

# ARCHAEOLOGY AT ASHE FERRY

LATE WOODLAND AND MIDDLE MISSISSIPPIAN PERIOD  
OCCUPATIONS IN THE LOWER CATAWBA RIVER VALLEY,  
YORK COUNTY, SOUTH CAROLINA

BRETT H. RIGGS,  
R. P. STEPHEN DAVIS, JR.,  
AND  
MARY ELIZABETH FITTS

WITH CONTRIBUTIONS BY  
DUANE ESAREY  
DALE HUTCHINSON  
ASHLEY PELES  
C. MARGARET SCARRY  
THOMAS R. WHYTE

PREPARED FOR  
MULKEY ENGINEERS &  
CONSULTANTS  
AND  
SOUTH CAROLINA  
DEPARTMENT OF  
TRANSPORTATION



RESEARCH REPORT 36  
RESEARCH LABORATORIES OF ARCHAEOLOGY  
UNIVERSITY OF NORTH CAROLINA  
CHAPEL HILL  
2015

**ARCHAEOLOGY AT ASHE FERRY**  
LATE WOODLAND AND MIDDLE MISSISSIPPIAN  
PERIOD OCCUPATIONS IN THE LOWER CATAWBA  
RIVER VALLEY, YORK COUNTY,  
SOUTH CAROLINA

BRETT H. RIGGS  
R. P. STEPHEN DAVIS, JR.  
MARY ELIZABETH FITTS

WITH CONTRIBUTIONS BY  
DUANE ESAREY  
DALE HUTCHINSON  
ASHLEY PELES  
C. MARGARET SCARRY  
THOMAS R. WHYTE

SCDOT FILE # 2946.037243A  
SCDOT PCN # 37243\_PE01

PREPARED FOR  
MULKEY ENGINEERS & CONSULTANTS  
AND  
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

RESEARCH REPORT 36  
RESEARCH LABORATORIES OF ARCHAEOLOGY  
UNIVERSITY OF NORTH CAROLINA  
CHAPEL HILL

2015



## MANAGEMENT SUMMARY

The 2010 archaeological investigations of the Ashe Ferry site (38YK533) aimed to document contexts and recover assemblages from the site in order to mitigate adverse impacts to the site occasioned by the replacement of the SC Highway 5 bridge across the Catawba River. Construction of a new bridge and approach ramp after the conclusion of field investigations obliterated or buried that portion of 38YK533 north of the existing 1959 roadway that bisected the site. Phase I archaeological survey of the bridge replacement project area by Legacy, Assoc. in 2009 identified the Ashe Ferry site and documented the presence of potential buried contents, discrete features, and appreciable substantive content, qualities that led SCDOT to seek further evaluation of contextual integrity and content as an initial stage of the 2010 investigations. Testing of the site by the University of North Carolina Research Laboratories of Archaeology in the spring of 2010 clearly demonstrated integrity of site deposits and the presence of coherent material assemblages that exhibited capacity to “yield information important to prehistory,” consistent with significance Criterion D for eligibility of the site for inclusion in the National Register of Historic Places. Because avoidance or other preservation options were not feasible given the scope of the bridge replacement project, mitigation of construction impacts through data recovery of “information important to prehistory” was undertaken immediately on the heels of site evaluation and expedited consultation, consistent with Section 106 of the National Historic Preservation Act.

Archaeological field investigations began on March 10, 2010 and were completed on November 19, 2010. Investigations entailed eight components: (1) establishment of a site grid; (2) field evaluation of Legacy shovel tests and exploratory backhoe trenches; (3) systematic test excavations; (4) selective mechanized stripping of plowed soil and overlying flood-deposited sand; (5) excavation of additional test units and block excavations within stripped areas; (6) additional mechanized stripping of the site; (7) mapping and excavation of archaeological features; and (8) removal, relocation, and re-interment of identified graves.

Hand dug excavation units totaled 212m<sup>2</sup>, a well distributed sample of approximately 3.5% of the accessible site area (exclusive of areas obscured/obliterated by the existing SC Highway 5 causeway and the site access road). These units yielded artifact samples that included approximately 8,500 ceramic sherds and 10,000 lithic artifacts, most of which are attributable to Late Woodland period site occupations. Mechanical removal of plowed soils from 2583 m<sup>2</sup> (42% of the accessible site area) revealed 81 archaeological features, 52 of which proved to be cultural in origin. These facilities included 42 features referable to Late Woodland period site occupations, seven Mississippian period deposits, one facility associated with Early Woodland period site occupation and one associated with Late Archaic period occupations. AMS dates obtained from 10 contexts indicate that the predominant Late Woodland period Ashe Ferry phase components spanned ca. A.D. 1000–1150, followed by occupations during the early Middle Mississippian period Early Brown phase, ca. A.D. 1150–1350.

Cultural features documented at 38YK533 included 17 probable roasting facilities (fire cracked rock filled basins), seven deep pits (storage facilities), 12 shallow basins, nine postholes, three graves, and a hearth. In general, the facilities form linear arrays along the terrace crest and backslope, with postholes, graves, shallow basins and hearths associated with residential activities on the crest, and roasting facilities and storage facilities situated on the backslope, where they constitute a specialized work precinct.

Excavation and waterscreen or flotation processing of feature deposits recovered substantial assemblages of cultural artifacts and archaeobotanical remains; archaeofaunal remains were

notably scarce. Analysis of these assemblages recovered from discrete contexts (particularly radiocarbon dated contexts) provided organizational structure for identification and interpretation of the remainder of the site collections. Analysis of plant remains established a basis for interpretation of feature function and site function. Analysis of archaeobotanical materials recovered from primary deposits in probable roasting facilities (the most common facility type) revealed predominant content of charred acorn shell fragments, a pattern indicative either of roasting acorns (with concomitant shell breakage) or use of acorn shells as fuel. Such roasting or parching of acorns is indicated as a processing technique in ethnohistoric and ethnographic literature, and these features are interpreted as processing facilities that represent a primary activity at the site. This hypothesized function is bolstered by the incidence of complete shelled acorn nutmeats recovered from deep pit features. These probable storage facilities are also posited as components of an acorn collection/processing/storage complex. Because these processing and storage facilities predominate, and because evidence for long-term residential occupation (e.g., architectural remains) is scanty, the primary Late Woodland period and early Middle Mississippian components are interpreted as representative of successive, seasonally occupied extraction camps where activities focused on collection and processing of arboreal nuts.

Material assemblages recovered by the 2010 investigations at the Ashe Ferry site indicate small scale occupations during the Early, Middle, and Late Archaic periods and during the Early and Middle Woodland periods, with much more intense occupations in the terminal Late Woodland and early Middle Mississippian periods. Ceramic assemblages from features dated ca. A.D. 1010-1160 are dominated by sand tempered simple stamped wares, and constitute the Ashe Ferry phase, a construct parallel to the Santee II phase in the South Carolina Coastal Plain and the Vining phase defined in the Georgia piedmont region. Definition and temporal placement of the Ashe Ferry phase extends the geographic scope of a supra-regional terminal Late Woodland period horizon of simple stamped ceramics posited by Anderson (Anderson, et al., 1996) and others.

Ceramic assemblages associated with features dated ca. A.D. 1160-1350 are characterized by grit tempered Mississippian Plain/Burnished Plain wares, which constitute one aspect of the Early Brown phase, a Savannah Culture complex parallel to the Belmont Neck and Beaverdam Creek phases, but most similar to ceramic assemblages from the Blair Mound Site in the nearby Broad River Valley. The character and dating of the Early Brown phase relative to the Ashe Ferry phase indicates relatively late transition to Mississippian ceramic patterns in the north central piedmont of South Carolina.

Definition and absolute dating of the Ashe Ferry phase and Early Brown phase ceramic assemblages provides anchors for the development of cultural historical sequences specific to the central piedmont region, a particularly understudied area of South Carolina. In addition, the closely sequential dating of these Late Woodland and Mississippian period ceramic assemblages presents additional complexity to current understandings of the process of “Mississippianization” in the South Carolina piedmont. Finally, the proposed definition of the Ashe Ferry phase and Early Brown phase components at 38YK533 as representative of seasonally occupied extraction encampments that focused on collection, processing and storage of acorns provides an initial measure of logistical mobility in late prehistoric era settlement-subsistence systems in the central Piedmont, and illustrates the continued dietary importance of arboreal nuts long after the establishment of horticultural production.

## ACKNOWLEDGMENTS

First and foremost, we would like to thank Mr. Chad Long, NEPA Coordinator/Archaeologist with the South Carolina Department of Transportation, both for his advocacy of archaeological data recovery at the Ashe Ferry and Ayers Town sites and for his helpful assistance throughout the field, analysis, and reporting phases of the project. We also are grateful for the advice given by Mr. Charles Cantley of the South Carolina State Historic Preservation Office and Dr. Wenonah Haire of the Catawba Tribal Historic Preservation Office.

Site excavations were contracted through Mulkey Engineers and Consultants of Cary, North Carolina, and we wish to acknowledge Ms. Michelle Fishburne of that office for her assistance in administering the contract. Her counterparts at the University of North Carolina at Chapel Hill were Ms. Brenda A. Moore and Ms. Lisa-Jean Michienzi, both with the Research Laboratories of Archaeology, and Ms. Cathy Rogers of the UNC Office of Sponsored Research. Dr. Vincas P. Steponaitis, director of the Research Laboratories of Archaeology, provided much behind-the-scenes guidance in facilitating the project.

Archaeological data recovery at the Ashe Ferry site was directed by Drs. Brett H. Riggs and R. P. Stephen Davis, Jr., and undertaken in three phases. The crew for the initial phase, undertaken between March 15 and May 7, 2010 and consisting of site-wide test excavations and mechanic stripping of topsoil, included Johann Furbacher, Eric Deetz, Duane Esarey, Mary Beth Fitts, Dr. Bill Jurgelski, Sean Patton, Mark Plane, J. P. Preston, Scott Shumate, and Erin Stevens. Operation of a mini-excavator to strip topsoil from the site was ably performed by Mr. Byron K. Hill of B. K. Hill and Associates, LLC, of Rock Hill, South Carolina.

During the second phase of investigation, undertaken between May 11 and June 7, 2010, students and staff of the UNC archaeological field school conducted block excavations and excavated archaeological features. The field school staff consisted of Brooke Bauer, David Cranford, Johann Furbacher, Elise Duffield, Duane Esarey, Mary Beth Fitts, Bill Jurgelski, Mark Plane, Anna Semon, Erin Stevens and Rebecca Wingo. Field school students included Timothy Barco, Rosanna Crow, Natalie DeMasi, Yosha Gunasekera, Shane Hale, Jonathan Leggett, Katherine Mullis, Laura Parks, Alyssa Parry, Sarah Settle, Michelle Stanfield, Elaine Tolbert, Mary Walker, and Abigail Winegarten.

The final phase of investigation occurred between November 15 and 19, 2010 and involved the hand excavation, removal, and re-interment of three graves. This work was conducted by Johann Furbacher, Bill Jurgelski, and Eric Deetz in consultation with staff from the Catawba Tribal Historic Preservation Office. We wish to thank Ms. Beckee Garris for her thoughtful advice and assistance with this task. Prior to re-burial, a field assessment of the three graves was performed by Dr. Dale Hutchinson of the University of North Carolina at Chapel Hill.

Cleaning and cataloging of the artifacts recovered from Ashe Ferry were performed by undergraduate employees and volunteers in the Research Laboratories of Archaeology. They included Jacqueline Berton, Jonathan Branch, Caroline Carter, Rosanna Crow, Elise Duffield, Shane Hale, Cassie Marcelo, Carmen Mendoza, Bouran Mozayen, Becka Rohrer, Sarah Settle, Archie Smith, Janice Tse, and Andy Valiunas. Duane Esarey and Andy Valiunas assisted Brett Riggs with the ceramic analysis. David Cranford analyzed the chipped stone projectile points from the site, and Elise Duffield, Bouran Mozayen, and Sarah Settle assisted Steve Davis with the analysis of other artifacts. Dr. Thomas R Whyte of Appalachian State University undertook the analysis of zooarchaeological remains, and Ashley Peles conducted the analysis of paleobotanical remains in consultation with Dr. C. Margaret Scarry of the University of North

Carolina. Mary Beth Fitts wrote the descriptions of archaeological features presented in the appendix. Radiocarbon samples from Ashe Ferry were analyzed by Beta Analytic, Inc., Miami, Florida.

The authors are grateful for assistance, perspectives, and advice forthcoming from Jim Bates, John Cable, Bill Green, Chris Judge, Bill Jurgelski, Jon Marcoux, Chris Espenshade, Chris Moore, Chester DePratter, Dan Elliott, Mark Williams, and Sean Taylor, all of whom helped orient us to the late prehistory of the South Carolina Piedmont. John Cable, in particular, provided invaluable feedback with regard to the interpretation of ceramic artifacts recovered from the Ashe Ferry Site. Any errors or misconstructions contained herein are solely the products and responsibilities of the authors, and are included despite the best advice of experts in the region.

# TABLE OF CONTENTS

<b>Management Summary</b> .....	i
<b>Acknowledgments</b> .....	iii
<b>Chapter 1. Introduction</b> .....	1-1
Site Setting.....	1-4
Geology.....	1-5
Soils and Site Stratigraphy.....	1-6
Climate.....	1-7
Biotic Environment.....	1-7
<b>Chapter 2. Culture Historical Background</b> .....	2-1
Early Woodland Period.....	2-1
Middle Woodland Period.....	2-2
Late Woodland Period.....	2-4
Mississippian Period.....	2-8
Post-Contact Site History .....	2-14
<b>Chapter 3. Archaeological Investigations</b> .....	3-1
Previous Research by Legacy Research .....	3-1
Shovel Testing.....	3-1
Trench Excavations .....	3-3
Initial Site Interpretation and Recommendation.....	3-4
Investigations by the University of North Carolina.....	3-5
Establishing the Grid .....	3-6
Field Evaluation of Shovel Tests and Backhoe Trenches .....	3-7
Systematic Test Excavations .....	3-11
Phase I Stripping of Plowed Soil.....	3-20
Phase II Stripping of Plowed Soil .....	3-25
Additional Test Units and Block Excavations.....	3-28
Mapping and Excavation of Archaeological Features.....	3-35
Treatment of Archaeological Features Containing Human Remains.....	3-37
<b>Chapter 4. Discrete Feature Contexts and Site Structure at the Ashe Ferry Site</b> .....	4-1
Rock-filled Roasting Facilities .....	4-1
Storage Pits.....	4-10
Shallow Basins .....	4-13
Postholes.....	4-17
Caches.....	4-17
Graves.....	4-19
Site Structure .....	4-23
<b>Chapter 5. Chapter 5: Ceramic Artifact Assemblages</b> .....	5-1
Characterization of the Ashe Ferry Site Ceramic Assemblage .....	5-1
Ceramic Vessel Sherd Sample and Analytic Methods.....	5-2
Vessel portion.....	5-2
Rim morphology attributes.....	5-3

Aplastic Content .....	5-5
Exterior Primary Surface Treatments .....	5-8
Secondary Decorative Treatments .....	5-12
Ceramic Typology at 38YK533 .....	5-14
Ashe Ferry Simple Stamped .....	5-15
Ashe Ferry Plain/Smoothed .....	5-18
Ashe Ferry Cordmarked .....	5-18
Cape Fear Fabric Impressed .....	5-18
Uwharrie Fabric Marked .....	5-20
Yadkin Fabric Marked .....	5-21
Badin Fabric Impressed .....	5-22
Deptford Check Stamped .....	5-23
Woodstock Complicated Stamped .....	5-24
Mississippian Burnished Plain and Mississippian Plain .....	5-26
Early Brown Complicated Stamped .....	5-27
Twelve Mile Check Stamped .....	5-30
Ceramic Assemblages, Ceramic Chronology, and Site Occupation History at 38YK533 .....	5-33
Chronology of the Late Woodland and Mississippian period components .....	5-34
Ashe Ferry Phase .....	5-35
Early Brown phase .....	5-44
Summary and Discussion .....	5-52
<b>Chapter 6. Chipped-Stone, Ground-Stone, and Other Artifacts from Ashe Ferry .....</b>	<b>6-1</b>
Chipped-Stone Production Debris .....	6-1
Cores .....	6-3
Flakes .....	6-4
Chipped Stone Projectile Points .....	6-5
Kirk Serrated Projectile Point .....	6-8
Morrow Mountain II Stemmed Projectile Points .....	6-8
Guilford Lanceolate Projectile Points .....	6-9
Savannah River Stemmed Projectile Points .....	6-10
Archaic Projectile Points (Indeterminate) .....	6-10
Yadkin Large Triangular Projectile Points .....	6-10
Pentagonal Projectile Points .....	6-10
Small Triangular Projectile Points .....	6-11
Other Chipped-Stone Tools .....	6-13
Preform .....	6-13
Bifaces .....	6-13
Drills .....	6-17
Perforators .....	6-17
Chipped Hoes .....	6-17
End Scraper .....	6-18
Worked Flakes .....	6-19
Ground-Stone Tools .....	6-19
Celts .....	6-19
Hammerstones .....	6-21
Possible Milling Stones .....	6-21

Pitted Stones .....	6-21
Nutting Stone.....	6-23
Other Modified Cobbles and Pebbles.....	6-23
Stone Gorget.....	6-23
Stone Pipes .....	6-24
Utilized Minerals .....	6-25
Fire-Cracked Rock.....	6-26
Clay Artifacts.....	6-29
Daub and Fired Clay.....	6-29
Wooden Artifact .....	6-31
Modern Artifacts.....	6-31
<b>Chapter 7. Subsistence Remains from the Ashe Ferry Site .....</b>	<b>7-1</b>
Plant Remains from the Ashe Ferry Site (38YK533), A Multi-Component Site In York County, South Carolina, by Ashley A. Peles and C. Margaret Scarry .....	7-2
Introduction.....	7-2
Methods and Materials .....	7-2
Results.....	7-4
Feature Assemblages.....	7-9
Discussion of Plant Remains from 38YK533 .....	7-13
Nuts.....	7-13
Fruits.....	7-18
Starchy and Oily Seeds.....	7-18
Cultigens.....	7-19
Miscellaneous Taxa.....	7-19
Conclusions.....	7-20
Archaeofaunal Remains from the Ashe Ferry Site (38yk533), York County, South Carolina, by Thomas R. Whyte .....	7-24
Methods of Identification and Analysis.....	7-24
Potential Biases.....	7-25
Results.....	7-25
Conclusions.....	7-27
<b>Chapter 8. Summary and Conclusions .....</b>	<b>8-1</b>
<b>References Cited.....</b>	<b>R-1</b>
<b>Appendix A. 2008 Survey Shovel Test Data .....</b>	<b>A-1</b>
<b>Appendix B. Maps, Illustrations, and Descriptions of Archaeological Features at the Ashe Ferry Site .....</b>	<b>B-1</b>
<b>Appendix C. Field Analysis of Human Burials, by Dale Hutchinson .....</b>	<b>C-1</b>
<b>Appendix D. Beta Analytic, Inc. reports on radiocarbon assays of samples from the Ashe Ferry Site .....</b>	<b>D-1</b>

Available online at  
<http://www.rla.unc.edu/Publications/pdf/ResRep36>

**Appendix E. Catalog of Archaeological Specimens Recovered from the  
Ashe Ferry Site**.....online

**Appendix F. Descriptive Inventories of Selected Artifact Classes (available as pdf  
documents and Excel spreadsheets)**.....online

Appendix F1. Descriptive Inventory of Pottery from the Ashe Ferry Site

Appendix F2. Descriptive Inventory of Chipped Stone Projectile Points from the Ashe  
Ferry Site

Appendix F3. Descriptive Inventory of Chipped Stone Flakes from the Ashe Ferry Site.

Appendix F4. Plant Remains Recovered from the Ashe Ferry Site

Appendix F5. Descriptive Inventory of Faunal Remains from the Ashe Ferry Site

## LIST OF TABLES

<u>Table</u>	<u>Page</u>
Table 3.1. Summary of artifacts recovered from initial test excavations. ....	3-15
Table 3.2. Dimensions of trenches excavated during Phase I and II stripping, and numbers of test units subsequently dug in each trench.....	3-24
Table 4.1 Discrete archaeological features designated at 38YK533 (incl. cultural and natural soil disturbances).....	4-4
Table 5.1. Size distribution of ceramic sherds recovered from 38YK533.....	5-2
Table 5.2. Thickness distribution of ceramic sherds recovered from 38YK533 .....	5-2
Table 5.3. Summary of aplastic content and primary exterior surface treatment observed on ceramic vessel sherds from 38YK533 .....	5-5
Table 5.4. Secondary decorative treatments observed on 38YK533 sherds.....	5-13
Table 5.5. AMS dates associated with 38YK533 feature contexts.....	5-34
Table 5.6. Ceramic sherds associated with contexts dated ca. A.D. 1010–1030 (38YK533, Features 11, 46, 50, 52, 77). ....	5-36
Table 5.7. Ceramic sherds from dated mid-12th century contexts (Features 28 and 48). ....	5-40
Table 5.8. Ceramic sherds recovered from post-A.D. 1200 dated contexts used to define Early Brown phase assemblages .....	5-45
Table 5.9. Ceramic sherds attributed to Early Brown phase occupations .....	5-47
Table 5.10. Early Brown phase rim treatments, 38YK533.....	5-48
Table 6.1. Summary of Stone Artifacts Recovered from the Ashe Ferry Site.....	6-2
Table 6.2. Distribution of chipped-stone flakes by excavation context, raw material, and size class.....	6-6
Table 6.3. Distribution of chipped-stone flakes by excavation context, raw material, size, and presence/absence of cortex. ....	6-7
Table 6.4. Measurement statistics for small triangular projectile points from the Ashe Ferry Site .....	6-15
Table 6.5. Summary of basal and lateral edge shape for small triangular projectile points from Late Woodland, Mississippian, and other contexts at the Ashe Ferry Site. ....	6-15
Table 6.6. Distribution of fire-cracked rock by feature and size category. ....	6-27
Table 6.7. Fire-cracked rock counts and weights by size category for all cultural features. ....	6-28
Table 7.1. Flotation samples examined for botanical remains from the Ashe Ferry site .....	7-5
Table 7.2. Plant taxa represented in analyzed samples from 38YK533 .....	7-6
Table 7.3. Nut remains by feature from the Ashe Ferry site.....	7-7
Table 7.4. Number of identified specimens (NISP) of animal remains from 38YK533. ....	7-26

## LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
Figure 1.1. LiDAR-based relief map of the Catawba River valley showing the topographic setting of the Ashe Ferry (38YK533) and Ayers Town (38YK534) sites opposite the mouth of Twelvemile Creek. ....	1-1
Figure 1.2. Aerial photograph taken March 30, 2004 of the project area.....	1-2
Figure 1.3. Aerial photograph taken March 26, 2012 of the project area.....	1-2
Figure 1.4. Sections of the Catawba, S.C. and Van Wyck, S.C. 7.5-minute series USGS topographic maps showing the towns, roads, and railroads located in the vicinity of the Ashe Ferry (38YK533) and Ayers Town (38YK534) sites in 1968.....	1-3
Figure 2.1. Map indicating locations of key archaeological sites discussed in text. ....	2-2
Figure 2.2. Detail of the 1775 “An Accurate Map of North and South Carolina” .....	2-15
Figure 2.3. 1843 plats for land deeded to Benjamin S. Massey on both sides of the Catawba River above Twelvemile Creek .....	2-17
Figure 2.4. View to west of Ashe Ferry in operation in 1954. ....	2-19
Figure 2.5. Aerial view [1959] of the construction of the SC Highway 9 bridge and the approach across 38YK533.....	2-20
Figure 3.1. Legacy Research Associates project map, showing project boundaries and the locations of sites 38YK533, 38YK534, and 38La570.....	3-2
Figure 3.2. Legacy Research Associates map of archaeological testing at the Ashe Ferry site (38YK533) (from Legacy 2009:43).....	3-3
Figure 3.3. View of the Ashe Ferry site looking southeast along the access road. The Catawba River is to the left and the SC Highway 5 bridge approach is to the right. ....	3-7
Figure 3.4. Map of the Ashe Ferry site showing the placement of Legacy excavations, as re-located in the field, and the site’s estimated limits based on those excavations. ....	3-9
Figure 3.5. Map of potsherd density at the Ashe Ferry site based on artifact samples recovered from shovel test pits by Legacy archaeologists. ....	3-10
Figure 3.6. Re-excavation of Legacy Trench 9, showing the cleaned east profile and descriptions of strata. ....	3-11
Figure 3.7. Map of the Ashe Ferry site showing the site boundary, as revised following an analysis of Legacy shovel testing data, and the placement of initial unit excavations.....	3-13
Figure 3.8. Excavating and dry-screening fill from Square 870R850 during systematic testing. ....	3-14
Figure 3.9. Soil profile for Square 770R910, located south of the highway. ....	3-14
Figure 3.10. Soil profile for Square 750R950 at the southeast edge of the site.....	3-15
Figure 3.11. Soil profile for Square 830R890, located north of the highway.....	3-17
Figure 3.12. Soil profile for Square 850R870, located north of the highway.....	3-18

Figure 3.13. View of the 828–830R910–911 excavation block following removal of plowed soil, showing Feature 47 on the soil pedestal at top left and the top of Feature 49 near the center of the excavation. ....	3-18
Figure 3.14. Map of potsherd density at Ashe Ferry based on artifact samples recovered from systematic test excavations. The shading represents the revised site area. ....	3-20
Figure 3.15. Removing flood sands and modern plowed soil with a trackhoe during phase I stripping at the Ashe Ferry site. ....	3-21
Figure 3.16. Flatshoveling the base of an excavated trench during phase I stripping to identify archaeological features and retrieve artifacts. ....	3-21
Figure 3.17. Map of the Ashe Ferry site showing the 23 trenches opened during Phase I stripping of plowed soil and the 72 test units excavated within those trenches. ....	3-22
Figure 3.18. Excavating and mapping test units in Trench 3. ....	3-25
Figure 3.19. Trench test units excavated from the trench base to the top of subsoil. ....	3-26
Figure 3.20. Map of the Ashe Ferry site showing the additional 16 trenches opened during II Phase stripping of plowed soil. ....	3-27
Figure 3.21. Map of the Ashe Ferry site showing all stripped trenches, test units, and block excavations. ....	3-29
Figure 3.22. Excavating units at the north edge of the Trench 2 block. ....	3-30
Figure 3.23. Cluster of large fabric marked potsherds found in Square 873R856 within Trench 2 excavation block. ....	3-30
Figure 3.24. Trench 15 after phase I stripping and excavation of test units. ....	3-32
Figure 3.25. Trench 15 excavation block with old plowzone removed. ....	3-32
Figure 3.26. Excavating the block within Trenches 17 and 23. ....	3-33
Figure 3.27. East and south soil profiles for the L-shaped trench comprising the Trenches 17 and 23 excavation block. ....	3-34
Figure 3.28. The Trench 18 excavation block, showing <i>in situ</i> fire-cracked rocks associated with Feature 21. ....	3-34
Figure 3.29. Map of the Ashe Ferry site showing the total extent of excavations and all identified archaeological features of cultural origin. ....	3-36
Figure 3.30. Mapping and recording the top elevations of Feature 48 prior to excavation. ....	3-38
Figure 3.31. Trowelling Feature 17 for photography and profile mapping after removing the fill zones in the north half of the feature. ....	3-39
Figure 3.32. Excavating fill from around fire-broken hearth stones in Feature 77. ....	3-39
Figure 3.33. Waterscreening feature fill at the Ashe Ferry site. ....	3-39
Figure 4.1. Plan of 38YK533 indicating locations of discrete archaeological features. ....	4-2
Figure 4.2. Detail of the northern half of the 38YK533 site plan indicating locations of discrete archaeological features. ....	4-3
Figure 4.3. Detail of the southern half of the 38YK533 site plan indicating locations of discrete archaeological features. ....	4-3
Figure 4.4. Illustrations of Feature 74, a rock-filled roasting facility. ....	4-8

Figure 4.5. Illustrations of Feature 11, a probable Ashe Ferry phase storage/processing pit...	4-11
Figure 4.6. Illustrations of Feature 20, a probable Ashe Ferry phase storage/processing pit...	4-12
Figure 4.7. Feature 16, a shallow basin that probably represents the basal remnant of a plow truncated roasting facility. ....	4-14
Figure 4.8. Feature 50, a shallow basin with “subpits” including <i>in situ</i> vessel fragments.....	4-15
Figure 4.9. Feature 61 plan view and profile drawings and excavation photographs: .....	4-16
Figure 4.10. Feature 56, a probable posthole.....	4-18
Figure 4.11. Feature 75, a probable posthole and <i>in situ</i> stone-tool cache.....	4-18
Figure 4.12. Feature 80, a probable Late Archaic period cache. ....	4-19
Figure 4.13. Feature 43 plan view and profile drawings, and excavation photographs. ....	4-20
Figure 4.14. Feature 45 plan view and profile drawings, and excavation photographs .....	4-21
Figure 4.15. Feature 62 plan view and profile drawings, and excavation photographs. ....	4-22
Figure 4.16. Ceramic sherd density at 38YK533.....	4-24
Figure 4.17. Map of 38YK533 indicating hypothesized spatial precincts.....	4-26
Figure 5.1. Schematic of possible vessel forms indicating location/landmarks for vessel portions. ....	5-3
Figure 5.2. Simple and thickened castellate rim forms represented at 38YK533.....	5-3
Figure 5.3. Schematic illustrating vessel rim morphologies identified in the 38YK533 ceramic sample. ....	5-4
Figure 5.4. Schematic illustrating vessel lip morphologies identified in the 38YK533 ceramic sample. ....	5-4
Figure 5.5. Sherd edge views illustrating aplastic/temper states observed in 38YK533 ceramic sherds. ....	5-6
Figure 5.6. Ashe Ferry Simple Stamped rim sherds from 38YK533.....	5-9
Figure 5.7. Plain wares from the Ashe Ferry site. ....	5-9
Figure 5.8. Fabric impressed wares from the Ashe Ferry site .....	5-10
Figure 5.9. Cord marked sherds from the Ashe Ferry site. ....	5-10
Figure 5.10. Complicated stamped wares from the Ashe Ferry site. ....	5-11
Figure 5.11. Check stamped wares from the Ashe Ferry site. ....	5-11
Figure 5.12. Cobmarked sherd recovered from plowzone at 38YK533. ....	5-12
Figure 5.13. Cord wrapped dowel stamped sherd recovered from plowzone at 38YK533.....	5-12
Figure 5.14. Secondary decorative treatments.....	5-14
Figure 5.15. Ashe Ferry Simple Stamped sherds recovered from Feature 50. ....	5-15

Figure 5.16	Ashe Ferry Simple Stamped rim profiles .....	5-16
Figure 5.17.	Edge view of Cape Fear Fabric Impressed sherd illustrating aplastic content.....	5-18
Figure 5.18.	Reconstructed <i>Cape Fear Fabric Impressed</i> vessel from 38YK533. ....	5-19
Figure 5.19.	<i>Uwharrie Fabric Marked</i> sherd (obverse and reverse views) from 38YK533. ...	5-20
Figure 5.20.	Edge view of <i>Uwharrie Fabric Marked</i> sherd illustrating aplastic content.....	5-20
Figure 5.21.	Yadkin Fabric Impressed rim (obverse and reverse views) from 38YK533.....	5-21
Figure 5.22.	<i>Badin Fabric Impressed</i> sherds with mend hole. ....	5-22
Figure 5.23.	Edge view of <i>Badin Fabric Impressed</i> sherd illustrating aplastic content.....	5-22
Figure 5.24.	Deptford Check Stamped vessel section, Feature 58, 38YK533.....	5-23
Figure 5.25.	Woodstock Complicated Stamped sherds, Trench 10, 38YK533. ....	5-24
Figure 5.26.	Woodstock Complicated Stamped sherds, Feature 1, 38YK533. ....	5-24
Figure 5.27.	<i>Woodstock Complicated Stamped</i> jar section, Feature 1, 38YK533. ....	5-25
Figure 5.28.	Mississippian Plan/Burnished Plain rims from 38YK533 plowzone deposits.....	5-26
Figure 5.29.	Early Brown Complicated Stamped sherds from 38YK533 plowzone contexts.	5-28
Figure 5.30.	Elaborated rims attributed to Early Brown Complicated Stamped vessels from 38YK533 plowzone. ....	5-29
Figure 5.31.	Early Brown phase (early Middle Mississippian period) vessel rim profiles. ...	5-30
Figure 5.32.	Twelve Mile Check Stamped sherds from 38YK533. ....	5-31
Figure 5.33.	Rim profile of Twelve Mile Check Stamped vessel section. ....	5-32
Figure 5.34.	Graph illustrating calibrations of AMS dates from 38YK533 contexts.....	5-35
Figure 5.35.	Ashe Ferry Simple Stamped sherds recovered from Feature 77. ....	5-37
Figure 5.36.	Sherds recovered from Feature 11.....	5-38
Figure 5.37.	Ashe Ferry Simple Stamped sherds recovered from Feature 52. ....	5-39
Figure 5.38.	Ashe Ferry Simple Stamped sherds recovered from Feature 28. ....	5-41
Figure 5.39.	Ashe Ferry Simple Stamped sherds recovered from Feature 48. ....	5-41
Figure 5.40.	Ceramic sherds recovered from Feature 76.....	5-46
Figure 5.41.	Ceramic sherds recovered from Feature 41. ....	5-46
Figure 6.1.	Lithic raw material types represented at the Ashe Ferry site. ....	6-3
Figure 6.2.	Percent distribution of flakes by raw material and flake size. ....	6-8
Figure 6.3.	Miscellaneous Archaic, Woodland, and Mississippian projectile points recovered from the Ashe Ferry site. ....	6-9
Figure 6.4.	Small triangular projectile points from features attributed to the Late Woodland Ashe Ferry phase. ....	6-12

Figure 6.5. Small triangular projectile points from features attributed to the Mississippian period. ....	6-13
Figure 6.6. Small triangular projectile points from general excavation contexts at the Ashe Ferry site. ....	6-14
Figure 6.7. Chipped-stone preform, triangular bifaces, drills, and perforators from the Ashe Ferry site. ....	6-16
Figure 6.8. Chipped hoes from the Ashe Ferry site. ....	6-18
Figure 6.9. Celts, celt fragments, and celt blank from the Ashe Ferry site. ....	6-20
Figure 6.10. Hammerstones, pitted cobble, and nutting stone from the Ashe Ferry site. ....	6-22
Figure 6.11. Stone pipe bowl from Feature 20 (top row), stone platform pipe from Feature 45 (bottom left and center), and stone gorget fragment from Trench 30 (bottom right). ..	6-24
Figure 6.12. Examples of alate-stemmed and monitor-style platform pipes from the McLean Mound. ....	6-25
Figure 6.13. Sample of fire-broken quartz and quartzite cobbles recovered from Feature 47, a Late Woodland cooking/processing facility. ....	6-28
Figure 6.14. Clay pipe fragments and pottery disk from the Ashe Ferry site. ....	6-30
Figure 6.15. Fragments of architectural daub and mud dauber's nest from Feature 41 (top), and section of a charred wooden shaft from Feature 28 (bottom). ....	6-31
Figure 7.1. Figure 7.1. Plan of 38YK533 excavations indicating contexts sampled for archaeobotanical analysis.....	7-3
Figure 7.2. Chart illustrating differential distribution of plant food residues (by count) in roasting facilities vs. deep pits.....	7-8
Figure 7.3. Chart illustrating differential distribution of plant food residues (percentage of identified specimens) in roasting facilities vs. deep pits.....	7-9





# Chapter 1

## INTRODUCTION

This report documents archaeological data recovery investigations by the Research Laboratories of Archaeology (RLA), The University of North Carolina at Chapel Hill, at site 38YK533, also known as the Ashe Ferry site, located on the Catawba River in southern York County, South Carolina. Investigations at Ashe Ferry by the RLA, along with additional investigations at a nearby archaeological site, 38YK534 or the Ayers Town site, were conducted under contract with Mulkey Engineers & Consultants to provide for mitigation of adverse effect to these archaeological resources by planned South Carolina Department of Transportation replacement of the SC Highway 5 bridges across the Catawba River and Twelvemile Creek (Figures 1.1, 1.2, 1.3, 1.4). Both archaeological sites had previously been determined eligible for inclusion in the National Register of Historic Places by reference to register Criterion D, which assigns significance to cultural resources that have the quality and capacity to “yield ... information important to history or prehistory.” In addition, the South Carolina Department of Transportation, in consultation with the South Carolina State Historic Preservation Office and the Catawba Indian Nation Tribal Historic Preservation Officer, determined that mitigation of adverse effects to these register eligible resources by the proposed bridge construction undertaking would consist of recovery and documentation of archaeological evidence to actualize the “information important to history or prehistory” judged to be present within these sites.

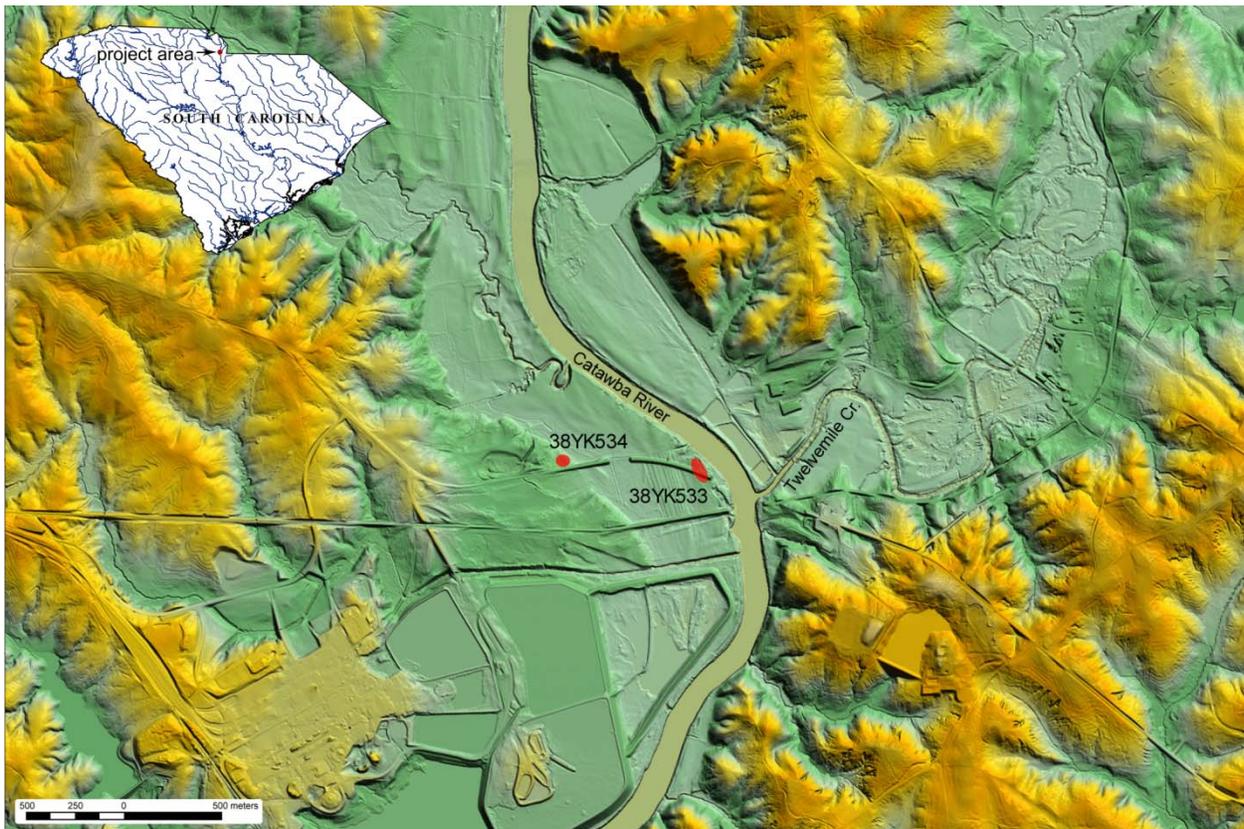


Figure 1.1. LiDAR-based relief map of the Catawba River valley showing the topographic setting of the Ashe Ferry (38YK533) and Ayers Town (38YK534) sites opposite the mouth of Twelvemile Creek. Inset schematic of South Carolina indicates the location of the project area.



Figure 1.2. Aerial photograph taken March 30, 2004 of the project area, showing the locations of archaeological sites 38YK533 and 38YK534 in relation to SC Highway 5. Note the prehistoric fish weir (38YK535/38LA569) at the shoals in the river immediately northeast of 38YK533. Photo from Google Earth (© 2012 Orbis, Inc.).



Figure 1.3. Aerial photograph taken March 26, 2012 of the project area, showing the locations of archaeological sites 38YK533 relative to new highway and bridge construction along SC Highway 5. Photo from Google Earth (© 2012 Orbis, Inc.).

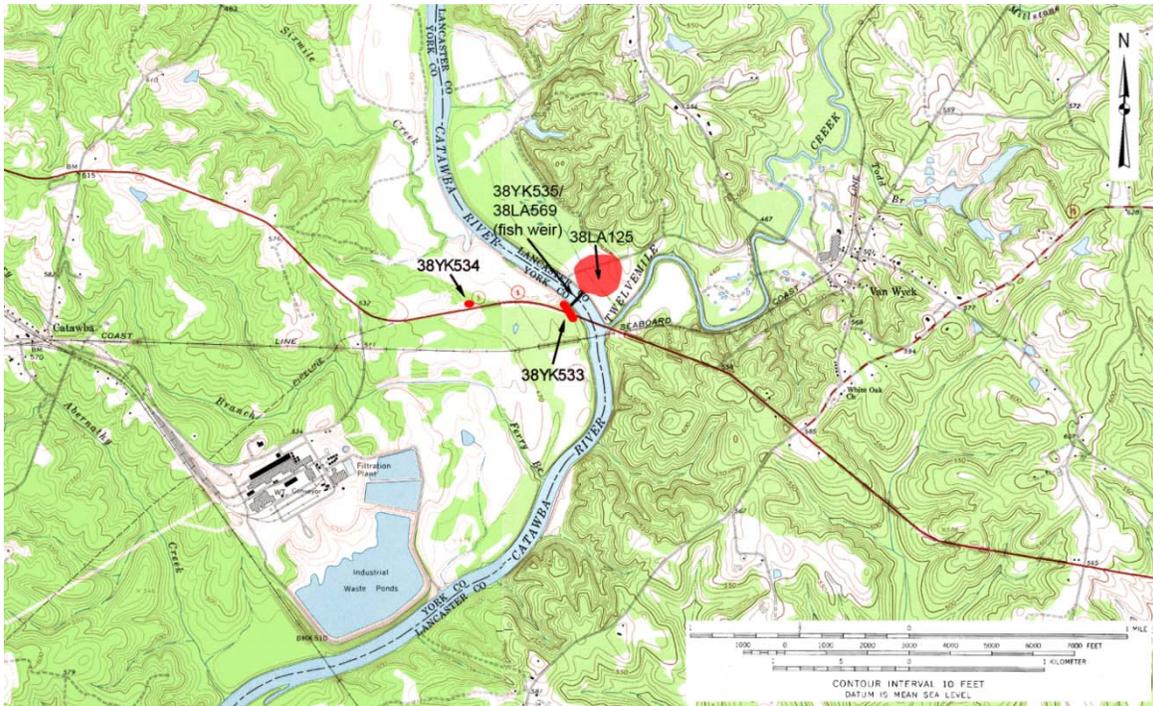


Figure 1.4. Sections of the Catawba, S.C. and Van Wyck, S.C. 7.5-minute series USGS topographic maps showing the towns, roads, and railroads located in the vicinity of the Ashe Ferry (38YK533) and Ayers Town (38YK534) sites in 1968. Note 38LA125 (now obliterated) and 38YK535/38LA569.

The Ashe Ferry site (38YK533) is located on the west bank of the Catawba River, approximately 3.8 km east of the present-day community of Catawba, South Carolina. The site name derives from the ferry that operated adjacent to the site from 1921 until 1959. The site occupies approximately 1.05 ha (2.6 ac) of the levee crest and first terrace formation, and is diagonally crosscut by the elevated causeway of SC Highway 5, which obscures more than half of the probable site area. Legacy Research Associates archaeologists originally delineated a 270 m x 85 m site area as defined by the incidence of ceramic sherds and lithic artifacts in deposits that ranged up to 140 cm in depth (Legacy Research Associates 2009). The 2009 Legacy Research Associates final report notes that:

38YK533 is recommended as being eligible for the NRHP under Criterion D for its information potential.... The site is significant primarily because of the buried Archaic period component and the ca. 1700 Catawba component. The Archaic period component at 38YK533 has the potential to yield significant information about stone tool morphology, intrasite distributions of artifacts, and the regional use of raw materials.... The ca. 1700 Catawba component at 38YK533 is significant primarily because of its rarity.... Catawba archaeological sites from the early-eighteenth century are sparsely distributed along the west side of the Catawba River.... Ceramics from 38YK533 appear to represent the earlier time period (ca. 1700) before a change was made around 1750–1760 in ceramic manufacturing. In addition, it is possible that cultural features associated with the ca. 1700 Catawba component are present at the site. Feature types could vary from storage pits, cob-filled pits, burial pits, and postholes. The Catawba component at 38YK533 is significant because of its information potential and not for its rarity [sic]. [Legacy Research Associates 2009:70]

Re-examination of materials recovered by the Phase I investigations, together with materials recovered in the initial stages of the 2010 testing program, determined that primary site occupations at Ashe Ferry occurred during the terminal Late Woodland and early Middle

Mississippian periods. Protohistoric or early historic era Catawba components, the original basis for the Phase I recommendations concerning site significance, are not represented by the site collections. Nevertheless, it was determined that the probable Late Woodland and Mississippian period components at 38YK533 were equally significant in presenting an opportunity to better define and explore hitherto poorly documented late prehistoric era native occupations in the lower Catawba River valley. The 2010 data recovery investigations at 38YK533 focused on the ceramic-bearing components rather than expending efforts to expose diffuse, deeply buried Archaic period deposits, much of which would remain undisturbed by bridge construction activities.

Prior to the 2010 investigations at Ashe Ferry, Late Woodland period and early Middle Mississippian period occupations in the central Piedmont region of South Carolina were not well-known, nor even clearly defined (e.g., see Anderson et al. 1996, Benson 2006, Prentice and Nettles 2003, Trinkley 1990). Consequently, archaeological inquiry at the Ashe Ferry site focused on development of basic temporal and descriptive frameworks, prerequisites to future interrogation of late prehistoric economies, settlement/subsistence systems, and political evolution in the region. Toward these ends, the 2010 investigations sought to address the following basic research questions:

- a. What are the temporal positions and spans of Late Woodland and Mississippian period site components at Ashe Ferry? How do these components relate temporally, and do they present evidence of the Woodland-Mississippian cultural transition?
- b. What are the formal characteristics of Late Woodland and Mississippian period ceramic types and assemblages at Ashe Ferry? Do these assemblages evince stylistic and technofunctional continuity?
- c. What are the spatial extents and functional natures of Late Woodland and Mississippian period site components? How do the community structures of these components compare and contrast?
- d. How do the subsistence systems represented by the Late Woodland and Mississippian period site components compare and contrast?

This suite of research issues is particularly informed by ongoing discussions concerning Mississippian emergence, and its relationship to antecedent Woodland cultural patterns, in the Catawba-Wateree-Santee river basin (e.g., Anderson et al. 1982; Anderson et al. 1996; Cable 2000, 2007; Cable et al. 1999, 2013, DePratter and Judge 1990, Vanier 2010, 2013; Wagner 2008, 20013). The programs of field recovery and laboratory analysis that operationalize these inquiries are detailed in the following discussions of field procedures (Chapter 3), archaeological contexts and site structure (Chapter 4), ceramic artifact assemblages (Chapter 5), and subsistence remains (Chapter 7).

### **Site Setting**

The Ashe Ferry site (UTM Zone 17, 511938E, 3856942N) is located on the west bank of the Catawba River, within the central Piedmont physiographic province in southeastern York County, South Carolina (Figure 1.1). The area surrounding the site is characterized by low, gently rolling uplands with relatively broad, flat interstitial ridges that are marginally dissected by dendritic, incised stream drainages, a physiography typical of the lower portions of the Carolina Terrane in the South Carolina portion of the Carolina Slate Belt. The edges of the uplands can be somewhat steep, but are moderated by low, narrow colluvial flanks that adjoin the alluvial terrace systems along the Catawba River. The site itself is positioned at the eastern edge of an extensive (5 km x 1.7 km) complex of river terraces, and spans the proximal

(riverside) half of a Holocene-age T-1 terrace (approximately 9,800m<sup>2</sup>), with concentrations of archaeological contexts positioned 40–80 m southwest of the river channel. The northeastern site boundary is defined by the front of the terrace scarp. Site elevation ranges from 470–475 ft (144.5 m) AMSL, approximately 25 ft (7.62 m) above the normal river elevation. Because the site occupies a particularly elevated levee atop the T-1 terrace, it is not normally subject to periodic flooding; however, the site was certainly submerged by the infamous July 1916 flood. During this epic event, a 54 ft (16.5 m) high railroad trestle across Catawba River, located about 3.5 km downriver, was floated off its piers by floodwaters (Southern Railway Company 1917:102).

The T-1 terrace slopes gently from 38YK533 southwestward 300m to a Pleistocene paleochannel backswamp that drains into Ferry Branch. Beyond this backswamp, the original topography of older terraces is obliterated by settling ponds and other facilities of the Abitibi-Bowater paper mill. Nearby uplands rise up to 580 ft AMSL and generally present a gently rolling aspect, with more localized highly dissected areas.

The Catawba River is the dominant feature of the local environment and the principal natural factor affecting site location. The river, which heads in the North Carolina Blue Ridge, is the upper segment of the Catawba-Wateree-Santee river basin, a 540-mile-long drainage. The Ashe Ferry site is positioned at Catawba River Mile 122.9 (mileage above the Congaree River confluence), approximately 270 miles from the source and 266 river miles from the Atlantic Ocean. The mean river streamflow at 38YK533 is approximately 4850 cfs, with dramatic variations prior to regulation by a series of upstream impoundments. The river volume is substantially augmented by the confluence of Twelvemile Creek directly opposite the site. River shoals formed on bedrock dikes just above the mouth of Twelvemile Creek create a natural crossing point at 38YK533, and eighteenth-century accounts and maps indicate periodic, if not regular, use of this ford. These shoals also presented a suitable setting for construction of a multi-lobed stone fish weir (38YK535/38LA569) situated adjacent to the site, approximately 300 m upstream from the mouth of Twelvemile Creek.

## **Geology**

The underlying geology of the site area is somewhat complex. Ashe Ferry sits on the Gold Hill-Silver Hill shear zone (Lawrence 2008) at the interface of the Carolina Slate Belt and the Charlotte Belt, within the Carolina Terrane (Dennis and Wright 1997; Secor et al. 1998) of the central Piedmont. Butler (1965) describes this area as:

A narrow extension of the Carolina slate belt underlies part of the Lancaster County-Panhandle and southeastern York County. The major rock types are phyllite and argillite. The phyllite has a prominent cleavage that is nearly vertical and trends northeast. The phyllite is probably formed from felsic to intermediate volcanic rocks and, in some cases, sedimentary rocks. Bedding in the argillite defines north-east trending folds. Mineral assemblages near the center of the belt are typical of lower green schist facies and metamorphic rank rises toward each flank. Transitional rocks occurring between the belts are so mapped because they have characteristics of both belts and probably mark a metamorphic gradient. The transitional zone between the Charlotte belt and Carolina slate belt contains foliated granitic rocks, biotite gneiss, phyllite, and fine-grained amphibolite interlayered in a complex manner.

In the immediate environs of 38YK533, Butler (1965) observed that:

Biotite gneiss crops out in [Catawba] River S[outh] of [SC Highway 5] bridge. Road cuts on E side of the bridge are in saprolite of foliated granite, biotite schist, and minor amphibolite.... Clay pit of Ashe Brick Co, of Van Wyck, S.C. Removal of material over several acres has exposed green to light gray slate and phyllite formed by regional metamorphism of laminated argillite and subordinate beds of coarser clastic rocks. Slaty cleavage is strongly developed and is nearly vertical with a strike of about N 60° E. Folds observed in the pit at various stages of excavation range in wave length from a few feet to less than an

inch and generally plunge ENE at about 35°. Cleavage seems to parallel axial planes of the folds. Two Triassic (?) diabase dikes trend NW through the pit and show effects of thermal metamorphism on the surrounding rocks. The larger dike is about 50 feet thick. A thin section from the center of the dike has about 12% olivine. [Butler 1965:2]

This bedrock geology controls multiple conditions important to human occupation of the area, including development of the surface terrain, upland soils formation, groundwater distribution, and the configurations of the biotic environment. The position of the site near the interface of the Carolina Slate Belt and Charlotte Belt complexes likely presented inhabitants of 38YK533 access to more diverse local environments.

### **Soils and Site Stratigraphy**

The bedrock geology at 38YK533 is buried by more than nine meters of Holocene alluvium deposited by the Catawba River. The surficial alluvial sediments at Ashe Ferry are broadly characterized as Congaree fine sandy loam (0 to 2 percent slopes), a well-to-excessively drained alluvial soil that occurs on younger terraces of the Catawba River floodplain (Camp 1965). Parent material for Congaree soils include weathered granite, gneiss, schist, and basic rocks. Congaree association alluvial terraces probably once supported levee and bottomland forests of oak, hickory, elm, beech, gum, ash, and cottonwood trees with an understory of vines, canes, briars, and native grasses (Camp 1965:18). The majority of these terraces are now cleared for agricultural use.

Camp (1965:34) describes the typical profile for Congaree fine sandy loam as: “0-7 inches, dark grayish-brown, very friable fine sandy loam; 7 to 33 inches, yellowish-brown, very friable fine sandy loam [with] weak granular structure; 33 to 44 inches +, loamy fine sand mottled with dark brown, yellowish brown, and grayish brown.” Testing at 38YK533 revealed a 15–25cm overburden mantle of slightly silty, fine undifferentiated quartz sand with mica flecks. This overburden, which yielded very low artifact frequencies, is interpreted as redeposited alluvium swept in by the 1916 flood. This deposit appears to have been slightly plow disturbed, although agricultural activity at the site may have ceased shortly after the sterile sand flood deposits capped the productive Congaree soils. Desultory plowing after the 1916 event incorporated artifacts from pre-1916 deposits into this overburden.

Site sediments beneath this twentieth-century deposit more closely conform to Camp’s description of Congaree fine sandy loam, with a pre-1916 plowzone (Ap or Apb horizon) consisting of 10–20cm of brown (10YR4/3–10YR3/3), organic, sandy loam which contained relatively high densities of archaeological materials referable to the past 2,000 years of occupation. This stratum appears to represent a once-stable, developed A-horizon that was largely truncated and homogenized by low intensity historic era plowing. Materials within this deposit include large ( $\geq 5$  cm diameter) ceramic sherds, artifacts that are typically highly fragmented by twentieth-century agricultural practice. Thin, undisturbed patches of intact A-horizon (Ab) deposits were evident at the base of plowzone in some areas; these were characterized by eluviated (rather than abrupt) contacts with underlying deposits. Beneath this historic plowzone and A-horizon remnants are more than two meters of eluviated sand or silty sand with *in situ* lamellae development below 60 cm (below surface) defining Bw horizons. The uppermost of these eluviated deposits (at 35–55cm below the current surface) included Late Archaic period lithic materials; deep testing during the Phase I survey identified Archaic period materials at depths of 1.5–1.6m below present ground surface (Legacy Research Associates 2009:48). The incidence of these more deeply buried materials indicates sustained terrace aggradation through the mid-Holocene into the late Holocene, with stabilization over the past 2,000 years.

## **Climate**

The site area has a humid subtropical climate, with warm, humid summers and mild winters, and average annual precipitation (mostly rainfall) of 46.1 inches (Landers 1974; South Carolina State Climatology Office 2012). Daytime temperatures during midsummer are typically near 90°F; the record high temperature is 106°F. Winter daytime temperatures are usually above 40°F; a record low winter temperature of -4°F is reported. The average growing season between seasonal frosts is 220 days. These present-day conditions probably approximate the climatic regime established after abatement of the Holocene Climate Optimum (ca. 5000 B.P.), and likely reflect prevalent conditions during the major span of occupation represented at 38YK533. The primary Late Woodland/emergent Mississippian occupations at Ashe Ferry coincide with the Medieval Warm Period (ca. A.D. 950–1250), a warm episode with annual temperatures comparable to the late twentieth century (Mann et al. 2009) but possibly having greater variation in precipitation (Stahle and Cleaveland 1994). The Little Ice Age climatic episode (ca. A.D. 1450–1850), defined by marked cooling and drying trends, postdates the major site occupations but coincides with protohistoric and historic-era Waxhaw, Catawba, and European occupations of the surrounding area (Stahle and Cleaveland 1994).

## **Biotic Environment**

The Ashe Ferry site is situated in a historically rich biotic environment, with proximate access to a wide range of riverine and terrestrial resources important to human economies. The site is positioned within the greater Piedmont Level III ecoregion (Omernik 1995), a zone broadly dominated in the late Holocene by variations of the oak-hickory community or oak-hickory pine community (Braun 1950; Skeen et al. 1993). Notable terrestrial habitats defined in the north-central South Carolina piedmont include oak-hickory forest, basic (i.e., alkaline) forest, bottomland hardwood forest, cove forest, levee, shoal and stream bar, mesic mixed hardwood, montmorillonite forest, piedmont seepage forest, small stream forest, and upland depression swamp forest (Nelson 1986), as well as piedmont savannah (Barden 1997; Davis et al. 2002; Juras 1997; Schmidt and Barnwell 2002).

Most of these stable/climax habitats are now reduced to vestigial tracts scattered through a mosaic-developed landscape, and the original distribution of these habitats must be inferred by reference to existing local physiography. The 38YK533 locality is within the Carolina Slate Belt Level IV ecoregion of the piedmont, where felsic substrates in the uplands probably dictate a climax Piedmont Dry-Mesic Oak-Hickory Forest subtype (Grossman et al. 1998) characterized by a white oak/red oak/mockernut hickory/pignut hickory dominated canopy with subcanopy species including sourwood, red maple, black gum, dogwood, redbud, and American holly. The understory is often dominated by hillside or dryland blueberry, with climbing vines such as muscadine grape and poison ivy. Herbaceous plants and grasses are sparse but omnipresent. Slightly more mesic settings in ravines or on lower slopes with northerly aspects probably presented mesic mixed hardwood forest, with canopies dominated by white oak, southern red oak, tulip poplar, red maple, and American beech, and understory including dogwood, American holly, and heaths (Nelson 1986). The precontact extent of prairie/savannah habitats in the north-central piedmont uplands and alluvial plains is widely conjectured (e.g., Barden 1997; Juras 1997) but undocumented. Davis et al. (2002) suggest the former existence of patchy prairie mosaics across the region; such open, grassy environments may have been readily accessible to the inhabitants of 38YK533.

The sandy alluvial levee at 38YK533 probably supported a mixed community with stands of river cane interspersed with sycamore, river birch, box elder, black willow, red maple, tulip

poplar, green ash, sweet gum, and elm. The extensive terrace complex adjacent to the site likely hosted a mix of piedmont bottomland forests that included canopy species such as swamp chestnut oak, water oak, willow oak, loblolly pine, sycamore, green ash, box elder, red maple, tulip poplar, sweet gum, elm, red maple, hackberry, cottonwood, and American holly. Older, more elevated terraces were probably covered with either mesic mixed hardwood or mesic oak-hickory forests.

Ethnobotanical remains recovered from archaeological contexts at 38YK533 reflect focused use of upland plant resources from the upper terrace/upland oak-hickory forests, with strong representation of acorns and hickory nuts, and incidence of chestnut, black walnut, blueberry, persimmon, grape, and holly. Other species are more representative of disturbed ground and open or edge habitats, including amaranth, goosefoot, spurge, geranium, little barley, morning glory, evening primrose, maypop, maygrass, pokeweed, knotweed, purslane, plum, brambles, and bearsfoot. Sedge and flatsedge represented in the 38YK533 samples probably derive from marshy habitats associated with the backswale that separates the first and second terraces.

Diverse terrestrial fauna populated habitats surrounding site 38YK533 prior to widespread historic-era disruptions, and comprise species typical of the oak-hickory zone of the Southern Temperate Deciduous Forest Biome (Shelford 1963:57). Contemporary mammalian fauna of the north-central piedmont region of South Carolina (Fields 2007) include white-tailed deer, black bear, gray squirrel, fox squirrel, southern flying squirrel, opossum, eastern cottontail rabbit, chipmunks, woodchucks, beaver, muskrat, gray fox, raccoon, long-tailed weasel, mink, river otter, striped skunk, bobcat, and a wide variety of small rodents (e.g., rice rat, harvest mouse, white-footed mouse, woodrat, pine vole), bats (e.g., red bat, hoary bat, big brown bat, evening bat), shrews (southeastern, short-tailed, least), and the eastern mole. Extirpated species include cougar, elk, gray wolf, and possibly bison and red wolf. Zooarchaeological records from 38YK533 (see Whyte, this volume) and nearby archaeological contexts (Thomas R. Whyte, personal communication 2012) document white-tailed deer, black bear, fox squirrel, gray squirrel, cottontail, gray fox, raccoon, opossum, skunk, and beaver as mammalian species most important to human economies.

The varied habitats of the central piedmont once hosted a profusion of resident and migratory birds. Loomis (1891) reports records of 202 species in nearby Chester County. Recent annual bird counts conducted in York County have documented 126 species present in midwinter, with as many as 80 species present in a single year. Archaeological contexts at 38YK533 and nearby sites have yielded remains of turkey, mourning dove, mallard, sparrow, blue jay, mimic thrush, pileated woodpecker, and common flicker. Conspicuously absent from the archaeological record at 38YK533 and the historic-era Catawba village samples are grassland/edge habitat species such as bobwhite and meadow lark, as well as passenger pigeon, which Lawson (1709) reports in vast abundance in the central piedmont region.

Terrestrial and aquatic habitats around the Ashe Ferry site also abound in reptiles and amphibians, including diverse colubrid (e.g., eastern garter snake, scarlet snake, black racer, corn snake, rat snake, eastern hognose snake, eastern kingsnake, northern water snake, rough green snake, queen snake) and croatalid (i.e., copperhead, timber rattlesnake, pygmy rattlesnake) snakes (Thompson 1982; Wilson 1995). Native lizards include the green anole, eastern fence lizard, six-lined racerunner, coal skink, five-lined skink, southeastern five-lined skink, broadhead skink, mole skink, ground skink, and eastern glass lizard. Turtles common to the area include the box turtle, common snapping turtle, painted turtle, river cooter, slider turtle, eastern mud turtle, common musk turtle, and spiny softshell. Amphipians documented in southern York County

include Fowler's toad, eastern spadefoot toad, eastern narrowmouth toad, northern cricket frog, green treefrog, pine woods treefrog, barking treefrog, spring peeper, upland chorus frog, bullfrog, green frog, pickerel frog, and southern leopard frog, along with spotted salamander, marbled, spotted dusky salamander, southern two-lined salamander, three-lined salamander, spring salamander, four-toed salamander, slimy salamander, mud salamander, red salamander, and red-spotted newt.

