TENNESSEE ARCHAEOLOGY

Volume 5 Summer 2010 Number 1

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On the Cover: Cahokia point (40CH200), *Courtesy, Aaron Deter-Wolf*

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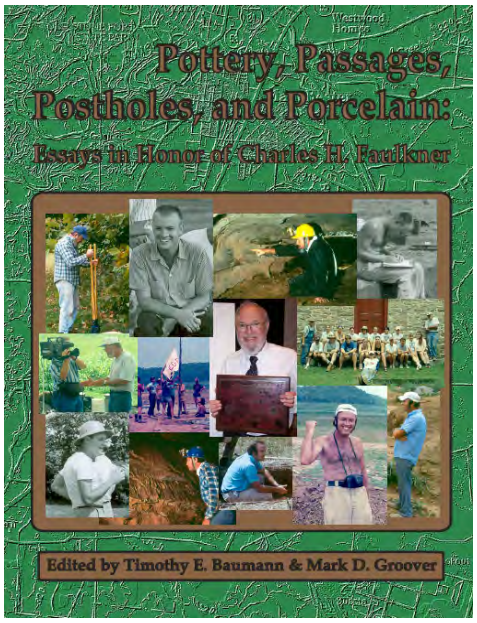

Welcome to the ninth issue of *Tennessee Archaeology*, with articles ranging from historical perspectives on Pleistocene faunal discoveries to high-tech applications of x-ray fluorescence in sourcing lithic materials. We are also pleased to note that articles from previous issues of *Tennessee Archaeology* are being cited in an increasing number of avenues including recent published academic books from University of Alabama Press, University of Florida Press, SUNY Press, and the University of Tennessee Press (that we've noticed); and print journals including *Southeastern Archaeology* and *Journal of Archaeological Research*. Also, since e-publication of Volume 4 in October 2009, the volume has been handsomely reformatted and printed for distribution by the University of Tennessee Press (see cover at right). As always, we extend our thanks to the contributing authors and to the scholars who assist with reviews of submitted articles. This journal would not be possible without their support.

Parris Stripling, 1989 (*Courtesy, Kevin E. Smith*)

We are sad to report the untimely passing of Charles Parris Stripling, a member of the Tennessee archaeological community for over 30 years, on September 29, 2009 at the age of 58. Parris graduated from Florida State University in 1973 with a B.S. in Anthropology and minor in Mass Communications, after which he worked as a Biological Field Inspector with the Florida Department of Environmental Regulation. In late 1975, he resigned and moved to Murfreesboro, Tennessee to take an archaeological aide position working with Steven J. Fox at Middle Tennessee State University on the Hartsville Nuclear Plant Archaeological Project funded by the Tennessee Valley Authority. He continued in that position, doing both fieldwork and labwork, until the contract funds were expended in June 1978. While working at MTSU, Parris also worked with Fox on projects at two Civil War sites in Murfreesboro, Fortress Rosecrans and Lunette Palmer -- where he immediately

established a reputation as a painstaking field and laboratory technician and an expert draftsman.

In early 1979, Sam Smith hired Parris to work on the first of eighteen years of projects with the Tennessee Division of Archaeology (then in the Department of Conservation). Some of the major TDOA projects that Parris worked on include: 1981-84 excavations at Pinson Mounds, 1982-84 State Lands Survey, 1984-85 Western Highland Rim Iron Industry Sites Survey, 1985 40DV36 test excavations, 1985-86 Gordontown excavations, 1988-89 Civil War sites survey, 1990 Veterans Cemetery Project, 1990-91 Normandy Fish Hatchery Project, 1992 Brandywine Pointe excavation, 1994 Bicentennial Mall Project, and the 1993-95 Rutherford-Kizer excavations. His skills as a field technician were unmatched -- his meticulous concern for excavation, notes, and photographs is remembered by many of his co-workers, colleagues, and friends.

Tennessee Division of Archaeology crew photograph (ca. late 1980s. Left to right: Parris Stripling, Don Spires, John Broster, Paul Allen (kneeling), Steve Spears (*Courtesy, Tennessee Division of Archaeology*)

Parris (right) chatting with volunteer Carnie Elliott while at the Bledsoe's Fort Archaeological Project in 1998 (*Courtesy, Kevin E. Smith).*

For nearly 35 years, Parris devoted his life to archaeology of all kinds in his adopted state of Tennessee. Outside of fieldwork and labwork at his regular job, Parris also dedicated much of his time to presenting his love of Tennessee archaeology to the public -- it would be difficult to tally the number of school programs and "public archaeology" type events that he participated in. We would also be hard pressed to docu-

ment the number of archaeology projects that he visited, photographed, and volunteered on. After leaving the Division in 1997, he continued to work part-time as a consultant for several archaeological firms, but got most of his income from landscaping work. In his spare time, however, he continued to be a familiar face at most of the public archaeology programs in the mid-state area (particularly with Tennessee State Parks).

We will remember Parris not only for his love of Tennessee archaeology, but also for always freely sharing his expertise, knowledge, friendship, and quirky sense of humor. He will be greatly missed.

Parris (seated) demonstrates flintknapping to visitors during the "Sandy" stamp dedication ceremony at Sellars Mound State Archaeological Area, September 2004 (*Courtesy, Kevin E. Smith).*

Selected Publications by Charles P. Stripling

Froeschauer, John E., Peggy S. Froeschauer, and Charles P. Stripling
1986 *Archaeological Survey of State-Owned Lands*. Tennessee Division of Archaeology Report of Investigations No. 3, Nashville.

Moore, Michael C., Emanuel Breitburg, John T. Dowd, C. Parris Stripling, and John B. Broster
1992 Archaeological Investigations at 40DV35: A Multi-Component Site in the Cumberland River Valley, Davidson County, Tennessee. *Tennessee Anthropologist* 17(1):54-78.

Moore, Michael C., C. Parris Stripling, John T. Dowd, and Richard D. Taylor, Jr.
1990 The Anderson Site Revisited: Results of Recent Investigations at 40WM9, Williamson County, Tennessee. *Tennessee Anthropologist* 15(2):82-95.

Smith, Kevin E., C. Parris Stripling, and Michael C. Moore
1993 The Brick Church Business Park Site (40DV301): Salvage Excavations at a Mississippian Hamlet. *Tennessee Anthropologist* 18(2):94-116.

Smith, Samuel D., Charles P. Stripling, and James M. Brannon
1988 *A Cultural Resource Survey of Tennessee's Western Highland Rim Iron Industry, 1790s – 1930s.* Tennessee Division of Archaeology Research Series No. 8, Nashville.

Stripling, Charles P.
1980 *1979 Historic Site Survey*. Tennessee Division of Archaeology and Tennessee Historical Commission, Nashville.

Recently, Aaron Deter-Wolf (Tennessee Division of Archaeology) had the opportunity to document a Cahokia point from Cheatham County, Tennessee. The small side- and basal-notched point was collected in 1988 from a plowed field a short distance down the Harpeth River from the early Mississippian Mound Bottom site (40CH8). Small side-notched triangular points of this form are extremely rare in the Nashville area (not to be confused with the much earlier and more common Archaic side-notched forms).

The point appears to be manufactured from Burlington chert, an important raw material for Mississippian era communities in southern Illinois and surrounding areas. Although outcrops occur in both eastern Missouri and west central Illinois, the best known sources for this particular material are the Crescent quarries near St. Louis, Missouri. Although a wide variety of colors have been found in deposits at these quarries, the distinctive cream or white colored variant is the most commonly identified outside the source area.

Only a few Mississippian sites within the Middle Cumberland region have produced this material, including four flakes from the Sandbar Village site (40DV36); one Madison point, a point fragment, and two flakes from the Rutherford-Kizer site (40SU15); and one blank flake from the Jarman site (40WM210). In each case, these examples comprise less than 0.2% of the lithic assemblage and none have produced side-notched triangular arrow points.

Our thanks to Aaron for sharing the photographs and we look forward to hearing more about this site in a future issue of the journal.

A SUMMARY OF EXPLORATORY AND SALVAGE ARCHAEOLOGICAL INVESTIGATIONS AT THE BRICK CHURCH MOUND SITE (40DV39), DAVIDSON COUNTY, TENNESSEE

Gary Barker and Carl Kuttruff

The Brick Church Mound site was a Middle Cumberland Mississippian town with a large platform mound and several smaller mounds located in what is now suburban north Nashville, Davidson County, Tennessee. The site was initially described by Frederic Ward Putnam in 1878 and remained relatively undisturbed for about a century. However, over the past 30 years the site has been almost entirely destroyed by residential and church development. This work provides a summary of exploratory and salvage archaeological investigations at the Brick Church Mound site since it was first reported some 130 years ago.

The Brick Church Mound site (40DV39) represents a Mississippian period town with one large platform mound and several smaller mounds established in what is now a suburban area of north Nashville, Tennessee (Figure 1). The site has been the subject of periodic avocational and professional archaeological investigations since it was first reported in the late nineteenth century (Putnam 1878). Over the past 30 years, the site's platform mound has been leveled and archaeological deposits that comprise the remains of the town have been nearly destroyed by residential and church development. Fortunately, some salvage excavations were carried out at the site as a result of the development. Evidence of mound stage construction, structural remains, stone-box graves, and other associated archaeological features indicate the Brick Church Mound site was a major center of Middle Cumberland Mississippian culture. This report provides a summary of the periodic antiquarian and modern archaeological investigations at the Brick Church Mound site between 1877 and 2001.[1]

The Early Explorations

Frederic W. Putnam. The oldest published reference for the Brick Church Mound is found in the Eleventh Annual Report of the Peabody Museum at Harvard. In this volume, Frederic Ward Putnam (1839-1915), regarded as one of the founders of anthropological sciences in the United States, described exploratory investigations conducted at the site in 1877 (Putnam 1878:337-339). Putnam was invited to explore the mound by the Reverend M.A. Matthews of Nashville. At the time of Putnam's visit the Brick Church Mound was locally referred to as the "Love Mound", named after Mr. Joseph Love who was the grandfather of Mrs. Matthews.

Putnam wrote that the Love family settled in the area in 1795, and that Mr. Love "found a heavy growth of timber on the platform mound, and decayed stumps of red oak trees that were over two feet in diameter" (Putnam 1878:337). The mound was cleared of timber about 1850 with the intent of cultivating its sides. However, the sides were found to be too steep to grow crops and the mound was again left to nature. Putnam noted that trees covered

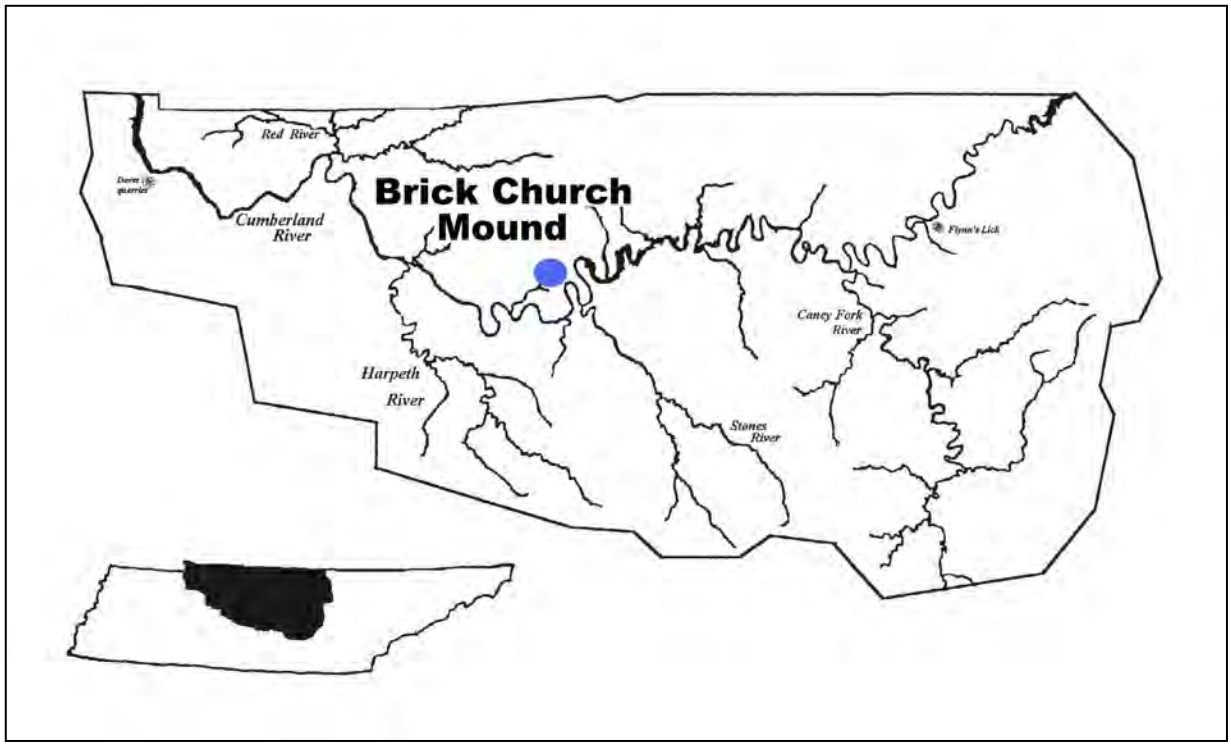

FIGURE 1. Location of the Brick Church Pike Mound (40DV39).

the largest mound at the time of his visit, but that they were less than 25 years old. He also stated the mound summit had "been used as a family cemetery, which somewhat interfered with the work of the exploration" (Putnam 1878:337).

In his report, Putnam provides the dimensions of the largest mound, gives a brief description of other surface features observed around it, and goes on to reveal the results of his excavations. He states the large mound was:

> *…23 feet high, and, as near as the measurements could be made, owing to the washing of the banks, 155 feet in diameter in a north south line, and 147 feet in an east-west direction… In the immediate vicinity of the mound, on the north, west and south are [were] large artificial depressions, showing where the earth forming the mound was obtained. The excavations on the north and south have [had] left a slight ridge, about a hundred feet in width and several hundred feet in length, to the eastward of the mound...* (Putnam 1878:337)

Putnam observed many stone-box graves that had been destroyed by cultivation along this slight ridge. One undisturbed grave excavated by Putnam contained the poorly preserved remains of an adult. A portion of an "ear ornament" crafted of wood and covered with a thin layer of copper was obtained from the side of the individual's head.

Putnam also identified "a small mound nearly obliterated by cultivation" about two hundred feet north of the end of the stone-box covered ridge. He dug into the center of this mound and stated "nothing was discovered except the indications of a fire a few feet from what is now [then] the surface of the mound" (Putnam 1878:337).

Under Putnam's direction, a crew of six to eight men spent four days trenching

and tunneling into the center of the large platform mound. From his writing it is apparent the objective of the excavations was to determine if the mound housed an elite burial chamber. Nearly five hundred cubic yards of earth was removed from the trenches. Putnam noted that "the earth of which this mound was composed had been brought in small quantities, probably in baskets and the outline of each little load could be distinctly seen on the sides of the trenches." (1878:338)

The only cultural materials observed in the mound were a few pieces of cannel coal, several flint chips, some decomposed limestone, and a fragment of *Unio* shell. Putnam determined that there was no central tomb, and since "…it seemed useless to continue the exploration, the trenches were filled and the mound restored to its former shape" (Putnam 1878: 338-339).

Putnam's excavation objective was clearly focused on the recovery of exotic artifacts. However, he can be credited with providing: (1) the first measurements of the Brick Church Mound; (2) a description of the platform mound and other site features as they existed in 1877; and (3) an interpretation of what purpose the large mound served.

> *The results of the exploration of this mound lead to the supposition that it was erected for some other purpose than as a monument over the remains of the dead, and, as the remains of numerous graves near it indicate a settlement at this place, it is very likely that it was devoted to some other important purpose of the people of the town* (Putnam 1878:339).

William E. Myer. One other relatively early reference to the Brick Church Mound site is reported by William Edward Myer (1862-1923) who was a native Tennessean and graduate of Vanderbilt University. Myer examined Mississippian mound centers throughout Middle Tennessee during the late nineteenth and early twentieth centuries. In his unpublished manuscript titled "Stone Age Man in the Middle South," Myer briefly describes "two mounds formerly known as the Love Mounds" and mentions the work of Putnam (Myer 1923). He indicates the large mound was 23 feet tall and 150 feet in diameter and that the smaller one was nearly destroyed by cultivation. Based on Myer's brief description it is unclear if he is transcribing Putnam's 1878 work or if he actually visited the site. In either case, the physical state of the two mounds seems to have changed little over the roughly 30-year interim between Putnam's and Myer's writings. There are no indications of additional archaeological explorations at the Brick Church Mound site until well into the twentieth century. Given the agricultural base of the study area during that time, there's no doubt the site continued to be plowed and prodded into for nearly 100 years.

Limited Modern Archaeological Investigations

Fletcher (1969). Limited archaeological sampling was conducted at the Brick Church Mound site in the summer of 1969. Dr. Charles Fletcher, a visiting instructor at Vanderbilt University, conducted a field school to teach archaeological methods to students. The work was apparently carried out in an area of the site with low archaeological density (Dowd 1974:101). The areas of the site sampled, as well as the results of Fletcher's work, are unknown.

Dowd (1971). A year or so after Fletcher's site visit, a local youth uncovered a unique set of ceramic

FIGURE 2. Figurines recovered from the Brick Church Mound site in 1971 (*Courtesy, John T. Dowd*).

figurines while digging on a "ridge that joins the big mound". These figurines included an adult male, an adult female and two children of opposite sex. Also discovered were two torsos, three legs, and two arms from additional figurines (Dowd 1974:85-106). Figure 2 shows the four relatively complete figurines. Not long after these artifacts were found, John Dowd, a respected avocational archaeologist from Nashville, was made aware of the discovery and went to the location where the figurines were removed. Dowd, well-versed in Middle Cumberland Mississippian prehistory, observed the artifacts had come from a Mississippian period house floor.[2]

After visiting the site area and determining the location of the discovered figurines, Dowd conducted the first photographically recorded archaeological excavations at the Brick Church Mound site (Dowd 1974:85-106). This testing exposed a 17 ft (5.2 m) by 8 ft (2.4 m) section of prepared clay floor from a burned Mississippian period house (Figures 3 and 4). Dowd stated the "structure appeared to be separated from the [a] main house" (located in the area of the boy's excavations where the figurines had been found), and further indicated "There was a small trench where a partition may have stood between the two sections of the house. The section which I [he] excavated could have been an addition to the main part of the house to provide storage or additional sleeping rooms" (Dowd 1974:99).

Scattered postholes were recorded around part of the house floor perimeter, but the entire post pattern was not discerned due to intermittent digging and destruction of the feature by others when Dowd was away from the site. Dowd noted that in the structure's "southeast corner large burned timbers were found

FIGURE 3. Prepared clay house floor identified at the Brick Church Mound site by John T. Dowd in 1971 (*Courtesy John T. Dowd*).

lying across the floor; impressions of burned cane matting were observed among the timbers", and that "much of the main portion of the house probably remains [remained] for future excavations". Burned daub, shell-tempered ceramic sherds, animal bone, two ceramic earplugs, and a sandstone disk were found on the house floor. A small "humpbacked figurine" somewhat similar to the figurines collected earlier by the youth was also found in a small hole within the house floor (Dowd 1974:97-99).

Dowd reports the Brick Church Mound was 18 feet (5.6 m) tall in 1971 (Figure 5). Putnam's 1877 estimate of 23 feet

FIGURE 4. View south showing prepared clay house floor identified by John T. Dowd in 1971 and its location relative to the Brick Church Mound (*Courtesy, Mack Prichard*).

suggests a 22% decrease in the height of the mound in less than a century. Dowd also notes that in 1971 the mound was 185 feet long north to south and 150 feet wide east to west (Dowd 1974:97-99). Comparison of the mound diameters provided by Putnam and Dowd reveal the horizontal dimensions of its base increased from 1877 to 1971. This can be attributed to erosion of the mound and soil movement down its slopes.

During a site visit in June of 1971, Dowd "…was shocked to see a dozer cutting a swath through the large mound." (Dowd 1974:91). The owner of the property at the time, Mr. Thomas Jackson of Nashville, had agreed to provide topsoil for a local little league ball park. Mr. Jackson determined this was an ideal opportunity to see what was in the mound. Consequently, a trench the width of a bulldozer blade was cut to a depth of 17 feet into the center of the mound and the dirt hauled away. Dowd was permitted to ride on the dozer and observe the trench profiles. Like Putnam before him, Dowd observed distinct "half-moons of earth stacked on top of each other" evidencing the basket loading used to construct the mound. No artifacts were found in the dozer swath. Before the dozer left the site the banks of the trench were caved to keep cows from falling into it. No doubt the caving/filling of the trench further reduced the height of the mound.

Dowd also noted that small boys later digging in the dozer trench (four feet below the top) found parts of a human skeleton along with two square nails and a button (Dowd 1974:93). These remains were apparently from one or more of the historic graves in the top of the mound

FIGURE 5. The Brick Church Mound in 1971 (*Courtesy, Mack Prichard*).

that impeded Putnam's digging.

In addition, Dowd ascertained the "remains of a number of stone box graves lie about 150 feet northeast of the excavated house site; this was determined by random probing and verified with a test pit" (Dowd 1974:99).

Development and Salvage Archaeological Investigations

In September 1971, Mack Prichard became the State of Tennessee's first modern State Archaeologist, and Director of the newly formed Tennessee Division of Archaeology (TDOA). One of the TDOA's initial goals was to recommend the state purchase of archaeological sites for parks and conservation. Prichard visited the Brick Church Mound site with John Dowd in the first month of his tenure (Figure 5). Dowd recorded the site as 40DV39 with the TDOA on September 11, 1971. Later that year the Brick Church Mound site was formally nominated and placed on the National Register of Historic Places. However, this National Register status did not afford the site protection from private development.

Between 1971 and 1974, the TDOA worked diligently to secure appropriations to purchase the Brick Church Mound site. While a number of other mound complexes were acquired by the State (including Mound Bottom on the Harpeth River in Cheatham County, and Sellars Farm on Spring Creek in Wilson County), appropriations to acquire the Brick Church Mound site were not forthcoming.

Construction of the Ewing Baptist Church destroyed the north area of the site in April of 1972. This construction activity was monitored by TDOA personnel. As a large dozer stripped off the

back side of the ridge where the church building was to be located, a prepared clay house floor and several trash pits were uncovered (Figure 6). No burials were discovered during the church construction. A review of Putnam's writing suggests the small mound that he tested, along with a number of the shallow plow-disturbed graves that he observed, were located in the site area where the church was built or just to the south of it.

The remainder of the Brick Church Mound site lying south of Ewing Baptist Church was purchased by Robert Earheart Construction Inc. of Mt. Juliet, Tennessee in 1979. During that same year a contour map of the property was prepared by the new owner (Figure 7).

Robert Jolley (1983)

In the early 1980s, a series of residential developments were initiated that would ultimately destroy the Brick Church Mound and most of the remainder of the site. In response, the site was the subject of a series of salvage archaeological investigations. The first of these was undertaken in 1983 when a subdivision was built in the southern limits of the site.

In 1983, a housing development was proposed in the area recorded to be the southern limits of the Brick Church Mound site.[3] Prehistoric ceramics and lithics were found as a result of road cuts through the development. Subsequently, Robert Jolley with Cultural Resource Consultants Inc. was contracted to: (1) establish the boundaries of archaeological deposits within the housing subdivision; (2) determine the density and types of cultural materials present there; and (3) assess the likelihood of the existence of prehistoric cultural features (Jolley 1983:1-23). The site area to be

FIGURE 6. View south showing prepared clay floor identified during 1972 topsoil removal in preparation for construction of Ewing Baptist Church (*Courtesy, Mack Prichard*).

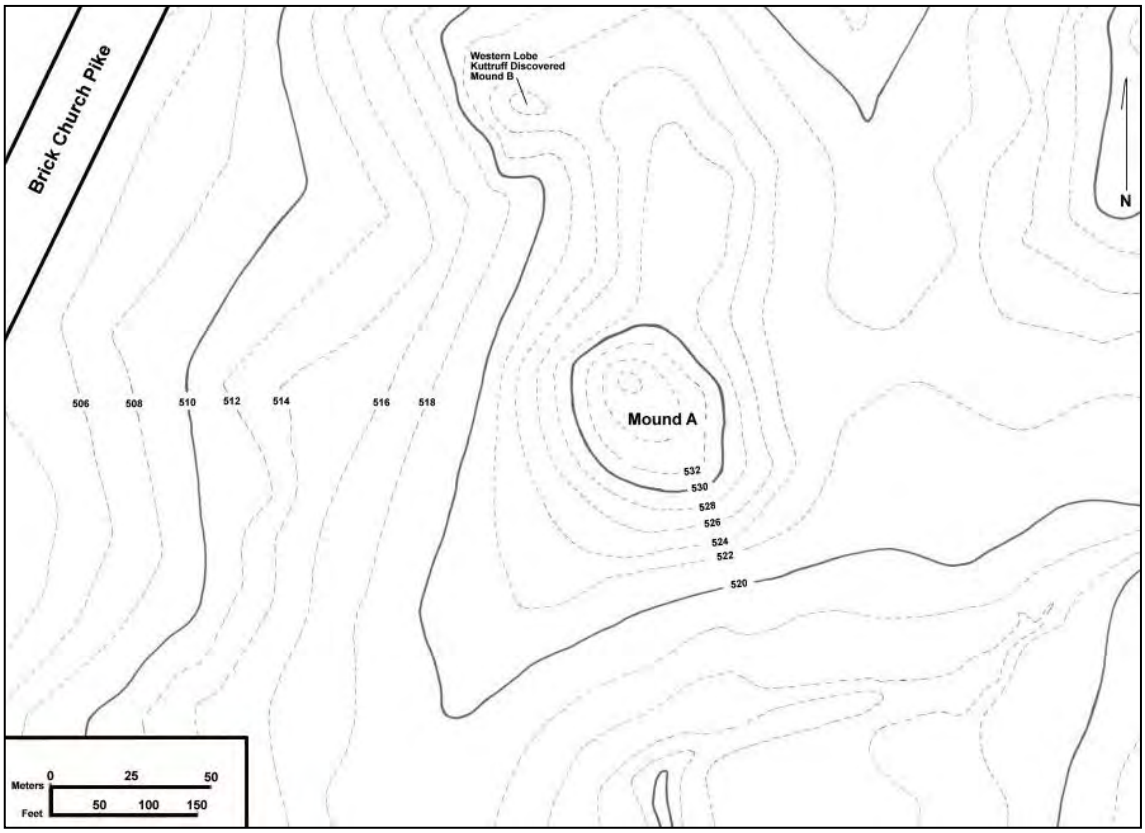

FIGURE 7. Contour map showing the Brick Church Mound and its vicinity in 1979.

archaeologically assessed measured approximately 0.45 acre (0.182 hectare). Jolley carried out a limited testing program consisting of “shovel cut tests” and the excavation of five trenches measuring one by five meters each (Jolley 1983:7). Figure 8 indicates the trenches in relation to the TDOA recorded area of the Brick Church Mound site.

One feature, an apparent trash pit, was identified as a result of Jolley’s assessment. This large basin had horizontal dimensions of 1.8 meters by 3.3 meters, and extended to a maximum depth 0.2 meters below surface. Jolley cross-sectioned the pit and excavated its west half. A total of 977 prehistoric ceramics, 200 lithic items, 346 bone fragments, burned limestone and clay, fire-cracked rock, and a couple of daub fragments were recovered from the pit fill (Jolley 1983:11).

While only one feature was identified by Jolley, he indicated the limited nature of the testing program precluded identification of other subsurface prehistoric features potentially present on two residential building lots he sampled (Nos. 9 and 10). Consequently he recommended these two lots be left undisturbed, or have the earth moving activities on them monitored by an archaeologist (Jolley 1983:18). Whether or not the monitoring was carried out is unclear to the authors. Nonetheless, the developer built the housing subdivision across the south area of the Brick Church Mound site.

Jolley can be credited with the first professionally excavated artifact sample from the Brick Church Mound site. The ceramic collection (n=1001) included 772 plain coarse ware (Mississippi Plain or Neelys Ferry Plain), 25 plain fine ware

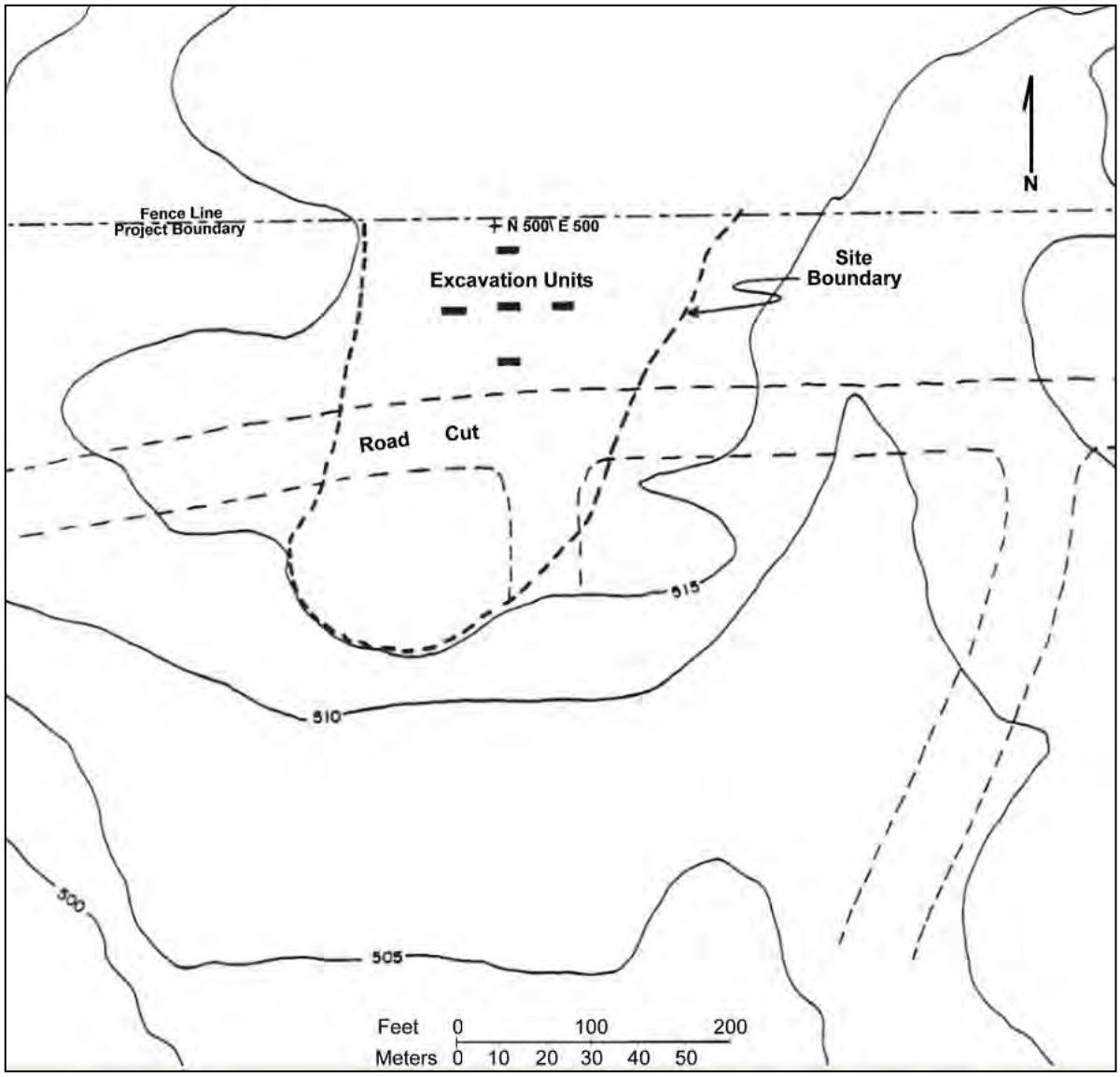

FIGURE 8. Contour sketch showing the 1983 Jolley excavations in the southern limits of the Brick Church Mound site.

(Bell Plain), 18 fabric impressed (Kimmswick Fabric Impressed), one punctate (Manly Punctate), two incised (Matthews Incised), 168 residual, one conical node, four strap handles, five lugs, one hooded water bottle fragment, one plate fragment with grooved rim, two ceramic disks and one ceramic cylinder (figurine fragment?) (Jolley 1983:12). The majority of the ceramic assemblage (n=98%) was obtained from the cross-sectioned pit (Feature 1). The 304 lithic specimens included a Dover chert dagger, a triangular dart point, and three Dover chert hoe flakes. Based on the collection and existing archaeological literature at the time Jolley surmised that the feature dated to the latter part of the Mississippian period (Jolley 1983:13), or what is now known as the Thruston phase (Smith 1992).

FIGURE 9. Spreading of mound fill across the residential development in 1984 (Courtesy, Mack Prichard).

Tennessee Division of Archaeology (1983-1984)

The remainder of the Brick Church Mound site was proposed for additional housing construction within a year following Jolley's study.[4] The Brick Church Mound lay in the heart of the area to be developed. In October of 1983, TDOA personnel under the direction of Carl Kuttruff shovel tested a 30-meter by 90-meter area of the development parallel to Brick Church Pike and west of the mound ridge. Shovel tests were laid out on a 10-meter grid. Only a few artifacts were recovered and the area was believed to be relatively free of any significant archaeological remains. Later examination of exposures during construction in this area generally supported the original conclusion. At the time, it was understood that construction would be limited to the area shovel tested along Brick Church Pike.

TDOA personnel returned to the site in May of 1984 after the discovery of burials during construction. By that time, development was well underway as many of the lots and streets were staked and graded, street curbing was in place, and underground utility line trenches had been excavated. This visit revealed construction had extended well beyond the area initially shovel tested. The Brick Church Mound was leveled by bulldozer,

FIGURE 10. Leveling of the Brick Church Mound in 1984 (Courtesy, Mack Prichard).

leaving a low ridge surrounded by zones of construction (Figures 9 and 10).

The May 1984 visit also revealed two clusters of stone-box graves encountered southwest of the Brick Church Mound (Figure 11). These cemeteries were documented and excavated by TDOA personnel and Tennessee Historical Commission volunteers from May 11-25, 1984. A total of 26 features were given burial designations. The field notes indicate 28 individuals were interred within these cemetery clusters, comprising 16 adults and 12 children. Two empty stone-box graves (one adult and one child) and one non-mortuary feature containing abundant Mississippian period pottery were also excavated.

While it is not the purpose of this article to elaborate on the TDOA excavated cemetery clusters, it is of interest to note several mortuary activities represented in them. Children comprise 43% of the burial population, an unusually high representation for Middle Cumberland Mississippian cemeteries. Furthermore 50% of the individuals identified were in graves containing more than one person. Burial 2 was a stone-box grave that contained four adult bundle burials. Burial 23 (n=4) contained a semi-flexed adult lying on his or her side with an extended burial of an adult lying face down directly on top of the lower semi-flexed individual. On top of this grave were the remains of two infants (Burials 20A and 20B). Traumatic violence is possible evidenced in one of the cemetery clusters - a bowl crafted of an adult cranium was found between Burials 8 and 9 (Barker and Kuttruff 2001).

The Division of Archaeology focused their attention upon documenting what was left of the Brick Church Mound after completion of the cemetery removals. At the time of the work, the mound vicinity

FIGURE 11. Stone box graves excavated by TDOA staff in 1984 at the Brick Church Mound site.

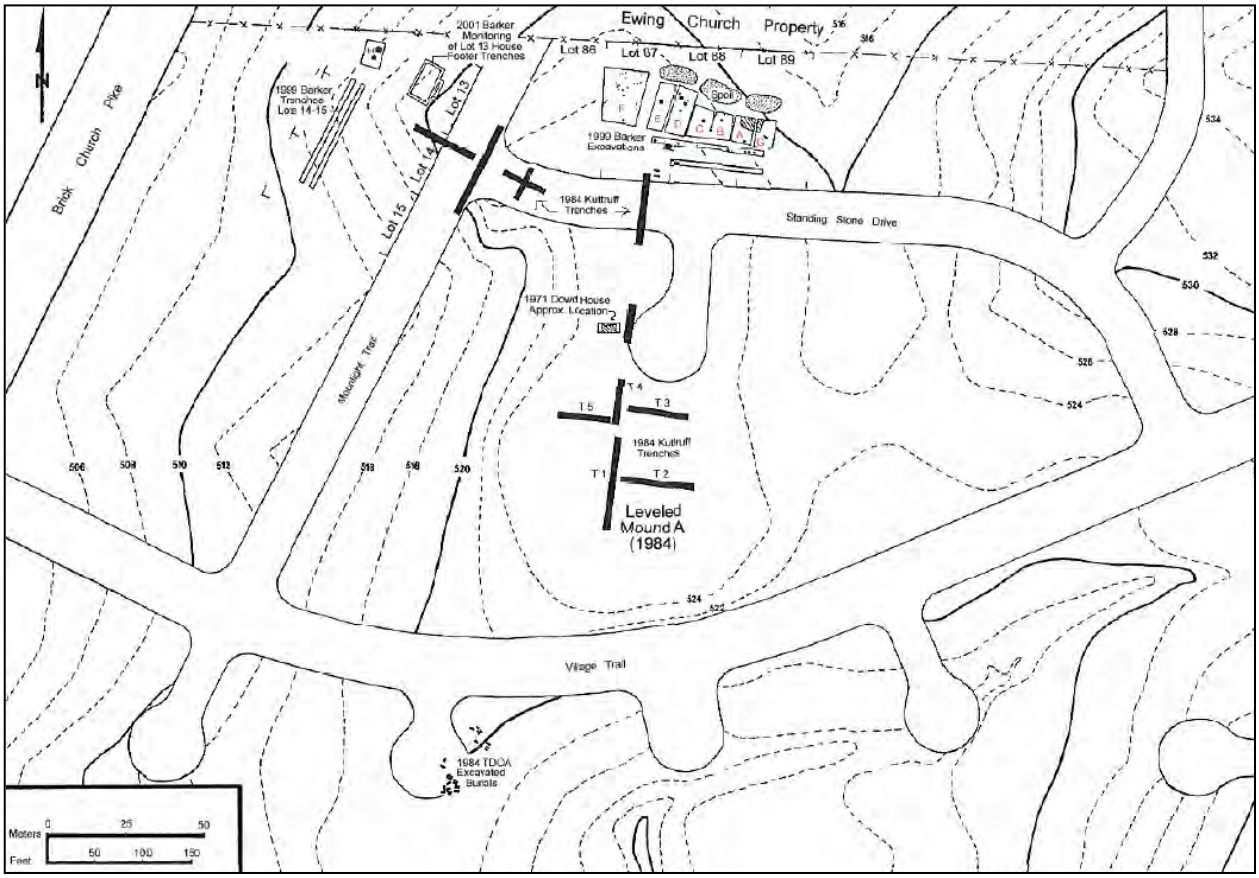

FIGURE 12. Contour map showing excavations and identified features in 1984 at the Brick Church Mound site.

consisted of an approximate 75 meters long and 35 meters wide ridge running in a north-south direction. Toward the south end of the ridge was an elevated area that represented what remained of the Brick Church Mound. Near the north end of the ridge was a low lobe that extended westward from the main ridge (see Figure 7). In late June 1984, TDOA personnel examined a utility trench that had been excavated through the westward extending lobe. The east and west profiles of the trench were cleaned and the east wall profile mapped in detail and photographed.

In September 1984, five backhoe trenches (totaling 105 meters in length) were excavated to the base of what remained of the Brick Church Mound. Two additional shallow trenches were excavated on the ridge north of the mound in an unsuccessful attempt to locate the house floor examined by Dowd in 1971. These two trenches revealed extensive surface modification with no intact archaeological deposits.

Another trench was excavated westward from the approximate center of the utility trench dug into the western lobe of the ridge and terminated at the ridge's west end. Two short perpendicular trenches were then excavated to the east of the utility trench in this area. Trench profiling and mapping was carried out and eventually completed in December of 1984. Figure 12 provides the locations of the trenches and burials excavated by the TDOA on a contour map of the development layout. The contours estimate the decrease in the Brick Church

Mound height (compare contour elevations with those in Figure 7) that resulted from it being bulldozed in 1984. The approximate location of the structure discovered by Dowd is also noted in Figure 12 along with trenches and blocks later excavated at the site by the senior author in 1999.

Mound A. The five TDOA excavated trenches (T-1 through T-5 in Figure 12) into the Brick Church Mound (or Mound A) allowed the formation of a partial construction sequence. Two distinct construction stages were noted, as shown on the schematic plan in Figure 13. The first stage was a platform 75 cm high constructed directly on top of subsoil (indicating the top soil had been removed prior to construction). The platform surface (Stage 1) and its southern slope had been capped with a layer of sterile yellow clay. On the surface of the platform was a dark grey to brown layer of soil accumulated from use or intentional deposition. This layer was laminated somewhat, and heavily packed down, indicating a surface that was well used. On the platform's southern slope was a 10-15 cm layer of charcoal, ash, and a few artifacts deposited from perhaps cleaning the mound surface. Trench 1 also revealed the Stage 1 platform had been later extended horizontally to the south.

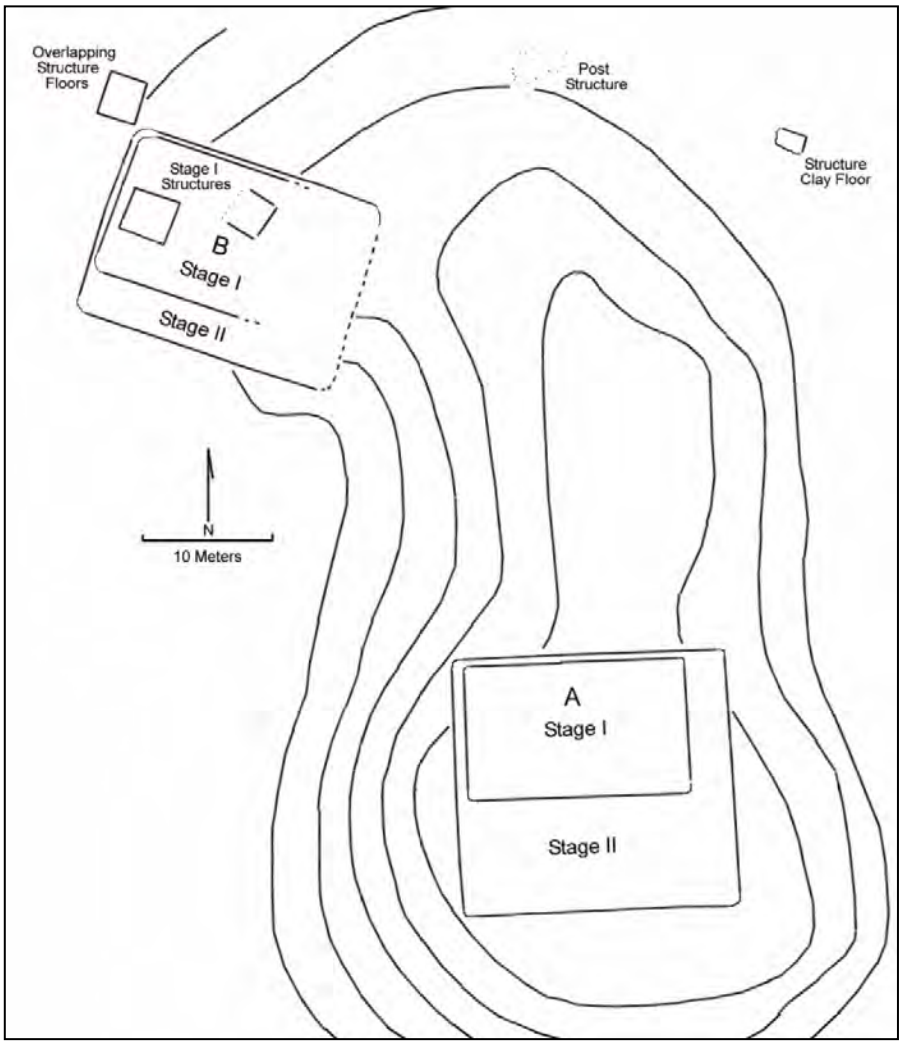

FIGURE 13. Schematic showing identified construction stages of Mounds A and B and associated architectural features.

