SIUE 2021 FIELD SCHOOL

INVESTIGATIONS

AT 11MS99

Interim Report

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June 2022
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LIST OF TABLES

Table 1. Site Datum Coordinates (Zone 15S).................................................................18
Table 2. Unit Coordinates.............................................................................................19
Table 3. Plowzone (Ap) Artifacts from all 2021 excavations units..................................19
Table 4. Excavation Block A Features (Units GA-GF)....................................................20
Table 5. Stratum B (non-feature) Artifact Summary.....................................................24
Table 6. Artifacts by Feature (Screened Sample)..........................................................27
Table 7. Excavation Block B Features (Units GG-GJ)....................................................37
LIST OF FIGURES

Figure 1. 1815 GLO map (Illinois Secretary of State 2009) .............................................10
Figure 2. Location of previously recorded sites on the SIUE campus .................................11
Figure 3. Units GA-GF (Block A), plan view at base of plow zone ..................................21
Figure 4. Unit GA plan view at base of the plowzone/Level 1 (Features 359-365) ...............22
Figure 5. Unit GB plan view at base of the plowzone/Level 1 (Features 356 & 357) ...........22
Figure 6. Unit GE plan view at base of the plowzone/Level 1 (Feature 368) .......................23
Figure 7. Unit GF plan view at base of the plowzone/Level 1, facing east*
   (Features 366 & 367) .........................................................................................................................23
Figure 8: Units GA-GF (Block A), plan view map at base of Level 2 ...................................25
Figure 9. Unit GA plan view at base of Level 2 (Feature 369) .............................................26
Figure 10. Unit GC plan view at base of Level 2 (Feature 370) ...........................................26
Figure 11. Unit GE plan view at base of Level 2 (Feature 371) ..........................................27
Figure 12. Feature 356, plan view ...............................................................................................28
Figure 13. Feature 356, profile facing north ...........................................................................29
Figure 14. Feature 356, drawn profile facing north .................................................................29
Figure 15. Feature 357, plan view .............................................................................................30
Figure 16. Feature 357, profile facing north ...........................................................................31
Figure 17. Feature 357, drawn profile facing north .................................................................31
Figure 18. Feature 359, plan view .............................................................................................32
Figure 19. Features 359 (left) and 360 (right), profile facing north .......................................32
Figure 20. Feature 359, drawn profile facing north .................................................................33
Figure 21. Feature 364, plan view .............................................................................................34
Figure 22. Feature 364, profile facing north ...........................................................................35
Figure 23. Feature 364, drawn profile facing north .................................................................35
Figure 24. Unit GG (Block B), profile facing north .................................................................38
Figure 25. Units GG-GJ (Block B), plan view at base of plow zone ......................................39
Figure 26. Block A (Units GG-GJ) plan view at base of plow zone/Level 1 .........................40
Figure 27. Unit GG plan view at base of plowzone/Level 1 (Features 350-355) .................40
Figure 28. Features 352, 354, and 355 (possible postmolds at center of photo; Unit GG) 
   and previously excavated Features 104 (top right quadrant; Unit GH) ..............................41
Figure 29. Block B (Units GG-GJ) plan view at the base of Level 2. Remnants of 
   previously excavated features 103 and 104 are visible in the east half of the block .............41
Figure 30. Unit GG plan view map at base of Level 3 .............................................................42
Figure 31. Unit GG plan view at base of Level 3 (Features 374 & 375) ...............................43
Figure 32. Feature 350, plan view .............................................................................................44
Figure 33: Feature 350, profile facing north ............................................................................44
Figure 34. Feature 350, drawn profile facing north .................................................................45
Figure 35. Feature 352, plan view .............................................................................................46
Figure 36. Feature 352, profile facing north ............................................................................46
Figure 37. Feature 352, drawn profile facing north .................................................................47
Figure 38. Feature 354, plan view .............................................................................................47
Figure 39. Feature 354, drawn profile facing north .................................................................48
Figure 40. Feature 355, plan view .............................................................................................48
Figure 41. Feature 355, profile facing north.................................................................49
Figure 42. Feature 355, drawn profile facing north.........................................................49
Figure 43. Gehring site overview map: Excavations from 2009, 2013-2021.......................53
ABSTRACT

The SIUE archaeology field school took place on the SIUE campus in the summer of 2021. Our excavations focused on an area at the southern end of 11MS99 where SIUE field school excavations in 2009, 2013, 2014, 2016, and 2018 revealed prehistoric features including pits, posts, and structures. Our primary research interest was to investigate previously unexcavated areas around and between Middle Woodland features and two Mississippian houses in this region of the site in the hope of encountering new pit features that could shed light onto regional foodways. In 2021 we excavated 28 meters of “new” ground, revealing a number of possible post features, and we reopened another 12 meters that had been originally excavated in 2009 in order to excavate below the plowzone/subsoil transition to verify that there were no buried features in this area. No new pit or house features were encountered in 2021.
ACKNOWLEDGMENTS

This report is dedicated to the Indigenous peoples whose traditional homelands include the Gehring site and the SIUE campus, and from whom the SIUE lands were taken, including the Osage and other Dhegiha Sioux peoples; the Kiikaapoi; The Illinois Confederacy, including the Peoria, Kaskaskia, Michigamea, Cahokia, and Tamaroa; and others.

Thanks to Anthropology Chair Julie Zimmermann for all of her advice and assistance in preparing and carrying out field work in 2021, and to Julie Huelsing for her valuable support of coordinating logistics for the field school. I appreciated the cooperation, coordination, and friendly rivalry with Corey Ragsdale and his bioarchaeology field school during their time at the Gehring site. Carol Colaninno played a crucial role in prior investigations at the Gehring site and aided with a new project for the field school students this summer. Thank you to Erin Benson, Elizabeth Watts Malouchos, and Alleen Betzenhauser of the Illinois State Archaeological Survey (ISAS) for helping to map this year’s excavations, and to ISAS for permitting the use of their total station. Thanks to Susan Bostwick, Emma Warner, and other volunteers at the site. Kaia Cosgriff and Sheryl Myers for their contributions to the graphics in this report.

And last but not least, thanks to the nine wonderful students who made this field season a success. These budding archaeologists made my first field school an enjoyable one.
INTRODUCTION

The Anthropology Department of Southern Illinois University Edwardsville (SIUE) conducted an archaeological field school on the SIUE campus in Edwardsville Township, Madison County, Illinois, between May 17 and June 25, 2021. Field school investigations consisted of excavations at the southern end of 11MS99. Susan Kooiman, Assistant Professor of Anthropology, acted as field director and instructor of record. Nine SIUE students (Hannah Consiglio, Alexander Gerstenecker, Chapin Haag, Marchyl Jones, Casey Laughlin, Jaden Lawson, Justin Miller, Paige Scott, and Nathaniel Shelly) enrolled full-time in the course and acted as field crew.

The primary goal of the SIUE archaeology field school is to teach students standard archaeological field methods. In addition, the field school offers research opportunities to SIUE anthropology faculty and also to students, who are encouraged to do original research for their senior projects. Perhaps most importantly, the field school provides a means for recording endangered archaeological sites, which are rapidly disappearing due to development in Madison County. 11MS99, for example, has been severely impacted by decades of deep plowing and removal of artifacts by private collectors. The field school provides us with the opportunity to document archaeological resources on campus with the goal of protecting them, or excavating them if determined necessary. Another goal of the field school is community outreach, to share what we do with and to educate the public.

The field school achieved all of these goals. All students completed the course successfully and gained excavation experience. In terms of research, the data recovered from 11MS99 provide information about the Middle Woodland and Mississippian occupations at the Gehring site and more generally of the American Bottom. Several senior projects utilizing data recovered during the field school investigations at Gehring will be pursued in the future. In terms of the third goal, in 2012 SIUE removed 11MS99 from agricultural production to conserve it, as a result of our field school research. Finally, we hosted approximately 30 visitors on site this summer (fewer than usual given Covid-19, which prevented us from inviting as many guests as in previous seasons). Since the summer of 2013, we have given site tours to approximately 500 visitors.

This report summarizes results of the SIUE field school undertaken at 11MS99 on the SIUE campus in the summer of 2021. Our excavations at 11MS99 have focused on an area at the southern end of the site where Middle Woodland and Mississippian features were identified during the 2009, 2013, 2014, 2016, and 2018 field schools. Our primary research interest in 2021 was to investigate previously unexcavated areas around and between Middle Woodland features and two Mississippian houses in this region of the site in the hope of encountering new pit features that could shed light onto regional foodways. In 2021 we excavated 28 meters of “new” ground, revealing a number of possible post features, and we reopened another 12 meters that had been previously excavated in order to explore the matrix below the plowzone/subsoil transition for buried features in this area. No new pit or house features were encountered in 2021.

