-	-	-	-	-	-	-	-	-	1	1.7
Microblade Core	-	-	-	-	1	7.0	-	-	-	-	-	-	1	7.0
Debitage	436	239.2	746	360.9	22	7.2	17	9.4	1	2.3	18	13.8	1,240	632.8
Subtotal	*451*	*302.6*	*758*	*560.2*	*25*	*33.0*	*17*	*9.4*	*1*	*2.3*	*19*	*14.1*	**1,271**	**921.6**
Mill Creek														
Hoe Flake	-	-	-	-	1	0.3	-	-	-	-	-	-	1	0.3
Debitage	15	9.6	5	4.4	4	0.5	1	0.7	-	-	-	-	25	15.2
Subtotal	*15*	*9.6*	*5*	*4.4*	*5*	*0.8*	*1*	*0.7*	*0*	*0.0*	*0*	*0.0*	**26**	**15.5**
Ste. Genevieve														
Projectile Point	-	-	1	0.6	-	-	-	-	-	-	-	-	1	0.6
Biface Fragment	-	-	-	-	1	0.2	-	-	-	-	-	-	1	0.2
Bipolar Core	1	6.6	1	30.9	-	-	-	-	-	-	-	-	2	37.5
Tested Cobble	1	44.2	-	-	-	-	-	-	-	-	-	-	1	44.2
Debitage	52	36.8	67	25.6	12	9.4	-	-	-	-	1	1.8	132	73.6
Subtotal	*54*	*87.6*	*69*	*57.1*	*13*	*9.6*	*0*	*0.0*	*0*	*0.0*	*1*	*1.8*	**137**	**156.1**
Fern Glen														
Debitage	1	3.1	1	0.2	-	-	-	-	-	-	-	-	**2**	**3.3**
Salem														
Debitage	3	4.8	7	77.2	-	-	-	-	2	4.3	-	-	**12**	**86.3**

Table 6.42, continued. Chipped Stone from Possible Mississippian Contexts.

Chert Type	Feature 1		Feature 11		Feature 15		Feature 21		Slot Trench 3		Slot Trench 4		**Total**	
Tool Type	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Kaolin														
Debitage	-	-	-	-	-	-	-	-	-	-	2	0.3	**2**	**0.3**
Hixton														
Debitage	-	-	1	0.1	-	-	-	-	-	-	-	-	**1**	**0.1**
Cobden														
Debitage	-	-	-	-	-	-	-	-	-	-	1	0.2	**1**	**0.2**
Indeterminate														
Projectile Point	1	0.6	-	-	-	-	-	-	-	-	-	-	1	0.6
Bipolar Core	-	-	1	4.2	-	-	-	-	-	-	-	-	1	4.2
Tested Cobble	1	12.8	-	-	-	-	-	-	-	-	-	-	1	12.8
Debitage	110	95.9	104	75.3	7	2.8	5	4.3	-	-	1	1.9	227	180.2
Subtotal	*112*	*109.3*	*105*	*79.5*	*7*	*2.8*	*5*	*4.3*	*0*	*0.0*	*1*	*1.9*	**230**	**197.8**
Total	636	517.0	946	778.7	50	46.2	23	14.4	3	6.6	24	18.3	**1,682**	**1,381.2**

Table 6.43. Fired Clay.

Feature Number	Burnt Clay		Tempered Burnt Clay		Modeled Clay		Daub		Total	
	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
F1	67	47.5	3	4.9	2	1.1	4	21.9	76	75.4
F2	38	33.7	-	-	1	65.7	-	-	39	99.4
TU6	-	-	-	-	1	2.8	-	-	1	2.8
TU7	12	4.8	-	-	-	-	9	19	21	23.8
Total	117	86.0	3	4.9	4	69.6	13	40.9	**137**	**201.4**

Table 6.44. Worked Sherds.

Bag Number	Context	Type	Count	Weight	Ground Edges	Diameter	Min. Diameter	Hole Diameter[1]	# Holes	Temper	Ext. Surface	Int. Surface	Notes
TU6-5	PZ	drilled	5	22.1	Y	62.3	57.5	4.4	1	LS	Pol RS	PL	spindle whorl? Probably from F1
1-1a	All E1/2 S1	perforated	1	1.9	Y	IND	IND	IND	1	SH	PL	PL	possibly two holes
1-1b	All E1/2 S1	perforated	1	1.6	Y	IND	IND	IND	1	LS	PL	PL	possibly RS ext.
1-1c	All E1/2 S1	perforated	2	37.5	N	-	-	IND	1	LS	Pol RS	PL	jar shoulder?
1-1d	All E1/2 S1	drilled	1	9.1	Y	39.4	32	8.7	2	LS	Pol RS	PL	incomplete drilled disk
1-1e	All E1/2 S1	drilled	1	5.3	Y	36.2	32.4	9.1	2	LS	Pol RS	PL	
1-1f	All E1/2 S1	perforated	4	26.3	Y	86.3	-	5.8	5	LS	CM	PL	maybe 6 holes, 1 sherd not glued
1-2a	All E1/2 S1	disk	1	4.3	Y	IND	IND	IND	0	LS	CM	PL	1/4 present
1-2b	All E1/2 S1	disk	1	7.9	Y	IND	IND	IND	0	LS	CM	PL	1/4 present
1-4	Floor E1/2 S1	drilled	2	8.6	Y	-	-	8.3	2	LS	Pol RS	PL	
1-6	ZA,D,E E1/2 S2	perforated	1	3.7	N	-	-	IND	1	SH	CM	PL	
1-14	ZD E1/2 S2	effigy	1	5.9	N	20.6	19.8	19.0*	-	LS	RS	RS	rim rider, possible owl
1-25	ZD E1/2 S2	perforated	1	1.8	N	-	-	>12.0	1	LS	Pol RS	PL	
1-27	ZG E1/2 S2	perforated	2	6.2	N	-	-	IND	1	LS	Pol RS	Pol RS	seed jar frag?
1-29	Floor E1/2 S2	drilled	1	11.4	Y	IND	IND	IND	2	LS	Pol RS	RS	
1-30	Floor E1/2 All	drilled	1	11.8	Y	52.4	IND	5.8	1	LS	CM	PL	spindle whorl
1-52	PM 30	drilled	2	20.0	Y	IND	IND	9.9	3	LS	Pol RS	PL	
1-56	PM 36	disk	4	11.2	Y	50.7	36.9	-	-	LS	CM	PL	Oval
2-6	Zall profile scrape	drilled	1	4.6	N	-	-	-	2	LS	Pol RS	PL	
2-12	Zall Surface NE1/4	drilled	1	4.4	N	-	-	7.5	2	SH	PL	PL	possibly slipped
2-15	ZB NE1/4	drilled	1	6.0	N	-	-	7.6	1	SH	PL	PL	possibly same as 2-12, possibly 2 holes
2-20	ZC NE1/4	drilled	1	5.6	Y	IND	IND	IND	1	LS	CM	PL	fragment

1 IND = Indeterminate
* = height

Table 6.45. Body Sherds.

Temper	Feature 1		Feature 2		TU2		TU5		TU6		TU7		**Total**	
Surface	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Limestone														
CM	370	1,040.8	61	285.0	-	-	2	1.0	7	18.8	72	312.3	512	1,657.9
PL	192	403.0	30	56.9	-	-	1	2.3	2	5.0	31	55.9	256	523.1
RS	-	-	-	-	1	7.0	5	9.8	-	-	-	-	6	16.8
Pol RS	187	385.5	97	188.4	-	-	-	-	16	65.7	56	164.5	356	804.1
SmCM	33	90.8	-	-	-	-	-	-	-	-	9	24.9	42	115.7
ER	129	89.1	34	19.6	1	0.6	5	4.6	22	32.1	32	33.5	223	179.5
PL/RS	1	1.7	-	-	-	-	-	-	-	-	-	-	1	1.7
Subtotal	*912*	*2,010.9*	*222*	*549.9*	*2*	*7.6*	*13*	*17.7*	*47*	*121.6*	*200*	*591.1*	***1,396***	***3,298.8***
Shell														
CM	21	24.0	9	19.6	-	-	-	-	1	2.8	2	5.2	33	51.6
PL	40	75.9	42	74.0	-	-	-	-	2	40.1	8	17.9	92	207.9
RS	-	-	-	-	-	-	-	-	-	-	1	0.9	1	0.9
Pol RS	3	1.6	11	13.4	-	-	-	-	-	-	1	1.7	15	16.7
SmCM	4	6.2	-	-	-	-	-	-	-	-	-	-	4	6.2
ER	38	40.1	67	58.3	-	-	1	1.0	7	5.3	12	13.3	125	118.0
Burnished	-	-	-	-	-	-	-	-	1	13.1	-	-	1	13.1
ER/RS	-	-	6	9.4	-	-	-	-	-	-	-	-	6	9.4
Subtotal	*106*	*147.8*	*135*	*174.7*	-	-	*1*	*1.0*	*11*	*61.3*	*24*	*39.0*	***277***	***423.8***
Grog														
CM	5	18.0	3	10.8	-	-	-	-	-	-	1	1.4	9	30.2
PL	5	13.2	12	78.5	-	-	-	-	-	-	4	2.5	21	94.2
SmCM	4	5.7	-	-	-	-	-	-	-	-	-	-	4	5.7
ER	1	0.5	1	1.1	-	-	-	-	1	3.3	3	7.7	6	12.6
Subtotal	*15*	*37.4*	*16*	*90.4*	-	-	-	-	*1*	*3.3*	*8*	*11.6*	***40***	***142.7***
Grit														
CM	-	-	4	15.0	-	-	-	-	-	-	-	-	4	15.0
PL	-	-	3	3.5	-	-	-	-	-	-	2	0.8	5	4.3
Subtotal	-	-	*7*	*18.5*	-	-	-	-	-	-	*2*	*0.8*	***9***	***19.3***

Table 6.45, continued. Body Sherds.

Temper	Feature 1		Feature 2		TU2		TU5		TU6		TU7		**Total**	
Surface	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
SH/GT														
CM	-	-	-	-	2	1.8	-	-	-	-	-	-	2	1.8
Subtotal	-	-	-	-	*2*	*1.8*	-	-	-	-	-	-	***2***	***1.8***
LS/SH														
CM	1	1.2	5	4.4	-	-	-	-	-	-	-	-	6	5.6
PL	-	-	1	0.8	-	-	-	-	-	-	1	0.5	2	1.3
ER	1	0.4	-	-	-	-	-	-	-	-	-	-	1	0.4
Subtotal	*2*	*1.6*	*6*	*5.2*	-	-	-	-	-	-	*1*	*0.5*	***9***	***7.3***
SH/LS														
CM	-	-	35	96.6	-	-	-	-	-	-	3	3.9	38	100.5
PL	-	-	15	25.6	-	-	-	-	-	-	2	4.2	17	29.8
ER	-	-	3	3.0	-	-	-	-	-	-	-	-	3	3.0
Burnished	-	-	32	79.5	-	-	-	-	-	-	-	-	32	79.5
ER/RS	-	-	2	9.4	-	-	-	-	-	-	-	-	2	9.4
Subtotal	-	-	*87*	*214.1*	-	-	-	-	-	-	*5*	*8.1*	***92***	***222.2***
SH/GG														
CM	9	11.2	-	-	-	-	-	-	-	-	-	-	9	11.2
Subtotal	*9*	*11.2*	-	-	-	-	-	-	-	-	-	-	***9***	***11.2***
LS/GG														
CM	-	-	-	-	-	-	-	-	-	-	1	8.8	1	8.8
PL	7	16.9	-	-	-	-	-	-	-	-	-	-	7	16.9
Subtotal	*7*	*16.9*	-	-	-	-	-	-	-	-	*1*	*8.8*	***8***	***25.7***
Total	1,051	2,225.8	473	1,052.8	4	9.4	14	18.7	59	186.2	241	659.9	**1,842**	**4,152.8**

Table 6.46. FCR.

Feature Number	Limestone		Sandstone		Igneous/ Metamorphic		Chert		**Total**	
	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
F1	75	490	16	77	3	5	13	116	107	688
F2	22	255	11	61	-	-	39	264	72	580
TU5	4	159	1	3	-	-	-	-	5	162
TU6	16	62	5	13	-	-	-	-	21	75
TU7	25	141	10	37	-	-	-	-	35	178
Surface	4	59	-	-	-	-	-	-	4	59
Total	146	1,166	43	191	3	5	52	380	**244**	**1,742**

Table 6.47. Groundstone Tools and Debris.

Feature	Celt		Celt Flakes		Hammerstone		Flat Abrader		Slot Abrader		Limonite		Hematite		Missouri River Clinker		Unmodified Cobble		Unmodified Pebble		**Total**	
Number	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
F1	-	-	-	-	1	103.8	5	342.6	2	158.4	2	0.4	3	1.1	-	-	-	-	14	14.4	27	620.7
F2	2	1,938.6	-	-	-	-	-	-	1	1.9	1	0.2	3	0.9	2	2.8	-	-	15	4.7	24	1,949.1
TU6	-	-	1	3.8	1	33.5	1	8.0	2	6.8	-	-	-	-	-	-	1	14.7	3	2.6	9	69.4
TU7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1.3	2	1.3
Surface	-	-	1	53.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	53.1
Total	2	1,938.6	2	56.9	2	137.3	6	350.6	5	167.1	3	0.6	6	2.0	2	2.8	1	14.7	34	23.0	**63**	**2,693.6**

Table 6.48. Celt Attributes.

	PP1	PP3
Weight (g)	1,141.2	797.4
Max. Length (mm)	202	155
Max. Width (mm)	82	70
Max. Thickness (mm)	43	42
Reworked	No	95% (all but the bit)
Usewear	notches on bit, hafting mark	notches at bit
Raw Material	St. Francois diabase	basalt
Notes	on top of PP3, small break on distal end	on floor of structure below PP1; small break on distal end

Table 6.49. Chipped–Stone Tools and Debitage.

Chert Type	Feature 1		Feature 2		TU2		TU4	
Tool Type	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Burlington								
Projectile Point	-	-	1	1.6	-	-	-	-
Flake Tool	10	51.6	4	41.2	-	-	-	-
Bipolar Core	10	234.3	6	117.4	-	-	-	-
Freehand Core	1	49.4	-	-	-	-	-	-
Adze Fragment	-	-	1	6.4	-	-	-	-
Adze Flake	1	3.4	-	-	-	-	-	-
Debitage	476	739.1	216	286.3	6	10.7	1	2.6
subtotal	*498*	*1,077.8*	*228*	*452.9*	*6*	*10.7*	*1*	*2.6*
Mill Creek								
Hoe Flake	23	19.5	3	1.6	-	-	-	-
Debitage	43	80.9	20	10.7	-	-	-	-
subtotal	*66*	*100.4*	*23*	*12.3*	-	-	-	-
Ste. Genevieve								
Bipolar Core	-	-	3	51.7	-	-	-	-
Freehand Core	1	15.8	-	-	-	-	-	-
Tested Cobble	-	-	-	-	-	-	-	-
Adze Flake	1	0.2	-	-	-	-	-	-
Debitage	46	80.6	13	8.1	-	-	-	-
subtotal	*48*	*96.6*	*16*	*59.8*	-	-	-	-
Salem								
Bipolar Core	-	-	1	60.5	-	-	-	-
Freehand Core	1	102.4	1	42.6	-	-	-	-
Debitage	5	17.0	11	59.9	-	-	-	-
subtotal	*6*	*119.4*	*13*	*163.0*	-	-	-	-
Grover Gravel								
Tested Cobble	-	-	-	-	-	-	-	-
Fern Glen								
Debitage	2	12.0	2	28.1	-	-	-	-
St. Louis								
Debitage	1	0.5	-	-	-	-	-	-
Indeterminate								
Flake Tool	-	-	-	-	-	-	-	-
Tested Cobble	-	-	-	-	-	-	-	-
Debitage	51	64.2	27	15.8	-	-	-	-
subtotal	*51*	*64.2*	*27*	*15.8*	-	-	-	-
Total	672	1,470.9	309	731.9	6	10.7	1	2.6

Table 6.49, continued. Chipped–Stone Tools and Debitage.

Chert Type	TU5		TU6		TU7		Total	
Tool Type	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Burlington								
Projectile Point	-	-	-	-	-	-	1	1.6
Flake Tool	1	2.0	3	13.2	4	103.0	22	211.0
Bipolar Core	1	16.1	9	83.5	3	22.3	29	473.6
Freehand Core	-	-	-	-	1	35.1	2	84.5
Adze Fragment	-	-	-	-	-	-	1	6.4
Adze Flake	-	-	-	-	-	-	1	3.4
Debitage	4	9.9	48	173.3	76	137.4	827	1,359.3
subtotal	*6*	*28.0*	*60*	*270.0*	*84*	*297.8*	**883**	**2,139.8**
Mill Creek								
Hoe Flake	1	0.3	1	0.8	1	1.1	29	23.3
Debitage	-	-	4	20.8	1	0.2	68	112.6
subtotal	*1*	*0.3*	*5*	*21.6*	*2*	*1.3*	**97**	**135.9**
Ste. Genevieve								
Bipolar Core	-	-	1	16.2	1	29.1	5	97.0
Freehand Core	-	-	-	-	1	5.3	2	21.1
Tested Cobble	-	-	-	-	1	14.2	1	14.2
Adze Flake	-	-	-	-	-	-	1	0.2
Debitage	2	1.7	1	1.2	5	13.7	67	105.3
subtotal	*2*	*1.7*	*2*	*17.4*	*8*	*62.3*	**76**	**237.8**
Salem								
Bipolar Core	-	-	1	40.6	-	-	2	101.1
Freehand Core	-	-	-	-	-	-	2	145.0
Debitage	-	-	2	22.9	3	10.7	21	110.5
subtotal	-	-	*3*	*63.5*	*3*	*10.7*	**25**	**356.6**
Grover Gravel								
Tested Cobble	-	-	1	86.3	1	70.8	**2**	**157.1**
Fern Glen								
Debitage	-	-	2	12.0	2	18.6	**8**	**70.7**
St. Louis								
Debitage	-	-	-	-	-	-	**1**	**0.5**
Indeterminate								
Flake Tool	-	-	-	-	1	1.7	1	1.7
Tested Cobble	-	-	-	-	1	27.4	1	27.4
Debitage	2	6.8	5	25.1	6	12.7	91	124.6
subtotal	*2*	*6.8*	*5*	*25.1*	*8*	*41.8*	**93**	**153.7**
Total	11	36.8	78	495.9	108	503.3	**1,185**	**3,252.1**

Table 6.50. Debitage.

Chert Type	Feature 1		Feature 2		TU2		TU4		TU5		TU6		TU7		**Total**	
% Cortex	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Burlington																
0%	461	688.5	211	270.6	6	10.7	1	2.6	2	5.7	46	125.0	71	127.1	798	1,230.2
<50%	13	49.5	5	15.7	-	-	-	-	1	0.3	2	48.3	5	10.3	26	124.1
>50%	2	1.1	-	-	-	-	-	-	1	3.9	-	-	-	-	3	5.0
Subtotal	*476*	*739.1*	*216*	*286.3*	*6*	*10.7*	*1*	*2.6*	*4*	*9.9*	*48*	*173.3*	*76*	*137.4*	**827**	**1,359.3**
Mill Creek																
0%	34	30.4	18	7.4	-	-	-	-	-	-	2	1.2	1	0.2	55	39.2
<50%	8	25.1	-	-	-	-	-	-	-	-	2	19.6	-	-	10	44.7
>50%	1	25.4	2	3.3	-	-	-	-	-	-	-	-	-	-	3	28.7
Subtotal	*43*	*80.9*	*20*	*10.7*	-	-	-	-	-	-	*4*	*20.8*	*1*	*0.2*	**68**	**112.6**
Ste. Genevieve																
0%	19	11.9	10	4.4	-	-	-	-	1	1.2	1	1.2	2	5.3	33	24.0
<50%	20	44.2	1	3.1	-	-	-	-	1	0.5	-	-	1	1.5	23	49.3
>50%	7	24.5	2	0.6	-	-	-	-	-	-	-	-	1	2.2	10	27.3
100%	-	-	-	-	-	-	-	-	-	-	-	-	1	4.7	1	4.7
Subtotal	*46*	*80.6*	*13*	*8.1*	-	-	-	-	*2*	*1.7*	*1*	*1.2*	*5*	*13.7*	**67**	**105.3**
Salem																
0%	4	16.8	10	48.5	-	-	-	-	-	-	1	4.2	-	-	15	69.5
<50%	1	0.2	1	11.4	-	-	-	-	-	-			2	5.8	4	17.4
>50%	-	-	-	-	-	-	-	-	-	-	1	18.7	-	-	1	18.7
100%	-	-	-	-	-	-	-	-	-	-	-	-	1	4.9	1	4.9
Subtotal	*5*	*17.0*	*11*	*59.9*	-	-	-	-	-	-	*2*	*22.9*	*3*	*10.7*	**21**	**110.5**

Table 6.50, continued. Debitage.

Chert Type	Feature 1		Feature 2		TU2		TU4		TU5		TU6		TU7		**Total**	
% Cortex	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
Fern Glen																
0%	-	-	2	28.1	-	-	-	-	-	-	-	-	2	18.6	4	46.7
<50%	2	12.0	-	-	-	-	-	-	-	-	2	12.0	-	-	4	24.0
Subtotal	*2*	*12.0*	*2*	*28.1*	-	-	-	-	-	-	*2*	*12.0*	*2*	*18.6*	**8**	**70.7**
St. Louis																
0%	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	1	0.5
Subtotal	*1*	*0.5*	-	-	-	-	-	-	-	-	-	-	-	-	**1**	**0.5**
Indeterminate																
0%	44	52.0	26	15.5	-	-	-	-	-	-	3	17.0	4	6.0	77	90.5
<50%	6	10.5	1	0.3	-	-	-	-	1	0.8	-	-	-	-	8	11.6
>50%	1	1.7	-	-	-	-	-	-	1	6.0	2	8.1	1	1.0	5	16.8
100%	-	-	-	-	-	-	-	-	-	-	-	-	1	5.7	1	5.7
Subtotal	*51*	*64.2*	*27*	*15.8*	-	-	-	-	*2*	*6.8*	*5*	*25.1*	*6*	*12.7*	**91**	**124.6**
Total	624	994.3	289	408.9	6	10.7	1	2.6	8	18.4	62	255.3	93	193.3	**1,083**	**1,883.5**

Table 6.51. Ethnobotanical Remains.

	Feature 1	Feature 2
Sample Volume (liters)	55	46
Total Wood (N)	37	49
Total Wood Wt. (g)	0.31	0.37
Breakdown by taxon (N)		
Quercus sp. (oak)	12	23
Salix/Populus spp. (willow/poplar)	9	-
Bark	1	-
Diffuse porous	2	1
Ring porous	5	-
Unidentifiable	8	1
Total Nutshell (N)	1	10
Total Nutshell Wt. (g)	0.05	0.23
Breakdown by taxon (N and Wt.)		
Carya sp.	1	1
(hickory)	0.05	0.04
Juglandaceae	-	6
(hickory/walnut family)	-	0.05
Juglans nigra	-	3
(black walnut)	-	0.09
Total Seeds (N)	50	96
Breakdown by taxon (N)		
Andropogon sp. (bluestem/beardgrass)	2	2
Chenopodium berlandieri (chenopod)	2	-
Hordeum pusillum (little barley)	2	64
Ipomea sp. (morning glory)	-	1
Nicotiana rustica (tobacco)	1	-
Panicum sp. (panic grass)	-	4
Phalaris caroliniana (maygrass)	16	2
Poaceae (grass family)	3	1
Polygonum erectum (erect knotweed)	-	1
Solanum ptycanthum (black nightshade)	1	-
Unidentifiable	25	21
Total Maize (Zea mays) (N)	2	9
Total Maize Weight (g)	0.01	0.05
kernel	2	7
cupule	-	2
Miscellaneous Materials	178	-
Monocot stem	176	44
Vegetative/fruit tissue	2	-

Table 6.52. Seed Summary.

Seed Type	Number	Percentage
Andropogon sp. (bluestem/ beardgrass)	4	3.9
Chenopodium berlandieri (chenopod)	2	2.0
Hordeum pusillum (little barley)	66	64.7
Ipomea sp. (morning glory)	1	1.0
Nicotiana rustica (tobacco)	1	1.0
Panicum sp. (panic grass)	4	3.9
Phalaris caroliniana (maygrass)	18	17.6
Poaceae (grass family)	4	3.9
Polygonumerectum (erect knotweed)	1	1.0
Solanum ptycanthum (black nightshade)	1	1.0
Total	102	100.0

Table 6.53. Faunal Remains.

Taxon	Feature 1		Feature 2		Test Unit 7		**Total**	
	no.	wt(g)	no.	wt(g)	no.	wt(g)	no.	wt(g)
White-tailed deer (*Odocoileus virginianus*)	--	--	2	0.04*	--	--	2	0.04*
Large-sized mammal	1	0.29	--	--	5	1.15	6	1.44
Small to medium-sized mammal	--	--	1	0.10	--	--	1	0.10
Mammal, indet.	--	--	3	0.24	--	--	3	0.24
cf. Canada goose (*Branta canadensis*)	--	--	1	0.58	--	--	1	0.58
Large-sized bird	4	0.73	1	0.60	--	--	5	1.33
Bird, indet.	--	--	3	0.14	--	--	3	0.14
Turtle, indet.	--	--	1	0.02	--	--	1	0.02
Fish, indet.	5	0.03	1	0.01	--	--	6	0.04
Taxon indeterminate (Vertebrata)	9	0.86	3	0.25	--	--	12	1.11
Total	19	1.91	16	1.98	5	1.15	40	5.04

*does not include element in matrix

Table 6.54. Body Sherds.

Temper	Feature 1		Feature 2		Feature 3		Feature 4		Feature 5		Feature 7		Feature 8	
Surface Treatment	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)
Shell														
Slipped	-	-	-	-	33	84.6	3	1.1	3	3.0	1	0.7	-	-
Plain/Eroded	-	-	68	445.1	16	62.6	15	30.8	17	48.8	1	0.3	7	13.3
CM/Slipped	-	-	-	-	-	-	-	-	-	-	1	11.1	-	-
Limestone														
Slipped	-	-	-	-	24	58.3	20	85.8	13	26.4	3	17.8	-	-
Plain	-	-	-	-	12	25.8	15	38.1	2	1.8	20	17.0	1	13.0
CM	-	-	-	-	8	31.8	47	420.8	7	29.0	32	161.7	2	11.7
CM/Slipped	-	-	-	-	5	7.0	-	-	-	-	1	2.0	-	-
Grog														
Slipped	-	-	-	-	4	1.9	-	-	3	0.7	1	0.3	-	-
Plain	-	-	-	-	12	26.1	14	28.6	39	58.2	20	40.6	5	13.1
CM	1	6.6	1	36.2	30	140.2	14	174.9	25	39.3	68	291.1	6	42.2
Eroded	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grit														
Plain	-	-	-	-	-	-	1	1.0	-	-	-	-	-	-
CM	-	-	-	-	3	4.9	2	38.9	-	-	-	-	-	-
Grit/Grog														
Plain	-	-	-	-	-	-	1	4.1	-	-	2	11.6	-	-
CM	-	-	-	-	1	0.7	-	-	-	-	16	105.8	-	-
Total	1	6.6	69	481.3	148	443.9	132	824.1	109	207.2	166	660.0	21	93.3

Table 6.54, continued. Body Sherds.

Temper	Feature 10		Feature 11		Feature 12		Feature 14		Feature 15		Feature 16		**Total**	
Surface Treatment	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)
Shell														
Slipped	8	59.5	6	30.6	-	-	-	-	5	29.0	9	22.4	68	230.9
Plain/Eroded	-	-	-	-	-	-	-	-	1	2.0	12	13.0	137	615.9
CM/Slipped	-	-	2	7.4	-	-	-	-	-	-	-	-	3	18.5
Limestone														
Slipped	-	-	-	-	1	2.8	1	0.4	-	-	-	-	62	191.5
Plain	2	1.2	22	52.5	4	16.9	-	-	3	4.6	-	-	81	170.9
CM	6	12.5	11	141.3	2	4.5	-	-	37	174.9	-	-	152	988.2
CM/Slipped	-	-	-	-	-	-	-	-	-	-	-	-	6	9.0
Grog														
Slipped	-	-	-	-	-	-	1	1.1	3	6.0	-	-	12	10.0
Plain	5	3.9	16	36.8	3	4.5	-	-	21	35.1	3	7.0	138	253.9
CM	30	23.5	66	434.8	7	28.1	-	-	40	155.8	10	63.6	298	1,436.3
Eroded	-	-	-	-	-	-	-	-	2	0.8	-	-	2	0.8
Grit														
Plain	-	-	-	-	3	7.6	-	-			1	0.7	5	9.3
CM	1	1.9	1	46.4	33	78.7	-	-	3	33.0	-	-	43	203.8
Grit/Grog														
Plain	-	-	-	-	-	-	-	-	2	5.9	-	-	5	21.6
CM	8	46.8	-	-	-	-	-	-	29	145.0	2	6.1	56	304.4
Total	60	149.3	124	749.8	53	143.1	2	1.5	146	592.1	37	112.8	**1,068**	**4,465.0**

Table 6.55. Unmodified Lithics and FCR.

Feature	Limestone		Sandstone		Siltstone		Silicate		Quartzite		Crystal Rock		Unidentified		Burned Sandstone		**Total**	
	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)
F 2	31	172.8	3	2.2	-	-	-	-	-	-	-	-	-	-	-	-	34	175.0
F 3	9	368.6	4	9.4	-	-	-	-	1	15.1	25	13.3	-	-	1	14.1	40	420.5
F 4	10	344.0	4	63.5	-	-	-	-	-	-	-	-	-	-	-	-	14	407.5
F 5	5	11.5	6	78.1	1	0.1	-	-	-	-	-	-	2	0.8	-	-	14	90.5
F 7	2	146.6	2	10.9	-	-	-	-	-	-	-	-	-	-	-	-	4	157.5
F 8	1	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1.4
F 10	2	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1.4
F 11	4	289.0	1	0.8	-	-	-	-	-	-	-	-	-	-	-	-	5	289.8
F 12	1	85.2	-	-	-	-	-	-	-	-	-	-	1	0.1	-	-	2	85.3
F 14	2	60.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	60.2
F 15	4	496.1	-	-	-	-	-	-	1	61.8	-	-	-	-	-	-	5	557.9
F 17	2	8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	8.6
Surface/PZ	1	23.7	-	-	-	-	1	0.5	1	4.9	-	-	-	-	-	-	3	29.1
Total	74	2,009.1	20	164.9	1	0.1	1	0.5	3	81.8	25	13.3	3	0.9	1	14.1	**128**	**2,284.7**

Table 6.56. Groundstone Tools.

	Sandstone Abrader		Basalt Flakes		Igneous Hammerstone		Quartzite Hammerstone		Unmodified Hematite		Unmodified Glacial Cobble		Igneous Cobble Fragment		**Total**	
Feature	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)
F 2	-	-	1	0.2	-	-	-	-	-	-	1	199.2	1	68.1	3	267.5
F 3	1	6.8	-	-	-	-	-	-	-	-	-	-	-	-	1	6.8
F 4	-	-	-	-	-	-	-	-	1	2.4	-	-	-	-	1	2.4
F 5	-	-	2	2.1	-	-	-	-	-	-	-	-	-	-	2	2.1
F 7	-	-	-	-	-	-	1	91.0	-	-	-	-	-	-	1	91.0
F 15	-	-	-	-	1	218.3	-	-	-	-	1	0.3	-	-	2	218.6
Surface/PZ	1	30.5	1	63.0	-	-	-	-	-	-	-	-	-	-	2	93.5
Total	2	37.3	4	65.3	1	218.3	1	91	1	2.4	2	199.5	1	68.1	**12**	**681.9**

Table 6.57. Debitage.

Feature Number	Flake Shatter		Block Shatter		Heat Treated Flake Shatter		Heat Treated Block Shatter		Chert Cobble		Heat Altered Chert Cobble		**Total**	
Chert Type	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)
F 2														
Burlington	51	59.9	5	21.6	7	8.2	-	-	-	-	-	-	63	89.7
Mill Creek	3	7.9	-	-	-	-	-	-	-	-	-	-	3	7.9
Ste. Genevieve	3	2.7	-	-	-	-	-	-	-	-	-	-	3	2.7
Indeterminate	4	7.5	-	-	-	-	-	-	2	72.5	-	-	6	80.0
F 3														
Burlington	41	75.1	10	104.6	14	34.5	6	7.8	-	-	-	-	71	222.0
Mill Creek	2	15.2	-	-	-	-	-	-	-	-	-	-	2	15.2
Indeterminate	-	-	1	7.3	3	1.2	-	-	3	106.3	-	-	7	114.8
F 4														
Burlington	9	30.2	1	9.1	2	4.3	-	-	-	-	-	-	12	43.6
Mill Creek	5	5.8	-	-	-	-	-	-	-	-	-	-	5	5.8
Ste. Genevieve	-	-	1	101.2	-	-	-	-	-	-	-	-	1	101.2
Salem	2	3.2	-	-	-	-	-	-	-	-	-	-	2	3.2
River Gravel	5	57.1	-	-	-	-	-	-	-	-	-	-	5	57.1
F 5														
Burlington	91	60.6	2	29.3	22	19.3	4	6.8	-	-	-	-	119	116.0
Mill Creek	7	5.9	-	-	1	0.1	1	1.3	-	-	-	-	9	7.3
Ste. Genevieve	4	0.8	1	6.6	-	-	-	-	-	-	-	-	5	7.4
Indeterminate	4	0.8	1	3.0	3	0.7	-	-	1	0.4	-	-	9	4.9
F 7														
Burlington	6	7.1	1	0.3	1	2.4	-	-	-	-	-	-	8	9.8
Indeterminate	1	2.0	-	-	-	-	-	-	-	-	-	-	1	2.0
F 10														
Burlington	3	5.6	1	1.9	2	1.2	-	-	-	-	-	-	6	8.7
Mill Creek	1	2.2	-	-	-	-	-	-	-	-	-	-	1	2.2

Table 6.57, continued. Debitage.

Feature Number	Flake Shatter		Block Shatter		Heat Treated Flake Shatter		Heat Treated Block Shatter		Chert Cobble		Heat Altered Chert Cobble		**Total**	
Chert Type	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)	no.	wt.(g)
F 11														
Burlington	22	45.0	1	2.1	7	2.3	1	2.1	-	-	-	-	31	51.5
Mill Creek	2	1.6	-	-	-	-	-	-	-	-	-	-	2	1.6
Indeterminate	1	0.3	-	-	-	-	-	-	-	-	-	-	1	0.3
F 12														
Burlington	2	0.8	-	-	-	-	-	-	-	-	-	-	2	0.8
Mill Creek	-	-	-	-	1	7.8	-	-	-	-	-	-	1	7.8
Indeterminate	-	-	-	-	-	-	-	-	-	-	1	2.8	1	2.8
F 15														
Burlington	14	21.5	-	-	2	0.7	-	-	-	-	-	-	16	22.2
Mill Creek	8	5.3	-	-	-	-	-	-	-	-	-	-	8	5.3
Ste. Genevieve	1	0.7	-	-	-	-	-	-	-	-	-	-	1	0.7
Indeterminate	2	1.6	-	-	-	-	-	-	1	22.6	-	-	3	24.2
F 16														
Burlington	2	0.2	-	-	-	-	1	1.5	-	-	-	-	3	1.7
Ste. Genevieve	1	0.4	-	-	-	-	-	-	-	-	-	-	1	0.4
Indeterminate	-	-	-	-	2	3.5	-	-	-	-	-	-	2	3.5
F 17														
Burlington	5	3.8	-	-	1	0.6	-	-	-	-	-	-	6	4.4
Mill Creek	1	0.9	-	-	1	0.9	-	-	-	-	-	-	2	1.8
Indeterminate	1	0.1	-	-	-	-	-	-	-	-	-	-	1	0.1
Surface/PZ														
Burlington	9	39.2	4	20.8	3	27.8	3	49.1	-	-	-	-	19	136.9
Indeterminate	-	-	-	-	-	-	-	-	1	41.4	-	-	1	41.4
Total	311	468.9	31	309.5	69	114.8	16	68.6	8	243.2	1	2.8	439	1,208.9

Table 6.58. Chert Types.

Chert	Percent by Count			Percent by Weight		
Type	Debitage	Tools	Total	Debitage	Tools	Total
Burlington	81	67	80	59	50	56
Mill Creek	8	26	9	5	43	15
Ste. Genevieve	3	8	3	9	7	9
Salem	<1	-	<1	<1	-	<1
Glacial Till	1	-	1	5	-	3
Indeterminate	7	-	7	23	-	16

Table 6.59. Chipped-Stone Tools.

Feature Number Chert Type	Flake Tool Low Angle Wear no.	wt(g)	Flake Tool High Angle Wear no.	wt(g)	Block Shatter Low Angle no.	wt(g)	Block Shatter High Angle no.	wt(g)	Core Fragment no.	wt(g)	Flaked Chert Pebble no.	wt(g)
F 2												
Burlington	1	4.6	-	-	-	-	-	-	-	-	-	-
Mill Creek	-	-	1	19.2	-	-	-	-	-	-	-	-
Ste. Genevieve	-	-	-	-	-	-	-	-	1	27.8	-	-
F 3												
Burlington	3	14.3	1	13.2	-	-	-	-	-	-	-	-
F 4												
Burlington	2	30.5	2	8.9	-	-	1	6.5	-	-	1	27.1
Mill Creek	2	13.9	-	-	-	-	-	-	-	-	-	-
F 5												
Burlington	1	17.2	-	-	-	-	-	-	-	-	-	-
Mill Creek	-	-	-	-	-	-	-	-	-	-	-	-
F 8												
Burlington	2	3.6	1	2.4	-	-	-	-	-	-	-	-
F 10												
Burlington	-	-	1	2.5	-	-	-	-	-	-	-	-
Mill Creek	-	-	-	-	-	-	-	-	-	-	-	-
F 11												
Burlington	3	9.1	1	1.7	-	-	1	3.0	-	-	-	-
Mill Creek	1	4.8	1	4.8	-	-	-	-	-	-	-	-
F 12												
Burlington	1	0.1	-	-	-	-	-	-	-	-	-	-
F 15												
Ste. Genevieve	2	1.5	-	-	-	-	-	-	-	-	-	-
F 16												
Burlington	-	-	-	-	2	11.1	-	-	-	-	-	-
900s												
Burlington	5	41.2	2	12.5	1	5.2	-	-	-	-	-	-
Mill Creek	1	4.0	-	-	-	-	-	-	-	-	-	-
Total	24	144.8	10	65.2	3	16.3	2	9.5	1	27.8	1	27.1

Table 6.59, continued. Chipped-Stone Tools.

Feature Number / Chert Type	Retouched Flakes no.	Retouched Flakes wt(g)	Bifacial Flakes no.	Bifacial Flakes wt(g)	Polished Bifacial Flakes no.	Polished Bifacial Flakes wt(g)	Hoe Blade Fragment no.	Hoe Blade Fragment wt(g)	Perforator no.	Perforator wt(g)	**Total** no.	**Total** wt(g)
F 2												
Burlington	-	-	1	13.4	-	-	-	-	-	-	2	18.0
Mill Creek	-	-	-	-	2	9.0	-	-	-	-	3	28.2
Ste. Genevieve	1	6.0	-	-	-	-	-	-	-	-	2	33.8
F 3												
Burlington	-	-	-	-	-	-	-	-	-	-	4	27.5
F 4												
Burlington	-	-	-	-	-	-	-	-	-	-	6	73.0
Mill Creek	-	-	-	-	-	-	2	148.2	-	-	4	162.1
F 5												
Burlington	1	11.9	-	-	-	-	-	-	-	-	2	29.1
Mill Creek	-	-	-	-	2	1.1	-	-	-	-	2	1.1
F 8												
Burlington	-	-	-	-	-	-	-	-	-	-	3	6.0
F 10												
Burlington	-	-	-	-	-	-	-	-	-	-	1	2.5
Mill Creek	-	-	-	-	-	-	-	-	1	0.7	1	0.7
F 11												
Burlington	-	-	-	-	-	-	-	-	-	-	5	13.8
Mill Creek	-	-	-	-	-	-	-	-	-	-	2	9.6
F 12												
Burlington	-	-	-	-	-	-	-	-	-	-	1	0.1
F 15												
Ste. Genevieve	-	-	-	-	-	-	-	-	-	-	2	1.5
F 16												
Burlington	-	-	-	-	-	-	-	-	-	-	2	11.1
900s												
Burlington	-	-	-	-	-	-	-	-	-	-	8	58.9
Mill Creek	-	-	-	-	-	-	-	-	-	-	1	4.0
Total	2	17.9	1	13.4	4	10.1	2	148.2	1	0.7	**51**	**481.0**

Table 6.60. Fired Clay and Ceramic Objects.

Site	Burnt Clay	Daub	Modeled Clay	Pinch Pot Sherds	Discoidal	Sherd Disk	Pipe	Clay Ball	**Total**
Component	no.	no.	no.	no.	no.	no.	no.	no.	no.
Fish Lake									
George Reeves	91	16	-	1	1	-	-	-	109
Lindeman North	120	17	1	5	-	-	-	-	143
Lindeman South	87	125	10	17	1	5	-	1	246
Lohmann	-	-	1	-	-	-	-	-	1
Divers									
Lindeman	*	*	*	*	2	15	1	1	19
Lohmann	*	*	*	*	*	2	*	*	2
Peiper									
Lohmann	140	76	5	-	-	-	1	-	222
Washausen									
Feature 1	70	4	2	-	-	12	-	-	88
Feature 2	38	-	1	-	-	1	-	-	40

* = not reported

Table 6.61. Groundstone.

