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5

Graves Lake

A Late Mississippian–Period Village in Lauderdale County, Tennessee

Robert C. Mainfort, Jr., and Michael C. Moore

GRAVES LAKE (40LA92) is located within Lower Hatchie National Wildlife Refuge, approximately 5 kilometers north of the mouth of the Hatchie River in Lauderdale County, Tennessee (Figure 5-1). The site occupies a low, mesa-like erosional remnant that rises approximately 10 meters above the surrounding bottomland at the southern terminus of the First Chickasaw Bluff system (Figure 5-2). Like much of the loess-bluff system in western Tennessee, the local soil association is Memphis silt loam, which is well suited to row-crop agriculture (Monteith 1990), and the site area has been under cultivation for more than fifty years. King Pond (known locally as Graves Lake), a seasonally flooded marsh that probably represents an abandoned meander scar of the Hatchie River, is located immediately east of the site; the Mississippi River flows about 400 meters to the west. Other notable late prehistoric sites in the vicinity of Graves Lake include Hatchie (40TP1), a moundless Late Mississippian–period community on the south bank of the Hatchie River (Mainfort 1991; Smith 1990) (Figure 5-1); site 40LA95, a large substructural platform mound in the Hatchie River floodplain several kilometers to the east (Mainfort 1991); and site 40LA83, apparently a small mound or mound complex that may have been visited by Clarence B. Moore (1916:493) earlier in the century (Figure 5-2).

Investigations at Graves Lake were prompted by the actions of a maintenance worker who mistakenly made several passes with a road grader along the eastern edge of the site in 1990. The refuge manager and one of us (RCM) subsequently prepared a plan that addressed not only the immediate problem of how to mitigate the damage already done to the site but also the long-term problem of how best to protect and manage the archaeological resource. Fieldwork was conducted by the Tennessee Division of Archaeology (TDOA) late in 1990 and was based on preservation, not specifically on collection of archaeological materials. However, the results represent an important contribution to our understanding of the Late Mississippian–period (post–A.D. 1400) archaeological record in the central Mississippi River valley.

Much of what is known about that period is derived from fieldwork conducted in southeastern Missouri (e.g., Chapman and Anderson 1955; O'Brien 1994a; Price and Price 1990; Williams 1954) and northeastern Arkansas (e.g., D. F. Morse 1989, 1990; P. A. Morse 1981, 1990; Morse and Morse 1983). Although sites in western Tennessee often are mentioned in overviews of the Late Mississippian period (e.g., Williams 1980), the references have lacked specificity. The Graves Lake archaeological record presents an opportunity to address specific questions regarding the use of the east side of the Mississippi River by Late Mississippian groups.

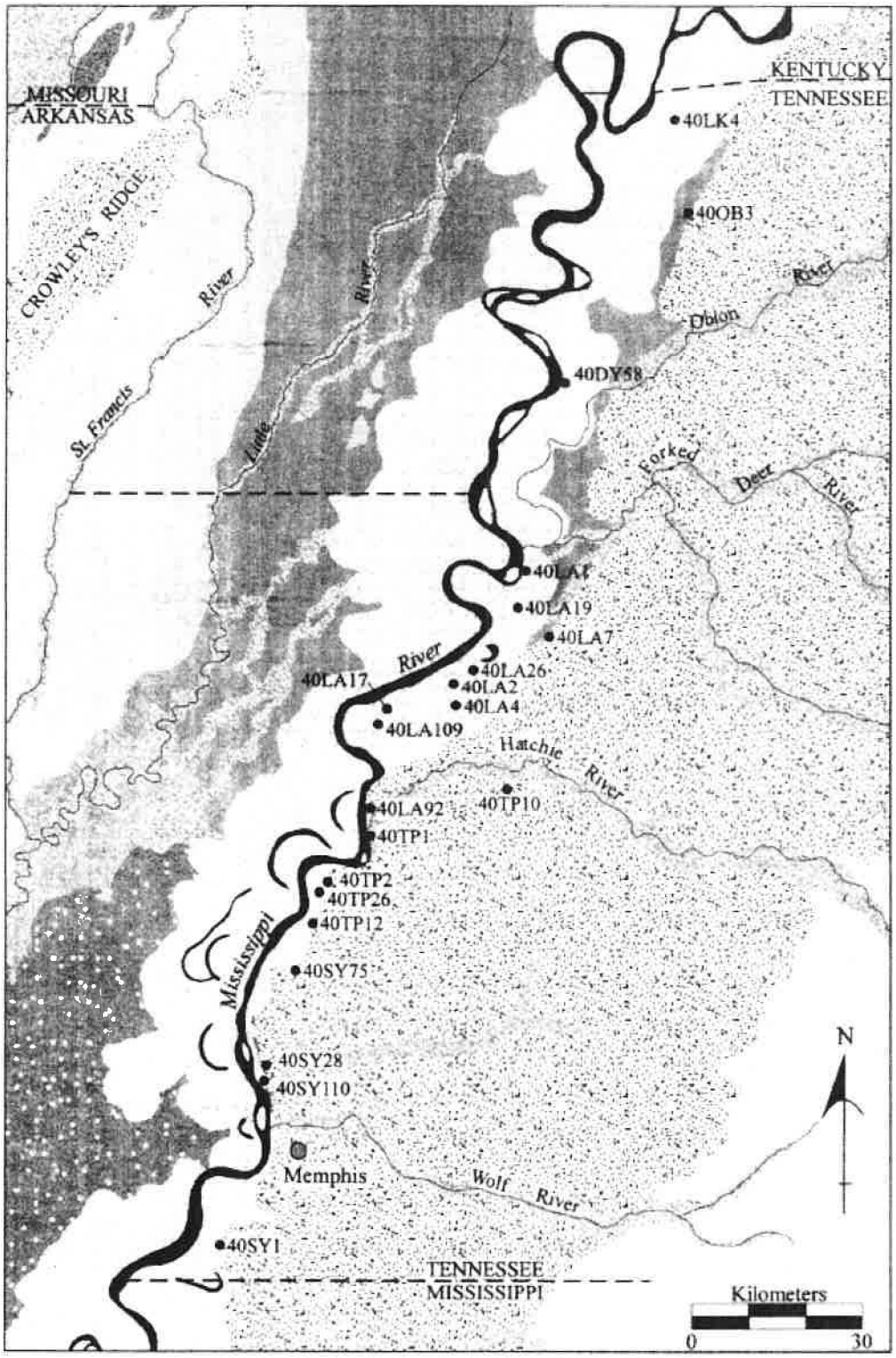

Figure 5-1. Map of western Tennessee and environs showing locations of sites mentioned in the text.

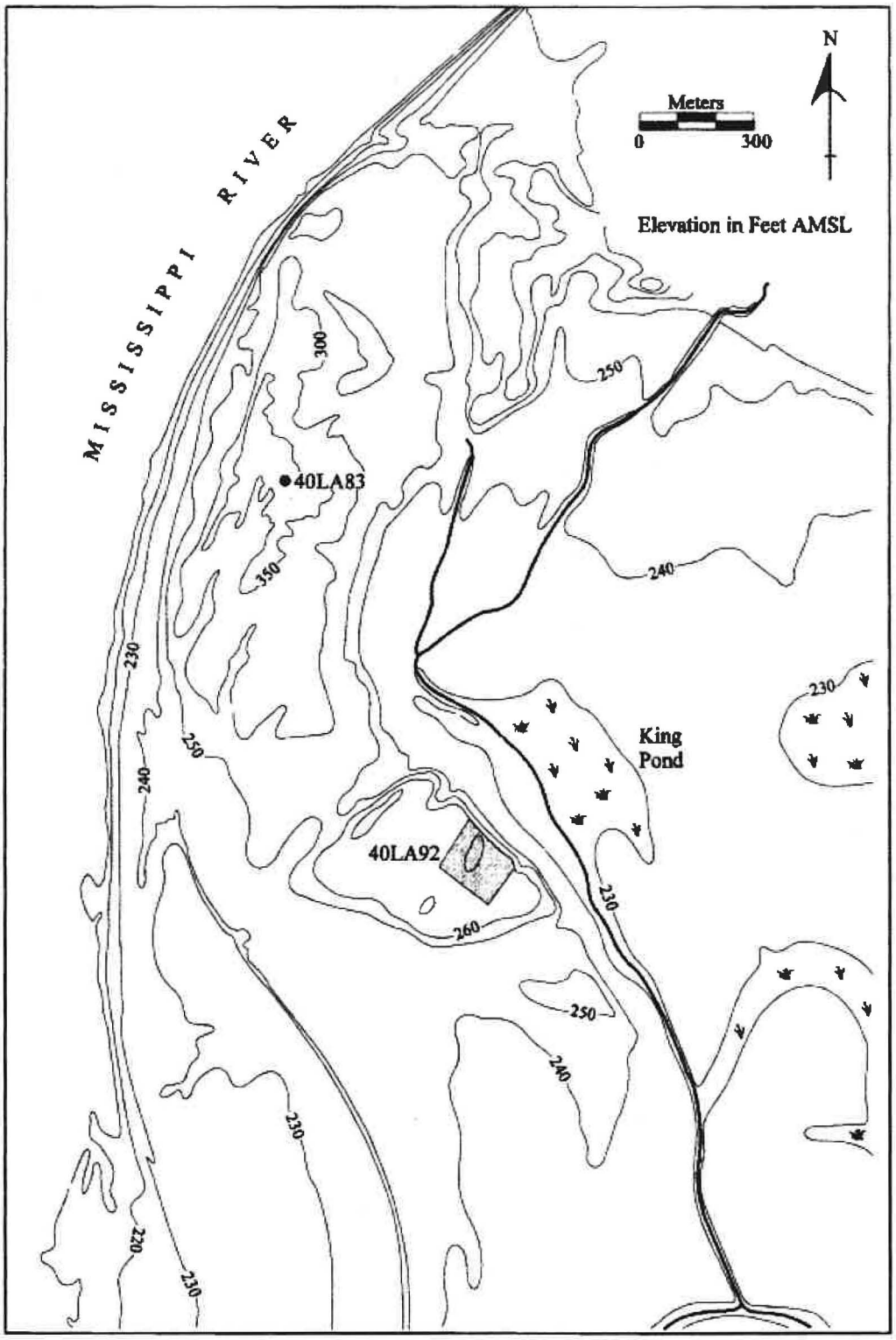

Figure 5-2. Topographic setting of Graves Lake (40LA92) and site 40LA83, Lauderdale County, Tennessee.

