GEOPHYSICAL AND ARCHAEOLOGICAL INVESTIGATIONS AT THE CLEMENT SITE, A CADDO MOUND COMPLEX IN SOUTHEASTERN OKLAHOMA

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Since the 1960s, few professional archaeological excavations have been conducted at Caddo sites in southeastern Oklahoma. This article summarizes the initial phase of a research program designed to increase our knowledge of this area. Geophysical and archaeological investigations at the Clement site (34Mc8) were conducted during the summer of 2008 by the University of Oklahoma. These revealed deep middens, intact mound stratigraphy, and architecture, and suggest that Clement had multiple Caddo occupations spanning approximately 300 years.

Introduction

Since the River Basin Surveys of the 1960s, few professional archaeological excavations have been conducted at prehistoric Caddo sites in the far southeastern corner of Oklahoma. While research at Caddo sites to the north in the Arkansas Valley, as well as other portions of southwestern Arkansas, northeastern Texas, and northwestern Louisiana, have greatly advanced knowledge of Caddo prehistory in the past four decades, research in southeast Oklahoma has lagged behind. In the past three years, faculty and students at the University of Oklahoma's Department of Anthropology, the Oklahoma Archeological Survey, and the Sam Noble Oklahoma Museum of Natural History have begun to revisit the prehistory of the Caddo in this area through analysis of existing collections and new excavations. The goals of the new analysis include many of the basic goals of any regional archaeological program, such as using detailed ceramic studies and radiometric dating to gain a better understanding of the regional cultural chronology, using chronologies, excavation data, and settlement patterning studies to better understand regional sociopolitical structure, and conducting excavations in nonmound domestic contexts using modern sample recovery techniques, such as flotation, to understand daily life. As a beginning phase of this research program, the 2008 University of Oklahoma summer archaeological field school was held at the Clement site (34Mc8), a multiple-mound Caddo site located in southeastern Oklahoma (Figure 1).

The Clement site is on the western terrace of the Glover River just below the point at which the Glover exits a meandering, tightly constricted channel in the southern Ouachita Mountains and begins to carve a series of floodplains and alluvial terraces. The Clement site proper has two documented mounds, and there are at least four other mounds within 1.5 km, although we do not yet know their chronology or relationship to Clement. On a larger scale (see Figure 1), there are numerous Caddo mound centers and smaller sites on the Red River and one of its principal tributaries, the Little River, that flow through the southeast corner of Oklahoma (Bell and Baerreis 1951; Wyckoff 1967; Wyckoff and Fisher 1985).

Clement was extensively excavated by the Works Progress Administration (WPA) in 1941 but has received little attention in subsequent decades. The new round of research will ultimately involve a reanalysis of the collections from the WPA investigations, along with a series of excavations employing modern techniques to better understand the history of this mound center and its place in the Caddo political and temporal landscape of southeastern Oklahoma. This article summarizes the 1941 WPA excavations and the 2008 field excavations, with a focus on the results of geophysical survey conducted over much of the site.

Previous Research at Clement

In 1941, WPA crews under the direction of University of Oklahoma archaeologist David Baerreis (1941a, 1941b) conducted excavations at the Clement mounds and other nearby sites. We are reexamining their work at three locations that Baerreis considered part of the original Clement site complex: 34Mc8, which designates the Clement mounds; 34Mc9, which refers to a rise adjacent to the Glover River 500 m to the south of the mounds that becomes an island when the waters are high; and 34Mc10, which is a sandy ridge to the west of the mounds (Baerreis 1941b). According to the field notes and a brief published account in 1951 (Baerreis 1941a, 1941b; Bell and Baerreis 1951), the WPA excavations primarily focused on the largest mound, now called Mound A (Figure 2). In 1941, the mound was approximately 2 m tall and 30 m in

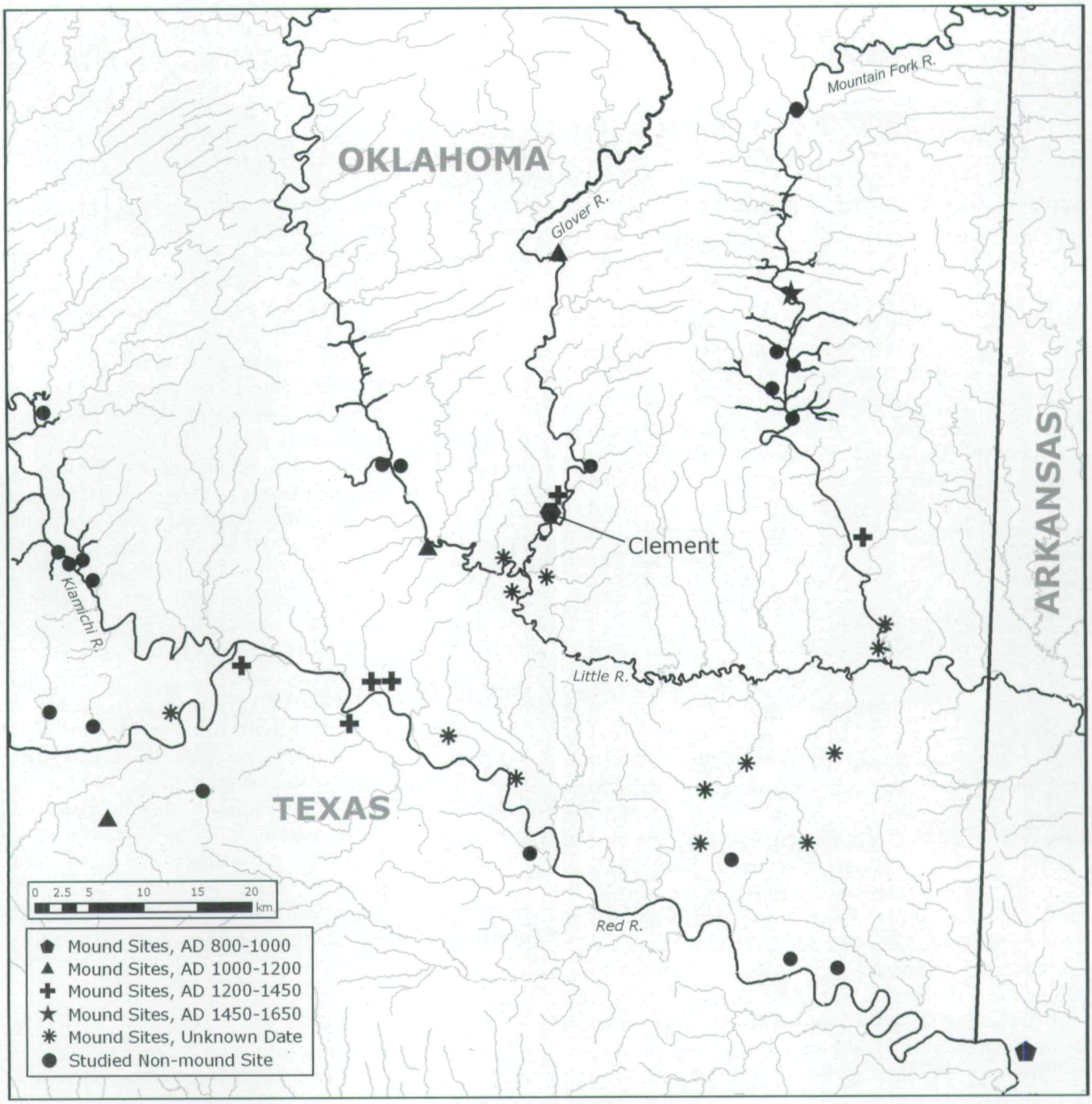

Figure 1. Location of the Clement site in southeastern Oklahoma.

diameter. Early-twentieth-century excavations by avocational archaeologist George T. Wright revealed a structure about 1 m below the summit of the mound, although no map exists of the results of that work (Baerreis 1941b). The 1941 excavations showed several distinct strata, including what Baerreis interpreted as a premound midden about 0.5 m in depth. Baerreis surmised that the mound was constructed rather quickly because of the homogeneity of the fill (Figure 3).