This report will begin with a description of the project setting and a summary of previous investigations in the area. The bulk of the report will focus on our excavation methods and results. As of this writing, analysis of the artifacts collected is still ongoing. When the analysis of these artifacts is complete, a final report will be written which will compare our findings with data from the greater American Bottom. Certainly, it is clear that the people who inhabited
11MS99 from the Late Archaic period through the Mississippian period were engaged in the social arena of the greater American Bottom.
SETTING AND PRIOR RESEARCH

The archaeological record of the American Bottom is rich. Although best known as home to Cahokia, largest archaeological site north of Mexico, thousands of archaeological sites have been recorded in the American Bottom and in the adjacent uplands. In the uplands, these include sites dating from the Paleoindian period through the historic period; in the floodplain, sites date from the Early Archaic through historic periods. The region was attractive to prehistoric and historic settlers alike for its rich resources in both floodplain and uplands, including both forest and prairie habitats (e.g., see White et al. 1984).

The area located around modern Edwardsville, including the SIUE campus, exemplifies the American Bottom in the richness of its natural resources and in the corresponding richness of its archaeological record. The SIUE campus is situated along the bluff edge and bluff base of the northern American Bottom, just south of where Cahokia and Indian Creeks exit the uplands and then merge. Cahokia Creek would have meandered along the base of the bluff on the western edge of campus on its way south to Cahokia, a distance of just ten miles (16 km), and from there on to the Mississippi River beyond. The gentle slope of the bluff here would have given inhabitants easy access to resources of both floodplain and upland. The 1815 GLO map shows that most of what is now the SIUE campus was forested at that time, although prairie was located nearby on both the floodplain and in the uplands (Illinois Secretary of State 2009; see Figure 1). In the early 1800s a backwater lake was located in the American Bottom just 3.5 miles (six km) west of the bluff that crosscuts the campus, and the Mississippi River itself was approximately twice that distance. Through time the exact boundaries of forest and prairie would have shifted, the river and creeks would have meandered, and floodplain lakes would have swelled and shrunk, but local resources would have been abundant regardless of these fluctuations.

Figure 1. 1815 GLO map (Illinois Secretary of State 2009).
The richness of the local natural resources has produced an equally rich archaeological record. Munson and Harn (1971) surveyed portions of the SIUE campus as part of a larger archaeological survey of the American Bottoms and Wood River terrace in 1963. Sites reported on campus by Munson included 11MS94, 11MS95, and 11MS96 on the bluff; and 11MS99 in the floodplain below (Figure 2). Archaic period components were recorded at 11MS96 and (albeit with a question mark) at 11MS95. Middle Woodland components were recorded at 11MS94 and 11MS99. A Late Woodland component was reported at 11MS95, and Mississippian components were recorded at 11MS94 and 11MS99.

Of these, 11MS99 was clearly the largest site, covering at least forty acres, and it seems to have had the densest concentration of artifacts. The site lies on the floodplain near the base of the bluff, on a terrace just east of Cahokia Creek. Munson named 11MS99 the Gehring site after Wilbur Gehring, then a tenant farmer of SIUE but formerly owner of the site. Munson described 11MS99 as a Havana village (MsV266) and mound (MsO267) and also a Bluff camp yielding Late Bluff rim sherds (Munson and Harn 1971:7, 13). On the IAS site form Munson also indicates a Mississippian presence at the site; other artifacts he collected included one Marion Thick sherd, and both straight and expanding stemmed points. On the site form Munson further indicates that his surface collection of 11MS99 was “arbitrarily” divided into three parts. The
northern part apparently lay to the north of an old street car trace that is referred to as a levee on a sketch of the site included with the site files. Today this street car trace or “levee” is used as a road to access utilities which have impacted the northern part of the site to an unknown extent (Booth 2014). The central and southern parts of the site lay to the south of the street car trace in a cultivated field. The central part of the site was highest in elevation, a relatively broad terrace closest to Cahokia Creek; the southern part of the site appears on the sketch map as a narrow finger ridge extending to the south. On the site form Munson noted that Middle Woodland artifacts were found on all parts of the site (northern, central, and southern), whereas Late Woodland and Mississippian artifacts were found only in the central part of the site. Munson’s artifact counts indicate that the greatest number of artifacts was collected in the central part of the site, which is not surprising giving that this relatively high and broad part of the site was used repeatedly throughout its history.

Review of Illinois Archaeological Survey (IAS) site files indicates that additional surveys were conducted on campus by Ken Williams and Ernest Evans in 1969. They reported a number of new sites on campus, including 11MS157, 11MS161, 11MS169, and 11MS170 in the uplands; 11MS165 on the bluff edge; 11MS168 on the slope of the bluff; and 11MS159 and 11MS160 on the floodplain. Most of these sites seem to have been small with light artifact densities, except for 11MS159, which was recorded as a possible village dating to the Woodland period. Woodland components were also reported at several other sites (11MS160, 11MS165, 11MS168, and 11MS170). No Archaic or Mississippian components were recorded by Williams and Evans.

In the early 1970s, SIUE professor Sid Denny conducted field school excavations at 11MS99 for two or three seasons. He referred to the site as the Keller Site because it was farmed by Vernon Keller at that time. Apparently no report of Denny’s excavation was ever written. Maher (1996) interviewed Denny in March of 1994 and reports that all of Denny’s excavation notes and maps were lost at that time, although he was able to examine some of Denny’s artifacts. In July of 2003 Julie Zimmermann (then Assistant Professor Julie Zimmermann Holt) transferred nine boxes of artifacts labeled MSV-99 from the SIUE Anthropology Lab to the SIUE University Museum. Presumably, these were artifacts from the Denny excavation. At that time the ISM declined to accept the collection for curation because no field notes could be found to accompany them. More recently, we have received an inventory of documents given by Denny to the SIUE Lovejoy Library Archives. This inventory lists documents from “MS99 Kellar Site.” The documents are excavation forms from the 1970 excavation; these have been copied and are currently on file in the SIUE Anthropology Department. Four sheets of color slides from Denny’s excavations have remained on file in the SIUE Anthropology Department and have been digitally scanned. These slides also appear to be from the 1970 excavation, and show excavation of trenches with a road grader.

Zimmermann (then Zimmermann Holt) interviewed Denny on-site on May 20 of 2009. Denny indicated that in his first field season or two, he excavated test units on 11MS99. In his last field season he excavated two or three trenches with a road grader in the central part of the site. These trenches were perhaps 100 m long running north to south with perhaps 10 m between the trenches; the road grader and trenches were approximately 3 m wide.

In one trench, probably the one located farthest to the west, Denny observed a structure at the base of the plowzone which he described as a “small brush structure” (personal communication, May 2009). The structure was roughly rectangular and approximately 5 x 12 feet in plan view with a basin approximately 2.5 feet deep. (Note that Denny described the trenches in metric measurements and the structure in English; his terminology is used here.) He
said the structure contained no wall trenches, but randomly placed posts were noted, and few artifacts were recovered. At first Denny thought this was a Middle Woodland structure, but he said later discussions with personnel at Cahokia Mounds State Historic Site made him think that the structure dated to the Mississippian period. In the middle trench Denny observed a cluster of three or four pits (personal communication, May 2009). One of these contained Havana artifacts, while the others contained Mississippian artifacts such as Powell Plain and Ramey incised jars (which Denny described as “Fairmount Phase”). The trench farthest to the east contained no features.

The completed forms from Denny’s excavation are difficult to decipher since they don’t include an overall site map. (Although one slide from Denny’s fieldwork shows a student drawing a large map, no site maps were found among his notes.) The notes suggest the presence of one or two living surfaces below the plowzone. For example, one form (labeled 24 in the upper right hand corner) contains the comments, “Plow depth ranged from 25 to 40 cm. Under plow depth black band of undisturbed loamy soil grading into a lighter sandy brown soil. 2 possible occupation levels. Artifacts found in both soil types under plow zone. All pottery identified from both soil types (levels) as Mississippian.” Another sheet (labeled 25 in the upper right hand corner) contains the comments, “Black soil band under plowzone extended through all four pits on the walls. Possible depressed area where people threw refuse, not a midden, span of time used probably short.” It is not clear in these comments if “pits” refers to pit features or excavation units.

Although feature descriptions in these notes are very brief, they might provide some context to the artifacts recovered. It is also possible to identify several of the features in the slides. Feature 11 appears to have been a shallow pit feature, and about 2 m northeast of Feature 11, Feature 9 was labeled as a burnt corn concentration (sheet 15). Feature 8 was a shallow pit (sheets 16 and 62). Feature 4 was a bell-shaped pit (sheet 74). Feature 7 was circular in plan view, and was presumably a pit (sheet 77). Its surface was “covered w/large quantities of shell temp pottery (Cahokia Red shell temp plain and Ramey Incised), 1 reworked proj point drill, burned clay & rock” with “very little charcoal” (sheet 77). A sketch suggests it was found in association with a line of posts.

