"Cooperation Then and Now"
Archeological Investigations at the Wallace Bottom Site, White River National Wildlife Refuge, Arkansas: 2003 Season

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Report to the Quapaw Tribe of Oklahoma
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MANAGEMENT SUMMARY

The Wallace Bottom archeological site in White River National Wildlife Refuge, Arkansas is a likely candidate for the location of the late 17th century Quapaw village of Osotouy and locations of the French Arkansas Post dating between 1686 and 1741. As such, Wallace Bottom ranks with the nation's foremost colonial era Native American and European sites in its importance to early American history.

In 2002 the Quapaw Tribe of Oklahoma received a historic preservation grant from U.S. National Park Service in support of a project titled, "Cooperation Then and Now: Locating and Preserving the Quapaw Village of Osotouy and the Associated French Arkansas Post." Under this grant, the Tribe sponsored archeological studies conducted by the Arkansas Archeological Survey in partnership with the Quapaw Tribe, U.S. Fish and Wildlife Service, Arkansas Post National Memorial, and the Arkansas Archeological Society. The primary goals of the project were confirming the identification of the Wallace Bottom site with Osotouy and the early Arkansas Post and to securing information pertinent to development of an agreement between the Quapaw Tribe, White River Refuge, and other parties for the management and interpretation of the site. The work was authorized under a federal archeological permit issued by the U.S. Department of the Interior.

The archeological work consisted of two phases, small-scale excavations conducted in February and November 2003 and archaeogeophysical mapping conducted in February 2004. Both phases were continuations of pilot studies carried out in 2001 and 2002. Excavation on two areas of the Wallace Bottom site explored cultural features that corresponded to geophysical anomalies identified in previous mapping. One feature is a midden-filled trench which may be the foundation of a colonial era Indian or French structure. The other principal feature identified is a large pit containing abundant early 18th century European artifacts, as well as Indian artifacts, animal bone, charred plant remains, and evident debris from a burned structure. The geophysical mapping conducted as a part of the Cooperation Then and Now project employed magnetic and electrical resistivity methods in extending maps begun in previous years. With this work, virtually all of the Wallace Bottom site, an area comprising nearly 2ha, has been mapped with geophysical instruments. The maps show many geophysical anomalies that may indicate cultural features below the plowzone. The Cooperation Then and Now grant supported participation by one Quapaw tribal member in the November 2003 excavations and a field visit by Elders and other Tribal members on November 8-9, 2003.

Though less than one tenth of one percent of the Wallace Bottom site has been excavated, research results so far support identifying the site with Osotouy and the early Arkansas Post. The distinctive Native material culture from the Wallace Bottom site may be the material signature of the Quapaw people at the beginning of the Colonial era. In the opinion of the authors, the archeological evidence developed by the Cooperation Then and Now project and earlier archeological studies at Wallace Bottom is more than sufficient to qualify the site for placement on the National Register of Historic Places.

ACKNOWLEDGEMENTS

The Arkansas Archeological Survey is grateful to the Quapaw Tribe of Oklahoma for sponsoring the 2003 field operations at Wallace Bottom and to Carrie V. Wilson, the Project Director, for her guidance and persistence in making this proposed field project a reality. In addition to House, Stewart-Abernathy, and Farmer, members of Survey staff taking part in the 2003 work were Mike Evans, Tom Green, Marion Haynes, Tim Mulvihill, Jared Pebworth and Kate Wright. Volunteers were Scott and Hugh Akridge, Diana Angelo, Ann and Robert Bianchi, Bob Cooper, Danny Crumbliss, Brandon Daniels, Mandy DeMichelle, Gayle Fritz, Bill Leach, Mary Little, Joe Melton, Laura Miller, Diana Moxely, Chester Shaw, Alan Smith, Billie Woods, and Susan Young. As in previous phases of the fieldwork at Wallace Bottom, Refuge Manager Larry Mallard of White River National Wildlife Refuge and other members of the Refuge staff were unstinting in their support for archeology at the Wallace Bottom site. Mike Evans, Marion Haynes, and Larry Porter of the Arkansas Archeological Survey and volunteer Chester Shaw assisted in the geophysical mapping in February 2004. Mildred Grissom, Byron Halliburton, Mary Little, Diana Moxely, Rhena and Jacob Persons, Chester Shaw, Mesilla Smith, Ray Veazey, and Jim Wilson volunteered in the UAPB station laboratory processing specimens from the 2003 excavations. Support from Rick Kanaski, USFWS Regional Archaeologist, Ed Wood, Arkansas Post National Memorial Superintendent, and Donald and Linda Wallace of Nady, Arkansas was vital to the success of the field work.

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APPENDIX 1b Copy of Federal Archaeological Permit No. 3AR179-12202 issued to Quapaw Tribe and Arkansas Archeological Survey by U.S. Department of the Interior.

APPENDIX 2 Copy of "Wallace Bottom: A Colonial-Era Archaeological Site in the Menard Locality, Eastern Arkansas." by John H. House, *Southeastern Archaeology* 21(2002):257-268.

APPENDIX 3 Copy of "Archaeogeophysical Mapping at the Wallace Bottom Site, White River National Wildlife Refuge, Arkansas," by Jami J. Lockhart and John House. Report Submitted to Quapaw Tribe of Oklahoma and U.S. Fish and Wildlife Service, Southeast Regional Archeologist's Office by Arkansas Archeological Survey.

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INTRODUCTION

Though it was unknown until 1998, the Wallace Bottom archeological site in White River National Wildlife, Arkansas ranks with Jamestown, Old Mobile, the Natchez Grand Village, and Pecos Pueblo in its significance for colonial-era American history. Archeological evidence collected since the site's discovery supports the site's identification with the late 1600s Quapaw village of Osotouy and successive Arkansas Posts dating between 1686 and 1749—if it is not the location of one or more of the early Posts. Henri de Tonty's 1686 trading house at Osotouy was the first French settlement in what became the Louisiana colony. The establishment of Tonty's post initiated cooperation between the French and the Quapaw people in commercial, military, and political affairs. This cooperation continued through the end of the French era and the beginning of the Spanish era in 1763 and into the American era following the Louisiana Purchase of 1803.

Members of the Quapaw Tribe of Oklahoma followed the Wallace Bottom site's discovery and the initial archeological studies at the site with great interest. Exciting results from these studies brought parties interested in the site together in a meeting in Fayetteville on December 12, 2001. The meeting took place at the Coordinating Office of the Arkansas Archeological Survey, a unit of the University of Arkansas System. The Quapaw Tribe was represented by Carrie V. Wilson, the Quapaw Tribe's NAGPRA and Cultural Resources Director, and Flossie Mathews and Marilyn Rodgers from the Tribal Business Committee. Also participating were White River National Wildlife Refuge Manager Larry Mallard, Arkansas Post National Memorial Superintendent Ed Wood, Arkansas Archeological Survey Director Thomas J. Green, State Archeologist Ann M.Early, and John House, Arkansas Archeological Survey Station Archeologist at University at Pine Bluff. The consensus of the meeting was that the Tribe should apply for a National Parks Service Historic Preservation Grant to support archeological studies and consultation with the Tribe at Wallace Bottom. As part of activities to be funded by the grant, the Quapaw Tribe would contract with the Arkansas Archeological Survey to conduct the archeological investigations. Mallard and Wood offered their support for the project as partners.

Following the meeting, the participating Quapaw Tribal members drafted a resolution in support of the project. The resolution was approved by Quapaw Tribe's Business Committee at its December 15 meeting. Over the ensuing several weeks, Carrie Wilson prepared a grant proposal titled, "Cooperation Then and Now: Locating and Preserving the Quapaw Village of Osotouy and the Associated French Arkansas Post," which the Tribe submitted to the Tribal Preservation Program, Heritage Preservation Service, National Park Service. The grant application was approved with full funding.

Cooperation Then and Now project's objectives were: (1) verifying the Wallace Bottom site as the location of the Quapaw village of Osotouy; (2) determining the eligibility of the Wallace Bottom site for placement on the National Register of Historic Places; (3) identifying a Quapaw archeological assemblage from the 1600s or 1700s; (4) helping identify other Quapaw sites from the Colonial era; (6) providing a direct link between ancestors and contemporary Quapaws; and (5) developing information pertinent to an Agreement among relevant parties concerning the management, protection, interpretation and preservation of the Wallace Bottom site. Carrie V. Wilson served as the Cooperation Then and Now Project's director.

This is a report on 2003-2004 archeological field investigations at Wallace Bottom conducted the Arkansas Archeological Survey, under the sponsorship of the Quapaw Tribe of Oklahoma. The first phase of the fieldwork was excavations carried out in February and November 2003. These excavations were directed of John H. House with the assistance of Leslie C. Stewart-Abernathy, Arkansas Archeological Survey Station Archeologist at Arkansas Tech University and Mary V. Farmer, Station Assistant at UAPB. House reported preliminary results from this first phase in an interim report to the Tribe and to the Fish and

Wildlife Service's Regional Archeologists office in February 2004. The second phase of the fieldwork consisted of geophysical mapping begun in November 2003 and finished in February 2004. Jami J. Lockhart, Director of the Arkansas Archeological Survey's Archeogeophysical Applications Program, directed this work. Volunteer members of the Arkansas Archeological Society played a major part in every phase of the fieldwork, contributing a total of 702 hours of work.

In addition to the Quapaw Tribe and the Arkansas Archeological Survey, the United States Fish and Wildlife Service, White River National Wildlife Refuge, Arkansas Post National Memorial, and the Arkansas Archeological Society were partners in the project, in keeping with the project theme of cooperation. The field studies reported here were authorized under a federal archeological permit the United States Department of the Interior. This permit and the research proposal on which it was issued are attached to this report as Appendix 1.

PREVIOUS ARCHEOLOGICAL WORK IN THE PROJECT AREA

The Wallace Bottom No. 2 site (3AR179) is located in the Arkansas River floodplain about 400 meters south of the Menard-Hodges archeological site (Figure 1). The mounds, village middens, and Indian cemeteries, at Menard and neighboring sites attracted scholarly interest beginning with Thomas Nuttall's 1819 visit (Nuttall 1821). Edward Palmer of the Smithsonian Institution, excavated at Menard in 1881-82 (Jeter 1990:243-251; Thomas 1894:229-231), followed a few decades later by Clarence B. Moore of the Academy of Natural Sciences of Philadelphia (Moore 1911:486-509). Philip Phillips of the Peabody Museum, Harvard University, conducted stratigraphic tests at Menard in 1941 as part of the Central Mississippi Valley Archaeological Survey (Phillips et al. 1951:265-270). After Stanley Faye argued that the Menard locality at the southern tip of the Little Prairie must correspond—at least generally—to Quapaw Osotouy and to the site of the early Arkansas Post (Faye 1943), archeological and historical interest focused on potential evidence for colonial era Quapaw and French occupation. As part of the archeological investigation in conjunction with the establishment of Arkansas Post National Memorial, the National Park Service sponsored work at Menard in 1956 and 1958 for the purpose of identifying physical traces of the early Arkansas Post and Quapaw Osotouy (Ford 1961; Holder 1957). These investigations produced extremely sparse evidence for Colonial era European occupation and equivocal evidence for an archeological assemblage that could be identified with the late seventeenth century Quapaws. This result was perplexing to archeologists and historians.

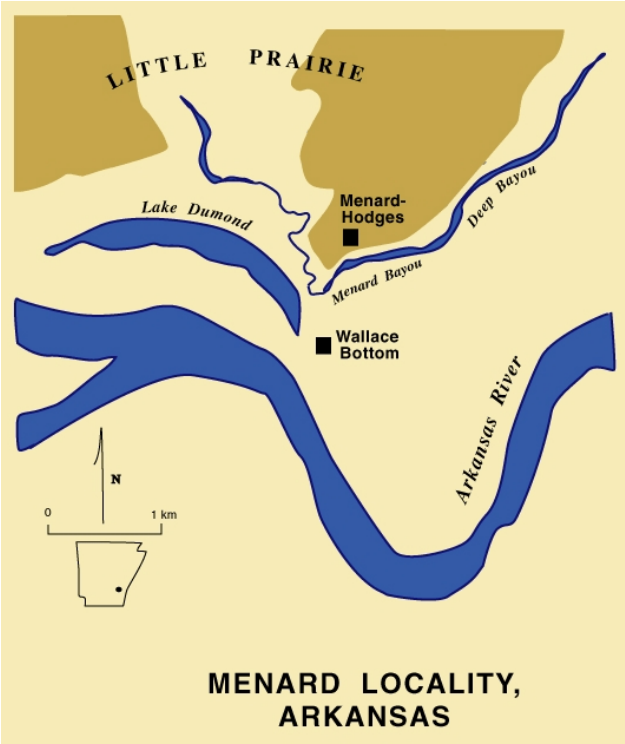


Figure 1. Map of the Menard locality.

The Archaeological Conservancy acquired the Menard site in 1980 for an archeological preserve and renamed the site "Menard-Hodges" to recognize the previous landowners, T. L. and Charlotte Hodges, who purchased the site in 1940 with the object of preserving it. In 1990 the U.S. National Park Service recognized

the exceptional significance of the locality by designating the Menard-Hodges site as a National Historic Landmark. In 1997, the United States Congress authorized the creation of the Arkansas Post National Memorial, Osotouy Unit, encompassing the Menard-Hodges site and the adjacent Lake Dumond sites.

The Arkansas Archeological Society/Survey Training Program held at Menard-Hodges and Lake Dumond in 1997-1998 was the first time that the State of Arkansas had conducted excavations in the Menard-Hodges site locality. While the 1997-1998 work was intended to primarily develop information on physical and cultural contexts at the sites as a baseline for future field studies, an unanticipated result was the discovery of colonial era Indian graves, thought to be those of Quapaws, at the Lake Dumond site (House 2001a). The Wallace Bottom site was discovered during surveys of Menard-Hodges site environs by the Arkansas Archeological Society Site Survey Seminar in conjunction with second year of the Society/Survey training session. Material culture collected at this time included both Native American and Colonial French artifacts (House 2002a). House reported preliminary research results from Wallace Bottom in a 2002 article in the journal *Southeastern Archaeology* (see Appendix 2).

Following the 1998 discovery, the Arkansas Archeological Survey worked at Wallace Bottom in 2001 and 2002 with logistical support from White River National Wildlife Refuge and Arkansas Post National Memorial and the labor of volunteer members of the Arkansas Archeological Society. These operations included establishing a permanent site grid, initiating geophysical mapping, making a controlled surface collection in the cultivated field, systematic bucket auger testing on the wooded lake bank, and excavating a test pit in that area (House 2001b, 2002b). The geophysical mapping identified numerous magnetic and electrical resistivity anomalies that suggested the presence of cultural features beneath the plowzone.

ENVIRONMENTAL SETTING

The Wallace Bottom site is located in the floodplain of the Arkansas River near the southern tip of a Grand Prairie outlier known as the Little Prairie. This is a geologically dynamic landscape with ongoing effects from lateral channel migration of the river and deposition of alluvium by floods. The most conspicuous features in the site environs are oxbow lakes occupying abandoned channels of the Arkansas River. The culturally sterile alluvium overlying the colonial-era horizons on portions of the Wallace Bottom site was probably deposited by flooding from the mid-1800s Arkansas River channel now occupied by Lake Dumond, about 100 meters to the northwest. Early nineteenth century land survey maps (United States General Land Office 1840) indicate that the apparent shallow, wooded extension of Lake Dumond that is immediately west the Wallace Bottom site is actually a remnant of an older oxbow that was called “Gordon’s Lake.” Gordon’s Lake may correspond to the colonial era Arkansas River channel.

DESCRIPTION OF THE WALLACE BOTTOM SITE

Within the floodplain, the Wallace Bottom site occupies a subtle alluvial ridge some 250 m in length, northwest to southeast, and about 150 m wide. Most of this 3.75 ha (9.4 acre) area is in a former cultivated field. The present day ground surface in most of this area site lies between 48.0 and 48.5 m (158.4 to 160.0 feet) above mean sea level (amsl). The site is flanked by shallow swales that hold water during the winter and spring. There is no obvious midden staining but cultivation over the past decade exposed cultural material including sherds of Indian and European pottery, arrow points and other chipped stone artifacts, and fragments of animal bone. A wooded strip between 30 and 50 m in width lies between the field and the wetlands to the west that correspond to early 19th century Gordon’s Lake. Test excavation and systematic auger sampling in 2001-2002 established that the archeological deposits at Wallace Bottom extend to the lake bank, lying beneath as much as 0.4 m of recent alluvium.

EXCAVATION METHODS

The 2003 excavations sponsored by the Quapaw Tribe took place in two site areas in the cultivated field. They were designated "Unit 8" and "Unit 25," referring to the system of 20 x 20 m geophysical map grid units used in the 2001 and 2002 work (Figure 2). The excavations were placed to investigate two geophysical anomalies that were selected, in consultation with Jami Lockhart and Ken Kvamme, from the anomalies on the geophysical maps created in 2001 and 2002. Results from preliminary analyses of 2001 controlled surface collection had indicated a prevalence of material traces of Indian occupation in the Unit 8 area and conspicuously high frequencies of colonial-era European artifacts in the general vicinity of Unit 25.

In 2003, House directed the work in Unit 8 (Figure 3) while Stewart-Abernathy directed the work at Unit 25. At the conclusion of the November 2003 work, a total of 16 m^2 had been opened at Unit 8 while 6 m^2 had been opened at Unit 25.

With the exception of bulk sediment samples collected for flotation, all fill from excavation units (including plowzone) was screened through ¼-inch mesh. Ten samples of feature fills (from Features 3, 7, 12, 13, and 14), with a total volume of 576 liters were collected for flotation recovery. These samples were subsequently processed by water flotation at the Arkansas Archeological Survey Coordinating Office in Fayetteville. The apparatus used was a 40 gallon steel tank with a 20 gallon insert. The heavy fraction consisted of material retained in the interior tank on stainless steel window screen with a mesh size of approximately 1.6 mm. The light fraction was collected in a No. 40 geological sieve with a .425 mm mesh size. In the UAPB laboratory, Station Assistant Mary Farmer found 161 tiny glass seed beads while size-grading heavy fractions from Feature 12 or while washing away sediment adhering to bones and artifacts from that feature.

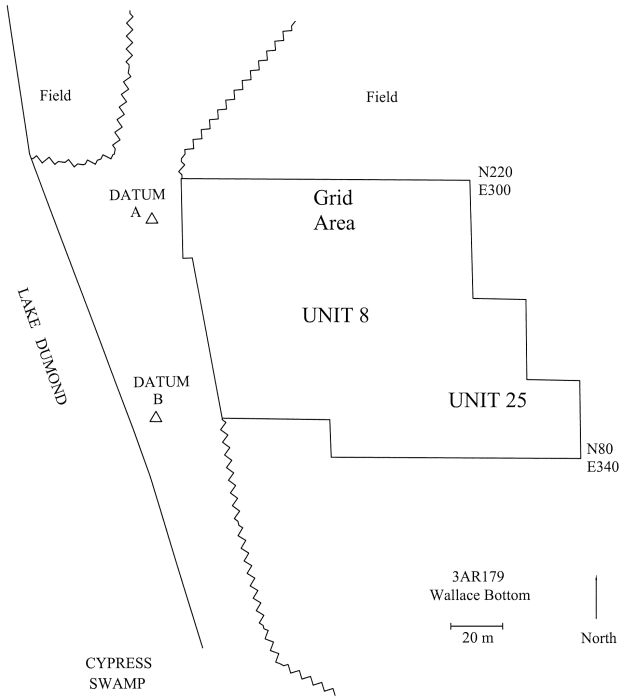


Figure 2. Excavation areas at Wallace Bottom.

Figure 3. View of Unit 8 excavation, looking west. Photo by Mary Little.

EXCAVATION RESULTS

Stratigraphy and Geological Context

Excavations in the cultivated field, at both Units 8 and Unit 25, revealed a plowed horizon 30 cm in thickness composed of very dark grayish brown (10YR3/2) clay loam containing Colonial era artifacts and

abundant animal bone fragments. The clayey character of this plowzone contrasts with the underlying sandy alluvium. In Unit 8, this was a massive brown (7.5YR4/4), very fine sand. Except for postholes and other intrusions, this stratum was largely devoid of artifacts. The character of this deposit is consistent with a point bar formation developed on the inside of an Arkansas River meander. Some 60 meters to the east, at the Unit 25 excavations, the subplowzone horizon was slightly siltier and less red (10YR 4/6 to 5/6). The deepest Unit 8 excavation unit encountered a stratum of brown (7.5YR4/3) clay loam about 90 cm beneath the present ground surface.

The present-day soil profile in the cultivated field is, of course, artificial, the result of deep plowing of the natural profile. The profile of a 1 x 1 m unit (N190E168NW1/4) excavated on the wooded lake bank in 2001, however, gives some indications of the stratigraphy that may have characterized the Wallace Bottom site prior to historic disturbance. Some 40 cm of culturally-sterile alternating clayey and sandy alluvium overlay a 30 cm thick horizon containing colonial era Indian and European artifacts along with lenses of ash and well preserved animal bones. The sterile alluvial layer may be a flood deposits laid down in the nineteenth century when the Arkansas River meandered about 100 m to the northwest. The absolute elevation of the top of the artifact-bearing horizon in the lake bank excavation is about 48.5 m above mean sea level (amsl), roughly comparable to the elevation of the present-day surface of the cultivated field at Units 8 and 25. It is likely, however, that the ca. 1700 ground surface at the latter locations was somewhere between the elevation of the bottom of the plowzone and the present surface (between 47.95 m and 48.30 m amsl in the area of Unit 8 and between 48.10 m and 48.40 m amsl at Unit 25) and that the plowzone was formed from mixture of alluvial overburden and the upper-most portion of the colonial era soil profile.

Cultural Features

The 2002 test pit excavated in 2002 was placed over a linear anomaly indicated in Unit 8 on the geophysical maps prepared the previous year. This excavation revealed Feature 3, a northwest-southeast trending midden-filled trench that corresponds well in location and orientation to the linear anomaly on the geophysical maps. The 2002 units were reopened in 2003 and adjacent units were opened to follow Feature 3. At the close of the November work, an area 16 m^2 had been opened in Unit 8, exposing 6.5 m of the length of Feature 3 and numerous post holes (Figures 4 and 5). Seven of the postholes were assigned feature numbers and recorded in detail (Table 1).

Feature 3 continues beyond the excavation on both the northwest and southeast with no corner or change in direction evident (Figure 4). No post molds were observed within Feature 3, as one would expect if the feature represents a wall trench for an Indian house or the footing trench for a French *poteaux en terre* structure. In vertical section (Figure 5), Feature 3 exhibits a vertical profile on its southwest side and a sloping profile on its northeast side; it extends to a depth of 91 cm below the present-day ground surface.

The postholes excavated in Unit 8 varied in diameter from 15 cm to 21 cm and ranged in depth from 46 to 94 cm below the present day surface. No alignments that may represent a structure wall line are evident. A complete deer mandible had been placed vertically in Feature 2 before it was filled with sediment. Feature 9 contained a complete box turtle carapace (upper shell) while several fragments of turtle shell were found in the upper portion of Feature 7. Feature 11, an indistinct intrusion that may have been a posthole, contained a complete mussel shell and a hand-forged iron nail. The flotation heavy fraction from Feature 13 contained flakes of rusty iron in addition to Indian pottery sherds, chert flakes, and bits of animal bone.

Most of the postholes were identified in N144E222W1/2, the single unit that was excavated below the base of plowzone. They did not become distinct until the top 15 cm of the subplowzone deposit had been removed. It is likely that further excavation in the adjacent units would reveal additional post holes.

Table 1. Summary of Cultural Features.