FIGURE 14. Backhoe trench profile showing distinct basket loaded fill in Stage II of Mound A (*Courtesy, Mack Prichard*).

FIGURE 15. Empty post holes evidencing a structure wall on the Mound B Stage I platform and overlapping burned structure floors evidenced in trench profile.

FIGURE 16. Trench through Mound B showing construction Stages I and II. Note distinct (red) surface of Stage I (John T. Dowd, left; Carl Kuttruff, right).

Stage II of Mound A was a two-meter high addition to the Stage I platform. This stage was defined by distinct basket loaded fill (see Figure 14). The original Stage II height is unknown as the mound was truncated and leveled by the ongoing subdivision grading.

Mound B. The 1984 examination of the utility trench and TDOA trenches that had been excavated through the westward extending ridge lobe (see Figure 12) revealed a series of mound construction stages tied into the natural ridge (see Figure 13). The three identified stages are cumulatively referred to as Mound B.

The first stage was a low platform that toed into the natural ridge slope, its height equal to the Stage I platform of Mound A. The surface of this platform was capped with a thin layer of packed clay. On the northern part of this platform was a series of (at least) four sequentially constructed house floors, all of which had heavily fired prepared-clay hearths, exposed in the TDOA excavation wall profiles/plans. The north and south limits of these floors were bounded by wall trenches while the east-west wall of one structure was of single post construction. The post holes from the east-west wall were empty as air, indicating the posts had been removed from them. These post holes were not filled, but simply capped and preserved by basket loads of clay that constitute the subsequent Stage II construction. Figure 15 shows this row of empty postholes across the Mound B Stage I platform, and also the series of burned house floors in the trench profile.

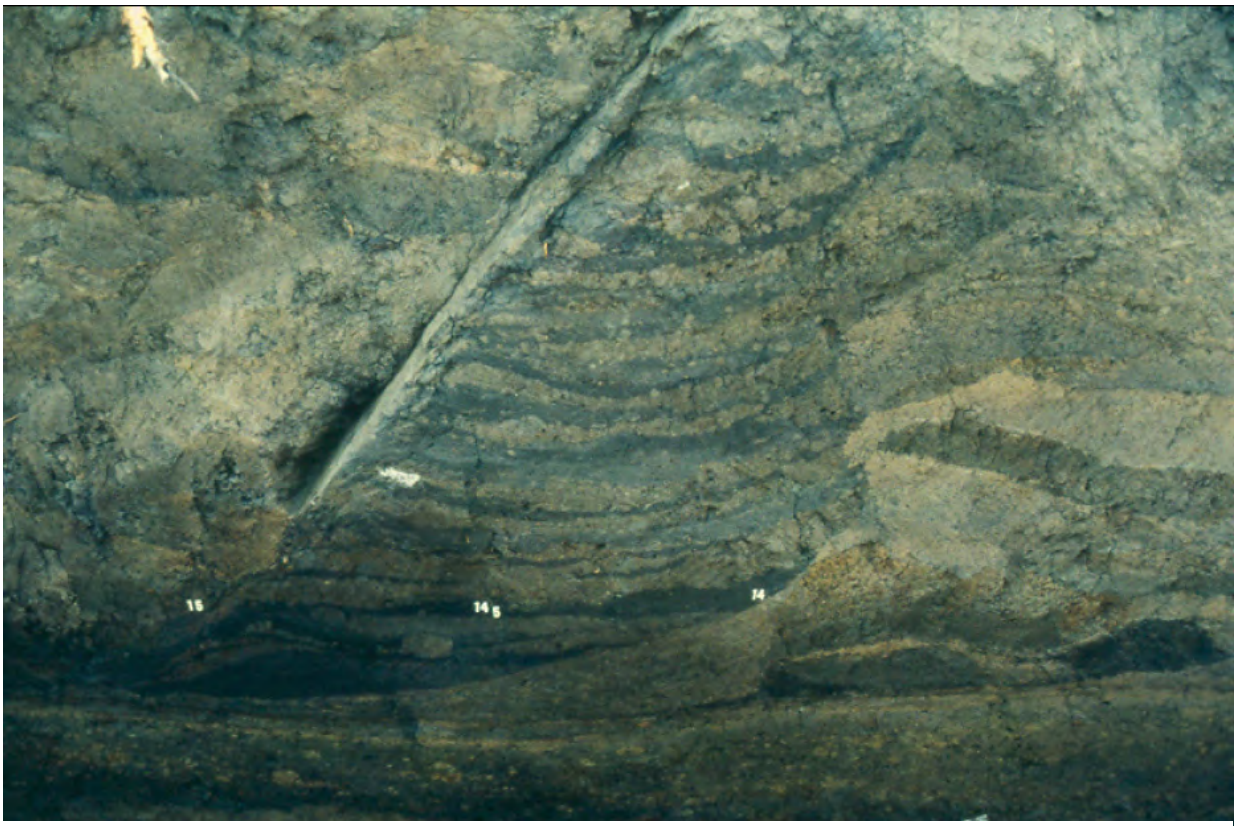

FIGURE 17. Profile of Stage II construction in Mound B showing distinct packed down basket loads of soil over Stage I. Note puddled clay layer over Stage II indicating additional stage(s) above it.

The second construction stage of Mound B was a two-meter addition of loaded fill over Stage I (see Figure 16). The northern slope of this construction began at the southern part of the superimposed house floors. One of the most interesting features about this construction was the detail of the Stage II surface. As seen in Figure 17, the series of basket loads of earth that constitute Stage II were carefully placed, tightly packed down, and then plastered with a layer of puddled clay. The final construction of Mound B consisted of either a third separate stage or a northward expansion of Stage II. The final height of Mound B is also unknown due to the bulldozing activity.

Remaining Site Area. The remainder of the Brick Church Mound (Mound A) was bulldozed following completion of the TDOA cemetery removal and mound testing. Additional lots were graded, and roadbeds and subsurface utility lines were finished. Residential homes were built on all but 19 of the development building lots. The undeveloped lots comprised: (1) the ridge connecting Mounds A and B; (2) part of where Mound A was erected; (3) all of the Mound B area discovered by the TDOA; and (4) the lots that bordered Ewing Baptist Church to the north. These 19 lots were not developed at the time due to the 1980s housing slump and possibly from complications resulting from recent changes in the state burial laws.

Gary Barker (1998-2001)

In 1986, the Tennessee legislature amended the intent of the state cemetery law to provide prehistoric Native American

burials the same protection as historic graves (Moore 1989). Accordingly, the developer was requested to conduct an archaeological investigation of the remaining 19 undeveloped lots within the site area (prior to any further grading and house construction) to determine the presence of human burials. However, these 19 lots remained vacant until 1998.

The senior author conducted an archaeological exploration of these 19 lots between March and May of 1998 to evaluate their potential to yield human burials (Barker 1998). A second objective of this work was to determine the extent and condition of any remaining archaeological deposits. The archaeological investigations involved a combination of pedestrian reconnaissance, rod probing, and intensive shovel test sampling.

Each building lot (Nos. 13-15, 75-83, and 86-92) encompassed roughly 10,000 square feet, and constituted a total area of 4.89 acres (1.98 hectares). The reconnaissance survey identified prehistoric cultural material (including Mississippian period pottery, animal bone, and lithics) in road cuts and other eroded areas of the study project. At least four lots yielded a high potential for archaeological features. One poorly preserved stone-box grave (Burial 1) was found protruding from subsoil on Lot 87. Probing identified a second stone-box grave (Burial 2) just north of Burial 1 on Lot 87. However, probing generally proved problematic for locating stone-box graves due to a high volume of residual limestone at or near the ground surface.

Roughly twenty 30 cm by 30 cm shovel tests were dug on transacts across each lot. The shovel tests were dug to sterile subsoil and/or contact with

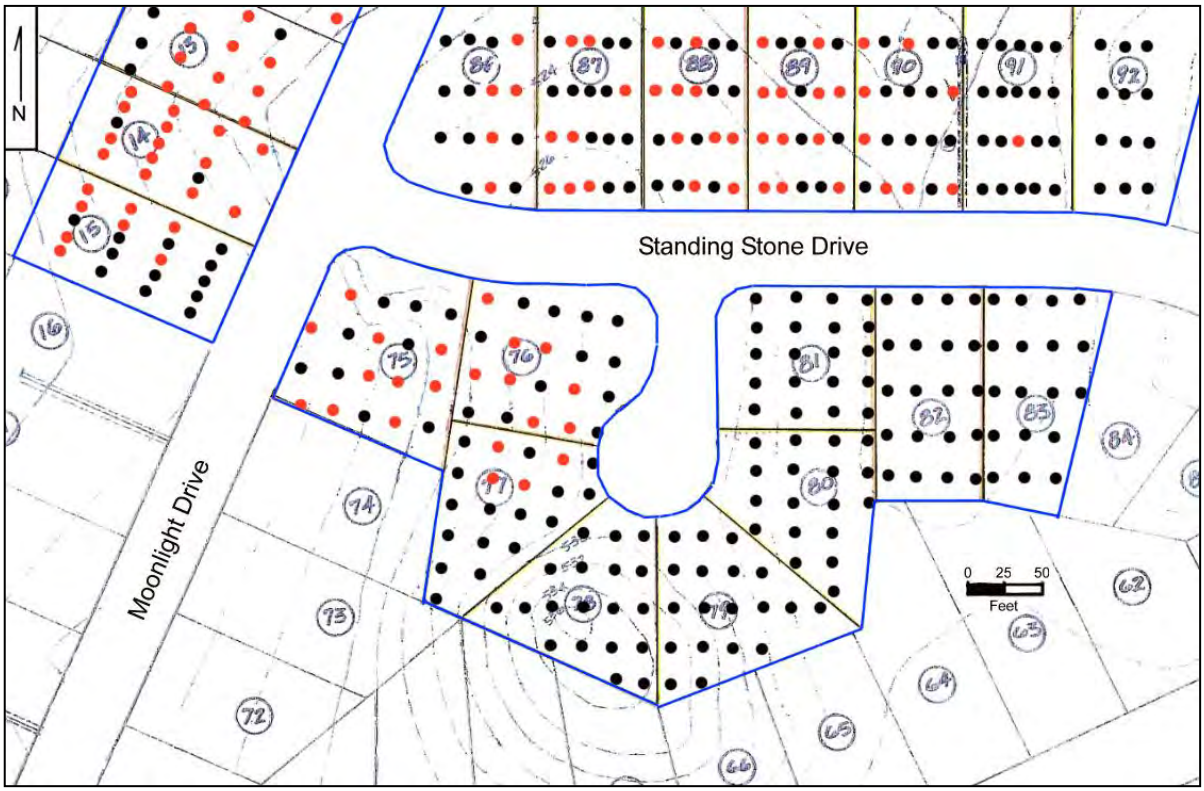

FIGURE 18. Project plan (1998) showing positive (red) and negative (black) shovel tests excavated across the then undeveloped portion of the Brick Church Mound site.

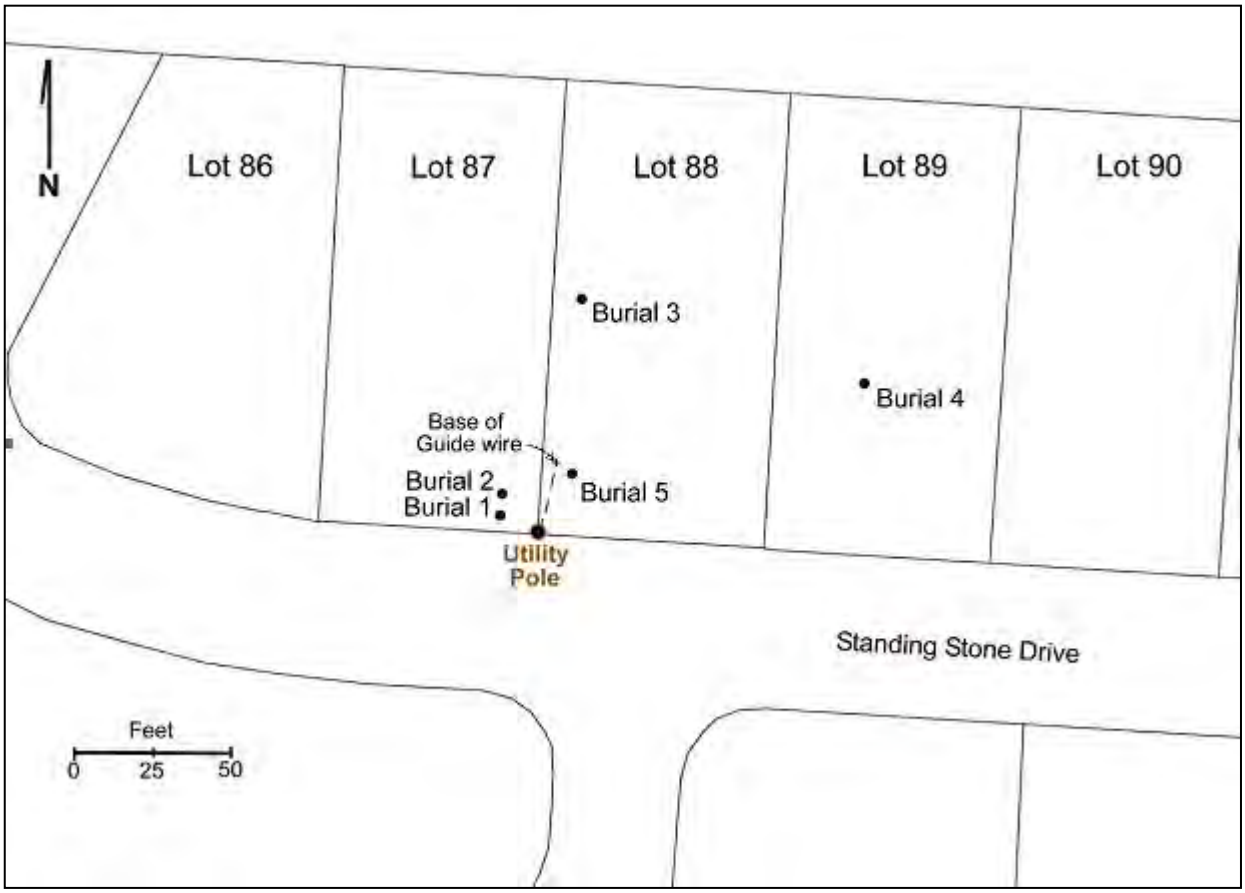

FIGURE19. Schematic indicating locations of human burials identified at the Brick Church Mound site in 1998 and 1999.

bedrock, although in some cases a three-inch auger was used to confirm subsoil depth and to penetrate areas of overburden. All test fill was screened through 1/4" hardware mesh at the time of excavation. Twenty-eight percent (*n*=99) of the 351 shovel tests were positive for prehistoric cultural material (Figure 18). Thirteen lots (Nos. 75-83, 86, and 90-92) were determined to have a low potential for human burials and their development proceeded with no further archaeological oversight.

The spring 1998 shovel tests revealed that two groups of lots contained features and/or midden deposits. These lot groups (Nos. 13-15 and 87-89, respectively) were also considered to have a high potential for human burials as two stone-box graves (Burials 1 and 2) had already been discovered on Lot 87 (see Figures 12 and 18).

Test excavations between October 10-15 of 1999 included strip blocks and trenches across Lots 13-15 and Lots 87-89 (Figure 12). A Mississippian period house floor of prepared clay (Feature 1-Structure 1) was immediately identified upon stripping the soil overburden from Lot 89 in Block A (Figure 13). This floor had characteristics identical to the house floor exposed by Dowd in 1971 as well as the house floor observed by the TDOA in 1972. Fill from a large trash pit (Feature 2) also identified in Block A yielded abundant Mississippian period pottery (n=175 sherds).

Excavations in Blocks B through E

FIGURE 20. Intact Mississippian period midden deposit identified in 1999. Note ceramic loop handle (bottom left) and density of faunal remains.

identified five large pits, a puddled-clay hearth, a single postmold, and a badly disturbed human pit burial (Feature 8-Burial 3). All of these features were encountered very near the existing ground surface as the topsoil across Lots 88 and 89 had been previously removed. Spoil piles at the rear of these lots (see Figure 12) suggest the topsoil was scrapped off and stockpiled for spreading back over the lots after the proposed houses were built.

Excavations in Block F revealed another Mississippian period house (Structure 2). This building of single post construction was represented by 16 postmolds. These posts formed the northwest corner and part of an interior wall of the structure (see Figures 12 and 13). No intact floor was evident in the shallow soil across the postmold pattern. A small amorphous pit (Feature 24) was identified within the confines of the house.

An additional excavation block (Block G) was mechanically stripped east and adjacent to Block A. This work identified the southeast corner of the previously defined Feature 1- Structure 1 house floor. A human pit burial (Feature 32-Burial 4) was also identified in Block G.

As shown in Figure 12, two trenches (Trench 1 and 2) were mechanically excavated across the fronts of Lots 87-89. Trench 1 was initiated where the two stone-box graves were found on Lot 87. This trench identified an additional (yet poorly preserved) stone-box grave designated Burial 5, and also determined that subsoil occurred at or near the ground surface. Trench 2, placed parallel and north of Trench 1 (see Figure 12), revealed a shallow layer of topsoil

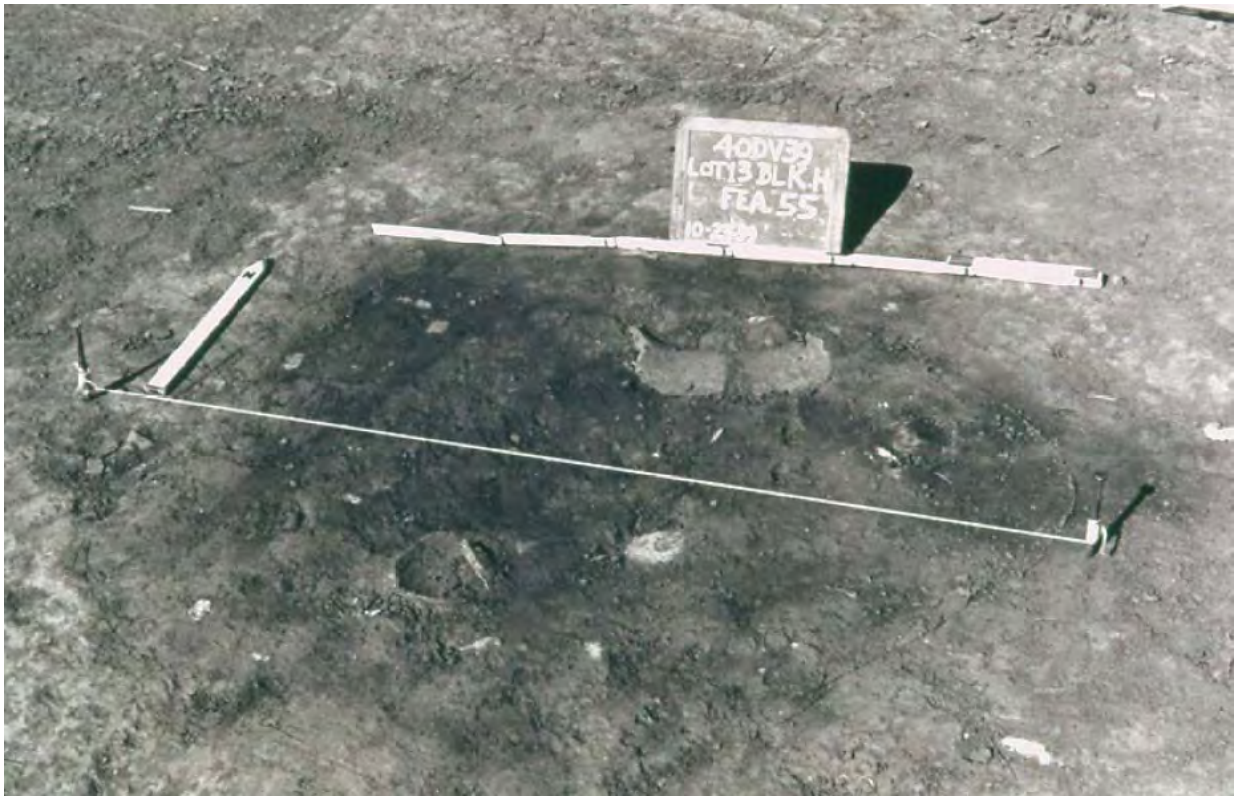

FIGURE 21. Plan View of Feature 55, Lot 13. Note large rim sherd with single lug handle at center right.

averaging 20 centimeters in depth. This soil zone appeared to increase in depth down slope to the north. The Trench 2 excavation identified 10 scattered postmolds with no clear pattern and three large pit features. A small excavation block was extended beyond the south wall of Trench 2 to expose the remainder of the largest defined pit (Feature 43).

On October 13, 1999, the developer was informed of the five human burials discovered on Lots 87-89 along with a map showing their location (Figure 19). The developer was also notified that 12 pit features within Lots 87-89, along with the prepared clay house floor (Feature 1-Structure 1) discovered straddling Lots 88 and 89, might contain human burials. Rather than seek a termination order (TCA 46-4-101-104) to remove the identified burials, the developer chose not to develop Lots 87-89.[5] Consequently, the burials and other archaeological features were mapped and then covered with soil to avoid additional disturbance. These three lots remain undeveloped. On October 14, 1999, five backhoe trenches were opened on Lots 13-15, including two trenches on Lot 13 (Trenches 1 and 2) and one trench on Lot 15 (Trench 3). Two trenches (Trenches 4 and 5) were opened across lots 13-15 (see Figure 12).

Trench 1 measured five meters long and was placed roughly west of (and parallel to) the previously discussed “Mound B”. This trench revealed a series of overlapping burned structure floors extending greater than a meter in depth below the existing surface. The identified deposits apparently comprised the remnant base and western limits of “Mound B”.

Trench 2, placed in the rear of Lot 13, identified a preserved midden at a depth

FIGURE 22. Owl rattle (front, side and top) from Lot 13, Block H, Feature 55.

of 35 centimeters below existing surface. The midden contained abundant refuse including well-preserved animal bone, botanical remains, lithics and Mississippian period pottery (Figure 20). Trench 2 was expanded into an excavation block (Block H, see Figure 12) to assess the midden extent. A large Mississippian period refuse pit (Feature 55) found within Block H is shown in Figure 21.

Trench 3 extended five meters in length across the front of Lot 15. This trench revealed disturbed soil deposits that appears to be either spoil derived from “Mound A”, or deposits originating from somewhere else on the Brick Church Mound site.

Trenches 4 and 5 were placed across the rear of Lots 13-15 (see Figure 12). Disturbed soil was observed to a depth of roughly 30 centimeters below the existing ground surface. Underlying these layer were intact archaeological deposits with evidence of burning and Mississippian period refuse disposal.

On October 15 of 1999, the walls and floor of Trench 1 were cleaned in preparation for mapping and photographic documentation of the identified overlapping structure floors. Unfortunately, upon arrival at the site the following day, the author observed that the developer had covered over Trenches 1 and Trenches 3 since no human burials had been exposed. In addition, Trenches 4 and 5 were filled before profile drawings could be made. As a result, the locations of Trenches 1 and 3 are not indicated in Figure 12.

During late October 1999, the midden deposit and pit feature (Feature 55) previously identified in Block H were excavated with the assistance of volunteers. These archaeological deposits produced a wealth of Mississippian period cultural material, including 1117 ceramic specimens. The ceramic sample includes a unique perforated owl effigy rattle (Figure 22). The deposits also yielded 1391 items of well-preserved animal bone. This assemblage constitutes the only faunal collection of any consequence from the Brick Church Mound site.[6]

By April 2001, the developer had completed construction of the 13 lots released in 1998, and turned his attention toward Lots 13-15. The mechanical excavation of house footer trenches on these lots was monitored on April 2, 2001. The footer trenches on Lots 14 and 15 revealed disturbed soils similar to that previously observed in Trench 3 on Lot 15, with no burials or intact features observed. Footer excavations on Lot 13 revealed significant stratified archaeological deposits consisting of a subterranean, burned clay house floor with a minimum of two additional burned house floors superimposed above it. Wall trench

and single post construction was observed in the footer trenches (Figure 23). Two ash-filled puddled-clay hearths were also identified, with one in the subterranean floor plan and the other vertically above it (Figures 23 and 24). Given the placement of these superimposed structures near the superimposed house floors in Mound B (see Figure 13), it is apparent that the Lot 13 footer trenches were cut into what remains of Mound B. The Lot 13 footer trench plan and profiles were mapped, drawn and photographed prior to being filled with concrete. Ironically, the modern house constructed on Lot 13 represents the latest in a series of overlapping houses built on Mound B (Figure 25).

Summary Remark

This report has provided background context for the Brick Church Mound site by describing the sequence of events that

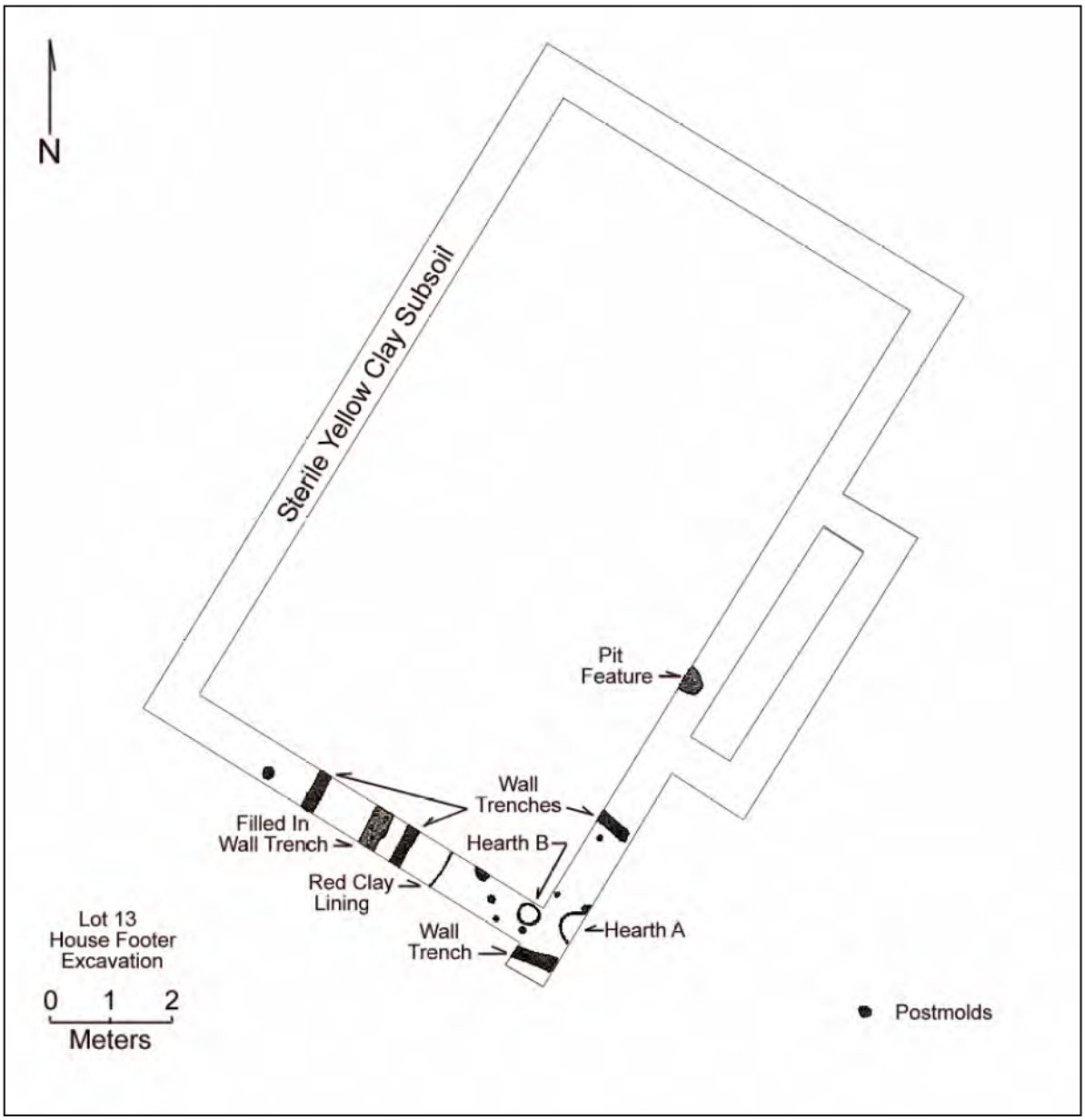

FIGURE 23. Plan view showing wall trenches, postmolds, and hearths identified in the modern footer trench on Lot 13.

FIGURE 24. Hearth A (top left) and Hearth B (center) after fill removal, and a portion of wall trench (right) identified in the modern footer trenches on Lot 13.

lead to the near complete destruction of the last remaining Mississippian period mound center in Davidson County, Tennessee. The modern salvage investigations mentioned in this work, although carried out under less than desirable conditions, successfully documented partial construction phases of (at least) two mounds at the site. In addition, these evaluations discovered the remains of five individuals that were left in place, and also defined areas of the site to still contain intact archaeological deposits (see Figure 26). Future research regarding the Brick Church Mound site will focus on: (1) a more detailed analysis of the mound construction stages, as well as a closer look at other identified site features; and (2) development of a cultural chronology through analysis of the recovered ceramic and lithic artifacts, in concert with a series of radiocarbon determinations derived from the mounds and other archaeological features.

Notes.

[1] This summary establishes a general historical context for the Brick Church Mound site that will provide the basis for two future articles. One article will focus specifically on the site's mound construction and architectural features of the town. The other will discuss the site's material culture and chronology as evidenced by salvage archaeological excavations at the site over the past 30 years.

[2] John Dowd eventually acquired the ceramic figurines from the youth that discovered them. These wonderful and unique examples of Mississippian period ceramic art are now displayed courtesy of Mr. Dowd at the Frank H. McClung Museum on the campus of the University of Tennessee in Knoxville. Dowd published these figurines, and the results of his investigations, in the Fall 1974 issue of *Tennessee Archaeologist* (Vol. 30, No. 2).

FIGURE 25. View west on Standing Stone Drive showing modern house (center right) located on the remains of Mound B on Lot 13.

FIGURE 26. Aerial image indicating areas of known intact archaeological deposits bounded by black lines (Google Earth ® 2007).

[3] Construction of this subdivision was carried out by TennReal Inc. of Nashville.

[4] Construction of the federally-subsidized (HUD) subdivision that impacted the Brick Church Mound was carried out by Robert Earheart Construction Inc.

[5] In spring 1999, the Tennessee Commission on Indian Affairs and members of the local Native American community opposed a TDOT court petition to move prehistoric human burials from the right-of-way of a state funded intersection expansion project that crossed the Davidson/Williamson County line. TDOT archaeological excavations had identified Mississippian period graves in both county jurisdictions at the intersection (Barker and Kline 2006).

Up to the time of the TDOT intersection project, Tennessee courts had refused to recognize modern-day Native Americans as next of kin or blood relatives in cemetery termination proceedings. Tennessee law provides that one must be a blood relative or owner of the land upon which graves are discovered to be recognized as an "interested party", a status legally required to have standing in Tennessee cemetery termination proceedings. Given that local Native Americans were traditionally not recognized as "interested parties", they had no grounds to object to prehistoric graves being relocated from development and road construction projects. However, interested party status was interpreted quite differently in Williamson County Circuit Court in June 1999 when Judge Russ Heldman ruled that the state's Commission on Indian Affairs and members of the local Native American community could stand in court against the TDOT. Following Heldman's August 5, 1999 ruling, the TDOT sought to have his decision overturned in the Tennessee Court of Appeals. This ruling led to two years of judicial

proceedings that would catapult the case to the steps of the Tennessee Supreme Court.

On October 13th 1999, State Archaeologist Nick Fielder informed Earhart Construction, Inc. that, should he wish to relocate the five discovered graves and others potentially on Lots 87-89, he would have to seek a cemetery termination order from the Davidson County Court. The developer was also informed that it would be necessary to further examine the 12 pit features and Structure 1 on the three lots to determine if they contained additional human remains. Complicating matters for the developer, if he chose to have the discovered burials removed, he would have to await the outcome of the ongoing TDOT Intersection proceedings in Williamson County. This is because the Davidson County Court was awaiting the outcome of the TDOT case before it would reside over any other pre-contact period cemetery termination proceedings.

[6] A detailed analysis of the Block H material culture and 1999 site excavations will be the subject of a later report.

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NEW PERSPECTIVES ON LATE WOODLAND ARCHITECTURE AND SETTLEMENT IN EASTERN TENNESSEE: EVIDENCE FROM THE DeARMOND SITE (40RE12)

Lynne P. Sullivan and Shannon D. Koerner

Evidence of Late Woodland (c. A.D. 600-900) settlements has been difficult to find in eastern Tennessee. Burial mounds ("Hamilton" mounds) dating to this time period are well known and have been studied for many years along the upper Tennessee River and its tributaries. The problem faced for decades has been locating contemporary habitation sites, especially those with evidence of structures. Such evidence was in fact found by a Works Progress Administration-era crew at the DeArmond site (40RE12) in the Tennessee Valley Authority's Watts Bar reservoir area, but never reported. Recognizing the DeArmond feature as a legitimate Woodland structure and describing the material culture association should allow future researchers to identify similar features in the eastern Tennessee region.

The Late Woodland period in eastern Tennessee is poorly understood, largely because of the lack of evidence for structures and settlements. The difficulties in finding Late Woodland settlements in eastern Tennessee stand in sharp contrast to the wealth of residential sites identified for this period in many other southeastern and adjacent midwestern regions (Anderson and Mainfort 2002; Emerson et al. 2000; Nassaney and Cobb 1991; Smith 1990). These difficulties also have inhibited the development of models that address the transition from Late Woodland to the much better-known Mississippian societies in the Upper Tennessee Valley (Faulkner 1972; Schroedl et al. 1990; Wetmore 2002).

Our examination of the records from unpublished Works Progress Administration (WPA)-era excavations in Roane County at the DeArmond site (40RE12) revealed an archaeological feature that has heretofore been unrecognized and unidentified in eastern Tennessee (except to the New Deal-era field archaeologists who supervised these excavations): a clear pattern of a Late Woodland building. The photographs, descriptions, and ceramics associated with this large, circular structure pattern, as well as an absolute date from an overlying level confirm its temporal placement during or before the tenth century. The rediscovery of this Late Woodland building makes possible the identification of similar structure patterns at other sites in the region. Identification of these buildings also enables researchers to better model the development of regional Mississippian societies.

Late Woodland Research in Eastern Tennessee

Schroedl et al. (1990:180) point out that defining a Late Woodland period in eastern Tennessee has proved difficult because of "the problems researchers have had in identifying Late Woodland period occupation sites, the reevaluation of burial mounds as defining criteria of the Late Woodland period, and the occurrence of diagnostic Middle Woodland ceramics in apparent Late Woodland contexts." Each of these difficulties has a rather complex history that is summarized here in a brief synopsis of current interpretations and problems of the Late

Woodland period in the eastern Tennessee region. More comprehensive information can be found in publications by Wetmore (2002) and by Schroedl et al. (1990). Wetmore (2002) provides an overview of Late Woodland studies in the entire Appalachian Summit region, including the Valley and Ridge of eastern Tennessee, while Schroedl et al. (1990) examine in detail previous research on the Late Woodland period in eastern Tennessee and the Woodland to Mississippian transition.

In the 1940s, Lewis and Kneberg (1941, 1946; Lewis et al. 1995) built upon earlier research, especially that of Thomas (1894) and Harrington (1922), to define the Hamilton focus as the terminal Woodland period occupation in the Upper Tennessee Valley between Knoxville and Chattanooga. The focus was named for Hamilton County, the location of present-day Chattanooga, and was later recast as a phase, following the newer terminology proposed by Willey and Phillips (1958) which replaced that of the Midwest Taxonomic system developed by McKern (1939). Many conical burial mounds associated with the Hamilton focus were found and investigated in the 1930s by New Deal-era archaeologists in the Tennessee Valley Authority's Chickamauga and Watts Bar Reservoir areas. These burial mounds became a defining characteristic of the Hamilton focus along with limestone-tempered plain, cordmarked, and brushed ceramics. "Household" shell middens were thought to be locations of resi-

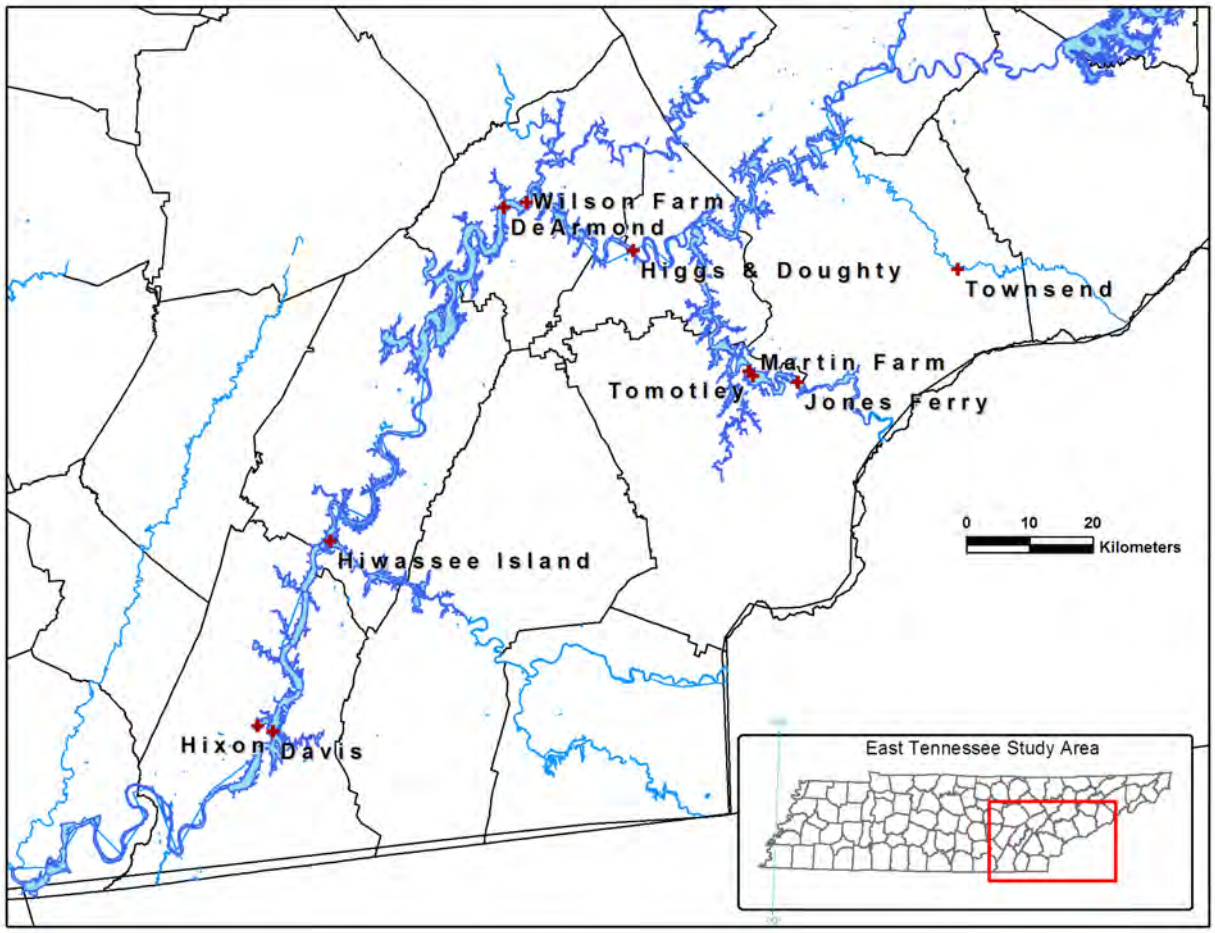

FIGURE 1. Location of DeArmond and other significant sites.

dential sites, but no associated structure patterns were found. Lewis and Kneberg (1946:36) surmised that the household buildings left no discernable evidence because they were lightly constructed. To date, a partial structure pattern, discovered in 1972 by McCollough and Faulkner (1973) at the Higgs site (40LD46) on Watts Bar Lake in Loudon County (Figure 1), is the only widely-reported Woodland structure in eastern Tennessee -- although when it dates in the Woodland period is unclear.

In the 1970s, Schroedl (1973, 1978) found that the use of the conical burial mounds, which Lewis and Kneberg associated with Late Woodland occupations, extended well into the Mississippian period. Radiocarbon dates from these mounds range from A.D. 700 to 1200, clearly placing their use span into the Hiwassee Island phase (A.D. 1100-1300). These mounds account for the lack of burials at most eleventh- through thirteenth-century habitation sites. As Schroedl et al. (1990:192) note, removal of the burial mounds as a defining characteristic of Late Woodland has left little evidence for Late Woodland settlement patterns in the region. Debate continues today about the nature of Late Woodland settlement (Schroedl and Boyd 1991:80; Wetmore 2002:267) and mainly is based on studies of seasonal use of the shell middens.

Identification of Late Woodland habitation sites also is hindered because studies of Late Woodland ceramic assemblages in eastern Tennessee have produced ambiguous results. As noted above, Late Woodland, Hamilton complex ceramics, as defined by Lewis and Kneberg (1946), include limestone-tempered plain, cord-

TABLE 1. Diagnostic Traits of Late Woodland Pottery in the Southern Appalachian region.

Series	Location	Diagnostics	Time	References
Napier	Northern Georgia	Sand tempered; complicated stamped (nested triangles)	A.D. 400-800	Wauchope 1966
Connestee	Western North Carolina	Sand tempered; plain, simple stamped, brushed	A.D. 200-950	Wetmore 2002
Hamilton	Eastern Tennessee	Limestone tempered; plain, cordmarked (and smoothed), incised, and punctated	A.D. 600-900	Lewis and Kneberg 1946; Schroedl and Boyd 1991; Wetmore 2002
Mason	Middle Tennessee	Chert tempered; cordmarked and net-impressed	A.D. 800-1100?	Faulkner 2002
Owl Hollow	Middle Tennessee	Limestone tempered; simple stamped and plain	A.D. 300-800	Faulkner 2002

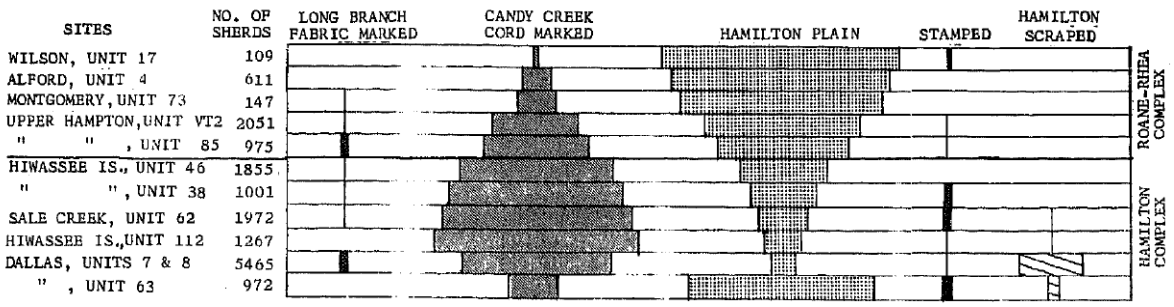

FIGURE 2. Seriation of Roane-Rhea complex ceramics (after Kneberg 1961:Figure 5).

marked, and brushed sherds (Table 1). The recognition of such assemblages is extremely difficult because Middle Woodland, Candy Creek ceramics also are limestone-tempered plain and cordmarked (Lewis et al. 1995:Table 19.3). In addition, limestone- and sand-tempered stamped types compatible with Candy Creek/Connestee assemblages also are found in Late Woodland assemblages (Schroedl and Boyd 1991:79). Connestee phase pottery is diagnostic of the Middle Woodland period in western North Carolina but may extend well into the tenth century (Wetmore 2002:262). Adding to this amalgamation of cultural materials, some so-called Hamilton assemblages contain limestone-tempered vessels with definite Mississippian morphology and sometimes these assemblages include small amounts of shell-tempered pottery (Kneberg 1961:8; Schroedl et al. 1990:184). Perhaps these mixed assemblages relate to “Early” and “Late” Late Woodland ceramic assemblages, based on the inclusion of ceramics similar to those of preceding or succeeding culture periods, but such temporal relationships have yet to be demonstrated.