The most striking feature of Mound A was a large shaft tomb excavated through the mound into the underlying premound midden. Located under the midden are some number of premound structures. Unfortunately, the post patterns for these structures were not well defined during the excavation, and likely were disrupted by the construction of the shaft tomb. The shaft tomb contained the remains of at least 11 badly preserved individuals in three different groups, with associated grave goods, and cedar posts at each of

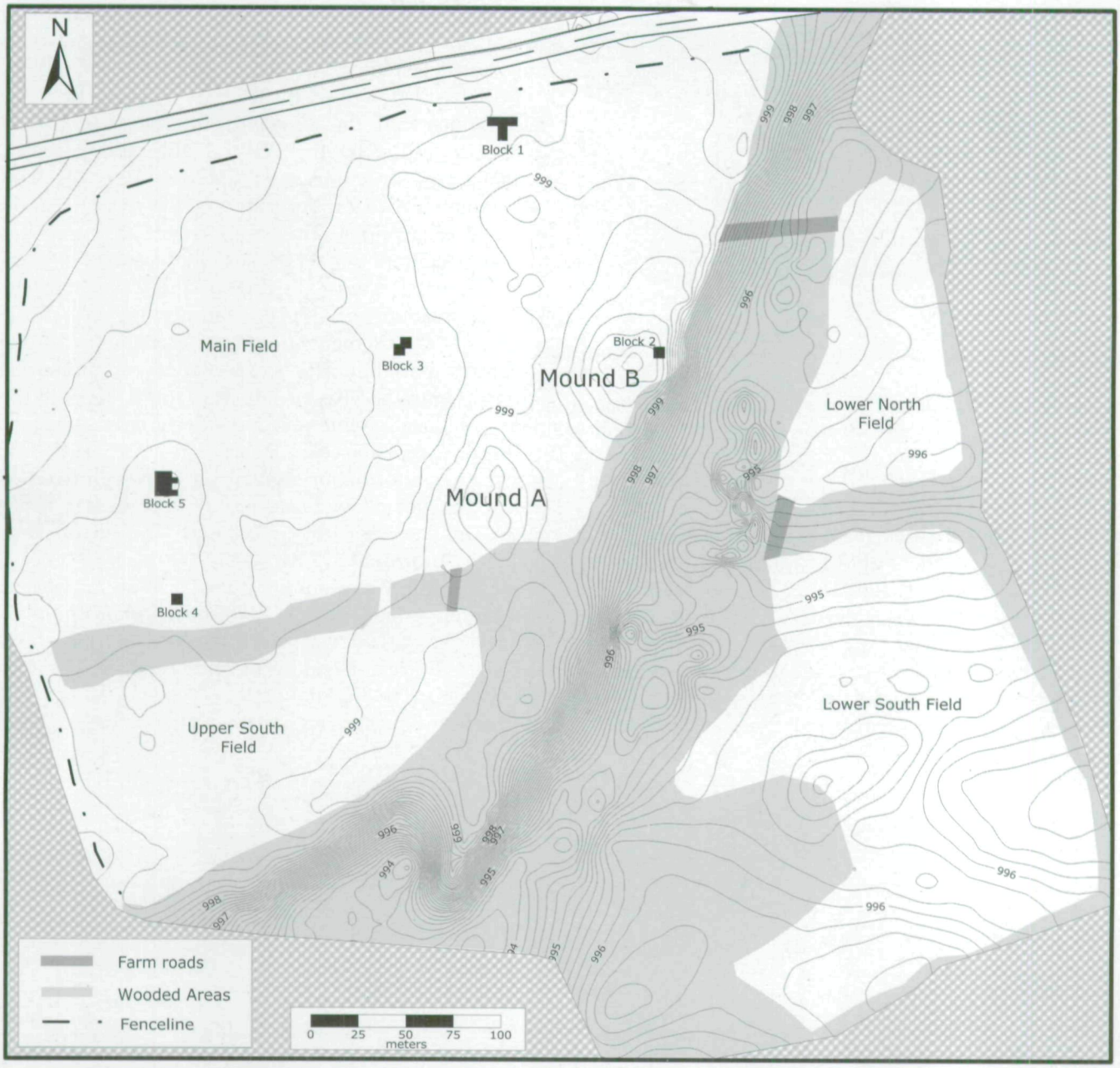

Figure 2. Contour map of the Clement site with 2008 excavation areas marked.

the corners. The artifacts from this tomb have not yet been studied.

Baerreis (1941a) uncovered two overlapping structures northeast of Mound A, which we have designated as Structures 1 and 2 (Figure 4). The earlier of the two, Structure 1, was square with four center posts and measured 8 m on a side. It had a 2-m-long entrance trench oriented to 45 degrees and a clay step at the threshold of the house. The significance of clay steps in Caddo structures in the Arkansas River basin in eastern Oklahoma and northwestern Arkansas has been discussed by Kay and Sabo (2006). They appear to be a rare feature in Red River Caddo architecture. The later rectangular structure, Structure 2, had only two central posts, was oriented to 55 degrees, and was smaller, at 5.5 m, but had a long 4.5 m entrance trench (Baerreis 1941a) (see Figure 4). One of the wooden support posts was well preserved but unfortunately was not subsequently retained. A historic Choctaw component also occurs into this area (Baerreis 1941a) and includes several pits containing historic artifacts (ceramics and metal) along with animal bone, including white-tailed deer, pig, squirrel, skunk, and cow/bison (Moody 2009).

The entrance trenches of both structures are typical of Caddo architecture in southeastern Oklahoma and

Figure 3. Mound A Row 24 profile showing homogeneous mound fill. The "pie crust" appearance is from deep plow furrows. Photograph courtesy of the Sam Noble Oklahoma Museum of Natural History, University of Oklahoma.

southwestern Arkansas (Perttula 2009; Trubitt 2009). Kay and Sabo (2006:37) have argued that southwest-facing entryways are signatures of "calendrical and diurnal aspects of the mortuary ceremonialism" of Harlan phase charnel houses in the Arkansas River basin. While no evidence of ritual mortuary activity has been noted for Structures 1 and 2, the presence of these southwest-facing doorways and the clay step in the entrance to Structure 1 suggest some contact with aboriginal groups to the north, although the nature of this contact remains unclear.

34Mc9 was described by Baerreis as an "island" to the southeast of the Clement site (Baerreis 1941a). Extensive testing by the WPA in this area revealed evidence of structures and midden deposits but, unfortunately, we cannot pinpoint the exact location of these excavations. The locals report this area has been a favorite of looters because loose, sandy soil has allowed for the easy digging of numerous burials. WPA excavations at 34Mc10, a sandy ridge west of the mounds at the Clement site proper, documented three structures spaced hundreds of feet apart and numerous burials (Figure 5). Five burials were found beneath the floor of House 2 (which we have designated Structure 4). Skeletal remains were poorly preserved and little age and sex information is available, although Baerreis noted that not all were adults. Pottery vessels were placed in the graves in association with all of these burials. Unfortunately, we also have been unable to locate a master map showing the location of 34Mc10 and therefore have been unable to relocate this site. It has been suggested that Baerreis may have intentionally altered directions in his quarterly reports to throw off looters (Prewitt n.d.). If so, he thus far has successfully confounded archaeologists as well.

