Lamb Site Features: Clues to Cooking and Community Organization in the Central Illinois River Valley

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Excavations at the Lamb site (11SC24) revealed over 30 pit features that varied in size and shape. Morphological and functional analyses of these pits indicate a range of multipurpose/food-processing, cooking, and storage features. This report concludes with a discussion of community organization at the site. The Lamb site spatial pattern, including communal clusters of deep storage pits and earth ovens, is reminiscent of Late Woodland period settlements in the American Bottom as well as Bauer Branch sites in the central Illinois River valley.

The goals of this feature analysis are to understand the spatial organization of activities at the Lamb site (11SC24) and to infer practices related to food processing, cooking, and storage by the site's occupants. The analysis that follows includes the reporting of formal attributes, as well as an interpretation of possible functional uses of different pit types in the activities of the site's inhabitants. On the basis of the Lamb site pottery remains (see Wilson, this volume), all features appear to represent a contemporaneous early Eveland phase (A.D. 1100–1150) occupation.

As noted in the previous article, the exact number of pits encountered by the salvage excavations is unclear. The plan map (Figure 1) shows 33 pits but detailed records were not found for all, and some information was available for one not shown on the map. Basic data are available for 31 pits, and 19 of these had sufficient information in the form of profile drawings or metrics to merit functional analysis (Table 1). Employing methods patterned after those used by other Illinois researchers (Binford et al. 1970; Fortier et al. 1984; Harris 1996; Holt 1996; Kelly et al. 1987; Koldehoff and Galloy 2006a), data were gathered to determine feature form and interpreted to infer feature function. Metric and nominal attributes recorded include orifice length, orifice width,

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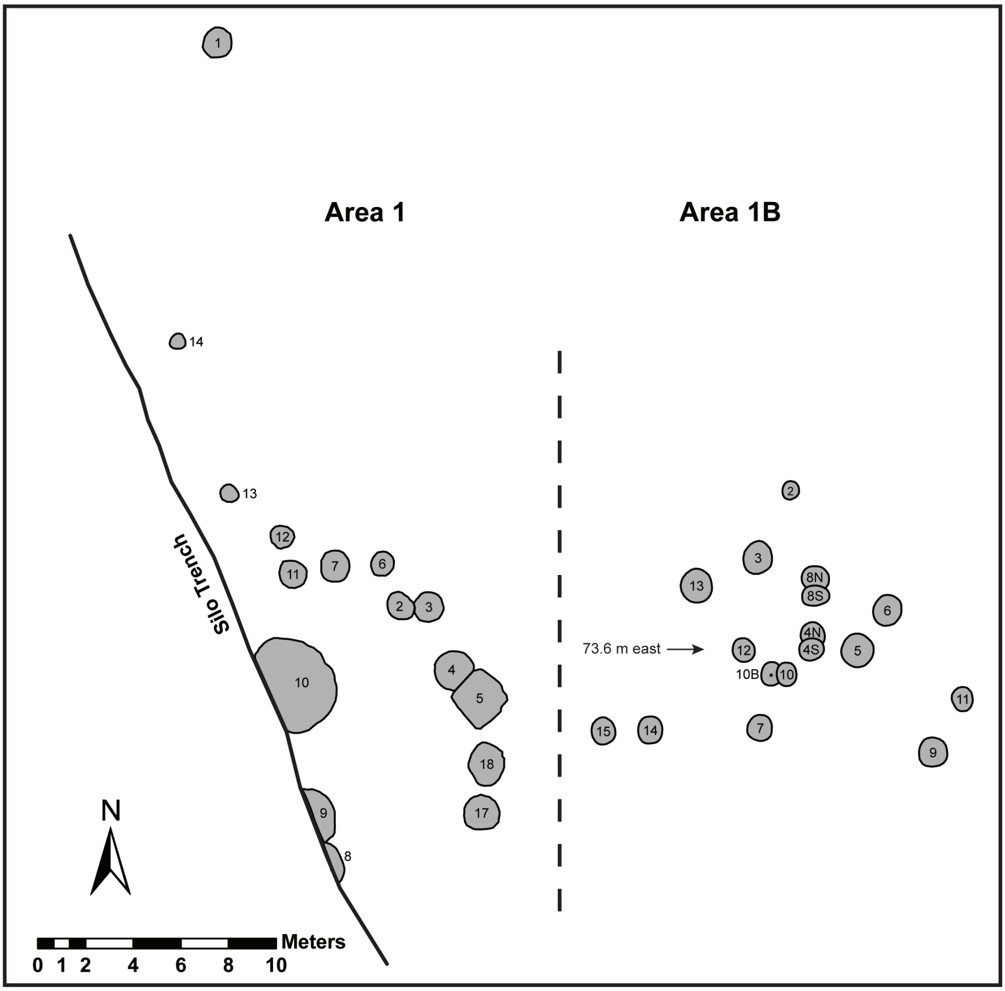

Figure 1. Plan map of the Lamb site excavations.

depth, volume, bottom (or basal) length (as needed to determine volume), surface area, material density, plan shape, and profile shape (Table 1). In plan view, all of the features are round or oval. Depth was defined as the difference between the highest and lowest feature fill elevation. Pit volume was calculated using volumetric formulae based on profile shape (Table 2, adapted from Jackson et al. 2003:72; see also Fortier et al. 1984). Volume estimates generally reflect overall pit capacity; however, the calculated volumes must be considered approximations because some pits presented irregularities in shape (or in terms of data reported) not compensated for in the formulae. Basal length was recorded for the calculation of volume estimates for pits with inslanted walls and flat bottoms (a shape approximating a portion of a cone) but is not reported

Table 1. Pit Feature Formal Attributes.