Zooarchaeological samples from the area indicate only limited use of reptiles and amphibians by local native communities. Contexts at 38YK533 and nearby sites (i.e., 38YK534 [Ayers Town], SoC632/635 [New Town] and SoC634 [Old Town]) yielded only sparse remains of frog (*Rana* sp.), toad (*Bufo* sp.), eastern box turtle, musk turtle, slider/cooter, stinkpot turtle, and both colubrid and croatalid snakes.

The documentary (i.e., Jones 1815; Lawson 1709) and zooarchaeological records indicate that fish were particularly important to human economies in the Catawba River basin. DeWitt (1998) documents 37 native fish species currently resident in the lower Catawba River, including warmouth, bluegill, redbreast sunfish, redear sunfish, green sunfish, pumpkinseed, black crappie, largemouth bass, brassy jumprock, white sucker, quillback, shorthead redhorse, v-lip redhorse, striped jumprock, gizzard shad, threadfin shad, yellow perch, white bass, striped bass, bowfin, longnose gar, mosquitofish, bluehead chub, white catfish, flat bullhead, snail bullhead, and channel catfish. Mills (1826) also indicates limited runs of anadromous and diadromous fish (e.g., shad, eels) that ascended above the Great Falls of the Catawba prior to major river impoundments. Archaeological sites near 38YK533 have yielded remains of chain pickerel, largemouth bass, redbreast sunfish, warmouth sunfish, white catfish, brown bullhead, snail bullhead, flat bullhead, bluehead chub, quillback carpsucker, Carolina redhorse, notchlip redhorse, robust redhorse, and sturgeon (Thomas R. Whyte, personal communication 2012).

Aquatic habitats near the site also supported molluscan and crustacean fauna useful to the human inhabitants of 38YK533. Bogan et al. (2008) identify a broad suite of bivalves as having been historically present in the lower Catawba basin, including multiple species of *Alasmidonta*, *Elliptio*, *Lampsillis*, and *Villosa*. Archaeological contexts in the area have yielded specimens of *Elliptio* sp.; most of these appear to have been valves used as potter's tools (Whyte, this volume). Crayfish, particularly *Cambarus* sp. and *Procambarus* sp. (Eversole and Jones 2004), were also widely available to the inhabitants of 38YK533, but no archaeological record of these crustaceans is documented in the area.

To summarize, the local environments surrounding the Ashe Ferry site are typical of central Piedmont riverine settings, where linear corridors of riverine, palustrine, and bottomland habitats border minimally differentiated swaths of oak-hickory forested uplands. Local variations in upland environments were largely products of slope and aspect along the borders of drainages; there are no higher elevation ridges in the immediate area to provide elevational gradations. More open, thinly forested, or unforested environments in the area were likely the products of human activity, and were probably subject to rapid succession without continued human intervention. The central piedmont biota was relatively rich in pre-modern times, and certainly adequate to support substantial human populations of foragers, hunters, and gatherers within small territories before the advent of large-scale food production. Although the eventual spread of horticultural food production into the central piedmont region may have spurred higher human population densities by broadening the subsistence basis, wild plant and animal resources certainly remained critically important to piedmont native societies well into the nineteenth century.



## **Chapter 2**

### **CULTURE HISTORICAL CONTEXT**

The 2010 investigations at the Ashe Ferry site focused on archaeological components that date to the Late Woodland (ca. A.D. 800–1150) and Mississippian (ca. A.D. 1150–1540) periods, and the vast majority of contexts and assemblages documented at Ashe Ferry are attributable to these components, with the exceptions of one Middle Woodland period feature (a single cached vessel) and two Late Archaic period caches. Radiocarbon assays of samples from discrete contexts at Ashe Ferry indicate a primary span of occupation ca. A.D. 950–1150, with continued or sporadic lower intensity occupation through ca. A.D. 1325. Test units and extensive mechanical stripping of flood overburden and plowzone from the site also yielded collections that included small numbers of Early, Middle, and Late Archaic projectile points, as well as a few diagnostic Middle Woodland period pottery sherds. The following discussion specifically contextualizes the investigations of Late Woodland period and Mississippian period components at the Ashe Ferry site with an overview of the current state of knowledge concerning these archaeological periods in the central Carolina piedmont, with broader reference to this span in the surrounding region.

#### **Early Woodland Period**

The inception of the Woodland period (ca. 3000–1000 B.P.) in the Carolina piedmont is defined by the widespread, ubiquitous use of pottery by human populations who pursued transhumant or semi-transhumant hunter-gatherer strategies refined throughout the preceding Archaic period. This threshold is clearly arbitrary inasmuch as pottery production was commonplace among Late Archaic period societies in the South Carolina coastal plain and along the fall line after 4500 B.P. (Anderson et al. 1996; Sassaman et al. 2006), with some low incidence of Late Archaic Stallings fiber-tempered wares and Thom’s Creek sand-tempered wares reported in the lower piedmont region. Slower adoption of ceramic production by central piedmont populations may reflect subsistence practices and settlement systems essentially different from those of coastal plain and Savannah River corridor groups (cf. Goodyear 1988), but relatively little is known about Late Archaic period economies in the Piedmont region northeast of the Savannah River basin (see Sassaman and Anderson 1995).

The emergence of the Woodland cultural pattern has not been specifically documented for the lower Catawba River basin or the north-central piedmont of South Carolina, and developments in this area must be inferred from investigations in surrounding regions (Benson 2006; Trinkley 1990), most notably the middle and upper Savannah River basin and the lower Yadkin/upper Pee Dee basin. Although scattered examples of Late Archaic ceramics have been documented in the lower and central piedmont regions, ceramic wares probably do not figure prominently in central piedmont archaeological assemblages until ca. 2800 B.P., with the appearance of sand-tempered fabric-marked wares similar to the Badin series (Coe 1964:27), documented northeast of the study area, or the Dunlap series (Caldwell 1958) documented to the southeast. These fabric-marked Early Woodland period ceramic wares, which Caldwell (1958) termed the “Middle Eastern” ceramic tradition, exhibit stylistic and technological affinities to more northerly traditions and do not seem to be derived from the Late Archaic period coastal traditions. Other materials diagnostic of Early Woodland components include small stemmed and large triangular dart points, as well as rare objects such as stone bar gorgets, grooved ground-stone axes, tubular carved-stone smoking pipes, and carved soapstone bowls. Survey

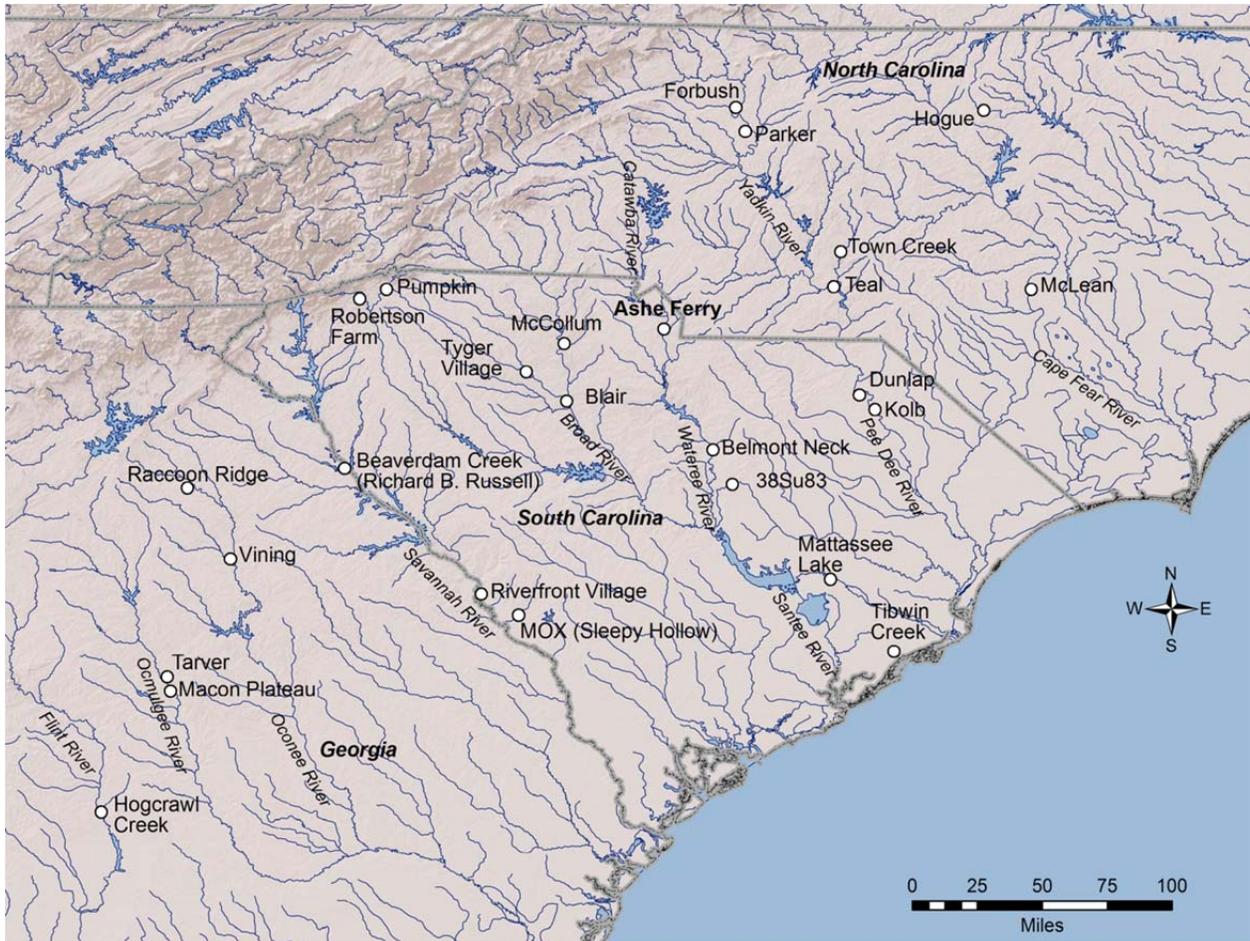


Figure 2.1. Map indicating locations of key archaeological sites discussed in text.

data suggest that Early Woodland period components are infrequent and typically low-density phenomena in the north central Piedmont, distributions which probably indicate low-density occupation by small, mobile groups. In a study of site distributions on the USFS Enoree Ranger District (40 miles southwest of 38YK533), Benson (2006:194) identified a “substantial increase in the number of [Early Woodland period] occupations per 100 years” as compared to the Late Archaic period. Benson (2006:193) further notes that “increased, and presumably more diversified, use of the Piedmont inter-riverine zones during the Late Archaic period initiated a trend that is amplified in succeeding archaeological periods.” In sum, the Early Woodland period in the central Piedmont appears to have been an era of gradual change from antecedent Archaic period patterns, and occasioned none of the material elaborations documented for this period in the Midwest, Midsouth, or lower Mississippi Valley and Gulf Coast, where evidence for expansive trade networks, horticultural food production, monumental constructions and ritual (especially funerary) complexity indicate expanding populations, growing sedentism, and increasing sociopolitical integration .

**Middle Woodland Period**

The succeeding Middle Woodland period (ca. 2200–1500 B.P.) in the central Piedmont is marked by the appearance of crushed rock-tempered Yadkin series (Coe 1964:30–32) ceramic

wares with fabric-impressed, cordmarked, check-stamped or plain surfaces; these ceramic wares tend to co-occur with sand-tempered Deptford check-stamped wares (Caldwell and Waring 1939) more characteristic of the South Appalachian tradition (Cable and Hebler 1999). Other diagnostic artifact forms include Yadkin Large Triangular and Yadkin Eared projectile points (Coe 1964:45), and small stemmed or side-notched projectile points (cf. Boudreaux et al. 2004). Less common associations include ground-stone celts, stone bar gorgets, and stone and clay smoking pipes. Middle Woodland Yadkin phase components are not well documented in the central Piedmont region (see Benson 2006; Trinkley 1990), but investigations at 38SU83, located approximately 63 miles south-southeast of 38YK533 in the inner Coastal Plain, provide a proximate base for extrapolation to the study area (Blanton et al. 1986). Investigators here identified 12 cultural features, including irregular pits and postholes, and recovered a substantial assemblage of Yadkin series pottery with a variety of surface treatments (i.e., fabric-marked, cord-marked, check-stamped and simple-stamped) representing deep, straight-sided jars with conical bases. Associated with these wares are both large and small triangular projectile points as well as small stemmed projectile points, a ground-stone axe, and a stone gorget fragment. Radiocarbon assays derived from 38SU83 contexts with direct Yadkin phase associations yielded corrected calendrical dates (calibrated intercepts) of 393 B.C. and 165 B.C. Farther afield, documented Yadkin components at 31CH8 (Haw River, North Carolina) and the E. Davis Site (31FY549) have yielded <sup>14</sup>C dates (calibrated intercepts) of 199 B.C. and 193 B.C. (respectively). All of these sites appear to represent relatively small, low intensity occupations, a pattern common across the Carolina piedmont. The presumed absence of large, dense Middle Woodland period site components indicative of long-term group aggregation suggests that occupation of the central piedmont continued to be characterized by low density, mobile populations that continued to pursue transhumant hunter-gatherer subsistence strategies and settlement organization. This pattern contrasts markedly with Middle Woodland period developments across much of the southeastern United States, in which antecedent Early Woodland trends of population growth with increasing aggregation and sedentism, horticultural food production, material elaboration, and increasing sociopolitical complexity are amplified (Anderson and Mainfort 2002). It is somewhat axiomatic to attribute the lack of evidence for such developments in the central Piedmont to the general paucity of data for the region (see Benson 2006; Trinkley 1990), but lack of work in the region is, in part, a function of the inconspicuous (and, some might contend, uninspiring) nature of the Woodland period record.

The latter portion of the Middle Woodland period (ca. A.D. 200–A.D. 700) in the central piedmont is completely unattested, but evidence from surrounding areas indicates probable diagnostic artifacts including sand-tempered fabric-impressed ceramic wares and small triangular projectile points indicative of a shift from atlatl-dart technology to bow-and-arrow technology. At Mattassee Lake, located in the coastal plain 115 miles southeast of 38YK533, Anderson (1982) identifies sand-tempered Cape Fear Fabric Impressed pottery (South 1960:38–41) as the dominant late Middle Woodland period ceramic type associated with rock-filled basins (probable rock oven roasting facilities) that yielded radiocarbon dates ranging from A.D. 520–A.D. 710 (Anderson et al. 1982:355). Anderson subsumes Trinkley's (1981) McClellanville wares into the Cape Fear series and the later Santee series, with the implication that Trinkley's previously undated complex likely dates to the Middle Woodland–Late Woodland threshold. Anderson also indicates late sand-tempered Deptford wares (Caldwell and Waring 1939) and late grog-tempered Wilmington/Hanover wares as diagnostic of Middle Woodland period occupations ca. A.D. 200–A.D. 500, but these components are not independently dated. Investigations at the

Johannes Kolb site (38DA75) on the Great Pee Dee River (74 miles southeast of 38YK533), document Woodland period components dominated by grog-tempered Hanover (South 1976) fabric-impressed and cordmarked wares, with associated radiocarbon dates ca. A.D. 510–A.D. 840 (Hollenbach 2010\*; Christopher Judge, personal communication, 2012). Other elements of the late Hanover component include small triangular projectile points indicative of bow-and-arrow technology, which DePratter (1993:40) suggests became commonplace in South Carolina during the fifth century A.D. Large, refuse-filled Hanover storage pits at Kolb yielded abundant subsistence remains, including deer, raccoon, rabbit, turkey, turtle, bass, perch gar, catfish, and bowfin bones (Judge and Reid 2007), and charred remains of acorn, hickory nut, persimmon, walnut, bearsfoot, and maygrass (Hollenbach 2010). Maize kernels and cupules recovered from Kolb site midden deposits may be associated with Hanover or later components. To date, investigations have not revealed whether the Hanover component represents repeated seasonal camps or a more substantial, longer-term occupation.

Evidence from the Pumpkin site (38GR226), located in the Blue Ridge foothills 91 miles west of 38YK533, documents a late Middle Woodland period Connestee phase component with numerous pit features and postholes indicative of sustained occupation (Charles 2001). Radiocarbon assays indicate occupation ca. A.D. 550–650, with associated assemblages of Connestee sand-tempered wares (see Keel 1976:247–255) dominated by plain and cordmarked surface treatments. Crites (2001) identified maygrass and chenopodium in Pumpkin site samples; these are the earliest dated native cultigens identified in South Carolina. Investigations along the upper Savannah River at Richard B. Russell Reservoir (113 miles southwest of 38YK533) documented several later Middle Woodland period components represented by Connestee series and Cartersville series (Caldwell n.d.:176) pottery and large and small triangular projectile points (Anderson and Joseph 1988:230). Anderson and Joseph (1988:230–231) conclude that these late Middle Woodland period components probably represent “a fairly high population density possibly coupled with a moderate degree of residential mobility or seasonal movement,” but they discerned no evidence for horticultural production, residential aggregation, interregional trade, or increased sociopolitical complexity.

### **Late Woodland Period**

The transition from the Middle Woodland period to the Late Woodland period (ca. A.D. 700–1150) in South Carolina is thought to have been marked by gradual transformations in material pattern, subsistence practice, and settlement systems. Trinkley (1990) notes that:

In many respects the South Carolina Late Woodland may be characterized as a continuation of previous Middle Woodland cultural assemblages. While outside the Carolinas there were major cultural changes, such as the continued development and elaboration of agriculture, the Carolina groups settled into a lifeway not appreciably different from that observed for the previous 500 to 700 years. This situation would remain unchanged until the development of the South Appalachian Mississippian complex. [Trinkley 1990:21–22]

However, Trinkley (1990:24) also observed that

While this apparent absence of Late Woodland pottery over much of the South Carolina Piedmont may be a result of incomplete field work, an alternative explanation is that the historic aboriginal population areas and distributions may have time depth not presently recognized. Much of the South Carolina Piedmont may be within a buffer zone or hunting territory claimed by two or more groups (such as was the situation in the historic period with the Cherokee to the northwest and the Catawba to the northeast), but largely uninhabited by either group. Anderson and Joseph (1988) are unconvinced of this explanation and suggest instead that the “plain and simple stamped wares traditionally documented as Cartersville or Connestee may extend later in time than previously thought in the upper Savannah River.” Only

additional surveys and excavations in the South Carolina riverine Piedmont will provide the data necessary to assess Late Woodland occupation.

Similarly, Prentice and Nettles (2003) cite the current state (or lack) of understanding of the Late Woodland period for the Saluda River basin, 70 miles southwest of 38YK533:

Any attempts at construing Late Woodland lifeways in ... the upper South Carolina Piedmont at the present time are hampered by a lack of well understood cultural analogs in the adjacent culture areas. The Late Woodland time period is generally viewed by archeologists as the period in which the economic and social underpinnings that later led to the development of Mississippian culture were established by the appearance of fairly permanent village sites and the widespread adoption of maize agriculture, although it appears that it remained a minor contribution to the overall Late Woodland diet. The degree to which this characterization applies to the upper South Carolina Piedmont remains very much in doubt, however, because well documented Late Woodland occupations have yet to be identified in the immediate or surrounding areas. This conundrum is probably at least partially due to the proposition that locally produced Late Woodland pottery types in the upper South Carolina Piedmont are so similar to Middle Woodland types that Late Woodland components at many sites have simply not been recognized. For example, fine sand-tempered, simple stamped wares (e.g., Connestee Simple Stamped, Santee Simple Stamped, Camden Simple Stamped) long considered Middle Woodland pottery types have recently been recognized as also being Late Woodland/Mississippian (ca. A.D. 500–1400) pottery forms for a large area extending from central Georgia to northern coastal North Carolina. Similarly, projectile point types of the period consist primarily of medium to small triangular forms (Haywood Triangular, Pisgah Triangular) comparable to Hamilton Incurvate and Madison types which also span the entire Late Woodland to Mississippian time frame. The paucity of well dated ceramic trade wares has also hindered the recognition of Late Woodland occupations in the region. [Prentice and Nettles 2003:30-31].

At the 1995 Hobcaw workshop on native pottery of the Carolinas (Anderson et al. 1996), discussion addressed hypothetical Late Woodland period ceramic assemblages for the South Carolina piedmont. Published notes from the conference indicate a thread of discussion that posits sand-tempered simple-stamped wares (like those predominant at Ashe Ferry) as hallmarks of Late Woodland occupations in the piedmont:

Chester DePratter .... noted that we know very little about the immediate pre-Mississippian Woodland material from the central Wateree River Valley.... Along the Saluda River valley simple stamped materials with fine sandy paste have been found in pre-Mississippian deposits along the Saluda, in the general vicinity of the Blair and McCollum Mounds. There might be similar simple stamped materials at Mulberry and in the central Wateree, but there is little evidence for it....

A discussion of Late Woodland and Early Mississippian era simple stamping followed. Dave Phelps noted that about A.D. 800–900 an influx of simple stamping occurred in northern coastal North Carolina, and was curious about where the material might have come from. I (David G. Anderson) noted the array of evidence generated in recent years—from Georgia (Vining), the upper Savannah River (Russell Reservoir, late Cartersville), central South Carolina (Mattassee Lake/Santee Simple Stamped and Walnut Grove/McClellanville Simple Stamped), and the Connestee area (late simple stamping from A.D. 500–1000)—that, taken together, demonstrates the existence of a late Woodland simple stamped horizon apparently extending from central Georgia to northern coastal North Carolina.... [Anderson et al. 1996:20]

Anderson's viewpoint was partially informed by the Mattassee Lake investigations, which first clearly defined and dated Late Woodland period components in the Santee River valley (Anderson et al. 1982). Here, Anderson observed that:

Two discrete assemblages were defined ... one characterized by fabric impressed and cord marked pottery, and the other by (predominantly) simple stamped pottery. The earlier assemblage, corresponding to the Middle Woodland, was defined by six dates .... from AD 520 to AD 710. The later assemblage, corresponding to the Late Woodland/Early Mississippian time horizon, was defined by six dates from six

features.... These features, characterized by simple stamped pottery, yielded dates ranging from AD 810–to AD 1340, for an average of AD 1046. [Anderson 1982:355]

Anderson defines this diagnostic simple-stamped pottery as part of the Santee ceramic series, a ware characterized by fine sand-tempered subconoidal jars and small hemispherical bowls. Anderson describes Santee Simple Stamped (var. Santee) as the only constituent type, but notes the probable inclusion of plain, cordmarked, and fabric impressed treatments in the series, and posits that cordmarked and fabric-impressed treatments date to the earlier portion of the Late Woodland period, while plain wares increase in frequency through time. Most features assigned to this “Late Woodland/Early Mississippian time horizon” are identified as probable hearths; none appear to resemble the rock-filled earth ovens associated with the Middle Woodland component at Mattassee. Lithic tools associated with the Late Woodland component include small triangular points and a range of *ad hoc* flake tools. Subsistence remains attributed to the Late Woodland component include hickory and acorn shell, grape seeds, blackberry seeds, and possibly maize, although this cultigen may be attributable to the later Mississippian component.

Anderson identifies this component at Mattassee Lake as representing the “Santee Cultural Complex,” a later manifestation of the “Late Woodland Stage” that follows the “McClellanville Cultural Complex,” an accommodation of Trinkley’s (1981) undated McClellanville phase. Cable subdivides the Santee Cultural Complex unit into the Santee I phase (ca. AD 700–900) and the Santee II phase (ca. AD 900–1200), an early Mississippian period unit, noting that “Santee I is dominated by fabric impressed surface finishes and bridges the transition from the Middle Woodland period, while Santee II is dominated by simple stamped finishes and occupies a transitional position to the Mississippian period in the region” (Cable 2007:471). More recently, Cable et al. (2013) have suggested revisiting the McClellanville Simple Stamped type (as distinguished from Santee Simple Stamped) as representative of the later Santee II phase.

The Late Woodland Santee complex/phase unit has been successfully applied throughout much of the Santee River basin (e.g., Cable 2007) and appears to be relevant into the Wateree and lower Catawba portions of the drainage as well. Recent salvage excavations at Manchester State Forest along the lower Wateree River identified multiple pit features that yielded sand-tempered simple-stamped and fabric-impressed vessel sections and abundant food remains (Sean Taylor, personal communication 2012; Vanier 2013). Incised and punctated decorations on these wares resemble those described by Stuart (1970:110–113) for the Camden Ceramic Complex, which represents the grit-tempered simple-stamped and check-stamped wares from the Guernsey Cut-Off site on the Wateree near Camden (Griffin 1945). The probable association of incised simple-stamped wares and fabric-marked wares at the Manchester State Forest site indicate a temporal placement comparable to the Santee I subphase.

Farther upstream, investigations at the Concrete Block (38KE192), V. Green (38KE287), and Richardson (38KE288) sites in the Wateree River valley near Camden (48 miles southeast of 38YK533) targeted probable Late Woodland period components identified by the co-occurrence of sand-tempered cord-marked, fabric-impressed, and simple-stamped sherds with small triangular projectile points (McWhorter 2008; Stewart 2008; Vanier 2010; Wagner 2003, 2008). Unfortunately, none of these investigations identified discrete contexts or produced supporting dates, and the collections cannot be interpreted as coherent assemblages.

The recent investigations at the Ashe Ferry site (38YK533), a probable seasonal camp site in the lower Catawba River valley, define the Ashe Ferry phase (ca. A.D. 900–1150) (this volume), which appears closely comparable to the Santee II phase. Site contexts, including large storage

pits and fire-cracked rock filled roasting facilities, yielded sand-tempered simple-stamped wares in association with small triangular projectile points. Subsistence remains from Late Woodland period contexts at Ashe Ferry include large quantities of acorns and hickory, along with chestnut, black walnut, persimmon, blueberry, blackberry, plum, maypop, maize, amaranth, goosefoot, knotweed, little barley and maygrass. AMS dates associated with maize indicate the crop was present ca. A.D. 1000–1100, but the small quantities of maize suggest limited use of the cultigen. Ashe Ferry presented little evidence for architecture, and the limited suite of contexts documented at the site probably indicates redundant seasonal use by small foraging/collecting groups over a two-century span. The presence of garden cultigens in the assemblage, including maize, and possibly maygrass and chenopod, may reflect a settlement system that included longer-term residential bases with horticultural plots.

Incidence of sand-tempered simple-stamped ceramic wares representative of Late Woodland period components like those documented at Ashe Ferry appear relatively common in the lower Catawba River valley, and are reported at Spratt's Bottom (38YK3) (May and Tippitt 2000), 38LA144 (Charles 1984), and 38LA125. Site 38LA125, located immediately across the Catawba River from the Ashe Ferry Site, appears to have formerly included a relatively large ( $\approx$ 4ha –13ha by various estimates), dense Late Woodland period residential component marked by high densities of sand-tempered simple-stamped potsherds and small rhyolite (dacite) triangular projectile points. Since 1980, the site has been completely obliterated by clay borrowing by the Ashe Brick Company and its successor, Boral Industries, but site surface collections made by Janet Surratt Harris indicate a predominant early Ashe Ferry phase component. Site visits by Jackie Rice (then of the Catawba Cultural Preservation Project) noted the presence of discrete pit feature (including graves) associated with the Late Woodland period component (Jackie Rice, personal communication, 2002).

Similar Late Woodland or terminal Late Woodland components are reported from the Blair (38FA48) and McCollum (38CS2) mound sites on the Broad River (Green and Bates 2003; Ryan 1971; Teague 1979), and at Tyger Village (38UN213) on the lower Tyger River (Elliott 1984). Charles and Ferguson (2005) report Late Woodland period contexts, dated ca. A.D. 950–1100, in the upper Saluda River valley, 95 miles west of 38YK533. This component includes sand-tempered recurvate jars and bowls with simple stamped and plain surfaces, along with lineblock-motif complicated-stamped wares (Terry A. Ferguson, personal communication, 2012). At the MOX site (38AK546) on the middle Savannah River, King (2003) and Brummitt (2007) report Late Woodland period contexts that yielded sand-tempered plain and complicated-stamped wares defined as the Sleepy Hollow phase (ca. AD. 800–1150). They regard these complicated-stamped wares as similar to, and perhaps antecedent to, Mississippian-age Pisgah series ceramics (Dickens 1976:171–201; Holden 1966:72–77), but Sleepy Hollow phase wares lack the distinctive thickened and elaborated rims that make their appearance in the twelfth century and are the hallmarks of Pisgah ceramics.

Farther west, the Vining phase (ca. A.D. 800–1200) of central Georgia appears closely comparable to the terminal Woodland Ashe Ferry phase (Elliott and Wynn 1991; Kelly 1938; Meyers et al. 1999; Pluckhahn 1997; Worth 1996). This complex is typified by dense upland sites with pit features and midden deposits that yield sand-tempered simple-stamped and plain ceramic wares and small triangular projectile points. Associated subsistence remains indicate dependence on wild food resources with minor contributions, including maize, from horticultural production (Mozingo 1997). Pluckhahn (1997) characterizes Vining phase as an Early Mississippian period unit and notes the incidence of early Mississippian ceramic types in Vining

contexts at the Tarver site. He also notes apparent contemporaneity of Vining with initial Mississippian development at Macon Plateau.

To the southeast of Ashe Ferry, investigations at the Dunlap site (38DA66) in the Great Pee Dee River valley identified a presumed Late Woodland period shell midden that contained sand-tempered cordmarked and simple-stamped pottery associated with small triangular projectile points (Charles 1984; Chris Judge, personal communication 2012). Other materials recovered from Dunlap include ceramic smoking pipe fragments, ceramic disks, shell beads, and bone tools. No absolute dates have been obtained for the Late Woodland period component at Dunlap, but researchers infer that the component postdates the Hanover phase occupations at the nearby Kolb site and predates the spread of the South Appalachian Mississippian ceramic tradition (ca. A.D. 1150–1200) across the area. Further upstream at the Teal site (31AN1) in North Carolina (50 miles northeast of 38YK533), Oliver (1992) defines the Savannah Creek ceramic series as representative of terminal Late Woodland period occupations in the uppermost Pee Dee River valley. These sand-tempered simple-stamped and fine cordmarked wares closely resemble Ashe Ferry ceramics with respect to rim form and treatment, and may be coeval with Ashe Ferry and Santee II. These Savannah Creek wares are probably also represented at Town Creek (31MG2, 31MG3), but no discrete Late Woodland period contexts have been defined there (see Boudreaux 2005).

Farther afield, in the middle Yadkin River valley in the North Carolina piedmont, components of the ca. A.D. 800–1200 time horizon are referable to the Uwharrie phase (Coe 1952), distinguished by the predominance of Uwharrie series ceramics. These crushed quartz-tempered wares exhibit cord, fabric or net-impressed surfaces on conoidal jars and hemispherical bowls with distinctive scraped/combed interiors. Unlike the sand-tempered simple-stamped wares found across the South Carolina piedmont, Uwharrie ceramics appear to derive directly from Yadkin series antecedents. Other documented elements of Uwharrie phase assemblages include small isosceles triangular projectile points, carved-stone alate-stemmed tobacco pipes, marine shell (*Olivella* and *Marginella*) beads, ground-stone celts, bone awls and bone fishhooks. Radiocarbon dates for Uwharrie phase contexts cluster in the A.D. 1000–A.D.1200 range (Eastman 1994a, 1994b), with considerable outliers that may reflect classificatory issues. Investigations of Uwharrie phase components at the Parker (31DV25), Forbush Creek (31YD1), Donnaha (31YD9), and Hunting Creek (31DE155) sites have documented midden deposits, large storage pits, human burials, and probable structures in both riverine and upland settings (Newkirk 1978; Ward and Davis 1999:100–101; Woodall 1984). These components appear indicative of more sustained, higher intensity occupations, and have been interpreted as representing hamlets or small-scale villages which probably date to the later end of the phase. Surveys in the Great Bend area of the Yadkin River valley have identified numerous Uwharrie phase components (Woodall 1990) in a variety of settings, an indication of population growth and growing complexity of settlement systems during this era.

### **Mississippian Period**

Late Uwharrie phase trends of group aggregation, settlement stability, and increased sedentism, and increasing complexity of settlement/subsistence systems, parallel the contemporaneous development of Mississippian cultural patterns across South Carolina and the southern North Carolina piedmont during the twelfth and thirteenth centuries. Mississippian period cultural patterns include: the development of sociopolitical complexity, including sociopolitical hierarchies (e.g., chiefdoms) with institutionalized controls; markedly higher levels of group aggregation and sedentism (i.e., development of “permanent” villages and towns); the

development of settlement hierarchies; economic dependence on horticultural food production (based upon maize) coupled with surplus production and storage; the organization of labor for construction of political and religious monuments; and the development of a broadly shared system of iconography and related material trappings that point to moderately well-integrated communication networks across disparate societies. These trends find their earliest and most complete expressions in the central Mississippi River valley with the rise of Mississippian centers during the tenth and eleventh centuries. Expression of these trends varies widely across the Mississippian sphere, and the Mississippian “culture” constitutes polythetic sets of practices often overlaid on local antecedent Late Woodland period patterns. In South Carolina, the South Appalachian Mississippian regional variant is most basically represented by ceramic assemblages predominated by grit- or sand-tempered complicated-stamped ceramics (rather than shell-tempered plain ceramics that define Middle Mississippian archaeological cultures) (Ferguson 1971). Mound centers, the archetypical Mississippian village sites with monumental earthen substructure platform mounds, are widely but sparsely arrayed along major stream valleys across the interior of South Carolina. These administrative and religious centers undoubtedly anchored a landscape populated with smaller subsidiary villages, hamlets, and farmsteads, but these smaller sites have not been well documented in the South Carolina piedmont.

Adoption or development of South Appalachian Mississippian cultural practices in the South Carolina piedmont appears to span the twelfth century, with a general inception horizon proceeding northeastward from the Savannah River corridor beginning ca. A.D. 1100 and reaching the Pee Dee River (the northeastern Mississippian frontier) by ca. A.D. 1200. In the upper Savannah River basin, the initial Mississippian Jarrett phase (ca. A.D. 1100–1200) is defined at the Tugalo and Chauga mound sites, where it is associated with the earliest stages of mound construction (Hally and Rudolph 1986). Jarrett phase ceramic assemblages are dominated by even proportions of grit-tempered plain (46%) and complicated-stamped (Etowah) (47%) wares. Anderson (1994:375) identifies small, hamlet-scale Jarrett phase components at Clyde Gully and 9EB219 in the Richard B. Russell Reservoir project area, and notes probable Jarrett phase settlement hierarchies represented in the region.

The succeeding Beaverdam phase (ca. A.D. 1200–1300) is defined at the Beaverdam Creek mound and village site in the Richard B. Russell Reservoir (Hally and Rudolph 1986; Rudolph and Hally 1985). Investigations there yielded evidence of a large, compact nucleated village with probable square domestic structures and rectangular earth lodges that may have functioned as public buildings; one of these earth lodges was superimposed by a low platform mound. Excavations within the village area focused on occupational midden and pit features. The Beaverdam phase ceramic assemblages are dominated by plain and burnished plain grit-tempered wares (86%), but include Etowah Complicated Stamped, Savannah Complicated Stamped and Savannah Check Stamped types. Collared rim forms, with a variety of punctated or incised decorations, are conspicuous. Beaverdam Creek wares represent a range of at least eight vessel types and sizes that reflect the increasing complexity of Mississippian ceramic production and use. Other elements of Beaverdam Creek assemblages include small equilateral or isosceles triangular arrow points, drills, perforators, ground-stone celts, carved soapstone or ceramic tobacco pipes, marine shell beads and gorgets, and sheet copper ornaments. Botanical remains from Beaverdam Creek include maize, squash, gourd, sunflower, and sumpweed, indicating a well-developed and prominent horticultural complex. Wild plant foods, particularly acorn and hickory nut, are ubiquitous. Faunal remains include deer, raccoon, opossum, rabbit, squirrel,

turkey, passenger pigeon, snapping turtle, soft shell turtle, box turtle, gar, suckerfish, bullhead catfish, bass, and sunfish.

Below the Savannah River fall line, the Lawton phase appears to be coeval with the Jarrett phase (Anderson 1994; Stephenson 2011). Recent investigations at the Riverfront Village site (38AK933) at North Augusta documented an apparent Lawton phase component dated ca. A.D. 1050–1250 (Whitley et al. 2012). Lawton phase contexts there included bell-shaped pits, hearths, and residential structures set in subterranean basins. The associated ceramic assemblage contained coarse sand/grit-tempered wares with plain (65–93%), cobmarked (1–10%) and curvilinear complicated stamped (1–11%) surfaces along with low incidences of rectilinear complicated-stamped, check-stamped, and cordmarked surfaces. Subsistence remains indicate a broad-based economy that included maize production, but with greater emphasis on gathering-hunting-fishing; acorn remains are particularly prominent in Early Mississippian period contexts at Riverfront Village.

The ensuing Hollywood phase (ca. A.D. 1250–1350) (Hally and Rudolph 1986) is defined from investigations at the Hollywood mound and village site and best documented at the Lawton and Red Lake mound sites (DeBaillou 1965; Stephenson 2011). This phase witnessed development of multiple mound centers with palisaded or ditched nucleated settlements indicative of growing sociopolitical complexity. Stephenson (2011) indicates that these centers served a dispersed population of farmsteads and hamlets. Subsistence remains from Lawton suggest increased reliance on maize production, but continued heavy use of acorn and hickory as second line foodstuffs. Associated ceramic assemblages include coarse sand-tempered Savannah wares with plain/burnished plain (40%), check-stamped (44%), and complicated-stamped (16%) surface treatments (Hally and Rudolph 1986). Ceramic rims are typically simple in form, but are frequently decorated with cane punctations or punctated nodes (Anderson 1994:370; Anderson et al. 1986:40–41; Hally and Rudolph 1986:62–63). Large utilitarian jars and carinated bowls were also used as containers for urn burials, a diagnostic (if infrequent) Hollywood phase characteristic. Brummitt (2007:16) emphasizes the broad distribution of diagnostic Hollywood phase ceramic attributes as evidence of “more cultural similarity across the region during this time than in preceding periods. The pottery of the Hollywood phase is very much like that from other areas across the region, ranging from the Irene (9Ch1) site near Savannah, Georgia to the Town Creek site (31Mg2) in Montgomery County, North Carolina.”

A still broader frame of interaction is indicated by a wide variety of Hollywood phase Southeastern Ceremonial Complex artifacts, including repoussé copper plates, imported “water” bottles painted or engraved with Braden-style Mississippian cosmological motifs, elaborate stone and ceramic tobacco pipes, shell beads and gorget fragments, and copper covered earspools (Anderson et al. 1986:33). These iconographic objects from Hollywood phase contexts signal common participation in a Mississippian ritual complex that extended from the eastern Plains to the Atlantic and from the upper central Mississippi Valley to the Gulf Coast.

Mississippian period development is not as well documented in the piedmont region between the Savannah and Santee-Wateree-Catawba rivers (Benson 2006). Test excavations at the Blair Mound site (Teague 1979) on the Broad River revealed a burned submound structure, which yielded a radiocarbon date of A.D. 1195. Associated materials include ceramic wares that resemble the Pisgah series (Dickens 1976) and Pee Dee series (Coe 1952; Reid 1967), and a span of ca. A.D. 1200–1300 is indicated (Green and Bates 2003). Investigations at the McCollum Mound site, located upstream from Blair (and approximately 54 km west of Ashe Ferry) identified a similar component that included Pisgah-like wares as well as Pee Dee and Savannah

series ceramics; a ca. A.D. 1200–1400 occupation span is likely. Recent investigations at the Roberson Farm site on the upper Saluda River has documented early Pisgah phase contexts dated to the eleventh and twelfth centuries (Charles and Ferguson 2005; Terry Ferguson, personal communication 2011). These contexts yielded distinctive, grit-tempered complicated-stamped Pisgah pottery with punctate rim collars (Dickens 1976). Similar ceramic wares are documented throughout much of the Broad, Saluda, Enoree, and Tyger basins (Benson 2006; Bridgman-Sweeney 2006; DePratter 1989; Green and Bates 2003; Elliott 1984), indicating an Early Mississippian period trajectory distinct from that documented on the upper and middle Savannah.

Mississippian period occupation in the Santee-Wateree-Catawba basin has been more thoroughly explored, and Mississippian cultural sequences have been developed for the lower Santee and middle Wateree regions (Anderson 1982; Cable 2007; DePratter and Judge 1986, 1990). At Mattassee Lake, Anderson (1982:250) identifies Santee II phase (ca. A.D. 900–1200) as an initial Mississippian period complex. Associated ceramic wares are sand-tempered Santee Simple Stamped, sand-tempered Woodland Plain (unspecified), grog-tempered Wilmington Heavy Cordmarked (Caldwell 1952), and grog-tempered Wilmington Plain, all wares found in the preceding Santee I phase, but lacking Cape Fear ceramic types. Anderson's basis for associating Santee II with the Mississippian period rather than the Late Woodland period appears to be primarily temporal. Major changes in the Mattassee Lake assemblage follow with the Jeremy phase (ca. A.D. 1200–1400) (Trinkley 1980), characterized by the appearance of Savannah Complicated Stamped, Savannah Check Stamped, Savannah Fine Cord Marked, and Mississippian Plain types—wares that are comparable to those in Hollywood phase contexts on the middle Savannah River. Cable (2007:471) observed a significant change in settlement pattern between Santee I and Santee II phases at Tibwin Creek on the lower Santee, and noted a significant increase in site size and density during Santee II. Cable more definitively associates Santee II with the Mississippian inception, and describes Santee II communities as the foundations for successive Jeremy phase communities (Cable 2007:476). He also suggests that the evidence for initial Mississippian culture on the Santee should articulate directly with the Wateree River valley sequence defined by DePratter and Judge (1986, 1990) for the Camden locality.

This Wateree River valley sequence begins with the Belmont Neck phase (ca. A.D. 1200–1250) (DePratter and Judge 1986, 1990); no antecedent Late Woodland period or initial Mississippian antecedent has been defined, although DePratter (Anderson, et al. 1996) suggests a probable Santee II-like precursor. DePratter and Judge based the phase definition on surface-collected materials from the Belmont Neck site, a mound and village complex near Camden that yielded Early Mississippian period collections characterized by sand/grit-tempered wares with complicated-stamped (43%) and plain/burnished (40%) surfaces. Belmont Neck phase rims are primarily simple in form. Test excavations by Cable et al. (1999) at Belmont Neck obtained samples that suggest a broader range of occupation, with Etowah Complicated Stamped wares posited as representing an initial Mississippian occupation ca. A.D. 1000 (based on the incidence of Etowah wares), but the inception of the Belmont Neck phase is not independently dated.

The ensuing Adamson phase (ca. A.D. 1250–1300) is characterized on the basis of surface collections and test excavations at the Adamson site, a large mound and village complex also located near Camden (Cable et al. 1999; DePratter 1985; DePratter and Judge 1990). Similar to the Hollywood and Lawton sites, Adamson boasts paired mounds (a reported third mound is no longer apparent). These multiple-mound centers are interpreted as reflective of multi-town

settlement hierarchies, and are believed to represent mature development of Mississippian sociopolitical systems (Anderson 1994). A similar contemporaneous multiple-mound complex is documented downstream at the Fort Walton/Scott's Lake site (Ferguson 1975).

Adamson phase ceramic assemblages consist of grit or coarse sand-tempered wares with plain/burnished plain (59%) and complicated-stamped (23%) surfaces, and with stamp designs dominated by filfot cross and line-block motifs. Decorated rims increase over the antecedent Belmont Neck phase, with notching (13%), punctations (13%), and applique rosettes (3%) being most prominent. Adamson phase ceramics are generally comparable to Pee Dee wares defined at the Town Creek site in North Carolina.

At the Ashe Ferry site (this volume) on the lower Catawba River (48 miles northwest of the Camden site localities), the transition from terminal Woodland to initial Mississippian is marked by later Ashe Ferry phase (ca. A.D. 1100–1150) contexts, which yielded homogeneous assemblages of sand-tempered simple-stamped wares comparable to the Santee II phase. The succeeding (early Mississippian) Early Brown phase (ca. A.D. 1200–1350) is characterized by grit- or sand-tempered plain and burnished plain wares, which primarily represent shouldered bowls with distinctive round dowel-notched rims. No complicated stamped wares are clearly associated with Early Brown phase contexts, but Savannah Complicated Stamped sherds recovered from the plowzone are likely Early Brown phase elements. Pisgah-like collared jar rims recovered from plowzone contexts at Ashe Ferry exhibit notching identical to that evident on the Early Brown burnished bowls and may also be attributable to the sparse Early Brown phase component. The absence of Etowah-type complicated-stamped wares at Ashe Ferry, and the presence of Pisgah-like wares indicates Early Mississippian development distinct from the nearby Belmont Neck phase and, perhaps, more similar to developments in the Broad River basin (Green and Bates 2003). The predominance of plain/burnished plain wares in the Early Brown phase also resembles the Beaverdam phase (ca. A.D. 1200–1300) in the upper Savannah River basin and the Lawton phase in the middle Savannah River basin, where plain/burnished plain wares account for 80–90% of the ceramic assemblage.

The Early Brown phase Mississippian component at Ashe Ferry appears to have been small scale and relatively low intensity, and only eight discrete feature contexts yielded Mississippian period pottery. Distributions of diagnostic Mississippian sherds indicate two probable loci of occupation at opposite ends of the terrace; these may be referable to individual farmsteads that were largely obscured by the construction of the SC Highway 5 causeway. By contrast to the preceding Ashe Ferry phase component, which was characterized by large earth ovens and large and small storage pits, Early Brown contexts were all small pits or basins, and a major shift in site activity is indicated. However, other aspects of material assemblages appear closely similar to those of the Ashe Ferry phase, and the suite of edible plant remains in Early Brown phase contexts (e.g., acorn, hickory nut, walnut, grape, persimmons, maygrass, and maize) resembles those documented from Ashe Ferry phase contexts.

No other early Mississippian period occupations have been identified in the middle Catawba River basin in the North Carolina piedmont, and survey collections from the middle Catawba may reflect the late persistence of Late Woodland period patterns in this segment of the valley (Moore 2002). Moore (2002:177–178) describes Pisgah phase components at the headwaters of the Catawba as the initial Mississippian occupations; radiocarbon dates from the Tyler-Loughridge (Robinson 1996) and McDowell sites indicate an eleventh-century Mississippian inception.

To the northeast of Ashe Ferry, the Pee Dee River basin marks the northeastern extent of the South Appalachian Mississippian cultural pattern, most notably at the Town Creek site, a mound and village complex on the Little River at the foot of the Uwharrie Mountains. Analyses by Oliver (1992) and Boudreaux (2005, 2007) define the inception of the Mississippian pattern in this area as the Teal phase (ca. A.D. 1000–1150) based upon evidence from the Teal site in Anson County, North Carolina (Oliver 1992). Contexts at Teal yielded early Etowah-like Pee Dee Complicated Stamped wares, together with plain wares, and sand-tempered simple-stamped wares and fine cordmarked wares that are characterized as Late Woodland period Savannah Creek series (Oliver 1992). However, the contextual association of the Mississippian Pee Dee wares and the Late Woodland Savannah Creek wares is not particularly robust, and interpretation of Teal as a bridging transitional assemblage is not supported. Radiocarbon dates derived from putative Teal phase contexts span the tenth through sixteenth centuries. Boudreaux notes that the various elements of the Teal phase, such as Etowah-style complicated stamping, fine cordmarking, and simple stamping, all find expression in other Early Mississippian phases in the A.D. 1100–1200 time horizon (Boudreaux 2005:82).

The succeeding Early Mississippian Town Creek phase (ca. A.D. 1150–1300), which is largely contemporaneous with the Early Brown phase, is much more securely constructed from extensive investigations of the Town Creek site (Boudreaux 2005:82–86). Town Creek phase contexts include thousands of postholes that constitute dozens of structures, storage pits and basins of various sizes, hearths, burials (including urn burials), and an earthen substructure platform mound. The early (pre-mound) segment of the Town Creek phase (ca. A.D. 1150–1250) is characterized by sand-tempered Pee Dee series ceramic wares that exhibit complicated-stamped (54%) or plain/burnished plain (28%) surfaces, with minority representations of check-stamped, simple-stamped, cordmarked and fabric-impressed surfaces (exclusive of indeterminate stamped surfaces) (Boudreaux 2007:26). The later Town Creek phase (ca. A.D. 1250–1300) ceramic assemblage evinces an increase in plain/burnished plain surfaces (43%) parallel to the Adamson and Hollywood phases, but also sees an increase in rim decoration, particularly the addition of applique rosettes on jars and applique pellets on bowls. Other materials associated with Town Creek phase contexts include small triangular projectile points, drills, perforators, ground-stone celts and adzes, carved-stone and pottery tobacco pipes, ground-stone beads, marine shell gorgets and beads, bone scratchers/scarifiers, awls, and scrapers, sheet copper, and a copper axe. Associated subsistence remains include abundant evidence for use of maize and hickory, white-tailed deer, raccoon, squirrel, rabbit, turkey, ducks, bobwhite, passenger pigeon, fish, and turtles (Trinkley 1995; Wilson and Hogue 1995).

The early Town Creek phase (pre-mound) community at Town Creek constituted a small nucleated and palisaded village of 10 or more circular, small-post residential structures that surrounded a central plaza (Boudreaux 2007). At opposite sides of the plaza were larger rectangular public structures, including an earth-embanked “earth lodge” similar to those documented in Early Mississippian period contexts at Macon Plateau, Irene, and Beaverdam Creek (Caldwell and McCann 1941; Hally and Rudolph 1986; Kelly 1938). During the late Town Creek phase, the community was marked by installation of a platform mound over the earth lodge ruin at the western edge of the plaza and an enclosure around the public structure on the east side of the plaza. Domestic residential occupation appears greatly reduced, and large, corporate group buildings constitute the majority of structures around the plaza, indicating a possible shift in focus from residential to ritual activities at the site by A.D. 1300. The population that this center served was presumably dispersed across nearby agricultural lands.

Occupation of the Ashe Ferry site appears to have ceased by the mid-fourteenth century, a time when many South Appalachian Mississippian centers in the surrounding region remained ascendant, and during an era of expanding sociopolitical complexity. One such center apparently arose 8.5 miles south of Ashe Ferry at 38LA14, site of a large village and mound (once 30 ft tall and since leveled) occupied during the McDowell phase (ca. A.D. 1350–1450) (see DePratter and Judge 1990). This poorly documented mound center may have served as the hub for a sociopolitical organization that spanned the lower Catawba River valley, as no other Mississippian mound centers are reported in the middle or lower Catawba River basin (Moore 2002). Furthermore, evidence from surveys and testing projects indicate that Mississippian cultural patterns do not appear to have taken hold in much of the middle or lower Catawba River basin until the fifteenth century (Moore 2002:181–182). The presence of native towns within this region in the very late prehistoric and protohistoric eras is intimated by interpretations of the narratives of sixteenth-century Spanish entradas into the southeastern interior (Baker 1975; DePratter 1989; Hudson et al. 1984). These readings of the routes of the DeSoto and Pardo expeditions place the paramount center of Cofitachequi in the Camden district and posit a Wateree-Catawba River corridor for Spanish exploration. On the basis of these accounts, Booker et al. (1992), DePratter et al. (1983), and Hudson et al. (1984) suggest that the native settlements of Tagaya the Lesser, Gueça, Aracauchi, Otari, Yssa, and Quinhaqui were all located in the lower or middle Catawba River basin. Linguistic analyses (Booker et al. 1992) identify these as Catawban place names, implying continuity with the later historic-era populations of the region.

### **Post-Contact Site History**

No materials recovered from the Ashe Ferry site indicate native occupations after ca. A.D. 1350, and the record of site use is obscure until the dawn of the historic era, when Lawson (1709) describes this area along the presumed edges of Waxhaw and Esaw territories; the river bottoms opposite the site were once considered part of the “Waxhaws Old Fields.” Mooney (1900:380–381), however, notes Cherokee tradition that asserts that the land between the west bank of the Catawba River and the east side of the Broad River was a mutually agreed buffer between Cherokee and Catawba possessions. Throughout most the eighteenth and early nineteenth centuries, the site locality was recognized as part of the territory of the Catawba Indian nation (successor to both Esaw and Waxhaw nations); however, Catawba occupation of the west side of the Catawba River is undocumented until 1781 (Drayton 1802; Feltman 1853). The boundaries of the Catawba nation defined by the Treaty of Augusta (1763) strike the Catawba River at the mouth of Twelvemile Creek and include the Ashe Ferry site at the edge of that boundary (Figure 2.2).

Early documentary accounts and maps indicate a ford crossing of the Catawba River adjacent to the site, immediately upstream from the mouth of Twelvemile Creek. In 1772, John F.D. Smyth used the ford and noted:

... I left the Catawbas, and set out on a journey to a very distinguished place of trade, in South-Carolina, lately entitled Camden...

We set out from hence in the morning very early, and ... crossed the Catawba river, at a ford just above the confluence of a considerable rivulet that falls into it on the north-east side named Twelve Mile creek, leaving the great road or trading path on our right, that leads west towards the Cherokee country, our course being almost due south a little easterly; and during all this morning's ride hitherto, we have still been upon the territory belonging to the Catawba nation.

The Catawba is a large and rapid river, containing an enormous quantity of water: it is about three hundred and fifty yards wide, and, although fordable, is deep, and runs in a rocky channel with great velocity. [Smyth 1784:196–197]

Contemporary maps indicate that Smyth traversed the “New Catawba Road” that linked to the Salisbury-Camden road, passed through the main Catawba Town, and crossed the Catawba River above Twelvemile Creek to pass down the west side of the Catawba-Wateree (Fig. 2.2). Smyth re-crossed the Wateree by ferry near Camden. The road on the west side of the Wateree continued southward through Amelia Township, Dorchester, and eventually attained Charles Town.

At the end of the American Revolution, a new Catawba Indian settlement headed by Col. John Ayers was established on the west side of the Catawba River, approximately 650 m west of the Ashe Ferry site. It is likely that the inhabitants of Ayers Town regularly traversed the Ashe Ferry site in crossing Twelvemile Ford, but use of this river crossing probably lapsed when the Ayers Town community moved upstream around 1800. The ford is not depicted on the 1798 Price-Strothers map or on the 1825 *Mills Atlas* maps of York and Lancaster counties (Mills 1825; Price and Strothers 1808).

The Ashe Ferry site remained within the territory of the Catawba Indian Nation until the 1840 Treaty of Nation Ford, but the property may have been leased to whites after abandonment

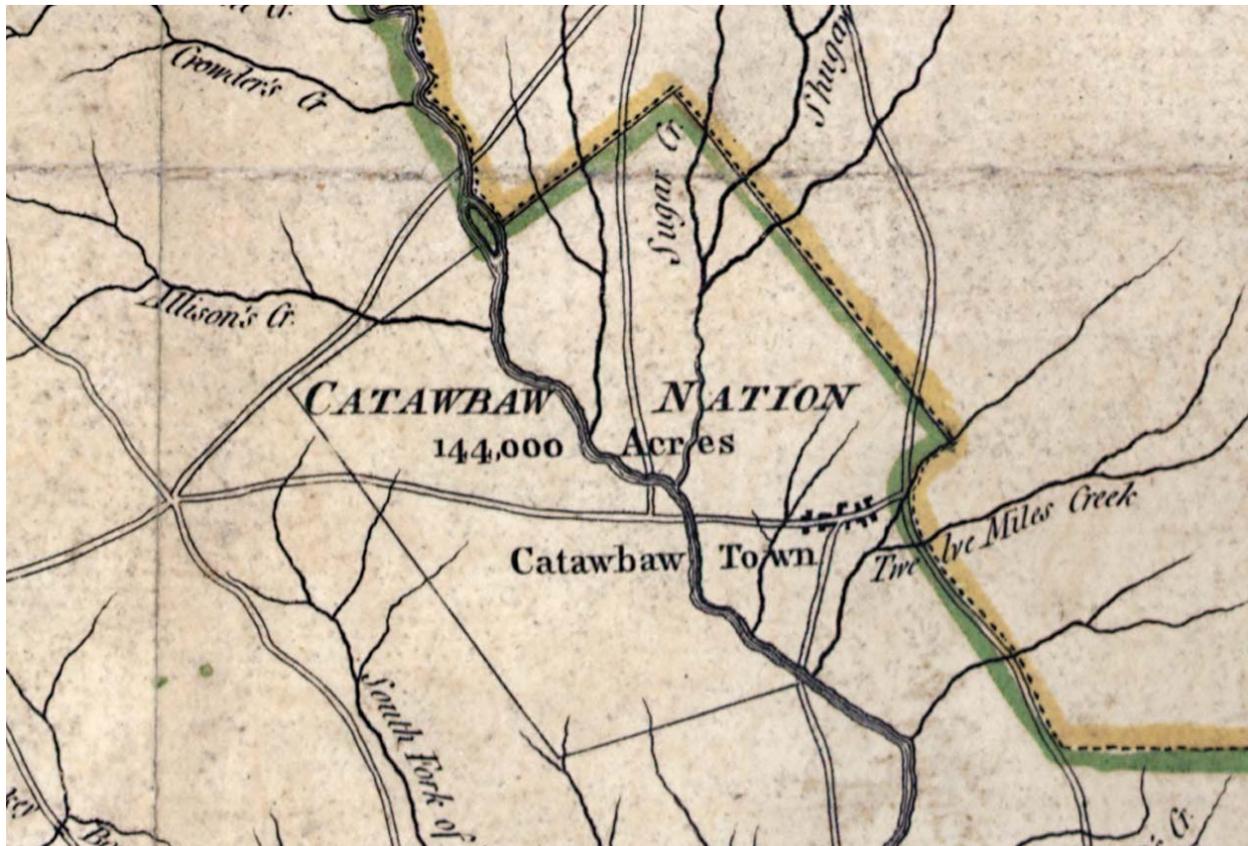


Figure 2.2. Detail of the 1775 “An Accurate Map of North and South Carolina With Their Indian Frontiers” [Henry Mouzon], indicating the 1763 boundary of the Catawba Nation and the river crossing at Twelvemile Creek.

of nearby Ayers Town (ca. 1800). Informal leasing of Catawba lands began before the American Revolution, and in 1785 South Carolina instituted a formal leasing system for Catawba lands to promote white settlement and use of the tribal territory (Pettus 2005:29). Under this state sanctioned system, three state-appointed commissioners oversaw and recorded lease transactions between whites and Catawba representatives, maintained surveys, and recorded lease payments (Pettus 2005:29). Surviving records do not indicate the leasing of the Ashe Ferry site locality, but acquisition of the tract by Benjamin Sykes Massey in 1843 may reflect his prior lease of the land. Surviving records for the east side of the river indicate that Massey leased lands adjoining Twelvemile Creek in 1839, positioning for purchase of that property after the Nation Ford treaty (Massey was an acting commissioner for Catawba lands). Because Massey also acquired 430 acres of land on the opposite side of the river (including the Ashe Ferry Site), he may have “preconditioned” this property through long-term lease as well (York County Register of Deeds 1843). The initial survey plats for both properties, drawn shortly after the treaty was signed, indicate that Massey operated a ferry immediately upriver from the Ashe Ferry site.

It is unclear how long Massey operated his ferry after 1841, but the Ashe Ferry site remained part of Massey’s holdings until his death in 1854, when the property passed to his son, L.H. (Lycurgus Herschel) Massey. Benjamin Massey maintained his residence in Lancaster County throughout his life, and there is no evidence for residential occupation of the Ashe Ferry property during his tenure. L.H. Massey, who lived north of the Ashe Ferry property near present-day Catawba, South Carolina, held the property until 1872. Massey fell into bankruptcy as a result of losses suffered during the Civil War and ensuing economic collapse in the South, and in 1872 was forced to liquidate his real estate holdings to pay debts. W.B. Metts, the court assignee in Massey’s bankruptcy, sold 300 acres, including the Ashe Ferry site, at public auction in 1872 to Massey’s niece, C.A. (Charlotte Addie) White and her husband, Dr. W.J. White (York County Register of Deeds 1872). The Whites held the property until 1909.

In 1888, the Seaboard and Roanoke Railroad (later, the Seaboard Air Line Railway [1900], the Seaboard Air Line Railroad [1946], the Seaboard Coast Line Railroad [1967], and CSX Transportation [1986]) acquired right-of-way and constructed a rail line across the property, with embankments, causeways, and bridges that effectively split the tract and created new agricultural field patterns on the parcel. The rail line is approximately 100 m south of the Ashe Ferry site and did not directly affect the archaeological site, but the railroad imposed impediments to water flow that modified the site during subsequent floods of the Catawba River. In 1901, a major flood swept away the railroad and floated a newly-built resort hotel (from 100 miles upstream) across the property. The Seaboard Air Line Railway quickly rebuilt the rail, setting the stage for a major train wreck near the site in 1904. Saboteurs had damaged a trestle over the backswamp 250 m southwest of the site, causing a passenger train to derail and plunge down the embankment, followed by a light engine and caboose that derailed atop the first train and killed four (Associated Press 1904).

In 1909, C.A. White sold the 300-acre property on the west side of the Catawba River to Rock Hill entrepreneurs S.N. Sowell and J.L. Sowell (York County Register of Deeds 1909). The Sowells, who operated the Sowell Brick Company, merged that business with William Nelson Ashe’s brickmaking companies (the Rock Hill SC Brick Works and the Catawba River Brick Works at Van Wyck) in February 1910 to form The Catawba Press Brick Company (South Carolina Secretary of State 1910:76). The Sowells then sold their private interests in the Ashe Ferry Site property to the Catawba Press Brick Company in 1913 (York County Register of Deeds 1913).



The Catawba Press Brick Company operations were largely limited to a plant at Van Wyck on the east side of the river, and the former White property appears to have remained in agricultural use until the epic flood of 1916. In July, 1916, two successive hurricanes inundated the southern Appalachian Mountains and the eastern flank of the Blue Ridge, and caused massive flooding along the entire Catawba-Wateree drainage (Southern Railway Company 1917:7-9). The Lake Wylie dam at Rock Hill burst, and all bridges and rail trestles along the Catawba and Wateree rivers were destroyed (Southern Railway Company 1917:93). Flood waters that swept across the Ashe Ferry site (eight meters above normal river level) were slowed by damming from the Seaboard Air Line Railway trestle and causeway, and deposited a foot or more of sterile sands over the long-stable surface of the site. This deposit effectively sealed the Ashe Ferry archaeological site from further plowing damage.

When the Catawba Press Brick Company went into receivership in 1917, William N. Ashe purchased full ownership of the tract that included the Ashe Ferry site (York County Register of Deeds 1917). Ashe, whose holdings also included the property on the opposite side of the river, established Ashe Ferry in 1927 to link his properties and facilitate travel to his Ashe Brick Company plant (est. 1906) in nearby Van Wyck, South Carolina. The April 26, 1927 issue of *The Yorkville Enquirer* reported:

“Thanks largely to the enterprise of Mr. W. N. Ashe, there will soon be a new ferry on the Catawba at Catawba Junction which will cut the distance across the river between Van Wyck and Catawba Junction,” said Dr. G. W. Hill, veteran physician of Catawba Junction who was a visitor in York last Wednesday. “A site near the Seaboard Bridge crossing the river has been selected by Mr. Ashe for his flat boat and ferry.”

Dr. Hill went on to tell: landings have been constructed, the boat has been completed and it is presumed that the new crossing will be ready within a short time now. The new ferry will be the means of elimination of that big hill on the Lancaster side at Cureton’s and as I say make a more direct route between the village of Catawba and that of Van Wyck.