Site Component	Celt/Spud Frags/Flakes	Lithic Discoidals	Flat Abraders	Pigment Minerals	**Total**
Fish Lake					
George Reeves	1	-	4	-	5
Lindeman North	6	-	18	-	24
Lindeman South	2	-	7	1	10
Lohmann	-	-	2	-	2
Divers					
Lindeman	1	2	2	-	5
Lohmann	1	3	1	2	7
Washausen					
Feature 1	-	-	5	5	10
Feature 2	2	-	-	4	6
Morrison					
Edelhardt	4	-	1	1	6

CHAPTER 7
CREATING THE CAHOKIAN COMMUNITY

In this chapter I will situate the spatial and material evidence from the five sites discussed in the previous two chapters within regional context by including them in comparisons among Mississippian Transition sites throughout the American Bottom region. Variables used for comparison include occupation histories, site plans, architecture, and material culture. I separate the sites into four groups based on their location within four sub-regions in order to identify overall trends and changes in space and material culture throughout the region. The four sub-regions are the northern American Bottom floodplain, northern uplands, southern American Bottom floodplain, and southern uplands. The dividing line for the floodplain and uplands is the bluff line. The dividing line for north and south is defined somewhat arbitrarily at the Prairie du Pont Creek. As previously noted, Kelly (1990a; 2002) proposed that this area which is relatively wide and swampy would hinder travel and provide a natural boundary between the northern and southern regions.

In order to address changes in community and identity at the Terminal Late Woodland to Mississippian transition, I first compiled a list of sites recorded in the Illinois Archaeological Survey site files in ArcMAP 9.3 with evidence derived from surface collection and excavation indicating they were occupied during the late Terminal Late Woodland and/or early Mississippian period. I relied on the description of the materials collected during surveys and excavations as reported in the material column in the IAS site files. TLW2 sites include those with shell, grog, and/or limestone temper and red–slipped, plain, and/or plain–cordmarked sherds. Sites were considered to have Lohmann phase components when shell–tempered sherds were present as well as some limestone–tempered, red–slipped, plain, and polished sherds. Many sites that may date to either of these periods were excluded due to incomplete information in the site files or lack of diagnostic artifacts in the collection.

These sites were further separated into three different categories: abandoned sites that had only TLW2 occupations (e.g., Morrison), newly established sites with only early Mississippian occupations (e.g., Peiper), and reorganized sites that have evidence for both occupations (e.g., Fish Lake). Sites that might date to either the TLW2 or the early Mississippian period are included with the last category to provide the maximum number of sites that may date to each of these periods. For most of these sites it is impossible to determine site size or spatial organization because most data are derived from surface collections.

Sites that have undergone excavation were classified based on the number of structures and other constructions. Sites with mounds are considered mound centers regardless of number or size of mounds. Following terminology established by Holley and colleagues (2001a), sites that lack mounds and have 10 structures or less are considered hamlets while those with more than 10 structures are referred to as villages. Sites with two or fewer structures are considered farmsteads. Farmsteads are considered nodal if there is evidence for suprahousehold, administrative, and/or ritual activities and a high degree of diversity in terms of material culture, architecture, and site layout (see Emerson 1997a, b and Betzenhauser 2006).

I also compiled comparative data from reports of excavated sites including structure size (floor area), morphology, and construction method for domiciles and non-residential structures. Structures are considered non-residential if they were interpreted as temples, charnel structures, or communal structures (council houses) in the site report. Very large structures (>100 m^2) are typically interpreted as community or council houses while circular structures are inferred to be sweatlodges (Emerson 1997a, b; Kelly 1990a). Very small structures (<4 m^2) and L-shaped structures are associated with storage (Alt 2006b; Collins 1990). T-shaped structures are considered non-residential because they have been interpreted as temples although they may have housed high status individuals as well (Alt 2006a).

The site maps of a sample of the excavated sites were digitized, also in ArcMAP 9.3, in order to identify site specific changes in layout through the Mississippian Transition. Features were separated based on component when possible and separate maps for each component were produced at the same scale in order to compare the change in size and location of occupations at individual sites.

Finally, I compare the density and distribution of different types of material remains recovered from excavated sites within the region. These data provide information concerning economic centralization, redistribution of resources, and possible production of items intended as tribute. The presence of items and depositional data that suggest communal activities or events are also noted. With this spatial and material information, it is possible to illustrate how communities throughout the region were altered as evidenced by changes in population, settlement, material production and consumption, daily practices, and participation in periodic events.

SPATIAL EVIDENCE FOR THE MISSISSIPPIAN TRANSFORMATION

As noted in Chapter 5, several lines of evidence indicate that there were multiple ways in which space was altered concurrent with the Mississippian transition. Here I present region–wide data concerning occupational histories as viewed through settlement patterns and sub-regional comparisons of architectural forms, construction methods, and structure size and shape. Direct evidence for the transition in the form of superimposed structures and contexts of structure abandonment will also be addressed. With these data it is possible to assess how similar changes in the construction of space were throughout the region or if particular alterations to space are restricted to a sub-region or even individual sites.

SETTLEMENT PATTERNS

A total of 616 sites listed in the IAS site files were identified as exhibiting TLW2 and/or early Mississippian occupations based on either surface or excavation data (Figure 7.1). The vast majority are located within the northern American Bottom in Madison and northern St. Clair counties (81%). The difference in number of sites may be related to the more limited survey coverage of the southern American Bottom (Table 7.1). Less than 10 percent of Monroe county has been surveyed in contrast to Madison and St. Clair counties where 19 percent and 15 percent of the total area has been surveyed, respectively. However, total site density is greatest in Monroe county where the number of sites per surveyed square kilometer is 12.3. Madison county has the lowest density with a measure of 4.9 sites per square kilometer of surveyed area. This pattern is reversed when considering only the sites with TLW2 and/or Lohmann phase occupations. Madison County has the highest density of these sites with a measure of 0.96 whereas the value for Monroe county is 0.63. This suggests that there is a higher density of Mississippian Transition sites located in the northern American Bottom region than in the south.

Most sites with TLW2 and/or Lohmann phase occupations are located within the floodplain (59%). They are present in higher densities as well with a total density of 2.0 sites/km^2 compared to the uplands where it is only 0.49 sites/km^2. An interesting pattern emerges when comparing site densities in the floodplain and uplands by county. As expected, sites are most dense in the floodplain located within Madison county (2.4 sites/km^2) and least dense in Monroe county (1.5 sites/km^2). However, site density in the uplands of St. Clair county is highest with a value of 0.68 sites/km^2 while Madison county has a density of only 0.41 sites/km^2. As expected, the site density in the uplands of Monroe county is the lowest (0.23 sites/km^2). This pattern indicates that Mississippian Transition sites are most dense in the floodplain of Madison County. However, there is also a high density of sites in the uplands of St. Clair county. This may be related to the presence of historically documented trails leading east from present–day St. Louis (Holley et al. 2001a). At least some of these trails were likely in use even before the Mississippian period as suggested by the distribution of TLW2 sites along this same path. These paths presumably connected upland residents to those living in the floodplain, including Cahokia.

Of the 616 sites, 31 percent (n = 189) may date to either period or both including several unexcavated mound centers located in the southern American Bottom. Forty-one percent (n = 250) appear to have been abandoned because they exhibit evidence for occupation during the TLW2 period but not the early Mississippian. The remaining sites are considered to have been established during the early Mississippian period due to the presence of Lohmann phase materials or features and the absence of any indication of a TLW2 occupation. However, it is likely that Lohmann phase occupations are underrepresented in this sample. Lohmann phase farmsteads and cemeteries are notoriously difficult to detect based on surface data alone (Booth 2001; Bukowski 2008a; Galloy 2003). Also, shell–tempered sherds are more susceptible to erosion and may not survive on the surface long enough to be collected (Milner 2006).

All types of sites are more common in the northern American Bottom. However, sites that lack evidence for a TLW2 occupation are significantly more common in the northern American Bottom (89%) than the other two types (Table 7.2, Figure 7.2a). Abandoned sites are more common in the uplands (56%) while sites that were established in previously unoccupied areas are more common in the floodplain (65%). Sites with evidence for occupations during both the TLW2 and early Mississippian period are also more common in the floodplain (74%). Based on the number of sites, these patterns may indicate that more TLW2 residents in the uplands moved to the floodplain or other previously occupied sites than to newly established sites during the early Mississippian period.

Most of the sites in the sample were abandoned before the Mississippian period. Sites that were reorganized are slightly more prevalent than sites that were newly established. This pattern changes when we compare the types of sites by sub-region. Abandoned sites are the most common type in all sub-regions except the floodplain where reorganized sites are most common. More than half of the sites located in the uplands were abandoned (53%). Reorganized sites are more common among sites located in the southern American Bottom and are the least common types of sites located in the northern American Bottom and uplands. Newly established sites are second in prevalence everywhere except in the southern American Bottom where they comprise only 17 percent of the sample.

The distribution of sites within these sub-regions provides interesting data concerning the different ways in which sociopolitical consolidation in the American Bottom region was accomplished (Figure 7.2b). The fact that fewer sites were abandoned and more sites were established or reorganized in the floodplain at the beginning of the Mississippian period suggests that people were moving into and around the floodplain rather than out of the floodplain. In the southern American Bottom, abandoned and reorganized sites are far more prevalent than newly established sites. This suggests there was little movement to more southerly areas.

The high percentage of reorganized sites suggests that those who stayed were actively involved with the sociopolitical transformations occurring to the north. Similarly, sites were more likely to be abandoned or newly established rather than reorganized in the northern American Bottom and uplands. The movement of people into and out of the uplands, particularly in areas east of Cahokia along trails, may indicate a greater need for monitoring local residents and the integration of rural populations.

When the data are parsed even further based on location in the uplands and floodplain of the northern and southern American Bottom, still more interesting patterns emerge (Figure 7.2c). The patterns for the northern American Bottom are generally the same noted for the entire floodplain and the all of the uplands. In the floodplain, most sites are reorganized or established while in the uplands most sites are abandoned or established. These trends change significantly for the southern American Bottom where most sites in the floodplain were reorganized or abandoned. In the uplands, two-thirds of the sites were abandoned and another quarter were reorganized. Only 8 percent of the sites in the southern American Bottom uplands were newly established. This further suggests limited movement to the south and a high degree of abandonment in the southern uplands during the early Mississippian period.

SITE TYPES AND DISTRIBUTION

Late Terminal Late Woodland settlements range in size from isolated households to large villages comprised of a few hundred to a thousand people (Fortier and McElrath 2002; Kelly 1990a). However, most sites during this time period are hamlets comprised of three to 10 contemporaneous structures (Figure 7.3). Although mound construction is commonly thought to have its origins during this period (see Holley et al. 2001a; Porter 1974), Mound A at the Morrison site is the only documented example. It is likely that mound construction commenced at Cahokia and Pulcher and possibly several southern American Bottom sites including Washausen, Maeys, and Wessel to name a few. Regardless of when mound construction began, it appears to have been on a small scale during the late TLW2 in terms of number of mounds and mound size if Morrison is representative. Interestingly, there is little to no indication of TLW2 mound construction or large villages in the uplands.

Most non-village TLW2 sites are oriented toward natural features including the bluff edge, water features, or the ridge topography. Site layouts of villages and some hamlets include courtyards surrounded by several structures (Kelly et al. 2007). Many courtyards include central features such as communal storage pits or marker posts (Kelly 1990a,b; Kelly et al. 2007). Many TLW2 sites were occupied during only one phase suggesting the residents were not tied to these locales for multiple generations. However, there are several examples of sites that appear to have been occupied continuously for at least a century prior the Lohmann phase. These include large village sites such as Cahokia and Range, small village sites including Divers, and hamlets including the George Reeves and Fish Lake (Kelly et al. 2007; McElrath and Finney 1987; Pauketat 1998).

The subsequent early Mississippian period Lohmann phase is characterized by an even wider range of site sizes and types and a dramatic increase in monumental construction. Farmsteads are ubiquitous in both the floodplain and uplands (Figure 7.4). Many are unremarkable in terms of architecture, site layout, and material remains. As many archaeologists have noted, the location of farmsteads along waterways in bottomlands is an efficient way to conduct maize agriculture (Emerson 1992b; Emerson and Milner 1982; Mehrer 1995; Muller 1978). The spatial distribution of farmsteads combined with the fact that such a distribution of sites is conducive to maize agriculture suggests that Lohmann phase farmsteads were established (at least in part) in order to intensify production of corn, likely intended to provision individuals living at Cahokia and other mound centers.

Nodal farmsteads first appear during this period and are dispersed among non-nodal farmsteads and near mound centers in both the floodplain and uplands. These sites exhibit evidence for suprahousehold activities including feasting, communal storage, or ceremonies suggesting their role in the integration of rural populations (Emerson 1997a, b; Mehrer 1995). Many nodal farmsteads also exhibit Cahokia–style architecture (see below) suggesting direct connection with the center (Betzenhauser 2006; Emerson 1997a, b).

This period also marks the first appearance of larger villages in the uplands (Alt 2006a, b). Evidence for administrative, communal, and ritual activities at villages such as the Grossmann site point to their role in the integration of rural residents as well (Alt 2006a). Smaller villages are also present in both the uplands and floodplain. Sites such as Halliday have been linked to craft production and maize agriculture on a larger scale than is evident at farmsteads (Pauketat 2003, Alt 1999). Smaller, non-mound villages are not common in the floodplain although the recently excavated Alexander Jacob site located in the northern floodplain may be an example of one such village (Machiran et al. 2010).

Mound and plaza construction during this period is widespread in both the floodplain north and south of Cahokia and the uplands east of Cahokia. Mounds were built in previously unoccupied areas although some were constructed in locales with TLW2 settlements including small hamlets and larger villages. The scale of construction is immense in both size and quantity although these vary drastically from site to site (e.g., Fowler 1997; Esarey and Pauketat 1992). Mound centers in the northern bottoms tend to be larger and more closely space than in the southern floodplain. Mound centers in the uplands appear to be intentionally located along trails (Koldehoff et al. 1993; Kruchten et al. 2009). While several mound centers in the southern floodplain appear to have Lohmann phase occupations, none has been identified in the southern uplands thus far with the possible exception of the Booker T. Washington site located along the bluff edge (Kelly 1990a, 1993; Porter 1974).

The rural cemetery is a new type of site associated with the Lohmann phase. Emerson and colleagues (2003b) define these cemeteries as spatially restricted groups of oval shaped pit features that are removed from habitation areas. Examples of such sites include portions of the Halliday, Stemler Bluff, and Center Grove sites (Booth 2001; Bukowski 2008b; Hargrave and Hedman 2001; Walz et al. 1997). Rural cemeteries have been identified in all four sub-regions. The absence of Terminal Late Woodland mortuary features and the evidence for new mortuary practices associated with rural cemeteries as well as the large–scale mortuary ritual events evident in Mound 72 at Cahokia suggest to Emerson and colleagues that they are associated with region–wide social and political negotiations and likely community construction and maintenance during the early Mississippian period (Fowler et al. 1999).

ARCHITECTURE

In addition to the region–wide changes in site location and site types are changes in the types of structures that were built as well as construction methods. Residential structures represent the lived space that contributes to the building of communities and identities through restraining, enabling, and patterning movement on a daily basis. Non-residential structures include community buildings, structures with benches, charnel structures, sweat lodges, storage structures, and L- or T-shaped buildings. The presence of these structures is suggestive of suprahousehold activities and possibly high status individuals, families, or groups.

Ninety-two structures dated to the Edelhardt and Lindeman phases are included in the excavated sample (Table 7.3). All of them are considered residential[i]. These structures are typically built using single posts set in deep basins. In fact, 98 percent of the structures were built with single–set posts. Only two structures, one from Cahokia and Feature 703 from Fish Lake, exhibit what may be considered faux wall trenches. These walls are characterized by shallow linear soil stains with postmolds visible beneath. The presence of structures with faux wall trenches may indicate early experimentation with a new construction method.

Late TLW2 structures tend to be small with an average floor area of 8 m^2 although floor area varies widely from 3.3 m^2 to over 23 m^2 (Table 7.4, Figure7.5a).

Structures at sites located in the uplands are larger than their floodplain counterparts, particularly in the northern uplands where the average floor area is nearly 12 m^2. The northern uplands also have the most varied sizes as indicated by the high standard deviation. Sites located in the southern American Bottom and neighboring uplands tend to be smaller with less variation than those in the north. Houses built at sites located in the floodplain exhibit the least variation, especially those located in the southern bottoms.

These structures also tend to be rectangular in shape with an average W/L ratio of 0.65 (Table 7.5, Figure 7.5b). However, there is a great deal of variation with values ranging from 0.41 to 0.96 indicating that both strongly rectangular and nearly square structures are present in the sample. Sites located in the floodplain are more rectangular than those in the uplands, particularly in the northern bottoms where the average is 0.57. The northern floodplain structures also exhibit the least variation. Structures in the southern uplands are the least rectangular with an average W/L ratio of 0.79. The values for structures in the southern floodplain are more similar to those in the northern uplands than other floodplain or other southern sites. They also exhibit the greatest variation.

A total of 332 Lohmann phase structures are included in the sample. More than a third of these structures (36%) were located at Cahokia in Tract 15A, the Dunham Tract, and the ICT-II. The remainder is comprised of structures from 28 sites including farmsteads, villages, and mound centers. Most structures (88%) appear to be typical domiciles although there is a proliferation in structure form. Thirty-nine structures including community, storage, L-shaped, and T-shaped

structures as well as sweat lodges are considered non-residential. Most of these (46%) are located in the northern floodplain including all of the circular structures and half of the storage structures. Nearly all of the non-residential structures in the northern floodplain are located at Cahokia with the exception of a small community building from the BBB Motor site which is in close proximity to Cahokia.
Non-residential structures in the northern uplands are similarly diverse. These include small square structures and L-shaped structures associated with storage at the Knoebel site, possible charnel structures at Center Grove, and a large community structure at J. Sprague. Non-residential architecture in the southern region is limited to large community structures at Range, George Reeves, and Power Line and one storage structure at Stemler Bluff. Interestingly, all of these sites are farmsteads with only a few structures.

In contrast to TLW2 structures, most Lohmann phase residential structures (83%) are built using wall trenches. Single–post construction continues to be used for residential structures in all regions and at all types of sites including Cahokia but in much smaller proportions than the previous period. Single–post construction is most common among upland sites east of Cahokia where 40 percent of the sample is characterized by this type of construction. However, a significant number of residential structures have been identified at the East St. Louis Mound center during recent excavations. Single–set posts are also employed in the construction of large community buildings including the example from Range. It appears that single–post construction associated with residential structures is largely limited to the early Lohmann phase.

Lohmann phase structures also tend to be larger and more rectangular than TLW2 structures. The average floor area increases to 11.7 m^2 and there is a more diversity in terms of structure size than was evident for the TLW2 structures (Table 7.4, Figure 7.5c). Houses located in the floodplain tend to be larger than those in the uplands with average floor areas measuring 12.3 m^2 in the floodplain and 9.7 m^2 in the uplands. In particular, the northern floodplain has the largest houses on average. This is due in part to the large number of structures from the Cahokia site where the average size is 13.1 m^2. However, the average floor size for all other northern floodplain sites is also quite high with a mean value of 12.6m^2. There are noticeable differences in structure size within the Cahokia site as well. Structures are larger in the Tract 15A/Dunham Tract area (13.1m^2) than in the ICT–II Tract (12.6m^2).

Structures at sites located in the southern region are on average smaller than those in the northern region with a value of 9.9 m^2. This is not strictly due to the absence of large–scale excavations at mound centers located in the southern region. As noted above, structures in the northern region located outside of mound centers are also larger than those located in the southern floodplain and uplands. Structures at sites in the southern floodplain tend to be much larger (10.5 m^2) than those in southern uplands (7.6 m^2) but are more similar to structures located in the northern uplands.

Structures become more rectangular with a decrease in variability in terms of the W/L ratio (Table 7.5; Figure 7.5d). The average W/L ratio for all Lohmann phase structures in the sample is 0.56, significantly more rectangular than structures associated with Edelhardt or Lindeman components. The movement toward more rectangular houses is evident in all sub-regions. In fact, the average W/L ratio for each sub-region is less than the average ratio for TLW2 structures. Structure shape appears to become more standardized as indicated by the low standard deviations for all regions.

SITE LAYOUT

The data presented above indicate that site location, site types, and architecture changed significantly at the beginning of the Mississippian period throughout the American Bottom floodplain and neighboring uplands. In many cases, these changes are dramatic. In the next section I will illustrate specific examples of changes in site layout and occupational history with reference to the conditions of abandonment at sites located in all four sub-regions to further illustrate changes in the construction of space and communities during the Mississippian Transition.

Nowhere is the change in spatial layout more dramatic than at Cahokia itself (Figures 7.6 and 7.7). In the Tract 15A excavations of downtown Cahokia, multiple TLW2 courtyards were replaced by Lohmann phase wall trench structures including T-shaped and circular structures arranged around rectangular plazas (Pauketat 1998a). The ICT–II tract was unoccupied during the TLW2 but during the Lohmann phase, over 20 structures including a large T–shaped, circular, and storage structures were built along the southwestern corner of a possible plaza (Collins 1997; Mehrer and Collins 1995). The majority of structures in both areas and plazas are oriented north or just east of north, an orientation shared by the Grand Plaza and the distribution of mounds in the central area of the site suggesting the reorganization of space along a shared axis (Collins 1997; Fowler 1969; Pauketat 1998a). These data indicate the site underwent a rapid increase in population and a site–wide reorganization of space related to urbanization concurrent with the beginning of the Lohmann phase (Fowler 1998; Pauketat 1998a).

The Range site is located in the southern floodplain a few kilometers east of the Pulcher site. The final Lindeman occupation at Range is considered a village with at least 35 structures, four pits, and an arc of posts (Figure 7.8). Kelly (2007) has suggested the structures are arranged to form two courtyards, one with the arc of posts at its center and the other immediately to the south. All of the structures were built using single posts. In contrast, the earliest Mississippian settlements at the site are characterized by a series of four spatially segregated farmsteads comprised of two to three contemporaneous structures and a handful of pits. In total, only 10 structures date to the Lohmann phase. All but one were built using wall trenches.

Although the size of the occupation decreased dramatically, there is evidence for supra-household activities, most notably in the form of a large single–post structure or council house located in the northern settlement and a large refuse pit possibly associated with feasting located in the next settlement to the south. The presence of such features suggest the residents of theses farmsteads were also involved in hosting activities and events that, as Emerson (1997a, b) suggests, served to integrate rural populations into the Cahokian community.

The George Reeves site is located only 2 km east of the Pulcher site and only 3 km south of Range on top of the bluff edge. The Lindeman and Lohmann components are similar in size and composition although there are two possible communal structures associated with the Lohmann phase occupation (Figure 7.9). Interestingly, there are several instances where Lohmann phase structures superimpose Lindeman structures but they are oriented perpendicular to the earlier structures. A similar pattern was noted at the Divers site and it is suggested here that this change in orientation combined with partial superpositioning is one way in which the prior occupations were referenced possibly as a means of usurping local sources of power through reference to the past.

The Old Man, CO2, Willoughby, and Stemler Bluff sites are farmsteads that were established during the Lohmann phase in the northern and southern floodplain and uplands. All of them with the exception of Stemler Bluff are non-nodal farmsteads that were established in areas that were not occupied during the TLW2 period (Figure 7.10). Although not nodal, there are material remains at each of these sites that indicate connections to Cahokians either through participation in communal events at Cahokia, goods exchanges with Cahokians, or through nodal sites. The Lindeman phase occupation at Stemler Bluff was a small village comprised of at least two courtyards (Figure 7.11). The size of the occupation decreased significantly during the Mississippian Transition. The Lohmann phase occupation may be considered a nodal farmstead due to the presence of a storage structure, a concentration of discoidals, and proximity to an early Mississippian rural cemetery.

Several TLW2 sites of varying size were abandoned prior to or concurrent with the beginning of the Lohmann phase. For example, the Marge site is a Lindeman phase hamlet located in the southern floodplain at the base of the bluffs

(Figure 7.12). At least three structures were occupied concurrently. Several storage and processing pits and hearths were also present. This site was abruptly abandoned prior to the Lohmann phase. As previously noted, the Morrison site was an Edelhardt phase mound center that was also abruptly abandoned prior to the Lohmann phase.

These examples illustrate the range of changes in the construction of space on multiple scales that occurred during the Mississippian Transition. The same types of changes are evident at the five sites reported in this study thus providing further support for the assertion that the shift from TLW2 to Mississippian in spatial terms was more of a transformation than a transition. The construction of space changed throughout the region at every scale, from individual structures, to sites, to the entire region. Although these changes appear to be rapid and widespread, there are still variations in the exact timing of these transformations. For instance, the continued use of single–post construction in the uplands is suggestive of a delay in the adoption of wall trench architecture possibly due to a greater distance from Cahokia and less frequent contact or as a form of resistance to a new social order (Alt 2002; Pauketat 2003; Wilson 1998).

MATERIAL EVIDENCE FOR THE MISSISSIPPIAN TRANSFORMATION

In addition to the spatial changes noted above are changes in practices as indicated by material remains and the contexts of deposition. Region–wide changes in production, consumption, and ritual activities are evidenced by changes in material culture and the differential distribution of certain types of objects and raw materials. As indicated in Chapter 6, the material remains recovered from TLW2 sites in the American Bottom and uplands indicate the existence of localized pottery traditions, the use of local and nonlocal raw materials for expedient and formal stone tools, the production of maize and Eastern Complex cultigens, and limited evidence for foreigner presence or long distance exchange. There is also depositional evidence for ritual burning, communal feasting and gaming, and limited mortuary activity.

Tempering agents vary depending on the portion of the region in which the pottery was produced (see Chapter 2; Fortier and McElrath 2002; Milner 2006). Vessel forms are limited to jars, large and small bowls, stumpware, and bottles (Kelly et al. 1984). A significant proportion of vessels, particularly seed jars and bowls, exhibit red–slipped surfaces. Many lips on jars and bowls are embellished, some with effigy lugs. A certain degree of mobility and interaction within the region existed during the TLW2 period as evidenced by the presence of a few pots produced in the NAB and uplands at sites in the southern American Bottom and vice versa. Although exotic pottery has been recovered from several TLW2 occupations, the overall quantity is very low and limited to the largest sites indicating minimal immigration into the region prior to the Mississippian period (Fortier and McElrath 2002).

Lithic materials indicate the use of local and nonlocal resources including Burlington chert from Missouri and Mill Creek chert from Southern Illinois (Kelly et al. 1984). Mill Creek chert is associated with farming implements that likely entered the American Bottom in finished form (Cobb 2000). Discoidals associated with the chunkey game are produced from a wide variety of locally available materials including limestone, sandstone, and glacial cobbles (Pauketat 2004). Fortier and McElrath (2002) note the distribution of ritually or socially significant materials and objects during this period appears to indicate these items were held as community possessions.

In contrast, the material assemblages recovered from Lohmann phase contexts at farmsteads, villages, and mound centers are indicative of different types and scales of production and communal or ritual activity (Betzenhauser 2006; Emerson 1997a, b; Pauketat 1994, 2003). There is greater standardization in terms of pottery temper, surface treatments, and forms. Most vessels are tempered with shell or limestone, surfaces are predominantly plain or burnished slip, and cooking jars typically exhibit angled shoulders and everted or rolled lips (Milner et al. 1984). Nonlocal pottery from the northern Midwest and plains in addition to the same areas evident in TLW2 assemblages comprise much larger proportions of assemblages and not only at larger sites (Alt 2006a, b; Pauketat 1998a, 2003; Watts and Kruchten 2010). Nonlocal or ritually significant lithic materials are more common. These include Mill Creek hoes, quartz crystal, hematite and galena, flint clay and pipestone for figurines and earspools, and St. Francois diabase for celts and discoidals (Emerson et al. 2002, 2010; Pauketat 2004).

The distribution of certain types of materials and artifacts provides evidence for rural production of foodstuffs and other items possibly intended as tribute. In a previous analysis (Betzenhauser 2006) I compiled architectural and artifactual data for farmsteads throughout the American Bottom region in order to delineate the degree of diversity, identify nodal farmsteads, and determine whether rural farmstead occupants were integrated into a Cahokian community through material exchanges and participation in communal events. The results for Lohmann phase farmsteads indicate these sites vary greatly in degree of diversity with high, mid, and low diversity sites located both close to Cahokia and in more distant locations (Figure 7.13).

The data also suggest that the differential distribution of some items throughout the region may be related to centralized control, redistribution, provisioning, and participation in integrative events held in the countryside as well as at Cahokia (Figures 7.14–7.16). Seed jars, decorated vessels, pigments, crystals, nonlocal chert, microblade technology, and ritually significant or medicinal plants (e.g., red cedar and morning glory) are most concentrated at and near Cahokia. These concentrations suggest Cahokians controlled the movement of exotic materials within the region and held communal events at the center.

In contrast, concentrations of pigments and spindle whorls are greatest at farmsteads located between 10 and 20 km from Cahokia. Disks and pigments may have been used to produce dyed cloth, possibly as a form of tribute (Alt 1999). The limited distribution of these items (most are from the Range site) may indicate that production of textiles was occurring at a subset of rural farmsteads. Farmsteads located between 10 and 20 km from Cahokia have higher concentrations of points, ceramic spindle whorls, pigments, and storage structures. The points may have been used to obtain meat for urban residents as is suggested by the over–representation of high–utility parts of deer at Cahokia (L.S. Kelly 1997).

Similarly, Pauketat (2003) has noted a high concentration of Mill Creek hoes and flakes at upland villages suggesting surplus production of maize in rural areas. The presence of storage structures at nodal sites in the uplands may indicate that people living at nodal sites held stores of food and objects intended as tribute as well. The presence of unique or unusual items including pipes, earspools, and shell beads at Lohmann phase farmsteads may indicate rural residents were involved in a type of prestige or gift exchange with Cahokians or ritual activities associated with smoking (Emerson 1997a:34, 52; Emerson et al. 2002, 2003).

Large–scale public events held at Cahokia including feasting, gaming, and mortuary performances also included residents from throughout the region. The submound 51 pit contained a high concentration of food remains and broken pots suggesting large feasting events (Pauketat et al. 2002). The Grand Plaza itself is suggestive of large scale events and gaming due its sheer size and ability to accommodate large groups of people as well as the similarity with historically documented chunkey fields (Catlin 1841). Finally, evidence from the excavation of Mound 72 indicates both living and nonliving rural and high status residents as well as foreign and local groups were participants in mortuary related performances (Ambrose et al. 2003; Fowler et al. 1999).

DISCUSSION

The regional data presented above provide information concerning how communities throughout the region were altered as evidenced by changes in population, settlement, architecture, material production and consumption, daily practices, and participation in periodic events and exchanges. Immediately apparent in the site distribution data is the high degree of movement that occurred within the region. The synchronized abandonment, establishment, and reorganization of sites in all sub-regions coincident with the beginning of the Mississippian period suggests this movement is directly related to the construction of the Cahokian community. The movements of people into the northern floodplain indicate people were drawn to Cahokia. The depopulation of the southern uplands and establishment and reorganization of sites in the southern floodplain suggest the southern uplands were depopulated due to the relocation of settlements to the floodplain or out of the region completely. Also, population decreased at many of the reorganized sites including Range, Fish Lake, and Stemler Bluff suggesting a decrease in population in the southern region in general.

The proliferation of site types provide further evidence for changes in the construction of space at the local level. The increase in number and size of mound centers, villages, and nodal farmsteads and their presence in all sub-regions suggests the residents at these types of sites were involved with administrative and integrative activities and events that connected rural residents to Cahokians through the construction of the Cahokian community. The large size of many sites combined with evidence indicating the presence of foreign families and groups indicate that disparate groups from within and outside the region came together to live at such sites, including Cahokia. The juxtapositioning of individuals and families with different backgrounds and values would necessitate the renegotiation of identity and community. The appearance of rural cemeteries throughout the region suggests rural groups participated in and created more local community identities as well. In fact, Hargrave and Hedman (2001) have suggested that the arrangement and distribution of burial pits within these cemeteries may be related to lineages or other family units.

A similar proliferation in non-domestic architecture occurred at the beginning of the Lohmann phase as well. The appearance of new architectural forms including T-shaped structures, community buildings, charnel structures, and storage facilities are indicative of what Emerson has termed an "architecture of power" (1997a:36–37). Their presence, particularly in rural areas, is suggestive of Cahokian influence in the countryside related to administration and integration of rural producers into the Cahokian economy, community, and polity (Emerson 1997a, b).

Changes to vernacular architecture are also evident. Domestic structures become less diverse in terms of size ,shape, and construction method. This is particularly true for structures in the northern floodplain where they are typically larger and built using wall trenches. Variation in structure size, shape, and construction method is greatest in the uplands and the southern regions. This may be related to attempts by local groups to maintain their own sense of community and identity through the maintenance of architectural forms and construction (Alt 2006; Pauketat 2003; Pauketat and Alt 2005; Wilson 1998).

The distribution of material remains provides further evidence for the integration of southern and rural residents into the Cahokian sphere in terms of the production of goods and foodstuffs, the exchange of exotic or ritually significant items and materials, and participation in communal events. The distribution of

Monks Mound Red seed jars is particularly relevant to this study. Some researchers have suggested these vessels were manufactured at the Pulcher site or a few southern American Bottom sites due to their prevalence in TLW2 assemblages in this sub-region (Kelly 2002; Pauketat 1998a). During the Lohmann phase, these vessels are present in high concentrations at Cahokia and decrease in prevalence at farmstead sites as distance from Cahokia increases suggesting they may have been produced at Cahokia and redistributed. The redistribution of this "southern" vessel form throughout the region during the Lohmann phase may indicate that they were employed as symbols in the construction of a region–wide community and served, at least in part, to include southern residents in such a community (Pauketat 1994). If they were produced at Cahokia during the Lohmann phase, then it is likely that southern potters relocated to Cahokia, possibly in order to produce these vessels.

The regional comparisons of site distribution and layout, architecture, and material culture provide further evidence that indicates the rapid transformation of social, political, and economic life for those living throughout the American Bottom region. This is not to say that all individuals changed all aspects of their daily lives at the same time. Sub-communities persisted and new local communities formed at the same time that a regional community identity was being constructed. The differences between sub-regions and sites within sub-regions attest to this. Similarly, even though some aspects may have continued (e.g., limestone temper in the southern regions), the movements of people changed the construction of the landscape. The alterations to space at the local and regional scale detailed above had a profound impact on the daily lives of those living throughout the region due to the disruption of local relationships and the formation of new community identities at multiple scales. It was through the reconstruction of settlements and the landscape that Cahokia arose as a regionally integrated polity and social, political, and religious center.

---

[i] Non-residential architecture is thus far unidentified for late Terminal Late Woodland components although it is possible that a large community structure at Range is associated with the Lindeman phase occupation and a possible storage structure at the Marge site.

FIGURES

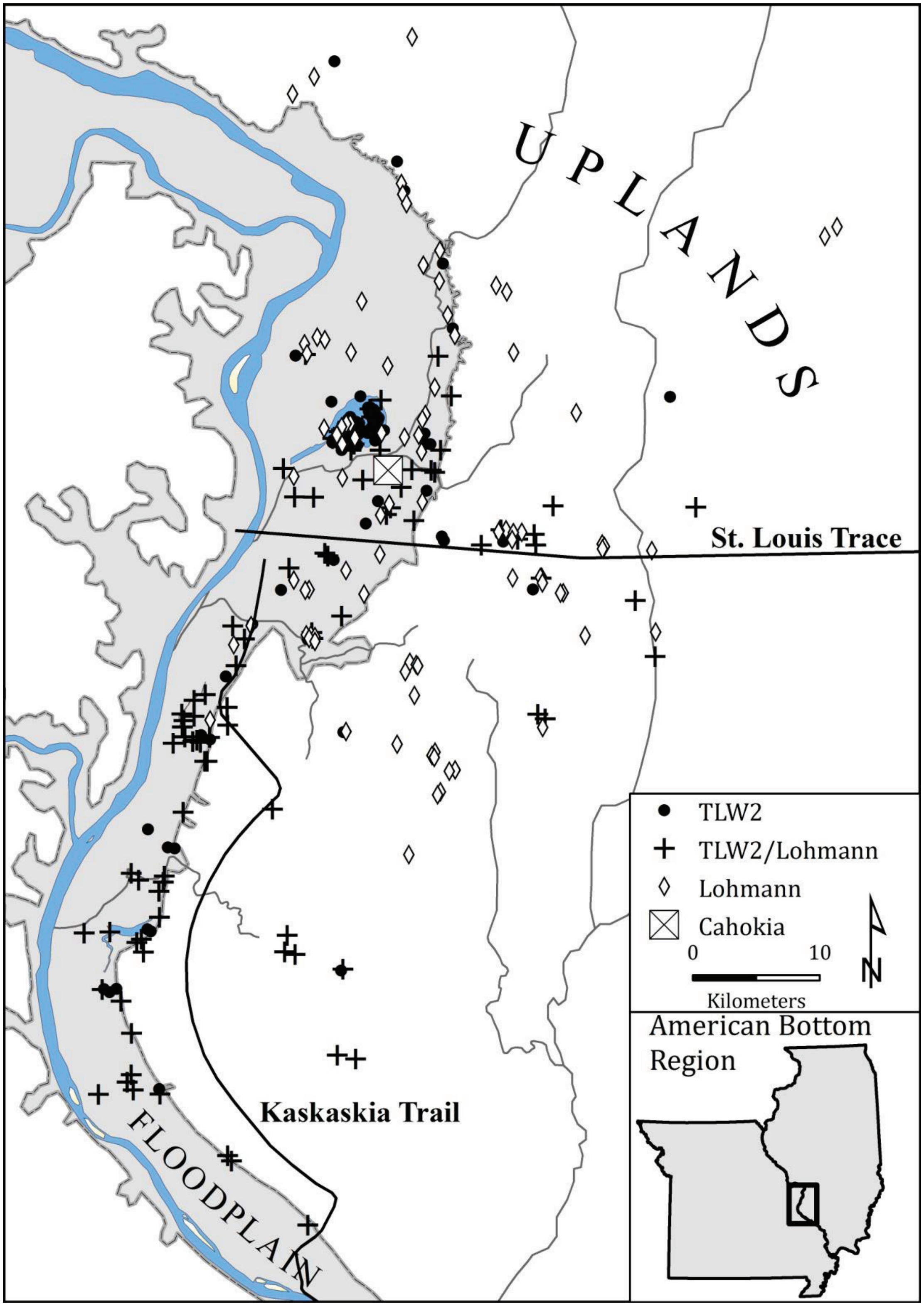


Figure 7.1. All Sites from Madison, St. Clair, and Monroe Counties with Evidence for Terminal Late Woodland 2 and/or Lohmann Phase Occupations.

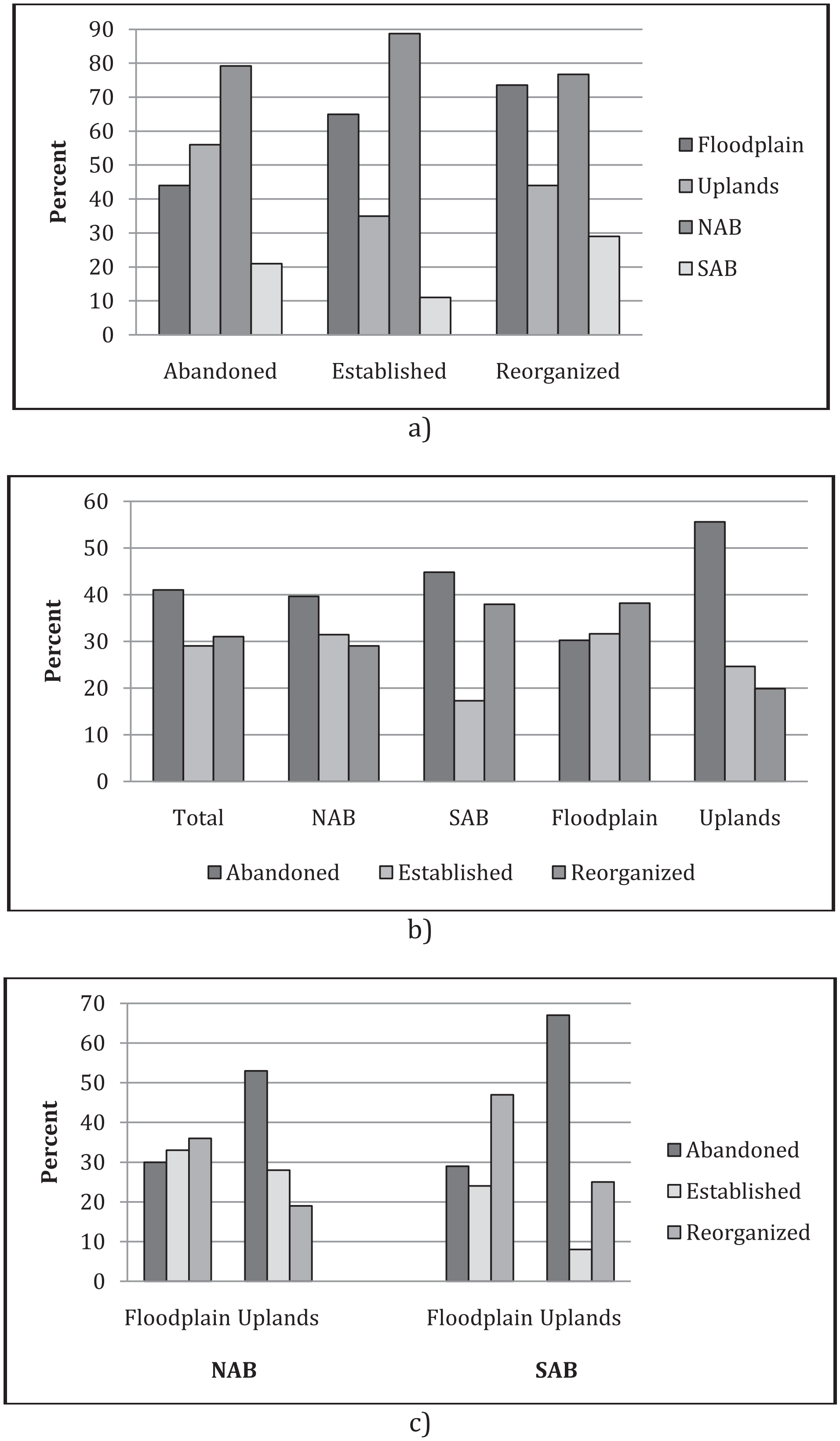


Figure 7.2. Site Distribution: a) All sites by Region; b) All Regions by Types of Sites; c) Northern and Southern American Bottom sites by Sub-region and Site Type.