Fieldwork

The first objective of our work at Graves Lake was to examine the northeastern slope of the site.

Severe natural erosion in that area apparently had been exacerbated by the former landowner, who reportedly had made several bulldozer cuts near the bluff crest, exposing human skeletal remains in the process. That area had been cursorily examined by TDOA several years earlier. Our initial investigation consisted of a general surface collection made across the entire northeastern slope, up to and including a bulldozed field road at the bluff crest. Areas that exhibited minor concentrations of daub and other cultural materials were shovel skimmed, but no evidence of intact subsurface cultural deposits was found at those localities.

Moderate rainfall exposed additional cultural material on the slope of the elevated area, particularly along the uppermost portion, and one major daub concentration was recorded. Because the area would require disking and/or plowing prior to the planting of grass seed, limited excavations were conducted within the daub concentration to assess possible impacts from plowing. An irregularly shaped area measuring approximately 9 × 2 meters, eventually designated House 3 (Figure 5-3), was exposed, revealing a number of posts and several pits beneath a 10- to 25-centimeter-thick layer of daub (discussed below).

Controlled Surface Collection

A major objective of the project was to determine approximate site boundaries, both for National Register of Historic Places purposes and for management of the site area by the U.S. Fish and Wildlife Service. Staff from TDOA addressed this objective in part by conducting a controlled surface collection of the site. Approximately one month prior to the beginning of fieldwork in 1990, vegetation covering the site and adjacent areas was cut with a brush-hog. Ground cover was relatively short at the time of cutting, which made it impossible to bale the cut materials; this limited surface visibility in several units during surface collection. Approximately 20 percent of the top of the erosional remnant, including all of the presumed site area, was disked to a depth of roughly 15 to 20 centimeters. Although deeper disking or plowing might have produced larger artifact collections, we wanted to minimize damage to the site.

A grid consisting of 182 10-meter-square units was established over most of the disked area (Figure 5-3). Collection-unit size was based on several factors, with the greatest weight given to practical considerations. First, since the principal objective of the controlled surface collection was to provide a reasonable estimate of site boundaries for land-management purposes, a smaller unit size was deemed unnecessary. Second, establishing a 10 × 10-meter grid was considerably less labor intensive than establishing, say, a 5 × 5-meter grid; our limited budget and reliance on volunteers ruled out use of a smaller grid interval. Third, although it is difficult to demonstrate that a specific unit size is optimal for distributional studies of surface-collected artifacts (but see Jermann 1981), it has been shown (e.g., Odell and Cowan 1987) that distributional studies of surface collections based on small grid intervals produce spurious aggregations of artifacts (but see Lewarch and O'Brien 1981).

The grid system was deliberately aligned along a low ridge intuitively believed to align with the main axis of the site (23°3720 east of magnetic north). After approximately 5 centimeters of rain had fallen on the site, a surface collection of all grid units was conducted by a crew of TDOA staff members and three volunteers from the Department of Anthropology, University of Memphis.

After initial experimentation, collection time was limited to five minutes per unit. In every instance, this procedure allowed crew members to collect virtually all surface material in each unit. Although artifact recovery in low-density units probably was somewhat inflated and recovery in high-density units probably slightly decreased, such potential sampling biases were not of great relevance to our main objective. All visible artifacts, with the exception of daub, were collected. Apparent concentrations of daub, some appearing to represent individual houses, were flagged during surface collection for further investigation. Subsequent rainfall revealed the distribution of daub to be much more continuous than we originally suspected, suggesting that the "concentrations" observed during the surface collection were a product of collecting conditions on particular days. Interestingly, subsequent rainfall exposed very little additional cultural material, with the exception of daub.

Test Excavations

Limited subsurface testing was conducted at several localities, with emphasis on (1) determining the nature and extent of archaeological materials and (2) assessing damage caused by road grading and subsequent erosion. The road-grader cut extended along the entire northeastern side of the site and continued across the erosional remnant (Figure 5-3). The width of the impact area averaged approximately 9 meters, and the depth of disturbance was 15 to 30 centimeters. Fortunately, the grader blade had not been set to cut a level surface, so the greatest damage occurred along the outer margins of the impact area; deposits near the center received only minor damage.

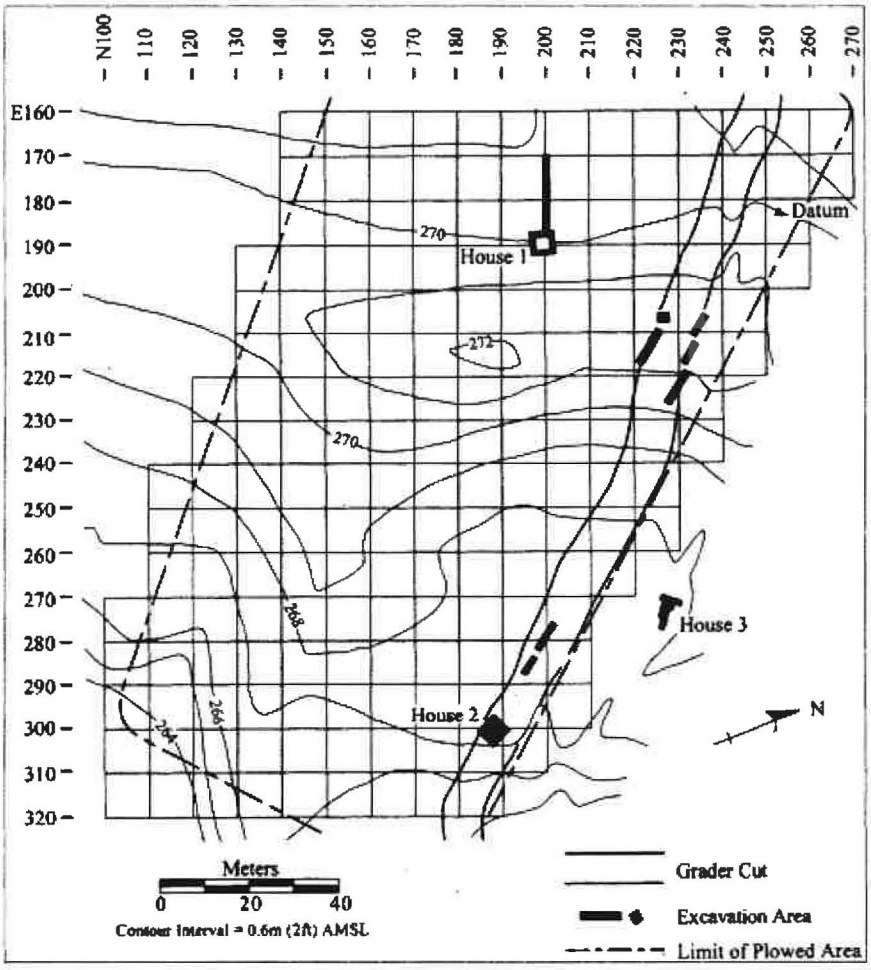

Figure 5-3. Topographic map of Graves Lake showing grid lines and tested localities.

Test excavations were undertaken at seven localities within and adjacent to the road-grader cut, as well as within the House 3 area near (and probably within) the field road cut by the former landowner (Figure 5-3). A complete assessment of damage was beyond the scope of the Archaeological Resources Protection Act (ARPA) permit under which we were working, and we focused attention on localities recorded as possible features. Depths of undisturbed cultural deposits ranged from virtually zero in unit N230/E210 and vicinity to more than 60 centimeters below surface in unit N200/E230. Deposits in the latter area included a substantial amount of midden that apparently was redeposited prehistorically by erosion. It quickly became evident that a considerable number of human burials were present within the area. Rather than cause additional disturbance to human remains, testing within the impact area was suspended, with the exception of work conducted in the area of House 2 (Figure 5-3).