Fea. No.	Location	Description
1	Unit 8: N142.6E222.3	Shallow patch of ash at bottom of plowzone.
2	Unit 8: N142.4E222.2	Post hole intrusive into sandy alluvium; diameter ca. 21 cm, extends from bottom of plowzone to 72 cm below surface (47.58 m amsl). Contents include complete deer mandible.
3	Unit 8	Trench feature, partially exposed, ca. 40 cm in width at base of plowzone, extending downward to a depth of 91 cm below surface (47.39 m amsl). Fill consists of dark brown (10YR3/2) very fine sandy loam with abundant charcoal bits, bone, Indian pottery sherds and chipped stone artifacts. European artifacts in flotation heavy fractions include one iron straight pin, a glass seed bead, flakes of rusted iron and slivers of glass.
4	Unit 8	Shallow linear intrusion in N144E222; plow scar?
5	Unit 8, N145.8E222.1	Two overlapping possible post holes extending from base of plowzone to 48 cm below surface (47.82 m amsl) and 67 cm below surface (47.63 m amsl). Maximum diameters are 20 cm and 15 cm, respectively.
6	Unit 8, N145.5E222.6	Possible posthole, ca. 18 cm in diameter, recorded at 46 cm below surface (47.84 m amsl); unexcavated.
7	Unit 8, N145.2E222.7	Posthole, ca. 20 cm diameter, extending from base of plowzone to 75 cm below surface (47.55m amsl); fragments of box turtle shell associated.
8	Unit 8: N145.4E222.3	Possible posthole, ca. 16 cm in diameter, extending to 66 cm below surface (47.64 m amsl).
9	Unit 8: N245.6E222.4	Posthole, ca. 15 cm in diameter, extends to 80 cm below surface (47.50 m amsl): contained intact box turtle carapace.
10	Unit 8: N145.1E222.2	Posthole ca. 20 cm dia., extends downward to 55 cm below surface (47.76 m amsl).
11	Unit 8: N145.2E222.3	Indistinct intrusion (posthole?) extending to $\geq$ 53 cm below surface (47.77 m amsl); contained intact mussel shell, hand-forged iron nail.
12	Unit 25	Large refuse filled pit, partially excavated, extending from base of plowzone to $\geq$ 100 cm below surface (47.50 m amsl); contains abundant colonial era European and Indian cultural material, animal bones, and lenses of burned clay bits and ash.
13	Unit 8: N144.7E223.8	Post hole, ca 18 cm in diameter, extending from base of plowzone to 94 cm below surface (47.36 m amsl); cluster of shell tempered sherds in upper portion of feature, flakes of rusted iron found in flotation heavy fraction.
14	Unit 8: N146.9E220.6	Intrusion at base of plowzone, partially excavated; contained fragments of charred maize cobs.

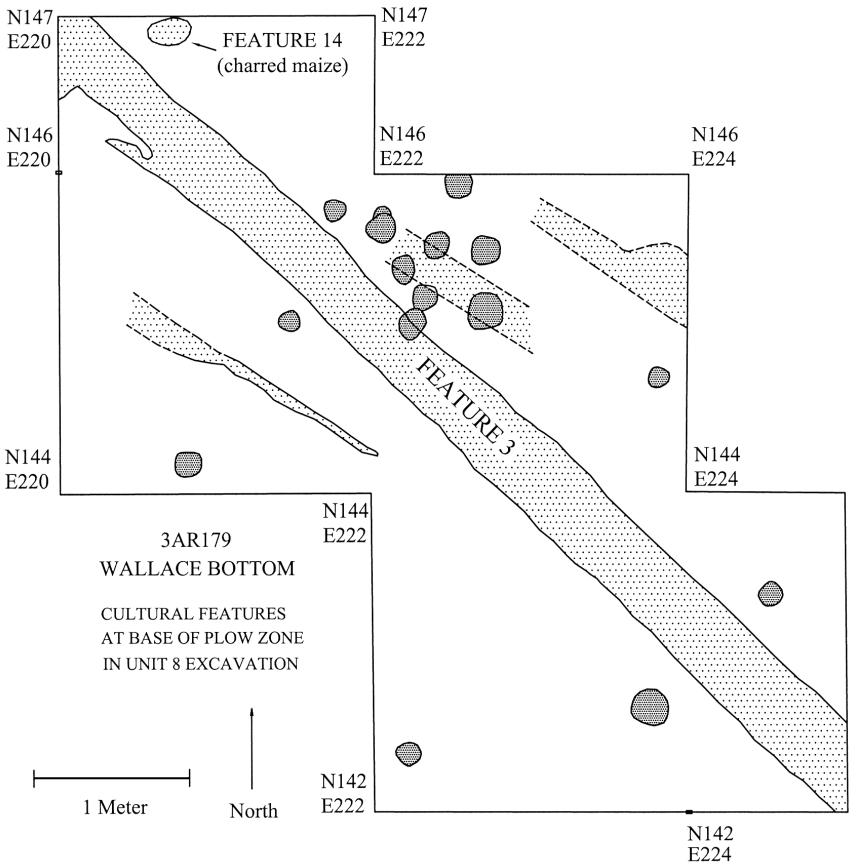


Figure 4. Cultural features at base of plowzone in Unit 8.

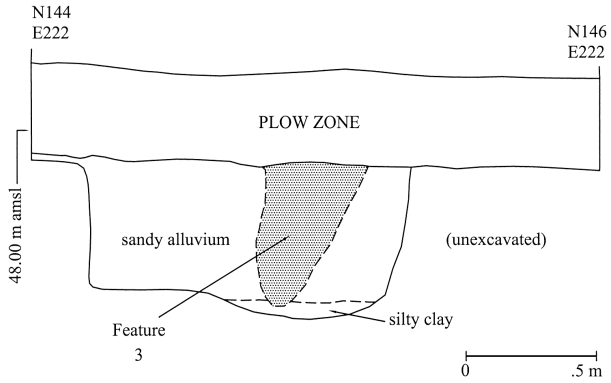


Figure 5. Profile of Feature 3 at E222.

Feature 14 consisted of an intrusion containing charred maize cobs. Gayle Fritz, of Washington University, St. Louis, a specialist in botanical specimens from archeological sites, collected portions of charred maize cobs and associated matrix. After the botanical specimens were separated from matrix in the UAPB station laboratory, the botanical specimens were sent to Dr. Fritz for preliminary analysis and evaluation. After the final recording in these units, we laid down sheets of black plastic on the floor and backfilled. The cultural contexts exposed in Unit 8 await further investigation.

Removal of 6 m^2 of plowzone over a strong magnetic anomaly in Unit 25 (Figure 6) revealed Feature 12, a pit containing abundant colonial European material culture. Projection of the feature boundaries exposed in the excavation suggests a circular outline with a diameter around 3 m. Portions of Feature 12 in two excavation units were excavated to the flat base of the feature at 50 cm below the bottom of plowzone and profiles and were recorded (Figure 7). The greater part of Feature 12, however, remains intact.

Colonial era European material culture from Feature 12 includes European ceramics (Figure 8) glass bottle fragments, hand-forged iron nails, debris from casting musket balls, and unidentified cuprous metal objects. Feature 12 also contained Indian

Figure 6. Unit 25 excavation, looking southeast. Leslie C. Stewart-Abernathy explains Feature 12 to Gayle Fritz. Photo by Mary Little.

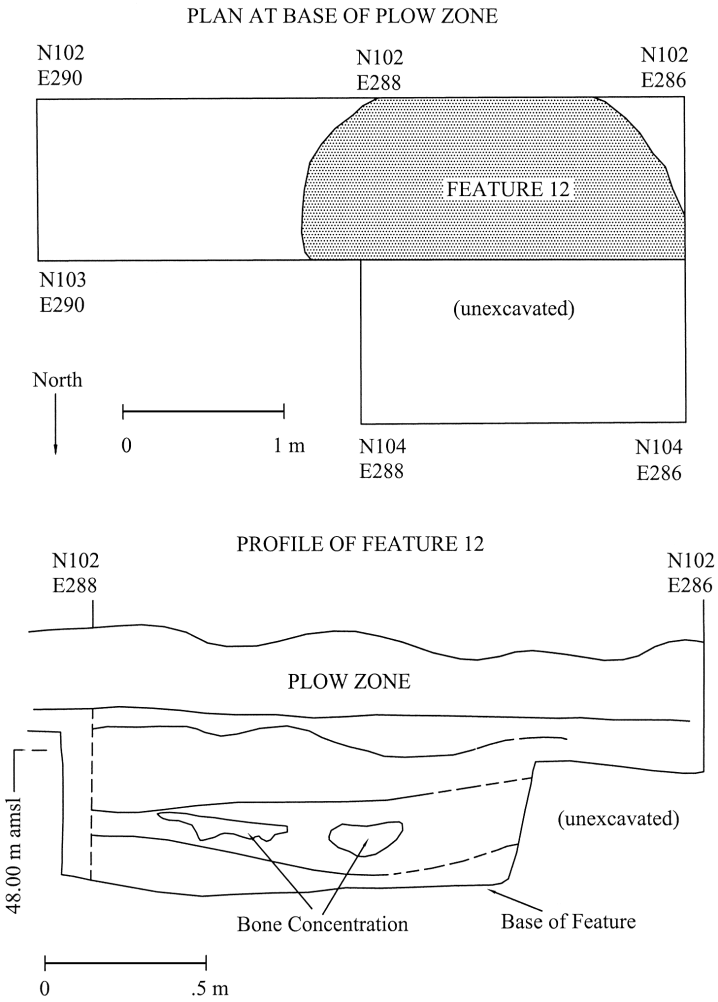


Figure 7. Plan and profile of Feature 12 in Unit 25.

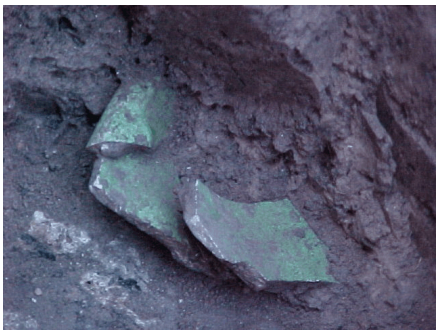


Figure 8. Sherds of coarse green earthenware (French early 1700s) in situ in Feature 12. Photo by Mary Little.

pottery sherds, numerous bones of large and small mammals, fish, and birds, and charred peach pits. Internal stratification (or layering) within Feature 12 included lenses of ashes and burned clay bits that sloped down from south to north. These suggest that portions of the fill are debris from a burned structure that was formerly located immediately to the south of the present excavation.

Artifacts and Samples

Indian Material Culture. Classes of Indian material culture collected at Wallace Bottom include pottery sherds, chipped stone arrow points (Figure 9), and endscrapers (Figure 10), and debitage, fragments of celts (ungrooved axes), ground stone pendant fragments, sandstone abraders, and at least three antler tine arrow points (Figure 11).

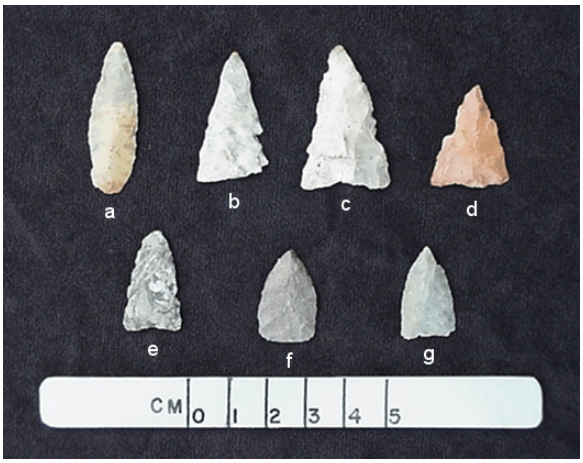


Figure 9. Chipped stone arrow points from Wallace Bottom: a. Nodena; b-g. Madison (a, d, g: 2001-393-13; b. 2003-378-67; c. 2003-378-68; e, f: 2003-378-42). Photo by Mary Farmer.

Figure 10. Endscrapers from Wallace Bottom (a, b, c: 2003-378-67; d. 2003-378-82; e, f, g: 2001-393-13). Photo by Mary Farmer.

Figure 11. Antler tine arrow point from 2003 excavations at Wallace Bottom. Photo by Mary Little.

Historic Artifacts. Though the field at Wallace Bottom has been cultivated for more than a century and is in close proximity to former and present-day roads, the overwhelming bulk of the historic artifacts found at the site date to the colonial era. These include sherds of faience, coarse earthenwares, Westerwald stoneware and other ceramics; sherds from glass bottles; glass beads (tiny "seed" or embroidery beads are conspicuous in some flotation heavy fractions); musket parts (Figure 12); lead musket balls, sprue and drip; objects of cuprous metal that may be brass; and more than 100 hand forged iron nails. These artifacts were recovered from both Units 8 and Unit 25 and from both plowzone and cultural features. The metal artifacts have been sent to the Survey Coordinating Office in Fayetteville where they are currently undergoing conservation under the direction of Jared Pebworth. The European material assemblage resembles materials from other early to mid-18th century French sites (House 2002a:262-263).

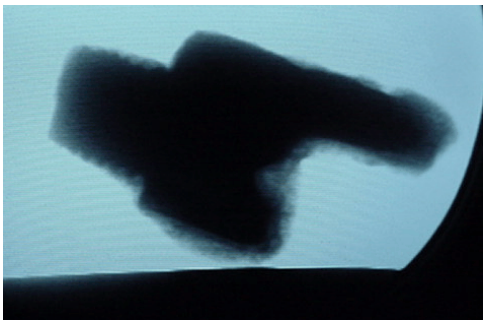


Figure 12. X-ray of musket breech plug (2003-378-51) from Feature 12, before conservation. Radiography courtesy of Central Maloney, Inc., Pine Bluff. Photo by Mary Farmer.

Animal Bone. All of the excavations at Wallace Bottom have produced quantities of well preserved bones of mammals, birds, reptiles (e.g., turtle), and fish. While the bone from the plowzone consists chiefly of small fragments, excavation in below-plowzone features has yielded large quantities of relatively intact animal bones. Remains of deer are conspicuous in the samples from Unit 8 while Feature 12 in Unit 25 yielded very large bones which would be consistent with bison or cow plus teeth that appear to be from domestic pig. Much of the animal bone from all portions of the Wallace Bottom is calcined or blackened from burning.

Botanical Specimens. The light fractions and the charred botanical materials from the heavy fractions have been transferred to Gayle Fritz at Washington University, St. Louis where they are undergoing evaluation and preliminary archeobotanical study by Professor Fritz and her students.

In addition to botanical samples recovered by flotation, numerous charred botanical specimens were collected during the excavation. These include the Feature 14 maize from Unit 8 and charred peach pits from Feature 12.

Ongoing Analyses and Curation. Preliminary analysis and database coding of the specimens from the 2003 field work at Wallace Bottom is ongoing. A comprehensive inventory of the artifacts and samples from this work will be submitted to the Tribe and to the U.S. Fish and Wildlife Service Regional Archeologists Office at a later date.

The artifacts and samples from Wallace Bottom are property of the United States Fish and Wildlife Service. Under a curation agreement between USFWS and the Survey, these collections and accompanying records will reside permanently in the Arkansas Archeological Survey-University of Arkansas Museum repository in Fayetteville.

PARTICIPATION BY THE QUAPAW TRIBE

The Quapaw Tribe's grant supported tribal member Larry Kropp of Quapaw, Oklahoma in taking part in the 9 days of fieldwork at Wallace Bottom. On 8 and 9 November, members of the Quapaw Tribe accompanied Cooperation Then and Now project director Carrie Wilson, John Berrey, Chair of the Quapaw

Tribe's business committee, Elders, and other tribal members in visiting the excavation to consult on the management and interpretation of the Wallace Bottom site (Figures 13 and 14).

Figure 13. Quapaw Elders and other tribal members visit the Wallace Bottom excavations on November 7, 2004. Photo by Mary Little.

Figure 14. Larry Kropp and Chester Shaw screen fill from Feature 12. Photo by Mary Little.

GEOPHYSICAL MAPPING RESULTS

The archeogeophysical mapping sponsored by the Quapaw Tribe as part of the "Cooperation Then and Now" project is the culmination of a three-year collaborative effort by Dr. Kenneth L. Kvamme with his University of Arkansas Near-Surface Prospection class, Dr. Jay K. Johnson with his students from the University of Mississippi, and Jami J. Lockhart of the Arkansas Archeological Survey staff assisted by Survey staff members and Arkansas Archeological Society members. The geophysical mapping was begun in 2001 and resumed in 2002. On February 19 and 20, 2004, with the sponsorship of the Quapaw Tribe, Lockhart

resumed archeogeophysical mapping with assistance from Survey personnel and volunteers (Figure 15). Together, all or part of 45 20 x 20 m data collection units have been mapped by magnetometry and all or part of 43 units have been mapped by electrical resistance. These comprise an area of almost 2 ha (5 acres). This represents nearly all of the known area of the Wallace Bottom site in the cultivated field.

Figure 15. Mike Evans and Chester Shaw operating electrical resistivity instrument at Wallace Bottom, February 20, 2004. Photo by Mary Little.

The appended geophysical mapping report includes the maps generated by this work accompanied by preliminary interpretations. The magnetometry images depict anomalies that are consistent with: (1) cultural features whose fills have anthropogenically enhanced magnetic susceptibility; (2) results of construction activities, both historic and prehistoric, that change the distribution of variably magnetic materials; and (3) the presence of metal artifacts, particularly iron.

The characteristic magnetic signature of metal on the magnetometry images is a data dipole, which is a black magnetic high immediately adjacent to a white magnetic low. Not all of the metal dipoles are oriented in the same direction, which can indicate metals forged during different time periods. Most of the dipole anomalies on the magnetometry images probably indicate metal artifacts derived from colonial European occupation or trade between Indians and Europeans during the colonial era.

Low resistivity features on the electrical resistivity maps may indicate the presence of moist fills in buried cultural features (e.g., pits, ditches) that might provide a less resistant pathway for electrical current. High resistivity features may indicate areas where deposits were compacted by heavy use of the overlying surfaces. Numerous intersecting linear and rectangular trends are evident in the resistance images. Because the archeogeophysical imagery has been georeferenced to the on-site coordinate system, any anomaly or excavation unit can be located at any time with high precision using Total Station technology. Appendix 3 of this report consists of Lockhart's August 2004 report on the geophysical mapping at Wallace Bottom.

SIGNIFICANCE OF ARCHEOLOGICAL RESULTS

The Quapaw Tribe's Historic Preservation Grant Proposal identifies the objectives of the Cooperation Then and Now Project. These are: (1) verifying the Wallace Bottom site as the location of the Quapaw village of Osotouy; (2) determining the eligibility of the Wallace Bottom site for placement on the National Register of Historic Places; (3) identifying a Quapaw archeological assemblage from the 1600s or 1700s; (4) helping identify other Quapaw sites from the Colonial era; (5) providing a direct link between ancestors and contemporary Quapaws; and (6) developing information pertinent to an Agreement among relevant parties concerning the management, protection, interpretation and preservation of the Wallace Bottom site.

1. At this point only about one tenth of one percent of the Wallace Bottom site has been excavated. It is not yet possible to make a final judgment as to whether the Wallace Bottom site corresponds to the Quapaw village of Osotouy or to any of the early locations of the Arkansas Post. It may be said, however, that the material record at Wallace Bottom is consistent with our expectations for both. Wallace Bottom represents

a large and heavily occupied colonial era Indian village consistent with late seventeenth century descriptions of Osotouy. The amount of the European material culture and particularly the prevalence of hand-forged nails (Figure 16) suggest that Wallace Bottom represents an established European settlement with European style buildings rather than merely a place occupied by Indians who traded with Europeans. The prevalence of European artifacts in Feature 12, particularly suggests that it is a European feature.

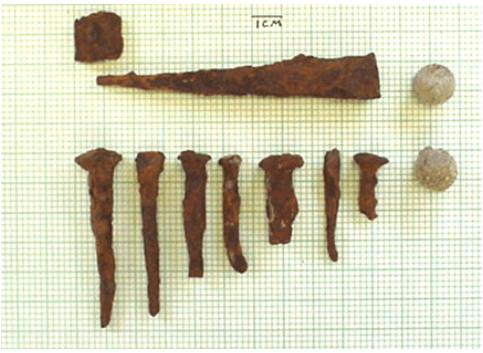


Figure 16. Hand-forged nails and musket balls from the surface at Wallace Bottom. Photo by Mary Farmer.

Both Indian and European artifacts are abundant at Wallace Bottom but they may represent largely different episodes of occupation. This would be consistent with the interpretation that Wallace Bottom was the location of Osotouy in the late 1600s and then subsequently had one or more episodes of occupation by the French in the 1700s. Future excavations of large numbers of cultural features may reveal contexts that can be distinguished as predominantly Indian or predominantly European, and which may be assigned to different time horizons. Persistence of traditional Native American chipped and ground stone and ceramic technologies suggests that much of the occupation pre-dates the beginning of sustained French contact at the beginning of the eighteenth century.

2. In the authors' judgment, the archaeological information that has been developed at Wallace Bottom over the past four years is more than sufficient to warrant placement of the site on the National Register of Historic Places. With respect to the established criteria for placement of a property on the Register, Criterion A, "associated with events that have made a significant contribution to the broad patterns of our history," and Criterion D, "yielded or may be likely to yield, information important in prehistory or history," are particularly relevant. Accordingly, the Arkansas Archeological Survey has agreed, in consultation with the U.S. Fish and Wildlife Regional Archeologist's Office, to prepare a nomination form for the Wallace Bottom site and submit it to the Arkansas State Historic Preservation Office in the latter half of 2005.

3. The Native material culture from Wallace Bottom, particularly the pottery, contrasts with that from protohistoric archeological sites in the lower Arkansas River region and is a very likely candidate for the material signature of the colonial era Quapaws. The ceramic assemblage collected at Wallace Bottom in 1998 is dominated by plain shell tempered ware (Mississippi Plain). The most distinctive mode in the ceramic assemblage is the occurrence of a thick notched fillet affixed about 1 centimeter below the lips of jars. This mode (occurring on jars, at least) is unparalleled among late prehistoric and Protohistoric ceramic assemblages in the Central Mississippi Valley. Comparison of this mode to Midwestern protohistoric or colonial Native American ceramics reveals some generic correspondences; e.g., Danner ware (Brown 1961; Grantham et al. 1996) and Whittlesey Tradition utilitarian wares (Brose 1994) but no specific correspondences. A small proportion of red-slipping, sherds in shell-and-bone tempered Sarassa ware (House 1997), and occurrences of the "helmet bowl" mode characteristic of the Protohistoric lower Arkansas River region (Hoffman 1977:18; House 1997:60-61), however, represent continuity from pre-colonial era Native material culture in this region.

The most frequent arrow point form is triangular, generally corresponding to the Madison type, but varying in size and blade outline (see Figure 9). The ratio of triangular points to ovate (Nodena) points is about 2:1. At least 126 end scrapers (see Figure 10) have been found to date at Wallace Bottom, a frequency that is unparalleled at late prehistoric and protohistoric sites on the lower Arkansas River. End scrapers are thought to have been the bits of specialized hide preparation tools. High frequencies of endcrapers in colonial era Indian sites may be associated with production of dressed hides for trade with Europeans (Johnson 1997).

Stone tool manufacturing byproducts such as chert preforms, cores, flakes, and hammerstones are abundant at Wallace Bottom.

Turning to architecture, the Unit 8 excavations revealed a high density of postholes that are probably vestiges of houses or other structures. We do not, however, have a clear picture of the kinds of houses Indians built at Wallace Bottom. The earliest accounts of the Quapaws (e.g., Foster 1998:270) refer to multi-family, bark-covered, vault-like structures that may have been similar to longhouses occupied by many Northeastern and Midwestern Indian peoples in the colonial era. This type of dwelling appears to be depicted on the Robe of the Three Villages that is in the Musée de L'Homme in Paris (Arnold 2000:64-66).

Could Feature 3 be the foundation of a Quapaw longhouse? The prevalence of linear anomalies on the geophysical maps suggests that trenches such as Feature 3 are frequent at Wallace Bottom. Protohistoric and archeological longhouses in the Midwest (e.g., Drucker and Cowan 2001:Figure 8.7), however, seem to have typically involved single-post, rather than wall-trench, construction. In the archeological sequence of the Midwest and Southeast, wall trench houses are primarily associated with prehistoric Mississippian occupations dating before AD 1400. An alternative interpretation of Feature 3 is that it is the foundation of a French *poteaux en terre* structure such as those at Old Mobile (Waselkov 1999) or wall-trench lot enclosure fences *(pieux en terre* or *pieux dubout*) such as those Preston Holder appears to have unearthed at Arkansas Post National Memorial in 1957 (see Walthall 1991:101-102).

4. In 1687 Osotouy was one of four villages (with Kappa, Torima, and Tongiga) occupied by the Quapaws (Baird 1980:16). The Quapaws in Arkansas continued to occupy multiple villages into the early nineteenth century. The work at Wallace Bottom offers some expectations for the material culture assemblage that might be associated with these villages if they are ever found. The presence of thick deposits of alluvium over the artifact-bearing horizons at Wallace Bottom suggests that Historic alluvium may obscure—and preserve—other Quapaw sites, especially if they were ever in the proximity of the active channel of the Arkansas River.

The results of Wallace Bottom investigations are relevant to the complex history of the nearby Osotouy Unit of Arkansas Post National Memorial. The offerings in graves excavated at the Lake Dumond site in 1997 (House 2001a; House et al. 1999) included numerous contact era items such as sheet brass cones and tiny glass seed beads that are also conspicuous in the material record at Wallace Bottom. These graves may be those of children who lived at Wallace Bottom during the early colonial era.