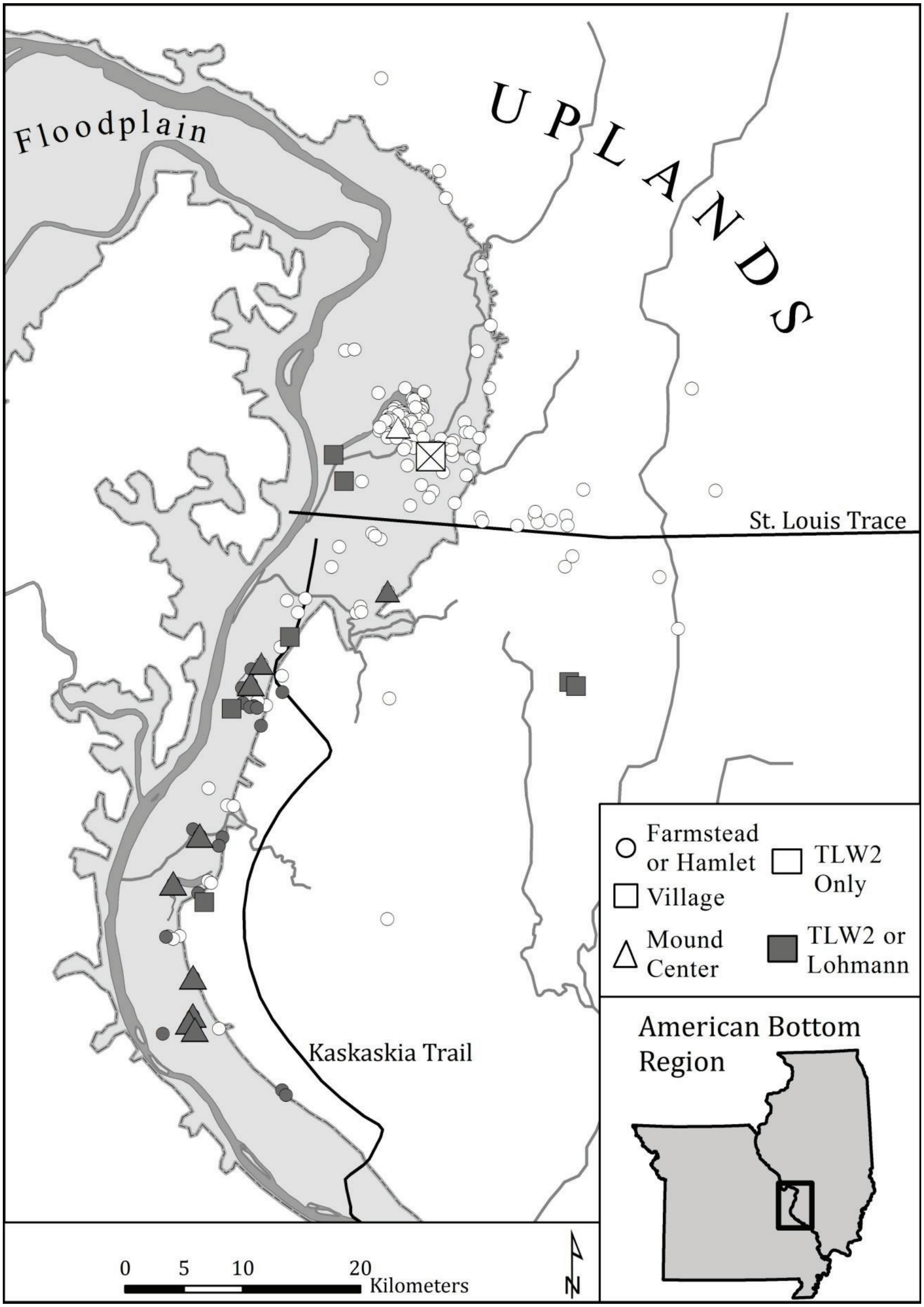


Figure 7.3. Distribution of TLW2 Sites.

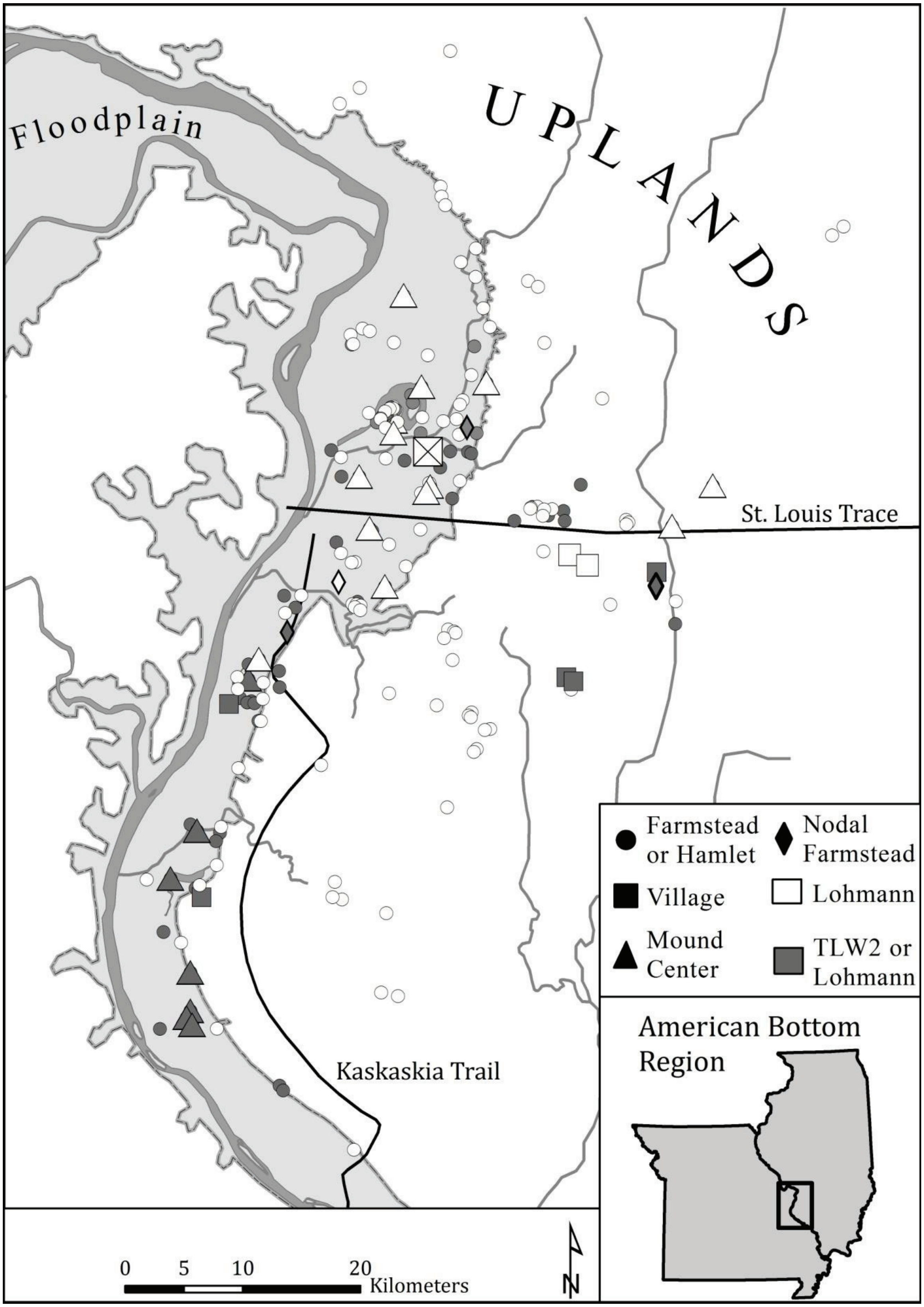


Figure 7.4. Distribution of Lohmann Phase Sites.

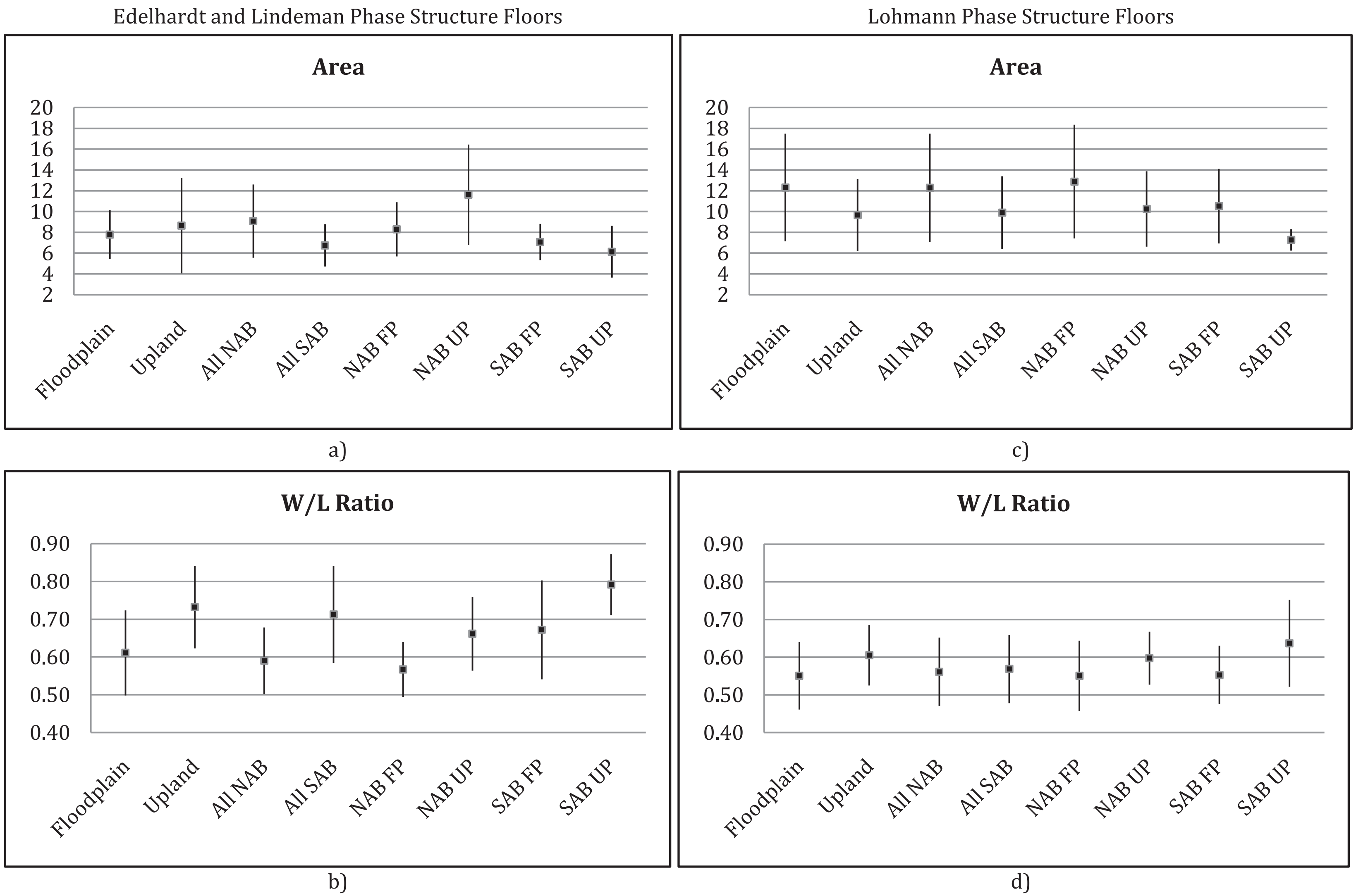


Figure 7.5. TLW2 and Lohmann Phase Floor Area and W/L Means and Standard Deviations.

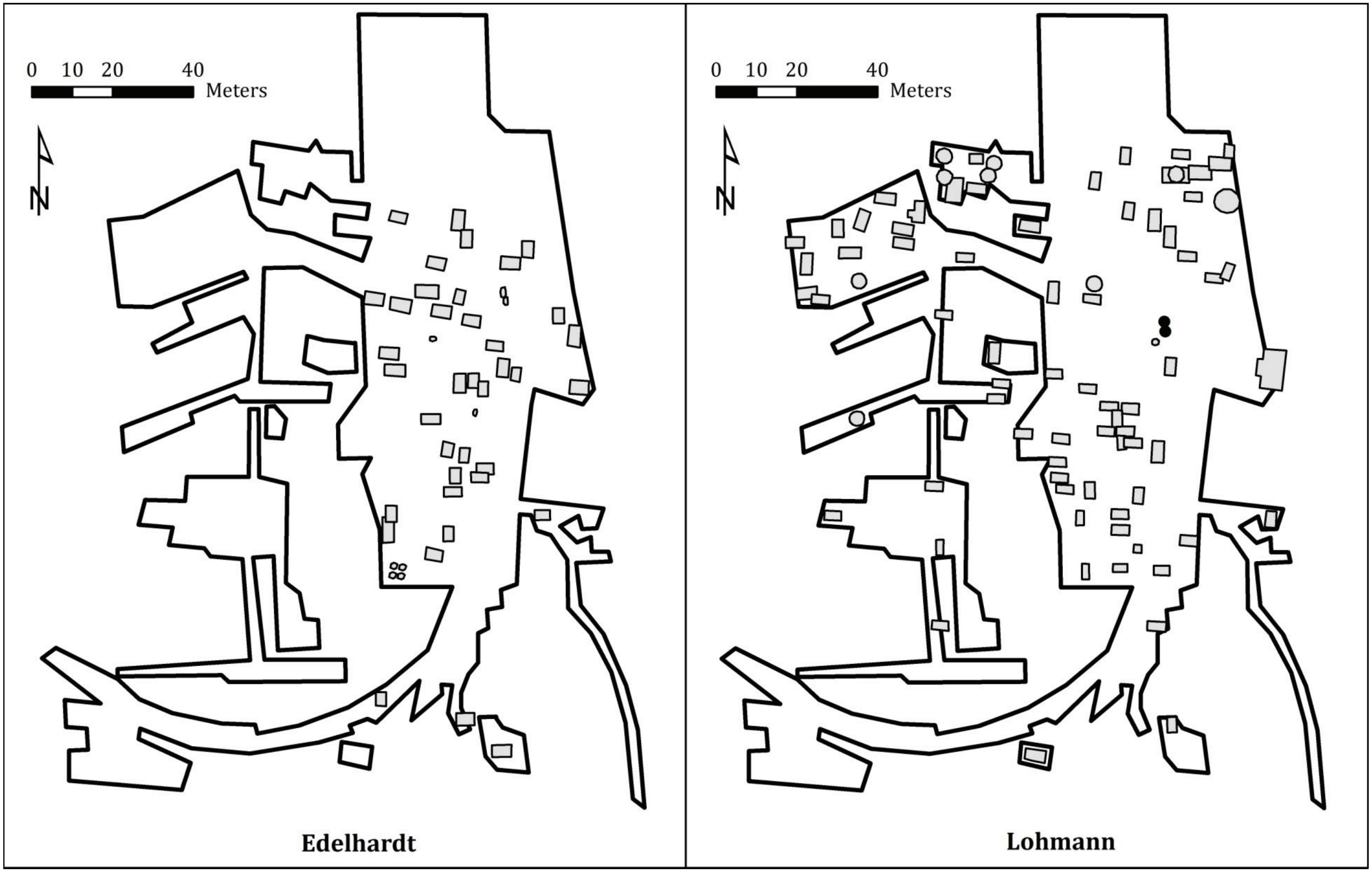


Figure 7.6. Cahokia Tract 15A Edelhardt and Lohmann Phase Structures (after Pauketat 1997 Figure 2.1).

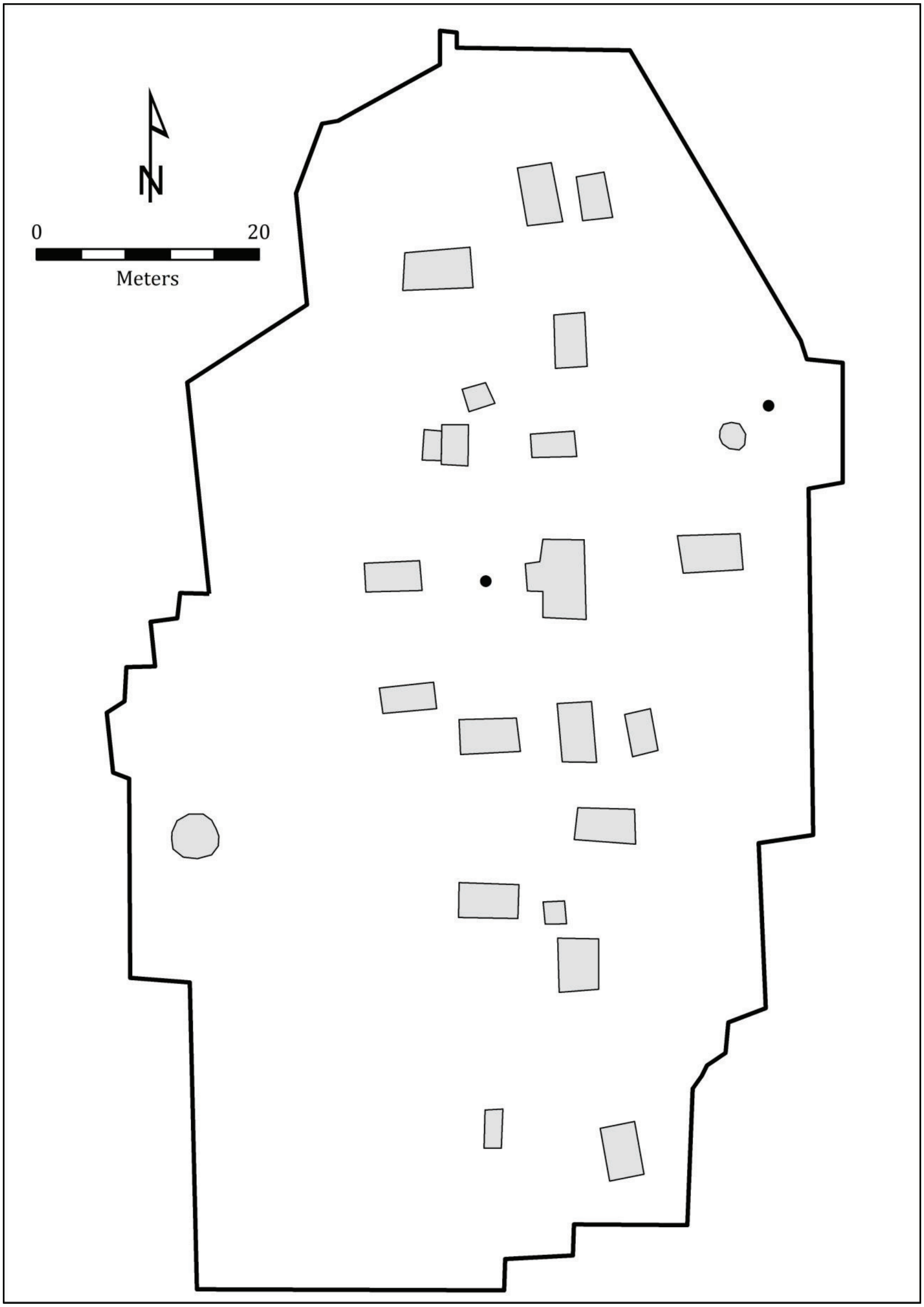


Figure 7.7. Cahokia ICT–II Lohmann Phase Structures and Post Pits (after Collins 1997 Figure 7.2).

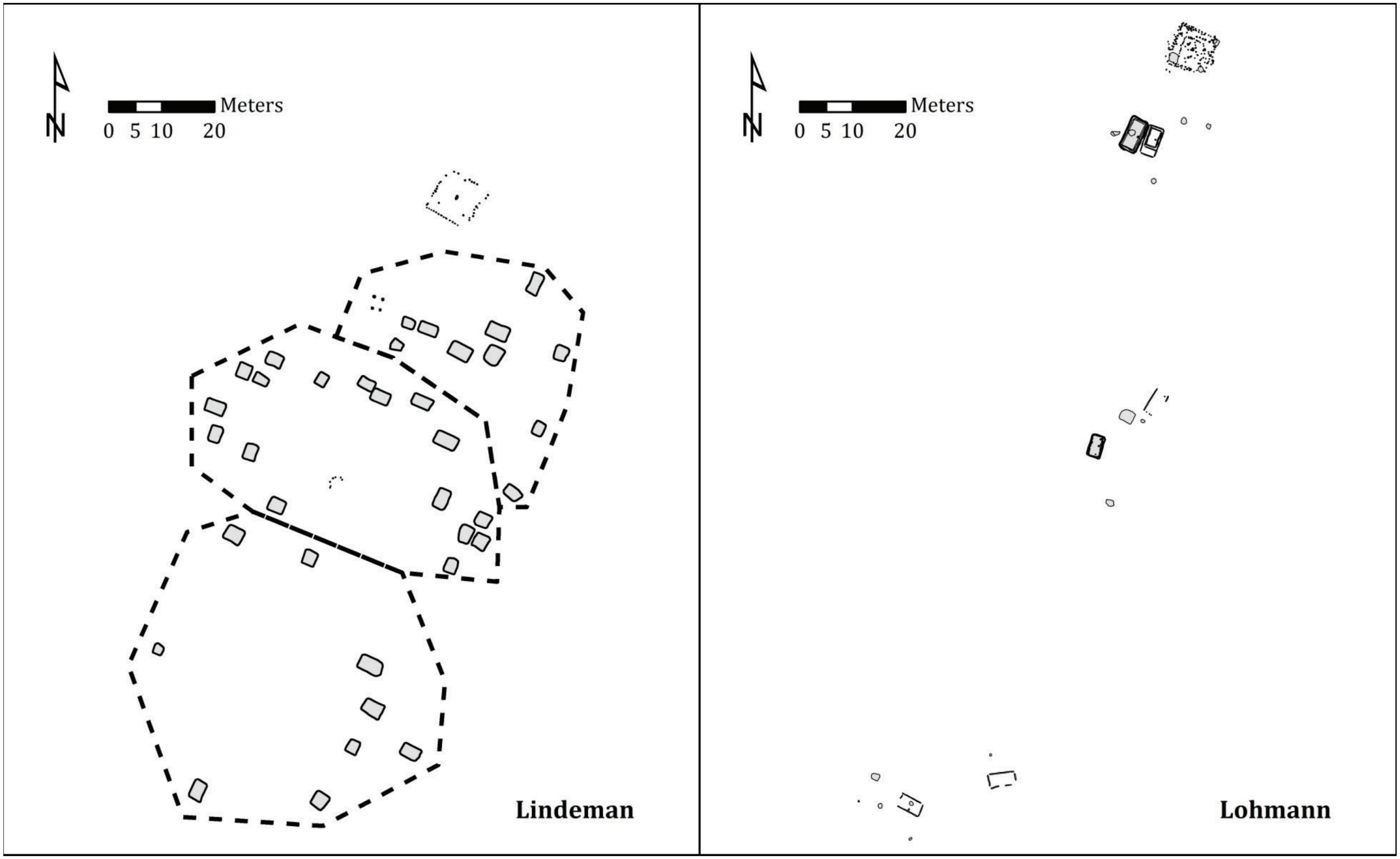


Figure 7.8. Range Site Lindeman and Lohmann Phase Features (after Kelly 1990b Figure 43 and Hanenberger 2003 Figure s 5.4–5.7).

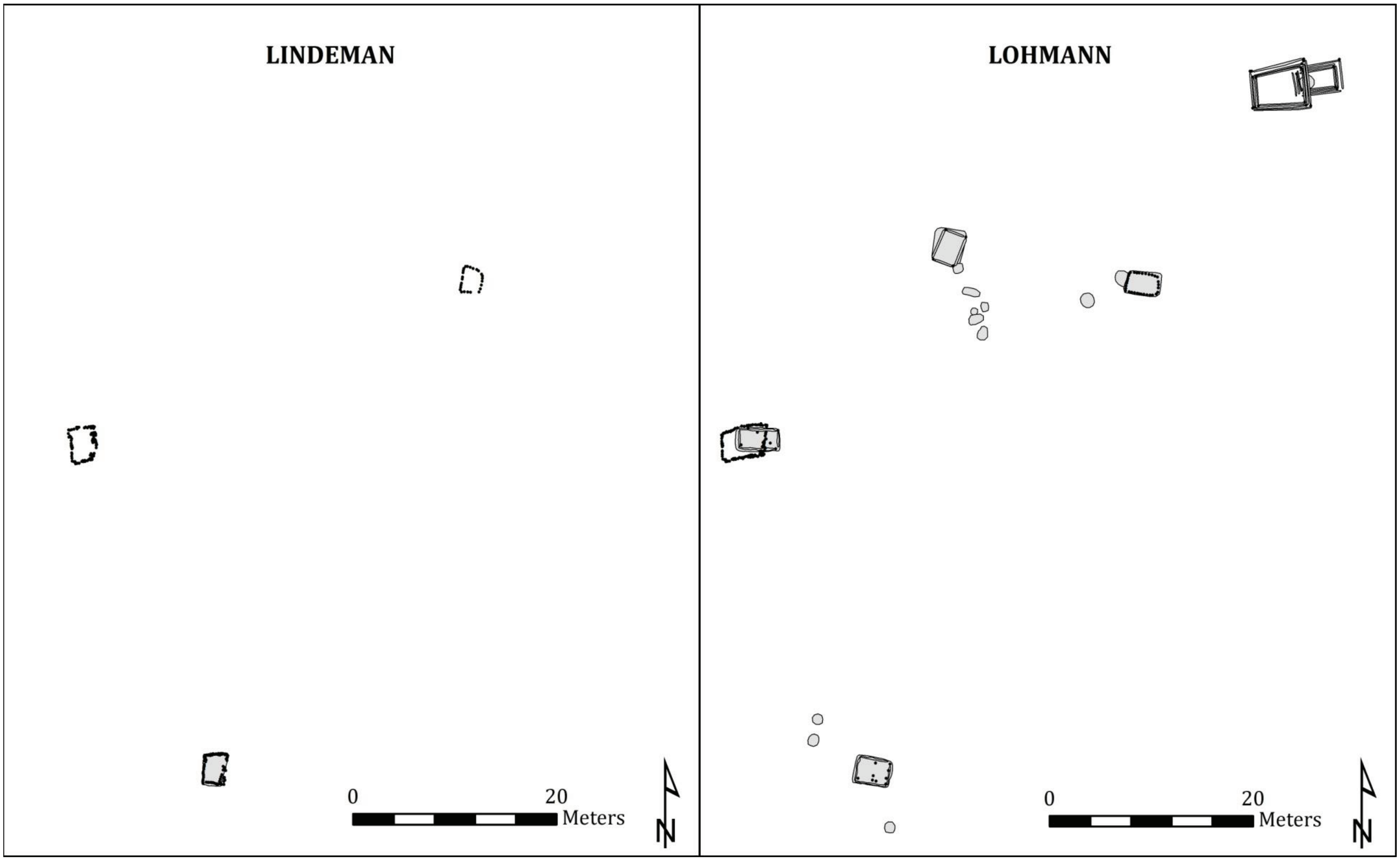


Figure 7.9. George Reeves Site Lindeman and Lohmann Phase Features (after McElrath and Finney 1987 Figures 34 and 62).

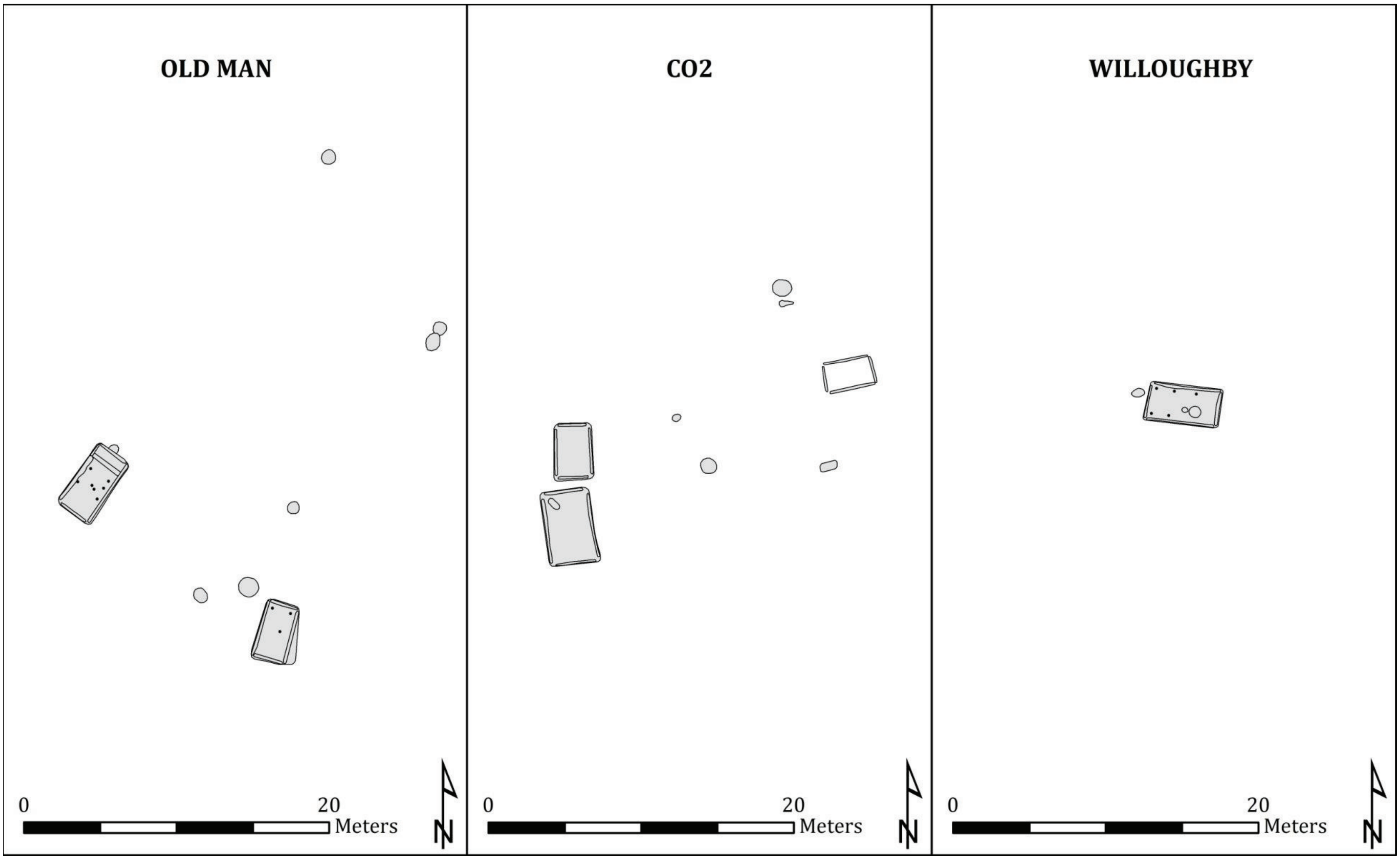


Figure 7.10. Select Lohmann Phase Farmsteads (after Betzenhauser 2005 Figure 2, Fortier 1985 Figure 7, and Jackson 1990 Figure 7.

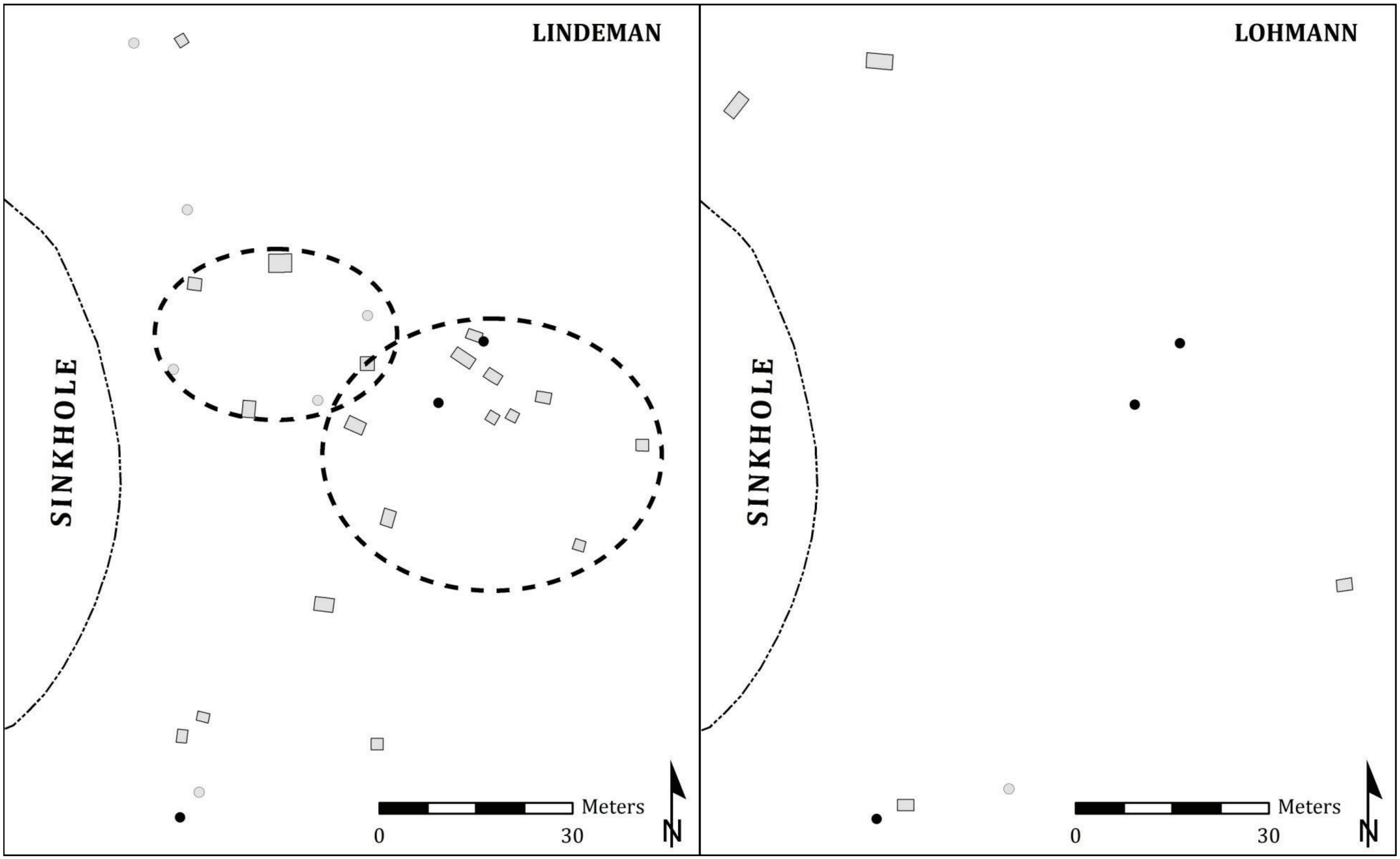


Figure 7.11. Stemler Bluff Lindeman and Lohmann Phase Features (after Walz et al. 2007 Figure 4–3).

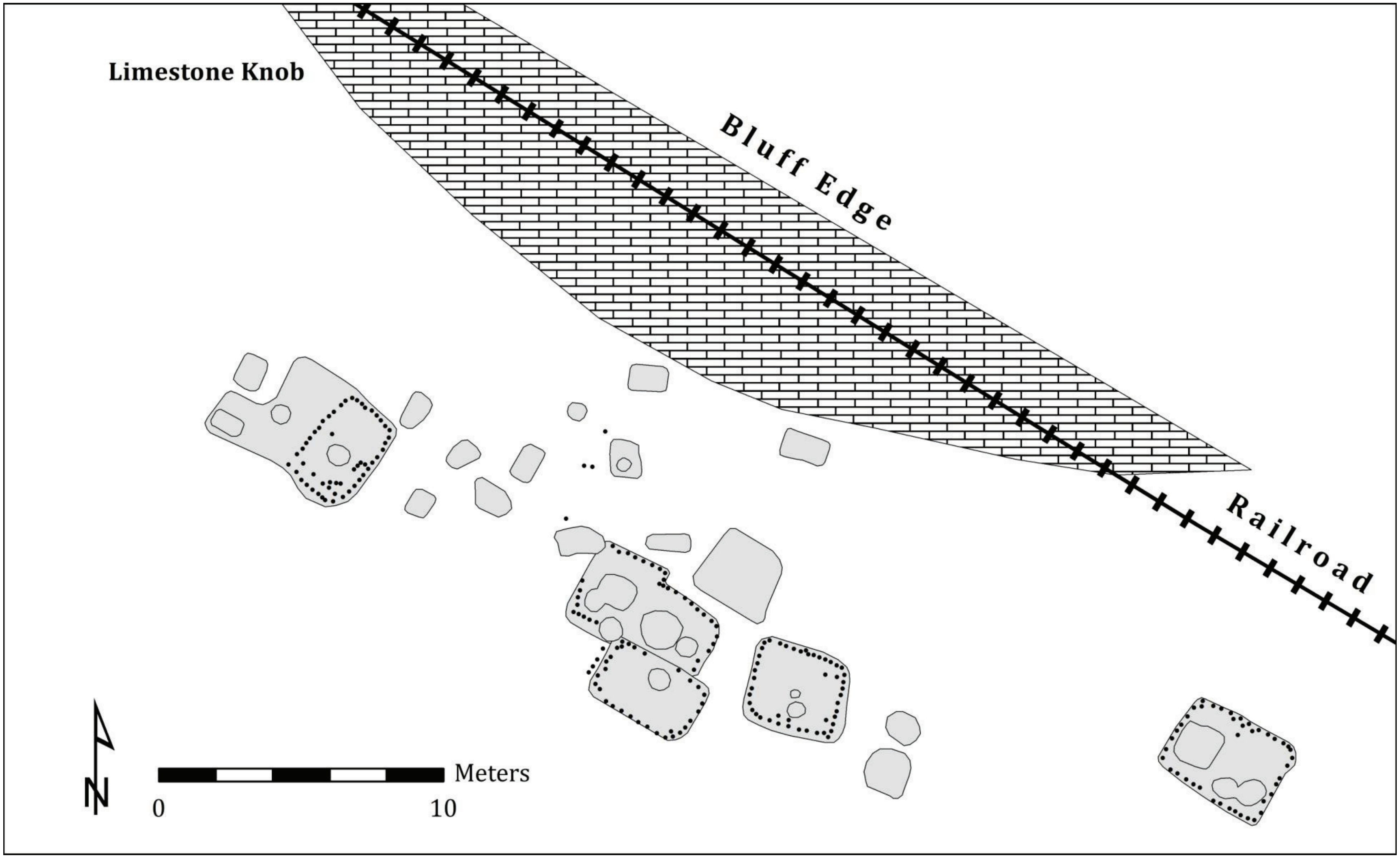


Figure 7.12. Marge Site Lindeman Phase Features (after Fortier 1996 Figure 3.6).

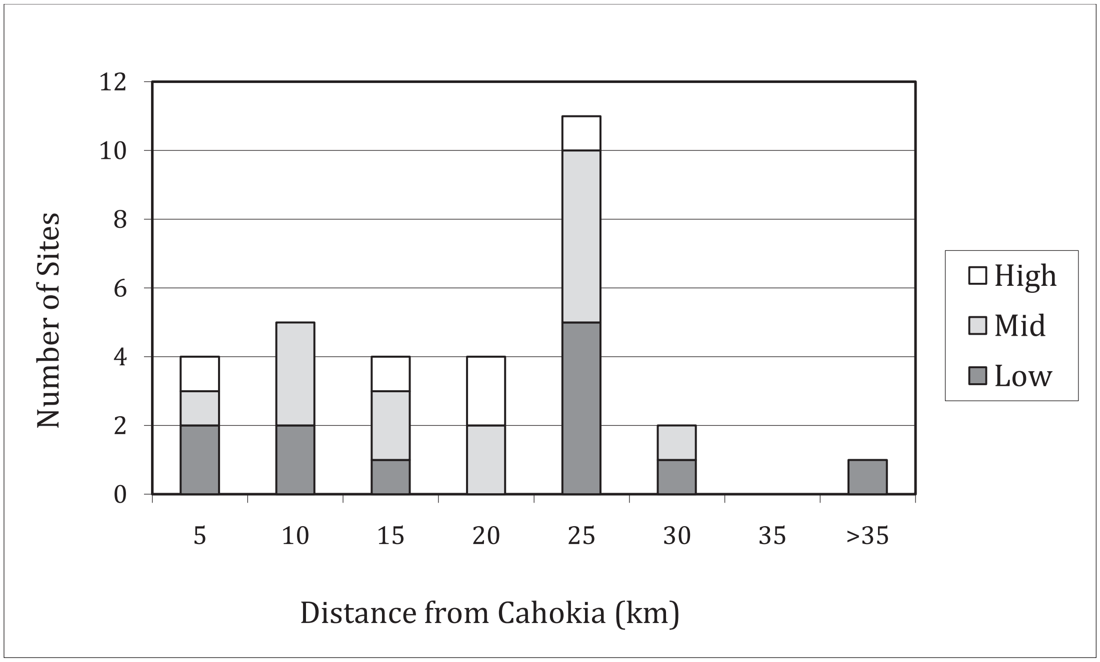


Figure 7.13. Distribution of High, Mid-, and Low Diversity Lohmann Phase Farmsteads.