The understanding is that Mr. Ashe’s principal idea in constructing this new ferry was in order that he might have a more direct connection between his extensive farming interests on both sides of the river; although the general public is to have the benefit of it. And we people down around Catawba Junction feel mighty good over it. [*Yorkville Enquirer*, April 26, 1927]

William Moore, Ashe’s nephew, later related that:

Ashe operated the Ashe Brick Co. on the Lancaster County side of the river and owned a farm on the York County side. In 1927, he built the ferry and a mile and a half of road leading to it. He was aided by both York and Lancaster counties.

Originally called the Ashe Ferry, the square-looking boat went into operation in 1928. When it wore out it was succeeded [sic] by another ferry, and finally by the present craft.

The first ferry was poled across the river. But today’s ferry, built in 1942, is motorized.

The original ferry was operated by the Ashes on a private basis. It was taken over by the state in 1942 and became an official link for State Rt. 504. [*Rock Hill Evening Herald* 1959]

Upon W.N. Ashe’s death in 1932, the Ashe Ferry site property passed in estate to his sister, Elizabeth Ashe Moore, and devolved into trust with her death in 1966. Operation of Ashe Ferry, adjacent to the Ashe Ferry archaeological site (38YK533), continued throughout much of Elizabeth Ashe Moore’s tenure. The state of South Carolina assumed operation of Ashe Ferry in 1942, and employed Early Brown, a Catawba Indian ferryman who had once run Cureton Ferry, to manage the crossing on SC State Route 504 (Figure 2.4). Brown resided in a house on the west bank of the river and on the north side of Highway 504, “above the reach of high water, yet

near enough to hear any motorist who needs ferrying across the river” (*Rock Hill Herald* 1950; Bigham 1954). W.D. Workman, who visited the ferry in 1953, described its operation:

The entire scene of the ferry reflects by-gone days, for approaches on both sides of the river are dirt, the ferry is an old flat-bottomed barge, and its motive power comes from the push exerted by the ferryman as he poles the craft across the river. Nowadays, that push comes from a wiry young man named Howard George, who does the job for his grandfather, Early Berley Morgan Brown. Both are Catawba Indians.... [Workman 1953]

Brown, with assistance from his relatives, continued to operate Ashe Ferry until 1959, when the state constructed SC Highway 5 and a new bridge across the Catawba River that obviated the ferry. Local politicians and businessmen had long pushed to have a highway bridge that connected southern York County with northern Lancaster County, but it was the May 1956



Figure 2.4 View to west of Ashe Ferry in operation in 1954. Early Brown (inset) operated the ferry ca. 1942-1959. Brown’s house is at right; the Ashe Ferry site (38YK533) is immediately downstream (left) from the ferry landing.

announcement of plans by the Bowater Paper Corporation to build a \$100 million dollar pulp mill on the banks of Catawba River just outside Catawba (formerly Catawba Junction) that finally prompted the state to approve state and federal funds for construction of a two-lane highway and bridge connection (*Charleston News and Courier* 1956). The decision on where to site the bridge was delayed until Bowater's design plans were finalized. Construction of the highway, bridge, and pulp mill began in 1957, and all were completed in 1959. On October 9, 1959, Gov. Ernest F. "Fritz" Hollings dedicated the Ashe-Bradford bridge, named in honor of W.N. Ashe and W.R. Bradford, editor of the *Fort Mill Times* and long-time member of the South Carolina State House of Representatives (Pettus 2001). With completion of the Ashe-Bradford bridge, the old Ashe Ferry that connected Catawba Junction and Van Wyck was decommissioned and the Route 504 approach adjacent to 38YK533 was abandoned.

Construction of Highway 5 and the Ashe-Bradford bridge cut a 17-meter wide swath through the long axis of the Ashe Ferry archaeological site, and destroyed or obscured approximately 30% of the total site area (Figure 2.5). In addition, a construction access road snaked through the site along the north side of the highway, and soil borrowing along the construction access destroyed an additional 10% of the original site area. Agricultural use of the property probably ceased after highway construction, and the site lapsed into old field succession.



Figure 2.5. Aerial view [1959] of the construction of the SC Highway 9 bridge and the approach across 38YK533. Ashe Ferry and the Early Brown house are visible in the background.

The Ashe Ferry site tract passed into trust after the deaths of Elizabeth Ashe Moore (d. 1966) and her son, James M. Moore (d. 1975). The heirs, as substitute trustees, deeded the land to the Ashe Brick Company, Inc. in 1985 (York County Register of Deeds 1985), then filed a quitclaim deed on the property in 1987 as Ashe Farms, Inc., following the 1986 sale of Ashe Brick Company to Boral Industries (York County Register of Deeds 1987). Ashe Farms, Inc. sold the Ashe Ferry site property to Calhoun Newsprint Company (a division of Bowater Incorporated) in 1993 (York County Register of Deeds 1993); the property was retitled to Bowater Incorporated in 1996 (York County Register of Deeds 1996). The South Carolina Department of Transportation acquired right-of-way for the current bridge replacement project from Bowater in 2009, setting the stage for the 2010–2011 archaeological investigations.



## Chapter 3

### ARCHAEOLOGICAL INVESTIGATIONS

#### **Previous Investigations by Legacy Research**

The Ashe Ferry site (38YK533) was discovered in 2008 by archaeologists from Legacy Research Associates, Inc., while conducting a Phase I investigation to identify cultural resources that might be affected by South Carolina Department of Transportation's planned replacement of the SC Highway 5 bridge over Catawba River. This investigation consisted, in part, of intensive archaeological survey, involving both surface reconnaissance and systematic shovel testing, within the area of potential effects (APE), and geomorphological deep testing on the first alluvial terrace along the west side of Catawba River (Legacy 2009:iv). The APE was defined as a corridor extending 48 m north of the existing highway and 30 m south of the highway, and running from a point about 1,100 m west of Catawba River (in York County) to a point about 1,000 east of the river (in Lancaster County) (Legacy 2009:32).

#### *Shovel Testing*

Initial systematic shovel testing within the project APE consisted of digging 30-cm diameter test pits at 30-m intervals along transects running parallel to the highway. Test pits were excavated to sterile subsoil, where possible, and excavated soil was screened through ¼-inch mesh. According to Legacy's final report, "When archaeological materials were encountered, additional shovel tests were excavated to determine site integrity and artifact density, and to gather preliminary information on the cultural affiliation and age of the site.... Testing was limited to the amount necessary to determine site significance in terms of NRHP-eligibility criteria (Legacy 2009:33)." Testing in this manner led to the discovery and delineation of the Ashe Ferry site (38YK533), the Ayers Town site (38YK534), and a third, highly disturbed site (38LA570) on the east side of Catawba River which was defined by the occurrence of a single utilized flake (Figure 3.1).

According to the Legacy (2009:41) report, the Ashe Ferry site was discovered as a result of 11 positive shovel tests (i.e., test pits containing artifacts) within two transects (transects #18 and #19) along the north side of the highway, adjacent to Catawba River. At least 10 shovel tests appear to have been dug along transect #18, located closest to the edge of the highway; however, only seven (test pits 1, 3–5, 7, and 9–10) of these were mapped. Test pits 1–5 contained pottery or lithic artifacts (Legacy 2009: Appendix A). Likewise, at least eight shovel tests in transect #19, located about 30 m north of transect #18, appear to have been dug, but only four of those (test pits 1, 2, 7, and 8) are mapped. Three (test pits 3, 4, and 5) of the six pits containing artifacts (test pits 1–5 and 8) were not mapped. Two additional shovel tests (transect #17, test pits 99 and 100) also produced artifacts and appear to have contributed to the site's discovery (see Legacy 2009:Appendix A). These were not mapped but presumably were located on the south side of the highway. Two additional positive shovel tests on the north side of the highway are shown on the map; it is unclear when or why these were dug.

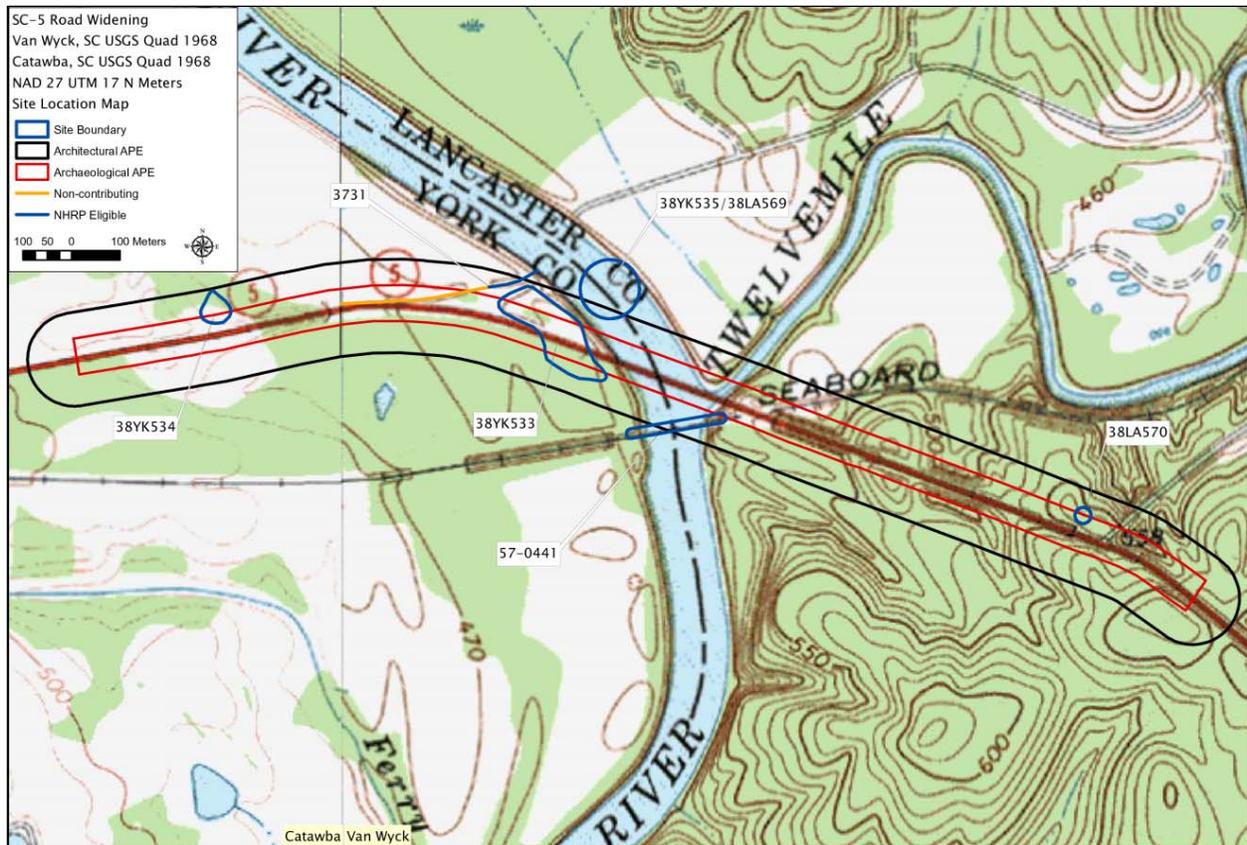


Figure 3.1. Legacy Research Associates project map, showing project boundaries and the locations of sites 38YK533, 38YK534, and 38LA570 (from Legacy 2009:v).

Following site discovery, Legacy archaeologists dug additional shovel tests across the suspected site area at 10-m intervals along transects placed approximately 10 m apart. This permitted the delineation of site boundaries by mapping the distribution of positive shovel tests. According to their report (Legacy 2009:41), 113 additional shovel test pits were dug during this phase of investigation, and 51 test pits “yielded cultural material,” mostly lithic artifacts, flakes, fire-cracked rock, and fragments of broken pottery, in soils ranging from 10 cm to 82 cm in depth. Forty-nine of these test pits were mapped, and 50 are listed in the artifact inventory (Legacy 2009:Appendix A). Based on the spatial distribution of positive shovel tests, the site was defined as an approximately 17,800 sq m (17.8 ha) area extending almost 100 m southwest from the front edge of the alluvial terrace, about 100 m north of the highway, and about 60 m south of the highway (see Figure 3.1). This coincides with the area on the terrace with the highest elevation, which is about eight meters above the normal level of the river.

Shovel testing recovered 238 lithic artifacts, consisting mostly of debitage and including no temporally diagnostic artifacts (Legacy 2009:56). Of the 156 potsherds that were found, 54 were identifiable by surface treatment (with most exhibiting plain, cord-marked, or simple-stamped surfaces), and all these were interpreted as “Historic Catawba” ceramics (Legacy 2009:58). These potsherds can now be confidently attributed to the Late Woodland Ashe Ferry phase and Mississippian occupations of the site; none are attributable to a Catawba occupation during the historic period.

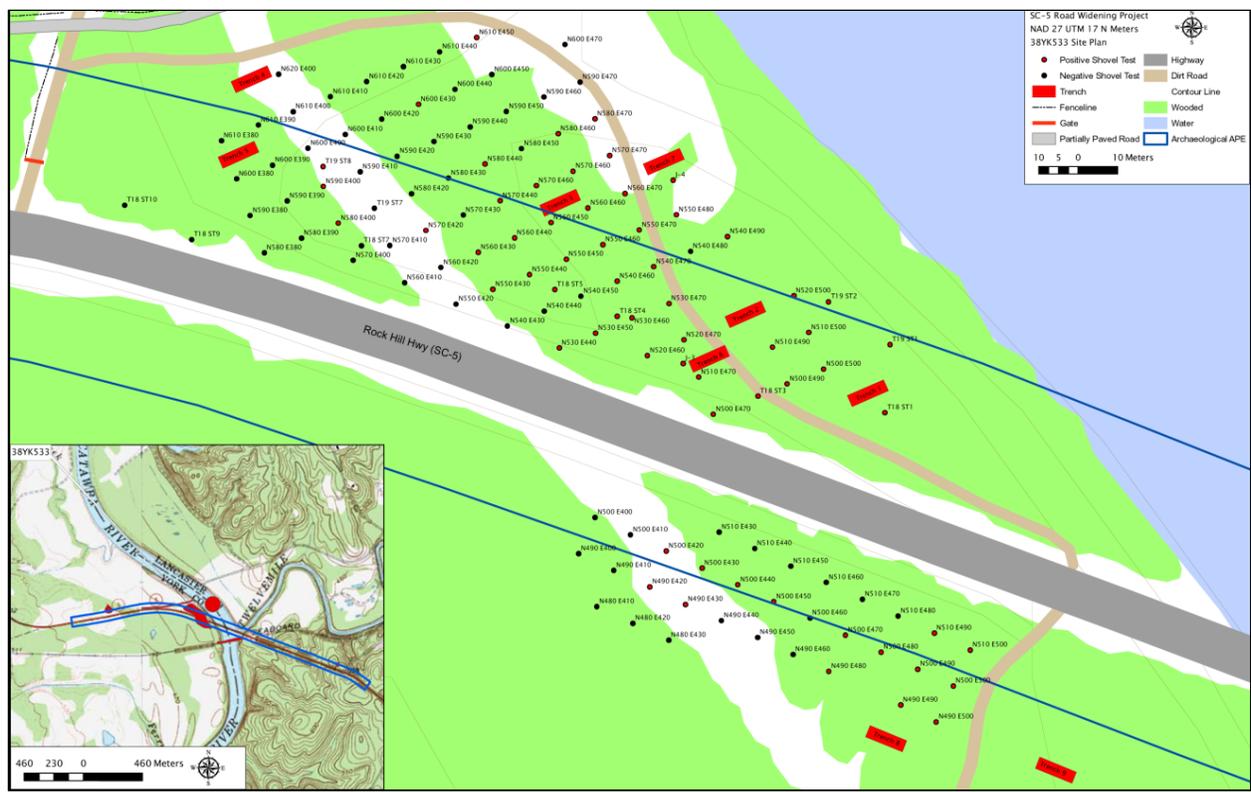


Figure 3.2. Legacy Research Associates map of archaeological testing at the Ashe Ferry site (38YK533) (from Legacy 2009:43).

*Trench Excavations*

In addition to shovel testing, Legacy archaeologists also employed a backhoe to excavate nine trenches across the site in order to sample deeply buried sediments and provide exposures for gathering geomorphological data about the site (Figure 3.2). Five of these trenches were located near the site center, with Trenches 1, 2, and 7 placed along the proximal side of the T1 terrace levee and Trenches 3 and 6 along the distal side of the levee (Legacy 2009:42).

At a depth of 155 cm bs within Trench 2, archaeologists found a concentration of 596 orthoquartzite flakes, a possible fragment of a Late Archaic Savannah River Stemmed projectile point, and seven other lithic fragments (Legacy 2009:48). This artifact cluster, likely representing the remains of a small pit, was designated Feature 1 and provided evidence for more deeply buried cultural components at the site. Additional evidence for buried, pre-Woodland cultural components was revealed in Trench 7, where a concentration of 15 stone flakes, a possible biface fragment, a piece of fire-cracked rock, and a grinding stone was recorded at a depth of 80–100 cm below surface (Legacy 2009:49). Finally, excavation of Trench 6 was terminated at a depth of about 30 cm due to the appearance of possible archaeological features associated with an unspecified cultural component.

At the northwest edge of the site (as originally defined), Trench 4 was excavated into the distal side of the T1 levee while Trench 5 was excavated into T1 sediments just west of the levee and within a broad erosional channel. No artifacts were reported from the excavation and cleaning of these trenches.

The final two trenches were dug into the distal (west) side of the T1 levee at the site’s southern edge. One of these (Trench 8) encountered “a shallow cultural horizon” with “fill

material [that] extended from the ground surface to a depth of 28 cm bs” (Legacy 2009:42). This artifact and charcoal-laden deposit was actually the uppermost fill zone of a large storage pit, designated Feature 28, which had been subsequently truncated by agricultural plowing and backhoe trenching to a depth of about 28 cm below surface. Excavation of Trench 8 terminated at the top of this deposit but extended to a depth of about 2 m immediately to the east, clipping the feature’s lower fill zones. Within these zones, which are transected by percolation lines, or lamella, Legacy archaeologists encountered what they mistakenly regarded as “a buried cultural horizon...between two lamella layers at approximately 1.3 m (4.3 ft) bs” and reported that “an early 1700s Catawba cord-marked sherd was recovered...at about 1 m (3.3 ft) bs within the buried cultural horizon” (Legacy 2009:49).

Trench 9, located on a highly disturbed and eroded land surface between Trench 8 and the river, also revealed artifacts within a deeply buried stratum. Beneath two zones totaling 60 cm in thickness, which the excavators interpreted as a “post-1916 red clay fill” underlain by “ca. 1916 flood-deposited sand,” was a 15-cm thick band of darker soil—designated a “buried cultural horizon”—that purported contained 11 potsherds, a utilized flake, and four pieces of fire-cracked rock (Legacy 2009:52–54). This trench was re-exposed by UNC archaeologists and two 1x1-meter units were excavated adjacent to it in order to investigate the potential for deeply buried, ceramic-bearing deposits at this location. These investigations are treated more fully under *Field Evaluation of Shovel Tests and Backhoe Trenches* (see below).

In summary, trench excavations at the Ashe Ferry site indicated the potential for culturally-derived deposits beneath the base of plowed soil within the levee that built up along the front edge of the T1 terrace; similar deposits were not encountered along the west, or distal, side of the levee. Trenches 2 and 7 provided unambiguous evidence for buried deposits likely attributable to the Archaic period, while Trenches 8 and 9 contained purported evidence of deeply buried “Historic and possibly unidentified Woodland period occupations” (Legacy 2009:58). Artifact-bearing deposits and possible archaeological features of unspecified cultural association also were reported at the base of plowed soil in Trenches 6 and 8.

#### *Initial Site Interpretation and Recommendation*

Based upon the results of their site investigations, Legacy Research Associates (2009:64) hypothesized that the Ashe Ferry site contained the following four distinct archaeological components:

1. an “unidentified prehistoric ceramic and lithic scatter” identified through shovel testing and covering “an area that is approximately 120 m (393.7 ft) north–south and 135 m (442.9 ft) northwest–southeast”;
2. a “Historic Catawba occupation” also identified through shovel testing and of similar extent to the previous component;
3. a “buried Archaic period component identified in Backhoe Trench 2 between 80 and 210 cm (2.6 to 6.9 ft) bs” and of unknown areal extent; and
4. a “buried Catawba component identified in Trench 9 between 60 and 75 cm (2 to 2.5 ft) bs and in Trench 8 at 140 cm bs.”

Given this interpretation, it was argued that the site was significant, and therefore eligible for the National Register of Historic Places under Criterion D for its information potential, “primarily because of the buried Archaic period component and the ca. 1700 Catawba component” (Legacy 2009:64). It was argued further that the “Catawba component” was significant “primarily because of its rarity” (Legacy 2009:65). With these findings, a scope of work was drawn up by

the South Carolina Department of Transportation to conduct additional archaeological testing at the site to clarify both site extent and composition, and to undertake broader investigations to mitigate the site's loss due to the bridge replacement project (SC DOT 2009).

### **Investigations by the University of North Carolina**

In response to SC DOT's scope of work and request for proposal, the Research Laboratories of Archaeology, University of North Carolina, Chapel Hill, submitted a proposed data recovery plan to Mulkey Engineers and Consultants for archaeological investigations at 38YK533 (Ashe Ferry site) and 38YK534 (Ayers Town). The plan for the Ashe Ferry site was based on the likelihood that the archaeological manifestation initially interpreted as "Historic Catawba" actually dated to the Late Woodland period (ca. A.D. 1000–1200). This plan noted:

...the simple stamped and cordmarked ceramic wares recovered from 38YK533 more closely resemble sherds from nearby site 38LA125, a probable Late Woodland period component (now destroyed) formerly located immediately across the Catawba River. Similarly, the spatial coincidence of fine-grained rhyolite lithic debris and small projectile point fragments with ceramic sherds at 38YK533 resembles the configuration of the 38LA125 component. Therefore, we propose that *investigations at 38YK533 might be more correctly framed as exploration and clarification of a heretofore undefined Late Woodland period material complex* [emphasis added].

Accordingly, investigations at 38YK533 should first attempt to define coherent material patterns and to temporally situate these patterns as a starting point from which to interrogate the record of Late Woodland period occupation in the lower Catawba River Valley. Investigations at 38YK533 will aim to:

- (1) refine definition of the horizontal and vertical extent of the component within site sediments;
- (2) expose and identify a representative sample of intact discrete deposits (e.g., pit features, architectural post patterns) and intact continuous deposits (i.e., middens, buried surfaces) in an attempt to characterize the span and functions of the Late Woodland period occupation; and
- (3) recover a representative sample of material assemblages from discrete contexts, providing a basis for functional and temporal characterization of the ceramic bearing component. Acquisition of these data will facilitate both synchronic and diachronic comparative analyses to illuminate this poorly documented and poorly understood segment of South Carolina's prehistory, a need underscored by Anderson et al. (1996).

... to address these objectives, the RLA proposes a stepwise and differential approach to accommodate the progressive definition of varied site conditions and discovery of evidence. ...to establish the horizontal and vertical extent of the ceramic-bearing component, the RLA will excavate a series (approximately 33) of one-meter square units arrayed on 20-meter centers across the site area as defined by the 2008 Legacy survey, to achieve an approximate .25% sample of the site deposits. Additional 1x3-m units will be excavated adjacent to Legacy trenches 8 and 9, which encountered ceramic artifacts associated with buried surfaces. These excavation units will be hand dug, and all sediments removed will be passed through ¼"-mesh screen for recovery of artifacts. Plowzone ... will be removed as a single stratigraphic unit; other deposits will be removed under arbitrary 10-cm level controls with provisions for clear stratigraphic transitions. These units will serve to define spatial variation in the vertical distributions of materials associated with the presumed Late Woodland period component and will provide a gross-scale measure of variations in material density across horizontal space. ....

Stratigraphic information from the one-meter square units will guide subsequent machine excavation of three-meter-wide trenches arrayed at 20-meter intervals across the site area to assay for the presence and density of intact discrete and continuous deposits associated with the presumed Late Woodland period site component. These machine-excavated transects will remove historic-era plow-homogenized sediments to access surfaces within which such intact deposits might survive, and will achieve an evenly distributed exposure of 15% of intact surfaces within the defined area of the ceramic-bearing component. ...

Intact discrete and continuous cultural deposits exposed by the three-meter wide trenches will be mapped (using a total station) with reference to the internal site grid and control points established by the SCDOT, and documented with digital photography from vertical perspective (including mapped control points); then, they will be hand excavated with respect to internal stratigraphy, with photodocumentation and mapping of profile sections and completed surfaces and outlines. Recovered soils from these discrete contexts will be water-screened through window mesh for recovery of associated materials, and measured sediment samples from each stratigraphic unit will be processed by flotation to recover botanical materials. Exceptions to this standard recovery protocol will be made in the instance of human burials and probable human interments. Upon discovery of contexts evincing formal and matrix characteristics consistent with human graves, the surfaces of such contexts will be mapped and photodocumented, and SCDOT will be notified of their presence, character, and location. No further investigation of these contexts will be undertaken pending consultation of the lead agency (SCDOT) with interested parties and the development (through consultation) of a formal treatment plan for such grave contexts. The RLA will then proceed as directed under the terms of the formal treatment plan ....

... the incidence and distribution of intact discrete and continuous deposits exposed by the three-meter-wide trenches will guide selection of areas for more extensive excavation to achieve a sample suited to definition of site structure and, if feasible, community pattern.

These mechanically-stripped exposures may total as much as 6,500m<sup>2</sup> (1.6 ac) within the APE, with no more than 4,000 m<sup>2</sup> (.99 ac) exposed at one time. Intact discrete and continuous cultural deposits revealed by these large contiguous exposures will be treated with the same protocols as those exposed by the three-meter-wide test trenches. [RLA 2009]

The University of North Carolina's archaeological investigations at Ashes Ferry began on March 10, 2010 with the establishment of the site grid and concluded on November 19, 2010 with the removal and re-interment of four graves found at the site. Most work at the site, however, was undertaken over a 12-week period between March 15 and June 7, 2010, and was facilitated by the use of a trackhoe to expose selected surfaces for archaeological mapping and excavation. Investigations were accomplished by a crew of 6–8 archaeologists and for the last four weeks of the project also included students and staff of the university's summer archaeological field school.

At the time of investigation, the site was planted in mature pines with interspersed hardwood trees and patches of river cane and dense undergrowth. These conditions factored into the placement of excavations, and in some instances test units had to be moved a meter or two in order to avoid trees. An unimproved access road also ran through the site, and it was avoided during excavation, as was a large gully that cut into the northeast site edge (Figure 3.3). Finally, the SC Highway 5 embankment and right-of-way created a 35-m wide corridor across the center of the site that was inaccessible for field study.

Investigations were undertaken in the following eight phases: (1) establishment of a site grid; (2) field evaluation of Legacy shovel tests and exploratory backhoe trenches; (3) systematic test excavations; (4) selective mechanized stripping of plowed soil and overlying flood-deposited sand; (5) excavation of additional test units and block excavations within stripped areas; (6) additional mechanized stripping of the site; (7) mapping and excavation of archaeological features; and (8) removal and re-interment of identified graves.

### *Establishing the Grid*

The first task before beginning work at the Ashe Ferry site was to establish an excavation grid. Because we also planned to work simultaneously at nearby Ayers Town, we established a single grid for both sites. This grid was tied into the South Carolina State Plane reference points



Figure 3.3. View of the Ashe Ferry site looking southeast along the access road. The Catawba River is to the left and the SC Highway 5 bridge approach is to the right.

that had been placed in the vicinities of both sites by surveyors working for Mulkey Engineering and Consultants. The initial grid datum point was established at Mulkey’s iron reference point marked CP13, located near the center of the site area north of the highway. This point, RLA Station #1, was assigned a coordinate of 860.000 m east and 860.000 m north, and an elevation of 100.000 m (144.06m/472.64ft AMSL). With a total station set up atop this pin, a north–south baseline was established using a compass, and a steel spike was driven into the base of a pine tree along the line north of the pin. With the north–south axis of the grid established, a second Mulkey reference point, marked CP12 and located approximately 75 m southeast of CP13, was located with the total station as having a coordinate of 928.865 m east and 826.492 m north. (The standard nomenclature used for grid coordinates throughout this report is 826.492R928.865, with the first value representing the north or “y” value, “R” indicating right of the zero north–south baseline, and the second value representing the east or “x” value.) Once the grid had been established in this manner, additional reference points were set across the site as needed.

#### *Field Evaluation of Shovel Tests and Backhoe Trenches*

The map produced by Legacy Research Associates to depict their areas of investigation is a stylized representation of their shovel testing transects and backhoe trenches, and was not suitable for accurately relocating those excavations in the field, since they were not tied into extant reference points (see Figure 3.2). For the same reasons, their overall map of the site and its boundaries provided only an approximation of those boundaries (see Figure 3.1). One of our first tasks, then, was to relocate the backhoe trenches and enough of the shovel test pits in order

to place them accurately relative to the established site grid and to determine site boundaries. Fortunately, several of these excavations were still clearly visible, and many of the shovel test locations still had surveyor's flagging tape marked with shovel test pit numbers or coordinates.

After a thorough search of the site area, all of the backhoe trenches were relocated except for Trenches 1 and 4. Ninety-seven shovel test pits were relocated. Seventy of these are depicted on Legacy's map (Figure 3.2). The other 27 shovel test pits were identified in the field, based on the occurrence of marked flagging tape. These include three test pits listed in Legacy's artifact inventory as having produced artifacts. It is presumed that the other 24 test pits were marked in the field for excavation but for some reason were never dug. Fifty-nine other test pits, including four containing artifacts but not shown on the Legacy map, could not be relocated.

These results indicate that a total of 132 shovel tests, and not 124 as reported (Legacy 2009:41), were excavated by Legacy archaeologists, assuming that all test pits shown on the Legacy map and all test pits not shown on the map but listed in the inventory as containing artifacts were excavated. Sixty-five of these test pits yielded potsherds or lithic artifacts (Appendix A). Even though numerous shovel test pits could not be verified in the field, a sufficient number were identified to permit the approximate relocation of the remainder. These are shown in Figure 3.4 along with the locations of the seven identified backhoe trenches and the site boundary as estimated by Legacy archaeologists. One area of confusion was due to Legacy archaeologists having duplicated the shovel testing grids on the north and south sides of the highway. As a consequence, six pairs of corresponding shovel tests were combined in the artifact inventory (see shovel test pits 500N470E, 500N490E, 500N500E, 510N470E, 510N490E, and 510N500E in Legacy 2009:Appendix A). For the purpose of mapping artifact density, these were tentatively separated based upon test pit depth and artifact content.

Once the Legacy shovel test pits were located relative to the site grid, a map of potsherd densities from those units was generated (Figure 3.5). The resulting map, which incorporates fine-scale topographic information, indicates that most evidence for later (i.e., post-Archaic) occupations was concentrated near the center of the defined site area and nearly absent along the northern, southeastern, and eastern edges. The inclusion of these peripheral areas within the site appears to be based largely on where shovel test pits were dug and not on where shovel test pits containing artifacts were found. This pottery distribution, based on the occurrence of positive shovel tests, is coterminous with an elevated and nearly level landform on the T1 terrace, a pattern that was not apparent on earlier site maps. Mapping of lithic artifacts recovered from shovel test pits shows a similar pattern. In sum, there is little artifactual basis for defining the limits of the site as they were originally defined.

Based on these results, a revised map of the site's boundary was drawn that corresponds with the area of uniform pottery distribution and also the highest potsherd density; this area coincides with the area of highest elevation on the T1 terrace and levee, and constitutes the area subject to the 2010 testing program (see Figure 3.7). The original site boundary encompassed an area of about 1.8 ha; the revised boundary encompasses 0.975 ha, or about 55% of the original site area. Excluded from the revised site area are the eroded southeastern and eastern edges of the T1 terrace and an old erosional channel that cuts across the northern quarter of the originally defined site. With the exception of two shovel tests along the eastern, eroded terrace flank, these areas yielded only a few isolated artifact finds. The two test pits (T19ST1 and T19ST2) along the eastern flank yielded only quartz and quartzite debitage, and appear to have sampled deeper deposits attributable to the Archaic occupation of the site (Legacy 2009:Appendix A).

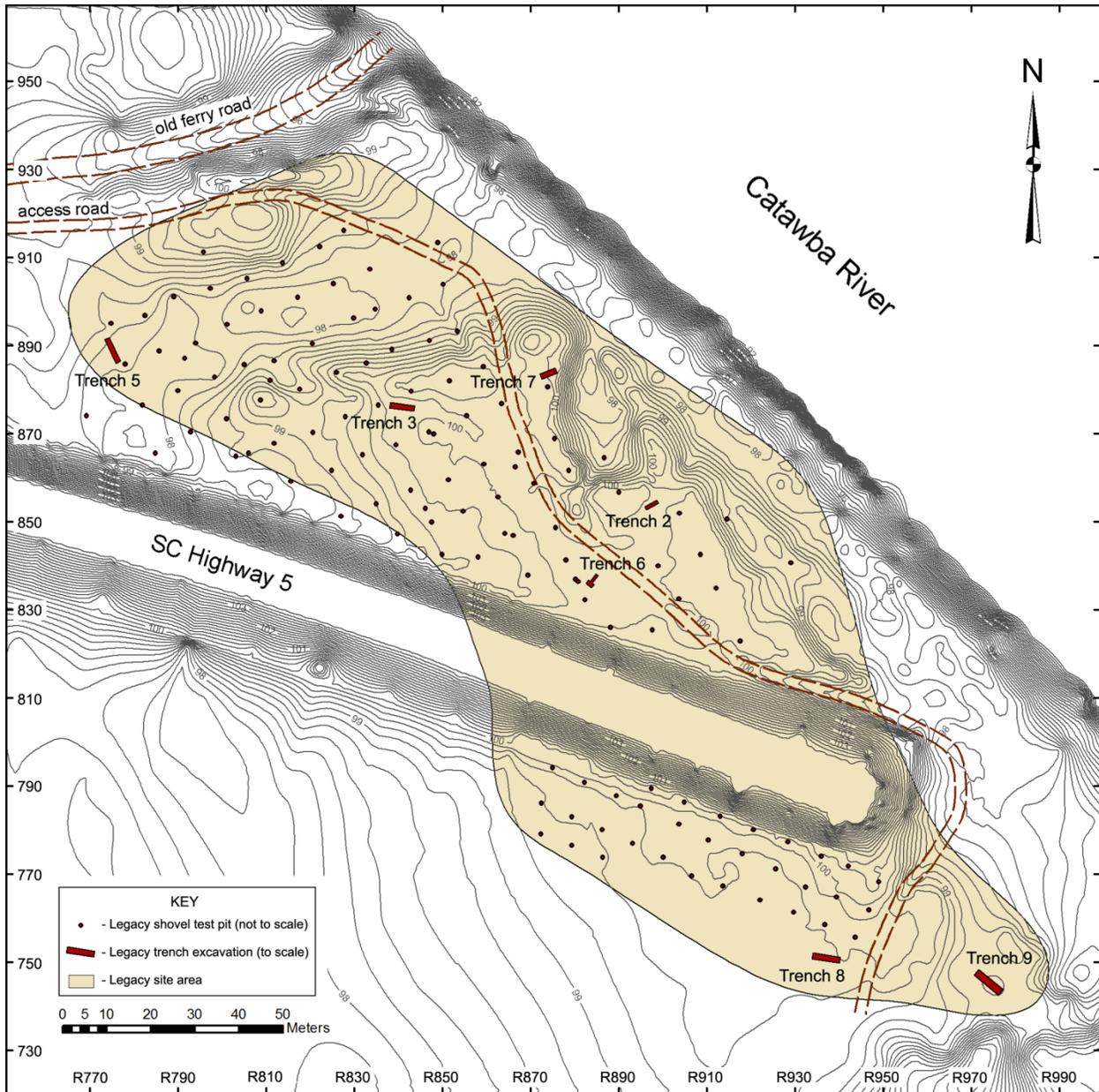


Figure 3.4. Map of the Ashe Ferry site showing the placement of Legacy excavations, as re-located in the field, and the site’s estimated limits based on those excavations. Contour interval is 20 cm. The site topography shown on this and subsequent maps in the report is based on a combination of elevation data collected by Mulkey Engineering and systematic, fine-scale mapping by UNC archaeologists.

As previously noted, Legacy archaeologists reported possible evidence for deeply buried “Historic and possibly unidentified Woodland period occupations” in Trenches 8 and 9, both located at the south edge of the site (Legacy 2009:58). Upon closer inspection, the artifact-bearing deposits in Trench 8 were determined to be associated with the lower fill zones of Feature 28, a large, refuse-filled storage pit originating at the base of plow zone and dating to the Ashe Ferry phase.

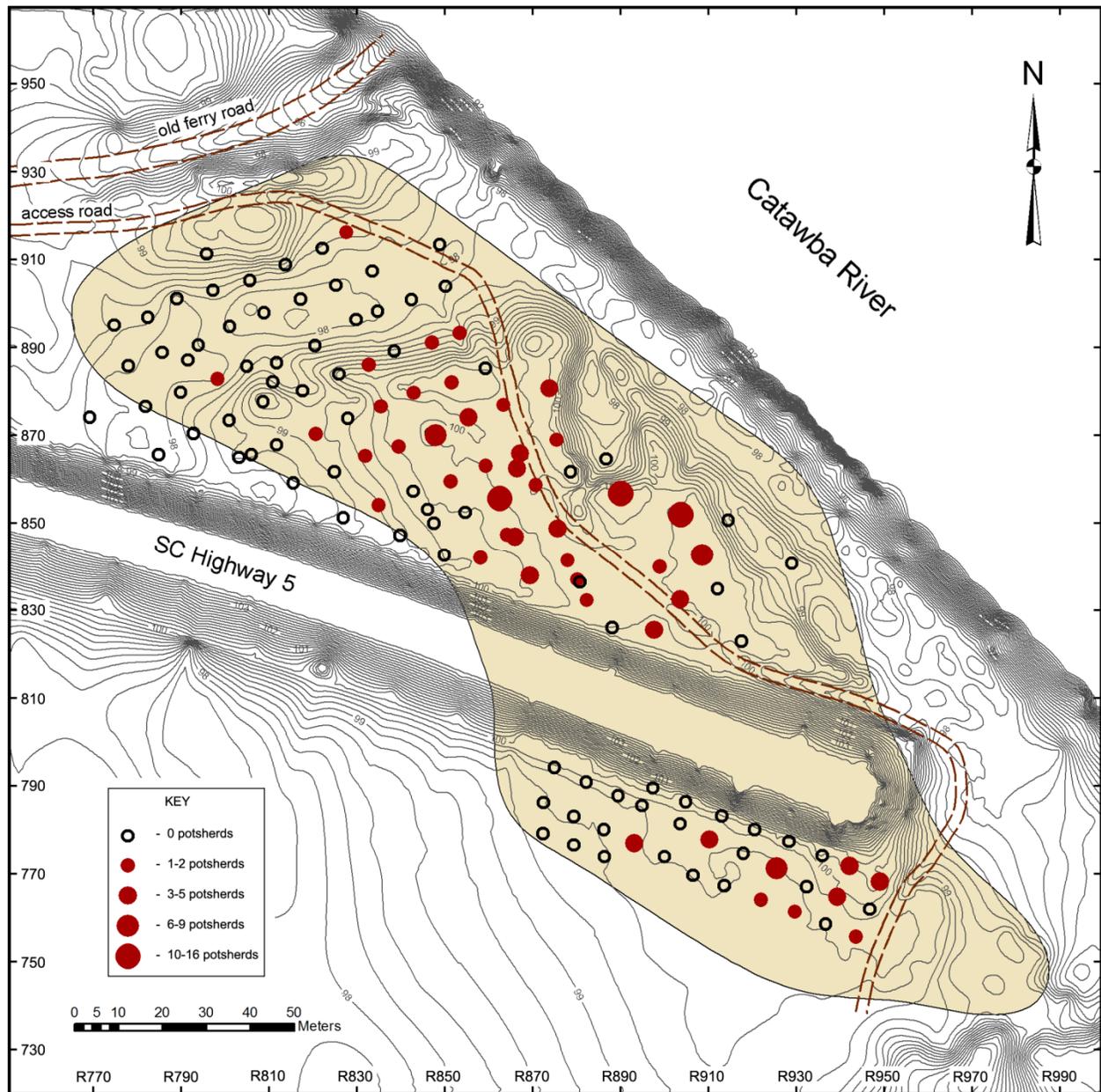


Figure 3.5. Map of potsherd density at the Ashe Ferry site based on artifact samples recovered from shovel test pits by Legacy archaeologists. The limited spatial distribution of higher-density samples indicates a site area somewhat smaller than the initial estimated site area.

To evaluate the evidence from Trench 9, the eastern edge of the backfilled trench was re-exposed and adjacent deposits were carefully excavated and screened to identify the purported artifact-bearing deposit and sample it for artifacts. It should be noted that the ground surface where this trench was dug is 40–50 cm lower than the rest of the site and a large depression immediately to the southeast of it is interpreted as a likely borrow pit created when the current CSX trestle and approach were built in 1916. The cleaned trench profile revealed 12 stratigraphic units (Strata A through L) to a depth of 1.85 m (Figure 3.6). About two-thirds of the uppermost stratum (Stratum A) was removed by the backhoe and is not recorded in Legacy’s stratigraphic

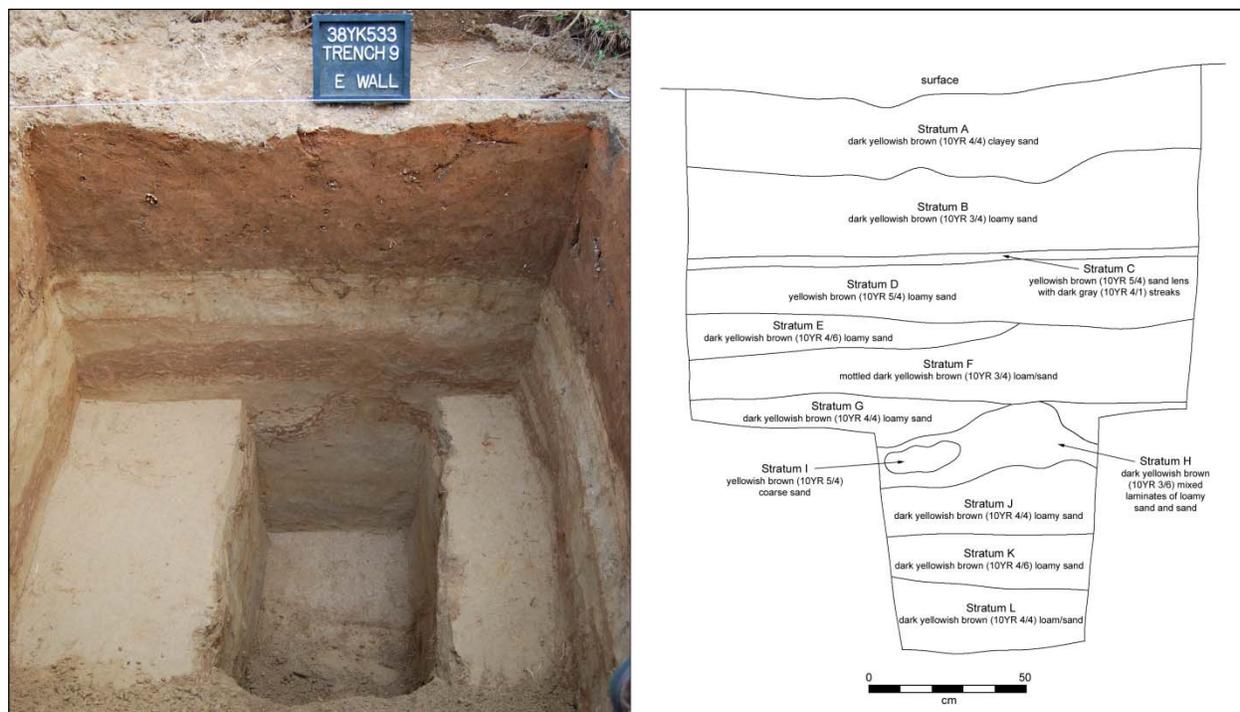


Figure 3.6. Re-excavation of Legacy Trench 9, showing the cleaned east profile and descriptions of strata.

profile (Legacy 2009:54). The bottom third of Stratum A and Stratum B appear to comprise Legacy’s 30-cm thick “post-1916 red clay fill” while Strata C, D, and E comprise Legacy’s 30-cm thick “ca. 1916 flood-deposited sand.” The distinct interface between Strata B and C indicates that Stratum C was truncated before Stratum B was deposited. Whether Strata C, D, and E can be attributed to the 1916 flood is uncertain, but an older age for these sand deposits is suggested by the development of lamellae within them. Stratum F appears to be the stratigraphic unit interpreted by Legacy archaeologists as a “buried cultural horizon” (Legacy 2009:54). It varies between 15 cm and 25 cm in thickness and has a darker color than the strata immediately above and below it. Examination of this stratum in profile indicates that it represents a thick band of multiple lamellae and thus developed through natural processes rather than as a result of cultural activity. Cleaning of the profile surface and additional excavation of Stratum F at the margins of the original backhoe trench failed to turn up any artifacts. Additional strata of sand and loamy sand containing lamellae were encountered beneath Stratum F. Both thin and thick lamellae within deeply buried sand deposits also were reported from Trenches 1, 2, and 7 which were dug along the proximal side of the T1 terrace levee (Legacy 2009:60).

Two 1x1-m test units were dug adjacent to Trench 9 in order to further evaluate the potential for deeply buried cultural deposits in this area of the site. These excavations are described more fully below under *741R973–974 Block Excavation*.

### *Systematic Test Excavations*

At the time of investigation, the site was covered by a stand of mature pine trees. Because the disposition of those trees was still in negotiation between SC DOT and the landowner, it was necessary to work around, rather than, remove them. This affected the placement of some excavation units and also slowed the later mechanical stripping of the site.

Initial systematic excavations by UNC archaeologists consisted of digging 1x1-meter test units at 20-meter intervals across the site. Twenty-three units were excavated in this manner, providing uniform coverage of the revised site area and also sampling the area north of the revised site boundary. Placement of a few units had to be adjusted a meter from their intended location because of vegetation. Fifteen of these were located north of the highway, and eight were located south of it. The goals for digging these initial units were: (1) to assess site stratigraphy across the site and ascertain the potential depth of deposits containing Woodland and Mississippian cultural materials; (2) to obtain artifact samples from discrete stratigraphic contexts; and (3) to evaluate the density and distribution of post-Archaic period artifacts across the site.

Twelve additional 1x1-meter test units also were dug during this phase of investigation. Two of these were dug adjacent to Trench 9; a block of four units was dug to investigate the possible archaeological features encountered by Legacy archaeologists during the excavation of Trench 6; five additional units were dug adjacent to test unit 830R910, which encountered the top of Feature 47, a rock-filled hearth; and one unit was excavated on an elevated landform at the northernmost edge of the originally-defined site as an additional assessment of the revised site boundary. Three of the original 23 test units also were located beyond the revised northern site boundary. Figure 3.7 shows the revised site boundary and the placement of the 35 test units excavated during this phase of investigation.

The method for excavating these and the additional 181 1x1-m units that were dug at the site was as follows. First, unit corners were established with a total station, with the unit being designated by the coordinate of its southeast corner (i.e., Sq. 750R950 designated a unit with corners at 750R950, 750R940, 760R950, and 760R940). Galvanized pins were placed at each corner, and string was pulled between the corners to define the unit edges. After removing leaf litter from the top of the unit, the unit was carefully excavated by natural strata, beginning with the layer of humus at the top of the unit and concluding with the basal sediments resting upon sterile subsoil. In some instances, a cut was made into the top of subsoil. All units were hand excavated with shovels and trowels. Excavated soil was dry-screened through 1/4" hardware mesh, and objects caught in the screen were placed in a paper bag and returned to the lab for cleaning. Units near the center and eastern edge of the site (i.e., along the most elevated area of the T1 terrace) usually contained the thickest and most stratigraphically complex deposits. Once an excavation level was completed, its depth at each corner was measured with a tape or folding ruler from a unit corner whose absolute elevation was obtained with a total station. Soil texture, soil color, and artifact content also were noted, and this information was placed on a separate form for each unit excavation level (Figure 3.8). All units were photographed upon completion, and any archaeological features or other disturbances observed at the base of an excavation unit were drawn by hand and also mapped with a total station.

*Systematic Testing South of Highway.* Eight units were dug at 20-m intervals south of the highway. They ranged from 39–71cm in maximum depth to top of subsoil, which corresponded with the base of plowed soil. Average depth was 52 cm. A generalized stratigraphic profile for these units is as follows. The uppermost layer consisted of humus, modern debris, and clay wash along the edge of the highway embankment which had an average thickness of 13 cm (range = 6–28 cm). Beneath this layer was a zone of flood-deposited sand (attributed to the 1916 flood event; Keith Seramur, personal communication 2010) and modern plowed soil that averaged 25 cm in thickness (range = 6–40 cm). In six of the eight units, this was underlain by a much thinner zone of old plow-disturbed soil that averaged 13 cm in thickness (range = 8–20 cm). The

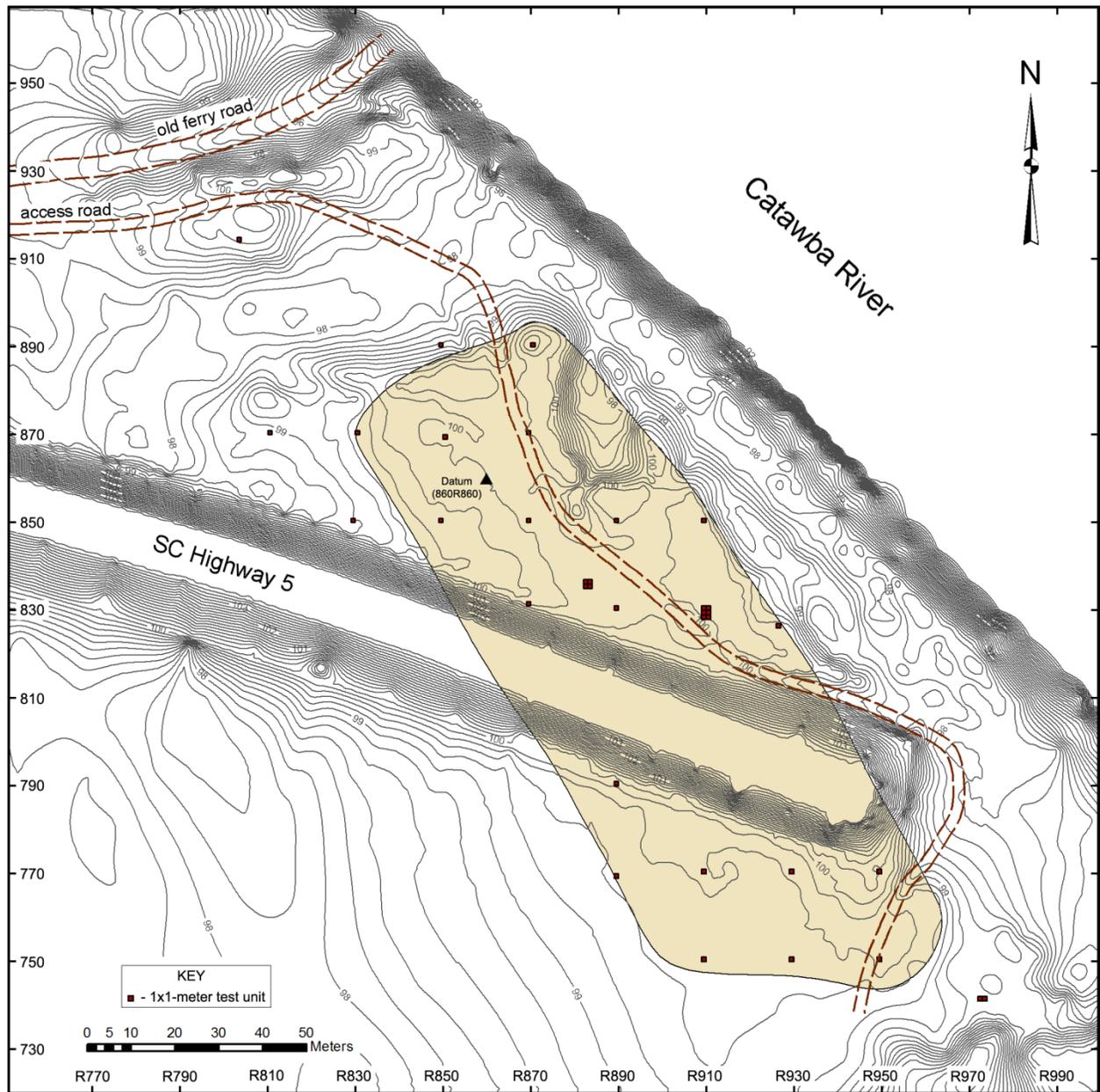


Figure 3.7. Map of the Ashe Ferry site showing the site boundary, as revised following an analysis of Legacy shovel testing data, and the placement of initial unit excavations.

two units at the southwestern edge of the site (i.e., Squares 750R910 and 750R920) did not contain evidence of an old plow zone. The modern and old plow zones were distinguished primarily by their color and texture, owing to the incorporation of flood sands into the modern plowed soil. Modern plowed soil was slightly lighter in color (10YR 4/4, dark yellowish brown) than the underlying old plowed soil (10YR 3/4, dark yellowish brown), and both graded in texture from sandy loam along the east side of the site to sandy clay loam at the western edge (Figure 3.9). Pottery, lithic artifacts, and fire-cracked rock were recovered from both plowzones; 276 potsherds came from the modern plow zone and 125 potsherds came from the old plow zone. Eighteen sherds came from other contexts (Table 3.1). Square 750R950, the easternmost unit excavated, was also the deepest and contained a few artifacts (i.e., 10 potsherds, two calcined bone, two flakes, and two fire-cracked rock) within the layer of sandy loam immediately



Figure 3.8. Excavating and dry-screening fill from Square 870R850 during systematic testing. The embankment for SC Highway 5 can be seen in the background.



Figure 3.9. Soil profile for Square 770R910, located south of the highway, showing a thick humus layer underlain by zones of flood sand, modern plowed soil, old plowed soil, and subsoil sand (at base of unit).

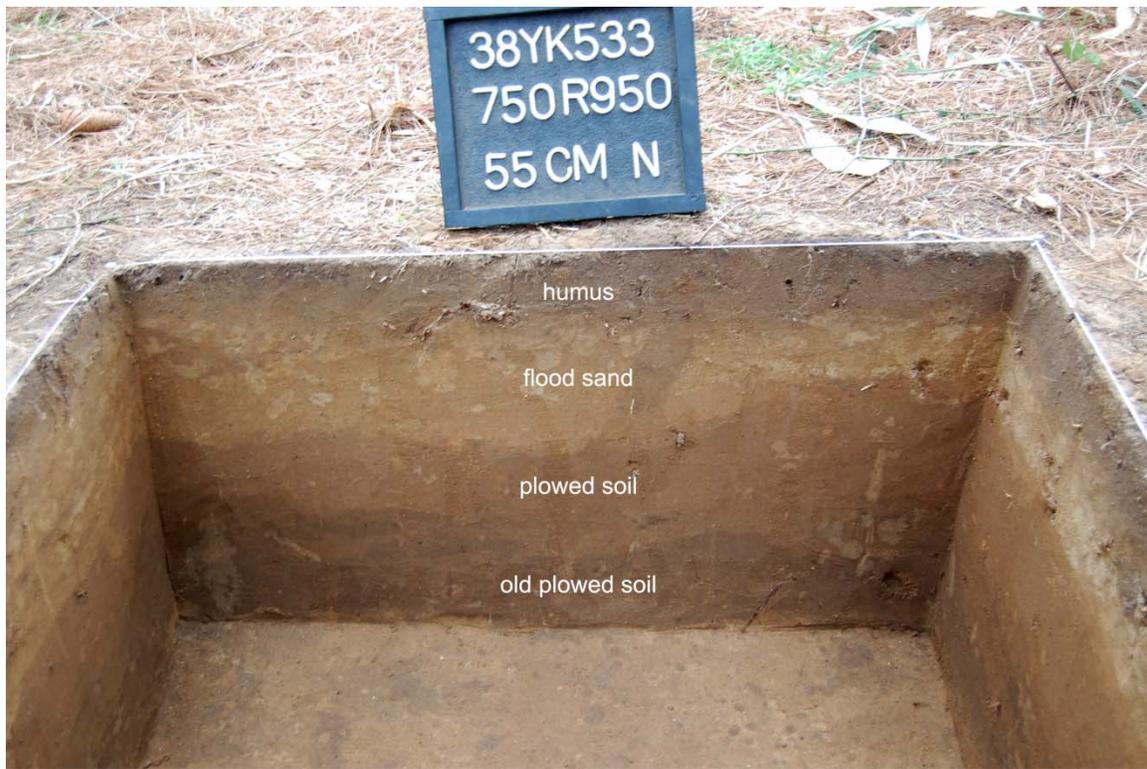


Figure 3.10. Soil profile for Square 750R950 at the southeast edge of the site, showing sequential zones of humus, flood sand, modern plowed soil, old plowed soil, and subsoil sand (at base of unit).

Table 3.1. Summary of Artifacts Recovered from Initial Test Excavations.

Test Excavation Units	Potsherds	Lithic Flakes	Other Lithic Artifacts	Fire-Cracked Rocks	Other	Total
<i>Initial Testing South of Road</i>						
Sq. 750R910	18	5	3	9	0	35
Sq. 750R930	53	10	2	22	0	87
Sq. 750R950	69	42	1	33	3	148
Sq. 769R890	50	25	1	16	0	92
Sq. 770R910	40	29	0	16	0	85
Sq. 770R930	84	57	1	44	5	191
Sq. 770R950	40	40	2	8	12	102
Sq. 790R890	65	51	3	44	0	163
Sub-total	419	259	13	192	20	903
<i>Initial Testing North of Road</i>						
Sq. 826R927	8	87	2	65	1	163
Sq. 830R890	36	36	5	51	1	129
Sq. 830R910	36	56	1	74	2	169
Sq. 831R870	76	96	2	121	1	296
Sq. 850R830	39	51	4	17	0	111
Sq. 850R850	90	153	3	13	1	260
Sq. 850R870	59	80	1	34	2	176
Sq. 850R890	62	111	3	185	8	369
Sq. 850R910	49	99	5	60	9	222

Table 3.1 (continued).

Test Excavation Units	Potsherds	Lithic Flakes	Other Lithic Artifacts	Fire-Cracked Rocks	Other	Total
Sq. 869R851	32	58	0	6	1	97
Sq. 870R811	4	4	0	6	1	15
Sq. 870R831	17	20	0	8	0	45
Sq. 870R870	97	111	0	79	2	289
Sq. 890R850	11	6	0	1	0	18
Sq. 890R871	50	84	1	19	0	154
Sub-total	666	1,052	27	739	29	2,513
<i>Other Test Units</i>						
Sq. 741R973	4	0	0	4	0	8
Sq. 741R974	5	4	0	4	0	13
Sq. 828R910	25	30	3	16	3	77
Sq. 828R911	24	57	0	92	2	175
Sq. 829R910	43	96	2	94	5	240
Sq. 829R911	38	43	3	26	0	110
Sq. 830R911	46	79	2	65	2	194
Sq. 835R883	46	41	2	51	0	140
Sq. 835R884	26	20	0	25	0	71
Sq. 836R883	47	23	1	28	0	99
Sq. 836R884	9	6	0	9	1	25
Sq. 914R804	12	8	1	9	3	33
Sub-total	325	407	14	423	16	1,185
Total	1,410	1,718	54	1,354	65	4,601

below the base of the old plow zone (Figure 3.10). Following the initial phase of mechanized site stripping, an L-shaped trench comprised of 15 1x1-m units was excavated adjacent to this unit in order to sample these more deeply buried deposits.

*Systematic Testing North of Highway.* Fifteen units were dug at 20-m intervals north of the highway. They ranged from 20 cm to 1.67 m in maximum depth, with an average depth of 54 cm. Because these units were dug before those located south of the highway, many were excavated 10–20 cm below the base of plowed soil in order to determine the potential for deeper cultural deposits. Sq. 850R870, one of the first units dug, extended 1.67 m below surface, or about a meter below the base of plowed zone. Only two flakes were found within this meter-thick zone of loamy sand, and very few artifacts were found in other sub-plow zone contexts, indicating that artifact-bearing deposits associated with the post-Archaic occupations of the site were confined to the modern plow zone, the old plow zone, soils immediately beneath the old plow zone, and pit features intruding the subsoil from those levels. While no test units on the south side of the highway encountered archaeological features, three units on the north side of the road—Squares 830R910, 850R850, and 890R871—intruded the tops of Features 47, 76, and 16, respectively.

Depth from the ground surface to the base of plowed soil ranged from 20–63 cm and averaged 43 cm. The generalized stratigraphic profile for the units north of the highway was similar to that observed on the south side of the road (Figures 3.11 and 3.12). The uppermost zone consisted of humus and flood sands; it ranged from 6 cm to 36 cm in thickness with an average thickness of 15 cm. Thicker deposits of capping flood sands occurred on the highest

elevations closest to the river (i.e., on the T1 terrace levee), while clay wash from the adjacent road embankment capped those units nearest the highway. Beneath these uppermost deposits was a modern plow zone comprised of brown (10YR 5/3) to dark yellowish brown (10YR 3/4) sandy loam that ranged from 10–25 cm in thickness (average thickness = 18 cm). Remnants of an older plow zone were observed in nine of the 15 test units; those units not containing an old plow zone were mostly situated at the northern and eastern edges of the site. Where present, the old plow zone ranged from 11–20 cm in thickness (average thickness = 16 cm). This zone was a sandy loam and varied from grayish brown (10YR 5/2) to dark yellowish brown (10YR 3/4) in color.

Artifacts attributable to the Woodland and Mississippian cultural components at the site were recovered from both plow zones. Artifacts from the old plow zone generally were larger and in better condition than those from overlying deposits, owing to a more limited impact upon them from plowing. The 15 test units on the north side of the highway produced 390 potsherds from the modern plow zone and 268 potsherds from the old plow zone. Eight sherds came from other contexts (Table 3.2).