5. The Cooperation Then and Now Project was the fruit of the shared interests of Tribal members, archeologists, and historians in the early history of Arkansas that is also the history of the Quapaw people. In the decades preceding the project, the Quapaw Tribe supported and consulted on the management and investigation of archeological sites in the Menard locality, including Wallace Bottom. Individual Tribal members have demonstrated their interest by visiting their old homeland in Arkansas and participating in events such as the Menard-Hodges site National Historic Landmark dedication in 1990 and the Arkansas Archeological Society/Survey Training Sessions at that site and the Lake Dumond site in 1997-98.

6. See "Recommendations" below.

RECOMMENDATIONS

One of the objectives of the Cooperation Then and Now Project was to obtain information that will be useful in developing an Agreement among the Quapaw Tribe of Oklahoma, the U.S. Fish and Wildlife Service, National Park Service and Arkansas Archeological Survey on a Master Plan for the future

management, protection, interpretation and preservation of the Wallace Bottom site. In addition to significant historical and cultural information, the archaeological work at Wallace Bottom over the past four years has determined that the Wallace Bottom site contains an abundance of well preserved archeological contexts associated with both Indian and colonial era European occupation. Particularly pertinent to the site's management the site, this work established (1) the boundaries of the site; (2) that the site's sensitive archeological contexts lie beneath a 30 cm-deep plowzone in the cultivated field or under comparable amounts of alluvial overburden along the wooded lake bank; and (3) that geophysical mapping can locate cultural features below the plowzone at Wallace Bottom.

As part of the creation of a Master Plan, the U.S. Fish and Wildlife Service should continue to consult with the Quapaw Tribe on securing external funding for future archeological studies at Wallace Bottom. Preparation of research proposals for funding should incorporate:

1. Visits by the Quapaw Tribe's Cultural Resources Director, the Project Archeologist, and representatives U.S. Fish and Wildlife Service, and National Park Service to other sites of comparable importance in colonial history; e.g., the Natchez Grand Village, Old Mobile, and LaSalle's Ship Belle.

2. Development of archeological research designs reflecting the state of the art in studies in the historical archeology of colonial era Native Americans and Europeans.

3. Creation of a research team incorporating specialists in colonial era European material culture particularly metal, archaeobotany, archaeozoology and perhaps a consulting historian, as well as representatives from the Quapaw Tribe.

Through 2005, the White River National Wildlife Refuge has continued to lease the field containing the Wallace Bottom site for agricultural use. This decision, made in consultation with the Arkansas Archeological Survey and the Quapaw Tribe, reflects the consensus that continued cultivation would make the site easier to monitor and protect from potential looting. Since cultivation is scheduled to end with the 2005 crop season, however, maintenance of the site by mowing or bush-hogging and regular monitoring should be a high priority.

CONCLUSION

The more that has been learned about the Wallace Bottom site archeologically, the more the results support identification of the site with the Quapaw village of Osotouy and the French Arkansas Post of the early eighteenth century. Archeological investigation of the Wallace Bottom site is still in an early stage, however, and much remains to be done to put historical and cultural interpretation of the site on a firmer basis. We have much to learn about the overall range of cultural features present, the arrangement of structures, and possible evidence for discrete episodes of occupation. Notwithstanding, it is clear that the Wallace Bottom is a place that is closely associated with the historical and cultural milieu in which the Quapaw people first appear in documentary history. There is every reason to believe that the most exciting archeological discoveries at Wallace Bottom, and in Quapaw archeology generally, lie in the future and that the Quapaw Tribe and its members will participate in these discoveries.

The presence of important Indian and European components at Wallace Bottom may a tangible reflection of the historic cooperation between the Quapaws and French and the "middle ground" where Quapaws and French met as equals (Sabo 2000). In archeological terms, the Wallace Bottom site holds the potential to produce unprecedented information about interactions between these two very different cultures. There is no other site remotely like it in Arkansas, and it may be the best-preserved site of its kind anywhere.

REFERENCES CITED

Arnold, Morris S.
2000 *The Rumble of a Distant Drum: The Quapaws and Old World Newcomers, 1673-1804*. University of Arkansas Press, Fayetteville.

Baird, W. David
1980 *The Quapaw Indians: A History of the Downstream People*. University of Oklahoma Press, Norman.

Brose, David S.
1994 *The South Park Village Site and the Late Prehistoric Whittlesey Tradition of Northeast Ohio*. Monographs in World Archaeology No. 20. Prehistory Press, Madison.

Brown, James A. (editor)
1961 *The Zimmerman Site: A Report on Excavations at the Grand Village of Kaskaskia, La Salle County, Illinois*. Reports of Investigations 9. Illinois State Museum, Springfield.

Drucker, B. Penelope, and C. Wesley Cowan
2001 Transformation of the Fort Ancient Cultures of the Central Ohio Valley. In *Societies in Eclipse: Archaeology of the Eastern Woodlands Indians, AD 1400-1700*, edited by David S. Brose, C. Wesley Cowan, and Robert C. Mainfort Jr. pp. 83-106. Smithsonian Institution Press, Washington.

Faye, Stanley
1943 The Arkansas Post of Louisiana: French Dominion. *Louisiana Historical Quarterly* 26:633-721.

Ford, James A.
1961 *Menard Site: The Quapaw Village of Osotouy on the Arkansas River*. Papers of the American Museum of Natural History, Volume 48, Part 2.

Foster, William C. (editor)
1998 *The La Salle Expedition to Texas: The Journal of Henri Joutel, 1684-1687*, edited and with an introduction by William C. Foster, translated by Johanna S. Warren. Texas State Historical Association, Austin.

Grantham, Larry, Neal Lopinot, William Martin, T. M. Hamilton, and David W. Benn
1996 Ilini Village of the Marquette and Jolliet Voyage of 1673. *Missouri Archaelogist*, Vol. 54.

Hoffman, Michael P.
1977 The Kinkead-Mainard Site, 3PU2: A Prehistoric Quapaw Phase Site. *Arkansas Archeologist* 16-18:1-41.

Holder, Preston
1957 Archaeological Research on the Problem of the Locations of Arkansas Post, 1686-1803. Manuscript on file, Richmond, Virginia, National Park Service, Region I.

House, John H.
1997 Noble Lake: A Protohistoric Site on the Lower Arkansas River. *Arkansas Archeologist* 36:46-97.

2001a *Preliminary Report On Artifacts And Material Culture Samples From Colonial-Era Indian Graves At The Lake Dumond Site, Arkansas County, Arkansas*. Report. Arkansas Archeological Survey. Submitted to Quapaw Tribe of Oklahoma.

2001b *Archeological Investigations at The Wallace Bottom Site, White River National Wildlife Refuge, Arkansas, 2000-2001*. Report. Arkansas Archeological Survey. Submitted to United States Fish and Wildlife Service, Regional Archeologist's Office, Savannah, Georgia.

2002a Wallace Bottom: A Colonial-Era Archaeological Site in the Menard Locality, Eastern Arkansas. *Southeastern Archaeology* 21: 257-268.

2002b *Archeological Investigations at the Wallace Bottom Site, White River National Wildlife Refuge, Arkansas: 2002 Season*. Report. Arkansas Archeological Survey. Submitted to United States Fish and Wildlife Service, Regional Archaeologist's Office, Savannah, Georgia.

John H. House, Mary Evelyn Starr, and L. C. Stewart-Abernathy
1999 Rediscovering Menard. *Mississippi Archaeology* 34:156-177.

Jeter, Marvin D.
1990 *Edward Palmer's Arkansaw Mounds*. University of Arkansas Press, Fayetteville.

Johnson, Jay K.
1997 Stone Tools, Politics and the Eighteenth Century Chickasaw in Northeast Mississippi. *American Antiquity* 62:215-230.

Moore, Clarence B.
1908 Mounds and Cemeteries of the Lower Arkansas River. In *Certain Mounds of Arkansas and Mississippi* (Part I), pp. 488-557. Journal of the Academy of Natural Sciences of Philadelphia 13.

Nuttall, Thomas
1821 *A Journal of Travels in the Arkansa Territory*. Thomas H. Palmer, Philadelphia. Readex Microprint 1966.

Phillips, Philip, James A. Ford, and James B. Griffin
1951 *Archaeological Survey in the Lower Mississippi Alluvial Valley, 1940-1947*. Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University 25.

Sabo, George III
2000 The Quapaw Indians of Arkansas, 1673-1803. In *Indians of the Greater Southeast: Historical Archaeology and Ethnohistory*, edited by Bonnie G. McEwan, pp.178-203. University of Florida Press, Gainesville.

Thomas, Cyrus
1894 *Report on the Mound Explorations of the Bureau of Ethnology*. Bureau of Ethnology Annual Report 12.

United States General Land Office
1840 Compared Copy of Original Field Notes for Township 8 South Range 2 West, North of Arkansas River, Book 629-A, Bundle 133. (Typescript on file at Arkansas State Land Commissioners Office, Little Rock).

Walthall, John A.
1991 An Analysis of Late Eighteenth Century Ceramics from Arkansas Post at Ecores Rouges. *Southeastern Archaeology* 10(2):98-113.

Waselkov, Gregory A.
1999 *Old Mobile Archaeology*. University of South Alabama, Center for Archaeological Studies.

Appendix 1a

Copy of Proposal
"Continued Archeological Investigation of the Wallace Bottom No. 2 Site, Arkansas County, Arkansas"

CONTINUED ARCHEOLOGICAL INVESTIGATION OF THE WALLACE BOTTOM NO. 2 SITE ARKANSAS, COUNTY ARKANSAS

NATURE AND EXTENT OF PROJECT

The Arkansas Archeological Survey proposes to resume investigation of the Wallace Bottom No. 2 Archaeological Site on White River National Refuge in Arkansas County, Arkansas. This projected archaeological investigation is to be carried out in cooperation with the Quapaw Tribe of Oklahoma, the United States Fish and Wildlife Service, United States National Park Service, and Arkansas Archeological Society. The archeological fieldwork is among the activities funded by a historic preservation grant awarded in 2002 to the Quapaw Tribe of Oklahoma by United States National Park Service to support a project titled, "Cooperation Then and Now: Locating and Preserving the Village of Osotouy and the Associated Arkansas Post." The Wallace Bottom site is a likely candidate for the late 1600s Quapaw village of Osotouy and may be a context closely associated with the French Arkansas Post of 1686-1749.

The overall goal of the project is to identify the physical location at which the Quapaw first appear in historical accounts and to identify the material culture of the Colonial era Quapaw. The project's main objectives, in addition to conducting archeological field investigations, include arranging on-site visits for Tribal Elders and other Tribal members and for those wanting to participate in the excavations, consultation with Tribal members on the meaning and significance of archeological discoveries at Wallace Bottom, and sharing results of the archeological project with members of the Tribe. The last of these objectives will involve production of a videotape program as documentation for Tribal member and Elders unable to visit the site.

The archeological activities to be carried out in conjunction with the project are (1) completion of archeogeophysical surveys begun in 2001 and 2002, (2) further archeological test excavations, and (3) systematic bucket auger testing to explore the topography beneath the nineteenth-century alluvial mantle. The principal focus of the test excavations will be further exploration of the vestiges of an evident Colonial-era structure (Feature 3) revealed by test excavation in February 2002.

The Project Director is Carrie V. Wilson, Director of Cultural Resources for the Quapaw Tribe of Oklahoma. For the archeological field investigations, the principal investigator will be John H. House, Arkansas Archeological Survey Station Archeologist at University of Arkansas at Pine Bluff. The proposed field investigations are tentatively scheduled to take place between February 15 and March 2003.

ARCHEOLOGICAL BACKGROUND AND PREVIOUS INVESTIGATIONS AT WALLACE BOTTOM

The Wallace Bottom No. 2 site (3AR179) is located in the Arkansas River floodplain about 400 meters south of the Menard-Hodges archeological site and immediately adjacent to the newly-authorized Osotouy Unit of Arkansas Post National Memorial. The Wallace Bottom No. 2 site was discovered in 1998 during the surveys in the Menard-Hodges site environs conducted in conjunction with the Arkansas Archeological Society/Survey Training Program. Material culture from Wallace Bottom includes both Native American and Colonial French artifacts. The Wallace Bottom No. 2 site appears to be closely associated with early (1686-1749) locations of the Arkansas Post and may represent portions of the late 1600s Quapaw village of

Osotouy. Results from field and laboratory studies conducted before 2001 are reported in an article, "Wallace Bottom: A Colonial-Era Archaeological Site in the Menard Locality, Eastern Arkansas," to be published in the winter 2002 issue of the journal *Southeastern Archaeology*.

Fieldwork conducted on the Wallace Bottom site during 2000-2001 consisted of (1) establishment of a permanent grid system, (2) preparation of a topographic map, (3) geophysical mapping of a portion of approximately 23,600 m^2 the cultivated field, (4) controlled surface collection of 11,000 m^2 in the field, (5) exploration of selected geophysical anomalies with a soil probe, and (6) test excavation in the cultivated field and the wooded lake bank.

Further field studies were conducted in late winter 2002. Important results, from the 2002 field season, reported to U.S. Fish and Wildlife Service in April 2002, include:

(1) Further geophysical mapping. This was accomplished by a crew of students and volunteers under the direction of Jami Lockhart and Kenneth Kvamme, of the Arkansas Archeological Survey and University of Arkansas, Fayetteville Anthropology Department, respectively.

(2) Test excavation to "ground truth" interpretation of geophysical anomalies on the 2001 geophysical map. Excavation determined that a linear magnetic and resistivity anomaly on the 2001 map corresponds to a subplowzone trench-like cultural feature, Feature 3, filled with dark soil containing abundant Native American ceramic sherds, chipped stone debris, and animal bones as well as a few bits of rusted iron and glass that may be derived from a Colonial European occupation. Feature 3 may be the either a foundation wall trench of a Quapaw wall trench house or the footing of a French *poteaux en terre* structure.

(3) Improved understanding of the geological stratigraphy of the Wallace Bottom site. It appears now that the 30 cm-deep plowzone was formed from both a nineteenth century flood deposit and the top of an underlying eighteenth century cultural horizon.

(4) Delineation of discrete boundary for the Wallace Bottom site**.** Bucket auger testing at a 10 m interval on the wooded lake revealed that the site extends for 70 meters north-south along the lake bank. Together with the surface artifact scatter in the field, this gives a total site area of slightly under 30,000 m^2 or 3 ha (7.5 acres).

METHODS

Portions of the precise grid system established in 2000-2001 will be laid out in the cultivated field to relocate the 2002 test units and features from the geophysical mapping. Since cultivation continues, no signs of these are observable on the surface.

Additional 20 x 20 m data collection units will be laid-out adjacent to the units mapped and collected last year. Magnetic measurements and electrical resistivity measurements will be made with appropriate instruments at a 1.0 m or 0.5 m interval in the cultivated field portion of the site. Magnetic measurements will be acquired with a Geoscan Research FM-36 Advanced Fluxgate Gradiometer. Resistance measurements will be acquired with the Geoscan Research RM-15 Electrical Resistance meter in conjunction with the MPX-15 multiplexer that allows multiple measurements/hit at certain depth settings. The geophysical measurements will be downloaded in the field to a laptop computer and saved as digital files. The resulting data sets will be processed with appropriate software to produce maps of the geophysical characteristics of the site. These maps will be compared with each other and with the maps prepared from data collected in 2001 and 2002.

The excavation opened in 2002, a north south 1 X 4-meter trench consisting of the western halves of N142E222 and N144E222, will be re-opened and remaining portions of Feature 3 in those units (covered with plastic before backfilling in 2002) will be excavated. Then additional units, to the east and west, will be excavated to base of plowzone to follow the trench feature in those directions. In so far as possible, sufficient area will be exposed to determine the nature of the structure represented by Feature 3 and to determine the presence of any associated cultural features. Additional bulk samples of fill from Feature 3 and any associated features will be collected for flotation.

If time and field conditions permit, one additional test unit, no more than 2 meters square, will be opened on another geophysical anomaly elsewhere in the field, to be selected in consultation with Jami Lockhart and Kenneth Kvamme. The purpose of this excavation will be to continue to ground-truth interpretations of the geophysical maps and to secure additional information on the nature of subplowzone features at Wallace Bottom.

The combined area of units to be excavated in the field will be no more than 30 m^2. All fill from these excavations will be screened through 1/4-inch mesh (if not collected for flotation recovery) and thorough records will be made of cultural features and strata and horizons observed in unit profiles.

In conjunction with the test excavations, a north-south transect of the site will be selected for exploration with a four-inch diameter bucket auger. The characteristics of sediments encountered by the bucket auger will be logged and sediments brought up from culture-bearing deposits will be screened through 1/4-inch mesh. The linear, northwest-southeast-trending character of the site suggests that both the Indian and European settlements were on the crest of an elevated topographic feature such as a relict Arkansas River point bar ridge. Systematic bucket auger sampling will help evaluate this inference and may reveal the presence of cultural refuse accumulations in swales flanking a point bar ridge.

While no human remains or other indications of the presence of graves have been identified at Wallace Bottom, care will be taken not to disturb any graves during the course of the proposed field investigations. If any cultural features that appear to be graves are encountered, work in that portion of the excavation will be discontinued and the Tribe and relevant authorities will be notified immediately. The Quapaw during the historic period did not bury their dead in close proximity to their villages.

If field conditions permit, the intensive surface collection begun in 2001 will be extended to additional 20 x 20 m units.

Following the fieldwork, all of the specimens will be processed Arkansas Archeological Survey laboratory on the University of Arkansas at Pine Bluff campus and prepared for analysis and curation. When all analyses are completed, all specimens and records from the project will be transferred to the University of Arkansas Collections Facility in Fayetteville for permanent curation. The processing and preparation will be in conformity with Federal and State curation standards (see attached Curation Agreement). The results of the analysis of the specimens from the fieldwork at Wallace Bottom will be reported to the Quapaw Tribe as well as to United States Fish and Wildlife Service. The Tribe will be consulted about specialized analyses and loan of specimens to museums.

TIMETABLE OF INVESTIGATIONS

The time frame for which authorization for fieldwork is sought will be 15 December 2002 through 15 June 2002. In advance of the fieldwork, the principal investigator and Director of the Arkansas Archeological

Survey will meet in Quapaw, Oklahoma with the Quapaw Tribe (Business Committee, Tribal Elders, and interested Tribal Members), and representatives of White River National Wildlife Refuge and Arkansas Post National Memorial. We anticipate beginning field visits in late December, followed by re-gridding. Geophysical mapping, surface collecting, test excavations, and auger explorations will take place between 15 February and 2 March. A report on the preliminary results of the investigation will be submitted to the USWFS Regional Archaeologist and the Quapaw Tribe no later than 31 December 2003.

SIGNIFICANCE OF THE PROJECT

The Quapaw Tribe has long recognized the Menard-Hodges site locality as the most important of its ancestral cultural sites in its traditional homelands in Arkansas. Notwithstanding, over a century of archeological investigations in the locality prior to 1998 had not yielded clear-cut evidence of Osotouy and the first Arkansas Post. With the recent discovery of the Wallace Bottom site, it now appears possible to identify physical place where the Quapaw people first appear in documentary history and to identify material signature of Colonial era Quapaw. The Quapaw were an important ally to the French, protecting French colonial territories including Arkansas Post. Field studies at Wallace Bottom will also shed light on the historic cooperation between the Quapaws and French. Results from this project will help Fish and Wildlife Service to manage and protect the Wallace Bottom site. They will also aid the Quapaws in advising Fish and Wildlife Service and National Park Service on the management and interpretation of all cultural resources on federal land in the Menard-Hodges site locality.

Appendix 1b

Copy of Federal Archaeological Permit No. 3AR179-12202 issued to Quapaw Tribe and Arkansas Archeological Survey by U.S. Department of the Interior

Please use this number
when referring to this permit
No.: 3AR179-12202

DI Form 1991 (Sept. 1992)
OMB No. 1024-0037
Approved through 10/31/2001

UNITED STATES DEPARTMENT OF THE INTERIOR

FEDERAL ARCHEOLOGICAL PERMIT

To conduct work upon public and Indian lands owned, controlled or held in trust by the Department of the Interior under:
X The Archaeological Resources Protection Act of 1979 (P.L. 96-95; 93 Stat. 721, 16 U.S.C. 470aa-mm) and its regulations (43 CFR 7).
☐ The Antiquities Act of 1906 (P.L. 59-209; 34 Stat. 225, 16 U.S.C. 431-433) and its regulations (43 CFR 3).

1. Permit issued to: Arkansas Archeological Survey & Quapaw Tribe of Oklahoma

2. Under application dated: December 2, 2002

3. Name, address and official status of person:

a. In general charge:
Ms. Carrie V. Wilson (Project Director)
Quapaw Tribe of Oklahoma
223 E. Lafayette Street
Fayetteville, Arkansas 72701

b. In direct charge:
Dr. John H. House (Principal Investigator)
Arkansas Archeological Survey
University of Arkansas at Pine Bluff
P.O. Box 4814
1200 North University
Pine Bluff, Arkansas 71601

4. Activity authorized: Geophysical mapping of Wallace Bottom No. Archaeological Site (3Ar179); systematic sampling with a bucket auger at 10-meter intervals; additional 20 meter x 20 meter units to be laid out for controlled surface collections; hand excavation of up to 30 square meters; and collection of bulk soil samples for floatation and other specialized analyses.

5. On lands described as follows:

On White River National Wildlife Refuge in Arkansas, 400 meters south of the Menard-Hodges Site and immediately adjacent to the Osotouy Unit of the Arkansas Post National Monument.

Control No.

6. For period: December 15, 2002 to March 30, 2003

7. University, museum or other scientific or educational institution in which the materials collected under this permit will be deposited for permanent preservation: (A copy of a current, valid curation agreement must be kept on file with the land managing agency (ies)).
University of Arkansas Collections
Arkansas Archeological Survey
P.O. Box 1249
Fayetteville, Arkansas 72702-1249

8. Special conditions: This permit, as checked above, is subject to the provisions of the Archaeological Resources Protection Act of 1979, and its regulations (43 CFR 7), or the Antiquities Act of 1906, its regulations (43 CFR 3), and interdepartmental regulations (25 CFR 261) as to Indian lands. All permits are subject to the provisions of the Native American Graves Protection and Repatriation Act of 1990, the regulations for the curation of Federally-owned and administered archeological collections (36 CFR 79), and the special conditions as listed on the reverse side.

9. Preliminary report: Within approximately 6 weeks of the conclusion of field work, a preliminary report of work performed under this permit, illustrated with representative photographs and listing new and significant collected materials, should be furnished to:
a - Regional Archaeologist, Savannah Coastal Refuges, 1000 Business Center Drive - Suite 10, Savannah, Georgia 31405
b- Refuge Manager, White River National Wildlife Refuge, P.O. Box 308, 321 West 7th Street, DeWitt, Arkansas 72042-0308

10. Signature and title of approving official: 11. Date 12/16/02

Paperwork: Reduction Act Statement

This information is being collected to report on the results of archeological studies conducted on lands under the jurisdiction of the Department of the Interior. This information will be used to ensure that the work was conducted in accordance with statutory and regulatory requirements and any terms and conditions stipulated in the permit. Response to this request is required to obtain a benefit. The public reporting burden for the preliminary and final reports is estimated to average one hour per response, including he time for reviewing instructions, searching existing data sources, gathering and maintaining data, and completing and reviewing the reports. Direct comments regarding the burden estimate or any other aspect of this form to the Information Collection Clearance Officer, National Park Service, 1849 C Street N.W., Room 3317, Washington, D.C. 20240 and the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

8. (CONTINUED) Special conditions are checked (X) as appropriate to this permit:

a. X This permit shall not be exclusive in character, and there is hereby reserved unto the landowners the right to use, lease or permit the use of said land or any part thereof for any purpose.

b. X Other institutions may be engaged in archeological research in the general area covered by this permit. In case there should be conflict with respect to a site not specifically designated in a permit, the parties concerned shall reach agreement between themselves as to which shall work the site.

c. X The Department of the Interior, including its bureaus and employees and the landowners and their grantees, shall be held blameless for any and all events, deeds or mishaps, regardless of whether or not they arise from operations under this permit.

d. X Such guidance and protection as is consistent with duties of the Department of the Interior official in charge of the area will be afforded the permit holder and his party.

e. X Transportation in Department of the Interior vehicles cannot be furnished, except in cases where no extra expense to the Department is involved.

f. X All costs shall be borne by the permittee.

g. X Excavation or removal of any Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony must be preceded by consultation with or, in the case of tribal lands, consent of the appropriate Indian tribe or Native Hawaiian organization. Consultation should be conducted with the lineal descendants, tribal land owners, Native American representatives, and traditional religious leaders of all Indian tribes and Native Hawaiian organizations that can reasonably be assumed to be culturally associated with the cultural items or, if the cultural affiliation of the objects cannot be reasonably ascertained, from whose judicially established aboriginal lands the cultural items originated.

h. X All excavated areas shall be restored by filling in the excavations and otherwise leaving the area in as near to original condition as is practicable.

i. X The permittee shall conduct all operations in such a manner as to prevent the erosion of the land, pollution of the water resources, and damage to the watershed, and to do all things necessary to prevent or reduce to the fullest extent the scarring of the lands.

j. X Any findings of mined or processed metals or other treasure or treasure trove in the area covered by this permit are the exclusive property of the landowners, and shall not be disturbed or removed from the site without specific written permission from the Department of the Interior.

k. X Five copies of the final report, a completed NTIS report documentation form (optional form 272), and required information for listing in the National Archeological Database (NADB-Reports) administered by the National Park Service will be submitted to the office issuing the permit: Office of the Regional Archaeologist, Savannah Coastal Refuges, 1000 Business Center Drive - Suite 10, Savannah, Georgia 31405. Procedures for submitting the required information for NADB listing are available from the issuing office.

l. _ Before undertaking any work on lands administered by the Bureau of Reclamation, clearance should be obtained from the official in charge of the area.

m. _ Before undertaking any work on lands administered by the National Park Service, clearance should be obtained from the superintendent in charge of the area.

n. _ Before undertaking any work on lands administered by the Bureau of Land Management, clearance should be obtained from the Office of the State Director and from the BLM District Officer in direct charge of the area concerned.

o. _ Before undertaking any work on lands administered by the Fish and Wildlife Service, clearance should be obtained from the Office of the Regional Director and from the Refuge Manager in charge at the appropriate Fish and Wildlife Refuge. Possession or use of firearms in such areas is prohibited.

p. _ Before undertaking any work on Indian tribal lands or on individually owned trust or restricted Indian lands, clearance should be obtained from the Bureau of Indian Affairs official having immediate jurisdiction over the property.

q. X Other special conditions continued on attached sheet(s).