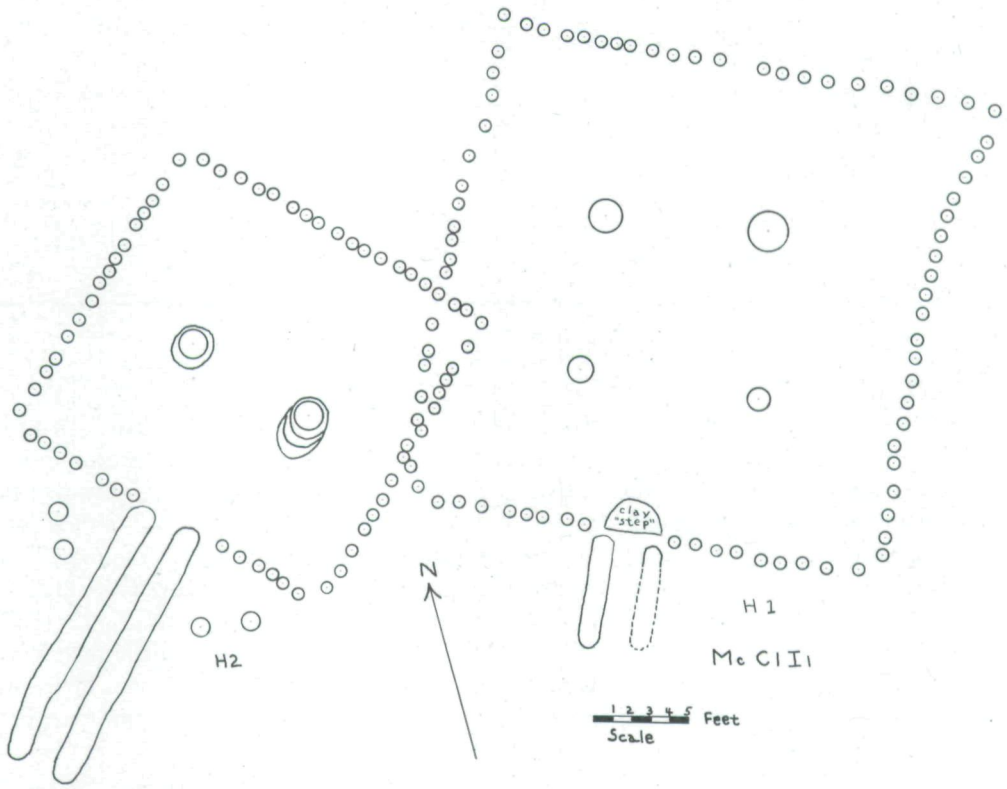

Figure 4. WPA map of Structures 1 (right) and 2 (left).

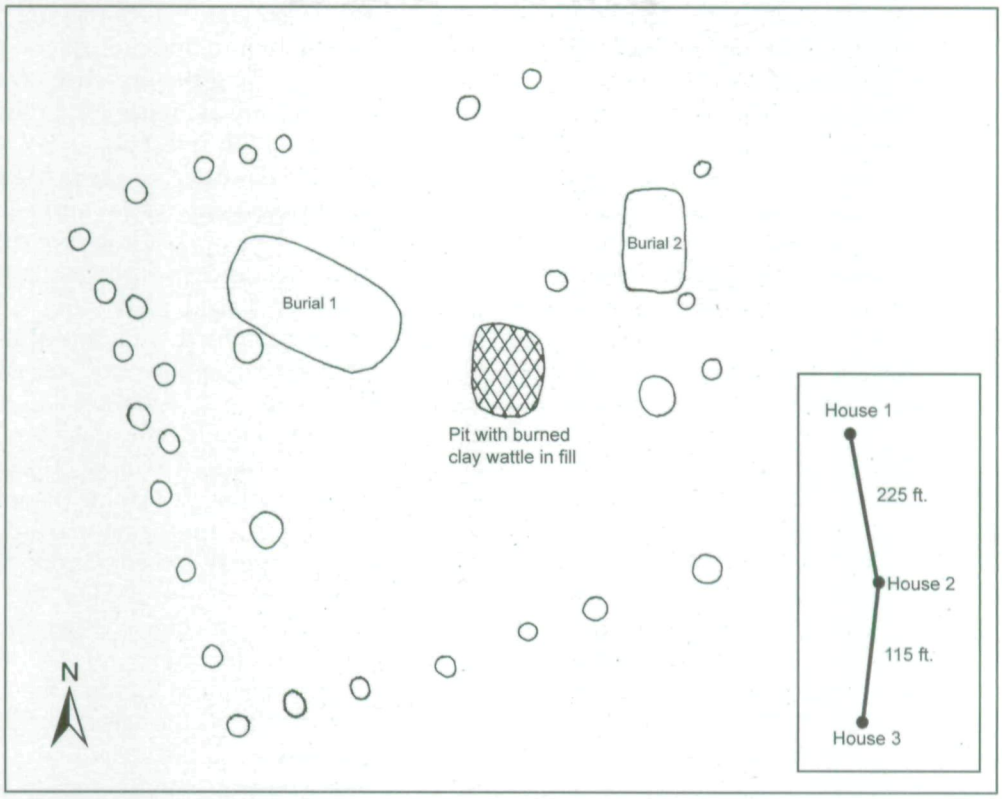

Figure 5. Plan map of Structure 4 (WPA House 2) at 34Mc10. The locations of Structures 3, 4, and 5 (Houses 1, 2, and 3) with respect to one another are shown in the inset. The actual locations of these structures are unknown, as is the scale of the map.

In 1968, 10 samples of wood and corn cobs from the WPA excavations at the Clement site were submitted to the laboratory at the University of Texas at Austin for radiocarbon dating (Table 1). The uncorrected dates range from A.D. 1200 to 1810 (Valastro et al. 1972), although we have reason to believe that some, if not all, of these results may not be accurate, since we have no knowledge of the treatment of the samples from the time of the excavations to the eventual submission. Eight of the samples came from charred maize cobs. Several of these samples appear to have been contaminated, since their dates from submound pits vary by as much as 600 years and can be as recent as the 1950s. This seems far too late for their contexts beneath Mound A and in one of the post holes in Structure 1. Although the accuracy of all of these dates are suspect and it is unlikely any of the dates are valid, updated OxCal 4.1 calibrations (Bronk Ramsey 2009) of these original samples are listed in Table 1.

Based on the WPA excavations, the Clement site frequently has been discussed in the literature as if it was a single component post–A.D. 1400 McCurtain phase[1] Late Caddo site (Bell and Baerreis 1951; Perttula 1992; Story 1990; Wyckoff 1969). However, our review of the site notes indicate several possible chronological discrepancies. Rectangular structures with four central support posts and structures with extended entryways in the Arkansas River valley date to approximately

Table 1. Radiocarbon dates from the 1941 excavations (calibrated using OxCal 4.1).

TX #	Location	Type	Intercept (B.P.)	±	2-sigma calibrated age range
823A	Unknown	Wood	390	60	A.D. 1433–1640
823B	22:8; premound	Corncob	140	140	A.D. 1493
824	22:8; premound post hole	Corncob	190	70	A.D. 1523–1955
825	25:10; premound	Corncob	350	80	A.D. 1417–1952
829	Feature C6, base of mound	Corncob	140	70	A.D. 1662–1952
821	23:7; base of mound	Corncob	260	70	A.D. 1452–1954
826	21:9; lower stage of mound	Corncob	160	70	A.D. 1648–1953
827	24:5, premound post hole	Corncob	750	80	A.D. 1048–1399
820	21:9, Feature A14	Corncob	250	70	A.D. 1460–1954
828	Post in Burial 3	Wood	620	70	A.D. 1271–1429
822	NW center post, Structure 1	Wood	1690	80	A.D. 138–540

A.D. 1050–1300 (Kay and Sabo 2006). In the Red River valley, Sanders phase (A.D. 1100–1300) structures are rectangular or square, possess internal support posts, and have extended entranceways (Bruseth 1998). Large platform mounds like Mound A are typically associated with Early Caddo and Middle Caddo (Sanders phase) sites, although shaft tombs are present in McCurtain phase Caddo sites along the Red River. It is likely the site was assigned a late date because of the presence of the shaft tomb and the artifacts reported from the tomb (Bruseth 1998). However, it seems clear from the evidence that the shaft tomb was a later addition to the site and significant components of the site have earlier dates.