Area	Number	Plan Shape	Length (m)	Width (m)	Depth (m)	Volume (m^3)	Surface Area (m^2)	Profile[a]	Function
1	1	Circular	1.1	1.1	0.2	0.4	1.0	Basin	Processing
1	2	Oval	1.6	1.2	0.4	1.2	1.4		
1	3	Circular	1.2	1.2	0.3	0.6	1.1	Insl/flat	Cooking
1	4	Oval	1.4	1.2	0.3	0.8	1.3	Insl/flat	Cooking
1	5	Oval	1.4	1.2	0.7	2.0	1.3	Vert walled/flat	Storage
1	6	Circular	0.9	0.9	0.2	0.2	0.6		
1	7	Oval	1.0	0.8	0.1	0.1	0.6	Basin	Processing
1	8	Circular	1.6	1.6	0.6	1.7	1.3	Basin	Not classified
1	9	Circular	0.8	0.8	0.7	2.3	1.9	Vert walled/flat	Storage
1	10	Oval	1.8	1.6	1.7	9.5	2.2	Vert walled/flat	Cooking
1	11	Circular	1.1	1.1	0.3	0.2	1.0	Vert walled/flat	Not classified
1	14	Circular	0.9	0.9	0.1	0.2	0.6	Basin	Processing
1	15	Oval	1.6	1.5	0.5	2.0	1.9	Insl/flat	Cooking
1	17	Circular	1.1	1.1	0.2	0.4	0.9		
1	18	Circular	1.3	1.3	0.4	1.0	1.2		
1B	2	Circular	0.6	0.6	0.2	0.1	0.3		
1B	3	Oval	1.2	1.1	0.3	0.6	1.0		
1B	4N	Oval	1.3	1.2	0.7	1.6	1.1	Vert walled/flat	Storage
1B	4S	Oval	1.3	1.0	0.4	0.7	1.0		
1B	5	Oval	1.5	1.4	0.3	1.0	1.6	Insl/flat	Not classified
1B	6	Circular	1.3	1.3	0.2	0.5	1.2	Basin	Processing
1B	7	Circular	1.0	1.0	0.3	0.5	0.7	Basin	Processing
1B	8N	Oval	0.8	0.7	0.1	0.1	0.4		

Table 1. Continued.

Area	Number	Plan Shape	Length (m)	Width (m)	Depth (m)	Volume (m^3)	Surface Area (m^2)	Profile[a]	Function
1B	8S	Oval	0.8	0.6	0.2	0.1	0.4		
1B	9	Circular	1.2	1.2	0.2	0.5	1.1	Basin	Processing
1B	10	Circular	0.9	0.9	0.4	0.6	0.6		
1B	10B	Oval	1.0	0.9	0.7	1.0	0.7		
1B	11	Oval	0.9	0.8	0.3	0.3	0.5	Basin	Processing
1B	12	Oval	1.5	1.4	0.5	1.5	1.6		
1B	13	Oval	1.1	0.9	0.1	0.2	0.8	Basin	Processing
1B	15	Oval	1.4	1.4	0.5	1.4	1.5	Vert walled/flat	Storage
Mean			1.2	1.1	0.4	1.0	1.0		
Total						29.6	29.7		

[a]Profile class and function were not assigned for features that lacked profile drawings.

Table 2. Pit Volume Formulae.

Profile Shape	Formula
Basin	$V = 0.16\pi h\ (3ab + h^2)$
Inslanted/flat bottomed	$V = h/2\ (a_1 + a_2)$
Vertical walled/flat bottomed	$V = \pi\ r^2 h$
V = volume	a_1 = orifice length
h = depth	a_2 = basal length
a = radius length	r = radius
b = radius width	

here. As all pit-orifice shapes are circular or oval in plan, surface area was calculated using the standard formula for the surface area of an ellipse, πab (with a and b representing the radius of the long and short axis of the feature orifice, respectively). Artifact density was defined as the number of grams of inorganic cultural material (ceramics, lithics, nonchert lithics) per cubic meter of fill as the measure of artifactual content of each feature.

A morphological and functional analysis of the pit features is provided below, concluding with a discussion of community organization at the Lamb site. Pits often served as multifunctional facilities with complex use-lives and depositional histories (Koldehoff 2002:43). Thus, pit-feature data should be used cautiously, as there are many taphonomic factors that influence feature morphology. For example, some features may be uncharacteristically shallow due to plow shaving, skewing volume estimates and use-life assumptions that are made based on overall depth (e.g., storage functions, see below). Reuse of a pit for other purposes may serve to mask its original function as well; for example, rocks may be removed from a cooking feature (e.g., earth oven) for use elsewhere (e.g., to line a storage pit), and may be ultimately discarded in a refuse pit. Regardless of original function, pits often rapidly fill with erosional deposits or intentionally dumped refuse. Archaeologists have noted that it is unlikely that pits were ever primarily dug to serve as refuse pits (DeBoer 1988:4). Therefore, as the Lamb site pits all represent refuse disposal in their final context, we primarily use morphometric analysis (rather than artifactual contents) to infer possible original feature function.

Morphological Analysis

Pits were placed into one of three types based on profile shape (Figure 2) when profile data were available. Type 1 pits are basin shaped, i.e., they have a continuous curvilinear profile. Type 2 pits have inslanted walls and flat bottoms. Type 3 pits have

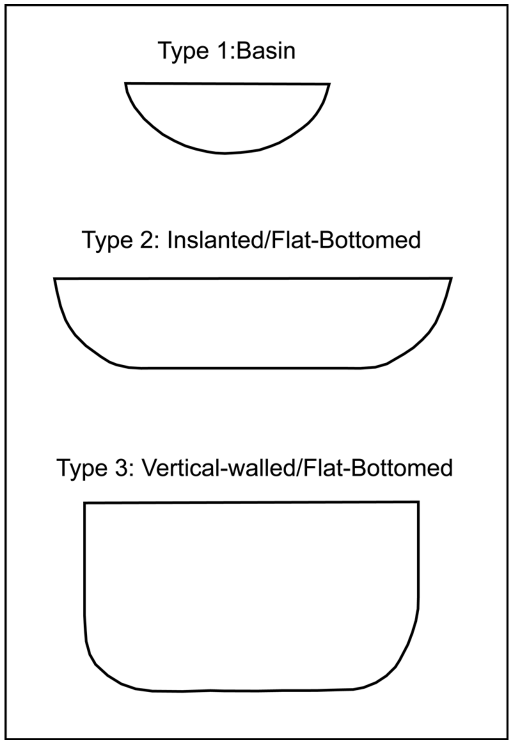

Figure 2. Sample pit feature type profiles.

vertical (or nearly vertical) walls with flat bottoms and are generally much deeper than the other two pit types.

Type 1: Basin-Shaped Pits (n=8, Figure 3)

Of the 19 pits with adequate documentation defined at the Lamb site, eight are basin shaped and fairly shallow, with an average depth of 0.2 m. Type 1 pits have an average length and width of 1.1 m, respectively, with a mean volume of 0.3 m^3. These features generally contained a modest amount of inorganic cultural material (i.e., ceramics, chert, nonchert lithics), with an average artifact density of 543.4 g/m^3.