1. Work under this permit is limited to archaeological investigations of the Wallace Bottom No. 2 Site (3Ar179) located on the White River National Wildlife Refuge in Arkansas County, Arkansas. The field methodology is described in House's December 2, 2002 proposal, ***Continued Archaeological Investigation of the Wallace Bottom No. 2 Site, Arkansas County, Arkansas***. Please note that soil from all excavation units will be screened through ¼-inch (or less) mesh hardware cloth, unless collected for specific analytical purposes.

2. The permittee shall contact the pertinent Refuge Manager prior to the beginning of each field operation to inform him of specific work to be conducted. At this time, the Refuge Manager may impose additional stipulations as deemed necessary to provide for the protection and management of the resources of the area.

3. Collections of cultural artifacts and other related material acquired under the provisions of this permit remain the property of the United States Government and may be recalled at any time for the use by the FWS or other agencies of the Federal Government. Upon completion of the research, analysis and report preparation, the permittee shall also provide to the Regional Archaeologist and the Refuge Managers an inventory and list of catalogue numbers (assigned by the archaeologists and the curatorial facility) for all the cultural specimens and research records. Once placed in the repository/curational facility, the collection and records shall only be removed for study by qualified scholars or exhibit with the written permission of the FWS Regional Director. **PLEASE SEE THE DEPARTMENT OF THE INTERIOR FINAL RULE GOVERNING CURATION OF FEDERALLY OWNED AND ADMINISTERED ARCHAEOLOGICAL COLLECTIONS, 36 CFR Part 79 (September 12, 1990).**

4. The person in direct charge of field work, or a qualified designee, shall be on site at all times when work is in progress. Failure to comply with permit stipulations will result in removal of the individual's name from the list of approved persons-in-direct-charge.

5. During the course of the work conducted under this permit, the Refuge Manager, or his/her representative shall have access to the study area (within the refuge) of this permit, and during or after completion of this work, shall have the right to inspect all artifacts or other material from these sites.

6. Progress reports will be submitted periodically to the Regional Archaeologist and the Refuge Manager for the duration of the fieldwork and subsequent laboratory analysis.

7. Within two weeks of the completion of fieldwork, a copy of the interim report briefly describing the results of the archaeological investigations shall be forwarded to the Regional Archaeologist and the Refuge Manager. **Draft and final report submission will be completed in accordance with current standards and guidelines for archaeological resource management studies published by Arkansas Archeological Survey.** Copies of the draft report should be submitted to the Regional Archaeologist and the Refuge Manager for review. The permittee will prepare a final report incorporating FWS's comments as appropriate.

8. Five copies of the final report and NTIS documentation shall be submitted to the Regional Archaeologist by January 31, 2004 and shall include all necessary revisions to the data contained in the draft as requested by the FWS. An additional copy of the final report shall be submitted to the Refuge Manager. The following items are to be included:

   a. A complete catalogue and evaluation of specimens collected;

   b. A statement of where all field and analytical records and specimens are curated (including address, name of director, and telephone); and

   c. Updated State of Arkansas Site Form.

9. All professional reports, journal articles, reprints, and other published or unpublished reports and manuscripts resulting from the work conducted under this permit shall give the FWS appropriate acknowledgment. A copy of each shall be filed with the Regional Archaeologist and the Refuge Manager.

10. Upon request, all field and analytical records and other data related to this permit shall made accessible to the FWS and/or the Department of Interior's Consulting Archaeologist for review.

11. Notify the Refuge Manager and FWS Regional Archaeologist if any evidence of human remains is encountered on refuge land during the course of excavations.

    Removal of any human remains or NAGPRA related items from the ground, if deemed necessary, shall be done in accordance with 43 CFR 10 (Native American Graves Protection Act Regulations; Final Rule).

12. No lithic replicative experimentation shall be conducted at any archaeological site or quarry source covered by this permit.

13. Stakes and/or flagging used to identify sites shall be removed upon completion of the research.

14. Vehicular activity shall be restricted to existing roads and trails unless otherwise authorized by the Refuge Manager. All boat access shall be authorized by the Refuge Manager. Care should be exercised to avoid increasing direct or indirect access or potential vandalism to cultural resource sites.

15. Disturbed areas shall be kept to the minimum size necessary to achieve the purposes of the study.

16. The permittee shall, upon direction from the Refuge Manager, take adequate precautions to protect wildlife and their habitat from injury.

17. All excavation units and subsurface test units shall be backfilled.

18. Living vegetation shall not be removed or otherwise damaged without permission of the Refuge Manager.

19. Proper precautions shall be taken at all times to prevent and suppress fires. The permittee shall be held responsible for suppression costs for any fires on public lands caused through negligence of the permittee or his authorized representatives. No debris burning shall be allowed without specific permission of the Refuge Manager.

20. Improvements, such as fencing or water containment structures, within the permit area shall not be disturbed. Where disturbance may be necessary to meet the goals of this permit, prior approval must be obtained from the Refuge Manager. Any disturbance to improvements shall be mitigated by returning them to the original or better condition; achievement of complete mitigation shall be determined by the Refuge Manager.

21. The permittee shall be responsible for cleaning and repairing the work sites before leaving the area. Caution shall be taken to adequately prevent littering or pollution on refuge lands or adjoining properties or waters. Refuse shall be carried out and deposited in approved disposal areas.

22. The FWS reserves the right to terminate this permit at any time. The permittee may appeal termination through the Refuge Manager and/or the Regional Director.

23. The resumes of all new personnel in-charge must be submitted to the Regional Archaeologist if any personnel changes are anticipated. The Regional Director may recommend that the Refuge Manager deny access to the permit area, if after regional review, it is believed that the personnel are not professionally qualified.

24. The specific locations of archaeological locations shall not be provided to any media source (radio, TV, newspaper). Press coverage and discussion of the finds shall be cleared by and coordinated with the Refuge Manager.

25. If, during the course of the investigations, the permittee notes illegal excavation or archaeological resource removal activities, this information shall be immediately provided to the Refuge Manager.

Appendix 2

Copy of "Wallace Bottom: A Colonial-Era Archaeological Site in the Menard Locality, Eastern Arkansas" by John H. House *Southeastern Archaeology* 21(2002):257-268.

A reprint of the copyrighted article, "Wallace Bottom: A Colonial-Era Archaeological Site in the Menard Locality, Eastern Arkansas" by John H. House, *Southeastern Archaeology* 21(2002):257-268, was inserted as Appendix 2 in each of the copies of this report that were submitted to the Quapaw Tribe of Oklahoma and the U.S. Fish and Wildlife Services, Southeast Regional Archaeologists Office.

The complete article is available in *Southeastern Archaeology* Vol. 21.

Appendix 3

Copy of "Archaeogeophysical Mapping at the Wallace Bottom Site, White River National Wildlife Refuge, Arkansas"
by Jami J. Lockhart and John House
Report Submitted to Quapaw Tribe of Oklahoma
and U.S. Fish and Wildlife Service,
Southeast Regional Archeologist's Office
by Arkansas Archeological Survey

Archeogeophysical Mapping at The Wallace Bottom Site, White River National Wildlife Refuge, Arkansas

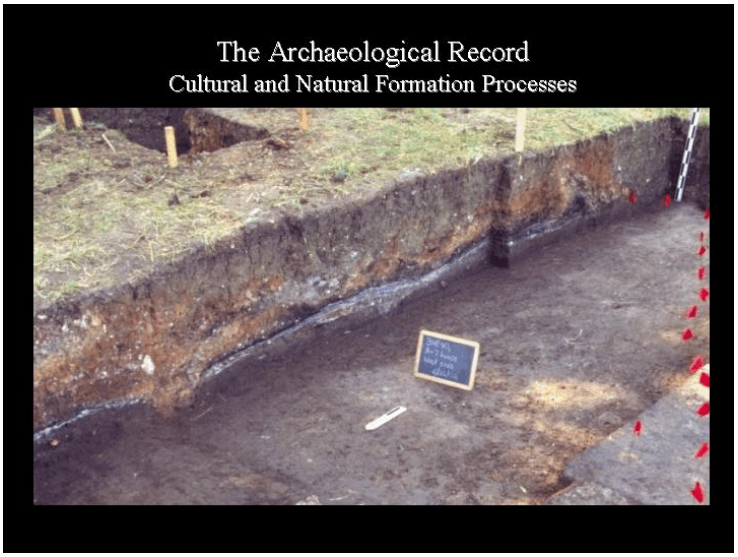
Jami J. Lockhart and John H. House
Arkansas Archeological Survey
August 25, 2004

INTRODUCTION

Over the past three years at the Wallace Bottom site, archeogeophysical data have been collected in a collaborative effort, which included Dr. Kenneth L. Kvamme with his University of Arkansas Near-Surface Prospection class, Dr. Jay K. Johnson with his students from the University of Mississippi, and Jami J. Lockhart with Arkansas Archeological Survey staff and Arkansas Archeological Society members. Kvamme and Lockhart directed the geophysical surveys, data processing, georeferencing, and interpretation, in collaboration with Dr. John House. Magnetometer data were collected using Geoscan FM-36 Fluxgate gradiometers within the 0.1 nT range at 25 cm sample intervals and 50 cm traverse intervals. Electrical resistance data were collected using Geoscan RM-15 resistance meters and multiplexers employing a parallel-twin probe configuration at 50 cm sample and traverse intervals.

BACKGROUND

Technological advances and the availability of high-resolution data allow researchers to explore interrelationships between the physical and cultural elements of a landscape in ways that were previously prohibitive in terms of time and monetary cost. Natural properties of the physical environment and prehistoric cultural information can now be quantified, mapped, modeled and analyzed as they relate to human life ways through time.



One of the technological tools that figures prominently into state-of-the-art archeological methodology is archeo-geophysical near-surface prospection. The term archeogeo-physics describes a range of non-invasive methods for delineation and analysis of sub-surface archeological and cultural features (Clark 1996; Conyers and Goodman 1997; Kvamme 2001). Generally speaking, archeological sites are the product of cultural and natural formation processes (Schiffer 1987). Sites are altered by anthropogenic activities and the natural accumulation of sediments. Soils are physically and chemically changed over time, and the archeological record is transformed both spatially and quantitatively. These site formation processes produce a three-dimensional archeological matrix or volume composed of topographic and physical properties such as soil texture, soil compaction, stratigraphy, biogenic and biochemical components, differential moisture retention, burning, and artifact composition. Archeogeophysical technologies provide the capability to measure the variable strengths and locations of physical properties that make up the archeological record. Through post-processing of geophysical data, maps of data anomalies

can be produced and georeferenced to actual field coordinates that can be accurately located on the ground for archeological excavation and confirmation as archeological features.

Archeogeophysical surveys are non-destructive in that each technology operates at or near the surface of the ground by measuring physical properties that have been created or altered by natural processes and/or past anthropogenic activities. Archeogeophysical surveys are also cost-effective in many situations as compared to traditional archeological survey methods. For example, conventional shovel-test surveys at standard intervals (i.e., 30 m) and at comparatively shallow depths may fail to locate even moderately large cultural features. Alternatively, the sampling strategy of a geophysical survey is contiguous and uniform within a study area, with data collection commonly ranging from continuous pulses to 50 cm sample and traverse intervals depending on the device being used. Consequently, the results provide higher-order data resolution and locational accuracy in locating and identifying subsurface archeological features before excavation.

There are a variety of techniques that can be used to record physical properties of near-surface deposits. Generally speaking, each of these techniques is defined by a consistent and systematic sampling strategy through the use of measured sample and traverse intervals. Using equally spaced ropes of fixed length (e.g., 20 m) that have equidistant marks along each (e.g., 50 cm intervals), geophysical measurements (z-values) can be collected at prescribed intervals in both the x and y directions on the ground. A broad area can be sampled, and every measurement generated has a known location on the ground. Combined with accurate land survey technologies, such as a total station, high-order locational precision can be achieved. The raster-formatted data can also be used directly with other spatial data management technologies, such as geographic information systems, in intrasite analysis and precise placement of excavation units.

There are two realms of geophysical technology — active and passive. Active technologies are used to transmit electromagnetic energy into the ground, and then measure the response to subsurface characteristics. Passive technologies measure inherent or natural properties at the surface. This study will focus on two technologies — magnetometry (gradiometry) and electrical resistance.

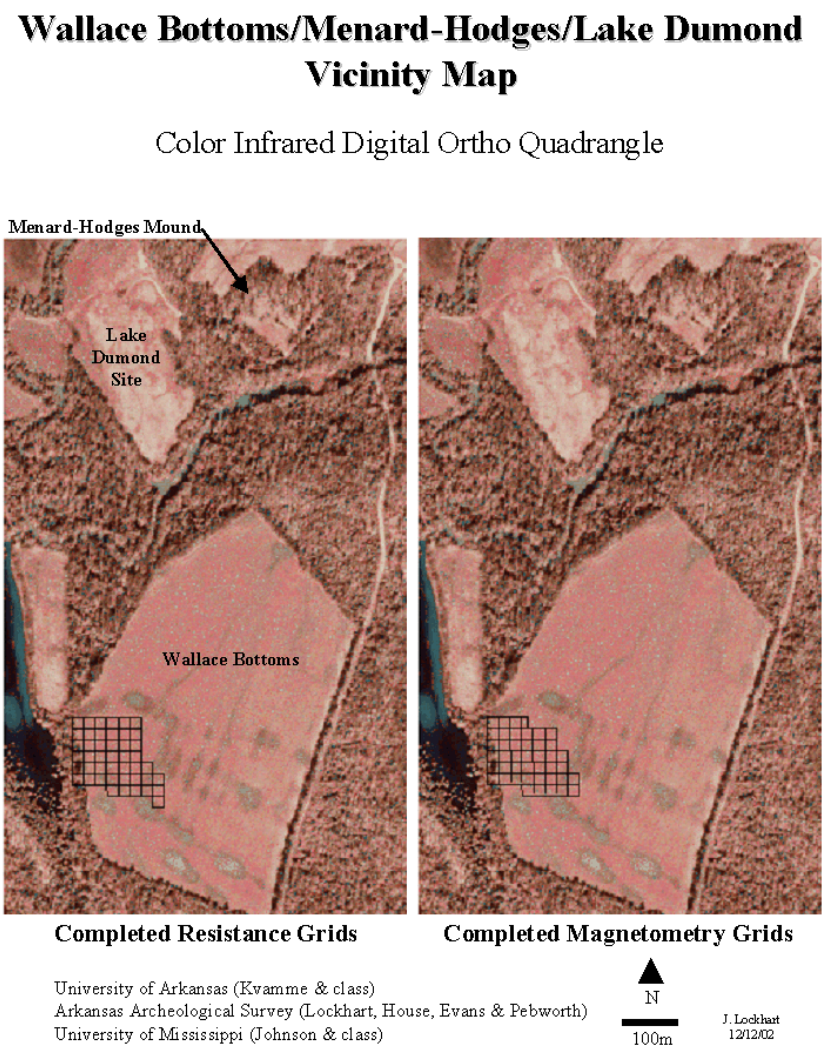
Regardless of which technology is used, data must be downloaded from the device, post-processed and converted to imagery for use in site interpretation. The volume of data that can be compiled in a short period of time using optimized instruments (i.e., 1,600 measurements in 30 minutes) has led to advances in computer software. Post-processing includes the concatenation of multiple files, edge matching of files, noise removal through despiking routines, low and high pass filtering to visually separate cultural features from background soils and geology, filtering to better define linear patterning, histogram clipping to sharpen data contrasts, data interpolation to improve resolution, assigning intensity values, interpretation and recommendations.

A critical companion element of the methodology that was used before and during the geophysical surveys at the Wallace Bottom site was precision surveying and mapping accomplished with total station technology. Beginning in February 2001, the total station was used to establish accurate locational control on a single coordinate system for the entire site. Once this system was established, all spatial elements of the site

could be located with centimeter-level accuracy during all three years of the project. Other uses for this technology at Wallace Bottom were site mapping and topography, geophysical grid and excavation unit location, and to record the location of artifacts discovered during controlled surface collections. Ultimately, the technology was used to accurately position the fifty-one 20 x 20 m grids and four partial grids conforming to the woodline at the site. Dr. John House established the locations of the study area and survey base line. Survey specialist Mike Evans directed the total station mapping with the assistance of Jared Pebworth and other Arkansas Archeological Survey personnel.

Another critical companion technology that factors into spatial accuracy on the site is GIS technology. By georeferencing the geophysical imagery with the locational control of the total station coordinate system, every geophysical anomaly in every potential 2 x 2 m excavation unit within every 20 x 20 m geophysical grid on the site can be located with centimeter-level accuracy. This locational control allows for direct comparisons between the geophysical imagery and future archeological excavations.

During four geophysical surveys over the course of three years, weather conditions ranged from 40 to 90 degrees Fahrenheit with sun, clouds and rain. Soils within the Wallace Bottom study area are generally silt loam at the surface with a silty clay loam subsurface. The soils are generally poorly drained with slow permeability. Consequently, the ground was saturated with isolated areas of shallow standing water, particularly in southern portions of the study area. During the time span of the geophysical surveys, the study area has been actively farmed, as it has been for decades. Various crops have been cultivated, and some archeological deposits have been disturbed by the plow to varying degrees. During the actual surveys, field conditions ranged from newly disked and furrowed to crop stubble subsequent to harvest. Plow scars are readily visible in the unfiltered geophysical images, as well as in aerial photos. The color infrared digital ortho quadrangle at right shows Wallace Bottom and its relationship to other elements of the early historic and late prehistoric landscape, such as the nearby Menard-Hodges mound site (Osotouy), Lake Dumond site, and the abandoned Arkansas River channel.



MAGNETOMETRY

Magnetometry is a passive technology that measures very small variations in the earth's natural magnetic properties. Although it changes over time, at any given period the earth has a consistent magnetic declination and inclination. Soil volumes that have been disturbed reflect a change in this natural magnetic alignment. Likewise, materials that have been fired have a measurably different magnetic signature than their surroundings. In addition to fired materials, magnetic methods are also sensitive to metal. Technically speaking, magnetic field strength is measured in nanotesla (nT = 10^{-9} Tesla). This study will measure magnetic properties using a Geoscan FM-36 fluxgate gradiometer that features the capability to difference diurnal fluctuations (ca. 40 to 50 nT) in background magnetic field strengths commonly ranging from 40,000 to 60,000 nT (Weymouth 1986) with potential archeological features that can differ from the background by as little as 5 nT. The FM-36 gradiometer measures the vertical gradient of the magnetic field — not the total field strength — and is sensitive to magnetic differences as subtle as 0.1 nT. The device is capable of 8 measurements per second, and is generally limited to features located in the top 1.5 to 3 m of the soil.

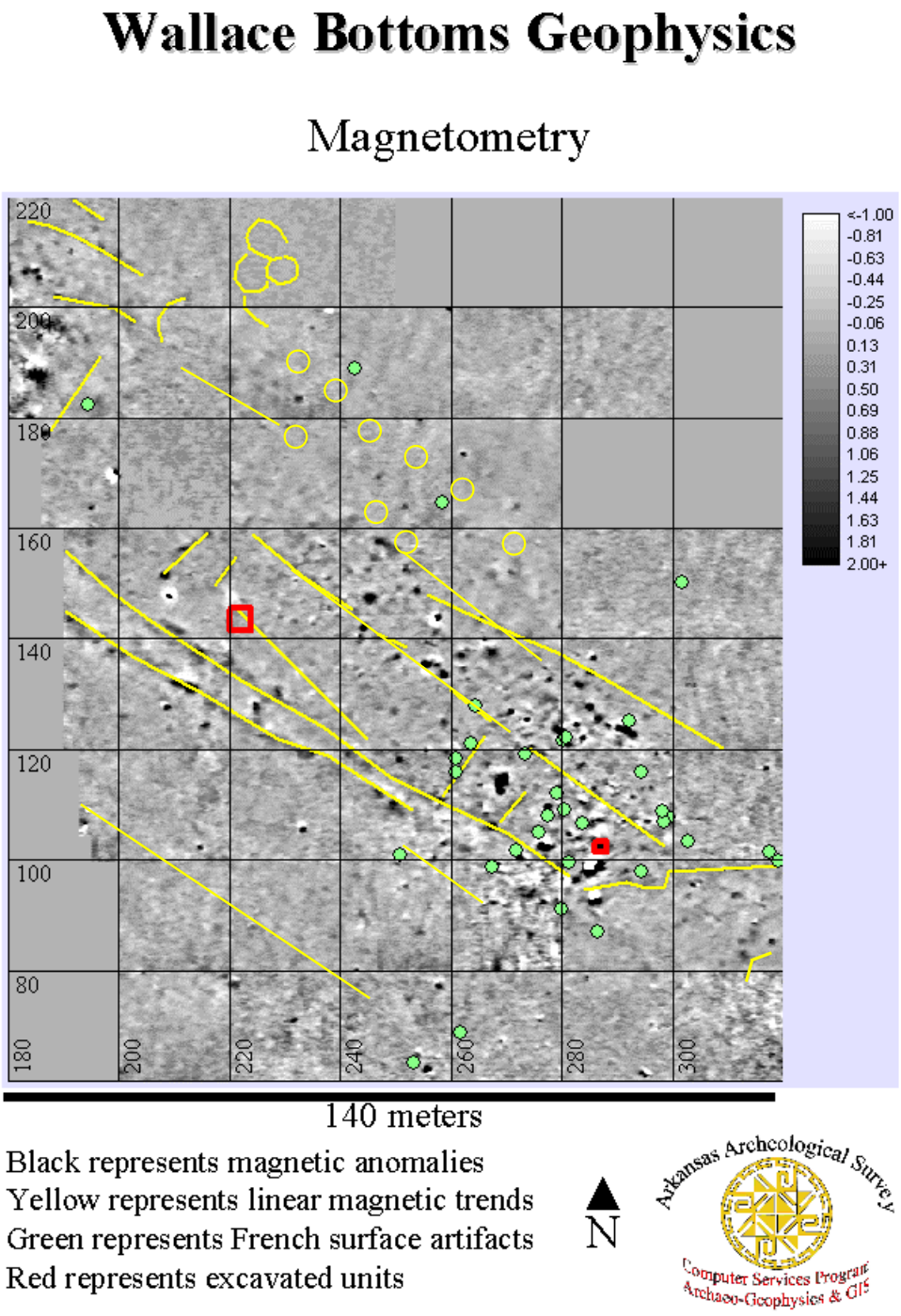
In practice, perhaps the overarching premise that makes archeology possible is that, through time, human activities have altered and otherwise restructured the natural landscape. These past activities have resulted in a mixing and general integration of artifactual materials with native topsoils. This mixing associated with human occupation causes measurable changes in the magnetic characteristics of the upper soil horizons as compared and contrasted with surrounding undisturbed areas. In particular, the magnetic susceptibility of soils and archeological features is enhanced by burning and firing associated with activities such as ceramic and brick manufacture, metalworking, saltmaking, cooking as expressed in historic and prehistoric domestic hearths, as well as the individual artifacts that result from these practices.