Recent Fieldwork

In 2008, with the assistance of the University of Oklahoma field school, we conducted excavations at Clement. These excavations had four goals. First, we wanted to gather more data to help us better understand the site chronology. We also hoped to test Mound B, which was not excavated in 1941, both to determine if there are still intact cultural deposits and to gather datable material from stratigraphic contexts. Our hope was to provide data to better inform our reanalysis of the 1941 artifacts. We also wanted to locate the 1941 excavations and to try and document the geographic extent of the site, as the landowner has plowed down Mound A significantly over the decades, so much so that it is no longer the taller of the two mounds. Finally, we hoped to find food remains using twenty-first-century excavation methods that were not available in 1941. In order to document the extent of the site and to locate areas for potential excavation, our first course of action was to survey the site using split-core augers and a gradiometer.

The split-core auger survey was conducted on a 20-m grid across the entire field encompassing the site (Figure 6). Augering was conducted to a maximum depth of 1.25 m. Additionally, 2-m auger transects were conducted across the tops of Mounds A and B, in the northeastern corner of the field, where we suspected there might have been other mounds, and in the northern part of the field, where midden soils were detected. Figure 6 shows the distribution of artifacts and midden soils discovered by the auger testing. The most significant concentrations of cultural material were located to the west and north of the mounds. The augers indicated that in the eastern part of the field, cultural materials were often buried 50–75 cm below the surface (cmbs), under an apparently culturally sterile soil horizon. We currently hypothesize that the sterile horizon is alluvium deposited on the site during the early twentieth century, possibly associated with deforestation associated with logging in the Glover drainage. The alluvium does not extend across the field to the west, suggesting the presence of a natural levee. We failed to find any evidence for cultural deposits on the lower terrace with select auger tests.

A Geoscan FM256 fluxgate gradiometer was used to conduct subsurface geophysical survey along a 20-m^2 grid. Within each block, readings were taken at 25-cm intervals (four readings per m) along 40 north-south parallel transects spaced 50 cm apart. Raw data was processed and combined into composite maps using GeoPlot 3.0. A zero mean traverse was run and the data were then clipped to ± 9 nanoteslas (nT) to remove extreme outliers. Finally, the data were interpolated along the X and Y axes. A total of 52 geophysical grids were surveyed, totaling 20,800 m^2 (Figure 7). Coverage of the site, which can appear haphazard at first glance, was driven by several considerations. First, we were attempting to identify the 34Mc8 site area near the mounds and to investigate whether there were additional mounds to the north of Mounds A and B. Second, we were trying to identify the 34Mc10 locality and the sandy ridge to the west. For this we focused our westernmost grids on areas that appeared promising in the soil-core auger survey and east-west transects connecting our two zones of gradiometer coverage. Third, time constraints limited the amount of space we could cover, but we hope to return eventually to fill in some of the gaps.

The varying quality of the images in Figure 7 is due to several factors. Probably the most important of these is the use of multiple operators of the gradiometer. Since this project was part of a field school, we made an effort to give each student experience operating the instrument. However, some were better than others at keeping it level and moving at the proper pace. These differences are reflected in the quality of the data and indicate the danger in having multiple untrained operators using the machine, as the results will be inconsistent. We will not make this mistake in future work. In addition, several grids, notably the northeastern ones, were collected when the instrument was not properly balanced, and this too is reflected in the data. Five grids (N5080 E4920, N5080 E4940, N5080 E4960, N5100 E4920, and N5100 E4940) are not shown in Figure 7 because of the poor quality of the results.

Despite these problems, there were several interesting findings. While there are a number of grid squares that could be discussed here, in the interest of space we will focus on three areas. The gradiometer successfully located the outlines of the 1941 Mound A excavations. As discussed above, Mound A was the focus of much of the WPA work and locating the outlines of their trenches was crucial to reconstructing their work. In four grids centered around N4960 E4940, these trenches were clearly visible as areas of magnetic lows

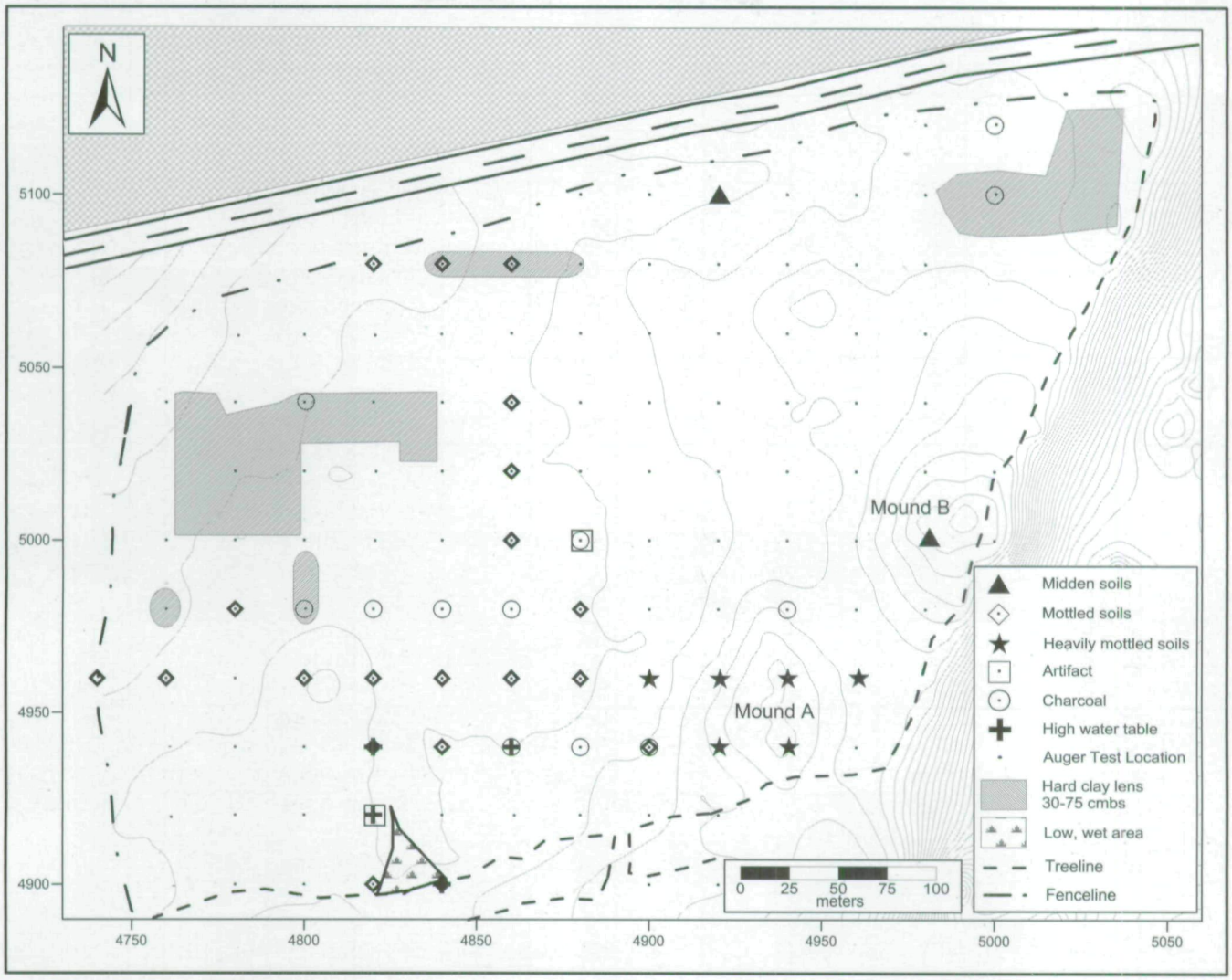

Figure 6. Locations of auger tests.

approaching -9 nT (Figure 8). The large white square on the northern edge of their excavations is likely the location of the previously mentioned shaft tomb. We expect that these trenches eventually will help us determine the orientation of the WPA grid, although we did not excavate in this area. As mentioned above, the landowner has plowed down Mound A considerably. The extent of the pushed mound fill is clearly evident to the west of the mound in Figure 8.