*741R973–974 Block Excavation.* Two contiguous 1x1-m units—Squares 741R973 and 741R974—were excavated approximately two meters southwest of Trench 9 in order to examine further the potential for buried post-Archaic cultural deposits at this locality. Both units were dug to a depth of 70 cm below surface, which corresponded with the base of plow-disturbed soil. These plow-zone excavations yielded nine potsherds, a flake, and six pieces of fire-cracked rock. Square 741R974 was then dug to a depth of one meter. The coarse sands from this lower level produced only three small flakes and two fire-cracked rock fragments. Thin bands of lamella

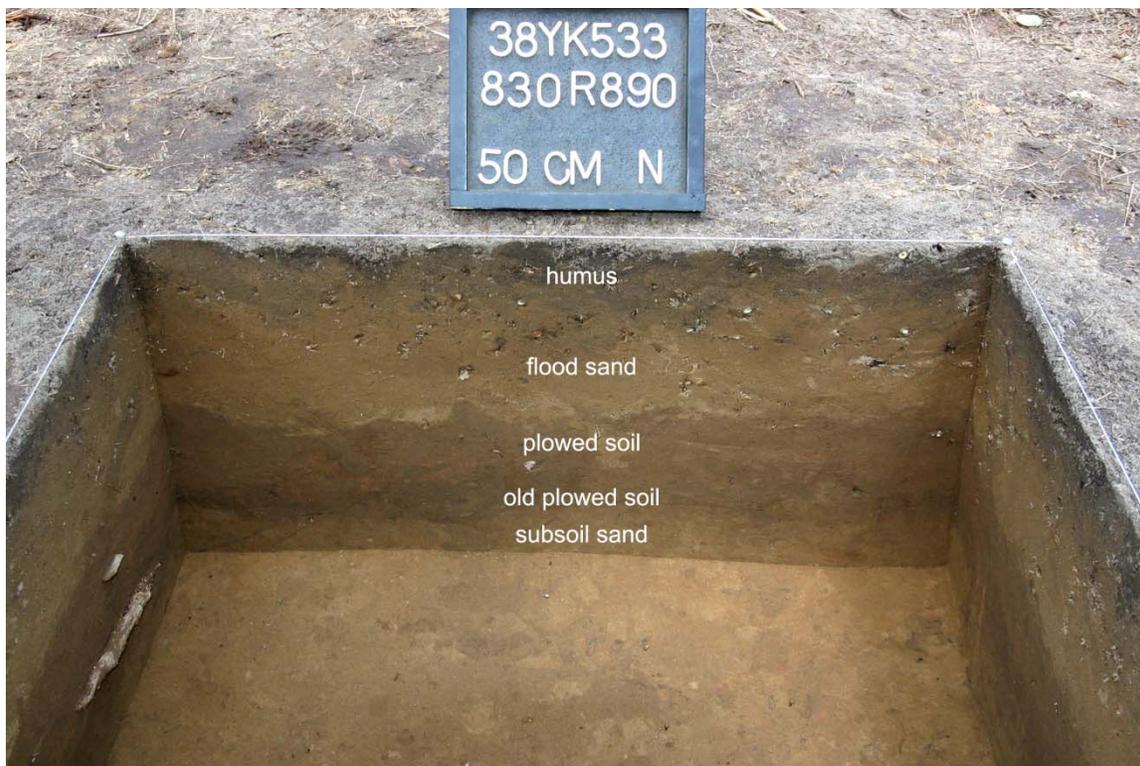


Figure 3.11. Soil profile for Square 830R890, located north of the highway, showing a humus layer underlain by zones of flood sands, modern plowed soil, old plowed soil, and subsoil sand.



Figure 3.12. Soil profile for Square 850R870, located north of the highway, showing a humus layer underlain by zones of modern plowed soil, old plowed soil, and subsoil sand.



Figure 3.13. View of the 828-830R910-911 excavation block following removal of plowed soil, showing Feature 47 on the soil pedestal at top left and the top of Feature 49 near the center of the excavation. View to north.

were observed in profile between 70 cm and 100 cm below surface, but the thick band of lamella observed below the base of plow zone in the nearby trench was absent. In sum, this excavation did not produce any evidence to support the existence of deeply buried cultural deposits beneath the base of plowed soils.

*828–830R910–911 Block Excavation.* Five additional 1x1-m units were dug adjacent to Square 830R910, one of the initial test units, in order to fully expose and define the limits of Feature 47, a fire-cracked rock cluster encountered 29 cm below surface at the base of plow zone. These units formed a 2x3-m block and exposed an additional feature—Feature 49, a shallow, oval pit (Figure 3.13). Both features are attributed to the Late Woodland Ashe Ferry phase.

*835–836R883–884 Block Excavation.* Four contiguous 1x1-m units were excavated at the southwestern end of Trench 6 in order to assess the presence of archaeological features as reported by Legacy archaeologists. These units contained a 19-cm thick zone of sandy loam plow zone and flood-deposited sand which was underlain by an older plow zone approximately 10 cm in thickness. The old plow zone was a dark brown (7.5YR 3/4) sandy loam that contained a much higher density of potsherds, flakes, and fire-cracked rock than the overlying modern plow zone. This older zone appears to represent the plow-disturbed remains of a continuous midden layer or a discrete, shallow pit feature, but no intact culturally derived deposits were observed.

*Square 914R804.* The limits of the site, as originally defined by Legacy archaeologists, included an elevated T1 terrace remnant at the northern edge of the site. This landform is separated from the revised site area by a broad erosional channel. In order to verify that the site occupation did not extend onto this terrace remnant, a single 1x1-m test unit—Square 914R804—was dug here. The excavation extended 1.05 m below surface and revealed a stratigraphic sequence (from top to bottom) consisting of a humus (6 cm thick), a modern silty sand plow zone (52 cm thick), a sandy silt loam plow zone (13 cm thick), a possible buried humus zone (2 cm thick), a sandy loam plow zone (19 cm thick), and sterile sand. Plow scars were observed at the top of the sterile sand, and only a few small, eroded potsherds, flakes, and pieces of fire-cracked rock were recovered from the overlying plowed soils. These findings indicate that the soils on this landform are highly disturbed and contain only minimal evidence of prehistoric activity.

*Distribution of Pottery in Test Units.* Once the initial phase of systematic test excavation was completed, the distribution and density of pottery from those units was mapped in order to evaluate the site boundary revisions made using the Legacy shovel-testing data and to identify areas of the site where more expansive excavations should be undertaken to sample the site's Woodland and Mississippian cultural components. The resulting map (Figure 3.14) based on these ceramic sherd distributions indicates a refined site boundary coextensive with the arbitrary 99.5m contour (143.6m/471ft, AMSL) within the tested area (i.e., the project APE) and extrapolated to include a small area immediately south of the project area. This boundary indicates an original site area of approximately 1.1ha (11,207m<sup>2</sup>), of which 305.5m<sup>2</sup> is outside the project area, 3,136m<sup>2</sup> is obstructed (or obliterated) by the SC Highway 5 causeway, and 550m<sup>2</sup> appears to have been destroyed by soil borrowing. Units north and west of this revised boundary produced relatively few potsherds, and these derived from probable redeposited soils. Several units within the revised site boundary also produced low-to-moderate sherd counts, interspersed between units that produced large sherd samples, a pattern indicating that the

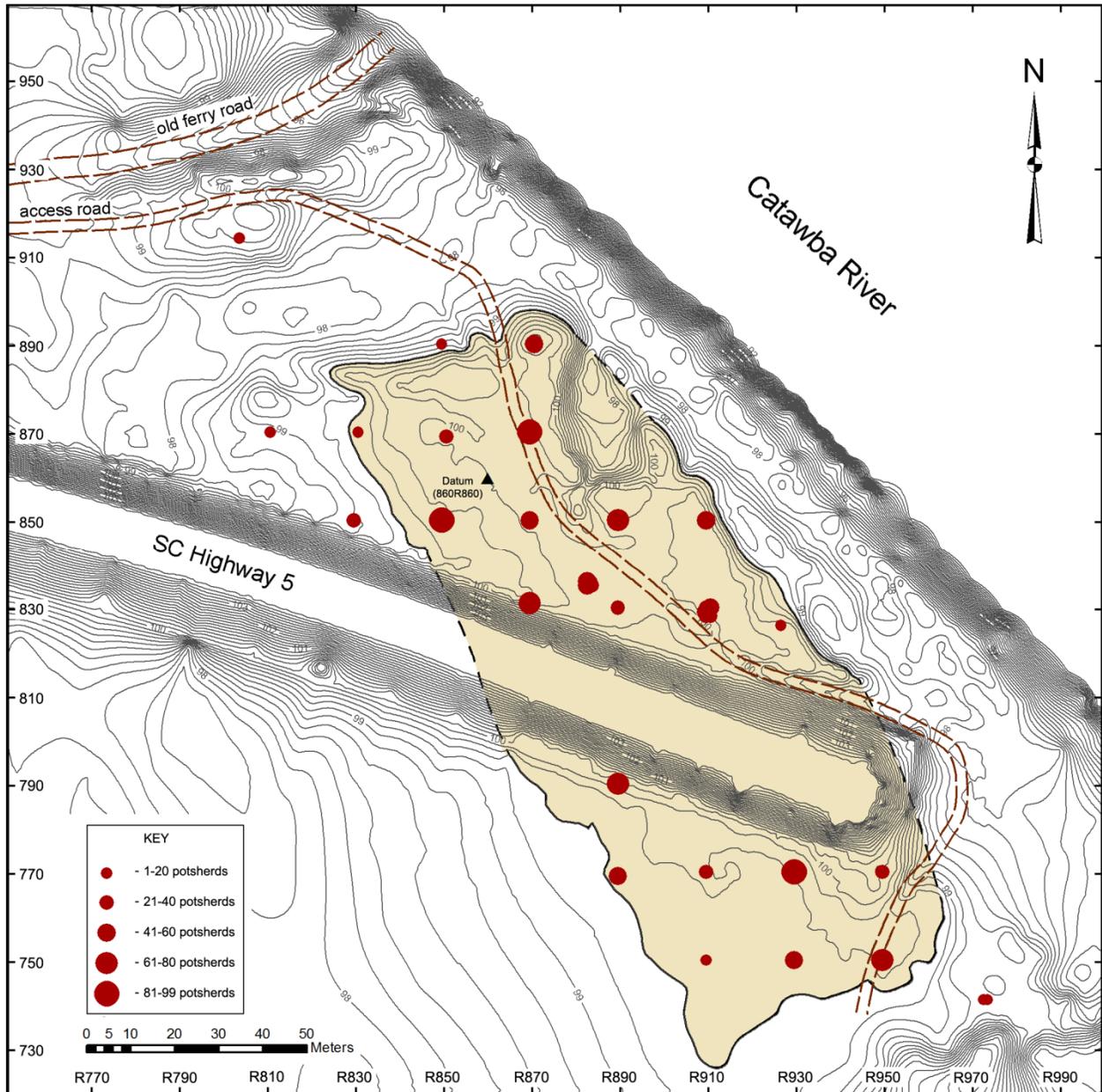


Figure 3.14. Map of potsherd density at Ashe Ferry based on artifact samples recovered from systematic test excavations. The shading represents the revised site area. Potsherd incidences outside the revised boundary appear to reflect redeposited soils.

evidence for Late Woodland and Mississippian occupation of the site is not continuously distributed. Instead, the distributional data indicate discrete areas of intense cultural activity and peripheral areas where activities were less intense. This uneven spatial pattern of potsherd density corresponds to the uneven distribution of archaeological features that were identified following mechanized stripping of the site.

#### *Phase I Stripping of Plowed Soil*

After completion of the initial phase of test unit excavations, a trackhoe with a toothless bucket was used to remove the overlying flood deposits and modern plowed soil from portions of



Figure 3.15. Removing flood sands and modern plowed soil with a trackhoe during phase I stripping at the Ashe Ferry site.



Figure 3.16. Flatshoveling the base of an excavated trench during phase I stripping to identify archaeological features and retrieve artifacts.

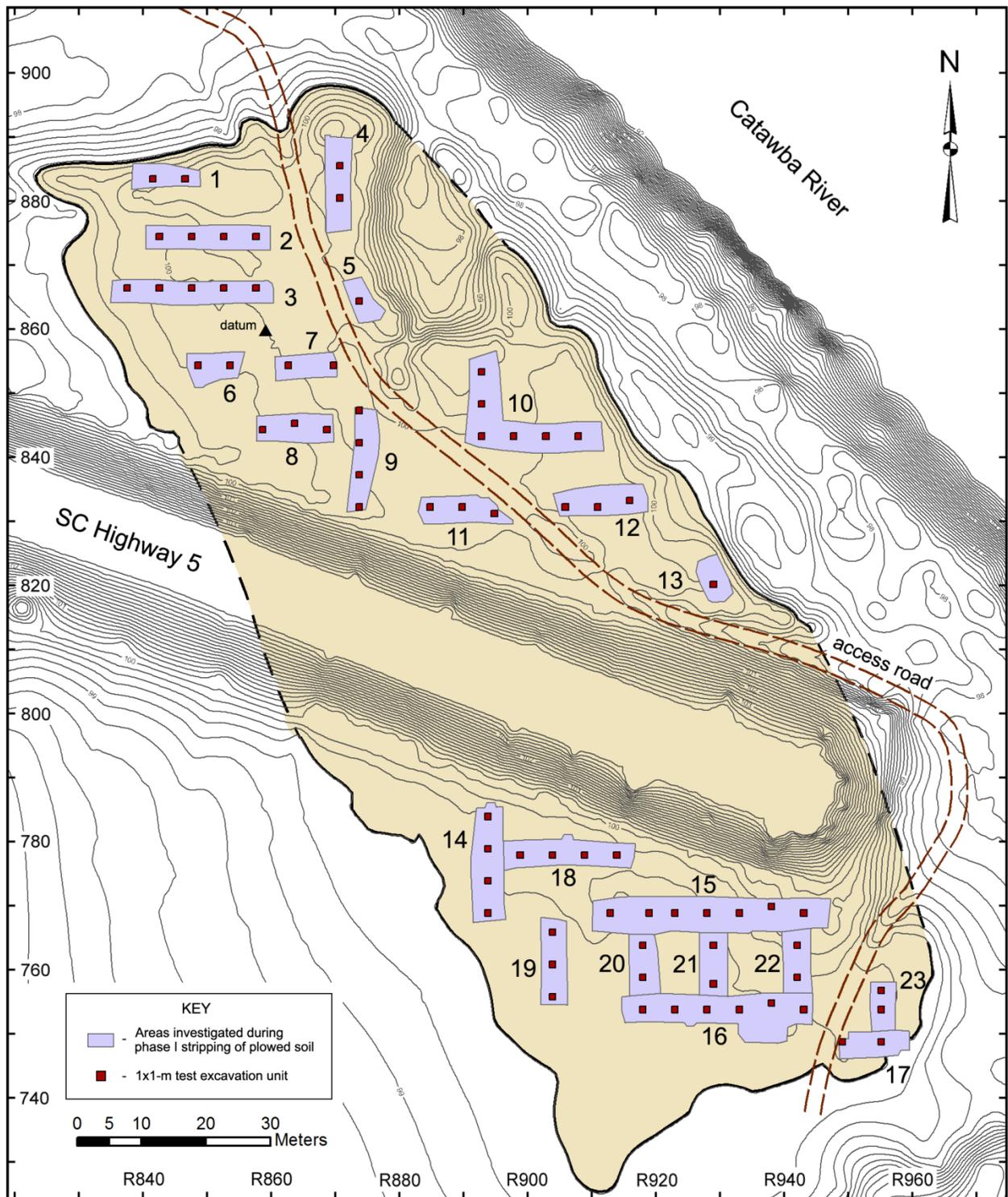


Figure 3.17. Map of the Ashe Ferry site showing the 23 trenches opened during phase I stripping of plowed soil and the 72 test units excavated within those trenches.

the site in order to create large exposed surfaces for identifying archeological features, areas of undisturbed midden, and dense concentrations of artifacts. In all, 23 trenches ranging from 3.5–5.6 m in width (average = 4.3 m) and 6.9–36.9 m in length (average = 15.4 m) were excavated. The depths of these trenches ranged from 12 cm in areas that had been previously disturbed to 36 cm in areas with deep deposits of flood sand and modern plowed soil, and they provided uniform coverage across the site. Trenches were aligned either north–south or east–west, with 5–6-m wide gaps between trenches for placement of backdirt (Figures 3.15–3.17; Table 3.2).

Phase I stripping exposed approximately 1,524 m<sup>2</sup>, or 21%, of the effective site area. Effective site area was defined as the portion of the site that was actually available for archaeological investigation. Although the revised site boundary (within the project APE) encompassed about 11,200 m<sup>2</sup>, a significant part of that area was either inaccessible or had been previously destroyed. Almost 29% of the total site area lay beneath the causeway for SC highway 5, and an additional 8.8% of the site was taken up by the access road or removed by an old borrow pit at the northeast edge of the site. Because of these features, the effective site area available for investigation was only 7,215 m<sup>2</sup>, or 64.4% of the total site.

The following procedure was used to excavate a trench. First, the intended trench location and lateral boundaries were located and staked out. Next, the trackhoe operator began at one end of the trench, carefully stripping the topsoil within an approximately 3x4-m area in 5 cm to 10 cm increments. As soon as the top of the old plow zone or subsoil began to appear, a team of archaeologists using shovels and working in concert with the trackhoe operator carefully removed the remainder of the topsoil to expose a clean surface. Artifacts found during the excavation were bagged by trench (or sometimes by area within a trench), and all exposed trench floors were flatshoveled and examined for evidence of archaeological features. Artifacts collected during both phase I and II mechanized stripping include 2,569 potsherds, 769 flakes, 172 other lithic artifacts, and 27 other artifacts.

Possible features, indicated by the presence of fire-broken rocks, artifact concentrations, or darkened soil stains, were marked with pin flags for later investigation. Artifacts found in association with those possible features were either left in place or collected and bagged separately. In this fashion, the trackhoe and archaeologists moved across the entire trench until the opposite end was reached. Obvious tree stump holes and root molds were not marked or mapped; however, more ambiguous soil disturbances were treated as possible cultural features until determined otherwise through excavation.

Once the trenches were completed, additional 1x1-m test units were excavated within them at five meter intervals in order to supplement the sample of systematically recovered artifacts from old plow zone and sub-plow zone contexts (Figure 3.18). Seventy-two units were excavated during this phase of investigation. With the overlying deposits removed by stripping, most of these units were less than 20 cm deep; however, some units in Trenches 14, 17, and 23 sampled old plow zone deposits that were up to 40 cm thick. Overall, the test units excavated within the stripped trenches yielded 2,099 potsherds, 2,320 flakes, 96 other lithic artifacts, 2,097 fire-cracked rock fragments, and 108 other artifacts. On average, the per-unit artifact counts from the trench units were about 70% of those from the initial test units where all soils within a unit were excavated and screened, even though stripping removed about 60% of the upper fill from those units. This reflects the generally higher artifact density within the old plow zone, but doesn't consider the additional fact that artifacts from that zone were generally larger due to less mechanical weathering.

Table 3.2. Dimensions of Trenches Excavated during Phase I and II Stripping, and Numbers of Test Units Subsequently Dug in Each Trench.

Trench	Length (m)	Width (m)	Area (sq m)	Initial Depth (cm)	Total Depth (cm)	No. of Test Units	Avg. Test Unit Depth (cm)
<i>Phase I Stripping</i>							
Trench 1	10.8	3.6	36.4	20	38	2	18
Trench 2	19.3	3.8	72.4	14	31	4	17
Trench 3	25.4	3.8	90.3	27	39	5	12
Trench 4	15.1	4.3	59.4	23	30	2	7
Trench 5	6.9	3.5	25.6	27	35	1	8
Trench 6	9.0	4.6	37.1	35	45	2	10
Trench 7	9.0	3.7	35.3	31	46	2	15
Trench 8	11.7	4.2	50.8	25	42	3	17
Trench 9	16.3	3.8	56.4	26	41	4	15
Trench 10	29.6	4.5	145.9	15	35	6	20
Trench 11	13.8	4.2	52.1	25	39	3	14
Trench 12	14.0	4.8	62.2	12	39	3	27
Trench 13	6.5	4.3	28.2	14	30	1	16
Trench 14	17.7	5.0	86.5	25	62	4	37
Trench 15	36.9	5.6	196.3	33	57	7	24
Trench 16	29.6	4.9	154.4	29	40	6	11
Trench 17	10.9	4.1	41.0	37	77	2	40
Trench 18	20.5	4.5	82.3	33	56	4	23
Trench 19	13.5	4.2	54.1	30	43	3	13
Trench 20	9.7	4.8	42.4	31	58	2	27
Trench 21	9.6	4.5	43.5	25	39	2	14
Trench 22	10.0	4.5	42.3	32	48	2	16
Trench 23	7.7	4.1	29.5	36	63	2	27
Sub-total			1,524.4			72	
<i>Phase II Stripping</i>							
Trench 2a	9.2	4.9	42.4	-	31	-	-
Trench 6a	5.9	4.1	20.6	-	45	-	-
Trench 8a	3.5	5.2	18.2	-	42	-	-
Trench 10e	15.3	12.4	142.6	15	39	3	24
Trench 10n	14.5	8.8	46.6	-	30	-	-
Trench 10s	12.4	10.1	68.8	-	36	-	-
Trench 10w	19.9	6.3	68.3	-	30	-	-
Trench 24	20.0	14.1	110.0	-	39	-	-
Trench 25	21.1	6.0	95.2	-	57	-	-
Trench 26	11.1	6.5	64.9	-	41	-	-
Trench 27	9.8	8.3	84.4	-	44	-	-
Trench 28	13.3	9.4	103.6	-	41	-	-
Trench 29	7.7	5.3	38.3	-	44	-	-
Trench 30	9.7	5.0	43.5	-	52	-	-
Trench 31	13.3	7.7	89.7	-	44	-	-
Trench 32	5.1	4.3	22.0	-	35	-	-
Sub-total			1,059.1			3	
Total			2,583.5			75	



Figure 3.18. Excavating and mapping test units in Trench 3. View to west.

As with the initial testing at the site, surprisingly few test units encountered archaeological features. Feature 11, a large storage pit, was identified in Square 758R930 (Trench 21); Feature 12, a fire-cracked rock cluster, was found in Square 784R895 (Trench 14); and the edge of Feature 13, another fire-cracked rock cluster, was observed in Square 778R905 (Trench 18) (Figure 3.19).

#### *Phase II Stripping of Plowed Soil*

Most of the trenches excavated during the initial stripping of topsoil exposed the top of the old plow zone rather than subsoil; consequently, few archaeological features were clearly identified during this phase of site investigation. After excavating the additional test units, the remaining old plowed soil was removed from the trenches and additional areas, also called trenches but more irregular in shape, were excavated to the base of the old plow zone or top of subsoil (Figure 3.20; Table 3.3). Seven areas containing high concentrations of artifacts and evidence of archaeological features were exempted from additional mechanized stripping and instead were excavated by hand as blocks of 1x1-m units (see discussion below under *Additional Test Units and Block Excavations*).

Sixteen new areas totaling 1,059 m<sup>2</sup> were exposed during phase II stripping, and all of the initially excavated trenches, except for Trenches 13, 17, and 23, also were taken down to the top of subsoil. Most of the new phase II stripping occurred north of the highway, where most of the identified archaeological features were clustered. This also was the part of the site that would



Figure 3.19. Trench test units excavated from the trench base to the top of subsoil: Square 778R905 in Trench 18, showing fire-broken rocks associated with Feature 13 at northwest corner (left); and Square 758R930 in Trench 21, exposing the top of Feature 11 and a large potsherd in the west half of the unit (right).

experience the greatest impact from SC DOT's bridge replacement project. Phase I stripping of the site area south of the highway indicated that it contained far fewer archaeological features and that the features were widely scattered. Coincidentally, SC DOT plans indicated that this part of the site would be used primarily as a staging area and therefore not be as heavily impacted. One large area designated Trench 25, and located between Trench 15, Trench 18, and the highway, was stripped because of higher-than-expected densities of artifacts in those adjacent trenches and the presence of Mississippian potsherds within those artifact samples. It exposed a single feature—Feature 41—that is interpreted as the truncated base of a Late Mississippian storage pit.

Two particularly large exposures were created by contiguous trenches dug around Trenches 6–11 in the west-central part of the site and around Trenches 10 and 11 along the east-central site edge. These two areas contained 36 (69%) of the 52 archaeological features identified at the site, including the three identified graves. In contrast, the remaining areas examined north of the highway, including a large block of 64 1x1-m units excavated across Trenches 2 and 3, produced only seven archaeological features, and the entire area stripped south of the road yielded only nine features.

If the total areas stripped on each side of the highway are considered separately, about 44% of the effective site area north of the highway was examined while 33% of the site area south of the highway was exposed. The largest area north of the road not investigated was between Trench 3 and Trenches 6 and 7. This was the location of the site datum, critical to maintaining spatial control of the investigations throughout the project. Unexcavated areas peripheral to the

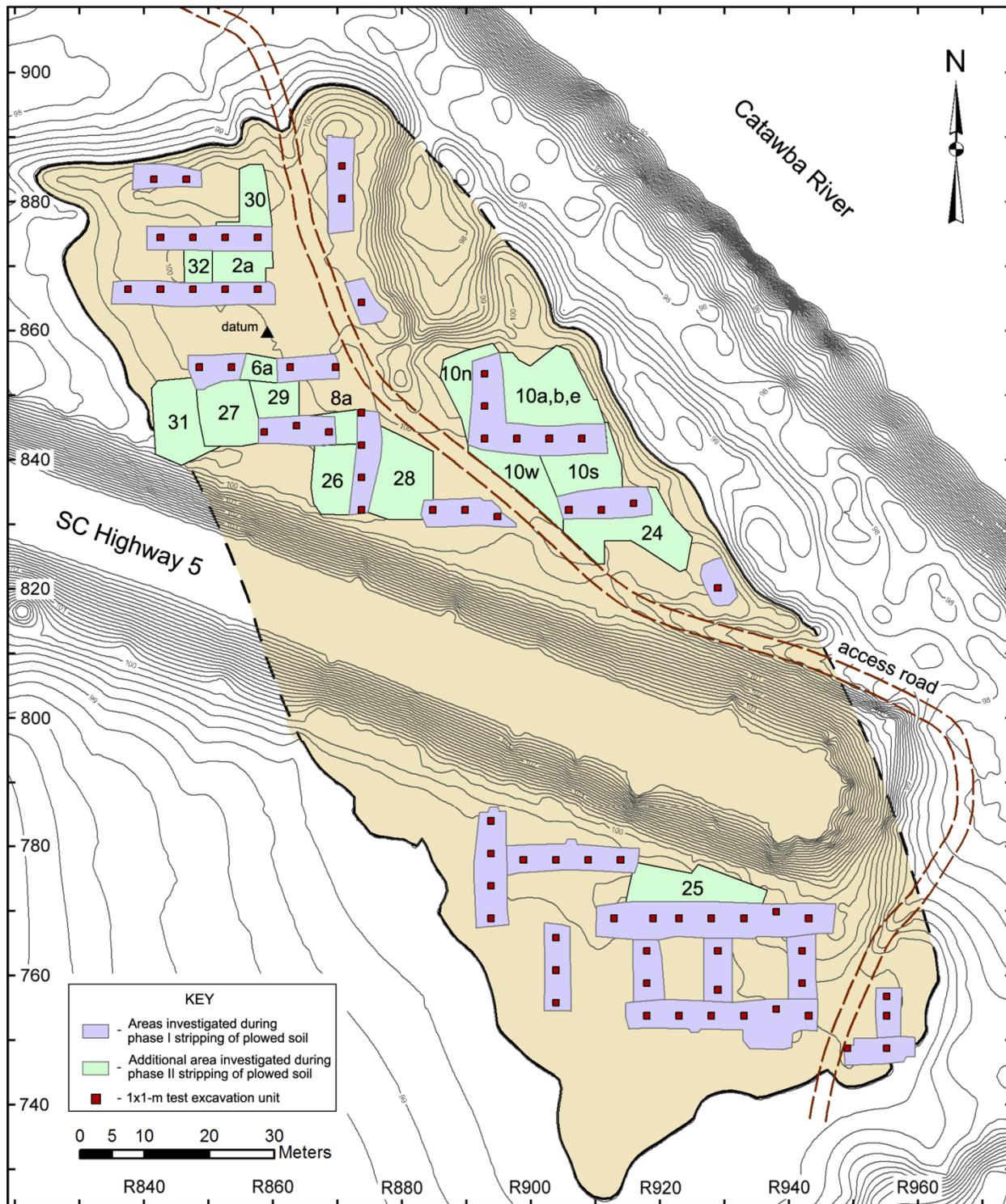


Figure 3.20. Map of the Ashe Ferry site showing the additional 16 trenches opened during phase II stripping of plowed soil.

datum were used to store backdirt. This area also lay between two widely separated clusters of identified archaeological features in Trench 2 and 2a and in Trenches 27 and 29. Most of the area not investigated south of the road was at the southwestern edge of the site where artifact densities within test units were low and no archaeological features were found during initial stripping.

#### *Additional Test Units and Block Excavations*

Seventy-two test units were excavated within the trenches exposed by phase I stripping. Three more test units—all in the vicinity of Trench 10—were excavated during phase II stripping in order to provide additional coverage within this important site area. This area was adjacent to the front edge of the T1 terrace and was where 23 features, including three graves, were ultimately found. Although numerous potsherds and other artifacts were observed and collected during phase II stripping in this area (designated Trench 10e), only remnants of the old plow zone remained and artifact density within that zone was generally low (i.e., less than 20 potsherds per unit).

Eight other areas were hand-excavated as blocks of contiguous 1x1-m units (Figure 3.21). These blocks ranged in size from three 1x1-m units to as large as 64 1x1-m units and represent a total of 181m<sup>2</sup>. The trench areas selected for sampling through block excavation contained higher artifact densities and in some instances also contained evidence of archaeological features. Two of the areas where blocks were excavated south of the highway produced several fragments of Mississippian pottery during phase I stripping.

*Trench 2 Excavation Block.* This excavation block contained 64 1x1-m units (Squares 866–875R853–859), plus four test units excavated at the east ends of Trenches 2 and 3, and was by far the largest block excavation at the site (Figure 3.22). The units in this block cover a 7 m by 10 m area, within which eight units were left unexcavated due to the presence of large trees. Two additional units were dug at the southwest corner to fully expose an archaeological feature. Eighteen potential archaeological features were identified and excavated within this block; following their excavation, 13 were interpreted as non-cultural features that likely represent tree disturbances. The other five features include: a small, fire-cracked rock cluster (Feature 15); two shallow, refuse-filled basins that appear to represent truncated storage facilities (Features 32 and 42); and two other irregular, refuse-filled basins (Features 35 and 40). In Square 873R856 near the north edge of the block, excavators found numerous fragments of a largely restorable fine fabric-marked jar that is attributed to the Ashe Ferry phase. These fragments were recovered at the base of the old plow zone (Figure 3.23).

The more than 10,000 artifacts from this excavation block, not including those from feature contexts, appear to be associated almost exclusively with the Ashe Ferry phase site occupation and include: 3,075 potsherds, 3,529 flakes, 186 other lithic artifacts, 3,151 fire-cracked rocks, and 150 other artifacts. The contents of the five features are described more fully in Appendix B.

*Trench 10 Excavation Blocks.* While stripping the northwest end of Trench 10, a layer of artifact-rich soil was observed near the edge of the old borrow pit that intrudes the northeast edge of the site. This deposit was sampled by a block of three units (Squares 855R893–895) and an adjacent block of four units (Squares 854–855R888–889). The first block revealed a 5-cm-thick lens of old plow zone that contained 95 potsherds as well as other artifacts, including a piece of iron wire. The artifact-bearing zone in the adjacent block was much deeper, with a

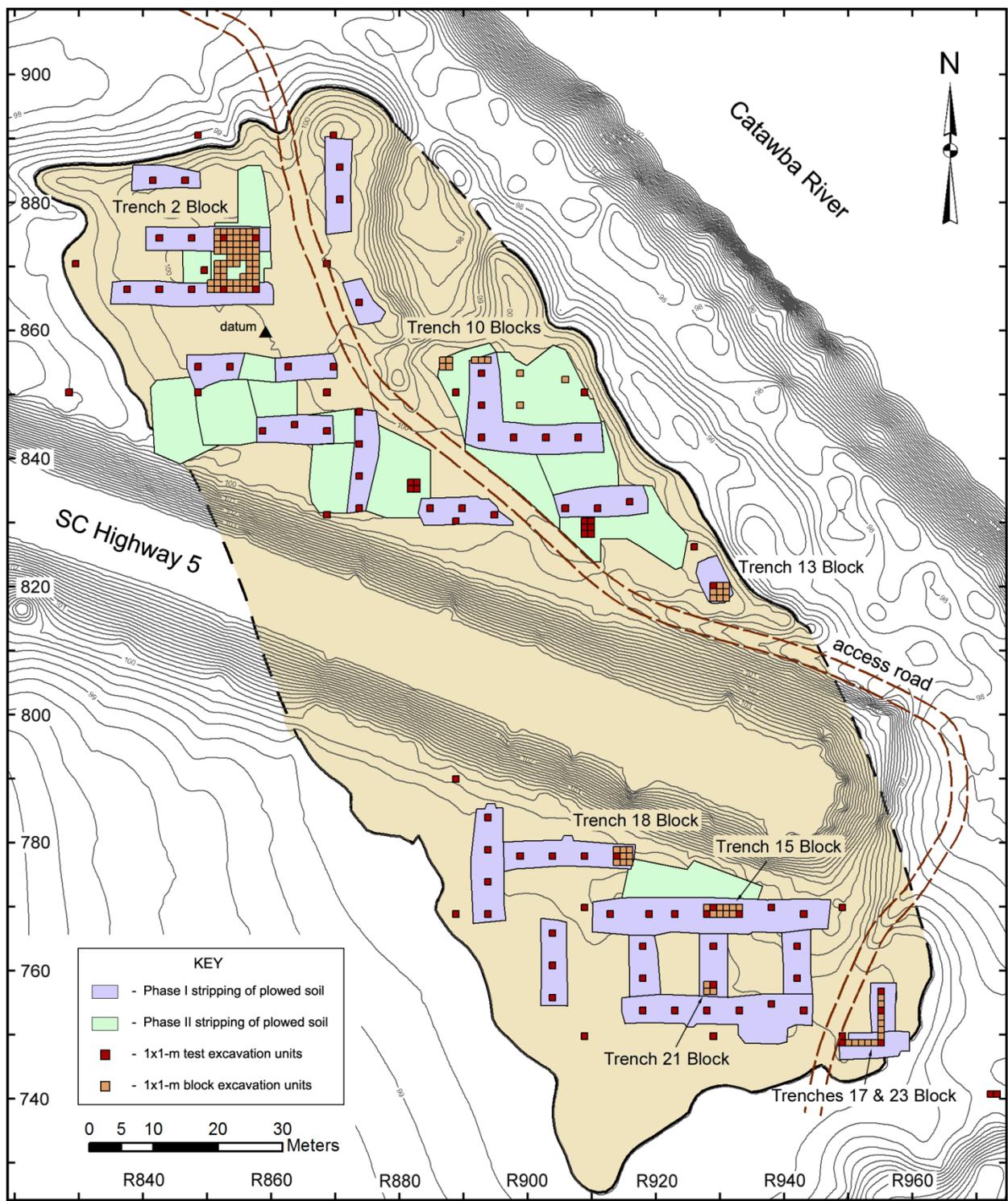


Figure 3.21. Map of the Ashe Ferry site showing all stripped trenches, test units, and block excavations.



Figure 3.22. Excavating units at the north edge of the Trench 2 block. The students at right are troweling old plowed soil in Square 873R856 to expose a cluster of large potsherds.



Figure 3.23. Cluster of large fabric impressed potsherds found in Square 873R856 within Trench 2 excavation block.

maximum depth at the northwestern edge of 38 cm below the base of the stripped surface. It contained 385 potsherds, 1,038 flakes, 44 other lithic artifacts, 1,956 fire-cracked rocks, and 32 other artifacts. Two cut nails, an iron disk, and an iron nut were among the other artifacts found near the base of the deposit, indicating that it represented old plowed soil that had been pushed over the edge of the old borrow pit rather than an aboriginal deposit that had been truncated by that pit.

*Trench 13 Excavation Block.* Artifacts recovered from Square 820R930, the only test unit excavated in Trench 13, included several Badin Fabric Impressed potsherds, indicating the presence of an Early or Middle Woodland occupation at the site. Since this was the only location where Badin pottery had been observed, a block of nine 1x1-m units (Squares 818–820R930–932), including the initial test unit, was excavated to provide additional material associated with this cultural component. These units contained a dark yellowish brown (10YR 4/4) silty sand and were excavated as a single zone to depths of 13–20 cm. Tree disturbances were encountered in three of the units, but no cultural features were identified. Trench 13 excavations, including the initial test unit, produced 183 potsherds, 189 flakes, five other lithic artifacts, 174 fire-cracked rock fragments, three pieces of daub, and two calcined bone fragments.

*Trench 15 Excavation Block.* This excavation block was located near the center of Trench 15, about six meters south of the SC highway 5 embankment. It contained 12 1x1-m units (Squares 769–770R929–934), including Square 770R930 dug during initial test excavations at the site and Squares 769R929 and 769R924 which were dug after phase I stripping of Trench 15 (Figure 3.24). All three of these test units yielded Mississippian potsherds from a moderately thick (i.e., 17–29 cm) old plow zone. These were expanded into a 2-m x 6-m wide trench in order to search for undisturbed features and midden deposits associated with the site's Mississippian component and to obtain a larger artifact sample from the old plow zone (Figure 3.25). While no undisturbed contexts were identified in this excavation block, the only feature clearly attributable to the Mississippian component was found less than two meters north of the block within Trench 25. The 12 units within the Trench 15 excavation block contained 404 potsherds, 255 flakes, 12 other lithic artifacts, 195 fire-cracked rocks, and 25 other artifacts.

*Trenches 17 and 23 Excavation Block.* During the initial testing of the site, Square 750R950 at the southeast edge of the site exposed an especially deep zone of old plowed soil containing potsherds, calcined bone, and other artifacts. Because of the thickness of the overlying deposits, this area along the front edge of the T1 terrace was considered to have a higher potential for containing undisturbed, and perhaps stratified, cultural deposits beneath the base of plow zone. Trackhoe stripping of Trenches 17 and 23 removed about 30 cm of flood deposits and modern plowed soil from a 70 sq m area, and several fragments of burnished and complicated-stamped pottery, attributable to the Mississippian period, were collected while cleaning the top of the old plow zone. After stripping, four 1x1-m test pits were dug into the trench floors. These units—Squares 749R950, 749R956, 754R956, and 757R956—contained artifact-bearing strata as deep as 50 cm below the top of the old plow zone and revealed up to three distinct fill zones resting on top of sterile sand. The block excavation within Trenches 17 and 23 consisted of digging 11 additional 1x1-m units between the test units to form an L-shaped, one-meter-wide trench running seven meters west to east from Square 749R950 to Square 749R956 and then nine



Figure 3.24. Trench 15 after phase I stripping and excavation of test units. The block excavation encompassed the three test units near the center of the trench. View to northeast.



Figure 3.25. Trench 15 excavation block with old plow zone removed. The deeper unit in the foreground was excavated into the subsoil sand. View to east.

meters north to Square 757R956. Units within this trench were excavated by natural strata (Figures 3.26 and 3.27).

Despite the soil depth and stratigraphy, all of the zones above sterile sand are interpreted as buried plowed soils and not intact cultural deposits. A mixture of Late Woodland and Mississippian pottery was recovered from the basal zones, and the juncture between the lowest artifact-bearing zone and the sandy subsoil was distinct and irregular, similar to the soil interface seen elsewhere at the site where plow scars were clearly evident at top of subsoil. Parts of the trench floor and walls were heavily mottled with light sandy soil due to worm activity.

Artifacts recovered from the Trenches 17 and 23 excavation block (including those found in the four test pits) include 774 potsherds, 208 flakes, 20 other lithic artifacts, 297 fire-cracked rocks, and 14 other artifacts. A slightly darker, mottled soil discoloration at the base of Square 749R956 was designated Feature 81, but it was not excavated. While this feature may represent an intentionally dug pit, its location at the edge of the T1 terrace suggests that it more likely is a natural gully filled in with old plowed soil.

*Trench 18 Excavation Block.* Square 778R915, the easternmost test unit excavated in Trench 18, contained two distinct zones of old plowed soil (each about 15 cm thick) beneath the modern plow zone, and both contained numerous potsherds, fire-cracked rock, and other artifacts. Given the depth of this unit, it was hoped that patches of undisturbed midden might be present in this area. Eight contiguous 1x1-m units forming a 3x3-m block (Squares 777–779R915–917) were excavated to test this hypothesis (Figure 3.28). No traces of undisturbed midden were found, but a large, plow-disturbed cluster of fire-cracked rocks was encountered in



Figure 3.26. Excavating the block within Trenches 17 and 23. View to north.

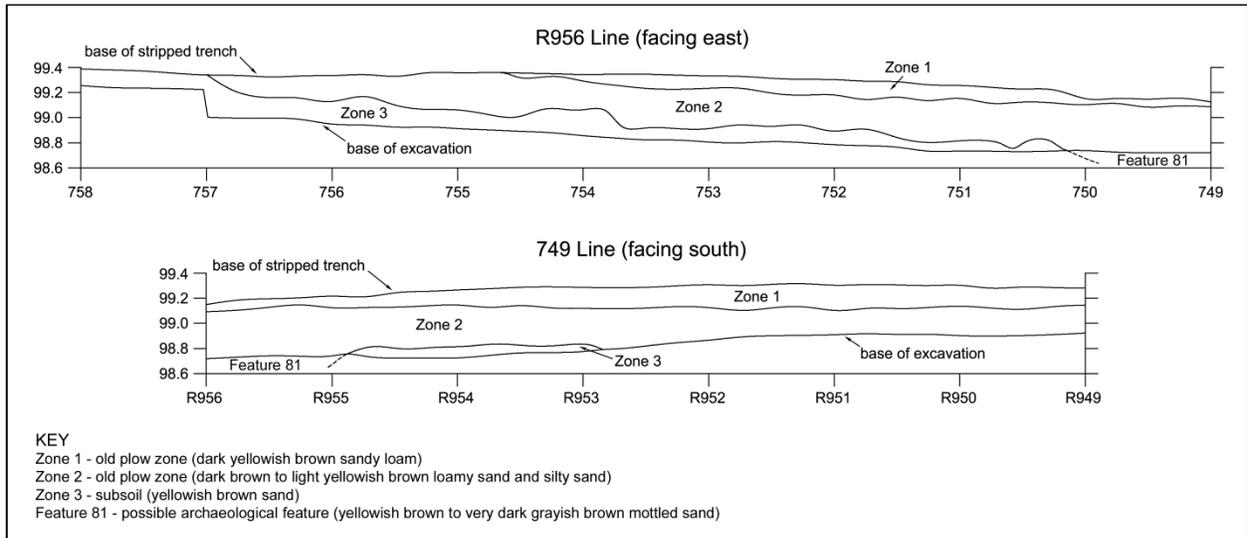


Figure 3.27. East and south soil profiles for the L-shaped trench comprising the Trenches 17 and 23 excavation block.



Figure 3.28. The Trench 18 excavation block, showing *in situ* fire-cracked rocks associated with Feature 21. View to north.

the southeast quadrant at the base of the excavation block. This cultural feature, designated Feature 21, represents a cooking or heating facility and is attributed to the Late Woodland Ashe Ferry phase. Artifacts recovered from the Trench 18 block excavation (excluding those found while excavating Feature 21) include 351 potsherds, 284 flakes, 12 other lithic artifacts, 1,111 fire-cracked rocks, and 15 other artifacts.

*Trench 21 Excavation Block.* This was a 2-m x 2-m block (Squares 757–758R929–930) that expanded from Square 758R930, one of the test units in Trench 21, in order to expose the top of Feature 11. These units exposed most, but not all, of this large, Ashe Ferry phase storage pit; phase II stripping exposed the remainder of this feature. These units were only 10–12 cm deep (below base of phase I stripping) and contained relatively few artifacts, including 119 potsherds, 46 flakes, 37 fire-cracked rocks, and three other artifacts.

#### *Mapping and Excavation of Archaeological Features*

Eighty-one sub-plow zone contexts at the Ashe Ferry site were designated as archaeological features and excavated as discrete contexts; after excavation, 52 of these were determined to be of cultural origin (Figure 3.29). Two basic types of culturally derived archaeological features were evident. The first type consisted of pits of various sizes, shapes, and depths, which represent storage pits, refuse-filled depressions, possible post holes, caches, and graves. Thirty-eight features of this type were excavated. The second type included clusters of fire-broken rocks, also of various sizes and shapes, that are interpreted as hearths or cooking facilities. Thirteen rock clusters were excavated as features.

While remnants of both types of features were sometimes recognizable near the base of the old plow zone, they usually could not be defined clearly until all plowed soil had been removed. As trenches were stripped, all areas of darker soil were carefully cleaned with flatshovels and trowels. Many of the exposed feature surfaces exhibited higher densities of pottery, flakes, and fire-broken rock. Fire-cracked rock clusters, however, often consisted only of rocks resting on the top-of-subsoil surface, and in many cases these had been partially disturbed by plowing. Those potential features which did not disappear with the removal of the old plow zone were flagged and given a feature designation. These included 29 other disturbances that, upon excavation, were determined to be of non-cultural origin such as tree tip-ups, root disturbances, and stump holes.

The following procedures were used to document, excavate, and map archaeological features. Prior to excavation, the top of each feature was carefully trowelled to create a clean, crisp surface; it then was photographed and mapped both by hand and with a total station (Figure 3.30). Most features were bisected and excavated by halves in order to expose and document the fill structure in profile. While some of these features contained a single fill zone, many had complex fill structures and contained multiple zones of contrasting fill. Fill from each zone (in each half) was excavated and processed separately. Artifacts encountered during excavation of a feature zone usually were removed and bagged separately. Standard 10-liter samples of soil from each zone were retained for flotation processing to recover carbonized and uncarbonized plant remains. In instances in which the volume of the zone was less than 10 liters, or the deposit appeared especially rich in botanical materials, the matrices of entire zones were flotation processed. All other feature soils were waterscreened through 1/16" window screen. Once the first half of a feature was completed, the exposed fill profile was trowelled, photographed, and mapped both by hand using a line level and folding rulers, and with a total station (Figure 3.31). Afterwards, the remaining half was excavated in similar fashion. Upon completion of excavation, the entire feature was again trowelled, photographed, and mapped (Figure 3.32).

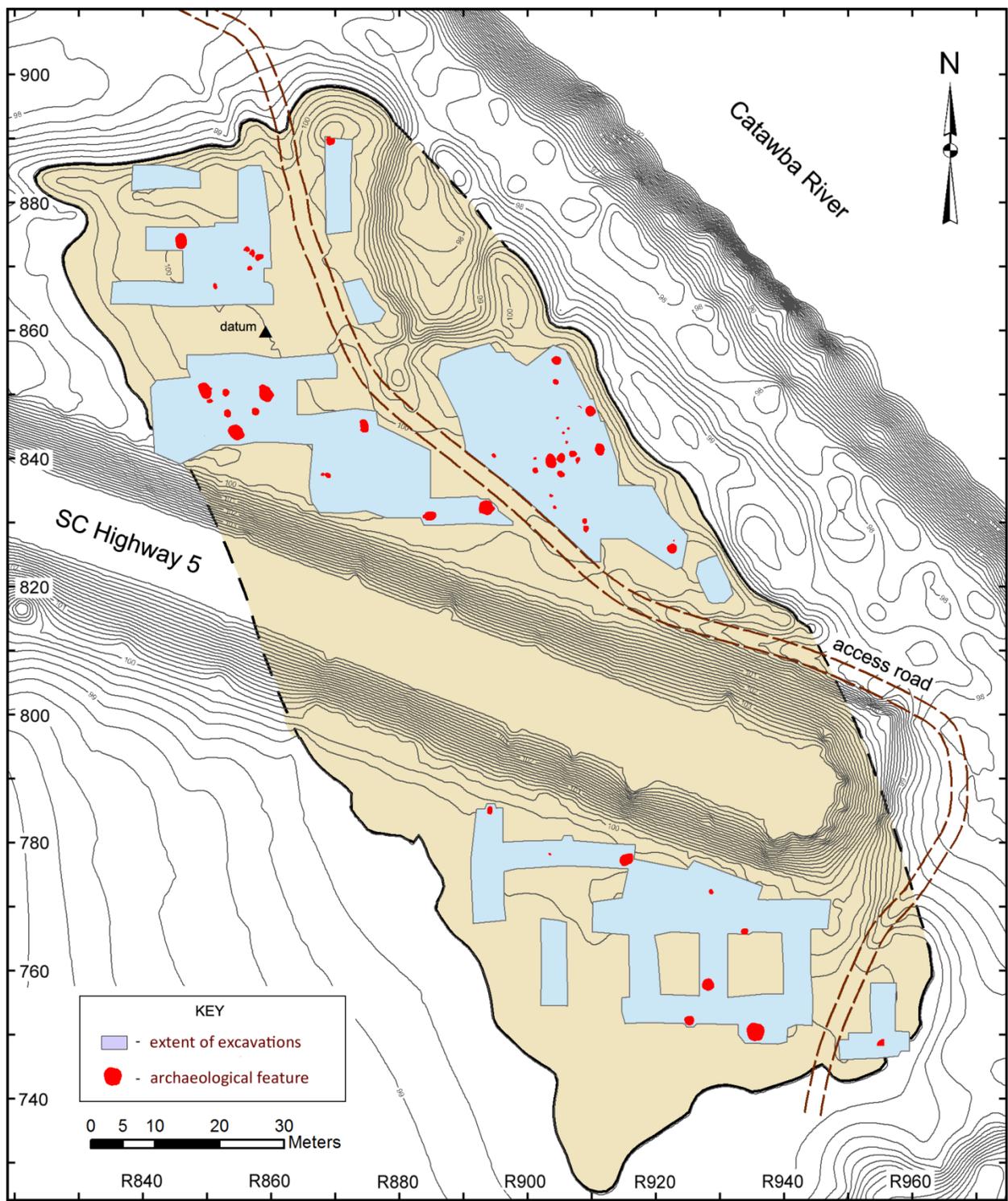


Figure 3.29. Map of the Ashe Ferry site showing the total extent of excavations and all identified archaeological features of cultural origin. See Appendix B for detailed maps and descriptions of features

Waterscreening and flotation were conducted at the site using sluices and a flotation tank which were fed by water pumped from the nearby river (Figure 3.33). Runoff from these devices collected in a “pool” created by the old borrow pit at the northeast edge of the site. Fill dirt excavated from features was transported in large buckets by truck. Because of the large volume of fire-broken rocks recovered during the excavation of both features and units, most rocks were analyzed in the field and discarded. Analysis consisted of dividing the rocks from each excavated context into four size categories (i.e., 1/4–1/2 inch, 1/2–1 inch, 1–2 inches, and >2 inches) using sorting screens, and then calculating the quantity and weight for each size class. Almost 14,000 fire-broken rocks weighing more than 368 kg (812 pounds) were processed in this manner. All other artifacts and “washings” from waterscreening, as well as samples processed by flotation, were taken back to the University of North Carolina for cleaning, cataloging, and analysis. Once the excavation of archaeological features was completed, all exposed trenches at the site were backfilled.

#### *Treatment of Archaeological Features Containing Human Remains*

The proposed data recovery plan for the Ashe Ferry site, quoted at length earlier in this chapter, anticipated the discovery of human graves. This expectation was based on their documented presence at other Late Woodland village sites in piedmont North Carolina such as Forbush Creek (31YD1), Donnaha (31YD9), the Hogue site (31OR233), and the Wall site (31Or11). As stipulated in the plan, upon the discovery of contexts identifiable as graves, excavation of those contexts would cease and officials with the South Carolina Department of Transportation would be notified immediately. Disposition of those contexts would be determined through consultation between SCDOT officials and interested parties, specifically the Catawba Indian Nation THPO and the South Carolina SHPO.

Three prehistoric graves (Features 43, 45, and 62) were identified during the summer 2010 investigations at the site, and a few human cranial fragments and teeth recovered in waterscreened fill from a fourth archaeological feature (Feature 20) were subsequently identified in the lab. As soon as human bone was encountered in the three features representing graves, excavation was halted, the pit contents and any exposed human remains were photographed and mapped, and officials with SCDOT were notified of the discoveries. Upon a site visitation by Mr. Chad Long, SCDOT archaeologist, the pits were carefully backfilled pending consultation with the Catawba THPO and SHPO.

Because the three graves were located within the proposed bridge corridor, it was not practical to preserve them in place. As a result of the consultation process, UNC archaeologists were directed to exhume the graves and rebury them in a protected location at the nearby site of Ayers Town (38YK534). The plan called for building a wooden box around each grave and removing it intact to the new grave location. This task was accomplished during the week of November 15–19, 2010, just prior to resuming fieldwork at Ayers Town.

Prior to reburial, each of the features containing human remains was re-excavated down to the level where uppermost bones began to appear. These bones were cleared of dirt using small tools and brushes in order to determine the disposition and approximate extent of the grave. The exposed bones and pit configuration were photographed and mapped, and then the edges of the pit were expanded and then excavated downward with trowels and shovels to the approximate level of the pit’s bottom. This provided a working area around the entire grave. Next, the edges of the fill matrix on the pit’s floor, containing the grave and now pedestaled,



Figure 3.30. Mapping and recording the top elevations of Feature 48 prior to excavation.



Figure 3.31. Trowelling Feature 17 for photography and profile mapping after removing the fill zones in the north half of the feature.



Figure 3.32. Excavating fill from around fire-broken hearth stones in Feature 77.



Figure 3.33. Waterscreening feature fill at the Ashe Ferry site.

were carefully trimmed with trowels to create a rectangular block. An effort was made to reduce the pedestal to as small a size and weight as possible without encroaching upon the burial itself. Once the size and shape of the block was finalized, 1x6-in boards were cut and fastened with L-brackets to form the sides of a wooden box.

At this stage in the process, a field analysis of each grave was conducted by Dr. Dale Hutchinson, a bioarchaeologist with the University of North Carolina, in order to identify and assess age, sex, and condition. This analysis was restricted to skeletal elements that were readily accessible and visible within the pedestaled block, but it was necessary to remove a small amount of fill dirt in order to inspect some of the bones and teeth. The results of this analysis are summarized in the descriptions of the features containing burials (see Appendix C), and the full report is presented in Appendix C.

The most difficult task was removing the boxed pedestal from the underlying sandy subsoil without disturbing the contents of the grave and without cracking the soil pedestal. To accomplish this, rectangular pieces of heavy-gauge sheet metal were pushed and pried underneath the block using levers to cut it free from the subsoil. Then, the block was slid onto a rectangular sheet of plywood slightly larger than the box and attached with metal L-brackets. Each block weighed about 60–135 kg (200–300 lbs.). Finally, the boxed remains of the graves were transported individually on litters and by truck to Ayers Town, where they were placed into newly-dug graves. This concluded the archaeological fieldwork at the Ashe Ferry site.

## Chapter 4

### Discrete Feature Contexts and Site Structure at the Ashe Ferry Site

The 2010 investigations at 38YK533 designated 81 discrete archaeological features evident as soil disturbances intrusive into the subsoil horizon (Figures 4.1, 4.2, 4.3; Table 4:1; Appendix B). These intrusions were identified as potential cultural features on the basis of apparent morphology, soil matrices, or content evident upon removal of overlying plowzone or other overburden deposits. Excavation determined that 52 of these features were of cultural origin or contained deposits of cultural origin; 29 soil disturbances were determined to be probable natural tree root molds, stumpholes or disturbances from uprooted tree collapse. The 52 cultural features are attributable to multiple site occupations during the Late Archaic (n=1), the Middle Woodland (n=1), the Late Woodland (n=37), and Mississippian (n=9) periods, but comprise relatively few discrete formal and functional classes, including fire-cracked or burned rock concentrations (i.e., rock hearths) (n=13), large storage pits (n=8), shallow basins and small pits (n=16), postholes (n=9), graves (n=3), and caches (n=2).

The unique depositional situation at 38YK533, with modern flood-deposited coarse sands that cap a shallow pre-1916 plowzone, protected the site from the effects of mechanized plowing, and resulted in preservation of discrete archaeological contexts normally obliterated on most sites in the region. Even slightly deeper plowing of the site matrix would have eliminated most of the discrete facilities, particularly the shallow rock-filled basins and other roasting facilities, thereby severely constraining interpretability of site structure and function. However, because the subplowzone matrix at 38YK533 is relatively coarse grained and highly permeable, it is subject to excessive leaching, and the margins of older soil disturbances were indistinct due to the progressive migration of finer particles and organic material through percolation. As a consequence, the morphologies of many cultural features were difficult to distinguish, and it is possible that some features with especially low artifact content and low organic matter content went undetected despite intense scrutiny of the subplowzone surface. For example, a cluster of Late Archaic period lithic artifacts (Feature 80) likely represents the location of a pit, posthole, or tree stumphole, but the surrounding matrix could not be differentiated from the larger site matrix. Likewise, a cluster of Middle Woodland period Deptford series ceramic sherds (Feature 58) recovered from the general subplowzone matrix almost certainly marked a highly leached pit location. This uniform and progressive taphonomic effect of soil leaching likely precluded definition of some smaller, lower density contexts (e.g., postholes), rendering site structure potentially less coherent and less interpretable.

#### **Rock-filled roasting facilities (n=13)**

Thirteen shallow, cobble-filled basins or surfaces with clusters of fire-cracked rocks (Features 12, 13, 15, 17, 21, 25, 47, 51, 53, 55, 74, 77, and 78) are interpreted as rock ovens or hearths used as heating or cooking facilities (Figure 4.4). As documented in the ethnographic and ethnohistoric records, such facilities were used to either dry roast or steam large quantities of foodstuffs without direct flame (see Smith 2000; Thoms 2007, 2008, 2009; Wandsnider 1997). The stones in such facilities provided thermal mass heated by an initial high intensity firing (typically above 400°C), after which food could be loaded into the bed of hot cobbles, ashes, and coals and either roasted in open air for shorter term supervised cooking or covered with vegetable material and soil for insulation for longer term baking. Recovery of cooked foods from such facilities disrupted oven coverings and ash matrixes, but generally left the cobble

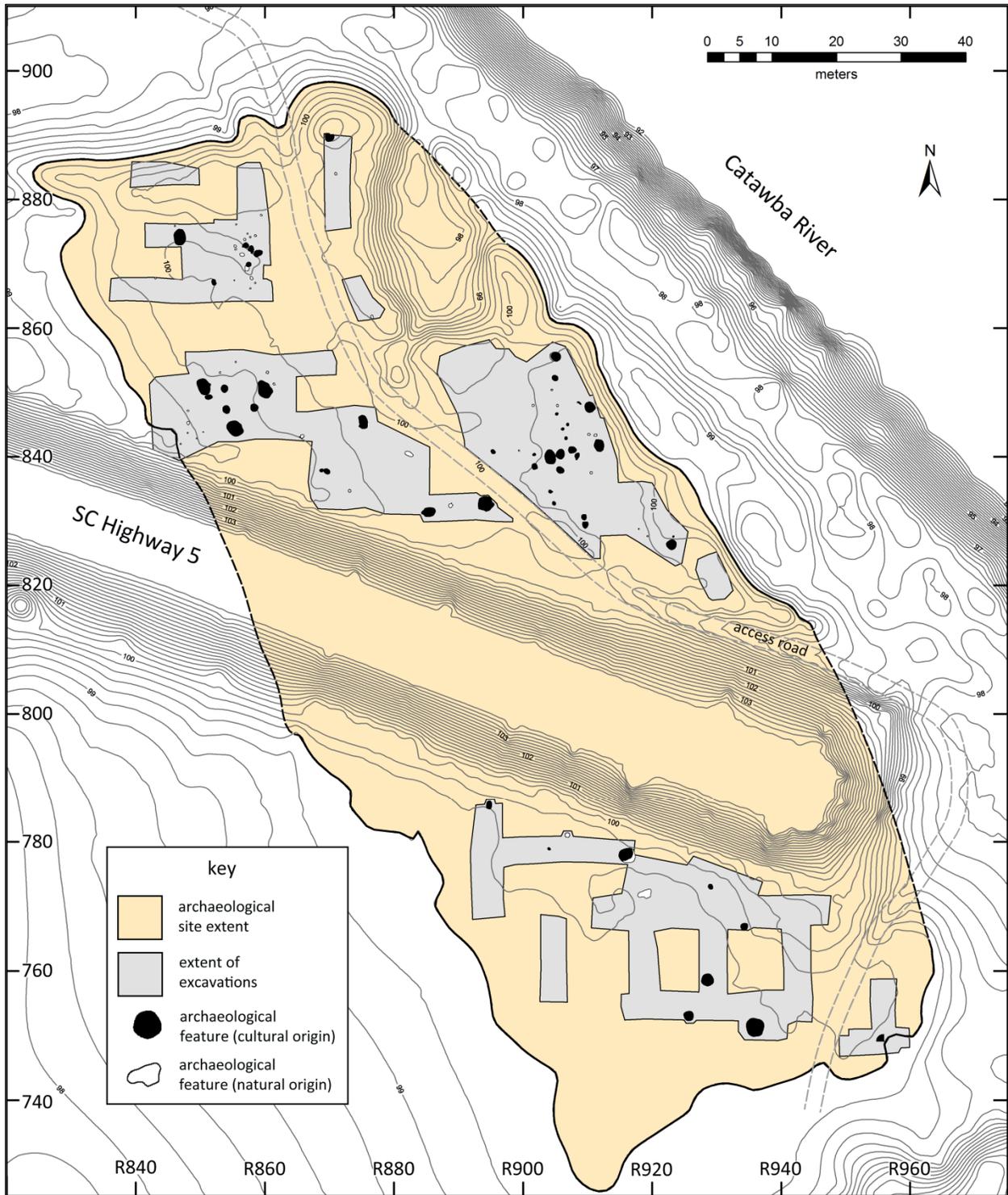


Figure 4.1. Plan of 38YK533 indicating locations of discrete archaeological features.

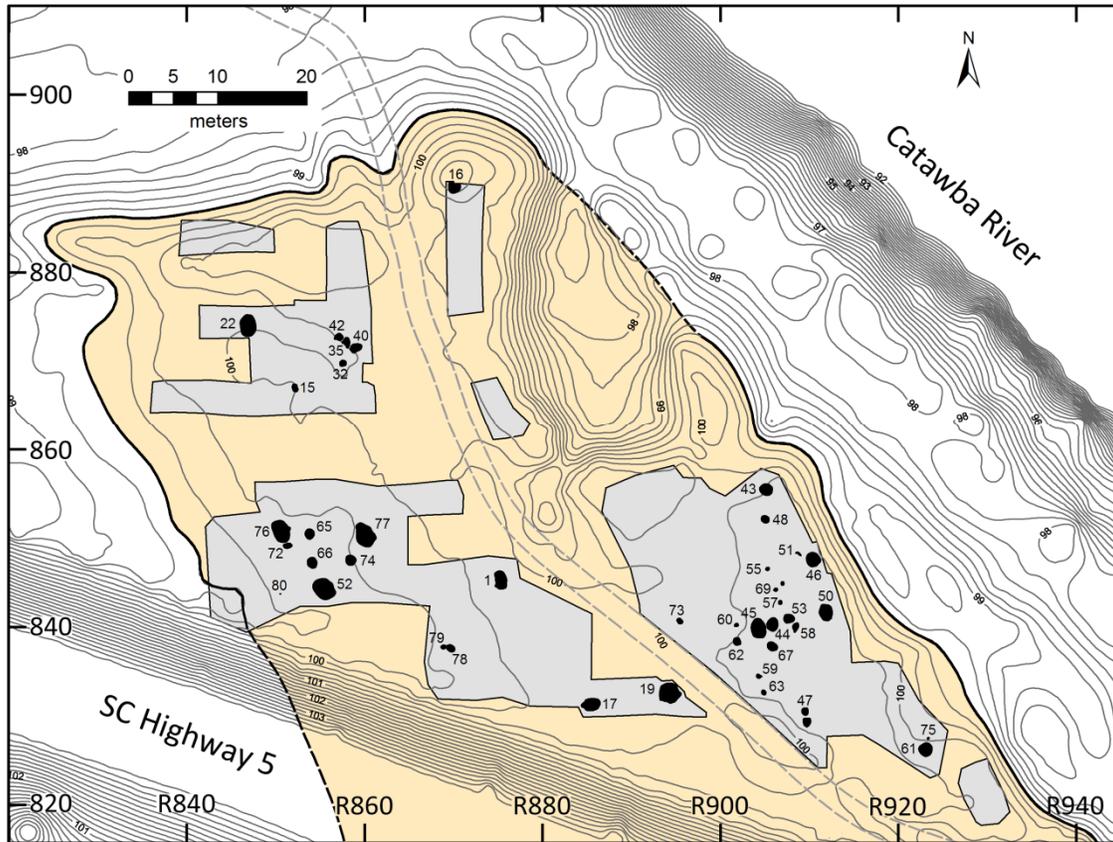


Figure 4.2. Detail of the northern half of the 38YK533 site plan indicating locations of discrete archaeological features (cultural origin only), with numeric designations (as referenced in Table 4.1).