Another important source of enhanced magnetic susceptibility is related to organic biogenic and biochemical processes that alter naturally-occurring components of the topsoil, such as magnetite, maghaemite, iron oxides, clay minerals, as well as a variety of other ferromagnetic (strongly magnetizable) and paramagnetic (moderately magnetizable) substances. Anthropogenically enhanced magnetic susceptibility is a very enduring component of archeological horizons and landscapes. Even lands subjected to intensive historic and modern agricultural practices retain relatively stable magnetic susceptibility signatures of previous human activities.

Construction activities, both historic and prehistoric, change the distribution of variably magnetic materials. When more magnetic topsoil is removed from an area, as in digging a ditch for example, that area will often have measurably different magnetism. Conversely, if magnetically enriched topsoil is piled or mounded up in an area, that area is likely to have measurably increased magnetism. Other construction activities involve the use of stones or bricks that have a different magnetic signature than the surrounding soil matrix.

Magnetometers are also sensitive to metal, and particularly iron. Certainly, the magnetometry imagery (below) indicates the presence of metal objects, which would not be unexpected in an area that has been farmed for decades. However, given the density of anomalies and the high probability of early European and Euroamerican contact and trade with the Quapaw at the Wallace Bottom locale, the potential for discovery of early historic artifacts is also high. The characteristic magnetic signature of metal is called a data dipole, which is a black magnetic high immediately adjacent to a white magnetic low. Not all of the metal dipoles are oriented in the same direction, which can indicate metals forged during different time periods. All of the magnetic characteristics and physical properties described above are evident in the Wallace Bottom

magnetometry imagery shown below. Yellow indicates some of the more evident magnetic trends, which have a similar alignment to those seen in the electrical resistance, as will be seen in the following section. The general data trends are turned diagonally from magnetic north and the other cardinal directions. The locations of historic surface artifacts (green) and recently excavated test units (red) are also shown.



ELECTRICAL RESISTANCE

Electrical Resistance is an active technology, in which two probes inject an electrical current and two probes measure voltage. This technology depends on physical properties of the soil (i.e., moisture, dissolved ions, soil particle properties). The physical properties of archeological features commonly differ from the surrounding natural soil matrix, resulting in measurably differential resistance to the flow of electricity. For example, the moist fill of a buried ditch might provide a less resistant pathway for electrical current than the surrounding dry and compacted natural soil matrix. Prospection depth is controlled by the distance of separation between the probes. Electrical resistance is measured in ohms, and resistivity is measured in ohm meters (2 pi "resistance in ohms" probe spacing in meters). The Geoscan RM-15 used in this project is optimized for archeological applications. The probes are affixed to a frame, and the data collector is capable of approximately 20 to 30 measurement per minute for a total of 30,000 measurements before downloading. It can be configured in parallel mode to take multiple readings of equal depth, or in multiplexing mode to take readings at different depths as in tomography.

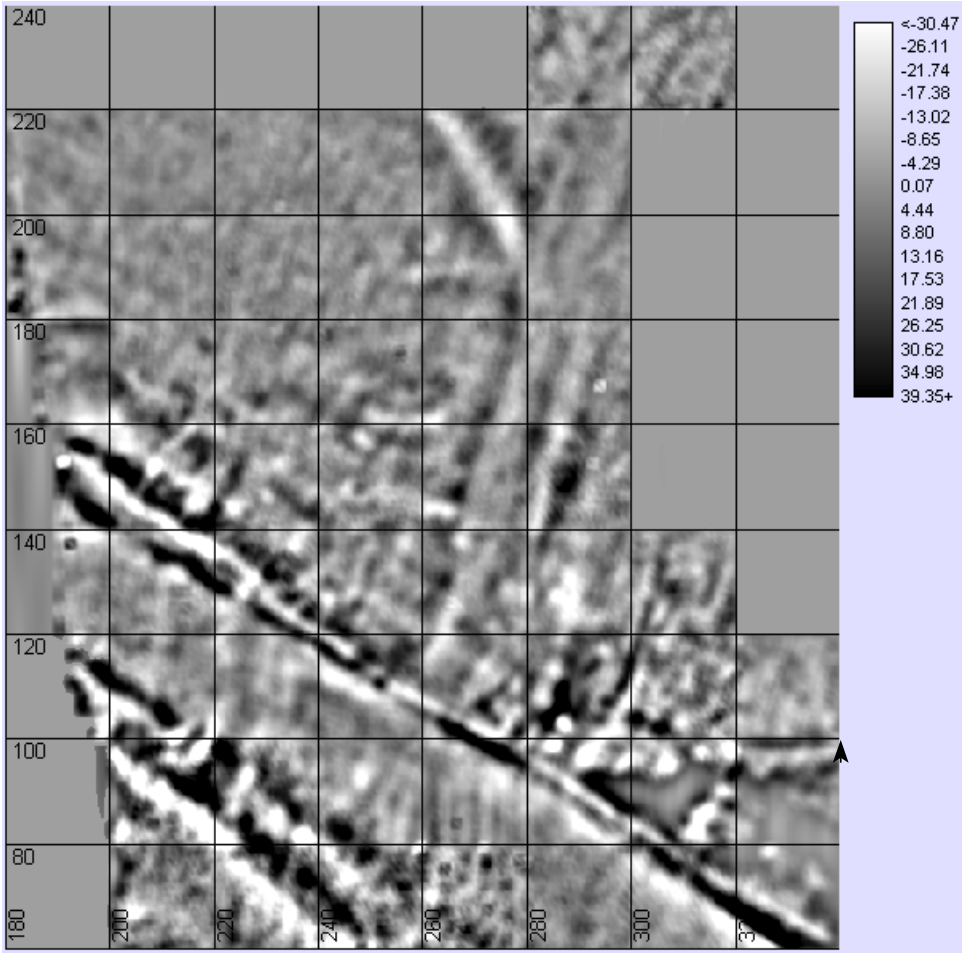
The electrical resistance image immediately below shows the location of the 20 x 20 m geophysical grids with magnetic north at top. The first image is shown without interpretations for reference. In the next image, I have highlighted some of the most clearly expressed anomalous trends in yellow along with the locations of historic surface artifacts in green, and completed excavations in red. The anomalous data trends are generally rectilinear and oriented diagonally to magnetic north and the cardinal directions as in the preceding magnetometry data.

The largest and perhaps most obvious trend in the resistance appears to be approximately 35 m wide, and follows a straight and uniform trajectory from northwest to southeast in the southern half of the imagery (blue dashed line). The trend is also identifiable as being wetter than average as shown in the preceding aerial color infrared photograph. Another linear trend running from northeast to southwest (blue dotted line) appears to intersect the larger trend at approximately N110, E260. The larger dashed trend appears to cover the dotted trend at that point. Furthermore, close inspection of the resistance data reveals a faint linear anomaly continuing the trajectory of the dotted trend beneath the larger dashed trend, indicating the possibility that the dotted trend preceded the larger dashed trend. Still other data trends are represented by the patterned interface between high and low electrical resistance. Rectangular patterning may indicate the historic location of structures and high use areas that are characterized by differential compaction (e.g., living floors, pits, etc.), and thereby differential moisture retention. Indeed, recent excavations (shown in red) located according to the geophysical imagery have confirmed such features. The western-most area of excavation has uncovered a wall-line of post molds, as well as Native American and Euroamerican artifacts. The eastern-most excavations were located on the lowest electrical resistance readings on the site, and have unearthed a pit feature with similar period artifacts and evidence of burning.

The locations of surface artifacts were pinpointed using total station technology and are shown in green relative to the geophysical imagery. There is a clustering of surface artifacts in the southeastern quadrant of

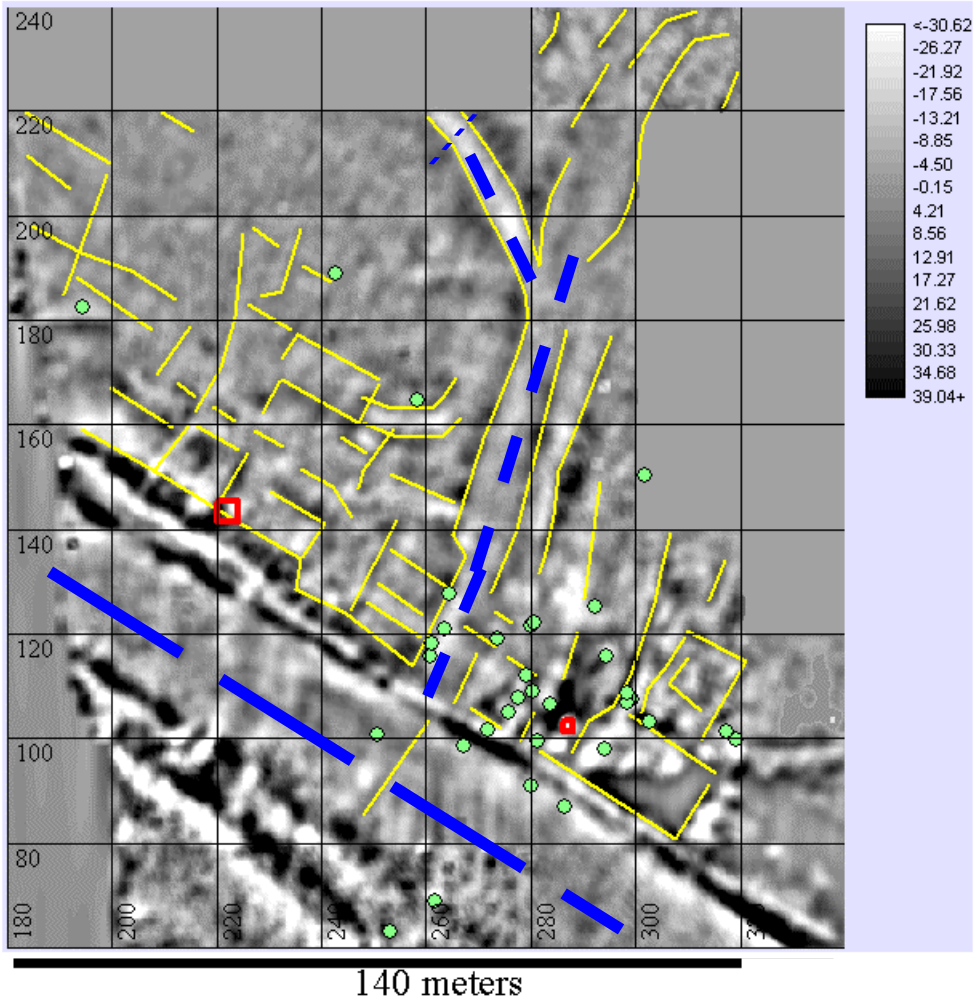
the imagery, which coincides with resistance anomalies. Due to natural and agricultural changes in the landform since the time of occupation, this portion of the site may be closer to the present-day surface. Plowing has brought some of the uppermost level of the archeological features to the surface in this area.

WALLACE BOTTOMS ELECTRICAL RESISTANCE



Wallace Bottoms Geophysics

Electrical Resistance



140 meters

Yellow represents linear magnetic trends
Green represents French surface artifacts
Red represents excavated units

N

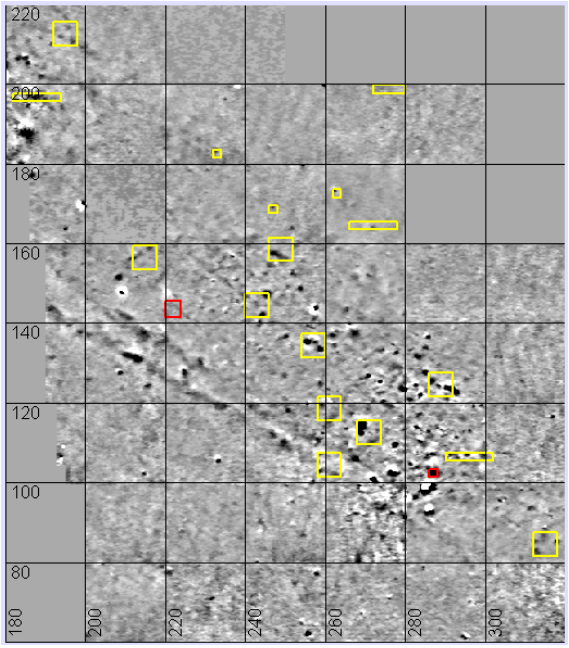
Arkansas Archeological Survey
Computer Services Program
Archaeo-Geophysics & GIS

RECOMMENDATIONS

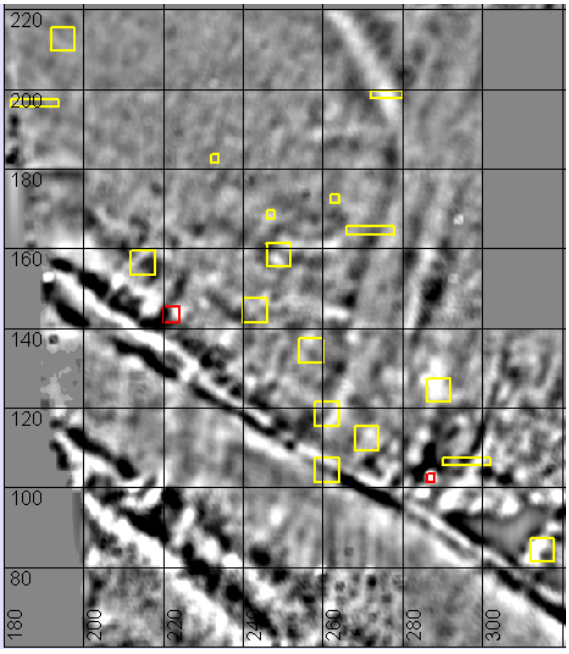
The images below compare the magnetometry (left) with the electrical resistance data at the same scale. The yellow rectangles shown on the images below mark the location of potential excavation units. Each unit has been precisely positioned in order to investigate different types of anomalies that occur in both data sets, and to maximize the amount of information that can be gained from the site. Because the archeogeophysical imagery has been georeferenced to the on-site coordinate system, any anomaly or excavation unit can be located at any time with high precision using Total Station technology. The large number of recommended excavations attest to the fact that the Wallace Bottom site will continue to provide information for many years to come.

WALLACE BOTTOM ARCHEOGEOPHYSICS

Magnetometry



Electrical Resistance



SUMMARY

Given the success of recent excavations at Wallace Bottom, as well as the presence of numerous Native American and an early Euroamerican artifacts, the highly patterned trends in the archeogeophysical imagery, and the site's proximity to the location of the ceremonial mound center of Osotouy (Menard-Hodges Mound Site), there can be little doubt of the site's historical importance. The Wallace Bottom site holds the potential to produce unprecedented information about interactions between two very different cultures — the Native population of Osotouy, and the French traders that came to inhabit the area in the late seventeenth century. There is no other site remotely like it in Arkansas, and it may be the best-preserved site of its kind anywhere.

REFERENCES CITED

Clark, A.
1996 *Seeing Beneath the Soil: Prospecting Methods in Archaeology*. B. T. Batsford, London.

Conyers, L. B., and D. Goodman
1997 *Ground-penetrating Radar: An Introduction for Archaeologists*. AltaMira Press, Walnut Creek, California.

Kvamme, K. L.
2001 Current Practices in Archaeogeophysics: Magnetics, Resistivity, Conductivity, and Ground Penetrating Radar. In *Earth Sciences and Archaeology*, edited by P. Goldberg, V. Holliday, and R. Ferring. In press, Plenum Press, New York.

Schiffer, Michael B.
1987 *Formation Processes of the Archaeological Record*. University of New Mexico Press, Albuquerque.

Weymouth, John W.
1986 Geophysical Methods of Archaeological Site Surveying. In *Advances in Archaeological Method and Theory*, Vol. 9, edited by Michael B. Schiffer, pp. 311-395. Academic Press, New York.

COOPERATION THEN AND NOW
REPORT ADDENDUM

September 14, 2005

Artifacts and Samples from Wallace Bottom (3AR0179)
2003 Season

Accession No. 2003-378

Note: This inventory does not include metal artifacts currently undergoing conservation.

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
1	unassigned						
N144E220, Plowzone 0-30 cm BS (48.28-47.98 m amsl), screened 1/4"							
2	POT	RIM		SHELL	MISSISSIPPI	1	.80
2	POT	BODY		SHELL	MISSISSIPPI	10	22.40
2	POT	BODYFG		SHELL			10.60
2	POT	BODY		SHELL	OLDTOWN, *var. Oldtown*	1	.90
2	POT	BODY		FGRSHL	BELL	1	.60
2	POT	BODY		FGRSHSD	OLDTOWN, *var. Unsp.*	1	1.60
2	CL	FLA		CRT		140	48.80
2	CL	SHAT		CRT		5	2.20
2	CL	CORE	PEBCO	CRT		2	55.60
2	CL	FLA	RUM	CRT		2	8.20
2	CL	FLA		PITKIN		1	2.50
2	CL	FLA		STGEOG		1	.10
2	CL	FLA		NOV		1	.60
2	URM	FCR		CRT		3	1.30
2	URM	CHNK		QTZT		1	2.80
2	URM	CHNK		SS		1	1.60
2	URM	PEBL		CRT		2	3.60
2	FAUNA	BS				37	13.80
2	METAL	UNID		IRON		1	1.70
2	GLASS	UNID		(AQUA)		1	.20
Surface at N148E222							
3	CL	BIF	ARRFPM	CRT	MADISON	1	2.10
144E222E1/2, Plowzone, 0-30 cm BS (48.30-48.00 m amsl), screened 1/4"							
4	POT	BODY		SHELL	MISSISSIPPI	16	47.80
4	POT	BODYFG		SHELL			3.60
4	POT	MDLOBJ		UNID		1	.20
4	CL	BIF	ARROW	CRT	UNCLASS	1	.60
4	CL	UNIF	END	CRT		1	3.20
4	CL	CORE		CRT		1	26.90
4	CL	FLA	RUM	CRT		1	2.00
4	CL	FLA		CRT		114	38.90
4	CL	SHAT		CRT		9	10.40
4	CL	SHAT		QTZT		1	2.50
4	URM	PEBL		CRT		1	.30
4	FAUNA	BS				40	8.10
4	FAUNA	SHELL				1	.10
4	FAUNA	BS		TEETH		1	.10
4	EUCER	BODY		EARTHR	CHARENTE	1	1.90
4	METAL	UNID		IRON		1	.50
4	METAL	AMMO	SHOT	LEAD		1	.50
4	METAL	UNID		CUPROUS		1	.10
144E222W1/2, Feature 3 east of E222.50, below 47.93 m amsl, Flotation Heavy Fraction							
5	FLOT_HF						
Same as above, Flotation Light Fraction							
6	FLOT_LF						
Same as above, specimens handpicked from flotation sample matrix							
7	POT	BODY		SHELL	MISSISSIPPI	7	54.70
7	POT	BODYFG		SHELL			9.90
7	CL	BIF	ARROW	CRT		1	1.00
7	CL	FLA		CRT		3	6.70
7	URM	FCR		CRT		1	.90
7	FAUNA	BS				2	2.70

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
N144E222W1/2, Feature 4 east of E222.5, below 47.95 m amsl, screened 1/4"							
8	POT	RIM		SHELL	MISSISSIPPI	1	19.30
8	POT	BODY		SHELL	MISSISSIPPI	5	30.80
8	POT	BODYFG		SHELL			.90
8	CL	FLA		CRT		7	21.70
8	CL	SHAT		CRT		1	7.00
8	CL	UNIF	END	CRT		1	5.50
8	FAUNA	BS				30	19.40
8	FAUNA	UNMOD	GAR	FISC		5	.10
8	FLORA	CHARC		UNID			.10
N144E222W1/2, Feature 7							
9	FAUNA	UNMOD	TURTLE			1	13.40
N144E222W1/2, Feature 9							
10	FAUNA	BS				1	.70
N144E222W1/2, Feature 8							
11	CL	SHAT		CRT		1	14.20
N144E222W1/2, Feature 3 clearing, handpicked							
12	POT	BODY		SHELL	MISSISSIPPI	3	30.60
12	CL	FLA		CRT		2	4.40
12	FAUNA	BS				1	26.60
12	FAUNA	UNMOD	SHELL			1	26.60
12	URM	CHNK	UNFIRE	CLAY		1	19.20
N144E222W1/2, Feature 11							
13	METAL	FASTNR	NAIL	IRON		1	5.80
N144E222W1/2, Feature 10, handpicked							
14	POT	BODY		SHELL	MISSISSIPPI	2	5.00
14	FAUNA	UNMOD				1	.30
N144E222W1/2, Feature 11							
15	CL	FLA		CRT		2	1.70
15	FAUNA	UNMOD	MUSSEL			1	35.00
Surface at N146E222							
16	EUCER	BODY	PIPE	UNMOD		1	.50
Surface at N195E195							
17	POT	BODY		SHELL	MISSISSIPPI	1	5.50
Surface at N102E289							
18	LITHIC	ARMS	GFLINT	FLINT		1	6.10
Surface at N100E276							
19	POT	RIM		CGRSHL	UNCLASS PLAIN	1	1.70
19	EUCER	RIM		EARTHR	GREENGLAZED	1	4.60
Surface at N150E220							
20	CL	BIF	ARROW	CRT	UNCLASS	1	1.50
Surface at N145E253							
21	POT	BODY		SHELL	MISSISSIPPI	1	4.00
21	CL	UNIF	END	CRT		1	4.50
Surface at N164E215							
22	CL	UNIF	END	CRT		1	3.90
Surface at N104E292							
23	CL	BIF	ARROW	CRT	MADISON	1	1.70
23	URM	FCR		CRT		1	13.50
23	EUCER	BODY		STONEW	WESTERWALD	1	.90
N102E286S1/2, Plowzone, 0-30 cm BS (48.40-48.10 m amsl), screened 1/4"							
24	POT	RIM		SHELL	MISSISSIPPI	2	2.90
24	POT	BODY		SHELL	MISSISSIPPI	51	94.10
24	POT	BODYFG		SHELL			50.50

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
24	POT	BODY		SHELL	UNCLASS INCISED	1	.30
24	POT	RIM		CGRSHL	UNCLASS PLAIN	1	3.40
24	POT	BODY		CGRSHL	UNCLASS PLAIN	2	7.20
24	POT	BODY		FGRSHL	BELL	4	5.70
24	POT	BODY		FGRSHBO	UNCLASS PLAIN	1	1.80
24	POT	FBCLAY					62.00
24	CL	BIF	ARROW	CRT	MADISON	1	.60
24	CL	UNIF	END	CRT		1	5.10
24	CL	UNIF	END	CRT		1	4.20
24	CL	UNIF	END	CRT		1	3.10
24	CL	FLA	RUM	CRT		4	26.70
24	CL	FLA		CRT		445	122.50
24	CL	FLA		PITKIN		6	1.20
24	CL	FLA		STJOEG		1	.10
24	CL	CORE	PEBCO	CRT		1	23.00
24	CL	SHAT		CRT		20	21.00
24	GRL	FLA	UNID	QTZT		1	.10
24	URM	FCR		CRT		9	3.10
24	URM	CHNK		SS		22	29.00
24	URM	CHNK		SHL		5	1.40
24	URM	PEBL		CRT		9	7.70
24	FAUNA	BS				429	165.90
24	FAUNA	BS		TEETH		4	1.50
24	FAUNA	UNMOD	BONE			1	1.30
24	FLORA	CHARC					.10
24	EUCER	RIM		EARTHB	GREENGLAZED	1	7.70
24	EUCER	BODY		EARTHB	GREENGLAZED	5	10.10
24	EUCER	BASE	UNID	EARTHR	CHARENTE	1	18.10
24	EUCER	BODY		EARTHR	CHARENTE	9	4.50
24	EUCER	BODY		EARTHR	UNCLASS	1	5.60
24	EUCER	BODY		EARTHB	UNCLASS	4	4.50
24	EUCER	BODY		EARTHB	SLIPWARE	1	.50
24	EUCER	BODY		EARTHB	SLIPWARE	1	.60
24	EUCER	BODY		EARTHR	ALBISOLA	1	.70
24	EUCER	RIM	MUG	STONEW	UNCLASS	1	10.70
24	EUCER	BODY		EARTH	UNCLASS	1	.70
24	METAL	UNID	SHOT	LEAD		1	.10
24	METAL	UNID	UNID	LEAD		7	14.80
24	GLASS	BODY		(AQUA)		5	1.40
24	GLASS	BODY		(LTGREEN)		4	2.20
24	GLASS	BODY		(OLIVE)		4	4.50
24	SLAG	SLAG	SLAG			7	4.00
N102E288S1/2, Plowzone, 0-30 cm BS (48.40-48.10 m amsl), screened 1/4"							
25	POT	RIM		SHELL	MISSISSIPPI	2	1.90
25	POT	BODY		SHELL	MISSISSIPPI	54	93.70
25	POT	BODYFG		SHELL			40.50
25	POT	BODY		BOSH	SARASSA	2	3.40
25	POT	BODY		BOSH	OLDTOWN, *var. Noble Lake*	1	.50
25	POT	BODY		FGRSHL	BELL	1	1.10
25	POT	BODY	GRSND	FATHERLAND		1	5.00
25	POT	BODY	BONE	UNCLASS	PLAIN	1	.40
25	POT	MDLOBJ	PIPE	UNID		1	2.10
25	POT	FBCLAY					25.10
25	CL	BIF	ARROW	CRT	MADISON	1	1.20