Type 2: Inslanted/Flat-Bottomed Pits (n=4, Figure 4)

Four of the 19 pits fall into this category. With an average depth of 0.35 m and an average length and width of 1.4 and 1.3 m, respectively, they are generally larger than Type 1 pits. The mean volume of Type 2 pits (0.4 m^3) is lower than that of Type 1 pits. Although volume has some association with pit depth, larger volumes may result from shallower pits due to their larger dimensions in plan view. The Type 2 pits reveal that

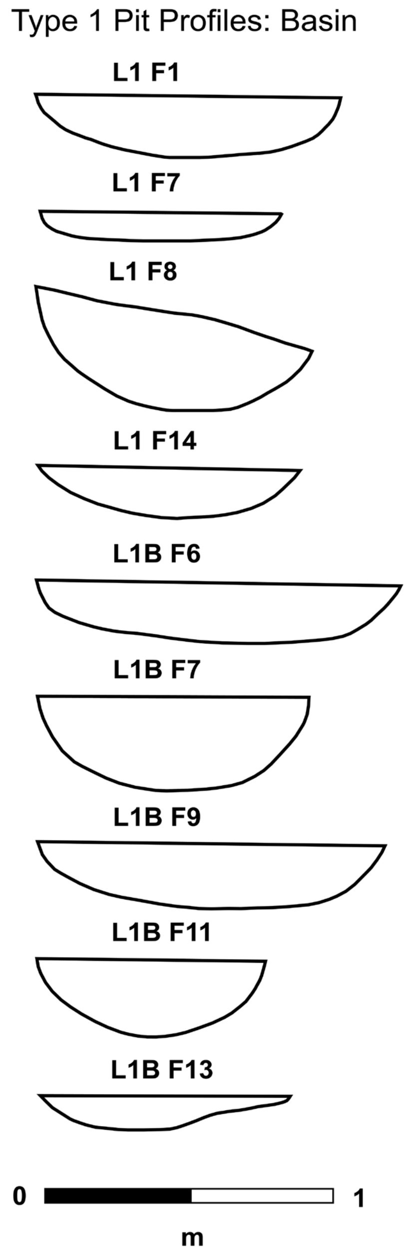

Figure 3. Profile view of Type 1 pit features.

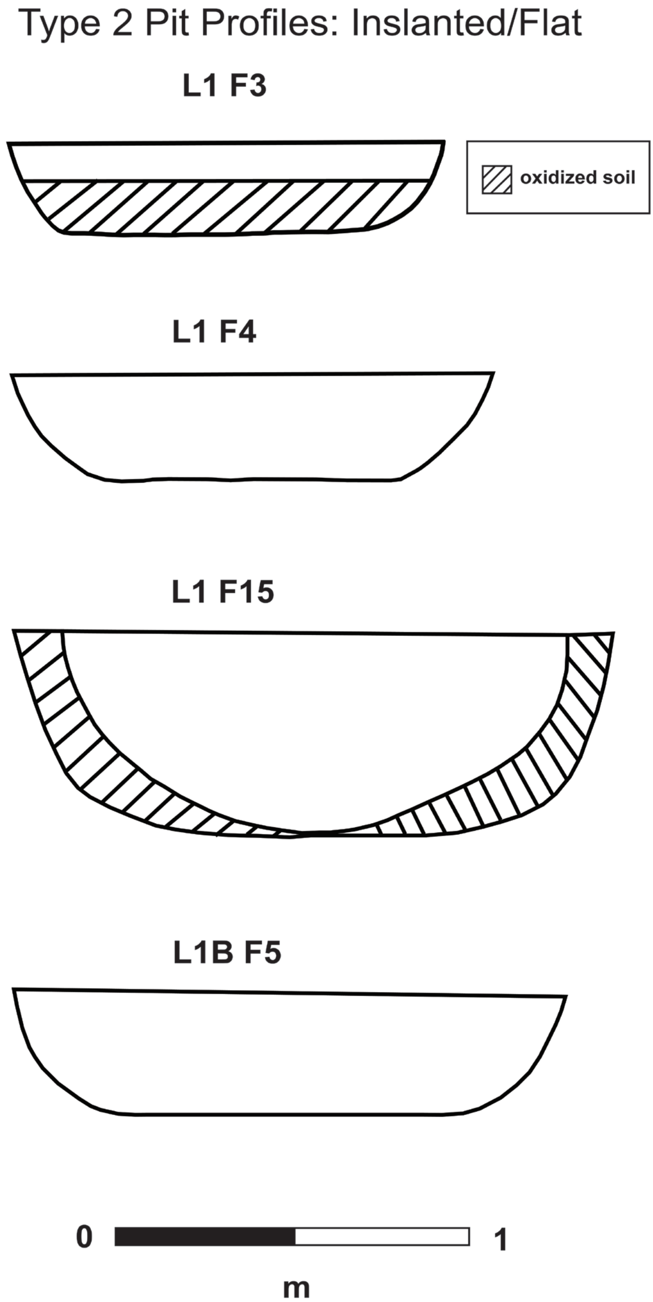

Figure 4. Profile view of Type 2 pit features.

there is no direct correlation between size and amount of debris; despite a lower average volume, Type 2 pits contained over twice the amount of inorganic cultural material as Type 1 pits, with an average artifact density of 1,203.3 g/m^3. Three of the four Type 2 pits (L1-F3, L1-F4, and L1-F15) exhibited in situ oxidization (burned soil); hence, they are classified as earth ovens (detailed below).

Type 3: Vertical-Walled/Flat-Bottomed Pits (n=6, Figure 5)

Six of the 19 pits have vertical walls and flat bottoms. All of the orifices of Type 3 pits are circular. These pits are the deepest at the site, with an average depth of 0.8 m. Type 3 pits have slightly smaller dimensions than Type 2 pits, with an average length and width of 1.3 and 1.2 m, respectively. However, Type 3 pits average substantially higher volumes due to their greater depth, with a mean volume of 1.7 m^3. Type 3 pits also have the highest material density, at 1,526.5 g/m^3. This high mean artifact density is primarily attributed to the contents of L1-F10, a large, communal earth oven that was likely secondarily filled with refuse (see below).