As part of his dissertation investigating the “Hopewell occupation” of the American Bottom, Maher (1996) examined artifacts from Denny’s excavation and surface collection, but apparently the artifacts were without specific provenience. Maher (1996: Tables D.5 and D.6) provides a list of the Middle Woodland ceramics he identified in Denny’s collection; he suggests that there was an equal number of Mississippian sherds in the assemblage (apparently dating to the late Stirling phase), as well as a “substantial collection of Early Woodland Marion Thick pottery” (1996:640). Maher (1996:640) reports that Denny provided him with photographs from his excavation which “revealed the presence of pottery-filled pits (Figure D.15); a pit with a carbonized corn cob remains (Figure D.15), and midden-filled pits and post molds (Figure D.16) [sic].” Maher’s Figures D.15 and D.16 are included among Denny’s color slides now curated in the SIUE Anthropology Department.

Maher (1996) also conducted limited excavations at 11MS99, focusing on the purported mound. IAS site forms indicate that this “mound” was 80 feet in diameter and 3 feet high, and as Maher notes, the IAS site forms also indicate that previous owner Wilbur (or Wilber) Gehring dug a hole in the landform “many years ago [before 1969], but never found anything.” The IAS site forms indicate that a notched hoe was found near the possible mound, but was not necessarily associated with it. Terry Norris (personal communication, September 2016) reports
that he and Ken Williams found a stone pipe fragment on the possible mound during a general
surface collection prior to Denny’s first field school on the site in 1970. Norris states that the
pipe fragment was approximately 10-12 cm long and 5-6 cm wide, larger and bulkier than a
Middle Woodland styled platform pipe and more similar to a Mississippian style pipe. The stone
was dark and possibly a fine grained sandstone.

Maher (1996) excavated in the possible mound to determine its cultural affiliation. He
notes that at the time of his excavation in 1994, the purported mound was only 50 cm high and
difficult to locate due to decades of plowing. Maher placed two transects of “soil probe cores”
across the mound, and also excavated three 1 x 2 m units on the mound. All excavated sediments
in these units were screened through half-inch mesh. No artifacts were recovered in two of the
three units, and artifacts in the third were recovered from the plowzone only and were not
culturally diagnostic. Maher reports that the stratigraphy in the excavation units was often
disturbed and gave no indication of mound construction techniques (such as basket loading).
Flotation samples were taken from supposed mound fill, but produced few plant remains. A
hazelnut shell was submitted for radiocarbon dating and produced a date of 2475 ± 45 BP,
suggesting a Late Archaic or Early Woodland affiliation (Maher 1996:659). However, Maher
concludes that “the mound at Gehring remains an enigma” (1996:659). That is, the near absence
of artifacts and lack of definitive evidence for mound construction could indicate that this was
not a mound at all, but instead was a natural geomorphological feature, perhaps a remnant of a
sand ridge.

The observations and collections of avocational archaeologist Keith Probst are probably
as important as those of professional archaeologists in understanding 11MS99. Probst collected
11MS99 and other sites in Madison County between 1967 and 1973, keeping a log of his finds in
which he recorded artifact numbers, artifact descriptions, and site locations (Zimmermann 2019).
In 2007 and 2008 Probst permitted Julie Zimmermann, Brad Koldehoff, and Ken Farnsworth to
examine his collection, photocopy his log, and photograph selected artifacts. In his log, Probst
referred to 11MS99 as a “Hopewell” site, and our examination of his collection from 11MS99
confirms that it is predominantly composed of Middle Woodland artifacts. Middle Woodland
lithic artifacts he collected include blades, blade cores, Snyder points (several of which were
reworked into scrapers), North points, Manker points, a Norton point, celts, and a hoe. Middle
Woodland ceramic types identified in the Probst collection include Havana plain, Hopewell
rocker stamped, Netler stamped, and Sisters Creek fingernail punctate. A drilled bear canine
from the site is also surely Middle Woodland, and a galena fragment and a quartz crystal are
probably Middle Woodland. (One Snyder points was also made of quartz; this was found in the
northern part of the site.) Early Woodland and Mississippian artifacts were also common. Early
Woodland artifacts included 11 Kramer points (one of which was reshaped into a drill), and a
probable limestone tube pipe (broken and unfinished) also appears to be Early Woodland.
Mississippian artifacts include Cahokia points, Madison points, a Cahokia cordmarked jar rim
with a red-slipped interior (Moorehead phase), a celt, and a Cahokia style discoidal. Two marine
shell disk beads in the Probst collection are probably also Mississippian. The Probst collection
from 11MS99 also includes a Dalton point (turned into a scraper), a variety of Late Archaic point
types (Matanzas, Riverton, Adena, Copena, Etley, and Motley), a Late Woodland Mund point,
artifacts dating to the Terminal Late Woodland or Emergent Mississippian period (a Late
Woodland arrow point and Late Bluff rim sherds), and an historic period ceramic pipe.

While revisiting 11MS99 in 2008, in 2009, and in 2013, Probst pointed out that the
majority of Middle Woodland artifacts came to the surface only after the sand ridge in the
southern part of the site was deep plowed for horseradish production. This observation suggests that prior to deep plowing, the site had been stratified. Probst also suggests that as much as five feet of sediment have been removed from this ridge (due to plowing and erosion) since the early 1970s.

There are surely other privately held artifact collections from 11MS99 which would prove informative if they could be located. Probst collected the site for a relatively brief period, and during that period he regularly observed footprints from other artifact collectors. Footprints from a collector were observed in Zimmermann’s first visit to the site with Probst in March of 2008. Footprints of collectors were observed on-site every time it rained during the field school in May and June of 2009. Zimmermann observed on June 1 of 2009 that a collector had been digging on-site, at the edge of an erosion gully at the southern end of the site. In addition, in May and June of 2009 a total of approximately 20 people actively surface collecting were observed firsthand by field school faculty and students and reported to SIUE police. One collector reported that she had been told about the site by her employer, a local lawyer, who had collected the site for years with his family. A family caught collecting and stopped by SIUE police in summer of 2009 reported that they had been given permission to collect by Craig Keller (the current tenant farmer); they reported that they had collected the site for years and had seen many other collectors out there. It would be beneficial to examine the collections of these and other individuals, but unfortunately none have been forthcoming as of this writing. During the 2011 SIUE field school, looters damaged a feature that was being excavated, but it is unknown if they stole any artifacts (Vogel et al. 2013). During field school excavations since 2013, we have not observed any collectors, nor have we observed evidence that the site has been visited by collectors. This could be in part a result of the police protection which began in 2009, and the installation in 2009 of IHPA signs forbidding artifact collection on site. Moreover, because the site is no longer plowed (since approximately 2012), it is less attractive to collectors.

Julie Zimmermann (formerly Zimmermann Holt) directed the SIUE Anthropology Department’s archaeology field school at 11MS99 in 2009, 2013, 2014, 2016, and 2018 (Zimmermann 2017, 2018; Zimmermann Holt 2013, 2015; Zimmermann Holt and Belknap 2010). In 2009, a surface collection was conducted over the southern and central portions of 11MS99, as well as ca. 85 acres of agricultural field adjacent to the central and southern portions of the site. Based on results of this surface survey, and an interest in the Middle Woodland occupation of the site, excavations directed by Zimmermann have been focused at the southern end of 11MS99. These investigations have revealed artifacts and three pit features suggesting occupation throughout the Middle Woodland period (Zimmermann et al. 2018; Zimmermann 2020). Middle Woodland artifacts recovered suggest participation in the Hopewell Interaction Sphere, perhaps more intense participation than is typically interpreted at Middle Woodlands sites in the American Bottom. Possible “Hopewelian” goods recovered in our excavations included Hopewell pottery, a figurine, mica, obsidian, and copper awl. Several posts ca. 20 cm in diameter are also believed to date to the Middle Woodland period. These posts, along with mud dauber nests, suggest the presence of one or more Middle Woodland structures at the site.

Excavations directed by Zimmermann at the southern end of the site have also revealed Mississippian features, including two wall trench structures and at least four external pits. Features located inside the wall trench structures might be contemporary with the structures, or might predate them (Leslie 2020; Zimmermann Holt 2013, 2015; Zimmermann 2017, 2018). Several other pits excavated in the vicinity of these features might date to the Late Woodland period (Zimmermann 2017).
These possible Late Woodland features extended into the wall of the 2016 excavation units. Excavation of them was completed by Carol Colaninno of SIUE’s STEM Center, who directed her NSF REU field school from 2017 through 2019 at 11MS99 (Colaninno and Zimmermann 2018, 2019, 2020). Colaninno’s excavations in this area revealed two additional pit features which were probably Mississippian in age.