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
25	CL	FLA	RUM	CRT		14	44.50
25	CL	FLA		CRT		325	138.90
25	CL	CORE	PEBCO	CRT		1	14.60
25	CL	SHAT		CRT		17	25.20
25	CL	FLA		PITKIN		3	1.70
25	CL	FLA		NOV		1	.50
25	CL	SHAT		NOV		2	.50
25	URM	FCR		CRT		16	8.30
25	URM	BEBL		CRT		10	3.84
25	URM	CHNK		SLT		1	1.00
25	URM	PEBL		IGN		1	2.90
25	URM	CHNK		SS		9	24.80
25	FAUNA	BS				284	126.50
25	FAUNA	UNMOD		TEETH		6	2.20
25	EUCER	BODY		EARTHB	TINGLAZED	1	.20
25	EUCER	BODY		EARTHR	TINGLAZED	1	.20
25	EUCER	BODY		EARTHB	CHARENTE	3	7.90
25	EUCER	BODY		EARTHR	UNCLASS	6	6.00
25	EUCER	RIM		EARTHR	SLIPWARE	1	.10
25	EUCER	BODY		EARTHR	SLIPWARE	1	.80
25	EUCER	RIM		EARTHR	ALBISOLA	1	.40
25	EUCER	BODY		EARTHR	ALBISOLA	1	.30
25	EUCER	BODY		EARTHB	SAINTONGE-SL	4	4.20
25	EUCER	BODY		EARTHB	GREENGLAZED	2	1.80
25	EUCER	BODY		UNID	UNCLASS	1	2.10
25	METAL	UNID		IRON		27	11.90
25	METAL	BUTTON	BUTTON	CUPROUS		1	3.20
25	METAL	BUTTON	BUTTON	CUPROUS		1	.70
25	METAL	AMMO	MBALL	LEAD		1	17.40
25	METAL	AMMO	MBALL	LEAD		1	16.00
25	METAL	AMMO	DRIP	LEAD		6	14.60
25	LITHIC	ARMS	GFLINT	FLINT		1	7.40
25	LITHIC	ARMS	GFLINT	FLINT		1	1.10
25	GLASS	BODY		(AQUA)		1	.60
25	GLASS	BODY		(GREEN)		1	.80
25	GLASS	BODY		(PATINATED)		1	.40
25	GLASS	BODY		(CLEAR)		1	.20
25	SLAG	SLAG	SLAG			20	23.50
N102E286S1/2, Feature 12, stoneware rim at N102.40E287.55, 48.05 m amsl							
26	EUCER	RIM	MUG	STONEW	UNCLASS	1	10.00
N102E288S1/2, Plowzone							
27	GRL	GEOB	PIPE	CATLINITE		1	4.00
N102286S1/2, Plowzone, 30-35 cm (48.10-48.05 m amsl), screened 1/4"							
28	POT	RIM		SHELL	MISSISSIPPI	2	2.40
28	POT	BODY		SHELL	MISSISSIPPI	12	42.70
28	POT	BODYFG		SHELL			8.20
28	POT	BODY		FGRSHBO	UNCLASS PLAIN	1	.70
28	POT	BODY		BONE	UNCLASS PLAIN	1	3.00
28	POT	FBCLAY					193.30
28	CL	FLA	RUM	CRT		2	3.10
28	CL	FLA		CRT		66	38.00
28	CL	SHAT		CRT		5	2.90
28	CL	FLA		PITKIN		2	.40
28	CL	FLA		STGEOR		1	.70

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
28	GRL	GRIP	ABRAD	SS		2	48.90
28	URM	CHNK		SS		6	69.10
28	URM	FCR		CRT		2	54.30
28	URM	PEBL		SS		1	1.10
28	FAUNA	BS				318	297.10
28	FAUNA	UNMOD		TEETH		1	37.10
28	FAUNA	BS		TEETH		2	.40
28	FLORA	CHARC	PEACH	SEED		1	2.60
28	FLORA	CHARC	WOOD	UNID			10.30
28	FAUNA	SHELL				2	.10
28	EUCER	RIM		EARTHR	CHARENTE	1	11.00
28	EUCER	BASE		EARTHR	CHARENTE	1	5.90
28	EUCER	BODY		EARTHR		6	7.00
28	EUCER	BASE		EARTHR	GREENGLAZED	1	65.00
28	EUCER	BASE		EARTHR	GREENGLAZED	1	2.90
28	EUCER	BODY		UNID	UNCLASS	1	5.10
28	METAL	BUTTON	BUTTON	CUPROUS		1	3.00
28	METAL	UNID		IRON		15	7.80
28	METAL	DRIP	DRIP	LEAD		1	.30
28	SLAG	SLAG	SLAG			6	1.90
28	METAL	BEAD	BEAD	CUPROUS		1	.10
N102E286S1/2, Bottom of plowzone, 30-35 cm BS (48.10-48.05 m amsl), screened 1/4"							
29	POT	RMLUG		SHELL	MISSISSIPPI	1	6.60
29	POT	LUG		SHELL	UNCLASS	1	.60
29	POT	RIM		SHELL	MISSISSIPPI	1	2.70
29	POT	BODY		SHELL	MISSISSIPPI	6	6.60
29	POT	BODYFG		SHELL			4.40
29	POT	BODY		FGRSHBO	UNCLASS	1	.20
29	CL	FLA	RUM	CRT		1	4.80
29	CL	FLA		CRT		54	54.40
29	CL	SHAT		CRT		3	.90
29	CL	FLA		PITKIN		1	1.90
29	POT	FBCLAY					1.80
29	FAUNA	BS				48	21.70
29	EUCER	BODY		EARTHR	CHARENTE	2	2.00
29	EUCER	BODY		EARTHR	GREENGLAZED	1	1.10
29	EUCER	BODY		EARTHR	UNCLASS	1	.20
29	EUCER	BODY		STONEW	WESTERWALD	1	.60
29	EUCER	RIM	UNID	UNCLASS		2	2.30
29	METAL	UNID	UNID	CUPROUS		1	.20
29	METAL	UNID	UNID	IRON		8	1.10
29	GLASS	BODY		(AQUA)		1	1.10
29	SLAG	SLAG	SLAG			3	2.70
N102E286N1/2, Plowzone, 0-30 cm BS (48.40-48.10 m amsl) screened 1/4"							
30	POT	RMLUG		SHELL	MISSISSIPPI	1	8.00
30	POT	LUG		SHELL	MISSISSIPPI	1	1.30
30	POT	BODY		SHELL	MISSISSIPPI	43	99.20
30	POT	BODYFG		SHELL			27.00
30	POT	BODY		FGRSHL	BELL	2	8.50
30	POT	BODY		FGRSHL	FATHERLAND	1	5.40
30	POT	BODY		SHELL	UNCLASS INCISED	1	1.10
30	POT	BODY		FGRSHBO	UNCLASS INCISED	1	1.30
30	POT	BODY		FGRSHBO	UNCLASS PLAIN	1	7.40
30	POT	BODY		CGRSHL	UNCLASS PLAIN	1	3.50

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
30	POT	BODY		GRSND	UNCLASS PLAIN	1	7.40
30	POT	FBCLAY					34.50
30	CL	BIF	ARROW	CRT		1	.20
30	CL	BIF	ARRPFM	CRT	UNCLASS	1	1.00
30	CL	BIF	UNID	CRT		1	2.30
30	CL	UNIF	SIDE	CRT		1	2.30
30	CL	CORE	PEBCO	CRT		2	58.70
30	CL	FLA	RUM	CRT		9	1.84
30	CL	FLA		CRT		308	106.60
30	CL	SHAT		CRT		25	29.60
30	CL	FLA		PITKIN		1	1.00
30	CL	FLA		STGEOR		3	1.40
30	URM	FCR		CRT		8	13.10
30	URM	PEBL		CRT		2	.50
30	URM	CHNK		SS		13	14.20
30	URM	CONCRT		UNID		1	.10
30	FAUNA	BS				320	138.10
30	FAUNA	T00TH				4	1.90
30	FAUNA	UNMOD	GAR	FISC		2	.10
30	EUCER	RIM		EARTHR	TINGLAZED	1	.40
30	EUCER	RIM		EARTHB	GREENGLAZED	1	8.20
30	EUCER	RIM		EARTHR	GREENGLAZED	1	4.90
30	EUCER	RIM		EARTHR		1	2.70
30	EUCER	BODY		EARTHB	GREENGLAZED	3	6.20
30	EUCER	BODY		EARTHB	SAINTONGE	1	5.50
30	EUCER	RIM		EARTHR	CHARENTE	1	1.80
30	EUCER	RIM		EARTHR	CHARENTE	1	.30
30	EUCER	BODY		EARTHR	CHARENTE	8	5.30
30	EUCER	BODY		EARTHB	SLIPWARE	1	.10
30	EUCER	BODY		EARTHR	ALBISOLA	4	1.40
30	EUCER	BODY		EARTHB	UNCLASS	1	.40
30	EUCER	BODY		EARTHR	UNCLASS	5	8.30
30	EUCER	RIM		STONEW	UNCLASS	1	5.10
30	EUCER	BODY		STONEW	WESTERWALD	1	.20
30	EUCER	BODY		UNID	UNCLASS	1	2.20
30	EUCER	BODY		UNID	UNCLASS	1	.40
30	GRL	GEOB	UNID	CATLINITE		1	.40
30	METAL	CLOACC	BUCKLE	CUPROUS		1	.40
30	METAL	UNID	UNID	CUPROUS		1	.10
30	METAL	AMMO	MBALL	LEAD		1	18.30
30	METAL	AMMO	SPLATT	LEAD		8	28.00
30	GLASS	BODY		(OLIVE)		6	5.70
30	GLASS	BODY		(AQUA)		3	3.20
30	GLASS	BODY		(CLEAR)		2	.20
30	GLASS	BODY		(PATINATED)		1	1.10
30	GLASS	BEAD	NECKLA	(WHITE)		1	1.10
30	GLASS	BEAD	NECKLA	(WHITE)		1	.40
30	GLASS	BEAD	NECKLA	(WHITE)		1	.40
30	LITHIC	ARMS	GFLINT	FLINT		1	4.90
30	LITHIC	GIZZAR	GIZZAR	CRT		1	.10
30	SLAG	SLAG	SLAG			21	16.00
N102286N1/2, Bottom of Plowzone (48.10-48.00 m amsl), screened 1/4"							
31	POT	RIM		SHELL	MISSISSIPPI	1	14.20
31	POT	RIM		SHELL	MISSISSIPPI	1	1.10

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
31	POT	BODY		SHELL	MISSISSIPPI	40	160.00
31	POT	BODYFG		SHELL			14.70
31	POT	RIM		CGRSHL	UNCLASS PLAIN	1	2.80
31	POT	BODY		CGRSHL	UNCLASS PLAIN	2	6.70
31	POT	BODY		FGRSHBO	UNCLASS PLAIN	1	.30
31	POT	FBCLAY					12.30
31	CL	BIF	UNID	CRT		1	4.20
31	CL	CORE	PEBCO	CRT		1	26.10
31	CL	FLA		CRT		81	26.10
31	CL	SHAT		CRT		10	23.50
31	CL	FLA		QTZT		1	.60
31	URM	FCR		CRT		6	2.70
31	URM	PEBL		CRT		1	.20
31	URM	PEBL		QTZ		1	1.30
31	URM	CHNK		SS		2	3.20
31	FAUNA	UNMOD	UNID			1	99.60
31	FAUNA	UNMOD	UNID			1	26.90
31	FAUNA	UNMOD	UNID			1	6.60
31	FAUNA	BS				257	147.80
31	URM	UNID		UNID		1	.90
31	FAUNA	TEETH	UNID			1	2.60
31	EUCER	BODY		EARTHB	GREENGLAZED	1	1.10
31	EUCER	BODY		EARTHR	CHARENTE	2	3.70
31	EUCER	BODY		EARTHR	ALBISOLA	1	.20
31	EUCER	BASE		EARTHR	UNCLASS	1	14.20
31	EUCER	BODY		EARTHR		2	18.20
31	EUCER	BODY		EARTHR	UNCLASS	2	18.20
31	EUCER	BODYFG		EARTHR		4	2.70
31	EUCER	BODYFG		EARTHB		1	.70
31	EUCER	BODY		UNID	UNCLASS	1	1.40
31	METAL	UNID	UNID	IRON		10	2.50
31	METAL	CLOAC	PIN	CUPROUS		1	.10
31	METAL	AMMO	SPRUE	LEAD		1	1.70
31	METAL	AMMO	DRIP	LEAD		2	5.90
31	GLASS	BODY		(AQUA)		2	.40
31	GLASS	BODY		(OLIVE)		1	5.00
31	GLASS	BODY		(OLIVE, PATINATED)		3	2.10
31	SLAG	SLAG	SLAG			3	1.30
N144E222E1/2, Bottom of Plowzone (48.10-48.00 m amsl), screened 1/4"							
32	POT	RIM		SHELL	MISSISSIPPI	2	3.90
32	POT	RMLUG		SHELL	MISSISSIPPI	1	2.80
32	POT	LUG		SHELL	UNCLASS	1	2.90
32	POT	BODY		SHELL	MISSISSIPPI	83	166.60
32	POT	BODYFG		SHELL			46.60
32	POT	RIM		FGRSHL	BELL	1	.30
32	POT	BODY		FGRSHL	BELL	2	2.80
32	POT	BODY		CGRSHL	UNCLASS PLAIN	1	4.50
32	POT	BODY		UNID	UNCLASS PLAIN	2	.80
32	POT	FBCLAY					12.40
32	CL	BIF	ARROW	CRT	MADISON	1	1.30
32	CL	BIF	ARROW	CRT	UNCLASS	1	.90
32	CL	BIF	ARRPFM	CRT	UNCLASS	1	2.50
32	CL	UNIF	SIDE	CRT		1	4.50
32	CL	BIF	ARROW	CRT	MADISON	1	.40

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
32	CL	BLADE	BLADE	CRT		1	.60
32	CL	CORE	BLADE	CRT		1	34.10
32	CL	CORE	PEBCO	CRT		5	116.20
32	CL	FLA	RUM	CRT		18	172.60
32	CL	FLA		CRT		568	226.40
32	CL	SHAT		CRT		33	72.70
32	CL	FLA		PITKIN		3	.80
32	CL	FLA		STJOER		3	1.40
32	GRL	GRIP	ABRAD	SS		1	216.10
32	GRL	GRIP	ABRAD	QTZT		1	113.90
32	GRL	GRIP	ABRAD	IRS		1	13.60
32	URM	FCR		CRT		11	5.50
32	URM	PEBL		CRT		5	5.10
32	URM	PEBL		QTZ		5	3.90
32	URM	CHNK		SS		4	2.90
32	URM	CHNK		SILT		1	.90
32	URM	CHNK		QTZT		1	.20
32	URM	CONCRT		UNID		1	.40
32	FAUNA	BS				113	98.40
32	FAUNA	TEETH	UNID			1	.10
32	FAUNA	FISC	GAR	FISC		4	.40
32	EUCER	BODYFG		EARTHR			.70
32	EUCER	BODY		EARTHB	GREENGLAZED	2	1.80
32	GLASS	BODY		(CLEAR)		1	1.00
32	GLASS	BODY		(LTGREEN)		1	.40
32	METAL	UNID	UNID	IRON		1	.50
32	URM	CHNK		HEM		1	.50
N144E222W1/2, Feature 7-north half, handpicked							
33	POT	BODY		SHELL	MISSISSIPPI	1	4.90
33	POT	BODYFG		SHELL			.10
33	CL	FLA		CRT		3	.90
33	URM	CHNK		SS		4	4.70
33	FAUNA	UNMOD				2	.30
33	FAUNA	BS				1	.10
N102E286S1/2, Feature 12, 48.00-47.80 m amsl, screened 1/4"							
34	POT	RIM		SHELL	MISSISSIPPI	1	3.40
34	POT	LUG		SHELL	UNCLASS	1	5.60
34	POT	BODY		SHELL	MISSISSIPPI	19	108.50
34	POT	BODYFG		SHELL			7.70
34	POT	BODY		CGRSHL	UNCLASS PLAIN	2	3.30
34	POT	RIM		FGRSHBO	UNCLASS PLAIN	2	6.10
34	POT	RIM		GROG	BAYTOWN	1	3.60
34	POT	FBCLAY					263.60
34	POT	DAUB				1	5.00
34	CL	FLA	RUM	CRT		3	12.60
34	CL	FLA		CRT		60	20.50
34	CL	SHAT		CRT		4	14.10
34	CL	FLA		PITKIN		2	5.00
34	URM	FCR		CRT		3	.70
34	GRL	GRIP	ABRAD	SS		1	129.10
34	URM	CHNK		SS		54	77.10
34	URM	CHNK		UNID		1	14.00
34	URM	PEBL		CRT		3	2.60
34	URM	PEBL		QTZ		1	.60

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
34	FAUNA	BS				285	171.50
34	FAUNA	TEETH				1	2.80
34	FAUNA	UNMOD		FISC		1	.20
34	FLORA	CHARC	WOOD				16.50
34	EUCER	RIM		EARTHR	CHARENTE	1	1.30
34	EUCER	BASE		EARTHR	CHARENTE	1	3.60
34	EUCER	BODY		EARTHR	CHARENTE	5	10.10
34	EUCER	RIM		EARTHR	GREENGLAZED	1	58.90
34	EUCER	RIM		EARTHR	GREENGLAZED	1	.50
34	EUCER	BODY		EARTHR	GREENGLAZED	1	4.70
34	EUCER	BASE		EARTHR	UNCLASS	1	5.40
34	EUCER	BODYFG		EARTHR		1	.30
34	EUCER	PERSOB	PIPE	UNID		1	2.10
34	GLASS	BODY		(OLIVE)		1	3.50
34	GLASS	BODY		(PATINATED)		1	2.10
34	GLASS	BODY		(LTGREEN)		1	.50
34	GLASS	RIM		(AQUA)		1	.70
34	GLASS	BEAD	NECKLA	(BLUE, TRANSLUCENT)		1	.70
34	METAL	UNID		IRON		5	2.50
34	METAL	SHEET		CUPROUS		4	3.20
34	METAL	AMMO	STOCK	LEAD		1	6.40
34	METAL	AMMO	MBALL	LEAD		1	18.80
34	METAL	AMMO	SHOT	LEAD		1	.30
34	METAL	AMMO	SPRUE	LEAD		2	8.70
34	METAL	AMMO	SPRUE	LEAD		1	1.60
34	METAL	UNID	UNID	LEAD		2	7.20
34	LITHIC	ARMS	GFLINT	FLINT		1	.20
34	LITHIC	GIZZAR		CRT		1	.30
N102E286S1/2, Feature 12, 48.00-47.92 m amsl, screened 1/4"							
35	POT	BODY		SHELL	MISSISSIPPI	5	4.30
35	POT	BODYFG		SHELL			4.20
35	POT	BODY		FGRSHL	BELL	1	24.60
35	POT	BODY		SHELL	UNCLASS	1	.60
35	POT	BODYFG		BOSH			.90
35	POT	BODFG		FGRSND			2.80
35	POT	FBCLAY					13.80
35	CL	FLA		CRT		18	4.70
35	GRL	GRIP	ABRAD	SS		1	277.50
35	URM	PEBL		CRT		2	2.10
35	FAUNA	UNMOD					.00
35	EUCER	BASE	FOOTRI	EARTHR	CHARENTE	1	4.00
35	EUCER	BODY		EARTHR	CHARENTE	1	.30
35	EUCER	BODY		UNID	UNCLASS	1	3.40
35	METAL	UNDI		IRON		1	.20
35	METAL	DRIP	DRIP	LEAD		1	4.40
35	METAL	TCONE		CUPROUS		1	.40
35	SLAG	SLAG	SLAG	SLAG		3	1.50
N144E222W1/2, Feature 7-south half, Flotation Heavy Fraction							
36	FLOT_HF (size-grade $\geq$ 4.75mm)						
36	P0T	BODY		SHELL	MISSISSIPPI	3	16.70
36	POT	BODYFG		SHELL			7.90
36	POT	FBCLAY					9.80
36	CL	BIF	ARROW	CRT	MADISON	1	1.00
36	CL	FLA		CRT		35	12.00

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
36	CL	FLA		PITKIN		1	.40
36	URM	FCR		CRT		1	.40
36	URM	CHNK		SHL		1	.50
36	FAUNA	BS				44	5.60
36	FAUNA	CARAPA	BOXTUR			1	3.80
36	POT	BODY		SHELL	MISSISSIPPI	1	.40
N144E222W1/2, Feature 7-south half, Flotation Light Fraction							
37	FLOT_LF						
N144E222W/2, 47.60 m amsl, sherd from alluvium							
38	POT	BODY		SHELL	MISSISSIPPI	1	4.30
N102E286S1/2, Feature 12, 48.00-47.90 m amsl, Flotation Heavy Fraction							
39	FLOT_HF (size-grade $\geq$ 4.75mm)						
39	POT	FBCLAY					.20
39	CL	FLA		CRT		11	2.40
39	URM	CHNK		SS		7	12.90
39	URM	PEBL		CRT		1	.30
39	FAUNA	BS				31	43.10
39	FAUNA	FISC	UNID			1	.00
39	GLASS	BEAD	SEED	(WHITE)		3	.00
39	SLAG	SLAG	SLAG			1	.30
N102E286S1/2, Feature 12, 48.00-47.90 m amsl, Flotation Light Fraction							
40	FLOT_LF						
N144E220, Bottom of Plowzone, 48.04-47.95 m amsl, screened 1/4"							
41	POT	BODY		SHELL	MISSISSIPPI	83	195.90
41	POT	BODYFG		SHELL			52.90
41	POT	BODY		SHELL	OLDTOWN, *var. Oldtown*	1	1.60
41	POT	BODY		FGRSHL	BELL	1	.70
41	POT	FBCLAY					19.50
41	CL	BIF	ARROW	CRT	MADISON	1	2.30
41	CL	BIF	ARROW	CRT	MADISON	1	1.80
41	CL	BIF	ARROW	CRT	MADISON	1	1.20
41	CL	BIF	ARROW	CRT	MADISON	1	2.10
41	CL	BIF	ARRPFM	CRT	MADISON	1	3.10
41	CL	BIF	DART	CRT	UNCLASS	1	5.90
41	CL	BIF	UNID	CRT		1	3.00
41	CL	BIF	UNID	CRT		1	2.70
41	CL	UNIF	END	CRT		1	3.00
41	CL	UNIF	SIDE	CRT		1	3.80
41	CL	CORE	PEBCO	CRT		4	156.60
41	CL	FLA	RUM	CRT		14	42.70
41	CL	FLA		CRT		766	424.00
41	CL	SHAT		CRT		24	63.80
41	CL	FLA	RUM	PITKIN		1	1.00
41	CL	FLA		PITKIN		5	1.60
41	CL	FLA		STGEOR		1	10.10
41	CL	BIF	UNID	CRT		1	.20
41	GRL	GRIP	ABRAD	SS		1	9.40
41	URM	FCR		CRT		10	19.60
41	URM	CHNK		SS		11	16.70
41	URM	PEBL		CRT		9	18.70
41	URM	PEBL		QTZ		2	1.90
41	URM	UNID		UNID		2	.90
41	FAUNA	BS				235	88.10
41	FAUNA	TEETH				2	1.10