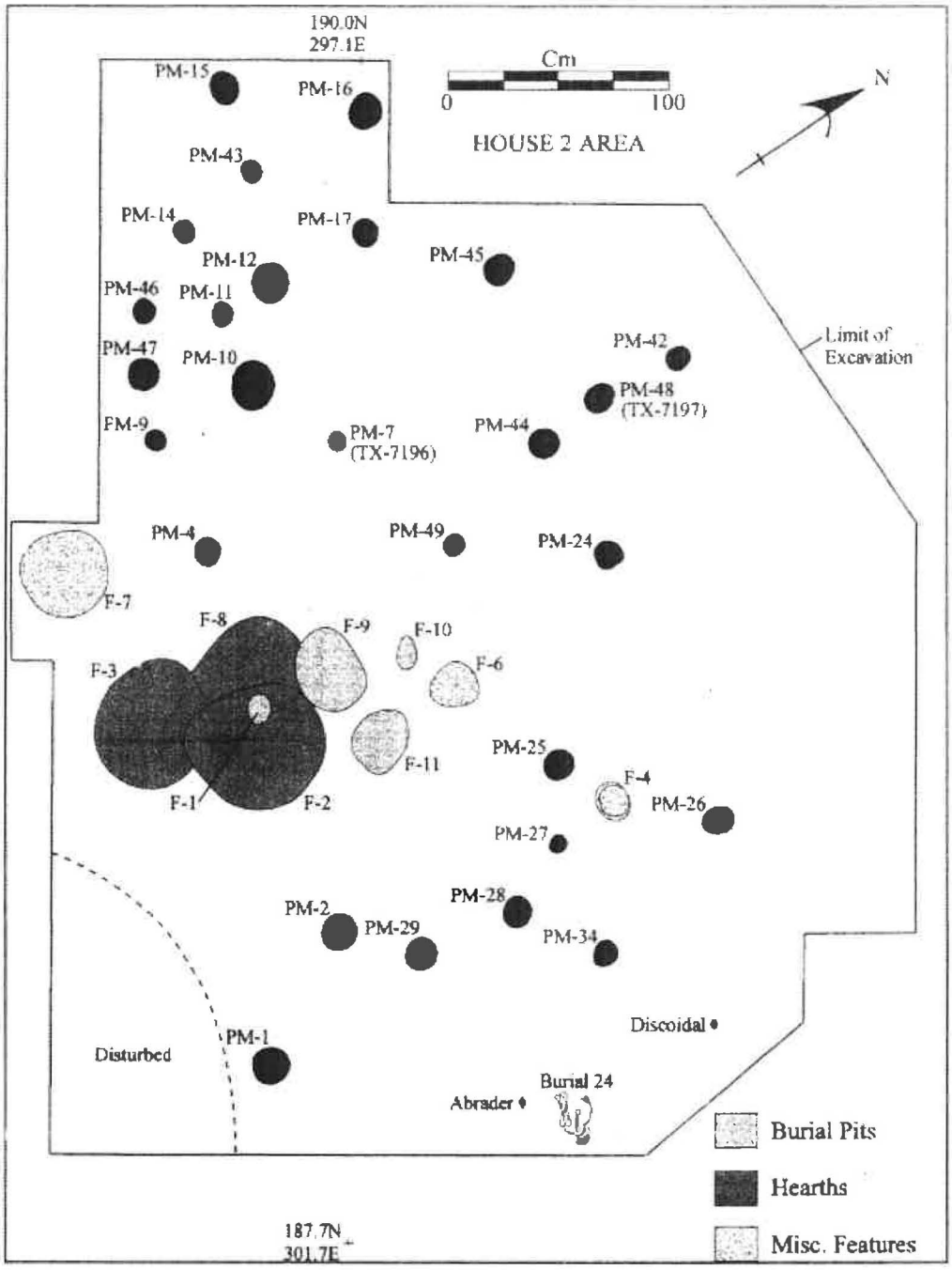

Figure 5-4. House 2 area at Graves Lake showing locations of burial pits, hearths, miscellaneous features, and post molds (labeled *PM*).

HOUSE 2

A heavy concentration of daub interpreted as a prehistoric house was exposed in the road-grader cut near the northeastern edge of the site. That locality, designated House 2, was partially excavated, disclosing the remains of a house that apparently had been rebuilt three times (Figure 5-4). Excavation revealed ten pits and twenty-seven post molds within an area measuring approximately 5 × 4 meters. Although possible alignments were evident among several groups of post molds, no walls could be identified with confidence, and no indications of wall trenches were observed. In addition to the interpretive difficulties posed by three inferred rebuilding episodes, precise definition

of the structure was also hampered by incomplete excavation and by disturbance from both the road grader and erosion, particularly in the southwestern portion of the house.

Three shallow, superimposed hearths (features 2, 3, and 8) were located in the southwestern quadrant of the excavation area. These ash-filled basins were 52 to 60 centimeters in diameter and 6 to 16 centimeters deep. Feature 8 represented the earliest hearth, followed in time by Feature 3 and then by Feature 2 (Figure 5-4). A portion of Feature 8 was preserved under Feature 2 at the same depth as the base of Feature 3. Intruding into Feature 2 was a small pit covered with a portion of a Barton Incised, *var. Kent* (Phillips 1970:46) jar, under which were found the remains of an infant (Feature 1). Feature 10, located about 40 centimeters east of Feature 8, was virtually identical to Feature 1 and also contained part of a Barton Incised, *var. Kent*, jar. Two somewhat larger pits (features 9 and 11) also contained infant remains; a small untempered plain-surface vessel was associated with the latter feature. Upon identification of human skeletal remains, excavation of the features ceased, in accordance with provisions of the ARPA permit. The functions of the remaining features (4, 6, and 7) are unknown, as there were few associated artifacts.

The disarticulated remains of an adult (Burial 24) were partially exposed in the southeastern quadrant of the excavation area. Nearby was a sandstone abrader, but previous disturbance rendered its association with the burial uncertain. A fragment of a large hematite discoidal was located near the southeastern edge of the excavated area at approximately the same elevation as the presumed structure floor. A Bell Plain (Phillips et al. 1951:122–26) bowl and several concentrations of pottery sherds were found in the daub rubble overlying the floor.

HOUSE 3

House 3 was recorded initially as a daub concentration near the top of the northeastern slope of the erosional remnant, north of House 2 (Figure 5-3). The former landowner reportedly had bulldozed the area. The excavation area measured approximately 9 meters southeast-northwest by 2 meters northeast-southwest, with a total excavated area of 20 square meters. Beneath a 10- to 25-centimeter layer of daub thirteen post molds, three storage or refuse pits, and four human burials were exposed (Figure 5-5). Discovery of the burials (25, 26, 27, and 28) caused excavation to be suspended in the large northwestern portion of the tested area and limited the overall extent of investigations in the locality.

Limited excavations in the House 3 area did not permit a definitive assessment of the house-related features and posts encountered. Nine post molds were located in a linear arrangement and presumably represented a section of a house wall. As in the case of House 2, we found no evidence of wall trenches. Several of the more isolated posts, notably post molds 21 and 22 (Figure 5-5), might have been part of a second structure. A probable hearth, Feature 1, was represented by a shallow basin with a fired base; no artifacts were recovered from the fill. A smaller basin (Feature 2) also lacked artifacts. Feature 3 appeared to be a small pit, 18 centimeters deep. Evidence of an apparent floor was observed throughout most, but not all, of the excavated area near the posts and features. Part of a large, heavily worn metate was recovered from the presumed floor adjacent to Feature 3, and a section of a gadrooned bottle was found in the rubble immediately above the floor.

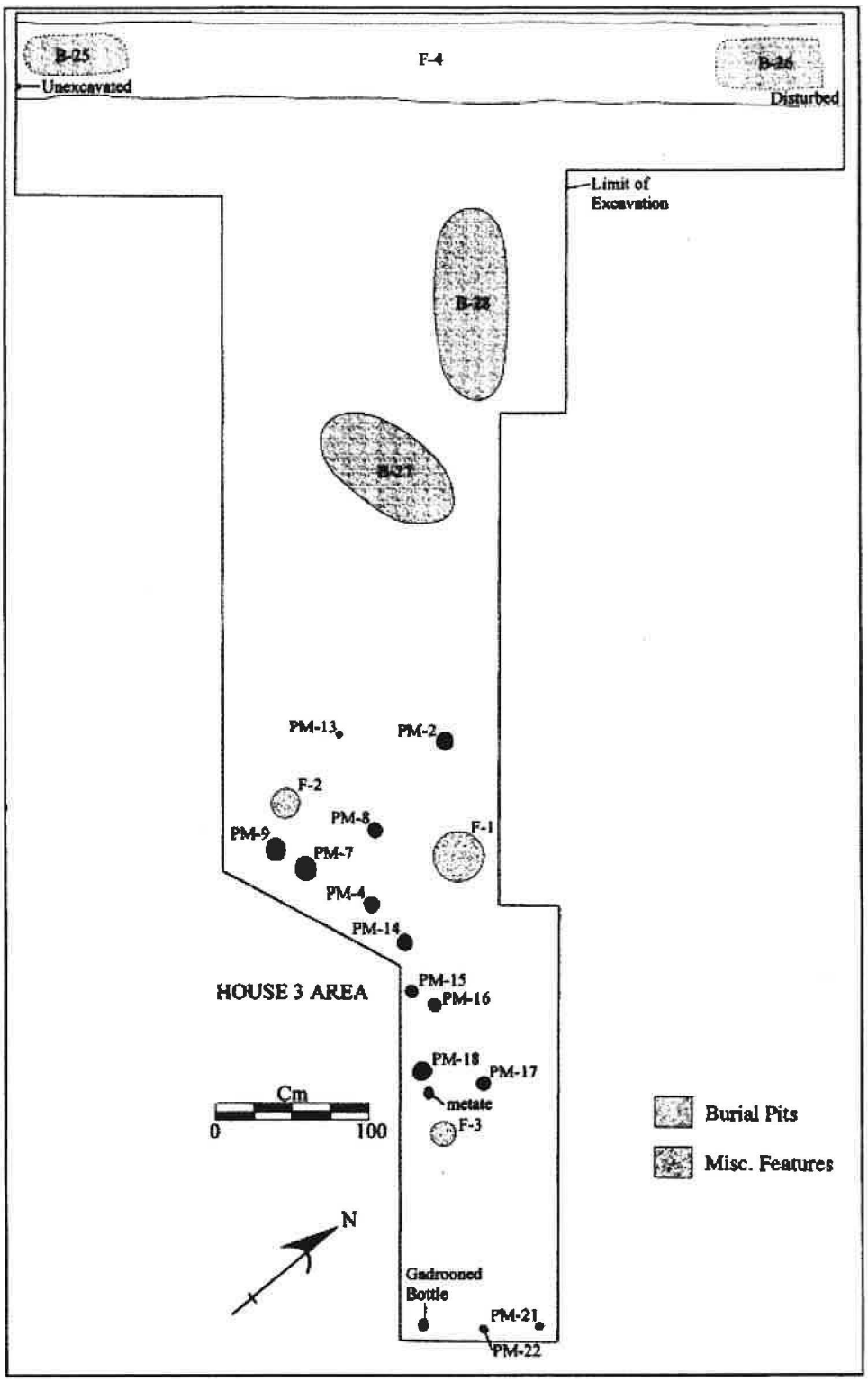

Figure 5-5. House 3 area at Graves Lake showing locations of burial pits, miscellaneous features, post molds (labeled *PM*), and several artifacts.