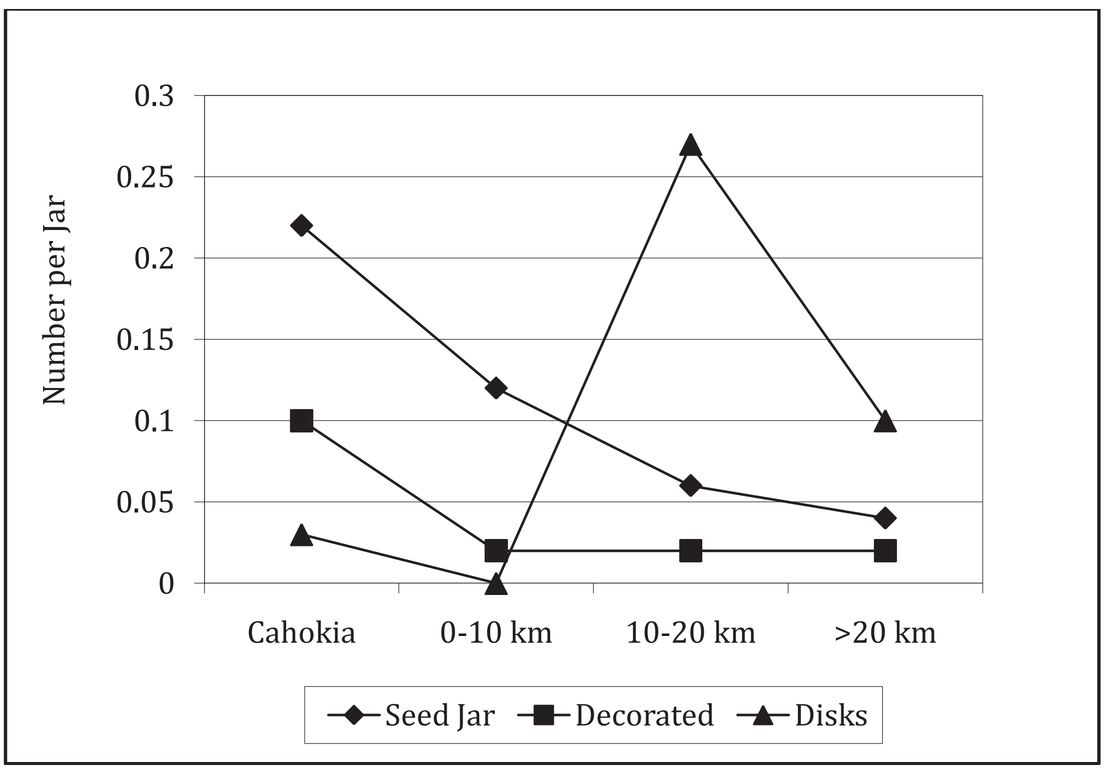


Figure 7.14. Spatial Distribution of Ceramics from Lohmann Phase Farmsteads.

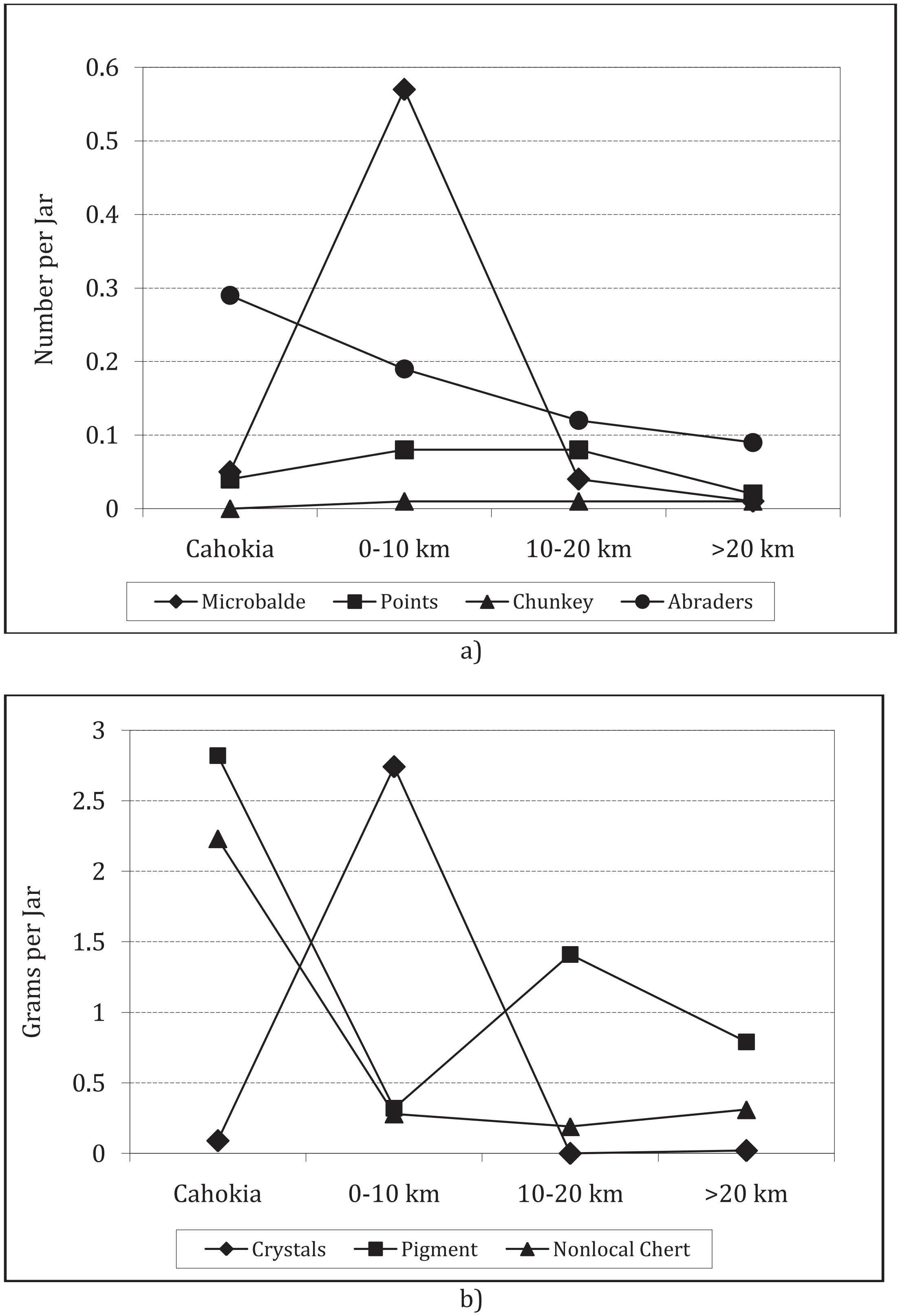


Figure 7.15. Spatial Distribution of Lithics from Lohmann Phase Farmsteads. a) Count; b) Weight.

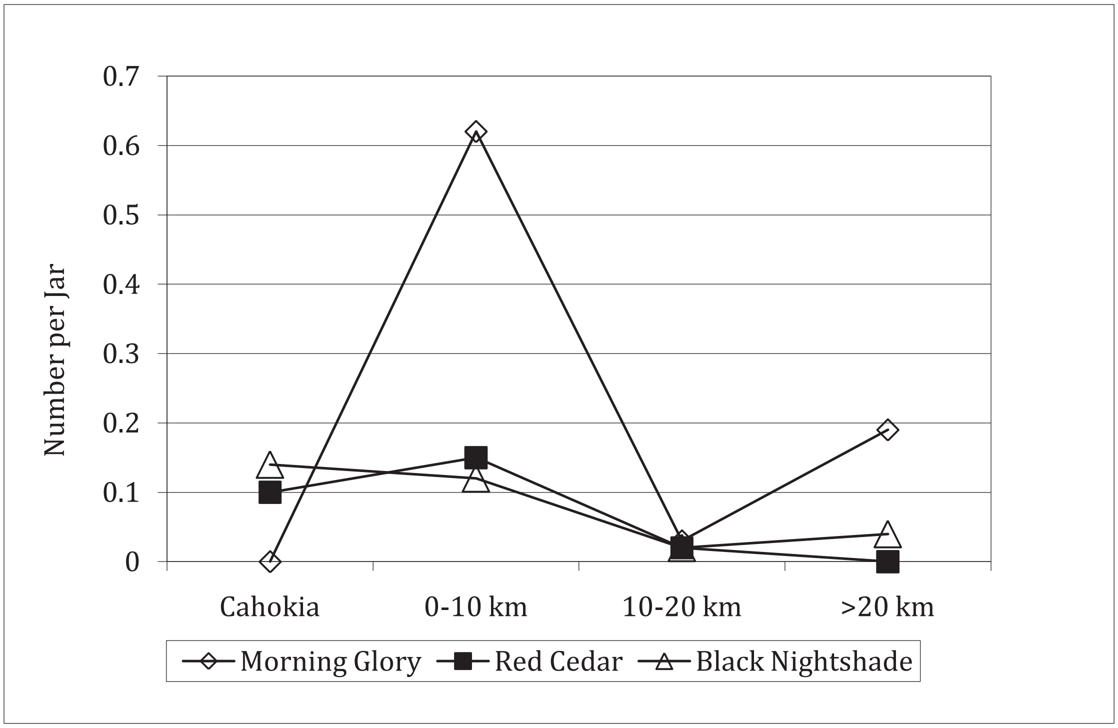


Figure 7.16. Spatial Distribution of Botanicals from Lohmann Phase Farmsteads.

TABLES

Table 7.1. Survey Area and Site Density for Madison, St. Clair, and Monroe Counties.

	Madison	St. Clair	Monroe
Total Area (km2)	1,896	1,727	1,019
Total Floodplain Area (km2)	309	206	283
Total Upland Area (km2)	1,587	1,521	736
Total Area Surveyed (km2)	355	253	88
County Surveyed (%)	19	15	9
Surveyed Area in Floodplain (%)	27	23	32
Surveyed Area in Uplands (%)	73	77	68
Total Floodplain Surveyed (km2)	96	59	28
Floodplain Surveyed (%)	31	29	10
Total Upland Surveyed (km2)	259	194	60
Upland Surveyed (%)	16	13	8
Total Sites	1755	2296	1081
Site Density (sites/km2)	4.94	9.08	12.28
Total TLW2 and/or Lohmann Sites	340	221	55
TLW2/Lohmann Site Density (sites/km2)	0.96	0.87	0.63
TLW2/Lohmman Sites in Floodplain	234	89	41
Site Density in Floodplain (sites/km2)	2.44	1.51	1.46
TLW2/Lohmann Sites in Uplands	106	132	14
Site Density in Uplands (sites/km2)	0.41	0.68	0.23

Table 7.2. Distribution of TLW2 and Lohmann Phase Sites.

	TLW2	TLW2/ Lohmann	Lohmann	**Total**
NAB - Floodplain	90	107	99	296
NAB - Uplands	108	38	58	204
SAB - Floodplain	20	32	16	68
SAB - Uplands	32	12	4	48
Total	250	189	177	**616**

Table 7.3. Architectural Forms and Construction Methods.

Component	**Total**	Construction Technique				Non-residential Structures				
Sub-region	**Structures**	SP[1]	WT	Faux WT	Indeterminate	Circular	Community[2]	Storage	L	T
Edelhardt/Lindeman										
NAB Floodplain	**39**	38	-	1	-	-	-	-	-	-
NAB Uplands	**12**	12	-	-	-	-	-	-	-	-
SAB Floodplain	**28**	27	-	1	-	-	-	-	-	-
SAB Uplands	**13**	13	-	-	-	-	-	-	-	-
Total	***92***	*90*	-	*2*	-	-	-	-	-	-
Lohmann										
NAB Floodplain	**149**	10	131	-	8	10	1	4	-	3
NAB Uplands	**39**	16	21	2	-	-	4	3	1	-
SAB Floodplain	**38**	4	34	-	-	-	2	-	-	-
SAB Uplands	**14**	2	12	-	-	-	-	1	-	-
Total	***240***	*32*	*198*	*2*	*8*	*10*	*7*	*8*	*1*	*3*
Total	***332***	*122*	*198*	*4*	*8*	*10*	*7*	*8*	*1*	*3*

1 SP = single post; WT = wall trench; L and T = L-shaped and T-shaped

[2] NAB floodplain = rectangular WT structure w/possible interior benches at BBB Motor
NAB uplands = 3 possible charnel structures at Center Grove and 1 large square WT structure at Range
SAB floodplain = 1 large square single post structure either rebuilt of with interior benches

Table 7.4. Comparison of Residential Structure Floor Areas (m^2).

	All Floodplain	All Upland	All NAB	All SAB	NAB FP	NAB UP	SAB FP	SAB UP
Edelhardt/Lindeman								
Minimum	3.37	3.34	3.37	3.34	3.37	6.55	3.81	3.34
Maximum	14.00	23.40	23.40	12.95	14.00	23.40	11.96	12.95
Mean	7.78	8.64	9.08	6.75	8.29	11.61	7.07	6.14
Standard Deviation	2.35	4.60	3.53	2.04	2.61	4.84	1.73	2.49
Lohmann								
Minimum	3.10	2.56	2.56	5.12	3.10	2.56	5.12	6.17
Maximum	31.00	17.50	31.00	18.18	31.00	17.50	18.18	9.24
Mean	12.31	9.66	12.28	9.90	12.88	10.26	10.52	7.26
Standard Deviation	5.17	3.48	5.22	3.50	5.48	3.62	3.59	1.03

Table 7.5. Comparison of Residential Structure W/L Ratios.

	All Floodplain	All Upland	All NAB	All SAB	NAB FP	NAB UP	SAB FP	SAB UP
Edelhardt/Lindeman								
Minimum	0.41	0.53	0.41	0.48	0.41	0.53	0.48	0.65
Maximum	0.93	0.96	0.82	0.96	0.72	0.82	0.93	0.96
Mean	0.61	0.73	0.59	0.71	0.57	0.66	0.67	0.79
Standard Deviation	0.11	0.11	0.09	0.13	0.07	0.10	0.13	0.08
Lohmann								
Minimum	0.38	0.46	0.38	0.41	0.38	0.46	0.41	0.47
Maximum	1.00	0.77	1.00	0.76	1.00	0.77	0.76	0.76
Mean	0.55	0.61	0.56	0.57	0.55	0.60	0.55	0.64
Standard Deviation	0.09	0.08	0.09	0.09	0.09	0.07	0.08	0.12

CHAPTER 8
CONCLUSIONS

The data presented in this dissertation provide evidence for dramatic and rapid changes that occurred at the onset of the Mississippian period throughout the American Bottom region. These changes involved the construction of space and communities at multiple scales. The fact that these changes occurred at the same time that urbanization as evidenced by the acceleration of mound-and-plaza construction at Cahokia suggests they are related to region–wide changes in sociopolitical organization associated with the creation of a regionally integrated polity. These changes were not identical and did not occur at the same exact time in all places throughout the region. This suggests that the changes in power and community were negotiated differently depending on the people involved in such negotiations.

The evidence gained through the investigation of the Fish Lake, Divers, Peiper, Washausen, and Morrison sites indicates that the residents of these sites participated in the Cahokian community to varying degrees and in different ways. The Fish Lake site exhibits continuous occupation through the TLW2 and early Mississippian period beginning with a small farmstead in the George Reeves phase. The architectural and material evidence from this occupation suggest the residents were focused on horticultural or agricultural activities along with a more specialized habitation associated with a prominent individual or family. The prepared fill of the structure, the excavation of a pit into the center of a Patrick phase pit, and the presence of an intentionally fragmented spud hint at more specialized activities.

The subsequent Lindeman occupation is larger with structures and pits arranged into small courtyards. The Lindeman residents appear to have referenced connections to the earlier occupation as indicated by the presence of some spatial elements noted for the George Reeves phase including arrangement of paired structures and exterior pits. However, there is greater evidence for suprahousehold and possible ritual activity as indicated by the concentration of high quality serving vessels, seeds, and faunal remains consistent with feasting events. Special items and materials including red cedar, a human cranial fragment, effigy vessels, and evidence for pigment production in the form of stained flat abraders are likely related to suprahousehold and/or ritual activities within the southern courtyard. The differences between the Lindeman phase courtyards are indicative of the diversity in practices during the Terminal Late Woodland period even at the most local scale.

Although the early Mississippian habitation is of indeterminate size, the small material assemblage from the single pit feature includes both limestone–tempered and shell–tempered vessels although the vessels are predominantly Mississippian in form. The small cemetery located east of the site is consistent with early Mississippian rural cemeteries and may be associated with the Lohmann occupation. The continued use of limestone temper combined with the appearance of new jar shapes and surface treatments as well as the presence of a rural cemetery suggest the Lohmann phase residents derived from the local populations but created new traditions in daily and ritual life as indicated by the new jar form and the treatment of the dead.

The Divers site has the longest continuous occupation beginning in the Late Woodland Patrick phase through the Stirling phase of the Mississippian period. The results from the geophysical survey and the excavations conducted by Freimuth and Porter indicate it was most intensively and extensively occupied during the Lindeman phase. During this period multiple deep basin, single–post structures were built and arranged into roughly oval courtyard groups. Similar to the Fish Lake site, the pottery from the Lindeman phase includes a wide array of vessel forms, surface treatments, and decorative elements. There appears to have been a significant decrease in population as indicated by the small size of the subsequent Lohmann phase settlement. The courtyard groups are supplanted by one or a few structures corresponding to farmsteads. These structures were built using wall trenches and were restricted to the highest elevation along the northern edge of the ridge.

Direct evidence for the Terminal Late Woodland to Mississippian transition at Divers exists in the form of two Lindeman phase structures that were superimposed by Lohmann phase structures exhibiting the opposite orientation. This pattern has been noted elsewhere, including at the George Reeves site. The use of the same space suggests the structures were occupied by the same people or family group. However, the change in orientation might indicate that the Lohmann phase residents appropriated local sources of power through referencing past inhabitants. Similarly, the presence of three burned Lindeman phase structures with intact floor assemblages may indicate intentional incineration, either by the Lindeman phase residents before leaving or the Mississippian residents prior to the construction of new houses. If the Lohmann phase residents intentionally burned these structures, then it may indicate an attempt to remove reminders of the past occupants and local sources of power (Joyce 2003).

The Peiper site was most intensively occupied during the Patrick phase as indicated by the distribution of features in the excavated area. The site was apparently unoccupied for the entirety of the Terminal Late Woodland. A small Lohmann phase re-occupation is represented by the wall trench structure and the few material remains. The structure was apparently built on the Late Woodland burial mound or on its flank. The Mississippian residents referenced this past significance through a commemorative or citational act when they built the structure in that location (Joyce and Hendon 2000; Pauketat and Alt 2003).

The data gained through geophysical mapping and excavation at Washausen indicate the site was most intensively and extensively occupied during the Lindeman phase. Direct evidence for the Mississippian Transition is present in the form of the two superimposed structures. In this case, the later structure shares the same orientation but differs in the depth of the basin and size of the posts. The contexts of abandonment also differ. The wall posts from the earlier structure appear to have been intentionally removed and the basin filled. Subsequently, Feature 2 was excavated into the west end of the earlier structure. The similarities in material culture between the two structures may indicate that the people who built Feature 2 were at least local residents if not the same people or from the same lineage as those who built the earlier structure.

Changes in site layout at Washausen as indicated by the distribution of features and geophysical anomalies include the shift from courtyard groups to a mound-and-plaza group. The clustering of anomalies in the north, east, and west areas of the site may be related to neighborhoods or sub-communities within the site. The Washausen site appears to have the shortest occupation span in the sample, likely 100 years or less, although it was apparently reoccupied in the late Mississippian period. The short occupation span combined with the evidence for mound-and-plaza construction are similar to the Morrison site although Morrison lacks any evidence for Mississippian habitation.

The mapping and excavation data from the Morrison site provide the only documented case of Terminal Late Woodland mound-and-plaza construction. The Morrison site may have served as a local political, religious, and/or administrative center for the Edelhardt phase occupants of the Horseshoe Lake peninsula (Pauketat et al. 1998). Also significant is the fact the site lacks any evidence for habitation during the Mississippian period. Lohmann phase residents from nearby sites (possibly Cahokia) returned to Morrison on at least one occasion as indicated by the presence a sherd from a white-on-red seed jar which is associated with Lohmann phase ritual contexts (Pauketat et al. 2002; Richards 2007).

The feature and material data derived from these investigations and the regional comparison indicate that the late Terminal Late Woodland settlements and assemblages in the American Bottom region can be characterized as diverse. The focus on local resources, pottery traditions, limited evidence for foreigners, and possible communal ownership of items such as discoidals is consistent with the existence of many small communities with locally based power related to specific lineages. Similarities in vessel form, decorative techniques, and surface treatments as well as architectural styles during this period indicate at minimum interaction between these local communities and possibly the existence of larger communities although not on the scale evident in the subsequent Mississippian period.

There is also evidence for pre-Mississippian ritual deposition in the form of the fragmented spud and layered floor deposits in a George Reeves phase structure at Fish Lake, cranium fragment and feasting debris associated with the Lindeman phase component at Fish Lake, and incineration (Divers, Fish Lake, George Reeves). The presence of these deposits further suggest a focus on the local community since these deposits are not extensive and occur at several sites of varying size throughout the region as opposed to more spatially restricted and larger deposits associated with large feasting events.

The Lohmann phase occupations are also diverse in terms of site types, architectural styles, and to a certain extent, pottery. However, there is a higher degree of standardization in structure size and shape, vessel forms and surface treatments, and lithic raw materials. Many items identified in TLW assemblages are also recovered from Mississippian contexts (e.g., celts, discoidals, and Mill Creek hoes). However, the production and use of pre-Mississippian pottery, tools, and architecture continued alongside new structure and tool forms. These earlier traditions did not maintain the same meanings and associations for Mississippian people throughout the region. Most were physically altered in some or were associated with particular types of structures, items, raw materials, settlements, or groups of people (DeBoer 1993; Emerson 1997a; Pauketat 1994).

Ritual deposition is similarly more restricted. For example, feasting debris and human remains are more commonly associated with nodal farmsteads, administrative villages, or mound centers with fewer examples of these deposits at non-nodal farmsteads and smaller villages or hamlets. It is possible that the burning of some of the late TLW2 structures was actually initiated by Lohmann phase residents. Lindeman phase structures that were burned with intact floor assemblages or were superimposed completely or partially by Lohmann phase buildings may have been intentionally set ablaze or filled in as a way for Lohmann phase residents to reference the past and tap into (or usurp) local sources of power.

These changes in the construction of space, community, and material culture are not limited to the few sites in this analysis but are found throughout the region at multiple scales. The regional data from Chapter 7 indicate people were moving from the southern American Bottom region to the northern floodplain and uplands closer to Cahokia. The traditions and daily practices of commoners including architectural style, pottery production, foodways, and the treatment of the dead were altered, invented, or suppressed in an effort to unite a diverse, even multi-ethnic population into the Cahokian community. Commoners as well as elites throughout the region asserted connections with the Cahokian community through these practices and traditions as well as their use of items produced, procured, and redistributed through Cahokia. These connections were also mediated through nodal sites and villages that served as places of power in the countryside. New types of sites with specialized architecture (Emerson's "architecture of power") were constructed among smaller villages and farmsteads and served as articulation points where rural farmers and Cahokia–related political and religious figures interacted.

People changed not only where they lived, but how they interacted through the abandonment, establishment, and re-organization of sites at the beginning of the Mississippian period. The movement of entire households and the abandonment of some villages opened new spaces for the negotiation of power and identity within the region. In some cases, neighbors and family members that once lived in the same courtyard group were now living separately as indicated by the decrease in population or abandonment of some sites and the establishment of dispersed farmsteads. In essence, this means a shift from local community focused living on a day-to-day basis (within courtyards) to relative isolation with periodic interaction at nodal sites and mound centers.

Site layouts were transformed through urbanization at some locales and depopulation at others. Concurrent with the construction of Cahokia as a city (complete with monumental architecture) was the construction of the countryside with rural mound centers, villages, and farmsteads. Both local and foreign people settled in previously unoccupied areas in the uplands (Emerson 1997a, b; Pauketat 2003:54). It is reasonable to postulate that the farmers who established rural farmsteads moved from Terminal Late Woodland floodplain villages and hamlets as part of a region–wide reconstruction of the landscape (Emerson 1997a, b; Kelly

1990b; Pauketat 1997, 2003). New site types associated with the administration and integration of rural populations also appeared indicating political, economic, and religious connections between urban and rural residents.

These movements of people coinciding with the beginning of the Mississippian period were instrumental in creating new places and forever altered the landscape. They also appear to have disrupted local, even familial ties. This would have provided an opportunity to construct a larger sense of community identity and polity, one that is distinctly Mississippian and distinctly Cahokian. Interactions among individuals and families with different backgrounds and values on a daily basis as well as at periodic events would necessitate the renegotiation of identity, community, and what it means to be a part of that community. These negotiations took place through daily practices, the movement of bodies, building of houses, social interactions, and the production, use, and discard of material items as well as during community–building events including mound construction and feasting.

The Cahokian community was a region-wide phenomenon comprised of a diverse groups of people in terms of wealth, ethnicity, and political clout. It included a complex sociopolitical structure with administrators, religious figures, rural farmers, and city–dwellers united through altered and invented traditions and styles in terms of material culture (e.g., pottery, stone tools, and raw materials) and architecture as well as exchanges of food and materials and participation in community constructing events (e.g., mound and plaza construction, feasting, and ritual performances). The maintenance of some pre-Mississippian traditions while participating in other aspects of the Cahokian community indicates that those who enacted these traditions were holding on to local community identities, in essence resisting the Cahokian community either actively or subconsciously.

In contrast to gradualist views (see Chapter 2), the construction of the Cahokian community and changes in the landscape occurred quickly and on a large spatial scale. For instance, in Freimuth's analysis of the Divers site, he does not see any evidence for ". . . a rapid attempt to project a Cahokia identity, its sense of community building, and greater central control . . ." (Freimuth 2010:316–317). I have shown here that there were changes in settlement (decreased pop, site layout), architecture, pottery styles, ritual practices, and foodways demonstrating that that is exactly what happened. The Cahokian community (and polity) was created on a large geographic scale over a short period of time by a diverse group of individuals.

Similarly, gradualists including Milner (2006), Schroeder (1997, 2004), and Kelly (2002) view rural sites including farmsteads and mound centers as autonomous and give explanatory power to the environment as opposed to social factors and past agents in terms of sociopolitical change. The results presented here indicate that those who constructed and lived at these rural sites were not separate or politically autonomous but were integral to the construction and maintenance of the Cahokian community and polity as well as the landscape. Cahokia became the center of a polity, not because of environmental factors but as a result of the actions and interactions of past agents at all socioeconomic levels and in all subregions. People throughout the region (e.g., urban and rural) were actively involved with creating Cahokia as a sociopolitical phenomenon through their movements, place–

making, interactions, and production. The fact that rural residents were relatively isolated spatially does not mean they were independent or autonomous. They lived with constant reminders of their membership in the larger constructed community including the houses they lived in, food they ate, and the pottery and stone tools they used.

To conclude, the permanent relocations and repeated, temporary movements throughout the American Bottom region combined with economic, social, political, and religious interactions and events altered the American Bottom political landscape. Through such movements and interactions, farming families and foreigners were actively involved with the construction of the Cahokian community. Not only did where people live change, but the types of structures in which they lived, pottery and stone tools they made and used, and who they interacted with and how also changed. As a result, social, political, and economic relationships were irreversibly altered as well. It is now evident that not only was labor mobilized in constructing Cahokia, but entire communities, shared memories, cosmologies, and the landscape itself were also critical to its creation in both physical and social terms.

REFERENCES

Alt, Susan M.
1999 Spindle Whorls and Fiber Production at Early Cahokian Settlements. *Southeastern Archaeology* 18:124–133.
2001 Cahokian Change and the Authority of Tradition. In *The Archaeology of Traditions: Agency and History before and after Columbus,* edited by Timothy R. Pauketat, pp. 141–156. University Press of Florida, Gainesville.
2002 The Knoebel Site: Tradition and Change in the Cahokian Suburbs. Unpublished Master's thesis, Department of Anthropology, University of Illinois, Urbana.
2006a Cultural Pluralism and Complexity: Analyzing a Cahokian Ritual Outpost. Unpublished Ph.D. dissertation, Department of Anthropology, University of Illinois, Urbana.
2006b The Power of Diversity: The Roles of Migration and Hybridity in Culture Change. In *Leadership and Polity in Mississippian Society*, edited by Brian M. Butler and Paul D. Welch, pp. 289–308. Center for Archaeological Investigations Occasional Paper No. 33, Southern Illinois University, Carbondale.

Alt, Susan M., Jeffrey D. Kruchten, and Timothy R. Pauketat
2010 The Construction and Use of Cahokia's Grand Plaza. *Journal of Field Archaeology* 35(2):131–146.

Ambrose, Stanley H., Jane Buikstra, and Harold W. Krueger
2003 Status and Gender Differences in Diet at Mound 72, Cahokia, revealed by Isotopic Analysis of Bone. *Journal of Anthropological Archaeology* 22:217–226.

Anderson, Benedict
1991 *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. Verso, New York.

Appadurai, Arjun
1996 *Modernity at Large: Cultural Dimensions of Globalization*. University of Minnesota Press, Minneapolis.

Ashmore, Wendy
2007 Social Archaeologies of Landscape. In *A Companion to Social Archaeology*, edited by Lynn Meskell and Robert W. Preucel, pp. 255–271. Blackwell, Malden.

Ashmore, Wendy and A. Bernard (editors)
2003 *Archaeologies of Landscape: Contemporary Perspectives*. Blackwell, Oxford.

Bailey, Katri Susanna
2004 A Preliminary Look at the Emergent Mississippian and Early Mississippian Occupations at the Dickneite Site (11MO785) Monroe County, Illinois. Paper presented at the 61st Annual Meeting of the Southeastern Archaeological Conference, Saint Louis.
2006 The Significance of the Distribution of Monks Mound Red Bowls as Ritual Serving Vessels at the Washausen Mound Center. Paper presented at the 63rd Annual Meeting of the Southeastern Archaeological Conference, Little Rock.
2007 Washausen Mound Center (11MO305) Ceramic Assemblage: Broken Pots from the Plaza. Unpublished Master's thesis, Department of Anthropology, Washington University, Saint Louis.

Bareis, Charles J.
1968 Report on Salvage Work Undertaken at the Faust Site (S–69) on FAI–64, St. Clair County, Illinois (Phase 3 Excavations). Department of Anthropology, University of Illinois, Urbana.
1976 *The Knoebel Site St. Clair County, Illinois*. Illinois Archaeological Survey, Department of Anthropology, University of Illinois, Urbana.

Bareis, Charles J. and James W. Porter
1984 *American Bottom Archaeology: A Summary of the FAI–270 Project Contribution to the Culture History of the Mississippi River Valley*. University of Illinois Press, Champaign.

Benchley, Elizabeth D.
1974 Mississippian Secondary Mound Loci: A Comparative Functional Analysis in a Time–Space Perspective. Unpublished PhD Dissertation, Department of Anthropology, University of Wisconsin, Milwaukee.

Bender, Barbara
2001 Landscapes on-the-move. *Journal of Social Archaeology* 1(1):75–89.

Bennett, John W.
1944 Archaeological Horizons in the Southern Illinois Region. *American Antiquity* 10(1):12–22.

Berres, Thomas E.
1984 A Formal Analysis of Ceramic Vessels at the Schlemmer Site (11-S-382): A Late Woodland/Mississippian Occupation in St. Clair County, Illinois. Unpublished MA Thesis, Department of Anthropology, Western Michigan University, Kalamazoo.

Betzenhauser, Alleen M.
2004 Through Space and Time: Preliminary and Proposed Investigations at the Washausen (11MO305) and Pieper (11MO31) Sites. Paper presented at the 61st Annual Meeting of the Southeastern Archaeology Conference, Saint Louis.
2005 The Old Man Site #3 (11MS542): A Lohmann Phase Farmstead. *Illinois Archaeology* 14:73–89.
2006 Greater Cahokian Farmsteads: A Quantitative and Qualitative Analysis of Diversity. Unpublished MA paper, Department of Anthropology, University of Illinois, Urbana.
2008a Timing the Terminal Late Woodland to Mississippian Transition in the Southern American Bottom: Preliminary Results from the Washausen Site (11MO305). Paper presented at the 54th Annual Meeting of the Midwest Archaeological Conference, Milwaukee.
2008b Recent Investigations at the Washausen (11MO305) and Divers (11MO28) Sites: Preliminary Results from Geophysical Survey and Targeted Excavation in the Southern American Bottom. Poster presented at the 65th Annual Southeastern Archaeological Conference, Charlotte.
2009a Reevaluating the Emergent Mississippian in the American Bottom. Paper presented at the 55th Annual Meeting of the Midwest Archaeological Conference, Iowa City.
2009b Transforming Places and Persons: Community and Personhood during the Terminal Late Woodland to Mississippian Transition in the Southern American Bottom Paper presented at the 66th Annual Meeting of the Southeastern Archaeological Conference, Mobile.
n.d. The Prehistory of Turkey Hill: Archaeological Investigations along Illinois Route 13/15 (FAP–103) Belleville to Freeburg, St. Clair County, Illinois. Illinois State Archaeological Survey Research Reports. University of Illinois, Urbana. D*raft on file.*

Bhabha, Homi
1989 Location, Intervention, and Incommensurability: A Conversation with Homi Bhabha. *Emergences* 1(1):63–88.

Blake, Emma
2002 Spatiality past and present: An interview with Edward Soja, Los Angeles, 12 April 2001. *Journal of Social Archaeology* 2(2): 139–158.
2007 Space, Spatiality and, and Archaeology. In *A Companion to Social Archaeology*, edited by Lynn Meskell and Robert W. Preucel, pp. 230–254. Blackwell, Malden.

Blake, Leonard
1949 The Missouri River Bluffs at Caulk's Creek in St. Louis County, Missouri. *The Missouri Archaeologist* 11(1):18–28.
1955 The Lambert–St. Louis Airport Site. *The Missouri Archaeologist* 17(1):24–42.

Blakeslee, Donald
1983 Kinks in the Calibration Curve: Reassessing Radiocarbon Dates. In *Man and the Changing Environments in the Great Plains*, edited by Warren W. Caldwell, C. Bertrand Schultz, and T. Mylan Stout, pp. 29–35. Transactions of the Nebraska Academy of Sciences, Volume 11. Lincoln.

Booth, Donald L.
2001 The Center Grove Site: A Nearly Invisible Early Mississippian Mortuary Facility in the Uplands of Madison County, Illinois. *Illinois Archaeology* 13 (1 and 2):36–56.

Bourdieu, Pierre
1973 Cultural Reproduction and Social Reproduction. In *Knowledge, Education, and Cultural Change*, edited by Richard Brown, pp. 71–84. British Sociological Association, Tavistock, London.
1977 *Outline of a Theory of Practice*. Cambridge University Press, Cambridge.

Brackenridge, Henry Marie
1814 *Views of Louisiana; Together with a Journal of a Voyage up the River Missouri, in 1811*. Cramer, Spear, and Eichbaum, Pittsburgh.

Bradley, Richard
2002 *An Archaeology of Natural Places.* Routledge, New York.

Brück, Joanna
2006 Death, Exchange and Reproduction in the British Bronze Age. *European Journal of Archaeology* 9(1):73–101.

Buikstra, Jane E. and Douglas K. Charles
2003 Centering the Ancestors: Cemeteries, Mounds, and Sacred Landscapes of the Ancient North American Midcontinent. In *Archaeologies of Landscape: Contemporary Perspectives*, edited by Wendy Ashmore and A. Bernard Knapp, pp. 201–228. Blackwell, Malden.

Bukowski, Julie A.
2008a *Isolated Human Remains Recovered from the Habitation Area of the Fish Lake Site, Monroe County, Illinois*. Research Report No. 123. Illinois Transportation Archaeological Research Program, University of Illinois, Urbana.
2008b Archaeological Investigations at the Ramsey Road Section of the Fish Lake Site, Monroe County, Illinois. Research Report No. 121. Illinois Transportation Archaeological Research Program, University of Illinois, Urbana.

Bukowski, Julie A. and Brad Koldehoff
*n.d.*a Archaeological Investigations at the Deer Site, Monroe County, Illinois. Illinois State Archaeological Survey Research Report, University of Illinois, Urbana.

*n.d.*b Archaeological Investigations at the Power Line Site: A Small Late Woodland and Mississippian Settlement on Fish Lake, Monroe County, Illinois. Illinois State Archaeological Survey Research Report No. 124, University of Illinois, Urbana.

Burks, Jarrod
2004 *Results from a Small Magnetic Survey at the Washausen Site, Monroe County, Illinois*. Ohio Valley Archaeological Consultants, Ltd, Worthington.

Burns, Carol J.
1991 On Site: Architectural Preoccupations. In *Drawing/Building/Text: Essays in Architectural Theory*, edited by Andrea Kahn, pp. 146–167. Princeton University Press, New York.

Butler, Judith
1993 *Bodies that Matter*. Routledge, London.

Butler, Amanda J., Brenda E. Beck, and Madeleine G. Evans
n.d. Lithics. In *The Fish Lake Site: Patrick Phase Occupation*, edited by Andrew C. Fortier. Illinois State Archaeological Survey, University of Illinois, Urbana.

Canuto, Marcello A., and Jason Yaeger
2000 *The Archaeology of Communities: A New World Perspective*. Routledge, New York.

Casell, Eleanor C. and Chris Fowler (editors)
2004 *The Archaeology of Plural and Changing Identities*. Springer, New York.

Catlin, George
1841 *Letter and Notes on the Manners, Customs, and Condition of the North American Indians: Written During Eight Years' Travel Amongst the Wildest Tribes of Indians in North America in 1832, 33, 34, 35, 36, 37, 38, and 39*. Volume 1. Ross & Haines, Minneapolis.

Chapman, Ellen
2005 *Analysis of the Washausen Mississippian Mound Site (11MO305) Using Distribution Maps*. Unpublished Senior Thesis, Department of Anthropology, Washington University, Saint Louis.

Christaller, Walter
1966 *Central Places in Southern Germany*. Translated by Carlisle W. Baskin. Prentice-Hall, Englewood Cliffs.

Clark, John E.
2004 Mesoamerica Goes Public: Early Ceremonial Center, Leaders, and Communities. In *Mesoamerican Archaeology*, edited by Julia A. Hendon and Rosemary A. Joyce, pp. 43–72. Blackwell, Malden.

Clifford, James
1997 Routes: Travel and Translation in the Late Twentieth Century. Harvard University Press, Cambridge.

Cobb, Charles R.
2000 *From Quarry to Cornfield: The Political Economy of Mississippian Hoe Production*. University of Alabama Press, Tuscaloosa.

Collins, James M.
1990 *The Archaeology of the Cahokia Mounds ICT–II: Site Structure*. Illinois Cultural Resources Study 10. Illinois Historic Preservation Agency, Springfield.
1997 Cahokia Settlement and Social Structures as Viewed from the ICT–II. In *Cahokia: Domination and Ideology in the Mississippian World*, edited by Timothy R. Pauketat and Thomas E. Emerson, pp. 124–140. University of Nebraska Press, Lincoln.

Collot, George-Victor
1924 *A Journey in North America*. Translated by J. Christian Bay. Firenze O. Lange.

Conkey, Margaret W.
1990 Experimenting with Style in Archaeology: Some Historical and Theoretical Issues. In *The Uses of Style in Archaeology*, edited by Margaret W. Conkey and Christine A. Hastorf, pp. 5–17. Cambridge University Press, New York.

Creed, Gerald W.
2004 Constituted through Conflict: Images of Community (and Nation) in Bulgarian Rural Ritual. *American Anthropologist* 106(1):56–70.

Cunningham, Clark
1973 Order in the Atoni House. Reprinted in Right & Left, edited by Rodney Needham, pp. 204–237. University of Chicago Press, Chicago.

Dalan, Rinita A., George R. Holley, William I. Woods, Harold W. Watters, Jr., and John A. Koepke
2003 *Envisioning Cahokia: A Landscape Perspective.* Northern Illinois University Press, DeKalb.

DeBoer, Warren R.
1990 Interaction, Imitation, and Communication as Expressed in Style: The Ucayali Experience. In *The Uses of Style in Archaeology*, edited by Margaret W. Conkey and Christine A. Hastorf, pp. 82–104. Cambridge University Press, New York.
1993 Like a Rolling Stone: The Chunkey Game and Political Organization in Eastern North America. *Southeastern Archaeology* 12:83–92.

Dietler, Michael and Brian Hayden
2001 Digesting the Feast–Good to Eat, Good to Drink, Good to Think: An Introduction. In *Feasts: Archaeological and Ethnographic Perspectives of Food, Politics, and Power*, edited by Michael Dietler and Brian Hayden, pp. 1–22. Smithsonian Institution Press, Washington.

Dobres, Marcia-Anne and John E. Robb
2000 Agency in Archaeology: Paradigm or Platitude? In *Agency in Archaeology*, edited by Marcia A. Dobres and John E. Robb, pp. 3–14. Routledge, London.

Durkheim, Emile
1965 (1915) *The Elementary Forms of Religious Life*. University Press of Chicago, Chicago.

Durkheim, Emile and Marcel Mauss
1963 (1903) *Primitive Classification*. University of Chicago Press, Chicago.

Emerson, Thomas E.
1992 The Mississippian Dispersed Village as a Social and Environmental Strategy. In *Late Prehistoric Agriculture: Observations from the Midwest*, edited by William I. Woods, pp. 198–216. Studies in Illinois Archaeology No. 8. Illinois Historic Preservation Agency, Springfield.
1997a *Cahokia and the Archaeology of Power*. The University of Alabama Press, Tuscaloosa.
1997b Reflections from the Countryside on Cahokian Hegemony. In *Domination and Ideology in the Mississippian World*, edited by Timothy R. Pauketat and Thomas E. Emerson, pp. 167–189. University of Nebraska Press, Lincoln.