Gregory Vogel, then Assistant Professor of Anthropology, directed the SIUE archaeology field school at 11MS99 from 2010 through 2012 (Vogel and Clemons 2011; Vogel et al. 2013). Vogel conducted extensive remote sensing at 11MS99, and his excavations focused on ground-proofing the remote sensing results in the central portion of the site. Pit features excavated by Vogel and students in the central part of the site are believed to date to the Middle Woodland, Late Woodland, Emergent Mississippian, and Mississippian periods. Structures were excavated probably dating to the Mississippian and historic periods. The presumed Mississippian structure was a wall trench structure. A Mississippian burial probably dating to the Moorehead phase was found in the summer of 2012; it contained copper, a shell-tempered ceramic discoidal, and red-slipped, shell-tempered pottery (Vogel 2012). After determining that this feature was a burial, it was immediately reported to the IHPA and reburied without further excavation.

Investigation of the stratigraphy at 11MS99 included excavation of deeper units by Zimmermann (then Zimmermann Holt) and students in the southern portion of the site in 2009 and in the central portion of the site by Vogel and students in subsequent field seasons. Vogel also took sediment cores across the site. His stratigraphic analysis suggests potential for deeply buried cultural deposits at 11MS99. However, based on Vogel’s recommendations, our excavations since 2009 have mostly been limited in depth to investigation of features found at the base of the plowzone. If there are more deeply buried cultural deposits at the site, we don’t have time to reach them in the course of a typical field school season because our field methods do not include use of heavy machinery. We realize, however, after discovery of the Mississippian wall trench structure Feature 257 in 2016, that there could be culturally buried deposits at the site. That is, Mississippian features superimpose and may have sometimes buried earlier features. Thus, our excavations in 2018 were deeper than those in 2013-16 to make sure we had reached culturally sterile sediments. The shallow depth of Mississippian features demonstrate that Probst was correct: the southern end of the site has lost as much as 5 feet of topsoil (see Zimmermann Holt 2013, 2015; Zimmermann 2017, 2018).

Finally, 11MS99 has been the subject of recent CRM compliance work. Because the road which separates the northern and central portions of the site was scheduled to be improved, in May of 2014 several backhoe trenches were dug cross-cutting the road, and shovel tests were conducted just north and south of the road (Booth 2014). These investigations found nothing of archaeological significance. The road improvements were completed in summer of 2015.

Based on our recommendations, and because a burial was confirmed in the summer of 2012, SIUE has stopped leasing the southern and central portions of 11MS99 for agriculture. In fall of 2015 we seeded the southern and central portions of the site with a conservation planting. After several years without plowing, the undergrowth on the site by that time was extremely dense, including small trees. Because of this, the site had to be cleared with a construction grader, which left extreme ridging across parts of the site, particularly the central portion. However, while the disturbance at the surface of the site was extreme, we saw no evidence that clearing caused impact below the level of the existing plowzone. That is, clearing did not appear to pull up artifact concentrations which would have suggested disturbance of intact features. After the site was cleared, we planted an annual crop of winter wheat to hold the soil and
discourage weeds, along with a permanent planting of non-native perennial grasses, timothy and redtop. Non-native grasses were chosen because these were cheaper; however, they also have a shallower root system than native grasses, and so might be less destructive to archaeological deposits. We hand-broadcasted native wild flowers (black-eyed Susan, gray-headed coneflower, and partridge pea) the following January after a light snowfall; the purpose of the wild flowers was to provide food for native wildlife. During the summer of 2016, the tenant farmer accidentally plowed about four acres in the central part of the site, unfortunately in the vicinity of the Mississippian burial identified in 2012. The plowed portion of the site was again planted with timothy and redtop that fall, and again native wildflowers black-eyed Susan, gray-headed coneflower, and partridge pea were hand-broadcasted in February of 2017 after a light snowfall. As of this writing, the site is well-stabilized with these plants, preventing further erosion of archaeological deposits. Undesirable weeds are also present at the site, but we don’t have the budget to control them. Further regrowth of trees has been prevented by mowing in September, after birds are finished nesting for the year. We will continue to mow the site every September, or possibly burn the grasses periodically.
FIELD METHODS AND RESULTS

Excavation was begun on Wednesday, May 19, and completed on Wednesday, June 23. Our goals in 2021 were to investigate the spaces between Features 212 and 257, two Mississippian wall trench features discovered and excavated in previous field seasons by Zimmermann (2013, 2015, 2017, 2018). Our goal for this area (described as Excavation Block A) was to find additional pit features associated with the Mississippian houses. Unit GG was placed near previously excavated Features 102 and 104, which were associated with the Middle Woodland occupation of the site (Zimmermann Holt and Belknap 2010). Features 102 and 104 were excavated in 2009, prior to the practice of excavating below the plowzone/subsoil transition, so Units GH-GJ were re-excavated in order to verify that these units were sterile outside of the previously identified features. Units GG-GJ comprise Excavation Block B. Our goal was to encounter pottery with intact food residues in both Middle Woodland and Mississippian features to investigate diachronic foodways patterns using methods not commonly used in the American Bottom region.

Site datum coordinates for our excavations in the southern portion of the site can be found in Table 1 (see Zimmermann Holt and Belknap 2010; Zimmermann Holt 2013). Please note that our coordinates are on a different grid system than the grid later established by Vogel in the central part of the site (Vogel and Clemons 2011; Vogel et al. 2013). Unit coordinates and sizes for the 2021 excavation can be found in Table 2. Unit coordinates refer to the southwest corner of the unit.

### Table 1. Site Datum Coordinates (Zone 15S)

<table>
<thead>
<tr>
<th>SIUE grid coordinates</th>
<th>X (UTM)</th>
<th>Y (UTM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N419 E396</td>
<td>759095</td>
<td>4297430</td>
</tr>
<tr>
<td>N399 E396</td>
<td>759096</td>
<td>4297408</td>
</tr>
</tbody>
</table>

**Methods**

All sediments were removed by hand (using shovel and trowel). The plowzone in all new units (GA-GG) and one previously excavated unit (GJ) was removed in one natural level, screened through ¼ inch mesh, and described using standard nomenclature (Munsell colors and USDA textures). The plowzone in two previously excavated units (GH & GI) were removed by hand but not screened since it had been previously screened. Sediments below the plowzone in Units GA-GJ were removed in arbitrary 10 cm levels and described using standard nomenclature. Some levels below the plowzone were screened in entirety through ¼ inch mesh, but others were screened at rates of less than 100% because they were high in clay content (breaking both screens and spirits) and because they contained very few (if any) artifacts.

Possible cultural features identified in Units GA-GJ were drawn and photographed in plan view, given a feature number (beginning with 350) and then bisected. The first half of each feature was excavated as a single stratum. The profile of the feature was then photographed and drawn. Any distinct strata visible in profile were excavated separately in the second half of the feature, with 10 L flotation samples taken from each. If strata were too small to yield a 10 L sample, smaller samples were taken. All feature sediments not saved for flotation were screened using ¼ inch mesh.
Table 2. Unit Coordinates.

<table>
<thead>
<tr>
<th>Excavation Block</th>
<th>Unit name</th>
<th>SIUE grid coordinates</th>
<th>Unit size</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>GA</td>
<td>N416E400</td>
<td>2x2 m</td>
</tr>
<tr>
<td></td>
<td>GB</td>
<td>N416E402</td>
<td>2x2 m</td>
</tr>
<tr>
<td></td>
<td>GC</td>
<td>N414E400</td>
<td>2x2 m</td>
</tr>
<tr>
<td></td>
<td>GD</td>
<td>N414E402</td>
<td>2x2 m</td>
</tr>
<tr>
<td></td>
<td>GE</td>
<td>N412E400</td>
<td>2x2 m</td>
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<tr>
<td></td>
<td>GF</td>
<td>N412E402</td>
<td>2x2 m</td>
</tr>
<tr>
<td></td>
<td>GG</td>
<td>N410E394</td>
<td>2x2 m</td>
</tr>
<tr>
<td></td>
<td>GH</td>
<td>N410E396</td>
<td>2x2 m</td>
</tr>
<tr>
<td></td>
<td>GI</td>
<td>N408E394</td>
<td>2x2 m</td>
</tr>
<tr>
<td></td>
<td>GJ</td>
<td>N408E396</td>
<td>2x2 m</td>
</tr>
</tbody>
</table>

Results, Excavation Block A, Units GA-GF

Excavation Block A included six 2x2m units, all of which were excavated in two levels (Figure 3). The plowzone in Units GA-GF ranged between 20 and 25 cm deep, and was typically described as a 10YR 3/2 very dark grayish brown sandy loam or clay loam. According to the USDA (2009), the soil at 11MS99 is classified as an Onarga sandy loam. The most common artifacts found in the plowzone of Units GA-GF were lithics (chert) and ceramics (Table 3). The largest concentrations of artifacts in Excavation Block A were derived from Units GA and GB, which were the northernmost units of the block and located immediately south of both a large Mississippian pit feature (F325) and a Mississippian house (F212). Units GE and GF had been partially excavated before when the Mississippian house (F257) to the south of Block A was investigated in 2016 and 2018; the southern halves of these units were not screened, so the proportion of artifacts in the plowzone of these units is still high, and not unexpected given their proximity to a house structure.