ADDITIONAL TEST EXCAVATIONS

A series of contiguous 50-centimeter-wide trenches was cut along the N200 grid line between points E171 and E195 to determine whether a palisade marking the edge of the village was present. No indications of a palisade were encountered, but the tests revealed the relatively undisturbed

remains of a Mississippian-period house at a depth of approximately 30 centimeters below surface between units E187 and E193.5. Test excavations were expanded to confirm identification of the house (designated House 1) and to define its limits (Figure 5-3), but no attempt was made to expose the structure floor or associated features. Charcoal samples were recovered from several probable posts that extended into the daub rubble above the floor.

To the west of House 1, we observed a marked falloff in the density of cultural material, and no additional cultural features were located. The plow zone appeared to extend to an average depth of 25 centimeters below surface within the trenches, though several possible plow scars were observed as deep as 30 centimeters. A series of small shovel tests (30 × 30 centimeters) was placed at 20-meter intervals along the N200 and E200 grid lines to determine the depth of cultural deposits across the site and to aid in site-boundary definition. The shovel tests were excavated to subsoil, and profiles were recorded for each test unit. Intact midden was observed at points N170/E200, N210/E200, N200/E190, N200/E210, and N200/E290 (Figure 5-3); no indications of midden were noted at points N250/E200, N200/E250, or N200/E270. The remaining test units yielded ambiguous results. Two small test units were placed in a low rise located southwest of the site that resembled a mound remnant (Figure 5-2), though excavation suggested it was a natural feature.

Pottery

We recovered 2278 prehistoric sherds during the 1990 fieldwork at Graves Lake.[1] Other sherds were collected during initial visits to the site in 1987. Virtually all the material included in the earlier collection was obtained from eroded localities along the northeastern slope; that area was not included in the 1990 work in order to avoid causing additional erosional damage. The notable differences between the two collections (Table 5-1)—for example, the higher frequency in the 1990 collection of sherds of the type Bell Plain and of sherds of several decorated types—might be partly attributable to the reported occurrence of numerous graves in the 1987 collection area. Radiocarbon determinations presented below suggest that use of the 1987 collection area might postdate major use of other portions of the site.

Table 5-1. Frequencies of Shell-Tempered Sherds from Graves Lake and Richardson's Landing

Ceramic Type	Graves Lake (1987)	Graves Lake (1990)[a]	Richardson's Landing
Mississippi Plain	185	1329	492
Bell Plain	222	776	514
Parkin Punctated, *var. Parkin*	9	40	8
Parkin Punctated, *var. Castile*	1	0	0
Parkin Punctated, *var. unspecified*	0	1	0
Barton Incised, *var. Barton*	3	10	2
Barton Incised, *var. Kent*	1	10	0
Barton/Kent Incised	13	3	0
Ranch Incised	11	19	1
Old Town Red	8	38	23
Nodena Red-and-White	2	2	1
Hollywood White Filmed	0	8	0
Unidentified decorated	7	39	22
Rhodes Incised	2	1	1
Walls Engraved	0	1	3
Vernon Paul Appliquéd	3	0	0
Campbell Appliquéd	3	0	0
Kent Incised and Ranch Incised	1	0	0
Pouncey Ridge Pinched	0	1	0
Total	471	2278	1067

[a]The 1990s totals include only sherds recovered during the controlled surface collection at Graves Lake.

All but a fraction of the sherds are representative of the Late Mississippian–period occupation of the site; the remainder date to the Tchula (Early Woodland) and Baytown (Middle Woodland–Late Woodland) periods. The type-varieties used here, with few exceptions, are based on descriptions presented in Phillips (1970). In some instances, notably in the case of Ranch Incised, the terminology of Phillips et al. (1951) has been retained. Variety names are not used in describing shell-tempered plainwares because no truly distinctive variety definitions have been formulated for the study area. Most of the Mississippi Plain (Griffin 1949; Griffin, in Walker and Adams 1946:91) sherds from Graves Lake could be subsumed under the description of *var. Chucalissa* (Lumb and McNutt 1988). Several researchers have experienced difficulties in consistently sorting Bell Plain, *vars. Bell* and *Nickel*, as described by Lumb and McNutt (1988). Because the inclusion of crushed potsherds in Bell Plain paste has no apparent temporal significance at Chucalissa (cf. Lumb and McNutt 1988), all sherds containing finely crushed shell were classified as Bell Plain without varietal distinctions.

The combined 1987 and 1990 assemblage from Graves Lake ($n = 2749$) contains 1514 sherds of Mississippi Plain (55 percent) (Table 5-1). Virtually all identifiable rimsherds represent bowls or jars; most are too small to permit conclusive identification of vessel form. Many lips exhibit interior

beveling (see below). The combined assemblage also produced 998 Bell Plain sherds (36 percent). Exteriors of these sherds are generally, but not always, smoothed or burnished. Bowls and/or jars are the dominant vessel forms, though several bottles are represented. Appliqué strips of various styles, below and parallel to the vessel lip, are relatively common, as is interior lip beveling.

As is typical at Late Mississippian–period sites in the central Mississippi Valley, Parkin Punctated (Phillips et al. 1951:110–14) is the most common decorated ceramic type in the Graves Lake assemblage (n = 51). With only two exceptions, all sherds are classified as Parkin Punctated, *var. Parkin* (Phillips 1970:151). One exception is a sherd of Parkin Punctated, *var. Castile* (Phillips 1970:151); the second exception is not easily accommodated under current type-variety nomenclature. Among Barton Incised sherds, thirteen examples are of Barton Incised, *var. Barton*, and eleven are of Barton Incised, *var. Kent*; many specimens cannot be identified to variety because of their small sizes.

Although Phillips (1970) reduced Ranch Incised to variety status, other researchers (e.g., Lumb and McNutt 1988) believe that the original type designation has greater utility. Because in contrast to types such as Parkin Punctated and Barton Incised, the Ranch motif has no pre-Mississippian precedents, we believe the original type status is justified. Decoration consists of wet-paste-incised "fish-scale" curvilinear designs, almost exclusively on a Mississippi Plain paste. The relative frequency of this type in the Graves Lake assemblage is noteworthy (n = 30). Among painted ceramics are forty-six sherds of Old Town Red (Phillips et al. 1951:129–32) and four Nodena Red-and-White (Phillips et al. 1951:133–34) specimens; some white-filmed sherds classified here as Hollywood White Filmed (Phillips et al. 1951:134) probably came from red-and-white vessels.

Minority shell-tempered types include Vernon Paul Appliqué (Phillips et al. 1951:120) (n = 3), Campbell Appliqué (Chapman and Anderson 1955:42–44) (n = 3), Rhodes Incised (Phillips et al. 1951:127) (n = 3), and single examples of Pouncey Ridge Pinched (Phillips 1970:154–55) and Walls Engraved (Phillips et al. 1951:127–29). The presence of sherds of the former two appliquéd types is particularly significant, as those types are characteristic of post–A.D. 1540 assemblages in southeastern Missouri and the Reelfoot Lake area of western Tennessee (e.g., Chapman and Anderson 1955; Holland 1991; Lawrence and Mainfort 1995; O'Brien 1994a). All six appliquéd sherds were collected in 1987, probably from the extreme northeastern margin of the site. Their provenience is important in light of two post–de Soto–period radiocarbon determinations from this general area (see below).

A number of whole or partially restorable vessels were recovered (Figure 5-6), among the more distinctive examples of which are two Mississippi Plain helmet-shaped bowls. The larger of these, which was damaged by the road grader, is 18 centimeters in diameter and 7 centimeters high. The rim is flared, with a notched, appliquéd strip below the everted lip. The smaller, complete, example exhibits four equally spaced appliquéd handles. Helmet-shaped bowls are considered to be excellent late-period markers (Curren 1984; Williams 1980).

A pair of Bell Plain bird-effigy vessels, differing only in size, was associated with Burial 25 in the House 3 area. The heads exhibit small, flattened, semi-pointed beaks and coffee-bean-shaped eyes encircled by incised lines that continue down the necks; holes were placed in the back and in the middle of the necks. Broad lines were incised on the upper surfaces of the flattened tails; two holes were pierced through the tails near the midpoints. Also recovered from the House 3 area were a small Barton Incised, *var. Kent*, jar that exhibits a herringbone motif and Parkin Punctated handles; a basal fragment of a Bell Plain gadrooned bottle; a heavily decorated Barton Incised, *var. unspecified* (cf. *Arcola* [Phillips 1970:45]) jar; and a Bell Plain bottle with a slightly flaring neck. A privately owned Rhodes Incised "cat-serpent" vessel from the site (D. F. Morse and L. White, pers. comm., 1991), is illustrated by Hathcock (1988; the provenience is given as "Gray's Lake site").