Space does not permit us to discuss all of our geophysical results in full. However, at least six small anomalies were noted in grid square N4940 E4820 (Figure 9). These were not ground truthed but have a size and magnetic signature (over 5 nT) consistent with debris-filled pits. Future fieldwork will target this area.

The gradiometer survey also revealed an anomaly in the northwestern corner of grid square N4940 E4800 (Figure 10). Readings in this section of the grid reached values as high as 4 nT, a range consistent with a shallowly buried hearth or burned feature associated with a buried Caddo structure (e.g., Lockhart, this volume). Excavations conducted in this grid square revealed a burned structure and are discussed further below.

Excavations and Ground Truthing

Block 1 was placed where auger testing revealed a deeply buried black midden (see Figure 2). It was ultimately a T-shaped excavation of seven 2-x-2-m squares measuring 10 m east to west and 6 m north to south. Below 50–65 cm of alluvium, the excavations revealed a deep midden-filled pit with irregular margins. The pit reached a maximum depth of 120 to 180 cmbs and tapered off to a depth of 10 cm in the east (Figure 11). There were two different midden strata. The upper was a lighter color (dark gray) with a moderate artifact density and the lower was darker (a very dark gray) and greasy with a very high artifact

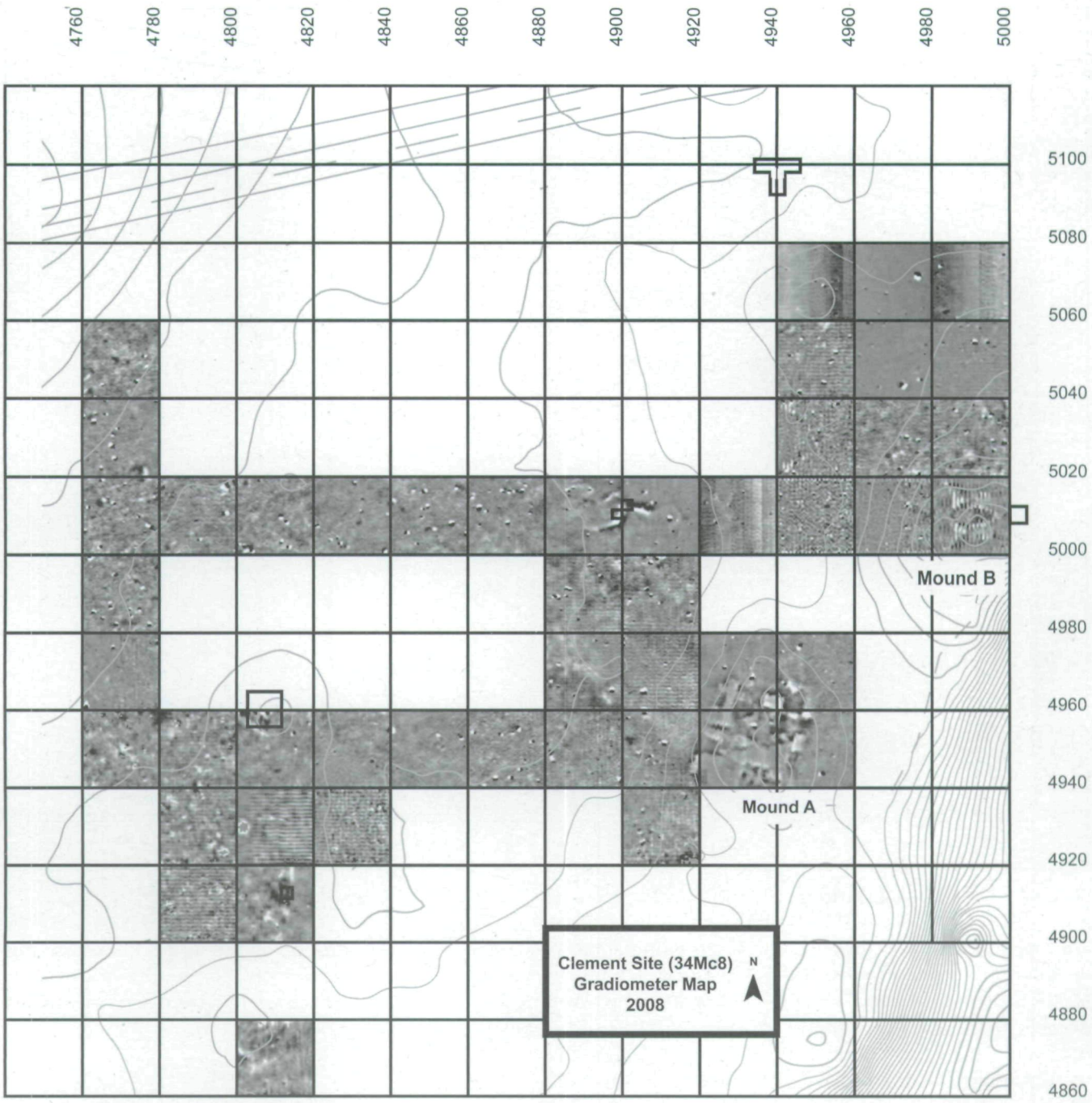

Figure 7. Composite gradiometer map.

density. Organic preservation was very poor, however, and only a few very small friable bone fragments were recovered. Based on the size and irregular margins of the pit, we hypothesize that it was a clay extraction area that was later used as a refuse dump. Two radiocarbon dates were obtained from the midden (Table 2). One of these dates is recent and is clearly contaminated. The other has a 2-sigma calibrated date range of A.D. 990–1200. Table 3 shows the counts, percentages, and weights of shell-tempered and grog-tempered sherds by level from the 2-x-2-m unit excavated through the deepest and densest portion of the midden. The appearance of shell-tempered ceramics and the continuing use of grog as a tempering agent is one of the markers of the early McCurtain phase (Bruseth 1998:60). From Level 8, where the transition from washed-in soils and intact midden occurs, down to sterile subsoil, shell-tempered sherds by count comprise between 36 and 43 percent of the sherd assemblage (Table 3), suggesting that the piece of charcoal sampled from Block 1 does not accurately date the formation of this midden.