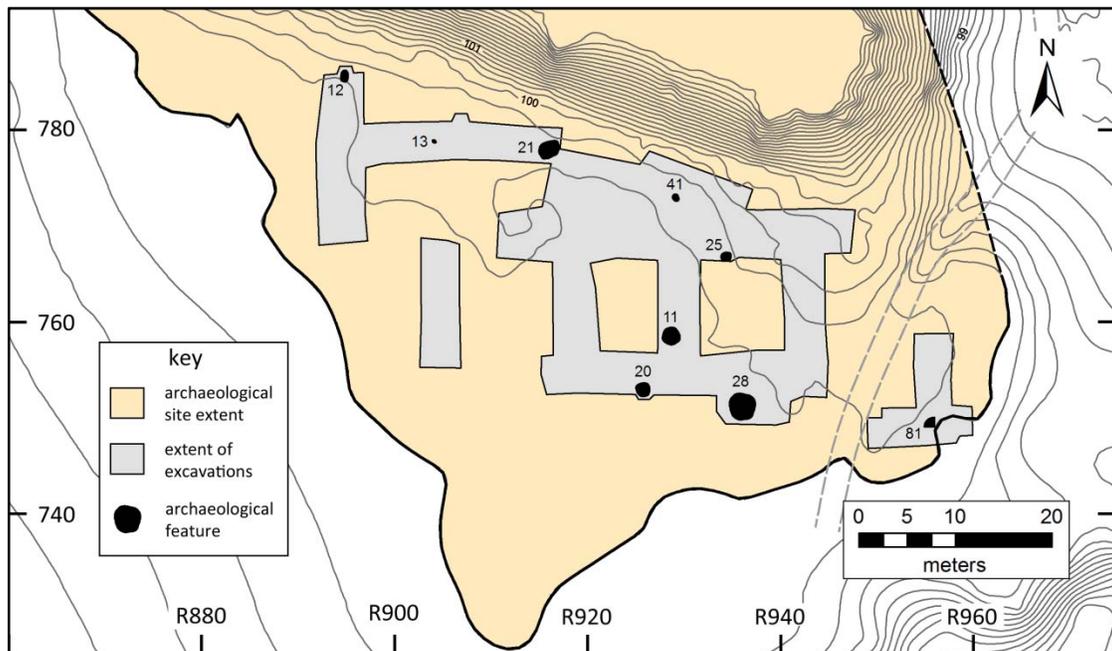


Figure 4.3. Detail of the southern half of the 38YK533 site plan indicating locations of discrete archaeological features (cultural origin only), with numeric designations (as referenced in Table 4.1).

Table 4.1. Discrete archaeological features designated at 38YK533.

<b>Feature</b>	<b>Location</b>	<b>length (cm)</b>	<b>width (cm)</b>	<b>depth (cm)</b>	<b>formal description (functional interpretation)</b>	<b>temporal period cultural phase</b>
1	845.30R875.30	210	130	9	basin	Late Woodland period Ashe Ferry phase (Woodstock)
2	832.33R888.82	63	58	15	natural disturbance (tree/root mold)	n/d
3	850.27R904.53	30	30	10	natural disturbance (tree/root mold)	n/d
4	847.88R901.65	35	35	20	natural disturbance (tree/root mold)	n/d
5	867.63R843.13	27	23	31	natural disturbance (tree/root mold)	n/d
6	875.79R846.13	24	19	21	natural disturbance (tree/root mold)	n/d
7	861.66R876.69	60	39	20	natural disturbance (tree/root mold)	n/d
8	854.62R855.56	28	20	n/d	natural disturbance (tree/root mold)	n/d
9	852.97R853.16	30	23	12	natural disturbance (tree/root mold)	n/d
10	853.04R860.48	42	42	n/d	natural disturbance (tree/root mold)	n/d
11	758.60R928.56	180	180	60	pit (storage/processing facility)	Late Woodland period Ashe Ferry phase
12	785.63R894.87	120	60	10	fire-cracked rock concentration (roasting facility)	Late Woodland period Ashe Ferry phase
13	778.73R904.14	50	35	5	fire-cracked rock concentration (roasting facility)	not determined
14	883.89R871.08	42	33	12	natural disturbance (tree/root mold)	n/d
15	867.11R852.11	90	65	<8	fire-cracked rock concentration (roasting facility)	Late Woodland period Ashe Ferry phase
16	889.59R870.02	140	135	10	basin (roasting facility)	Late Woodland period Ashe Ferry phase
17	831.22R885.50	190	150	23	fire-cracked rock concentration (roasting facility)	Late Woodland period Ashe Ferry phase
18	843.01R865.81	62	56	n/d	natural disturbance (tree/root mold)	n/d
19	832.71R894.41	260	200	10	basin (roasting facility)	Late Woodland period Ashe Ferry phase
20	752.99R925.82	160	160	48	pit (storage/processing facility)	Late Woodland period Ashe Ferry phase
21	777.80R915.80	135	120	5	fire-cracked rock concentration (roasting facility)	Late Woodland period Ashe Ferry phase

Table 4.1. Discrete archaeological features designated at 38YK533.

<b>Feature</b>	<b>Location</b>	<b>length (cm)</b>	<b>width (cm)</b>	<b>depth (cm)</b>	<b>formal description (functional interpretation)</b>	<b>temporal period cultural phase</b>
22	874.00R847.00	220	170	11	basin (roasting facility)	Late Woodland period Ashe Ferry phase
23	866.93R858.59	22	20	10	natural disturbance (tree/root mold)	n/d
24	867.33R855.31	25	20	16	natural disturbance (tree/root mold)	n/d
25	766.76R934.29	110	110	12	fire-cracked rock concentration (roasting facility)	Late Woodland period Ashe Ferry phase
26	867.54R858.03	30	24	5	natural disturbance (tree/root mold)	n/d
27	866.07R857.84	35	25	9	natural disturbance (tree/root mold)	n/d
28	751.11R936.01	280	280	105	pit (storage/processing facility)	Late Woodland period Ashe Ferry phase
29	874.28R858.62	35	35	8	natural disturbance (tree/root mold)	n/d
30	771.80R918.92	100	100	70+	natural disturbance (tree/root mold)	n/d
31	874.58R857.35	18	18	4	natural disturbance (tree/root mold)	n/d
32	869.79R857.57	72	72	11	basin	Late Woodland period Ashe Ferry phase
33	874.03R857.80	20	20	15	natural disturbance (tree/root mold)	n/d
34	873.69R856.93	42	34	11	natural disturbance (tree/root mold)	n/d
35	872.00R857.92	133	93	8	basin (with posthole)	Late Woodland period Ashe Ferry phase
36	872.17R855.55	n/d	n/d	31	natural disturbance (tree/root mold)	n/d
37	872.66R855.45	40	40	10	natural disturbance (tree/root mold)	n/d
38	869.35R857.07	85	70	6	natural disturbance (tree/root mold)	n/d
39	871.24R856.55	80	55	17	natural disturbance (tree/root mold)	n/d
40	871.45R859.05	145	103	10	basin (with posthole)	Late Woodland period Ashe Ferry phase
41	772.91R929.14	84	65	17	basin	Mississippian period Early Brown phase
42	872.74R857.09	100	80	8	basin	Late Woodland period Ashe Ferry phase

Table 4.1. Discrete archaeological features designated at 38YK533.

<b>Feature</b>	<b>Location</b>	<b>length (cm)</b>	<b>width (cm)</b>	<b>depth (cm)</b>	<b>formal description (functional interpretation)</b>	<b>temporal period cultural phase</b>
43	855.50R905.00	165	145	60	pit (probable storage/processing facility repurposed as grave)	Late Woodland period Ashe Ferry phase
44	840.28R905.83	80	65	20	basin	Late Woodland period Ashe Ferry phase
45	839.60R904.26	105	83	14	basin (grave)	Late Woodland period Ashe Ferry phase
46	847.48R910.50	165	165	25	basin (roasting facility)	Late Woodland period Ashe Ferry phase wi/Early Brown phase zone
47	830.51R909.47	87	75	10	fire-cracked rock concentration (roasting facility)	Late Woodland period Ashe Ferry phase
48	852.12R905.03	100	87	50	pit (storage/processing facility)	Late Woodland period Ashe Ferry phase
49	829.35R909.63	105	90	18	basin	Late Woodland period Ashe Ferry phase
50	841.58R911.87	200	150	22	basin (hearth)	Late Woodland period Ashe Ferry phase
51	848.25R908.90	75	30	15	fire-cracked rock concentration (roasting facility)	Late Woodland period Ashe Ferry phase
52	844.20R855.30	180	140	48	pit (storage/processing facility)	Late Woodland period Ashe Ferry phase
53	840.92R907.74	123	100	15	fire-cracked rock concentration (roasting facility)	Mississippian period Early Brown phase
54	847.85R905.44	35	35	19	natural disturbance (tree/root mold)	n/d
55	846.52R905.32	50	50	6	fire-cracked rock concentration (roasting facility)	not determined
56	844.91R907.03	40	40	50	pit (posthole?)	Late Woodland period Ashe Ferry phase
57	842.71R906.73	45	45	35	pit (posthole?)	Late Woodland period Ashe Ferry phase
58	840.03R908.49	70	29	5	artifact cluster	Middle Woodland period Deptford phase
59	834.46R904.37	55	43	18	basin	Late Woodland period Ashe Ferry phase
60	840.27R901.86	50	40	40	pit (posthole?)	Late Woodland period Ashe Ferry phase
61	826.11R923.00	171	132	14	basin (with postholes)	Late Woodland period Ashe Ferry phase
61a1		25	25	50	posthole	Late Woodland period Ashe Ferry phase

Table 4.1. Discrete archaeological features designated at 38YK533.

<b>Feature</b>	<b>Location</b>	<b>length (cm)</b>	<b>width (cm)</b>	<b>depth (cm)</b>	<b>formal description (functional interpretation)</b>	<b>temporal period cultural phase</b>
61a2		23	20	37	posthole	Late Woodland period Ashe Ferry phase
62	838.35R901.80	85	73	n/d	pit (grave)	Late Woodland period Ashe Ferry phase
63	832.62R904.87	60	45	50	pit (posthole?)	not determined
64	840.85R899.45	20	20	11	natural disturbance (tree/root mold)	n/d
65	850.49R853.84	120	100	45	pit (storage/processing facility)	Late Woodland period Ashe Ferry phase
66	847.26R854.09	125	105	21	basin	Late Woodland period Ashe Ferry phase
67	837.83R905.86	115	90	15	basin	Late Woodland period Ashe Ferry phase
68	837.38R910.65	40	35	12	natural disturbance (tree/root mold)	n/d
69	844.21R906.24	52	40	38	pit	Late Woodland period Ashe Ferry phase
70	843.25R911.32	50	40	27	natural disturbance (tree/root mold)	n/d
71	843.38R910.25	35	30	37	natural disturbance (tree/root mold)	n/d
72	849.16R851.37	120	80	13	basin	Late Woodland period Ashe Ferry phase
73	840.66R895.35	75	50	40	pit	Late Woodland period Ashe Ferry phase
74	847.51R858.44	90	90	15	basin with fire-cracked rock concentration	Mississippian period Early Brown phase
75	827.46R923.36	25	25	9	pit / artifact cluster	Late Woodland period Ashe Ferry phase
76	850.67R850.45	260	200	80	pit (storage/processing facility)	Late Woodland period Ashe Ferry phase wi/Early Brown phase zone
77	850.22R860.02	120	120	16	fire-cracked rock concentration (roasting facility)	Late Woodland period Ashe Ferry phase
78	837.60R869.62	100	70	13	fire-cracked rock filled pit (roasting facility)	Mississippian period Early Brown phase
79	837.82R869.89	60	47	20	pit	Mississippian period Early Brown phase
80	843.74R850.53	15	15	2	artifact cache	Late Archaic period Savannah River phase
81	749.40R955.60	n/d	n/d	n/d	pit	not determined

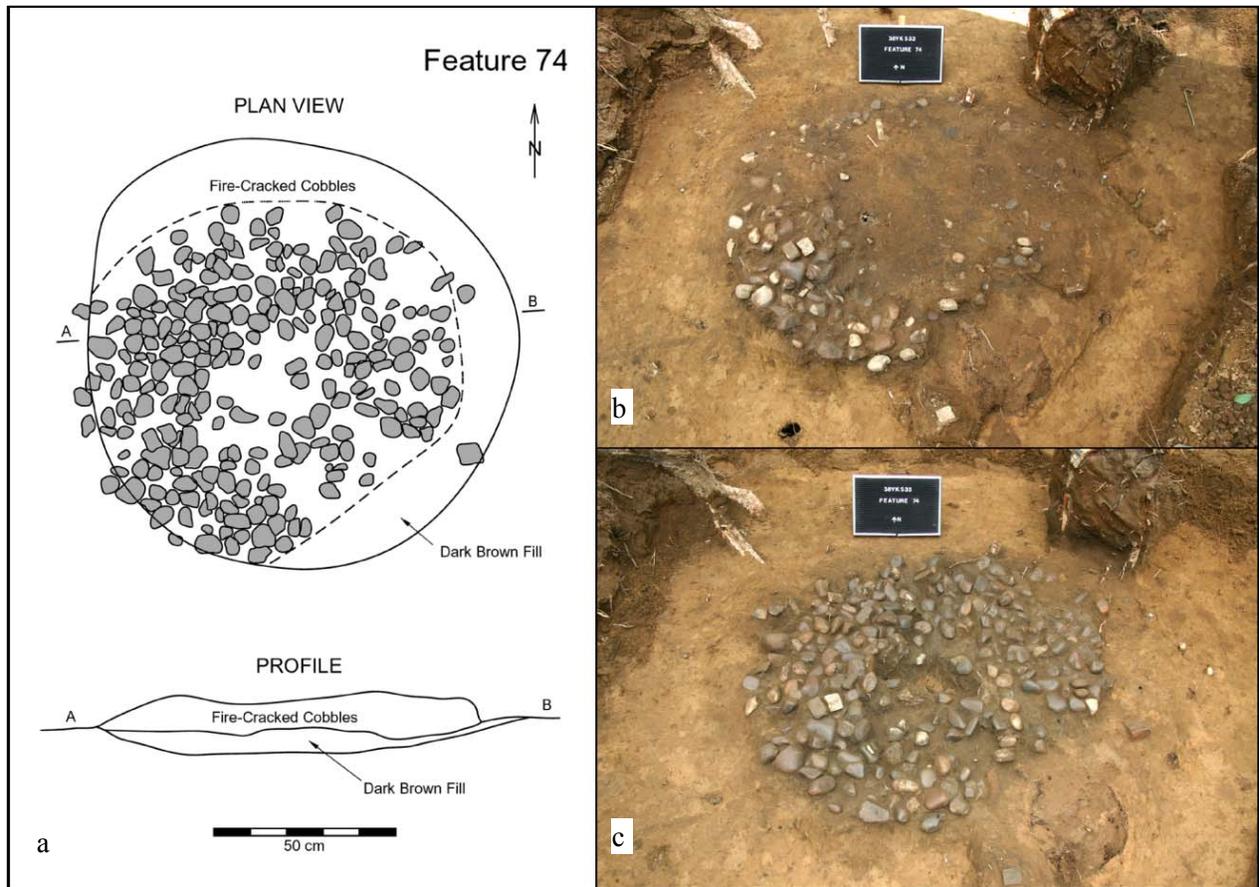


Figure 4.4. Illustrations of Feature 74, a rock-filled roasting facility. a: plan view and profile drawings; b: top of feature prior to excavation, c: top of feature with fire-cracked rocks fully exposed.

linings relatively intact. Repeated reuse of these facilities caused progressive deterioration of the facilities and the constituent rocks. Archaeological evidence for “rock oven” or heated-stone griddle cooking facilities is well documented in Archaic and Woodland period contexts throughout the southeast, and similar facilities are widely distributed across North America wherever suitable stones are available (Petraglia 2002, Wandsnider 1997).

Burned rock features are associated with both the Ashe Ferry phase and Early Brown phase occupations at Ashe Ferry; AMS assays of materials from two rock hearths yielded calibrated intercept dates of A.D. 1010 and A.D. 1270. Most of these facilities are located along the western edge of the site in proximity to large pit features; the co-distribution of these pits and hearth facilities may represent a spatially segregated activities precinct. Rock hearths at Ashe Ferry range from 50cm to 190cm in diameter and five to 15 cm in thickness, and typically include bedded masses of small (5-10cm) river cobbles (primarily quartzite and quartz). In many cases, fired cobbles appear to be dispersed from their original (typically circular) concentrations. Some of this dispersion is post-depositional (due to plowing), but some cobbles may also have been dislodged by manipulation or removal of the primary cooked or heated content. Some of these features exhibit margins defined by *in situ* fired cobbles, but the interior cobbles are sparse, perhaps as a function of hearth cleaning

All of these features appear to be the basal remnants of shallow facilities dug through the original A-horizon soils (approximately 20cm) and which barely penetrated the subplowzone E-

horizon; all of these features are plow truncated, and many similar facilities may have been completely obliterated by pre-1916 site cultivation. Most of these rock clusters are surrounded by halos of charcoal infused soils, the post-depositional products of leaching of ash and charcoal residues from fires burned atop the beds of river cobbles.

Most of the cobbles in the rock hearths are reddened or discolored due to *in situ* firing, but relatively few are actually cracked or particularly degraded by firing. The unbroken, but discolored condition of the fired cobbles is consistent with relatively slow heating to high temperatures, and maintenance of dry firing environments (i.e., no introduction of water for steam) through the cooling stage to hold thermal stress fracturing to a minimum (see Jackson 1998). The shallow depth of most of these rock hearth facilities and the condition of the constituent cobbles is consistent with a hearth type that Thoms (2007, 2008, 2009) and others have associated with hot rock dry griddling or grilling at or near the ground surface. In these applications, fired cobble beds provided thermal mass for retention of heat after fuel combustion above the rocks subsided, allowing efficient regulation of heat for close-order cooking on heated cobbles without potentially dangerous flames. By contrast, Feature 78 consists of a bed of cobbles positioned in a well-defined pit, with masses of charcoal preserved beneath the cobble layer indicative of heating of stones above the combustion zone.

Relatively intact, coherent fired-rock arrays illustrate two distinct size grades of rock hearths. Small hearths (Features 13 and 55) consist of relatively few (7-25), closely-packed cobbles. These probably represent facilities constructed for relatively small-scale, discrete cooking or drying tasks (e.g., roasting or drying meat or fish in small quantities). More common are large burned-cobble beds ranging 87cm–120cm in diameter, with single or double layers of stones forming uniform surfaces. These heated cobble surfaces (and associated beds of hot ashes and embers) presented griddle-like platforms for rapid, uniform dry heating or cooking of larger quantities of foods. Foods suitable for this type of processing or preparation were likely small or thin enough to cook thoroughly over a relatively brief period, but were not amenable to open flame cookery. Smith (2000) and Thoms (2008, 2009) note that such large rock griddles were often used for drying of meats, where steady moderate heat without flame aided desiccation without scorching.

Botanical samples from rock hearths at Ashe Ferry (see Peles and Scarry, this volume) may offer clues to the specific functions of these facilities. The suites of plant remains recovered from rock hearths include acorn nutshell and nutmeats, chestnut shell, hickorynut shell, maize, maygrass, purslane, bearsfoot and spurge, but are heavily dominated by acorn nutshell (which account for 95% of identified specimens in rock hearths). By contrast, plant remains recovered from large storage pits at 38YK533 are heavily weighted toward hickorynut shell and acorn nutmeats; acorn nutshell accounts for 15% of identified specimens from these contexts. The prevalence and ubiquity of acorn fragments at 38YK533 indicates that acorn processing—which yielded charred shell and discarded nutmeats as byproducts—was a major activity during the Late Woodland and Early Mississippian periods at Ashe Ferry. The disparate representation of acorn nutshell in rock hearth contexts at 38YK533 may reflect *de facto* residue of the roasting or parching of acorns in these facilities. Parching of acorns to prevent germination and kill insect larvae is well documented in the ethnographic and ethnohistorical records (Converse 1908, Densmore 1928, Harriot 2007[1590], Heath 1963; Lederer 1672; Lawson 1709; Ortiz 1991; Petrusco and Wickens 1984; Smith 1923; Tantaquidgeon 1972). In the Iroquois legend of *De-wan-do* and the Flying Head, *De-wan-do* “...was at the hearth fire roasting acorns ... One by one as they burst their shells she drew them away... [emphasis added] (Converse 1908:81).” The

signature popping or bursting of the hulls of roasted acorns due to the rapid escape of steam undoubtedly introduced acorn shell fragments into hearths and the surrounding areas. Harriot (1590) indicates that natives on the Carolina coast roasted acorns on cane hurdles over fires as a first step in processing (Harriot 2007 [1590]). *Mourt's Relation* (1622), reports that the Plimoth colonists "... found two baskets full of parched acorns hid in the ground" by Wampanoag natives (Heathy 1963: 34). Lederer (1672:15) observed that the Eno people (of the North Carolina piedmont) "parch their Nuts and Acorns over the fire, to take away their rank Oyliness." Smith (1923) notes that among the Wisconsin Menominees, acorn

... hulls were flailed off after parching, and the acorn was boiled till almost cooked. The water was then thrown away. Then to fresh water, two cups of wood ashes were added. The acorns were put into a net and were pulled out of the water after boiling in this. The third time, they are simmered to clear them of lye water. Then they are ground into meal with mortar and pestle, then sifted... [emphasis added] (Smith (1923:66)

While it is likely that rock hearths at Ashe Ferry served a variety of cooking and drying functions in which indirect heating was useful, the frequency, distribution, and content of these facilities may reflect an emphasis on specialized food processing (e.g., acorn roasting). Other types of facilities at Ashe Ferry have yielded unusual quantities of discarded acorns and peeled acorn nutmeats, and it appears that gathering, processing, and storage of acorns were particularly prominent activities at Ashe Ferry during the Late Woodland and early Mississippian periods. Repeated construction and use of rock hearths, the dominant feature type at Ashe Ferry, over a 200-year span, suggests long-term stability in site function linked to a concentrated, locally available resource that required hot rock griddling or dry roasting for preparation or preservation.

### **Storage pits (n=8)**

Eight large pit features (Features 11, 20, 28, 43, 48, 52, 65, and 76) are provisionally categorized as storage facilities designed for retention of foodstuffs or caching of goods (Table 4.1; Appendix B; Figures 4.5, and 4.6). All are associated with the Late Woodland period Ashe Ferry phase component; associated AMS dates indicate storage pits spanning ca. A.D. 1010–1160. These round or ovoid storage facilities are distinguished by large volumes (.4 m<sup>3</sup>–6.5m<sup>3</sup>) and high depth/diameter ratios (.3–.5). Most of these pits exhibit flat (level or slightly inclined) or slightly concave bases, with distinct inflections that mark base-wall junctures. Pit diameters range from 100cm to 280cm, with depths that range from 45cm to 105cm (below plowzone). With the exception of Feature 48, the smallest probable storage pit, these facilities are located along the west (landward) side of the river terrace, where slightly finer grained sediments may have been more conducive to large pit construction and maintenance. Nonetheless, all of these facilities have outsloping sidewalls rather than the vertical (or bell-shaped) walls optimal for storage facilities (cf. DeBoer 1988); this wall morphology is likely the product of rapid pit deterioration in the highly friable site matrix. Successful use of storage pits at Ashe Ferry probably required wall buffers (e.g., bark linings, basketry) to prevent soil infiltration, and removal or deterioration of such buffers likely occasioned pit wall collapse. Reuse of these pits probably required substantial reconstruction, a factor which may account for pit asymmetries and evidence of pit expansion.

These large, deep pits tend to exhibit greater stratigraphic complexity than other features at 38YK533, and most include multiple strata indicative of incremental filling processes. In at least one instance (Feature 76), stratigraphic complexity is compounded by a later (Early Mississippian period) pit intrusion directly into earlier (Late Woodland period) pit deposits. In

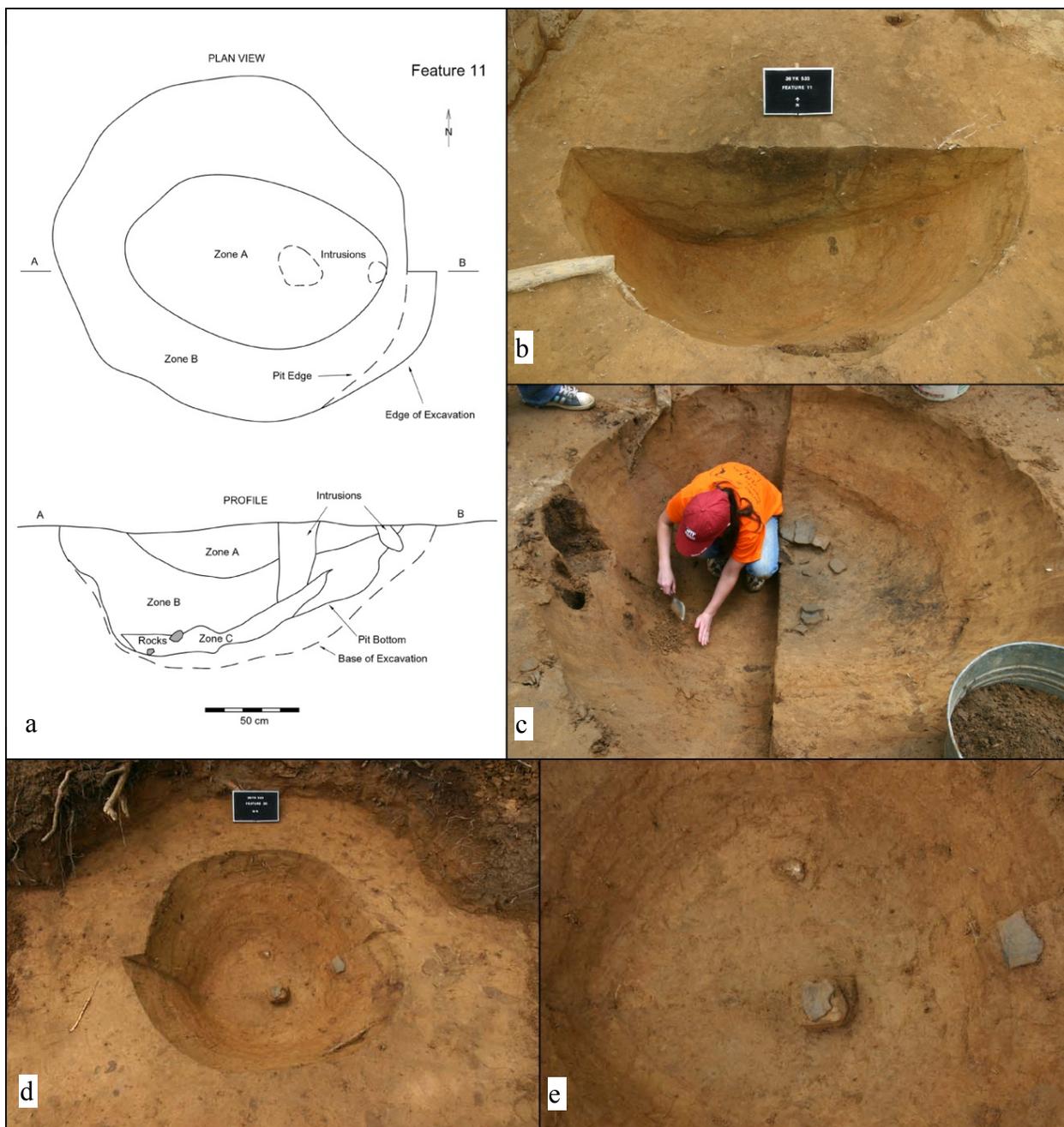


Figure 4.5. Illustrations of Feature 11, a probable Ashe Ferry phase storage/processing pit. a: plan view and profile view drawings; b: fill profile with south half excavated (view to north); c: cleaning for photograph (view to west); d: fully excavated feature (view to north); e: *in situ* potsherds resting on top of Zone C (view to north).

addition, developmental lamellae formed incipient horizons across much of the site; these crosscut deposits in deep pits, indicating lamellae development during the last millennium. Deep pit contexts also yielded greater frequencies of refuse and more diverse artifact assemblages than other feature contexts at 38YK533; this pattern appears to be a direct function of total

feature volume, and the absolute density of artifacts per unit volume is more randomly distributed among feature types.

Most of the large capacity pits at the Ashe Ferry site received habitation refuse after their presumed abandonment as storage/processing facilities. Some of this refuse was likely coincident with soils dumped or collapsed into the pits, but instances of conjoining ceramic vessel sections in pits presumably connote direct, primary refuse disposal in storage pits as well. In one instance (Feature 43), a probable storage facility (as identified by pit morphology) appears to have been laterally cycled and reused as a grave. In another case (Feature 11), fragmented human remains appear to have been incorporated in pit fill coincident to backfilling; these remains likely derived from an earlier context that was disturbed, but unrecognized, by Late Woodland period site inhabitants.

Large capacity subterranean pits, such as those documented at 38YK533, are generally considered to represent facilities for mass storage or caching of foodstuffs to preserve, or, in some cases, process foods for later consumption (Arnold 1995, DeBoer 1988; Dickens 1985; Mathews 2009). In settings where horticultural or agricultural food production is prominent, it is typically assumed that such facilities are directly related to storage of produce, and large numbers or high densities of pit facilities have been interpreted as evidence of surplus horticultural production (Ames, et al., 2009; DeBoer 1988; Dickens 1985; Wesson 1999).

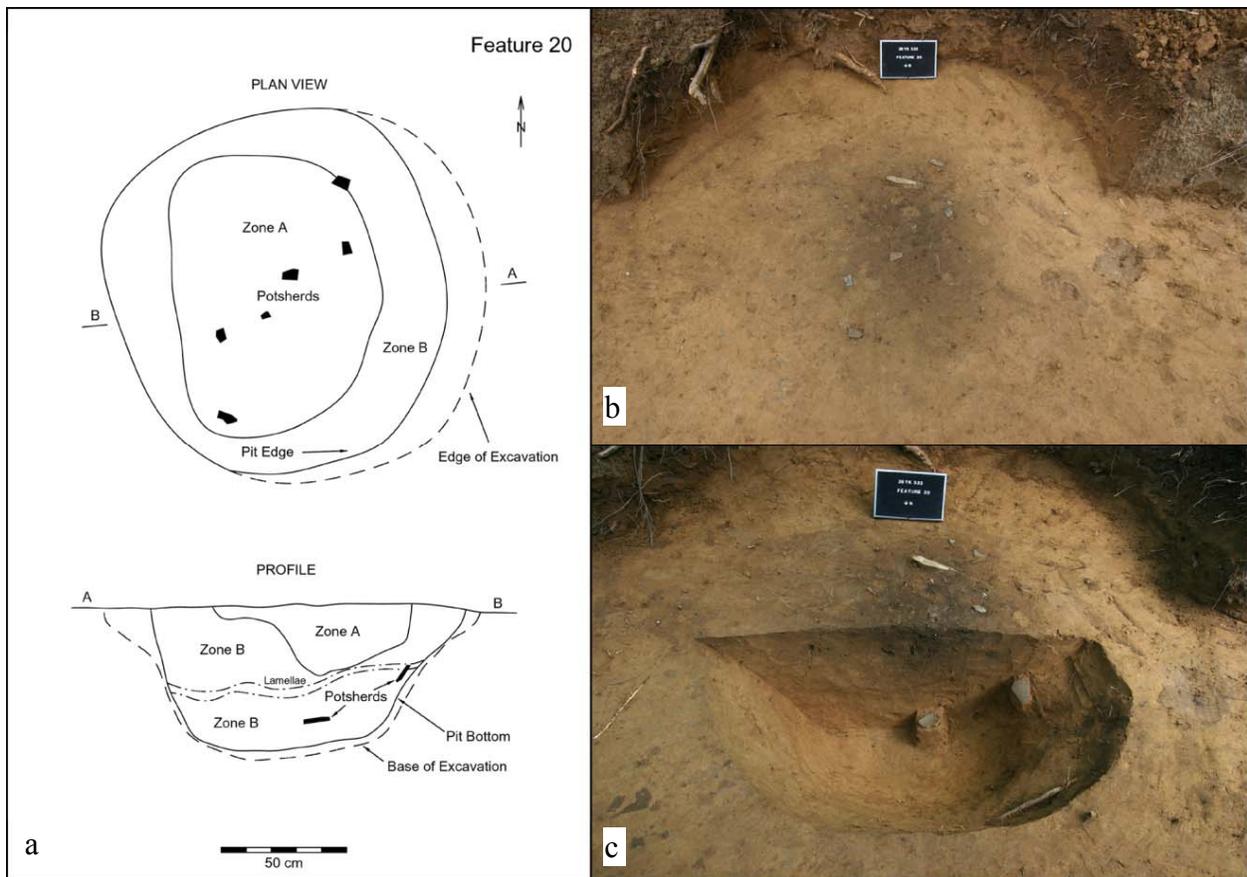


Figure 4.6. Illustrations of Feature 20, a probable Ashe Ferry phase storage/processing pit. Feature 20 a: plan view and profile view drawings, b: top of feature (view to south), c: fill profile with north half excavated (view to south).

In the case of the Late Woodland period Ashe Ferry phase component, in which there is limited evidence for horticulture, such pits likely contained wild plant foods gathered from the surrounding environment. Unfortunately, pit fills at Ashe Ferry comprise primary or secondary refuse, and the original stored content can only be inferred. In the moist, subtropical climate of the southeastern piedmont, pit storage is best suited to vegetable materials with moderate moisture content (e.g., tubers) that require cool, stable temperatures, and substantial relative humidity for long term preservation (on the order of months, not years). Edible wild tubers available in quantity to the inhabitants of the Ashe Ferry site likely included *Apios americana* (groundnut), *Peltandra virginica* (tuckahoe), and *Smilax rotundifolia* (greenbriar), but these highly perishable foods are unattested by the paleoethnobotanical record (see Chapter 7). By contrast, botanical samples from Ashe Ferry present ubiquitous evidence for processing of acorns, with pit features that contained substantial numbers of discarded charred nutmeats, and rock oven facilities that yielded appreciable quantities of charred acorn shell. It is hypothesized that gathering and processing of acorns was a major economic focus at the site during the Late Woodland period, and the large capacity subterranean pits at Ashe Ferry may represent facilities related to mass storage or processing of acorns. Although the highly permeable soils at Ashe Ferry do not present an optimal matrix for pit construction or maintenance, they drain readily, and could facilitate subterranean storage of acorns or acorn nutmeats without saturation. Because the sandy matrix of the site allowed rapid percolation of rainwater, snowmelt or floodwater, subterranean storage of acorns at Ashe Ferry might also have promoted the passive flushing of tannins from acorn nutmeats, a process that would render normally bitter and acidic red oak acorns more palatable and useable. Subterranean caching of acorns to flush tannins is well documented among California natives (Gifford 1936, Moerman 2002), and peoples of coastal Oregon and Washington (Gunther 1973, Harper 1971, Mathews 2009, Moerman 2002). Densmore (1924:320) notes that among the Ojibwe, “Sweet acorns (*mitigo' minum*) were frequently gathered in the late fall and buried for use in the winter or spring ....” Bradford (1622) “... found two baskets full of parched acorns hid in the ground” by Wampanoag natives in present-day Massachusetts (Heathy 1963: 34).

The general spatial coincidence (and contemporaneity) of large capacity pits and rock hearth roasting facilities along the western side of the site may also hint at their functional association as components of a single food processing/storage complex. Given the predominance of acorn remains in botanical samples at 38YK533, and the weight of ethnographic and ethnohistoric evidence for acorn parching and acorn storage/leaching in subterranean pits, it appears most parsimonious to associate both the roasting and storage facilities at 38YK533 with acorn processing and storage activities. Clearly, other specific functions for these large capacity pits are equally plausible, but none are specifically supported by archaeological evidence.

### **Shallow basins (n=16)**

Shallow basin-shaped pits or depressions (Features 1, 16, 19, 22, 32, 35, 40, 42, 44, 46, 49, 50, 58, 61, 66, 67, 72 and 79) comprise multiple functional types, including probable hearths, basins with postholes, and probable short term storages facilities (Table 4.1; Figures 4.7–4.9). These broad, basin-shaped depressions typically appeared as indistinct, roughly oval patches of organic staining of the subplowzone surface. Because leaching of organic soil content obscured the margins of these features, it was often difficult to distinguish the original feature morphology, and, in some cases, these “basins” might actually represent halos of organic staining that emanated from features otherwise obliterated by historic plowing.

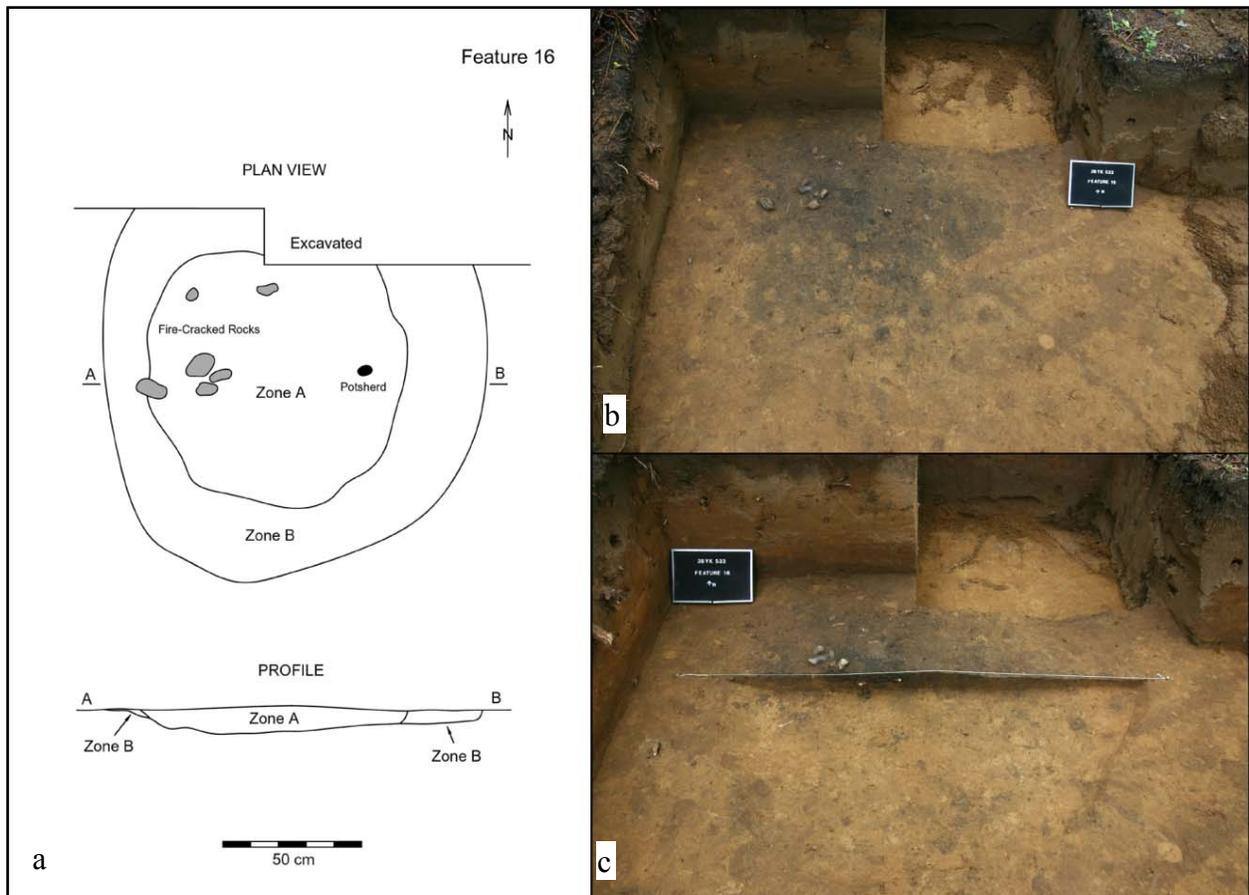


Figure 4.7. Feature 16, a shallow basin that probably represents the basal remnant of a plow truncated roasting facility. a: plan view and profile view drawings; b: top of feature (view to north); c: fill profile with south half excavated (view to north)

Four of these basins or shallow pits (Features 32, 41, 66, and 79) evinced relatively clearly defined margins and bases indicative of construction by excavation. All are relatively large (72-125 cm dia.) but shallow (11-21cm below base of plowzone) facilities that were probably not suited to long term subterranean food storage (lacking both sufficient depth and volume). These pits may have functioned for shorter term caches, or as processing facilities, but neither the content nor morphologies of these features provide clues to their functions.

Other shallow, basin-shaped features (Features 16, 19, 22, 44, 46, 67) closely resembled the basal levels of burned rock-filled roasting facilities, and may reflect staining from the leaching of ash and charcoal infiltrated soils below the actual heating surfaces. Feature 22, a large (220cm x 160cm), shallow basin or depression with burned earth and abundant charcoal inclusions, yielded high counts of acorn nutshell comparable to rock hearths, and probably represents a roasting area where nuts were parched in ashes and embers without a rock surface. Features 16, 19, 46, and 67 also appear to represent the basal levels of roasting facilities, and exhibit sparse inclusions of fire-altered cobbles.

Feature 50, a shallow basin with complex internal structure, may represent another specialized hearth construction (Figure 4.7). This basin includes two smaller circular “subpits,” (Zones A and B) which probably represent the original intrusions into the subplowzone surface. Zone A included large slabs of an Ashe Ferry series ceramic vessel that bounded walls of the

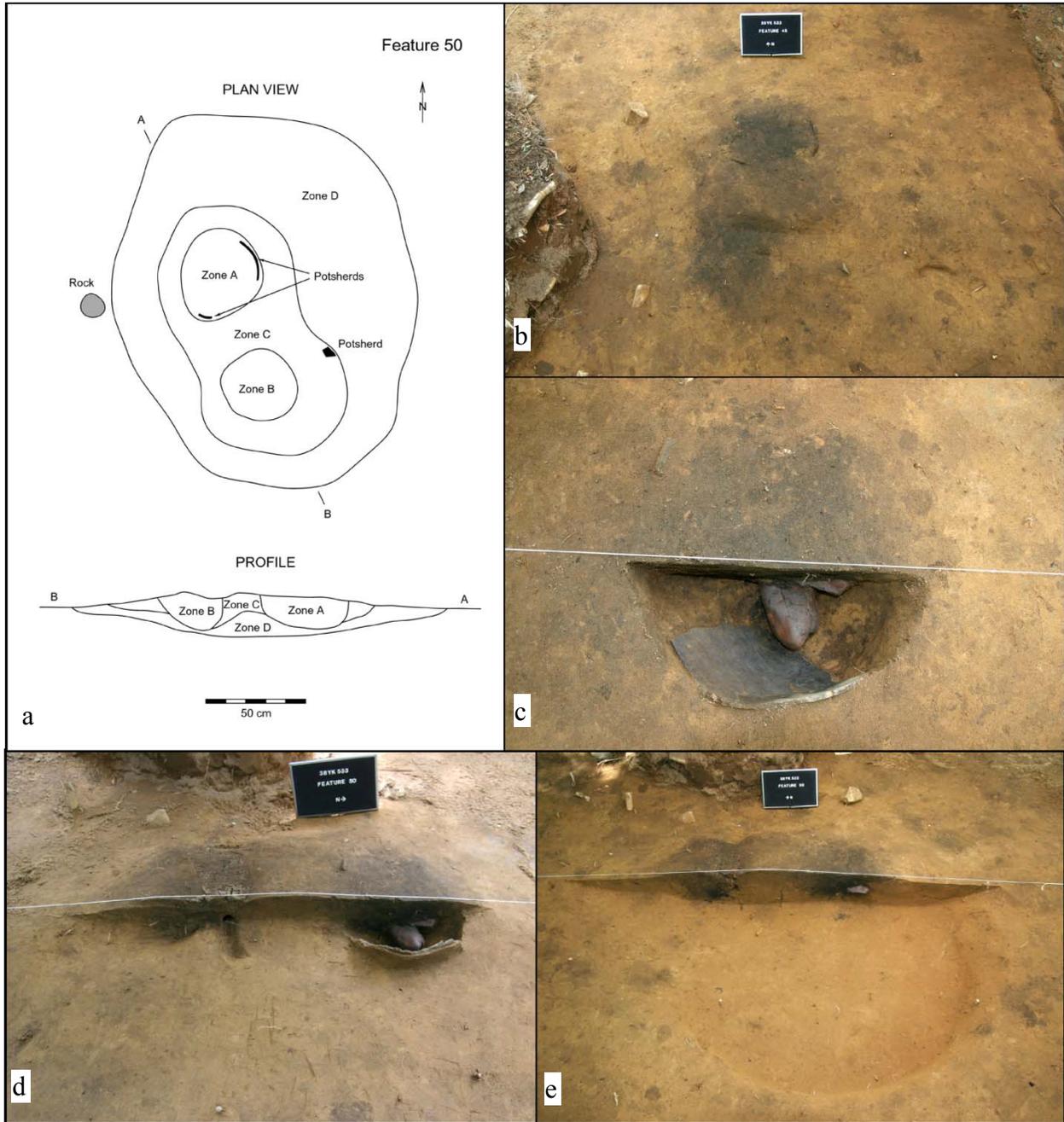


Figure 4.8. Feature 50, a shallow basin with “subpits” including *in situ* vessel fragments. a: plan view and profile view drawings; b: top of feature (view to north); c: intrusive pit (designated Zone A) containing large vessel section with northeast half excavated (view to southwest); d: fill profile before removing Zone A potsherds with northeast half excavated (view to southwest); e: fill profile with northeast half fully excavated (view to southwest).

small pit; these *in situ* slabs likely represent fragments of a vessel used and broken within the pit and partially retrieved. The base of Zone B, a nearly identical intrusion centered 32cm from Zone A, exhibited a dense deposit of charcoal with structure indicative of *in situ* firing. Both of these small pits may have been constructed to seat dual ceramic vessels over coals for cooking or

other food processing. For instance, Smith (1923) implies the simultaneous use of multiple vessels for the process of alkali leaching of acorn tannins by Menominee cooks.

Surrounding Zones A and B was an oval band of soil with heavy carbon staining (Zone C), which graded into Zone D, the “shallow basin.” Both Zones C and D were likely the products of leaching of carbon from Zones A and B (which probably filled with ashes and charcoal upon removal of the ceramic vessels).

Other shallow basins (Features 35, 40, and 61) include one or more postholes, and may represent excavations to provide deeper footings for post placements. Feature 61, a broad shallow basin, included two deep, rounded based postholes located 12 cm apart (Figure 4.8). These paired posts, along with a nearby posthole (Feature 75) probably represent a simple Late Woodland period construction frame for a rack or shed. No other postholes or other discrete context are documented in the immediate vicinity. Features 35 and 40 are adjacent shallow basins that each include small (28-30cm) shallow, circular flat based pits that resemble postholes in form and diameter. These features may represent a construction comparable to the Feature 61-Feature 75 posthole cluster.

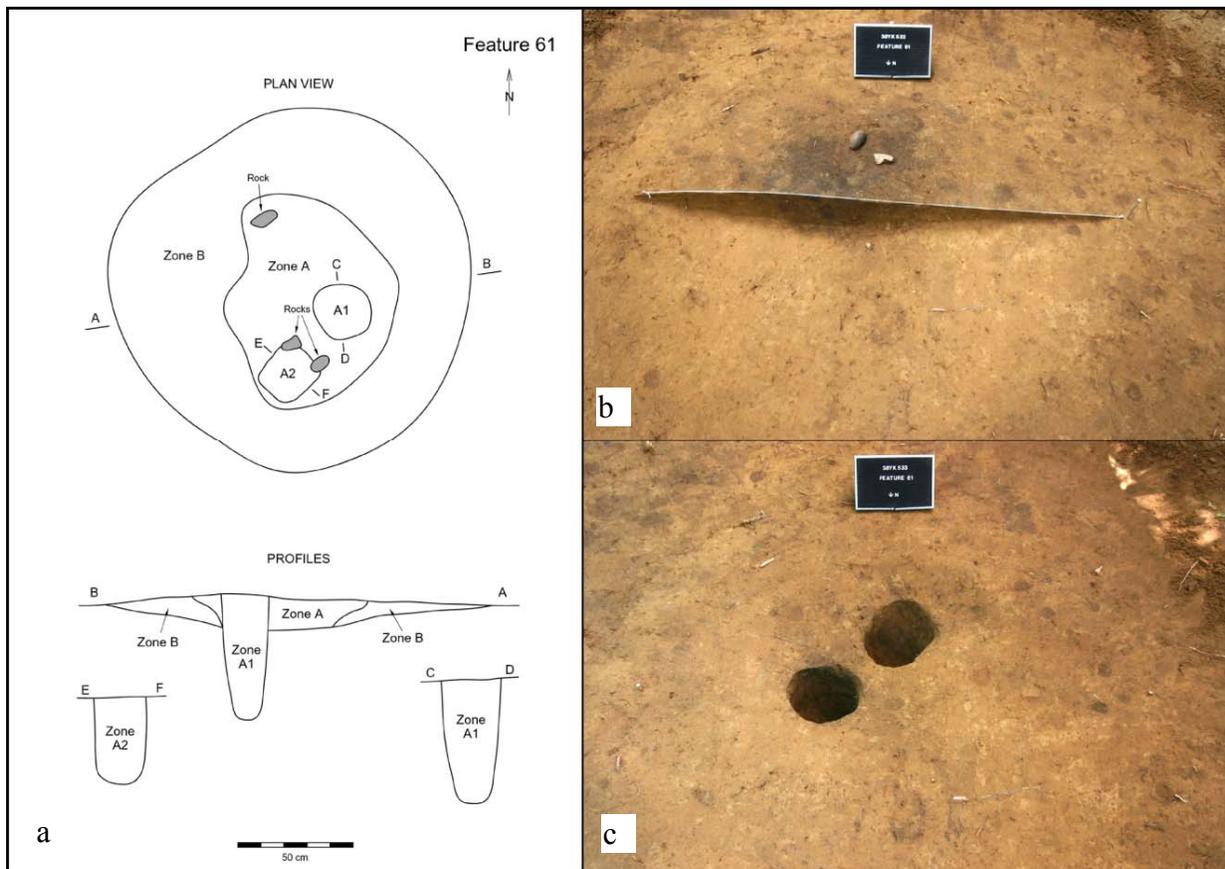


Figure 4.9. Feature 61, a shallow basin with postholes. a) plan view and profile view drawings; b) fill profile with north half excavated (view to south); c) base of feature with excavated postholes (bottom right, view to south).

Still other shallow basins (Features 1, 42, 58, and 72) were functionally obscure, amorphous soil lenses that yielded artifacts in densities equal to, or greater than, the overlying plowzone. Feature 1, a thin, irregular lens, contained a substantial portion of a fragmented Woodstock Complicated Stamped jar, but practically no other materials. Feature 58 consisted of three clusters of conjoining Deptford Check Stamped sherds that presumably demarcated a heavily leached shallow basin.

### **Postholes (n=11)**

Eleven small pits (Features 35a, 40a, 56, 57, 60, 61a1, 61a2, 63, 69, 73, and 75) are characterized as probable postholes, excavations for the installation of earthfast wooden posts (Table 4.1; Figures 4.9–4.11). Two of these pits (Feature 61a1, 61a2) exhibit the cylindrical morphology commonly associated with this facility type; the remainder are more conical in form, probably as a result of warpage during post extraction and pit wall collapse. These postholes range in size from 23cm–75cm diameter and 9cm–50cm in depth, and are distinguished by very high depth/diameter ratios (range: .53–2).

Nine of the probable postholes are located along the eastern edge of the site on the front (riverside) edge of the terrace. Six of these occur in a high density area in proximity to three graves, hearths, and shallow basins. This cluster of contexts appears to represent the central locus of residential domestic activities at the site, and the postholes here may indicate the remains of a shelter substructure or installations to support other frameworks. One cluster of three posts (Features 61a1, 61a2, and 75) situated at the eastern edge of the site may represent a small-scale scaffold, as do two postholes (Features 35a, 40a) located near the northern edge of the site. None of these groups of postholes constitute coherent architectural patterns.

As evidenced by the markedly indistinct margins of large pit features, the Ashe Ferry site sediments are highly susceptible to leaching and movement of fine organic particles, and post-depositional taphonomic processes may have completely obscured many postholes and other small facilities. Consequently, the lack of coherent posthole patterns at Ashe Ferry cannot be confidently construed as evidence for the absence of permanent (i.e., non-ephemeral) architecture at 38YK533.

### **Caches (n=2)**

Two tightly defined clusters of lithic tools (Features 75 and 80) represent packages of material apparently cached for later use but never retrieved (Table 4.1; Figures 4.2, 4.11, and 4.12). The earlier of these, Feature 80, is a small (15 cm dia.) cluster of Late Archaic period artifacts situated in a shallow depression at the base of the plow zone (Figure 4.11). The cache included one Savannah River projectile point, three bifaces, four cores, and two flakes. Feature 75, a Late Woodland period cache, consisted of one celt, one biface, one projectile point fragment, seven rhyolite cores, two worked flakes, one fragment of unidentified black mineral pigment, and an antler (11 fragments) that were placed in the top of an apparent posthole (Figure 10).

Caching behavior represented by Features 75 and 80 invokes multiple possible scenarios. These unrecovered caches may reflect hiding of possessions from site co-occupants as a behavior intended to be completely internal and contemporaneous within a particular occupation episode. Alternatively, caching may reflect materials intentionally left onsite between occupations or site visits in anticipation of future need. This scenario implies residential mobility of some or all of the site occupants, and efforts to conceal cached materials suggests apprehension of recovery by

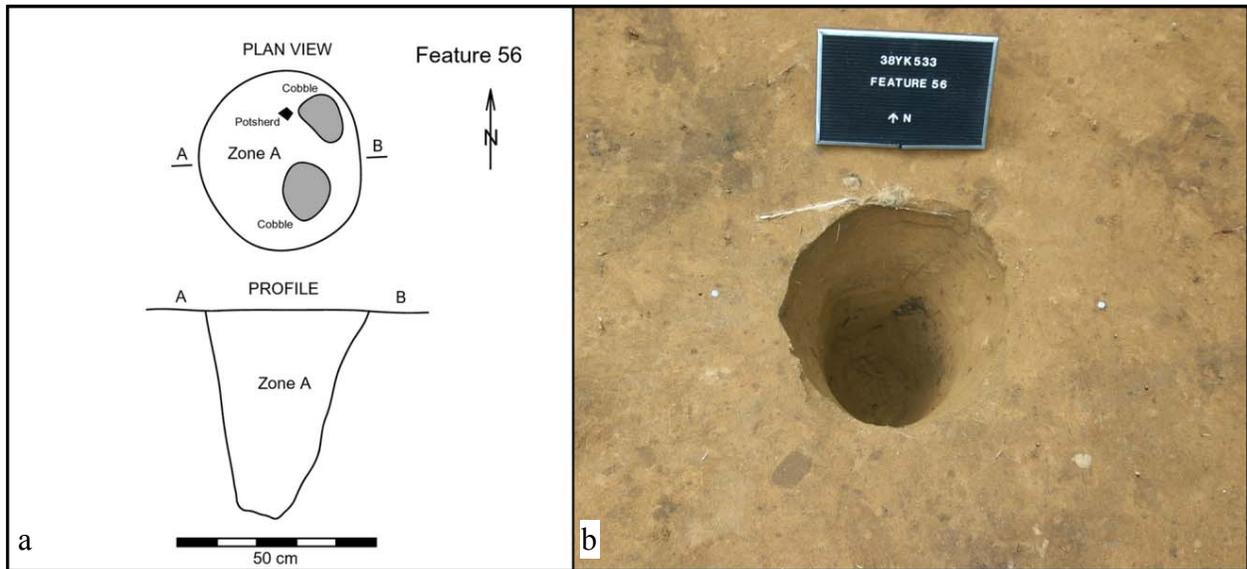


Figure 4.10. Feature 56, a probable posthole. a: plan view and profile view drawings; b: photograph of excavated feature (view to north).

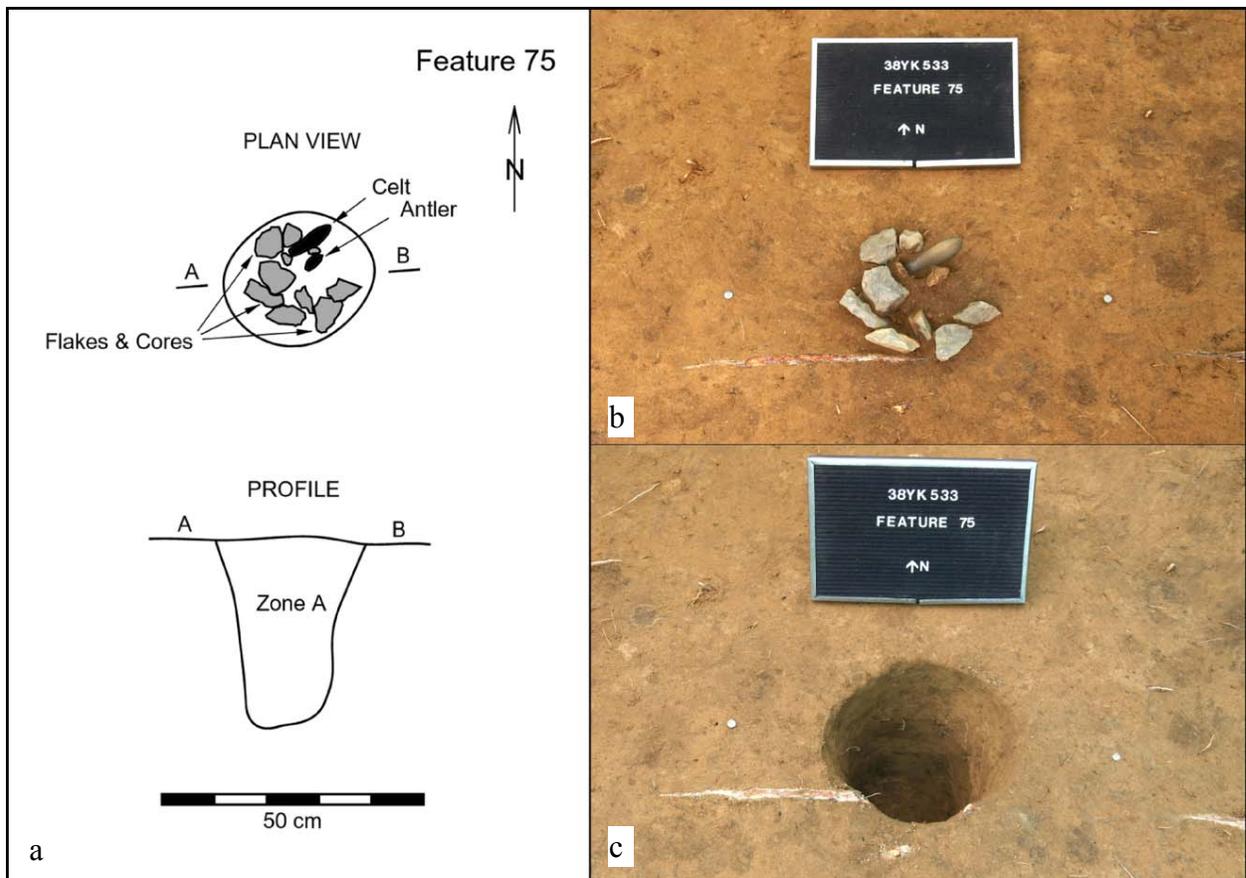


Figure 4.11. Feature 75, a probable posthole with stone-tool cache. a: plan view and profile view drawings; b: top of feature showing *in situ* stone-tool cache (view to north); c: excavated feature (view to north).

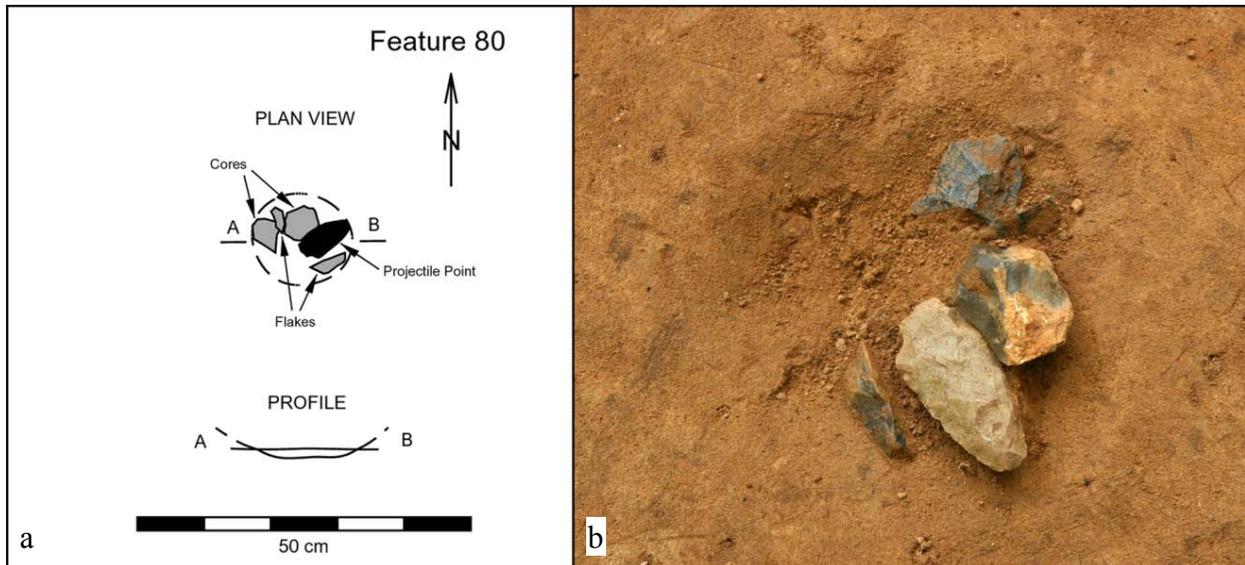


Figure 4.12. Feature 80, a probable Late Archaic period cache. Left: plan and profile drawings; right: plan view photograph (view to west).

someone other than the depositor or their designees. Caching of tools and raw material for tools is a particularly well documented strategy for mobile hunter-gatherer populations with subsistence economies organized in seasonal rounds that occasion predictable revisits to resource rich localities (Binford 1979; Kelly 1985).