A relatively small number of pre-Mississippian sherds was recovered during the controlled surface collection. These consisted of ten sherds of Baytown Plain, *var. Tishomingo* (Mainfort 1994); two of Baytown Plain, *var. Forked Deer* (Mainfort 1994); twenty-one of Baytown Plain, *var. unspecified* (Phillips et al. 1951:76–82); five of Mulberry Creek Cordmarked, *var. unspecified* (Haag 1939; Phillips et al. 1951:82–87); and single specimens of Cormorant Cord-Impressed (Phillips et al. 1951:73), Baldwin Plain, and Furrs Cordmarked (Cotter and Corbett 1951). Most of the sherds

probably represent one or more Middle Woodland components at the site; the Baytown Plain, *var. Forked Deer*, and Cormorant Cord-Impressed specimens indicate a minor Tchula occupation. Also of probable Tchula-period or earlier origin are seven baked-clay-object fragments.

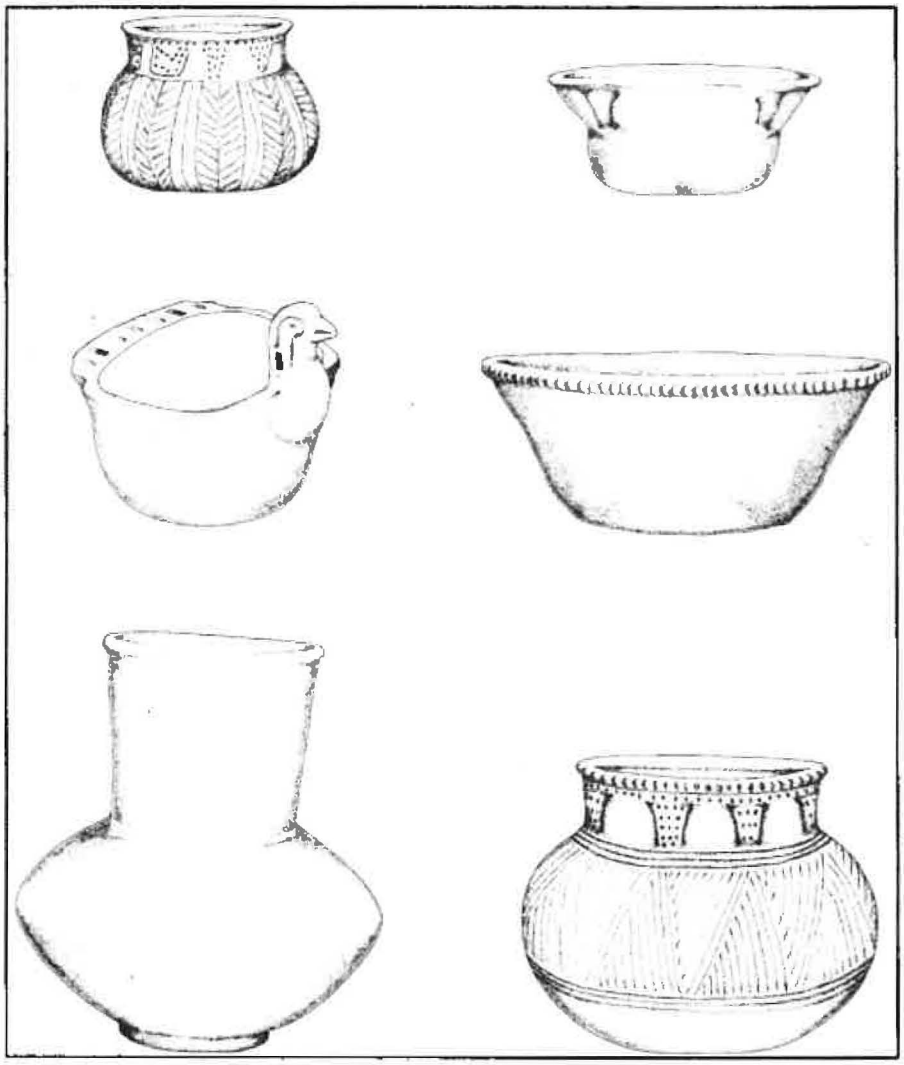

Figure 5-6. Ceramic vessels from Graves Lake: *top*, Barton Incised, *var. Kent*, jar (*left*) and helmet-shaped bowl (*right*); *middle*, Bell Plain bowls; *bottom*, Bell Plain bottle (*left*) and Barton Incised, *var. unspecified*, jar (*right*). Barton Incised jar is roughly one-eighth actual size; all others are roughly one-quarter actual size.

Lithic Material

A total of 8028 lithic artifacts—including chipped and ground tools, knapping debris, and unmodified cobbles—was recovered during the 1990 investigations. Frequency data are presented below; more detailed descriptions of artifact classes can be found in Mainfort (1992). Roughly one-third of the lithic sample consists of unmodified cobbles of chert, quartzite, sandstone, limestone, and limonite, more than two-thirds of which appear to have been thermally altered. Projectile points are all subtriangular to triangular types such as Madison (n = 9), Nodena (n = 8), and Sand Mountain (n = 1) (Cambron and Hulse 1983; Justice 1987). These types are typically associated with late prehistoric occupations, and their presence is consistent with the ceramic

assemblage from the site. Several triangular arrow points classified here as Madison exhibit an overall length that is greater than that normally associated with specimens of that type. They are quite similar to points recovered from Otto Sharpe (40LK4), a seventeenth-century site that has also yielded a number of snub-nosed end scrapers and sherds with distinctive vertical applique strips (Lawrence and Mainfort 1995; O'Brien et al. 1995). Future research should address whether those elongated triangular points are better treated as a variety of Madison or whether they represent a separate form diagnostic of late-period occupations.

Among the scraping tools from Graves Lake is a single snub-nosed end-scraper fragment, a tool form that is characteristic of protohistoric sites in the central Mississippi Valley (Brain 1988; Mainfort 1991; Price and Price 1990; Williams 1980). The assemblage also includes several crude end and side scrapers, a moderate number of unifacially retouched flakes, spokeshaves, and a graver. Several forms of drills ($n = 6$), including examples with expanded and round to parallel bases, also were collected. Ground specimens from the surface collection include two discoidals, three celt/hoe fragments, and five hoe-rejuvenation flakes. Numerous hammerstones and a pitted "nutting" stone also were recovered.

Lithic-Resource Identification

More than 99 percent of the flaked artifacts were made from local cherts obtained from gravel deposits along the nearby Mississippi River (see Stallings 1989). This material generally is fine grained, opaque, and nonlustrous. Off-white, tan, and dull yellow are the most common colors of chert, with shades of gray, red, blue, and black also represented. Small quantities of Mill Creek and Dover chert are present in the surface collection, which is not an unexpected occurrence at late prehistoric sites. Mill Creek chert was extensively used during the Mississippian period for the production of agricultural implements (Bareis and Porter 1984; Cobb 1989; Dunnell et al. 1994; Morse and Morse 1983). This material comes from southern Illinois, approximately 200 kilometers north of Graves Lake, where it occurs as nodules and flat boulders, both of which are excellent forms for the manufacture of large tools (Brown et al. 1990).

Dover chert has traditionally been viewed as coming from Stewart County, Tennessee, roughly 175 kilometers northeast of the project area (Marcher 1962), but recent research has identified outcrops in Houston, Humphreys, and Dickson counties, Tennessee (K. Smith, pers. comm., 1991). Dover chert circulated widely during the Mississippian period and was often used for producing large hoes and celts as well as exotic implements such as some of those in the Duck River cache from Tennessee (Bass 1984; Winters 1981).

Ground and pecked artifacts were primarily made from local sandstone and limestone. All celt/hoe fragments were made of an unidentified chert that may have originated near the site.

Human Burials

Twenty-four human burials were recorded during test excavations within the grader cut (four individuals were associated with House 2), and four additional burials were located in the House 3 area. As noted previously, information on human remains is limited, because, when they were encountered, skeletal material was uncovered only to the extent necessary to identify the remains as human, to determine the extent of disturbance, and, if possible, to determine skeletal orientation. Nine skeletons of adults were extended (supine), one was apparently bundled, and one may have been disarticulated; eight individuals were represented by only one or a few bones. Remains of five subadults were extended, and three were bundled or disarticulated; the remains of one individual were too fragmentary to determine burial position.

Artifact-Density Distributions

We used the Transform computer program (Spyglass 1991) to create a series of

surface-artifact-density maps (Figures 5-7 through 5-9). Shell-tempered ceramics were heavily concentrated along the low ridge defined by the 271-foot contour line (Figures 5-3 and 5-7); the distribution of primary flakes (Figure 5-8) and chert cobbles (Figure 5-9) more or less mirrored the distribution of sherds. A high density of daub also occurred on the ridge, and that topographic feature may be reasonably interpreted as the product of successive episodes of house construction and destruction. Bell Plain and decorated Mississippian ceramics are often associated with specialized contexts (particularly mortuary areas) in the central Mississippi Valley, but no distinctive spatial patterning was evident in the Graves Lake surface collection. In fact, the distribution of decorated ceramics (both by individual types and as a group) closely corresponded to the distribution of Mississippi Plain sherds.

Sherds representing pre-Mississippian occupation of Graves Lake occurred in low frequency across much of the area, with a minor concentration centered on unit N130/E270. At least two pre-Mississippian occupations appear to have been present, the earlier of which is represented by Baytown Plain, *var. Forked Deer*, Cormorant Cord-Impressed, and several baked-clay-object fragments. Sand, clay, and mixed sand-and-clay (Tishomingo paste) wares constitute the remainder of the pre-Mississippian ceramic assemblage and probably represent one or more additional early occupations.