Emerson, Thomas E. and Douglas K. Jackson
1984 *The BBB Motor Site (11-MS-595)*. American Bottom Archaeology, FAI–270 Site Reports 6. University of Illinois Press, Urbana.
1985 The Edelhardt and Lindeman Phases: Setting the Stage for the Final Transition to Mississippian in the American Bottom. In *The Emergent Mississippian: Proceedings of the Sixth Mid-South Archaeological Conference June 6–9, 1985*, edited by Richard A. Marshall, pp. 172–193. Cobb Institute of Archaeology Occasional Papers 87–01. Mississippi State University, Mississippi State.
1987 *Emergent Mississippian and Early Mississippian Homesteads at the Marcus Site (11-S-631)*. American Bottom Archaeology, FAI–270 Site Reports 17, University of Illinois Press, Urbana.

Emerson, Thomas E. and George R. Milner
1982 Community Organization and Settlement Patterns of Peripheral Mississippian Sites in the American Bottom, Illinois. Paper presented at the 47th Annual Meeting of the Society for American Archaeology, Minneapolis.

Emerson, Thomas E., Eve A. Hargrave, and Kristin Hedman
2003b Death and Ritual in Early Rural Cahokia. In *Theory, Method, and Practice in Modern Archaeology*, edited by Robert J. Jeske and Douglas K. Charles, pp. 163–181. Praeger Publishers, Westport.

Emerson, Thomas E., Steve Boles, Sarah U. Wisseman, and Randall E. Hughes
2010 Contextualizing Figurines and Earspools from the East St. Louis Mound Center. Paper presented at the 56th Annual Meeting of the Midwest Archaeological Conference, Bloomington.

Emerson, Thomas E., Randall E. Hughes, Mary R. Hynes, and Sarah U. Wisseman
2002 Implications of Sourcing Cahokia–Style Flint Clay Figures in the American Bottom and the Upper Mississippi River Valley. *Midcontinental Journal of Archaeology* 27:309–338.
2003a The Sourcing and Interpretation of Cahokia-Style Figurines in the Trans-Mississippi South and Southeast. *American Antiquity* 68(2):287–313.

Esarey, Duane and Timothy R. Pauketat
1992 *The Lohmann Site An Early Mississippian Center in the American Bottom*. American Bottom Archaeology, FAI–270 Site Reports 25, University of Illinois Press, Urbana.

Finney, Fred A.
1984 Ceramic Assemblage. In *The Fish Lake Site*, by Andrew C. Fortier, Richard B. Lacampagne, and Fred A. Finney, pp. 83–138. American Bottom Archaeology, FAI–270 Site Reports 8, University of Illinois Press, Urbana.
1985 The Carbon Dioxide Site. In *The Carbon Dioxide Site and the Robert Schneider Site*, by Fred A. Finney and Andrew C. Fortier, pp. 3–167. American Bottom Archaeology, FAI–270 Site Reports 11, University of Illinois Press, Urbana.

Fortier, Andrew C.
1984 Feature Types and Distribution. In *The Fish Lake Site*, by Andrew C. Fortier, Richard B. Lacampagne, and Fred A. Finney, pp. 17–83. American Bottom Archaeology, FAI–270 Site Reports 8, University of Illinois Press, Urbana.
1985 The Robert Schneider Site. In *The Carbon Dioxide Site and the Robert Schneider Site*, by Fred A. Finney and Andrew C. Fortier, pp. 171–305. American Bottom Archaeology, FAI–270 Site Reports 11, University of Illinois Press, Urbana.
1996 *The Marge Site: Late Archaic and Emergent Mississippian Occupations in the Palmer Creek Locality*. American Bottom Archaeology, FAI–270 Site Reports 27, University of Illinois Press, Urbana.
1998 Pre-Mississippian Economies in the American Bottom of Southwestern Illinois, 3000 B.C.–A.D. 1050. *Research in Economic Anthropology* 19: 341–392.

Fortier, Andrew C. and Douglas K. Jackson
2000 The Formation of a Late Woodland Heartland in the American Bottom, Illinois cal A.D. 650–900. In *Late Woodland Societies: Tradition and*

Transformation across the Midcontinent, edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, pp. 123–162. University of Nebraska Press, Lincoln.

Fortier, Andrew C. and Dale L. McElrath
2002 Deconstructing the Emergent Mississippian Concept: The Case for the Terminal Late Woodland in the American Bottom. Midcontinental *Journal of Archaeology* 27(2):171–215.

Fortier, Andrew C., Richard B. Lacampagne, and Fred A. Finney
1984 *The Fish Lake Site*. American Bottom Archaeology, FAI–270 Site Reports 8, University of Illinois Press, Urbana.

Fortier, Andrew C., Thomas O. Maher, and Joyce A. Williams
1991 *The Sponemann Site: The Formative Emergent Mississippian Sponemann Phase Occupations*. American Bottom Archaeology FAI–270 Site Reports, Vol. 23. University of Illinois Press, Urbana.

Fortier, Andrew C., Thomas E. Emerson, and Dale L. McElrath
2006 Calibrating and Reassessing American Bottom Culture History. *Southeastern Archaeology* 25(2):170–211.

Foucault, Michele
1997a Of Other Spaces: Utopias and Heterotopias. In *Rethinking Architecture: A Reader in Cultural Theory*, edited by Neil Leach, pp. 350–367. Routledge, New York.

1997b Space, Knowledge and Power (Interview conducted with Paul Rabinow). In *Rethinking Architecture: A Reader in Cultural Theory*, edited by Neil Leach, pp. 367 379. Routledge, New York.

Fowler, Chris
2004 The Archaeology of Personhood: An Anthropological Approach. Routledge, New York.

Fowler, Melvin L.
1975 A Precolumbian Urban Center on the Mississippi. *Scientific American* 23(2):92–101.
1978 Cahokia and the American Bottom: Settlement Archaeology. In *Mississippian Settlement Patterns*, edited by Bruce D. Smith, pp. 455–478. Academic Press, New York.
1997 The Cahokia Atlas: A Historical Atlas of Cahokia Archaeology (Revised). University of Illinois at Urbana–Champaign Studies in Archaeology No. 2, Illinois Transportation Archaeological Research Program, Urbana.

Fowler, Melvin L., Jerome Rose, Barbara VanderLeest, and Steven R. Ahler
1999 *The Mound 72 Area: Dedicated and Sacred Space in Early Cahokia*. Illinois State Museum, Reports of Investigations No. 54. Illinois State Museum Society, Springfield.

Fowler, Melvin L. and Robert L. Hall
1975 Archaeological Phases at Cahokia. In *Perspectives in Cahokia Archaeology*, edited by James A. Brown, pp. 1–14. Illinois Archaeological Survey Bulletin no. 10. University of Illinois, Urbana.

Freimuth, Glen A.
1974 The Lunsford–Pulcher Site: An Examination of Selected Traits and Their Social Implications in American Bottom Prehistory. Unpublished Master's Thesis, Department of Anthropology, University of Illinois, Urbana.
2010 Segmented and Ascendant Chiefdom Polity as Viewed from the Divers Site. Unpublished Ph.D. dissertation, Department of Anthropology, University of Illinois, Urbana.

Galloy, Joseph
2003 Archaeological Investigations at Site 11MS1970 (Pinga's Pup Site) for the CH 75/Governor's Parkway, IL 157 to IL 143. *Archaeological Testing Short Report No. 135*, Illinois Transportation Archaeological Research Program, University of Illinois at Urbana–Champaign.
2004 *Data Recovery Plan for Phase III Mitigation of the Liz's Eye Site (11S886) and Backward Glance Site (11S1619), St. Clair County, Illinois*. Gateway Archaeology, Saint Charles.

Giddens, Anthony
1984 *The Constitution of Society: Outline of the Theory of Structuration*. University of California Press, Berkeley.

Gillespie, Susan D.
2001 Personhood, Agency, and Mortuary Ritual: A Case Study from the Ancient Maya. *Journal of Anthropological Archaeology* 20:73–112.

Gregg, Michael L.
1975 Settlement Morphology and Production Specialization: The Horseshoe Lake Site, A Case Study. Unpublished Ph.D. dissertation, Department of Anthropology, University of Wisconsin, Milwaukee.

Griffin, James B.
1949 Report on Pottery from the St. Louis Area. *The Missouri Archaeologist* 7(2):1–17.
1977 The University of Michigan Excavations at the Pulcher Site in 1970 (*sic* 1950). *American Antiquity* 42:462–490.

Gujilde, Paolo and Eve A. Hargrave
2009 *Human Remains and Mortuary Practices at the Centreville Site (11S332): A Small Early Mississippian Cemetery in St. Clair County, Illinois*. Skeletal Report No. 2009–19. Illinois Transportation Archaeological Research Program, University of Illinois, Urbana.

Gupta, Akhil and James Ferguson
1992 Beyond "Culture": Space, Identity, and the Politics of Difference. *Cultural Anthropology* 7(1):6–23.

Hall, Robert L.
1966 Cahokia Chronology. Paper prepared for distribution at the Annual Meeting of the Central States Anthropological Society in St. Louis, Missouri. Illinois State Museum, Springfield.
1975 Chronology and Phases at Cahokia. In *Perspectives in Cahokia Archaeology*, pp. 15–31. Illinois State Archaeological Survey Bulletin No. 10, Urbana.
2000 Cahokia Identity and Interaction Models of Cahokia Mississippian. In *Cahokia and the Hinterlands: Middle Mississippian Cultures of the Midwest*, edited by Thomas E. Emerson and R. Barry Lewis, pp. 3–34. University of Illinois Press, Urbana.

Hanenberger, Ned H.
1990 The Olszewski Site (11S465). In *Selected Early Mississippian Household Sites in the American Bottom*, edited by Douglas K. Jackson and Ned H. Hanenberger, pp. 253–423. American Bottom Archaeology, FAI–270 Site Reports Volume 22, University of Illinois Press, Urbana.

2003 *The Range Site 3: Mississippian and Oneota Occupations*. Research Program Transportation Archaeological Research Reports No. 17. Illinois Transportation Archaeological Research Program, University of Illinois at Urbana–Champaign.

Hargrave, Michael L., Lewis E. Somers, Thomas K. Larson, Richard Shields, and John Dendy
2002 The Role of Resistivity Survey in Historic Site Assessment and Management: An Example from Fort Riley, Kansas. *Historical Archaeology* 36(4):89–110.

Hargrave, Eve A. and Kristin M. Hedman
2001*The Halliday Site (11S27) Investigations into Early Mississippian Mortuary Behavior.* Illinois Transportation Archaeological Research Report No. 50. Illinois Transportation Archaeological Research Program, University of Illinois at Urbana–Champaign.

Harn, Alan D.
1971 *An Archaeological Survey of the American Bottoms in Madison and St. Clair Counties, Illinois*. Reports of Investigation 21 (Part 2). Illinois State Museum, Springfield.

Hastorf, Christine A.
2003 Community with the Ancestors: Ceremonies and Social Memory in the Middle Formative at Chiripa, Bolivia. *Journal of Anthropological Archaeology* 31:305–332.

Hawkes, Preston A.
1985 *Report of Supplemental Phase I Documentation and Survery, and Phase II Testing at Selected Sites for the Proposed FAP–413 Highway Project, Madison County, Illinois.* Midwestern Archaeological Research Center, Illinois State Univeristy, Normal.

Hedman, Kristin M.
2007 *Isolated Human Burials at the Fingers Site (11S333 North), St. Clair County, Illinois*. Illinois Transportation Archaeological Research Report No. 100. Illinois Transportation Archaeological Research Program, University of Illinois at Urbana–Champaign.

Heidegger, Martin
1997 Building, Dwelling, Thinking. In *Rethinking Architecture: A Reader in Cultural Theory*, edited by Neil Leach, pp. 100–124. Routledge, New York

Hendrickson, Carl F.
1979 The Ceramics of the Fenaia Site (M–1), Monroe County, Illinois. Unpublished Master's thesis, Department of Anthropology, University of Wisconsin, Madison.

Hobsbawm, Eric J.
1983 Introduction: Inventing Traditions. In *The Invention of Tradition*, edited by Eric Hobsbawm and Terence Ranger, pp. 1–14. Cambridge University Press, Cambridge.
1990 *Nations and Nationalism since 1780: Programme, Myth, Reality*. Cambridge University Press, Cambridge.

Hodder, Ian and Craig Cessford
2004 Daily Practice and Social Memory at Çatalhöyük. *American Antiquity* 69(1):17–40.

Holley, George R.
1989 *Archaeology of the Cahokia Mounds ICT–II: Ceramics*. Illinois Cultural Resources Study No. 11. Illinois Historic Preservation Agency, Springfield.

Holley, George R., Mikels Skele, Harold W. Watters Jr., Kathryn E. Parker, Elizabeth M. Scott, Joyce A. Williams, Donald L. Booth, Julie N. Harper, Alan J. Brown, Christina L. Fulton, and Laura L. Harmon
2001a *Introduction to the Prehistoric Archaeology of the Scott Joint–Use Archaeological Project*. Contract Archaeology Series, Southern Illinois University, Edwardsville.

Holley, George R., Kathryn E. Parker, Harold W. Watters, Jr., Julie N. Harper, Julie N.; Mikels Skele, Jennifer E. Ringberg, Alan J. Brown, Donald L. Booth
2001b *The Knoebel Locality, Scott Joint–Use Archaeological Project*. Contract Archaeology Series, Southern Illinois University, Edwardsville.

Hutson, Scott R.
2002 Built Space and Bad Subjects: Domination and Resistance at Monte Albán, Oaxaca, Mexico. *Journal of Social Archaeology* 2(1):53–80.

Ingold, Timothy
1993 The Temporality of the Landscape. *World Archaeology* 25(2):152–174.

Isbell, William
2000 What We Should be Studying: The "Imagined Community" and the "Natural Community". In *The Archaeology of Communities: A New World Perspective*, edited by Marcello A. Canuto and Jason Yaeger, pp. 243–266. Routledge, New York.

Jackson, Douglas K.
1990a The Willoughby Site (11MS610). In *Selected Early Mississippian Household Sites in the American Bottom*, edited by Douglas K. Jackson and Ned H. Hanenberger, pp. 17–89. American Bottom Archaeology, FAI–270 Site Reports Volume 22, University of Illinois Press, Urbana.
1990b The Esterlein Site (11MS598). In *Selected Early Mississippian Household Sites in the American Bottom*, edited by Douglas K. Jackson and Ned H. Hanenberger, pp. 91–216. American Bottom Archaeology, FAI–270 Site Reports Volume 22, University of Illinois Press, Urbana.
1993 The Determann Borrow Pit Site: A Mississippian Occupation on the Silver Creek Drainage. *Illinois Archaeology* 5:355–362.

Jackson, Douglas K. and Sissel Johannessen
1990 The Sandy Ridge Farm Site (11-S-660). In *Selected Early Mississippian Household Sites in the American Bottom*, edited by Douglas K. Jackson and Ned H. Hanenberger, pp. 217–252. American Bottom Archaeology, FAI–270 Site Reports 22, University of Illinois Press, Urbana.

Jeske, Robert J.
1999 World–Systems Theory, Core–Periphery Interactions, and Elite Economic Exchange in Mississippian Societies. In *World–Systems Theory in Practice: Leadership, Production, and Exchange*, edited by Nick P. Kardulias, pp. 203–222. Lanham, Littlefield.

Johnson, Gregory A.
1977 Aspects of Regional Analysis in Archaeology. *Annual Review of Anthropology* 6:479–508.

Jones, Andrew
2001 Drawn from Memory: The Archaeology of Aesthetics and Aesthetics of Archaeology in Earlier Bronze Age Britain and the Present. *World Archaeology* 33(2):334–356.

Joyce, Arthur A.
2004 Sacred space and social relations in the Valley of Oaxaca. In *Mesoamerican Archaeology*, edited by Julia A. Hendon and Rosemary A. Joyce, pp. 192–216. Blackwell, Malden.

Joyce, Rosemary A.
2003 Concrete Memories: Fragments of the Past in the Classic Maya Present (500–1000 AD). In *Archaeologies of Memory*, edited by Ruth M. Van Dyke and Susan E. Alcock, pp. 104–125. Blackwell, Malden.

Joyce, Rosemary A. and Julia A. Hendon
2000 Heterarchy, History, and Material Reality: “Communities” in Late Classic Honduras. In *The Archaeology of Communities: A New World Perspective*, edited by Marcello A. Canuto and Jason Yaeger, pp. 143–160. Routledge, New York.

Kardulias, Nick P. (editor)
1999 *World–Systems Theory in Practice: Leadership, Production, and Exchange*. Lanham, Littlefield.

Kelly, A.R.
1933 Some Problems of Recent Cahokia Archaeology. *Transactions of the Illinois State Academy of Science* 26:101–103.

Kelly, John E.
1980 Formative Developments at Cahokia and the Adjacent American Bottom: A Merrell Tract Perspective. Unpublished Ph.D. dissertation, Department of Anthropology, University of Wisconsin, Madison.
1985 Emergent Mississippian and the Transition from Late Woodland to Mississippian: The American Bottom Case for a New Concept. In *The Emergent Mississippian: Proceedings of the Sixth Mid-South Archaeological Conference June 6–9, 1985*, edited by Richard A. Marshall, pp. 212–226. Cobb Institute of Archaeology Occasional Papers 87–0. Mississippi State University, Mississippi State.
1990a The Emergence of Mississippian Culture in the American Bottom Region. In *The Mississippian Emergence*, edited by Bruce D. Smith, pp. 113–152. University of Alabama Press, Tuscaloosa.
1990b Range Site Community Patterns and the Mississippian Emergence. In *The Mississippian Emergence*, edited by Bruce D. Smith, pp. 67–112. University of Alabama Press, Tuscaloosa.
1991 Cahokia and Its Role as a Gateway Center in Interregional Exchange. In *Cahokia and the Hinterlands: Middle Mississippian Cultures of the Midwest*, edited by

Thomas E. Emerson and R. Barry Lewis, pp. 61–80. University of Illinois Press, Urbana.
1993 The Pulcher Site: An Archaeological and Historical Overview. *Illinois Archaeology* 5:434–451.
2000a The Nature and Context of Emergent Mississippian Cultural Dynamics in the Greater American Bottom. In *Late Woodland Societies: Tradition and Transformation across the Midcontinent*, edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, pp. 104–127. University of Nebraska Press, Lincoln.
2000b *Archaeological Mitigation of the New Whiteside School Site (11S1145) St. Clair County, Illinois: Data Recovery Plan*. Central Mississippi Valley Archaeological Research Institute, Collinsville, Illinois.
2002 The Pulcher Tradition and the Ritualization of Cahokia: A Perspective from Cahokia's Southern Neighbor. *Southeastern Archaeology* 21(2):136–149.
2006 The Ritualization of Cahokia: The Structure and Organization of Early Cahokia Crafts. In *Leadership and Polity in Mississippian Society*, edited by Brian M. Butler and Paul D. Welch, Occasional Paper No. 33, pp. 1–15. Center for Archaeological Investigations, Southern Illinois University, Carbondale.
2007a The Results of the 2005 Elder Hostel Test Excavations at the Washausen Site (11MO305). Manuscript on file at the Central Mississippi Valley Archaeological Research Institute, Columbia, IL.
2007b Lindeman features in Range report

Kelly, John E., Steven J. Ozuk, Douglas K. Jackson, Dale L. McElrath, Fred A. Finney, and Duane Esarey
1984 Emergent Mississippian Period. In *American Bottom Archaeology: A Summary of the FAI–270 Project Contribution to the Culture History of the Mississippi River Valley*, edited by Charles J. Bareis and James W. Porter, pp. 128–157. University of Illinois Press, Champaign.

Kelly, John E., Steven J. Ozuk, and Joyce A. Williams
2007 *The Range Site 4: Emergent Mississippian George Reeves and Lindeman Phase Occupations*. Transportation Archaeological Research Reports No. 18. Illinois Transportation Archaeological Research Program, University of Illinois, Urbana.

Kelly, John E., Andrew C. Fortier, Steven Ozuk, and Joyce Williams.
1987 *The Range Site: Archaic Through Late Woodland Occupation*. American Bottom Archaeology FAI–270 Site Reports Volume 16. University of Illinois Press, Urbana.

Kelly, John E., Jean R. Linder, and Theresa J. Cartmell
1979 The Archaeological Intensive Survey of the FAI–270 Alignment in the American Bottom Region of Southern Illinois. Illinois Transportation Archaeology Scientific Reports No. 1. Illinois Department of Transportation, Springfield and Illinois Archaeological Survey, Urbana.

Kelly, Lucretia
1997 Patterns of Faunal Exploitation at Cahokia. In *Cahokia: Domination and Ideology in the Mississippian World*, edited by Timothy R. Pauketat and Thomas E. Emerson, pp. 69–88. University of Nebraska Press, Lincoln.

Kolb, Michael J. and James E. Snead
1997 It's a Small World After All: Comparative Analyses of Community Organization in Archaeology. *American Antiquity* 62(4):609–628.

Koldehoff, Brad
1989 Cahokia's Immediate Hinterland: The Mississippian Occupation of Douglas Creek. *Illinois Archaeology* 1:39–68.

Koldehoff, Brad and Joseph M. Galloy
2006 *Late Woodland Frontiers: Patrick Phase Settlement along the Kaskaskia Trail, Monroe County, Illinois*. Transportation Archaeological Research Reports No. 23. Illinois Transportation Archaeological Research Program, University of Illinois at Urbana–Champaign.

Koldehoff, Brad and Gregory D. Wilson
2011 Mississippian Celt Production and Resource Extraction in the Upper Big River Valley of St. Francois County, Missouri. *The Missouri Archaeologist* 71:217–248.

Koldehoff, Brad, Timothy R. Pauketat, and John E. Kelly
1993 The Emerald Site and the Mississippian Occupation of the Central Silver Creek Valley. *Illinois Archaeology* 5(1 and 2):331–343.

Kruchten, Jeffrey D. and Joseph M. Galloy
2010 Exploration of the Early Cahokian Residential Zone at East St. Louis. Paper presented at the 56th Annual Meeting of the Midwest Archaeological Conference, Bloomington, Indiana.

Kruchten, Jeffrey D., Melissa R. Baltus, and Timothy R. Pauketat
2009 Genealogies of Temple Rituals in Earth, Fire, and Water at an Early Cahokian Outlier. Paper presented at the 75th Annual Meeting of the Society for American Archaeology, Atlanta, Georgia.

Lawrence, Denise L. and Setha M. Low
1990 The Built Environment and Spatial Form. *Annual Review of Anthropology* 19:453–505.

LeFebvre, Henri
1991 *The Production of Space*. Translated by Donald Nicholson-Smith. Blackwell, Malden.

Lekson, Stephen H.
1999 *The Chaco Meridian: Centers of Political Power in the Ancient Southwest*. Altamira Press, Walnut Creek.

Locock, Martin
1994 Meaningful architecture. In *Meaningful Architecture: Social Interpretations of Buildings*, edited by Martin Locock, pp. 1–13. Avebury.

Lopinot, Neal H. and William I. Woods
1993 Wood Overexploitation and the Collapse of Cahokia. In *Foraging and Farming in the Eastern Woodlands*, edited by C. Margaret Scarry, pp. 206–231. University Press of Florida, Gainesville.

Lopinot, Neal H., Joseph L. Harl, and Joseph M. Nixon
1987 *Archaeological Investigations at the Riverside Site (23SL481), Southern St. Louis County, Missouri*. Archaeological Survey, University of Missouri, St. Louis Research Report 52.

Long, S. H.
1823 *Account of an Expedition from Pittsburgh to the Rocky Mountains, Performed in the Years 1819, 1820*. Longman, Hurst, Rees, Orme, and Brown, London.

Lopinot, Neal H., Michael D. Connor, Jack H. Ray, and Jeffrey K. Yelton
1998 *Prehistoric and Historic Properties on Mitigation Lands, Horseshoe Lake Peninsula, Madison County, Illinois*. St. Louis District U.S. Army Corps of Engineers Historic Properties Management Report 56. Center for Archaeological Research, Southwest Missouri State University, Springfield.

Lovell, Nadia
1998 Introduction. In *Locality and Belonging*, edited by Nadia Lovell, pp. 1–24. Routledge, New York

Low, Setha M. and Denise Lawrence-Zúñiga
2003 Locating Culture. In *The Anthropology of Space and Place: Locating Culture*, edited by Setha M. Low and Denise Lawrence-Zúñiga, pp. 1–48. Blackwell, Malden.

Lynott, Mark J., Hector Neff, James E. Price, James W. Cogswell, and Michael D. Glascock.
2000 Inferences about Prehistoric Ceramics and People in Southeast Missouri: Results of Ceramic Compositional Analysis. *American Antiquity* 65(1):103–126.

Maceachern, Scott
2002 Beyond the belly of the house: Space and Power around the Mandara Mountains. *Journal of Social Archaeology* 2(2): 197–219.

Machiran, Robin, John Klein, and Joe Harl
2010 *Data Recovery Investigations at the Alexander Jacob Site (11MS2288) in Granite City, Illinois*. Report prepared by Archaeological Research Center of St. Louis, Inc. for the Illinois Historic Preservation Agency, Springfield.

Marcus, Joyce
1973 Territorial Organization of the Lowland Classic Maya. *Science* 180(4089):911–916.

McElrath, Dale L. and Fred A. Finney
1987 *The George Reeves Site*. American Bottom Archaeology, FAI–270 Site Reports Volume 15. University of Illinois Press, Urbana.

McElrath, Dale L., Joyce A. Williams, Thomas O. Maher, and Michael C. Meinkoth
1987 *Emergent Mississippian and Mississippian Communities at the Radic Site (11MS584)*. American Bottom Archaeology, FAI–270 Site Reports Volume 17. University of Illinois Press, Urbana.

McGuire, Randall H.
1996 The Limits of World Systems Theory for the Study of Prehistory. In *Prehistoric World Systems in the Americas*, edited by Peter N. Peregrine and Gary M. Feinman, pp. 51–64. Prehistory Press, Madison.

Mehrer, Mark W.
1995 *Cahokia's Countryside: Household Archaeology, Settlement Patterns, and Social Power*. Northern Illinois University Press, DeKalb.

Mehrer, Mark W. and James M. Collins
1995 Household Archaeology at Cahokia and its Hinterlands. In *Mississippian Communities and Households*, edited by John D. Rogers and Bruce D. Smith, pp. 32–57. University of Alabama Press, Tuscaloosa.

Milner, George R.
1983 *The Turner and DeMange Sites*. American Bottom Archaeology, FAI–270 Site Reports Volume 4. University of Illinois Press, Urbana.
1984a *The Robinson's Lake Site*. American Bottom Archaeology, FAI–270 Site Reports Volume 10. University of Illinois Press, Urbana.
1984b *The Julien Site*. American Bottom Archaeology, FAI–270 Site Reports Volume 7. University of Illinois Press, Urbana.
1985 Cultures in Transition:The Late Emergent Mississippian and Mississippian Periods in the American Bottom, Illinois. In *The Emergent Mississippian: Proceedings of the Sixth Mid-South Archaeological Conference June 6–9, 1985*, edited by Richard A. Marshall, pp. 194–211. Cobb Institute of Archaeology Occasional Papers 87–01. Mississippi State University, Mississippi State.

1990 The Late Prehistoric Cahokia Cultural System of the Mississippi River Valley: Foundations, Florescence, and Fragmentation. *Journal of World Prehistory* 4(1):1–43.
1991 American Bottom Mississippian Culture: Internal Developments and External Relations. In *New Perspectives on Cahokia: Views from the Periphery*, edited by James B. Stoltman, pp. 29–47. Monographs in World Archaeology 2. Prehistory Press, Madison.
1996 Development and Dissolution of a Mississippian Society in the American Bottom, Illinois. In *Political Structure and Change in the Prehistoric Southeastern United States*, edited by John F. Scarry, pp. 27–52. University Press of Florida, Gainesville.
2006 *The Cahokia Chiefdom: The Archaeology of a Mississippian Society*. University Press of Florida, Gainesville.

Milner, George R. and Sissel Schroeder
1999 Mississippian Sociopolitical Systems. In *Great Towns and Regional Polities in the Prehistoric American Southwest and Southeast*, edited by Jill E. Neitzel, pp. 95–107. University of New Mexico Press, Albuquerque.

Morgan, Lewis Henry
1965 (1881) *Houses and House–life of the American Aborigines*. University of Chicago Press, Chicago.

Morton, Christopher
2007 Remembering the House: Memory and Materiality in Northern Botswana. *Journal of Material Culture* 12(2):157–179.

Muller, Jon
1978 The Kincaid System: Mississippian Settlement in the Environs of a Large Site. In *Mississippian Settlement Patterns*, edited by Bruce D. Smith, pp. 269–292. Academic Press, New York.

Muller, Jon and Jeanette E. Stephens
1991 Mississippian Sociocultural Adaptation. In *Cahokia and the Hinterlands: Middle Mississippian Cultures of the Midwest*, edited by Thomas E. Emerson and R. Barry Lewis, pp. 297–310. University of Illinois Press, Urbana.

Munson, Patrick J.
1971 *An Archaeological Survey of the Wood River Terrace and Adjacent Bottoms and Bluffs in Madison County, Illinois*. Reports of Investigations 21 (Part 1). Illinois State Museum, Springfield.

Nanoglou, Stratos
2008 Building Biographies and Households: Aspects of community life in Neolithic northern Greece. *Journal of Social Archaeology* 8(1):139–160.

Norberg-Schulz, Christian
1971 *Existence, Space & Architecture*. Praeger Publishers, Santa Barbara.

Norris, Terry
1975 Horseshoe Lake State Park Archaeological Survey. Survey report submitted to the Illinois State Museum and Cahokia Mound State Park.

O'Brien, Patricia
1972 *A Formal Analysis of Cahokia Ceramics from the Powell Tract*. Illinois Archaeological Survey Monograph No. 3. Illinois Archaeological Survey, Urbana.

Ortner, Sherry B.
2001 Commentary: Practice, Power, and the Past. *Journal of Social Archaeology* 1(2):271–278.

Ozuk, Steven J.
1987 Patrick Phase Ceramics. In *The Range Site: Archaic Through Late Woodland Occupations*, by John E. Kelly, Andrew C. Fortier, Steven J. Ozuk and Joyce A. Williams, pp. 230–304. American Bottom Archaeology FAI–270 Site Reports Volume 16. University of Illinois Press, Urbana.
1990a Dohack Phase Ceramics. In *The Range Site 2: The Emergent Mississippian Dohack and Range Phase Occupations*, by John E. Kelly, Steven J. Ozuk, and Joyce A. Williams. American Bottom Archaeology FAI–270 Site Reports Vol. 20. University of Illinois Press, Urbana.
1990b Range Phase Ceramics. In *The Range Site 2: The Emergent Mississippian Dohack and Range Phase Occupations*, by John E. Kelly, Steven J. Ozuk, and Joyce A. Williams, pp. 387–448. American Bottom Archaeology FAI–270 Site Reports Volume 20. University of Illinois Press, Urbana.
Parker Pearson, Michael and Colin Richards, editors
1994 *Architecture and Order: Approaches to Social Space*. Routledge, London.

Parsons, Jeffrey R.
1972 Archaeological Settlement Patterns. *Annual Review of Anthropology* 1:127–150.

Pauketat, Timothy R.
1993 *Temples for Cahokia Lords: Preston Holder's 1955-1956 Excavations of Kunnemann Mound.* University of Michigan, Museum of Anthropology Memoir 26. Ann Arbor.
1994 Ascent *of Chiefs: Cahokia and Mississippian Politics in Native North America*. University of Alabama Press, Tuscaloosa.
1996 AG Church Site Ceramics: Clues to Community Change. *Illinois Archaeology* 8(1 and 2):85–116.
1997 Cahokian Political Economy. In *Cahokia: Domination and Ideology in the Mississippian World*, edited by Timothy R. Pauketat and Thomas E. Emerson, pp. 30–51. University of Nebraska Press, Lincoln.

1998a *The Archaeology of Downtown Cahokia: The Tract 15A and Dunham Tract Excavations*. Illinois Transportation Archaeological Research Program, Studies in Archaeology 1, University of Illinois, Urbana.
1998b Refiguring the Archaeology of Greater Cahokia. *Journal of Archaeological Research* 6(1):45–89.
2000a Politicization and Community in the Pre-Columbian Mississippian Valley. In *The Archaeology of Communities: A New World Perspective,* edited by Marcello A. Canuto and Jason Yaeger, pp. 16–43. Routledge, London.
2000b The Tragedy of the Commoners. In *Agency in Archaeology*, edited by Marcia-Anne Dobres and John E. Robb, pp. 113–129. Routledge, London.
2001 A New Tradition in Archaeology. In *The Archaeology of Traditions: Agency and History Before and After Columbus*, edited by Timothy R. Pauketat, pp. 1–16. University Press of Florida, Gainesville.
2002 A Fourth-Generation Synthesis of Cahokia and Mississippianization. *Midcontinental Journal of Archaeology* 27:149–170.
2003 Resettled Farmers and the Making of a Mississippian Polity. *American Antiquity* 68:39–66.
2004 *Ancient Cahokia and the Mississippians*. Cambridge University Press, Cambridge.
2007 *Chiefdoms and Other Archaeological Delusions*. AltaMira Press, Walnut Canyon.

Pauketat, Timothy R. and Susan M. Alt
2003 Mounds, Memory, and Contested Mississippian History. In *Archaeologies of Memory*, edited by Ruth M. Van Dyke and Susan E. Alcock, pp. 151–179. Blackwell, Oxford.
2004 The Making and Meaning of a Mississippian Axe-head Cache. *Antiquity* 78:779–797.
2005 Agency in a Postmold? Physicality and the Archaeology of Culture–Making. *Journal of Archaeological Method and Theory* 12(3):213–236.

Pauketat, Timothy R. and Thomas E. Emerson
1991 The Ideology of Authority and the Power of the Pot. *American Anthropologist* 93 (4):919-941.
1997 *Cahokia: Domination and Ideology in the Mississippian World*. University of Nebraska Press, Lincoln.
1999 The Representation of Hegemony as Community at Cahokia. In *Material Symbols: Culture and Economy in Prehistory*, edited by John E. Robb, pp. 302–317. Occasional Paper No. 26, Center for Archaeological Investigations, Southern Illinois University, Carbondale.
2008 Star Performances and Cosmic Clutter. *Cambridge Archaeological Journal* 18 (1), 78–85.

Pauketat, Timothy R. and Brad Koldehoff
2002 Cahokian Ritual and the Ramey Field: New Insights from Old Collections. *Southeastern Archaeology* 21:79–91.

Pauketat, Timothy R., Mark A. Rees, and Stephanie L. Pauketat
1998 *An Archaeological Survey of the Horseshoe Lake State Park, Madison County, Illinois*. Illinois State Museum Reports of Investigations No. 55. Illinois State Museum Society, Springfield.

Pauketat, Timothy R., Lucretia S. Kelly, Gayle J. Fritz, Neal H. Lopinot, Scott Elias, and Eve Hargrave
2002 The Residues of Feasting and Public Ritual at Early Cahokia. *American Antiquity* 67:257–279.

Paynter, Robert and Randall H. McGuire
1991 The Archaeology of Inequality: Material Culture, Domination, and Resistance. In *The Archaeology of Inequality*, edited by Randall H. McGuire and Robert Paynter, pp. 1–24. Blackwell, Cambridge.

Peregrine, Peter N.
1992 *Mississippian Evolution: A World–System Perspective*. Monographs in World Archaeology No. 9. Prehistory Press, Madison.
1996 Archaeology and World–Systems Theory. *Sociological Inquiry* 66(4):486–495.
1999 Legitimation Crisis in Prehistoric Worlds. In *World–Systems Theory in Practice: Leadership, Production, and Exchange*, edited by Nick P. Kardulias, pp. 37–52. Lanham, Littlefield.

Peregrine, Peter N. and Gary M. Feinman
1996 *Pre-Columbian World Systems*. Monographs in World Archaeology No. 26. Prehistory Press, Madison.

Perino, Gregory
1971 The Mississippian Component at the Schild Site (No. 4), Greene County, Illinois. In *Mississippian Site Archaeology in Illinois, Vol. 1*. Illinois Archaeological Survey Bulletin, No. 8. Urbana.

Plog, Stephen
1990 Sociopolitical Implications of Stylistic Variation in the American Southwest. In *The Uses of Style in Archaeology*, edited by Margaret W. Conkey and Christine A. Hastorf, pp. 61–72. Cambridge University Press, New York.

Porter, James W.
1969 The Mitchell Site and Prehistoric Exchange System at Cahokia. In *Explorations into Cahokia Archaeology*, edited by Melvin L. Fowler, pp. 137–164. Illinois Archaeological Survey Bulletin No. 7. Urbana.
1974 Cahokia Archaeology as Viewed from the Mitchell Site: A Satellite Community at A.D. 1150–1200. Unpublished Ph.D. dissertation, Department of Anthropology, University of Wisconsin, Milwaukee.

1985 Thin Section Analysis of Ceramics. In *The Robinson's Lake Site*, by George R. Milner. American Bottom Archaeology FAI–270 Site Reports, Vol. 10, pp. 133–170. University of Illinois Press, Urbana.

Porter, James W. and Jean Linder
1974 An Archaeological Survey of the Mississippi Valley in St. Clair, Monroe, and Randolph Counties. In *Preliminary Report of the 1973 Historic Sites Survey Archaeological Reconnaissance of Selected Areas in the State of Illinois*, pp. 28–34. Illinois Archaeological Survey, Urbana.

Preucel, Robert W. and Lynn Meskell
2007 Places. In *A Companion to Social Archaeology*, edited by Lynn Meskell and Robert W. Preucel, pp. 215–229. Blackwell, Malden.

Rapoport, Amos
1969 *House Form and Culture*. Prentice–Hall, Englewood Cliffs.

Renfrew, Colin
1986 Introduction: Peer–Polity Interaction and Sociopolitical Change. In *Peer–Polity Interaction and Sociopolitical Change*, edited by Colin Renfrew and John F. Cherry, pp. 1–18. Cambridge University Press, New York.

Reynolds, John
1879 *Reynolds' History of Illinois My Own Times: Embracing also the History of My Life.* Chicago Historical Society, Ferguson Printing Company, Chicago.

Richards, John D.
2007 Context and Process: Red–Slipped Pottery in Cahokia's Northern Hinterlands. *Illinois Archaeology* 19:1–26.

Robin, Cynthia
2002 Outside of houses: The practices of everyday life at Chan Nòohol, Belize. *Journal of Social Archaeology* 2002 2(2): 245–268.

Robin, Cynthia and Nan A. Rothschild
2002 Archaeological ethnographies: Social dynamics of outdoor space. *Journal of Social Archaeology* 2(2):159–172.

Sackett, James R.
1990 Style and Ethnicity in Archaeology: The Case for Isochrestism. In *The Uses of Style in Archaeology*, edited by Margaret W. Conkey and Christine A. Hastorf, pp. 32–43. Cambridge University Press, New York.

Scarry, John F.
2001Resistance and Accommodation in Apalachee Province. In *The Archaeology of Traditions: Agency and History Before and After Columbus*, edited by Timothy R. Pauketat, pp. 34–57. University of Florida Press, Gainesville.

Schortman, Edward M.
1989 Interregional Interaction in Prehistory: The Need for a New Perspective. *American Antiquity*, 54(1):52–65.

Schroeder, Sissel
1997 Place, Productivity, and Politics: The Evolution of Cultural Complexity in the Cahokia Area. Unpublished Ph.D. dissertation. Department of Anthropology, Pennsylvania State University, State College.
2004 Power and Place: Agency, Ecology, and History in the American Bottom, *Illinois Antiquity* 78:821–827.

Silliman, Stephen
2001 Agency, Practical Politics and the Archaeology of Culture Contact. *Journal of Social Archaeolog*y 1(2):190–209.

Simon, Mary L.
2002 Red Cedar, White Oak, and Bluestem Grass: The Colors of Mississippian Construction. *Midcontinental Journal of Archaeology* 27(2):273–308.

Smith, Adam T.
2003 *The Political Landscape: Constellations of Authority in Early Complex Polities*. University of California Press, Berkeley.

Smith, Carol A.
1975 Examining Stratification Systems Through Peasant Marketing Arrangements: An Application of Some Models from Economic Geography. *Man* 10(1):95–122.

Smith, Bruce D.
2007 Preface to the New Edition. In *The Mississippian Emergence*, edited by Bruce D. Smith, pp. xix–xxxi. University of Alabama Press, Tuscaloosa.

Stahlman, Kathleen and James Mertz
2006 Establishing the Platform: Ongoing Investigating at the Washausen Site, a Small Pulcher Tradition Mound Center. Paper presented at the 63rd Annual Meeting of the Southeastern Archaeological Conference, Little Rock.

Stahlman, Kathleen, Jarrod Burks, John Kelly, and Toi Saale
2004 Washausen: Recent Investigations at a Small Pulcher Tradition Mound Center and Its Implications on the Emergence of the Mississippian Tradition. Paper presented at the 61st Annual Meeting of the Southeastern Archaeological Conference, Saint Louis.

Stein, Gil J.
2001 “Who was King? Who was Not King?”: Social Group Composition and Competition in Early Mesopotamian State Societies. In *From Leaders to Rulers,* edited by Jonathan Haas, pp. 205–231. Kluwer Academic/Plenum Publishers, New York.

Stone, Tammy
1999 The Chaos of Collapse: Disintegration and Reintegration of Inter-regional Systems. *Antiquity* 73(279):110–118.

Stone-Miller, Rebecca
1995 *Art of the Andes: From Chavín to Inca*. Thames and Hudson, London.

Strezewski, Michael
2009 The Concept of Personhood in a Mississippian Society. *Illinois Archaeology* 21:166–190.

Szuter, Christine R.
1979 *The Schlemmer Site: A Late Woodland–Mississippian Site in the American Bottom*. Unpublished Master’s Thesis, Department of Anthropology, Loyola University, Chicago.

Thomas, Julian
1999 Time, Culture and Identity: An Interpretive Archaeology. Routledge, New York.
2001 Archaeologies of Place and Landscape. In *Archaeological Theory Today*, edited by Ian Hodder, pp. 165–186. Polity Press, Cambridge.

Thomas, Jamie A.
2004 The Westpark Site (11MO96): Late Woodland and Emergent Mississippian Occupations in a Selected Household Cluster. Paper presented at the 61st Annual Southeastern Archaeological Conference, Saint Louis.