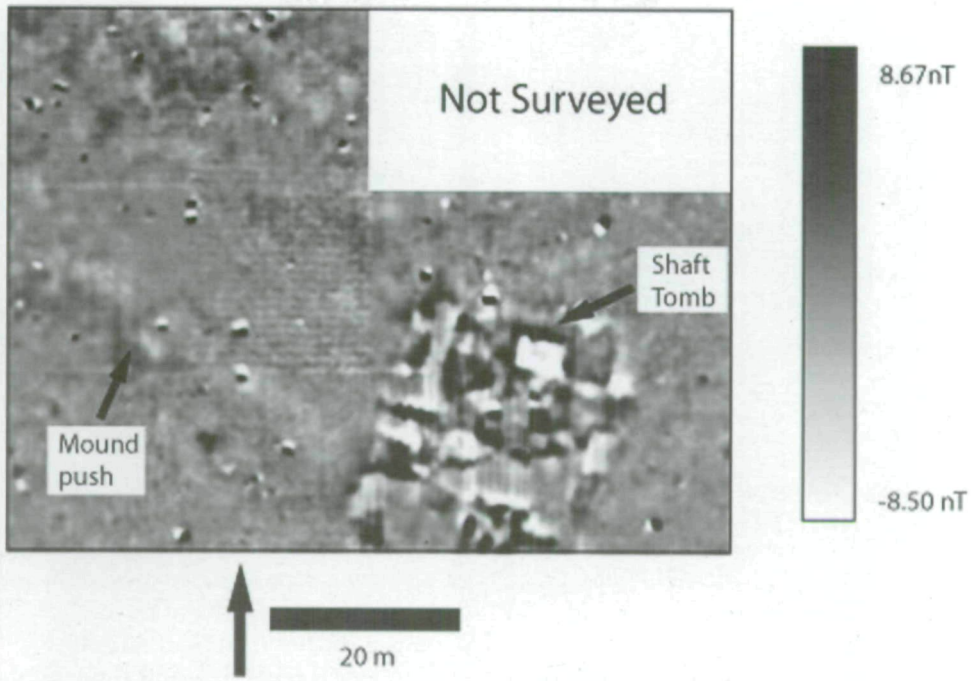

Figure 8. Composite gradiometer map of Mound A. The large white square is likely the location of the shaft tomb. The extent of bulldozed mound fill is evident to the west of the mound.

Block 2 was a 2-x-2-m test unit located on the flank of Mound B, just 2 m from the terrace edge (see Figure 2). Mound B was not excavated in 1941 but has probably been disturbed by agricultural use and has certainly been disturbed by looting. The landowner reported that in 2003 or 2004 a pair of determined looters tunneled into the mound from the terrace side, using plywood shoring and lights powered by a generator. We wanted to learn whether there were any intact cultural deposits in Mound B and hoped to collect stratigraphically intact dateable material. The excavations confirmed that there are undisturbed mound deposits. At 60 cmbs, the excavations uncovered a hearth and compacted clay floor under the edge of sloping mound fill. A radiocarbon date with a calibrated intercept of A.D. 1410 was obtained from the hearth. A second date with a calibrated intercept of A.D. 1050 came from mound fill roughly 30 cm below the hearth (see Table 2). These dates, along with field observations of pottery decorations, suggest an earlier Caddo occupation for the initial construction of the mound, although laboratory analysis is ongoing. The

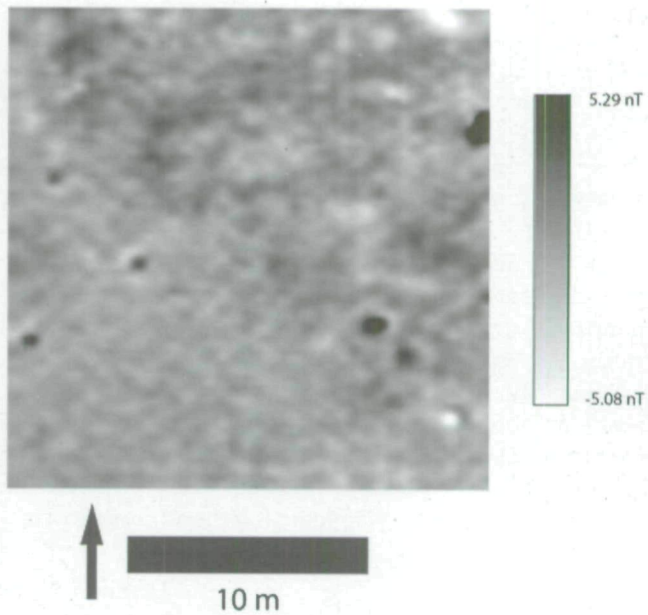

Figure 9. Possible debris-filled pits (dark spots) in grid square N4920 E4820.

Table 2. Radiocarbon dates from the 2008 excavations (calibrated using OxCal 4.1).

Beta #	Location	Type	Intercept (B.P.)	±	2-sigma calibrated age range
251250	Mound B, Level 8 hearth	Wood, charcoal	540	40	A.D. 1307–1442
253059	Mound B, Level 11	Wood, charcoal	900	40	A.D. 1034–1215
251251	Block 1, midden Level 7	Wood, charcoal	960	50	A.D. 990–1185
253326	Block 1, midden Level 7	Wood, charcoal	80	40	A.D. 1681–1937
251253	Structure 7 post hole	Wood, charcoal	870	40	A.D. 1042–1256
252247	Structure 6 post hole	Wood, charcoal	830	60	A.D. 1042–1280

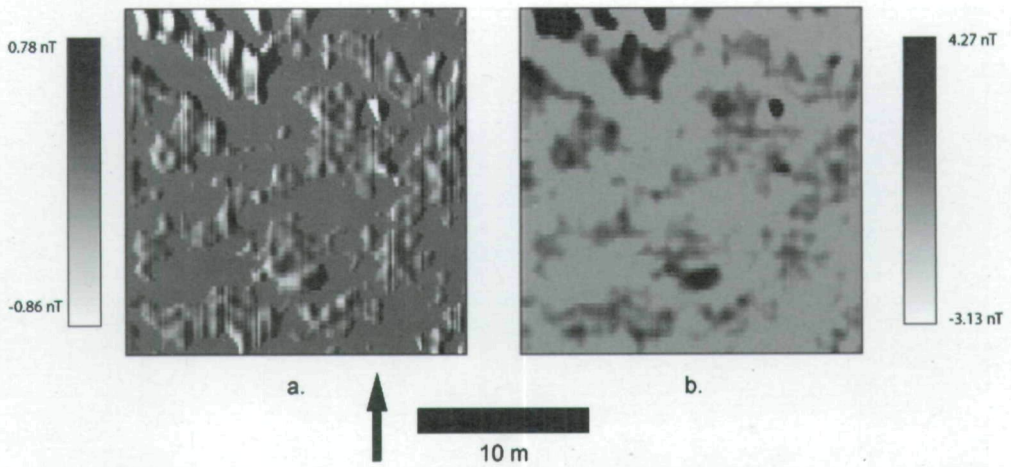

Figure 10. Gradiometer map of the Block 5 area. The southern portion of Structure 6, including the probable entrance trench, is to the northwest: (a) relief view; (b) shade plot view.

counts, percentages, and weights of shell- and grog-tempered sherds by level in the mound are provided in Table 4. In the levels immediately above the hearth, shell-tempered pottery comprises roughly 30 percent of the ceramic assemblage, which matches well with the early McCurtain phase radiocarbon date from the hearth and compacted clay floor. In the levels below 65 cm, only a handful of shell-tempered sherds were recovered, less than 5 percent of the total assemblage, reflecting the earlier date of this context.

Block 5, which consisted of 14 2-x-2-m units covering most of the area enclosed by an 8-x-8-m square, was placed to investigate the anomaly found by the gradiometer in grid square N4940 E4800 (see Figures 2, 7, and 10). The top of a large burned structure, designated Structure 6, was located just below the plow zone, at depths of 15–20 cmbs. There were numerous collapsed and charred timbers, charred cane and matting, as well as a significant amount of burned earth. A radiocarbon date with a calibrated intercept of A.D. 1120 was obtained from one of these charred timbers (see Table 2). Once the burned overburden was removed, a floor of yellowish/grayish clay 10 cm thick and about 40 cmbs was revealed. When the yellowish-gray soil was removed, it exposed the red subsoil against which the bottoms of the posts were visible. The post pattern indicates a circular structure an estimated 12 m in diameter (Figure 12), and the wall posts extended to an original depth of over 70 cm below the house floor. There is a suggestion of a doorway on the southern edge of the post pattern. Geophysical data indicate that this entranceway extends perhaps an additional 1 m south of the edge of our excavations (see Figure 10). Several internal features were found, designated Features 40 and 67 on Figure 12. The features lacked clear definition and could only be seen in profile. The structure was largely free of artifacts, suggesting it was cleared before being burned.