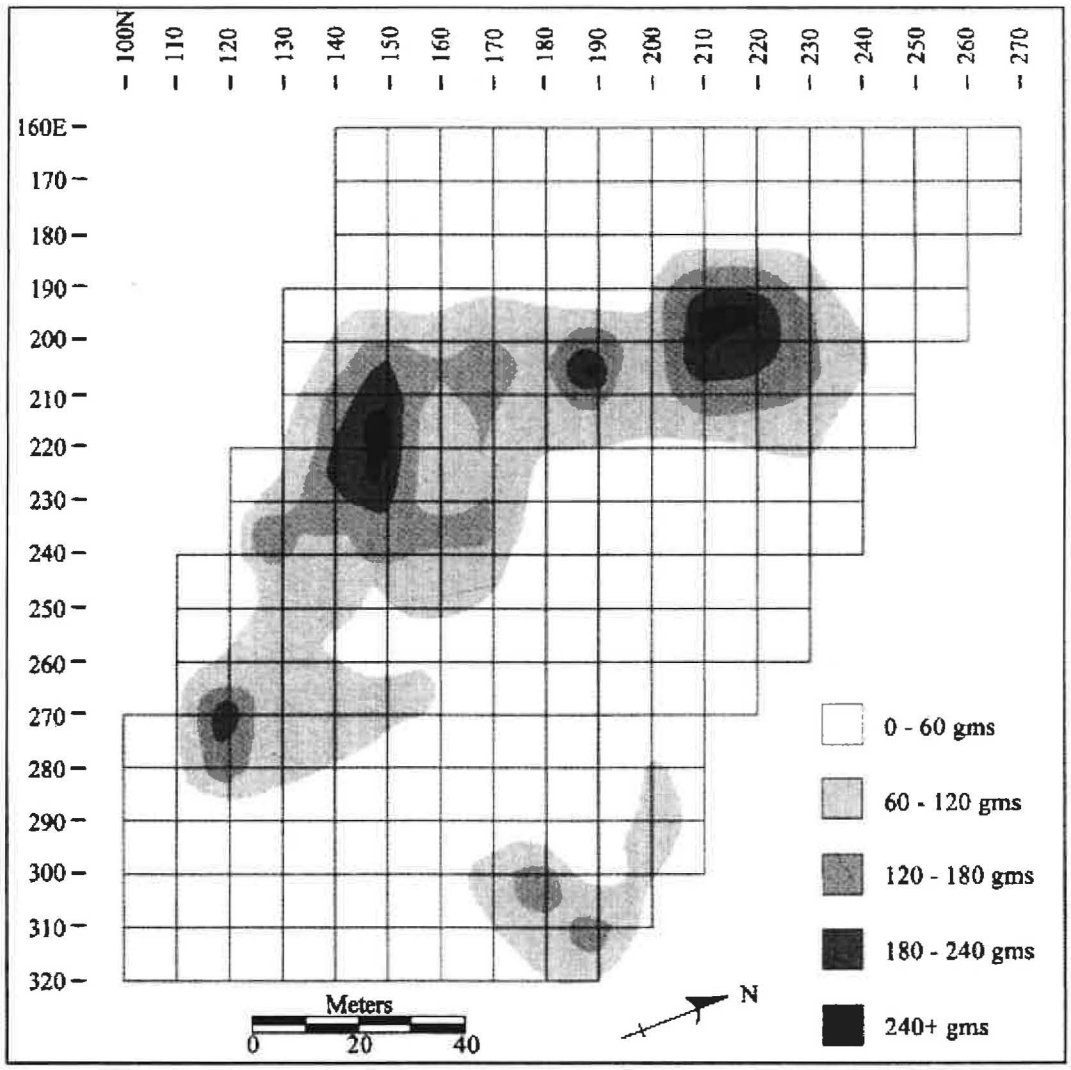

Figure 5-7. Distribution of surface-collected shell-tempered sherds by weight (grams per 10 × 10-meter unit) at Graves Lake. Shapes of the distributions in Figures 5-7 through 5-9 do not conform exactly to collection-unit boundaries because the Transform program interpolates values in calculating boundaries.

Distributional analysis of functionally related lithic-artifact classes was also performed, but no distinct functional areas are apparent in the data. Distributions of all lithic categories are relatively isomorphic and, moreover, closely mirror the distribution of pottery (Figures 5-7 through 5-9). This finding suggests that lithic manufacture and use was fairly homogeneous among households and that no specialized lithic-activity areas were present at the site. The minor concentration of primary flakes in unit N140/E280 may have been associated with a Woodland component (Figure 5-8), inasmuch as a minor concentration of pre-Mississippian pottery was also present in the unit.

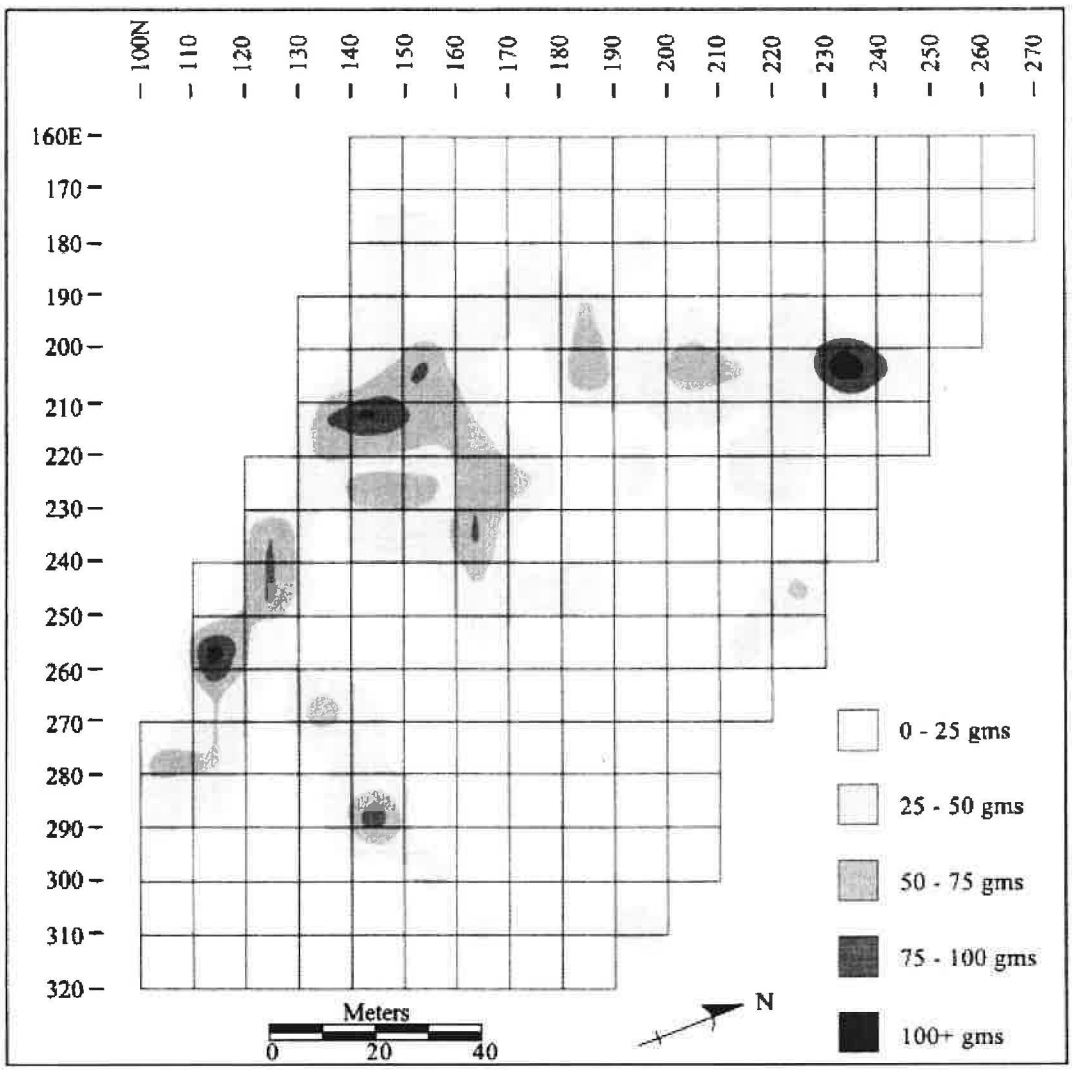

Figure 5-8. Distribution of surface-collected primary flakes by weight (grams per 10 × 10-meter unit) at Graves Lake.

Radiocarbon Determinations

Seven radiocarbon determinations were obtained for the late prehistoric/protohistoric component at Graves Lake (Table 5-2 and Figure 5-10 [all dates in Table 5-2 are rounded to the nearest 5/0]), including two each from houses 1 through 3. Limited testing of the House 1 locality yielded two large wood-charcoal samples that produced radiocarbon ages of 520 ± 60 B.P. (TX-7194) and 480 ± 50 B.P. (TX-7195). The respective calibrated dates (obtained with CALIB 2.0 [Stuiver and Becker 1986]) are A.D. 1330 (1415) 1435 and A.D. 1410 (1430) 1440; the average calibrated date for House 1 is A.D. 1410 (1425) 1435. Wood-charcoal samples from two possible posts associated with the House 2 area produced radiocarbon ages of 390 ± 70 B.P. (TX-7196) and 500 ± 70 B.P. (TX-7197), representing calibrated dates of A.D. 1435 (1455) 1630 and A.D. 1330 (1420) 1440, respectively. Averaging yields a calibrated date of A.D. 1425 (1440) 1455.