Tilley, Christopher
1994 *A Phenomenology of Landscape: Places, Paths and Monuments*. Berg, Oxford.
2004 From Body to Place to Landscape: A Phenomenological Perspective. In *The Materiality of Stone: Explorations in Landscape Phenomenology: 1*, edited by Christopher Tilley, pp. 1–31. Berg, New York.

Titterington, P. F.
1935 Certain Bluff Mounds of Western Jersey County, Illinois. *American Antiquity* 1:6–46.
1946 Four Diorite Spuds from Jersey County, Illinois. *Journal of the Illinois State Archaeological Society* 4(1):6–7.

Tooker, Deborah E.
2004 Modular Modern: Shifting Forms of Collective Identity among the Akha of Northern Thailand. *Anthropological Quarterly* 77(2):243–288.

Trigger, Bruce G.
1967 Settlement Archaeology. Its Goals and Promise. *American Antiquity* 32(2):149–160.
2000 *A History of Archaeological Thought*. Cambridge University Press, Cambridge.

Van Dyke, Ruth M.
2004 Memory, Meaning, and Masonry: The Late Bonito Chacoan Landscape. *American Antiquity* 69(3):413-431

Van Dyke, Ruth M. and Susan E. Alcock, editors
2003 *Archaeologies of Memory.* Blackwell, Oxford.

Van Gijseghem, Hendrik and Kevin J. Vaughn
2008 Regional Integration and the Built Environment in Middle–Range Societies: Paracas and Early Nasca Houses and Communities. *Journal of Anthropological Archaeology* 27(1):111–130.

Vogel, Joseph O.
1964 *A Preliminary Report on the Analysis of Ceramics from the Cahokia Area at the Illinois State Museum*. Illinois State Museum, Springfield.
1975 Trends in Cahokia Ceramics: Preliminary Study of the Collections from Tracts 15A and 15B. In *Perspectives in Cahokia Archaeology*, edited by James A. Brown, pp. 32–125. Illinois Archaeological Survey Bulletin no. 10. University of Illinois, Urbana.

Wallerstein, Immanuel
1974 *The Modern World–System Volume I: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*. Academic Press, New York.

Walthall, John A.
1981 *Galena and Aboriginal Trade in Eastern North America*. Illinois State Museum Scientific Papers 17, Springfield.

Walz, Gregory R., Brian Adams, Jacqueline M. McDowell, Paul P. Kreisa, Kevin P. McGowan, Kristin Hedman, and Cynthia L. Balek
1997 The Stemler Bluff Site. *Archaeological Investigations For the Relocation of Valmeyer, Monroe County, Illinois Volume 3:*. Public Service Archaeology Program Research Report No. 28. University of Illinois, Urbana.

Watts, Elizabeth L. and Jeffrey D. Kruchten
2010 Moving Objects, Moving People: Non-Local Pottery at East St. Louis. Paper presented at the 67th Annual Meeting of the Southeastern Archaeological Conference, Lexington, Kentucky.

Whalley, Lucy A.
1984 Plant Remains from the Stirling Phase. In *The BBB Motor Site*, edited by Thomas E. Emerson and Douglas K. Jackson, pp. 321–335. American Bottom Archaeology, FAI–270 Site Reports 6. University of Illinois Press, Urbana.

White, William P., Sissel Johannessen, Paula G. Cross, and Lucretia S. Kelly
1984 Environmental Setting. In *American Bottom Archaeology: A Summary of the FAI–270 Project Contribution to the Culture History of the Mississippi River Valley*, edited by Charles J. Bareis and James W. Porter, pp. 15–33. University of Illinois Press, Champaign.

Wiessner, Polly
1990 Is There a Unity to Style? In *The Uses of Style in Archaeology*, edited by Margaret W. Conkey and Christine A. Hastorf, pp. 105–112. Cambridge University Press, New York.

Wild, J. C.
1841 *The Valley of the Mississippi Illustrated in a Series of Views.* Edited by Lewis Foulk Thomas. Chambers and Knapp, Saint Louis.

Wilson, Gregory D.
1998 An Investigation of Early Mississippian Resistance in the American Bottom. Unpublished Master's thesis, Department of Anthropology, University of Oklahoma, Norman.
1999 The Production and Consumption of Mississippian Fineware in the American Bottom. *Southeastern Archaeology* 18(2):98–109.
2010 Community, Identity, and Social Memory at Moundville. American Antiquity 75(1):3-18.

Wittry, Warren L. and Joseph O. Vogel
1962 Illinois State Museum Projects. In *American Bottoms Archaeology*, July 1, 1961–June 30, 1962, edited by Melvin L. Fowler, pp. 14–30. Illinois Archaeological Survey, Urbana.

Wittry, Warren L., John C. Arnold, Charles O. Witty, and Timothy R. Pauketat
1994 *The Holdener Site: Late Woodland, Emergent Mississippian, and Mississippian Occupations in the American Bottom Uplands*. American Bottom Archaeology, FAI–270 Site Reports 26. University of Illinois Press, Urbana.

Wolforth, Thomas
1992 *Archaeological Investigations at the Greenhouse Site (11MO140) Monroe County, Illinois*. Resource Investigation Program Research Reports No. 39. Department of Anthropology, University of Illinois, Urbana.

Yaeger, Jason
2003 Untangling the Ties that Bind: The City, the Countryside, and the Nature of Maya Urbanism at Xunantunich, Belize. In *The Social Construction of Ancient Cities*, edited by Monica L. Smith, pp. 121–155. Smithsonian Institution Press, Washington.

Yaeger, Jason and Marcello A. Canuto
2000 Introducing an Archaeology of Communities. In *The Archaeology of Communities: A New World Perspective*, edited by Marcello A. Canuto and Jason Yaeger, pp. 1–15. Routledge, New York.

Yoffee, Norman
2005 *Myths of the Archaic State: Evolution of the Earliest Cities, States, and Civilizations*. Cambridge University Press, Cambridge.

Zelin, Alexey
n.d. Ceramics. In *The Fish Lake Site: Patrick Phase Occupation*, edited by Andrew C. Fortier. Illinois State Archaeological Survey, University of Illinois, Urbana.

APPENDIX A: SITE LISTS

Table A.1. Excavated Site Sample.

Pulcher Tradition

	Site Number	TLW2	Lohmann	TLW2 type	Lohmann type	other	Excavated	Reference
Dickneite	11MO785	Y	Y	indet	indet	-	*ina*	Bailey 2004
Divers	11MO28	Y	**Y**	Village	farmstead	-	tested	Freimuth 2010
Fish Lake	11MO608	Y	Y	hamlet	farmstead?	-	large scale	-
George Reeves	11S650	Y	Y	hamlet	farmstead	-	large scale	McElrath et al. 1987
Maeys	11MO71	Y	Y	mounds?	mounds	-	tested	Porter and Linder 1974
Pulcher	11MO13/11S40	Y	Y	Village?	farmstead?	-	tested	Freimuth 1974; Griffin 1977
Range	11S47	Y	**Y**	Village	farmstead	-	large scale	Kelly et al. 2007; Hanenberger 2003
Stemler Bluff	11MO891	Y	**Y**	hamlet	farmstead	cemetery	large scale	Walz et al. 1997
Washausen	11MO305	Y	Y	Mounds?	Mounds	-	tested	-
Westpark	11MO96	Y	Y	hamlet		-	salvage	Kelly et al. 1989a; Thomas 2004
Caulk's Creek (MO)	-	Y?	-	indet	-	-	not excavated	Blake 1949
Hamill	11S62	Y	-	hamlet	-	-	salvage	Kelly et al. 1989a; Kelly 1990a
Marcus	11S631	Y	-	farmstead	-	-	large scale	Emerson and Jackson 1987
Marge	11MO99	Y	-	hamlet	-	-	large scale	Fortier 1996
Schlemmer	11S382	Y	-	hamlet	-	-	large scale	Szuter 1979; Berres 1984
Booster Station	11MO768	-	Y	-	farmsteads	-	tested	IAS Site Files
CO2	11MO594	-	Y	-	farmstead	-	large scale	Finney 1985
Deer Site	11MO1068	-	Y	-	cemetery	-	large scale	Bukowski and Koldehoff *n.d.* a
Greenhouse	11MO140	-	Y	-	indet	-	salvage	Wolforth 1992
Peiper	11MO31	-	Y	-	farmstead?	-	tested	-
Power Line	11MO598	-	Y	-	farmstead	-	large scale	Bukowski and Koldehoff *n.d.* b
Fenaia	11MO1	Y?	Y	indet	Mounds	-	tested	Hendrickson 1979

Late Bluff Tradition

	Site Number	TLW2	Lohmann	TLW2 type	Lohmann type	other	Excavated	Reference
Henderson	11MS803	Y?	-	indet	-	-	tested	Hawks 1985
BBB Motor	11MS595	Y	Y	hamlet	nodal farmstead	-	large scale	Emerson and Jackson 1984
Cahokia 15A	11MS2/11S34	Y	Y	village	Mounds	-	large scale	Hall 1975a; Pauketat 1998a; Vogel 1975
Cahokia 15B	11MS2/11S34	Y	Y	village	Mounds	-	large scale	Hall 1975a; Pauketat 1998a; Vogel 1975
Cahokia Dunham	11MS2/11S34	Y	Y	village	Mounds	-	large scale	Pauketat 1998a
Cahokia Merrell	11MS2/11S34	Y	Y	village	Mounds	-	large scale	Kelly 1980
Cahokia Powell	11MS2/11S34	Y	Y	hamlet	Mounds	-	large scale	O'Brien 1972
ESTL	11S706	Y	Y	Village	Mounds	-	large scale	Kruchten personal communication
Fingers	11S333	Y	Y	farmstead	farmstead	-	large scale	notes on file, ISAS ABFS
Horseshoe Lake	11MS343 or 37	Y	Y	hamlet?	Mound	-	tested	Gregg 1975; Pauketat et al. 1998
Janey B. Goode	11S1232	Y	Y	Village	farmstead	-	large scale	Galloy personal communication
Knoebel	11S71	Y	Y	Village	Small Village	-	large scale	Alt 2002; Bareis 1976

Table A.1. continued.

Late Bluff Tradition

	Site Number	TLW2	Lohmann	TLW2 type	Lohmann type	other	Excavated	Reference
Lambert Airport (MO)	-	Y	Y	hamlet?	village	cemetery	salvage	Blake 1955
Lohmann	11S49	Y	Y	indet	Mounds	-	large scale	Esarey and Pauketat 1992
Fill	*ina*	Y	Y	indet	indet		large scale	Porter 1974
Bridgeton (MO)	-	Y	-	indet	-	-	salvage	Wright 1986
Morrison	*11S1548*	Y	-	Mounds	-	-	tested	-
Radic	11MS584	Y	-	hamlet	-	-	large scale	McElrath et al. 1987
78th Street	11S821	-	Y	-	farmstead	-	large scale	Wells and Holley 1993; www.prairiearchaeology.com
Backward Glance	11S1619	-	Y	-	farmstead	-	tested	Galloy 2004
Cahokia ICT-II	11MS2/11S34	-	Y	-	Mounds	-	large scale	Collins 1990; Holley
Cahokia Mound 72	11MS2/11S34	-	Y	-	Mounds	-	large scale	Fowler et al. 1999
Cahokia Submound 51	11MS2/11S34	-	Y	-	Mounds	-	large scale	Pauketat et al. 2002
Emerald	11S1	-	Y	-	Mounds	-	tested	Koldehoff et al. 1993
Lillie	11MS662	-	Y	-	farmstead	cemetery	large scale	Terry personal communication
Liz's Eye	11S886	-	Y	-	farmstead	-	tested	Galloy 2004
New Whiteside School	11S1415	-	Y	-	sm. Village	farmstead	tested	Kelly 2000
Old Man 3	11S542	-	Y	-	farmstead	-	salvage	Betzenhauser 2005
Olszewski	11S465	-	Y	-	farmstead	-	large scale	Hanenberger 1990
Pfeffer	11S204	-	Y	-	Mounds	-	large scale	notes on file, ISAS ABFS and University of Illinois, Urbana
Pinga's Pup	11MS1970	-	Y	-	farmstead	-	large scale	Galloy 2003
Orville Seibert	11S730	-	Y	-	farmstead	-	large scale	Betzenhauser *n.d.*
Turner	11S50	-	Y	-	farmstead	-	large scale	Milner 1983
Willoughby	11MS610	-	Y	-	farmstead	-	large scale	Jackson 1990a
Charles Hytla	11S1161	-	Y	-	farmstead	-	large scale	notes on file, University of Illinois, Urbana
Curtiss Steinberg Road	11S823	-	Y	-	farmstead	cemetery	large scale	Gujilde and Hargrave 2009
Determann	11MS1060	-	Y	-	farmstead	-	large scale	Jackson 1993
Esterlein	11MS598	-	Y	-	farmstead	-	large scale	Jackson 1990b
G. Pinch A and B	11S815	-	Y	-	farmstead	-	large scale	Holley et al. 2000
Heberer	11S595	-	Y	-	farmstead	-	tested	notes on file, University of Illinois, Urbana
J. Sprague A, C	11S238	-	Y	-	farmstead	-	large scale	Holley et al. 2000
James Faust J	11S776	-	Y	-	farmstead	-	large scale	Holley et al. 2000
Julien	11S63	-	Y	-	farmstead	-	large scale	Milner and Williams 1984
Knoebel South	11S816	-	Y	-	cemetery	farmstead	large scale	Holley et al.
Lienesch	11S67	-	Y	-	farmstead	-	salvage	Bareis 1972
Cahokia Monks Mound[1]	11MS2/11S34	Y	Y	village	Mounds	-	tested	Williams 1975
High Prairie	11S992	Y	Y	small village	Small Village	tested	tested	Koldehoff 1989; Wilson 1998
Holdener	11S685	-	Y	-	farmstead	-	large scale	Wittry et al. 1994
		also TLW1	also Stirling					

Table A.2. Northern American Bottom Region Mississippian Transition Sites.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
MS1005	New Bridge	N/A	N/A	?	N/A	N/A	N
MS101	Schmidt Cemetery & Mounds	Y	N/A	N/A	?	N/A	N
MS1010	Leonard	N/A	N/A	?	Y	N/A	N
MS1016	Kolk	Y	N/A	N/A	?	N/A	N
MS1018	Seminary Road	N/A	N/A	?	N/A	N/A	N
MS1023	Penning	Y	N/A	?	N/A	N/A	N
MS103	St. Elizabeth Mound	N/A	N/A	N/A	?	N/A	N
MS1044	N/A	N/A	N/A	Y	?	N/A	N
MS1045	n/a	N/A	N/A	N/A	?	N/A	N
MS1047	N/A	N/A	N/A	?	Y	N/A	N
MS105	Grass	N/A	N/A	?	?	N/A	N
MS1050	N/A	N/A	N/A	N/A	Y	Y	N
MS1055	Eastport Plaza-Hilton	N/A	N/A	?	N/A	N/A	N
MS1060	Determann	N/A	N/A	N/A	Y	N/A	Y
MS109	Schmid	N/A	N/A	?	N/A	Y	Y
MS110	Willaredt	Y	N/A	?	?	N/A	Y
MS1108	John Fox	N/A	N/A	N/A	?	N/A	N
MS116	Davinroy East	N/A	N/A	N/A	Y	Y	N
MS117	Compton	N/A	N/A	N/A	?	N/A	N
MS118	Holding	Y	N/A	?	?	N/A	Y
MS1189	Adrian Vesper	Y	N/A	N/A	?	N/A	N
MS1190	Glade Vesper	Y	N/A	N/A	?	N/A	N
MS1194	n/a	N/A	N/A	N/A	Y	N/A	N
MS12	Vaughn Village	Y	N/A	Y	N/A	N/A	N
MS1204	Glenwood	N/A	N/A	?	Y	N/A	N
MS1217	n/a	N/A	N/A	N/A	?	N/A	N
MS1218	n/a	N/A	N/A	N/A	?	N/A	N
MS122	Kosten Cemetery	N/A	N/A	N/A	?	N/A	N
MS1242	n/a	N/A	N/A	N/A	Y	N/A	Y
MS1273	Goshen	N/A	N/A	?	?	N/A	Y
MS1274	Milk and Honey	N/A	N/A	?	?	N/A	Y
MS128	Nochta	Y	Y	N/A	Y	N/A	Y
MS129	Hendricks	Y	N/A	N/A	Y	N/A	N
MS1302	n/a	N/A	N/A	N/A	?	N/A	N
MS1305	Sampson Monument	Y	N/A	?	N/A	N/A	N
MS1306	Shale	Y	N/A	?	N/A	N/A	N
MS1307	Harmann	Y	N/A	?	?	N/A	N
MS1310	N/A	N/A	N/A	?	N/A	N/A	N
MS1315	Canteen Lake #2	N/A	N/A	?	N/A	N/A	N
MS1316	Aufderheide	N/A	N/A	Y	N/A	N/A	N
MS1317	Sunflower	N/A	N/A	Y	N/A	Y	N
MS132	Holsinger Cemety	N/A	N/A	N/A	?	N/A	N
MS1330	Scatter	N/A	N/A	N/A	?	N/A	Y
MS1349	Collman	N/A	N/A	N/A	?	N/A	N
MS1352	Kendall Site	N/A	N/A	?	N/A	N/A	N
MS1353	Cunningham Site	N/A	N/A	?	N/A	N/A	N
MS1355	Lechien Site	N/A	N/A	?	N/A	N/A	N
MS1359	n/a	N/A	N/A	?	?	N/A	N
MS1363	Moser	N/A	N/A	N/A	?	N/A	N

Table A.2. continued.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
MS1365	Union	Y	N/A	?	N/A	N/A	N
MS1369	N/A	N/A	N/A	?	?	N/A	N
MS1371	n/a	N/A	N/A	?	N/A	N/A	N
MS1373	n/a	N/A	N/A	?	N/A	N/A	N
MS1375	Nasholin Site	N/A	N/A	?	?	N/A	N
MS1376	n/a	N/A	N/A	?	N/A	N/A	N
MS1385	N/A	N/A	N/A	Y	Y	N/A	N
MS1393	n/a	N/A	N/A	?	?	N/A	N
MS142	Kosten Site No. 2	N/A	N/A	N/A	?	N/A	N
MS143	Maag	N/A	N/A	Y	Y	N/A	N
MS1435	Refinery View	N/A	N/A	?	?	N/A	N
MS144	Ramada Inn	N/A	N/A	N/A	?	N/A	N
MS1452	N/A	N/A	N/A	?	?	N/A	N
MS146	Beyey Site #1	Y	N/A	?	N/A	N/A	N
MS1460	Sand Drive	N/A	N/A	Y	N/A	Y	Y
MS1461	Sandy Wind	N/A	N/A	Y	Y	N/A	N
MS1462	Shari's Sliver	N/A	N/A	Y	N/A	N/A	N
MS1464	Andrew Russell	N/A	N/A	Y	N/A	N/A	N
MS1465	Steinman	N/A	N/A	Y	N/A	N/A	N
MS1466	Dopuch	N/A	N/A	?	?	N/A	N
MS1467	Sunflower #2	N/A	N/A	N/A	?	N/A	N
MS1468	Scott Land	N/A	N/A	N/A	Y	N/A	N
MS147	Beyey Site #2	N/A	N/A	N/A	?	N/A	N
MS1470	Scott Spot	N/A	N/A	?	?	N/A	N
MS1471	Aufderheide Lane	N/A	N/A	?	?	Y	N
MS1472	Two Track House	N/A	N/A	?	?	N/A	N
MS1473	Marsh Boy	N/A	N/A	Y	N/A	N/A	N
MS1474	Discretion	N/A	N/A	?	?	N/A	N
MS1475	John Cowan	N/A	N/A	?	?	N/A	N
MS1476	Diamond Club	N/A	N/A	Y	N/A	N/A	N
MS1477	Zurkuhlen	N/A	N/A	?	?	N/A	N
MS1478	Gc Crater Minor	Y	N/A	Y	Y	N/A	N
MS1479	Gc Crater	N/A	N/A	?	?	N/A	N
MS1480	Francis Scott	N/A	N/A	?	?	N/A	N
MS1482	Bar Ren	N/A	N/A	Y	N/A	N/A	N
MS1483	Yellow Brick Road	N/A	N/A	?	?	N/A	N
MS1484	Noones	N/A	N/A	Y	N/A	Y	N
MS1485	Levi scott	N/A	N/A	Y	N/A	N/A	N
MS1486	Northeast	N/A	N/A	Y	N/A	N/A	N
MS1487	Daron Duke	N/A	N/A	?	?	N/A	N
MS1488	Rice-Babic	N/A	N/A	?	?	N/A	N
MS1489	Wein	N/A	N/A	?	?	N/A	N
MS1493	Islands End	N/A	N/A	Y	N/A	N/A	N
MS1494	Long Listeman	N/A	N/A	Y	?	N/A	N
MS1495	Miss Surprise	N/A	N/A	Y	N/A	N/A	N
MS1497	Sandy Pond	N/A	N/A	Y	?	N/A	N
MS1498	Ridge-in-the-Mist	N/A	N/A	?	?	N/A	N
MS1499	Colder	N/A	N/A	Y	N/A	N/A	N
MS1500	Wheats End	N/A	N/A	?	?	N/A	N

Table A.2. continued.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
MS1501	Npr	N/A	N/A	Y	N/A	N/A	N
MS1502	Slough Crossing	N/A	N/A	Y	N/A	N/A	N
MS1503	N/A	N/A	N/A	?	Y	N/A	N
MS1504	Ditch-and-Levee	N/A	N/A	Y	N/A	Y	N
MS1506	Parkside	N/A	N/A	?	?	N/A	N
MS1508	June Rain	N/A	N/A	Y	N/A	N/A	N
MS1509	Shair Williams	N/A	N/A	Y	N/A	N/A	N
MS1510	Borderlands	N/A	N/A	Y	Y	N/A	N
MS1513	Fruit Tree	N/A	N/A	?	?	N/A	N
MS1514	Sweet Flower	N/A	N/A	N/A	?	N/A	N
MS1515	Midsection	N/A	N/A	Y	N/A	N/A	N
MS1517	F.T. Norris	N/A	N/A	Y	N/A	N/A	N
MS1522	Walker's Island #5	N/A	N/A	Y	N/A	N/A	N
MS1523	Island House	N/A	N/A	Y	N/A	N/A	N
MS1524	Charles Listeman	N/A	N/A	Y	Y	N/A	N
MS1525	Seven Flake	N/A	N/A	Y	N/A	N/A	N
MS1527	Philip Listeman	N/A	N/A	Y	N/A	Y	N
MS1529	Roseland Place	N/A	N/A	Y	N/A	N/A	N
MS1530	McAdams	N/A	N/A	?	N/A	N/A	N
MS1548	Morrison	N/A	N/A	Y	N/A	N/A	Y
MS1553	N/A	N/A	N/A	?	?	N/A	N
MS1555	N/A	N/A	N/A	?	N/A	N/A	N
MS1556	Twernt	N/A	N/A	?	?	N/A	N
MS1558	Little Home	N/A	N/A	Y	N/A	N/A	N
MS1559	Hornet Wary	N/A	N/A	Y	N/A	N/A	N
MS1567	Timi Williams	N/A	N/A	Y	Y	N/A	N
MS1568	Frank Dorris	N/A	N/A	Y	N/A	N/A	N
MS1572	N/A	N/A	N/A	?	?	N/A	N
MS1574	Sta	N/A	N/A	Y	N/A	N/A	N
MS1575	Low Ditch	N/A	N/A	Y	N/A	N/A	N
MS1585	Levee Blip	N/A	N/A	N/A	?	?	N
MS1592	Geiger Count 7	N/A	N/A	N/A	?	N/A	N
MS1597	Carl Steinmann	N/A	N/A	N/A	?	N/A	N
MS1598	N/A	N/A	N/A	?	?	N/A	N
MS1647	N/A	N/A	N/A	?	?	N/A	N
MS1659	Richardson's Runway	N/A	N/A	?	N/A	N/A	N
MS1664	Center Grove	N/A	N/A	N/A	Y	Y	Y
MS1681	N/A	N/A	N/A	Y	N/A	N/A	N
MS1685	N/A	N/A	N/A	Y	N/A	N/A	N
MS1686	N/A	N/A	N/A	?	?	N/A	N
MS1687	Huckla	N/A	N/A	Y	?	N/A	N
MS1688	Catherine 1	N/A	N/A	?	?	N/A	N
MS1689	N/A	N/A	N/A	Y	N/A	N/A	N
MS1690	N/A	N/A	N/A	Y	N/A	N/A	N
MS1691	Glanzmann	N/A	N/A	Y	N/A	N/A	N
MS1692	N/A	N/A	N/A	?	?	N/A	N
MS1693	Catherine 2	N/A	N/A	Y	Y	N/A	N
MS1694	N/A	Y	N/A	?	Y	N/A	N
MS1697	N/A	N/A	N/A	?	Y	N/A	N

Table A.2. continued.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
MS1699	Dammermann	Y	N/A	N/A	Y	N/A	N
MS1703	N/A	N/A	N/A	?	N/A	N/A	N
MS1704	N/A	N/A	N/A	?	N/A	N/A	N
MS1705	N/A	N/A	N/A	?	?	N/A	N
MS1709	Loomis	Y	N/A	Y	N/A	N/A	N
MS1711	N/A	N/A	N/A	?	Y	N/A	N
MS1712	N/A	N/A	N/A	Y	N/A	N/A	N
MS1713	N/A	N/A	N/A	Y	N/A	N/A	N
MS1716	N/A	Y	N/A	Y	Y	Y	N
MS1717	N/A	N/A	N/A	?	N/A	N/A	N
MS1718	N/A	N/A	N/A	Y	N/A	N/A	N
MS1719	Cox	N/A	N/A	?	?	N/A	N
MS172	Bischoff Mound	N/A	N/A	Y	N/A	Y	N
MS1720	N/A	Y	N/A	Y	N/A	N/A	N
MS1721	N/A	Y	N/A	Y	Y	N/A	N
MS1723	N/A	N/A	N/A	?	Y	N/A	N
MS1724	Shockey	Y	N/A	?	N/A	N/A	N
MS1725	Norris's Ms-316	Y	N/A	?	N/A	Y	N
MS1726	N/A	N/A	N/A	?	N/A	N/A	N
MS1727	N/A	N/A	N/A	?	N/A	N/A	N
MS1730	N/A	N/A	N/A	?	N/A	N/A	N
MS1731	Manning Beems	Y	N/A	?	?	N/A	N
MS1732	N/A	Y	N/A	?	?	N/A	N
MS1733	N/A	N/A	N/A	Y	N/A	N/A	N
MS175	Southard	N/A	N/A	?	N/A	N/A	N
MS177	Edelhardt Meander	N/A	N/A	N/A	?	N/A	N
MS1778	Nad Enoob	Y	N/A	?	?	N/A	N
MS1802	Kate'S Point	Y	N/A	N/A	?	N/A	N
MS181	Kane Village	Y	Y	Y	N/A	N/A	Y
MS1854	N/A	N/A	N/A	?	?	N/A	N
MS1855	N/A	N/A	N/A	?	?	N/A	N
MS1856	N/A	Y	N/A	?	?	N/A	N
MS1857	N/A	N/A	N/A	N/A	?	N/A	N
MS1858	N/A	Y	N/A	?	N/A	N/A	N
MS1860	N/A	Y	N/A	N/A	?	N/A	N
MS1863	N/A	Y	N/A	N/A	?	N/A	N
MS1864	N/A	N/A	N/A	N/A	?	N/A	N
MS1867	N/A	Y	N/A	N/A	?	N/A	N
MS1869	N/A	Y	N/A	N/A	?	N/A	N
MS1871	N/A	N/A	N/A	N/A	?	N/A	N
MS1872	N/A	Y	N/A	?	?	N/A	N
MS1875	N/A	N/A	N/A	?	?	N/A	N
MS1877	N/A	N/A	N/A	?	?	N/A	N
MS1878	N/A	N/A	N/A	?	?	N/A	N
MS1879	N/A	N/A	N/A	?	?	N/A	N
MS1880	N/A	N/A	N/A	?	Y	N/A	N
MS1881	N/A	Y	N/A	?	?	N/A	N
MS1883	N/A	Y	N/A	?	N/A	N/A	N
MS1905	Isosceles Site	N/A	N/A	N/A	?	N/A	N

Table A.2. continued.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
MS1908	N/A	N/A	N/A	N/A	?	N/A	N
MS1918	N/A	N/A	N/A	?	N/A	N/A	N
MS1919	N/A	N/A	N/A	?	N/A	N/A	N
MS1923	N/A	N/A	N/A	?	N/A	N/A	N
MS1939	N/A	N/A	N/A	N/A	Y	N/A	N
MS1954	Mica site	N/A	N/A	N/A	?	N/A	N
MS1955	N/A	N/A	N/A	?	?	N/A	N
MS1959	Parks Site	N/A	N/A	N/A	?	N/A	N
MS1968	N/A	N/A	N/A	N/A	?	N/A	N
MS1970	Pinga's Pup	N/A	N/A	N/A	Y	N/A	Y
MS1983	Leprechaun Site	N/A	N/A	?	N/A	N/A	N
MS1992	Quicksilver Site	N/A	N/A	N/A	Y	Y	Y
MS2	Cahokia	Y	Y	Y	Y	Y	Y
MS20	Loyd	Y	Y	?	?	Y	N
MS2018	J-Ladybug Site	N/A	N/A	?	N/A	N/A	N
MS2032	Lucky Charms Site	N/A	N/A	?	N/A	N/A	N
MS2038	Oliver Anderson	N/A	N/A	?	?	N/A	Y
MS2054	Yollag Site	N/A	Y	?	?	N/A	N
MS2058	Hackethal Mound Site	N/A	N/A	?	Y	N/A	N
MS2069	N/A	N/A	N/A	N/A	?	N/A	N
MS2070	N/A	N/A	N/A	N/A	?	N/A	N
MS2086	N/A	N/A	N/A	Y	N/A	N/A	N
MS2087	Rathmeyer Mound	N/A	N/A	N/A	?	N/A	N
MS2088	N/A	N/A	N/A	N/A	Y	Y	Y
MS2099	N/A	N/A	N/A	N/A	?	N/A	N
MS21	Fox Hill	N/A	N/A	Y	Y	N/A	Y
MS2100	N/A	N/A	N/A	N/A	?	N/A	N
MS2101	N/A	N/A	N/A	N/A	?	N/A	N
MS2185	Miener Site #1	N/A	N/A	N/A	?	N/A	N
MS2187	N/A	N/A	N/A	N/A	?	N/A	N
MS2188	N/A	N/A	N/A	N/A	?	N/A	Y
MS2201	N/A	N/A	N/A	N/A	?	N/A	N
MS2210	Brackmann	N/A	N/A	N/A	?	N/A	N
MS2211	N/A	N/A	N/A	N/A	?	N/A	N
MS2236	Agnes Site	Y	N/A	?	?	N/A	N
MS2264	N/A	N/A	N/A	?	N/A	N/A	N
MS2271	N/A	N/A	N/A	?	?	N/A	N
MS2272	N/A	N/A	N/A	?	?	N/A	N
MS2288	FS-1	N/A	N/A	Y	Y	N/A	N
MS254	Moritz Wender 1	N/A	N/A	N/A	?	N/A	N
MS26	Klueter	Y	N/A	N/A	?	N/A	N
MS289	Ben and Edith Mersinger 1	N/A	N/A	N/A	?	N/A	N
MS299	Elemer Gindler	N/A	N/A	N/A	?	N/A	N
MS31	Poag Road	Y	N/A	?	N/A	N/A	N
MS32	Dida	N/A	N/A	?	?	N/A	N
MS330	E.J. Weinach 5	N/A	N/A	?	N/A	N/A	N
MS334	Walker's Island 1	N/A	N/A	Y	N/A	N/A	N
MS335	Walker's Island 2	N/A	N/A	Y	N/A	?	N
MS336	Harnish	N/A	N/A	Y	N/A	N/A	N

Table A.2. continued.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
MS345	Eckmann Island	Y	N/A	?	Y	N/A	N
MS368	Klenke & Schmidt	N/A	N/A	?	N/A	N/A	N
MS37	Horseshoe Lake Mound	N/A	N/A	Y	Y	Y	Y
MS38	Bishop	Y	N/A	?	N/A	N/A	N
MS40	Klug	N/A	N/A	?	?	N/A	N
MS42	Hartzel	Y	N/A	?	N/A	N/A	N
MS424	Black Poodle	N/A	N/A	N/A	Y	N/A	N
MS44	August Theis	N/A	N/A	N/A	?	N/A	N
MS46	McDonough	N/A	N/A	?	N/A	Y	N
MS460	Reget	N/A	N/A	N/A	Y	?	N
MS461	Elizabeth Niehaus	N/A	N/A	Y	N/A	N/A	N
MS462	Joseph Niehaus	N/A	N/A	Y	N/A	Y	N
MS463	Gun Club	N/A	N/A	N/A	?	N/A	N
MS464	House-Reese	N/A	N/A	?	N/A	Y	Y
MS4650	n/a						
MS477	Bay Pony	Y	N/A	?	N/A	N/A	N
MS481	C&NW RR	N/A	N/A	?	N/A	N/A	N
MS51	Schillinger	N/A	N/A	N/A	?	N/A	N
MS510	Pestle	N/A	N/A	N/A	?	N/A	N
MS52	C.C. Kane	Y	N/A	?	N/A	N/A	Y
MS529	Lange 3	N/A	N/A	?	N/A	N/A	N
MS53	Titchenal	Y	N/A	Y	N/A	N/A	N
MS530	Lange 4	N/A	N/A	?	N/A	N/A	N
MS531	Nut	N/A	N/A	?	?	N/A	N
MS542	Old Man #3	N/A	N/A	N/A	Y	N/A	Y
MS544	Forgotten #1	N/A	N/A	?	N/A	N/A	N
MS546	Forgotten 3	N/A	N/A	?	N/A	N/A	N
MS549	Sedlecek 3	N/A	N/A	N/A	?	N/A	N
MS551	Charlie M	Y	N/A	?	N/A	N/A	N
MS552	Composition A	N/A	N/A	?	?	N/A	N
MS562	Buzzy	N/A	N/A	?	N/A	N/A	N
MS582	Robinson's Lake	N/A	Y	Y	N/A	N/A	Y
MS584	Radic (G.N. Radic #1/4/5)	N/A	N/A	Y	N/A	Y	Y
MS591	Ida Magg #1	Y	N/A	?	N/A	N/A	Y
MS593	Watson Rouch #3/Rouch	N/A	N/A	N/A	?	N/A	N
MS595	BBB Motor	N/A	Y	Y	N/A	Y	Y
MS598	Esterlein	N/A	N/A	N/A	Y	Y	Y
MS602	n/a	N/A	N/A	Y	N/A	N/A	N
MS610	Willoughby	N/A	N/A	N/A	Y	N/A	Y
MS611	Judy'S Canal North	N/A	Y	Y	Y	N/A	N
MS612	Judy'S Canal South	Y	N/A	?	?	N/A	N
MS619	Thurnau	N/A	N/A	?	?	N/A	N
MS637	Barnhill's Farmstead	N/A	N/A	?	Y	N/A	N
MS639	Campbell	Y	N/A	N/A	Y	Y	N
MS642	Rise	N/A	N/A	N/A	?	N/A	N
MS662	Lillie	N/A	N/A	N/A	Y	N/A	Y
MS69	Gertrude Witte Mound N	N/A	N/A	N/A	?	N/A	N
MS726	K.H.	N/A	N/A	?	?	N/A	N
MS74	Witte Camp South	N/A	N/A	N/A	?	N/A	N

Table A.2. continued.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
MS754	Kunz	N/A	N/A	?	N/A	N/A	N
MS77	Shotgun	N/A	N/A	N/A	?	N/A	N
MS774	Sage Signifies	Y	N/A	?	?	N/A	N
MS776	Parrent	N/A	N/A	?	N/A	N/A	N
MS78	Sand Hill	N/A	N/A	N/A	?	N/A	N
MS79	Ratz	N/A	N/A	?	N/A	Y	N
MS8	Rosenburg	Y	N/A	?	?	N/A	N
MS80	Leveed Creek	Y	N/A	N/A	Y	N/A	N
MS803	Henderson	N/A	N/A	?	N/A	N/A	N
MS81	Mollenbrock	N/A	N/A	N/A	?	N/A	N
MS815	Gerald	N/A	N/A	?	N/A	N/A	N
MS816	Sieler & Ragsdale	N/A	N/A	?	N/A	N/A	N
MS84	Nichols	N/A	N/A	Y	Y	N/A	N
MS85	Mueller	N/A	N/A	Y	Y	N/A	N
MS86	Sanders	N/A	N/A	Y	?	N/A	N
MS862	n/a	N/A	N/A	N/A	?	N/A	N
MS863	n/a	N/A	N/A	N/A	?	N/A	N
MS867	n/a	N/A	N/A	N/A	?	N/A	N
MS870	Chris Primas	N/A	N/A	N/A	Y	N/A	N
MS872	n/a	N/A	N/A	N/A	?	N/A	N
MS875	N/A	N/A	N/A	?	N/A	N/A	N
MS878	n/a	N/A	N/A	N/A	?	N/A	N
MS88	Sugar Loaf Site No. 2	N/A	N/A	N/A	?	N/A	N
MS893	n/a	N/A	N/A	N/A	?	N/A	N
MS898	N/A	Y	N/A	?	Y	N/A	N
MS9	Gillham	N/A	N/A	N/A	?	Y	N
MS90	Harmon	N/A	N/A	?	Y	N/A	N
MS900	n/a	N/A	N/A	N/A	?	N/A	N
MS901	n/a	N/A	N/A	N/A	?	N/A	N
MS908	August Feldker	N/A	N/A	N/A	?	N/A	N
MS909	N/A	Y	N/A	?	N/A	N/A	N
MS92	Karlas	N/A	N/A	Y	N/A	N/A	N
MS928	Round Tripper	N/A	N/A	?	N/A	N/A	N
MS935	Forkeyville	N/A	N/A	?	N/A	N/A	N
MS94	Meek	N/A	N/A	N/A	?	N/A	N
MS940	Paul	N/A	N/A	?	N/A	N/A	N
MS946	Spur	N/A	N/A	?	N/A	N/A	N
MS95	Orchard	N/A	N/A	?	N/A	N/A	N
MS951	Joann	N/A	N/A	?	Y	N/A	N
MS957	H. Brush	N/A	N/A	N/A	?	N/A	N
MS97	Smith Lake	N/A	N/A	?	N/A	N/A	N
MS974	Heuer	N/A	N/A	?	N/A	N/A	N
MS976	R.H.	N/A	N/A	?	N/A	N/A	N
MS98	Sugar Loaf Village	N/A	N/A	?	N/A	N/A	N
MS984	Gun Club	N/A	N/A	?	N/A	N/A	N
MS99	Gehring Site	N/A	N/A	N/A	Y	N/A	N
MS998	Shaw	N/A	N/A	?	N/A	N/A	N
S1	Emerald Site	N/A	Y	Y	Y	Y	Y
S1001	Trailer Park	N/A	N/A	N/A	?	N/A	N

Table A.2. continued.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
S1002	Bizenberger	N/A	N/A	N/A	?	N/A	N
S1004	North Gate	N/A	N/A	N/A	?	N/A	N
S1006	Scott School North	N/A	N/A	N/A	?	N/A	N
S1009	Dusty Polo Site	N/A	N/A	N/A	Y	N/A	N
S1027	Hermon	N/A	N/A	N/A	?	N/A	N
S1029	N/A	N/A	N/A	N/A	Y	N/A	N
S1030	N/A	N/A	N/A	N/A	?	N/A	N
S1033	Weissert	N/A	N/A	Y	?	N/A	N
S1045	Edwards	N/A	N/A	N/A	?	N/A	N
S1062	Bostrom	Y	?	?	?	?	N
S1088	N/A	N/A	N/A	Y	Y	N/A	Y
S1103	N/A	N/A	N/A	N/A	Y	N/A	N
S1110	N/A	Y	N/A	N/A	Y	Y	N
S1111	N/A	Y	N/A	?	N/A	Y	N
S1112	N/A	Y	N/A	N/A	Y	Y	N
S1114	N/A	Y	N/A	?	Y	N/A	N
S1123	Chapel Hill	Y	N/A	?	N/A	N/A	N
S1126	Hovel	Y	Y	Y	N/A	N/A	Y
S1131	Grossmann	Y	N/A	N/A	Y	Y	Y
S1132	Viburnum	N/A	N/A	?	?	N/A	N
S1151	Powerline	Y	N/A	N/A	?	N/A	Y
S1156	Lebanon Avenue	N/A	N/A	?	N/A	N/A	N
S1157	Needle in a Haystack	N/A	N/A	N/A	?	N/A	N
S1160	Zone Buster Site	N/A	N/A	?	N/A	N/A	N
S1161	Charles Hytla	N/A	N/A	N/A	Y	N/A	Y
S1170	N/A	N/A	N/A	N/A	?	N/A	N
S1175	Barnes	N/A	N/A	N/A	?	N/A	N
S1176	Gaskills Buffalo Farm	N/A	N/A	N/A	?	N/A	N
S1177	Soccer	N/A	N/A	?	?	N/A	N
S1179	Wampler	Y	N/A	Y	Y	N/A	N
S1181	Keller	Y	N/A	N/A	?	N/A	N
S1184	Chasedawn	N/A	Y	N/A	N/A	N/A	N
S1185	Dawnshcase	N/A	N/A	N/A	?	N/A	N
S1194	Wpa Ditch	N/A	N/A	?	N/A	N/A	N
S1195	Charlie Scoured	Y	N/A	N/A	Y	N/A	N
S1197	Little Canteen Fan	N/A	N/A	N/A	?	N/A	N
S1198	Mees-Nochta	N/A	?	Y	?	?	Y
S1202	Wilke I	N/A	N/A	?	?	N/A	N
S1206	N/A	N/A	N/A	?	?	N/A	N
S1208	Oryza	Y	N/A	N/A	?	N/A	N
S1232	Janey B. Goode	Y	Y	Y	Y	Y	Y
S1240	Miller Farm #1	Y	Y	Y	Y	Y	N
S1241	Miller Farm #2	Y	Y	Y	Y	Y	N
S1298	Schwaegel Site	N/A	N/A	N/A	?	N/A	N
S1304	Obal's Ridge Site	N/A	N/A	N/A	?	N/A	N
S1308	Gaskil/Gabrina's Site	Y	N/A	N/A	?	N/A	N
S1309	Obal's Hill Site	Y	?	?	N/A	N/A	N
S1310	Kombrink Farm	Y	Y	Y	Y	Y	N
S1311	Obernefernum Hill Site	Y	?	?	N/A	N/A	N