Especially relevant to the discussion of a Late Woodland settlement at the DeArmond site in Roane County is Kneberg’s 1961 description of the Roane-Rhea complex. She defined and named this terminal Late Woodland ceramic complex for the two counties in which it is most frequently observed. Kneberg noted far fewer limestone-tempered cordmarked than plain surface pottery in this complex (Figure 2), and that vessels were morphologically similar to Mississippian forms. Roane-Rhea complex vessels had globular bases, jars with constricted necks, and shallow bowls. The presence of these forms is in contrast with the more typical Woodland conoidal jar form and an overall dearth of bowl forms. Mixing of Mississippian attributes, specifically shell tempering, also has been noted in Late Woodland ceramic assemblages in the Little Tennessee Valley by Chapman (1980) at the Jones Ferry site and by Baden (1983) at Tomotley, and at the Doughty site on the Tennessee River by McCollough and Faulkner (1973) (Figure 1).

The occurrence of shell tempering and Mississippian vessel forms in ceramic assemblages that also include substantial representation of Woodland types raises the semantic question of whether these assemblages should be considered Late Woodland or assigned to the Early Mississippian Martin Farm phase (A.D. 900-1100). Sites of this phase, which was defined in the Little Tennessee Valley (Schroedl et al. 1985; Schroedl and Boyd 1991), exhibit a combination of limestone-tempered plain and cordmarked pottery,

but with substantial amounts of shell-tempered pottery. Both tempers were used in clay to make Mississippian-style vessel forms. We concur with Schroedl et al. (1990) that ceramic assemblages composed predominantly of Late Woodland types -- even those whose makers were exhibiting some aspirations to be Mississippian -- are better categorized as Late Woodland than Early Mississippian. A radiocarbon age of 1260±135 B.P. for a Late Woodland mortuary context at Tomotley which included minor amounts of shell-tempered sherds, as reported in Baden (1983), supports this Terminal Woodland perspective (Schroedl et al. 1990:185). This date yields date ranges of cal A.D. 652-895 (one-σ; *p*=0.974) and A.D. 535-1036 (two-σ; *p*=0.999) when calibrated with the program CALIB 4.1 (Stuiver and Reimer 1993) using the calibration dataset INTCAL98 (Stuiver et al. 1998). Some additional views on this distinction are included in the following discussion of the large, circular building at the DeArmond site.

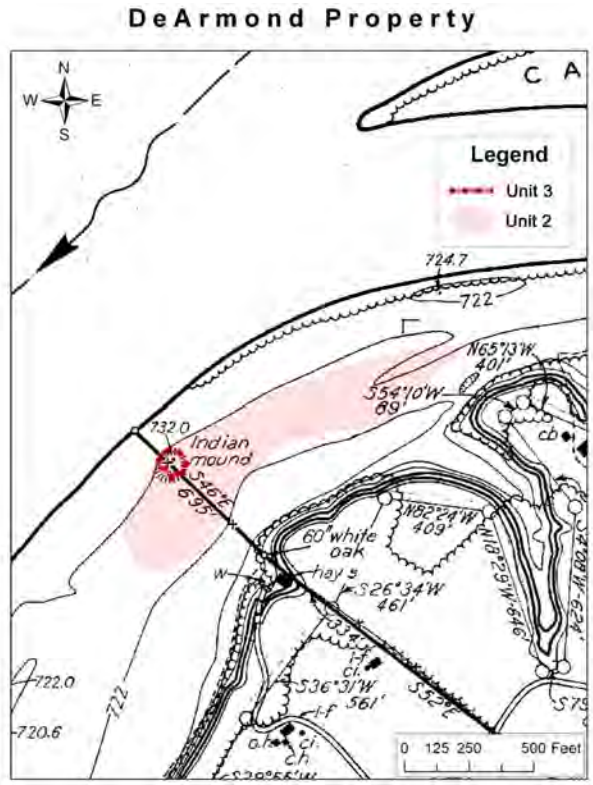

FIGURE 3. Excavation units and grid system at the DeArmond site (after c. 1930s TVA land maps).

The DeArmond Site Excavations

The DeArmond site was situated on the south bank of the Tennessee River, five miles downstream from Kingston, Tennessee (Figure 1; Alden *c.* 1941). An initial archaeological survey of the adjoining DeArmond and Detheridge farms in Roane County in July 1939 identified five sites on the DeArmond property: three burial mounds, one platform mound, and an adjacent village. The site was then excavated by a WPA crew before being inundated by TVA's Watts Bar dam in January 1942 (Lyon 1996:165).

Beginning in the spring 1940 and lasting until the spring 1941, WPA investigators John Alden and Wendell C. Walker supervised the excavations on the platform mound (Excavation Unit 3) and the adjacent village site (Excavation Unit 2) (Alden *c.* 1941). The village deposits, which extended to the north, east, and south of the mound, encompassed roughly 2.5 hectares and lay on a northeast to southwest trending ridge along the river. A grid system, laid out on magnetic north, was established at the southeast corner of the Unit 3 mound for both the mound and village excavations (Figure 3; Alden *c.* 1941). The use of fill from the village area for construction of the platform mound was apparent because Late Woodland limestone-tempered sherds were found in every stage of the mound (Koerner 2005:Table B.1).

Although WPA-era excavations differ from modern practices in record-keeping and artifact recovery, the DeArmond site investigators were careful about recording detailed structure, feature, and burial pat-

terns (Figure 4). They recorded the location of every recognized posthole at the site and their test trenches in the mound and village document well-differentiated site stratigraphy. The excavators observed and recorded this clearly defined stratigraphy across most of the site.

Two stratigraphic trenches were opened in the northeastern village area. These showed that the site was occupied over many generations from Woodland to Late Mississippian times. The stratigraphy was differentiated by cultural refuse interspersed with culturally sterile alluvial silting bands from the Tennessee River. The plowzone capped a Late Hiwassee Island to Dallas phase village that encompassed the platform mound and about one meter of village midden. The basal level of the mound and a structure pattern (Feature 35) from the adjacent village both lay on top of a band of soil the excavators referred to as the "lower Mississippi village alluvium" (Figure 5; Alden *c.*1941:12). Most of the village structure patterns and occupational debris were recovered above this and another lens of alluvial soil.

Under these Mississippian deposits lay a distinct layer of culturally sterile alluvium (Alluvium 1). This stratum in turn overlay a thick layer of cultural midden and features, referred to as "Old Humus 1". This first Old Humus level contained a significant amount of Woodland pottery and some Mississippian sherds that were re-

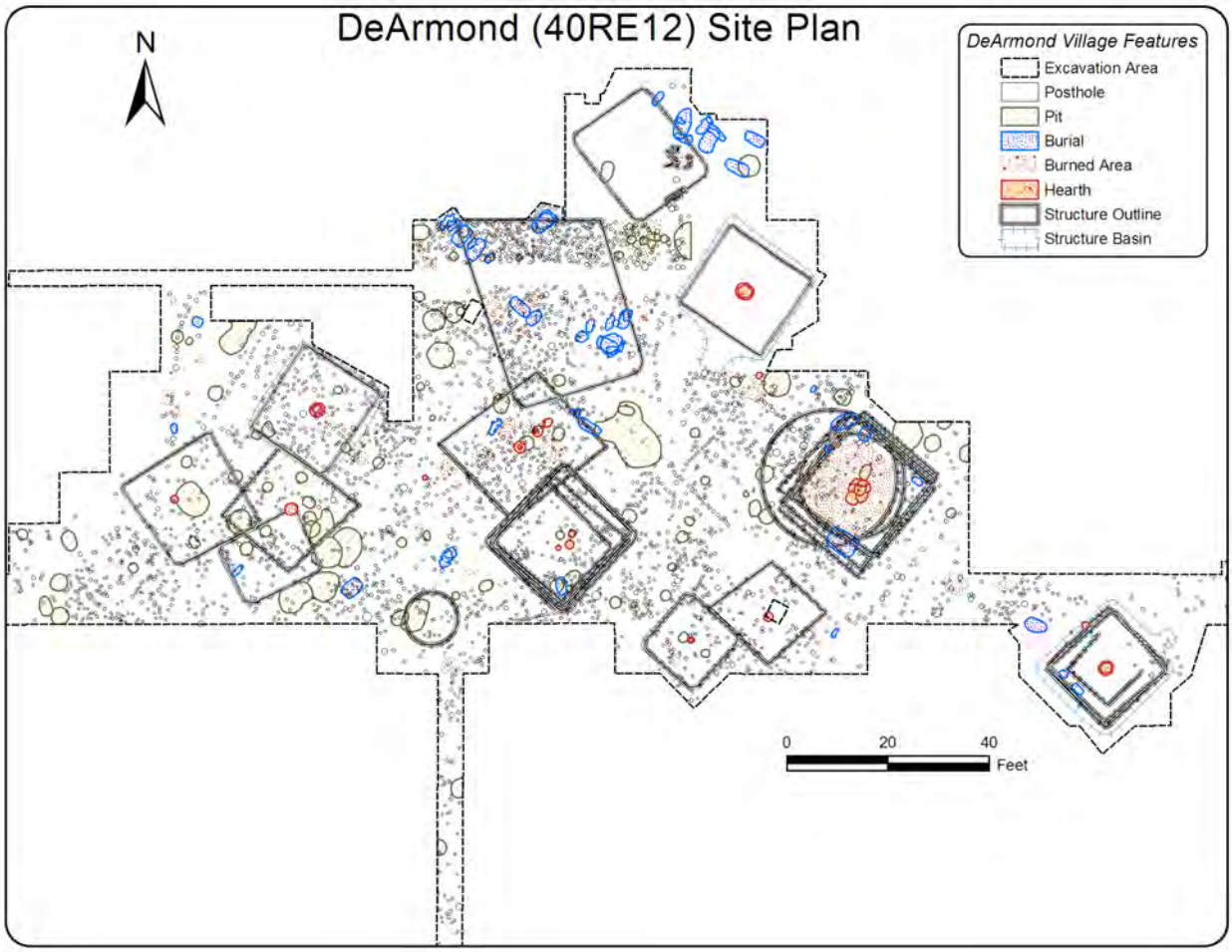

FIGURE 4. Detailed map of DeArmond village excavations.

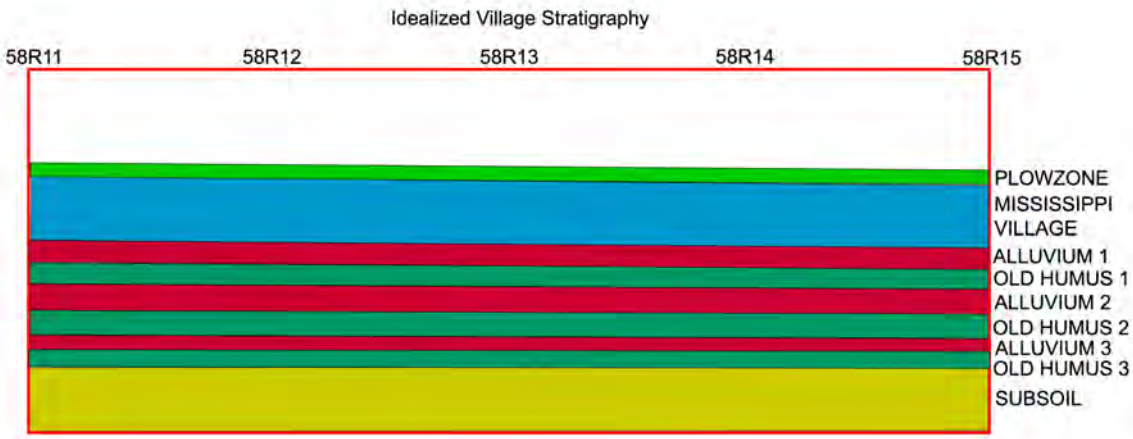

FIGURE 5. Stratigraphy in the village area at the DeArmond site.

covered from pit features and mixed within the level. It was at the base of this level where a large, circular structure was encountered, the cultural affiliation of which forms the main subject of this paper. A second culturally sterile alluvial band (Alluvium 2) delimited the base of this level and in turn, formed the ceiling of a second midden level denoted as “Old Humus 2”, which contained little cultural debris and features. This stratum was again delimited by a third culturally sterile alluvial band that formed a cap for the final cultural level, referred to as “Old Humus 3”. This last deposit lay on sterile subsoil and contained very few artifacts except for an abundance of burned shell and fire-cracked rock concentrations.

The Late Woodland Structure

The DeArmond excavators assigned Feature 30 to the posthole pattern of a very symmetrical, circular dwelling measuring 27 ft (8.2 m) in diameter (Figure 6). Walker notes on the feature form, “This structure pattern is definitely an ‘old humus’ dwelling (Woodland) and was worked out with the utmost care to insure its authenticity. Its association with the 'old humus' band, which is present, and separated from the Mississippian deposit by a distinct alluvial mantel throughout most of the excavated area, is not questioned by this observer” (Walker *c.* 1940:Feature 30). He further notes that the “structure associates with [the] bottom section of old humus” and that a gradual rise in this strata suggested a sloping land surface at the time the house was built.

The excavators first suspected the presence of the Feature 30 house pattern when they found three, regularly-spaced postholes that formed an arc on a horizontal plane in the old humus zone. They made a careful study to isolate postholes that definitely were not intrusive from the Mississippian village and noted that in the area where the circular structure was first located, the alluvium band separating the Mississippian deposit from the old humus was distinct and fairly thick. Adjacent postholes in the arc were located and profiled. The postholes were found to originate at a point not higher than 0.1 ft upward in the old humus midden band. Walker (*c.* 1940:Feature 30) notes on the feature form that “[the postholes] definitely did not originate above the old humus band and were visible in profile as originating only in the lower section of the old humus zone.” In almost every case, the

FIGURE 6. Photograph of Feature 30 at the DeArmond site (*Courtesy of the Frank H. McClung Museum, the University of Tennessee*).

postholes associated with the old humus were filled with dark, humic loam more or less homogeneous with the old humus loam itself. Charcoal flecks were usually readily apparent in the holes and a few limestone-tempered sherds were found in them.

The circular structure pattern was delineated by regularly and very widely-spaced holes, about 2.5 ft apart and of fairly uniform size (Figure 7). The postholes averaged 0.5 ft in diameter and ranged from 1.0 to 1.7 ft in depth. The wall posts were tapered; many actually were pointed. The excavators suggested that the wall posts were driven into the ground, which they also thought would in turn imply the use of relatively short wall posts in the building superstructure. Several larger post holes found within the structure pattern may have held roof support posts. These were relatively shallow, and some of them had ragged outlines and narrowed near the base, as if holes were dug for the placement of large posts.

No prepared floor was found, but four burned areas were associated with the house and likely represented the floor. These areas consisted of a sandy loam that was burned red, about 0.1 ft in thickness, and included disintegrated organic matter that suggested floor deposits. One area was roughly circular and centered inside the structure pattern. It may have been the result of a central fire within the house. No artifacts were found in association with the house, except for a few sherds in the postholes.

The Old Humus 1 stratum, which contained the circular structure, also included

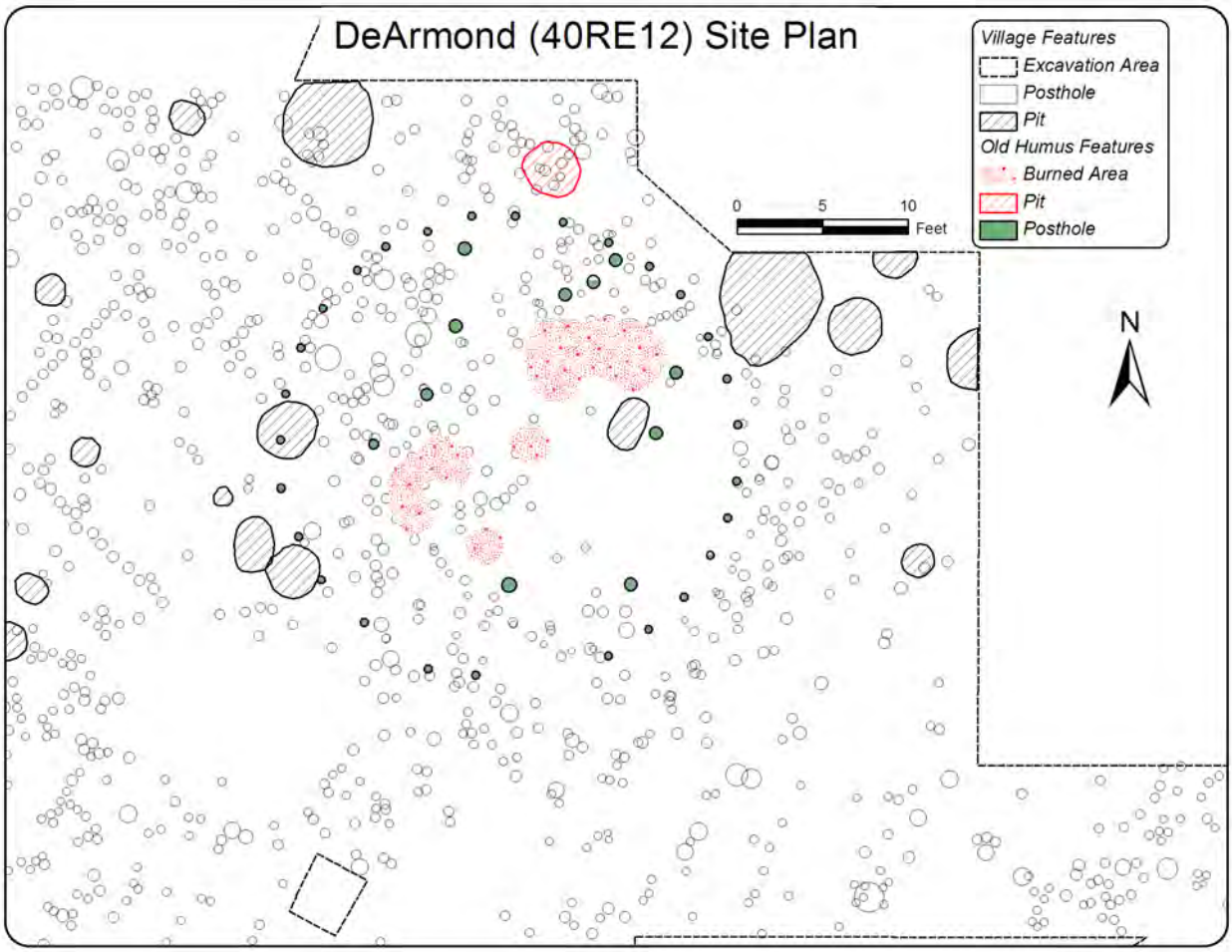

FIGURE 7. Map of circular structure pattern and associated features in Old Humus 1 stratum at the DeArmond site.

midden deposits and other pit features that appear to be contemporary. The mixture of pottery constructed with shell, limestone, and sand temper in the deposits is consistent with a Late Woodland occupation (Table 2). Limestone-tempered sherds from Old Humus 1 conform to the type of assemblage Kneberg (1961) originally correlated with the Hamilton focus. Twenty–five of the 35 sherds that came solely from closed context features in Old Humus 1 were limestone-tempered, with a mix of cordmarked, cord-wrapped dowel and checked and simple stamping. Sherds from the midden deposits in this level and below were predominately limestone-tempered, but both shell- and sand-tempered sherds also were present. The increased amount of shell tempering in the lowest alluvial level is interesting and not readily explained, although the small sample size, bioturbation or intrusive features, could all be factors.

The mix of shell-, limestone-, and sand-tempered sherds in these deposits is by no means unique. Schroedl et al. (1985) described a similar mixing of limestone and shell pottery along with very small amounts of sand pottery in their definition of the Martin Farm phase. Early levels at Martin Farm contained very little simple or check stamped pottery while the DeArmond Old Humus levels exhibit more of these surface treatments. Kneberg's (1961) study of the Hamilton and Roane-Rhea complexes sheds some light on

these slight differences. She associated assemblages with limestone–tempered sherds exhibiting scraped and smoothed-over surfaces and those with linear and check stamping with Hamilton components while she grouped assemblages in which these sherds were absent or occurred in very small quantities to the Roane-Rhea complex. These distinctions suggest that the pottery assemblage in contexts associated with Feature 30 at DeArmond is more congruent with a Late Woodland occupation.

TABLE 2. Diagnostic Pottery from the Old Humus Levels.

	Old Humus	
Type	All	Features
Shell - Plain	69	8
Shell - Cordmarked	12	0
Shell - Textile Impressed	4	0
Shell - Painted	1	1
Limestone - Plain	30	0
Limestone - Cordmarked	64	5
Limestone - Cord-Wrapped Dowel	42	8
Limestone - Simple Stamped	18	3
Limestone - Checkstamped	35	9
Sand - Plain	1	1
Sand - Cord-Wrapped Dowel	2	0

Adding some support to this argument is an AMS date we recently acquired for a feature in the pre-platform mound, Mississippian village level. A date of 966 ± 45 B.P. (lab id AA80208) was obtained from a bone artifact in a pit feature (Feature 103) originating in this lower Mississippian "Humus Under Village" stratum -- well above the Structure 30 floor level. The possible date ranges are cal A.D. 1020-1052, p=0.338, A.D. 1081-1128, p=0.479, and cal A.D. 1134-1152, p=0.183; at two sigma, the range is cal A.D. 990-1169, p=1 when calibrated with the program CALIB 4.1 (Stuiver and Reimer 1993) using the calibration dataset INTCAL98 (Stuiver et al. 1998). Given the alluvial layer that separates the stratum bearing this eleventh-century Mississippian component from the stratum containing Feature 30, a tenth-century A.D. or earlier date for the circular structure is not unreasonable. This timing also is compatible with the ceramic seriation.

The Feature 30 circular structure at the DeArmond site also compares favorably with Woodland structures in the larger region. In fact, if one were simply to guess what Late Woodland buildings "should" look like in eastern Tennessee by examining those found in adjacent areas, this large, circular, 27 ft (8.2. m) in diameter, single-post building fits well within the range of variation. To the east in the Appalachian Summit region, eight circular structures between 7 and 8 m in diameter were excavated at the Ela site and interpreted as late Middle Woodland, Connestee phase (A.D. 200-950) dwellings. These structures date to the late seventh century (Robinson et al. 1994; Wetmore 1996; Wetmore and Rogers 1990), but the use of similar buildings may have persisted through the tenth century (Ward and Davis 1999:155). To the west in the Elk and Duck River valleys, circular Middle Woodland structures characteristic of the McFarland and Owl Hollow phases excavated during the Normandy project in south-central Tennessee (Faulkner 2002) also are similar to the DeArmond structure. Faulkner (2002:197) notes that such circular buildings may have been used until the ninth century. He (Faulkner 2002) also makes the same comparison of the Normandy project structures in Middle

Tennessee with the partial structure pattern at the Higgs site.

Identifying Late Woodland Buildings in Southeastern Tennessee

Affiliation of the Feature 30 circular, single-post structure at the DeArmond site with a Late Woodland component raises questions about the temporal context of such structure patterns at some other sites. We point to some similar examples at the Wilson Farm site, also in Roane County, the Hiwassee Island site in adjacent Meigs County to the east, and the Hixon site in Hamilton County to the south (Figure 1). There also are similar patterns at site 40BT90 investigated by the Townsend project in Blount County (Yerka et al. 2009). We cannot definitely identify any of these structures as Late Woodland, but we can show that the structure at DeArmond is not unique in eastern Tennessee and that it is possible that archaeological field investigations and analyses have not been recognizing such structure patterns for what they are. Table 3 provides some summary data for these structures.

TABLE 3. Summary Data for Possible Late Woodland Structures in Eastern Tennessee.

Site	Structure Diameter	Average Postmold Diameter	Postmold Spacing
DeArmond	8.2 m	15 cm	76 cm
Wilson	Unknown	20 cm	Unknown
Hixon	12 m	15 cm	76 cm
Hiwassee Island	6 m	13 cm	Unknown
Townsend sites	10-12 m	17.5 cm	73 cm

The Wilson Farm site (40RE6), located on the north bank of the Tennessee River in Roane County, consisted of seven burial mounds and a village area. The mounds were situated on a terrace over-

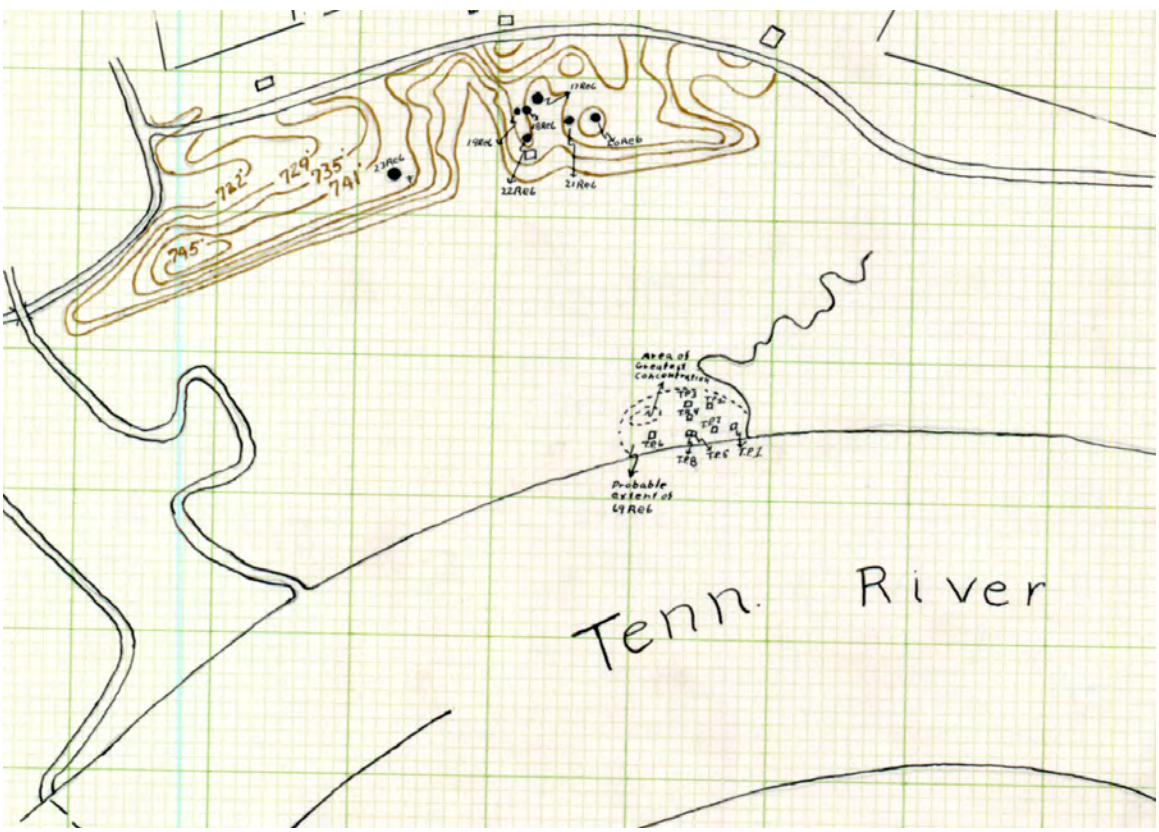

FIGURE 8. Sketch map of the Wilson Farm site (*Courtesy of the Frank H. McClung Museum, the University of Tennessee*).

looking bottomlands along the Tennessee River, where a probable village lay about 50 ft from the riverbank (Figure 8). Burroughs (*c.* 1930s) considered the small "village" area contemporary with the burial mounds although his investigation of this area was rather haphazard and not tied in with the datum for the mound excavations (thus there is no map of this area). Whenever his workmen had nothing else to do, they would dig test pits in the village. They dug eight pits in all with most producing small quantities of pottery and projectile points. One test pit in particular contained daub, pottery, projectile points, and an arc of large post holes forming a circular structure. The post holes averaged about 8 inches in diameter. A small collection from the site, curated at the Frank H. McClung Museum, consisted of three projectile points from two test units that yielded postholes. All were stemmed variants attributable to the Late Archaic period, (Justice 1987:149). Burroughs (*c.* 1930s) mentioned finding a few potsherds in these levels but none were located in the site collection.

The Hixon site (40HA3), located on a lower terrace adjacent to the Tennessee River, consisted of a Mississippian platform mound and palisaded village area (Lewis et al. 1995: 372-373). Approximately one half of a very large, single-post, circular structure pattern, Feature 13, was found beneath deposits on the southwest periphery of the Mississippian platform mound (Figure 9). The WPA excavators did not initially recognize the pat-

FIGURE 9. Field map of the Hixon site showing Structure 13 location under edge of platform mound (*Courtesy of the Frank H. McClung Museum, the University of Tennessee*).

tern, but later designated it as a “dwelling house” of the “Hiwassee type” (Lewis et al. 1995:391). The structure is about 12 m (40 ft) in diameter. As shown on the field plat curated at the Frank H. McClung Museum, the Feature 13 postholes average about 15 cm (6 in) in diameter and are widely spaced although depths were not recorded (Figure 10). It is possible that some interior postholes also are present, but the WPA investigators did not indicate which ones may be associated with the structure. An assemblage of Woodland ceramics from Hixon includes 846 sherds. The WPA team identified these as mainly representing the Candy Creek focus with some mixture from a Hamilton component (Lewis at al 1995: Table 24.5).

At the Hiwassee Island site (40MG31), a large platform mound and village site located on Hiwassee Island in the middle of the Tennessee River in Meigs County, excavators identified a large circular structure (Figure 11). Charles Nash described House 71, a single-post, circular structure 6 m (20 ft) in diameter (Lewis and Kneberg 1946:72; Nash *c.* 1938). This structure lay above an Old Humus layer, but below a Mississippian village level that formed the base of the platform mound. The Feature 71 structure had no definite floor deposits, but its upper terminus was indicated by the tops of inclusive postholes and a burned area designated as the hearth. Postholes for this feature averaged about 13 cm (5 in) in diameter and were nearly 0.5 m (1.6 ft) in depth.

The Townsend archaeological project

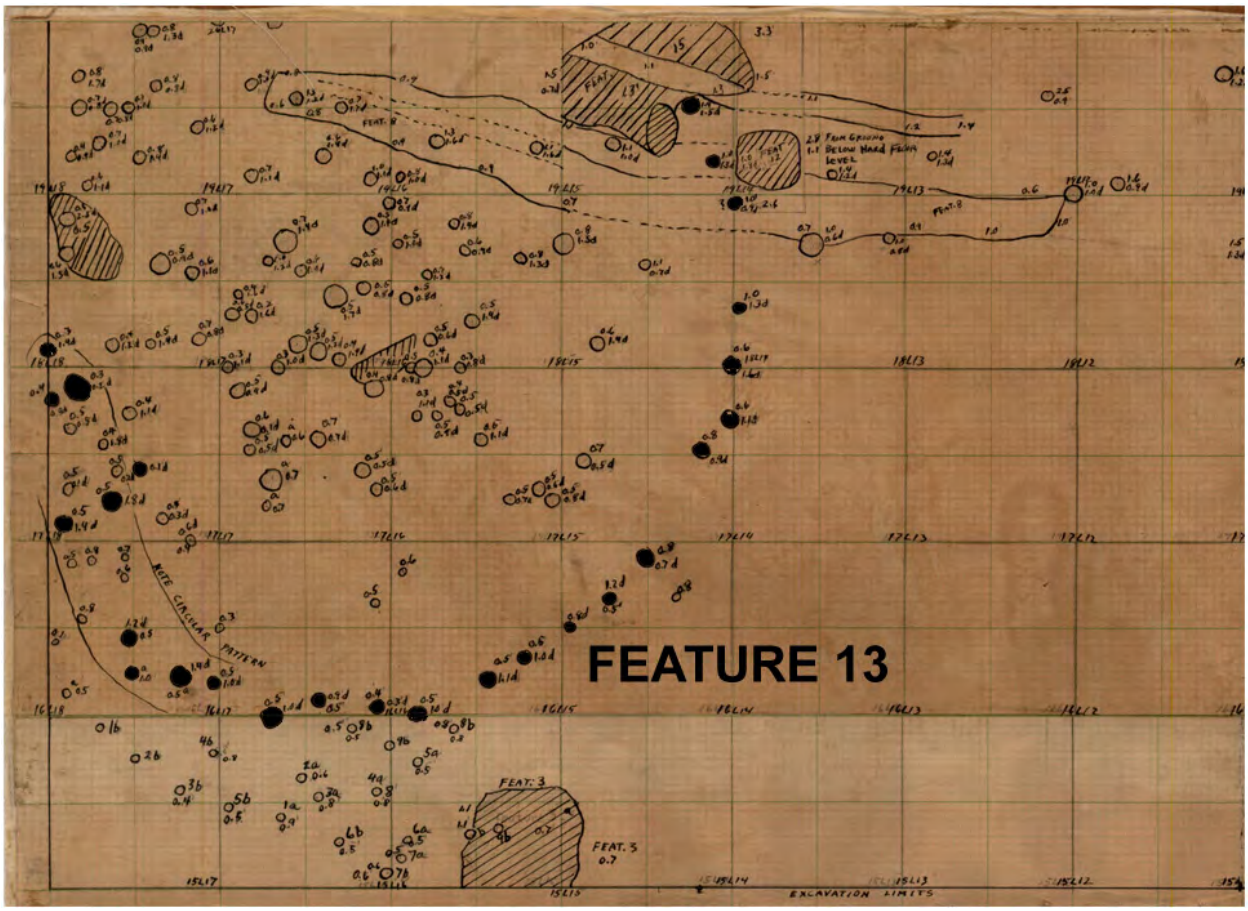

FIGURE 10. Field map of the Hixon site showing detail of Structure 13 pattern (*Courtesy of the Frank H. McClung Museum, the University of Tennessee*).

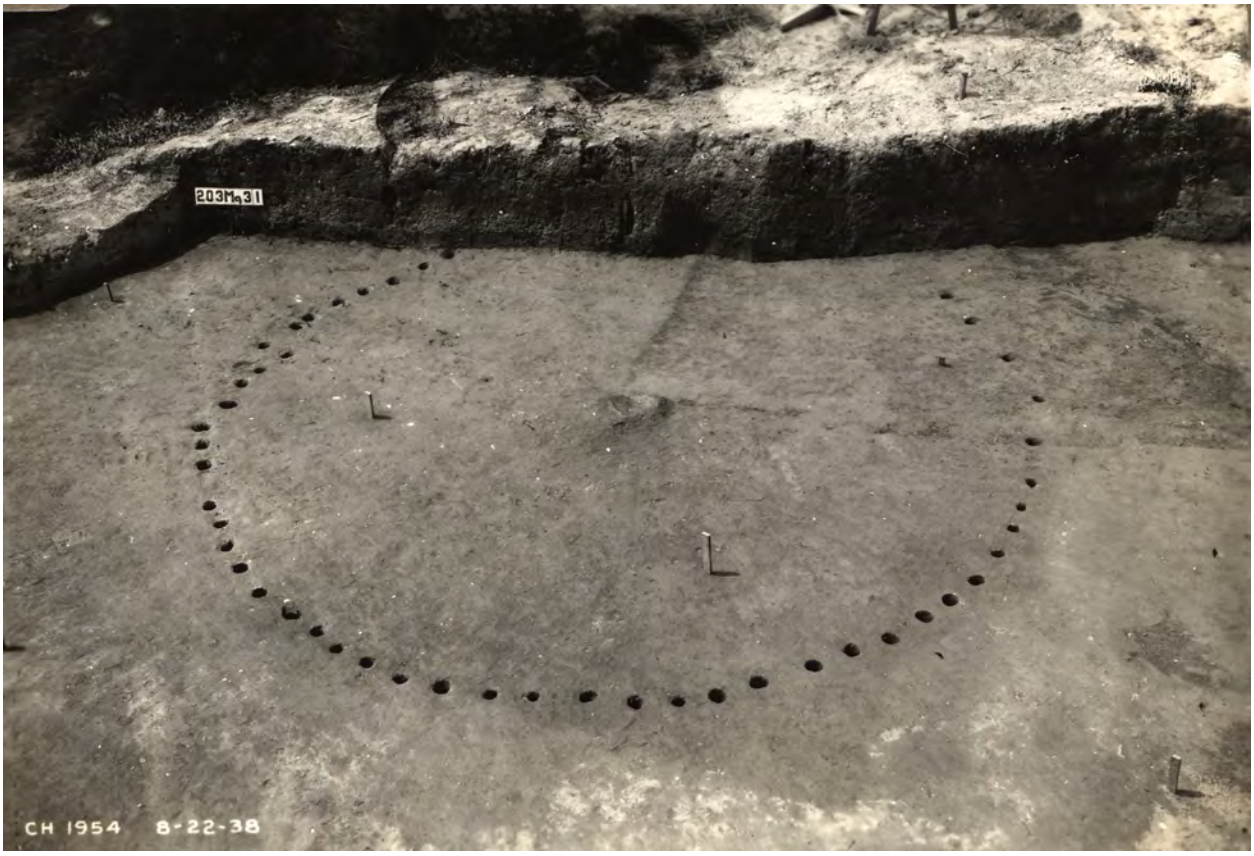

FIGURE 11. Photograph of Feature 71 at the Hiwassee Island site (*Courtesy of the Frank H. McClung Museum, the University of Tennessee*).

in Blount County mitigated three Mississippian sites (40BT89-91) in Tuckaleechee Cove (Figure 1). Site investigators recorded the patterns of at least four large, circular single post structures on site 40BT90 (Figures 12-13). These large structures are not to be confused with several historic Cherokee house patterns or the small Early Mississippian granaries. These structures range in size from about 10 to 12 meters in diameter, with postholes averaging 17.5 cm (6.5 in) in diameter and spaced 73 cm (29 in) apart (Yerka et al. 2009).

Circular Buildings and the Woodland to Mississippian Transition in Eastern Tennessee

The notion that at least some circular structure patterns at sites in eastern Tennessee are associated with Late Woodland components puts some perspective on the occurrence of circular structures in subsequent Mississippian contexts in the region. The Mississippian period circular buildings may simply reflect a conservative style or continuation of an older Woodland tradition that ends about the same time the use of the conical burial mounds ceases, certainly by the beginning of the Dallas phase (around A.D. 1300). Circular buildings are well-documented in the Hiwassee Island phase and long have seemed enigmatic in a Mississippian world of square and rectangular buildings. The “rotundas” on the Hiwassee Island mound Levels E2, D, and C (see Lewis and Kneberg 1946:Plates 16,18,19), and on the second

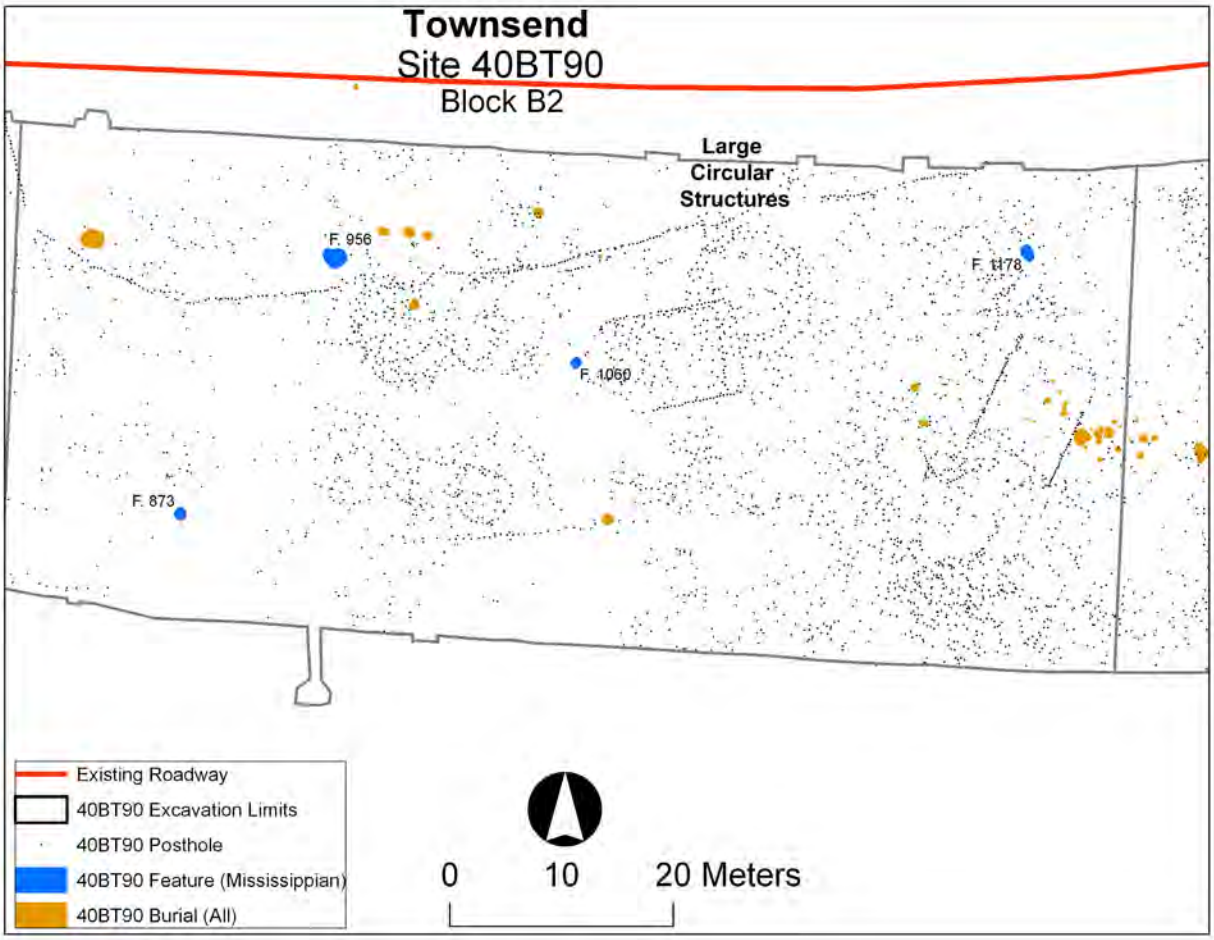

FIGURE 12. Plat showing patterns of large, circular structures in Block B2 at 40BT90 (*Courtesy of the Archaeological Research Laboratory, Department of Anthropology, the University of Tennessee*).

mound construction level at the Davis site (40HA2) in Hamilton County (Figure 1; see Lewis et al. 1995:Figures 25.6&7) all date between A.D. 1000 and 1300 (Lewis and Kneberg 1946; Sullivan 2009). This occurrence of circular buildings in Early Mississippian contexts also applies at the DeArmond site, where a circular structure (Feature 8) was built in the exact same place as the Feature 30 structure, but in a later stratigraphic level (Figure 14). The continued use of large circular buildings from Woodland through Early Mississippian occupations at important mound sites in the Tennessee Valley does not seem coincidental. Some large circular buildings are of single-post and some are of wall-trench construction, but the notion that they continue an earlier tradition makes them seem less out of place. The switching back and forth between circular and rectangular buildings in these contexts is no less confounding than the gradual change between small pole and large log architecture known for the region (Schroedl 1998; Webb 1938).