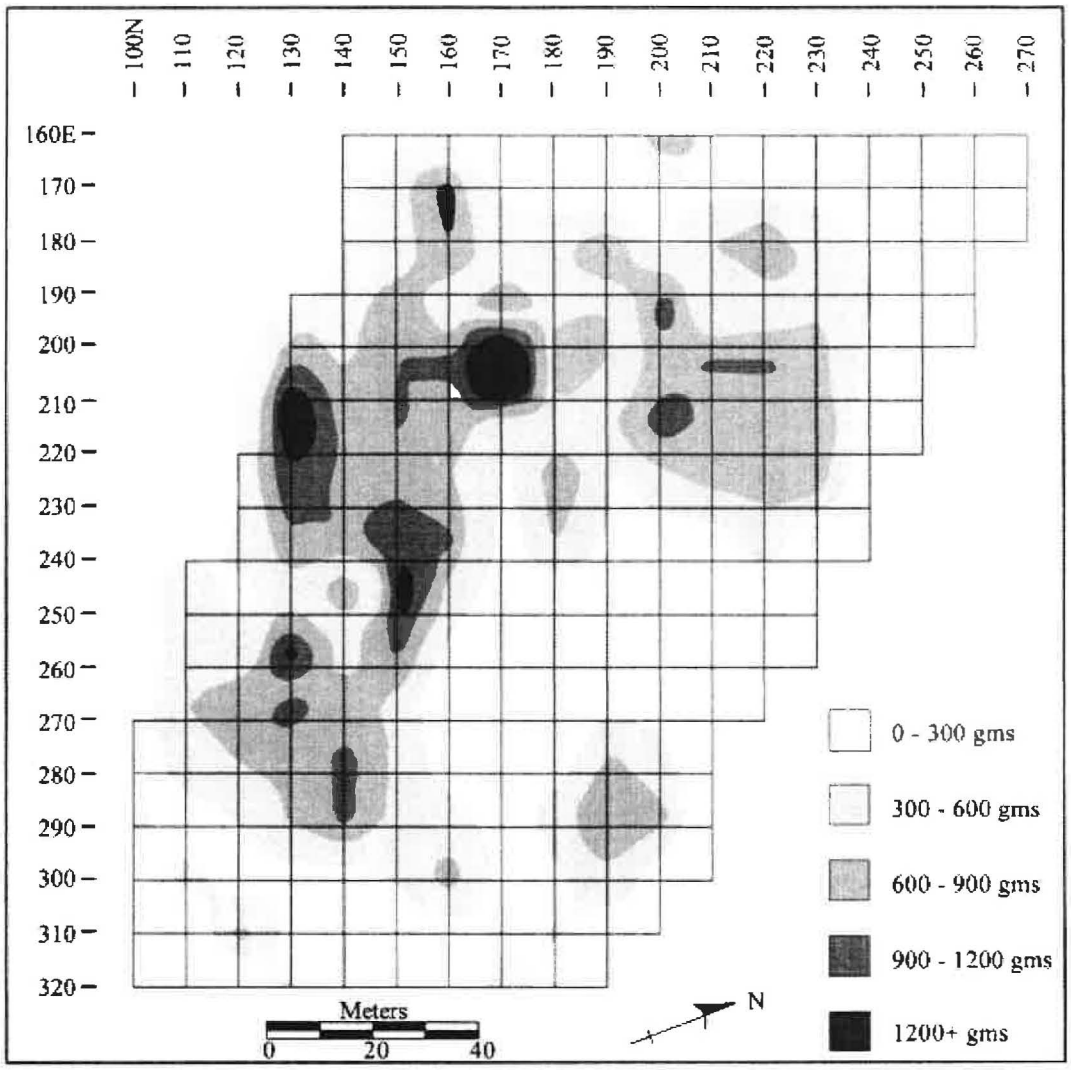

Figure 5-9. Distribution of surface-collected chert cobbles by weight (grams per 10 × 10-meter unit) at Graves Lake.

Two large wood-charcoal samples from posts in the House 3 area yielded radiocarbon ages of 320 ± 50 B.P. (TX-7486) and 310 ± 50 B.P. (TX-7487); the associated calibrated dates are A.D. 1485 (1525, 1565, 1630) 1645 and A.D. 1490 (1530, 1555, 1635) 1650, respectively. An average calibrated date of A.D. 1495 (1525, 1560, 1630) 1640 was obtained by combining these two age estimates; at one sigma, there is a .78 probability (determined with CALIB 2.0) of the actual date of the sample falling between A.D. 1515 and A.D. 1600. A small wood-charcoal sample collected approximately 3 meters southeast of Burial 1 during initial inspection of the impact area (1988) returned a radiocarbon age of 280 ± 60 B.P. (TX-6079), which calibrates to A.D. 1515 (1640) 1660. As a result of erosion, that collection locality could not be precisely relocated during the 1990 field season.

Table 5-2. Calibrated Radiocarbon Dates from Graves Lake

Sample[a]	Weight	Provenience	Uncorrected Date (B.P.)	Calibrated Date (1 Sigma)[b]
TX-6079	14.0 g	3 m SE of burial 1	280 ± 60	A.D. 1515 (1640) 1660
TX-7194	20.0 g	House 1, post	520 ± 60	A.D. 1330 (1415) 1435
TX-7195	17.0 g	House 1, post?	480 ± 50	A.D. 1410 (1430) 1440
TX-7196	24.0 g	House 2, PM 7	390 ± 70	A.D. 1435 (1455) 1630
TX-7197	30.0 g	House 2, PM 48	500 ± 70	A.D. 1330 (1420) 1440
TX-7486	19.5 g	House 3, PM 18	320 ± 50	A.D. 1485 (1525, 1565, 1630) 1645
TX-7487	28.0 g	House 3, PM 17	310 ± 50	A.D. 1490 (1530, 1555, 1635) 1650

Note: PM, Post mold.
[a]All dates on wood charcoal.
[b]Minimum and maximum ranges presented are 1 standard deviation of the calibrated age; all dates rounded to the nearest 5/0.

The radiocarbon dates could represent two distinct periods in the occupational history of Graves Lake, though all of the dates overlap around A.D. 1450 at two sigma. Four calibrated dates (those from the House 1 and House 2 areas) cluster tightly around A.D. 1430. This appears to be consistent with the presumed dates of the sherds in the surface collection, particularly when considered in light of similar sherds and calibrated dates for the penultimate summit structure at Chucalissa (cf. Lumb and McNutt 1988; Mainfort 1991), located in southern Memphis. The three remaining dates, especially those from the House 3 area, suggest that the site was occupied (continuously?) during or slightly after the time of the de Soto entrada; that is, around A.D. 1540. Certain recovered artifact types are consistent with such an interpretation, namely the helmet-shaped bowls, the gadrooned bottle, Campbell Appliqué and Vernon Paul Appliqué sherds, large triangular points, and the fragment of a snub-nosed scraper (Lawrence and Mainfort 1995; Williams 1980).

Despite intensive, long-standing interest in the Late Mississippian period in the central Mississippi Valley, there is an appalling lack of published (or even of unpublished) radiocarbon dates for that general time. The dates from Graves Lake provide the best chronometric anchors for late ceramic types in the region.

Pottery-Rim Modes as Chronometric Indicators

House (1991, 1993b; see also Phillips et al. 1951) recently suggested that interior-beveled rims are characteristic of post–A.D. 1450 occupations in the Kent-phase area of eastern Arkansas, along the lower St. Francis River. In particular, House argued that the "Memphis rim mode" is associated with Kent II and Kent III occupations but is absent in the Kent I temporal segment. Analysis of rimsherds from Graves Lake focused on, but was not limited to, recording variation in interior-rim beveling. As presented in Table 5-3, four categories, ranging from no bevel to sharp bevel, were used in analyzing all rims from the surface collections. In this exercise, beveling was defined as an outflared flattening of the lip interior that resulted in the creation of an obvious angle of inflection (essentially a "shoulder") between the vessel interior and the beveled area. This use appears to be somewhat more restrictive than House's Memphis rim mode, which does not necessarily require such a well-defined break between the beveled area and the unmodified vessel interior (e.g., House 1993b:28, figure 6a). A *sharp bevel* refers to an angle approaching (and even exceeding, in some

instances) approximately 40 degrees (cf. House 1993b:figure 6, *b* and *c*); this often produces outflaring on the rim exterior. Rims recorded as *slight bevel* exhibit characteristic flattening and a distinct, but small, angle of inflection.