Table A.2. continued.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
S1312	Wayne Anderson Farm Site	Y	N/A	Y	Y	N/A	N
S1313	Family Schwagel's Site	Y	N/A	N/A	Y	Y	N
S1314	East of K. K. Farm Site	Y	?	N/A	Y	N/A	N
S1315	Harold Kombrink Site	N/A	N/A	N/A	Y	N/A	N
S1316	Craig Shoal's Site	N/A	N/A	?	?	N/A	N
S1317	Ina Mantle's Ridges Site	Y	N/A	N/A	Y	N/A	N
S1318	Judy's Farmhouse Site	Y	Y	Y	?	?	N
S1330	Ogles Bluff Site	Y	Y	Y	Y	N/A	N
S1333	Off Hwy. 50 Site	Y	N/A	N/A	?	?	N
S1338	Late Entry	N/A	N/A	Y	Y	N/A	N
S1372	Bi-State VI	N/A	N/A	N/A	?	N/A	N
S1373	Bi-State VII	N/A	N/A	N/A	?	N/A	N
S1379	Fritz Kunze	Y	N/A	N/A	?	N/A	N
S1386	Kirby	Y	N/A	N/A	?	N/A	N
S1389	Guntown	N/A	N/A	Y	Y	Y	Y
S1397	N/A	N/A	N/A	N/A	?	N/A	N
S1399	N/A	N/A	N/A	N/A	Y	N/A	N
S1401	N/A	Y	N/A	N/A	Y	N/A	N
S1404	N/A	N/A	N/A	Y	N/A	N/A	N
S1435	Eriter 4	N/A	N/A	?	N/A	Y	N
S1445	Emma Frances Site	N/A	N/A	?	Y	N/A	N
S1446	Caseyville Senior Home #1	N/A	N/A	N/A	?	N/A	N
S1450	N/A	N/A	N/A	N/A	?	N/A	N
S1475	Summertooth	N/A	N/A	N/A	?	N/A	N
S1476	Yuki-Pooch	N/A	N/A	N/A	?	N/A	N
S1479	Tamarack	N/A	N/A	N/A	?	N/A	N
S1480	Stagger	N/A	N/A	?	N/A	N/A	N
S1487	Russell James	N/A	N/A	N/A	?	N/A	N
S1488	Winston-Hook	N/A	N/A	N/A	?	N/A	N
S1489	Lichtford	N/A	N/A	N/A	?	N/A	N
S1497	Anodyne	N/A	N/A	N/A	?	N/A	N
S1499	Sog	N/A	N/A	N/A	?	N/A	N
S1500	Stohlman	N/A	N/A	N/A	Y	N/A	N
S1501	Armored Schoolbus	N/A	N/A	N/A	?	N/A	N
S1502	MIBO	N/A	N/A	N/A	?	N/A	N
S1512	Isosceles Site	Y	N/A	?	?	N/A	N
S1551	Ste. Francois Green	N/A	N/A	N/A	?	N/A	N
S1575	Hoeflake	N/A	N/A	N/A	?	N/A	N
S1599	N/A	N/A	N/A	N/A	?	N/A	N
S1616	N/A	N/A	N/A	N/A	?	N/A	N
S1618	N/A	N/A	N/A	N/A	?	N/A	N
S1619	N/A	N/A	N/A	N/A	?	N/A	N
S1624	Bob Crocker	Y	N/A	N/A	?	N/A	Y
S1637	Southview 2	Y	N/A	N/A	?	N/A	N
S1654	Orchards 1	Y	N/A	N/A	?	N/A	N
S1655	Orchards 2	N/A	N/A	N/A	?	N/A	N
S1669	Lemen #4	N/A	N/A	N/A	?	N/A	N
S1694	Swisher #1	Y	N/A	N/A	?	N/A	N
S18	French Village	N/A	N/A	N/A	?	N/A	Y

Table A.2. continued.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
S204	William Pfeffer Site No.2	Y	N/A	N/A	Y	Y	Y
S238	J. Sprague	Y	N/A	N/A	Y	Y	Y
S241	E.J. Pfeifer 1	Y	N/A	?	?	N/A	N
S316	Axis	?	N/A	N/A	?	N/A	N
S321	Meyer	N/A	N/A	Y	Y	N/A	N
S329	Powdermill Creek	N/A	N/A	?	N/A	N/A	N
S333	Fingers	Y	Y	Y	Y	Y	Y
S34	Cahokia Mounds	Y	Y	Y	Y	Y	Y
S387	Gene Cove #1	Y	N/A	N/A	?	N/A	N
S389	Gene Cove #3	Y	N/A	N/A	N/A	Y	N
S39	Bunkum Road	Y	N/A	Y	Y	Y	Y
S427	Church Bell	Y	N/A	N/A	?	N/A	N
S428	Rooptayak	Y	N/A	N/A	?	N/A	N
S429	Old Canteen Creek	Y	N/A	N/A	?	N/A	N
S44	N/A	N/A	N/A	N/A	?	N/A	N
S447	Vincent de Mange	Y	N/A	?	?	N/A	N
S45	Forest Blvd./Spring Lake	N/A	N/A	Y	N/A	N/A	N
S465	Olszewski	Y	N/A	N/A	Y	Y	Y
S49	Lohmann	Y	Y	Y	Y	Y	Y
S491	N/A	N/A	N/A	?	N/A	N/A	N
S497	N/A	N/A	N/A	Y	?	Y	N
S50	Turner	N/A	N/A	N/A	Y	Y	Y
S596	Chevy Chase	Y	N/A	N/A	?	N/A	Y
S60	Crooked Lake	Y	N/A	?	?	N/A	N
S65	Bullfrog Station	N/A	N/A	?	N/A	N/A	N
S658	Edging	Y	N/A	N/A	Y	Y	Y
S67	Lienesch	N/A	N/A	N/A	Y	N/A	Y
S69	Faust	Y	Y	?	N/A	N/A	Y
S691	Cannon Hill	N/A	N/A	N/A	?	N/A	N
S706	Metro-East Mounds	Y	Y	Y	Y	Y	Y
S709	Leprechaun Site	Y	N/A	Y	?	N/A	N
S71	Knoebel	Y	N/A	Y	Y	Y	Y
S714	E. Boettcher	?	N/A	N/A	?	N/A	N
S72	Rolle	N/A	N/A	Y	Y	N/A	N
S730	Seibert Site	Y	N/A	N/A	Y	N/A	Y
S742	Tucker Drive	N/A	N/A	N/A	N/A	Y	Y
S821	78th Street	N/A	N/A	N/A	Y	Y	Y
S822	UAF	N/A	N/A	N/A	?	N/A	N
S823	Curtiss Stienburg Road	N/A	N/A	N/A	Y	Y	Y
S837	Grassy Knoll	Y	N/A	N/A	?	N/A	N
S86	Lembke 2	Y	N/A	?	?	Y	Y
S865	Begole Site IV	N/A	N/A	?	N/A	N/A	N
S868	Eldred Niebrugge I	N/A	N/A	?	N/A	N/A	N
S870	Danny	Y	N/A	?	?	N/A	N
S885	Hal Smith Home	N/A	N/A	Y	Y	Y	Y
S886	Liz's Eye	N/A	N/A	Y	Y	N/A	N
S9	Lebanon Golf Course	Y	N/A	N/A	?	N/A	Y
S926	Ag Church	Y	Y	Y	N/A	N/A	Y
S956	Jennings	N/A	N/A	N/A	?	N/A	N

Table A.2. continued.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
S958	Interfinger	N/A	N/A	N/A	?	N/A	N
S960	N/A	N/A	N/A	N/A	Y	N/A	N
S961	N/A	N/A	N/A	N/A	Y	N/A	N
S962	Murder Mystery	N/A	N/A	Y	Y	N/A	N
S963	Wendy Extension Site	Y	N/A	?	N/A	N/A	Y
S979	Carl	N/A	N/A	?	N/A	N/A	N
S980	Merkel	N/A	N/A	?	N/A	N/A	N
S981	Mastodon Creek	N/A	N/A	N/A	?	N/A	N
S982	Julius Ruess	N/A	N/A	N/A	?	N/A	N
S984	Philip Perchbacher	N/A	N/A	N/A	?	N/A	N
S987	Hammann	N/A	N/A	N/A	?	N/A	N

Table A.3. Southern American Bottom Region Mississippian Transition Sites.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
S332	Centreville	Y	N/A	N/A	Y	Y	Y
S944	Goose Ditch	N/A	N/A	N/A	Y	Y	Y
S1470	N/A	N/A	N/A	?	N/A	N/A	N
S1371	Bi-State V	N/A	N/A	Y	N/A	N/A	N
S1749	New Psalmists Church Site	N/A	N/A	?	?	N/A	Y
S1367	Bi-State I	Y	N/A	N/A	?	N/A	N
S338	Subdivision 4	N/A	N/A	N/A	?	N/A	N
S1556	N/A	N/A	N/A	N/A	?	N/A	N
S461	John Lorentzen #1	Y	N/A	?	?	N/A	N
S19	Booker T Washington Cemetery	Y	Y	Y	Y	Y	Y
S1283	Levee Road	Y	N/A	?	N/A	N/A	N
S903	N/A	N/A	N/A	N/A	?	N/A	N
S973	N/A	N/A	N/A	N/A	?	N/A	N
S1279	Earl Cates	Y	N/A	N/A	?	N/A	N
S1278	Creamer House	Y	N/A	Y	N/A	N/A	N
S62	Hamill	Y	Y	Y	Y	N/A	Y
S1280	Bevelot	N/A	N/A	N/A	Y	N/A	N
S1281	Illinsky	N/A	N/A	?	?	N/A	N
S299	Labras Lake	Y	N/A	?	N/A	Y	Y
S299	Labras Lake	Y	N/A	?	N/A	Y	Y
S299	Labras Lake	Y	N/A	?	N/A	Y	Y
S299	Labras Lake	Y	N/A	?	N/A	Y	Y
S1271	Creek Side	Y	Y	Y	Y	N/A	N
S1274	Two Deer	N/A	N/A	?	N/A	N/A	N/A
S299	Labras Lake	Y	N/A	?	N/A	Y	Y
S1275	Young	N/A	N/A	?	?	N/A	N
S1254	Eichaker	Y	N/A	N/A	Y	?	N
S462	Levin/Falling Springs	N/A	N/A	Y	Y	N/A	Y
S1262	Defosset	Y	N/A	N/A	N/A	N/A	N
S1270	Roadside	Y	N/A	N/A	Y	N/A	N
S1272	Branton	N/A	N/A	?	Y	N/A	N
S1256	John Hays	Y	N/A	?	?	N/A	N
S1269	Bench	Y	N/A	Y	Y	N/A	N
S1257	Pelanek	Y	N/A	N/A	Y	N/A	N
S1258	Little Knob	Y	N/A	Y	N/A	N/A	N
S1261	Hertel	N/A	N/A	N/A	?	N/A	N
S1462	Cyndia Sales	N/A	N/A	N/A	Y	N/A	N
S1259	Cruse	Y	?	?	?	N/A	N
S1192	Jw Seifert East	N/A	N/A	N/A	?	N/A	N
S1561	Wrubel Central	Y	N/A	?	Y	N/A	N
S1562	Wrubel South	Y	N/A	N/A	?	N/A	N
S1468	Twosome	N/A	N/A	?	N/A	N/A	N
S47	Range	Y	Y	Y	Y	Y	Y
S1349	Buddy boze	Y	N/A	N/A	?	N/A	N
S1348	Old Guetterhouse	N/A	N/A	N/A	Y	N/A	N
S1346	Guetterman Knob	N/A	N/A	?	?	N/A	N
S1347	Beanboy	N/A	N/A	?	N/A	N/A	N
S1353	Northpond Guetterman	N/A	N/A	?	?	N/A	N
S1345	Prairie Soup	Y	N/A	N/A	Y	N/A	N

Table A.3. continued.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
S1344	59th Street	Y	N/A	?	Y	N/A	N
S1343	St. Lynn	N/A	N/A	N/A	Y	N/A	N
S382	Schlemmer	N/A	N/A	Y	N/A	N/A	Y
S40	Pulcher	Y	Y	Y	Y	Y	Y
S1290	Pflugmacher	Y	N/A	N/A	Y	N/A	N
S650	George Reeves	N/A	Y	Y	Y	N/A	Y
S1325	Shotgun Ridge	N/A	N/A	N/A	Y	N/A	Y
S1324	Kalbfleish Pine	N/A	N/A	Y	N/A	N/A	N
S1323	Kalbfleish	N/A	N/A	N/A	?	?	N
S546	Zucha	N/A	N/A	N/A	Y	N/A	N
S521	Chester Valerius	N/A	N/A	N/A	Y	N/A	N
S563	Bonnie	N/A	N/A	N/A	Y	N/A	N
S520	Englerth	N/A	N/A	N/A	Y	Y	N
S586	Cletus	N/A	N/A	N/A	Y	N/A	N
S588	Kapelski	N/A	N/A	N/A	Y	N/A	N
S1577	Veit Site #2	Y	N/A	N/A	?	N/A	N
S992	High Prairie	N/A	N/A	N/A	Y	N/A	Y
S442	St. Clair County Farm	N/A	N/A	N/A	Y	N/A	N
S892	Scott's Cabin	N/A	N/A	N/A	?	N/A	N
S1300	Ollie	Y	N/A	N/A	Y	N/A	N
MO546	Horton	Y		?	?	?	
MO858	Toad	?	?	?	?		
MO942	Hawkins Ditch			?	?		
MO1001	n/a	Y		?	?		
MO1051	n/a			?	?		
MO249	G.B. Ritzel #3			?	Y		
MO1076	Morgan Site	Y	?	?	Y		
MO251	G.B. Ritzel #5	Y	?	?			
MO276	V.Schaeffer #2	Y		?			
MO855	Wierschem	Y	?	?		Y	
MO985	Luhrs Rockshelter			?		?	
MO13	Cates/Scared Rabbit	Y	Y	Y	?		
MO3	Altes	?		Y	Y		N
MO4	Schmidt/Marty Coolidge No. 2			Y	Y		
MO28	Divers	Y	Y	Y	Y	Y	
MO31	Peiper	Y		Y	Y		
MO71	Maeys			Y	Y	Y	
MO82	Wessel	Y	Y	Y	Y		
MO96	Anne-Lawrence/Westpark	Y	Y	Y	Y		
MO115	Herrmann		Y	Y	Y		
MO233	Les Mammelles	?	Y	Y	Y	Y	
MO234	Hoefft Mound		Y	Y	Y	Y	
MO305	Washausen #1			Y	Y		
MO607	Blackhorse/Emil Koch			Y	Y		
MO608	Fish Lake	Y		Y	Y	Y	
MO891	Stemler Bluff	?		Y	Y		
MO920	Bond Homestead			Y	Y		
MO1075	n/a	Y		Y	Y		
MO14/196	Mississippi Mud/Kings	Y	Y	Y	Y		N
MO5	Fountain Gap	Y		Y			

Table A.3. continued.

IAS Number	SITE NAME	Pre-TLW	TLW1	TLW2	Lohmann	Later Miss.	Excavation
MO81	Klein	Y		Y			
MO97	Julie,Jim,Warren/George Reeves	Y	Y	Y			
MO100	Schaefer	Y	Y	Y		Y	
MO121	Wessel #3	?		Y			
MO136	Wierschem #1			Y			
MO310	Moskop Mound	Y	Y	Y			
MO227	M. Kitchen #1	?			?		
MO984	Sand Cave Rockshelter				?	?	
MO1026	Wegner Mound Group	?			?		
MO1057	Curran Rock Shelter	Y			?		
MO1069	Ramsey Drive Site	Y			?		
MO1	Fenaia				Y	Y	N
MO87	Braun	Y			Y		
MO160	Eitman				Y		
MO175	E. Stumpf				Y		
MO180	Osterhage	Y			Y		
MO598	Power Line	Y			Y		
MO718	Dugan Airfield	Y			Y		
MO768	Booster Station				Y		
MO932	Allscheid Rockshelter	Y			Y		
MO940	Trout Bluff				Y		
MO941	Hawkins Orchard				Y		
MO1016	Trackwood				Y		

APPENDIX B: VESSEL DATA

WASHAUSEN RIM PROFILES

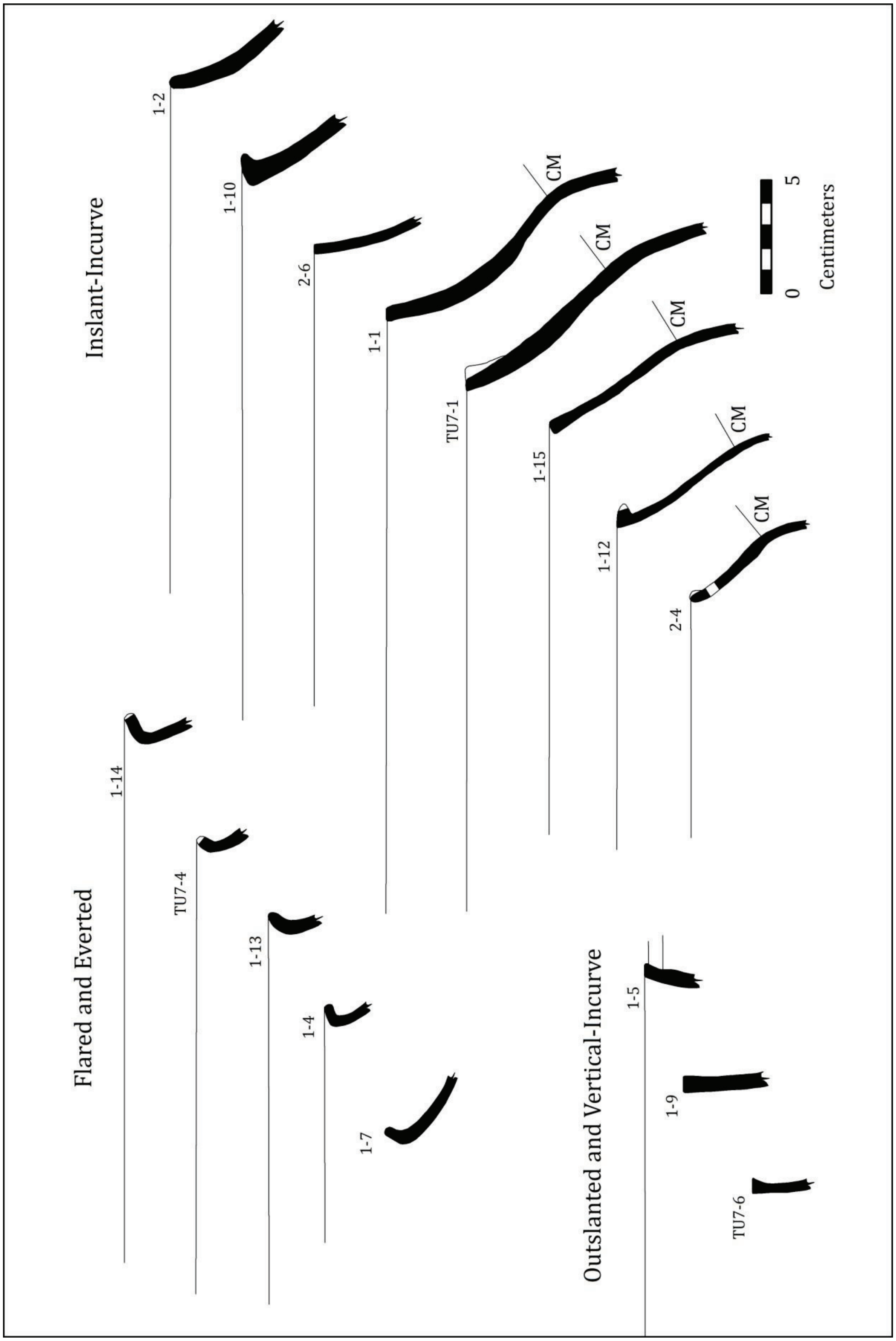


Figure B.1. Limestone–Tempered Jar Rim Profiles.

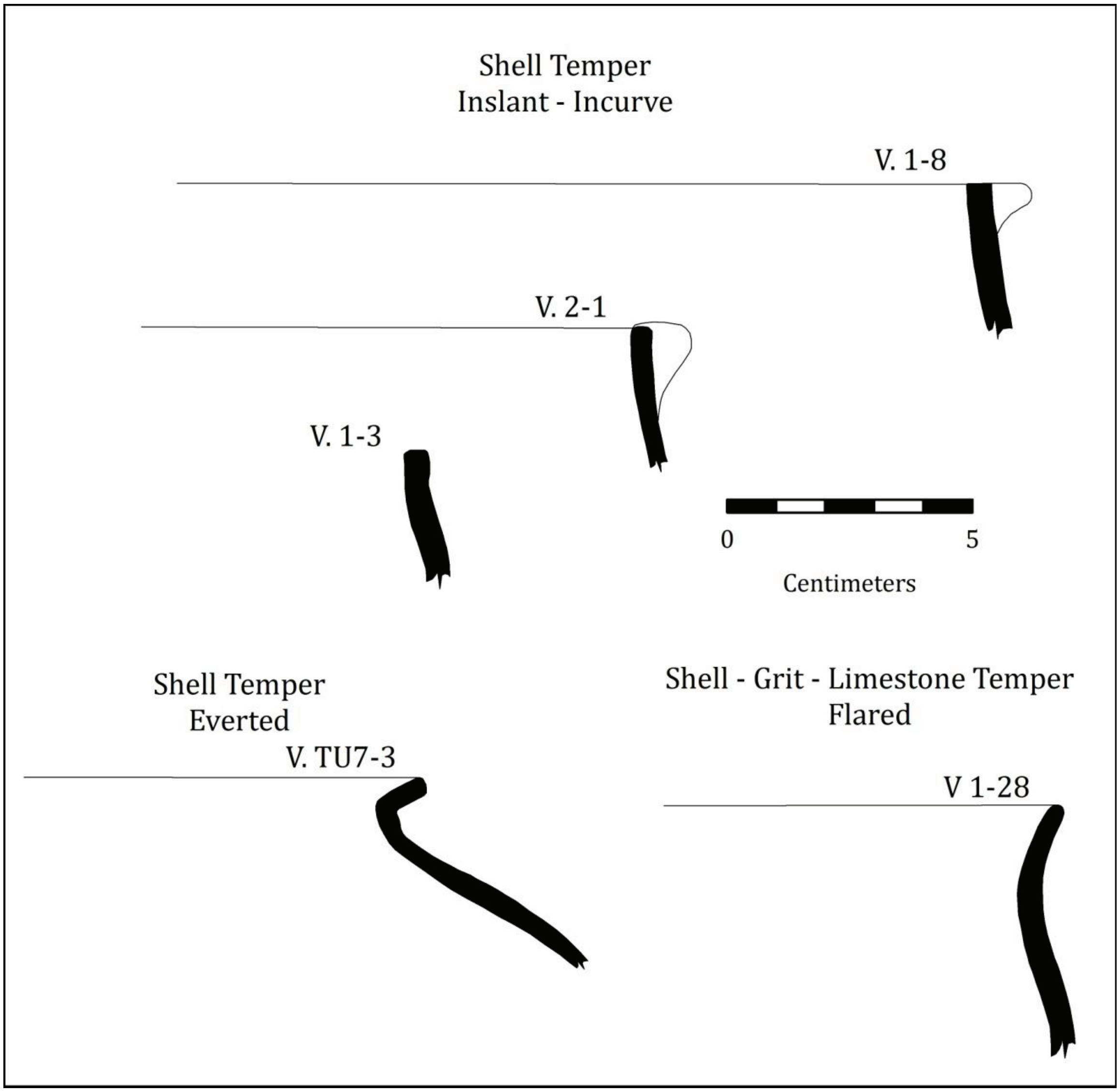


Figure B.2. Other Jar Rim Profiles.

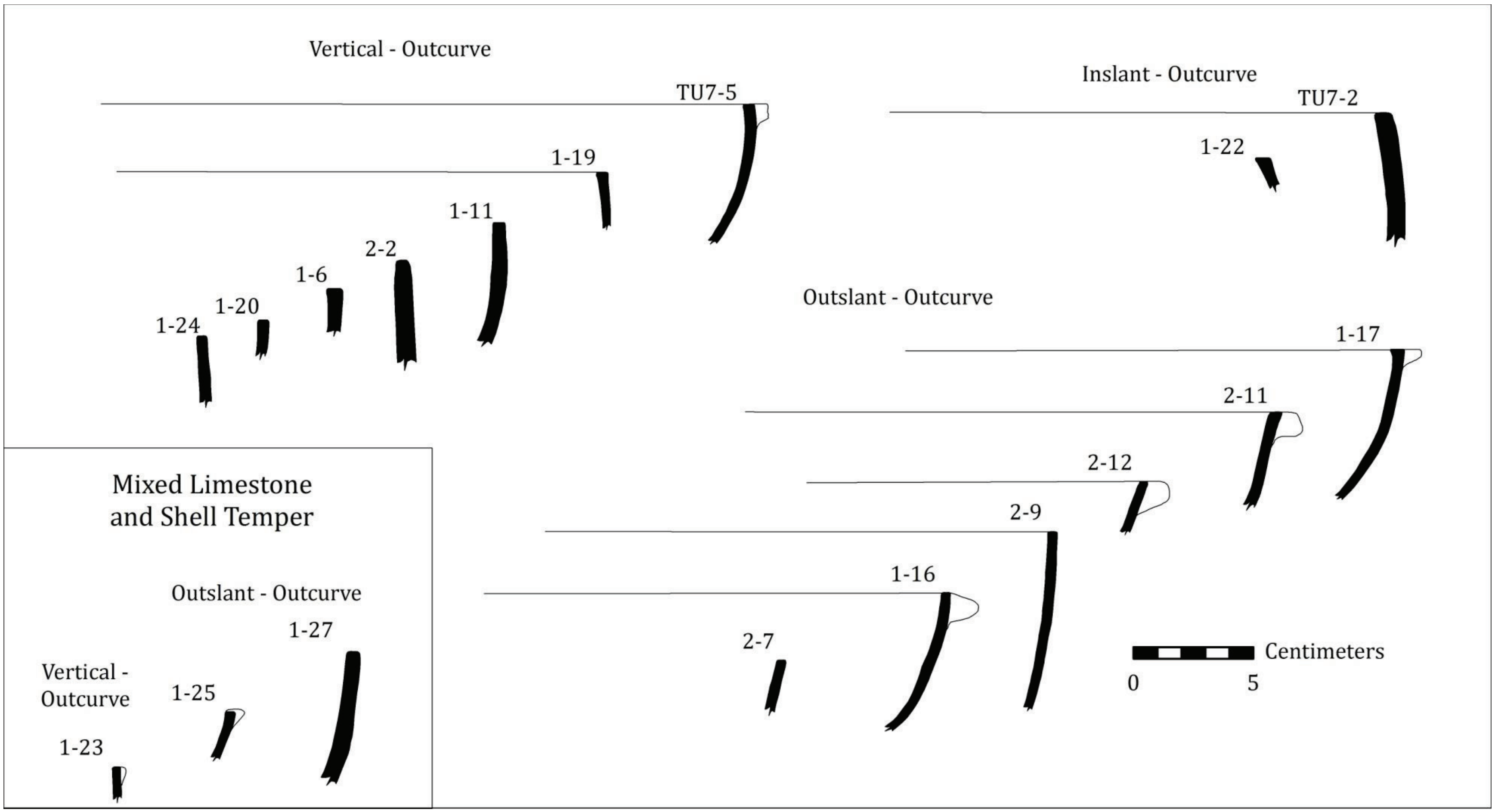


Figure B.3. Bowl Rim Profiles.

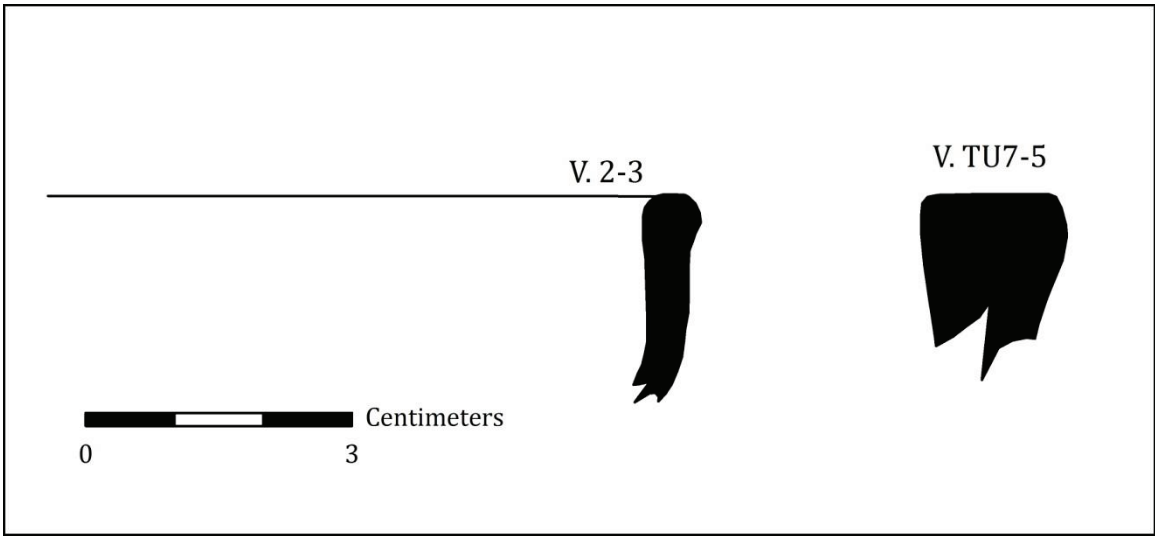


Figure B.4. Minivessel and Stumpware Profiles.

MORRISON SITE RIM PROFILES

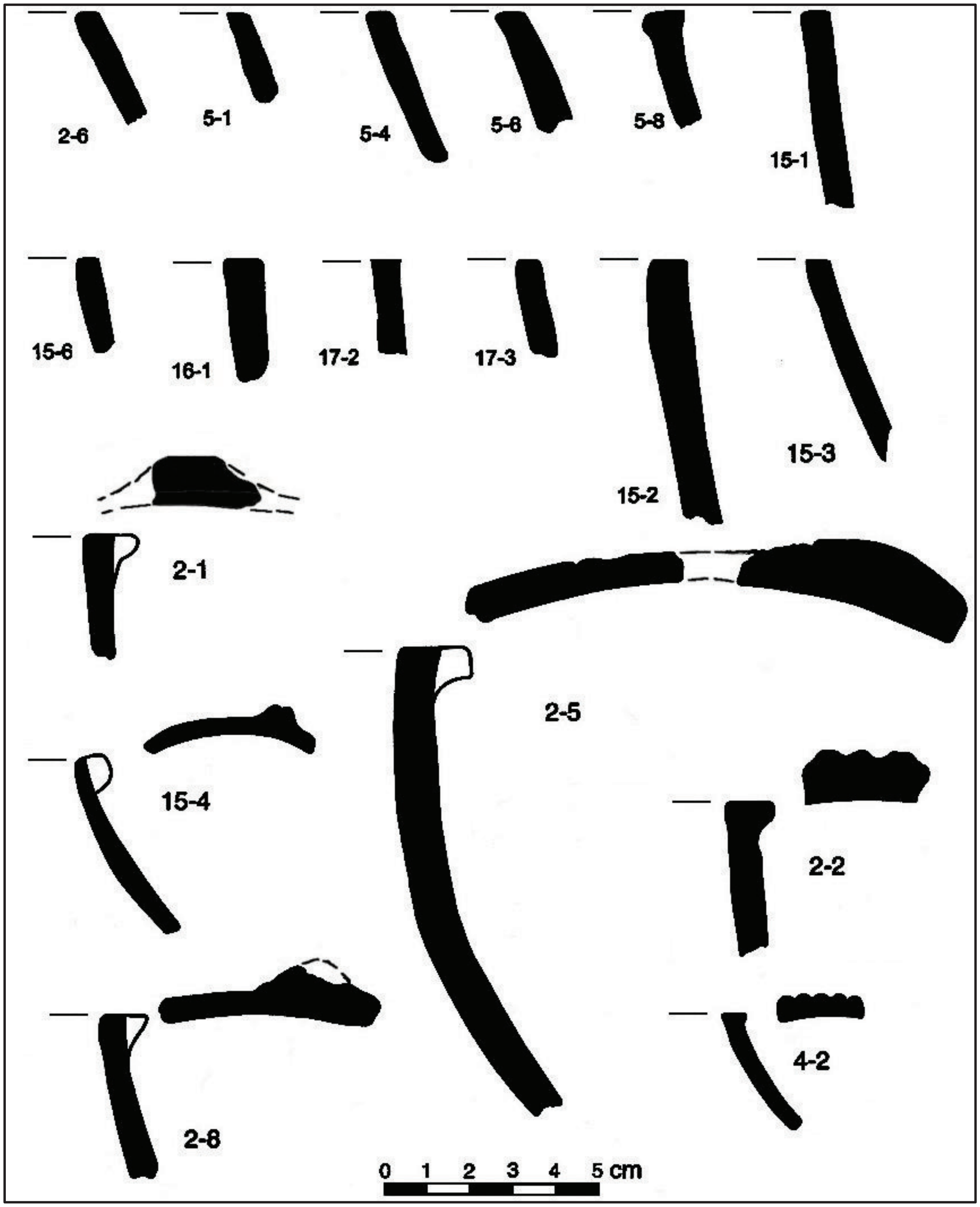


Figure B.5. Jar Rim Profiles.

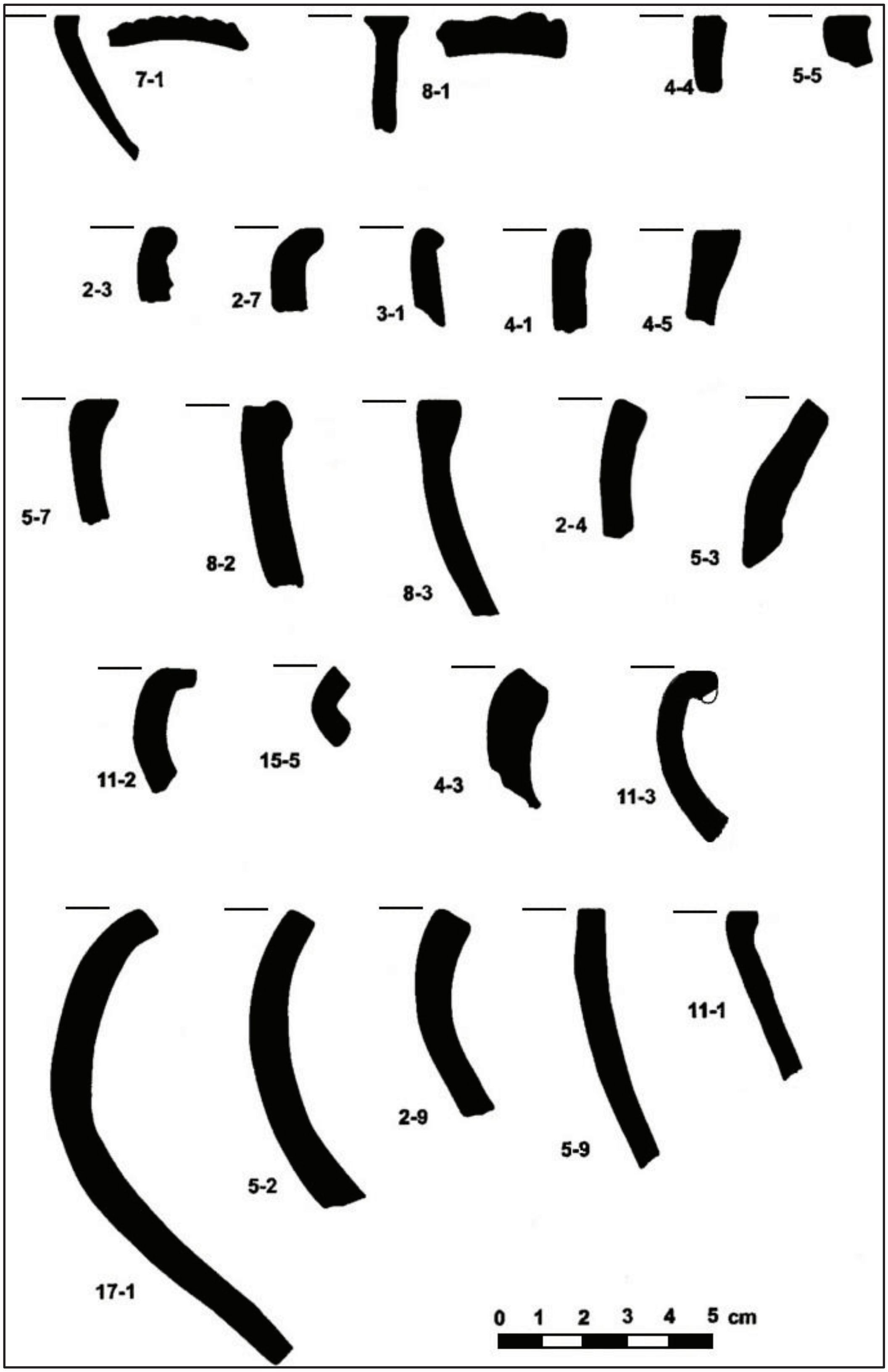


Figure B.5. continued. Jar Rim Profiles.

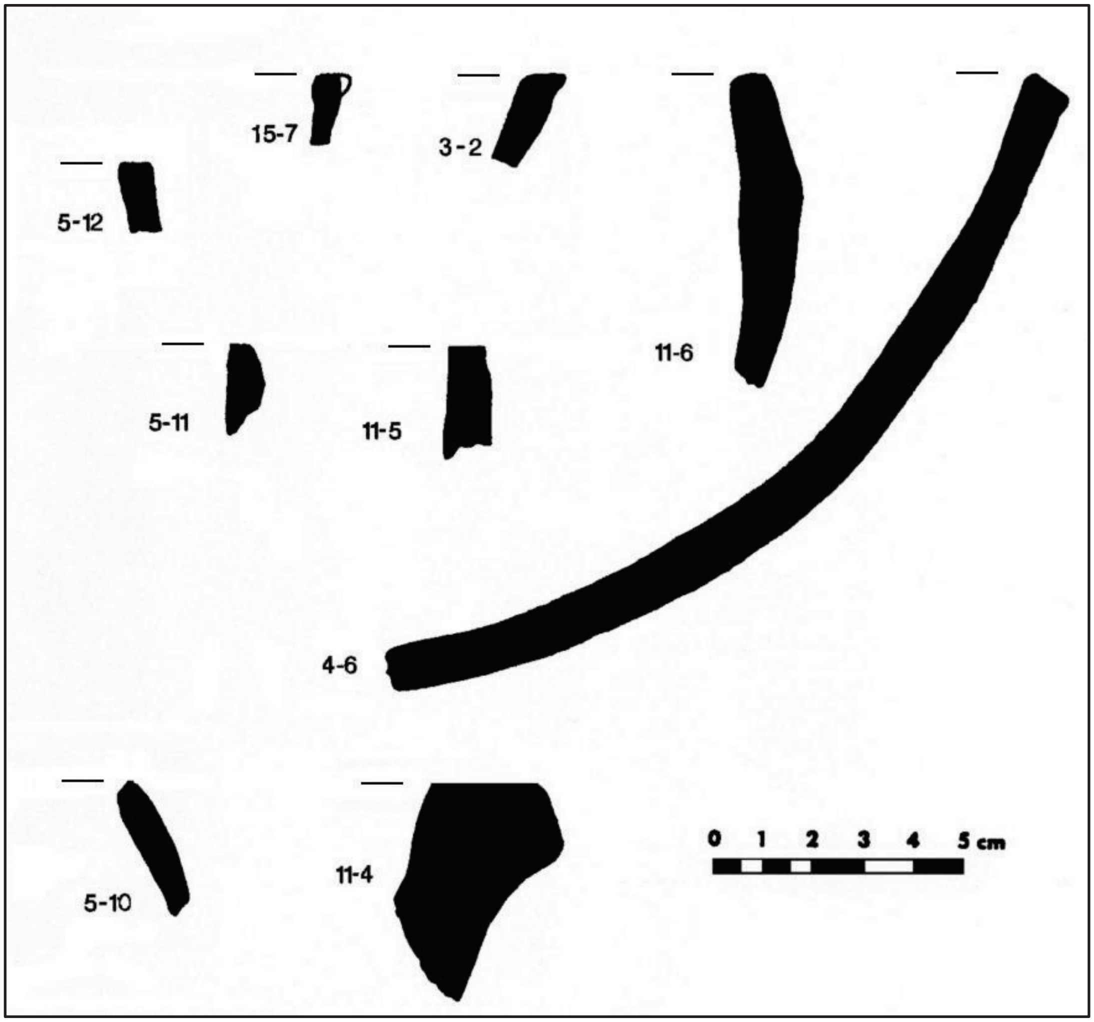


Figure B.6. Bowl, Seed Jar, and Stumpware Rim Profiles.