Also of interest is the fact that at least some of the large, circular buildings that correlate with Late Woodland occupations were built in places where Mississippian platform mounds were later constructed. If these buildings served as a locus of Late Woodland community activities (much like Hamilton burial mounds), then there is a strong correlation between the location of early Mississippian platform mounds and

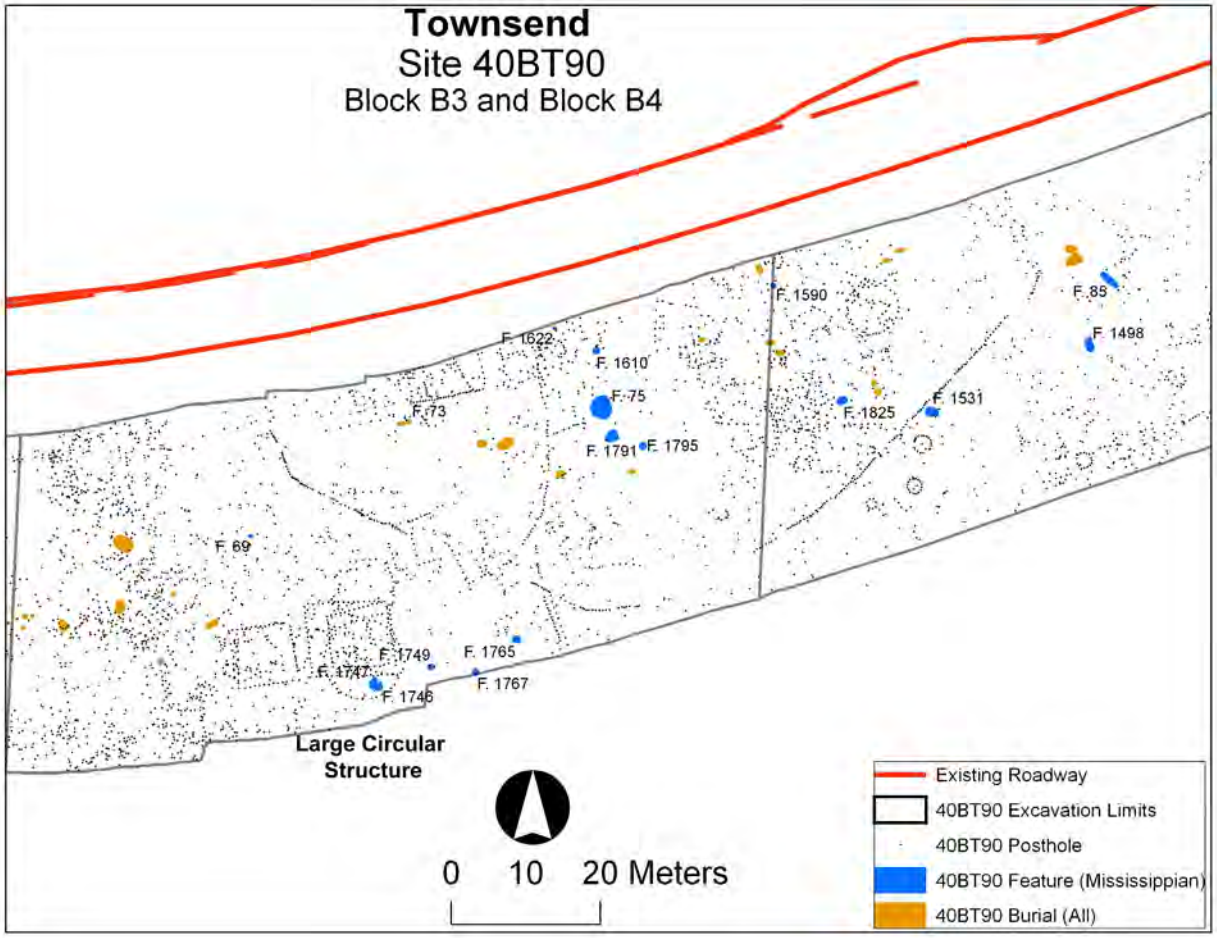

FIGURE 13. Plat showing patterns of large, circular structures in Blocks B3 and B4 at 40BT90 (*Courtesy of the Archaeological Research Laboratory, Department of Anthropology, the University of Tennessee*).

traditional Late Woodland gathering places. In other cases, such as the Wilson Farm site, the large, circular building is near a concentration of burial mounds. At Townsend, there are no mounds, but some very preliminary interpretations suggest that meeting for trading purposes may have been important at these sites (Sullivan and Koerner 2007).

In other areas of the world, considerable research has been devoted to correlating changes from circular to rectangular architecture with changes in societal organization (Flannery 1972, 2002). The change from circular to rectangular structures typically is associated with shifts to increases in agricultural production, sedentism, and social complexity – all processes that we would expect in the transition from Woodland to Mississippian ways of life. Circular buildings are not seen again archaeologically in eastern Tennessee until the seventeenth-century when the Overhill Cherokee constructed circular dwellings and town houses (Schroedl 1998).

When set into the context of our modern understanding of regional archaeological trends, the detailed observations made long ago by a WPA crew of one structure at the DeArmond site provide a clue to a regional pattern of conservatism in traditional architecture. The use of circular structures eventually changed along

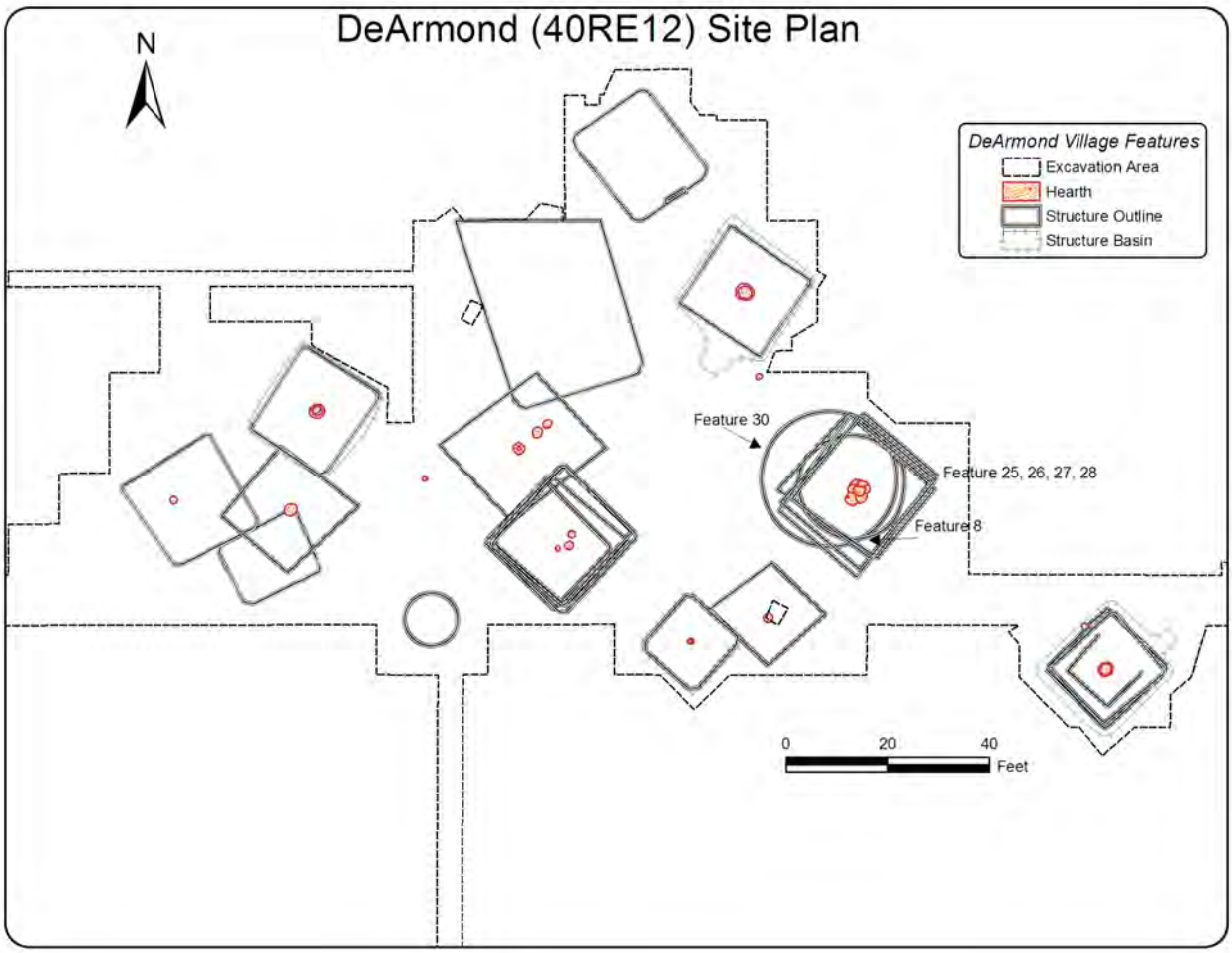

FIGURE 14. Schematic map of structure patterns at the DeArmond site.

with many other traditions and cultural practices during the Woodland to Mississippian transition in eastern Tennessee. Perhaps this exposé of one, elusive Late Woodland building hidden in 66-year-old records will promote the discovery of more—both in the ground and in curated collections.

Acknowledgements: The AMS date for the late Woodland component at DeArmond was generously provided by the NSF-Arizona AMS facility. Discussions with Cameron Howell, Stephen Yerka, and Kandace Hollenbach aided our interpretation and reporting of Late Woodland components from the Townsend sites. Paul Webb and Brett Riggs generously provided similar perspectives from Southern Appalachian sites in western North Carolina and northern Georgia. Finally, we must not forget the contribution of numerous WPA-era investigators, including but not limited to insights from Wendell Walker, Charles Nash, and Carroll Burroughs, whose consideration of significant site features during such challenging field conditions is now fully appreciated.

Collections. The collections and field notes from the DeArmond, Wilson, Hixon, Hiwassee Island, and Davis sites are curated at the Frank H. McClung Museum at the University of Tennessee in Knoxville.

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X-RAY FLUORESCENCE ANALYSIS OF A MISSISSIPPIAN GREENSTONE CELT CACHE FROM GILES COUNTY, TENNESSEE

C. Andrew Buchner

The results of X-Ray Fluorescence (XRF) analysis of three greenstone celts recovered from the Parker's Pasture site (40GL25) in Giles County, Tennessee are presented in this report. The celts were recovered during 2004 from a stone-capped grave identified within a completely excavated single-set post structure. A radiocarbon date on an intrusive feature suggests the burial predates the cal A.D. 1206-1406 range. XRF analysis is an inexpensive and non-destructive trace element analysis that has been successfully used in the past to source obsidian artifacts in the Mid-South; its use on greenstone was considered experimental. The results suggest that the celts could be from two sources within the Hillabee Metavolcanic Complex. Additional comparative samples from greenstone artifacts and sources are needed for this method to have more general utility, and recent advances in portable XRF (pXRF) devices provide a technological advance that could propel such research.

The Parker's Pasture site (40GL25) is a multi-component prehistoric open habitation located 10 km west of modern Pulaski (Figure 1). The site lies within the Outer Central Basin near its boundary with the Western Highland Rim physiographic province. Site deposits occur on the edge of a Late Pleistocene terrace (T-2) overlooking the floodplain of Richland Creek. Richland Creek flows generally southeasterly into the Elk River, which in turn empties into the Tennessee River in northern Alabama.

Staff of Panamerican Consultants, Inc. (Panamerican) conducted mitigation excavations at the Parker's Pasture site in late fall and summer 2004.[1] During the excavations, a cache of lithic artifacts was recovered from a Mississippian burial, including the three greenstone celts discussed here. These items came to my attention while serving in an ancillary role during report preparation. The celts continued to intrigue me following submittal of the final report (Chapman et al. 2006). After reading Gall and Steponaitis's (2001) "Composition and Provenance of Greenstone Artifacts from Moundville," I contacted Craig Skinner at the Northwest Research Obsidian Studies Laboratory about the possibility of using XRF in a similar trace element analysis for the 40GL25 celts. He responded positively and Panamerican agreed to fund the testing. The results were initially documented in Skinner's (2006) lab report, and then presented to the Mid-South Archaeological Conference (Buchner and Skinner 2007). The paper collected dust until a symposium on pXRF technology at the 2010 Society for Historical Archaeology (SHA) conference inspired me to submit it for publication.

Recovery Context

The data recovery (Phase III) excavation strategy at the Parker's Pasture site conformed to a plan commonly utilized during CRM projects at shallow sites: the plowzone (Ap) was mechanically stripped, and the features exposed in the sterile subsoil were then excavated and recorded. Stripping was conducted over a 60-x-20 m area in the far northern portion of the site, with the

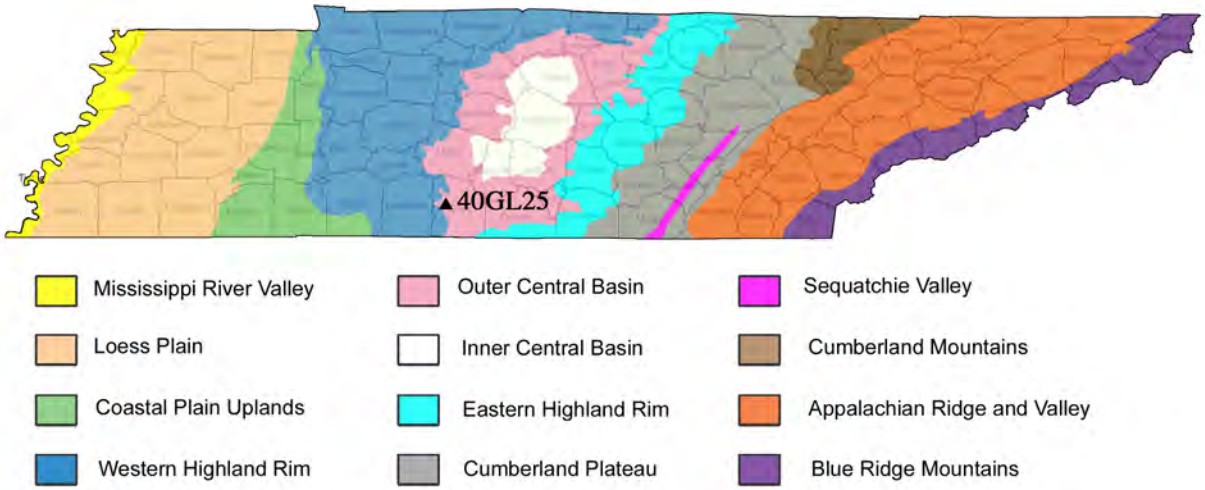

FIGURE 1. The Parker's Pasture site (40GL25) location in relation to Tennessee physiographic regions.

majority of the site remaining unexcavated (Chapman et al. 2006:Figure 5.01). The stripped area correlates with the T-2 terrace edge and overlooks the T-1 of Richland Creek to the west.

Stripping at the Parker's Pasture site resulted in the identification of 65 cultural features (Chapman et al. 2006:Table 5.01). With one exception, these features are associated with the site's Mississippian component. The features were clustered around two discrete structures located just over 20 m apart. Structure 2 was a small (2.8-x-2.1 m), lightly built rectangular dwelling that was interpreted as a summer residence. Structure 1 was a 5.0-x-5.0 m single-set post dwelling with rounded corners that was represented by 37 wall posts, 10 interior posts, and a pair of entrance trenches (Figure 2). Interior features within Structure 1 included a hearth (F-77), a pit (F-65), a basin (F-81), and most importantly for this study, a burial (F-3) that contained the cache of greenstone celts.

Feature 3 was a rectangular burial pit (1.2-x-0.6 m) capped with a single, large, horizontally placed limestone slab (Chapman et al. 2006:68-72). Unlike the more typical Missisippian stone-box graves of Tennessee's Central Basin, the burial vault did not contain a stone lining. Sometime in the past the capstone had broken and collapsed into the earthen burial vault. Excavations revealed the relatively well-preserved remains of a semi-flexed adult male roughly 23-30 years of age, with a stature of between 1.62 m and 1.69 m (5.3-5.6 ft) tall. The project physical anthropologist conducted an *in situ* examination of the skeletal remains, which were subsequently reburied in place. An unusual tooth wear pattern was observed on the F-3 individual: the maxillary teeth (excluding molars) were worn down to the dentin on the lingual surface. This was interpreted as evidence that he used his teeth as tools to work material, possibly leather.

The F-3 individual was interred with two tool caches, one on either side of his head. The greenstone celts were part of a cache of 27 artifacts on the east, or face, side of the head (Figure 3). This cache also included three hammerstones, two

FIGURE 2. Structure 1 with the F-3 stone-capped grave location indicated by the arrow, view to the southwest.

large (6.0-x-4.0 cm) retouched pieces of chert, and 19 pieces of Ft. Payne chert debitage (Chapman et al. 2006:136-142). On the opposite side of the head, the second tool cache produced three bone awls, two bone pins, a chert projectile preform, and an abrader. No ceramics were intentionally placed within the burial, although some sherds were recovered from intrusive fill after the capstone's collapse. However, a large (25-x-15 cm) Mississippi Plain jar rim was placed on the limestone slab that capped the burial vault. This may represent a ritually “killed” vessel.

Three radiocarbon dates were obtained on samples from the Parker’s Pasture site (Buchner 2006:185-188). The three results fall within a generalized Mississippian period framework, and are suggestive of a series of occupations at the site during the period ca. A.D. 1050 to A.D. 1500. Importantly, one of the dated features at the Parker’s Pasture site is an interior post (F-78) within Structure 1 that intrudes into burial F-3 (Chapman et al. 2006:47). As a result, the F-78 radiocarbon result provides the best chronological data for F-3 and the cache of greenstone celts. The F-78 sample yielded a measured radiocarbon age of 730±70 B.P. (Beta-198357; charcoal; δ13C= -26.6), and for this result the possible calibrated ranges are cal A.D. 1186-1201 [p=0.016], and cal A.D. 1206-1406 [p=0.984] (Calibrated at 2σ with the program CALIB Rev. 5.0.0 [Stuiver and Reimer 1986] that implements the radiocarbon curve of Reimer et al. [1998]). The calibrated results reveal that F-78 dates within the Middle Cumberland Regional Period III (A.D. 1200-1325)

FIGURE 3. Stone-capped burial F-3 after excavation showing the lithic cache, including the greenstone celts, *in situ*.

(Moore and Smith 2009:208), and in terms of the Moundville sequence, F-78 is associated with Moundville II phase (A.D. 1200-1400) (Knight and Steponaitis 1998). However, because F-78 was intrusive into the burial F-3 fill, the burial must predate the post. As a result, burial F-3 is interpreted as occurring within Middle Cumberland Regional Period II (A.D. 1100-1200; Moore and Smith 2009:207), which is coeval with the second half of the Moundville I phase (Knight and Steponaitis 1998).

Artifact Descriptions

Greenstone refers to a wide range of green-colored metamorphic rocks, and/or altered mafic volcanic rock. The green is due to abundant green chlorite, actinolite and epidote minerals that dominate the rock (Blatt and Tracy 1996).

The three greenstone celts from the Parker's Pasture site are highly polished, ungrooved, and taper toward the pole end (Figure 4 and Table 1). The celts were assigned "Item" numbers in the field, and these are keyed to scale drawings that documented the intra-burial provenience of all the funerary artifacts within F-3 in great detail (see Chapman et al. 2006:Figure 7.13).

The largest specimen, Item 1, is roughly twice as long as the other two

FIGURE 4. Greenstone celts while dry (left to right: Items 1, 7, and 27).

specimens, and is over six times the mass of the next nearest celt. The Item 1 celt exhibits flattened sides and a flat pole end that the smaller specimens do not. Two approximately 1 cm chips are missing from the Item 1 celt: one at the pole end and one on the lateral margin. The bit remains sharp (true for all three specimens). A similarly shaped example is reported from a Marshall Farm site (40DV48; Moore and Smith 2009:Figure 151).

The two smaller celts are roughly comparable in size to each other, but not in mass. The Item 7 celt is biconvex in cross section, while the Item 27 celt is flattened on both sides. Hence, the Item 27 celt may represent a chisel (Wilson 2001:123). The small celt/chisel (Item 27) is also unique for exhibiting a pole end that is ground into a useable edge; thus it is double-bitted. The Item 7 celt exhibits some minor nicks at the pole end and on the lateral margin, and the smallest celt (Item 27) exhibits some nicks along the lateral margin.

The nicking or chipping that was observed on all three specimens is interpreted as use wear. Thus these artifacts were functional tools, and not

simply ceremonial objects. Utilitarian greenstone celts were common household possessions in the Moundville polity, while ceremonial greenstone artifacts, such as monolithic axes, were elite possessions (Gall and Steponaitis 2001:108; Wilson 2001:125). Utilitarian celts functioned in heavy wood cutting activities, such as felling trees and log spitting (Wilson 2001:123), and could be used hafted or unhafted (i.e., employed as wedges). Chisels were used in more detailed wood working activities, such as carving lines, grooves, and notches.

TABLE 1. Metric Attributes of the 40GL25 Greenstone Celts.

	Item 1	**Item 7**	**Item 27**
Mass (g)	647.9	107.2	52.2
Maximum length (mm)	153.6	83.3	67.9
Bit width (mm)	73.3	39.6	30.6
Mid-point width (mm)	66.5	40.2	29.8
Pole width (mm)	39.5	33.3	19.8
Maximum thickness (mm)	31.8	17.3	13.5

While generally similar in color and texture, macroscopic examination of the Parker's Pasture greenstone specimens reveals some variation that may reflect different raw material sources, or possibly different veins within a single source. The large specimen (Item 1) is a relatively

FIGURE 5. Greenstone celts while moist (left to right: Items 1, 7, and 27).

TABLE 2. Results of XRF Studies of Three Greenstone Celts.

	Zn	Pb	Rb	Sr	Y	Zr	Nb	Ti	Mn	Ba	Fe2 O3	Fe: Mn	Fe:Ti	Geochemical Source
Item 1	88	4	nd	135	24	80	1	6,319	1,163	19	8.66	60.1	45.3	Source 1
±	13	11		10	3	10	2	100	29	31	0.11			
Item 7	92	7	3	126	27	87	6	6,882	1,363	62	9.13	54.0	45.1	Source 1
±	14	8	4	10	3	10	2	101	29	33	0.11			
Item 27	51	11	nd	216	27	87	2	5,938	1,301	0	8.58	53.5	47.8	Source 2
±	14	7		10	3	10	2	99	29	0	0.11			
RGM-1	56	23	151	106	25	218	10	1,518	542	736	1.7	26.3	37.6	Ref. standard
±	10	5	5	9	3	10	2	92	28	32	0.11			

homogenous grayish-green (10GY 5/2) greenstone. The Item 7 celt is also a relatively homogenous grayish-green (10GY 5/2), but it contains multiple thin dusky yellow-green (10GY 3/2) spider web-like streaks. The smallest specimen (Item 27) is the most deviant, as it exhibits pale yellowish-green (10GY 7/2) speckling on a grayish-green (10GY 5/2) matrix. When moist, all three specimens are glossy, and their colors shift toward a moderate blue-green (5BG 4/6) tint (Figure 5). Some of the speckling and banding within the stones becomes much more pronounced when moist.

XRF Analysis

The greenstone celts from the Parker's Pasture site were submitted to Northwest Research Obsidian Studies Laboratory for energy dispersive X-ray fluorescence (XRF) trace element analysis. This is a non-destructive technique that quantifies trace elements in various materials and is commonly used to source obsidian artifacts. The resulting "fingerprints" are then compared to known geologic sources and/or other artifacts. The samples were prepared and analyzed at the Northwest Research Obsidian Studies Laboratory under the accession number 2006-55.

Analytical Methods

Nondestructive trace element analysis of the samples was completed using a Spectrace 5000 energy dispersive X-ray fluorescence spectrometer. The system is equipped with a Si(Li) detector with a resolution of 155 eV FHWM for 5.9 keV X-rays (at 1000 counts per second) in an area 30 mm2. Signals from the spectrometer are amplified and filtered by a time variant pulse processor and sent to a 100 MHZ Wilkinson type analog-to-digital converter. The X-ray tube employed is a Bremsstrahlung type, with a rhodium target, and 5 mil Be window. The tube is driven by a 50 kV 1 mA high voltage power supply, providing a voltage range of 4 to 50 kV. For the elements Zn, Rb, Sr, Y, Zr, Nb, and Pb (Table 2), we analyzed the collection with a collimator installed and used a 45 kV tube voltage setting and 0.60 mA tube current setting. Additional details about the specific analytic methods and procedures used can be found in Skinner's (2006) technical report and are available on line (Northwest Coast Obsidian Studies Laboratory 2006a).

Results of Analysis

Test results were obtained for ten elements: zinc (Zn), lead (Pb), rubidium (Rb), strontium (Sr), yttrium (Y), zirconium (Zr), niobium (Nb), titanium (Ti), manganese (Mn), and barium (Ba) (Table 2). The trace element composition of the three artifacts that were characterized by XRF analysis suggests that they may have originated from two different

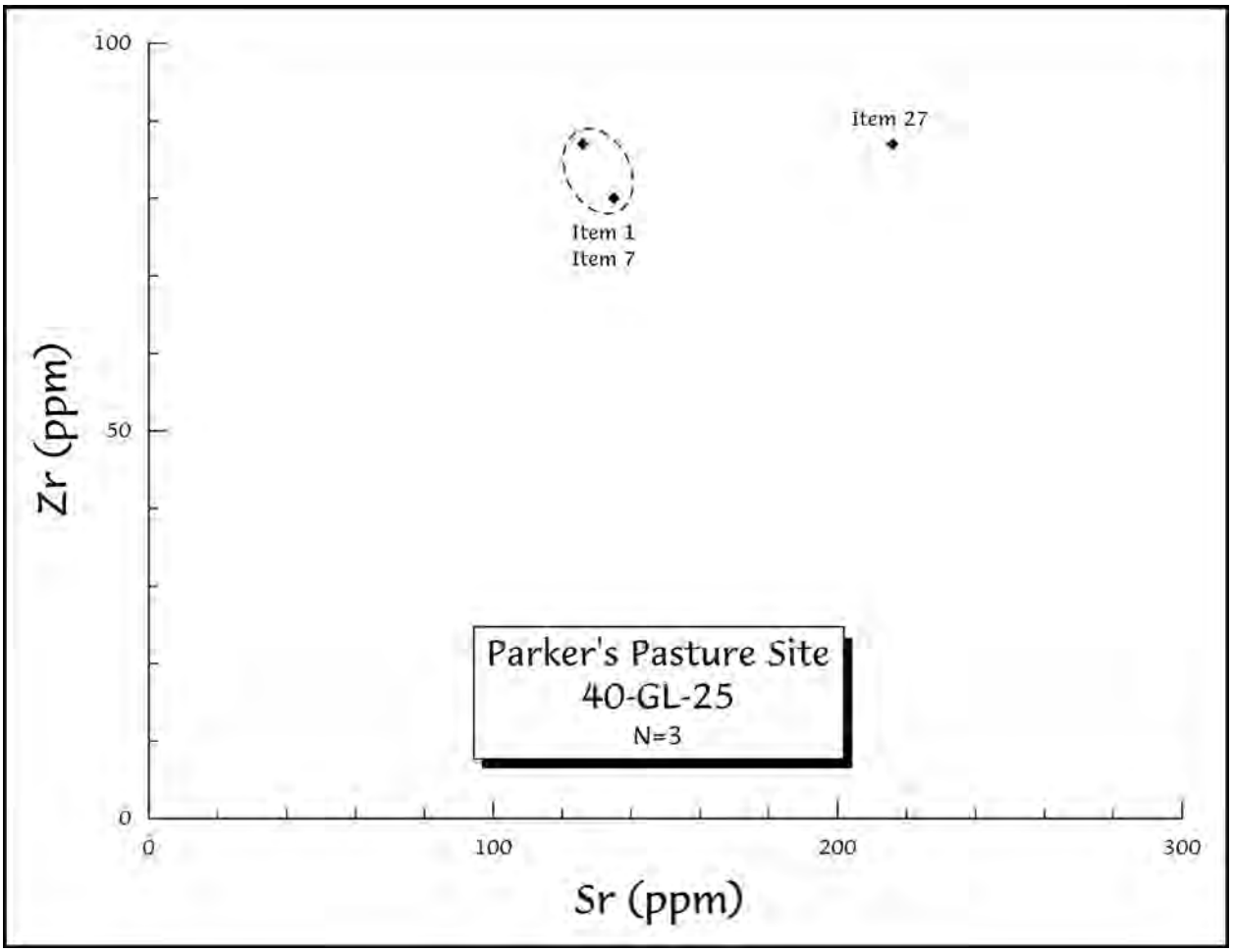

FIGURE 6. Scatterplot of strontium (Sr) plotted versus zirconium (Zr) for the three Parker's Pasture greenstone specimens (after Skinner 2006:Figure 2).

greenstone sources. Analytical results are presented in Skinner (2006:Table A-1) and in Table 2. The Item 1 and Item 7 celts exhibit similar profiles when Sr is plotted against Y, while Item 27 is deviant (Figure 6). Interestingly, this pattern conforms to our macroscopic examination, as Item 1 and Item 7 celts appear similar, and the "speckled" Item 27—which may be a chisel—is deviant (see Figure 4). Geochemical analysis thus appears to have confirmed our visual observation; the speckled specimen is "different".

Skinner (2006) pinned his geochemical assessment of the three celts on the Sr and Y values (see Figure 6), and did not elaborate on the other tested elements in his report. To explore the test results further, the values for eight of the ten trace elements that were tested for were plotted using a simple line chart. The resulting chart (Figure 7) reveals that the Item 1 and Item 7 celts are essentially geochemically identical in terms of all but one element (Ba). In contrast, the Item 27 celt/chisel is deviant as it contains less Zn, considerably more Sr (hence Skinner's focus on this result), and it contains no detectable Ba. Again, the Item 27 celt greenstone is "different" from the other two celts.

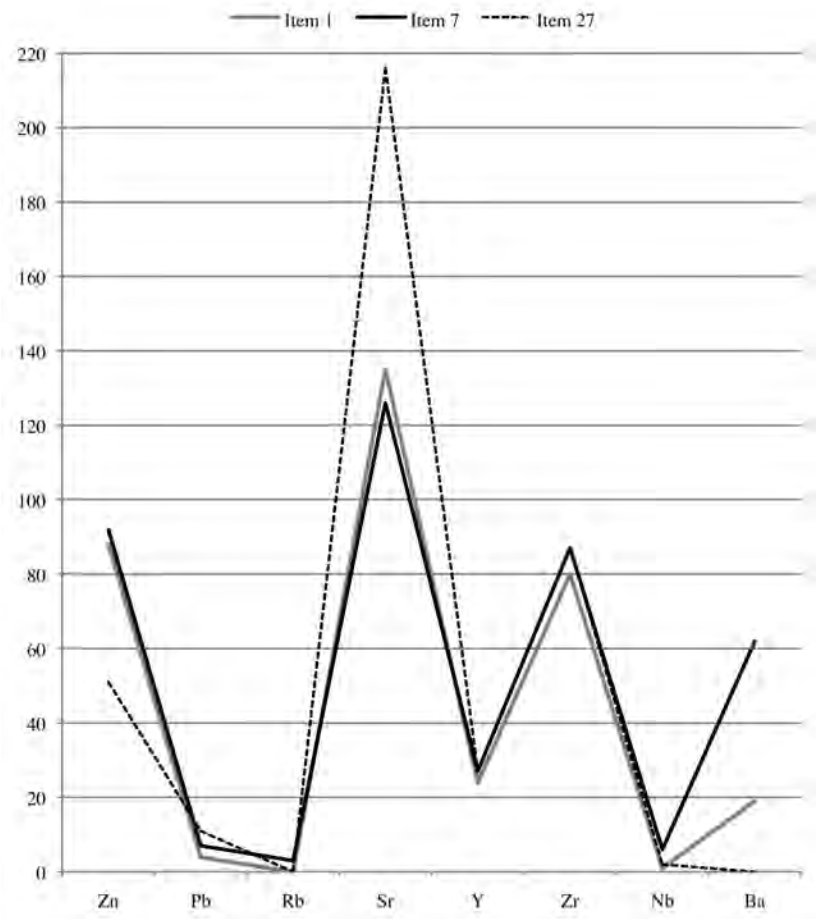

FIGURE 7. Line chart showing values (ppm) for trace elements in the Parker's Pasture greenstone artifacts.

While the Item 27 celt exhibits some geochemical variance from the other two, it is important to highlight the fact that all three artifacts exhibit similar results for six of the ten elements for which they were tested: Pb, Rb, Y, Nb, Ti and Mn. Note that the Mn and Ti results for all specimens were highly similar, and have values in excess of 1,000 or 5,000 ppm respectively (see Table 2), thus these results were not plotted in Figure 7. To summarize, the Item 27 celt/chisel has a trace element profile that exhibits more affinities to the Item 1 and Item 7 specimens than it does differences. For this reason, despite the deviance of Item 27, Skinner (2006) indicated the possibility that the three artifacts all fall within the range of trace element variability for a single greenstone source. Skinner's assumption that the celts came from the same source is plausible, as Gall and Steponaitis (2001:103) have previously demonstrated there is a considerable range of geochemical variability within Moundville's greenstone artifacts, which came from one source: the Hillabee Metavolcanic Complex of east-central Alabama.

To assess whether the Hillabee Metavolcanic Complex represents the source of the Parker's Pasture greenstone artifacts, the XRF results were compared to Gall and Steponaitis's (2001:Table 1) results for samples collected from this source. Plotting the results for the same elements that were shown in Figure 7 reveals considerable geochemical

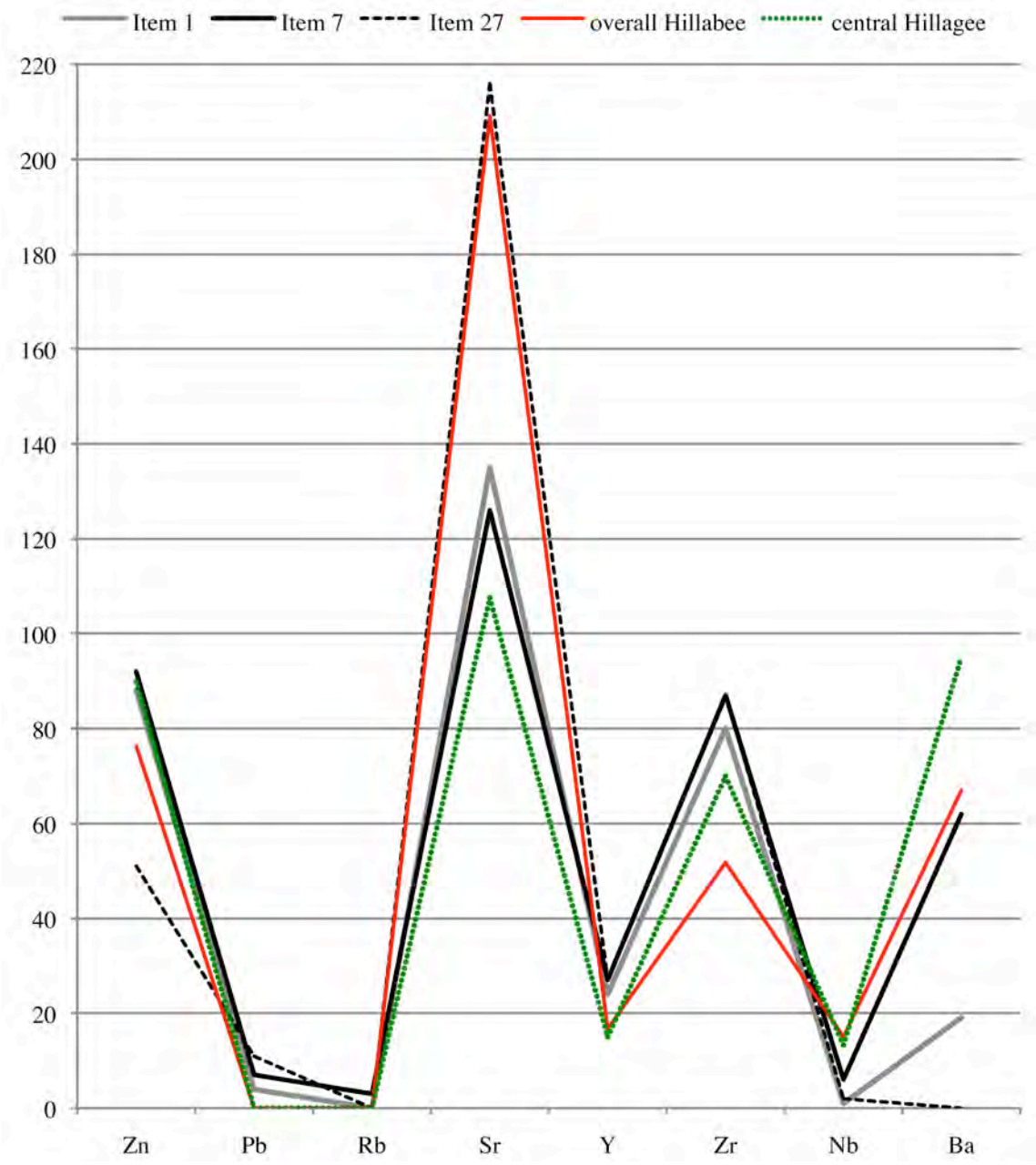

FIGURE 8. Line chart comparing values (ppm) for trace elements in the Parker's Pasture greenstone artifacts versus samples from the Hillabee Metavolcanic Complex (as reported in Gall and Steponaitis 2001:Table 1).

similarity (Figure 8). Items 1 and 7 are most similar to the greenstone samples from the central Hillabee source (Hatchet Creek). This is the primary source of Moundville's greenstone (Gall and Steponaitis 2001:112). The Item 27 celt/chisel is most similar the overall Hillabee geochemical profile, which represents the mean of the northern, central, and southern Hillabee sources. To conclude, the source of the Parker's Pasture greenstone artifacts is interpreted as being the Hillabee Metavolcanic Complex, with Items 1 and 7 more specifically interpreted as being from the Hatchet Creek source.

Discussion

Greenstone celts are reported from Mississippian contexts over a wide area of the Midsouth. Beyond Parker's Pasture, a significant number of sites within the Nashville Basin have produced them. Moore and Smith (2009:Appendix A) list at least a dozen sites in this region that yielded such items during antiquarian period investigations (40DS44, 40DV3, 40DV6, 40DV11, 40DV48, 40DV39, 40DV426, and 40WM11, as well as sites in Jackson County and Cheatham County). To the south, WPA excavations in the Middle Tennessee River valley resulted in the recovery of greenstone celts from five well known Mississippian sites: Seven Mile Island (1LU25), Kogers Island (1LU92), Hobbs Island (1MA4), Sublet Ferry, and Rudder (Walthall 1980). West of the Mississippi River, greenstone artifacts are uncommon (largely because igneous rock from other sources replaces greenstone for heavy stone tool production in this region), but greenstone celts are reported from four sites in northeast Arkansas (Gall et al. 2002; Fisher-Carroll et al. 2004). To the north, greenstone celts are reported from Mississippian sites in the Ohio valley, and recently one was recovered from the Kincaid Mounds in southern Illinois during a field school (Hahn 2009). Caches of unfinished celts are documented at the Cahokia and Lohmann mound centers (Milner 1998:87, 139).

Importantly, the Moundville chiefdom exerted some control over the production and distribution of greenstone during the Mississippian period. Gall and Steponaitis's (2001) trace element analysis of greenstone celt fragments from Moundville convincingly demonstrates that the source was the Hillabee Metavolcanic Complex in the Piedmont physiographic province of Alabama (Gall and Steponaitis 2001). This study relied on X-ray diffraction (XRD), a technique that requires rock powders. Because this is a destructive technique, only 28 celt fragments or chips from Moundville were actually tested (this represents a 4.8 percent sample of the 578 greenstone artifacts from Moundville). The primary source of Moundville greenstone was Hatchet Creek within the Central Hillabee Metavolcanic Complex. Gale Creek in the Southern Hillabee Metavolcanic Complex was a secondary source. These sources are respectively 150 km and 85 km east of Moundville. Gall and Steponaitis (2001:115) speculated that greenstone was obtained directly by procurement expeditions, and that greenstone was "readily available and not difficult to replace". The frequency of greenstone artifacts at sites within the Central Basin, such as Parker's Pasture, begs for a similar interpretation.

Future Direction: pXRF

For typical laboratory provenance studies, the diagnostic trace element values used to characterize the artifacts are compared directly to those for known toolstone sources reported in the literature and with unpublished trace element data collected through analysis of geologic source samples (Northwest Research 2006b). However, in this case Northwest Research had no comparative geologic greenstone source samples in their reference database and was only able to identify potential individual chemical sources (e.g., Greenstone Source 1). As a result, there is clearly a need for further provenance investigations of greenstone artifacts from the Central Basin of Tennessee and the southeastern U.S. It would be advisable to carry out

concurrent trace element investigations of source material collected from multiple prospective geologic sources. In this way, the expected range of intrasource and intersource trace element variability for possible toolstone sources could be assessed. This is a call for action: let's build a greenstone trace element database that mirrors the scope and intensity of the obsidian database in the western U.S.

More generally, XRF technology has advantages over the method employed by Gall and Steponaitis (2001). Because of the destructive nature of the XRD method, their analysis was restricted to a 4.8 percent sample, and no complete artifacts were tested. If XRF were employed, then the spectacular monolithic axes and utilitarian celts from Moundville, including the hafted "One That Didn't Get Away" (Walling 1982), could be geochemically profiled without damage. XRF analysis also has another advantage: it is relatively inexpensive.

Recent advances in portable XRF (pXRF) technology, or handheld XRF spectrometers, allow this non-destructive technique to be deployed anywhere, and opens up a universe of possible archaeological applications. As a result, valuable museum specimens now need not even leave their curation facilities to be geochemically profiled. Archaeological use of pXRF technology has begun. In a recent SHA session, historic archaeologists reported trace element analysis on Tennessee earthenware glazes (S. Smith 2010), dyed slave textiles (Inanez et al. 2010), and even plant material (Lundin et al. 2010). Prehistoric archaeologists could, given the development of source and artifact databases, deploy this technology to illuminate or pin down exchange networks for various raw materials, including but not limited to greenstone.

Notes.

[1] The Tennessee Department of Transportation (TDOT) conducted or sponsored the investigations at the Parker's Pasture site. TDOT archaeologists initially identified the site during a 1998 reconnaissance survey conducted in advance of planned widening of State Route 15 (US 64). Cultural Resource Services, Inc. revisited the site during a full scale cultural resources survey for the same undertaking, and in the resulting report G. Smith (2000) described it as a large Middle to Terminal Archaic lithic scatter. In 2001, Panamerican Consultants, Inc. formally evaluated the site's National Register of Historic Places (NRHP) status via the recovery of a substantial controlled surface collection, the excavation of five 2-x-2 m test units and plowzone stripping (Chapman 2002). During the Phase II effort over 18,000 artifacts were recovered, and a strong Mississippian period component and associated features were identified. The deposit was recommended as "eligible" under criterion d for its potential to yield significant information regarding its various prehistoric components. Panamerican submitted a data recovery plan to TDOT in June 2002, and, because avoidance was not an option, mitigation excavations were conducted at the Parker's Pasture site during late summer and fall of 2004.

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THE NASHVILLE SMILODON: AN ACCOUNT OF THE 1971 FIRST AMERICAN CENTER SITE INVESTIGATIONS IN DAVIDSON COUNTY, TENNESSEE

John T. Dowd

During the summer of 1971, construction activity in downtown Nashville, Tennessee exposed cave deposits containing the remains of a saber-tooth cat. Salvage excavation of the deposits by the Southeastern Indian Antiquities Survey (SIAS) yielded other early faunal remains as well, including horse, mammoth, peccary, and possibly musk ox. Human remains discovered above the early faunal remains were determined to be of much later origin. This report documents the author's first-hand account of events surrounding the 1971 site discovery.