Table 3. Plowzone (Ap) Artifacts from all 2021 excavations units

<table>
<thead>
<tr>
<th>Unit</th>
<th>Pottery</th>
<th>Lithics</th>
<th>Stone Tool</th>
<th>FCR</th>
<th>Burnt Clay</th>
<th>Sandstone</th>
<th>Limestone</th>
<th>Bone</th>
<th>Charcoal</th>
<th>Hematite</th>
<th>Historic</th>
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</thead>
<tbody>
<tr>
<td>GA</td>
<td>232</td>
<td>178</td>
<td>0</td>
<td>15</td>
<td>5</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>GB</td>
<td>220</td>
<td>141</td>
<td>0</td>
<td>9</td>
<td>57</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>GC</td>
<td>101</td>
<td>138</td>
<td>0</td>
<td>10</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>GD</td>
<td>116</td>
<td>194</td>
<td>1</td>
<td>11</td>
<td>12</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>GE</td>
<td>101</td>
<td>90</td>
<td>0</td>
<td>1</td>
<td>12</td>
<td>15</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>GF</td>
<td>123</td>
<td>82</td>
<td>0</td>
<td>5</td>
<td>17</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>GG</td>
<td>348</td>
<td>239</td>
<td>1</td>
<td>14</td>
<td>34</td>
<td>15</td>
<td>8</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>GH</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>GI</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>GJ</td>
<td>68</td>
<td>99</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Totals:</td>
<td>1309</td>
<td>1168</td>
<td>2</td>
<td>66</td>
<td>156</td>
<td>64</td>
<td>24</td>
<td>21</td>
<td>2</td>
<td>1</td>
<td>9</td>
</tr>
</tbody>
</table>
The subsoil immediately beneath the plowzone in units GA-GF was mostly a 10YR 4/4 dark yellowish brown clay loam or sandy clay. At the top of the subsoil (Stratum B), 13 possible post features were identified, mapped, and bisected in Excavation Block A (Figures 4-7; Table 4). Only one feature in Block A, Feature 356, appeared to be a real post feature once bisected. Two other features, F357 and F364, are possible postholes. All other features appeared to be the results of bioturbation, either horseradish taproots or rodent burrows. Flotation samples were still collected and processed from all numbered and bisected features, except for Feature 358, which received a number but was ultimately not deemed worthy of excavation.

### Table 4. Excavation Block A Features (Units GA-GF)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Unit/Level*</th>
<th>Length (cm)</th>
<th>Width (cm)</th>
<th>Depth (cm)</th>
<th>Plan</th>
<th>Profile</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>356</td>
<td>GB/1</td>
<td>22</td>
<td>22</td>
<td>12</td>
<td>Circular</td>
<td>vertical</td>
<td>posthole</td>
</tr>
<tr>
<td>357</td>
<td>GB/1</td>
<td>6.5</td>
<td>6.5</td>
<td>12</td>
<td>Circular</td>
<td>vertical</td>
<td>taproot/posthole?</td>
</tr>
<tr>
<td>358</td>
<td>GC/1</td>
<td>8</td>
<td>8</td>
<td>NA</td>
<td>Circular</td>
<td>NA</td>
<td>not excavated</td>
</tr>
<tr>
<td>359</td>
<td>GA/1</td>
<td>6</td>
<td>6</td>
<td>20.5</td>
<td>Circular</td>
<td>vertical/inslanting</td>
<td>rodent run</td>
</tr>
<tr>
<td>360</td>
<td>GA/1</td>
<td>13</td>
<td>14</td>
<td>24</td>
<td>circular/irregular</td>
<td>vertical/irregular</td>
<td>bioturbation</td>
</tr>
<tr>
<td>361</td>
<td>GA/1</td>
<td>30</td>
<td>30</td>
<td>21</td>
<td>Circular</td>
<td>vertical/irregular</td>
<td>bioturbation</td>
</tr>
<tr>
<td>362</td>
<td>GA/1</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>Circular</td>
<td>vertical</td>
<td>bioturbation</td>
</tr>
<tr>
<td>363</td>
<td>GA/1</td>
<td>9</td>
<td>9</td>
<td>10</td>
<td>Circular</td>
<td>vertical/inslanting</td>
<td>rodent run/taproot</td>
</tr>
<tr>
<td>364</td>
<td>GA/1</td>
<td>19</td>
<td>19</td>
<td>8</td>
<td>Circular</td>
<td>vertical</td>
<td>posthole?/bioturbation</td>
</tr>
<tr>
<td>365</td>
<td>GA/1</td>
<td>13</td>
<td>15</td>
<td>NA</td>
<td>circular/irregular</td>
<td>NA</td>
<td>soil anomaly/bioturbation</td>
</tr>
<tr>
<td>366</td>
<td>GF/1</td>
<td>6</td>
<td>6</td>
<td>20</td>
<td>Circular</td>
<td>vertical/inslanting</td>
<td>taproot</td>
</tr>
<tr>
<td>367</td>
<td>GF/1</td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>Circular</td>
<td>vertical/inslanting</td>
<td>rodent run</td>
</tr>
<tr>
<td>368</td>
<td>GE/1</td>
<td>6</td>
<td>6</td>
<td>10</td>
<td>Circular</td>
<td>vertical</td>
<td>taproot</td>
</tr>
<tr>
<td>369</td>
<td>GA/2</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>Circular</td>
<td>vertical</td>
<td>taproot/rodent run</td>
</tr>
<tr>
<td>370</td>
<td>GC/2</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>circular/ovular</td>
<td>vertical/inslanting</td>
<td>taproot/rodent run</td>
</tr>
<tr>
<td>371</td>
<td>GE/2</td>
<td>7.5</td>
<td>10</td>
<td>10</td>
<td>Ovalar</td>
<td>vertical</td>
<td>rodent run</td>
</tr>
<tr>
<td>372</td>
<td>GF/2</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>Circular</td>
<td>vertical</td>
<td>taproot</td>
</tr>
<tr>
<td>373</td>
<td>GF/2</td>
<td>6</td>
<td>10</td>
<td>31</td>
<td>Ovalar/irregular</td>
<td>vertical/irregular</td>
<td>rodent run</td>
</tr>
</tbody>
</table>

*feature identified at bottom of noted level
Figure 3. Units GA-GF (Block A), plan view at base of plow zone.
Figure 4. Unit GA plan view at base of the plowzone/Level 1 (Features 359-365)

Figure 5. Unit GB plan view at base of the plowzone/Level 1 (Features 356 & 357)
Figure 6. Unit GE plan view at base of the plowzone/Level 1 (Feature 368)

Figure 7. Unit GF plan view at base of the plowzone/Level 1, facing east* (Features 366 & 367)  
* [north arrow placed incorrectly in photo]
After the possible posts found at the base of the plow zone in Units GA-GF were excavated, we resumed excavation of the subsoil in order to be certain that there were no buried features in Block A. Our concern with buried features resulted from the discovery of Feature 257 buried below what looked like sterile subsoil during the 2016 field season (Zimmermann 2017:22).

The subsoil (Stratum B) in the Block A units was very compact and difficult to both dig and screen, particularly across the middle of the block (Units GC and GD). In general, very few artifacts were found in the subsoil. Excavating one 10-cm arbitrary level into the subsoil in Units GA-GF revealed an additional five possible post features (Features 369-373), which were investigated as part of Stratum B Level 2 (Figures 8-11). All of these possible post features were determined upon excavation to be the results of bioturbation. They will be further described with other features below. The lack of artifacts, cultural features, time limitations, and the difficulty of excavating and screening the soil from Stratum B led to the decision to excavate only a single arbitrary 10cm level into the subsoil across all Block A units.