APPENDIX C:
ETHNOBOTANICAL REMAINS FROM WASHAUSEN (11MO305)

Kathryn E. Parker

ANALYTICAL METHODS

Recovery strategies employed in Washausen site investigations included systematic collection of measured sediment samples from two semi-subterranean single post structures (Features 1 and 2). The resulting flotation samples were processed according to the Illinois Department of Transportation water flotation system (Wagner l976). Dried samples were stored in labeled vials and jars and ultimately forwarded for sorting, analysis and identification of botanical remains. In each sample received for analysis, carbonized plant materials were separated into two size fractions with the aid of a No. 10 geological sieve (2.0 mm mesh). Using a standard binocular microscope at low magnification (7-10x), all carbonized remains in each large fraction (>2.0 mm) were extracted and separated by category (nutshell, wood, maize, monocot stem, etc.). Nutshell and wood fragments were weighed and counted; other types of remains occasionally encountered in the large fraction were counted but not weighed. An attempt was made to identify all non-wood plant materials and the first 20 randomly selected wood fragments in the large fraction (or all wood, if there were less than 20 fragments in the sample).

Wood pieces examined but found to be unidentifiable at least to the taxonomic level of family were grouped into one of four categories: diffuse porous hardwood, ring porous hardwood, bark and unidentifiable. Diffuse porous woods include several tree taxa commonly occurring in the southern American Bottom region of Illinois, including maple (*Acer* sp.), willow (*Salix* sp.) and poplar (*Populus* sp.). Ring porous woods may be from trees such as various oaks (*Quercus* sp.), hickories (*Carya* sp.) and ash (*Fraxinus* sp.). Bark consists of non-distinctive pieces, and the unidentifiable category incorporates wood in which diagnostic morphological traits were destroyed during carbonization or had been otherwise distorted.

The small fraction of each sample (<2 mm) was examined carefully at 10-30x for seeds, monocot stem and other items. Any of these items observed were extracted, identified if possible, and counted, but not weighed.

HAND–COLLECTED PLANT MATERIALS

In addition to plant remains recovered by flotation, thatch, wood and nutshell specimens were collected by hand during excavation of structural Features 1 and 2. Hand-collected specimens are preferred for radiocarbon assay and also may provide information about plant use different than that from flotation sampling. Samples obtained in this manner were scanned at low magnification. Botanical remains in each sample were separated into the same categories used for flotation samples, and then weighed. An attempt was made to identify all non-wood items and five randomly selected wood fragments, or all wood if there were less than five in a sample.

METHODS OF IDENTIFICATION

Seed, nut and wood identifications for both the hand-collected and flotation remains were based on morphological characteristics, with reference to modern comparative specimens and standard pictorial guides (e.g. Martin and Barkley 1961; Hoadley 1990; www.plants.usda.gov/java/factSheet). All identifications were carried to the lowest possible taxon, usually to the genus level. Species identifications were attempted only when morphological comparisons ruled out other members of a genus (i.e. *Juglans nigra*, *Chenopodium berlandieri*). Scientific nomenclature and general floristics information follows Mohlenbrock (1986).

RESULTS OF ANALYSIS

Archaeological investigations at the Washausen site focused on two superimposed single post structures associated with a transitional Terminal Late Woodland (TLW2) into early Mississippian (Lohmann phase) occupation. Areas within the basins of the two structures (Features 1 and 2) were sampled for flotation, with samples equaling 101 liters of fill selected for analysis of botanical remains. Botanical materials from the two structures are tabulated separately (Table C.1, Parts 1 and 2) but except where noted are discussed together in this report because quantitative and taxonomic differences were for the most part minimal. Botanical remains in the 12 analyzed samples from the two houses totaled 0.96 g of wood and nutshell (>2 mm fraction only), equivalent to a very low mean density of less than 0.01 g/ liter. Among categories of plant material, seeds were recovered most often, followed in descending order by monocot stem, wood, nutshell and maize.

Among the 44 wood fragments identified in flotation samples, only two tree taxa were represented. Oak (*Quercus* sp.) was by far predominant in terms of frequency and ubiquity (and the only taxon from Feature 2), while willow or poplar (*Salix/Populus* spp.) was present in two of the Feature 1 samples. Hand collected specimens (Table C.2) affirmed the dominance of oak and showed that wood in both the red and white oak subgroups (*Q*. sp., subgenera *Erythrobalanus* and *Lepidobalanus*) was present in Feature 2. A small amount of ash (*Fraxinus* sp.) a wood not identified in flotation samples was also in one of the hand collected Feature 2 specimens.

Nutshell from flotation was extremely sparse, consisting of 11 small fragments with a combined weight of just 0.24 g. Most were amorphous, eroded, thick fragments identifiable only to the level of hickory/walnut family (Juglandaceae) but also included two or three fragments each of black walnut (*Juglans nigra*) and hickory (*Cary*a sp.). Hand collected specimens recovered from several locations within the Feature 2 basin added another 31 hickory nutshell fragments (2.93 g), a result that suggests nut remains may have been more abundant than was indicated in flotation samples. However, data from other TLW2 sites within the Mississippi River floodplain indicates that mast resources were not particularly important during this time.

Seeds totaled 146 and were recovered in all flotation samples but one. Together, Eastern Complex starchy cultigens/domesticates comprised 85.3% of the 102 seeds identified. Within the group of EC cultigens, little barley (*Hordeum pusillum*) predominated followed by maygrass (*Phalaris caroliniana*), with one or two specimens each of chenopod (*Chenopodium berlandieri*) and erect knotweed (*Polygonum erectum*) (Table C.3). A single seed of tobacco (*Nicotiana rustica*), culturally and economically important as a domesticated non-food specialty plant, was recovered from Feature 1.

Seeds of wild plants with possible economic significance included those of grasses, such as bluestem/beardgrass (*Andropogon* sp.), panic grass/ switch grass (*Panicum* sp.) and generalized grass family (Poaceae). Although the seeds themselves are probably incidental, stems of grasses such as *Andropogon* and

Panicum probably were among the principal raw materials in Features 1 and 2 house thatching.

Finally, one seed each of the wild herbaceous taxa, morning glory (*Ipomea* sp.) and black nightshade (*Solanum ptycanthum*) were identified. The relationship of morning glory and black nightshade to human populations is ambiguous. Both can be described as weeds of fields and gardens, but both also have potential as food and/or medicine. Seeds of both plants have occasionally been recovered in late prehistoric associations that strongly suggest an economic role.

Maize (*Zea mays)* remains, consisting of 11 small cupule and kernel fragments, were present in a total of three flotation samples from Features 1 and 2. The fragments were too small to permit evaluation of row number or other morphological characteristics. Regardless of minimal recovery from these structures, by the TLW2–Lohmann phase transition, residents of the American Bottom region were full participants in maize agriculture, combining this crop with the traditional EC starchy and oily seed cultigens (see, for example, Simon and Parker 2006:232-233).

With a total of 220 fragments, stems of giant cane (*Arundinaria gigantea*) and unidentified grasses (tabulated together as monocot stem) dominated the category of miscellaneous botanical remains. Especially in the context of Feature 1, monocot stems were clearly once part of burned thatching, possibly re-deposited upon abandonment and filling of the structure basin. Of the five hand collected potential radiocarbon samples from Feature 1, four consist of thatch remnants. These samples were comprised of flattened masses of grass and cane stems, together with small diameter twigs or sticks of willow or poplar wood.

DISCUSSION AND SUMMARY

The botanical assemblage from the two Washausen structures appears emblematic of plant use during this transitional prehistoric time period in the American Bottom region. The low density of plant remains, and the narrow range of taxa recovered is a likely byproduct of sample context. Cumulative botanical data from TLW 2 and Mississippian structure basins show a similar pattern, suggesting that floors were swept regularly, with organic refuse not allowed to accumulate inside actively inhabited houses, but instead deposited outside in open pits. Furthermore, in an occupation of relatively brief duration, followed by abandonment, infilling and a move by residents to another part of the site, refuse levels would have been minimal.

The wood taxa identified, primarily small diameter oak (red and white subgroups), ash, and willow or poplar, may represent burned construction debris. However, neither house showed evidence of burning, and thus charred wood in the basins could also be re-deposited fuel from domestic cooking/heating fires. In any case, a similar mix of taxa, dominated by hardwoods such as oak and hickory, with smaller amounts of other woods such as elm/hackberry, willow/poplar and maple, has characterized most TLW2 and early Mississippian assemblages regardless of upland/floodplain location (see, for example Lopinot and Woods 1993; Simon and Parker 2006: Tables 10 &12; Parker 2007). The archaeological wood recovery pattern reflects a well-established preference for high quality fuel and construction material, influenced by availability.

The prevalence of EC cultivated grains: little barley, maygrass, chenopod and erect knotweed in the identified seeds is to be expected for an assemblage of this prehistoric time period. It is highly unusual, however, for little barley to be the primary taxon recovered, with over 64% of the seeds identified. Botanical data from 20 TLW2 and Lohmann phase sites summarized by Simon and Parker (2006:Tables 10&12), shows that none had a proportion of little barley above 34% and most were 2% or less. It is worth noting that little barley seeds in this assemblage were found primarily in a single sample (62 seeds from Feature 2, zone D). Maygrass, the most commonly recovered starchy cultigen from late prehistoric components, was less than 18% of Washausen seeds, while chenopod and erect knotweed together were less than 5%. Because house basins rarely yield a representative sample of food plant remains, the unusual configuration of cultivated grains may be explained in this case as a byproduct of sample context.

One tobacco seed indicates the probable use of the plant in social and/or ceremonial practice. Although leaves rather than seeds of tobacco were most often used in smoking and ritual offerings, thousands of the sticky seeds are produced on each plant to be subsequently dispersed, clinging to every surface they encounter. Evidence from across the American Bottom suggests that tobacco was widely grown as part of standard farming protocols by the end of the Late Woodland period.

Black nightshade produces a fleshy berry that is edible when fully ripe. Seeds appear regularly, albeit usually at low frequencies, in late prehistoric assemblages, where they are usually interpreted as evidence of human collecting of the fruits. The single seed from Feature 1 could reflect intentional exploitation of a locally available wild resource. Because nightshade is also a weedy annual, invading fields and other disturbed substrates, this seed could as easily be an incidental inclusion in basin fill.

The one morning glory seed also can be variously interpreted. Morning glory is a plant taxon with documented medicinal/magical applications among historic Native Americans, some species having recognized hallucinogenic properties. Simultaneously wild morning glory is a genus widely regarded as a field weed. The seeds occur routinely in late prehistoric assemblages, occasionally from archaeological contexts that reflect probable use in communal/ceremonial activity. In the Lohmann phase component at the upland Lehmann-Sommers site, for example, *Ipomea* seeds were closely associated with a specialized "T" shaped structure (Parker 2002). Partially sprouted morning glory seeds from early Mississippian ritual nodal centers such as the Wal-Mart (Parker 1998:82) and Olszewski sites (Dunavan 1990:401-402), were recovered in contexts suggesting they were intentionally gathered for a particular use.

Maize recovery from TLW2 components varies widely. Some small and briefly occupied components or site areas have little or none, the two Washausen structures perhaps fitting this model. Overall there is ample evidence that local populations were at least partially reliant on a maize crop at the end of the Terminal Late Woodland period (Simon and Parker 2006:Table 10). By contrast maize remains tend to be ubiquitous and are often abundant in Lohmann phase Mississippian components. Despite the insubstantial remains from current Washausen investigations, people living at the site either in the TLW2 or early in the Mississippian Lohmann phase were part of a regional economic system that included maize production as one of its basic elements.

REFERENCES

Dunavan, Sandra L.
1990 Floral Remains. In Selected Early Mississippian Household Sites in the American Bottom, Part 5: The Olszewski Site (11-S-465) by Ned H. Hannenberger, pp. 389-403. American Bottom Archaeology FAI-270 Site Reports 22, University of Illinois Press, Urbana.

Hoadley, R. Bruce
1990 Identifying Wood: Accurate Results with Simple Tools. The Taunton Press, Newtown, Connecticut.

Lopinot, Neal H., and William I. Woods
1993 Wood Overexploitation and the Collapse of Cahokia. In Foraging and Farming in the Eastern Woodlands, edited by C. Margaret Scarry, pp. 206-231. University of Florida Press, Gainesville.

Martin, Alexander C., and William D. Barkley
1961 Seed Identification Manual. University of California Press, Berkley.

Mohlenbrock, Robert H.
1986 Guide to the Vascular Flora of Illinois. Southern Illinois University Press, Carbondale

Parker, Kathryn E.
2007 George Reeves Phase Plant Remains and Lindeman Phase Plant Remains. In The Range Site 4: Emergent Mississippian George Reeves and Lindemann Phase Occupations, by John E. Kelly, Steven J. Ozuk, Joyce A. Williams, Lucretia S. Kelly, Kathryn E. Parker, and George R. Milner, pp.209-222 and 457-468. Illinois Transportation Archaeological Research Program Reports No. 18. Illinois Department of Transportation and University of Illinois at Urbana-Champaign.

2002 Botanical Remains from the Lehmann-Sommers Site (11-S-1415). Report submitted to Dr. John Kelly, Central Mississippi Valley Archaeological Research Institute, Columbia, Illinois.

1998 Plant Remains from Archaeological Investigations at the Wal-Mart Site. In The Wal-Mart Site (11MS1369): A Lohmann Phase Occupation in the Northern American Bottom, by Charles L. Rohrbaugh.

Simon, Mary L. and Kathryn E. Parker
2006 Prehistoric Plant Use in the American Bottom: New Thoughts and Interpretations. Southeastern Archaeology Vol. 25 (2): 212-257.

United States Department of Agriculture, Natural Resources Conservation Service.

Fact Sheets and Plant Guides. http://www. plants.usda.gov/java/factSheet

Wagner, Gail E.
1976 IDOT Flotation Procedure Manual. Ms. on file, Illinois Department of Transportation, District 8, Fairview Heights.

Table C.1. Botanical Remains From Flotation of Features 1 and 2, Structures at the Washausen Site (11MO305).

Provenience	Feat. 1, zone A, W1/2	Feat. 1, zone B, W1/2	Feat. 1, zone D, E1/2, Sect. 2	Feat. 1, zone F, E1/2, Sect 2	Feat. 1, zone G, E1/2, Sect 2	Feat. 1, zone I, E1/2, Sect 2	Feat 1, PP 21-23	Total
Sample Number	1-9	1-8	1-18	1-20	1-16	1-17	1-59	
Sample Volume (liters)	8.0	10.0	3.0	10.0	10.0	10.0	4.0	55.0
Total Wood (N)	2	1	5	0	7	10	12	37
Total Wood Wt. (g)	0.01	0.01	0.03		0.08	0.05	0.13	0.31
Breakdown by taxon (N)								
Quercus sp. (oak)					7	4	1	12
Salix/Populus spp. (willow/poplar)			4				5	9
Bark	1							1
Diffuse porous							2	2
Ring porous	1		1			3		5
Unidentifiable		1				3	4	8
Total Nutshell (N)	0	1	0	0	0	0	0	1
Total Nutshell Wt. (g)		0.05						0.05
Breakdown by taxon (N and Wt.)								
Carya sp.		1						1
(hickory)		0.05						0.05
Total Seeds (N)	7	6	0	3	13	22	1	52
Breakdown by taxon (N)								
Andropogon sp. (bluestem/beardgrass)					2			2
Chenopodium berlandieri (chenopod)						2		2
Hordeum pusillum (little barley)		1			1			2
Nicotiana rustica (tobacco)					1			1
Phalaris caroliniana (maygrass)		1		1	4	10		16
Poaceae (grass family)		2					1	3
Solanum ptycanthum (black nightshade)	1							1
Unidentifiable	6	2		2	5	10		25
Total Maize (Zea mays) (N)	2	0	0	0	0	0	0	2
Total Maize Weight (g)	0.01							0.01
kernel	2							2
Miscellaneous Materials	2	0	45	0	40	1	90	178
Monocot stem			45		40	1	90	176
Vegetative/fruit tissue	2							2

Table C.1. continued.

Provenience	Feat. 2, zone A, E1/2, Sect 1	Feat. 2, zone B, NE1/4	Feat. 2, zone E, NE1/4	Feat. 2, zone I, NE1/4	Feat. 2, zone D, SE1/4	Total
Sample Number	2-4	2-16	2-18	2-19	2-36	
Sample Volume (liters)	10.0	10.0	10.0	6.0	10.0	46.0
Total Wood (N)	2	42	3	0	2	49
Total Wood Wt. (g)	0.05	0.28	0.02		0.02	0.37
Breakdown by taxon (N)						
Quercus sp. (oak)		20	3			23
Diffuse porous	1					1
Unidentifiable	1					1
Total Nutshell (N)	0	4	0	6	0	10
Total Nutshell Wt. (g)		0.07		0.16		0.23
Breakdown by taxon (N and Wt.)						
Carya sp.				1		1
(hickory)				0.04		0.04
Juglandaceae		4		2		6
(hickory/walnut family)		0.02		0.03		0.05
Juglans nigra				3		3
(black walnut)				0.09		0.09
Total Seeds (N)	11	4	9	9	63	96
Breakdown by taxon (N)						
Andropogon sp. (bluestem/beardgrass)	2					2
Hordeum pusillum (little barley)		1	1		62	64
Ipomea sp. (morning glory)				1		1
Panicum sp. (panic grass)	1			3		4
Phalaris caroliniana (maygrass)	1				1	2
Poaceae (grass family)			1			1
Polygonum erectum (erect knotweed)				1		1
Unidentifiable	7	3	7	4		21
Total Maize (Zea mays) (N)	0	6	0	3	0	9
Total Maize Weight (g)		0.04		0.01		0.05
kernel		4		3		7
cupule		2				2
Monocot stem (N)	44					44

Table C.2. Hand-Collected Botanical Specimens from Features 1 and 2 (all are carbonized).

Feature 1	Bag N.	Type of Material Identified	wt (g)
Floor, E1/2, Sec 1	1-4	Distorted oak wood	0.25
Zone D, E1/2, Sec 2 PP 23	1-19	Thatch remnants: giant cane and grass stems, small diameter willow or poplar wood	76.24
Zone A, C, E1/2, Sec 2	1-21	Giant cane and grass stems embedded in soil and ash	11.56
Floor, E1/2, Sec 2 PP20	1-32	Primarily willow or poplar wood and small amount of bark and flattened grass stems	76.24
Floor, E1/2, Sec 2 PP23	1-34	Thatch remnant: flattened mass of grass and giant cane stems, with willow/poplar and ash wood	241.67

Feature 2	Bag N.	Type of Material Identified	wt (g)
All surface	2-10	Oak wood	0.09
Zone I, NE1/4	2-13	White oak group wood 7 fragments hickory nutshell	30.54 0.34
All NE1/4	2-14	Oak wood and bark	0.15
Zone C, NE1/4	2-20	3 fragments hickory nutshell	0.08
Zone C, NE1/4	2-21	1 fragment hickory nutshell	0.07
Zone B, NE1/4	2-28	Red oak group wood	0.14
Zone C, NE1/4	2-29	Oak wood	1.79
Surface SE1/4	2-32	13 fragments hickory nutshell	0.59
Zone B, SE1/4	2-35	Red oak group wood 17 fragments hickory nutshell	0.04 1.85
Zone D, SE1/4	2-30	Oak and ash wood	0.22
Zone C, SE1/4	2-41	Oak wood	0.15

Table C.3. Summary of Identified Seeds from Features 1 and 2 at the Washausen Site.

Seed Type	Number	Percentage
Andropogon sp. (bluestem/ beardgrass)	4	3.92%
Chenopodium berlandieri (chenopod)	2	1.96%
Hordeum pusillum (little barley)	66	64.71%
Ipomea sp. (morning glory)	1	0.98%
Nicotiana rustica (tobacco)	1	0.98%
Panicum sp. (panic grass)	4	3.92%
Phalaris caroliniana (maygrass)	18	17.65%
Poaceae (grass family)	4	3.92%
Polygonumerectum (erect knotweed)	1	0.98%
Solanum ptycanthum (black nightshade)	1	0.98%
Total	102	100.00%

APPENDIX D:
FAUNAL ANALYSIS, WASHAUSEN SITE (11MO305)

Steven R. Kuehn
Illinois State Archaeological Survey
University of Illinois at Urbana–Champaign

December 2009

The Washausen assemblage contains 40 pieces of bone, recovered from two features and one test unit profile (Table D.1). Thirty-five specimens are calcined. Most of the fragments are relatively small crumbs of bone weighing less than 0.6 grams. Excluding the deer mandible encased in matrix, the total weight of all faunal material recovered was 5.04 grams. No butchering marks or evidence of cultural modification could be discerned.

Twelve mammal bones were identified, with most categorized only by relative size. One partial left mandible and a small piece of tooth enamel are identifiable as white-tailed deer (*Odocoileus virginianus*). The tooth fragment likely came from the mandible but could not be refit owing to the poor preservation of the element. Portions of the 3rd and 4th premolars and all three molars were observed on the mandible. The deer was 2½ to 3 years of age at the time of death, based on the fully erupted permanent dentition and the minimal occlusal wear on the 3rd molar.

Nine bird bones were recognized in the assemblage. One right 1st phalanx (2nd digit) compares favorably Canada goose (cf. *Branta canadensis*). Six other phalanx fragments were recovered, with four categorized as large-sized bird (large duck or goose-sized).

Six fish bones were identified, consisting of two vertebral pieces, three dorsal spine fragments, and a spine or rib shaft piece. None of the elements can be classified to a specific taxa. In addition to the fish remains, a single carapace or plastron fragment from an unidentified turtle was found in Feature 2.

Twelve pieces of bone were not identifiable to the class level, and are listed as indeterminate taxon (Vertebrata). Nineteen pieces of bone were recovered from Feature 1 and 16 from Feature 2. Five long bone shaft fragments from a large-sized mammal were found during wall profile scraping of Test Unit 7.

Table D.1. Faunal Remains from the Washausen Site.

Taxon	Feature 1 N	Feature 1 Wt(g)	Feature 2 N	Feature 2 Wt(g)	Test Unit 7 N	Test Unit 7 Wt(g)	Total N	Total Wt(g)
White-tailed deer (*Odocoileus virginianus*)	--	--	2	0.04*	--	--	2	0.04*
Large-sized mammal	1	0.29	--	--	5	1.15	6	1.44
Small-medium mammal	--	--	1	0.10	--	--	1	0.10
Mammal, indet.	--	--	3	0.24	--	--	3	0.24
cf. Canada goose (*Branta canadensis*)	--	--	1	0.58	--	--	1	0.58
Large-sized bird	4	0.73	1	0.60	--	--	5	1.33
Bird, indet.	--	--	3	0.14	--	--	3	0.14
Turtle, indet.	--	--	1	0.02	--	--	1	0.02
Fish, indet.	5	0.03	1	0.01	--	--	6	0.04
Taxon indeterminate (Vertebrata)	9	0.86	3	0.25	--	--	12	1.11
Total	**19**	**1.91**	**16**	**1.98**	**5**	**1.15**	**40**	**5.04**

*does not include element in matrix

APPENDIX E:
PEIPER SITE (11MO31) HUMAN REMAINS

Julie A. Bukowski (ISAS–ABFS)

The human remains surface collected from the Pieper site consist of fourteen cranial and post-cranial fragments. Identification of specific skeletal elements was hindered by poor preservation and the fragmented nature of the remains. At least four elements and two teeth are represented, including an occipital, parietal or frontal, left temporal, at least one long bone, and the LC^1 and RM_2 (Table E.1). The minimum number of individuals is one adult because there are no duplicate elements, but differences in the robusticity, cortical thickness, and coloration of the cranial fragments suggest that two separate adult individuals are represented by the remains.

The bone fragments were inventoried, documented, and analyzed after standards established by Buikstra and Ubelaker (1994). All of the recovered human remains are adult (>20 years old). This was determined from the maturity of the cortical bone of the long bone fragments and the diplöe thickness of the cranial fragments. A segment of the lambdoid suture is observable on the occipital fragment and is partially fused (stage 2; Meindl and Lovejoy 1985). Both teeth are fully developed, with moderate attritional wear, typical of younger adult individuals (Lovejoy 1985; Scott 1979; Smith 1984). The sex of the individual(s) could not be determined. The archaeological provenience of the human remains suggests a prehistoric, Native American affiliation, but no osteological indicators of racial affiliation are observable.

The poor preservation of the remains prevented identification of pathology on the bone fragments. Most fragments are weathered on the cortical surface, and the temporal fragment is also bleached from exposure. Deep cuts made post-depositionally, most likely by agricultural machinery, are present on the occipital fragment. The dental crowns are better preserved. The RM_2 has a thin layer of calculus on the buccal crown surface. The LC^1 has two linear enamel hypoplasias (at 0.38 and 0.65 cm from the cemento-enamel junction), and calculus on the buccal surface. The crown of the LC^1 is fractured, and a large portion of the lateral side of the crown is absent. Dentin is exposed as a result but there is no sign of any subsequent infection on the tooth root. Patina on the fractured crown surface indicates that the trauma occurred during life.

REFERENCES

Acsadi, George T. and Janos Nemeskeri
1970 *History of the Human Life Span and Mortality*. Akademiai Kiado, Budapest.

Buikstra, Jane E., and Douglas H. Ubelaker
1994 *Standards for the Data Collection from Human Skeletal Remains*. Proceedings of a Seminar at the Field Museum of Natural History, Organized by Johnathan Haas. Arkansas Archaeological Survey Research Series No. 44. Fayetteville.

Lovejoy, C. Owen
1985 Dental Wear in the Libben Population: Its Functional Pattern and Role in the Determination of Adult Skeletal Age at Death. *American Journal of Physical Anthropology* 68:47–56.

Meindl, Richard S. and C. Owen Lovejoy
1985 Ectocranial Suture Closure: A Revised Method for the Determination of Skeletal Age at Death Based on the Lateral-Anterior Sutures. *American Journal of Physical Anthropology* 68:57–66.

Scott, Elizabeth C.
1979 Dental Scoring Technique. *American Journal of Physical Anthropology* 51:213–218.

Smith, B. Holly
1984 Patterns of Molar Wear in Hunter-Gatherers and Agriculturalists*. American Journal of Physical Anthropology* 63:39–56.

Table E.1. Surface Collected Human Remains.

Piece-Plot No.	Element	Segment	Side	Preservation	Taphonomy	Pathology
2	Long bone fragment	-	-	3	weathered	-
3	Parietal or frontal fragment	-	-	3	weathering, rodent gnawing	-
3	Long bone fragment	-	-	3	weathered	-
4	Occipital fragment	-	-	3	post-depositional (plow?) cuts/gouges on the endocranial and ectocranial surfaces	-
5	Long bone fragments (n = 5)	-	-	3	weathered	-
-	Temporal	petrous	L	3	bleached	-
-	Long bone fragment	-	-	3	weathered, longitudinal cracking	-
-	Long bone fragment	-	-	3	weathered	-
-	LC^1	crown, partial root	L	1	-	LEH, antemortem fracture, calculus
-	RM^2	crown, partial root	R	1	-	calculus

Preservation: 1 >75%, 2 = 25-75%, 3 <25%

CURRICULUM VITAE

Education

2011 **Ph.D.** Anthropology, University of Illinois Urbana-Champaign
Thesis: Creating the Cahokian Community: The Power of Place in Early Mississippian Sociopolitical Dynamics.

2006 **M.A.** Anthropology, University of Illinois Urbana-Champaign
Paper: Greater Cahokian Farmsteads: A Qualitative and Quantitative Analysis of Diversity.

2002 **B.A.** *Magna Cum Laude*, Boston University
Archaeology Major, Anthropology Minor

Current Position

2011–present *Research Archaeologist*, Illinois State Archaeological Survey, American Bottom Field Station, Wood River, IL.

Previous Positions

2006 – 2011 *Archaeological Assistant*, Illinois State Archaeological Survey (formerly Illinois Transportation Archaeological Research Program), American Bottom Field Station, Wood River, IL.
2002–2006 *Research and Teaching Assistant*, Department of Anthropology, University of Illinois, Urbana.

Professional Training

2003 Certificate of Completion, National Park Service Archaeological Prospection Workshop, Collinsville, IL.

Skills

Ceramic analysis, lithic analysis, technical report preparation, ArcMap 9.3, gradiometric and resistivity survey, field photography, Total Station, MacGraw–Hill lecture capture technology, Compass learning management system.

Research Interests

Midwestern archaeology, Mississippian archaeology, American Bottom archaeology; geophysical prospection, ceramic and lithic analysis, GIS; communities and identity, urbanism and rurality; public outreach.

Field Experience

Excavation:

2011–present *Site Supervisor* at the East St. Louis Mounds site (11S706) under the direction of Douglas K. Jackson and Patrick Durst, ISAS.

2010 – 2011 *Excavation Supervisor* at the East St. Louis Mounds (11S706) under the direction of Jeffrey Kruchten, Dr. Joseph Galloy, Patrick Durst, and Douglas K. Jackson, ISAS.

2004 – 2009 *Project Director*, UIUC Anthropology Dissertation Research Project, Washausen (11MO305) and Divers (11MO28) sites; includes geophysical survey, mapping, targeted excavation, lab analysis, and GIS.

2008 *Supervisor*, ITARP, Pfeffer (11S204), Auburn Sky (11MS2300), and Brennan-Hynd (11S1492) sites; Lebanon, Hartford, and Shiloh, IL; Mississippian and Late Woodland occupations. Project Director: Brad Koldehoff.

2007 *Site Supervisor*, ITARP, Shotgun site (11S1389), Mascoutah, IL; Mississippian occupation. Project Director: Brad Koldehoff.
Excavation Supervisor, ITARP, Fish Lake site (11MO608); Columbia, IL; Late Woodland and Terminal Late Woodland occupations. Project Director: Brad Koldehoff.

2006 *Site Supervisor,* ITARP, Fingers Site (11S333) and Russell Site (11MS672); Sauget and Roxana, IL; Mississippian occupations. Project Director: Brad Koldehoff.
Excavation and Lab Supervisor, UIUC Anthropology Field School, Fingers site (11S333); Sauget, IL; Mississippian occupation. Principal Investigator: Dr. Timothy Pauketat.

2005, 06 *Excavation Supervisor,* ITARP, Janey B. Goode Site (11S1231); Brooklyn, IL; Terminal Late Woodland and Mississippian occupations. Project Director: Brad Koldehoff.

2004 *Excavation Supervisor,* UIUC Anthropology Field School, Loyd (11MS20), Washausen (11MS305), and Peiper (11MO31) sites; Glen Carbon and Fountain, IL; Terminal Late Woodland and Mississippian occupations. Principal Investigator: Dr. Timothy Pauketat.

2003 *Field Crew*, ITARP, Janey B. Goode Site (11S1231); Brooklyn, IL; Terminal Late Woodland and Mississippian occupations. Project Director: Brad Koldehoff.

2002 *Volunteer Excavator,* UIUC Anthropology Field School, Grossmann Site (11S1131); Shiloh, IL; Mississippian occupation. Principal Investigator: Dr. Timothy Pauketat.

2001 *Field School,* Xibun Archaeological Research Project, Boston University; Belmopan, Belize; Late and Terminal Post Classic Maya occupations at several surface and cave sites. Principal Investigator: Dr. Patricia McAnany.

Geophysical Survey:

2004 - 07 *Volunteer Survey Assistant* under the direction of Dr. Michael Hargrave (CERL) at several sites throughout Illinois including Cahokia Mounds, Fox Fort, New Philadelphia, and Chapman sites as well as the Poverty Point site in Louisiana.

Spring 2006 *Survey Co-Director* with Dr. Michael Hargrave, Divers site (11MO28), Monroe County, IL.

Spring 2004, 2007 *Survey Co-director* with Dr. Michael Hargrave, Washausen site (11MO305), Monroe County, IL.

Laboratory Analysis

2007-10 *Site Analysis*, UIUC Anthropology Dissertation Research Project; Washausen, Peiper, Divers, and Morrison sites.

2008 *Ceramic Analysis,* Fish Lake (11MO608), Terminal Late Woodland and Mississippian components, ITARP, Belleville, IL.
Site Analysis, Auburn Sky (11MS2300), Late Mississippian farmstead, ITARP, Belleville, IL.
Lithic Analysis, Russell Site (11MS672) and Sauget Industrial Park sites (11S332, 459, 823, 944), Mississippian period component farmsteads in the American Bottom, ITARP, Belleville, IL.
Site Analysis, Halloween site (11J1196), Crab Orchard and Late Woodland components in Southern Illinois, ITARP, Belleville, IL.
Site Analysis, Perrackson site (11PY198), Late Mississippian period farmstead in Southern Illinois, ITARP, Belleville, IL.
Site Analysis, Crowley site (11MS2208), Late Mississippian period farmstead in the American Bottom, ITARP, Belleville, IL.

2007 *Site Analysis*, Wilderman (11S729), Seibert (11S730), and Classen (11S747) sites, Late Woodland and Mississippian components in southwestern Illinois, ITARP, Belleville, IL.

2004 *Ceramic Analysis*, Hoxie Farm (11CK4) Mississippian and Oneota components in Northern Illinois, ITARP, Champaign, IL.

2002-04 *Ethnobotanical Analysis,* various prehistoric sites in Illinois, ITARP, Champaign, IL.

2002 *Site Analysis*, Old Man Site #3 (11MS342), Mississippian component in the American Bottom, University of Illinois Department of Anthropology, Urbana, IL.

2001 *Ceramic Analysis,* complete cave vessels, post-classic Maya component in the Xibun River Valley, Belize, Boston University Department of Archaeology.

Teaching Experience

Spring 2010 *Teaching Assistant*, World Archaeology, Professor: Dr. Astrid Runggaldier. UIUC Anthropology. Guest lecture “Garbology” (with Sarah Otten).

2004, 2006 *Teaching Assistant*, Archaeological Field School and Lab Analysis in Archaeology, UIUC Anthropology. Professor: Dr. Timothy Pauketat.
Guest lecture and tour “Geophysical Prospection and Terminal Late Woodland – Mississippian Southern American Bottom sites.”

Spring 2006 *Teaching Assistant,* The Archaeology of Illinois, UIUC Anthropology. Professor: Dr. Timothy Pauketat.
Guest lecture “Terminal Late Woodland to Mississippian Transition in the Southern American Bottom”.

Fall 2005 *Teaching Assistant*, Biological Bases of Human Behavior, UIUC Anthropology. Professor: Dr. Charles Roseman.

Spring 2005 *Teaching Assistant,* Aztec Archaeology, UIUC Anthropology. Instructor: Margaret Brown-Vega. Guest lecture “The Maya Postclassic”.

Fall 2004 *Teaching Assistant,* Human Origins and Culture, UIUC Anthropology, Fall 2004. Professors: Dr. Steven Leigh and Dr. Stanley Ambrose.
Taught three one hour lab sections per week.

Grants and Awards

Education and Competitions:

2010 Midwest Archaeological Conference Student Paper Competition – 1st Place. $250.00 and book prize.
2009-10 Research and Teaching Assistantships and Tuition Waiver, Anthropology UIUC. $29,725.00.
2009 Block Grant and Tuition Waiver, Anthropology UIUC. $11,870.51
2005-06 Teaching Assistantship and Tuition Waiver, Anthropology UIUC. $27,000.00.
2004-05 Teaching Assistantship and Tuition Waiver, Anthropology UIUC. $27,000.00.
2003-04 Research Assistantship and Tuition Waiver, Anthropology UIUC. $27,000.00.
2002-03 Research Assistantship and Tuition Waiver, Anthropology UIUC. $27,000.00.
2001 Alice M. Brennan Humanities Fellowship, Boston University. $4,000.00.

Research:

2006 Illinois Association for the Advancement of Archaeology Permanent Fund. $300.00
2004 Departmental Summer Funding for Exploratory Research, Anthropology UIUC. $750.00.

Conference Symposium, Papers, and Posters

Symposium:

2009 *Identity and Essence: Pathways to Personhood in the Southeast*. Co-organized with Melissa Baltus and Sarah Otten for the 66th Annual Meeting of the Southeastern Archaeology Conference, Mobile, Alabama.

Papers:

2010 *Don't Hassle Me, I'm Local: Changing Landscapes of Power in the American Bottom Region.* Invited contributor to the symposium "Mobility, Temporality, and Social Memory: Locating Objects and Persons in the Southeast," organized by Melissa Baltus and Sarah Otten. Presented at the 67th Annual Meeting of the Southeastern Archaeology Conference, Lexington, Kentucky.

2010 Accessing the Mississippian Transition in the Southern American Bottom through the Interpretation of a Gradiometric Survey. Presented at the 56th Annual Meeting of the Midwest Archaeological Conference, Bloomington, Indiana. **1st Place Student Paper Competition**.

2009 *Identity and Essence: An Introduction*. With Melissa Baltus and Sarah Otten. Presented at the 66th Annual Meeting of the Southeastern Archaeology Conference, Mobile, Alabama.

2009 *Transforming Places and Persons: Community and Personhood at the Mississippian Transition in the Southern American Bottom.* Presented at the 66th Annual Meeting of the Southeastern Archaeology Conference, Mobile, Alabama.

2009 *Reevaluating the "Emergent Mississippian" in the American Bottom*. Presented at the 55th Annual Meeting of the Midwest Archaeological Conference, Iowa City, Iowa.

2008 (with Thomas Zych) *Cahokia's Northern Neighbors: Late Mississippian Rural Settlements in the Northern American Bottom.* Presented at the 65th Annual Southeastern Archaeological Conference, Charlotte, North Carolina.

2008 *Timing the Terminal Late Woodland to Mississippian Transition in the Southern American Bottom: Preliminary Results from the Washausen Site (11MO305).* Presented at the 54th Annual Meeting of the Midwest Archaeological Conference, Milwaukee, Wisconsin.

2008 (with Thomas Zych) *New Insights into Late Mississippian Settlement in the Northern American Bottom*. Presented at the 54th Annual Meeting of the Midwest Archaeological Conference, Milwaukee, Wisconsin.

2008 *Current Research at the Washausen Site (11MO305)*. Presented at the Cahokia Conference 2008, Collinsville, Illinois.

2006 *Greater Cahokian Farmsteads: A Qualitative and Quantitative Analysis of Diversity*. Presented at the 63rd Annual Meeting of the Southeastern Archaeological Conference, Little Rock, Arkansas.

2006 *Mississippian Farmsteads of Greater Cahokia: The Case for Integrated Rural Populations*. Presented at the 50th Annual Meeting of the Midwest Archaeological Conference, Urbana, Illinois.

2004 *Through Space and Time: Preliminary and Proposed Investigations at the Washausen (11MO305) and Peiper (11MO31) Sites*. Contributor to "The Changing Mississippian: Recent Research on Mississippian Sites in the American Bottom and Beyond," organized by Eleanora Reber. Presented at the 50th Annual Meeting of the Midwest Archaeological Conference and 61st Southeastern Archaeological Conference, St. Louis, Missouri.

2003 *Lithic Technology at the Old Man Site 3 (11MS342).* Presented at the 60th Annual Meeting of the Southeastern Archaeological Conference, Charlotte, North Carolina.

Posters:

2010 *Transforming Places and Persons: Community and Personhood at the Mississippian Transition in the American Bottom Region*. Presented at the 75th Annual Meeting of the Society for American Archaeology Conference, St. Louis, Missouri.

2008 *Current Research at the Washausen (11MO305) and Divers (11MO28) Sites: Preliminary Results from Geophysical Survey and Targeted Excavation.* Presented at the 65th Annual Meeting of the Southeastern Archaeological Conference, Charlotte, North Carolina.

Articles and Technical Reports

n.d. (with Timothy R. Pauketat, Neil H. Lopinot, Dan Marovitch, and Liz Watts) The Morrison Site: An Edelhardt Phase Mound Center in the American Bottom. University of Illinois, Urbana. *Manuscript on file.*

n.d. *The Prehistory of Turkey Hill: Archaeological Investigations along Illinois Route 13/15 (FAP-103) Belleville to Freeburg, St. Clair County, Illinois.* Transportation Archaeological Research Reports, *Illinois State Archaeological Survey, University of Illinois, Champaign. Manuscript on file.*

n.d. *Archaeological Testing Short Report for the Perrackson Site (11PY198), Perry County, Illinois.* Illinois State Archaeological Survey, University of Illinois, Champaign. *Manuscript on file.*

2010 *Archaeological Testing Short Report for the Crowley Site (11MS2208), Madison County, Illinois.* Illinois Transportation Archaeological Research Program, Department of Anthropology, University of Illinois, Urbana.

2008 Washausen Site Investigations. *Illinois Antiquity*, 43(2):8.

2008 *Archaeological Testing Short Report for the Halloween Site (11J1196), Jackson County, Illinois.* Illinois Transportation Archaeological Research Program, Department of Anthropology, University of Illinois, Urbana.

2008 *Archaeological Testing Short Report for the Auburn Sky Site (11MO776), Madison County, Illinois.* Illinois Transportation Archaeological Research Program, Department of Anthropology, University of Illinois, Urbana.

2005 The Old Man Site #3 (11MS342): A Lohmann Phase Farmstead. *Illinois Archaeology* 14:73-89.

2003 Pottery Vessels in Chanona, Usrey, and Arch Caves. In *Between the Gorge and Estuary: Investigations of the 2001 Season of the Xibun Archaeological Research Project*. Edited by Patricia McAnany and Ben Thomas. Report submitted to the Department of Archaeology, Belmopan, Belize.

Public Outreach and Service

2011 *Cultural Resource Management and Preservation at the Pfeffer Site*, site tour and presentation for Lebanon Kids, Inc.; Lebanon, IL.

2008 *Archaeology at the Pfeffer Site,* presentation for the Lebanon Cub Scouts; Lebanon, IL.

2007 Archaeology show-and-tell for K-3rd graders at the Kidz Landing Summer Program; Columbia, IL.

2004-05 President, Archaeology Student Society, registered student organization, University of Illinois; Urbana.

2004 Guest lecture/slide show on Cahokia Mounds for 2nd and 3rd graders at Countryside School; Champaign, IL.

2002-04 Treasurer, Archaeology Student Society, registered student organization, University of Illinois; Urbana.

Professional Affiliations

Society for American Archaeology
Illinois Archaeological Survey
Midwestern Archaeology Conference
Missouri Archaeological Society
Southeastern Archaeological Conference