### Graves (n=3)

Investigations at 38YK533 identified three primary human interments (Features 43, 45, and 62) and discovered fragmentary, disassociated human remains mixed in another pit context (Feature 20) ((Table 4.1; Figures 4.13–4.15). None of these grave contexts could be distinguished by distinctive morphology or matrix characteristics—each presented as diffuse stains of organically enriched soils that were homogenized by post-depositional bioturbation and mechanical leaching. As a consequence, these grave contexts were initially interpreted as domestic facilities (which they substantially resembled) and were treated according to standard investigation protocol. However, upon discovery of human remains in these contexts, investigation was suspended until tribal and agency consultation determined proper treatment and disposition of the graves and their contents. These consultations provided for controlled exhumation and immediate reburial of human remains in a secure location outside the construction corridor. Pursuant to this determination, the three primary burials were relocated, *en bloc*, to a suitable protected location. In addition, the disassociated remains recovered from Feature 20 were reburied at this time.

The three primary inhumations were located on the highest portion of the levee formation along the northeastern flank of the site, part of a high density cluster of discrete contexts with postholes, hearths, and shallow basin-shaped pits that probably represents the primary residential area during the Late Woodland period. Grave associations or materials in the grave matrices indicate that all three primary interments, as well as the disassociated remains recovered from Feature 20, date to the Late Woodland period and are likely associated with the Ashe Ferry phase occupation.

Feature 43, which was located on the eastern edge of the terrace nearest the river, was an probable storage/processing pit that appears to have been repurposed as a grave. This oval pit measured 165 cm x 145 cm, with the inhumation positioned 60cm below the base of plowzone (Figure 4.12). The size and morphology of Feature 43 was directly comparable to large storage or processing pits located along the opposite side of the terrace. Pit matrices comprise two apparent zones, a lower fill that was directly deposited around the inhumation, and an upper zone that probably represents filling of the pit with organically enriched site midden/A horizon soil after (and perhaps in response to) subsidence of the burial fill.

As detailed in Appendix C, *in situ* field analysis of Feature 43 remains indicated that the interred individual was a young adult (est. 20–30 y, based on slightly worn third molar) of unknown sex. Observed skeletal elements included a fragmentary cranium, left mandibular permanent molars (1–3), left maxillary permanent molars (1–3), the neck and distal condyle of a femur, as well as other unidentifiable long bones (see Appendix C). No grave accompaniments were noted, with the possible exception of two teeth and maxillary fragment of a domestic dog. Incidental material recovered from the matrices within Feature 43 included 53 potsherds and nine projectile points referable to the Late Woodland period Ashe Ferry phase components. These inclusions clearly indicate that Feature 43 does not predate the Ashe Ferry phase, but do not preclude the possibility that the inhumation postdates Late Woodland period site occupations.

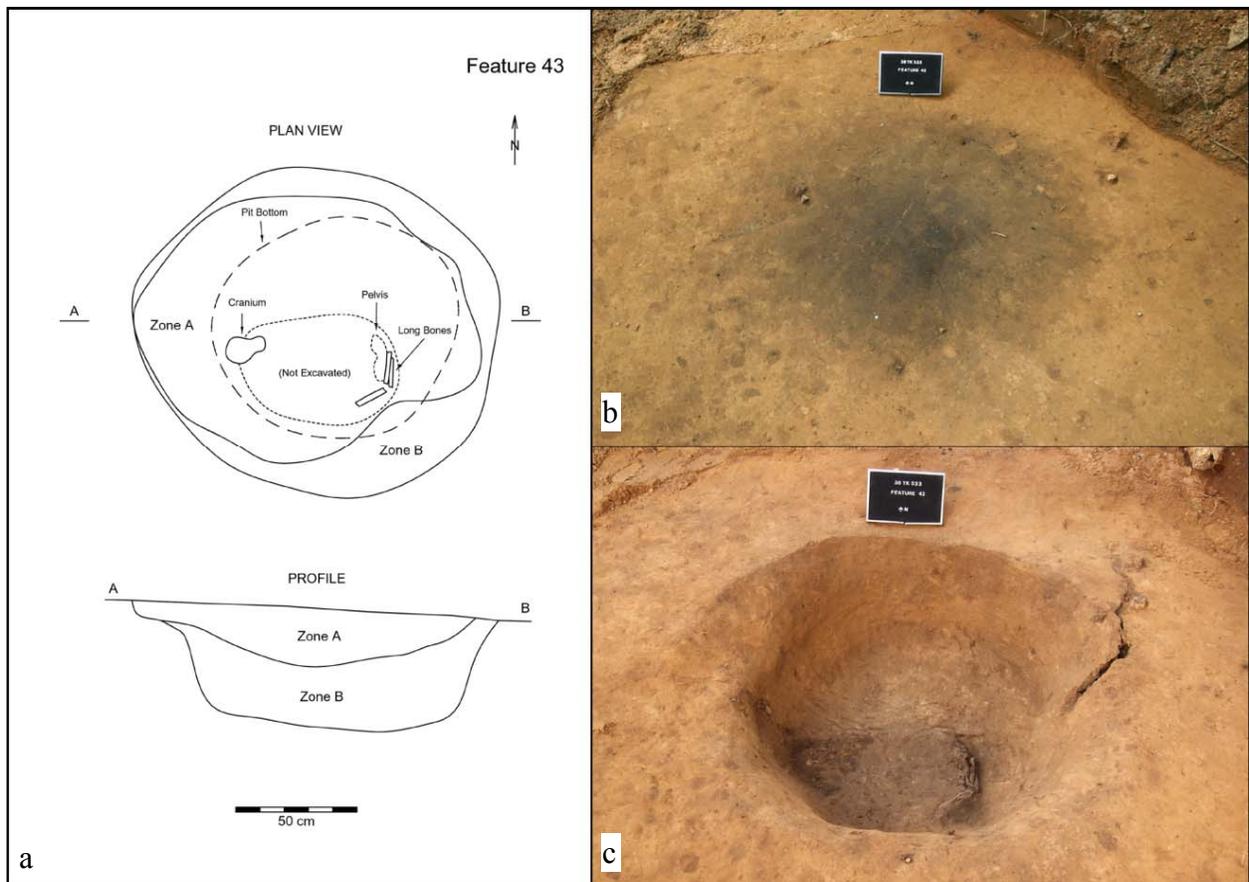


Figure 4.13. Feature 43, a probable storage pit repurposed as human grave. a: plan view and profile view drawings; b: top of feature prior to excavation (view to north); c: Feature 43 following excavation of Zones A and B but before exhumation (bottom, view to north).

Feature 45, which was located approximately 15m south of Feature 43, was a shallow basin-shaped grave pit that contained the remains of a gracile adult male with a small cluster of grave goods (Figure 4.13). The actual grave (Zone A), which measured 117 cm x 78 cm, apparently intruded a larger, preexisting shallow basin (Feature 45, Zone B). The grave pit (Feature 45, Zone A) extended only eight centimeters below the base of plowzone, with human remains evident throughout. Limited exposure of these remains revealed a tightly flexed, north-facing



Figure 4.14. Feature 45, a shallow inhumation. a: plan view and profile view drawings; b: top of feature (view to south), c: troweling feature for photography (view to southwest), d: fill profile with north half excavated (view to south); e: cluster of objects (stone platform pipe, deer antler, and worked bone) associated with the burial (view to south).

primary inhumation of a probable adult male; field inventory of the remains noted presence of the cranium, mandible, right side dentition including two worn maxillary molars, one maxillary or mandibular molar, one mandibular molar root, and broken premolar (probably mandibular), along with diaphyses of the right and left clavicles, humerii, ulnae, right radius, femora, and tibiae (Appendix C).

Associated grave goods (Figure 4.13), which were relocated and reburied with the remains, included what appeared to be a small bundle with a chlorite schist monitor-type platform pipe (see Chapt. 6), a deer antler tine, and a fragment of worked and polished bone. The chlorite schist smoking pipe appears directly comparable to presumed Late Woodland period examples recovered from the Town Creek site (Coe 1995). Materials recovered from the matrix of Feature 45 (but not noted in direct association with the burial), include Ashe Ferry phase ceramic sherds. As is the case with Feature 43, these incidental inclusions imply a Late Woodland period *terminus post quem*.

Feature 62, an oval grave pit that included remains of two subadult individuals, was situated 2.5m southwest of Feature 45. The flat-based grave pit measured 85 cm x 73 cm; human remains were evident approximately five centimeters below the base of plowzone. *In situ* field analysis prior to grave relocation indicated that these remains represent: “Two subadult individuals ... The remains consisted of two crania that were located adjacent to each other, at least one mandible, and at least one long bone. The dentition of individual one included deciduous maxillary first and second molars (side unknown) and deciduous mandibular first and

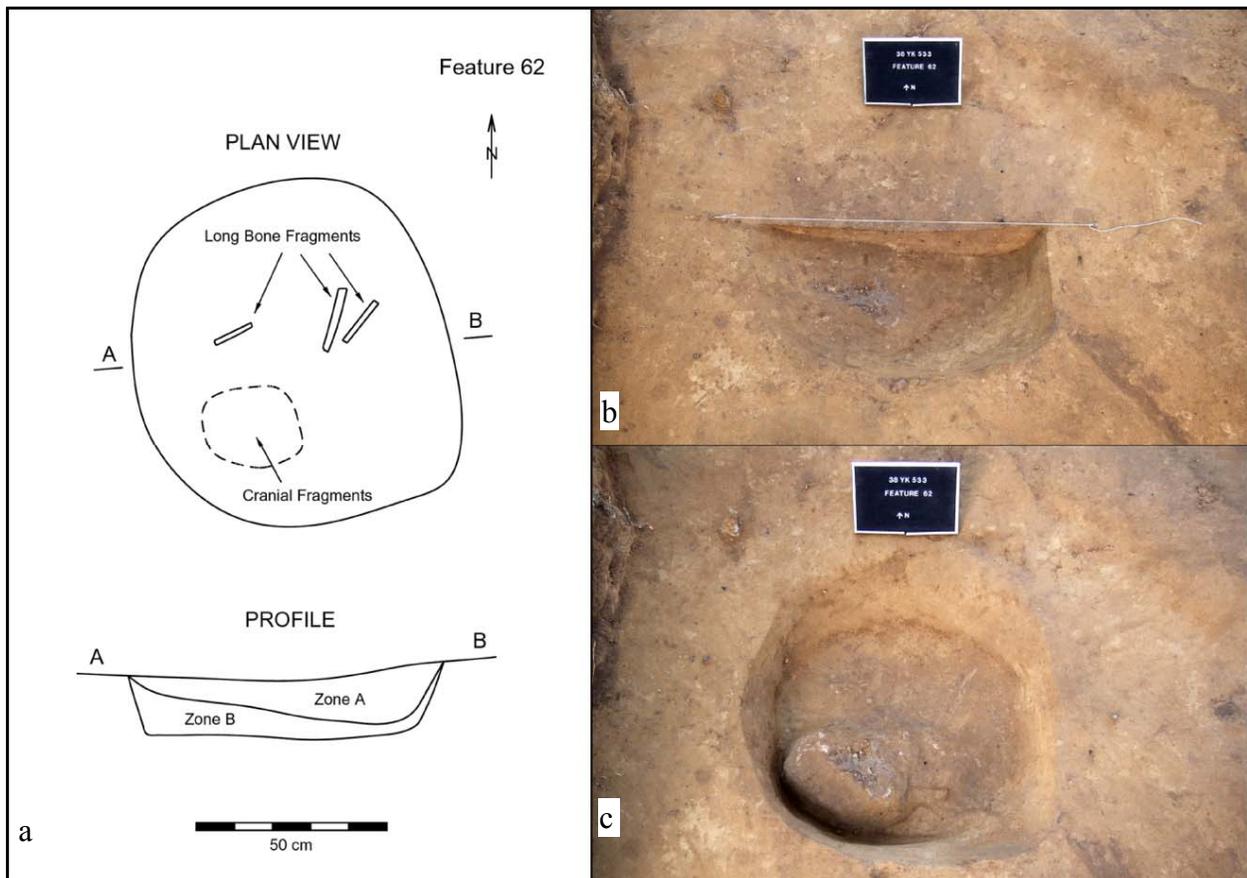


Figure 4.15. Feature 62, an inhumation of two subadult individuals. a: plan view and profile view drawings; b: fill profile with Zone A in south half excavated (view to north); c: feature excavated with the burial partially exposed (view to north).

second molars (side unknown). While these were clearly in articulated position, neither the mandible or maxilla was preserved enough for observation. There was also an unerupted maxillary permanent first molar with only the crown developed. All deciduous teeth were largely unworn. The developmental sequence of the teeth allowed an age estimate of 3–4 years of age (Ubelaker 1999). The dentition of individual two included a left deciduous canine, left maxillary first and second molars, and left deciduous mandibular canine, first and second molars. The mandibular and maxillary molars were clearly articulated in fairly well-preserved bone. There was also an unerupted maxillary permanent left first molar with only the crown developed. All deciduous teeth were largely unworn. The developmental sequence of the teeth allowed an age estimate of 3–4 years of age. There was also a very badly preserved long bone.... The development of the deciduous and permanent teeth indicates these two individuals were of identical or nearly identical ages. No observations were made that would permit assessing whether they were related or not” (Hutchinson, this volume, Appendix C).

No grave accompaniments were evident in the exposed portion of the grave. Incidental materials included in the feature matrix indicate a Late Woodland period Ashe Ferry phase *terminus post quem*.

In addition to the three primary interments, Feature 20 (Zone B) yielded relatively well-preserved human cranial vault fragments and two mandibular molars. While it is possible that these remains might represent surviving elements of an *in situ* burial within a preexisting storage pit (as may be the case with Feature 43), these isolated elements may instead reflect accidental redeposition of skeletal remains within the Feature 20 from an unknown original context. No materials observed or recovered from Feature 20 indicated the presence of an *in situ* primary interment.

The occurrence of three primary burials, and a fourth instance of disassociated remains, which together represent five individuals, probably reflect relatively sustained or frequently repeated site occupations consistent with the high densities of occupational debris. All five individuals are referable to Late Woodland period Ashe Ferry phase site occupations, which span approximately 150 years. Clustering of the primary inhumations within a relatively small portion of the total site area suggests that this precinct, on the highest part of the terrace, was deemed the most appropriate locus for interment. This area may correspond to the focus of residential occupation at Ashe Ferry.

### **Site Structure**

The distributions of discrete feature contexts, considered in conjunction with distributions of artifacts recovered from plowzone contexts, reveal multiple patterns in the use of space at Ashe Ferry during the Woodland and Mississippian period occupations. As illustrated by Figure 4.16, ceramic sherds (the most abundant class of artifacts recovered from one meter test units) are broadly, but unevenly distributed across the site. Across most of the site area, one meter square tests yielded 20 or more ceramic sherds each (primarily deriving from buried plowzone or truncated A-horizon deposits). Five general areas revealed much higher sherd densities, with counts of 40–133 sherds/m<sup>2</sup>. The northwesternmost cluster, centered around 856R874, forms an arc that includes Features 32, 35, and 42, all of which are attributed to Ashe Ferry phase occupations (Figure 4.16). Exceptionally high sherd weights (1988g/m<sup>2</sup>) centered at unit 873R856 reflect the incidence of a nearly complete, reconstructable fabric impressed vessel (Figures 3.23 and 5.18) recovered from the plowzone and A-horizon remnant. The distribution of fire-cracked rocks (as measured in g/m<sup>2</sup>) in this area mirrors that of potsherds, indicating heavy

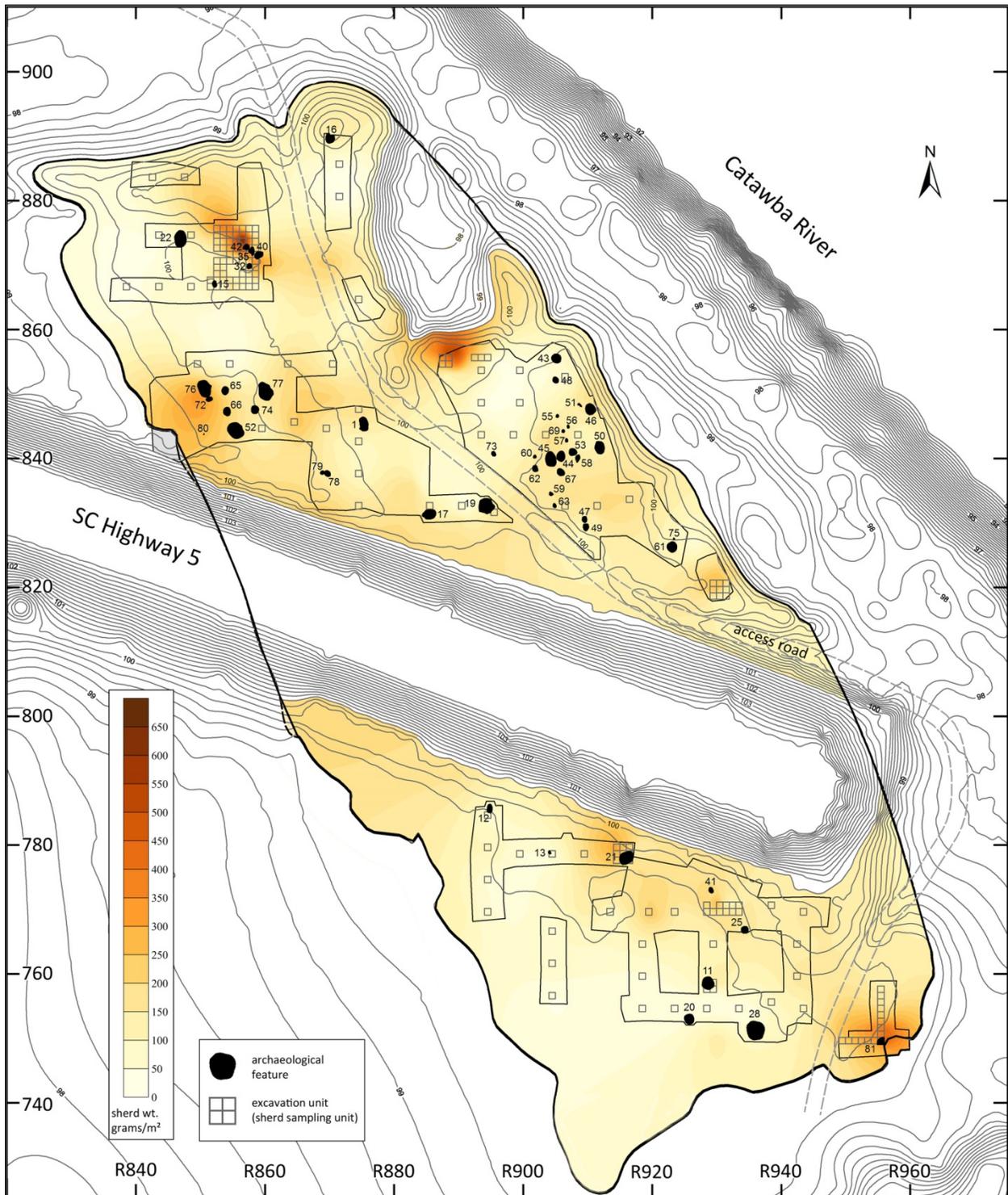


Figure 4.16. Ceramic sherd density (grams wt. sherds/m<sup>2</sup>) (extrapolated from one-meter tests) at 38YK533.

concentration of refuse around Features 32, 35, and 42, with a lower density concentration or refuse evident adjacent to nearby Feature 15. Low artifact densities evident in the space between Feature 15 and Features 32, 35, and 42 may represent an activity zone exempted from disposal. Another concentration of sherds and firecracked rocks around 856R889 may represent disposal associated with the use of Feature 22, an Ashe Ferry phase shallow hearth or roasting facility.

A small, but particularly dense concentration of sherds (133 sherds/m<sup>2</sup>) and fire-cracked rocks (>7kg/m<sup>2</sup>) was evident in unit 855R889. Here, redeposited soils formed a narrow berm at the edge of the borrow pit on the northern margin of the site. The adjacent area (approximately 110m<sup>2</sup>) to the east of this concentration evinced only vestiges of plowzone and very low artifact densities, apparently a function of modern mechanical scraping of the surface and displacement of plowzone soils (and artifacts) to the brink of the borrow pit.

High ceramic sherd densities in test unit 850R850 reflect the unit's intrusion into refuse deposits within Feature 76. Discrete high density clusters of sherds and fire-cracked rocks are documented adjacent to Features 21 and 81, indicating refuse disposal around and within these feature contexts. In the case of Feature 21, a rock-filled roasting facility, the concentration of fire-cracked rocks was located in the plowzone over the feature, while concentrations of ceramic sherds were located northwest of the facility. High densities of fire-cracked rocks in unit 832R886, adjacent to Feature 17, probably represent plow movement of material from the top of this Ashe Ferry phase rock filled roasting facility. High ceramic sherd densities in unit 820R930 reflect fragments of a single fabric impressed vessel attributed to an ephemeral Badin phase site occupation.

A 200m<sup>2</sup> area on the terrace crest in the east central portion of the site evinces the greatest concentration of discrete features (Features 43, 44, 45, 50, 51, 53, 55, 56, 57, 58, 62, and 69), including graves, postholes, shallow basins, rock-filled roasting facilities and deep pits. With the exception of Feature 53 (an Early Brown phase rock-filled roasting facility) and Feature 58 (a Deptford phase basin), these features are associated with the Ashe Ferry phase site occupations. Plowzone deposits in this area are not particularly distinguished by concentrations of ceramic sherds, lithic artifacts or fire-cracked rocks, and no dumps or truncated middens are indicated (Figure 4.17). This precinct, which constitutes the most elevated portion of the site, appears to have been the locus of multiple activity sets exclusive of refuse disposal, and may represent the primary residential area at the site during the Ashe Ferry phase. Other portions of the terrace crest and frontslope are either truncated by soil borrowing or obscured by construction of the SC Highway 5 causeway, and similar residential loci may have been destroyed by these activities.

The terrace backslope, which constitutes the southwestern portion of the site (approximately 60% of the total site area) appears to have been reserved for activities segregated from core residential behaviors. Most of the deep storage pits and large rock-filled roasting facilities are situated on the backslope, but few other feature types are documented in this precinct (i.e., no graves, postholes). Spatial segregation of the roasting facilities may have spared the site inhabitants some smoke nuisance (although most of these facilities are upwind of the presumed residential area) and segregation of deep pits kept foot traps out of high traffic areas. Moreover, position of deep pits on the backslope took advantage of finer grained sediments that might better support pit walls. The spatial segregation of these facilities from the presumed residential area also connotes segregation of activity sets, i.e., large pits and large roasting facilities were not components of daily residential activities, but rather were elements of one or more specialized processing or storage activity sets. As suggested in the preceding discussions of rock-filled roasting facilities and deep storage pits, one documented processing activity at the site

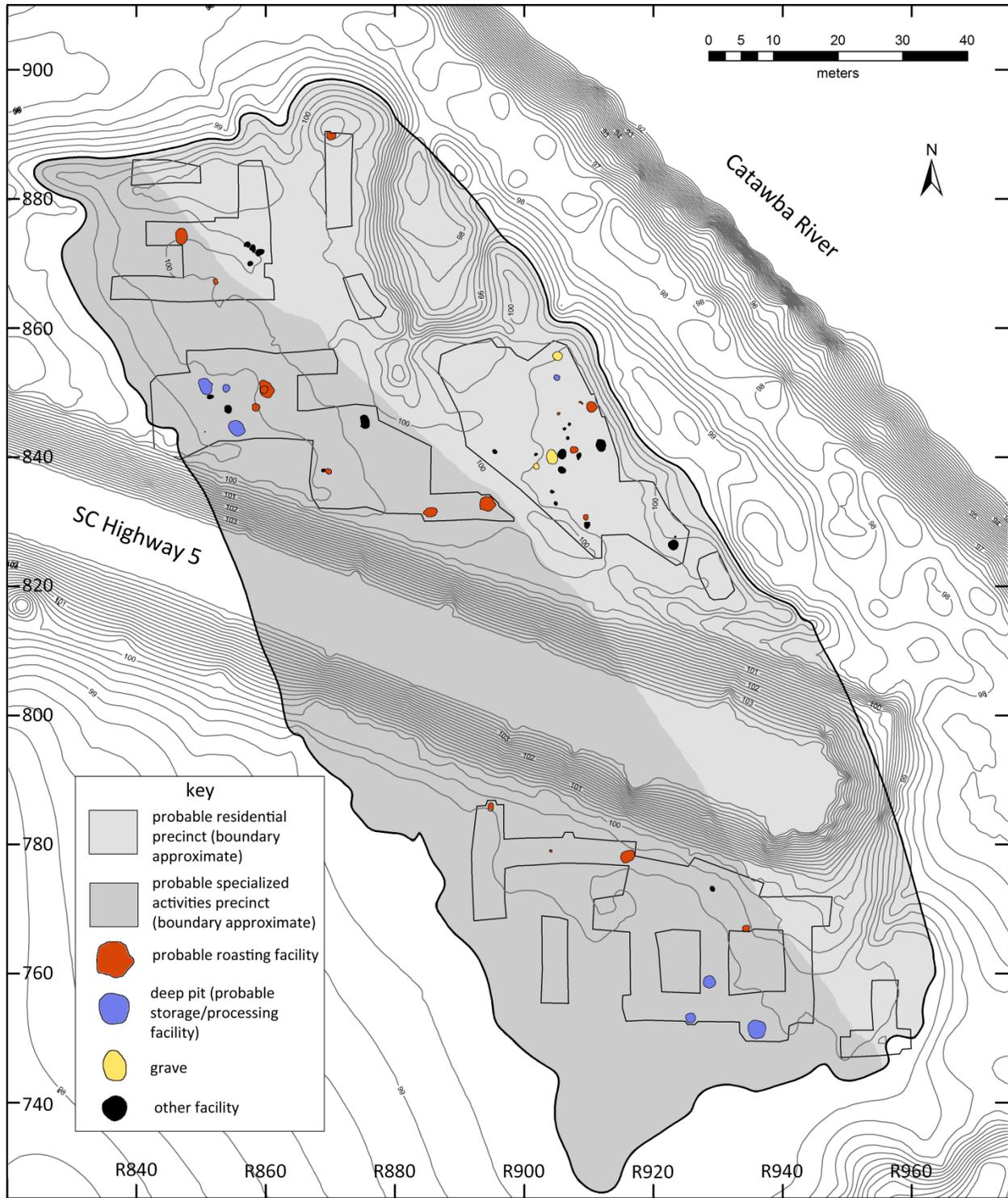


Figure 4.17. Map of 38YK533 indicating hypothesized spatial precincts.

involved roasting or parching of acorns. Processing of large quantities of acorns at 38YK533 is indicated by unusually high frequencies of acorn nutshell fragments in the matrices of rock-filled roasting facilities and discarded charred wormy acorn nutmeats in deep storage pits. As indicated by the series of AMS dates derived from discrete feature contexts at 38YK533 (and bolstered by temporal variation evident in the ceramic assemblage), primary occupations represented at the site were not synchronous, but rather distributed over a 350-year span. Therefore, the spatial structure of the site cannot be interpreted as the product of a single integrated occupational event, but rather as the accretional product of redundant use of space by multiple generations of site occupants. Such spatial redundancy is almost certainly the effect of stable physical characteristics of the site; site occupants used and reused the most elevated, well drained portion of the terrace as a residential surface. This area offered the most direct access to the Catawba River as a source of fresh water and as a distinct resource zone, and was directly proximate to a stone fishweir and ford in the river. Redundant use of this surface over a substantial span is indicated by diagnostic artifacts associated with Late Archaic, Middle Woodland, Late Woodland, and Mississippian period occupations. However, lack of coherent architectural evidence, and generally low diversity of facilities, is inconsistent with “permanent” occupation of 38YK533 as a residential base, and may instead indicate shorter-term occupations of the site as a seasonal camp. The scale of these occupations was undoubtedly small, possibly on the order of one or two households at any given time.

The possible functions of redundant seasonal occupations at 38YK533 may be better reflected in nonresidential areas. The backslope area, west and south of the terrace crest, presented two distinct attributes—spatial separation from the presumed residential area, and finer grained sediments than those found on the terrace crest—that may have been desirable for nonresidential activities (e.g., large-scale processing and storage of foodstuffs). Use of this area throughout the Late Woodland and early Mississippian period occupations is clearly indicated by the range of associated AMS dates (most of which derive from deep storage pits and rockfilled roasting facilities in the backslope area), and long-term continuity or redundancy in the type of activities conducted in this area is supported by the uniformity of facility forms and content through time. The unusually high incidence of acorn nutshell fragments and acorn nutmeats documented in backslope contexts may reflect recurrent use of the site as a base for acorn gathering, processing and storage during the Ashe Ferry and Early Brown phases.

If redundant Ashe Ferry and Early Brown phase occupations at 38YK533 focused on acorn procurement, processing and storage, the site location may have presented a “best fit” for the requirements of various activities involved in acorn exploitation. Proximity to oak groves with desired acorn types would have been necessary to reduce transportation costs. Such groves were likely not represented on the first terrace or within the Pleistocene aged backswamp, but may have grown on the extensive old terrace systems located .5–1km southwest of the site. Position of the site near the river provided ready access to unlimited quantities of fresh water for leaching of acorns for immediate use, and location of the site at a river shoal facilitated gathering of river cobbles used in roasting facilities. First terrace sediments presented suitable substrates for effective leaching of acorns, either passive, longer-term leaching via burial in pits, or more immediate leaching by pouring water over acorn meal in sand beds, a process documented among California natives (Ortiz 1991). Settings with this suite of characteristics are likely widespread in the lower Catawba River Valley, and components such as those represented at 38YK533 are probably commonplace, but remain largely undocumented. What may set the Ashe Ferry site apart from similar “acorn camp” sites is its position at a primary transportation

node, the Twelvemile Ford over the Catawba River. This location likely enhanced the accessibility and visibility of the Ashe Ferry site, especially in relation to site 38LA125, a probable early Ashe Ferry phase residential site located on the opposite side of the Catawba River. Unfortunately, the contemporaneity of 38LA125 with 38YK533 cannot be evaluated because 38LA125 was destroyed *en toto* by the clay mining operations of the Ashe Brick Company and its successor, the Boral Brick Company.

## **Chapter 5**

### **Ceramic Artifact Assemblages**

Ceramic vessel fragments (n=13,175) constitute the second most abundant class of artifacts (other than lithic debitage) recovered during the 2010 investigations at 38YK533 (Tables 5.1, 5.2, and 5.3; Appendix F1). Most (84%) of these sherds derive from plow-disturbed contexts and cannot be specifically associated as true assemblages, yet 96% of the analyzed sherds from non-feature contexts are stylistically and technologically consistent with Late Woodland period ceramic wares associated with radiocarbon dated feature contexts that assayed ca. A.D. 1010–1160.

Ceramic sherds recovered from the Ashe Ferry site are referable to a number of historical types and series documented in the Carolina piedmont or farther afield, including Badin, Deptford, Yadkin, Cape Fear, Woodstock, and Uwharrie. The great bulk of the site assemblage comprises a newly defined Late Woodland period ware, the Ashe Ferry series (primarily one type, Ashe Ferry Simple Stamped). The Ashe Ferry series is closely comparable to Santee series wares (Anderson et al. 1982) of the South Carolina Coastal Plain, but it is defined in this study as a distinct facies of the macroregional Late Woodland period tradition of sand-tempered, simple stamped wares (see Anderson 1989, 1996:20; Anderson and Joseph 1986:246–247; Elliott and Wynn 1991; Worth 1996; Worth and Duke 1991:34). Because Ashe Ferry Simple Stamped wares constitute the overwhelming majority of ceramic artifacts deposited over a 160-year period during the most intense occupation at 38YK533, this span is designated the Ashe Ferry phase (ca. A.D. 1000–1160). Successive to the Late Woodland period Ashe Ferry phase is an early Middle Mississippian period occupation (ca. A.D. 1200–1350) distinguished by a markedly different suite of ceramic wares, designated here as the Early Brown phase (named for Mr. Early B. Brown, the long-time Catawba ferryman at Ashe Ferry).

This chapter presents a formal description of the ceramic vessel fragments collected at 38YK533 during the 2010 investigations with a primary aim toward situating the collection within the rubric of previously established regional historical types and ceramic phases. Such characterization should be particularly useful because local ceramic sequences and chronologies in the northern central Piedmont region of South Carolina are not currently well defined nor well understood (Benson 2006; Prentice and Nettles 2003; Trinkley 1990). The radiocarbon dated ceramic assemblages from 38YK533 provide reference points for initial definition of terminal Woodland period and early Middle Mississippian period occupations in the lower Catawba River Valley and their relationships to the better known sequences of the Savannah River (e.g., Anderson et al. 1990; DePratter 1979, 1990; Hally 1990; Hally and Rudolph 1986) and Wateree-Santee River valleys (e.g., Anderson 1982; Cable 2002; DePratter and Judge 1990). Consideration of these dated Ashe Ferry ceramic samples lends clarity to particular issues articulated in the 1992 conference on Indian Pottery of the Carolinas (Anderson, et al. 1996) and restated by Vanier (2010) by specifically defining the nature and chronological position of terminal Woodland ceramic assemblages in the Piedmont region and the subsequent transition to Mississippian ceramic traditions.

#### Characterization of the Ashe Ferry Site Ceramic Assemblage

Characterization of the ceramic assemblage recovered from 38YK533 is based upon descriptive, attribute-level analysis of individual potsherds; these attributes are primarily nominal state observations (e.g., vessel portion, temper/aplastic content, primary surface treatment,

secondary decorative treatment), in addition to sherd size (maximum diameter) and thickness measures. Covariation of these nominal attribute states is then applied to the definition or classification of sherds with reference to established historical types, where applicable, or newly defined historical types as deemed necessary. The incidence and frequency of these historical types serve as chronological keys to outlining history and intensity of site occupation at 38YK533 and provide a basis for relating Ashe Ferry site occupations to those of the surrounding region.

### *Ceramic Vessel Sherd Sample and Analytic Methods*

As a first step in characterizing the ceramic collection, all ceramic sherds from each archaeological provenience were counted and weighed in bulk to effect gross measures of the spatial distribution and density of ceramic artifacts across the site area (Figure 4.15). After these inclusive metrics, the collection was subsampled by sorting sherds through ½" (1.3cm) mesh screen, separating the collection into "sherdlets" (those smaller than 1.55cm [.61"] diameter, the diagonal dimension of ½" screen) and sherds greater than 1.55cm diameter. Sherdlets (n=4222), which account for 32% (by count) of the ceramic sample, are frequently too small to allow accurate definition of vessel portion or surface treatment, and were not accorded further analytic scrutiny (beyond count and weight) in this study.

The remaining 8953 ceramic sherds (i.e., those greater than 1.55cm diameter) were individually characterized with respect to size grade (maximum diameter in two centimeter increments – i.e., ≤2cm, >2cm–≤4cm, etc.) (Table 5.1), thickness (graded in 2mm increments, ranging from <4mm–<12mm) (Table 5.2), aplastic content/temper (discrete nominal categories) (Table 5.3), vessel portion (i.e., rim, neck, shoulder, body, base, or combinations [e.g., rim/neck, rim/body]), vessel exterior surface treatments (discrete nominal categories), vessel interior surface finish (discrete nominal categories), and secondary decorative treatment. Rim fragments were further characterized with regard to rim form and lip form (see Appendix F1).

### Vessel portion

Where possible, individual ceramic sherds in the 8953 sherd sample were defined as specific vessel portions (Figure 5.1) on the basis of wall curvature, thickness differential (taper), presence of lip finish, or the presence of zoned treatment. The default vessel portion assignment was body fragment (n=8265). Other observed vessel portion states include: rim fragments (n=432), rim/neck fragments (n=8), rim/neck/body fragments (n=3), rim/body fragments (n=111), neck

Table 5.1. Size distribution of ceramic sherds recovered from 38YK533.

<i>size grade</i>	<i>size range</i>	<i>n=</i>
0	≤1.55cm	4222
1	>1.55cm–≤2cm	1608
2	>2cm–≤4cm	5341
3	>4cm–≤6cm	1548
4	>6cm–≤8cm	362
5	>8cm–≤10cm	71
6	>10cm–≤12cm	18
7	>12cm–≤14cm	3
8	>14cm	2
	total	13175

Table 5.2 Thickness distribution of ceramic sherds recovered from 38YK533

<i>thickness grade</i>	<i>thickness range</i>	<i>n=</i>
0	n/d	4263
1	≤4mm	423
2	>4mm–≤6mm	5340
3	>6mm–≤8mm	2828
4	>8mm–≤10mm	267
5	>10mm	54
	total	13175

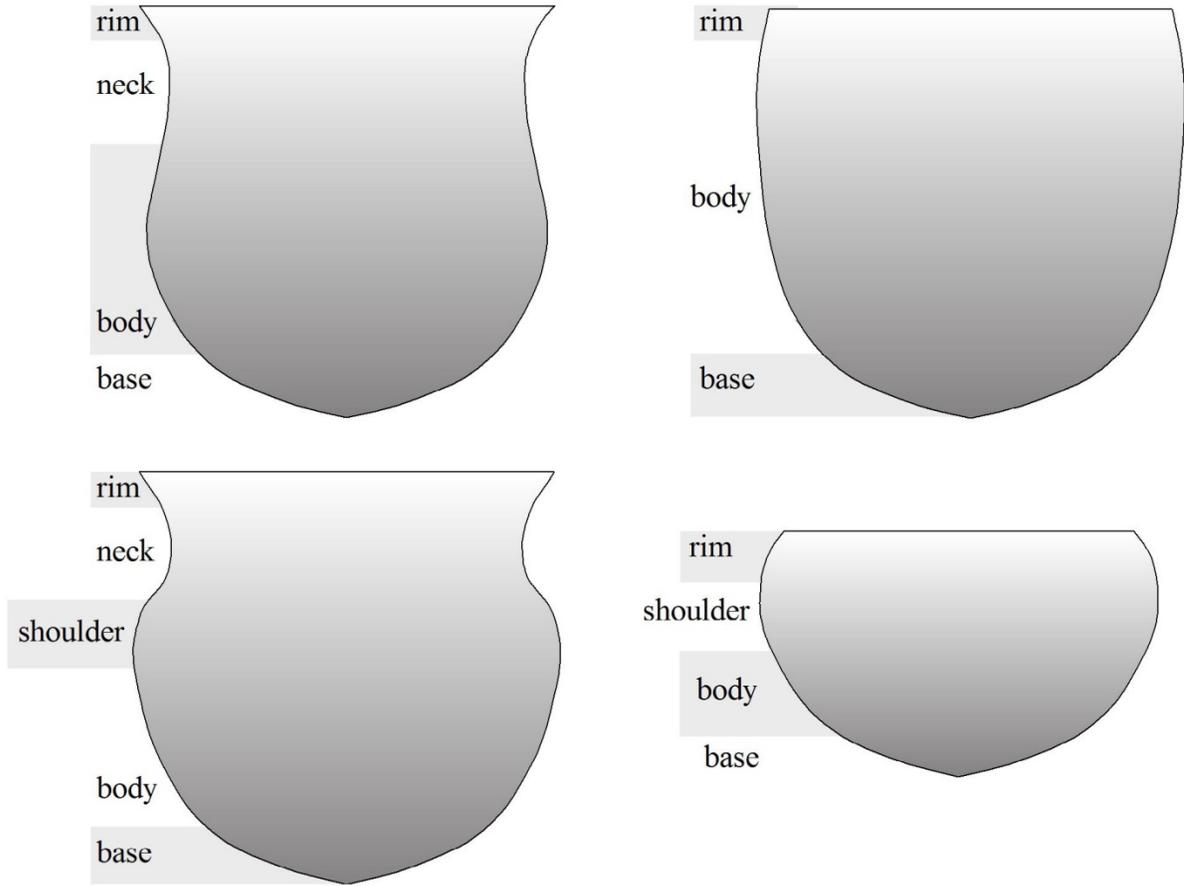


Figure 5.1. Schematic of possible vessel forms indicating location/landmarks for vessel portions.

fragments (n=45), neck/body fragments (n=18), and basal fragments (n=69). It is likely that body fragments are substantially overrepresented in this scheme, at the expense of both neck and base fragments, which in small, highly fragmented states could not be differentiated on the basis of wall inflection or thickness.

**Rim morphology attributes**

Vessel rim fragments were further characterized with respect to horizontal morphology (simple or castellate), vertical morphology (simple or compound) (Figures



Figure 5.2. Simple (left) and thickened castellate (right) rim forms represented at 38YK533.

5.2 and 5.3), rim profile (vertical, excurvate, strongly excurvate or incurvate) (Figure 5.3), and vessel lip morphology (see Figure 5.4).

### Rim type

Vessel rim forms are either simple or castellate in horizontal plane (Figure 5.2). Simple rims (n= 501) strike an approximately uniform (although frequently uneven) plane on the horizontal axis. By contrast, four castellate rims present scalloped rim edges punctuated by sculpted peaks that project above the predominant rim plane. These castellate sherds are attributed to the early Middle Mississippian period site component.

Rim morphology in vertical plane may be either simple or compound (thickened) (Figure 5.3). In simple forms (n=472), the vessel walls extend from the neck or body in even planes (usually with some thinning) to the lip termination. Compound forms, which occur exclusively on wares associated with the early Middle Mississippian period site component, are thickened by modeling or additive strips to either the rim interior (n=11) or exterior (n=22). Interior thickening effects a narrow ridge or corona that expands the rims of Mississippian bowls. Exterior thickening creates moderate to heavy collars on jar forms.

### Rim profile

Rim profile, a categorical description of the deviation of the vessel rim from an absolute vertical axis, was noted for 493 rim fragments (Figure 5.3). Most rims (n=225) were defined as approximately vertical in orientation, indicative of nearly vertical walled vessels with open orifices. Another 133 rims were described as slightly everted, 42 rims are moderately everted, and 18 rims are strongly everted or flared. Most of these represent jar forms with slight to moderate neck constriction and recurvate rims, with rims that approximate maximum vessel diameter. Seventy-five rims are incurvate, with either slight orifice constriction (n=24) that occurs on high shouldered jar forms or moderate orifice constriction (n=51) that occurs on shouldered bowl forms.

### Lip form

Vessel lip forms are defined and nominally categorized for 490 rim sherds. Defined forms include squared (i.e., cut) (n=2), flattened (n=117), thinned and flattened (45), flattened and extruded (n=79), rounded (n=113), thinned and

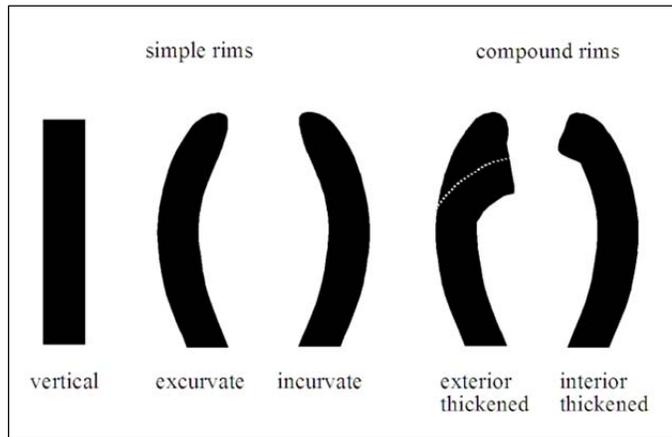


Figure 5.3. Schematic illustrating vessel rim morphologies (vertical) identified in the 38YK533 ceramic sample.

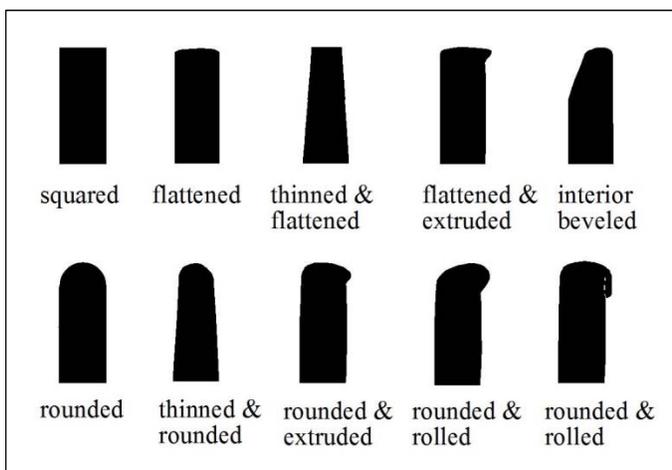


Figure 5.4. Schematic illustrating vessel lip morphologies identified in the 38YK533 ceramic sample.

rounded (n=72), and rounded and extruded/rounded and rolled (n=62) (see Figure 5.4). Three rims also exhibit narrow folded lips.

### Aplastic Content

Almost all ceramic vessel sherds from Ashe Ferry exhibit macroscopic aplastic inclusions as constituents of the clay bodies; such inclusions may represent up to 40% of sherd volume (Table 5.3). Most of these aplastic inclusions are siliceous material, predominantly quartz, with particles that range in size from fine sands (.125mm–.25mm) up to granular gravel (2mm – 4mm). While some aplastic component was probably incidental to clay sources used for pottery manufacture, variability in mixes and condition (e.g., rounded, subangular, angular) of aplastic particles likely connote intentional selection (and, in some cases, modification) of aplastic materials for addition to clay bodies to create tempering agents. The addition of such tempering materials may have aimed to improve clay workability, firing qualities, durability, or vessel

Table 5.3. Summary of aplastic content and primary exterior surface treatment observed on ceramic vessel sherds from 38YK533.

<i>primary exterior surface treatment</i>	<i>aplasic content</i>							totals
	<i>fine quartz sand with subangular quartz particles</i>	<i>fine quartz sand</i>	<i>medium sand/grit</i>	<i>crushed quartz</i>	<i>grog &amp; crushed quartz</i>	<i>none</i>	<i>n/d</i>	
simple stamped	4007	350	113	145				4615
complicated stamped	124	6	15					145
linear stamped (indet.)	105	22	6	1				134
check stamped	57	5	1					63
stamped (indet.)	988	80	15	12				1095
plain	619	109	38	4		1		771
n/d (thickened rim)	8		3					11
plain (burnished)	39	22	58	1				120
plain (rough)	94	2	9	1	16			122
smoothed	4							4
smoothed (obliterated)	390	81	8	11				490
fabric impressed	289	5		17				311
cordmarked	63	3	1	2				69
cob marked	1							1
cord-wrapped paddle stamped					1			1
indet./eroded/spalled	869	97	20	18				1004
sherdllets (<1.55cm)							4219	4219
<b>totals</b>	<b>7657</b>	<b>782</b>	<b>287</b>	<b>212</b>	<b>17</b>	<b>1</b>	<b>4219</b>	<b>13175</b>

function; particular clay body formulas were likely specific to both source clays and to cultural traditions or “communities of potters.” In a broad sense, temporal variation in clay formulas and aplastic materials tends to distinguish the wares associated with Middle Woodland, Late Woodland, and Mississippian period occupations at Ashe Ferry, but because various mixes of siliceous materials to intergrade, no particular temper variety appears to be exclusively definitive of temporal ware groups, and the diagnostic value of temper categories alone appears limited.

Categories of aplastic content observed in ceramic vessel sherds from Ashe Ferry may be broadly characterized (in order of abundance) as fine quartz sand with larger angular/subangular quartz particles fine quartz sand crushed quartz mixed medium sand/grit and grog mixed with crushed quartz (Figure 5.5).



Figure 5.5. Sherd edge views illustrating aplastic/temper states observed in 38YK533 ceramic sherds: a. fine quartz sand with angular/subangular quartz particle inclusions; b. fine quartz sand; c. grog and crushed quartz; d. crushed quartz; e. medium/coarse sand (grit).

*Fine Quartz Sand (with angular/subangular quartz particles) (n=7657) (Figure 5.5a)*

The most common aplastic constituents in ceramic sherds at Ashe Ferry are fine (.125mm–.25mm) quartz sands with sparse to abundant inclusions of larger subangular quartz particles (i.e., coarse [.5mm–1mm and very coarse [1mm–2mm] quartz sand) (Figure 5.5). Point counts of aplastic particles evident in broken edges of a sample of sherds that include sand with subangular quartz particles indicate moderately dense (25%–36%) sand content, with very fine to fine sands (<.25mm) constituting 30%–70% of particles, medium sand (<.5mm) contributing 25%–50%, coarse sand (<1mm) representing 2%–20%, and larger particles typically represented at less than 5%. These sand mixtures are likely the result of the manual (or sieve) separation of moderately sorted alluvial sands and gravels. In a few instances, fine sand appears mixed with coarse angular quartz granules, which is interpreted as the product of manual crushing and active introduction into the temper formula. In other cases (n=30 sherds), the fine sand constituent appears mixed with larger rounded quartz particles; these may be the residues of incomplete sorting. Some sherds (n=138) exhibit slight admixture of non-quartz particles (primarily feldspar and biotite) with quartz particles in the larger grain constituent of the sand mix; these are likely minor inclusions in the alluvial deposit sources.

Fine sand with larger angular/subangular quartz particles was noted in 7758 sherds, approximately 85% of analyzed specimens. Most of these sherds are attributed to the Late Woodland period Ashe Ferry series, but some sherds tempered with fine sand mixed with crushed quartz are more clearly referable to the Middle Woodland period Yadkin ceramic series. AMS dates associated with Ashe Ferry series wares tempered with sand with angular/subangular quartz particles range from ca. A.D. 1010 to AD 1160 (calibrated intercepts).

*Fine Quartz Sand* (n=782) (Figure 5.5b)

Well-sorted fine (.125mm–.25mm) to medium (.25mm–.50mm) quartz sand is the second most common aplastic/temper state observed on ceramic sherds at Ashe Ferry. Sand density ranges from 24% – 31% of volume of sherd bodies, and sherd texture is often notably sandy to the touch. Grain sizes tend toward fine sand (30%–70%) with a few sherds exhibiting greater constituents of medium sand (24%–47%) and occasional larger coarse sand inclusions. Three sherds exhibit predominant fine sand content with sparse subspherical solution voids indicating probable former calcareous content, such as marl. Most surface treatments and rim forms observed on fine sand-tempered wares correspond to Late Woodland period Ashe Ferry phase wares, but later Mississippian wares also exhibit well-sorted sand temper.

*Crushed Quartz* (n=212) (Figure 5.5d)

Angular medium (.25mm–.5mm) to very coarse (1mm–2mm) quartz fragments are the predominant aplastic contents observed on 166 sherds in the Ashe Ferry sample. These angular quartz fragments are interpreted as products of manual crushing, size sorting, and active introduction into the temper formula. Most crushed quartz tempered sherds also exhibit an appreciable fine sand component. Most crushed quartz tempered sherds recovered from the Ashe Ferry site are referable to Late Woodland period Ashe Ferry phase component, but crushed quartz aplastic content also characterizes Yadkin series and Uwharrie series wares at Ashe Ferry.

*Medium/Coarse Sand (grit)* (n=287) (Figure 5.5e)

A total of 286 sherds exhibit medium (.25mm – .5mm) to coarse (.5mm – 1mm) subangular to angular sand particles in densities ranging from 15% to 32%. Particle sizes are mixed, with 27%–57% fine sand (by count), 25%–57% medium sand, 10%–41% coarse sand, and less than 7% (by count) of particles larger than 1mm. Sand particles are predominantly quartz, but many medium/coarse sand tempered sherds exhibit admixtures including feldspar, manganese, and schist. Most aplastic particles are subangular, indicating selection of sands from probable alluvial sources and size sorting of particles without further modification (i.e., crushing). The rock mixtures evident in medium mixed sand indicate different sources from the sand with subangular quartz mixes predominant at Ashe Ferry, and may reflect procurement from local creek mouth deposits that are not completely dominated by the heavy quartz load of Catawba River sands. Half of the medium sand tempered sherds are attributed to vessels associated with the Mississippian period Early Brown phase site occupations; 114 medium sand tempered sherds are otherwise consistent with the Late Woodland period Ashe Ferry Simple Stamped. AMS dates directly associated with medium sand temper/grit tempered wares at Ashe Ferry are A.D. 1210, 1270, and 1300 (calibrated intercepts).

### *Grog and Crushed Quartz* (n=17) (Figure 5.5c)

Seventeen sherds exhibit crushed angular fragments of fired clay or grog as the primary temper component, with crushed quartz particles as secondary constituents. All appear to derive from a single exotic (Midwestern?) Middle Woodland period plain surfaced vessel with zoned, cordwrapped stick decoration above the shoulder (see Figure 5.13). Grog fragments range up to 2.5mm in diameter, and aplastic elements constitute more than 30% of the sherd bodies.

### *Temperless* (n=1)

One small burnished plain sherd exhibits a fine, temperless body, and appears most consistent with post-1760 Catawba Indian colonoware (Riggs 2010) found in the immediate area. Because 38YK533 yielded no other evidence for late 18<sup>th</sup>–early 19<sup>th</sup> century site occupation, it is suspected that this sherd represents an accidental intermingling of materials from 38YK534, a nearby Federal Period Catawba village investigated concurrently with 38YK533.

## **Exterior Primary Surface Treatments**

All ceramic vessel fragments with intact (i.e., not eroded or spalled) exterior surfaces exhibit extensive surface finishes that were either purposely effected or which represent *de facto* traces of the manufacturing process. Primary surface finishes are defined on 7951 sherds (88.8% of the analyzed sample) and include simple stamped, complicated stamped, check stamped, fabric impressed, cordmarked, plain, burnished plain, and cobmarked treatments (defined as follows). These nominal state surface treatments, when considered in conjunction with aplastic content of sherds, constitute the principal criteria used for the definition of historical types.

### *Simple Stamped* (n=4615) (Figure 5.6)

Almost 58% of the analyzed sherds that exhibit definable (i.e., not obliterated or eroded/spalled) exterior surface treatments appear simple stamped, with parallel arrays of impressed longitudinal grooves (often over stamped), typically applied at oblique angles to the vessel rim. In addition, most of the 1228 sherds with surfaces defined as linear stamped indeterminate or stamped (indeterminate) may represent small fragments of simple stamped vessels; inclusion of these with the simple stamped wares accounts for 74% of the analyzed sherd sample.

Two general modes of simple stamping are evident in the Ashe Ferry sample; narrow (.5mm–1mm) “U”-shaped grooves that appear to be impressions of round strings wrapped in rough parallel fashion around a stamp paddle, and wider (1mm–3mm) subrectangular grooves that appear to be impressions of flat straps, also wrapped in parallel around a stamp paddle. The media used to effect these simple stamped impressions are not obvious. The clearest impressions of round “strings” exhibit linear striations that appear slightly twisted (perhaps as a function of wrapping around a paddle), but are not conventionally twisted composite fiber cordage. One possible medium might be finely split and lightly twisted tree inner bark or secondary phloem. The “strap” or “thong” impressions appear to represent uniformly sized strips of pliable material evenly wrapped around a stamp paddle, with no evidence of overwrapping; these may reflect use of broader, thicker straps of inner bark. However, some instances of the wider, subrectangular groove category appear to represent impressions of carved wooden stamp paddles, and at least one sherd evinces a stamp pattern of parallel lines connected by terminal loops. All of the simple



Figure 5.6. Ashe Ferry Simple Stamped rim sherds from 38YK533.

stamped sherds recovered at Ashe Ferry are attributed to Late Woodland period occupations, and constitute the ubiquitous Ashe Ferry Simple Stamped type found in most site contexts.

*Plain* (n=1024) (Figure 5.7)

Plain exterior finishes are evident on 1024 sherds from Ashe Ferry, and constitute approximately 14% of the analyzed sample. Plain finishes are defined as those surfaces that are completely smoothed by wiping or rubbing, which obliterated evidence of modeling or paddling transferred in the manufacturing process. Three modes of plain surfaces are discriminated in the sample: (1) plain (matte) finishes (n=782), in which smoothing aligned clay and aplastic materials into a uniform surface; (2) burnished plain finishes (n=120), in which rubbing or polishing of leather-hard clays produced floated surfaces with slightly to moderately reflective (i.e., shiny) finishes (often with remnant burnishing facets); and (3) rough or coarse plain finishes (n=122), in which rewetting and wiping

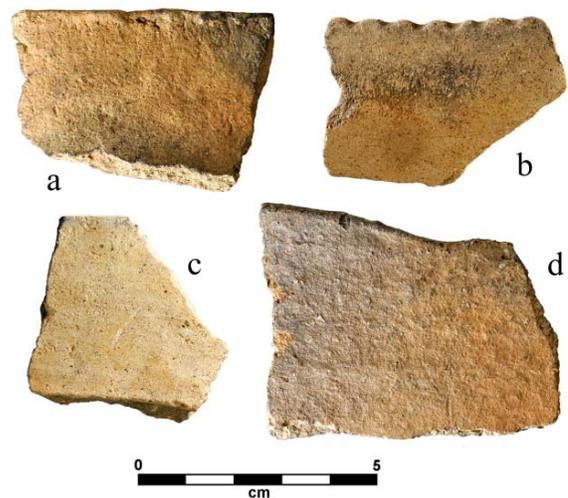


Figure 5.7. Plain wares from the Ashe Ferry site. a-b. plain sherds; c. burnished plain sherd; d. rough plain sherd.

of the surface produced a pebbly surface with slight extrusion of temper particles. Burnished plain and rough plain surface finishes occur primarily (and as dominant treatments) on Mississippian wares; plain surfaces are common on the Late Woodland wares as well as the Mississippian wares.

#### *Smoothed* (n=490)

In addition to plain sherds, another 490 sherds exhibit incompletely smoothed surfaces that reveal indistinct (and undefinable) traces of prior surface states. Most of these sherds probably represent obliterated or oversmoothed areas of textured surface vessels. The paste characteristics of most smoothed sherds are consistent with the Late Woodland period Ashe Ferry wares, and smoothed surface sherds account for 13% of sherds recovered from Ashe Ferry phase feature contexts.

#### *Stamped Indeterminate* (n=1095)

Stamped [form indeterminate] sherds (n=1095) exhibit partially obliterated surfaces with indistinct traces of prior stamping with carved or wrapped paddles. In a few instances, stamped indeterminate sherds can be attributed to defined vessels, including simple stamped, complicated stamped, and check stamped vessels.

#### *Fabric Impressed* (n=311) (Figure 5.8)

Fabric impressed surfaces account for 3.86% of the distinguishable sherd analyzed sherd sample. Two distinct modes of fabric impression are represented in the site collection. Large (cordage) element coarse wicker-like fabric impressions are distinctive of Early Woodland period Badin wares (Coe 1964:27–29) and Middle Woodland period Yadkin series wares (Coe 1964:30–32). Smaller element weaves are distinguished on Late Woodland Cape Fear (*sensu* Anderson et al. 1982; Cable 1992) and Uwharrie series (Coe 1952:307–308; Eastman 1996) wares. Half of the fabric marked sherds recovered in the 2010 investigations at Ashe Ferry are attributable to a single Cape Fear Fabric Impressed vessel, most consistent with the latest Cape Fear wares (Anderson et al. 1982) that Cable and Cantley (1998) characterize as Cape Fear III.

#### *Cordmarked* (n=69) (Figure 5.9)

Sherds that exhibit parallel impressions of twisted fiber cordage constitute less than 1% of the analyzed assemblage. Most of these sherds evince narrow (<.5mm) impressed grooves of z-twist cordage wrapped closely and evenly over a paddle surface. Most cordmarked sherds appear closely comparable to the Late Woodland period Ashe Ferry Simple Stamped



Figure 5.8. Fabric impressed wares from the Ashe Ferry site. left: Yadkin Fabric Impressed sherd; right: Cape Fear Fabric Impressed sherd.



Figure 5.9. Cord marked sherds from the Ashe Ferry site.

wares in terms of clay selection, aplastic content, and paste preparation, and the incidence of cordmarked sherds in Ashe Ferry phase feature contexts indicates probable contemporaneity with the Ashe Ferry phase component.

*Complicated Stamped* (n=145) (Figure 5.10)

Complicated stamped sherd surfaces are distinguished by impressed lands and grooves that intersect to constitute multilinear composite geometric motifs. These patterns were effected by application of carved wooden stamp paddles. Complicated stamped wares include Late Woodland period Woodstock Complicated Stamped (n=56), and early Middle Mississippian period Early Brown Complicated Stamped (n=85) (defined herein). Sherds that exhibit curved lands and grooves are defined as curvilinear complicated stamped (n=91), even in the absence of obvious line intersections. Sherds that evince straight lands and grooves with angular intersections, and which lack curving elements, are defined as rectilinear complicated stamped (n=25). Sherds that exhibit line element intersections, but which are too small to accurately identify curvature of line elements, are considered as complicated stamped (form indeterminate) (n=19). In addition, 28 linear stamped (form indeterminate) sherds can be attributed to defined complicated stamped vessels.



Figure 5.10. Complicated stamped wares from the Ashe Ferry site. a. Woodstock Complicated Stamped sherd; b-d. Early Brown Complicated Stamped sherds.

*Check Stamped* (n=63) (Figure 5.11)

Check stamped wares exhibit a regular grid pattern of impressed square or rectangular cells divided by narrow lands, a pattern applied with wooden paddles carved with crosshatched lines. Two modes—simple check stamped and linear check stamped—are represented in the assemblage. Simple check stamped sherds evince patterns of equilateral cells divided by lands of equal weight and depth. These include 11 sherds from a single Deptford Check Stamped vessel (Feature 58) (Figure 5.11a), as well as fragments from a single sand tempered vessel with an unusually large pattern of 10mm cells divided by 3mm lands. Linear check stamped sherds exhibit a pattern of rectangular cells divided by lands of greater weight and depth on one axis than the opposing axis. This pattern is characteristic of an early Middle Mississippian period ware



Figure 5.11. Check stamped wares from the Ashe Ferry site. a. Deptford Stamped sherds; b-c. Twelve Mile Check Stamped sherds.

defined here as Twelve Mile Check Stamped (Figure 5.11b). Associated radiocarbon dates indicate a thirteenth century temporal position for Twelve Mile Check Stamped wares, indicating contemporaneity with the more widely documented Savannah Check Stamped type.

*Cobmarked* (n=1) (Figure 5.12)

A single basal sherd of a probable miniature jar exhibits distinctive deep maize cob cupule impressions. Cobmarked treatments appear as diagnostic minority surface finishes in early Mississippian and early Middle Mississippian assemblages documented in the upper and middle Savannah River basin (Hally 1990; Hally and Rudolf 1986; Whitley 2012), and the incidence of cobmarked wares at 38YK533 is consistent with the early Middle Mississippian Early Brown phase component.

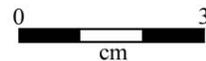


Figure 5.12. Cobmarked sherd recovered from plowzone at 38YK533.

*Cord Wrapped Dowel Stamped* (n=1) (Figure 5.13)

A single sherd exhibits cord wrapped dowel impressions as part of the zoned treatments (in combination with rough plain) evident on a unique grog and crushed quartz tempered vessel recovered from plowzone contexts on the terrace crest. This vessel appears to be of nonlocal origin, and may be comparable to late Middle Woodland period wares documented in southern Illinois (Caldwell-Rohm 2008). The stamped pattern on the vessel neck consists of parallel, 2.5mm-wide grooves that are composites of impressions of cordage wrapped tightly around a narrow dowel or paddle edge with grooves evenly spaced at 4.7mm intervals.

**Secondary Decorative Treatments**

In addition to the broadly applied surface finishes, 219 sherds (primarily rims) also exhibit secondary decorative treatments (Table 5.4; Figure 5.18). These secondary manipulations can be characterized as intrusive treatments, such as incision, punctation, or notching or modeled manipulations that raise or expand the vessel surface, such as nodes and lugs.