Functional Analysis

For those pit features classified into profile types, attempts were made to discern pit function. Small sample size precluded detailed statistical analyses; however, summary statistics related to feature size, shape, and contents can be employed to address the diversity of features in the sample and assign feature function. Pit depth, volume, orifice surface area, and evidence of in situ burning were used to assess function. Artifact density (specifically, the presence of fire-altered rocks) was employed to support functional interpretations; however, artifact density alone should not be used as an indicator of original feature function, as we cannot assume that a feature's contents represent primary refuse. Based on pit morphology and principles of efficient food processing and storage, three functional classes—multipurpose/food processing, cooking, and storage—were defined for 16 features for which profile drawings or descriptions with metrics were available. Comparisons with a wide range of ethnographic and experimental literature were used to ground interpretations of functional class (Densmore 1970; Diomedi 1978; Hough 1926; Parker 1968; Reagan 1934; Reynolds 1974; Swanton 1946; Teit 1900; Thoms 1989, 2008; Thwaites 1959; Wandsnider 1997; Whiting 1985; Wilson 1917).

Several functional types have been proposed for pit features at Late Woodland and Mississippian sites in Illinois. Researchers have outlined various expectations for archaeological signatures of earth ovens and hearths (e.g., Binford et al. 1970; Holt 1996; Stahl 1985) and storage pits (e.g., DeBoer 1988; Harris 1996). In their analysis of pit features at the early Late Woodland Hatchery West site on the Kaskaskia River in Clinton County, Illinois, Binford et al. (1970) proposed a series of archaeological correlates for rock hearths, shallow earth ovens, and deep earth ovens. They argued that a set of distinct archaeological phenomena with little formal variability have analogs

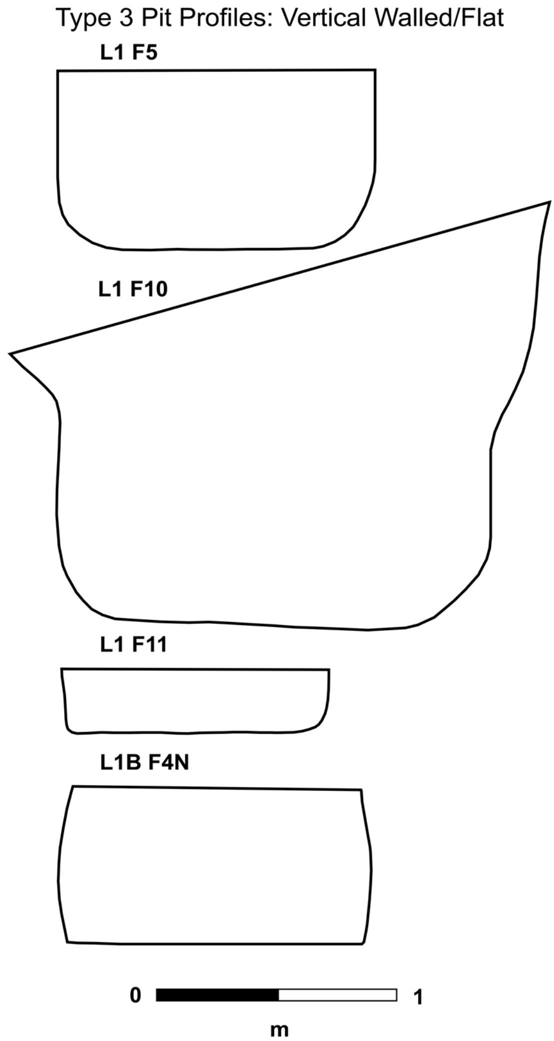

Figure 5. Profile view of Type 3 pit features.

in ethnographically reported feature types. A drawback of the typology proposed by Binford and colleagues is the exclusive focus on cooking (by hot rocks or fire), with an inability to discern the function of small, noncooking features, and no consideration of storage. Here we consider a wider range of feature types, including noncooking features, in our assessment of site-based organization of subsistence activities.

Multipurpose/Processing Features (n=8)

All of the Type 1 pits (with the exception of L1-F8, categorized as indeterminate) were classified as multipurpose/food-processing features. These features were probably constructed for various types of preparation/processing of foodstuffs, although short-term storage of foodstuffs and other materials cannot be ruled out. Low volumes (mean of 0.3 m^3) and shallow depths (mean of 0.2 m) indicate that long-term (overwintering) storage would have been an unlikely function for Type 1 pits, as they lack sufficient volume to store bulk foodstuffs and are nearer to annual frost lines. Rather, these features likely represent food-processing areas. Food processing can encompass a wide range of activities associated with preparation for immediate consumption or storage, including such activities as threshing (beating, tramping, hand-rubbing), raking (of grain, chaff, leftover plant by-products), winnowing, milling, washing, soaking, leaching, drying, freezing, sorting, sieving, grinding, dehusking, braiding, bagging, cutting up, etc. (Hastorf 1988:125). For the purposes of this study, we consider food processing to be activities that would not otherwise be considered a form of cooking. Although activities such as parching, roasting, boiling, baking, toasting, etc. are elements of 'food processing' in a technical sense, those activities, which require the use of fire or hot rocks, leave distinct archaeological signatures. We classify pit features in which elements of heat were used to prepare food in a separate category of cooking features below.

Other researchers have identified similar food-processing functions for basin-shaped pits. Kelly (2007) interprets the basin-shaped pits at the George Reeves site, an Emergent Mississippian site in the American Bottom, to be processing loci; like the Type 1 pits at Lamb, the George Reeves basins are relatively small (ca. 30–50 cm), with curvilinear orifices and shallow depths (<20 cm). Kelly posits that these features may have been used to hold wooden mortars or wooden anvils for food processing. Use of such mortars has been recorded for historic indigenous societies in the Southeast and Midwest (e.g., the Osage [La Flesche 1932] and the Pawnee [Weltfish 1965:385]). Gremillion (2004) experimented with pounding sumpweed with a wooden pestle on a sandstone slab to reconstruct possible processing activities in eastern Kentucky rock-shelters; similar seed processing may have taken place at the Lamb site. Processing food over shallow pits would have prevented the processed material from being scattered or lost (particularly if processed by wooden mortars, to which seeds would adhere less than stone [Adams 1999]).

Descriptions of acorn preparation suggest that basin-shaped features may have been used for leaching as well; various scholars (Bocek 1984; Driver 1961; Matthews 2009) describe the practice of placing ground nutmeats in shallow depressions for leaching.