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
41	GRL	UNID	UNID	QTZT		1	1.40
41	FAUNA	SHELL	MUSSEL			1	.10
41	URM	CHNK		HEM		1	1.70
41	EUCER	BODYFG		EARTHR		3	.70
41	GLASS	BODY		(OLIVE)		1	.70
41	METAL	UNID	UNID	IRON		4	3.30
41	METAL	AMMO	SPRUE	LEAD		2	5.80
41	METAL	TCONE	TCONE	CUPROUS		1	.60
N142E222E1/2, Plowzone, 0-30 cm BS (48.30-48.00 m amsl), screened 1/4"							
42	POT	RIM		SHELL	MISSISSIPPI	1	.90
42	POT	BODY		SHELL	MISSISSIPPI	134	235.20
42	POT	BODY		SHELL	UNCLASS INCISED	1	6.70
42	POT	BODYFG		SHELL			41.90
42	POT	BODY		FGRSHL	BELL	2	1.50
42	POT	BODY		BOSH	SARASSA	1	.40
42	POT	BODY		UNID	UNCLASS PLAIN	1	2.20
42	POT	FBCLAY					7.10
42	CL	BIF	ARROW	STGEOR	MADISON	1	1.30
42	CL	BIF	ARROW	CRT	MADISON	1	1.50
42	CL	BIF	ARROW	CRT	UNCLASS	2	2.80
42	CL	BIF	ARRPFM	CRT	UNCLASS	1	3.20
42	CL	BIF	ARRPFM	CRT	MADISON	1	3.90
42	CL	BIF	ARRPFM	CRT	MADISON	1	2.00
42	CL	BIF	ARRPFM	CRT	UNCLASS	1	4.20
42	CL	UNIF	END	STGEOR		1	9.60
42	CL	UNIF	END	CRT		1	4.30
42	CL	UNIF	END	CRT		1	2.80
42	CL	UNIF	END	CRT		1	1.50
42	CL	CORE	PEBCO	CRT		5	125.60
42	CL	FLA	RUM	CRT		17	76.20
42	CL	FLA		CRT		796	362.00
42	CL	SHAT		CRT		39	60.10
42	CL	BIF	UNID	PITKIN		1	1.80
42	CL	FLA		PITKIN		8	2.20
42	CL	FLA		STGEOR		3	2.10
42	CL	FLA		STGEOG		2	.60
42	CL	FLA		NOV		1	.60
42	POT	DAUB				1	1.00
42	GRL	GRIP	ABRAD	SS		1	33.90
42	GRL	GRIP	ABRAD	IRS		1	12.90
42	URM	FCR		CRT		10	9.10
42	URM	CHNK		SS		5	2.20
42	URM	CHNK		IRS		2	2.30
42	URM	CHNK		HEM		1	.50
42	URM	CHNK		META		1	1.10
42	URM	PEBL		CRT		11	13.00
42	URM	PEBL		QTZ		2	.80
42	URM	PEBL		CONG		1	.80
42	URM	GIZZAR	GIZZAR	CRT		1	.40
42	CL	UNIF	END	CRT		1	5.80
42	FAUNA	BS		108.5		339	108.50
42	FAUNA	TEETH				1	.10
42	FAUNA	SHELL	MUSSEL			1	6.40
42	EUCER	RIM		EARTHR	CHARENTE	1	.70

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
42	EUCER	BODYFG		EARTHR		3	1.80
42	EUCER	BODY		UNID	UNCLASS	1	.70
42	GLASS	BODY		(AQUA)		1	.60
42	METAL	UNID		IRON		8	5.10
42	UNID	UNID		UNID		1	.70
42	METAL	UNID		LEAD		1	1.30
N144E222E1/2, Bottom of Plowzone (N144.85E222.94, 47.96 m amsl)							
43	CL	UNIF	END	CRT		1	4.50
N144E222W1/2, Feature 8, 47.64 m amsl							
44	CL	FLA		CRT		1	3.30
N144E220, 48.04-47.95 m amsl, screened 1/4"							
45	POT	RIM		SHELL	MISSISSIPPI	1	3.10
45	POT	BODY		SHELL	MISSISSIPPI	89	215.20
45	POT	BODYFG		SHELL			51.00
45	POT	BODY		SHELL	UNCLASS BRUSHED	1	.30
45	POT	BODY		CGRSHL	UNCLASS PLAIN	1	1.30
45	POT	FBCLAY					14.00
45	POT	BODYFG		SAND			.20
45	CL	BIF	ARROW	CRT	MADISON	1	1.20
45	CL	BIF	ARROW	CRT	MADISON	1	2.50
45	CL	CRT	ARROW	CRT	MADISON	1	2.50
45	CL	BIF	ARROW	CRT	MADISON	1	1.60
45	CL	BIF	ARROW	CRT	UNCLASS	2	3.50
45	CL	BIF	ARRPFM	CRT	MADISON	1	3.00
45	CL	BIF	ARRPFM	CRT	MADISON	1	2.50
45	CL	UNIF	END	CRT		1	5.60
45	CL	UNIF	END	CRT		1	5.40
45	CL	UNIF	END	CRT		1	4.50
45	CL	UNIF	END	CRT		1	3.30
45	CL	BLADE	RUM	CRT		1	9.80
45	CL	BLADE	RUM	CRT		1	12.90
45	CL	BIF	UNID	CRT		2	5.20
45	CL	BIF	BLANK	CRT		1	14.50
45	CL	CORE	PEBCO	CRT		10	287.30
45	CL	FLA	RUM	CRT		16	59.70
45	CL	FLA		CRT		626	276.00
45	CL	SHAT		CRT		27	49.60
45	CL	BIF	UNID	CRT		3	2.90
45	CL	FLA		PITKIN		7	2.60
45	GRL	GRIP	ABRAD	SS		3	52.30
45	GRL	GRIP	UNID	QTZT		1	4.10
45	URM	FCR		CRT		10	34.40
45	URM	CHNK		SS		9	2.80
45	CL	CHNK		IRS		3	5.40
45	URM	CHNK		HEM		3	.40
45	URM	CHNK		SLT		14	47.10
45	URM	CHNK		QTZT		1	2.30
45	URM	PEBL		CRT		10	11.30
45	URM	PEBL		QTZ		3	2.70
45	URM	GIZZAR		CRT		1	.70
45	URM	CONCRE		UNID		1	.20
45	FAUNA	BS				337	116.90
45	FAUNA	UNMOD	GAR	FISC		2	.10
45	FAUNA	UNMOD	UNID	FISC		1	.20

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
45	FAUNA	SHELL				3	18.60
45	EUCER	BODY		EARTHR	CHARENTE	1	1.00
45	EUCER	BODY		EARTHR	ALBISOLA	1	.50
45	EUCER	BODYFG		EARTHR		1	.30
45	EUCER	BODYFG		EARTHB	UNCLASS	1	.40
45	EUCER	BODYFG		EARTHB		1	.40
45	METAL	UNIDD	UNID	IRON		7	2.40
45	METAL	SHEET	SCRAP	CUPROUS		3	1.20
45	METAL	AMMO	SPRUE	LEAD		1	2.00
45	GLASS	BEAD	NECKLA	(BLACK)		1	.20
45	GLASS	BODY		(LTGREEN)		1	.30
45	SLAG	SLAG	SLAG			1	.60
N144E220, 48.04-47.95 m amsl, Flotation Heavy Fraction							
46	FLOT_HF (size-grade $\geq$ 4.75mm)						
46	POT	BODY		SHELL	MISSISSIPPI	3	4.70
46	POT	BODYFG		SHELL			1.30
46	POT	FBCLAY					3.90
46	CL	BIF	BLANK	CRT		1	24.60
46	FLA	FLA		CRT		7	1.80
46	URM	FCR		CRT		1	.60
46	URM	CHNK		IRS		1	.60
46	URM	CHNK		SHL		1	.20
46	FAUNA	BS				16	11.60
46	GRL	GEOB	BEAD	UNID		1	.10
46	METAL	UNID	UNID	IRON		2	.30
46	METAL	AMMO	SHOT	LEAD		1	.60
N144E220, 48.04-47.95 m amsl, Flotation Light Fraction							
47	FLOT_LF						
N102N286S1/2, Feature 12, 47.95 m amsl							
48	SOISM						
N144E222W1/2, Feature 9, 47.70-47.50 m amsl, handpicked							
49	POT	DAUB				1	5.80
49	CL	FLA		CRT		1	3.50
49	FAUNA	CARAPA	BOXTUR			1	27.30
49	FAUNA	BS				1	.20
N102E286S1/2, Feature 12, N102.95E286.20, 47.81 m amsl							
50	POT	BODY		SHELL	MISSISSIPPI	1	42.90
N102E288S1/2, 48.00-47.80 m amsl, handpicked							
51	CL	FLA		CRT		11	3.20
51	CL	SHAT		CRT		1	1.30
51	URM	CHNK		SS		3	113.30
51	FAUNA	BS				3	.70
51	EUCER	BODY		EARTHR	CHARENTE	1	.30
51	GLASS	BEAD	NECKLA	(WHITE, HEATED)		1	.50
N102N286S1/2, Feature 12, 48.00-47.80 m amsl, Flotation Heavy Fraction							
52	FLOT_HF						
52	POT	RIM		FGRSHBO	UNCLASS PLAIN	1	5.10
52	POT	BODY		SHELL	MISSISSIPPI	1	2.40
52	POT	BODYFG		SHELL			4.00
52	POT	FBCLAY					6.90
52	CL	CORE	PEBCO	CRT		1	17.90
52	CL	FLA		CRT		30	10.90
52	URM	FCR		CRT		1	.80
52	URM	CHNK		SS		38	53.60

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
52	URM	CHNK		UNID		1	.20
52	FAUNA	BS				77	25.90
52	FAUNA	TEETH	UNID			2	.20
52	EUCER	BODY		EARTHR	CHARENTE	1	1.90
52	GLASS	BEAD	SEED	(BLUE, TRANSLUCENT)		2	.00
52	GLASS	BEAD	SEED	(CLEAR)		1	.00
52	GLASS	BEAD	SEED	(WHITE)		4	.00
52	GLASS	BEAD	SEED	(BLACK)		1	.00
52	GLASS	BEAD	SEED	(RED)		1	.00
52	GLASS	BEAD	SEED	(RED, COMPOS)	CORNALINE	4	.00
52	GLASS	GIZZAR	GIZZAR	(CLEAR)		1	.30
52	METAL	UNID	UNID	IRON		6	.90
52	METAL	AMMO	SHOT	LEAD		4	.60
N102N286S1/2, Feature 12, 48.00-47.80 m amsl, Flotation Light Fraction							
53	FLOT_LF						
N102E286S1/2, Feature 12, 47.80-47.60 m amsl, Screened 1/4"							
54	POT	VES		SHELL	MISSISSIPPI	1	75.80
54	POT	RIM		SHELL	MISSISSIPPI	24	149.50
54	POT	BODY		SHELL	MISSISSIPPI	128	425.50
54	POT	BASE		SHELL	MISSISSIPPI	1	25.60
54	POT	BASE		SHELL	MISSISSIPPI	1	47.90
54	POT	BASE		SHELL	MISSISSIPPI	1	3.20
54	POT	BODYFG		SHELL			38.70
54	POT	BODY		FGRSHL	BELL	1	10.10
54	POT	RIM		CGRSHL	UNCLASS PLAIN	1	12.40
54	POT	BODY		SHELL	SARASSA	2	10.80
54	POT	BODY		CGRSHL	UNCLASS PLAIN	7	55.50
54	POT	RIM		FGRSHBO	UNCLASS	1	8.30
54	POT	BODY		FGRSHBO	UNCLASS PLAIN	7	29.80
54	POT	DAUB				1	8.70
54	POT	DAUB				31	303.50
54	POT	FBCLAY					218.90
54	POT	DAUB				8	17.50
54	POT	MDLOBJ	UNID			1	6.20
54	CL	BIF	ARROW	CRT	UNCLASS	1	.20
54	CL	BIF	ARRPFM	CRT	UNCLASS	1	2.90
54	CL	BIF	BLANK	CRT		1	15.60
54	CL	CORE	PEBCO	CRT		1	11.20
54	CL	FLA	RUM	CRT		2	5.10
54	CL	FLA		CRT		109	51.20
54	CL	SHAT		CRT		13	23.70
54	CL	FLA		COTTER		1	5.00
54	GRL	GRIP	ABRADV	SS		2	5.90
54	GRL	GRIP	ABRAD	SS		3	37.80
54	GRL	GRIP	HS	QTZ		1	79.60
54	URM	FCR		CRT		10	6.00
54	URM	FCR		SS		6	126.90
54	URM	CHNK		SS		44	127.50
54	GRL	GEOB	UNID	SS		1	6.60
54	URM	CHNK		DOL		1	25.40
54	URM	CHNK		QTZ		1	.20
54	URM	GIZZAR		CRT		1	.40
54	URM	PEBL		CRT		1	.50
54	URM	PEBL		QTZ		1	.50

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
54	FAUNA	UNMOD					.00
54	FLORA	UNMOD	PEACH	SEED			.00
54	FLORA	UNMOD	CANE	WOOD			.00
54	FLORA	UNMOD	UNID	WOOD			.00
54	WS	WS					
54	EUCER	RIM		EARTHR	CHARENTE	1	10.10
54	EUCER	BODY		CLEAR	CHARENTE	4	56.80
54	EUCER	BASE		EARTHR	CHARENTE	1	22.00
54	EUCER	BODY		EARTHB	SAINTONGE	10	41.80
54	EUCER	RIM		EARTHB	GREENGLAZED	1	8.10
54	EUCER	BODY		EARTHB	GREENGLAZED	2	16.40
54	EUCER	BODY		EARTHR	GREENGLAZED	1	4.80
54	EUCER	BODY		EARTHR	ALBISOLA	3	3.30
54	EUCER	BODY		STONEW	WESTERWALD	3	4.90
54	EUCER	HANDLE		STONEW	WESTERWALD	1	13.00
54	EUCER	BODY		UNID (BUF)	UNCLASS	3	8.10
54	EUCER	BODY		UNID (RED)	UNCLASS	2	13.10
54	EUCER	BODYFG		UNID		5	3.10
54	GLASS	NECK	BOTTLE	(OLIVE)		1	1.00
54	GLASS	BODY	BOTTLE	(OLIVE)		1	69.80
54	GLASS	BASE	BOTTLE	(OLIVE)		1	24.40
54	GLASS	BODY		(OLIVE)		10	27.10
54	GLASS	BODY		(LTGREEN)		3	5.40
54	GLASS	BODY		(YELLOW)		1	1.10
54	GLASS	BODY		(AQUA)		2	2.70
54	GLASS	BASE		(CLEAR, BURNED)		1	5.70
54	GLASS	BEAD	SEED	(BLUE)		2	.10
54	GLASS	BEAD	SEED	(WHITE)		1	.10
54	GLASS	UNID		(BLUE)		1	.10
54	METAL	AMMO	MBALL	LEAD		1	12.10
54	METAL	AMMO	MBALL	LEAD		1	13.80
54	METAL	AMMO	SHOT	LEAD		1	.10
54	METAL	AMMO	DRIP	LEAD		5	15.10
54	BLDMAT	MORTER					4.10
54	SLAG	SLAG	SLAG			13	16.50
N102E286S1/2, Feature 12, 47.80-47.60 m amsl, Flotation Heavy Fraction							
55	FLOT_HF						
55	POT	RIM		SHELL	MISSISSIPPI	1	7.20
55	POT	BODY		SHELL	MISSISSIPPI	26	53.90
55	POT	BODYFG		SHELL			11.20
55	POT	RIM		FGRSHL	BELL	1	.20
55	POT	BODY		FGRSHL	BELL	3	10.20
55	POT	NONVES	PIPE	UNID		1	2.20
55	POT	FBCLAY					248.50
55	CL	FLA		CRT		9	10.00
55	CL	SHAT		CRT		4	.50
55	GRL	GRIP	ABRAD	SS		4	2.10
55	URM	FCR		CRT		5	1.20
55	URM	FCR		DOL		1	.80
55	URM	CHNK		SS		5	1.20
55	URM	CHNK		UNID		1	1.40
55	URM	PEBL		CRT		1	.70
55	FAUNA	BS				880	444.20
55	FAUNA	FISC				8	1.10

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
55	EUCER	BODY	UNID	UNCLASS		2	2.70
55	GLASS	BODY		(OLIVE)		2	2.10
55	GLASS	BODY		(AQUA)		1	1.00
55	GLASS	BODY		(LTGREEN)		1	.50
55	GLASS	BODY		(PATINATED)		2	.60
55	GLASS	BEAD	SEED	(WHITE)		8	.00
55	GLASS	BEAD	SEED	(BLUE)		2	.00
55	GLASS	BEAD	SEED	(BLACK)		2	.00
55	GLASS	BEAD	SEED	(CLEAR)		1	.00
55	GLASS	BEAD	SEED	(RED, COMPOS)	CORNALINE	1	.00
55	METAL	UNID	UNID	IRON		1	.10
55	METAL	UNID	UNID	CUPROUS		1	.00
55	METAL	AMMO	SHOT	LEAD		7	2.30
55	METAL	AMMO	DRIP	LEAD		11	10.50
55	METAL	SHEET	UNID	LEAD		1	.60
55	LITHIC	ARMS	GFLINT	FLINT		1	2.40
55	BONE	MAN	UNID			1	6.20
55	SLAG	SLAG	SLAG			5	4.80
N102E286S1/2, Feature 12, 47.80-47.60 m amsl, Flotation Light Fraction							
56	FLOT_LF						
N144E222E1/2, 47.95-47.90 m amsl, Screened 1/4"							
57	POT	BODY		SHELL	MISSISSIPPI	10	34.40
57	POT	BODYFG		SHELL			3.60
57	POT	FBCLAY					.40
57	CL	BLADE	BLADE	CRT		1	2.70
57	CL	FLA	RUM	CRT		2	8.50
57	CL	FLA		CRT		52	27.80
57	CL	SHAT		CRT		4	10.00
57	CL	PEBL		CRT		1	.40
57	FAUNA	BS				33	18.50
57	FAUNA	TEETH				1	.10
57	FAUNA	UNMOD	GAR	FISC		2	.20
N144E222E1/2, 47.97 m amsl, Screened 1/4"							
58	POT	BODY		SHELL	MISSISSIPPI	14	28.90
58	POT	BODYFG		SHELL			5.50
58	POT	RIM		SAND	UNCLASS PLAIN	1	.70
58	POT	FBCLAY					2.30
58	CL	UNIF	END	CRT		1	6.10
58	CL	BLADE	BLADE	CRT		1	4.80
58	CL	FLA	RUM	CRT		1	7.90
58	CL	FLA		CRT		112	46.80
58	CL	SHAT		CRT		6	13.00
58	CL	FLA		PITKIN		1	.30
58	GRL	GRIP	ABRAD	SS		1	54.10
58	URM	FCR		CRT		2	.70
58	URM	CHNK		SHL		1	.30
58	URM	CHNK		UNID		2	1.10
58	URM	CONCRT		SS		1	.60
58	URM	PEBL		CRT		1	2.00
58	FAUNA	BS				76	25.50
58	FAUNA	TEETH				1	.10
58	FAUNA	UNMOD	GAR	FISC		2	.20
N102E286S1/2, Feature 12, 47.80 m amsl							
59	POT	NONVES	PIPE	UNID		1	12.30

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
N102E286S1/2, Feature 12, 47.68 m amsl							
60	FAUNA	UNMOD	TIBIA			1	157.10
60	FAUNA	UNMOD	FEMUR			1	169.90
60	FAUNA	TEETH	UNID			1	39.30
N144E220, 47.95-47.90 m amsl, screened 1/4"							
61	POT	BODY		SHELL	MISSISSIPPI	7	40.10
61	POT	BODYFG		SHELL			5.40
61	POT	FBCLAY					1.10
61	CL	BIF	ARROW	CRT	MADISON	1	.50
61	CL	BIF	ARROW	CRT	UNCLASS	1	1.10
61	CL	BIF	ARRPFM	CRT	MADISON	1	6.50
61	CL	BIF	UNID	CRT		1	5.10
61	CL	UNIF	END	CRT		1	5.30
61	CL	CORE	PEBCO	CRT		4	153.50
61	CL	FLA		CRT		159	55.90
61	CL	FLA		STJOER		1	1.30
61	CL	SHAT		CRT		6	10.50
61	URM	FCR		CRT		1	.60
61	FAUNA	UNMOD		46.8		2	46.80
61	FAUNA	BS				115	30.10
61	FAUNA	MAN	ARROW	ANTLER		1	3.50
61	FAUNA	MAN	ARROW	ANTLER		1	.90
61	FAUNA	UNMOD	GAR	FISC		3	.30
61	FAUNA	SHELL	MUSSEL			1	.10
61	URM	CHNK		SLT		13	10.60
N102E288, Feature 12, 47.80-47.60 m amsl, handpicked							
62	POT	RIM		SHELL	MISSISSIPPI	1	7.40
62	POT	RIM		SHELL	MISSISSIPPI	1	3.50
62	POT	RMLUG		SHELL	MISSISSIPPI	1	7.00
62	POT	BODY		SHELL	MISSISSIPPI	26	68.80
62	POT	BODYFG		SHELL			9.70
62	POT	BODY		CGRSHL	UNCLASS INCI	2	4.50
62	POT	FBCLAY					4.70
62	CL	FLA		CRT		15	5.10
62	URM	FCR		CRT		5	5.90
62	URM	CHNK		SS		6	5.20
62	URM	PEBL		CRT		2	1.70
62	FAUNA	UNMOD	UNID			1	88.80
62	FAUNA	UNMOD	UNID			1	9.80
62	FAUNA	BS				148	118.10
62	FLORA						.00
62	EUCER	BODY		EARTHB	TINGLAZED	2	1.10
62	EUCER	BODY		EARTHR	TINGLAZED	1	.60
62	EUCER	BODY		EARTHB	GREENGLAZED	3	13.90
62	EUCER	BODY		STONEW	WESTERWALD	1	2.30
62	GLASS	BODY		(LTGREEN)		4	2.20
62	GLASS	BODY		(CLEAR)		1	.60
62	SLAG	SLAG	SLAG			1	3.70
N142E222E1/2, 47.95-47.90 m amsl, screened 1/4"							
63	POT	BODY		SHELL	MISSISSIPPI	7	13.00
63	POT	BODYFG		SHELL			2.20
63	POT	RIM		UNTEMP	UNCLASS PLAIN	1	1.40
63	POT	FBCLAY					3.00
63	CL	BIF	ARRPFM	CRT	UNCLASS	1	13.20

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
63	CL	CORE	PEBCO	CRT		1	16.70
63	CL	FLA		CRT		56	16.80
63	CL	FLA		QTZT		1	.10
63	FAUNA	BS				36	9.50
63	EUCER	BODY		UNID	UNCLASS	1	.30
63	SLAG	SLAG		SLAG			
N144E222E1/2, 47.98-47.90 m amsl, screened 1/4"							
64	POT	BODY		SHELL	MISSISSIPPI	4	4.60
64	POT	BODYFG		SHELL			2.80
64	POT	FBCLAY					1.70
64	CL	UNIF	END	CRT		1	4.60
64	CL	FLA		15.5		48	48.00
64	CL	SHAT		CRT		2	.60
64	URM	FCR		CRT		3	2.60
64	URM	CHNK		SS		3	1.50
64	URM	PEBL		CRT		1	1.00
64	FAUNA	BS				48	17.80
64	FAUNA	TEETH				1	.10
64	FAUNA	FISC	GAR	FISC		2	.10
N102E286S1/2, Feature 12, 47.70 m amsl							
65	LITHIC	ARM	GFLINT	FLINT		1	7.20
N102E286S1/2, Feature 12, N102.26E287.68, 47.66-47.63 m amsl							
66	POT	RIM		SHELL	MISSISSIPPI	1	3.20
66	POT	BASE		SHELL	MISSISSIPPI	1	94.50
66	POT	BODYFG		SHELL			.50
66	FAUNA						.00
66	FLORA						.00
66	GLASS	BEAD	SEED	(BURNED)		2	.10
N142E224W1/2, Plowzone, 0-30 cm BS (48.25-47.95 m amsl), screened 1/4"							
67	POT	RIM		SHELL	MISSISSIPPI	1	12.70
67	POT	RIM		SHELL	MISSISSIPPI	3	7.50
67	POT	BODY		SHELL	MISSISSIPPI	120	277.20
67	POT	RIM		SHELL	UNCLASS INCISED	1	.90
67	POT	BODY		SHELL	UNCLASS INCISED	1	1.90
67	POT	BODYFG		SHELL			68.40
67	POT	BODY		CGRSHL	UNCLASS PLAIN	1	6.80
67	POT	BODY		GROBON	MORRIS	1	1.50
67	POT	FBCLAY					23.50
67	CL	BIF	ARROW	CRT	MADISON	1	2.00
67	CL	BIF	ARROW	CRT	MADISON	1	1.20
67	CL	BIF	ARROW	CRT	MADISON	1	1.40
67	CL	BIF	ARROW	CRT	NODENA	1	1.20
67	CL	BIF	ARROW	CRT	UNCLASS	4	4.70
67	CL	BIF	ARROW	CRT	MADISON	1	2.00
67	CL	BIF	ARRPFM	CRT	MADISON	1	2.50
67	CL	BIF	ARRPFM	CRT	UNCLASS	1	2.00
67	CL	BIF	ARRPFM	CRT	UNCLASS	2	3.30
67	CL	UNIF	END	CRT		1	6.70
67	CL	UNIF	END	CRT		1	4.30
67	CL	UNIF	END	CRT		1	4.40
67	CL	UNIF	END	CRT		1	2.70
67	CL	UNIF	END	CRT		1	2.80
67	CL	UNIF	UNID	CRT			
67	CL	BIF	UNID	CRT		9	37.00