During the summer of 1971, construction was underway for the First American Center in downtown Nashville, Tennessee.[1] Roughly 30 feet of solid limestone had to be blasted and removed to acquire enough depth for the foundation of this 28-story bank building. This removal was about three-fourths complete when a large pocket of dirt was discovered at a depth of about 25 to 30 feet (Figures 1 and 2). Heavy equipment was called in to remove the material. Four dump-truck loads of dirt were hauled away before work was halted when a workman picked up a large canine along with additional bones and teeth (Figure 3). The workman called for his foreman, who notified his superiors, who in turn called Vanderbilt University.

The main interest of Vanderbilt's Department of Anthropology was archaeological site investigations in Mexico. As a result, any calls received regarding local archaeological matters were directed to the Southeastern Indian Antiquities Survey (SIAS), a local amateur group lead by its founder Bob Ferguson (Dowd and Smith 2008).[2] Ferguson became very excited upon examining the materials as he realized the large canine was from a saber-tooth cat, and that the other specimens were a mix of both human and animal bone (Figure 3). After Ferguson explained the importance of this discovery to the First American bank officials, they gave permission for the SIAS to further investigate this mysterious dirt pocket as long as it did not interfere with the building's progress.

SIAS work at the site was limited to after 5:00 p.m. on weekdays (once the construction workers left), and on weekends as long as there was no construction activity. Nevertheless, a substantial amount of work was accomplished with this limited schedule. The most devoted worker at the site was Buddy Brehm (Ingram 1971b) who was probably the most knowledgeable amateur archaeologist in the area and also my best friend (Figure 4). Strict rules were placed on the SIAS crew during the project. For example, no one was allowed to talk directly to the press.[3] Also, hard hats had to be worn at all times, and each worker had to keep a special identification card with them (Figures 5 and 6).

Work at the site was followed closely through the local TV and newspaper media (Hickerson 1971; Ingram 1971a-g). The story of the "Nashville Cat" was also broadcast on national television, and covered in Time Magazine (Time 1973) and the Wall Street Journal (Brand 1971).

FIGURE 1. Area view of the cave discovered within the First American Center construction site in downtown Nashville (*Courtesy, Les Leverett*).

FIGURE 2. Close-up view of cave deposit (*Courtesy, Les Leverett*).

Vanderbilt University officials noticed the importance of this site, and also how much national recognition it was getting. As a result, Vanderbilt requested the chair of their Department of Anthropology, Dr. Ronald Spores, to provide assistance to the SIAS at the bank building site.[4] Spores and his students were a most welcome addition to the SIAS work crew. Not only did they provide additional hands in the field, but their participation included the use of laboratory facilities for cataloging and storing the excavated materials.

SIAS Investigation Results

The SIAS investigations yielded a large bone sample, as well as a better understanding of the site area. This dirt pocket was eventually interpreted as a "crevice" type cave, where a crevice in the otherwise solid limestone served as an entrance to a hollow space that the saber-tooth cat used for a den (Figure 7). The cat would make a "kill" and drag it back to his den, accounting for some of the other animal bones found in the cave fill. Some of the smaller bones likely came from small rodents that either shared the cave, or had fallen into this crevice and could not get out. The saber-tooth cat evidently died in the cave. Whether this death resulted from natural causes, an injury, or a cave-in could not be determined. The cave was evidently still accessible thousands of years later as four Woodland period bundle burials were discovered at a level much higher than that of the saber-tooth cat remains (Figure 8).

FIGURE 3. Bones initially discovered at the First American Center construction site. Saber-tooth cat canine at bottom of photo, human humerus fragment at top right.

My first involvement with this project was to record the site with the state. Initially designated SIAS # 87 (40DA31), the cave deposit was named the First American site (after the bank) and assigned state site number 40DV40.

Although I worked sparingly at the downtown site because of my work schedule, I did take a group of volunteers to the location where the four dump-truck loads of dirt had been removed. These volunteers were mostly from a newly formed Tennessee Archaeology Society (TAS) chapter in Robertson County. Mack Prichard, the newly-appointed State Archaeologist (Figure 5), used his influence to have a large water tank truck from the Tennessee National Guard made available to us to waterscreen the dirt pile for whatever bone materials we could recover. So, early one Saturday morning a procession of cars filled with volunteers, along with the water tank truck driven by a guardsman, followed me to the spot where the construction foreman said the discarded dirt had been dumped. I had expected to find a pile of dirt that we could sift through and perhaps waterscreen, but I was wrong. The dirt, actually a mixture of rock and dirt, had been deposited in an

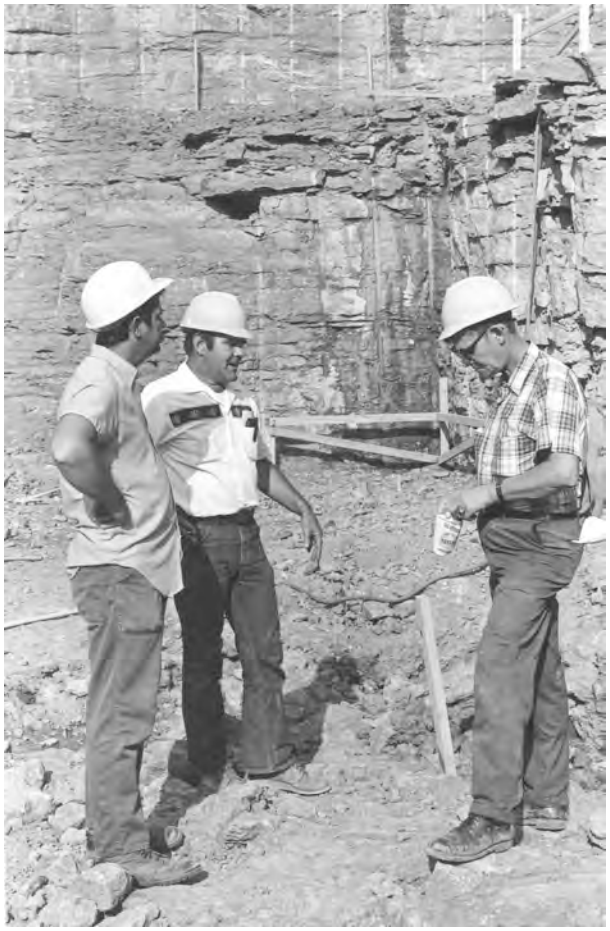

FIGURE 4. SIAS members Buddy Brehm (right) and Bob Ferguson (center) (*Courtesy, Les Leverett*).

obscure place near the Cumberland River down a very steep embankment. Just getting a bucket of dirt up the steep embankment was a problem. In addition, the matrix was so hard that sifting was next to impossible, and waterscreening was out of the question. However, quite a bit of bone material was recovered despite these obstacles. We also obtained some charcoal, but considering the situation, this material was of no value for dating. Thinking back, I believe more effort should have been directed at the dirt pile as the other saber-tooth cat canine (as well as lots more bone material) was probably in these four loads of dirt.

About seven to eight weeks of

FIGURE 5. State archaeologist Mack Prichard (right) and volunteer John Leverett (*Courtesy, Les Leverett*).

excavation had taken place when the construction crew announced that they could no longer work around the cave deposit. The archaeological work at the site would have to stop for the construction work to continue. First American Bank officials were very concerned about the fate of the site, and after conferring with Spores and Ferguson, they reached a decision to bring in experts to determine if the remaining cave deposits were worth saving.

A distinguished group of scholars consisting of Dr. Kent Flannery, Dr. Ed Wilmsen, and Dr. Loring Brace from the University of Michigan, along with Dr. Vance Haynes from Southern Methodist University (now with the University of Arizona), were brought in to evaluate the site (Ingram 1971f). On the night of their arrival, a party was held at Vanderbilt in the Stadium House where the Department of Anthropology was housed at the time.[5] Ironically, champagne and hors d'oeuvres were served to a group of individuals who would have been more comfortable with beer and pretzels, but the local folks were given a chance to meet these famous archaeologists. The next day, these experts were given a site tour and shown materials collected from the site. All were in agreement this was a very rare site and should be protected if possible.

Bank officials conferred with the contractors, and construction plans were altered to include a 38-foot concrete beam to support a wall above the cave, and a 300-pound manhole cover over it. Paul Kranbeck Sr., project manager for the contractor Foster & Creighton, said "changing the plans to save the cave was no small undertaking" (Ingram 1972). In June of 1972 (roughly eight months after the archaeological work had shut down) the cave was re-entered by Ferguson, Spores and several bank officials. After examining the encased cavern Ferguson

FIGURE 6. Vanderbilt University students and SIAS members excavating cave deposits (*Courtesy, Les Leverett*).

said: "As the months went by, I imagined the building closing in tighter and tighter on the cave. But it's like a ballroom down there. It's excellent. They left us plenty of room to work. There's a lot more space than I expected" (Ingram 1972). Ferguson and Spores also said at this time that they expected to resume exploration of the cave "within two weeks" (Ingram 1972), but for some unknown reason this did not happen.

In late March 1972, Ferguson received a preliminary faunal report from Flannery and John Guilday of the Carnegie Museum of Natural History (Guilday would later publish a much more detailed report in 1977). The preliminary report listed a variety of mammals, bird, fish, and reptiles. The mammal sample included (in addition to the saber-tooth cat): human, mastodon, horse, possible bison, deer, dog/wolf, and peccary specimens. Regarding the human specimens, Ferguson noted "The human material represents four persons buried in prepared, rock-lined crypts near the ceiling of the cavern, in a narrow space. They were secondary , or bundle, burials and were moderately flattened on the frontal bone. They were about 7 feet above the extinct faunal deposits, but stratigraphy is not fully determined as yet. About 7 feet of fill remain below the Smilodon feature which we have not yet excavated. The First American Bank of Nashville has preserved the site at a cost in excess of $22,000.00 and have built a hatch and ladder for our use."

Dates returned on submitted radiocarbon samples were somewhat disappointing. A human tibia sent to Geochron Labs (GX-2471) yielded a date of 1690 ± 115 years B.P. A second human tibia sent to Georgia Geochronology Laboratory (UGA-334) dated 2390 ± 145 B.P. Both dates place the human bundle burials within the Woodland period, although an interesting question to ask is why the two dates are so far apart. The easiest explanation is that these burials were deposited within the cave at different times, although the close proximity of these burials raises some doubt.

Two bone samples from the saber-tooth cat were also sent to two different labs to see how they would match up. Rib and vertebrae fragments sent to Teledyne Isotopes (I-6125) yielded a date of 9410 ± 155 years B.P. The proximal end of a humerus sent to Geochron Labs (GX-2562) dated 10,035 ± 650 years B.P. These particular dates were both good

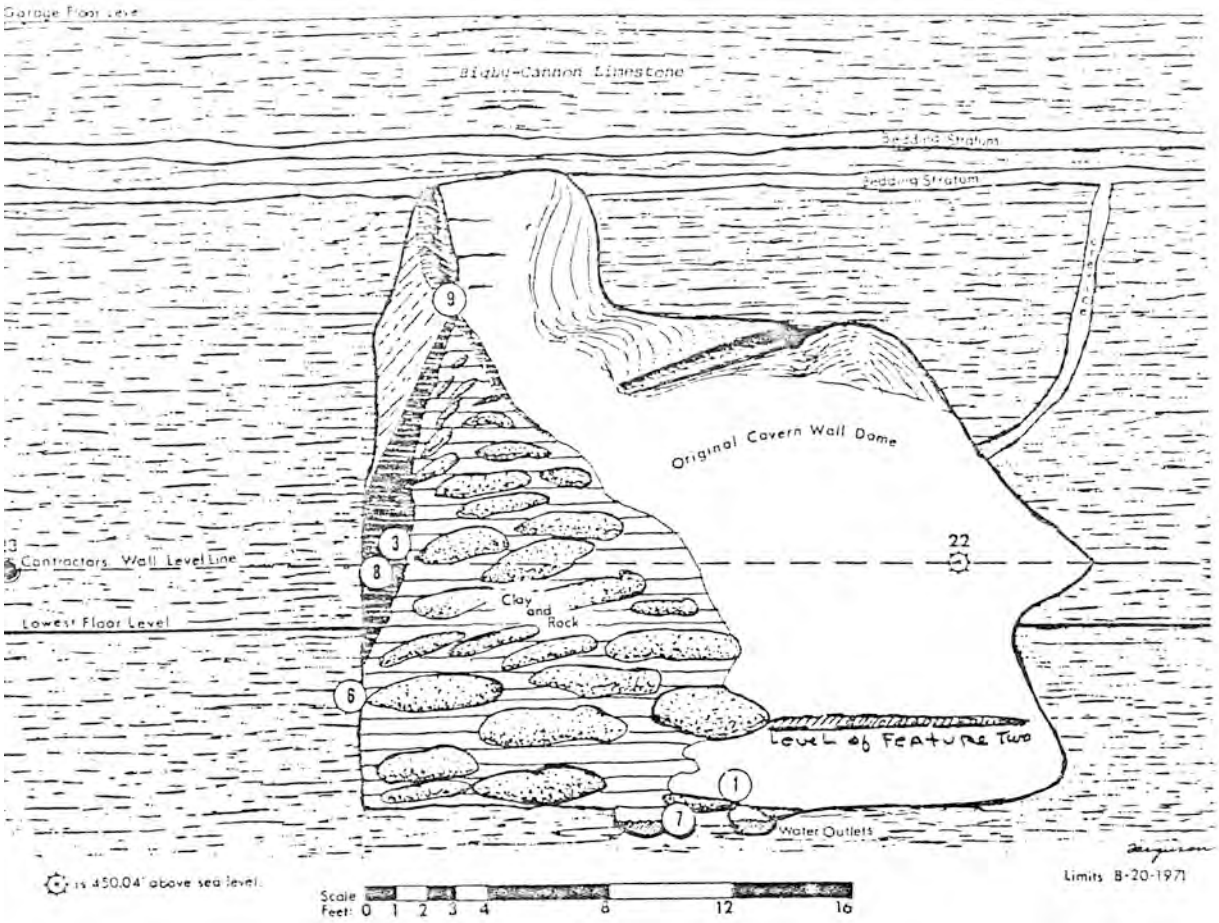

FIGURE 7. Field sketch, First American Bank Site excavation. Vertical view as of August 20, 1971. Numbers 22 and 23 correspond to lines in the architect's plan, as does the "wall level-line." 1. Location scattered Smilodon bones, including radius and ulna, excavated from presumed original matrix. 3. Site of small test excavation. 6. Bone fragment dropped from earth removal equipment. 7. Disturbed smilodon bones. 8. Human femur in dark brown matrix. 9. Crevice yielding skeleton remains of four humans (skeletons discovered six days after this sketch had been made). A dark brown mantel, which covered the clay and rock fill of cavern area, is indicated trailing downward from 9 to 8. Subsequent rock removal by construction company has altered the vertical profile. Sketch by Robert B. Ferguson (caption and sketch reproduced from Guilday 1977).

and bad. Taking into consideration the standard deviations, these dates could overlap but the average date would fall within the Early Archaic period (about 7500 B.C.) which seems highly unlikely. Guilday stated in a letter to Ferguson that: "It is possible that Smilodon lingered on, perhaps for thousands of years, after the extinction of its primary herbivorous prey…The Nashville Smilodon may well have been one of the last of its breed" (Guilday to Bob Ferguson, March 4, 1972). His statement is, of course, based upon the good condition of the saber-tooth cat's bones and assumes the radiocarbon date results are valid.

Ferguson Manuscript

Ferguson apparently intended to write a report for publication on the excavation of the Nashville Smilodon after receiving the preliminary faunal report and radiocarbon date results. Unfortunately, a

FIGURE 8. Human skeletal remains discovered in cave deposits (*Courtesy, Les Leverett)*.

subsequent job loss and move out of state prevented the completion of such a publication.[6] However, Ferguson did respond to an Alabama Archaeological Society newsletter article (Beinlich 1976) that was condensed from a story in the Memphis Commercial Appeal's Mid-South Magazine (Andrews 1975). The article incorrectly stated the saber-tooth cat's bones dated at 9500 years ago and the human bones dated at 10,000 years ago documented the fact that the saber-tooth and man had lived at the same time in this area (Beinlich 1976). Ferguson wrote the Alabama Archaeological Society and an updated correction later appeared in their newsletter (Ferguson 1976).

This correction, and the appearance of Guilday's 1977 report, must have revived Ferguson's interest in the First American site (if only for a short time) as he compiled a rough draft manuscript about the excavation history and sent a copy to Buddy Brehm for his comments. As far as I know, that was the last action Ferguson had concerning the First American site.[7] The rough draft remained in Brehm's files for the next 19 years until his death in 1995. Upon Buddy's death I inherited his archaeological files, and the information on the First American site rested in my own files for the next 14 years.

I eventually decided to write this report since no site information was ever prepared for the general public, and I had the most complete records. Ferguson's manuscript sent to Brehm was made on a 1970s copy machine, and those readers old enough to remember know about the poor copy quality those machines produced. The manuscript was over 30 years old and had been handled quite a bit. I transcribed the manuscript, and took the liberty of translating the smudged and

faded words. I also incorporated some of Brehm's comments, and inserted figure references for photographs used in this report where appropriate.[8] Ferguson's "enhanced" manuscript is presented below in its entirety.

Nashville Cat

It was a beautiful August day in 1971. Johnny Cash had just handed me a check at his House of Cash office in the amount of $10,000 to help our local anthropological organization (SIAS) further its work with the Indians of the Southeast. The money, with similar contributions from Porter Wagoner, Jerry Reed, Kitty Wells, Johnny Wright, Dolly Parton, and others would make possible publication of a newspaper for the Choctaws of Mississippi (The Choctaw Times), a Choctaw dictionary, and republication of a book by William Edward Myer (Two Prehistoric Villages in Middle Tennessee). So already the day was beautiful, what happened next made it memorable.

As Johnny signed the check for presentation the telephone rang. It was Tom Seigenthaler, who handled Public Relations for the First American National Bank. He asked if I could come by the construction head-quarters of the planned First American Center and look at some material he believed was of archaeological importance. He had been referred to our SIAS group (Southeastern Indian Antiquities Survey) by Vanderbilt University and had tracked me down through the direction of my RCA secretary. As soon as I had deposited Johnny's check in the bank I went to the construction site. Already present at the site were Seigenthaler, con-struction foreman George Spence, geologist Dick Stearns, and a close friend and archaeological associate Dick Weesner.

Our attention focused on some bits of bone and some teeth arranged on an 9 x 11 inch sheet of paper on a drafting table (see Figure 3)*. The room was hushed as we examined each item. It was as though time was jumbled before our eyes. There were human and animal teeth, large and small. There lay the distal end of a human humerus and next to it the maxillary canine of a Smilodon, or in plain english the formidable dagger-like "fang" of a long extinct Sabertooth Tiger (Time magazine would later describe it as an "ivory-colored, banana-shaped object that looked like a miniature elephant tusk"(Time 1973:53).*

This particular late-Pleistocene animal had never been reported from Middle Tennessee, nor had it ever been found in direct association with human remains. Both the human and animal material had mineralized to some degree and both bore stains from minerals in the clay and cave water. We were looking at Tennes-see's "first" Saber-toothed cat. We were also looking at the possibility that the animal had coexisted with humans.

*We visited the cave proper. It was located deep down in the Bigby-Cannon limestone that underlies much of Nashville and which now resembled a mud-filled sinkhole (*see Figures 1 and 2*). Arrangements were made with bank officials to conduct a study of the site. Working after 4:30 each day, when the construction workers knocked off, several of Nashville's best amateur archaeologists, H. C. Brehm, John Dowd, Roy Broster, Lionel Barrett, Lib Roller, Dick Weesner and others began the careful work* (see Figure 4)*. National Life and Grand Ole Opry photographer Les Leverett made regular photographs as the work progressed and he and his sons participated in the excavations on weekends* (see Figure 5)*. A search*

was made both in the cave area and a site where dirt that had been removed from the cave had been dumped. The bank was fully cooperative toward the excavation from the very beginning. Not only did it provide access and assistance in the excavation, it later paid for crucial radio-carbon datings of the bone material. Most of all it altered construction plans so the site could be saved for further study long after the building had been completed. Thus, to this day, Nashville has not only the First American Center with its offices, vaults, and computers, but far below in the substratum stone itself, the safely preserved First American Smilodon Site (40Dv40). Vanderbilt University and the State Division of Archaeology have consulted with bank officials on continuing the excavation at a later date. Doubtless much remains to be discovered because we were only able to work sixty part time days before the steel and concrete walls enclosed the area of the cavern. In those sixty days there was unearthed a remarkable story and some of the questions posed by the original assemblage were answered.

Dr. Ronald Spores, who was Head of the Anthropology Department at Vanderbilt University, had just returned from excavations in Oaxaca, Mexico, and he agreed to be co-director with this author. He brought in some of his students who continued the work along with the original crew. Cataloging of all the carefully excavated materials and those found at the dump site were done at Vanderbilt University. Some of the highlights of the excavation were the finding of two foreleg bones of the Smilodon in correct anatomical position, and the excavation of a crushed human humerus some six feet above those of the Smilodon. One evening, about dusk, working higher in the cave clay than we had worked before, under a dangerous looking protruding rock, we found a human long bone and upon excavating the area a human mandible (jaw bone) was also discovered (see Figure 7)*. These remains were rushed out to Dr. Spores home carrying them as carefully as if they were the remains of the last passenger pigeon. This was a clear indication that, while the human and Smilodon had shared the same cave, they were there at widely separated times. Radiocarbon dates later proved that the separation was 7,000 years or better. The Sabertooth cat had died about 9,000 years ago while the bones of the human had been buried in the fill near the top of the cave about the time of Christ. The cavern itself had become filled with clay over the many thousands of years.*

Vance Haynes, of the Department of Geological Sciences at Southern Methodist University visited the site on October 1st and 2nd, 1971, while our work was in progress. He offered the following chronology of events in the cave's history: "A hypothetical model of cave sedimentological history would be (1) erosion and transport of clays from interglacial soils or uplands, (2) occupation of the cave by Saber-toothed Cat early in the deposition of the yellow-brown, clay fill, (3) continual or intermittent accumulation of boulder and cave filling at the end of the Pleistocene 11,000 or 12,000 years ago followed by (4) desiccation of the fill, (5) use of the cave for secondary burials 5,000 to 1,000 years ago, and (6) filling of desiccation cracks by modern waste in late historic time as well as earlier parts of human burials that had fallen into cracks."

Radiocarbon datings, obtained after Dr. Haynes letter was written, tend to support his hypothesis. What was not learned until after his visit was that the depth of the site continues some seven feet below where remains of the saber-toothed cat were found.

Excavation in this lower area remains to be done. Certainly after the saber-toothed cat had died the cave filling continued, boulders and all, until it nearly reached the ceiling of the cavern. The desiccation, or drying-out of this fill material would expose cracks much like those in the bottom of a dust bowl. Anything deposited in the cave later could fall or wash down through these cracks. This would account for our finding human bone below where it was originally buried. It can also account for our finding early and recent historic Nashville materials at great depths. Some fissures extended from street level to eroded bedding strata in the limestone and so into the cave itself. During series of heavy rainfalls there would be hardly any limit to the movement of small objects of whatever time period through these cracks and crevices. Because of underground water pressure they could move not only downward and outward, but upward as well. When these materials were well covered with clay, however, their movement stopped except in cases of wildest flooding. In the first century of Nashville's occupation by non-Indians caves and sinkholes were often used as dumping sites. Future exploration of the cave should reveal not only information on the Pleistocene and the Native American, but information on historic Nashville as well.

Carbon 14 dating was carried out in two different laboratories. Working with John E. Guilday who is the Associate Curator of Vertebrate Fossils at the Carnegie Museum, we obtained a date from Teledyne Isotopes (Sample I-6125) using rib and vertebrae pieces of the Smilodon. A second sample was submitted to Geochron (Sample GX-2562) from the proximal end of the Smilodon's humerus (the large shoulder joint). For comparative purposes the two dates can be written this way:

Geochron-(GX-2562) 10,035 ± 650 (9385 to 10,685) years B.P. (before present).

Teledyne Isotopes (I-6125) 9410 ± 155 (9255 to 9565) years B.P.

The two dates overlap in the range 9385 to 9565. Richard Reesman of Geochron states that the "two analyses show quite agreement, considering the magnitudes of the measured ages". Thus our "Nashville Cat" dates about 7500 B.C.

John Guilday points out that the condition of the bones are commensurate with the date. They had not completely mineralized, or fossilized. His comments are worth quoting in full: "When burned it (the bone) readily chars, smokes, and emits the odor of burning organic matter. There has obviously been little mineral replacement or less of organic constituents. Whether this date is applicable to the other extinct forms in the deposit is a moot point. It does, however, imply that the saber-toothed cat survived well into early recent times and was a contemporary of early man"(Guilday 1972).

In fact, the date 7,500 B.C. puts the Saber-tooth into the Early Archaic Period according to the chronological usage of present day archaeologists. With California's La Brea Tar Pit specimens dating about 12,000 B.C., it was generally accepted that the Cat, and some of the other megafauna (giant animals) had coexisted with Paleo Period Indians. Some paleontologists believe the animal had survived to the end of the Paleo Period because its prey animals had been dated to that time. The Nashville cat lends support to this belief. It could well be the last of its kind. At any rate, it is late in the evolutionary sequence of the genus Smilodon.

Another extinct animal found at the site was the long-nosed peccary. In fact, teeth and bone fragments of three individuals were found. Guilday

points out that "this is the fifth known occurrence of the long-nosed peccary from Tennessee cave deposits. The other four are some 200 miles to the east in the Appalachian Mountains. Fragments have also been found in Savage Cave, located in Logan County, Kentucky, about 50 miles north of Nashville."

Bison bones were also identified, but it is uncertain at this time whether these represent the large, extinct Bison or the commonly known form. Future excavation may yield cranial and dental fragments which will facilitate positive identification.

The American Mastodon is represented at the First American Site by a single lower milk tooth. More of this animal's bones should turn up at the site.

Of the many other animal species found at the site the Pocket Gopher is of special interest because the animal is no longer present in Tennessee. It can be found in Missouri and a related species occurs in Central Alabama, but Guilday refers to our area as a "now pocket gopherless 400 mile corridor"(Guilday 1972). He adds that its presence at the site is indicative of nearby open country. More bone material from this animal would help understand the relationship of the two related, but distinct, species.

In all, 46 individual animals were represented at this site, some being the cat's prey and others that lived or had fallen in the cave.

As mentioned previously, the discovery of the human burials was made after we had been working the site for about a month. They were at the very top of the cave fill in a very dark humus soil which barely covered them. Its high organic content indicated no great age. At least four individual Native Americans were represented. They were found in a niche of the cave wall about a foot in width and 15 inches in depth. Except for a single flint tool no artifacts were found. As the measurements of the niche indicate, the bones had been buried only after the flesh was gone, this being a custom of early man. This makes it a secondary, or reburial, or as archaeologists would call it a "bundle burial". Flattening of the frontal bone suggested a Woodland Period time for the burials. Dr. Ed Wilmsen agreed with this preliminary dating that he would put it no later than the Woodland Time Period. In fact, Dr. Kent Flannery said, before we had received the Carbon 14 dates, that we may have a Late Archaic cave niche burial, which would have made it even earlier. Dr. Loring Brace placed it emphatically in the Woodland Period. A few months after their comments, reports were received on the Carbon 14 datings from human bone that had been sent to two different laboratories.

A human tibia submitted to Geochron (Sample GX-2471) was dated at 1690 ± 115 years B.P. A human tibia was also submitted to the University of Georgia Geochronology Laboratory (Betty Brandau) (Sample UGA-334). The date obtained was 2390 ± 145 B.P. Given the disparity of these datings one may assume the time of Christ as central, or more generally the Woodland Period as first surmised. Minimally they were deposited some 6,000 years after the Sabertooth and were separated by many feet of cave fill. Archaeological, geological, and radiocarbon age determination dates all indicate a wide separation in time between the deposition of the Pleistocene animal and the human bones.

Much remains to be discovered when work remains in the cavern so thoughtfully preserved by the First American Bank in Nashville. In addition to answering some of the questions I have already proposed, further excavation and evaluation may ultimately tell us what kind

environment existed in Nashville 5,10, or 20,000 years ago. There remains a possibility that human material will be found at the same time level of the giant animals.

How valuable is the site? Here are the ways several specialists put it:

Dr. Kent Flannery: "The only thing I have seen as good in an assemblage of this size is from Rancho La Brea. The state of preservation of this material is excellent and highly unusual for this part of the United Stastes. This collection is filling in a blank in the Eastern U.S.".

Dr. Ed Wilmsen: "This kind of fauna that is preserved is not often found in the Southeastern United States and so from this point of view, it is really quite valuable."

Dr. Vance Haynes: Vanderbilt, the local amateur archaeologists, and the Bank are to be commended for the superb way in which all aspects of the discovery have been handled. It is a very important site and investigations there, I hope, will continue".

John Guilday: "I want to congratulate you and your group on the thorough approach to this subject. Its key will lie not only in tests being carried on today on recovered material, but also what can be recovered in the way of additional material".

Brief Summary of the 1977 Guilday Analysis Results

The First American Center was completed in 1974 with a preserved Pleistocene cave section 30 feet under its lowest floor level. However, the saber-tooth cat discovery that had caused such an uproar was soon forgotten. Interest in the site was briefly renewed when John Guilday's report on the site fauna was published in the Journal of the Tennessee Academy of Science (Guilday 1977). This 10-page article described 33 species of vertebrates recovered from the First American Site (40DV40). Well over 1000 pieces of bone were found (including human) and his report lists some 520 pieces that could be identified. The fauna (and number of specimens) identified from the site included: unidentified fish scales (3), toad (5), mud turtle (1), water snake (1), garter snake (1), worm snake (1), racer (18), northern pine snake (41), milk snake (1), copperhead (3), rattlesnake (20), unidentified snake (40), American coot (1), opossum (2), least shrew (1), short-tailed shrew (1), eastern mole (8), cottontail rabbit (44), swamp rabbit (7), gray or fox squirrel? (1), pocket gopher (1), deer mouse (5), pine or prairie vole (3), dog? (3), bobcat (24), saber-tooth cat (119), raccoon (36), striped skunk (1), mastodon (1), horse (92), domestic hog (2), long-nosed peccary (23), white-tailed deer (12), and possibly musk ox (1).

Other Cave Visits

The cave was once again entered in June of 1978 by a group of five "cavers" who were members of the Nashville Grotto (a division of the National Speleological Society). These individuals were accompanied by First American Bank Vice-President William Greenwood. As cavers they expected to find passages to explore, and caver Warren Dixon stated "A caver always wants something that keeps on going, passages and stuff" (Freed 1978). What these cavers found, however, was a "minute" cave that measured about 45 feet by 20 feet. One of the cavers remarked "it was hard even to recognize the original cave walls" (Freed 1978). Bank official Greenwood, who held a great interest with the cave's history and future, climbed down the manhole but did not wade through the mud at the cave's entrance (Helm 1978).

FIGURE 9. TDOA archaeologists prepare to enter the cave through opening in bank building sub-basement level (*Courtesy, Aaron Deter-Wolf*).

The cavers were disappointed with only finding an enclosed cavern with mud-covered rock walls and no passages, but they did make measurements and sketches of the cave.

As far as I can determine, the cave sat idle for the next 30 years until Tennessee Division of Archaeology archaeologists John Broster, Aaron Deter-Wolf, Mike Moore, and Mark Norton revisited the cave in August of 2008 (Figures 9 and 10). Figure 11 presents a schematic profile drawing of the cave and surrounding building features observed during the visit (Deter-Wolf 2008, 2009). When asked about the possibility of any further archaeological work being done there in the future, State Archaeologist Mike Moore replied "There is always the possibility of future research. The likelihood of additional work in the near future is admittedly slim given our current tenuous budget situation. But who knows what the future holds five or ten years down the road?" (Mike Moore, personal communication, 2009).

Additional Recollections

Years after the site was more or less forgotten, an unusual thing happened. I don't remember the exact date, but I received a call from a lawyer that had found my name and address on the state site form that I recorded in 1971. The First American Bank was involved with a merger with AmSouth Bank and it seems the 1971 excavation materials were listed as assets of the First American Bank, and they were trying to locate these materials (especially the 9-inch saber-tooth cat canine).[9] I thought this was very funny that an animal tooth was holding up a multi-million dollar business transaction. I told the lawyer that I last saw the canine inside a display case in the First American Center lobby. The canine was part of an educational display of some of the other animal bones and a replica of a smilodon skull from the La Brea Tar Pits (Figure 12). I don't know if the saber-tooth cat canine was found or not.

FIGURE 10. TDOA archaeologists descend into preserved cave chamber below the bank building (*Courtesy, Aaron Deter-Wolf*).

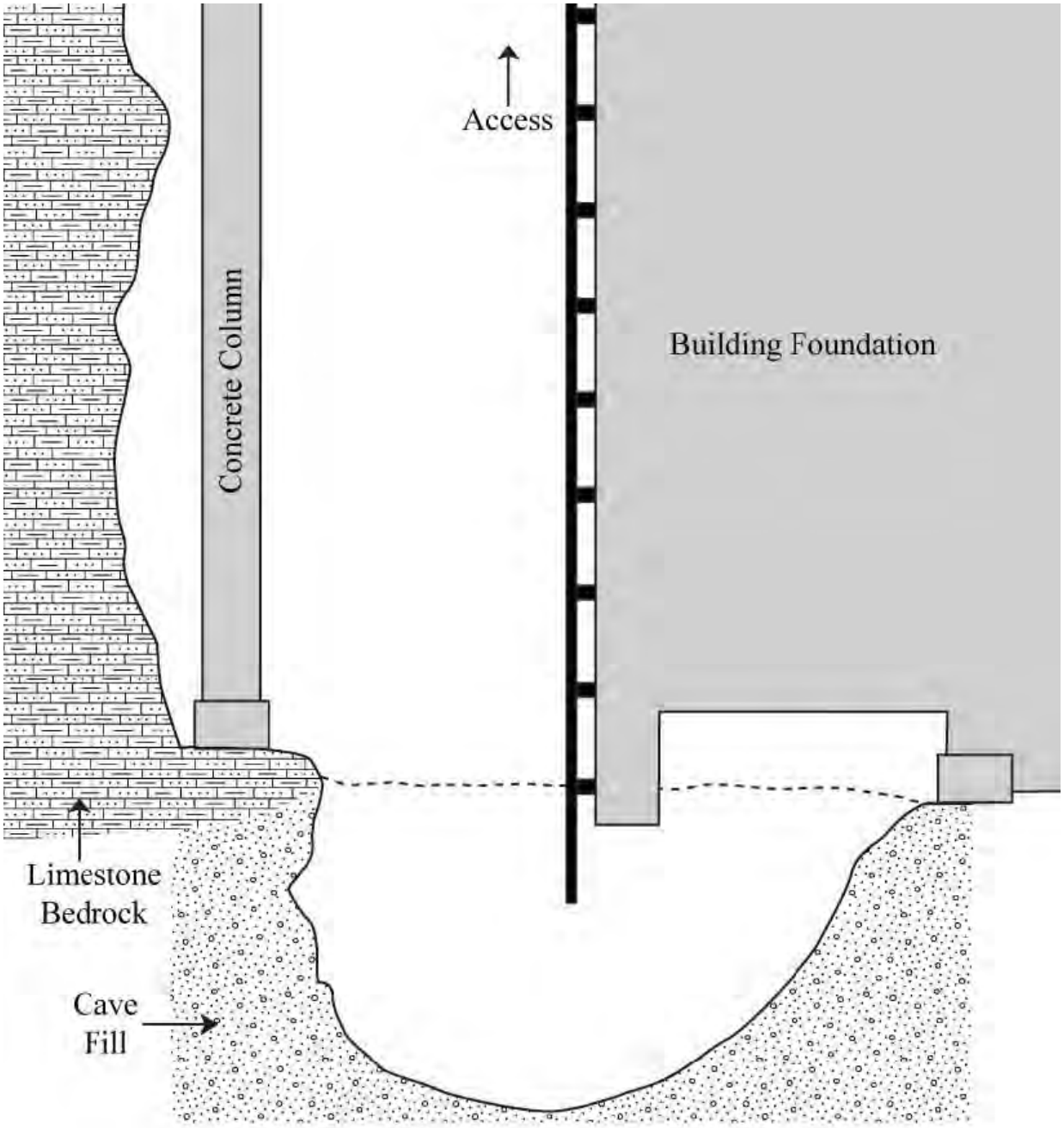

FIGURE 11. Sketch profile of preserved cave chamber (Deter-Wolf 2008).

The Nashville Smilodon lives on today in Nashville, although its significance is probably not recognized by most Nashvillians. In 1997, the Nashville Predators NHL hockey team started using the head of a "snarling" saber-tooth cat for their logo. Also, before each game a computer-generated show is shown on a giant screen depicting a saber-tooth cat emerging from underneath Nashville. The Predators games are played at the Bridgestone Arena building, just a few blocks away from where the Nashville Smilodon was actually discovered.

FIGURE 12. First American site exhibit on display in bank building lobby.

Concluding Comment

The reader should consider the First American Center work a salvage excavation in its truest form. When Ferguson first visited the site, much of the cave deposit had been removed (including the crevice entrance) and what was left was a "churned up mess." While Ferguson's idea of the cave layout presented in Guilday (1977) has a good chance of being close to correct, the schematic should be viewed with these facts in mind (Figure 7).

The first thing I heard from everyone when I started researching this project was "the dates are wrong." These individuals are probably right. I have talked with many professional archaeologists, and they all stated that dates taken on bone samples in the 1970s are not considered reliable today. With this opinion in mind, I e-mailed Geochron Labs where one of the c14 dates had been run and received the following reply:

The Geochron date in question was not a collagen date, but a bone apatite date. It is often difficult to obtain a good quality collagen from very old bones, or even younger ones in humid environments. For this reason, Geochron was an early advocate of dating old bones using apatite carbonate fraction. Without any additional information about the quality of the sample than what is in the old report, or anything about the Teledyne result, I would say the Geochron apatite

date stands a good chance of being a reliable age estimate for the bone. The good correlation with the independent Teledyne date adds some additional confidence. That having been said, this is a fairly young date for smilodon, and it cannot be ruled out that some modern or later contamination of the sample may have biased the measurement somewhat to the young side. (Dana Kreuger, personal communication by email, 2009).

In other words, Geochron stands behind this 1971 date if the sample was not contaminated. But, there is a good chance the sample was contaminated. Even after the crevice filled with dirt over the years, a sinkhole likely present at the entrance would make for a good dumping place in historic times. This fact is clearly demonstrated by the domestic hog bone recovered from the site deposits (Guilday 1977:93). Also, the site is located in downtown Nashville where construction activity has been continuous for several hundred years. In addition, there is a small stream running through the bottom of the cave that could carry various contaminates as it runs through a large metropolitan area.

The Nashville saber-tooth cat is slightly smaller in size than the individuals found at La Brea that date roughly 12,000 B.C. (Guilday 1977: 89). That being said, given the possibility that the 7500 B.C. dates are probably not correct, the Nashville Smilodon could still have been one of the last of its kind in this region of the country.

Notes:

[1] This building project cost over 20 million dollars.

[2] Bob Ferguson was a very successful executive with the Radio Corporation of America (RCA) in Nashville.

[3] Inquiries had to go through Tom Seigenthaler who had been appointed the public relations person representing the bank.

[4] Dr. Spores and his students had just returned from excavations in Oaxaca, Mexico.

[5] The Stadium House was demolished in the early 1980s. The Department of Anthropology is now housed in Garland Hall.

[6] There was a shake-up among the top executives at RCA and Ferguson lost his job. He moved to Philadelphia, Mississippi (the hometown of his wife, Martha) sometime in late 1973. Martha was a full-blood Choctaw and had been raised on the Choctaw reservation located there. Ferguson was a friend of the Choctaws and worked with them for many years on various projects. He taught organic farming under a Federal grant, and also became connected with a local radio station where he worked until his death in 2001 at the age of 73.

[7] My only contact with Bob Ferguson after he left Nashville was a few phone calls and e-mails, but none of them concerned the Nashville Smilodon.

[8] Les Leverett, photographer with the Grand Ole Opry, was the official photographer for this excavation.

[9] Amsouth Bank was later purchased or merged with Regions Bank and the original First American Center is at this time called the Regions Center.

Acknowledgements: When I first considered writing this report, I realized that pictures were needed. Les Leverett, an old friend of mine, was the photographer for the site excavations conducted some 38 years ago. Nevertheless, I called Les to ask about the photographs. Being the professional that he is, Les still had pictures and negatives of the First American site excavations in his files. He not only sent me the photographs used in this report, but an additional 200 or so negatives to add to the site records.

Thanks are given to Dana Krueger of Geocron Labs for the fast email reply and explanation of the dating on the saber-tooth sample. Belated thanks go to Bob Ferguson, who led the excavations at the First American site and was the driving force behind all the operations. Thanks also go to Buddy Brehm, the most devoted worker at the site, as well as the SIAS and other volunteer workers who gave their evenings and weekends to this project. Special thanks go to William Greenwood, Vice-

President at First American, and other bank officials who so zealously protected the site when they could have just as easily let the cave deposits be taken out (in 1971 there were no laws that would make them stop work, even if human burials were encountered). Thanks to Mack Prichard for his assistance. Also belated thanks to Kent Flannery, Ed Wilmsen, Loring Brace and Vance Haynes, the experts who were called in to evaluate the site and to John Guilday for his report on the faunal materials. Also, thanks to Ron Spores and Vanderbilt University who added a professional flair to the excavation.

And last, but not least, thanks to the construction workers of Foster & Creighton who stopped work when the bones were first spotted. They could just as easily have ignored these bones and, with a few more scoops of the backhoe bucket, made this historic discovery impossible.

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Nashville Tennessee

DESCRIPTION OF FIVE DOVER CHERT QUARRIES IN STEWART COUNTY, TENNESSEE

Ryan Parish

The prehistoric quarries located in Stewart County, Tennessee have fascinated archaeologists by both their size and the chert material that was extensively procured to fashion intricate prehistoric implements. Despite this interest, very little has been done to survey the spatial distribution of these sites. This study presents the results of a detailed survey of five previously recorded prehistoric quarry sites (40SW64, 40SW66, 40SW67, 40SW68, 40SW80) in Stewart County, with an emphasis on mapping individual quarry pits while placing them in their geographic context.

Dover chert has become synonymous with Southeastern archaeology and is well-represented in the prehistoric record of Tennessee. Professional archaeologists, as well as enthusiasts, have become familiar with this material and identified cultural implements made of Dover chert within prehistoric assemblages as far abroad as Arkansas and Oklahoma. Despite its reputation as a heavily exploited resource by prehistoric people, only a small amount of research has been aimed at surveying the spatial distribution of the prehistoric mining activity. The goal of this study is to examine the spatial extent, geographic location, and quantity of prehistoric mining activities of five Dover chert quarries in Stewart County, Tennessee. The following data was obtained to aid in Dover chert provenance studies and encourage future research.

The archaeological literature has generally attributed the procurement, production, and distribution of Dover chert implements to have originated from the "Dover Quarries" of Stewart County, Tennessee. One noted exception, Smith and Broster (1993), examines other possible procurement locations and the presence of Dover or macroscopically similar chert types. As a result, the "Dover Quarries" have become a popular type location for the material. The hypothesis that Dover chert utilized by prehistoric people was obtained from the quarries in Stewart County may or may not be an accurate assumption. Admittedly the prehistoric quarries of Stewart County are impressive. The numerous pits, massive piles of tested cobbles, debitage, and large areas of mining activity are silent witnesses to the importance of the resource. However, the quarry sites have never been comprehensively surveyed in regards to their spatial extent, density of quarrying activity, or topographic and geologic setting.