Maize kernels may have been soaked in pits before grinding, particularly if they had been previously dried for storage purposes (Swanton 1946:352; Wright 1958:158). Pits may also have been used for preparation of animal foods for storage; ethnohistoric accounts describe grills that were laid across pits dug into the ground for fish or meats to dry (e.g., by the Natchez [Swanton 1946]), or to freeze (e.g., by the Ojibwe [Densmore 1970]). These features may have served other uses unrelated to food processing as well; Hally (1986:271, based on Swanton's 1946 ethnographic descriptions) describes the tanning of animal skins in water, soaking of split cane to render it pliable for basketmaking, and dyeing of certain articles in cold dye solution. These activities may have taken place in the basin-shaped pit features at the Lamb site.

Cooking Features (n=4)

Three of the four Type 2 pits, as well as one of the Type 3 pits (L1-F3), were classified as cooking features or earth ovens. This classification was based primarily on the presence of oxidization (burned soil) in each of the features. Morphologically, the Type 2 pits (L1-F3, L1–4, and L1-F15), with their inslanted walls and flat bottoms, and L1-F10, the large, deep, vertical-walled, flat-bottomed pit, would have made ideal cooking features. Pits with flat bases would have contained more useable surface area for cooking than basin-shaped pits, and the wide orifices of these features would have facilitated access to place or remove material from the pit (and to allow oxygen to help fuel a fire). Similar features have been documented elsewhere in the central Illinois River valley (CIRV); Esarey et al. (2000) report the presence of a number of Late Woodland pits exhibiting oxidized bases at the Liverpool Lake site in Mason County, Illinois, and Wilson and VanDerwarker (2015) present a detailed analysis of the contents of an oxidized cooking feature at the late Eveland (A.D. 1150–1200) C.W. Cooper site in Fulton County, Illinois.

Stahl (1985) discusses two types of cooking facilities commonly identified at American Bottom sites: earth ovens and hearths. Earth ovens are cooking facilities where preheated rocks are used to provide heat, whereas hearths have open fires used for cooking without heated rocks. These two types of facilities are very similar in archaeological appearance due to similarity in function. According to Holt (1996:65; see also Bentz 1988; Fortier 1991; Kelly 1990; Stahl 1985), while reduced soils are more typical of earth ovens, the clearest distinction between earth ovens and hearths may be the presence or absence of limestone and sometimes igneous rocks, which are presumed to have been used for heating in earth ovens but not in hearths. Holt (1996) used that criterion to distinguish between earth ovens and hearths at the Late Woodland/Emergent Mississippian Assembly of God Church site in the uplands above the American Bottom. However, no such attempt was made with the Lamb pit features. As discussed above, reuse of a pit for other purposes may serve to mask its original function. For example, a hearth in disuse may later serve as a refuse pit, and that refuse may include burned limestone; or rocks may be removed from an earth oven for use elsewhere (e.g., a rock-lined cache pit, to keep burrowing animals away from foodstuffs [Wilke and MacDonald 1989]).

Evidence of burning in the form of charcoal, ash, burned clay, and oxidized soil may be found in either earth ovens or hearths; by those means, an earth oven and a hearth may appear identical archaeologically. For the purposes of this study, earth ovens are not distinguished from hearths, but only features evincing in situ oxidation are confidently assigned a cooking function. It bears noting that a storage pit cleaned by fire could also exhibit in situ oxidation (see Parker 1968:35 for a description of pit-cleaning practices among the Iroquois; see also Reynolds 1974:128). However, the combination of pit shape, burned soil, and high artifact density of fire-altered rock (see below) all support the functional assignment of cooking for these features.

Peacock (2008:119), based on Teit's (1900) ethnographic work in the Pacific Northwest, outlines the construction of an earth-oven cooking feature in which the bottom of a pit is lined with hot rocks to form a heating element and earth is piled around the edges with foods steamed between layers of vegetation. Alternately, Hough (1926:35) describes the practice of earth-oven cooking by the Nutka Sound (Nootka) in which a fire is built over the floor of a rock-lined pit, and foodstuffs are laid over the stones once the fire has burned down to coals. Whether rocks were heated by a fire built in the bottom of an oven or heated and then placed in the oven, the Lamb site residents likely practiced similar methods of cooking plant and animal foods. L1-F10, the deep earth oven, was probably used for the practice of steam cooking (see Dering 1999; Kelly et al. 1987; Peacock 2008; Thoms 1989, 2008; Wandsnider 1997). The shallower facilities (L1-F3, L1–4, L1-F15) may have been used for parching, roasting, broiling, or open-air cooking (see Binford et al. 1970:73; Kelly 2007:73). It is possible that L1-F10 initially functioned as a storage pit and was later converted into an earth oven (see Holt 1996:67), but the distribution of pit features in this portion of the site suggests otherwise, a point discussed further below. L1-F10 appears to have functioned as a large, communal, central earth oven with a circular arrangement of processing and storage features surrounding it.

Storage Features (n=4)

Four of the six Type 3 pits were classified as storage facilities. There is some debate as to what a storage feature should look like archaeologically; some researchers consider formal properties (i.e., size and shape) vis-à-vis other pit features with different functions (e.g., Holt 1996; Koldehoff and Galloy 2006b; Stahl 1985; DeBoer 1988); others consider the relationship between pit fill and pit function (Bentz 1988); and some consider aspects of both morphology and feature contents (Fortier 1991). As re-use of pits and other taphonomic factors may obscure original pit function, I rely primarily on formal properties including profile shape, depth, and volume to distinguish storage features from other functional classes.

Four pits at the Lamb site (L1-F5, L1-F9, L1-F4N, L1-F15) are relatively deep (mean depth 0.6 m) and capacious (mean volume 1.4 m^3). There is a clear separation between the depths and volumes of these four pits and the shallower processing features and earth ovens, with the exception of L1-F10, the large, communal earth oven. The size and depth of these four pits, coupled with the lack of in situ burning, suggests that they were used for storage.