Near the conclusion of our excavation season, we found evidence of an additional structure, Structure 7, in Block 5, in an area which had not been subjected to geophysical survey. This structure consists of six post holes in a straight line (see Figure 12). Unfortunately, we were unable to expand units in this area, since the line of posts was exposed on the second-to-last day of excavations. However, one radiocarbon date with an intercept of A.D. 1080 was obtained from one of these post holes (see Table 2).

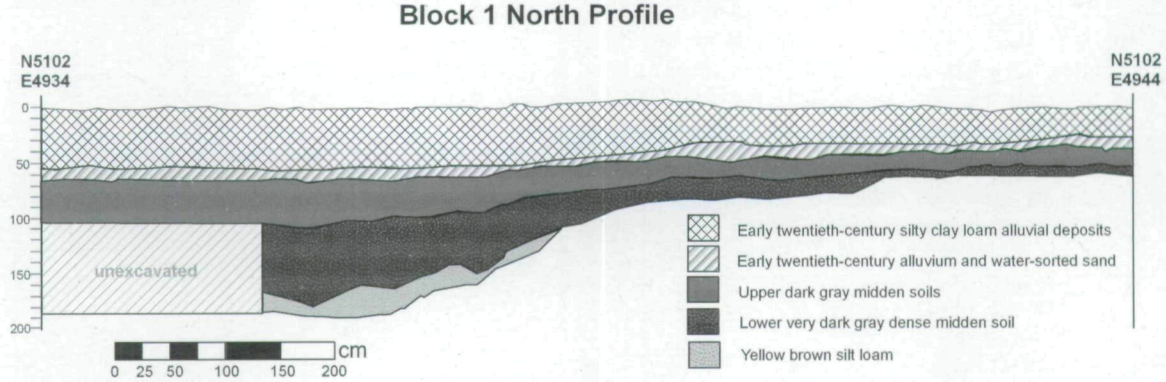

Figure 11. Block 1 profile facing north.

Table 3. Sherd temper totals from Unit N5100 E4936 in Block 1 (Levels 1–7 represent alluvial deposits; Levels 8–14 are from intact midden deposits).

Level	Stratum	Depth (cmbs)	Grog count	%	Shell count	%	Total count	Grog weight	Shell weight	Total weight
1	I	0–20	35	100	0	0	35	42.9	0.0	42.9
2	I	20–30	19	90.4	2	9.6	21	18.7	0.7	19.4
3	I/II	30–40	9	90.0	1	10	10	9.5	0.6	10.1
4	II	40–50	8	80.0	2	10	10	10.1	7.4	17.5
5	III	50–60	3	75.0	1	25	4	6.8	0.4	7.2
6	III	60–70	34	89.5	4	10.5	38	81.8	2.7	84.5
7	III	70–80	32	80.0	8	20	40	39.0	3.6	42.6
8	III	80–90	222	72.3	85	27.7	307	421.3	43.0	464.3
9	III	90–100	197	84.5	36	15.5	233	225.9	22.0	247.9
9	IV	90–100	300	72.4	114	27.6	414	601.3	138.7	740.0
10	IV	100–110	950	63.9	535	36.1	1,485	2,137.3	487.2	2,624.5
11	IV	110–120	594	63.8	337	36.2	931	1,844.5	363.0	2,207.5
12	IV	120–130	222	56.9	168	43.1	390	741.9	214.8	956.7
13	IV	130–140	526	60.9	337	39.1	863	1,684.7	36.3	1,721.0
14	IV	140–160	166	87.8	23	12.2	189	1,144.3	69.7	1,214.0
Totals			3,317	66.7	1,653	33.3	4,970	9,010.0	1,390.1	10,400.1

Table 4. Block 2 (Mound B) sherd temper totals.

Level	Depth (cmbs)	Grog count	%	Shell count	%	Total count	Grog weight	Shell weight	Total weight
1	0–10	17	94.4	1	5.6	18	28.6	1.0	29.6
2	10–15	9	75	3	25.0	12	27.3	1.4	28.7
3	15–25	15	78.9	4	21.1	19	33.5	9.8	43.3
4	25–35	30	78.9	8	21.1	38	99.6	22.4	122.0
5	35–45	48	82.8	10	17.2	58	113.4	12.3	125.7
6	45–55	20	64.5	11	35.5	31	53.1	16.3	69.4
7	55–65	37	75.5	12	24.5	49	140.6	21.6	162.2
8	65–70	32	100	0	0.0	32	98.6	0.0	98.6
9	70–80	39	95.1	2	4.9	41	124.0	1.0	125.0
10	80–90	37	94.9	2	5.1	39	85.0	7.3	92.3
11	90–100	12	92.3	1	7.7	13	49.4	3.9	53.3
Totals		296	84.6	54	15.4	350	853.1	97.0	950.1

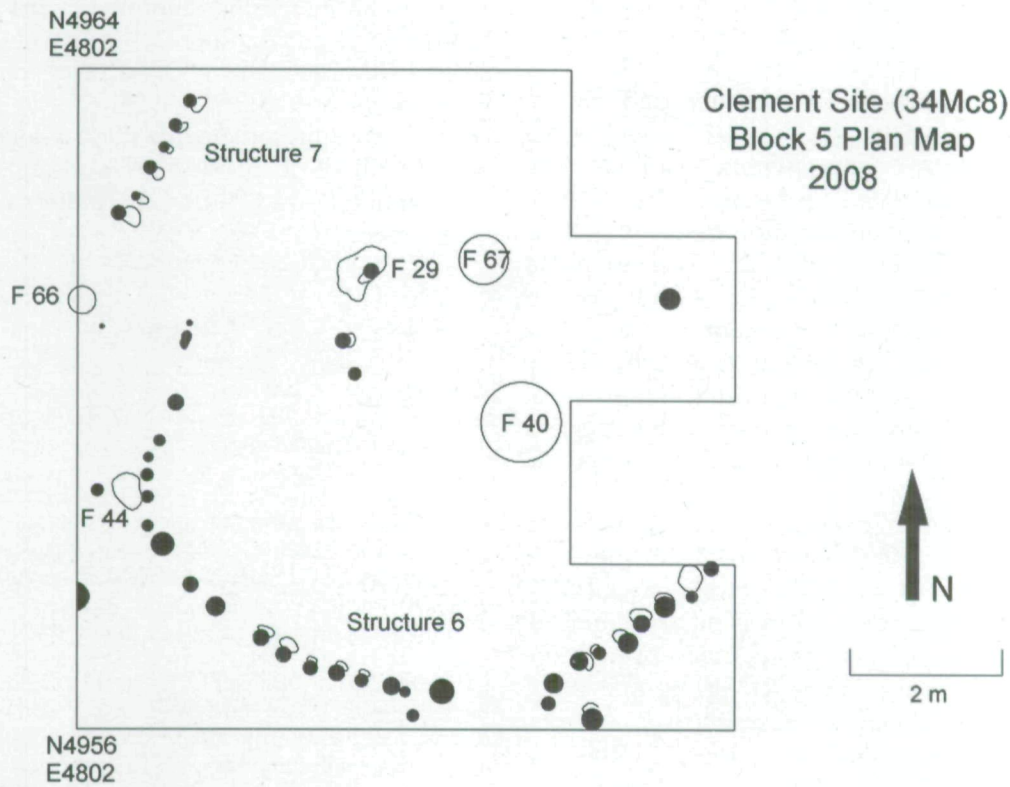

Figure 12. Block 5 plan map.

Table 5. Chronological markers present at Clement.