*Notched* (n=133) (Figure 5.18)

The most common secondary treatment in the Ashe Ferry ceramic collection is notching of vessel rims or lips. Notching can be broadly dichotomized as narrow (<2mm) V-shaped notches or broad (2mm–4.5mm) U-shaped notches. Broad U-shaped notches are evident on 53 sherds; these exhibit impressions of smooth cylindrical styluses or rods with diameters that range from 2mm up to 4.5mm (x=3.35). These cylindrical stylus impressions occur exclusively on Mississippian period ceramics, and are a hallmark attribute of the Early Brown phase (ca. A.D. 1200–1300). Narrow, V-shaped notching (n=79) is the primary decorative treatment applied to lips of Late Woodland period Ashe Ferry Simple Stamped rims.

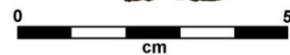
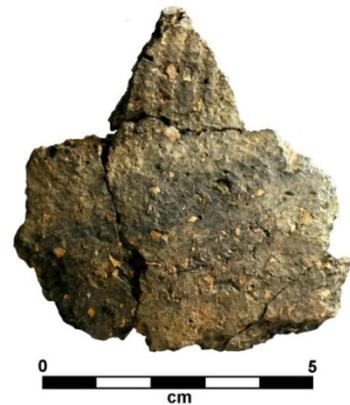


Figure 5.13. Cord wrapped dowel stamped sherd recovered from plowzone at 38YK533.

Table 5.4. Secondary decorative treatments observed on 38YK533 sherds.

<i>secondary decorative treatment</i>	<i>lip treatment</i>						
	incised	noded	notched	plain	punctate	n/a	totals
notched lip			112				112
notched rim (interior)			4				4
punctate			8	19	1	22	50
punctate; incised				1	1	7	9
punctate; noded			1	1			2
incised	2		2	9		21	34
incised; noded			1				1
node		2	3	1			6
lug			1	1			2
							219

*Punctate* (n=61) (Figure 5.14c-e)

Sixty-one sherds exhibit one or more intrusive punctations applied as zoned decorative treatments on vessel rims, necks, or shoulders. Two modes of punctation, those effected with a square or rectangular stylus (n=33) and those effected with a circular or cylindrical stylus (n=23), predominate. Square/rectangular stylus punctations occur on Ashe Ferry Simple Stamped and Twelve Mile Check Stamped sherds, and include triangular punctations effected with the stylus corner. Circular or cylindrical punctations occur primarily on early Middle Mississippian period wares, particularly elaborated rims associated with Early Brown Complicated Stamped wares. The diameter of these circular/cylindrical punctations closely parallels that of cylindrical stylus notches (with which they frequently co-occur); both appear to have been effected with the same class of tool. Circular/cylindrical punctations documented in the 38YK533 collection are consistent with specimens that Whyte et al. (2011) specifically correlated with use of large bird quill styluses.

*Incised* (n=43) (Figure 5.14f-i)

Forty-three ceramic sherds exhibit incised decorations consisting of scribed lines etched into green clay bodies with pointed or squared styluses. In most instances (n=32), incision is relatively narrow (<1.5mm) and deep, and is typically executed over plain fields. Such fineline incision is present on both Late Woodland period and Mississippian period wares. The other mode of incision consists of relatively wide (2.5mm–3.5mm) lines that are square or triangular in profile, and which appear to have been scribed with the tip or corner of a square stylus. This broadline form resembles the Camden Incised (Stuart 1975) type, a presumed Late Woodland period ware documented in the Wateree River Valley.



Figure 5.14. Secondary decorative treatments. a. V-shaped rim/lip notching on Ashe Ferry Simple Stamped sherd; b.; U-shaped rim/lip notching; c-e. punctate; f., g. fine line incised; h. broad line incised; i. punctate and incised; j. modeled node on burnished sherd; k. lug (top edge view of rim).

#### *Noded* (n=9) (Figure 5.14j)

Nine rim sherds exhibit modeled nodes that range in prominence from subtle expansions of vessel lips to a possible reworked loop handle attachment. Eight of these noded sherds are attributable to early Middle Mississippian period vessels; four are thickened loci on rim castellations.

#### *Lug* (n=2) (Figure 5.14k)

Two Mississippian Plain bowl rims are elaborated with attenuated lugs. These low lugs probably functioned poorly as handles, but may instead denote particular aesthetic landmarks along vessel rims.

### **Ceramic Typology at 38YK533**

Most ceramic vessel fragments recovered from the Ashe Ferry site are referable to a number of established or newly defined historical types that describe the repeated and consistent co-occurrence of particular suites of attributes (e.g., temper/aplastic content, primary surface treatment, secondary decorative treatment) that exhibit tendencies to covary in time and space. Categorization of these suites of attributes as historical types is particularly useful as a means to

facilitate consistency and comparability with previously documented ceramic assemblages from the region.

***Ashe Ferry Simple Stamped*** (n=4615) (Figures 5.6, 5.15 and 5.16)

Simple stamped, sand tempered wares account for more than half of the analyzed ceramic sherd sample recovered from the Ashe Ferry site. Although these sherds exhibit considerable variation in stamping and paste composition, the sand tempered simple stamped wares appear to have been deposited over a relatively brief span (ca. A.D. 1000–1160, as determined by eight AMS assays of associated materials) and can be characterized as representative of a newly defined historical type, designated Ashe Ferry Simple Stamped. These wares appear closely comparable, but not identical, to contemporaneous Santee Simple Stamped wares (Anderson 1982; Cable 2013) defined in the lower Santee River basin of the South Carolina coastal plain. Ashe Ferry Simple Stamped wares tend to exhibit more compact paste than Anderson’s Santee Simple Stamped sample, and are distinguished by the prevalence of notched (rather than simple stamped) lip treatments, and the virtual absence of interior simple stamping near the rims (as noted in the Matassee Lake Santee Simple Stamped sample).

Other comparable, contemporaneous ceramic wares include Savannah Creek Simple Stamped (Oliver 1992) in south central North Carolina and Vining Simple Stamped (Elliott and Wynn 1991; Kelly 1938) in central Georgia. Camden Simple Stamped wares (Stuart 1975) from the Guernsey Cut-Off site (71km south of 38YK533) and McClellanville Simple Stamped (Trinkley 1981) ceramics from the South Carolina northeastern coastal plain are also generally comparable, but their temporal placement is not well understood. Vanier (2010) reports simple stamped wares as part of presumed Late Woodland



Figure 5.15. Ashe Ferry Simple Stamped sherds recovered from Feature 50, AMS cCal. A.D. 1020 (intercept);  $2\sigma$  Cal. A.D. 990–A.D. 1040 and A.D. 1100–A.D. 1120.



Figure 5.16. Ashe Ferry Simple Stamped rim profiles. Exterior oriented to left. Vertical orientation determined by reconciliation of lip plane vessel wall curvature to achieve horizontal plane.

period ceramic collections at Concrete Block, V. Green, Richardson, and Belmont Neck sites near Camden, SC, but a temporal framework for these wares is not established.

### Attributes

*Surface treatment and secondary decorative treatments:* Ashe Ferry Simple Stamped wares exhibit paddle-applied linear impressed surface treatments, with both narrow (.5mm–1mm) “U” or “V” shaped grooves (73%) and wider (1mm–3mm) subrectangular grooves (27%) represented. No temporal pattern in the incidence of narrow versus wide stamped elements (as gauged by occurrence in dated contexts) was noted. Stamping is typically applied at oblique angles to the rim plane, although necks and rims occasionally exhibit stamping parallel to rim planes to create zoned patterns. Overstamping is common, especially in the narrow grooved variety. Simple stamping is applied to 12.6% of vessel lips, but only one sherd exhibits rim interior stamping. These lip treatments contrast with the Mattassee Lake Santee Simple Stamped wares, in which 78% of vessel lips are stamped, and 10.6% of rims exhibit interior stamping (Anderson 1982:307). Secondary decorative treatments are uncommon on Ashe Ferry Simple Stamped, but include lip notching (with narrow, edged stylus) on 20.5% of vessel rims, fineline incision on 5.75% of rims, and square-stylus punctation on 1% of rims.

*Aplastic content and paste characteristics:* Most (i.e., 87%) Ashe Ferry Simple Stamped sherds contain relatively dense (25%–35%) amounts of fine quartz sand with sparse to dense admixtures of larger subangular quartz particles (1mm–3mm). Well sorted fine quartz sand predominates in approximately 7.6% of Ashe Ferry Simple Stamped sherds, while crushed angular quartz fragments are evident in 3% of simple stamped sherds. Mixed medium to coarse sand is the primary aplastic constituent in 2.5% of analyzed Ashe Ferry Simple Stamped sherds. Sherd bodies are relatively hard, dense and well-compacted, yet high sand content renders fragments subject to particulate exfoliation. Body colors range from red (2.5YR 5/6) to dark grayish brown (10YR 4/2); most sherds are brownish yellow to yellowish brown (10YR 5/4–10YR 6/6) with uniform cores, indicating even firing of moderately iron-rich clays in oxidizing environments.

*Vessel forms:* The most prevalent Ashe Ferry Simple Stamped vessel forms are restricted jars with inslanting rims (no neck constriction) and moderately constricted orifices and rounded bases. Less common are vertical jars with unrestricted orifices and jars with gently constricted necks and slightly everted rims. Both open hemispherical bowls, and restricted bowls occur, but true carination is not present. Vessel rims are simple; no compound forms (e.g., collars, thickening strips) or sculpturing (e.g., castellation) are noted. Vessel lips tend to be flattened, and often exhibit mild exterior extrusion and occasional interior beveling. Vessel walls are well thinned, with 66% measuring <6mm, and 31% measuring >6mm<8mm. Coil fractures are uncommon.

Notes: An additional 1150 sherds that exhibit linear stamped (n=101) or indeterminate stamped (n=1049) surfaces and body compositions and colors consistent with Ashe Ferry Simple Stamped wares likely represent fragments of Ashe Ferry Simple Stamped vessels.

***Ashe Ferry Plain/Smoothed*** [provisional] (n=1156)

Plain (n=743) or smoothed (n=413) surfaced sherds with body compositions similar to Ashe Ferry Simple Stamped wares are provisionally categorized as Ashe Ferry Plain/Smoothed. Most of these sherds are probably attributable to partially or completely smoothed portions of Ashe Ferry Simple Stamped vessels, as indicated by refitted vessel sections including both simple stamped and plain/smoothed sherds. A marked underrepresentation of fine sand tempered plain rims in the sample bolsters this interpretation. However, plain rims (n=27) exhibit a higher rate (37%) of secondary decorative treatment (i.e., punctation, incision) as compared to simple stamped rims (n=317; 26% decorated); these may reflect plain rim fields for secondary decorative treatments applied to simple stamped vessels.

***Ashe Ferry Cordmarked*** [provisional] (n=67) (Figure 5.13)

Sixty-seven sand tempered cordmarked sherds are provisionally attributed to the Ashe Ferry series on the basis of similarity to Ashe Ferry Simple Stamped wares in terms of body composition and interior finish. These sherds evince paddle application of typically fine (.9 mm–1.6 mm) s-twist or z-twist cordage is present (with z-twist predominating). Incidence of sand tempered cordmarked sherds in Features 11, 28, 35, 40 and 52 also indicates probable Ashe Ferry phase associations. Radiocarbon dates obtained from three of these feature contexts attest a range ca. A.D. 1010–1160.

***Cape Fear Fabric Impressed*** (n=184) (Figures 5.17 and 5.18)

Fine sand tempered fabric impressed sherds recovered from 38YK533 conform to the Cape Fear Fabric Impressed type (South 1976:18–20; Cable 1993), a ware generally attributed to the late Middle Woodland period in the Carolinas. Anderson 1982 reports six radiocarbon dates for Cape Fear Fabric Impressed wares at the Mattassee Lake sites, with corrected dates ranging from A.D. 570 to A.D. 730. Eastman (1994a:21) reports a calibrated date of A.D. 1028 (2σ A.D. 821–1282) for Cape Fear Fabric Impressed wares at the McLean Mound (Cumberland County, NC). This relatively late assay corresponds to the earliest Ashe Ferry contexts dated at 38YK533. Cape Fear Fabric Impressed sherds were recovered in association with Ashe Ferry Simple Stamped sherds in Feature 22, which indicate Cape Fear Fabric Impressed wares as elements of the early Ashe Ferry phase occupation.

Attributes

*Surface treatment and secondary decorative treatments:* Cape Fear Fabric Impressed wares exhibit paddle-applied fabric impressed surface treatments oriented at oblique angles to the rim plane. The fabric impression is carefully applied, and appears to swirl around the vessel from base to rim. Of five Cape Fear Fabric impressed rims, two are plain, two are notched with narrow, edged stylus, and one is fabric impressed.



Figure 5.17. Edge view of Cape Fear Fabric Impressed sherd illustrating aplastic content.

*Aplastic content and paste:* Cape Fear Fabric Impressed sherds exhibit relatively high densities (20%–25%) of fine to medium (.06mm–.48mm) quartz sand with sparse admixtures of larger subangular quartz particles (1mm–3mm). The paste also includes sparse, very fine mica



Figure 5.18. Reconstructed Cape Fear Fabric Impressed vessel from 38YK533.

flecks. Sherd bodies are relatively hard, dense, and well-compacted, with body colors that range from brown (7.5YR 5/4) to dark grayish brown (10YR 4/2); most sherds are brown (7.5YR 5/4) or yellowish brown (10YR 5/4) with uniform cores.

*Vessel form:* The only Cape Fear Fabric Impressed vessel form observed in the 38YK533 collection is an open, conoidal jar (Figure 5.18) that measures 33 cm tall, with an orifice

diameter of 32cm. This vessel exhibits a simple rim with a simple squared, slightly extruded lip finish. Other rims indicate at least three vessels are represented in the collection. Vessel walls are notably thin and uniform, ranging from 3.8mm–5.8mm in the reconstructed vessel section.

*Uwharrie Fabric Impressed* (n=63) (Figures 5.19 and 5.20)

Fine weft fabric impressed sherds with heavily scraped or combed interiors are categorized as Uwharrie Fabric Impressed (Coe 1952:307–308, 1964:32–33; Eastman 1994, 1996), a Late Woodland period ceramic type most commonly associated with the North Carolina piedmont region. Although fabric impressions are similar to those evident on Cape Fear Fabric Impressed, Uwharrie Fabric Impressed sherds are distinguished by coarser temper, thicker bodies, and combed or scraped interiors.

The majority (n=55; 90%) of Uwharrie Fabric Impressed sherds are attributable to a single vessel recovered from plowzone contexts above and around Feature 22. The spatial distribution of Uwharrie Fabric Impressed sherds at 38YK533 closely corresponds to that of Cape Fear Fabric Impressed sherds; both types appear associated with a small, early Ashe Ferry phase component located near the northern edge of the site.

Radiocarbon assays associated with Uwharrie series wares span nearly one thousand years, but Eastman (1994a) suggests a core cluster of dates, ca. A.D. 1000–1200, as the most likely range for these wares. This temporal range corresponds closely to Ashe Ferry phase dates associated with Ashe Ferry Simple Stamped pottery, but the constrained spatial distribution of Uwharrie Fabric Impressed wares (and the absence of Uwharrie Cordmarked and Uwharrie Net Impressed wares) at 38YK533 suggests only limited contemporaneity with Ashe Ferry phase occupations.

Attributes

*Surface treatment and secondary decorative treatments:* Uwharrie Fabric Impressed wares exhibit paddle-applied fine weft fabric impressed surface treatments that appear somewhat randomly oriented. Most sherds exhibit oversmoothing that partially obliterates the fabric impressions, and one sherd evinces simple stamped impressions overstamped with fabric. Three Uwharrie Fabric Impressed rims exhibit plain lip finishes; two are fabric impressed. Vessel interiors are uniformly combed or scraped, with no subsequent smoothing.

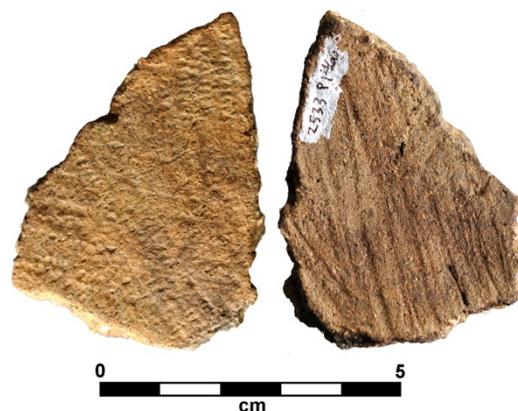


Figure 5.19. Uwharrie Fabric Impressed sherd (obverse and reverse views) from 38YK533.



Figure 5.20. Edge view of Uwharrie Fabric Impressed sherd illustrating aplastic content.

*Aplastic content and paste:* Uwharrie Fabric Impressed sherds exhibit relatively dense (22%–35%) aplastic content, and are generally coarse and sandy, with sparsely distributed medium (2mm–10mm) angular crushed quartz granules to fine sand mixed with medium subangular quartz. Sherds from the single vessel that constitute most of the sample contain a mix of quartz particles that includes 31% fine (.06mm–.25mm) quartz sand, 47% medium (.26mm–.5mm) quartz sand, and 22% larger angular quartz particles (.52mm–10mm). The paste is moderately hard and compact, but exfoliates readily due to high sand content. Sherd exterior surfaces range from light yellowish brown (10YR 6/4) to yellowish brown (10YR 5/6); sherd cores range from dark grayish brown (10YR 4/2) to very dark gray (10YR 3/1).

*Vessel form:* Uwharrie Fabric Impressed rims appear to represent large vertical open jars; a single basal disk indicates a subconoidal form. This vessel exhibits a simple rim with flattened lip that is partially fabric impressed, but impressions are discontinuous around the vessel rim. Other rims indicate at least two additional vessels represented in the collection. Vessel walls are uniform, but thicker than Cape Fear Fabric Impressed; 92% of sherds measure 6mm–8mm. Sherd fractures indicate a strong tendency for these wares (or this particular vessel) to break on coil junctures.

#### ***Yadkin Fabric Marked*** (n=7) (Figure 5.21)

Seven fabric impressed sherds with crushed quartz temper correspond to the Yadkin Fabric Marked type (Blanton et al. 1986; Coe 1964:31–32). This Early Woodland period ware is widely distributed in the Carolina piedmont, but is best documented at 38Su83, where Blanton et al. (1986) obtained radiocarbon dates of 165 BC (intercept) (1 $\sigma$  Cal. 345–42 BC) and 393 BC (1 $\sigma$  Cal. 411–259 BC) on Yadkin phase contexts. Yadkin Fabric Marked wares are similarly dated to 199 BC (intercept) (1 $\sigma$  Cal. 381–67 BC) at 31CH8 (Cable and Claggett 1982) and 193 BC (intercept) (1 $\sigma$  Cal. 367–61 BC) at 31FY549 (Eastman 1994:27).

#### Attributes

*Surface treatment and secondary decorative treatments:* Yadkin Fabric Marked wares exhibit coarse weft/ flexible warp textile impressions on exterior surfaces. Weft cordage impressions measure 2.3mm–2.6mm in diameter; warp impressions measure 25mm–2.7mm in width. Textile impressions appear slightly oblique to vessel rim planes. Rim interiors exhibit V-shaped notches (3mm, on 4.6mm centers). Vessel interiors are uniformly smoothed but exhibit vestigial traces of scraping.

*Aplastic content and paste:* Yadkin Fabric Marked sherds exhibit a fine sandy body with angular quartz granules that measure 2mm–5mm. Sand tends to be more uniformly distributed throughout the paste than the angular quartz granules. Sherd exterior surfaces are yellowish red (5YR 5/6–5YR 5/8), with similar colors for sherd cores and interior surfaces.



Figure 5.21. Yadkin Fabric Impressed rim (obverse and reverse views) from 38YK533.

*Vessel forms:* The small sample of *Yadkin Fabric Marked* sherds from 38YK533 does not reveal specific vessel forms, but vertical rims are consistent with open, conoidal jar forms that are well documented in other contexts (e.g., Blanton et al. 1986).

***Badin Fabric Impressed*** (n=57) (Figures 5.22 and 5.23)

Fifty-seven sand tempered fabric impressed sherds recovered from general deposits around Square 820R831 most closely resemble the *Badin Fabric Impressed* (Coe 1964:26–29) type, an undated ware that may be antecedent to *Yadkin Fabric Impressed*. All of these sherds appear to derive from a single vessel, and probably represent an ephemeral use of the site during the Early Woodland period.

Attributes

*Surface treatment and secondary decorative treatments:*

*Badin Fabric Impressed* wares exhibit medium weft / rigid warp textile impressions on exterior surfaces. Weft cordage impressions measure 1.3mm–1.6mm in diameter; warp impressions measure 3.5mm–4.6mm in width. Textile impressions appear parallel to the rim plane on the single rim sherd, but appear to have been applied in a variety of oblique angles (to coil fractures) over the body. No secondary treatments are evident. Vessel interiors are uniformly smoothed but exhibit vestigial traces of scraping.

*Aplastic content and paste:* *Badin Fabric Impressed* sherds exhibit a fine sandy body with sparse subangular quartz granules that measure 2mm–4mm. Uniform distribution of very fine (<.125mm) quartz sand throughout the paste probably indicates selection and use of naturally sandy clays; larger granules may be additive. Sherd exterior surfaces range in color from reddish yellow (5YR 6/6) to strong brown (7.5YR 5/6) with similar colors for sherd cores and interior surfaces.

*Vessel form:* *Badin Fabric Impressed* sherds from 38YK533 appear to represent a large vertical, open-mouthed conoidal jar with a simple flattened lip. Sherds exhibit a tendency to break along poorly welded coil junctures. One drilled mend hole is evident in a relatively thick, lower wall sherd, a probable indication that the repaired vessel had cycled into dry containment functions.



Figure 5.22. *Badin Fabric Impressed* sherds with mend hole.



Figure 5.23. Edge view of *Badin Fabric Impressed* sherd illustrating aplastic content.

***Deptford Check Stamped*** (n=11 [50]) (Figure 5.24)

Possibly coeval with the Badin Fabric Impressed wares are eleven sand tempered, check stamped sherds that conform to the Deptford Check Stamped type (Caldwell and Waring 1939a; DePratter 1979, 1991) following Cable (1996; personal communication 2012). All of these sherds are attributable to a single vessel recovered from Feature 58. Thirty-nine associated sherds exhibit identical paste and temper, but exhibit indeterminate stamped, smoothed or indeterminate surfaces; these appear to be fragments of the same Deptford Check Stamped vessel. Blanton et al. (1986:75–77) report closely similar wares from 38SU83 (100km south of 38YK533), but classify these as Yadkin Check Stamped (Coe 1964:30–32). Deptford nomenclature is applied here in view of the historical precedence of usage in the South Carolina Piedmont region, and because these check stamped sherds from 38YK533 do not exhibit the abundant angular quartz temper inclusions characteristic of the Yadkin ceramic wares as defined by Coe.



Figure 5.24. Deptford Check Stamped vessel section, Feature 58, 38YK533.

Anderson (1982:281) proposes a date range ca. 800 B.C.–A.D. 500 for Deptford Check Stamped in the lower Santee River basin. Blanton, et al., (1986:75–77) report a corrected radiocarbon age of ca. 460 B.C. for closely comparable Yadkin Check Stamped wares at 38SU83 in the lower Wateree River Valley. Nagle and Green (2010) derived radiocarbon dates of 1700±40 yrs. BP and 2140±40 yrs. BP and TL dates of 2060±90 yrs. BP and 2110±120 yrs. BP on Deptford associated contexts at the Treehouse Site near Irmo, SC.

Attributes

*Surface treatment and secondary decorative treatments:* Deptford Check Stamped sherds from 38YK533 exhibit a paddle impressed grid pattern of rectangular cells (4mm x 6mm) divided by .5mm lands, applied at approximately 30° to the rim plane. No secondary treatments are evident. Vessel interiors are uniformly smoothed but exhibit trailing from temper particles.

*Aplastic content and paste:* Deptford Check Stamped sherds exhibit a fine sandy body with sparse subangular quartz granules that measure 1mm–2.5mm. Uniform distribution of very fine (<.125mm) quartz sand throughout the paste probably indicates selection and use of naturally sandy clays; larger granules may be additive. Sherd exterior surfaces range in color from very pale brown (10YR 7/3) with similar colors for sherd cores; interior surfaces are light brownish gray (10YR 6/2).

*Vessel form:* Deptford sherds from 38YK533 appear to represent a large (approximately 35cm diameter) vertical, open-mouthed conoidal jar with a simple rounded lip. Vessel walls are thick (9mm–10mm), and coil fractures are prominent.

**Woodstock Complicated Stamped** (n=59 [136]) (Figures 5.25, 5.26, and 5.27)

Fifty-five sand tempered, complicated stamped sherds derive from three Woodstock Complicated Stamped (Caldwell 1950:29; Wauchope 1948:201, 1966:60–62) vessels, a ceramic type documented primarily in Georgia (Markin 2007). An additional 81 sherds from Feature 1 exhibit indeterminate stamped, smoothed, or indeterminate surfaces, but otherwise match one defined Woodstock Complicated Stamped vessel in terms of paste, color, and sherd thickness; some of these refit to complicated stamped sherds. These vessels are attributed to the Ashe Ferry phase site occupation; one Woodstock Complicated Stamped sherd from Feature 11 is associated with a calibrated AMS date of A.D. 1010 (intercept) ( $2\sigma$  Cal. A.D. 980–1030). This assay is consistent with the later end of the ca. A.D. 800–1000 span documented for Woodstock phase contexts in Georgia (Markin 2007). The limited incidence of Woodstock Complicated Stamped wares at Ashe Ferry may reflect only minor temporal overlap of the Woodstock phase with the Ashe Ferry phase. As Anderson (1996:271) notes, Woodstock ceramics occur rarely east of the western Piedmont region of South Carolina.

Attributes

*Surface treatment and secondary decorative treatments:* Woodstock Complicated Stamped sherds from 38YK533 exhibit paddle impressed curvilinear complicated geometric motifs distinguished by narrow (1.5mm–2mm) lands and grooves, and shallow, but clear execution. Stamp motifs include a pattern of nested ovals with horizontal 3-bar fills against a field of straight parallel lines (Figure 5.29) and a pattern nested (6 line) ogees with a vertical bisection line (Figure 5.30). On one vessel, the neck inflection is defined by a 3mm incised band. One vessel exhibits a simple rim with a rounded and slightly extruded lip. The other rim is simple, but markedly thinned to 2mm below a squared and slightly extruded lip. Vessel interiors are well smoothed, but wiping striations are still evident.

*Aplastic content and paste:* Woodstock Complicated Stamped sherds exhibit aplastic content similar to Ashe Ferry series wares, with abundant fine (<.25mm) quartz sand with sparse admixtures of coarse (.5mm–1mm) or very coarse (1mm–2mm) subangular quartz sand. Sherd exterior surfaces are pale brown (10YR 6/3) to light yellowish brown (2.5Y 6/3) with very dark gray (10YR 3/1) cores.



Figure 5.25. Woodstock Complicated Stamped sherds, Trench 10, 38YK533.

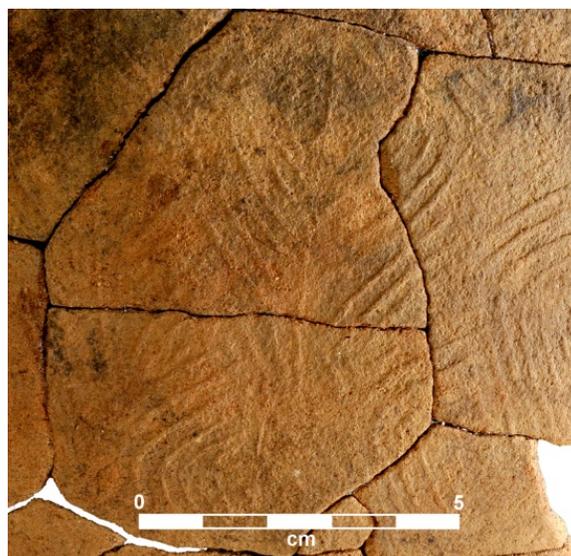


Figure 5.26. Woodstock Complicated Stamped sherds, Feature 1, 38YK533.

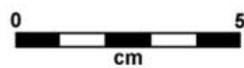


Figure 5.27. *Woodstock Complicated Stamped* jar section, Feature 1, 38YK533.

*Vessel form:* Feature 1 yielded a section of a large, vertical Woodstock jar with a rounded (subconoidal) base and a moderately everted rim. Vessel dimensions are estimated approximately 40cm tall and 34cm rim diameter. Another Woodstock vessel appears to be a low, short-necked jar. Vessel walls are slightly thicker on average than those in Ashe Ferry series sherds; over 40% of Woodstock Complicated Stamped sherds are >6mm thick.

***Mississippian Burnished Plain*** (n=120) and ***Mississippian Plain*** (n=99) (Figure 5.28)

Plain and burnished plain sherds that exhibit floated exterior or interior surfaces are attributed to Mississippian period occupations at Ashe Ferry, and are categorized as Mississippian Plain/Burnished Plain consistent with terminologies applied at Mattassee Lake (Anderson 1982) and the Camden district (i.e., Cable 2002; DePratter and Judge 1990). Mississippian Plain/Burnished Plain sherds are most consistently distinguished from Ashe Ferry Plain sherds in terms of degree of surface finish (i.e., floated surfaces and trimming/burnishing facets on Mississippian Plain/Burnished Plain), greater average thickness of Mississippian sherds, and a tendency toward coarser, lower density aplastic content (54% medium sand/grit). Feature contexts that yielded Mississippian Plain/Burnished Plain sherds are radiocarbon dated to A.D. 1210 and A.D. 1300, indicating an early Middle Mississippian period occupation (here termed Early Brown phase) closely successive to the Late Woodland period Ashe Ferry phase occupation. Mississippian Plain/Burnished Plain sherds are the primary diagnostic elements of Mississippian period occupation at the Ashe Ferry site; it is assumed small numbers of Mississippian complicated stamped sherds and elaborated rims recovered from plowzone contexts are contemporaneous elements of the Early Brown ceramic phase.



Figure 5.28. Mississippian Plain/Burnished Plain rims from 38YK533.

## Attributes

*Surface treatment and secondary decorative treatments:* Mississippian Plain and Burnished Plain sherds from 38YK533 are completely smoothed, with floated exterior and interior surfaces, and frequently exhibit residual facets from trimming and burnishing. Burnished Plain sherds are distinguished by a low degree of exterior polish; in many instances such polished surfaces may have degraded to plain surfaces. Vessel interiors are well smoothed; 40% are burnished. Secondary decorative treatment of rims is common; 53% (i.e., 30) exhibit stylus notching on lip surfaces. Twenty-five rims are notched with round dowels (most likely large bird quills; see Whyte et al. 2011) that range from 2.1mm–4.5mm in diameter. Such round dowel notching appears particularly diagnostic, and does not appear on Ashe Ferry phase wares, but is documented in ca. A.D. 1200–1300 assemblages at the Belmont Neck site near Camden (Cable 2002; DePratter and Judge 1990). Two plain rims exhibit small circular punctations executed with the ends of round styluses; these may represent different fascies of the tools used to execute dowel notching. One body sherd has three parallel fineline incisions.

*Aplastic content and paste:* Mississippian Plain and Burnished Plain sherds exhibit a range of aplastic inclusions. Medium mixed sand/grit temper is evident in 43% of sherds, while fine quartz sand temper is present in 16%. Fine quartz sand with prominent admixtures of coarse/very coarse sand is noted in 40% Mississippian Plain and Burnished Plain sherds. Large particles tend to be sparse, but evenly distributed, and the clay body appears well mixed. Exterior surfaces of Mississippian Plain/Burnished Plain sherds are either light gray (10YR 7/2) to very pale brown (10YR 7/3) or much darker hues from brown (7.5YR 5/4) to dark grayish brown with similar colors for sherd cores and interior surfaces. Approximately 15% of Mississippian Plain/Burnished Plain sherds exhibit interior smudging.

*Vessel form:* Vessel form diversity greatly exceeds that of preceding Ashe Ferry series wares. Most Mississippian Plain/Burnished Plain rim fragments are attributable to shouldered, incurvate rim bowls with restricted orifices and flat bases. Most bowl rims exhibit either beveled interior thickened lips (coronas), or simple interior bevels (see Figure 5.40). Short necked jars, thickened rim jars, flaring walled pans, and miniature jars are also represented. One sherd exhibits a probable plugged loop handle attachment scar. Three rims exhibit peaks or castellations, five have modeled nodes, and one rim exhibits an attenuated lug. Vessel walls are typically thicker than Ashe Ferry series wares; 60% of Mississippian Plain and Burnished Plain sherds measure greater than 6mm thick.

### ***Early Brown Complicated Stamped*** [provisional] (n=85) (Figures 5.29 and 5.30)

Eighty-four sherds recovered from plowzone contexts exhibit curvilinear or rectilinear complicated stamped motifs applied to bodies that resemble Mississippian Plain/Burnished Plain wares in terms of paste, aplastic content, and vessel wall thickness. Most of these are curvilinear complicated stamped, and generally resemble the Savannah Complicated Stamped type (Caldwell and McCann 1941:42–48; Caldwell and Waring 1939) broadly associated with early Middle Mississippian period occupations in the Wateree and Santee river valleys (Anderson 1982:308–311; Cable 2002). However, unlike Savannah Complicated Stamped, which typically exhibits simple, unmodified rims, the majority of rims associated with complicated stamped Mississippian wares at Ashe Ferry are highly elaborated with thickened folds or collars densely decorated with round stylus punctations, round dowel lip notching, applique nodes, and

castellations. Lip notching on these rims duplicates that observed on Mississippian Plain/Burnished Plain rims, and it is inferred that the complicated stamped wares are coeval with Mississippian Plain/Burnished Plain at Ashe Ferry, and constitute part of the Early Brown phase. These elaborated rims generally resemble early Pisgah series rim treatments documented in the Appalachian Summit (Dickens 1976:186–192) and foothills region of the Carolinas (Charles and Ferguson 2005:4; Moore 2002). Similar wares are reported from the Blair Mound (Teague 1979), McCullom Mound (Ryan 1971), and Tyger Village (Elliott 1984) sites in the Broad River



Figure 5.29. Early Brown Complicated Stamped sherds from 38YK533 plowzone contexts.

basin in the central piedmont region. Farther afield, on the upper Savannah River, Anderson and Joseph (1988:287–293) report collared rims and other elaborated forms at Rucker’s Bottom, and Rudolph and Hally (1985:273–274) noted collared rims associated with early Middle Mississippian period contexts at the Beaverdam Creek site.

Because Mississippian complicated stamped sherds from Ashe Ferry appear internally consistent as a class, but do not conform well to previously defined historical types, a provisional type, *Early Brown Complicated Stamped*, is proposed here.

### Attributes

#### *Surface treatment and secondary decorative treatments:*

Early Brown Complicated Stamped sherds from 38YK533 exhibit bold, paddle applied complex (primarily curvilinear) stamp patterns that are the hallmark of South Appalachian Mississippian wares. The small and highly fragmented sample precludes definition of clear stamp motifs, but partial patterns appear consistent with the Middle Mississippian period Savannah Complicated Stamped type. Overstamping is prevalent, and stamp execution varies widely from crisp patterns



Figure 5.30. Elaborated rims attributed to Early Brown Complicated Stamped vessels from 38YK533 plowzone contexts.

applied to relatively dry surfaces, to less distinct “sloppy” applications on wet surfaces. Stamp elements are relatively open and wide, with grooves ranging from 2.3mm–4mm and lands ranging from 2.6mm–3.5mm. Rectilinear patterns are rare and may represent partial elements of larger patterns based around curvilinear central motifs. Secondary decorative treatments are confined to rims, which are markedly elaborated by modeling (i.e., thickening, nodes, castellations), notching, and punctation. Rim/body or rim/neck junctures are often highly inflected and demarcated by a broad incision or groove that weakens the juncture and causes rims to detach readily from bodies. As a consequence, most thickened or collared rims are disassociated from body sherds, but snapped inflection grooves on both body and rim sherds indicates probable correspondence.

*Aplastic content and paste:* Early Brown Complicated Stamped sherds tend to include higher proportions of aplastic material than presumably contemporaneous Mississippian Plain and Burnished Plain sherds. Medium mixed sand/grit temper is evident in 15% of sherds, while fine quartz sand temper is present in 6.8%; 78% of Early Brown Complicated Stamped sherds include fine quartz sand with prominent admixtures of coarse/very coarse sand. Most Early Brown Complicated Stamped sherds are evenly colored throughout (with the exception of occasional firing clouds), ranging from brown (7.5YR 5/4, 7.5YR 4/2) and strong brown (7.5YR 5/6) to reddish brown (5YR 5/4). Pale grayish bodies evident in Mississippian Plain/Burnished Plain wares are not represented in the complicated stamped wares, and some

differences in clay selection are indicated. Approximately 27% of Early Brown Complicated Stamped sherds exhibit interior smudging.

*Vessel form:* Most Early Brown Complicated Stamped sherds from 38YK533 appear to represent large, flaring rim globular jars without distinct neck inflections. These jar forms are likely associated with Mississippian Plain/Burnished Plain bowls as elements of the early Middle Mississippian period Early Brown phase assemblage. Vessel wall thickness is highly variable, ranging from 4.2mm up to 10mm; 64% of Early Brown Complicated Stamped sherds are >6mm thick.



Figure 5.31. Early Brown phase (early Middle Mississippian period) vessel rim profiles (exterior to left). top row: Mississippian Plain/Burnished Plain bowl rims; bottom row: Early Brown Complicated Stamped jar rims.

***Twelve Mile Check Stamped*** [provisional](n=41 [77]) (Figure 5.32)

Forty-six sherds recovered from Features 78 and 79 are attributable to a large, sand-tempered linear check stamped jar with a partially smoothed neck zone decorated with three rows of rectangular jab-drag punctations. An AMS assay of associated charcoal returned a

calibrated date of A.D. 1270 (intercept) ( $2\sigma$  Cal. A.D. 1230–1290), indicating deposition during the Early Brown phase. Plowzone contexts yielded 54 similar linear check stamped sherds, as well as 13 other sherds with this distinctive jab-drag rectangular punctation. These punctate and check stamped wares are designated as representing a new provisional type, *Twelve Mile Check Stamped*. Incidence of *Twelve Mile Check Stamped* as part of the early Middle Mississippian period Early Brown phase is consistent with the minority representation Savannah Check Stamped wares in the contemporaneous Belmont Neck (Cable 2002; DePratter and Judge 1990), Savannah II (DePratter 1991), Jeremy (Anderson 1982; Trinkley 1980, 1981), and Beaverdam (Rudolph and Hally 1985; Hally and Rudolph 1986) phases.

These wares also superficially resemble Camden Check Stamped (Stuart 1970, 1975), a type defined on the basis of materials collected from the Guernsey site near Camden, South Carolina. The Camden wares are characterized by abundant grit temper on thin bodies with check stamped surface treatments and frequent incised or rectangular punctate secondary treatments. Stuart originally postulated a general temporal placement between ca. A.D. 1000–1400, but regards the



Figure 5.32. Twelve Mile Check Stamped sherds from 38YK533. Vessel section at right is associated with an AMS date of A.D. 1270 (intercept) ( $2\sigma$  Cal. A.D. 1230–1290).

Camden Ceramic Complex material as anomalous and enigmatic (George Stuart, personal communication, 2012). Elliott (1984) relates punctate and incised check stamped sherds collected from Tyger Village site (38UN213) (near Whitmire, South Carolina) to the Camden Check Stamped type, and reports an uncorrected radiocarbon date of A.D. 1400 ± 80 years for a context that included check stamped sherds (as well as rectilinear complicated stamped sherds). Recent salvage work at 38SU13 (near Sumter, SC) recovered Camden Ceramic Complex materials, including punctate check stamped wares, from discrete feature contexts (Christopher Judge, personal communication 2012; Vanier 2013). Associated fabric impressed vessel sections may indicate an earlier temporal frame for the materials, but no absolute dates for the 38SU13 contexts have been obtained at the time of this report. Osbourne (2013) reports wares that closely resemble *Twelve Mile Check Stamped* from the Eden site, a Mississippian period site located along the Congaree River near Columbia, South Carolina.

Comparison of the Ashe Ferry material with Stuart's type collection reveals several points of difference, but also similarities. The Ashe Ferry punctate and check stamped ware is substantially thicker (6.2mm–7mm) on average than Camden wares, which Stuart (1970:111–112) indicates as ranging from 4mm to 6mm thick. The Ashe Ferry material also exhibits much sandier pastes, and stamping on *Twelve Mile Check Stamped* is typically light and partially obliterated, as contrasted to bold execution of Camden Check Stamped. Although the particular jab/drag punctation of the Ashe Ferry site wares is not evident in the Guernsey collection, punctation and incised treatments appear to have been executed with similar sized (i.e., 3mm–3.5mm) rectangular styluses on sherds from both sites.

#### Attributes

##### *Surface treatment and secondary decorative treatments:*

Twelve Mile Check Stamped sherds from 38YK533 exhibit paddle applied linear check patterns that are typically lightly executed and partially obliterated. The Twelve Mile Check Stamped vessel evinces rectangular cells (5.8mm x 3.6mm) separated by 1.6mm wide longitudinal lands and 1mm transverse lands. Stamping below the neck inflection was applied at approximately 70° from the rim axis. Stamping on the neck parallels the rim axis and is heavily smoothed to create a distinct design zone. The vessel is decorated with three rows of rectangular (5.5mm x 3.5mm) punctations oriented 10°–27° from the rim axis, with punctations arrayed 5mm–6.7mm apart. One row of punctations is positioned approximately 7mm below the vessel lip; the other two rows are situated at the neck-body juncture. Sherds from other presumed Twelve Mile Check Stamped vessels exhibit similar linear check stamp patterns, with elongate rectangular check cells divided by lands that are more pronounced (i.e., deeper paddle grooves) along the long axis of the cells. Vessel interiors are well smoothed, and 20% of Twelve Mile Check Stamped sherds evince smudged interior surfaces. Only one sherd has a clearly burnished interior.

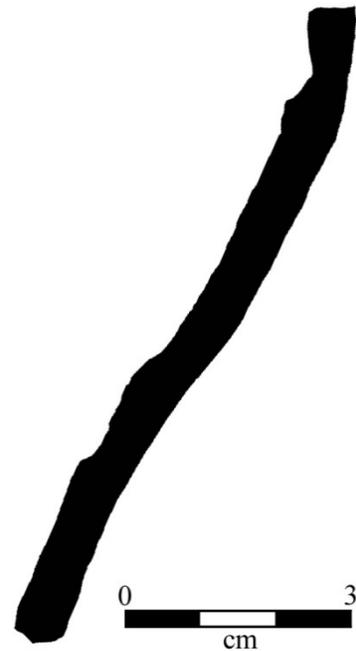


Figure 5.33. Rim profile of Twelve Mile Check Stamped vessel section. Orientation determined by lip plane.

*Aplastic content and paste:* Twelve Mile Check Stamped sherds tend to be compact and dense, with generally higher proportions of aplastic material than presumably contemporaneous Mississippian Plain/Burnished Plain and Early Brown Complicated Stamped sherds. Fine quartz sand with prominent admixtures of medium sand is evident in 50% of Twelve Mile Check Stamped sherds; 39% are tempered with fine quartz sand with coarse/very coarse sand inclusions. Nine Twelve Mile Check Stamped sherds include relatively well sorted fine quartz sand, and two evince medium mixed sand/grit temper. Most Twelve Mile Check Stamped sherds range in color from light brown (7.5YR 6/4, 10YR 6/3) to brown (7.5YR 5/3–7.5YR 5/4) and tend to be evenly colored throughout. Clay choice resembles Early Brown Complicated Stamped rather than Mississippian Plain/Burnished Plain.

*Vessel form:* Only one Twelve Mile Check Stamped vessel, a large (~32 cm orifice diameter) globular jar with insloping rim profile and a weakly defined neck (Figure 5.32, 5.33), is clearly definable in the collection. The rim is slightly thinned, with a squared and slightly extruded lip. Vessel wall thickness in this vessel ranges from 5.4mm to 9.5mm. Other Twelve Mile Check Stamped sherds apparently represent vessels of similar scale (as indicated by sherd curvature and thickness).

### **Ceramic Assemblages, Ceramic Chronology, and Site Occupation History at 38YK533**

One of the primary goals of attribute based analysis of the 38YK533 ceramic sherds was to define temporally associated assemblages of materials that could be used to reconstruct the chronology and scale (i.e., duration/intensity) of site occupation. Ceramic artifacts are media particularly well suited to these tasks because they are both abundant and chronologically sensitive (with regard to temporal variation of technofunctional and superficial stylistic attributes). Toward these ends, individual sherds were assigned (when possible) to previously defined historical types with documented temporal ranges (as described in the preceding section) or categorized as newly defined historical types for which temporal placements were ascertained via radiocarbon dating of associated materials from discrete contexts. Ceramic types with similar or concurrent date ranges are then associated, *de facto*, as broad temporal assemblages that constitute ceramic phases.

Typological analyses, combined with a battery of AMS radiocarbon dates derived from materials from discrete contexts, indicate that the vast majority of ceramic sherds recovered from 38YK533 were deposited over a four century (ca. A.D. 950–A.D. 1350) span. Two distinct ceramic assemblages, the Late Woodland period Ashe Ferry phase (ca. A.D. 950–1160) and the early Middle Mississippian period Early Brown phase (ca. A.D. 1200–1350), can be distinguished within this span. Earlier Woodland period occupations are represented by fragments of only five or six vessels (Badin, Deptford, Yadkin, undef. grog-tempered cordwrapped-stick stamped ware), artifacts that probably reflect ephemeral, transient occupations consistent with the long-term use of the site as a footing for the trail crossing of the Catawba River at Twelvemile Ford. Similarly, sparse earlier Archaic period site occupations are indicated by thirteen diagnostic projectile points, four of which were recovered from Late Woodland period contexts (see Chapter 6, this volume).

### Chronology of the Late Woodland and Mississippian period components

Construction of a temporal framework for the principal Late Woodland period and Mississippian period components at 38YK533 is based upon a suite of radiocarbon dates obtained from twelve discrete feature contexts that exhibited the largest and more readily definable collections of ceramic sherds (Figure 5.34). Each of the charred botanical samples submitted to Beta Analytic, Inc. for accelerator mass spectrometry radiocarbon assay was selected to minimize likelihood of contamination and to obviate problems of “old” carbon by using annuals (e.g., acorns, hickory nutshell) or short-lived species (e.g., river cane). Nonetheless, the Feature

22 sample returned markedly anomalous dates (i.e., 4350±30 yrs. BP, 3820±30 yrs. BP, and 900±30 yrs. BP ) and are rejected as erroneous. The other AMS assays returned a series of estimates of conventional radiocarbon ages ranging from 1040 B.P. to 630 B.P. with standard deviations of 30 years (respectively). Two-sigma calibrations of these dates provide evidence of persistent site occupations ranging between ca. A.D. 970 and A.D. 1400, with calibration curve intercepts that range from A.D. 1010 to A.D. 1380 (Table 5.5; Appendix E). The estimates group as three temporal clusters; five samples returned assays with intercepts in the early 11<sup>th</sup> century, two samples appear to date to the mid-12<sup>th</sup> century, and three samples date to the 13<sup>th</sup>–early 14<sup>th</sup> centuries.

Table 5.5. AMS dates associated with 38YK533 feature contexts.

<i>Feature</i>	<i>conventional radiocarbon age</i>	<i>2 σ calibration</i>	<i>intercept(s) of radiocarbon age with calibration curve</i>
77	1040±30 BP	cal AD 970 to 1030	cal. AD 1010
11	1030±30 BP	cal AD 980 to 1030	cal. AD 1010
53(b)*	1010±40 BP	cal AD 970 to 1050; cal AD 1090 to 1120; cal AD 1140 to 1150	cal. AD 1020
50	1000±30 BP	cal AD 990 to 1040; cal AD 1100 to 1120	cal. AD 1020
46	1000±30 BP	cal AD 990 to 1040; cal AD 1100 to 1120	cal. AD 1020
52	970±30 BP	cal AD 1010 to 1160	cal. AD 1030
53(a)*	920±30 BP	cal AD 1030 to 1190; cal AD 1200 to 1210	cal AD 1050; 1080; 1130; 1150
48	910±30 BP	cal AD 1030 to 1210	cal. AD 1160
28	900±30 BP	cal AD 1040 to 1210	cal. AD 1160
76	840±30 BP	cal AD 1160 to 1260	cal. AD 1210
78	750 ±30 BP	cal AD 1230 to 1290	cal. AD 1270
41	630±30 BP	cal AD 1280 to 1400 (cal BP 660 to 550)	cal. AD 1300; 1360; 1380
22(a)*	2520±30 BP	cal BC 790 to 730 (cal BP 2740 to 2680); cal BC 690 to 660 (cal BP 2640 to 2610); cal BC 650 to 540 (cal BP 2600 to 2490)	cal. BC 760; 680; 670
22(b)*	900±30 BP	cal AD 1030 to 1220 (cal BP 920 to 740)	cal AD 1160
22(c)*	3820±30 BP	cal BC 2400 to 2380 (cal BP 4350 to 4330); cal BC 2340 to 2200 (cal BP 4300 to 4150); cal BC 2170 to 2150 (cal BP 4120 to 4100)	cal BC 2280; 2250; 2230; 2220; 2210
22(d)*	4530±30 BP	cal BC 3360 to 3260 (cal BP 5310 to 5210); cal BC 3240 to 3100 (cal BP 5190 to 5050)	cal. BC 3340; 3200

\* multiple assays performed on split samples

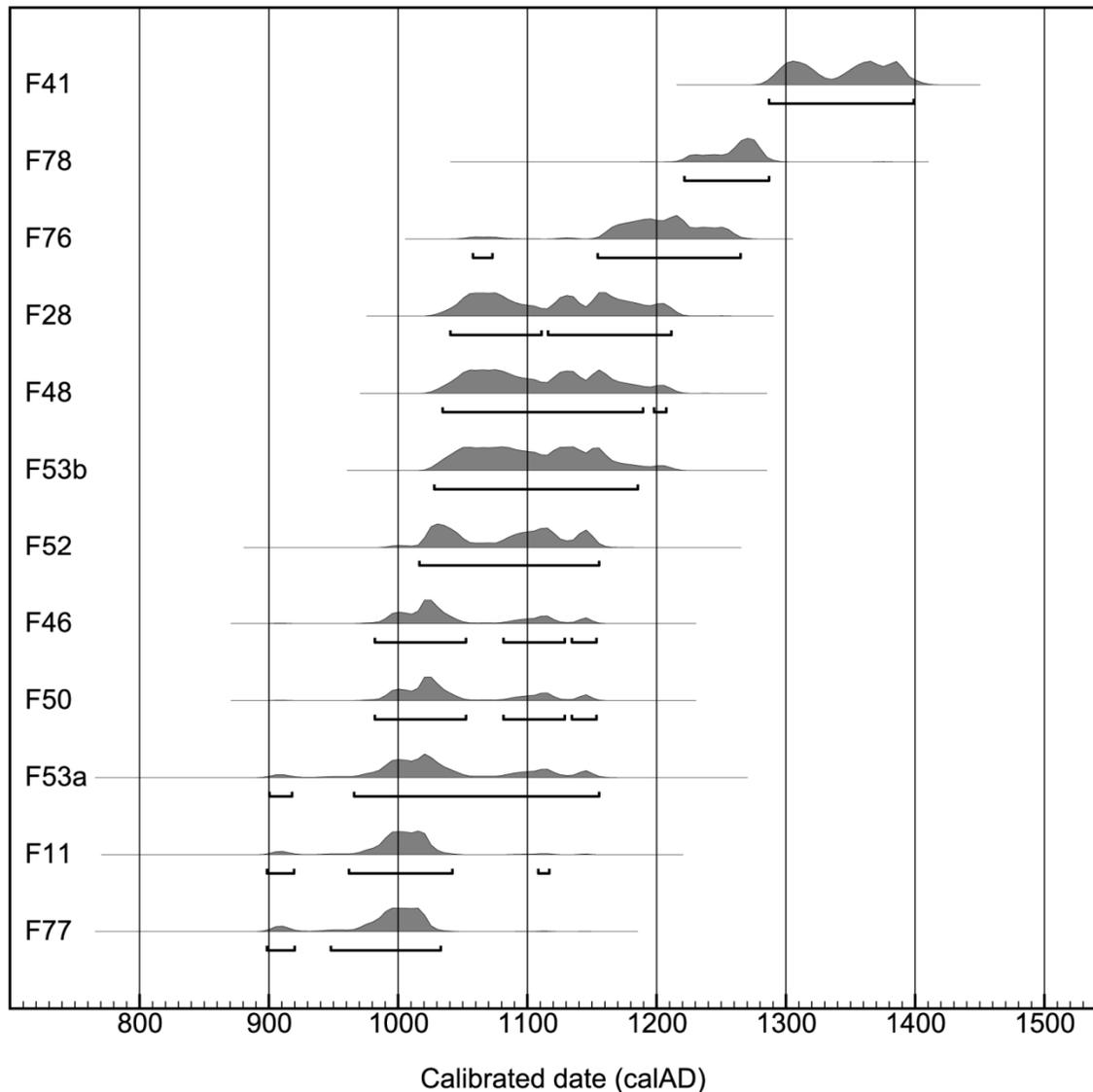


Figure 5.34. Graph illustrating calibrations of AMS dates from 38YK533 contexts, with  $2\sigma$  ranges indicated by brackets (anomalous Feature 22 dates excluded). Generated by OxCal 4.2 using IntCal13 curves (Bronk Ramsey 2009; Reimer et al., 2013).

#### Ashe Ferry Phase (ca. A.D. 950–1200)

The ceramic assemblages associated with 11<sup>th</sup> and 12<sup>th</sup> century dated contexts form the basis for defining the *Ashe Ferry phase* (ca. A.D. 950–1200), a Late Woodland period ceramic complex comparable to (and coeval with) the Santee II ceramic phase (Anderson 1982, 1994; Cable 2002) defined at Mattassee Lake in the middle Santee River basin, 115m southeast of 38YK533). The earliest dated contexts (Features 11, 46, 50, 52, 77) yielded sherd collections (n=484 sherds) heavily dominated (67%–81% of defined surfaces) by sand tempered simple stamped wares (*Ashe Ferry Simple Stamped*) (Table 5.6; Figures 5.15, 5.35, 5.36, and 5.37). Plain and smoothed/obliterated surfaces constitute 15%–23% of sherd surfaces defined in these contexts; most of these are likely oversmoothed portions of *Ashe Ferry Simple Stamped* vessels.

Table 5.6. Ceramic sherds associated with contexts dated ca. A.D. 1010–1030 (38YK533, Features 11, 46, 50, 52, 77).

<i>type/series</i>	<i>surface treatment</i>	<i>temper/aplastic content</i>					<i>totals</i>
		<i>crushed quartz</i>	<i>medium sand/grit</i>	<i>sand</i>	<i>sand with subangular quartz particles</i>	<i>sherdlets (not analyzed)</i>	
Ashe Ferry	simple stamped	9		17	238		264
Ashe Ferry	stamped (indet.)			1	11		12
Ashe Ferry	cordmarked				2		2
Ashe Ferry	plain			6	23		29
Ashe Ferry	plain (rough)		1		1		2
Ashe Ferry	smoothed (obliterated)	7		3	27		37
Woodstock	complicated stamped				2		2
Uwharrie	fabric impressed				1		1
n/d	indet./eroded/spalled			2	35		37
n/d	sherdlets (not analyzed)					98	98
<i>totals</i>		16	1	29	340	98	<b>484</b>

Two cordmarked sherds exhibit paste closely comparable to that of Ashe Ferry Simple Stamped sherds; these are categorized as Ashe Ferry Cordmarked. These early contexts also yielded two Woodstock Complicated Stamped sherds and one Uwharrie Fabric Marked sherd; the early 11<sup>th</sup> century dates are consistent with accepted date ranges for these types (Eastman 1994; Hally and Rudolph 1986; Markin 2007; Ward and Davis 1999). Cape Fear Fabric Impressed sherds recovered from Feature 22, a probable early Ashe Ferry phase context, may indicate contemporaneity of that ware with the early Ashe Ferry Simple Stamped type. One third of vessel lips are simple stamped or lightly notched, but no other secondary decorative treatments are evident among these earliest feature collections. Vessel lips (n=29) are mostly simple rounded or flattened; only six exhibit noticeable exterior extrusion.

Most vessels represented in early dated contexts are medium-sized (30cm–35cm dia.), subconoidal shouldered jars with inslanting rims that are slightly recurvate at the orifice. Inflections of inslanting rims range from 5°–20°. At least one small (18cm dia.) recurvate jar, and one hemispherical bowl (22 cm) are represented in these discrete contexts.

The latter portion of the Ashe Ferry phase is typified by wares from two mid-12<sup>th</sup> century contexts (Features 28 and 48) (Table 5.7; Figures 5.38 and 5.39). As in the early 11<sup>th</sup> century contexts, sand tempered simple stamped wares predominate (79% of definable surfaces) and plain/smoothed sherds constitute 19% of the sample. Ashe Ferry Cordmarked sherds continue as a minority (1.4%) type, but fabric impressed and complicated stamped types are not present in



Figure 5.35. Ashe Ferry Simple Stamped sherds recovered from Feature 77.

these contexts and cannot be ascribed to the later Ashe Ferry phase. One vessel from Feature 28 (Figure 5.38a) exhibits a zigzag pattern of multiple (6-line in most arrays) fineline incised chevrons over simple stamping; another fineline incised simple stamped sherd was recovered from Feature 48. Two vessels from Feature 48 evince fine notching or stamping of lip surfaces.

Vessel forms represented in these later Ashe Ferry contexts also include subconoidal shouldered jars with inslanting rims inflected from 10° up to 25° to create restricted orifices. Vertical rimmed hemispherical bowls, which range from 18cm–27cm in diameter, appear more common than in earlier contexts. As a whole, the Ashe Ferry phase can be characterized as spanning the 11<sup>th</sup> and 12<sup>th</sup> centuries, with an inception as early as A.D. 950, and a terminus ca. A.D. 1200 (as indicated by dates for the successive Early Brown phase). The phase consists of assemblages dominated by sand tempered (i.e., fine quartz sand with sparse to moderate mixtures of medium-to-coarse quartz sand particles) wares with simple stamped surface treatments and minimal secondary decoration. Simple stamped treatments comprise up to 81% of Ashe Ferry phase assemblages, followed by plain/smoothed treatments (15%–23%) (some of which represent oversmoothed or obliterated areas of simple stamped vessels). Cordmarked treatments



Figure 5.36. Sherds recovered from Feature 11, AMS Cal. A.D. 1010 (intercept); (2 $\sigma$  Cal. A.D. 980–1030).  
a–e, Ashe Ferry Simple Stamped; f, Woodstock Complicated Stamped.

are persistent minority (1%–1.4%) surface finishes. Complicated stamped and fabric impressed treatments (i.e., Woodstock Complicated Stamped, Cape Fear Fabric Impressed, Uwharrie Fabric Impressed types) are present in the early 11<sup>th</sup> century, but apparently drop out of Ashe Ferry phase assemblages by the 12<sup>th</sup> century. Secondary decorative treatments, particularly fineline incision, and probably punctation, are more common in the latter end of the phase. Ashe Ferry vessel forms include vertical, open subconoidal jars, small recurvate wall jars with weak necks, and hemispherical bowls. Most common are shouldered, subconoidal jars with inslanting rims and restricted orifices finished with slightly recurvate lips. Bowl forms apparently increase in relative frequency throughout the Ashe Ferry phase.



Figure 5.37. Ashe Ferry Simple Stamped sherds recovered from Feature 52.

The Ashe Ferry phase, a terminal Woodland period ceramic complex, fills a notable void in the culture historical sequence of the South Carolina piedmont, where the Late Woodland period has long been considered enigmatic (e.g., see Benson 2006:53–55; Trinkley 1990:24; Prentice and Nettles 2003). Although numerous researchers suspected or asserted sand tempered simple stamped wares as Late Woodland period precursors to early Mississippian patterns in the region (e.g., Cable 2002; DePratter 1996; Stuart 1970; Vanier 2010), the Ashe Ferry sample has proven to be the first assemblage recovered from secure, well-dated contexts that clearly situates simple stamped wares as immediately antecedent to the inception of Mississippian ceramic modes in the Piedmont. As such, the Ashe Ferry phase materials provide an important benchmark in the construction of sequences for the surrounding region.

The spatial extent of the Ashe Ferry phase remains undocumented, although comparable components are documented nearby at sites 38LA144 (Charles 1984) and 38LA125, and upstream at Spratt's Bottom (38YK3) (May and Tippitt 2000). Late Woodland period simple stamped wares are also reported from the Blair (38Fa48) and McCollum (38Cs2) mound sites on the Broad River (Green and Bates 2003; Ryan 1971; Teague 1979), and at Tyger Village (38Un213) (Elliott 1986) on the lower Tyger River, all within 45 miles of 38YK533. Downstream near Camden, probable terminal Late Woodland period simple stamped wares are documented at the

Table 5.7. Ceramic sherds from dated mid-12th century contexts (Features 28 and 48).

<i>type/series</i>	<i>surface treatment</i>	<i>temper/aplastic content</i>				totals
		medium sand/grit	fine quartz sand	fine quartz sand with subangular quartz particles	n/d (sherdlets)	
Ashe Ferry	simple stamped	1	19	131		151
Ashe Ferry	simple stamped; incised		14	1		15
Ashe Ferry	simple stamped; notched lip		3			3
Ashe Ferry	stamped (indet.)			2		2
Ashe Ferry	cordmarked			3		3
Ashe Ferry	plain		3	13		16
Ashe Ferry	smoothed (obliterated)		7	17		24
n/d	indet./eroded/spalled			14		14
n/d	n/d (sherdlets)				93	93
		1	46	181	93	<b>214</b>

Concrete Block (38Ke192), V. Green (38Ke287), and Richardson (38Ke288) sites (McWhorter 2008; Stewart 2008; Vanier 2010; Wagner 2003, 2008), and at the Guernsey site (Stuart 1970).

The Ashe Ferry phase appears to be a local, lower Catawba River Valley expression of a much more widespread terminal Woodland period horizon of sand tempered simple stamped wares. Anderson (Anderson et al. 1996) forwards this simple stamped horizon concept as:

... the array of evidence generated in recent years — from Georgia (Vining), the upper Savannah River (Russell Reservoir/late Cartersville), central South Carolina (Mattassee Lake/Santee Simple Stamped and Walnut Grove/McClellanville Simple Stamped), and the Connestee area (late simple stamping from A.D. 500–1000) — that, taken together, demonstrates the existence of a late Woodland simple stamped horizon apparently extending from central Georgia to northern coastal North Carolina (Anderson et al. 1996:20).

The Ashe Ferry phase appears most directly comparable to the latter portion of the Santee II phase (Anderson 1982:250; Cable 2007), a ceramic complex widely distributed in the Santee River Basin, approximately 100 miles southeast of 38YK533. Santee II has been variously identified as incipient Mississippian or as an immediate Mississippian precursor (Anderson 1982, 1990; Cable 2007). Anderson identified the Santee I and Santee II phases at Mattassee Lake as:

... corresponding to the Late Woodland/Early Mississippian time horizon ... defined by six dates from six features .... These features, characterized by simple stamped pottery, yielded dates ranging from AD 810–to AD 1340, for an average of AD 1046 (Anderson 1982:355).



Figure 5.38. Ashe Ferry Simple Stamped sherds recovered from Feature 28.



Figure 5.39. Ashe Ferry Simple Stamped sherds recovered from Feature 48.