The metrics of these pits also fall within the ranges of storage pits identified by other researchers. Koldehoff and Galloy (2006b:285–286) discuss Patrick phase storage pits from several sites in the American Bottom (Range, Dugan Airfield, and Sprague), characterized by belled or flared profiles with an average of 30–50 cm in depth below the plow zone. DeBoer (1988:4) describes features at the historic Cherokee sites of Chota and Tanasee in which pits devoted to bulk storage of foodstuffs were characterized by volumes greater than 1.1 m^3. Stahl (1985) identifies storage pits at the Late Woodland/Emergent Mississippian Dohack site in the American Bottom as those pits with volumes greater than 0.3 or 0.4 m^3. DeBoer (1988) cites an average volume of 0.3–0.5 m^3 for Late Woodland bell-shaped storage pits as well. Bentz (1988) identified storage pits at the Late Woodland Leingang site in the American Bottom as those pits lacking a significant amount of cultural material. At the Emergent Mississippian component of the Sponneman site in the American Bottom, Fortier (1991) identified storage pits as any pit deeper than 50 cm that contained less than 1,000 g of material. Comparable with the minimum suggested by Fortier, Holt (1996:63) identified pits at the Late Woodland/Emergent Mississippian Assembly of God Church site as those with depths of 50 cm or more.

A calculation of the ratio between orifice area and volume provides another way to consider the use of a feature and lends support to the storage functions assigned to four of the Lamb pits (Harris 1996:89). A lower ratio of orifice area to volume for pit features can suggest a storage use; storage pits should have relatively small orifice diameters to protect against animal intrusion and effects of the environment, but with comparatively large volumes, so that a large quantity of goods can be stored (Fortier 1991; Fortier et al. 1996; Stahl 1985; Wilson 1917:87). Wilson (1917) describes Hidatsa cache pits with narrow orifices and expanding bases, where keeping the orifice of the pit narrow was done for purposes of secrecy, in addition to protection against the elements. Indeed, other researchers note that bell-shaped pits with restricted orifices and wide bases function well as storage pits (DeBoer 1988; Fortier 1991; Reynolds 1974; Stahl 1985).

The Lamb site storage pits are cylindrical rather than bell-shaped, and their orifices are not notably smaller than their bases. However, similar storage pits are described by Fortier et al. (1996:150) at the Emergent Mississippian component of the Marge site in the American Bottom, with orifices equal to or larger than their basal diameters. Fortier and colleagues concluded that those storage facilities were probably not constructed for protection against raiders in the same way as the Hidatsa cache pits. Similar to the Marge site pits, the Lamb site storage pits may have been constructed for long-term (overwintering) food storage, rather than for purposes of concealment or for seasonal or annual settlement abandonment. Nevertheless, the orifice-area-to-volume ratios lend support to the storage arguments outlined above; the four storage pits have comparatively lower ratios of orifice area to volume than most pits assigned to other functional classes (food processing and cooking) (Figure 6).

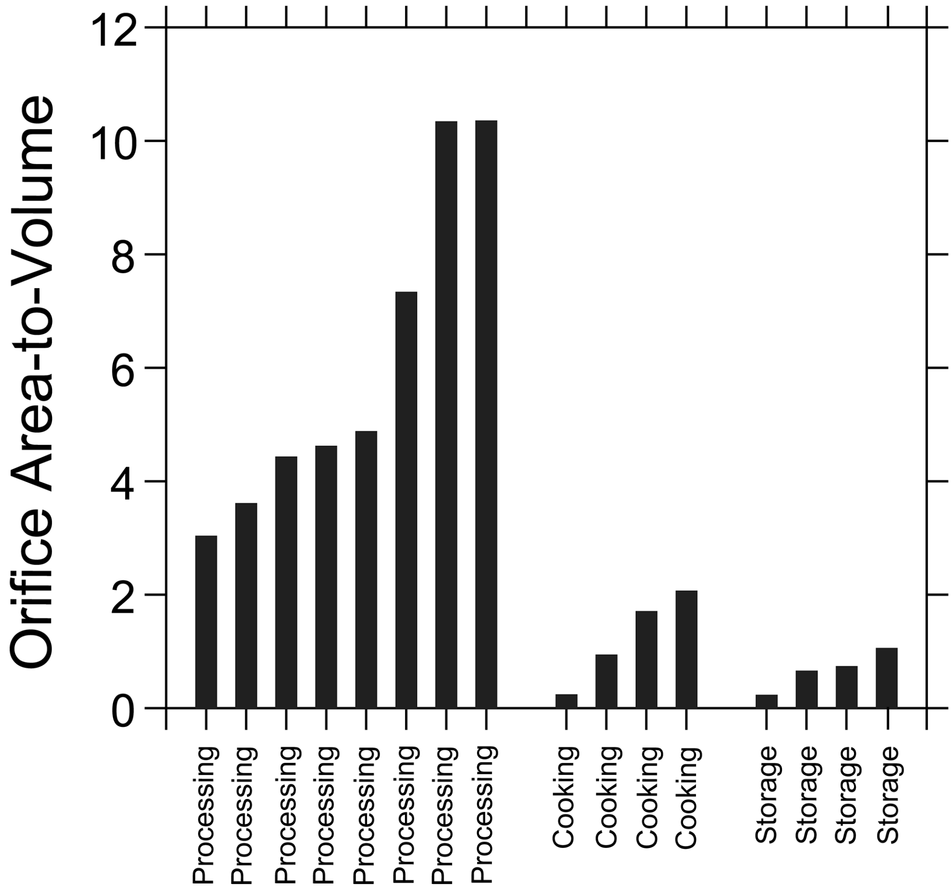

Figure 6. Bar chart of orifice-area-to-volume ratios by pit function.

Artifact Density

While metric analyses are better basic indicators of pit function than artifact density, artifact densities also can be examined in support of arguments about feature function (Table 3). Artifact densities for all inorganic cultural material (chert lithics, nonchert lithics, and ceramics) from features are standardized by weight. An examination of artifact densities by functional class (Figure 7) reveals that cooking features have the highest overall artifact density. This high overall density is impacted by the contents of L1-F10, the large, communal earth oven that was likely secondarily filled with refuse. However, cooking features also evince the highest density of nonchert lithics (NCL) (Figure 7). The bulk of the NCL are fire-altered rocks (limestone and some igneous rock, see the lithics article by Wilson, this volume). This trend is consistent with what we would expect a hot-rock cooking feature (i.e., earth oven) to look like archaeologically.

Table 3. Summary Statistics for Pits and Their Material Contents.