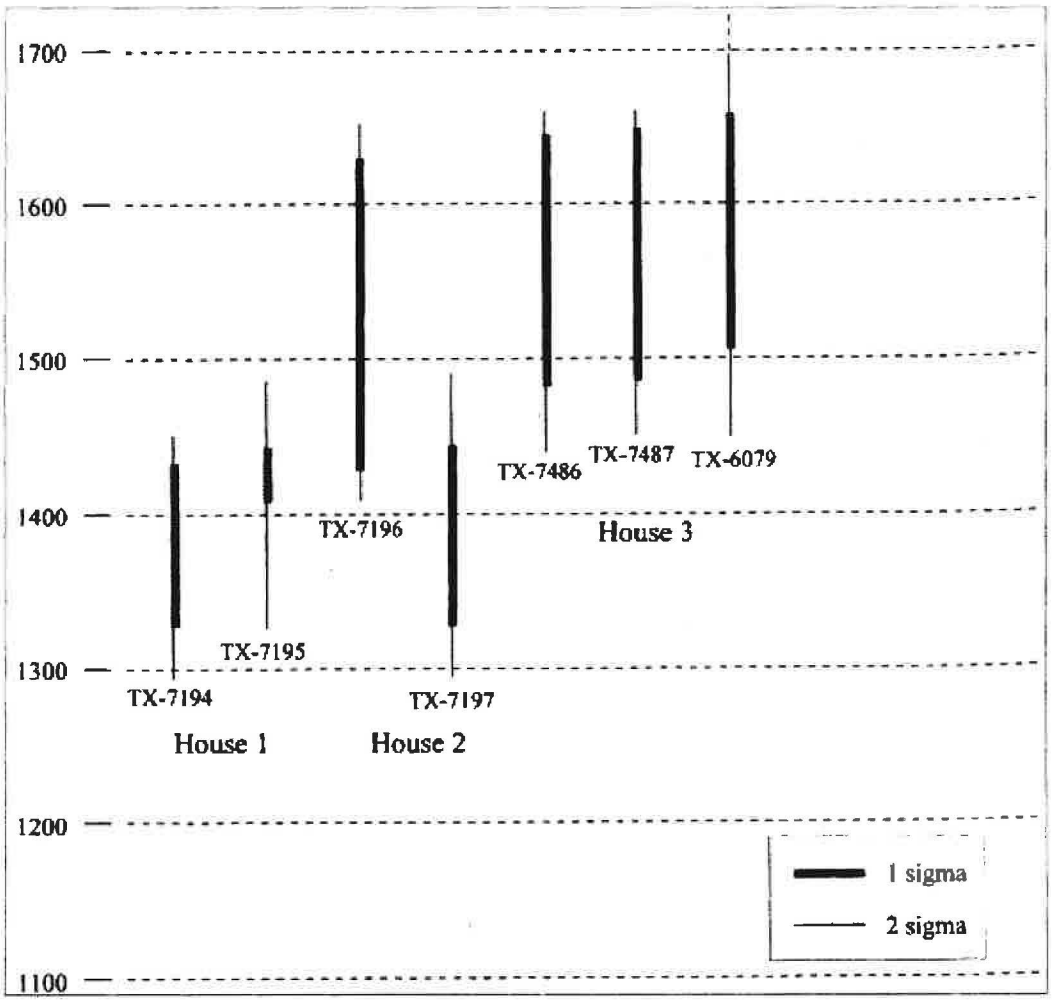

Figure 5-10. Radiocarbon determinations for Graves Lake (calibrated using CALIB 2.0 [Stuiver and Becker 1986]).

Table 5-3. Frequencies of Interior Beveling on Rimsherds from Sites in Western Tennessee and Southeastern Missouri

Site	Sharp Bevel		Moderate Bevel		Slight Bevel		No Bevel		Total
	n	%	n	%	n	%	n	%	
Berry (23PM59)	151	32	152	32	77	16	93	20	473
Campbell (23PM5)	30	26	42	37	20	17	23	20	115
Bishop (40TP10)	2	10	8	40	2	10	8	40	20
Sweat (40LA26)	29	22	36	27	8	6	59	45	132
40LA17	2	13	5	33		0	8	53	15
Graves Lake (40LA92)	24	12	44	22	23	11	112	55	203
Dry Arm (40LA19)	7	23	5	17	1	3	17	57	30
Jones Bayou (40LA4)	16	17	11	11	9	9	60	63	96
Wilder (40TP12)	18	14	18	14	7	6	84	66	127
Fullen (40LA109)	12	11	9	8	13	12	77	69	111
Rast (40SY75)	9	11	12	14	4	5	59	70	84
Hatchie (40TP1)	11	16	6	9	1	1	52	74	70
Richardson's Landing (40TP2)	8	7	8	7	11	10	88	77	115
Jeter (40SY28)	3	9	2	6		0	28	85	33
Porter (40LA2)	5	5	2	2	9	8	95	86	111

Slightly fewer than half the analyzed rims from Graves Lake exhibit some degree of interior beveling. Roughly one-third (those tabulated as sharp and moderate bevel) fall within the range of House's Memphis rim mode. Intuitively, the frequency of beveled rims at Graves Lake originally appeared to be higher than that at many late-period sites in the central Mississippi Valley. Analysis of rimsherds from other major Late Mississippian sites in western Tennessee (Mainfort 1991) indicates that this impression is essentially correct, though the incidence of beveled rims at several sites exceeds that in the Graves Lake assemblage. Importantly, sites with the highest frequency of beveled rims also have yielded artifacts indicative of the latest temporal placement. For example, sherds or vessels with vertical appliqués are reported from Graves Lake, Bishop, and Sweat (40LA26), whereas snub-nosed end scrapers occur only at Graves Lake and Bishop (Mainfort 1991).

It appears, therefore, that the frequency of beveled rims has temporal significance within the area under consideration. To test this proposition, surface collections from Campbell and Berry, both located in Pemiscot County, Missouri (O'Brien 1994a), were analyzed. Both are well-known late-period sites, and Campbell, the key site in Williams's (1980) formulation of the Armorel phase, has produced Spanish (O'Brien 1994a) and perhaps French artifacts (D. F. Morse 1990). As shown in Table 5-3, Campbell and Berry exhibit the highest percentages of beveled rims of any analyzed site, and thus the proposition that the frequency of interior beveling increases over time is strongly supported by the data from Campbell and Berry.

This conclusion has some interesting implications for the chronological positions of several sites listed in Table 5-3. Graves Lake and Hatchie (40TP1), located only 3 kilometers to the south of Graves Lake, have long been viewed as representing sequent occupations by a single sociopolitical group. On the basis of the incidence of beveled rims, Graves Lake, the smaller of the two sites, appears to postdate Hatchie. A cluster of sites to the north—Porter (40LA2), Jones Bayou (40LA4), and Sweat (40LA26)—presents another instructive case (Figure 5-1). Again, we have a group of late-period sites in close proximity that probably were occupied sequentially (Mainfort 1991). Reference to Table 5-3 clarifies the situation, because data there indicate that Porter is the earliest of the three and Sweat the latest. The latter is also the smallest site and lacks an associated mound. Although a comprehensive analysis is beyond the scope of this chapter, preliminary results presented

here strongly suggest that late-period sites in the central Mississippi Valley can be chronologically ordered on the basis of the frequency of rim beveling.

Supplemental Data from Richardson's Landing

As a small step toward alleviating the dearth of radiocarbon dates bemoaned above, we take this opportunity to present three radiocarbon dates on wood charcoal obtained during minor testing by TDOA at Richardson's Landing (40TP2), located several kilometers west of the Second Chickasaw Bluff system in the Mississippi River floodplain of Tipton County, Tennessee, and approximately 10 kilometers south of Graves Lake (Figure 5-1). The site is perhaps best known through Williams's work with collections in the Hampson Museum in Wilson, Arkansas (e.g., Williams 1980). We have examined a number of late-period vessels bearing variants of the provenience "Richardson's Landing" in the Hampson collection. These include "Richardson's Landing," "Harris site at Richardson's Landing," "1 mile south of Richardson's Landing," and "3 miles south of Richardson's Landing." Either or both of the first two designations might represent what we refer to as Richardson's Landing; the others probably represent site 40TP26 and Wilder (40TP12), respectively (see Figure 5-1). Two of the vessels illustrated by Williams (1980:figure 2, *K* and *Q*) are in all likelihood from site 40TP26. Other vessels in the Hampson collection that may be from Richardson's Landing proper include a Bell Plain bottle with appliquéd hands and long bones, a gadrooned Bell Plain bottle, a "cat-serpent" bowl, a Bell Plain bottle with an appliquéd ogee motif, and a Bell Plain stirrup bottle.

Long rumored to have been destroyed, Richardson's Landing was relocated by TDOA in 1989. In 1990 several surface collections were made and minor testing was conducted (Mainfort 1991). On the basis of surface indications, the site covers approximately a hectare. Lithic artifacts in the collections include ten Nodena points (including several examples of Nodena, *var. Banks*), five Madison points, a number of flaked adzes or gouges, and a ground basalt celt. Sherd counts from several general surface collections at Richardson's Landing are presented in Table 5-1. Although there are some general similarities with the collections from Graves Lake, the relatively low frequency of decorated sherds (especially of the types Parkin Punctated and Barton Incised) in the Richardson's Landing collection might be noteworthy.

Two radiocarbon assays were obtained from wood-charcoal samples associated with the remains of a house near the center of the site. The ages are 530 ± 70 B.P. (TX-7198) and 460 ± 70 B.P. (TX-7199); the associated calibrated dates are A.D. 1325 (1412) 1435 and A.D. 1410 (1435) 1465. The calibrated average of these two dates is A.D. 1410 (1425) 1440. A third radiocarbon determination was made on wood charcoal from an ash-filled pit found immediately below the plow zone, in which a large segment of a Mississippi Plain salt pan was found. The uncorrected age is 460 ± 70 B.P. (TX-6967), which is calibrated to A.D. 1410 (1435) 1465.

Obviously, the three radiocarbon dates for Richardson's Landing derive from only two features at a moderately large site; thus, they should be interpreted with caution. Indeed, it appears unlikely that these dates accurately reflect the age of some of the whole vessels mentioned above. Nonetheless, the partial contemporaneity of Richardson's Landing and Graves Lake seems securely established.

Concluding Remarks

Field research at Graves Lake was directed primarily toward addressing specific resource-management concerns. Preservation and stabilization of the site, not the accumulation of artifacts, was the desired outcome. Nonetheless, a considerable body of data pertaining to the Late Mississippian period in the central Mississippi Valley was obtained. Our use of controlled surface collection to define site boundaries was largely successful and revealed that cultural material was concentrated along a low rise on the west side of the site. Concentrations of daub along that rise

were interpreted as the remains of houses. Excavation of the House 2 and House 3 areas (Figure 5-3) indicated that not all houses at the site were located on the rise. The marked drop in artifact frequencies immediately to the east of the ridge raises the question of whether a central plaza is present.

Seven radiocarbon determinations were obtained from Graves Lake and suggest the site was occupied between A.D. 1430 (calibrated) and A.D. 1550 (calibrated). It is not clear that occupation was continuous during the period represented, and there is some indication of distinct spatial patterning over time. The radiocarbon dates and the artifact assemblage constitute some of the best available chronometric controls for the central Mississippi Valley during the late prehistoric and protohistoric periods. Such temporal and typological control is a necessary precondition for meaningful assessments of regional depopulation associated with early European contacts in the New World (see Ramenofsky 1987).

Acknowledgments

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