Table 5 shows that very few artifacts were found in the subsoil in Units GA-GF. In fact, the only unit that yielded artifacts outside of feature contexts in Stratum B is GF, which contained 4 lithic flakes. The soil matrix of Stratum B in Block A was incredibly dense and difficult to excavate clay, which likely prevented the migration of artifacts into this level. The further lack of verifiable cultural features in this area also shows that very little ground-disturbing activities were conducted in the area between the two Mississippian house features.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Pottery</th>
<th>Lithics</th>
<th>FCR</th>
<th>Burnt Clay</th>
<th>Bone</th>
<th>Unit Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>GA</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>GC</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>GD</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>GE</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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</tr>
<tr>
<td>GF</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>GG</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>GH</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>0</td>
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<td>14</td>
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<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>GJ</td>
<td>16</td>
<td>23</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>48</td>
</tr>
<tr>
<td>Totals</td>
<td>25</td>
<td>38</td>
<td>2</td>
<td>8</td>
<td>5</td>
<td>78</td>
</tr>
</tbody>
</table>
Figure 8. Units GA-GF (Block A), plan view map at base of Level 2.
**Figure 9.** Unit GA plan view at base of Level 2 (Feature 369)

**Figure 10.** Unit GC plan view at base of Level 2 (Feature 370)
Block A Features

Of the 18 possible features (all possible post features) excavated in Block A, only one (F356) was determined to be cultural, while two others, (F357 and F364) are possible postholes. Although likely not a cultural feature, F359 contained a single piece of bone. All other features explored appear to be the result of bioturbation. Table 6 provides summary data and artifact data for each of the Block A numbered features. All bisected features, cultural and noncultural, are discussed below. Photos and profiles are provided for postholes, possible postholes, and features containing artifacts; photos of non-cultural, sterile features are included in Appendix A.

<table>
<thead>
<tr>
<th>Block</th>
<th>Feature</th>
<th>Pottery</th>
<th>Lithics</th>
<th>Burnt Clay</th>
<th>Bone</th>
<th>Total Artifacts per Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>350</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>352</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>A</td>
<td>356</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>359</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>10</td>
</tr>
</tbody>
</table>
Level 1 Features:

Feature 356 was a circular feature approximately 22 cm in diameter and 12 cm below the subsoil (Figures 12-14). The majority of fill was characterized as 10YR 3/3 dark brown silty clay loam, with a small zone at the base that was the same matrix mottled with 10YR 7/3 very pale brown sandy clay. Significant amounts of charcoal were recovered from the feature, supporting the interpretation that it is cultural. The charcoal was collected and wrapped in tin foil and will be sent for AMS dating to determine the occupation with which is affiliated. A piece of pottery and small fragments of faunal bone were encountered within the feature. F356 seems a bit shallow for a posthole, but it was quite distinct in planview and profile (rounded bottom margin), and the amount of charcoal discovered within it strongly suggests it is cultural. The diameter and depth of F356 is consistent with Features 326 and 336, both excavated in 2018 and interpreted as postmolds (Zimmermann 2018). Feature 336 has been interpreted as a possible Middle Woodland house post (Zimmermann et al. 2018).

However, charcoal from Feature 356 charcoal yielded a radiocarbon age of 790±, or cal AD 1224-1271 (Stuiver et al. 2022; Stuiver & Reimer 1993). This means that F56 is associated with the Mississippian occupation of the site, specifically the Moorehead Phase (AD 1200-1300). This also explains the shallow nature of the feature, as other Mississippian features have also been shallow due to plowing and erosion at the site.

Figure 12. Feature 356, plan view
Figure 13. Feature 356, profile facing north

A = Feature 356 fill (10YR 3/3 dark brown silty clay loam)
B = Feature 356 fill (10YR 3/3 dark brown silty clay loam mottled with 10YR 7/3 very pale brown sandy clay)
C = Subsoil (10YR 4/4 dark yellowish brown clay loam)

Figure 14. Feature 356, drawn profile facing north
Feature 357 was encountered in the same unit and less than a meter from F356 in Unit GB (Figures 15-17). The fill was 10YR 3/2 very dark grayish brown silty loam. The feature contained chunks of burned clay that were too degraded to recover, as well as some charcoal flecks that were also too small to collect. It continued to a depth of 12cm below the surface of the subsoil, and had a pointed-to-round bottom margin. The narrowness of the feature suggests it is a taproot, but the presence of charcoal and baked clay suggests it could potentially be a small posthole (although the cultural materials might have been incorporated into the feature from the plowzone through bioturbation).

Feature 358 was initially identified on the surface of the subsoil (bottom Level 1) and given a number, but it was ultimately not excavated because of its small and diffuse superficial appearance.

![Image of Feature 357]

*Figure 15. Feature 357, plan view*
Figure 16. Feature 357, profile facing north

Figure 17. Feature 357, drawn profile facing north

A = Feature 357 fill (10YR 3/2 very dark grayish brown silty loam)
B = Subsoil (10YR 4/4 dark yellowish brown clay loam)
Figure 18. Feature 359, plan view

Figure 19. Features 359 (left) and 360 (right), profile facing north
Figure 20. Feature 359, drawn profile facing north

A = Feature 359 fill (10YR 3/2 very dark grayish brown clay loam)
B = Subsoil (10YR 4/4 dark yellowish brown clay loam)

Feature 359 was located close to F360 and was excavated along the same bisection line (Figures 18-20). F359 was characterized as 10YR 3/2 very dark grayish brown clay loam, and a single piece of faunal bone was present in the screened matrix. In profile, it was narrow and deep, continuing below the top of the subsoil for over 20cm at an angle (eastward) until it changed direction. It was determined to be a rodent run.

Feature 360 was an intriguing feature in planview, consisting of a dark center zone (6cm diameter) and a zone surrounding it consisting of a light matrix mottled with dark and reddish-orange soil (13cm diameter). The dark zone at the center was extremely shallow (1-2 cm below the subsoil) characterized as 10YR 3/1 very dark gray loam, while the light mottled zone, characterized as 10YR 3/3 dark brown silty clay loam with reddish-orange zones on the margins, terminated at 24cm below the subsoil. This suggests leaching of some kind. The shallowness of the dark center zone suggests the feature is likely not cultural.

Features 361 and 362 were excavated along the same bisection line Feature 361 was wide (30 cm diameter) and deep (24cm) but also highly irregular in shape, with two primary zones of fill characterized as 10YR 4/4 dark yellowish brown silty clay and 10YR 3/3 dark brown silty clay. Feature 362 was smaller and shallower, resembling F360, with a dark inner core (10YR 3/2 very dark grayish brown silty loam) surrounded by lighter zones of matrix (primarily 10 YR 4/3 brown loamy clay) mottled with dark gray and reddish-orange soils. It had a rounded bottom in profile. Both F361 and F 362 appear to be the result of bioturbation.
Feature 363 was excavated along the same bisection line as F365. The fill was 10 YR 3/2 very dark grayish brown loam. It had a narrow, vertical-to-inslanting profile. It appears to be rodent run or a taproot rather than a posthole or cultural feature.

Feature 364 was found directly east of Features 359 and 360. It was 19 cm in diameter and circular in planview with a depth of 8cm below the top of the subsoil (Figures 21-23). Its bottom margin was rounded in profile, and it contained three apparent soil zones (10 YR 4/3 brown sandy loam, 10YR 4/2 dark grayish brown sandy loam, and 10YR 4/4 dark yellowish brown sandy loam). The shape and diameter suggests it could be the bottom of a posthole, but it is also somewhat diffuse and indistinct. It is a possible postmold, but likely the result of bioturbation.

![Figure 21. Feature 364, plan view](image-url)
Figure 22. Feature 364, profile facing north

Figure 23. Feature 364, drawn profile facing north

A = Feature 364 fill (10 YR 4/3 brown sandy loam)
B = Feature 364 fill (10YR 4/2 dark grayish brown sandy loam)
C = Feature 364 fill (10YR 4/4 dark yellowish brown sandy loam)
D = Subsoil (10YR 4/6 dark yellowish brown clay loam)
Feature 365 was excavated along the same bisection line as F363. Upon bisection, it appeared to have no depth. F365 was therefore just a superficial soil anomaly (perhaps a zone of soil more highly saturated with water). No soil sample was collected from this “feature” for flotation.

Feature 366 was filled with 10YR 3/2 very dark grayish brown silty loam. In profile it was narrow and deep. It continued into the subsoil for approximately 20 and terminated in a pointed bottom margin. It is the remnants of a taproot.

Feature 367 contained fill characterized as 10YR 3/2 very dark grayish brown silty loam. Upon bisection, it was found to continue into the excavation basin down and northward at an extreme angle, strongly suggesting it was a rodent run.

Feature 368 was filled with 10YR 3/2 very dark grayish brown silty loam. It was quite narrow and contained no cultural material. It is most likely a taproot.

**Level 2 Features**

Feature 369 is small in diameter (6 cm) and shallow in profile (8 cm). The fill was 10YR 4/3 brown loam. Its bottom margin was rounded, but overall the feature was somewhat diffuse. It is unlikely that this feature is cultural and most likely represents a taproot or rodent run.

Feature 370 was a small, narrow feature (7 cm wide). The fill was 10YR 3/3 dark brown sandy loam. In profile it is vertical, but had a very pointed bottom margin that veered to the east. It is not cultural and is most likely a taproot or rodent run.

Feature 371 was a small, dark ovular feature in planview. The fill in a shallow zone in the center of the feature was characterized as 10YR 5/3 brown sandy clay loam while the surrounding it was characterized as 10YR 3/2 very dark grayish brown sandy clay. Upon bisection, the feature was found to change directions and began veering to the west. This was determined to be a rodent run.