Topographic and Geological Setting

The five Dover quarry sites surveyed in this study are located in Stewart County, Tennessee along the state's northern border with Kentucky (Figure 1). The town of Dover is located northwest of the quarry sites at the intersection of State Routes 79 and 49 on the south embankment of the Cumberland River. The area is located within the Western Highland Rim Plateau physiographic region and is characterized by maturely dissected valleys and ridgelines. The topographic relief of the area dips to the

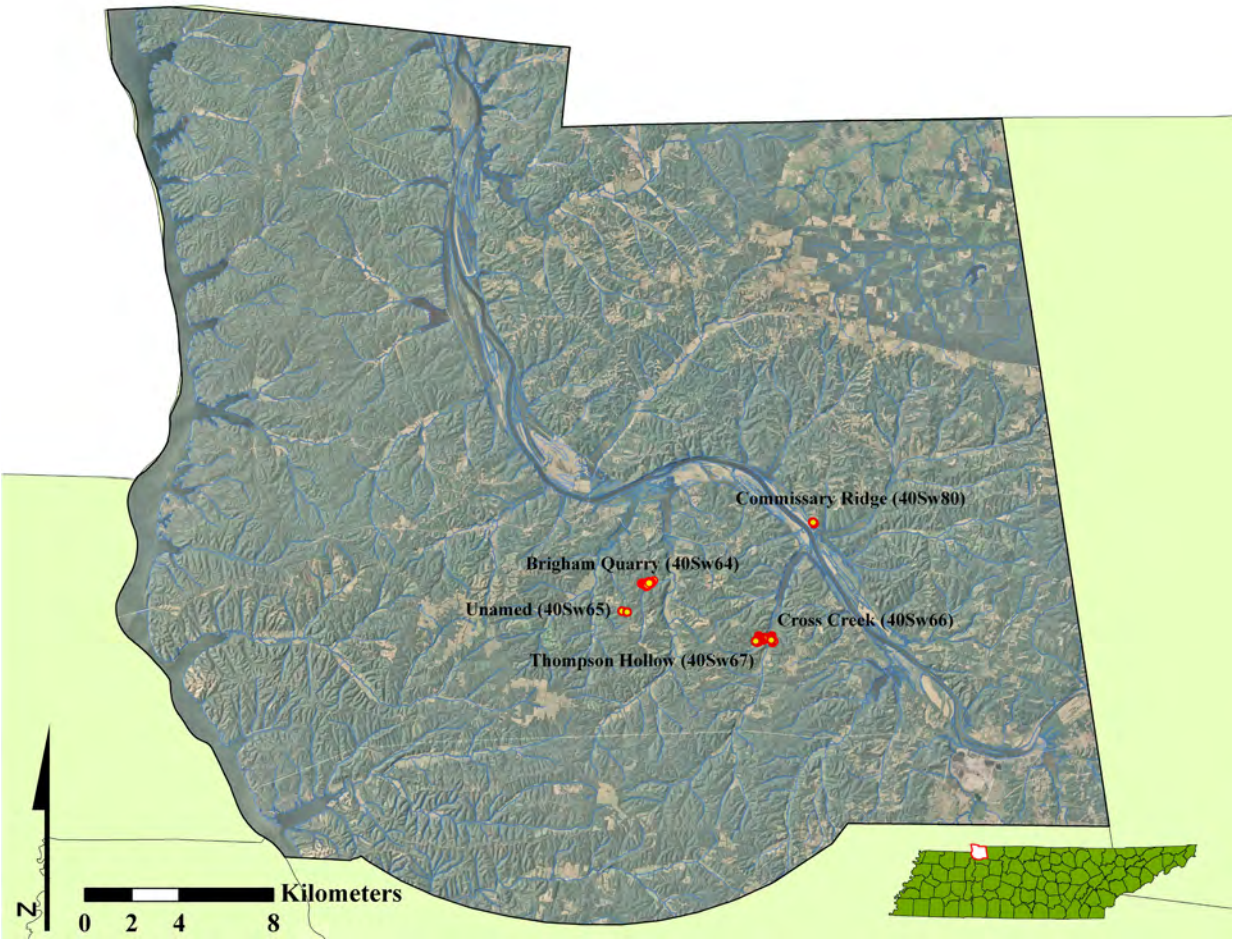

FIGURE 1. Location of the five previously recorded prehistoric Dover Quarry sites in Stewart County, Tennessee.

northeast and is primarily drained by the Cumberland River which flows to the north to become Lake Barkley. Secondary drainages in the area include Long Creek and Cross Creek that flow northward to the Cumberland. In addition to these, a number of third order tributaries are present but will be further discussed as they relate to individual quarry sites.

The soils in the vicinity are primarily assigned to the Baxter-Hammack-Brandon association described as a brown to reddish brown cherty silt loam. The Baxter-Hammack-Brandon soils are located on rolling to steep hillsides and hilltops (United States Department of Agriculture, Soil Conservation Service [USDA, SCS] 1953). The pedogenesis of the sediments is directly attributed to the weathering of limestone formations. It is important to understand the formative processes of these soils as it will be crucial in evaluating the occurrence of the Dover chert nodules at each site.

The Highland Rim province almost entirely engulfs the Central Basin of Tennessee. The Western Highland Rim is characterized by rolling terrain with numerous streams producing karst topography from Stewart County east to Sumner County and northward into Kentucky. Also present are maturely dissected valleys which have filled in with more modern silt deposits (Bassler 1932).

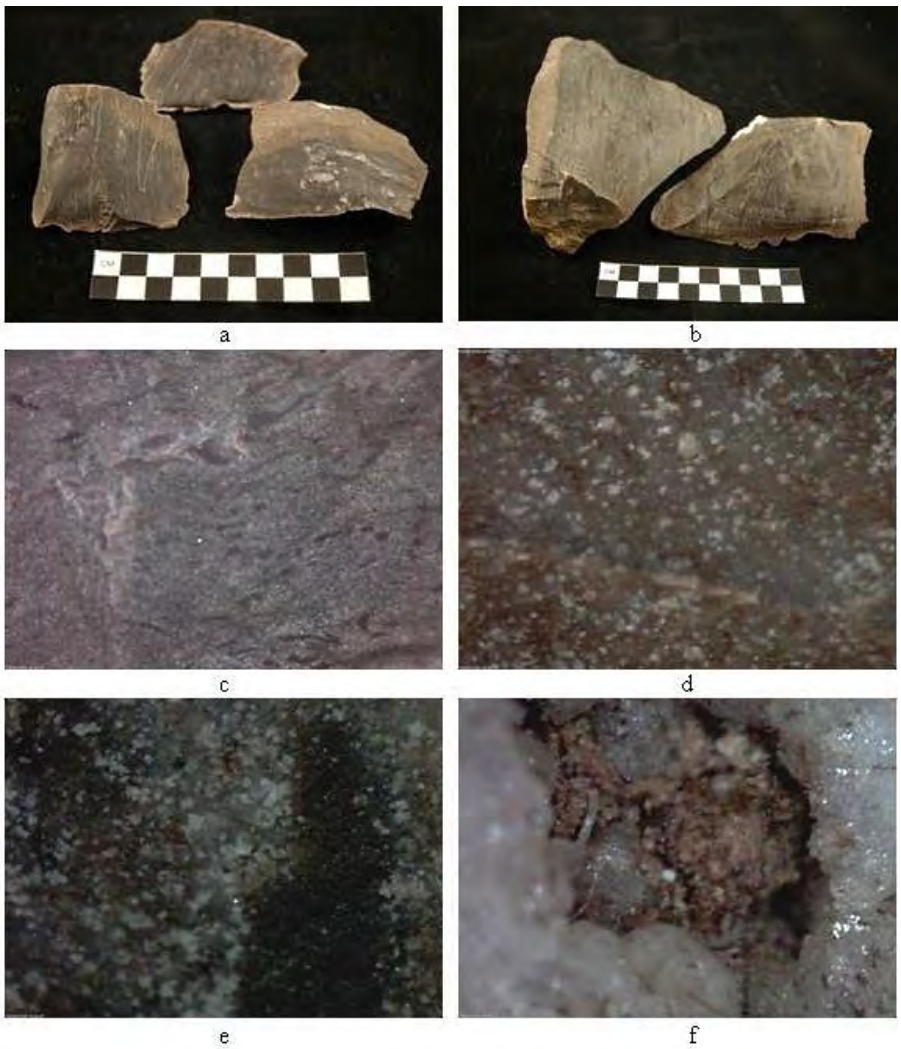

FIGURE 2. Variations and distinguishing attributes of Dover chert; (a) Dark high grade quality samples, (b) lighter variants, (c) mottling shown at 50x magnification, (d) macroscopic calcite crystals shown at 100x magnification, (e) sapropelic material [dark blemishes] shown at 150x magnification, (f) macrocrystalline inclusion shown at 200x magnification

The area offers a unique perspective on the depositional record of the Highland Rim province.

Many chert types would have been available to prehistoric people inhabiting the Dover area. The majority of the chert materials occur as bedded or nodular inclusions within the Mississippian-aged limestone formations. The Fort Payne formation is the oldest member of the Mississippian-aged limestone formations and is highly siliceous in nature containing both nodular and bedded chert types of varying consistencies. The Fort Payne is then followed by the Warsaw and St. Louis limestone formations having abundant chert residues imbedded within their limestone matrices. The youngest of the Mississippian-aged limestone formations is the Ste. Genevieve present as small upland remnants to the north where the formation is more prominent. The Ste. Genevieve formation contains fragmentary pieces of chert debris that were also exploited by prehistoric people. The sporadic occurrence of Cretaceous chert

gravel units provides an additional chert material resource to prehistoric peoples in the area. The Tuscaloosa formation comprises the bulk of the Cretaceous gravels occurring as large rounded cobbles of good quality material. These materials may be found along upland stream and tributary beds. Despite the presence of these various chert types, prehistoric miners at the Dover quarry sites focused their efforts on extracting a particular chert. Dover chert occurs locally as large nodules of micro to crypto-crystalline material encased within the silty clay mantle on hill slopes and eroding out of limestone bluff faces.

Dover Chert

Dover chert can be described as a light brown to dark brown, medium to fine grained chert with varying dark to light mottled lenses (Figure 2). Calcite geodes are often found as inclusions in the matrix ranging in color from a milky white to light blue, either solid or crystalline in nature.

The chert occurs in nodular form ranging from a few centimeters to fifty centimeters or more in diameter. The larger nodules are commonly referred to as “cannonballs” (Marcher 1962a, 1962b). No tabular or bedded forms of Dover chert were noted within the study area. However, frost fracturing of many of the “cannonballs” resulted in the presence of half cobbles resembling tabular blocks. This fracturing was not irregular but occurs along smooth plains often giving the nodules an angular appearance.

The nodule cortex is a few millimeters thick consisting of a white to reddish clay rind. Various fossil types can be seen within the cortex. The color variation present in the material can be directly attributed to varying degrees of silicate replacement processes and weathering to which the individual nodule or piece has been subjected. The dark black, fine-grained variety of Dover chert was observed still encased in the parent limestone. The light brown, caramel, or white variety of Dover was predominately observed in specimens located within the soil matrix. Color varieties ranging from dark to light brown were observed at each one of the five Dover quarries. No variant is indicative of a particular outcrop, making macroscopic sourcing of the material difficult if not impossible.

As previously mentioned, the main goal of the study is to quantify the spatial extent of prehistoric mining activity evidenced by the number of quarry pits/amorphous trenches at each site. The numbers of quarry pits should only be taken as approximations due to certain restrictions such as visibility, terrain, and episodic prehistoric refilling. In addition, historic disturbances such as logging, iron ore mining, and enthusiast’s excavations were noted at all of the sites.

Terminology

A clarification of terms is appropriate before proceeding further. Quarry pit, as used in this particular study, describes the occurrence of a circular to oval depression in the soil or limestone matrix with associated lithic debitage created as a direct result of prehistoric mining activities. This definition excludes semicircular depressions caused by tree falls or historic iron ore pits. This rather narrow definition may also rule out other prehistoric mining activity (such as prospecting pits) that did not yield any evidence of chert debitage on the surface.

In some areas, the sheer number of overlapping consecutive quarry pits created a phenomenon which can be best described as amorphous trenches. These

"trenches" were recorded with an effort made to differentiate individual quarry depressions. The size of the various quarry pits ranged in depth from a few centimeters to three meters, with diameters measuring between one to five meters. Dover chert materials at two sites were encased in their limestone matrices, prompting the author to refer to these as outcroppings.

Methodology

Spatial data for individual quarry pits were obtained with a handheld global positioning system (GPS) unit at an accuracy ranging from four to seven meters. Greater spatial resolution was attempted with a GeoTrex® Trimble unit, but was not attainable due to weather conditions, topographic relief, and satellite telemetry. Coordinates for each quarry pit were recorded referencing North American Datum 1983 (NAD83) Universal Transverse Mercator (UTM) Zone 16N. Elevation data was also recorded at the top of each quarry pit. Each pit was then assigned an arbitrary sequential number which was written on a piece of flagging tape and suspended above to guard against duplication errors. Each quarry site was systematically surveyed on foot by pacing arbitrary transects perpendicular to the axis of the ridgeline. The sites were surveyed in this manner until no signs of prehistoric mining activity were encountered for an approximate distance of 200 meters in either direction from the last recorded quarry pit.

Five prehistoric sites in Stewart County are recorded as a quarry or as having a quarry component: the Brigham Quarry (40SW64), Cross Creek (40SW66), Thompson Hollow (40SW67), Unnamed (40SW68), and Commissary Ridge (40SW80). These five previously recorded prehistoric quarry sites were the focus of the current investigation. The survey failed to relocate site 40SW68 thus no data is presented in this study. A few observations are made describing the area in which the unnamed quarry site was recorded, along with some speculation as to its existence.

Previous Research

A brief discussion of previous research is necessary to place this study within a contextual framework. The Dover Quarries seem to have been relatively overlooked by archaeologists of the early 20th century. Comprehensive surveys by Moorehead (1906, 1910) and Moore (1915) do not mention the Dover Quarry sites. In fact, Holmes's (1919) *Handbook of North American Lithic Industries* does not examine these sites despite being the comprehensive volume on major prehistoric quarry sites in the Americas. However, personal communications between Warren K. Moorehead and Parmenio E. Cox from 1926 to 1932 identify three quarry sites they investigated in close proximity to Dover, Tennessee (Smith 2010). One of the three sites is the Brigham quarry. The correspondence of Moorehead and Cox mention limited excavations and approximate sizes of the prehistoric mining activity (Smith 2010).

The first published association with Dover chert and Stewart County did not come until the early 1950s with an article by Madeline Kneberg in James B. Griffin's *Archeology of the Eastern United States* (Griffin 1952; Kneberg 1952). In *Tribes that Slumber; Indians of the Tennessee Region*, the chert material used to produce the ceremonial implements of the Duck River inhabitants are attributed to the Dover chert cobbles located "30 miles

TABLE 1. Site Information for Four Dover Quarry sites.

Quarry Site	Number of Pits	Linear Extent (m)	Area (m^2)	Elevation (m AMSL)
Brigham	341	450	38,730	132-149
Cross Creek	N/A	280	6,800	112-124
Thompson Hollow	253	420	28,500	124-140
Commissary Ridge	2	90	1,700	129-131

to the north" (Lewis and Kneberg 1958).

Not until the 1983 to 1985 investigations of Richard Gramly (1992), under the aegis of the Buffalo Museum of Science, were large-scale excavations undertaken on sites interpreted as workshop areas in close proximity to the quarry sites. In Gramly's (1992) monograph, *Prehistoric Lithic Industry at Dover, Tennessee*, the Brigham Quarry site is referred to often and the approximate spatial extent of the quarry is illustrated. The Cross Creek site is also mentioned with brief references to quarry pits and talus debris (Gramly 1992). Some excavation of debris piles was undertaken at both of these sites, but the main focus of the investigations was on related sites in the vicinity (Gramly 1992). In Nance's (2000) study of lithic materials from western Kentucky and Tennessee, samples of Dover chert were obtained from a portion of the Brigham site which he quantifies as being 75 square meters in spatial extent.

Brigham Quarry (40SW64)

The Brigham Quarry is probably the most cited and best known of the Dover quarries in the archaeological literature. This site is the largest (by spatial extent and number of quarry pits) of the five sites surveyed in this study. The site was first described by Parmenio E. Cox in a letter to Warren K. Moorehead (Cox to Moorehead, May 31, 1926). The site was formally recorded with the State of Tennessee in 1972 and listed on the National Register of Historic Places in 1973 (Tennessee Division of Archaeology 1972).

The Brigham Quarry site is located on the north slope of Caney Hollow. The mouth of Caney Hollow lies perpendicular to Long Creek and extends west of Long Creek for approximately one kilometer before turning to the south. The prehistoric quarries are located at this far western extent of the hollow along the south/southeast facing toe slopes of the ridgeline. At the time of the survey, the property was maintained by the Brigham family as pasture land with a few small tracts exiting as cultivated areas. The hill slopes lining the hollow are covered with deciduous woodland and secondary undergrowth. The area is primarily drained by unknown seasonal tributaries and Caney Hollow Creek which flows east into Long Creek.

Spatial Distribution

Approximately 341 pits and/or amorphous trenches were observed and recorded at the site, covering an area of 38,730 square meters and a linear distance of 450 meters (Table 1; Figure 3). The site is split into three sections by two unnamed seasonal drainages that flow southeast to Caney Hollow Creek. All of the pits are located along the terminus of the hill slopes at an elevation range of 132 to 149 meters above sea level. Some of the quarry pits are visible today as slight circular depressions on the leaf littered forest floor, but others are massive, exceeding five meters in

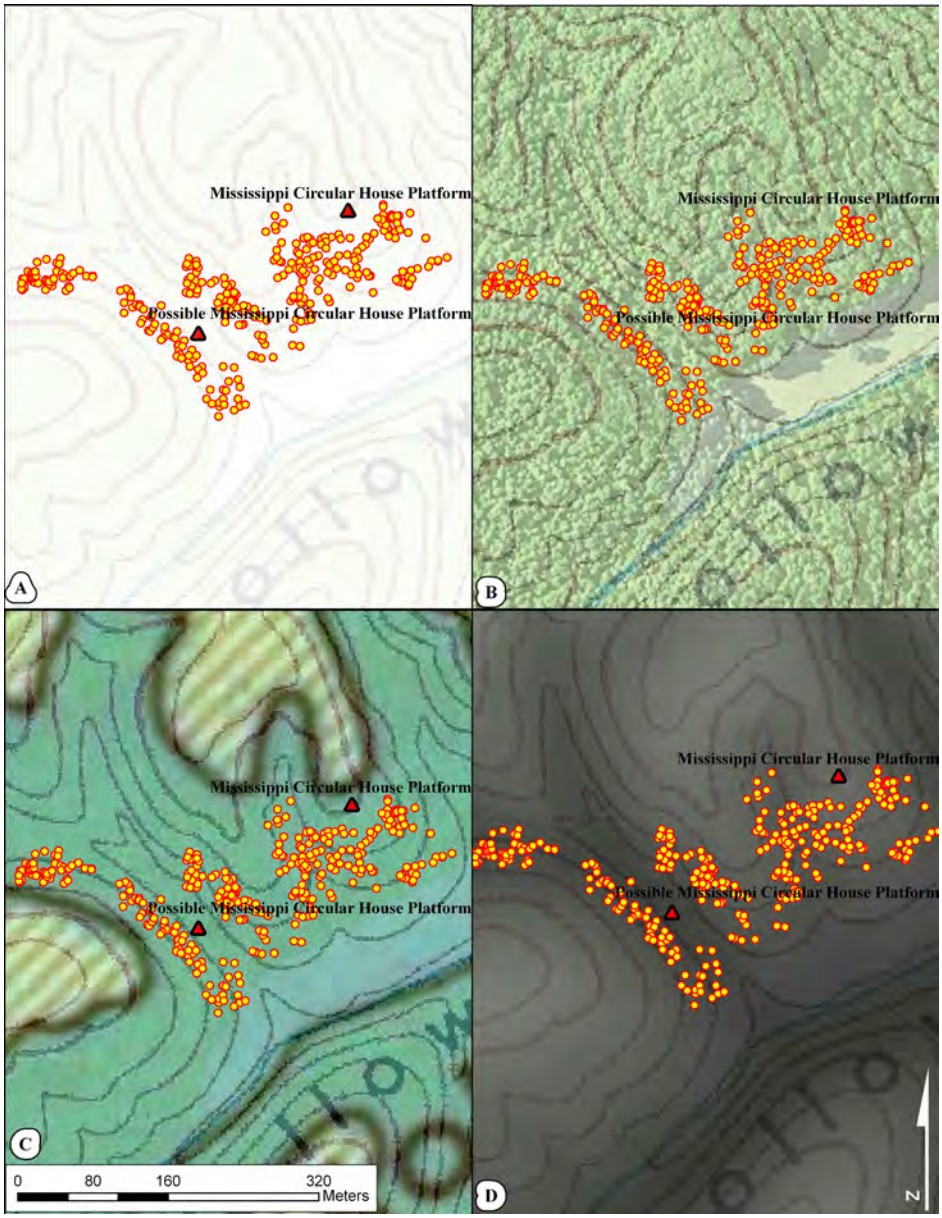

FIGURE 3. Brigham Quarry site: (a) spatial distribution of individual quarry pits/Mississippi house platforms, (b) aerial photograph, (c) underlying geology [Warsaw limestone (blue)], (d) digital elevation model with contour intervals [20 ft].

diameter and three meters in depth.

The hill slopes in and around the quarry pits are littered with debitage consisting of cortical flakes, discarded cobbles, and bifaces. The debitage piles are so dense in places that the ground is completely covered. Gramly excavated one of these piles and determined it to be a cache of prepared blanks for later use (Gramly 1992). Most of the debitage seems to be waste flakes from prepared cores and discarded nodules. There is also a number of bifaces rejected for various reasons during production. Surprisingly, a number of utilized debitage was observed. The larger specimens may have been used as digging implements as there is considerable edge damage and

use polish on the bulbar ventral surfaces.

The traces of prehistoric mining activity at the Brigham Quarry site are not evenly distributed across the hill slope. In some areas the quarry pits are heavily clustered, making it hard to distinguish individual excavations. In these locations, the excavated area appears to be a continuation of sequential pits leading up the hill slope. In this manner a degree of systemization can be perceived. Gramly investigated one of these “trenches” and proposed they illustrated a desperate attempt by prehistoric miners to obtain materials as the resource became scarcer (Gramly 1992).

Other Cultural Features

The current survey added a third section to the Brigham Quarry site that had previously not been identified. This new section extends the site an additional 150 meters to the northeast. No evidence of quarrying was observed along the opposing hill slopes of Caney Hollow despite topological similarities.

Further to the northeast a single pit was encountered 110 meters from the quarry. A cluster of three circular pits are located even further to the northeast on the south facing bluff overlooking the mouth of Caney Hollow. All four pits are identical to those located within the quarry site except for the absence of debitage. No chert debitage, cobbles, or any other form of lithic material was observed. These isolated pits are approximately three meters in diameter and two meters deep. They are the result of substantial excavations requiring a significant investment of time and energy. Each pit location was recorded, but not included in the total number of pits for the Brigham Quarry site due to the complete lack of prehistoric debitage.

There are two plausible explanations for the existence of these pits. First, the pits could represent prehistoric prospection pits as they are located at similar elevations and topographic setting as those within the site. This may explain the isolated pit at 110 meters distant, but hardly accounts for the cluster of three pits 780 meters to the northeast. A second, and more plausible, explanation is that they represent evidence of 19th century iron ore mining which was prevalent in Stewart County. Identical pits of this nature were observed along the Cross Creek drainage in close proximity to a mid-19th century recorded iron ore mine.

A second discovery with implications for future site investigation and interpretation was made during a field trip to the quarry when Dr. David Dye (University of Memphis) found what appears to be a Mississippian house platform. The platform is situated on top of a relatively flat protruding lobe of the ridgeline that would have afforded a commanding view of the northeastern section of the quarry. The earthwork is circular in plan-view with a diameter of approximately seven meters. The northwestern side of the feature appears to be depressed into the gently sloping landform whereas the southeastern side of the feature is built up to create a seemingly level platform. A small concentration of fire altered silicified limestone blocks can be seen in the eastern half of the platform. Scattered throughout the limestone are secondary and primary flakes, along with what appears to be a quartzite cobble. Quarry pits with large dimensions can be observed in close proximity to the feature. No other features of this nature were observed on the immediate uplands overlooking the site.

A second possible Mississippian house platform was observed along an unknown tributary that splits the quarry site in half and serves as the property boundary between the Brigham family and a local hunting club. This possible platform is less impressive than the one located up above, and may be the remnant of an ancient meander of the entrenched tributary. However, the feature is circular with dimensions similar to the previously described platform (except for the extreme southwestern side that is being eroded by the tributary). No cultural materials were observed with this possible platform except for the large amounts of chert debitage that litters the shallow drainage.

Disturbances

A number of historic impacts were observed at the Brigham Quarry site. The Brigham family has been a steward of the site for years, and as a result, the site is remarkably well-preserved. However, as previously mentioned, the hollow is currently utilized as a pasture. The fence line for the field incorporates a portion of the quarry pits located at the southern end of the site at lower elevations. These features are somewhat subdued and exist as shallow depressions due to bovine trampling and erosion.

Other historic intrusions include a wagon road that winds uphill to the northeast following the contour of the slope. Also, evidence of collector activity is suggested by the unnatural piles of bifaces on tree stumps and freshly broken cobbles. In addition, two quarry pits appear to be recent in origin as tree roots were exposed in the profiles.

However, the most significant site disturbance occurs on the hunt club property along the far southwestern section of the site. Recent logging activities have greatly impacted quarry pits at the highest elevations along the hill slope. Bulldozers have leveled the secondary undergrowth and torn up the ground to such an extent as to obliterate an unknown number of quarry pits, leaving behind piles of debitage mixed with disturbed subsoil.

Cross Creek Quarry (40SW66)

The Cross Creek Quarry is located 5.7 km southeast of the Brigham Quarry site in close proximity to the Cross Creek Federal Reserve on Cross Creek (see Figure 1). The site is on private property north of Carlisle, Tennessee. Currently the site is a fallow agricultural field bordered by mixed deciduous trees. A steep bluff face leads down to Cross Creek just inside the western tree line. The site record form describes the site as an open cultivated field with debitage piles and associated stone-box cemetery (Tennessee Division of Archaeology 1964a). Gramly visited the site and conducted brief excavations on one of the debitage piles at the edge of the bluff overlooking Cross Creek (Gramly 1992). The main prehistoric quarry activity can be viewed along this sheer bluff face. The extreme southern end of the landform is characterized by a steep almost vertical outcropping of limestone. The gradient of the bluff face lessons considerable to the north. Evidence of prehistoric mining activity is scattered over a linear extent of 280 meters along a north/south axis of this bluff face. Where the limestone is exposed, signs of prehistoric mining can be observed in the form of angular blocks of limestone, in situ Dover cobbles with step fracturing on the anterior surface, and possible signs of fire alteration along the outcrop. One section of the outcrop

FIGURE 4. Limestone bluff outcrop at the Cross Creek Quarry showing in situ Dover chert nodules each approximately 30 cm in diameter, facing south.

appears to be completely unnatural in appearance as it can be described as a limestone wall (Figure 4). The face of this section is completely vertical with equidistantly spaced fractured Dover nodules. A one-meter wide "foot path" leads in front of the exposure.

Spatial Distribution

The Dover chert nodules can be seen encased in the parent limestone along the outcropping for approximately 2,100 square meters (Table 1; Figure 5). These nodules appear to be tightly confined within a range of approximately 112 to 124 meters above sea level. Chipping debris and other chert debitage is present in this area as well. Extensive piles of debitage completely blanket the hill slope in places as the bluff face grade lessens to the north. The presence of these debitage piles covers an area of 4,700 square meters. Most of the debitage is cortical flakes indicative of blank or core preparation. Similar to the Brigham Quarry site, there are also stage two bifaces and utilized flakes present.

Gramly describes quarry pits as present along the bluff face. However, the survey did not encounter any discernible quarry pits akin to those witnessed at the Brigham Quarry site. Slight depressions or concavities observed along the slope line may represent these types of features. The Dover nodules appear to be almost completely free of their limestone encasements and may have been available to prehistoric miners right along the surface. Some degree of effort was likely required to pry them from the

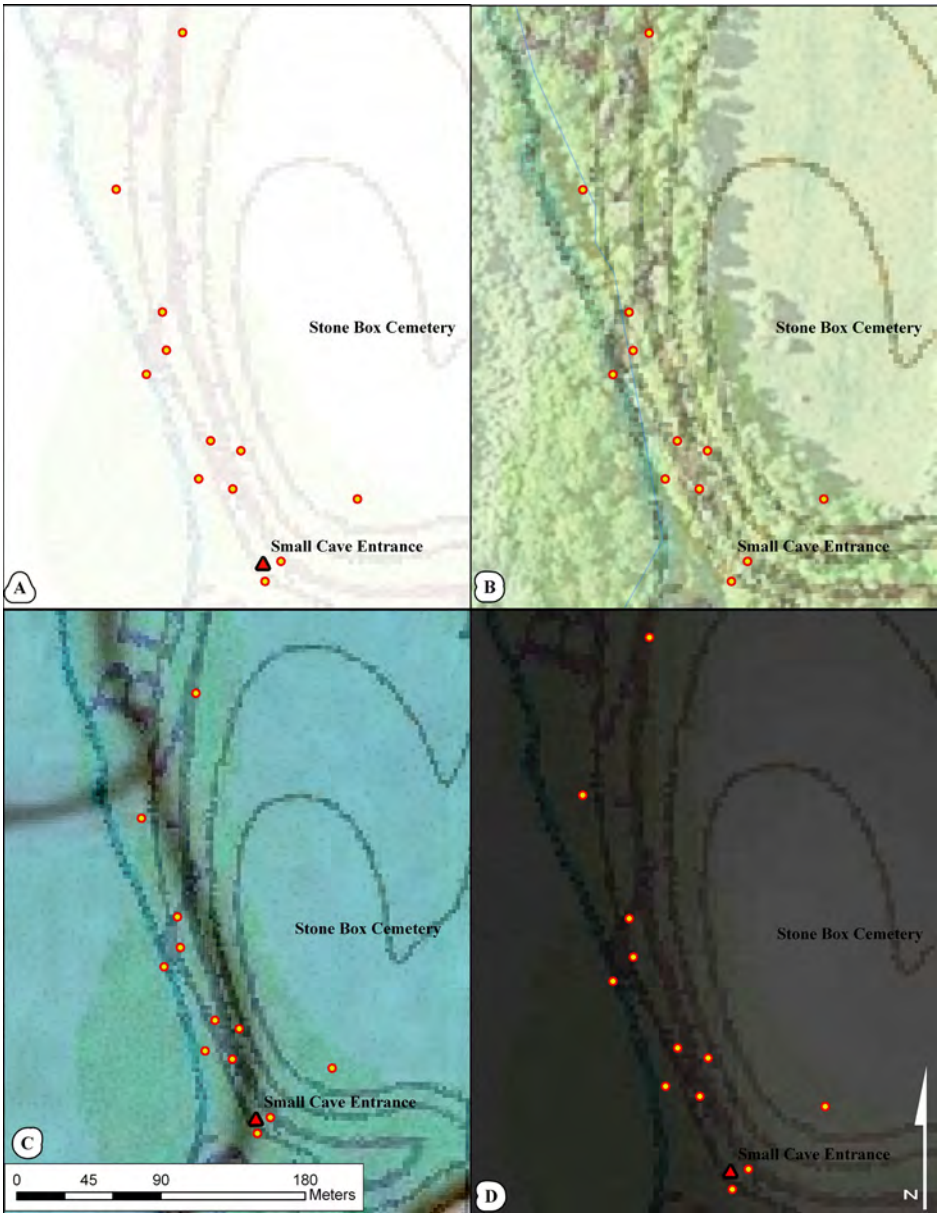

FIGURE 5. Cross Creek Quarry site: (a) spatial distribution of individual quarry pits/outcrops, (b) aerial photograph, (c) underlying geology [Warsaw limestone (blue)], (d) digital elevation model with contour intervals [20 ft].

remnants of the parent limestone. The elevation ranges for these debris piles and seemingly unnatural depressions is consistent with that observed at the southern end of the exposure.

Other Cultural Features

Other interesting features at the Cross Creek site include a stone-box cemetery recorded almost directly above the bluff face. Although the area is overgrown by thick secondary growth, angular limestone slabs were observed in the vicinity.

A small cave is present at the southern terminus of the site. The cave opening is approximately two meters wide and one meter high. The vestibule continues for four to five meters east before making an abrupt turn to the north and immediately

ending. No signs of cultural use were observed except for a few large secondary flakes that appear to have washed in. Neither the walls nor ceiling showed stains of smoke.

Large piles of secondary flakes and utilized lithics were seen along the top of the bluff edge just inside the wood line. One of these piles was excavated by Gramly (1992) and may be evidence of further production activity after the cortex was removed on the slope below.

Disturbances

Recent logging activity has impacted the stone-box cemetery and obliterated much of the bluff edge. Colluvium from cultivation and recent logging activity blankets much of the bluff face. In

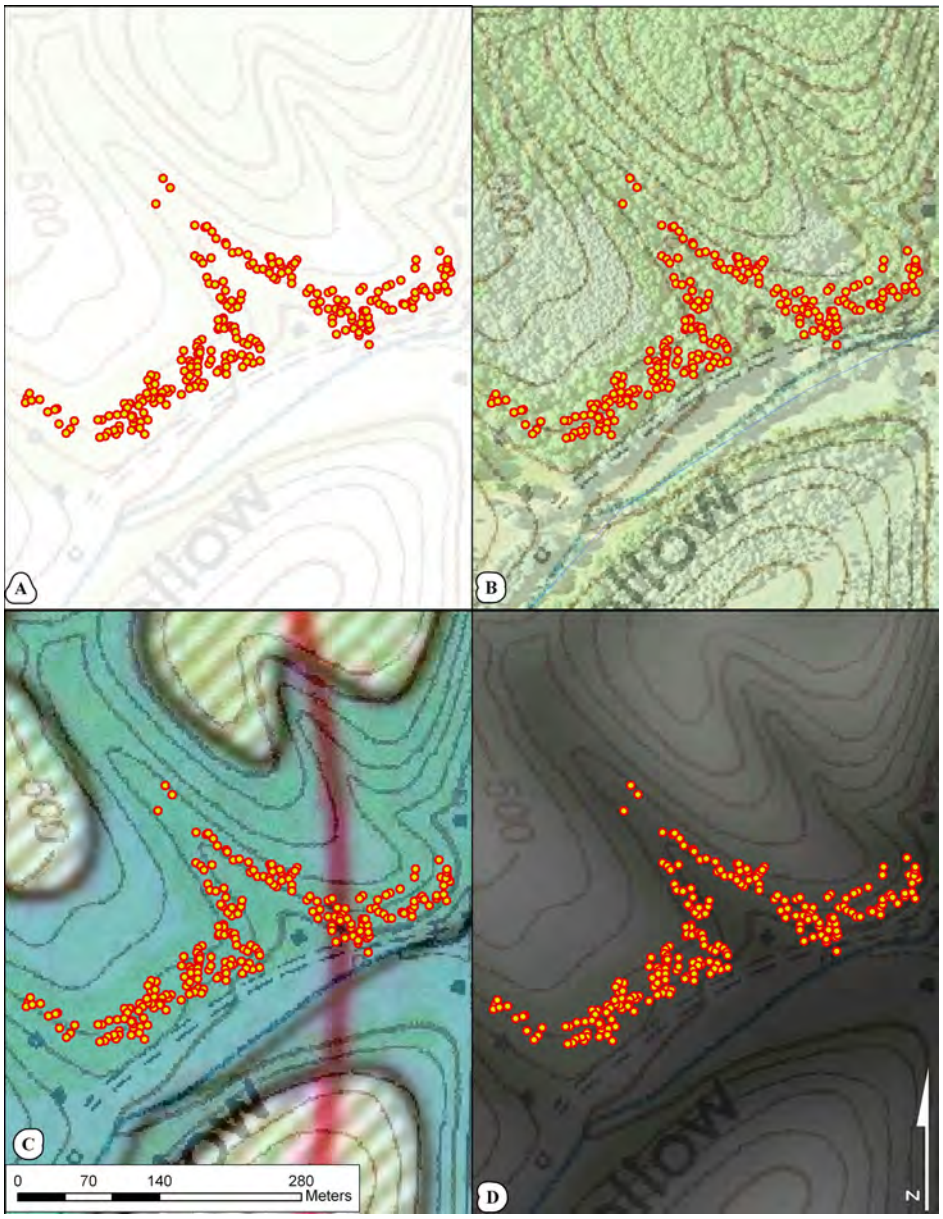

FIGURE 6. Thompson Hollow Quarry site: (a) spatial distribution of individual quarry pits, (b) aerial photograph, (c) underlying geology [Warsaw limestone (blue)], (d) digital elevation model with contour intervals [20 ft].

addition, the area is well known to local relic collectors in Carlisle as shown by discarded bifaces precariously placed upon limestone ledges.

Thompson Hollow Quarry (40SW67)

The Thompson Hollow Quarry is located on the western bank of Cross Creek almost directly across from the Cross Creek site. Thompson Hollow is easily accessed directly north of Carlisle, Tennessee via State Route 49. Thompson Hollow Creek runs east through the hollow before emptying into the Cross Creek drainage. The site, situated on the north side of the hollow and covered by mixed deciduous woodland, occurs on private property and was recorded by the presence of Dover chert cultural materials (Tennessee Division of Archaeology 1964b).

Spatial Distribution

The Thompson Hollow Quarry site is characterized by 253 quarry pits and amorphous trenches covering an area of 28,500 square meters (Table 1; Figure 6). The quarry pits are spread out over a linear extent of 420 meters along a northeast/southwest axis and are tightly constrained to a specific elevation range of 124 to 140 meters AMSL. These pits are not equidistantly spaced but occur in clusters and concentrations. Pit dimensions are comparable to those described previously for the Brigham Quarry site.

The Thompson Hollow and Brigham Quarry sites demonstrate a similar pattern of material exploitation. First, the south facing sides of the hollows were extensively mined, although this may represent a coincidence rather than cultural site selection preferences. The large “cannonballs” of Dover chert may occur naturally at these locations and are not indicative of a rational decision by the miners to excavate all south facing hill slopes in a particular hollow. Second, excavation of large circular pits and amorphous trenches was the preferred extraction technique for both sites. Large amounts of cortical debitage at both sites indicate the cobbles were being reduced on-site for further preparation elsewhere. Finally, the prehistoric miners were excavating cobbles directly from the soil matrix as the soluble limestone had completely eroded away. In fact, there was a complete absence of limestone blocks at the Thompson Hollow site.

The presence of Dover chert nodules seems to have been somewhat limited as mining activity is confined to a distinct elevation range. The quarry pits diminish in size and depth at the northeastern and southwestern terminal locations of the site, and the frequency and presence of debitage also significantly decreases. These observations indicate the finite nature of the deposit, and suggest the quarry had been utilized to its full extent.

Disturbances

The Thompson Hollow site seems to be in much better condition than the Brigham site, despite some disturbances due to logging and development. Thompson Hollow’s southwest section is located on local hunt club property and has been impacted by logging (although not to the same extent as the Brigham Quarry). The main impact to the site comes from a modern dirt road bulldozed into the hill slope directly off State Route 49. An artificially leveled platform partially impacts the northeast site area. Fortunately these disturbances appear to be located in areas of limited prehistoric mining activity.

A large, semi-circular, earthen embankment (approximately 20 meters long and three meters high) is present in the site center at an elevation range that slightly exceeds that of the quarry pits. The embankment is likely modern, as trees estimated to be about 20 years old were observed overtop with no cultural resources present other than an unidentified piece of iron equipment lying nearby.

Commissary Ridge Quarry (40SW80)

Commissary Ridge, located about five kilometers north-northeast of the three previously discussed quarry sites, occurs on an isolated bluff overlooking the Cumberland River to the south. The site area is drained by Commissary Ridge Creek along the eastern flank of the landform. Young deciduous woodland and thick secondary undergrowth covers much of the site, although a portion of the site area holds the Burcham cemetery. Another part of the site is preserved as a national recreation area associated with Lake Barkley.

Spatial Distribution

Commissary Ridge was initially recorded as a stone-box grave cemetery and quarry/workshop measuring 20,000 square meters (Tennessee Division of Archaeology 1978). No signs of quarrying activity were encountered within the site boundaries highlighted on the state site form. However, a sheer bluff face of exposed limestone along the western flank of the landform yielded evidence of prehistoric mining. Broken pieces of Dover nodules were encountered in runoff debris along the hill slope approximately 300 meters northwest of the prehistoric cemetery component. A single quarry pit was discovered at the edge of the bluff face along with a few piles of debitage in close proximity. A second quarry pit was encountered 90 meters northwest of the initial pit (Figure 7). Sparse amounts of Dover chert debitage were observed between these isolated pits for a total site area of 1,700 square meters (see Table 1). No other signs of prehistoric mining activity were encountered.

The two quarry pits are close to, and may be associated with site 40SW79 rather than the Commissary Ridge site. Regardless, procurement activity seems to have been of short duration at this isolated location. Further analysis is necessary to assess whether the quarry and (Mississippian period) stone-box cemetery are contemporaneous.

Other Cultural Features

The Commissary Ridge site area includes a late prehistoric (Mississippian period) stone-box cemetery disturbed by the early to mid-20th century Burcham Cemetery. Three stone-box graves visible along the eastern border of the historic cemetery appear looted as slabs from the limestone coffins are stacked in piles. The Burcham Cemetery contains a dozen headstones with Dover chert debitage and utilized flakes scattered throughout the headstones. An additional historic impact is the construction of Commissary Ridge road along the site's western boundary.