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
67	CL	CORE	PEBCO	CRT		6	298.80
67	CL	BLADE	BLADE	CRT		1	.70
67	CL	FLA	RUM	CRT		17	73.90
67	CL	FLA		CRT		868	341.50
67	CL	SHAT		CRT		27	44.80
67	CL	FLA		NOV		1	.70
67	GRL	GRIP	ABRAD	SS		1	3.20
67	URM	FCR		CRT		15	8.70
67	URM	CHNK		SS		8	24.90
67	URM	CHNK		DOL		3	9.10
67	URM	PEBL		CRT		4	4.20
67	URM	PEBL		QTZ		1	1.20
67	URM	PEBL		UNID		1	.70
67	URM	CHNK		SHL		1	.10
67	FAUNA	MAN	UNID			1	1.30
67	FAUNA	BS				371	130.10
67	FAUNA	TEETH	UNID			1	.30
67	FAUNA	TEETH				1	.60
67	FAUNA	UNMOD	GAR	FISC		1	.30
67	FAUNA	SHELL				2	.70
67	EUCER	BODY		EARTHR	UNCLASS	2	1.20
N146E220, Plowzone, 0-30 cm BS (48.25-47.95 m amsl), screened 1/4"							
68	POT	RIM		SHELL	MISSISSIPPI	1	6.00
68	POT	BODY		SHELL	MISSISSIPPI	41	61.10
68	POT	BODYFG		SHELL			18.40
68	POT	BODY		FGRSHL	BELL	1	.80
68	POT	FBCLAY					5.00
68	POT	UNID	UNID	BOSH		1	2.10
68	CL	BIF	ARROW	CRT	MADISON	1	.90
68	CL	BIF	ARROW	CRT	MADISON	1	2.90
68	CL	BIF	ARRPFM	CRT	MADISON	1	1.60
68	CL	BIF	UNID	CRT		1	5.80
68	CL	BIF	UNID	CRT		1	.70
68	CL	CORE	PEBCO	CRT		3	70.40
68	CL	FLA	RUM	CRT		1	.70
68	CL	FLA		CRT		393	146.80
68	CL	SHAT		CRT		28	36.50
68	CL	FLA		PITKIN		1	.20
68	CL	FLA		NOV		1	.30
68	CL	FLA		QTZT		1	.70
68	GRL	GRIP	ABRAD	IRS		1	1.80
68	URM	FCR		CRT		11	3.20
68	URM	CHNK		SS		3	8.00
68	URM	CHNK		IRS		1	.30
68	URM	PEBL		CRT		12	9.40
68	FAUNA	BS				109	38.60
68	FAUNA	TEETH				1	.30
68	EUCER	BODY		EARTHB	GREENGLAZED	1	.30
68	EUCER	BODY		UNID	UNCLASS	1	3.10
68	METAL	UNID	UNID	UNID		7	6.20
68	METAL	ARMS	SHOT	LEAD		1	2.50
N102E286S1/2, Feature 12, 47.80-47.60 m amsl							
69	LITHIC	ARMS	GFLINT	FLINT		1	5.30

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
N102E286S1/2, Feature 12, 47.80-47.60 m amsl							
70	FAUNA	MOD	ARROW	ANTLER		1	4.20
N144E222W1/2,Feature 13, West 1/2, below 47.95 m amsl, handpicked							
71	POT	BODY		SHELL	MISSISSIPPI	4	12.10
71	CL	FLA		CRT		6	13.40
71	FAUNA	BS				3	1.70
N102E286S1/2, Feature 12, 47.60-47.50 m amsl, screened 1/4"							
72	POT	RMLUG		SHELL	MISSISSIPPI	1	3.70
72	POT	BODY		SHELL	MISSISSIPPI	24	130.70
72	POT	BASE		SHELL	MISSISSIPPI	1	18.80
72	POT	BASE		SHELL	MISSISSIPPI	1	14.10
72	POT	BODY		FGRSHBO	UNCLASS PLAIN	1	3.20
72	POT	BODY		BONE	UNCLASS PLAIN	2	2.30
72	POT	BODYFG		SHELL			3.50
72	POT	DAUB				1	18.00
72	POT	FBCLAY					4.90
72	CL	BIF	BLANK	CRT		1	9.40
72	CL	FLA		CRT		17	7.20
72	GRL	GRIP	ABRAD	SS		1	160.90
72	GRL	GRIP	ABRAD	SS		1	75.00
72	URM	FCR		CRT		18	55.10
72	URM	CHNK		SS		5	85.60
72	URM	PEBL		CRT		2	.30
72	URM	PEBL		QTZ		1	2.70
72	URM	CHNK		IRS		1	43.10
72	FAUNA						
72	EUCER	BODY		EARTHB	TINGLAZED	1	.40
72	EUCER	BODY		EARTHR	GREENGLAZED	1	2.00
72	EUCER	BODY		EARTHR	ALBISOLA	1	3.40
72	EUCER	RIM		STONEW	UNCLASS	3	6.50
72	EUCER	BODYFG		STONEW		2	.80
72	EUCER	BODY		UNID		1	1.60
72	GLASS	BODY	BOTTLE	(OLIVE, SQUARE)		1	10.10
72	GLASS	BODY	BOTTLE	(DKGREEN)		1	6.90
72	GLASS	BASE	BOTTLE	(DKGREEN)		1	24.40
72	GLASS	BEAD	SEED	(BLACK)		1	.10
72	GLASS	BEAD	NECKLA	(ORANGE)		1	.10
72	METAL	AMMO	MBALL	LEAD		1	20.20
72	METAL	AMMO	MBALL	LEAD		1	16.60
72	LITHIC	ARMS	GFLINT	FLINT		1	3.10
N102E286S1/2, Feature 12, 47.60-47.50 m amsl, Flotation Heavy Fraction							
73	FLOT_HF						
73	POT	RMLUG		SHELL	MISSISSIPPI	1	9.70
73	POT	BODY		SHELL	MISSISSIPPI	24	51.20
73	POT	BASE		SHELL	MISSISSIPPI	1	7.40
73	POT	BODYFG		SHELL			7.00
73	CL	FLA		CRT		24	7.40
73	CL	SHAT		CRT		3	.90
73	CL	FLA		PITKIN		1	.50
73	GRL	GRIP	ABRAD	SS		1	6.90
73	URM	FCR		CRT		1	.70
73	URM	PEBL		CRT		4	1.00
73	URM	CHNK		SS		2	.80
73	URM	CHNK		UNID		3	.90

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
73	URM	GIZZAR		CRT		13	2.00
73	POT	FBCLAY					26.70
73	FAUNA	BS				449	224.70
73	FAUNA	MOD				1	.30
73	FAUNA	TOOTH				1	.70
73	EUCER	RIM		STONEW	UNCLASS	1	1.60
73	EUCER	BODYFG		STONEW		7	2.10
73	FAUNA	TOOTH				1	.30
73	GLASS	BODY		(LTGREEN)		2	.80
73	GLASS	BODYFG				3	.30
73	GLASS	BEAD	SEED	(WHITE)		37	.00
73	GLASS	BEAD	SEED	(BLACK)		7	.00
73	GLASS	BEAD	SEED	(LTBLUE)		10	.00
73	GLASS	BEAD	SEED	(RED, COMPOS)	CORNALINE	15	.90
73	GLASS	GIZZAR	GIZZAR	(CLEAR)		1	.70
73	METAL	UNID	UNID	IRON		6	1.10
73	METAL	AMMO	MBALL	LEAD		1	8.10
73	METAL	AMMO	SHOT	LEAD		7	1.10
73	BLDMAT	BRICK				1	1.10
N102E286S1/2, Feature 12, 47.60-47.50 m amsl, Flotation Light Fraction							
74	FLOT_LF						
N102E286S1/2, Feature 12, N102.20E287.25, 47.60-47.56 m amsl							
75	FAUNA	MOD	UNID			1	.10
75	METAL	UNID	UNID	IRON		4	2.40
N102E286S1/2, Feature 12, N102.55E287.10, 47.58 m amsl							
76	EUCER	RIM	PLATE	EARTHB	STCLOUD	1	11.20
N144E222E1/2, Feature 13							
77	POT	VES		SHELL	UNCLASS	1	340.10
77	POT	RIM		SHELL	MISSISSIPPI	1	10.80
77	POT	BODY		SHELL	MISSISSIPPI	3	14.10
77	FAUNA	BS				3	.30
N144E222E1/2, Feature 13, E 1/2, Flotation Heavy Fraction							
78	FLOT_HF						
78	POT	BODY		SHELL	MISSISSIPPI	4	55.80
78	POT	BODYFG		SHELL			1.20
78	POT	FBCLAY					6.10
78	CL	FLA		CRT		31	10.30
78	CL	FLA	RUM	CRT		1	4.60
78	CL	SHAT		CRT		2	4.50
78	FAUNA	BS				31	4.60
78	FAUNA	UNMOD	RODENT			1	.10
78	FAUNA	FISC		GAR		7	.50
78	METAL	UNID	UNID	IRON		3	.60
N144E222E1/2, Feature 13, E 1/2, Flotation Light Fraction							
79	FLOT_LF						
N102E286S1/2, Feature 12, 47.60-47.50 m amsl							
80	GLASS	BEAD	NECKLA	(STRIPE)		1	.50
N102E286E1/2, Feature 12, N102.95E287.15, 47.63 m amsl							
81	EUCER	RIM	CUP	EARTHB	TINGLAZED	1	2.10
N146E220S1/2, Plowzone, 48.25-47.95 m amsl, Screened 1/4"							
82	POT	RIM		SHELL	MISSISSIPPI	1	.70
82	POT	RMLUG		SHELL	MISSISSIPPI	1	.50
82	POT	BODY		SHELL	MISSISSIPPI	95	192.40
82	POT	BODYFG		SHELL			51.50

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
82	POT	BODY		SHELL	OLDTOWN, *var. Oldtown*	1	.30
82	POT	BODY		CGRSHL	UNCLASS PLAIN	1	2.50
82	POT	FBCLAY					10.30
82	CL	BIF	ARROW	CRT	MADISON	1	1.10
82	CL	BIF	ARROW	CRT	MADISON	1	1.20
82	CL	BIF	ARROW	CRT	MADISON	1	1.80
82	CL	BIF	ARROW	CRT	UNCLASS	1	1.00
82	CL	BIF	ARRPFM	CRT	MADISON	1	2.70
82	CL	UNIF	END	CRT		1	2.60
82	CL	UNIF	END	CRT		1	2.40
82	CL	UNIF	END	CRT		1	9.80
82	CL	CORE	PEBCO	CRT		9	257.60
82	CL	FLA	RUM	CRT		15	41.20
82	CL	FLA		CRT		820	296.60
82	CL	SHAT		CRT		30	63.30
82	CL	FLA		PITKIN		6	1.50
82	CL	FLA		STJOEG		2	1.00
82	CL	FLA	CORTEX	CRT		1	2.90
82	URM	CHNK		IRS		6	1.80
82	URM	CHNK		SS		6	14.30
82	URM	CHNK		SLT		2	2.00
82	URM	CHNK		CALXL		1	.50
82	URM	CHNK		QTZT		2	.70
82	URM	CHNK		IRS		2	.70
82	URM	PEBL		CRT		6	7.60
82	URM	PEBL		QTZ		2	2.60
82	URM	PEBL		UNID		1	.60
82	FAUNA	BS				296	101.50
82	FAUNA	SHELL	MUSSEL			3	7.10
82	URM	CHNK		HEM		2	.60
82	URM	CHNK		GALENA		1	3.30
82	EUCER	BODY		EARTHB	GREENGLAZED	1	1.30
82	EUCER	BODY		EARTHR	UNCLASS	1	1.60
82	EUCER	BODYFG		EARTHR		3	2.50
82	METAL	UNID	UNID	IRON		5	1.50
N102E286S1/2, Feature 12, N102.98E286.04, 47.55-47.50 m asml							
83	EUCER	RIM		EARTHB	SAINTONGE	1	50.70
83	EUCER	BODY		EARTHB	SAINTONGE	2	50.10
N102E286S1/2, Feature 12, N102.81E286.07, 47.50 m amsl							
84	CL	UNIF	END	CRT			2.50
N142E224W1/2, 47.95-47.90 m amsl, screened 1/4"							
85	POT	RIM		SHELL	MISSISSIPPI	1	4.60
85	POT	RMLUG		SHELL	MISSISSIPPI	1	10.80
85	POT	BODY		SHELL	MISSISSIPPI	25	113.50
85	POT	BODY		SHELL	MISSISSIPPI	1	7.80
85	POT	BODYFG		SHELL			10.70
85	POT	BODY		FGRSHL	BELL	1	.50
85	POT	FBCLAY					3.80
85	CL	BIF		PITKIN	MADISON	1	1.90
85	CL	CORE	PEBCO	CRT		3	139.90
85	CL	FLA		CRT		165	61.00
85	CL	SHAT		CRT		5	2.70
85	CL	FLA		PITKIN		1	.30
85	CL	FLA		DOL		4	9.20

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
85	URM	FCR		CRT		6	9.10
85	URM	GIZZAR		CRT		1	.30
85	URM	CHNK		IRS		1	.20
85	URM	PEBL		CRT		1	7.80
85	FAUNA	BS				183	49.50
85	FAUNA	UNMOD		ANTLER		1	1.20
85	FAUNA	TEETH		UNID		1	.20
85	FAUNA	FISC		UNID		6	.50
85	URM	CHNK		SS		1	.40
85	FLORA	CHARC	UNID	NUT		2	.40
85	GLASS	BODY		(PATINA)		1	.30
85	METAL	UNID	UNID	IRON		1	.80
N146E220S1/2, 47.95-47.90 m amsl, screened 1/4"							
86	POT	BODY		SHELL	MISSISSIPPI	9	23.80
86	POT	BODYFG		SHELL			5.30
86	POT	FBCLAY					1.40
86	CL	BIF	UNID	CRT		1	3.90
86	CL	UNIF	END	CRT		1	3.30
86	CL	UNIF	UNID	CRT		1	4.80
86	CL	CORE	PEBCO	CRT		1	25.30
86	CL	FLA		CRT		109	38.60
86	CL	SHAT		CRT		2	1.50
86	CL	FLA		PITKIN		2	1.90
86	URM	CHNK		SS		1	.40
86	URM	CHNK		SLT		1	.30
86	FAUNA	BS				89	36.40
86	FAUNA	MAN	BLUNT	ANTLER		1	1.90
86	FAUNA	MAN	PFOR			1	1.90
86	FAUNA	MAN	BLUNT			1	2.70
86	FAUNA	FISC		GAR		7	.60
86	FAUNA	SHELL	MUSSEL			1	.10
86	FLORA	CHARC	UNID	NUT		1	.20
N102E286S1/2, Feature 12, N102.98E287.65, 47.66 m amsl							
87	EUCER	BASE	UNID	EARTHB	SAINTONGE	1	52.00
N102E286S1/2, Feature 12, 47.60-47.50 m amsl, Flotation Heavy Fraction							
88	FLOT_HF						
88	POT	BASE		SHELL	MISSISSIPPI	3	4.80
88	POT	BODYFG		SHELL			2.40
88	POT	BODY		FGRSHL	BELL	1	.40
88	POT	BODY		BOSH	SARASSA	1	1.20
88	POT	DAUB				6	31.10
88	FBCLAY						12.20
88	CL	FLA		CRT		4	15.10
88	URM	GIZZAR		CRT		2	.50
88	URM	PEBL		QTZ		1	.50
88	FAUNA	BS				274	123.70
88	FAUNA	TEETH	PIG			1	6.70
88	EUCER	BODYFG		EARTHB		2	.10
88	EUCER	BODYFG		EARTHR		1	.10
88	EUCER	BODY		EARTHR	ALBISOLA	1	.30
88	EUCER	BODYFG		STONEW		6	3.20
88	GLASS	BEAD	SEED	(BLUE)		1	.00
88	GLASS	BEAD	SEED	(WHITE)		6	.00
88	GLASS	BEAD		(BLACK)		2	.00

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
88	GLASS	UNID	UNID			1	.00
88	METAL	UNID	UNID	IRON		4	.50
88	METAL	UNID	UNID	CUPROUS		2	.30
88	METAL	AMMO	SHOT	LEAD		1	.10
N102E286S1/2, Feature 12, 47.60-47.50 m amsl, Flotation Light Fraction							
89	FLOT_LF						
N102E288S1/2, Feature 12, 47.80-48.70 m amsl, handpicked							
90	POT	FBCLAY					.30
90	GRL	GEOB	UNID	SS		1	29.00
90	FAUNA	BS				2	6.10
90	GLASS	BODY		(PATINATED)		1	4.10
N102E288S1/2, Feature 12, 47.60-47.50 m amsl, handpicked							
91	POT	BODY		SHELL	MISSISSIPPI	14	19.90
91	POT	BODYFG		SHELL			3.40
91	POT	FBCLAY					.10
91	CL	FLA		CRT		8	3.00
91	URM	FCR		CRT		1	.50
91	FAUNA	MOD	CUTS			1	14.60
91	FAUNA	BS				31	31.10
91	FAUNA	SHELL	MUSSEL			1	.20
91	FLORA						
91	EUCER	BODY		EARTHB	SAINTONGE	1	3.50
91	METAL	UNID	UNID	IRON		1	1.00
91	LITHIC	ARMS	GFLINT	FLINT		1	.70
N102E286S1/2, Feature 12, ~47.50 m amsl, Flotation Heavy Fraction							
92	FLOT_HF (size-grade $\geq$ 4.75mm)						
92	POT	BODY		SHELL	MISSISSIPPI	8	9.80
92	POT	BODYFG		SHELL			1.40
92	POT	BODY		FGRSHL	FATHERLAND	1	.70
92	POT	BODY		FGRSHBO	UNCLASS PLAIN	1	.60
92	POT	FBCLAY					27.00
92	CL	FLA		CRT		8	2.90
92	CL	FLA		SS		1	5.00
92	URM	FCR		CRT		2	.40
92	URM	GIZZAR		CRT		2	.50
92	FAUNA	BS				111	53.20
92	FAUNA	SHELL	MUSSEL			1	.10
92	FLORA						
92	EUCER	BODYFG		STONEW		1	.30
92	GLASS	BODY	WINDOW	(LTGREEN)		1	.20
92	GLASS	BEAD	SEED	(WHITE)		8	.10
92	GLASS	BEAD	SEED	(RED, COMPOS)	CORNALINE	5	.10
92	GLASS	BEAD	SEED	(BURNED)		1	.10
92	METAL	BEAD		UNID		1	.10
92	METAL	AMMO	SHOT	LEAD		1	.50
N102E286S1/2, Feature 12, ~47.50 m amsl, Flotation Light Fraction							
93	FLOT_LF						
N102E286S1/2, Feature 12, Stratum IV, handpicked from south wall							
94	POT	BODY		SHELL	MISSISSIPPI	1	5.60
94	POT	FBCLAY					1.10
94	URM	GIZZAR		CHERT		1	.20
94	FAUNA	BS				46	301.90
94	EUCER	BODY	BOWL	EARTHR	SLIPWARE	1	17.60

FSN	GENERAL	SPECIFIC	FUNCT	MATERIAL	TYPE	COUNT	WEIGHT
94	EUCER	RIM	LID	EARTHR	GREENGLAZED	1	13.20
94	GLASS	BODY		(LTGREEN)		1	.40
N102E286S1/2, Feature 12, Stratum IV, handpicked from north wall							
95	POT	BODY		SHELL	MISSISSIPPI	1	3.30
95	POT	BODY		FGRSHL	BELL	2	27.10
95	POT	FBCLAY					1.60
95	URM	CHNK		DOL		2	5.70
95	FAUNA	UNMOD	MAXILL			1	146.50
95	FAUNA	UNMOD				1	188.00
95	FAUNA	UNMOD	UNID			1	65.80
95	FAUNA	BS				12	12.30
95	CL	FLA		CRT		3	3.90
95	FLORA						
95	LITHIC	ARMS	GFLINT	FLINT		1	7.60
95	BLDMAT	BRICK				2	9.50
N102E286S1/2, Feature 12, Stratum V, handpicked from north wall							
96	POT	RIM		SHELL	MISSISSIPPI	1	2.30
96	POT	BODY		SHELL	MISSISSIPPI	1	2.70
96	CL	CORE	PEBCO	CRT		1	36.50
96	CL	FLA		CRT		1	1.20
96	CL	SHAT		CRT		1	4.00
96	URM	CONCRT		UNID		1	2.50
96	EUCER	BODY		EARTHB	TINGLAZED	1	3.10
96	EUCER	BASE		EARTHR	UNCLASS	1	9.40
96	GLASS	BEAD	SEED	(RED, COMPOS)	CORNALINE	1	.10
96	FAUNA	UNMOD	UNID			1	397.00
N102E286S1/2, Feature 12, N103.00E286.32, 47.54 m amsl							
97	LITHIC	CUBE	UNID	DOL		1	165.00
N102E286S1/2, Plowzone (Stratum I), Soil Sample from south wall							
98	SOISM						
N102E286S1/2, Feature 12, Stratum II, Soil Sample from south wall							
99	SOISM						
N102E286S1/2, Feature 12, Stratum III, Soil Sample from south wall							
100	SOISM						
N102E286S1/2, Feature 12, Stratum IV, Soil Sample from south wall							
101	SOISM						
N102E286S1/2, Feature 12, Stratum V, Soil Sample from south wall							
102	SOISM						
N102E286S1/2, Feature 12, Stratum VI, Soil Sample from south wall							
103	SOISM						
N102E286S1/2, Feature 12, Burned clay lens in north wall, Soil Sample							
104	SOISM						
N146E2201/2, Feature 14, 47.95-47.85 m amsl, Charred Botanical Sample							
105	FLORA						
Surface at N106E270							
106	GLASS	BEAD	NECKLA	(WHITE, CYLIND)		1	.80

Appendix
DELOS LEXICON USED IN THIS REPORT

The codes used in this report in most cases follow the lexicon used in the DELOS artifact analysis and inventory system employed by the Arkansas Archeological Survey (Cande et al. 1992). The principal departure from the standard DELOS lexicon are the ceramic material codes that I have developed for entering data in the KENT1, KENT2, MENARD1, MENARD2, and MENARD3 databases.

Definitions for the Indian ceramic composition codes used in the "MATERIAL" column are as follows:

BOSH: Fine Bone and Shell (Sarassa paste; see House 1997)

BOSHSND: Bone Shell and Sand

BOSND: Bone and Sand

CGRSHL: Coarse Grog and Shell (Comment: I am provisionally calling this "Mitchell paste" referring to Lumb and McNutt's [1988] Mississippi Plain, *var. Mitchell*. I am calling the grog tempering "coarse" if there are frequent grogs >1.0 mm and "fine" if the grogs are overwhelmingly under 1.0 mm. Obviously, it can be hard to replicate this distinction (i.e., between Bell and Mitchell pastes) but in some assemblages, at least, it seems like most grog and shell tempered sherds readily fall into a Bell-paste class with grogs over-whelmingly <0.5 mm and a Mitchell-paste class with abundant grogs >1.0 mm.)

FGRSHBO: Fine Grog, Shell and Bone

FGRSND: Fine Grog and Sand

FGRSHL: Fine Grog and Shell. (Comment: This is "Bell paste" in the sense that I have used it in my dissertation following Million [1975]. It corresponds to Lumb and McNutt's Bell Plain, *var. Nickel.*)

FSHGRSND: Fine Shell Grog and Sand

SHELL: Shell. (Comment: Here, I consistently depart from standard DELOS terminology in which shell tempering is coded as SHELLT.)

SHELSND: Shell and Sand.

REFERENCES CITED

Cande, Kathleen H.

1992 *DELOS: A Computerized Artifact Inventory and Analysis System* (Version 3.), with a section by James E. Barnes and Forward by W. Frederick Limp. Technical Paper No. 7. Arkansas Archeological Survey, Fayetteville.

House, John H.

1997 Noble Lake: A Protohistoric Site on the Lower Arkansas River. *Arkansas Archeologist* 36:46-97.

Lumb, Lisa Cutts, and Charles H. McNutt

1988 *Chucalissa: Excavations in Units 2 and 6, 1959-67*. Occasional Papers 15. Anthropological Research Center, Memphis State University.

Million, Michael G.

1975 *Ceramic Technology of the Nodena Phase People (ca. A.D. 1400-1700)*. Bulletin 18. Southeastern Archaeological Conference.