Feature 372 was a small, dark circular feature in planview. The fill was 10 YR 4/2 dark grayish brown silty clay loam. It was narrow (6 cm diameter) with a rounded-to-pointed bottom margin in profile. It is most likely a taproot.

Feature 373 was very dark and ovular in planview. The fill was 10YR 3/2 very dark grayish brown sandy loam. Upon bisection, it was found to be very narrow and changed direction about 15cm below the surface of the subsoil. This feature was a rodent run.
Results, Excavation Block B, Units GG-GJ.

Excavation Block B consisted of four 2x2 m units, three of which were excavated in two levels (GH, GI, and GJ) and one of which was excavated in three levels (GG). The plowzone in Units GG-GJ ranged between 20 and 30 cm deep, and was typically described as a 10YR 3/3 dark brown sandy loam. According to the USDA (2009), the soil at 11MS99 is classified as an Onarga sandy loam. The most common artifacts found in the plowzone of Units GA-GF were chert and ceramics (see Table 3). The plowzone was screened in Unit GG, which had never been previously excavated, and in Unit GJ, which had been excavated before. The low yield of artifacts from GJ prompted the decision to not screen soil from the plowzone in Units GH and GI, which had also been previously excavated. Only artifacts spotted by eye during excavation were collected in those units. Unit GG ultimately yielded more plowzone artifacts than any of the units in Block A.

The subsoil immediately beneath the plowzone in units GG-GJ was mostly a 10YR 3/4 dark yellowish brown sandy loam, a stark difference from the dense, clayer subsoil in Block A (Figure 24). At the top of the subsoil (Stratum B), 6 possible post features were identified, mapped, and bisected, all in Unit GG, which was the only unit in Block B that had not be previously excavated down to the subsoil (Figures 25-27; Table 7). We did encounter Features 102, 103, and 104 from the 2009 excavations (Zimmermann Holt and Bellknap 2010), as well as two square/rectangular features that were obviously the result of recent disturbance, but were not indicated on site maps (Figure 28). Through further review of 2009 photos and paperwork and consultation with Julie Zimmermann, it was determined that a square feature in the southwest corner of GI was a 1x1m unit that the 2009 field school had excavated to reveal the site stratigraphy. A smaller rectangular feature centered between Units GI and GG was determined to be an original site datum, which was later removed when the current datum points were established.

Table 7. Excavation Block B Features (Units GG-GJ)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Unit/Level*</th>
<th>Length (cm)</th>
<th>Width (cm)</th>
<th>Depth (cm)</th>
<th>Plan</th>
<th>Profile</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>350</td>
<td>GG/1</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>circular/ovular</td>
<td>vertical</td>
<td>rodent run</td>
</tr>
<tr>
<td>351</td>
<td>GG/1</td>
<td>12</td>
<td>12</td>
<td>3</td>
<td>circular</td>
<td>vertical</td>
<td>bioturbation</td>
</tr>
<tr>
<td>352</td>
<td>GG/1</td>
<td>10</td>
<td>10</td>
<td>21</td>
<td>circular</td>
<td>vertical</td>
<td>taproot/posthole?</td>
</tr>
<tr>
<td>353</td>
<td>GG/1</td>
<td>7</td>
<td>7</td>
<td>14</td>
<td>circular</td>
<td>irregular</td>
<td>rodent run</td>
</tr>
<tr>
<td>354</td>
<td>GG/1</td>
<td>13</td>
<td>13</td>
<td>9</td>
<td>circular</td>
<td>vertical</td>
<td>posthole?/bioturbation</td>
</tr>
<tr>
<td>355</td>
<td>GG/1</td>
<td>10</td>
<td>11</td>
<td>7</td>
<td>circular</td>
<td>vertical</td>
<td>posthole?/bioturbation</td>
</tr>
<tr>
<td>374</td>
<td>GG/3</td>
<td>7</td>
<td>7</td>
<td>4</td>
<td>circular</td>
<td>vertical</td>
<td>rodent run (same as F350?)</td>
</tr>
<tr>
<td>375</td>
<td>GG/3</td>
<td>7</td>
<td>9</td>
<td>9</td>
<td>ovular</td>
<td>vertical/inslanting</td>
<td>taproot/rodent run</td>
</tr>
</tbody>
</table>
Figure 24. Unit GG (Block B), profile facing north
Figure 25. Units GG-GJ (Block B), plan view at base of plow zone.
Figure 26. Block A (Units GG-GJ) plan view at base of plow zone/Level 1

Figure 27. Unit GG plan view at base of plowzone/Level 1 (Features 350-355)
Figure 28. Features 352, 354, and 355 (possible postmolds at center of photo; Unit GG) and previously excavated Features 104 (top right quadrant; Unit GH). Previously excavated Unit 103 is also visible in the bottom right corner of the photo.

Figure 29. Block B (Units GG-GJ) plan view at the base of Level 2. Remnants of previously excavated features 103 and 104 are visible in the east half of the block.
After the possible posts found at the base of the plow zone in Units GG-GJ were excavated, we resumed excavation of the subsoil in order to be certain that there were no buried features in Block B. All of the units in Block B were excavated an additional 10-cm arbitrary level below the subsoil (Stratum B Level 2). The matrix of the subsoil in Block B was much less compact and sandier than that encountered in the Block A units. Still, very few artifacts were found in Level 2 (n=78; see Table 5). However, this is substantially more than in the subsoil of any Block A units, perhaps because of the sandier, looser soils in this block and the proximity of these units to substantial Middle Woodland pit features. Unit GJ had the highest concentration of artifacts, likely due to the fact that the unit surrounds Feature 102, a large Middle Woodland pit feature. No new features were encountered during the excavation of or at the base of Level 2 in Block B (Figure 29).

Unit GG was excavated an additional 10-cm arbitrary level (Stratum B Level 3) due to the ease of excavation in this zone and the potential for undisturbed, buried features in this corner of the block (the other units had all been highly disturbed by previous excavations). At the base of this level, two additional possible post features (F374 and F375) were identified, mapped, and bisected (Figures 30 and 31). However, no artifacts were encountered in this level.

**Figure 30.** Unit GG plan view map at base of Level 3

- A: 10YR 3/3 sandy clay loam
- B: 10YR 4/4 Loamy Sand
- C: 10YR 2/2 mottled with 10YR 3/4 sandy loam
- D: 10YR 4/3 sandy loam
- E: 10YR 4/4 sandy clay loam
Figure 31. Unit GG plan view at base of Level 3 (Features 374 & 375)

Block B Features

Of the 8 possible features (all possible post features) excavated in Block B, none were determined to be positively cultural, although three features (F352, F354, and F355) are possible postholes. All others appear to be the result of bioturbation. Tables 6 and 7 provide summary data and artifact data for each of the Block B numbered features. All bisected features, cultural and noncultural, are discussed below. Photos and profiles are provided for postholes, possible postholes, and non-cultural features containing artifacts; photos of non-cultural, sterile features are included in Appendix A.

Level 1 Features

Features 350-355 were identified at the bottom of Level 1 in Unit GG.

Feature 350 was filled with 10YR 3/2 very dark grayish brown silty clay loam (Figures 32-34). It was shallow and upon cleaning out the bisection basin was found to continue through the ground at various angles, suggesting it was a rodent run. Although not cultural, the feature fill did yield a single lithic flake, likely present as result of bioturbation.
Figure 32. Feature 350, plan view

Figure 33. Feature 350, profile facing north
Feature 351 was very shallow and difficult to see in profile. This feature was identified the day after a heavy rain, and may have been a zone of softer soil that became more saturated with water than its surrounding matrix. The “fill” appeared to be 10YR 3/2 very dark grayish brown silty clay loam. Its lack of distinctiveness marks it as bioturbation.

Feature 352 is about 10 cm in diameter and had a pointed bottom margin (Figures 35-36). The fill is 10YR 3/4 dark yellowish brown silty clay loam mottled with clay from the surrounding matrix. It contained a single piece of burned clay, but no charcoal or other materials. Although its shape is in alignment with a taproot, it could possibly be a small posthole.

The fill of Feature 353 was characterized as zones of 10YR 3/3, 10YR 3/2, and 10YR4/2 silty clay loam. The bottom margin of the feature diffuse upon bisection; after photographing and drawing a preliminary profile, further excavation revealed the darker soil continued on horizontally to the south, indicating a probable rodent run. The

Feature 354 was a circular, 13 cm-diameter feature in planview (Figures 38 and 39). The fill was characterized as 10 YR 4/4 dark yellowish brown silty clay loam. In profile it had a rounded base and was relatively shallow. It could be a posthole, but the lack of cultural items suggest it is more likely to be bioturbation. This feature was mapped in profile, but eager students removed the second half of the feature for a soil sample before the profile could be photographed.