Area	Feature	Volume (m^3)	Weight Chert Lithics (g)	Density Chert Lithics (g/m^3)	Weight Nonchert Lithics (g)	Density Nonchert Lithics (g/m^3)	Weight Ceramics (g)	Density Ceramics (g/m^3)	Total Material Weight (g)	Total Density (g/m^3)
1	1	0.4	354.8	865.3	127.0	309.8	195.1	475.8	676.9	1,651.0
1	2	1.2	248.9	200.7	388.6	313.4	53.8	43.4	691.2	557.4
1	3	0.6	168.0	305.4			241.6	439.2	409.5	744.6
1	4	0.8	52.6	70.2	2,913.7	3,885.0	15.8	21.0	2,982.1	3,976.2
1	5	2.0	268.9	131.8	1668.5	817.9	239.3	117.3	2,176.6	1,067.0
1	6	0.2	52.0	216.8	374.2	1,559.1	73.6	306.8	499.8	2,082.7
1	7	0.1	6.8	57.0			11.6	96.7	18.4	153.7
1	8	1.7	36.4	22.1	375.5	227.6	95.7	58.0	507.6	307.7
1	9	2.3			986.1	432.5			986.1	432.5
1	10	9.5	786.6	82.5	3,146.3	329.8	7,102.2	744.5	11,035.1	1,156.7
1	11	0.2	73.5	306.4	1,122.1	4,675.3	11.8	49.0	1,207.4	5,030.8
1	15	2.0	48.2	23.8	586.7	289.0			634.9	312.8
1	18	1.0	9.3	9.8	177.5	186.8	5.2	5.4	192.0	202.1
1B	3	0.6			870.4	1,426.9	47.7	78.2	918.1	1,505.0
1B	4N	1.6	89.7	57.9	181.2	116.9	94.4	60.9	365.3	235.7
1B	4S	0.7	384.9	549.8	91.0	130.0	550.9	787.3	1,026.8	1,466.9
1B	5	1.0	0.7	0.7			118.1	120.6	118.8	121.2
1B	6	0.5	2.5	5.1	15.7	31.3	3.6	7.2	21.8	43.6
1B	7	0.5			164.7	366.1			164.7	366.1
1B	8N	0.1	7.6	62.9	225.4	1878.0	6.3	52.8	239.2	1,993.7
1B	8S	0.1	19.6	178.6	150.2	1365.1			169.8	1,543.6
1B	9	0.5		0.0	588.5	1153.9			588.5	1,153.9
1B	10	0.6		0.0	522.8	901.5	109.6	188.9	632.4	1,090.4
1B	10B	1.0	234.9	230.3	844.2	827.6	177.0	173.5	1,256.1	1,231.5
1B	12	1.5		0.0	363.0	240.4	15.0	10.0	378.0	250.3
1B	13	0.2	0.8	5.1					0.8	5.1

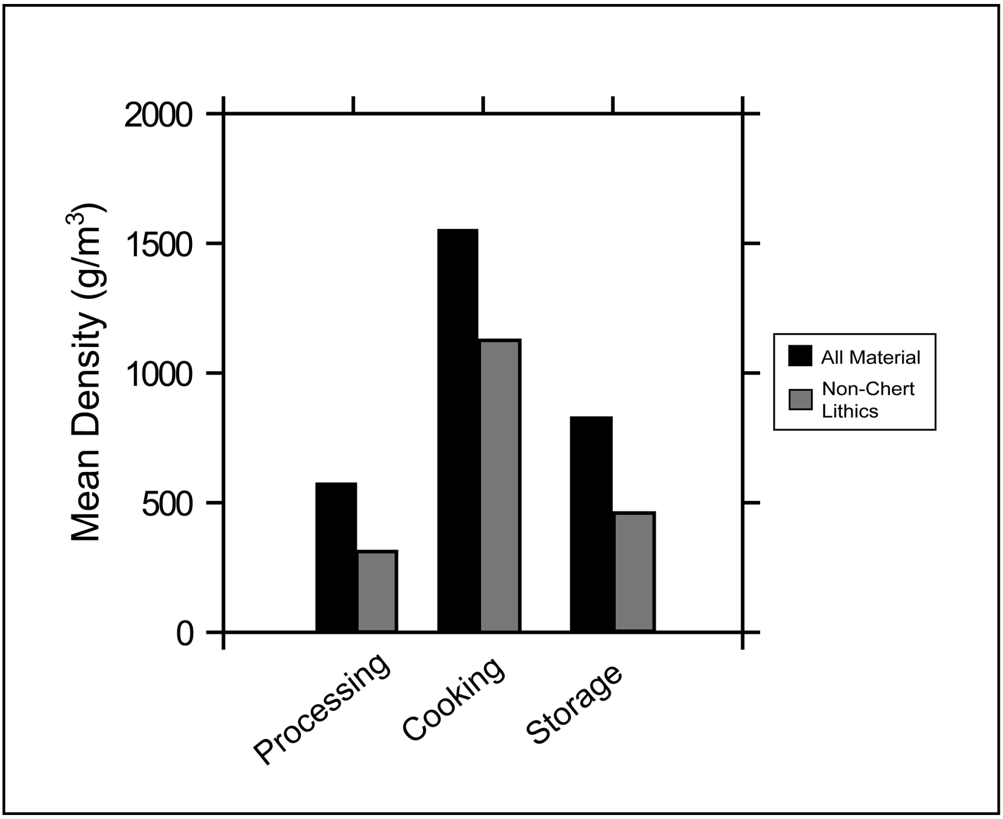

Figure 7. Bar chart of mean artifact densities (all material and nonchert lithics) of pit features by functional class.

Community Organization

With these functional categories of pit features assigned, we can consider organization of site-wide activities. We hypothesize that the two excavated areas of the Lamb site represent spaces for communal food processing, cooking, and storage, probably at the edge of a small Eveland phase village or farmstead. Lamb residents likely occupied the site year-round, planting and harvesting from spring through fall, storing food for winter (see Bardolph and VanDerwarker, this volume; see also VanDerwarker et al. 2013). The two site clusters, Area 1 and 1B, presumably represent independent loci of food preparation by the Lamb residents. The fact that no domiciles were encountered within the excavation blocks suggests that at least some food processing and storage was communally organized and spatially separated from habitation units. Kelly et al. (1990) note a similar configuration at the Late Woodland component of the Range site