Unnamed Site (40SW68)

Another previously recorded prehistoric quarry in Stewart County is site 40SW68 located at the far southwestern extent of Caney Hollow "one and a half mile west of Long Creek" (Tennessee Division of Archaeology 1967). Two days of survey on the flanking hill slopes and

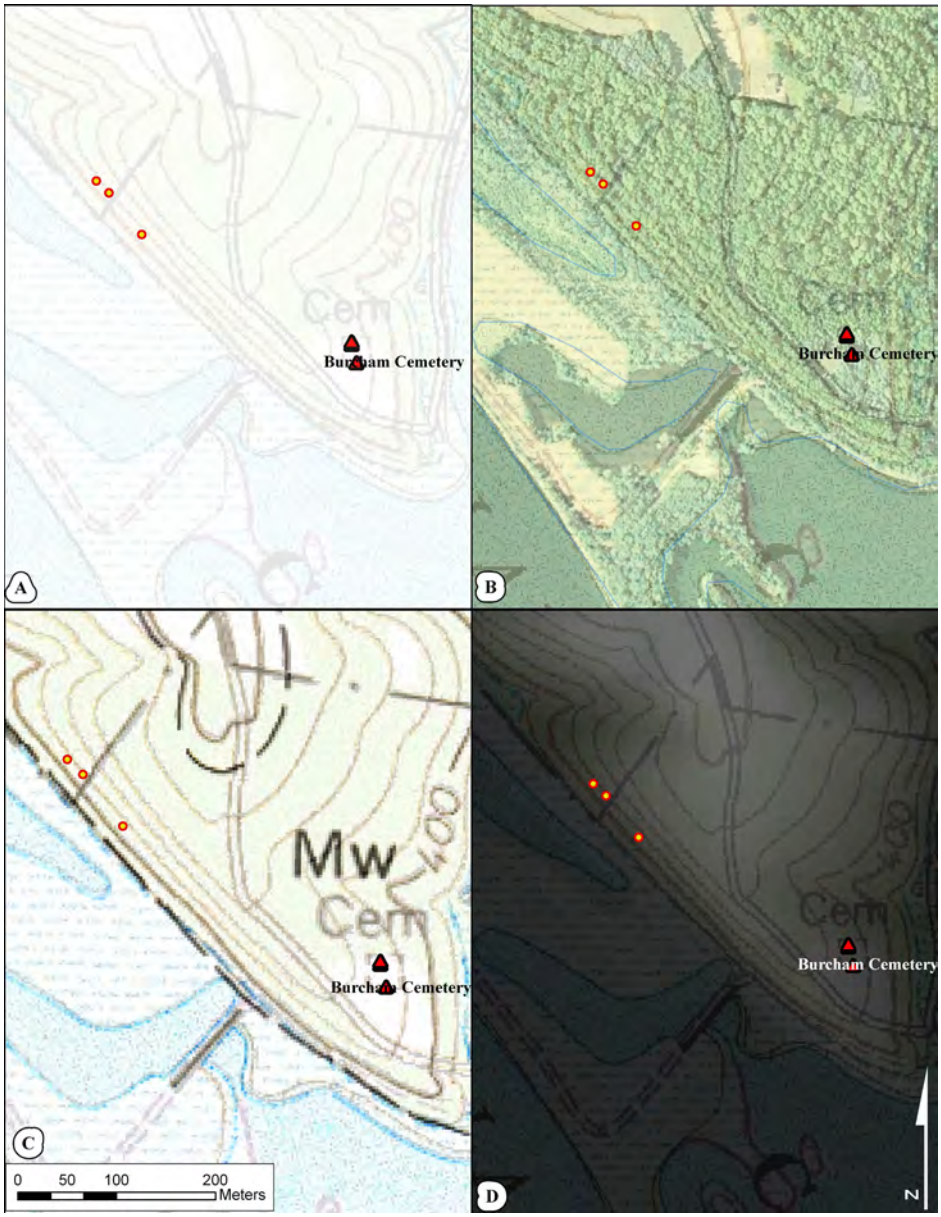

FIGURE 7. Commissary Ridge Quarry site: (a) spatial distribution of individual quarry pits, (b) aerial photograph, (c) underlying geology [Warsaw limestone (Mw)], (d) digital elevation model with contour intervals [20 ft].

within seasonal drainages yielded no signs of prehistoric quarrying such as quarry pits or debitage. However, small nodules of Dover chert were observed weathering out of the soil matrix at the top of the ridgelines. The chert occurred as nodules several centimeters in diameter, some being almost perfectly spherical. These specimens proved to be heavily weathered and unsuitable for tool manufacture.

Interestingly, these spherical nodules were seen in rock gardens in at least two historic dwellings in the area. Of note is that the survey of residential rock gardens holds potential for identifying the occurrence of Dover chert nodules in the local area. An examination of similar

residential rock gardens led the author to identify the location of prehistoric quarrying activity in Thompson Hollow.

The 40SW68 site location may be noted in the wrong place, but does represent a good indication of the uneven distribution and occurrence of the large Dover chert nodules across the landscape. The absence of large Dover chert nodules at this unnamed site strengthens the argument that such nodules may only be present in great amounts at certain geographic locations. Therefore, it might be incorrect to assume that continuous beds or stratums of Dover chert exist in the area.

Conclusion

The five previously discussed sites collectively represent the recorded Dover Quarries of Stewart County. Researchers should not assume that these are the only prehistoric quarries in Stewart County or the surrounding vicinity. Local informants in the towns of Dover and Carlisle allude to the existence of other similar sites. For example, a large quarry site is rumored to exist along the Cumberland River bluffs near Fort Donelson. Continued investigation and survey of these sites is of crucial importance for archaeologists who seek to understand the exploitation and distribution of Dover chert throughout the prehistoric record.

This study of the Dover Quarries has lead the author to consider other issues relating to economics, centralized control, specialized industries, trade, ownership, and temporal use of the quarry sites. Were these quarry sites predominately developed and utilized during the Mississippian period? Was the production and development of the quarry controlled by a distant centralized power or driven by economic demand? Was there competition for the production of implements stemming from the quarries at Mill Creek, Illinois (Cobb 2001)? Did one group of people lay claim to these sites and therefore restrict access as the association of stone box cemeteries in close proximity to the Dover quarry sites indicates? The discovery of Mississippian house platforms at the Brigham Quarry site raises again the question of a permanent population of prehistoric miners. These various issues pose a daunting task for researchers seeking to understand these sites and the procurement and distribution of Dover chert.

There is little debate over the significance and sheer size of the Dover Quarry sites, notably the Thompson Hollow and Brigham sites. The prehistoric industry shown at the quarries is impressive and may not be matched in the area. However, the need for comprehensive surveys in conjunction with predictive modeling is apparent and will aid future research. This type of data is imperative for studies seeking to quantify prehistoric exploitation of Dover chert. Only through these comprehensive efforts might we begin to uncover the spatial and temporal distribution of the material that was so heavily exploited by prehistoric people at the Brigham, Cross Creek, Thompson Hollow, and Commissary Ridge sites.

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ZOOARCHAEOLOGICAL REMAINS FROM THE 1998 FEWKES SITE EXCAVATIONS, WILLIAMSON COUNTY, TENNESSEE

Tanya M. Peres

The Fewkes site faunal assemblage, excavated as part of a Phase III data recovery project for the Tennessee Department of Transportation in 1998, was analyzed and evaluated in light of its potential to provide significant information about Middle Mississippian subsistence practices and environmental conditions of the area during the time of occupation. Specific goals of the analysis included: (1) defining the subsistence strategies and practices of the people that inhabited the site; (2) determining the relationship of the site to the surrounding ecological habitats; and (3) determining the seasonality of the site. Additionally, the Fewkes faunal assemblage was compared to animal exploitation practices as outlined for the Cumberland River drainage model of Mississippian period sites. The results of the analysis of selected contexts are presented here.

The Fewkes site (40WM1) is a Mississippian period mound complex and associated town located along the headwaters of the Harpeth River in Williamson County, Tennessee (Figure 1). Although mentioned by Joseph Jones (1876) as "the Boiling Springs site," the first well-documented archaeological investigations were conducted in October 1920 by William Edward Myer under the auspices of the Smithsonian Institution. As noted by Myer (1928:559), "at the request of many citizens of Tennessee this site was named the Fewkes Group in honor of J. Walter Fewkes, Chief of the Bureau of American Ethnology, who had visited it and recognized its possibilities a few months before." Although Myer died from a heart attack prior to completing the final report, his colleague and friend John Swanton completed editing of his archaeological reports on the Fewkes (40WM1) and Gordontown (40DV6) sites (Smith 2008). These reports were published posthumously by the Bureau of American Ethnology as *Two Prehistoric Villages in Middle Tennessee* (Myer 1928:557-613).

In 1996, proposed improvements by the Tennessee Department of Transportation to State Route 441 (Moore's Lane) from Liberty Road to State Route 252 (Wilson Pike) initiated a series of archaeological survey and excavation projects (DuVall & Associates, Inc. 1996, 1997a, 1997b). The portion of the site discussed here is located on the west side of Moore's Lane and was excavated during the 1998 Phase III data recovery project (Figure 2). The core of the mound complex on the east side of Moore's Lane was acquired in 2003 by the City of Brentwood and is now preserved as part of Primm Park, a city historic park (Smith and Hogan 2004). A large faunal assemblage (ca. 200 kg) was generated from the 1998 excavations, portions of which were analyzed by the author.[1] A total of 57 lots were analyzed, including those from 1/4-in hardware mesh, heavy fraction flotation, and piece-plotted specimens recovered from excavation blocks and units, features, and general recovery. Analyzed samples yielded a total NISP of 37,297 vertebrate and invertebrate specimens (ca. 35 kg).

The Fewkes site faunal assemblage was analyzed and evaluated in light of its

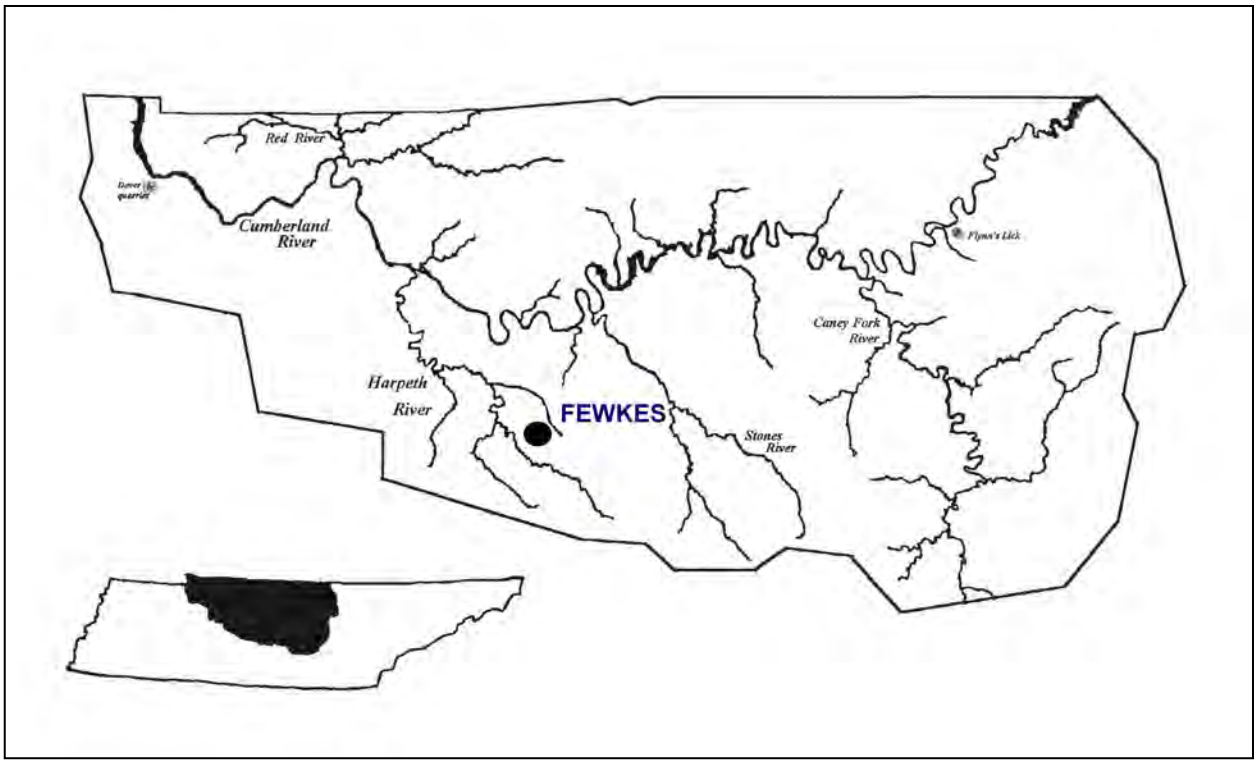

FIGURE 1. Location of Fewkes site.

potential to provide information about Mississippian subsistence practices and environmental conditions of the site vicinity (Peres 2002, 2004). Unfortunately, detailed descriptive information on the excavation units and stratigraphy is not available.[2] As a result, while the entire analyzed assemblage is summarized, the present discussion will focus on faunal remains recovered from selected features where more detailed context information is available.

Zooarchaeological Methods

The identification and analysis of the faunal remains were performed using the Zooarchaeological Comparative Collection housed at the University of Kentucky's William S. Webb Museum of Anthropology (WSWMA). Standard zooarchaeological procedures were used in this analysis following Reitz and Wing (2008). Any evidence of use-wear, thermal alteration, modification, or butchering was recorded, as were weights and Number of Individual Specimens (NISP). All primary and secondary data were entered into a Microsoft® ACCESS database.

The Archaeofaunal Assemblage

The total analyzed assemblage from the Fewkes site consists of 37,297 specimens weighing 35,027.72 g (Table 1). Vertebrate faunal remains comprise 37,271 specimens (34,968.17 g). Invertebrate faunal remains include 26 specimens (59.55 g). Approximately 28% of the faunal assemblage was recovered from general excavation units, and is discussed in detail elsewhere (Peres 2004). Faunal samples associated with 23 Mississippian component features were analyzed. Contextual data are available for only seven features (Features 1, 55, 184, 185, 722, 817, and 847) and the

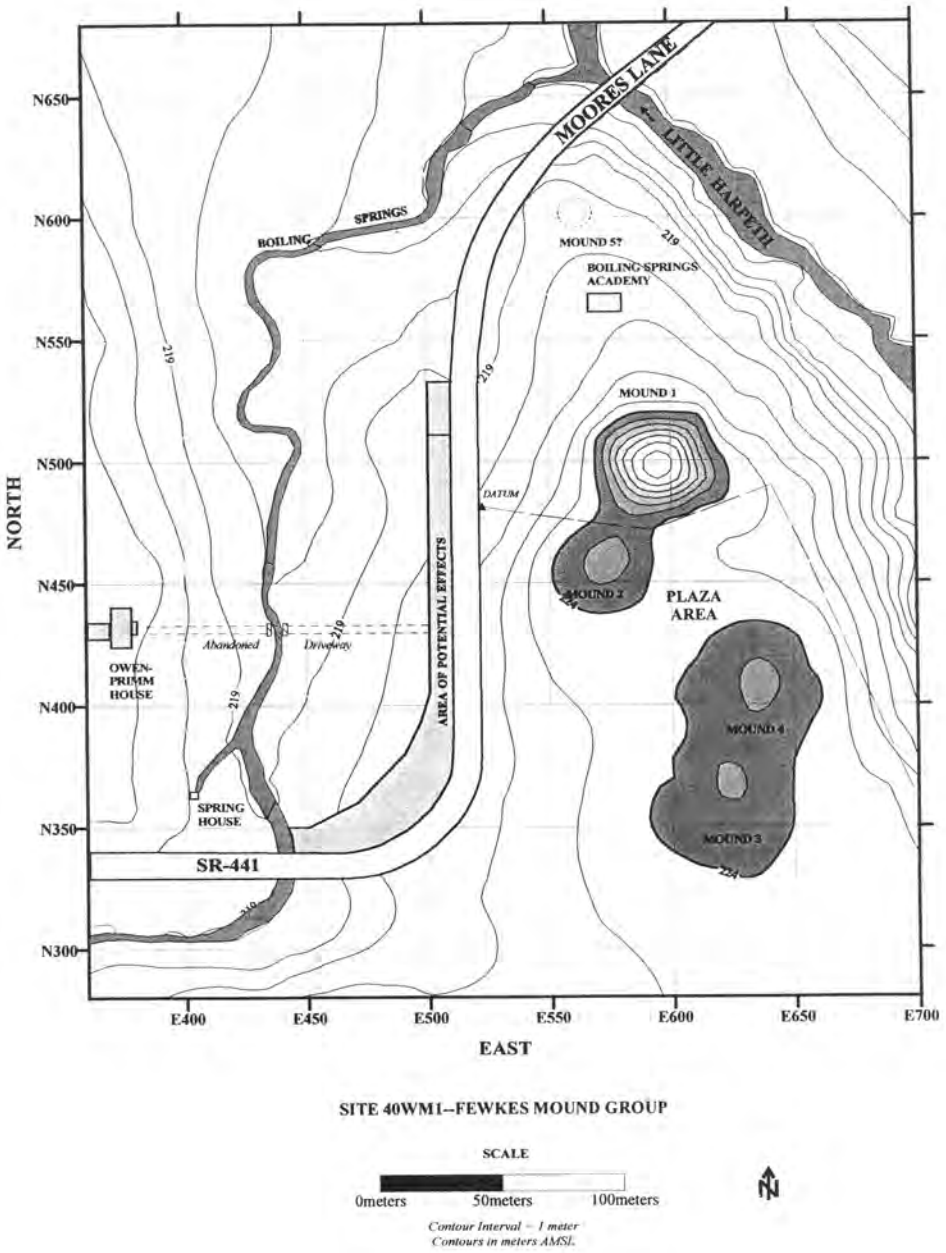

FIGURE 2. Location of 1998 excavations on the west side of Moores Lane (*Source: project records on file, Tennessee Division of Archaeology*).

present discussion is limited largely to these contexts (Figure 3).

Feature 1

Feature 1 was a deep "shaft," interpreted during the excavations as having been filled with domestic refuse (Merrill Dicks, personal communication, 2004). Diagnostic ceramics place this feature in the Thruston phase (ca. A.D. 1250-1450). This feature was morphologically unique out of the 350 features excavated during this project. During excavation, a dog skeleton was observed in the feature fill, but there was no evidence to suggest that the feature was a formal burial. Additionally, the feature fill appears to have been deposited rapidly and intentionally (Merrill Dicks, personal

communication, 2003).

A total of 516 vertebrate and invertebrate specimens (91.76 g) were recovered from Feature 1. The identifiable taxa include: opossum, dog, black bear, deer, squirrels, hispid cotton rat, eastern box turtle, snakes, and bivalves (Table 2). Of these specimens, 74 exhibit heat alteration, two are modified, and three are immature. The total MNI for Feature 1 is 10. The estimated biomass for all of the faunal remains in Feature 1 is 14.14 kg (Table 2).

Faunal remains in this feature are unusual compared to other features analyzed as part of this project. A nearly complete post-cranial male dog skeleton was recovered, including the baculum. All of the recovered dog elements appear to belong to the same individual, and none of them show signs of intentional alteration or trauma. Of additional interest is the absence of cranial elements. Analysis of the dog remains by Brian Worthington (2007) indicate the dog was approximately 19% complete, and represents an 18 to 24 month adult male falling within the range of variation for southeastern Mississippian dogs. The specimen was analyzed further by Lacey Fleming as part of an undergraduate research project, yielding a live weight estimate of approximately 5.78 kilograms (12.7 pounds) at the time of death (Fleming 2006). Additionally, the lumbar vertebrae exhibited gently warped dorsal spinous processes, a pathology that may indicate this animal had carried a load on its lower back for a good portion of its life (Fleming 2006).

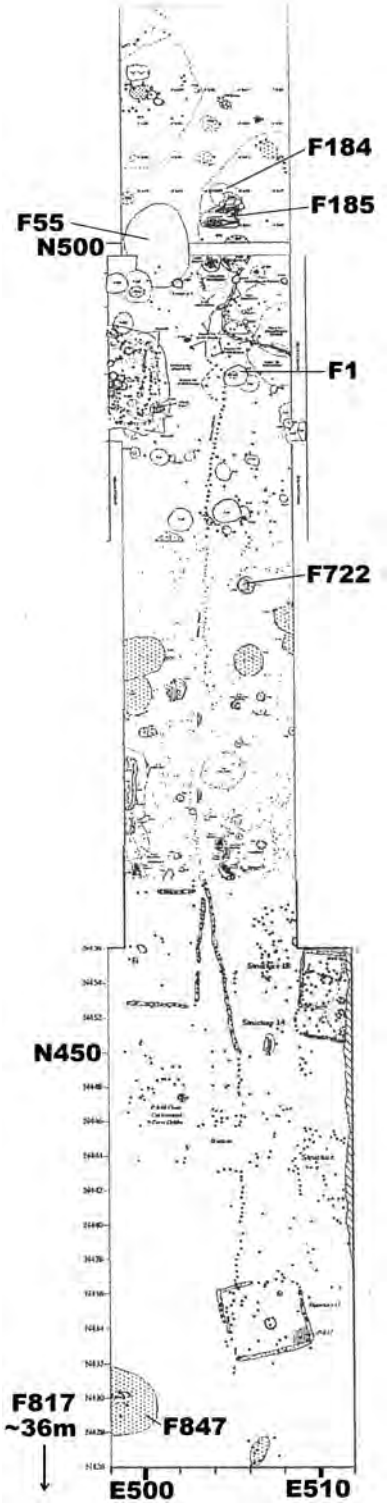

FIGURE 3. Location of features discussed in the text. Note that Feature 817 is located outside the mapped area (*adapted from project records on file, Tennessee Division of Archaeology*).

TABLE 1. Summary of Total Analyzed Faunal Assemblage.

Taxon	Common Names	NISP		Bone Weight		MNI		Biomass	
		Qty.	%	g	%	Total	%	kg	%
Vertebrata	vertebrates	5190	13.92	862.42	2.46	0		0	0.00
Mammalia	mammals	23878	64.02	9753.76	27.85	0	0.00	102.39	27.82
Mammalia,, large	large mammals	1015	2.72	2893.76	8 26	0	0.00	34.30	9.32
Mammalia, medium to large	medium to large mammals	197	0.53	173.72	0 50	0	0.00	2.73	0.74
Mammalia, medium	medium mammals	496	1.33	428.40	1 22	0	0.00	6.15	1.67
Mammalia, small to medium	small to medium mammals	31	0.08	17.54	0.05	0	0.00	0.35	0.09
Mammalia, small	small mammals	546	1.46	144.89	0.41	0	0.00	2.32	0.63
Didelphidae	American opossums	1	0.00	1.02	0.00	0	0.00	0.03	0.01
Didelphis virginiana	opossum	24	0.06	31.79	0.09	3	1.96	0.59	0.16
Parascalops breweri	hairy-tailed mole	3	0.01	1.26	0.00	1	0.65	0.03	0.01
Carnivora	carnivores	1	0.00	0.49	0.00	0	0.00	0.01	0.00
Canidae	dog family	49	0.13	62.06	0 18	2	1.31	1.08	0.29
Canis familiaris	domestic dog	105	0.28	226.05	0.65	2	1.31	3.46	0.94
Canis latrans	coyote	2	0.01	19.52	0.06	1	0.65	0.38	0.10
Canis sp.	dog, wolf, coyote	1	0.00	4.6	0.01	0	0.00	0.10	0.03
Urocyon cinereoargenteus	gray fox	5	0.01	9.12	0.03	1	0.65	0.19	0.05
Urocyon sp.	fox	1	0.00	1.13	0.00	0	0.00	0.03	0.01
Mephitis mephitis	striped skunk	2	0.01	2.57	0.01	1	0.65	0.06	0.02
Procyon lotor	raccoon	20	0.05	20.12	0.06	2	1.31	0.39	0.11
Ursidae	bears	2	0.01	31.51	0.09	0	0.00	0.59	0.16
Ursus americanus	black bear	44	0.12	1394.18	3 98	2	1.31	17.78	4.83
Sus scrofa	pig	2	0.01	42.87	0 12	1	0.65	0.77	0.21
Cervidae	deer, elk, wapiti	21	0.06	734.40	2 10	0	0.00	9.98	2.71
Cervus canadensis	elk	7	0.02	411.29	1 17	3	1.96	5.93	1.61
cf. *Cervus canadensis*	elk	2	0.01	33.66	0 10	0	0.00	0.62	0.17
Odocoileus virginianus	white-tailed deer	1571	4.21	14707.95	41.99	36	23.53	148.18	40.26
cf. *Odocoileus virginianus*	white-tailed deer	2	0.01	26.05	0.07	0	0.00	0.49	0.13
Bovidae	sheep, bison, cattle	1	0.00	102.69	0 29	1	0.65	1.70	0.46
Rodentia[1]	rodents	31	0.08	6.33	0.02	0	0.00	0.14	0.04
Sciuridae	squirrel family	7	0.02	2.09	0.01	0	0.00	0.05	0.01
Marmota monax	groundhog	3	0.01	5.25	0.01	1	0.65	0.12	0.03
Sciurus spp.	squirrels	30	0.08	9.86	0.03	1	0.65	0.21	0.06
Sciurus carolinensis	eastern gray squirrel	15	0.04	8.81	0.03	2	1.31	0.19	0.05
Sciurus carolinensis/niger	eastern gray or fox squirrel	260	0.70	84.78	0 24	18	11.76	1.43	0.39
Sciurus niger	fox squirrel	78	0.21	30.67	0.09	5	3.27	0.57	0.16
Glaucomys volans	southern flying squirrel	3	0.01	0.37	0.00	3	1.96	0.01	0.00
Cricetidae	rat and vole family	16	0.04	1.56	0.00	1	0.65	0.04	0.01
Peromyscus leucopus	white-footed/wood mouse	1	0.00	0.03	0.00	1	0.65	0.00	0.00
Sigmodon hispidus	hispid cotton rat	17	0.05	1.61	0.00	3	1.96	0.04	0.01
Leporidae	rabbit family	2	0.01	1.50	0.00	0	0.00	0.04	0.01
Sylivilagus floridanus	eastern cottontail rabbit	92	0.25	39.44	0 11	5	3.27	0.72	0.20
Aves	birds	857	2.30	415.98	1 19	0	0.00	4.94	1.34
Aves, small	small birds	32	0.09	4.85	0.01	0	0.00	0.09	0.02
Aves, small to medium	small to medium birds	2	0.01	0.68	0.00	0	0.00	0.01	0.00
Branta canadensis	Canada goose	2	0.01	2.97	0.01	1	0.65	0.05	0.01
Buteo jamaicensis	red-tailed hawk	13	0.03	37.68	0 11	3	1.96	0.55	0.15
cf. *Buteo jamaicensis*	red-tailed hawk	1	0.00	0.07	0.00	0	0.00	0.00	0.00
Colinus virginianus	bobwhite	9	0.02	2.16	0.01	2	1.31	0.04	0.01
Meleagris gallopavo	turkey	440	1.18	1127.36	3 22	16	10.46	12.23	3.32
Reptilia	reptiles	1	0.00	0.10	0.00	0	0.00	0.00	0.00
Testudines	turtles	877	2.35	294.11	0.84	0	0.00	1.43	0.39
Kinosternidae	mud and musk turtle family	62	0.17	18.10	0.05	1	0.65	0.22	0.06
Emydidae	water and box turtle family	66	0.18	43.80	0 13	0	0.00	0.40	0.11
Terrapene carolina	eastern box turtle	559	1.50	529.24	1 51	15	9.80	2.11	0.57
Chrysemys floridana	cooter	1	0.00	1.94	0.01	1	0.65	0.05	0.01
Chrysemys picta picta	painted turtle	6	0.02	5.50	0.02	1	0.65	0.10	0.03
Chrysemys scripta	pond slider	1	0.00	1.03	0.00	1	0.65	0.03	0.01
Chrysemys spp.	sliders and cooters	10	0.03	16.01	0.05	0	0.00	0.20	0.06
Trionyx ferox	softshell turtle	2	0.01	0.72	0.00	1	0.65	0.03	0.01
Squamata	lizards, snakes	1	0.00	0.20	0.00	0	0.00	0.00	0.00
Serpentes	snakes	207	0.56	35.28	0 10	0	0.00	0.09	0.02
Crotalidae	rattlesnake/pit viper family	29	0.08	19.06	0.05	1	0.65	0.00	0.00
Rana/Bufo sp.	frogs and toads	1	0.00	0.06	0.00	1	0.65	0.00	0.00

TABLE 1 (*continued*). Summary of Total Analyzed Faunal Assemblage.

Taxon	Common Name	NISP		Bone weight		MNI		Biomass	
		Qty	%	g	%	Total	%	kg	%
Osteichthyes	bony fish	243	0.65	42.62	0.12	0	0.00	0.62	0.17
Lepisosteus sp.	gars	3	0.01	0.30	0.00	1	0.65	0.01	0.00
Amia calva	bowfish	5	0.01	0.81	0.00	1	0.65	0.02	0.01
Catostomidae	sucker family	2	0.01	0.30	0.00	0	0.00	0.01	0.00
Moxostoma sp.	redhorse	4	0.01	1.12	0.00	1	0.65	0.03	0.01
Ictaluridae	catfish family	2	0.01	0.49	0.00	0	0.00	0.02	0.00
Ictalurus sp.	catfish	5	0.01	2.24	0.01	0	0.00	0.06	0.02
Ictalurus punctatus	channel catfish	18	0.05	3.45	0.01	1	0.65	0.08	0.02
Centrarchidae	sunfish/bluegill family	4	0.01	0.51	0.00	0	0.00	0.02	0.00
Micropterus salmoides	bigmouth bass	1	0.00	0.62	0.00	1	0.65	0.02	0.01
Micropterus sp.	bass	1	0.00	0.05	0.00	0	0.00	0.00	0.00
Aplodinotus grunniens	freshwater drum	30	0.08	27.68	0.08	1	0.65	0.43	0.12
Invertebrata	invertebrates	2	0.01	0.60	0.00	0	0.00	0.00	0.00
Mollusca	mollusks	2	0.01	1.01	0.00	0	0.00	0.00	0.00
Gastropoda	gastropods	4	0.01	0.55	0.00	4	2.61	0.00	0.00
Campeloma sp.	campeloma	1	0.00	0.06	0.00	1	0.65	0.00	0.00
Bivalvia	bivalves	15	0.04	20.71	0.06	0	0.00	0.00	0.00
Elliptio crassidens	elephantear	1	0.00	30.60	0.09	1	0.65	0.00	0.00
cf. *Pleurobema cordatum*	Ohio pigtoe	1	0.00	6.02	0.02	1	0.65	0.00	0.00
Identified[2]		3669	9.84	19929.76	56.90	149	97.39	212.54	57.74
Unidentified		33628	90.16	15097.96	43.10	4	2.61	155.55	42.26
Totals		37297	100.00	35027.72	100.00	153	100.00	368.09	100.00

[1] - Taxa that are considered commensural
[2] - Faunal specimens identified to Family, *Genus*, and *species*

In addition, elements identified as two individual bears were documented in this feature. One of the bears is an immature individual represented by nearly half of the rear portion of the cranium. The adult bear is represented by a longbone fragment and a right shaft and distal epiphysis of a humerus. The tip of the distal portion of the humerus has been burnt.

The uniqueness of the feature morphology, as well as the presence of a post-cranial male dog and two partial bears (one juvenile and one adult), suggests that this feature was not filled with "typical household refuse." Dicks notes that the dog skeleton appeared to have been deposited haphazardly during rapid filling of the feature, unlike many prehistoric dogs that have been formally buried (Merrill Dicks to Tanya Peres, letter, 2004).

Feature 1 is located within a complex of features including a palisade line, sheet midden, and burned structural elements (Figure 3). Unfortunately, the temporal and functional relationship of these features remains unclear.

Feature 55

Feature 55 is a very large (5.5 m x 5.2 m) circular, basin-shaped pit, with a maximum depth of 85 cm that may represent a borrow pit eventually filled with domestic refuse (Merrill Dicks to Tanya Peres, letter, April 30, 2002). The feature is located on the exterior of the identified palisade and appears to date to about A.D. 1150 (Dowd phase), approximately 100 years earlier than most of the investigated features (Merrill Dicks to Tanya Peres, letter, April 30, 2002).

In Feature 55, a total of 12,374 vertebrate and invertebrate specimens were recovered, weighing 10,307.62 g (Table 3; Figure 3). The identifiable taxa in Feature 55 include: opossum, hairy-tailed mole, gray fox, black bear, raccoon, elk, deer, squirrels, hispid cotton rat, eastern cottontail rabbit, red-tailed hawk, bobwhite, turkey, mud/musk turtle, pond slider, eastern box turtle, bowfin, redhorses, and channel catfish. Of these

TABLE 2. Summary of Faunal Remains from Feature 1.

Taxon	NISP	%	Weight (g)	%	Biomass (kg)	%	Heat Alt.	%	Mod.	%	Im-mature	%	MNI	%
Vertebrata	4	0 78	0 99	0 11	0 00	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Total Vertebrata	4	0 78	0 99	0 11	0 00	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Mammalia	378	73 26	143 83	15 77	2 30	16 39	70	94 59	0	0 00	0	0 00	0	0 00
Mammalia, medium	6	1 16	5 03	0 55	0 11	0 80	0	0 00	0	0 00	0	0 00	0	0 00
Mammalia, small	8	1 55	4 00	0 44	0 09	0 65	0	0 00	0	0 00	0	0 00	0	0 00
Didelphis virginiana	2	0 39	5 49	0 60	0 12	0 87	0	0 00	0	0 00	1	33 33	2	20 00
Canidae	1	0 19	0 23	0 03	0 01	0 05	1	1 35	0	0 00	0	0 00	1	10 00
Canis familiaris	87	16 86	197 03	21 61	3 06	21 76	0	0 00	0	0 00	0	0 00	1	10 00
Ursus americanus	3	0 58	339 20	37 20	4 98	35 48	1	1 35	0	0 00	1	33 33	1	10 00
Odocoileus virginianus	14	2 71	204 78	22 46	3 16	22 53	0	0 00	2	100 00	1	33 33	2	20 00
Sciuridae	1	0 19	0 19	0 02	0 01	0 04	1	1 35	0	0 00	0	0 00	1	10 00
Sigmodon hispidus	1	0 19	0 13	0 01	0 00	0 03	0	0 00	0	0 00	0	0 00	1	10 00
Total Mammalia	501	97 09	899 88	98 70	13 85	97 94	73	98 65	2	100 00	3	100 00	9	90 00
Aves	3	0 58	3 74	0 41	0 07	0 48	0	0 00	0	0 00	0	0 00	0	0 00
Total Aves	3	0 58	3 74	0 41	0 07	0 48	0	0 00	0	0 00	0	0 00	0	0 00
Testudines	2	0 39	0 66	0 07	0 02	0 17	1	1 35	0	0 00	0	0 00	0	0 00
Terrapene carolina	1	0 19	4 13	0 45	0 08	0 58	0	0 00	0	0 00	0	0 00	1	10 00
Serpentes	2	0 39	0 29	0 03	0 01	0 10	0	0 00	0	0 00	0	0 00	1	10 00
Total Reptilia	5	0 97	08	0 56	0 12	0 85	1	1 35	0	0 00	0	0 00	1	10 00
Osteichthyes	2	0 39	0 22	0 02	0 01	0 06	0	0 00	0	0 00	0	0 00	0	0 00
Total Osteichthyes	2	0 39	0 22	0 02	0 01	0 06	0	0 00	0	0 00	0	0 00	0	0 00
Total Vertebrata	515	99 81	909 91	99 80	14 04	100 00	74	100 00	2	100 00	3	100 00	10	100 00
Bivalvia	1	0 19	1 85	0 20	0	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Total Invertebrata	1	0 19	1 85	0 20	0	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Total Assemblage	516	100 00	911 76	100 00	14 04	100 00	74	100 00	2	100 00	3	100 00	10	100 00

specimens, 76 exhibit heat alteration, 21 are modified, and 93 are immature. The total MNI for Feature 55 is 60. The estimated biomass for all of the faunal remains in Feature 55 is 119.55 kg (Table 3).

White-tailed deer are represented by both adult and juvenile individuals, as well as cranial and post-cranial elements. The identified deer elements from this feature do not appear to be skewed towards meatier portions of the body, suggesting that at least the deer represented in this feature were domestic food refuse, and not ritual or feasting refuse. There are also numerous (*n*=216) bone flakes from large mammal and deer, which are portions of longbone shafts and potentially represent the end process of marrow extraction. The presence of immature and mature deer, coupled with the presence of both cranial and post-cranial portions of the skeleton, suggests that deer were butchered on-site, and that marrow was potentially extracted from the longbones to aid in food preservation.

A large mammal bone recovered from Feature 55 yielded a radiocarbon age of 760±40 B.P. (Beta-148190). This date yields ranges of A.D. 1230-1280 (one-σ) and A.D. 1190-1290 (two-σ) when calibrated with the program CALIB 6.01

TABLE 3. Summary of Faunal Remains from Feature 55.

Taxon	NISP	%	Weight (g)	%	Biomass (kg)	%	Heat Alt.	%	Mod.	%	Unfused	%	MNI	%
Vertebrata	1616	13 06	371 33	3 60	0	0 00	10	13 16	0	0 00	0	0 00	0	0 00
Mammalia	7709	62 30	2738 06	26 56	32 64	27 30	4	5 26	3	17 65	16	17 20	0	0 00
Mammalia, large	388	3 14	852 08	8 27	11 41	9 55	31	40 79	1	5 88	15	16 13	0	0 00
Mammalia, large-medium	139	1 12	56 67	0 55	1 00	0 83	0	0 00	0	0 00	0	0 00	0	0 00
Mammalia, medium	216	1 75	105 93	1 03	1 75	1 46	12	15 79	0	0 00	4	4 30	0	0 00
Mammalia, small	89	0 72	16 06	0 16	0 32	0 27	0	0 00	0	0 00	5	5 38	0	0 00
Didelphis virginiana	3	0 02	0 89	0 01	0 02	0 02	0	0 00	0	0 00	0	0 00	1	2 00
Parascalops breweri	2	0 02	0 93	0 01	0 02	0 02	0	0 00	0	0 00	0	0 00	1	2 00
Canidae	18	0 15	34 23	0 33	0 63	0 53	0	0 00	0	0 00	2	2 15	0	0 00
Canis sp	1	0 01	4 6	0 04	0 10	0 09	0	0 00	0	0 00	0	0 00	1	2 00
Urocyon cinereoargenteus	3	0 02	5 4	0 05	0 12	0 10	0	0 00	0	0 00	0	0 00	1	2 00
Procyon lotor	1	0 01	0 14	0 00	0 00	0 00	0	0 00	0	0 00	0	0 00	1	2 00
Ursus americanus	3	0 02	58 46	0 57	1 02	0 86	0	0 00	0	0 00	0	0 00	1	2 00
Cervus canadensis	5	0 04	343 46	3 33	5 04	4 21	0	0 00	0	0 00	1	1 08	2	4 00
Odocoileus virginianus	538	4 35	4505 21	43 71	51 09	42 74	1	1 32	12	70 59	34	36 56	5	10 00
Sciurus spp	254	2 05	82 72	0 80	1 40	1 17	0	0 00	0	0 00	9	9 68	10	20 00
Cricetidae	1	0 01	0 01	0 00	0 00	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Sigmodon hispidus	4	0 03	0 52	0 01	0 01	0 01	0	0 00	0	0 00	0	0 00	2	4 00
Sylivilagus floridanus	47	0 38	21 59	0 21	0 42	0 35	0	0 00	0	0 00	1	1 08	7	14 00
Aves	514	4 15	262 67	2 55	3 25	2 72	10	13 16	0	0 00	0	0 00	0	0 00
Aves, small	32	0 26	4 85	0 05	0 09	0 07	0	0 00	0	0 00	0	0 00	0	0 00
Buteo jamaicensis	11	0 09	35 29	0 34	0 52	0 44	0	0 00	0	0 00	0	0 00	2	4 00
Colinus virginianus	9	0 07	2 16	0 02	0 04	0 03	0	0 00	0	0 00	0	0 00	2	4 00
Meleagris gallopavo	291	2 35	582 35	5 65	6 70	5 61	0	0 00	0	0 00	6	6 45	6	12 00
Testudines	189	1 53	67 34	0 65	0 53	0 44	5	6 58	0	0 00	0	0 00	0	0 00
Kinosternidae	2	0 02	1 05	0 01	0 03	0 03	0	0 00	0	0 00	0	0 00	1	2 00
Emydidae	10	0 08	10 68	0 10	0 15	0 13	0	0 00	0	0 00	0	0 00	0	0 00
Terrapene carolina	123	0 99	114 62	1 11	0 76	0 63	3	3 95	1	5 88	0	0 00	1	2 00
Chrysemys scripta	1	0 01	1 03	0 01	0 03	0 03	0	0 00	0	0 00	0	0 00	1	2 00
Serpentes	81	0 65	12 86	0 12	0 18	0 15	0	0 00	0	0 00	0	0 00	1	2 00
Osteichthyes	60	0 48	8 79	0 09	0 17	0 14	0	0 00	0	0 00	0	0 00	0	0 00
Amia calva	2	0 02	0 21	0 00	0 01	0 01	0	0 00	0	0 00	0	0 00	1	2 00
Catostomidae	1	0 01	0 08	0 00	0 00	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Moxostoma sp	4	0 03	1 12	0 01	0 03	0 03	0	0 00	0	0 00	0	0 00	1	2 00
Ictalurus sp	2	0 02	0 66	0 01	0 02	0 02	0	0 00	0	0 00	0	0 00	0	0 00
Ictalurus punctatus	3	0 02	0 58	0 01	0 02	0 02	0	0 00	0	0 00	0	0 00	1	2 00
Mollusca	1	0 01	0 07	0 00	0 00	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Bivalvia	1	0 01	2 92	0 03	0 00	0 00	0	0 00	0	0 00	0	0 00	1	2 00
Total	12374	100 00	10307 62	100 00	119 55	100 00	76	1	17	1	93	1	50	100 00

(Stuiver and Reimer 1993) using the calibration dataset INTCAL09 (Reimer et al. 2009). Dicks notes that the faunal remains recovered from Feature 55 might represent domestic refuse from the occupation of Structure 21, but the relationship between these two features is unclear at this time (Merrill Dicks to Tanya Peres, letter, April 30, 2002).

Feature 184

Feature 184 is associated with Burial 4, Burial 6, and Feature 185 (described below). This feature is part of the upper fill sequence that surrounded Feature 185, and the upper part of the burial pit (Merrill Dicks to Tanya Peres, letter, 2004). In Feature 184, a total of 4,046 vertebrate and invertebrate specimens were recovered, weighing 2,623.74 g (Table 4). Identifiable taxa in Feature 184 include: opossum, coyote, raccoon, deer, gray squirrel, white-footed/wood mouse, cottontail rabbit, red-tailed hawk, turkey, mud/musk turtle, box turtle, snakes, bowfin, catfish, bass, and freshwater drum. Of these specimens, 146 exhibit heat alteration, 11 are modified, and 35 are immature. The total MNI for Feature 184 is 31. The estimated biomass for all of the faunal remains in Feature 184 is 32.82 kg (Table 4).

TABLE 4. Summary of Faunal Remains from Feature 184.