Middle Caddo Sanders phase (A.D. 1100–1300)	Late Caddo McCurtain phase (A.D. 1300–1650)
Rectangular interior support post	Shaft tomb
Extended entranceway structures	Subrectangular rounded corner structures
Large pyramidal mound	Shell-tempered pottery
Grog-tempered rims with concentric lines below lip of vessel	Red-filmed Avery Engraved pottery
Bottles with tall, tapered necks	Bottles with spool-shaped necks and outflaring lips

Discussion

Geophysical investigation was a major part of our effort at Clement. Our goals were to locate subsurface features for excavation via a combination of gradiometer and augur survey. This fieldwork provides us with an opportunity to contrast these two different methods of subsurface survey, which in this case proved to be complementary to one another. Auger survey has the advantage of requiring little specialized equipment but the disadvantages of causing some (minimal) site disturbance and of having a coarser resolution. It is better suited to finding diffuse middens and artifact scatters and was successful in locating the midden in Block 1 and documenting intact deposits in Mound B. The gradiometer, in contrast, is much higher resolution and causes no site disturbances, but it requires more expensive equipment and can be prone to user error. Because the auger tests conducted at 20-m intervals around Structures 6 and 7 did not reveal any cultural deposits, we did not conduct any close-interval testing. If we simply had relied on auger testing, we would have missed those structures.

Despite our initial problems with the gradiometer, we successfully located Structures 6 and 7 as well as the remnants of the WPA trenches within Mound A. The latter could eventually lead to the reestablishment of the WPA grid and aid in our attempts to decipher their notes. We were unable to find the excavations of Structure 1 and 2, the sandy ridge, or 34Mc10. We can confirm that the occupation at Clement was not dense enough to encompass the whole field around the mounds, but there are still significant numbers of intact structures and associated middens. This suggests that Clement was not simply a vacant ceremonial center.

We will know more about site chronology once the ceramic analysis is completed. However, the 2008 excavations and the radiocarbon dates reported here seem to confirm our early impression that the site likely has multiple components spanning at least the period from A.D. 1200 to 1500. Along the Red River in southeastern Oklahoma and northeastern Texas, the Middle Caddo period is referred to as the Sanders phase (A.D. 1100–1300) and the Late Caddo period is referred to as the McCurtain phase (A.D. 1300–1650) (Bruseth 1998). Elements of each are clearly present at the Clement site (Table 5). However, these phases are of limited usefulness since they span such a considerable amount of time. It is also clear that the people who lived at Clement had some contact with people living further north as evidenced by the presence of Arkansas River valley architectural styles.

Conclusions

Over the long term we think that examining the Glover River mound sites can significantly improve our understanding of Caddo prehistory. The Glover River remains Oklahoma's largest undammed drainage, and almost all of the sites of Clement's size and importance in other parts of eastern Oklahoma have been flooded. There has been a lack of work on Oklahoma Caddo materials over the last few decades, although an increasing amount of work is now being conducted (e.g., Cranford 2007; Dowd 2008; Fauchier 2009; Leith 2006; Rowe 2009). We are hopeful that once we have grappled with the basic systematics of chronology and settlement, these Glover River data will permit us to make more substantial interpretations about Caddo settlement patterns and political organization.

Notes

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[1]The McCurtain phase/focus was defined by Bell and Baerreis (1951) and currently spans some 350 years in duration. It has been justifiably criticized by Story (1990) as a "temporal hodgepodge." However, following Bruseth (1998), we retain the term simply because the data currently do not exist to refine it.

References Cited

Baerreis, David A.

1941a Quarterly Report for December 31, 1941. Manuscript on file, Sam Noble Oklahoma Museum of Natural History, University of Oklahoma.

1941b Quarterly Report for McCurtain County, Period Ending September 30, 1941. Manuscript on file, Sam Noble Oklahoma of Natural History, University of Oklahoma.

Bell, Robert E., and David A. Baerreis

1951 A Survey of Oklahoma Archaeology. *Bulletin of the Texas Archeological and Paleontological Society* 22:7–100.

Bronk Ramsey, Christopher

2009 Bayesian Analysis of Radiocarbon Dates. *Radiocarbon* 51:337–360.

Bruseth, James E.

1998 The Development of Caddoan Polities Along the Middle Red River Valley of Eastern Texas and Oklahoma. In *The Native History of the Caddo: Their Place in Southeastern Archeology and Prehistory*, edited by Timothy K. Perttula and James, E. Bruseth, pp. 47–68. University of Texas at Austin, Texas Archeological Research Laboratory Studies in Archeology 30.

Cranford, David J.

2007 Political Dynamics of Closely Spaced Mississippian Polities in Eastern Oklahoma: The Harlan (34CK6) and Norman (34WG2) Sites. Unpublished master's thesis, Department of Anthropology, University of Oklahoma.

Dowd, Elsbeth

2008 Identifying Variation: A Stylistic Analysis of Four Caddo Pottery Assemblages from Southeastern Oklahoma. Unpublished master's thesis, Department of Anthropology, University of Oklahoma.

Fauchier, Rachel

2009 Contextual Analysis of Burial Practices and Associations from a Shallow Fourche Maline Site: Akers, 34LF32. Unpublished master's thesis, Department of Anthropology, University of Oklahoma.

Kay, Marvin, and George Sabo III.

2006 Mortuary Ritual and Winter Solstice Imagery of the Harlan-Style Charnel House. *Southeastern Archaeology* 25: 29–47.

Leith, Luther J.

2006 The McCutchan-McLaughlin Site: A Stratigraphic Study of Material Culture Change and Possible Adoption of Horticulture. Unpublished master's thesis, Department of Anthropology, University of Oklahoma.

Moody, C. Adam

2009 Faunal Analysis of 34MC8 Focus on Historic Choctaw Component and Interesting Discoveries. Report on file at the Oklahoma Archeological Survey, University of Oklahoma.

Perttula, Timothy K.

1992 *The Caddo Nation: Archaeological and Ethnohistoric Perspectives*. University of Texas Press, Austin.

2009 Extended Entranceway Structures in the Caddo Archaeological Area. *Southeastern Archaeology* 28:27–42.

Prewitt, Terry J.

n.d. The Clement Site (Mc8, Mc9, Mc10), McCurtain County, Oklahoma. Unpublished manuscript on file, Sam Noble Oklahoma Museum of Natural History, University of Oklahoma.

Rowe, Simone Bachmai

2009 The Akers Site (34LF32): Preliminary Bioarchaeology of a Fourche Maline Site. Unpublished master's thesis, Department of Anthropology, University of Oklahoma.

Story, Dee Ann

1990 Cultural History of the Native Americans. In *The Archeology and Bioarcheology of the Gulf Coastal Plain*, vol. 1, edited by Dee Ann Story, Janice A. Guy, Barbara A. Burnett, Martha Doty Freeman, Jerome C. Rose, D. Gentry Steele, Ben W. Olive, and Karl J. Reinhard, pp. 163–366. Research Series 38. Arkansas Archeological Survey, Fayetteville.

Trubitt, Mary Beth

2009 Burning and Burying Buildings: Exploring Variation in Caddo Architecture in Southwest Arkansas. *Southeastern Archaeology* 28:233–247.

Valastro, S., Jr., E. Mott Davis, and Alejandra G. Valera

1972 University of Texas at Austin Radiocarbon Dates IX. *Radiocarbon* 14:461–485.

Wyckoff, Don G.

1967 Archaeological Sequence in the Broken Bow Reservoir Area, McCurtain County, Oklahoma. Stovall Museum of Natural History, Oklahoma River Basin Survey Project, University of Oklahoma Research Institute.

1969 Oklahoma. In *An Archeological and Historical Assessment of the Red River Basin*, edited by Hester A. Davis, pp. 69–134. Arkansas Archeological Survey, Fayetteville.

Wyckoff, Don G., and Linda Ragland Fisher

1985 Preliminary Testing and Evaluation of the Grobin Davis Archeological Site, 34Mc253, McCurtain County, Oklahoma. Archeological Resource Survey Report 22. Oklahoma Archeological Survey, Norman.