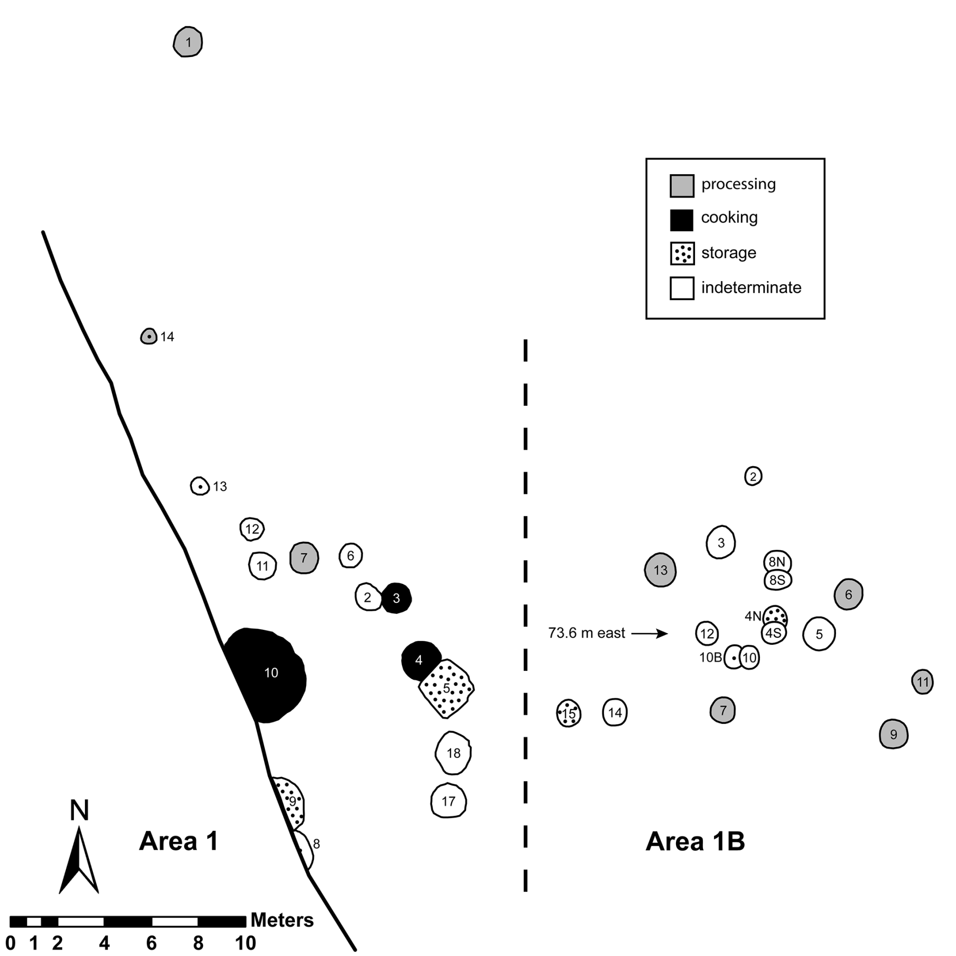

Figure 8. Organization of subsistence activities in the two excavations areas (1 and 1B).

in the American Bottom, where large food-processing areas were located at the margins of the communities.

Different activities related to food preparation, cooking, and storage likely took place at the two activity areas of the site (Figure 8). All activities (processing, cooking, and storage) took place in Area 1. Area 1 has three processing features, four cooking features (earth ovens), and two storage pits among its defined pit features. Pit cooking does not appear to have taken place in Area 1B, as no cooking features were documented in that area of the site. Of the features defined for Area 1B, five were processing features and two were storage pits. There was no significant intrasite variation in terms of artifact density (ceramics, lithics, nonchert lithics) to suggest significant cultural differentiation between the two areas. If there is a central focal point in this community, then it is probably associated with Area 1, where cooking, processing, and storage features are arranged in a circular fashion around the large central earth oven (L1-F10) (Figure 8). The size of that earth oven, as well as its central location at the site, suggests that large quantities of food would have been processed at a single time, more than would be consumed immediately by just one or two families. Such cooking events may have been done for purposes of commensality or for preparation for bulk storage. Wilson and VanDerwarker (2015) document the recent excavation of a large earth-oven feature at the late Eveland (A.D. 1150–1200) C.W. Cooper site in west-central Illinois, in which the remains of a failed maize roast (approximately 95 ears) were found charred in situ. The scale of that maize roast suggests that such features were used in the preparation of communal meals, including feasts. Similar events may have been conducted at the Lamb site using the large L1-F10 cooking feature. Given the apparent focus on maize production at the site (see Bardolph and VanDerwarker, this volume), the practical work of farming, processing, cooking, and storage likely benefited from collaborative effort.

Binford et al. (1970) noted a similar organizational pattern at the Late Woodland Hatchery West site, in which pit facilities were arranged in a circular fashion, with an area of corporate food preparation in the middle of the settlement. The habitation area was along the edge of the Hatchery West settlement; it is possible that the Lamb site was organized in a similar fashion, with communal food-processing/cooking activities conducted away from domiciles. It is possible that structures existed in the large unexcavated area between the two feature clusters, but only further fieldwork can provide information on possible uses of that area by indigenous inhabitants.

The Lamb site spatial pattern, including communal clusters of deep storage pits and earth ovens, is reminiscent of Late Woodland period settlements in the American Bottom as well as Bauer Branch sites in the central Illinois Valley. Kelly et al. (1987, 1990) document shared central pits in which foods were cooked and stored during the Late Woodland (Range phase) occupation of the American Bottom Range site. Intrasite settlement data from six excavated Bauer Branch sites in the CIRV indicate that neighboring households used shared clusters of deep pit features as earth ovens and for storage during this time as well (Green 1987; Green and Nolan 2000:362). Thus, in terms of site layout and community organization, the Lamb site more closely resembles Late Woodland Bauer Branch settlements than Stirling phase Mississippian sites, where earth ovens had largely disappeared by the Early Mississippian period. During the Stirling phase in the American Bottom, hearths were relocated inside structures, and storage also took place within dwellings, either in rafters or in subterranean facilities (Mehrer 1995). The Lamb site pit-feature data, along with patterns documented in the ceramic assemblage (see Wilson ceramics paper in this volume), suggest a continued aspect of communal social relations that had been abandoned in the American Bottom during Cahokia's Lohmann phase regional consolidation (Bardolph 2014; Wilson, this volume; Wilson and VanDerwarker 2015). Future detailed feature analyses from other settlements, including those with excavated structures, will further clarify the nature of Eveland phase community organization in the CIRV, a key aspect of understanding Mississippianization in the region.

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