Taxon	NISP	%	Weight (g)	%	Biomass (kg)	%	Heat Alt.	%	Mod.	%	Im-mature	%	MNI	%
Vertebrata	2326	57 49	205 77	7 84	0 00	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Total Vertebrata	2326	57 49	205 77	7 84	0 00	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Mammalia	768	18 98	219 43	8 36	3 37	8 42	130	89 04	1	9 09	0	0 00	0	0 00
Mammalia, large	162	4 00	415 03	15 82	5 97	14 95	4	2 74	1	9 09	7	20 00	0	0 00
Mammalia, medium	187	4 62	167 02	6 37	2 63	6 59	0	0 00	1	9 09	2	5 71	0	0 00
Mammalia, small	27	0 67	3 42	0 13	0 08	0 20	0	0 00	0	0 00	3	8 57	0	0 00
Didelphis virginiana	2	0 05	3 51	0 13	0 08	0 20	0	0 00	0	0 00	0	0 00	2	6 45
Canis latrans spp	2	0 05	19 52	0 74	0 38	0 95	0	0 00	1	9 09	0	0 00	1	3 23
Procyon lotor	9	0 22	6 13	0 23	0 13	0 34	0	0 00	0	0 00	0	0 00	2	6 45
Odocoileus virginianus	134	3 31	1353 68	51 59	17 31	43 33	2	1 37	0	0 00	19	54 29	8	25 81
Sciurus niger	14	0 35	3 75	0 14	0 09	0 22	0	0 00	0	0 00	2	5 71	3	9 68
Peromyscus leucopus	1	0 02	0 03	0 00	0 00	0 00	0	0 00	0	0 00	0	0 00	1	3 23
Sylivilagus floridanus	17	0 42	5 29	0 20	0 12	0 29	0	0 00	0	0 00	0	0 00	2	6 45
Total Mammalia	1323	32 70	2196 81	83 73	30 17	75 50	136	93 15	4	36 36	33	94 29	19	61 29
Aves	51	1 26	33 53	1 28	0 50	1 25	0	0 00	0	0 00	0	0 00	0	0 00
Buteo jamaicensis	1	0 02	2 12	0 08	0 04	0 10	0	0 00	0	0 00	0	0 00	1	3 23
Meleagris gallopavo	12	0 30	38 02	1 45	0 56	1 40	0	0 00	2	18 18	0	0 00	2	6 45
Total Aves	64	1 58	73 67	2 81	1 10	2 75	0	0 00	2	18 18	0	0 00	3	9 68
Testudines	130	3 21	33 88	1 29	0 34	0 84	4	2 74	2	18 18	0	0 00	0	0 00
Kinosternidae	2	0 05	0 62	0 02	0 02	0 06	0	0 00	0	0 00	0	0 00	1	3 23
Emydidae	6	0 15	3 12	0 12	0 07	0 17	0	0 00	1	9 09	0	0 00	0	0 00
Chrysemys picta picta	5	0 12	3 94	0 15	0 08	0 20	0	0 00	0	0 00	0	0 00	1	3 23
Terrapene carolina	117	2 89	86 91	3 31	0 63	1 58	4	2 74	2	18 18	2	5 71	2	6 45
Serpentes	12	0 30	1 72	0 07	0 05	0 11	1	0 68	0	0 00	0	0 00	1	3 23
Total Reptilia	272	6 72	130 19	4 96	1 18	2 95	9	6 16	5	45 45	2	5 71	5	16 13
Osteichthyes	32	0 79	6 05	0 23	0 13	0 32	0	0 00	0	0 00	0	0 00	0	0 00
Amia calva	1	0 02	0 09	0 00	0 00	0 01	0	0 00	0	0 00	0	0 00	1	3 23
Ictalurus punctatus	13	0 32	1 50	0 06	0 04	0 10	1	0 68	0	0 00	0	0 00	1	3 23
Micropterus salmoides	1	0 02	0 62	0 02	0 02	0 05	0	0 00	0	0 00	0	0 00	1	3 23
Aplodinotus grunniens	14	0 35	9 04	0 34	0 18	0 44	0	0 00	0	0 00	0	0 00	1	3 23
Total Osteichthyes	61	1 51	17 30	0 66	0 37	0 92	1	0 68	0	0 00	0	0 00	4	12 90
Total Vertebrata	4046	100 00	2623 74	100 00	32 82	100 00	146	100 00	11	100 00	35	100 00	31	100 00
Total Assemblage	4046	100 00	2623 74	100 00	32 82	100 00	146	100 00	11	100 00	35	100 00	31	100 00

The deer are represented by both adult and juvenile individuals, as well as cranial and post-cranial elements. As in Feature 55, the identified deer elements in this assemblage do not appear to be skewed towards meatier portions of the deer, suggesting that the deer represented in this feature assemblage are also domestic food refuse, and not ritual or feasting refuse. Additionally, two of the taxa identified in this assemblage are not considered typical food species. These taxa include red-tailed hawk and coyote. The contemporaneous Rutherford-Kizer site (40SU15) yielded numerous faunal remains, but none were identified as either of these two taxa (Breitburg and Moore 2001). The coyote identified at Fewkes is represented by both the left and right mandible. The right mandible had five cut marks on the ascending ramus. The red-tailed hawk is represented by a left tibiotarsus. The role that these two taxa played in the diet, daily life, or ritual life of the Fewkes' inhabitants warrants further exploration.

Feature 185

Feature 185 is a small hearth-like feature positioned over the burial of a young adult male (20-35 years old; Tennessee Division of Archaeology, NAGPRA Inventory 1015). The individual was extended and buried with two greenstone celts at the feet. Additionally, a second adult male (35-50 years of age), tightly flexed and missing the skull, C1 and C2, was recovered from a corner of the grave (Merrill Dicks to Tanya Peres, letter, 2004; Tennessee Division of Archaeology NAGPRA Inventory 1010). The hearth feature could have been created as part of the burial ritual, and may even be evidence of "feasting." The artifacts in this burial suggest a date range of ca. A.D. 1250 to 1450 which is compatible with the most intensive occupation of the site (Merrill Dicks to Tanya Peres, letter, 2004).

In Feature 185, a total of 371 vertebrate and invertebrate specimens were recovered, weighing 936.34 g (Table 5). The identifiable taxa in Feature 185 include: opossum, black bear, deer, squirrels, turkey, box turtle, and freshwater drum. Of these specimens, 29 exhibit heat alteration, six are modified, and nine are immature. The total MNI for Feature 185 is 10. The estimated biomass for all of the faunal remains analyzed from Feature 185 is 14.18 kg (Table 5).

The nature of Feature 185 suggests the possibility of feasting at this specific location. Feasting is usually studied archaeologically as an event hosted by elites in their competition for status

TABLE 5. Summary of Faunal Remains from Feature 185.

Taxon	NISP	%	Weight (g)	%	Biomass (kg)	%	Heat Alt.	%	Mod.	%	Im-mature	%	MNI	%
Vertebrata* no count	0	0 00	11 65	1 24	0 00	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Total Vertebrata	0	0 00	11 65	1 24	0 00	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Mammalia	178	47 98	41 66	4 45	0 75	5 32	19	65 52	2	33 33	5	55 56	0	0 00
Mammalia, large	84	22 64	106 41	11 36	1 76	12 38	4	13 79	2	33 33	1	11 11	0	0 00
Mammalia, medium-large	29	7 82	73 35	7 83	1 26	8 86	3	10 34	0	0 00	0	0 00	0	0 00
Mammalia, small-medium	21	5 66	15,05	1 61	0 30	2 13	0	0 00	0	0 00	1	11 11	0	0 00
Didelphis virginiana	1	0 27	0 74	0 08	0 02	0 14	0	0 00	0	0 00	1	11 11	1	10 00
Ursus americanus	1	0 27	23 31	2 49	0 45	3 16	0	0 00	0	0 00	0	0 00	1	10 00
Cervidae	1	0 27	88 14	9 41	1 48	10 45	0	0 00	0	0 00	0	0 00	1	10 00
Odocoileus virginianus	34	9 16	554 95	59 27	7 76	54 73	2	6 90	2	33 33	1	11 11	3	30 00
Sciurus spp	1	0 27	0 19	0 02	0 01	0 04	1	3 45	0	0 00	0	0 00	1	10 00
Total Mammalia	350	94 34	903 80	96 52	13 78	93 21	29	100 00	6	100 00	9	100 00	7	70 00
Aves	2	0 54	2 40	0 26	0 05	0 32	0	0 00	0	0 00	0	0 00	0	0 00
Meleagris gallopavo	4	1 08	4 25	0 45	0 08	0 54	0	0 00	0	0 00	0	0 00	1	10 00
Total Aves	6	1 62	6 65	0 71	0 12	0 82	0	0 00	0	0 00	0	0 00	1	10 00
Testudines	5	1 35	1 29	0 14	0 04	0 26	0	0 00	0	0 00	0	0 00	0	0 00
Terrapene carolina	3	0 81	1 63	0 17	0 04	0 31	0	0 00	0	0 00	0	0 00	1	10 00
Total Reptilia	8	2 16	2 92	0 31	0 08	0 55	0	0 00	0	0 00	0	0 00	1	10 00
Osteichthyes	2	0 54	0 25	0 03	0 01	0 07	0	0 00	0	0 00	0	0 00	0	0 00
Aplodinotus grunniens	2	0 54	4 15	0 44	0 09	0 66	0	0 00	0	0 00	0	0 00	1	10 00
Total Osteichthyes	4	1 08	4 40	0 47	0 10	0 70	0	0 00	0	0 00	0	0 00	1	10 00
Total Vertebrata	368	99 19	929 42	99 26	14 18	100 00	29	100 00	6	100 00	9	100 00	10	100 00
Bivalvia	3	0 81	6 92	0 74	0	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Total Invertebrata	3	0 81	6 92	0 74	0	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Total Assemblage	371	100 00	936 34	100 00	14 18	100 00	29	100 00	6	100 00	9	100 00	10	100 00

(VanDerwarker 1999). Often studies of faunal remains in conjunction with feasting look at taxonomic diversity and body-part distribution of deer, the largest vertebrate species recovered in abundance in the southeastern United States (Kelly 2001). If the Feature 185 faunal assemblage does represent a feast in relationship to a burial ceremony, would the same expectations apply? Since this feature is associated with burials, and thus a death ritual, any associated feast would not necessarily have been linked to competition for status, rather it likely would have been to mourn the dead and/or to reinforce the individual's status, if applicable. While black bear is thought to play a major role in the diet of the Middle Cumberland Mississippian people (Breitburg 1998; Breitburg and Moore 2001), it is not equally represented in all features or test units at the Fewkes site, as are other taxa, namely white-tailed deer. In the case of Feature 185, it seems likely that the inclusion of bear in the feature fill suggests that the assemblage represents an extraordinary meal or dietary event.

The topic of feasting is difficult to address using faunal remains alone. Multiple lines of evidence, comprised of ceramics, floral, lithics, and other artifacts, are necessary to answer such a complex question. Data from the analysis of other artifact classes are needed to shed light on the nature and function of the Feature 185 deposit.

Feature 722

Feature 722 was a large deposit of ash and charcoal located within Feature 723 (Merrill Dicks to Tanya Peres, letter, April 30, 2002). Dicks noted that this appeared to be an informal hearth-like pit that intruded into Feature 723, which was a basin-shaped pit. In Feature 722, a total of 154 vertebrate specimens were recovered, weighing 73.65 g (Table 6). The identifiable taxa in Feature 722 include: opossum, bear, cotton rat, and box turtle. Of these 154 specimens, 27 exhibit heat alteration, none are modified, and all are from adult individuals. The total MNI for Feature 722 is six. The estimated biomass for all of the faunal remains in Feature 722 is 1.39 kg (Table 6).

Feature 817

Feature 817 was a large, circular, shallow, basin-shaped pit (Merrill Dicks to Tanya Peres, letter, April 30, 2002). A

TABLE 6. Summary of Faunal Remains from Feature 722.

Taxon	NISP	%	Weight	%	Biomass	%	MNI	%
Vertebrata	76	49.35	1.46	1.98	0.00	0.00	0	0.00
Mammalia	65	42.21	18.31	24.86	0.36	25.96	0	0.00
Mammalia, large	1	0.65	7.02	9.53	0.15	10.95	0	0.00
Didelphis virginiana	1	0.65	0.85	1.15	0.02	1.64	1	16.67
Ursus americanus	1	0.65	44.40	60.29	0.80	57.61	1	16.67
Cervidae	1	0.65	0.70	0.95	0.02	1.38	1	16.67
Sigmodon hispidus	4	2.60	0.16	0.22	0.01	0.36	1	16.67
Terrapene carolina	2	1.30	0.56	0.76	0.02	1.55	1	16.67
Osteichthyes	3	1.95	0.19	0.26	0.01	0.55	1	16.67
Total	154	100.00	73.65	100.00	1.39	100.00	6	100.00

sample from this feature returned a radiocarbon age of 750±40 B.P. (Beta-148193). This date yields ranges of A.D. 1230-1280 (one-σ) and A.D. 1210-1380 (two-σ) when calibrated with the program CALIB 6.01 (Stuiver and Reimer 1993) using the calibration dataset INTCAL09 (Reimer et al 2009). The feature is part of a cluster of large, shallow pits that were identified in this area. The palisade line bisects this cluster of features, and few domestic structures were identified in this area (Merrill Dicks to Tanya Peres, letter, April 30, 2002). The original function of this feature has not been determined, but Dicks suggests that refuse disposal was not the primary function (Merrill Dicks to Tanya Peres, letter, April 30, 2002).

In Feature 817, a total of 2,955 vertebrate and invertebrate specimens were recovered, weighing 3,079.58 g (Table 7). The identifiable taxa in Feature 817 include: opossum, striped skunk, bear, deer, fox squirrel, hispid cotton rat, mud/musk turtle, pond slider, box turtle, pit vipers, bowfin, channel catfish, elephant ear, and Ohio pigtoe. Of these specimens, 789 exhibit heat alteration, none are modified, and one is immature. The total MNI for Feature 817 is 26. The

TABLE 7. Summary of Faunal Remains from Feature 817.

Taxon	NISP	%	Weight	%	Biomass	%	MNI	%
Vertebrata	633	21.42	45.12	1.47	0.00	0.00	0	0.00
Mammalia	1967	66.57	1811.76	58.83	22.51	58.78	0	0.00
Didelphis virginiana	1	0.03	2.06	0.07	0.05	0.13	1	3.57
Mephitis mephitis	1	0.03	1.26	0.04	0.03	0.08	1	3.57
Ursus americanus	1	0.03	89.86	2.92	1.51	3.94	1	3.57
Odocoileus virginianus	82	2.77	933.28	30.31	12.39	32.35	2	7.14
Sciurus niger	23	0.78	10.52	0.34	0.22	0.57	1	3.57
Cricetidae	1	0.03	0.07	0.00	0.00	0.01	0	0.00
Sigmodon hispidus	2	0.07	0.22	0.01	0.01	0.02	1	3.57
Aves	2	0.07	0.26	0.01	0.01	0.02	1	3.57
Testudines	61	2.06	27.53	0.89	0.29	0.76	0	0.00
Kinosternidae	42	1.42	14.10	0.46	0.19	0.49	1	3.57
Emydidae	3	0.10	7.37	0.24	0.12	0.31	0	0.00
Terrapene carolina	45	1.52	62.89	2.04	0.51	1.32	1	3.57
Chrysemys picta picta	1	0.03	1.56	0.05	0.04	0.11	1	3.57
Serpentes	19	0.64	2.77	0.09	0.06	0.16	0	0.00
Crotalidae	27	0.91	17.33	0.56	0.21	0.56	1	3.57
Osteichthyes	27	0.91	4.14	0.13	0.09	0.24	0	0.00
Amia calva	2	0.07	0.51	0.02	0.02	0.04	1	3.57
Ictalurus punctatus	1	0.03	1.21	0.04	0.03	0.09	11	39.29
Centrarchidae	1	0.03	0.06	0.00	0.00	0.01	1	3.57
Mollusca	1	0.03	0.94	0.03	0.00	0.00	0	0.00
Gastropoda	4	0.14	0.55	0.02	0.00	0.00	1	3.57
Bivalvia	6	0.20	7.59	0.25	0.00	0.00	0	0.00
Elliptio crassidens	1	0.03	30.60	0.99	0.00	0.00	1	3.57
cf. *Pleurobema cordatum*	1	0.03	6.02	0.20	0.00	0.00	1	3.57
Total	2955	100.00	3079.58	100.00	38.29	100.00	28	100.00

estimated biomass for all of the faunal remains recovered from Feature 817 is 38.29 kg (Table 7). The taxa represented in this feature assemblage are likely remains of domestic food refuse. These taxa are typical of the general diet of the occupants of the Fewkes site. Feature 817 may not have originally been dug for use as a refuse pit. However, the faunal assemblage composition, location of the feature within a cluster of similarly shaped and used features, and the cluster's location away from domestic structures, suggests that its terminal use was as a refuse pit.

Feature 847

This feature was an extremely large pit, similar to Feature 55. Like Feature 55, it may have originated as a borrow pit and was later filled with domestic refuse. Feature 847 also included Burial 19, an adult male (25-40 years of age), buried on his side in a flexed position (Merrill Dicks to Tanya Peres, letter, April 30, 2002; Tennessee Division of Archaeology NAGPRA Inventory 1035). This feature was located on the exterior of the palisade near several domestic structures. Associated diagnostic artifacts suggest a Thruston phase affiliation (ca. A.D. 1250-1450).

In Feature 847, a total of 445 vertebrate specimens were recovered, weighing 1,221.37 g (Table 8). The identifiable taxa in Feature 847 are: opossum, bear, deer, squirrels, foxes, groundhog, red-tailed hawk, turkey, painted turtle/cooter, box turtle, and snakes. Of these specimens, six exhibit heat alteration, 12 are modified, and seven are immature. The total MNI for Feature 847 is 24. The estimated biomass for all of the faunal remains from Feature 847 is 16.51 kg (Table 8).

The faunal remains recovered from Feature 847 may be associated with

TABLE 8. Summary of Faunal Remains from Feature 847.

Taxon	NISP	%	Weight (g)	%	Biomass (kg)	%	Heat Alt.	%	Mod.	%	Im-mature	%	MNI	%
Vertebrata	170	38 20	56 01	4 59	0 00	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Total Vertebrata	170	38 20	56 01	4 59	0 00	0 00	0	0 00	0	0 00	0	0 00	0	0 00
Mammalia	111	24 94	290 75	23 81	4 34	0 26	2	33 33	4	33 33	1	14 29	0	0 00
Canidae	2	0 45	2 04	0 17	0 05	0 00	0	0 00	0	0 00	0	0 00	1	4 17
Didelphis virginiana	1	0 22	2 05	0 17	0 05	0 00	0	0 00	0	0 00	0	0 00	1	4 17
Ursus americanus	11	2 47	77 35	6 33	1 32	0 08	0	0 00	0	0 00	0	0 00	1	4 17
Odocoileus virginianus	52	11 69	606 46	49 65	8 40	0 51	2	33 33	8	66 67	6	85 71	5	20 83
Sciurus spp	5	1 12	2 69	0 22	0 06	0 00	0	0 00	0	0 00	0	0 00	1	4 17
Urocyon spp	1	0 22	1 13	0 09	0 03	0 00	0	0 00	0	0 00	0	0 00	1	4 17
Marmota monax	2	0 45	2 06	0 17	0 05	0 00	0	0 00	0	0 00	0	0 00	1	4 17
Total Mammalia	185	41 57	984 53	80 61	14 30	0 87	4	66 67	12	100 00	7	100 00	11	45 83
Aves	12	2 70	12 57	1 03	0 02	0 01	1	16 67	0	0 00	0	0 00	0	0 00
Buteo jamaicensis	1	0 22	0 27	0 02	0 01	0 00	0	0 00	0	0 00	0	0 00	1	4 17
Meleagris gallopavo	16	3 60	79 05	6 47	1 09	0 07	1	16 67	0	0 00	0	0 00	3	12 50
Total Aves	29	6 52	91 89	7 52	1 30	0 08	2	33 3	0	0 00	0	0 00	4	16 67
Testudines	7	1 57	8 79	0 72	0 14	0 01	0	0 00	0	0 00	0	0 00	0	0 00
Kinosternidae	1	0 22	0 22	0 02	0 01	0 00	0	0 00	0	0 00	0	0 00	1	4 17
Chrysemys spp	10	2 25	16 01	1 31	0 20	0 01	0	0 00	0	0 00	0	0 00	1	4 17
Terrapene carolina	40	8 99	62 02	5 08	0 50	0 03	0	0 00	0	0 00	0	0 00	5	20 83
Serpentes	1	0 22	0 28	0 02	0 01	0 00	0	0 00	0	0 00	0	0 00	1	4 17
Total Reptilia	59	13 26	87 32	7 15	0 87	0 05	0	0 00	0	0 00	0	0 00	8	33 33
Osteichthyes	2	0 45	1 62	0 13	0 04	0 00	0	0 00	0	0 00	0	0 00	1	4 17
Total Osteichthyes	2	0 45	1 62	0 13	0 04	0 00	0	0 00	0	0 00	0	0 00	1	4 17
Total Vertebrata	445	100 00	1221 37	99 87	16 51	100 00	6	100 00	12	100 00	7	100 00	24	95 83
Total Assemblage	445	100 00	1221 37	99 87	16 51	100 00	6	100 00	12	100 00	7	100 00	24	95 83

Burial 19. If so, then it is possible that these remains are a result of feasting associated with the burial. As this feature is associated with a burial, and thus a death ritual, any associated feast may not have been linked to competition for status, rather it may have been to mourn the dead, and/or reinforce the deceased individual's status. In the case of Feature 847, the inclusion of bear and red-tailed hawk in the assemblage suggests an out-of-the-ordinary meal.

Evidence of Butchering

In the Fewkes faunal assemblage, there are 146 bones that exhibit signs of butchering. Fifty-eight indeterminate mammal bones show evidence of cut marks (15 are from large mammals). Deer account for the remaining 69 bones with cut marks, including: two astragali, four calcanei, one phalange, six metapodials, five metacarpals, and one generally identified as a metapodial. This suggests the cutting and removal of the feet during processing. One antler specimen also shows signs of cutting. The presence of cut marks on one atlas, one cervical vertebra and three mandible fragments as well as one portion of the ascending ramus indicates the removal and processing of the head. Cut marks on one femur indicate the removal of flesh or the disarticulation of the skeleton. Four right, two left and one indeterminately-sided tibia specimens also show signs of cutting. Further, the distal end of two tibiae, two right tibia shafts and one left shaft also display signs of cutting. The cut marks on the tibiae indicate possible disarticulation of the lower hind limbs. Cut marks on the distal portions of six humeri, the proximal portion of five humeri, and the shaft of one humerus indicates de-fleshing or disarticulation of the forelimbs. In addition, cut marks on one right and one left radius, as well as three right distal radii and three proximal radii, three right ulna, one left ulna, and one indeterminately sided ulna indicates that the forelimbs may have been disarticulated at the "elbow." Other elements displaying cut marks are two scapulae, one spinous process, one rib and three innominates Other mammals displaying cut marks include a coyote mandible, right tibia of an opossum, and distal tibia of a gray fox.

Representing the class of Aves is the turkey, with cut marks on one right and one left tibiotarsus. The eastern box turtle elements displaying cut marks include one carapace specimen and two marginal specimens.

In addition to cut marks, other documented evidence of butchering includes "bone flakes." These specimens are defined as pieces that come from long bone shafts of large mammals (i.e., humerus, radius, femur, tibia, metapodial), lack articular ends, and are less than half the circumference of the original element (Brain 1981). Brain (1981:10) states "long bones will generally have been smashed to extract marrow, resulting in characteristic bone fragments." Often marrow or "bone grease" is perceived as a food item that is used mainly in times of stress. These periods might occur when the animals themselves are in poor physical condition (Speth and Spielmann 1983). However, ethnographic evidence from the Plains Indians shows that grease was used as an ingredient in pemmican, a mixture of dried lean meat and melted fat, often marrow (Brink 1997; Webster's Dictionary 1986:868). Pemmican played a large role in food storage and trade. Thus, evidence of marrow extraction does not necessarily indicate that a population was under nutritional stress. The bone flakes

(*n*=575) in this assemblage likely represent evidence of marrow extraction, which is often the last stage in the butchering process, as it is quite destructive. Bone flakes were identified from mammal, medium-to-large mammal, large mammal, and deer. However, at this time, the data do not allow for unequivocal conclusions regarding the use of bone marrow at the Fewkes site.

Modified Bone

Within this portion of the Fewkes site assemblage, there were 146 bone specimens that were modified, and an additional 3,233 specimens that were heat altered. Two Cervidae antlers, weighing 8.79 g, were identified as “tools.” The distal end of an ulna, weighing 19.62 g, was modified into a shape that is commonly called an awl (Figure 4). Two Mammalia metapodials were identified as culturally modified fishhooks (Figure 5). A total of five bone pins (the use of “pin” here relates to form, as is not meant to imply any function) were found in the Fewkes assemblage, all of which were modified from indeterminate Mammalia (Figures 6 and 7). One of the bone pins exhibited polishing and striations toward the cut ends. Another indeterminate Mammalia specimen had been modified with a serrated tip. Seven of the specimens appeared to have red ochre applied to their surfaces. Three specimens were identified as exhibiting polish.

FIGURE 4. Distal ulna modified into an "awl."

FIGURE 5. Bone fishhook.

Species Biomass and Habitat Preference

A discussion of the most significant taxa, according to biomass estimates, and the habitats of the taxa, will aid in developing a deeper understanding of the environment in which the prehistoric people of the Fewkes site inhabited and exploited animals. The Fewkes site is located in the Central Basin physiographic region of Tennessee. The Central Basin is described as an elliptical

FIGURE 6. Bone "pin."

FIGURE 7. Bone "pins."

depression surrounded by the Highland Rim (Miller 1974:5). The majority of the Central Basin, including the Fewkes site, is located in the Western Mesophytic Forest Region (Braun 1950). This type of forest includes an upland climax community of oak, hickory, tulip tree, beech, and chestnut. Middle Tennessee, where the Fewkes site is located, is situated within the Carolinian Biotic Province, characterized by a rich and diverse fauna (Dice 1943). Some mammals native to this province include white-tailed deer, elk, black bear, mountain lion, gray wolf, raccoon, bobcat, fox, mink, otter, skunk, weasel, muskrat, woodchuck, squirrel, eastern cottontail rabbit, and opossum. Some of the avian taxa native to this province include: eagle, hawk, owl, turkey, quail, passenger pigeon, goose, duck, mallard, and teal. Other animals such as numerous species of snake, frog, turtles, fish, and molluscs, are also native to this province.

Biomass estimates for each identifiable taxon are presented in Table 1. Biomass estimates were not calculated for the invertebrates, as comparative data from modern reference specimens are not available, nor for those taxa considered commensal. However, habitat information for each of the identified invertebrate species will be presented.

The white-tailed deer (*Odocoileus virginianus* and cf. *O. virginianus*) comprises 69.95% of the biomass, thus making it the most important meat source at the site. The black bear (8.36%), turkey (5.75%), and elk (*Cervus canadensis* and cf. *C. canadensis*; 3.08%) are the other important meat sources after deer in terms of overall biomass. The eastern box turtle comprises 0.99% of the total identified taxa biomass estimates. All other identified taxa, with the exception of the dog (1.63%), have biomass estimates of less than 1% each. However, it is unclear if dogs were used as food at this site. The low numbers of fish may be due to a preservational or sampling bias, or fish may not have played a large role in the subsistence strategies of the site inhabitants. The combined identified fish taxa at the Fewkes site comprise less than 1% of the biomass estimates (Table 1). Thus, it appears that the inhabitants of the Fewkes site ate mainly deer, followed by bear, turkey, and elk. Lesser amounts of small and medium mammals (i.e., squirrels, skunk, raccoon, foxes, etc.), birds (goose, hawk, bobwhite), turtles (box, cooter, painted, etc.), snakes, fish, and mollusks were also included in the diet.

Animals that thrive along the forest edge or in open forest were the largest contributors to the animal biomass of the Fewkes faunal assemblage. These animals include deer, elk, squirrels, woodchuck, eastern cottontail rabbit, turkey, red-tailed hawk, and Canada goose. These animals comprise nearly 81% of the estimated biomass of the identified taxa.

Taxa procured in rugged forested upland and/or denser wooded areas also contributed significantly to the biomass of the site. These animals include black bear, opossum, box turtle, and snakes. These animals contributed nearly 10% to the estimated biomass of the identified taxa. Additionally, a number of taxa were procured from aquatic and semi-aquatic habitats. These animals include mud and musk turtles, water and box turtles, cooter, painted turtle, pond slider, sliders and cooters, softshell turtle, frogs and toads, gar, bowfin, suckers, redhorse, catfish, channel catfish, sunfish/bluegills, largemouth bass, bass, and drumfish. These taxa comprised nearly 2% of the estimated biomass of the identified taxa. The two molluscs identified in this assemblage do not have calculated biomass estimates, as comparative data from modern reference specimens are not available.

Seasonality

Prehistoric people adjust to the seasonal availability of foodstuffs through storage (salting, drying, pemmican, earthen pits, etc.), re-directing their focus to other locally available taxa, and/or changing their locale to exploit resources abundant elsewhere. Typically, zooarchaeologists use the presence of animals identified in an assemblage to infer the season(s) that people occupied the area (assuming these animals were procured at a time of year when they were abundantly available locally). For instance, the southern population of the Canada goose spends the summer in northern North America and migrates south to the United States in winter (Lutz and Dewey 2002). Thus, a zooarchaeologist would infer that the presence of Canada goose at a prehistoric archaeological site in the Southeastern United States indicates a winter occupation of the site. In the absence of data pertaining to other seasonal indicators (i.e., epiphyseal fusion, antler development, medullary bone, and incremental growth), the presence of the most abundant species will be used to infer season(s) of occupation at the Fewkes site.

The main taxa identified in this assemblage, based on biomass estimates consist of deer (148.18 kg), black bear (17.78 kg), turkey (12.23 kg), elk (5.93 kg), and eastern box turtle (2.11kg). Most of these animals could have been taken throughout the year. The deer have a small home range of less than one km^2, and do not have a pattern of seasonal migration (Senseman 2002). Elk have a larger home range of over 1500 km^2 (600 square miles) and migrate to higher elevations in the summer (Senseman 2002). The turkey is a non-migratory bird that is found throughout the southeast. The eastern box turtle has a small home range of 230 meters (250 yds) or less in diameter, which often overlaps with other individuals of the same species (Niedzielski 2002). The black bear is considered an efficient hibernator, even in the southeast (Rogers 1992). The home ranges of black bears vary from 3-10 km (2-6 miles) for adult females to 11-24 km (7-15 miles) for adult males (Rogers 1992).

A number of these animals would have been drawn to the types of environments that are a direct result of land clearing for agriculture. Deer, turkey, rabbit, and squirrel thrive in forest-edge environments, especially those created by humans during the process of forest clearing for arable land. Today, animals that survived well in forest-edge environments are commonly drawn to fields of cultivated crops or house-gardens to feed; this likely happened prehistorically, too. Since humans could easily acquire these animals, they concentrated their hunting efforts on them, and these taxa became the main contributors to the biomass of the site (Linares 1976). In addition, having a known supply of protein resources may have reduced the seasonality and scheduling of resource procurement (Linares 1976). This idea of "garden hunting" may very well apply to the Fewkes site and other Mississippian sites around the southeast.

Species Diversity and Equitability

The values for species diversity (number of different taxa represented in a sample) and equitability (evenness of the number of individuals of a given taxa) at the Fewkes site were calculated using both the MNI and biomass estimates for the vertebrate faunal assemblage (Table 9). The diversity and equitability values, based on MNI, were calculated using vertebrates only, then using both vertebrates and invertebrates (Table 9). Based on the MNI estimates of the vertebrates only, the species diversity (H') for this sample is 0.656, and the equitability (V') is 0.421. These numbers show that there is an uneven distribution of taxa in the Fewkes faunal assemblage. Based on MNI estimates for both the vertebrates and invertebrates, the species diversity (H') is 0.698, and the equitability (V') is 0.433, nearly the same as for the vertebrates alone. When biomass estimates of the vertebrates is used instead of MNI estimates (biomass figures for invertebrates were not calculated), the Fewkes sample is diverse in the number of taxa present (H'=0.829), however the equitability (V') is low (0.531). Thus, the biomass of this assemblage is dominated by a few taxa.

TABLE 9. Species Diversity (H') and Equitability (V') for the Fewkes Site Faunal Assemblage.

Vertebrates Only	**H'**	**V'**
MNI	0.656	0.421
Biomass	0.829	0.531
Combined Vertebrates and Invertebrates	**H'**	**V'**
MNI	0.698	0.433
Identified Taxa Only	**H'**	**V'**
MNI	1.244	0.771
Biomass	0.581	0.372

When the diversity and equitability are calculated for only those taxa considered identifiable (those identified to Family, *Genus*, and *species*; see Table 1), the results show that, in terms of biomass, the diversity (H'=0.581) and equitability (V=0.372) are both low (Table 9). This low diversity and equitability is due to the fact that deer dominate the biomass, and thus were the largest source of meat at Fewkes. In terms of MNI, the diversity (H'=1.244) is low to moderate, and the equitability (V'=0.771) is moderate. The low diversity is due to the fact that deer comprise the majority of the assemblage. The moderate equitability is due to the fact that four of the 39 identified taxa have significantly higher MNI values. Simply stated, while the deer dominates (MNI=36), several other taxa have higher than average MNI values (squirrels,

MNI=18; turkey, MNI=16; box turtle, MNI=15).

Observations on the Fewkes Site Faunal Assemblage

At the Fewkes site, the majority of the identifiable faunal assemblage is comprised of white-tailed deer. Other large mammals represented are elk and bear, however both occur in lesser quantities. Turkey and eastern box turtle comprise a relatively large percentage of the assemblage. Aquatic and semi-aquatic species are also present in this assemblage, however in smaller numbers. Thus, the occupants of the Fewkes site likely subsisted heavily on white-tailed deer, and occasionally consumed bear, turkey, elk, and box turtle. This underlying subsistence structure was supplemented with the other taxa identified in the sample. The species diversity and equitability numbers also support this argument. Animals that are represented in the sample in any quantity to speak of (deer, bear, elk, box turtle, turkey, and squirrels) are all locally available and thrive in Middle Tennessee. None of the animals represented in the assemblage can be considered "exotic" or non-local to the area.

Evidence of butchering suggests that post-cranial deer skeletons were disarticulated and defleshed prior to cooking and consumption. Potential evidence for pemmican (a mixture of dried lean meat and melted fat, often marrow) manufacture is seen in the high occurrence of "bone flakes" (*n*=575) in this assemblage. Bone flakes may have resulted from the intentional extraction of marrow for either direct consumption or as use in the manufacture of pemmican. Modified bone specimens (*n*=146) in the sample consist of two cervid antlers and an ulna awl, two fishhooks constructed from mammal metapodials, five bone pins/points, a mammal bone that had been modified to have a serrated tip, and three polished specimens. The bone "points" were likely utilitarian items that served many functions, thus a single function is not assigned here. Additionally, ten specimens had cut marks on them, seven had red ochre applied to their surfaces, and 3,233 have been heat altered.

The features identified at the Fewkes site are associated with the Mississippian occupation of the site. Of the seven features, three are associated with burials. These three features (Features 184, 185, 847) are not any more taxonomically diverse than the other four features (Features 1, 55, 722, 817). However, the three associated with burials had at least one "special" or "unusual" species represented, such as bear, red-tailed hawk, or coyote. Are the assemblages from the three burial-associated features representative of feasting episodes? What about the features that are not directly associated with burials, but contain "unusual" taxa or groupings of taxa? These are intriguing questions to be sure. However, only additional data from the analyses of other artifact classes will permit definitive conclusions regarding the presence of feasting.

Feature 1 was unusual both morphologically and compositionally. No burials were associated with this feature, however, two bears and one dog were identified in this assemblage. The assemblage composition of Feature 1 suggests that the fill was likely not everyday domestic refuse. How Feature 1 is related to the nearby sheet midden, the burned structure, and the palisade line is not known. Further analysis of other

artifact classes and features may be able to shed light on these relationships.

Feature 55 was the largest feature excavated out of 350 features. The deer represented in this feature assemblage are likely domestic food refuse, and not that of ritual or feasting activities. There are also numerous bone flakes from large mammal and deer, which possibly represent the end process of marrow extraction. The presence of immature and mature deer, cranial, post-cranial, post-cranial and meatier portions of the skeleton, suggests that deer were butchered on-site, and that marrow was extracted from the longbones to potentially aid in food preservation. The faunal remains recovered from Feature 55 might represent domestic refuse from Structure 21, but the relationship between these two features remains unclear.

Within the analyzed portion of the Fewkes site assemblage, there were 146 bone specimens that were modified, and an additional 3,233 specimens that were heat altered. Two Cervidae antlers and the proximal end of an ulna were identified as “tools.” Two Mammalia metapodials were identified as culturally modified fishhooks. A total of five bone pins were identified in the Fewkes assemblage. One of the bone pins exhibited polishing and striations toward the cut ends. Another indeterminate Mammalia specimen had been modified with a serrated tip. Seven of the specimens appeared to have red ochre applied to their surfaces. Three specimens were identified as exhibiting polish.

The largest contributors to the biomass estimates for Fewkes are those animals that thrive along the forest edge or in open forest. Other animals were procured in rugged forested upland and/or denser wooded areas, and contributed significantly to the biomass of the site. A number of aquatic and semi-aquatic taxa (vertebrates and invertebrates) are present at the Fewkes site; however, their biomass contributions are much smaller than animals from other environmental zones. A number of these animals would have been drawn to the types of environments that are a direct result of land clearing for agriculture. Deer, turkey, rabbit, and squirrel thrive in forest-edge environments, especially those created by humans during the process of forest clearing for arable land. Animals that survived well in forest-edge environments would have been drawn to fields of cultivated crops or house-gardens to feed. Since humans could easily acquire these animals, they concentrated their hunting efforts on them, and these taxa became the main contributors to the biomass of the site. Additionally, having a known supply of protein resources may have reduced the seasonality and scheduling of resource procurement for the occupants of the Fewkes site. It is likely that the Fewkes site was occupied year round, as evidenced by the vertebrate faunal remains.

Modeling Mississippian Subsistence Strategies in Middle Tennessee

The Fewkes site faunal assemblage is important because it allows us to draw conclusions about late prehistoric subsistence in Middle Tennessee at the site level. However, it is also important to place the Fewkes site into the larger picture by comparing the analyzed faunal assemblage with others from the region. The faunal assemblage analyzed from the Fewkes site is compared to animal exploitation practices as outlined for the Cumberland River drainage model of Mississippian period sites (Breitburg

1998; Breitburg and Moore 2001), as well as the model used to explain Mississippian period animal exploitation practices for the Mississippi River drainage (Smith 1974).

Bruce Smith (1974) proposed a model of animal exploitation strategies for sites along the Mississippi River drainage. Smith's first hypothesis is that these groups were selective in the animals they chose to kill and consume, and that this selection was uniform across sites. His analysis shows that the white-tailed deer, raccoon, and turkey were the most important terrestrial animals at these sites. Secondly, he suggests that the exploitation of animals by Middle Mississippi groups was seasonally oriented. There were two seasons of exploitation: a spring-summer season in which a number of fish species were taken, and a fall-winter season in which migratory waterfowl and numerous terrestrial species were taken. The white-tailed deer was the most important terrestrial species taken during the winter, followed by raccoon, turkey, and opossum. Smith notes that these animals were not taken *only* in the fall-winter, but that is when they were most heavily targeted. Third, Middle Mississippian groups concentrated on particular terrestrial animals, excluding other available animals. Smith found that for terrestrial animals exploited during the fall-winter months, white-tailed deer, raccoon, and turkey were selectively exploited to the near-exclusion of other terrestrial species taken during this season. Other small to medium mammals (i.e., opossum, squirrels, and rabbits) were consistently represented at Middle Mississippi sites, however, they were exploited in very low levels in relation to their availability.

Matthew Compton undertook a reanalysis of Smith's model for his dissertation research (2006). Using fine-screen samples from three sites (Upper Nodena, Parkin, Meador, all in Arkansas) as well as published and unpublished data from over 50 sites, Compton refined Smith's model of animal use in the Middle Mississippi Valley. Interestingly, his research demonstrated that Smith's 1974 assessment of animal-use still holds true, although the use of meat weight estimates biased the model towards the ranking of some large mammals (primarily elk and bear) as more important than other quantitative measures support (i.e., NISP, MNI). Additionally, this same technique favored the snapping turtle as more important than other reptiles. Using NISP, Compton shows that box and pond turtles are in fact more frequently represented. Compton's reanalysis indicates that spatial difference is more important than time (Compton 2006). Thus while plant use changes dramatically between the Woodland and Mississippian periods, animal use is consistent and varies by environmental location (the Eastern Lowlands vs. the Western Lowlands) (Compton 2006).

Alternatively, Emanuel Breitburg (1998) proposed a model of animal exploitation at Mississippian sites in the Middle Cumberland region of Tennessee. Breitburg's model defines the Middle Cumberland Mississippian animal-use pattern as related to subsistence, as one that is ecologically distinctive from contemporaneous sites along the Mississippi River. This model holds that the subsistence strategy practiced by the occupants of the Middle Cumberland River sites focused on large game mammals, specifically deer, elk, and bear, as well as turkey. Breitburg notes that the occupants of the Middle Cumberland sites relied less on migratory bird and fish

populations than their counterparts living in the Mississippi River drainage. Prior explanations for this distinct pattern of animal exploitation are based on the fact that many major prehistoric settlements are located at some distance from river floodplains, a postulated greater availability of elk and bear in the Highland Rim ecotone, and the greater distance to major migratory waterfowl flyways (Breitburg and Moore 2001:133).

At first look, the Fewkes site faunal assemblage fits Breitburg's model of animal use at Mississippian sites along the Middle Cumberland River. The overwhelming presence of deer, some elk and bear, along with turkey, small mammals, and eastern box turtle, suggests that the inhabitants of the Fewkes site were subsisting on animals that were locally procured on a non-seasonal basis. Some of the differences between the current interpretations and Breitburg's model are: (1) the current analysis interprets animal use in terms of NISP and MNI, in addition to biomass estimates; (2) close attention is paid to context of the animal remains as evidenced by the proximity of features to human burials, structures, etc., to allow for more complex interpretations of animal-use; and (3) the assemblage recovered and analyzed from the Fewkes site is much larger than those analyzed by Breitburg at the Gordontown and Rutherford-Kizer sites.

The faunal assemblage analyzed from the Fewkes site shows that white-tailed deer were the most important large mammals used (in terms of NISP, MNI, and biomass), as in Breitburg's model. However, bear and elk contribute less to the diet in terms of NISP and MNI than smaller animals such as turkey and eastern box turtle -- hence the importance of bear and elk to the general subsistence strategies of the Middle Cumberland Mississippian people may have been overstated. While the biomass (and indeed, the culturally subjective "edible meat yield") of bears may be large, the MNI estimates for bears in the published and unpublished literature for sites from this area are in the single digits (Table 10). We must examine the contexts from which bear and elk are recovered to make solid interpretations about their consumption.

TABLE 10. MNI Estimates of Black Bear and Elk in Middle Tennessee Mississippian Sites.

Site	Bear	Elk
Fewkes (40WM1)	2	3
Gordontown (40DV6)	2	1
Rutherford-Kizer (40SU15)	2	2
Brentwood Library (40WM210)	1	1

Recommendations for Future Zooarchaeological Work

In conclusion, I offer some recommendations for future zooarchaeological work in the region. The first recommendation addresses field sampling strategies for late prehistoric sites - I propose that column samples be taken from portions of sites containing middens. The entire column, a 50 cm x 50 cm corner of an excavation unit, should be removed in 5-cm levels and taken to the lab for processing by dry sieving and hand sorting. While more laborious in nature, column samples provide a wealth of environmental and subsistence data that cannot be gleaned from more conventional recovery methods (Peres 2001; Shaffer 1992; Wing and Quitmyer 1985).

Second, zooarchaeologists are encouraged to record the occurrence of "bone flakes" in assemblages so we may begin to understand the use of bone marrow prehistorically. Bone flakes are

those fragments of large mammal (i.e., deer, elk, bear) long bones that measure three-fourths or less of the total circumference of the diaphysis, and do not contain any portion of the epiphyses (Brain 1981). If these bone flakes do prove to be direct evidence of marrow extraction, as either subsequent direct consumption or as an ingredient in pemmican, we will gain a better understanding of food storage practices, particularly for meat.

Third, weight and growth data from modern comparative invertebrates are needed to be able to draw conclusions about their dietary role in late prehistory, season of capture, and the prehistoric environmental conditions that existed along the major river systems and tributaries in Tennessee.

Over time, the data from Fewkes and other Mississippian sites will produce a refinement of Breitburg's model of animal exploitation in the Middle Cumberland River area of Tennessee. By employing recovery methods that move beyond the current standard, re-analyzing existing collections in addition to those currently under excavation, basing interpretations on multiple lines of evidence, and continually asking new questions of our data we will be able to significantly contribute to the knowledge-base of Mississippian lifeways in the Middle Cumberland River area.

Notes:

[1] Tanya M. Peres and Michelle LeFebvre performed the zooarchaeological analysis for the majority of the assemblage. Data entry for this portion of the faunal assemblage was completed by laboratory assistants, Ms. LeFebvre and Dona Daugherty. Data tables were constructed by Alison Hadley, Andrea Howard, and Ms. LeFebvre. A portion of the assemblage was analyzed by University of Kentucky students enrolled in the ANT 580: Zooarchaeology course in the spring semester of 2004. These students were: James Breslin, Matt Byron, Alison Hadley, Sandy McDaniel, Olaf Jaime-Riveron, and Stephanie Jolly. These students were responsible for compiling and entering the data generated by their analyses, some of their data are included in the summary of Feature 55.

[2] Phase III data recovery was performed by staff of DuVall and Associates, Inc. on behalf of the Federal Highway Administration and Tennessee Department of Transportation (Contract Agreement E0237, Work Order 012, TDOT Project #94052-1517-04). At this time of this writing, a final report has not been submitted and no projected completion date is available.

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