Feature 355 was approximately 10cm in diameter and, although shallow, had a square-to-rounded bottom margin that suggests it could be a posthole (Figures 40-42). However, it was
light in color (10YR 3/3 very dark grayish brown silty clay loam) and the margins were somewhat diffuse, suggesting the likelihood it was some form of bioturbation.

Figure 35. Feature 352, plan view

Figure 36. Feature 352, profile facing north
**Figure 37.** Feature 352, drawn profile facing north

A = Feature 352 fill (10YR 3/4 dark yellowish brown silty clay loam mottled with 10YR 4/4 clay loam)
B = Subsoil (10YR 4/4 dark yellowish brown sandy loam)

**Figure 38.** Feature 354, plan view
Figure 39. Feature 354, drawn profile facing north

A = Feature 354 fill (10 YR 4/4 dark yellowish brown silty clay loam)
B = Subsoil (10YR 4/4 dark yellowish brown sandy loam)

Figure 40. Feature 355, plan view
Figure 41. Feature 355, profile facing north

Figure 42. Feature 355, drawn profile facing north

A = Feature 355 fill (10YR 3/3 very dark grayish brown silty clay loam)
B = Subsoil (10YR 4/4 dark yellowish brown sandy loam)
Level 2 Features

There were no evident features at the bottom of Level 2, Stratum B in any of the Block B units.

Level 3 Features

Two small features were identified at the bottom of Level 3, Stratum B in Unit GG of Block B.

Feature 374 was small and circular in planview, and was shallow and rounded in profile. The fill was 10YR 2/2 very dark brown sandy loam mottled with 10YR 3/4 dark yellowish brown matrix of the same texture. Upon mapping the feature, we realized it was directly below F350 from Level 1 and may be a continuation of that feature, which was determined to be a rodent run.

Feature 375 was an ovular feature in planview. In profile, it had a rounded-to-pointed base and an extremely slanted orientation. The fill was 10YR 4/3 brown sandy loam. It likely represents a taproot or rodent run.
DISCUSSION

Our 2021 excavations have revealed some additional information about the Middle Woodland and Mississippian components at 11MS99. Although the lack of features and artifacts from undisturbed contexts may not contribute significantly to our understanding of the Gehring site occupations, there are some things to be learned about the site from our findings. However, we should reiterate that analysis of artifacts from these features is not yet completed as of this writing, so this discussion is tentative.

In Block B, Unit GG was excavated to explore the potential for additional Middle Woodland pit features, based on the proximity of the unit to Features 102, 203, and 204, which are associated with the Middle Woodland occupation of 11MS99. However, there were no pit features present in Unit GG. Three features (352, 354, and 355) are possible postmolds. These three features line up in a semicircular alignment and have similar diameters (see Figure 25); they are also relatively shallow, like many of the Mississippian features at the site, unlike the deep Middle Woodland features nearby. These could be part of some small Mississippian outbuilding or structure, but given that Unit GG was full of other numerous bioturbations, they cannot be confidently interpreted as postmolds.

Excavation of the other units in Block B (GH-GJ), which had been previously excavated to the base of the plowzone, was conducted to check whether there were buried features in this zone. No new features were identified during the excavation of or at the base of Level 2 in these units.

The Block A units (GA-GF) were excavated with the purpose of uncovering additional pit features located between two previously identified Mississippian house features (Features 212 and 257; Figure 43). However, there were no pit features present in this space, and artifact density in both the plowzone and subsoil was very low. Located on the north end of this space, Feature 212 was identified as a Moorehead phase house (Leslie 2020). Moorehead phase groups constructed pit features both inside and outside of residential structures, usually with external pits located in close proximity to structures (Bareis and Porter 1984). At the Julien and St. Thomas sites, external pits were located south of these structures, much like the Mississippian pit features associated with Feature 212 (Kruchten 2008; Milner 1984). The lack of additional pit features further south of these immediately adjacent features falls in line with this trend.

Feature 257 was identified by Leslie (2020) as a Stirling phase house. During this phase, much like in the preceding Moorehead phase, people also dug storage pits inside and outside of their houses, as demonstrated at the Range, Julien, and Turner sites (Bareis and Porter 1984; Kelly 1990; Milner 1984). That no external pit features associated with Feature 257 have been identified (at least not to the north, west, or south of the house) is intriguing. Excavations led by Zimmermann (2017) and Colaninno and Zimmermann (2018, 2019, 2020) revealed a series of large pit features to the east of F257, but these were not immediately adjacent to the house structure and appear to contain largely Late Woodland materials (Colaninno and Zimmermann 2018; Lange 2020). Although Stirling phase houses had a tendency towards more internal storage pits as opposed to communal, exterior pits, the presence of external pit features was not uncommon among Stirling households (Emerson 1997; Mehrer 1995). External storage features may have been less a point of concern on an isolated farmstead, such as the Gehring site, where good stores would not have been protected from neighbors. Whether or not there are external storage pits associated with F257 is yet unknown; external storage pits were typically built along walls of house structures rather than at the corners, so additional investigations to the immediate...
east of F257 may reveal external pits. Radiocarbon dating of materials from the cluster of pits located ~4m east of this structure may also reveal whether they are associated with the Stirling phase or if they are part of a possible Late Woodland component of the site.

The single verified posthole excavated in 2021, Feature 356, was initially hypothesized as a Middle Woodland structural post. Its horizontal dimensions and depth is consistent with Feature 336, excavated in 2018 (Zimmermann 2018), and the diameter is consistent with other features (F103, F330, and F331) that have been interpreted as Middle Woodland structural posts at the Gehring site (Zimmermann et al. 2018). Feature 356 contained both artifacts and charcoal, the latter of which was sent to Keck Laboratories at UC-Irvine for AMS dating. Analysis of the Feature 356 charcoal yielded a radiocarbon age of \(790\pm\), or cal AD 1224-1271 (Stuiver & Reimer 1993; Stuiver et al. 2022). This is contemporaneous with the Mississippian Moorehead phase (AD 1200-1300), which is the probable phase of occupation of nearby Feature 212, a Mississippian house structure. It is unclear that the purpose of this post would be, given its spatial position outside of both the house structure and the associated Mississippian pit features to the south of the house.
Figure 43. Gehring site overview map: Excavations from 2009, 2013-2021. Blue features are Mississippian, red features are Middle Woodland.
CONCLUSION

In 2021 we excavated six 2x2 m units covering an area between two previously identified and excavated Mississippian house structures at the south end of the Gehring site (Excavation Block A). A total of 18 possible features were identified, but most (n=15) were determined to be the result of bioturbation. Two investigated features are possible postmolds, and only one, F356, was a verified feature. This feature contained charcoal that dated to the Moorehead phase (AD 1200-1300) of the Mississippian chronology. The nearby household, F212, was previously identified as a Moorehead phase structure (Leslie 2020).

An additional four 2x2 m units were excavated to the west of the F257 house structure (Excavation Block B). One of these units (GG) had not been previously excavated, while the other three had been excavated down to the surface of the subsoil. Since the adjacent F257 was only visible beneath the surface of the subsoil, these units were reopened to check for the presence of additional Mississippian features. These re-excavations did not reveal any new features. Unit GG, which had been previously excavated, contained 8 possible posthole features. Upon excavation, only three of these remain as possible postholes, the others were the result of bioturbation. None of the Excavation Block B can be confidently classified as cultural features.

Future excavations will hopefully identify additional pit features containing identifiable and datable materials. This will continue to contribute to our understanding of the spatial layout of the Mississippian households and features at the site, the potential for a Late Woodland component at the site, and perhaps will reveal further insight into the elusive Middle Woodland occupation of the site. Additional data from any/all of these components would contribute to our understanding of daily life at the Gehring site and provide insight into the evolution of domestic activities and diet through time.
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APPENDIX A
Non-cultural Features

Feature 351, plan view

Feature 351, profile facing east
Feature 353, plan view

Feature 353, profile facing south (sign mistakenly says “plan view”)

59
Feature 358, plan view (wrong unit indicated, should be Unit GC)

***Feature 358 was numbered and mapped but ultimately not bisected/excavated due to its small circumference.

Feature 360, plan view
Features 361 (center) and 362 (bottom right), plan view

Features 361 (left) and 362 (right), profile facing northeast
Features 365 (left) and 363 (right), plan view

Features 365 (left) and 363 (right), profiles facing northwest
Feature 364, plan view

Feature 364, profile facing north
Feature 367, plan view

Feature 367, profile facing south
Feature 368, plan view

Feature 368, profile facing south
Feature 370, plan view

Feature 370, profile facing north
Feature 372, plan view

Feature 372, profile facing north
Feature 373, plan view

Feature 373, profile facing west
Feature 374, plan view

Feature 374, profile facing north
Feature 375, plan view

Feature 375, profile facing north