The Santee I phase (ca. A.D. 700–A.D. 900) includes Santee Simple Stamped, Cape Fear Fabric Impressed, Cape Fear Cordmarked, Woodland Plain, and Wilmington Heavy Cord Marked and Wilmington Plain types. The Santee II phase, dated ca. A.D. 900–1200, is heavily dominated by Santee Simple Stamped wares, but also includes Woodland Plain, and Wilmington Heavy Cord Marked and Wilmington Plain types. Cable (2007) suggests the addition of Santee Cordmarked and Santee Check Stamped types to the Santee II phase. Anderson notes possible contemporaneity with Mississippian complicated stamped wares with Santee II, but that association is not demonstrated.

Santee II phase components are particularly well documented in the Francis Marion National Forest along the central South Carolina coast (Cable 2002, Cable et al. 2013). Using AMS dates derived from Santee phase samples at the Dark Bay, Fogarty Creek, and Sewee Camp sites, Cable et al. (2013) estimate a span of ca. A.D. 850–1200/1220 for Late Woodland period simple stamped wares, but differentiates temporal trends in paste and temper within this span, and suggests adjustments to Anderson's (1982) Mattassee Lake nomenclatures by parsing the Santee series (i.e., Santee Simple Stamped) into two groups. Cable redefines Santee series wares as "characterized by a soft clay body and traits suggestive of a poorly controlled oxidizing firing atmosphere. Cores are generally clear. Exterior and interior surface colors on individual sherds are most often without variation" with edge fracture that is "brittle to crumbly" (Cable 2013:166). This ware is viewed as most characteristic of the earlier portion of the Santee II span. Cable repositions later simple stamped wares as part of the McClellanville series, partially defined by "a hard ceramic fabric along with other traits suggesting better-controlled, longer duration firing conditions undertaken more often in a partially reducing atmosphere. Specimens approach the extremely hard clay body typical of later Mississippian pottery" (Cable 2013:171). Based on paste similarities between later McClellanville wares and successive Mississippian wares, and the co-occurrence of simple stamped wares with Mississippian complicated stamped wares in discrete contexts, Cable (2013) views the emergence of Mississippian ceramic patterns in the central coastal region as a gradual transition occurring during the Santee II phase.

Late Woodland period components dominated by sand tempered simple stamped wares are also attested along the upper Saluda River in the Blue Ridge foothills, where Ferguson obtained 11<sup>th</sup> century radiocarbon dates for pit contexts that yielded simple stamped jars with constricted necks, along with Woodstock Complicated Stamped wares (Charles and Ferguson 2005:4; Terry Ferguson, personal communication March 2012). These assemblages are not yet extensively described, but their documented presence lends weight to Anderson's (Anderson and Joseph 1988:246–247) suggestion that some of the simple stamped pottery traditionally ascribed to Cartersville or Connestee series in the upper Savannah River basin actually dates to the terminal Woodland period time horizon.

The best documented of these terminal Woodland/early Mississippian period phases characterized by simple stamped wares is the Vining phase of central Georgia, a construct originally formulated by Kelly (1938) as the "Vining simple stamped pottery complex" of the Macon Plateau (see Elliott and Wynn 1991; Meyers et al. 1999; Pluckhahn 1997; Worth 1996:76–77). Elliott and Wynn (1991) resurrected the Vining complex concept for the Oconee and Ocmulgee river valleys, and proposed a Vining phase (ca. A.D. 950–1150) characterized by ceramic assemblages of fine grit tempered wares with plain surfaces (58%–78%) and simple stamped surfaces (22%–42%) found in association with small triangular projectile points. Worth's (1996) investigations of the Vining phase component at the upland Raccoon Ridge site

on the Oconee River yielded evidence of a large, village-scale occupation that included storage pits and evidence of circular single-post domestic structures. Ceramic assemblages associated with OCR dates of ca. A.D. 1015–1205 include up to 50% simple stamped wares, approximately 30% plain surfaced wares, and examples of Woodstock, Etowah, and Savannah complicated stamped types. At Tarver, located on the Ocmulgee River within 10 km of Macon Plateau, the Vining phase assemblage is dated ca. A.D. 1000–1100 and includes 58% Vining Simple Stamped sherds and 32% plain wares (Pluckhahn 1997). Pluckhahn also defined Bibb Plain, a Macon Plateau Mississippian type, as part of the Vining phase assemblage at Tarver.

Farther west, below the Fall Line on the Flint River, Worth and Duke (1991) defined the Lester phase at Hogcrawle Creek site, with a Vining-like ceramic assemblage of plain (88%) and simple stamped (10%) jars and bowls. Worth and Duke (1991:30) note that, for simple stamped wares, “open bowl forms and bowls or jars with sharply incurvate rims and restricted orifices seem to predominate.” Worth and Duke suggest a ca. A.D. 900–1150 temporal range for the Lester phase, and relate the complex to both the Vining phase of the Oconee and Ocmulgee river valleys and the Averett phase of the Chattahoochee River Valley.

The temporal placement of the Santee II, Vining, and Lester phases (all approximately contemporaneous with the Ashe Ferry phase) has compelled researchers to consider these ceramic complexes as emergent or Early Mississippian manifestations rather than Late Woodland phases. More precisely (if somewhat more convoluted), Worth and Duke (1991), Worth (1996), and Pluckhahn (1999) appear to consider the Vining and Lester phases as representative of Woodland cultures situated in close proximity to contemporaneous Mississippian cultures during the Early Mississippian period. Worth notes that the Raccoon Ridge Vining component “was apparently contemporaneous with the emergent Mississippian Woodstock culture of North Georgia” and suggests “The contemporaneous development of a more heterogeneous cultural landscape characterized by several more or less clearly defined ceramic style zones” (Worth 1996:63). Pluckhahn (1999:49) observed that the dating of the Vining phase component at Tarver “indicates that the comparatively dissimilar societies represented by Vining and Macon Plateau assemblages existed within 10km of each other during the period from approximately 1000 to 1100 A.D.,” but suggests that “there was considerable interaction between the Early Mississippian populations in the Macon area” (Pluckhahn 1999:49).

Although less clearly delineated, this situation may also exist along the South Carolina fall line interface, where Cable (2000) has suggested development of early Mississippian Etowah related complexes at the Belmont Neck site in the Camden district during the eleventh century. No evidence of such early Mississippian occupation is detected at the Ashe Ferry site, despite the relative proximity to Camden (48 miles) and possible contemporaneity of the Ashe Ferry phase with Camden area early Mississippian phases. It should be noted, however, that the timing of the Camden/Wateree sequence has not yet been underpinned with absolute dates, and the contemporaneity of the Woodland pattern Ashe Ferry phase with nearby early Mississippian phases may be more apparent than real. Nonetheless, persistence of the later Ashe Ferry phase through the twelfth century, followed in rapid succession by the early Middle Mississippian Early Brown phase, indicates the asynchronous spread of Mississippian ceramic patterns through the Catawba-Wateree-Santee river basin, a situation that hints at considerable social and cultural complexity across the north central Piedmont, Fall Line, and Coastal Plain zones of South Carolina.

The widespread, supraregional extent of the Late Woodland/Early Mississippian simple stamped ceramic style horizon reflects existence of a broadly shared information network that persisted in relatively stable form for 200–300 years. The relationship of this network to the ensuing Mississippian culture networks is unclear at present. Various models have promoted hypotheses of social competition or cooperation, rapid cultural replacement or gradual transformation, or even rapid population replacement versus cultural assimilation. In all likelihood, the relationships are quite diverse and complex, yet little evidence has been brought to bear on Woodland pattern persistence and Mississippian pattern emergence within the region covered by the late simple stamped ceramic style horizon. It may prove that the information network represented by the late simple stamped ceramic style horizon constituted a matrix initially (ca. A.D. 1050) resistant to Mississippian patterns, but which later (ca. A.D. 1200) facilitated rapid incorporation of Mississippian systems. Unfortunately, the Ashe Ferry phase and ensuing Early Brown phase samples from 38YK533 shed little light on these processes other than to provide close framing for the timing and material patterns involved in the transition from Woodland ceramic patterns to Mississippian ceramic patterns.

*Early Brown phase (ca. A.D. 1210–1350)*

Feature contexts dated to the 13<sup>th</sup> and 14<sup>th</sup> centuries yielded small numbers of grit tempered plain/burnished plain sherds and sand tempered punctate/check stamped sherds, wares not found in earlier dated contexts (Table 5.8; Figures 5.32, 5.39, and 5.40). These sherds, along with similar wares recovered from plowzone and remnant A-horizon deposits across 38YK533, are the basis for defining the *Early Brown phase* (ca. A.D. 1210–1350), an early middle Mississippian period ceramic complex referable to Savannah Culture (Hally and Rudolph 1986:51). These 13<sup>th</sup> and 14<sup>th</sup> century contexts also yielded Ashe Ferry Simple Stamped sherds, but contemporaneity of these sand tempered simple stamped wares with the Mississippian period wares is uncertain. Because Ashe Ferry Simple Stamped sherds are ubiquitous in plowzone and remnant A-horizon deposits across the site, the presence of these sherds in post-A.D. 1200 contexts may reflect incidental inclusion.

Feature 76, Zone A is interpreted as an Early Brown phase pit that intruded an earlier Ashe Ferry phase storage pit. AMS assay of carbonized nutshell recovered from a mass of charred hickory nutshells in the Zone A deposit yielded a radiocarbon age of 840±30 years B.P. (2σ calibration cal. AD 1160 to 1260; calibration curve intercept cal. A.D. 1210), a result that substantially overlaps the later Ashe Ferry phase dates in the 2-sigma range. Included in this deposit (in addition to nine Ashe Ferry Simple Stamped sherds) were a grit tempered plain bowl rim and a grit tempered burnished plain body sherd (Figure 5.40) referable to the Mississippian Plain/Burnished Plain type. The bowl rim is clearly distinguished from Ashe Ferry simple stamped bowls, having an incurvate profile, interior thickening or extrusion of the lip trimmed to effect a sharply defined corona or ridge, and cylindrical dowel or stylus impressed notches applied diagonally to the top of the lip. This type of lip notching is evident on thirty plain or burnished plain rim sherds in the 38YK533 sample, including sherds recovered from Features 41, 46, and 53. Feature 41, which also yielded burnished plain, rough plain, and complicated stamped sherds, is AMS dated to 630±30 years B.P. (2σ calibration cal. A.D. 1280 to 1400; calibration curve intercepts cal. A.D. 1300, 1360, and 1380) (Figure 5.41). These dates suggest a minimum span of A.D. 1210–1300 for these distinctive plain/burnished plain incurvate bowls with notched lips. Other grit tempered plain/burnished plain bowls with plain, unnotched lips are assumed to date to the same span.

Table 5.8. Ceramic sherds recovered from post-A.D. 1200 dated contexts used to define Early Brown phase assemblages.

<i>type surface treatment</i>	<i>temper/aplastic content</i>				totals
	medium sand/grit	sand	sand with sub-angular quartz particles	n/d	
<b>Early Brown</b>					
complicated stamped (indet.)		1			1
<b>Mississippian</b>					
plain	3				3
plain (burnished)	2		1		3
<b>Twelve Mile</b>					
check stamped			6		6
linear stamped (indet.)			4		4
stamped (indet.)			8		8
plain			3		3
smoothed (obliterated)			21		21
<b>Ashe Ferry</b>					
simple stamped			35		35
stamped (indet.)			4		4
smoothed (obliterated)		1	5		6
indet./eroded/spalled		1	10		11
sherdlets (<1.55cm)				34	34
totals	5	3	98	34	<b>140</b>

AMS assays of split samples from Feature 53, which yielded a notched Mississippian Plain/Burnished Plain bowl rim and two other small Mississippian Plain/Burnished Plain body sherds, returned dates (1010±30 yrs. BP [2 σ calibration: AD 970 to 1050, and AD 1090 to 1120]; 920±30 yrs. BP [2 σ calibration: AD 1030 to 1190 and AD 1200 to 1210] more comparable to those from contexts that yielded only Ashe Ferry Simple Stamped sherds. The latter of these dates overlaps substantially with that determined for Feature 76 (840±30 yrs. B.P. (2σ calibration cal. AD 1160 to 1260), and may reflect the inception of the Early Brown phase in the latter twelfth or early thirteenth century.

The particular style of “U”-shaped notching observed on Mississippian Plain/Burnished Plain bowl rims is also evident on 11 thickened or collared rims of flaring rimmed jars (Figures

5.29 and 5.30) recovered from plowzone contexts. These rims, most of which are elaborated with modeling and punctation, resemble distinctive Pisgah series rims (ca. A.D. 1200–1400) documented in the Blue Ridge highlands and foothills (see Charles and Ferguson 2005; Dickens 1976) and parallel the collared rims documented in the Beaverdam phase (ca. A.D. 1200–1300) (Rudolph and Hally 1985). The notched, thickened rims pair with grit tempered curvilinear complicated stamped bodies (n=61) that resemble the Savannah Complicated Stamped type, and these are categorized as Early Brown Complicated Stamped (described herein). Temporal association of Early Brown Complicated Stamped jars with Mississippian Plain/Burnished Plain bowls is inferred from the co-occurrence of the particular rim notching style (which is not observed on Ashe Ferry Simple Stamped rims). Grit tempered rectilinear complicated stamped and complicated stamped (type indeterminate) sherds are assigned, *de facto*, to the Early Brown Complicated Stamped type.

Twelve Mile Check Stamped wares appear to be contemporary with Mississippian Plain/Burnished Plain bowls and Early Brown Complicated Stamped jars, as indicated by AMS assay of materials from Feature 78, which returned an estimate of 750±30 years B.P. (2σ calibration, cal. A.D. 1230 to 1290; calibration curve intercept, cal. A.D. 1270). Feature 78 deposits yielded Ashe Ferry Simple Stamped Sherds, but also contained punctate and smoothed sherds that refit a large portion of a zoned linear check stamped jar from adjacent Feature 79. Because such Twelvemile Check Stamped wares did not occur in earlier Ashe Ferry phase features, it is assumed that this type can be appropriately associated with the 13<sup>th</sup> century date. This temporal association is indirectly supported by the spatial association of

Twelvemile Check Stamped sherds with Mississippian Plain/Burnished Plain and Early Brown



Figure 5.40. Ceramic sherds recovered from Feature 76., top row: Mississippian plain bowl rim with dowel-notched lip and interior corona, obverse (left), reverse (right). Bottom row: Mississippian plain body sherds.



Figure 5.41. Mississippian Plain/Burnished Plain ceramic sherds recovered from Feature 41. Note obverse and reverse views of plain bowl rim with dowel-notched lip, at top left.

Complicated Stamped sherds in the deposits above and surrounding Feature 41 (AMS dated to the 14<sup>th</sup> century).

Fewer than 500 sherds (~100 vessels) and only six features or feature deposits can be readily attributed to post-A.D. 1200 occupations (Tables 5.9 and 5.10). Although the case for temporal association of the Mississippian Plain/Burnished Plain, Early Brown Complicated Stamped, and Twelvemile Check Stamped types as primary elements of an Early Brown phase assemblage is somewhat circumstantial, the construct conveniently accommodates all of the latest ceramic evidence and associated dates as a coherent occupation of limited scale and duration that closely succeeded the terminal Woodland period Ashe Ferry phase occupations. Absence of well documented later 14<sup>th</sup> and 15<sup>th</sup> century South Appalachian Mississippian ceramic attributes in the 38YK533 samples, such as applique rosettes and pellets, cane punctations, segmented rimstrips, and bold incision found in the Wateree Valley Town Creek phase (ca. A.D. 1300–1350)

Table 5.9. Ceramic sherds attributed to Early Brown phase occupations.

<i>type</i> <i>surface treatment</i>	<i>temper/aplastic content</i>				totals
	crushed quartz	medium sand/grit	sand	sand with sub-angular quartz particles	
<b><i>Early Brown</i></b>					
complicated stamped (curvilinear)		10	4	47	61
complicated stamped (rectilinear)		4		6	10
complicated stamped (indet.)			2	13	15
linear stamped (indet.)		6		10	16
stamped (indet.)		15	1	5	21
collared rim*		3		13	16
<b><i>Mississippian</i></b>					
plain (burnished)	1	58	22	39	120
plain		38	13	61	112
plain (rough)		3		10	13
smoothed (obliterated)		7		8	15
cob marked				1	1
indet./eroded/spalled				3	3
<b><i>Twelve Mile**</i></b>					
check stamped		1	5	31	37
linear stamped (indet.)				7	7
stamped (indet.)				9	9
plain				3	3
smoothed (obliterated)				21	21
totals	1	145	47	285	<b>480</b>

\*collared rims detached from body; surface treatment undetermined

\*\* assignment of non-check stamped sherds to Twelve Mile type based on attribution to Feature 78/79 vessel

(DePratter and Judge 1990:57) and the PeeDee culture Leak phase (ca. A.D. 1300–1500) (Boudreaux 2005) supports a case for a single early Middle Mississippian component. Although Ashe Ferry Simple Stamped wares consistently occur in 13<sup>th</sup> and 14<sup>th</sup> century contexts, ceramic continuity or derivation between the Ashe Ferry and Early Brown phases is not clearly indicated. Because the Ashe Ferry Simple Stamped sherds from these contexts do not exhibit similarities in paste, temper, vessel form, surface treatment or secondary decorative treatment to the Mississippian Plain/Burnished Plain, Early Brown Complicated Stamped, and Twelvemile Check Stamped types, contemporaneity appears unlikely. However, similarities in structure and content of Ashe Ferry phase and Early Brown phase roasting facilities indicate continuity in specialized activities at 38YK533, and it is tempting to assert social and economic continuity in the groups that used the site in the 11<sup>th</sup> to mid-14<sup>th</sup> centuries.

As a composite construct of post-A.D. 1200 ceramic wares at 38YK533, the Early Brown phase can be characterized as including medium mixed sand/grit tempered and fine quartz sand (with medium/coarse quartz sand inclusions) tempered wares with plain/burnished plain (~56%), complicated stamped (~27%), and check stamped (~8%) surface treatments. Overall, these

Table 5.10. Early Brown phase rim treatments, 38YK533.

<i>secondary decorative treatment</i>	<i>primary surface treatment</i>									
	plain/ burnished plain	plain (rough)	smoothed (obliterated)	complicated stamped	linear stamped (indet.)	check stamped	stamped (indet.)	n/d (thickened rim only)	indet./eroded	totals
notched lip	25	1	3	1	2		3	1	1	37
notched lip; incised			1							1
notched lip; incised; noded				1						1
notched lip; noded	4									4
notched lip; noded; punctate				1						1
notched lip; punctate					4			4		8
notched lip; lug	1									1
noded	1		1							2
punctate	1		2	1	4	2	1	3	1	15
punctate; incised	1									1
punctate; noded								1		1
none	24	2		6	3	1	4	2	3	45
<b>totals</b>	<b>57</b>	<b>3</b>	<b>7</b>	<b>10</b>	<b>13</b>	<b>3</b>	<b>8</b>	<b>11</b>	<b>5</b>	<b>117</b>

wares are thicker bodied, but more evenly potted than those in the preceding Ashe Ferry phase. Early Brown phase wares also exhibit harder bodies with lower aplastic content than Ashe Ferry wares, and typically exhibit highly smoothed or burnished interiors, with frequent interior smudging. Secondary decorative elaborations are common; 61% of Early Brown phase rims evince notching, punctation, incision, or modeling (often in combination), as contrasted with 24% of Ashe Ferry rims with light notching, incision, or punctation (Table 5.10). Early Brown phase vessel forms also include incurvate rim bowls (including carinated forms) in a variety of sizes, flaring rim bowls/pans, hemispherical bowls, globular short-necked jars, and tall necked globular jars.

The spatial extent of the Early Brown phase is unattested, and no other early Middle Mississippian components in the lower Catawba River basin have been investigated. Upstream, archaeological surveys of Lake Norman (Moore 2002) and reconnaissance in Gaston County, North Carolina (May 1985) found no evidence of Mississippian occupations predating ca. A.D. 1350. Small-scale investigations at Crowder's Creek (May 1989), Hardins (Keel 1990), and Hardins II (Levy and May 1987) revealed evidence of late Mississippian period occupations, but no indication of early or middle Mississippian period components. The absence (or lack of evidence) for early or middle Mississippian period occupations north of 38YK533 may position the Early Brown phase as the northernmost extension of Mississippian ceramic patterns in the lower and middle Catawba River basin prior to A.D. 1350.

The Early Brown phase (ca. A.D. 1200–1350) appears most comparable to early Middle Mississippian period ceramic assemblages from the Blair Mound site (Teague 1979), located along the Broad River, 42 miles southwest of 38YK533. Investigations at Blair recovered a ceramic collection that included plain/burnished plain bowls with notched lips, complicated stamped jars, collared jar rims elaborated with castellations, nodes, punctation and incision, and check stamped wares. Green and Bates (2003) note that:

Pottery found at the [Blair Mound] site includes zoned punctated, simple stamped, check stamped, and complicated stamped surface treatments. Complicated stamped designs include nested diamonds, crosses, arc-angles, bull's-eyes, spirals, quartered and nested circles, and line block motifs. Rim forms included notched lips, reed punctations, incised rims, and riveted lugs. All of these forms are similar to Pee Dee series pottery found in the Wateree Valley.

Based on these rim forms, the presence of zone punctated pottery, and the lack of rosettes and rim strips, we believe the initial Mississippian occupation occurred during the Belmont Neck Phase and continued through the Savannah II or early Adamson phase. Based on this, a tentative date of 1225–1300 can be established. Supporting this estimate are two radiocarbon dates obtained from the site. One sample, taken from a hearth, produced a date of  $1195 \pm 90$  (UGa-406), while the second, taken from a postmold, yielded a date of  $1325 \pm 75$  (UGa-405). This would make Blair roughly contemporary with the Lawton, Hollywood, Beaverdam Creek and Irene sites in the Savannah River Valley, and Belmont Neck in the Wateree Valley (Green and Bates 2003:4).

The McCollum Mound site, located in the Broad River Valley 33 miles west of 38YK533, appears to have been occupied slightly later than the Early Brown phase and Blair Mound (Green and Bates 2003; Ryan 1971). Green and Bates (2003:5) note that the McCollum assemblage includes wares with “segmented rim strips, reed punctations, and rosettes, all treatments commonly seen on Adamson and Town Creek phase sites in the Wateree Valley” as well as “collared and plain rims with horizontal and oblique ticks and incisions” that “closely resemble those found on Pisgah phase sites in North Carolina and Georgia, and at Rucker's Bottom, a palisaded village located in the Upper Savannah River Valley...” (Green and Bates 2003:5).

They also observed that “Based on the presence of the described rim treatments, as well as the absence of such earlier treatments as punctated and notched lips, zoned punctated sherds, and riveted lugs, a tentative date of 1275–1375 can be established” (Green and Bates 2003:5). Since Green and Bates’ study, Charles and Ferguson have investigated well-defined Pisgah phase components on the Saluda River, 65 miles west of McCollum (Charles and Ferguson 2005), and have obtained a series of absolute dates that span the Early Brown phase and the occupations at McCollum (Terry Ferguson, personal communication 2012).

The Belmont Neck (ca. A.D. 1200–1250) and Adamson (ca. A.D. 1250–1300) phases defined in the Camden locality (48 miles southwest of 38YK533) are also somewhat comparable to the contemporaneous Early Brown phase (Cable 2003, 2007; DePratter and Judge 1990). Plain/burnished plain treatments account for 40% of Belmont Neck sherd surfaces and 59% of sherd surfaces in Adamson (comparable to Early Brown) (DePratter and Judge 1990:56-58). Conversely, complicated stamped treatments are noted on 43% of Belmont Necks sherds, 23% of Adamson sherds, and 27% of Early Brown phase sherds. Belmont Neck phase also includes Etowah-type nested diamond-based complicated stamp motifs, an early characteristic not seen in the 38YK533 sample. Belmont Neck and Adamson phases apparently lack the elaborate collared rims that distinguish the Early Brown phase (and which are evident at Blair Mound and other Broad River sites). Notched lip elaborations are present on 9% of Belmont Neck phase rims and 13% of Adamson phase rims. In general, the Early Brown phase appears to more closely resemble the Adamson phase (ca. 1250–1300) than its antecedent Belmont Neck phase (ca. A.D. 1200–1250). Possible chronological disconformity between Early Brown, Belmont Neck, and Adamson may be attributable to a lack of absolute chronological controls for much of the Camden-Wateree Valley sequence.

Also contemporary with the Early Brown phase is the Beaverdam phase (ca. A.D. 1200–1300) defined in the upper Savannah River Valley (Rudolph and Halley 1985; Halley 1990:52–53). Like the Early Brown phase, plain/burnished plain wares predominate (86%) but Beaverdam phase exhibits little complicated stamping (2%). As in Early Brown, punctate collared jar rims occur on complicated stamped bodies in the Beaverdam phase.

The Early Brown phase span overlaps that of the Lawton phase (ca. A.D. 1000–1250) and Hollywood phase (ca. A.D. 1250–1350) defined in the middle Savannah River Valley (Anderson 1994; Stephenson 2012). Anderson notes of the provisional Lawton phase:

Diagnostic indicators include Savannah Complicated Stamped, Plain, Burnished Plain, Fine Cordmarked, and Check Stamped. The Savannah series materials typically have plain, unmodified rims lacking punctuations, rosettes, or nodes. Other finishes that may occur include plain (nonburnished) and, as a minority, cross V-shaped simple stamping (Santee Simple Stamped, *var. Santee*). The Savannah Check Stamped, Cordmarked, and Burnished Plain types may occur earlier than Savannah Complicated Stamped. Concentric circle motifs dominate the complicated stamped assemblages, with one- and two-bar diamond (Etowah motifs) less common. [Anderson 1994:370]

Stephenson (2012) observes that Anderson’s proposed Lawton phase did not prove characteristic of the Lawton type site, but appears instead at sites 38AK753 and Riverfront Village (Whitley 2012). Early-early Middle Mississippian Lawton phase contexts at Riverfront Village yielded ceramic assemblages heavily dominated by plain wares (57%–93%) followed by complicated stamped treatments (6%–42%) and consistent incidence of cobmarked (1%–12.5%) and check stamped (.5%–12.5%) treatments. Associated rims are

apparently simple and largely undecorated, in contrast to the Early Brown rim elaborations. Stephenson (2012:18) notes that the succeeding Hollywood phase (ca. A.D. 1250–1350) is characterized by:

Savannah Check Stamped, Savannah Plain and Burnished Plain, and Savannah Complicated Stamped dominated by variations of the filfoot-cross motifs and other related designs. Additional characteristics include cane punctations and large riveted nodes impressed with cane punctations on unthickened jar rims (Anderson 1994:370; Anderson et al. 1986:40–41; Hally and Rudolph 1986:62–63).

DeBaillou (1965:6) indicates high proportions of plain (38%) and check stamped (41%) wares in Hollywood site collections, but the collared rims and notched lips distinctive of the Early Brown phase wares are not present.

Although the Pee Dee culture Town Creek phase (ca. AD. 1150–1300), centered in North Carolina at the Town Creek mound site (31MG3) (58 miles northeast of 38YK533), is largely contemporaneous with the Early Brown phase, the ceramic assemblages differ appreciably. Boudreaux (2005) reports that earlier Town Creek phase assemblages (ca. A.D. 1150–1250) include 44% complicated stamped surfaces and 22.5% plain/burnished plain surfaces, with minority representation of fabric impressed, cordmarked, simple stamped, and check stamped treatments. Later Town Creek phase (ca. AD. 1250–1350) assemblages show an increase in plain/burnished plain treatments (38%) but relatively stable, high representation of complicated stamped treatments (42%). Notched rim treatments and collared rims are not present in Town Creek phase assemblages.

As these gross scale comparisons indicate, development and contemporaneous expressions of South Appalachian Mississippian (Caldwell 1958; Ferguson 1971) ceramic practice during the early Middle Mississippian period varied considerably at local and regional scales. While common elements (e.g., grit tempered burnished plain bowls, complicated stamped jars) unify these ceramic phases as part of a widely shared ceramic tradition, substantial variation in documented assemblages indicates independent trajectories in the development of local Mississippian ceramic patterns. Some of this variation is likely minor stylistic differences, while other aspects (e.g., proportions of plain bowl forms vs. stamped jar forms) may represent important technofunctional variation in vessel assemblages and their household contexts.

Comparisons with the Early Brown phase at 38YK533 are probably also influenced by differences in site function. Most of the better documented early Middle Mississippian period assemblages that are contemporaneous with Early Brown derive from village/mound center complexes, where activities involving ceramic use covered a spectrum of function from daily domestic household chores to community-scale ritual. By contrast, the Early Brown phase occupations at 38YK533 appear more narrowly focused on seasonal extraction activities (much like the preceding Ashe Ferry phase) in which the range of ceramic functions were probably somewhat restricted. This type of site use almost certainly shaped the vessel assemblage, emphasizing particular vessel shapes and sizes (and the treatments and decorations associated with particular vessel classes) (e.g., restricted bowls and small collared jars) at the expense of others (e.g., large flaring rimmed or necked jars). In addition, because the Early Brown phase component at 38YK533 does not appear to reflect long-term residential use, the ceramic vessels represented by the sherd collections were most likely produced in other, and potentially distant, locations, and may even reflect a composite of vessels from disparate localities. Therefore, until additional early Middle Mississippian period components are documented in the lower Catawba

River Valley, the Early Brown phase cannot be fully construed as “typical” of the immediate area.

### *Summary and Discussion*

The ceramic sherd collections recovered from 38YK533 during the 2010 investigations document varying scales and intensities of site occupations across more than a millennium, from the Early Woodland period through the early Middle Mississippian period. The very sparse incidence of Badin, Deptford, Yadkin, and other Early and Middle Woodland period ceramic wares (which account for 1.5% of diagnostic sherds) connote light, infrequent ephemeral use of the site prior to ca. A.D. 900–1000. Toward the end of the Late Woodland period, occupation of 38YK533 increased dramatically, as indicated by a recovered collection of more than 6800 Ashe Ferry Simple Stamped sherds that represent at least 200 ceramic vessels deposited over a span of 150–200 years (i.e., between about A.D. 950 and A.D. 1200). These Late Woodland period occupations were probably small, episodic, and redundant, with site use particularly concentrated ca. A.D. 1000–1050 (as indicated by AMS dated Ashe Ferry phase contexts). Vessel assemblages associated with these Ashe Ferry phase occupations include medium-sized (~8l–15l), vertical open jars, jars with inslanting rims, restricted orifice jars, necked jars with weakly defined constrictions, and hemispherical bowls. Facilities associated with the Ashe Ferry phase occupations reflect a limited range of functions related to wild plant food (e.g., acorns) processing and storage, and it is inferred that the numerous Ashe Ferry phase ceramic vessels, particularly jars, were integral to these specialized processing activities. Because the formal range and content of Ashe Ferry facilities appear to indicate more specialized site function, it is unclear whether the Ashe Ferry vessel assemblage at 38YK533 is broadly representative of the Ashe Ferry phase, or a more narrowly focused subset tailored to the predominant processing activities at the site.

Incorporated into the Ashe Ferry phase assemblages are small numbers of Woodstock Complicated Stamped sherds (more commonly associated with terminal Woodland/emergent Mississippian occupations in the north Georgia piedmont), Uwharrie Fabric Impressed sherds (typically associated with early Late Woodland period occupations in the central North Carolina piedmont), and Cape Fear Fabric Impressed sherds (wares generally associated with late Middle Woodland and early Late Woodland occupations in the Carolina Coastal Plain). The documented date ranges of these wares are consistent with the earlier (i.e., ca. A.D. 1000–1050), higher intensity or higher frequency Ashe Ferry phase occupations. None of these wares were associated with the latest Ashe Ferry phase contexts (ca. AD 1160), which yielded collections of sand tempered simple stamped and plain/smoothed ware, with bowl forms much more prominent than in 11<sup>th</sup> century contexts.

Wares associated with the Ashe Ferry phase comprise 92% of the diagnostic sherds (i.e., sherds larger than 1.55cm diameter with definable surface treatments) recovered in the 2010 investigations. These Ashe Ferry phase ceramic sherds were the primary (and most recent) temporally diagnostic artifacts associated with 41 discrete contexts defined at the site, accounting for 85% of feature contexts that can be attributed to cultural phase or period.

The late Ashe Ferry phase assemblage appears to be the immediate precursor of South Appalachian Mississippian pattern ceramic assemblages at 38YK533. Approximately 480 ceramic sherds (attributable to approximately 100 distinct vessels) recovered from site deposits (primarily plowzone) are distinguished from Ashe Ferry wares on the basis of paste, surface

treatment, decorative treatments and vessel form, and appear most comparable to early Middle Mississippian period wares documented at the Belmont Neck and Blair Mound sites. These Mississippian sherd assemblages constitute the Early Brown phase and reflect small-scale, probably episodic occupations of the site ca. A.D. 1200–1350. The Early Brown phase assemblage appears markedly more diverse than the preceding Ashe Ferry phase collection, with multiple vessel forms (including small short neck globular jars, restricted rim bowls, carinated and hemispherical bowls, castellate jars, flaring rim jars and bowls), decorated in a profusion of secondary treatments.

Certain vessel forms common to South Appalachian Mississippian ceramic assemblages (i.e., large, tall neck jars [see Hally 1984]) are grossly underrepresented at 38YK533. The near absence of these normally abundant large vessel forms may indicate that certain common domestic vessel functions were not deployed at the Ashe Ferry site during the Early Brown phase. Instead, early Middle Mississippian period site occupations may have focused on a limited range of non-residential activities, as was the case during the preceding Ashe Ferry phase. Only seven discrete deposits (i.e., Features 41, 46, 53, 63, 76, 78, and 79) are attributed to the Early Brown phase occupation; these include two rock-filled roasting facilities with substantial quantities of acorn nutshell, similar to those documented with the Ashe Ferry phase component. No postholes or other indications of longer term domiciles (e.g., formal, interior hearths) are associated with the Early Brown phase component, nor are there substantial storage facilities or human interments referable to Early Brown occupations. Like the Ashe Ferry phase component, the Early Brown phase component appears to have been less continuous and more functionally focused than “normal” residential occupation. Furthermore, the incidence of rock-filled roasting facilities with abundant acorn nutshell in the Early Brown phase component indicates continuity in specific site function from Ashe Ferry phase antecedents.

The closely sequential dating of the Ashe Ferry and Early Brown phases poses questions about the nature of the relationships between these two markedly different ceramic assemblages. Although Ashe Ferry and Early Brown wares co-occur in a number of discrete contexts at 38YK533, the wares are not demonstrably coeval. Accidental inclusion of Ashe Ferry wares in post-A.D. 1200 contexts appears to be a function of the general abundance and ubiquity of Ashe Ferry wares in extensive site deposits. Moreover, no hybrid Ashe Ferry/Early Brown forms are present; the paste, interior and exterior finishes, secondary decorative treatments and vessel forms documented for Ashe Ferry and Early Brown wares indicate two discrete, non-overlapping sets. Nonetheless, the transition between Ashe Ferry assemblages and Early Brown assemblages, as represented at 38YK533, appears to have occurred rapidly and completely between ca. A.D. 1160 and ca. A.D. 1210, a span typically associated with the inception of Middle Mississippian period Savannah culture (Hally and Rudolph 1986:51). In the upper Wateree River Valley (Camden district) and in the Savannah River Valley, there are documented Early Mississippian period antecedents (typically Etowah-like) to Savannah culture (Cable 2000). DePratter (Anderson et al. 1996) and others (i.e., McWhorter 2008; Stewart 2008; Vanier 2010; Wagner 2003, 2008) have posited Late Woodland period Ashe Ferry-like antecedents to Early Mississippian assemblages in the Camden district. The appearance of the Early Brown phase ceramic assemblages fast on the heels of the Ashe Ferry phase points to asynchronous development of Mississippian patterns across the Carolina piedmont, a trend amplified by the apparent absence of early Middle Mississippian period assemblages in the middle Catawba River Valley (see Moore 2002). The timing, tempo, and process of change from terminal Woodland

ceramic patterns (and, presumably foodways and economic patterns) to those characteristic of mature Mississippian development in the lower Catawba River basin is clearly a topic for additional research.

## Chapter 6

### CHIPPED-STONE, GROUND-STONE, AND OTHER ARTIFACTS

Archaeological excavations at the Ashe Ferry site recovered 14,323 chipped and ground stone artifacts (Table 6.1; Appendices F2 and F3). The overwhelming majority (95.6%) of the chipped stone specimens are flakes, chipped cores, and bifaces that represent the byproducts and unfinished products of stone tool manufacture. The remaining chipped stone artifacts include projectile points, hoes, drills, perforators, worked flakes, and other unifacial tools. Ground stone artifacts consist of hammerstones, celts, anvil stones, large stones used in processing plant foods, other pitted, abraded, and polished stones and polished stone fragments, a piece of a stone gorget or pendant, and two stone pipes. Other artifacts recovered or recorded at Ashe Ferry include more than 13,000 fragments of fire-cracked rock, 13 clay pipe fragments, a pottery disk, an unidentified fired-clay object, and almost 900 other fragments of daub and fired clay.

#### **Chipped-Stone Production Debris**

Most of the chipped-stone artifacts recovered from Ashe Ferry can be characterized as debris that resulted from the production of stone tools. These materials were placed into one of two categories—cores and flakes. Cores and unmodified flakes appear to be attributable largely to the production of chipped-stone arrow points, but also reflect the debris from creating ad hoc unifacial tools for cutting and scraping, bifacially worked drills and perforators, and hoes.

Eight raw material categories are recognized among the Ashe Ferry cores and flakes (Figure 6.1). The most ubiquitous material, representing 67% of cores and 85% of flakes, is metavolcanic stone classified geologically as dacite. Within this diverse material class, more than 60% of cores are made of a dark gray to black, aphyric rhyolite, and more than 80% of the flakes also appear to be of this material. Rhyolites and other metavolcanic rocks derive from the Carolina Slate Belt, which extends through the Carolinas immediately east of Ashe Ferry. These rocks were produced through various combinations of volcanism, sedimentation, and metamorphism, and they were used throughout human prehistory in the Piedmont because of their availability and fine-grained, cryptocrystalline properties (Rogers 2006). Rhyolite outcrops and quarries are documented in southern and eastern Lancaster County, approximately 35 km from Ashe Ferry (Christopher R. Moore, personal communication 2012).

Vein quartz is the only other raw material used with any regularity, and it is represented by 22% of the cores and 12% of the flakes. Quartz appears to have been acquired primarily as stream cobbles that were broken and knapped to produce usable flakes. Crystal quartz and quartzite were utilized only rarely, with each accounting for less than 1% of cores and flakes. Despite this, both quartzite and quartz stream cobbles were commonly used in hearths and, fire-broken cobbles were plentiful at the site.

Orthoquartzite appears to have been used primarily for large tools such as chipped-stone hoes. Three of the eight hoes recovered were made of this material, and most of the orthoquartzite flakes and core fragments were significantly larger than those of quartz or metavolcanic stone. Only eight orthoquartzite cores and 67 flakes were recovered. The source area for orthoquartzite is not known but presumed to be local. The one core with an exterior surface has a rough, weathered cortex rather than a water-worn cobble cortex, suggesting that orthoquartzite was obtained from an upland outcrop rather than from a stream bed.

Table 6.1. Summary of Stone Artifacts Recovered from the Ashe Ferry Site.

Category	Features						Unit Excav.	Trench Excav.	Total
	Late Archaic	Middle Woodland	Late Woodland	Missis- sippian	Indet.	Non- Cultural			
Projectile Point	1	-	95	3	-	4	265	89	457
Preform	-	-	-	-	-	-	-	1	1
Biface	3	-	4	2	-	2	26	13	50
Drill	-	-	-	-	-	-	8	5	13
Perforator	-	-	-	-	-	-	4	-	4
Chipped Hoe	-	-	4	1	-	-	1	2	8
End Scraper	-	-	-	-	-	-	1	-	1
Worked Flake	-	-	3	3	-	-	52	10	68
Core	4	-	17	-	-	1	50	31	103
Flake	2	1	2,707	259	30	211	9,589	771	13,570
Celt	-	-	3	-	-	-	2	3	8
Gorget	-	-	-	-	-	-	-	1	1
Pipe	-	-	1	-	-	-	-	-	1
Possible Milling Stone	-	-	2	-	1	-	3	-	6
Pitted Stone	-	-	-	-	-	-	1	2	3
Nutting Stone	-	-	1	-	-	-	-	-	1
Hammerstone	-	-	3	-	-	-	1	5	9
Modified Cobbles and Pebbles	-	-	3	-	-	-	6	8	17
Utilized Minerals	-	-	1	-	-	-	1	-	2
Total	10	1	2,844	268	31	218	10,010	941	14,323

Two types of non-local chert are represented within the flake sample. Thirty-two small, bifacial thinning flakes and one broken small triangular projectile point were made of gray to black, translucent, highly lustrous, fine-grained chert. This chert is similar to Knox Black Chert, derived from the Knox formation in east Tennessee, and occurs in low to moderate frequencies within late prehistoric assemblages in western North Carolina (Dickens 1976:135; Kimball 1985:41). Nine small, bifacial thinning flakes were classified as coastal plain chert. They appear, based upon macroscopic characteristics, to be attributable to the Flint River Formation of western Allendale County, South Carolina (Goodyear and Charles 1984). These specimens are lustrous, fine-grained, opaque, and have variegated color that ranges from pink to maroon. All appear to be thermally altered.

Finally, a single greenstone flake was recovered from unit excavations. It appears to be a spall from a ground-stone celt, as it shows evidence of grinding and polishing on the exterior surface. As such, it likely resulted from tool damage and not tool production. Eight greenstone celts and celt fragments were recovered, and these are discussed below under “Ground Stone Artifacts.” As Gall and Steponaitis (2001:99) note, “*Greenstone* is a very general term used in geology to describe a great variety of lithologies usually formed from the low-grade (e.g., greenschist-facies) metamorphism of mafic and ultramafic igneous rocks (e.g., basalt, dunite) or their sedimentary equivalents.” It is well-suited for the manufacture of axes and celts because of its “physical properties of toughness (resistance to breakage), high density (>3.0 g/cm<sup>3</sup>), and moderate hardness (6 to 7 on the Mohs’ hardness scale).” Greenstone tools at Ashe Ferry likely derive from one or more sources within the Carolina Slate Belt.

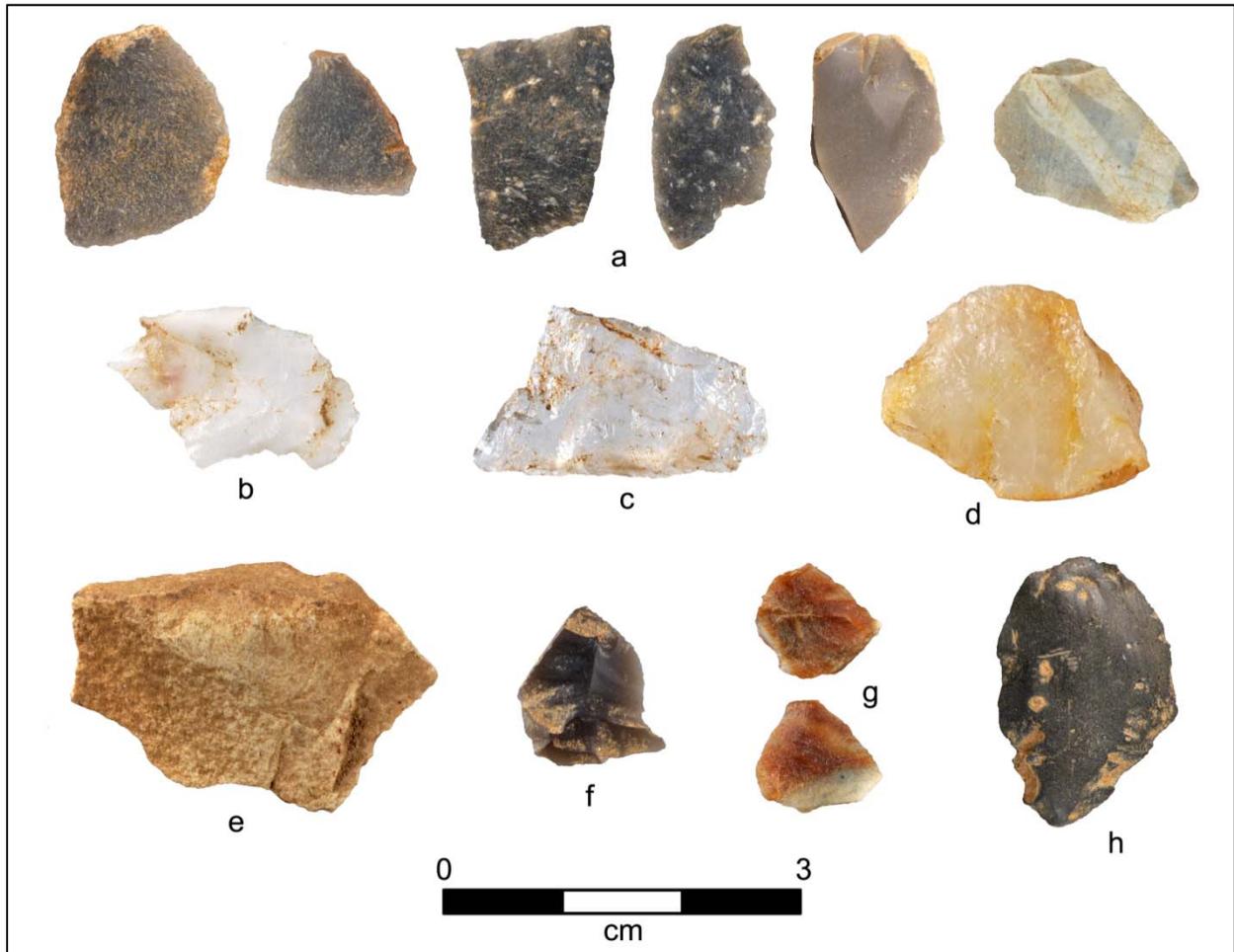


Figure 6.1. Lithic raw material types represented at the Ashe Ferry site. a: dacite; b: vein quartz; c: quartz crystal; d: quartzite; e: orthoquartzite; f: Knox chert; g: Allendale chert; h: greenstone .

### *Cores*

A core is a mass of knappable stone that exhibits one or more scars where flakes have been intentionally removed by percussion. The flakes detached from a core represent potential blanks for creating unifacial and bifacially worked tools as well as unusable detritus. One hundred and three cores were identified from the excavated collection of lithic artifacts. Most were made of fine-grained aphyric rhyolite (n=43 or 42%), other metavolcanic stone including rhyolite variants (n=26 or 25%), and vein quartz (n=24 or 23%). Eight large cores were made of orthoquartzite, and single examples of quartzite and quartz crystal cores were found. Most of these raw materials are found both locally and to the northeast within the southern Uwharrie Mountains; however, because of the variability in metavolcanic stone that exists within the Carolina Slate Belt, it is not possible at present to determine a specific source area for the materials utilized at Ashe Ferry (see Steponaitis et al 2006 for a more detailed analysis of variability in metavolcanic stone within the Carolina Slate Belt).

Rhyolite cores were generally smaller than those of other raw material, with more than half (n=23) being less than 4 cm in diameter. Most were amorphous in shape with random flake scars; however, four were bifacially worked. Thirty-eight exhibited patches of rough, weathered cortex on the exterior surface, indicating that they were collected from above-ground outcrops. Twelve of these had only one or two flake-removal scars and appear to have been tested for usability and discarded. Two rhyolite cores had patches of smooth, water-worn cortex and apparently were collected from a stream bed; three others exhibited no remaining cortex.

Cores made of metavolcanic stone not specifically identified as aphyric rhyolite were generally larger than those just described, with all but four (85%) ranging from 4–10 cm in diameter. All possessed an amorphous shape. Seventeen of these also exhibited no cortex, suggesting that: (1) they were utilized to a greater extent than rhyolite cores; (2) they did not possess a weathered cortex when collected or mined; or (3) they were partially reduced by flaking before being brought to the site.

The 23 vein quartz cores are uniformly distributed in size from about 3 cm to 8 cm in diameter. About two-thirds are stream cobbles that were broken and then flaked randomly or in a bifacial fashion along one edge. It is presumed that most quartz cores lacking a cortex also were reduced from broken stream cobbles. One unusual specimen is a bi-directional tabular core with parallel flake scars that was used to remove blade-like flakes.

Fifty of the 103 cores were recovered from unit excavations; 31 cores were found while stripping trenches; 17 cores (including eight other metavolcanic, four rhyolite, four vein quartz, and one quartzite cores) came from features attributable to the Late Woodland period; four rhyolite cores came from a single Late Archaic feature; and one rhyolite core came from a non-cultural feature. No cores were recovered from Mississippian features.

### *Flakes*

Chipped-stone flakes comprise 94.7% (n=13,570) of all stone artifacts recovered from Ashe Ferry. While some of these flakes were created during the reduction of stone cores to produce usable flake blanks for fashioning unifacial and bifacial tools, most appear to be direct byproducts of biface production (i.e., bifacial thinning flakes). Given the predominance of small chipped-stone arrow points within the overall sample of tools from the site, it seems likely that the majority of small thinning flakes resulted from the manufacture of these tools.

During analysis, flakes were classified by raw material, size, and presence/absence of cortex. While no attempt was made to discriminate between decortication, interior, and bifacial thinning flakes, the path from initial core reduction and flake blank creation to bifacial finishing corresponds well with the reduction in overall flake size and removal of cortex. Consequently, attributes of size and presence of cortex can be regarded as general indicators of where in the reduction sequence those flakes were removed.

It should be pointed out that the size distribution of flakes, particularly very small flakes, is not directly comparable between contexts due to differing recovery methods. Artifact samples collected while stripping trenches did not result from systematic screening of soil; all artifacts from unit excavations were recovered by screening soil through a 1/4-inch screen; and all soil from excavated features was waterscreened through a 1/16-inch screen to recover artifacts. The sample bias resulting from different screen sizes can be assessed by comparing the percent of flakes in each of the size categories for unit and feature excavations. The smallest size category, 0–1 cm, contains all flakes smaller than one quarter inches (0.635 cm) as well as some flakes that would have been caught in a 1/4-inch screen (i.e., between about 0.635 cm and 1 cm in size). Flakes from unit excavations exhibit the following size distribution: 0–1cm (8.5%), 1–2 cm

(78.4%), 2–4 cm (12.4%), 4–6 cm (0.6%), and >6 cm (0.1%). Flake sizes from feature excavations are as follows: 0–1cm (18.8%), 1–2 cm (70.4%), 2–4 cm (10.1%), 4–6 cm (0.7%), and >6 cm (0.1%). As expected, the smallest flakes are under-represented by the use of a 1/4-inch screen; however, whereas the two smallest size categories display significant differences between recovery screen sizes, together they comprise roughly the same proportion of the total samples, and the larger size categories are about the same. This reflects the fact that, for both units and features, most flakes are less than 2 cm in size—the flake sizes one would expect from the production of small chipped-stone tools.

The distributions of flakes by context, raw material, size, and presence/absence of cortex are presented in Tables 6.2 and 6.3. Within all contexts where artifacts were recovered by screening (i.e, excluding artifacts from trench stripping), the overwhelming majority (71–91%) of flakes are less than 2 cm in size and 84–94% are made of metavolcanic stone, principally aphyric rhyolite. Vein quartz comprises most of the remaining debitage and has a size distribution similar to the metavolcanics, but is less well represented within Mississippian and other features (3.9–4.1%) than in Late Woodland features (12.7%). Given the small number of Mississippian contexts and the likelihood that artifact samples from these contexts also contain “contaminants” from the preceding and pervasive Late Woodland occupation, no further discussion of this potential difference is warranted. Flakes of all raw material types were recovered from unit excavations and, with the exception of greenstone, from Late Woodland features as well, though in very low numbers.

Overall, the flake assemblage illustrates that stone-tool manufacture was an important activity at the site and that this activity involved core reduction to produce flake blanks that were then crafted into unifacial and bifacial tools. While the size distribution of flakes, with relatively few flakes exceeding 6 cm in maximum dimension, does not argue for a lithic source in close proximity to the site, almost one-third (32.1%) of all flakes greater than 4 cm in size were decortication flakes. The proportion drops to 23.5% for flakes between 2 cm and 4 cm, and only 7.6% of flakes less than 2 cm in size exhibited cortex on the exterior surface.

Orthoquartzite flakes are the only exception to the patterns just described (Figure 6.2). Unlike metavolcanics, vein quartz, quartzite, quartz crystal, ridge and valley chert, and Allendale chert which all exhibit a similar size distribution peaking at 1–2 cm, orthoquartzite flakes have a much less constrained size distribution, and half of those flakes exceed 4 cm in size. As noted earlier, it is believed that orthoquartzite was used primarily for making large tools such as chipped hoes. The production of such tools would have resulted in debitage comprised mostly of larger flakes.

### **Chipped-Stone Projectile Points**

Four hundred and fifty-seven chipped stone artifacts were classified as projectile points. A majority of these are small triangular arrow points, small pentagonal points, or probable fragments of small arrow points that are attributable to the Late Woodland and Mississippian cultural components at the site; the remaining specimens are attributable to earlier Woodland and Archaic site occupations. While some projectile points were recovered from dated Late Woodland and Mississippian feature contexts, most came from general test unit and trench excavations and thus are not directly assignable to a particular cultural component. However, the high proportion of Late Woodland pottery at the site to Mississippian and earlier Woodland pottery suggests that most of the triangular projectile points likely are attributable to the Late Woodland Ashe Ferry phase.

Table 6.2. Distribution of chipped-stone flakes by excavation context, raw material, and size class.

Context / Raw Material	<1 cm	1–2 cm	2–4 cm	4–6 cm	6–8 cm	8–10 cm	>10 cm	Total	%
<i>Unit Excavations</i>									
Metavolcanic	730	6,391	944	28	-	-	-	8,093	84.4
Vein Quartz	68	997	210	11	1	-	2	1,289	13.4
Quartzite	4	76	22	5	1	-	-	108	1.1
Orthoquartzite	2	8	10	18	4	-	-	42	0.4
Quartz Crystal	2	22	1	-	-	-	-	25	0.3
Ridge & Valley Chert	5	17	-	-	-	-	-	22	0.2
Allendale Chert	1	5	3	-	-	-	-	9	0.1
Greenstone	-	-	1	-	-	-	-	1	0.0
Sub-total	812	7,516	1,191	62	6	0	2	9,589	100.0
<i>Trench Excavations</i>									
Metavolcanic	-	261	376	49	5	-	1	692	89.8
Vein Quartz	-	21	32	3	2	-	-	58	7.5
Orthoquartzite	-	1	4	2	4	2	-	13	1.7
Quartzite	-	-	3	-	-	-	-	3	0.4
Ridge & Valley Chert	-	3	-	-	-	-	-	3	0.4
Allendale Chert	-	2	-	-	-	-	-	2	0.3
Sub-total	0	288	415	54	11	2	1	771	100.0
<i>Late Woodland Features</i>									
Metavolcanic	463	1,658	202	12	2	1	-	2,338	86.6
Vein Quartz	35	262	46	1	-	-	-	344	12.7
Quartzite	-	9	2	-	-	-	-	11	0.4
Orthoquartzite	-	2	2	4	-	-	-	8	0.3
Ridge & Valley Chert	-	3	-	-	-	-	-	3	0.1
Quartz Crystal	-	1	1	-	-	-	-	2	0.1
Allendale Chert	-	1	-	-	-	-	-	1	0.0
Sub-total	498	1,936	253	17	2	1	0	2,707	100.3
<i>Mississippian Features</i>									
Metavolcanic	45	163	35	-	-	-	-	243	93.8
Vein Quartz	-	7	3	-	-	-	-	10	3.9
Orthoquartzite	-	2	1	-	-	-	-	3	1.2
Quartzite	-	2	-	-	-	-	-	2	0.8
Ridge & Valley Chert	-	1	-	-	-	-	-	1	0.4
Sub-total	45	175	39	0	0	0	0	259	100.0
<i>Other Features</i>									
Metavolcanic	61	137	28	2	-	-	-	228	93.4
Vein Quartz	-	7	1	2	-	-	-	10	4.1
Ridge & Valley Chert	-	3	-	-	-	-	-	3	1.2
Allendale Chert	-	1	-	-	-	-	-	1	0.4
Quartzite	-	-	1	-	-	-	-	1	0.4
Orthoquartzite	-	-	1	-	-	-	-	1	0.4
Sub-total	61	148	31	4	0	0	0	244	100.0
Total	1,416	10,063	1,929	137	19	3	3	13,570	
%	10.4	74.2	14.2	1.0	0.1	0.0	0.0	100.0	

Table 6.3. Distribution of chipped-stone flakes by excavation context, raw material, size, and presence/absence of cortex.

Context / Raw Material	<2 cm		2-4 cm		>4 cm		Total
	no cortex	cortex	no cortex	cortex	no cortex	cortex	
<i>Unit Excavations</i>							
Metavolcanic	6,599	522	725	219	17	11	8,093
Vein Quartz	970	95	155	55	6	8	1,289
Quartzite	67	13	8	14	1	5	108
Orthoquartzite	10	-	10	-	21	1	42
Quartz Crystal	24	-	1	-	-	-	25
Ridge & Valley Chert	21	1	-	-	-	-	22
Allendale Chert	6	-	3	-	-	-	9
Greenstone	-	-	1	-	-	-	1
Sub-total	7,697	631	903	288	45	25	9,589
<i>Trench Excavations</i>							
Metavolcanic	245	16	295	81	39	16	692
Vein Quartz	18	3	25	7	4	1	58
Orthoquartzite	1	-	4	-	8	-	13
Quartzite	-	-	1	2	-	-	3
Ridge & Valley Chert	3	-	-	-	-	-	3
Allendale Chert	2	-	-	-	-	-	2
Sub-total	269	19	325	90	51	17	771
<i>Late Woodland Features</i>							
Metavolcanic	1,987	134	157	45	8	7	2,338
Vein Quartz	243	54	34	12	1	-	344
Quartzite	3	6	1	1	-	-	11
Orthoquartzite	2	-	2	-	2	2	8
Ridge & Valley Chert	3	-	-	-	-	-	3
Quartz Crystal	1	-	1	-	-	-	2
Allendale Chert	1	-	-	-	-	-	1
Sub-total	2,240	194	195	58	11	9	2,707
<i>Mississippian Features</i>							
Metavolcanic	199	9	26	9	-	-	243
Vein Quartz	6	1	2	1	-	-	10
Orthoquartzite	2	-	1	-	-	-	3
Quartzite	1	1	-	-	-	-	2
Ridge & Valley Chert	1	-	-	-	-	-	1
Sub-total	209	11	29	10	0	0	259
<i>Other Features</i>							
Metavolcanic	181	17	22	6	2	-	228
Vein Quartz	6	1	1	-	1	1	10
Ridge & Valley Chert	3	-	-	-	-	-	3
Allendale Chert	-	1	-	-	-	-	1
Quartzite	-	-	-	1	-	-	1
Orthoquartzite	-	-	1	-	-	-	1
Sub-total	190	19	24	7	3	1	244
Total	10,605	874	1,476	453	110	52	13,570
%	92.4	7.6	76.5	23.5	67.9	32.1	

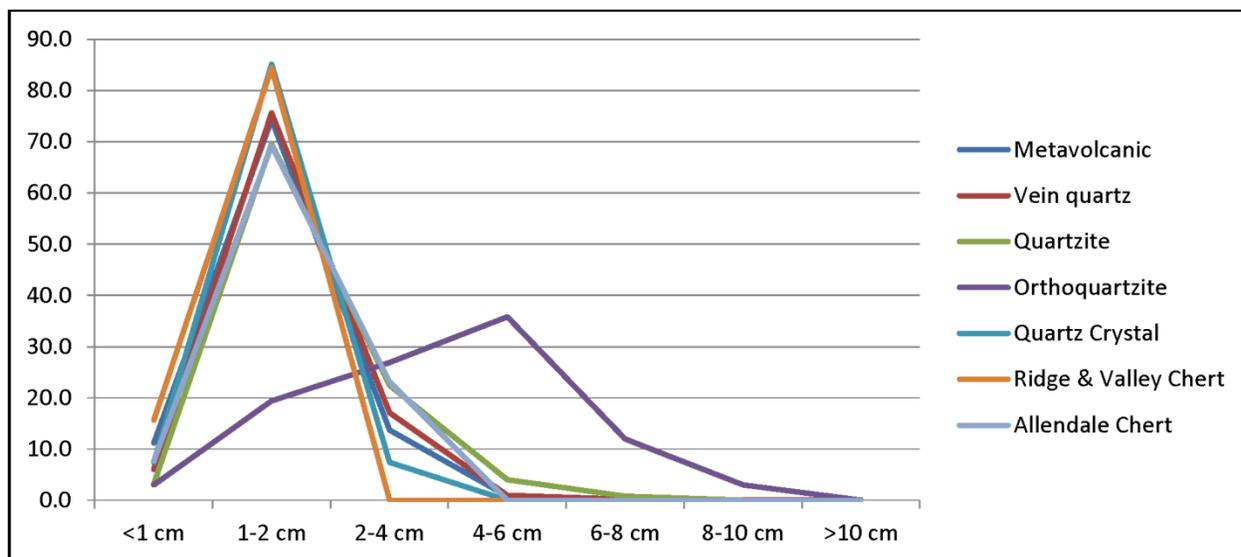


Figure 6.2. Percent distribution of flakes by raw material and flake size.

### *Kirk Serrated Projectile Point*

The oldest projectile point recovered from Ashe Ferry was an unbroken, heavily resharpened Kirk Serrated point found in the upper fill of Feature 65, a Late Woodland Ashe Ferry phase pit (Figure 6.3). This type was first recognized at the Hardaway site in piedmont North Carolina, where Kirk Serrated points were positioned stratigraphically between earlier Kirk Corner-Notched points and later Kirk Stemmed and Stanly Stemmed points. Coe (1964:70) described this type as having “a long narrow blade with deep serrations and a broad square stem,” and viewed it as an intermediate form within a long stylistic continuum between the Early Archaic Palmer Corner-Notched type and the Late Archaic Savannah River Stemmed type (Coe 1964:70). The Ashe Ferry specimen is made of patinated rhyolite and has a narrow, beveled, slightly incurvate body resulting from resharpening. It is 53 mm long, 23 mm wide at the shoulder, and 8 mm thick. Its occurrence within an Ashe Ferry phase pit suggests that it perhaps was collected by one of the site’s Late Woodland occupants and may not be indicative of an Early Archaic occupation at the site.

### *Morrow Mountain II Stemmed Projectile Points*

Six projectile points from Ashe Ferry were classified as Morrow Mountain II Stemmed (Figure 6.3). Three of these are made of rhyolite, and the rest are made of vein quartz. They range from 39–41 mm in length, 19–26 mm in width, and 5–16 mm in thickness. According to Coe (1964:37), this projectile point type is defined by a long, narrow blade and a tapered stem (Coe 1964:37). The Morrow Mountain II type is associated with the Middle Archaic period (ca. 5,500–5,000 BC), and specimens of this type were recovered in stratified context at the Doerschuk site in piedmont North Carolina (Coe 1964), and at the Icehouse Bottom and Howard sites in southeast Tennessee (Chapman 1977, 1979). All of the specimens from Ashe Ferry were recovered from old plow-disturbed soils within test units or during trench stripping, and they likely indicate a site occupation during the Morrow Mountain phase of the Middle Archaic period. A significant Morrow Mountain component was documented at the nearby Ayers Town site.

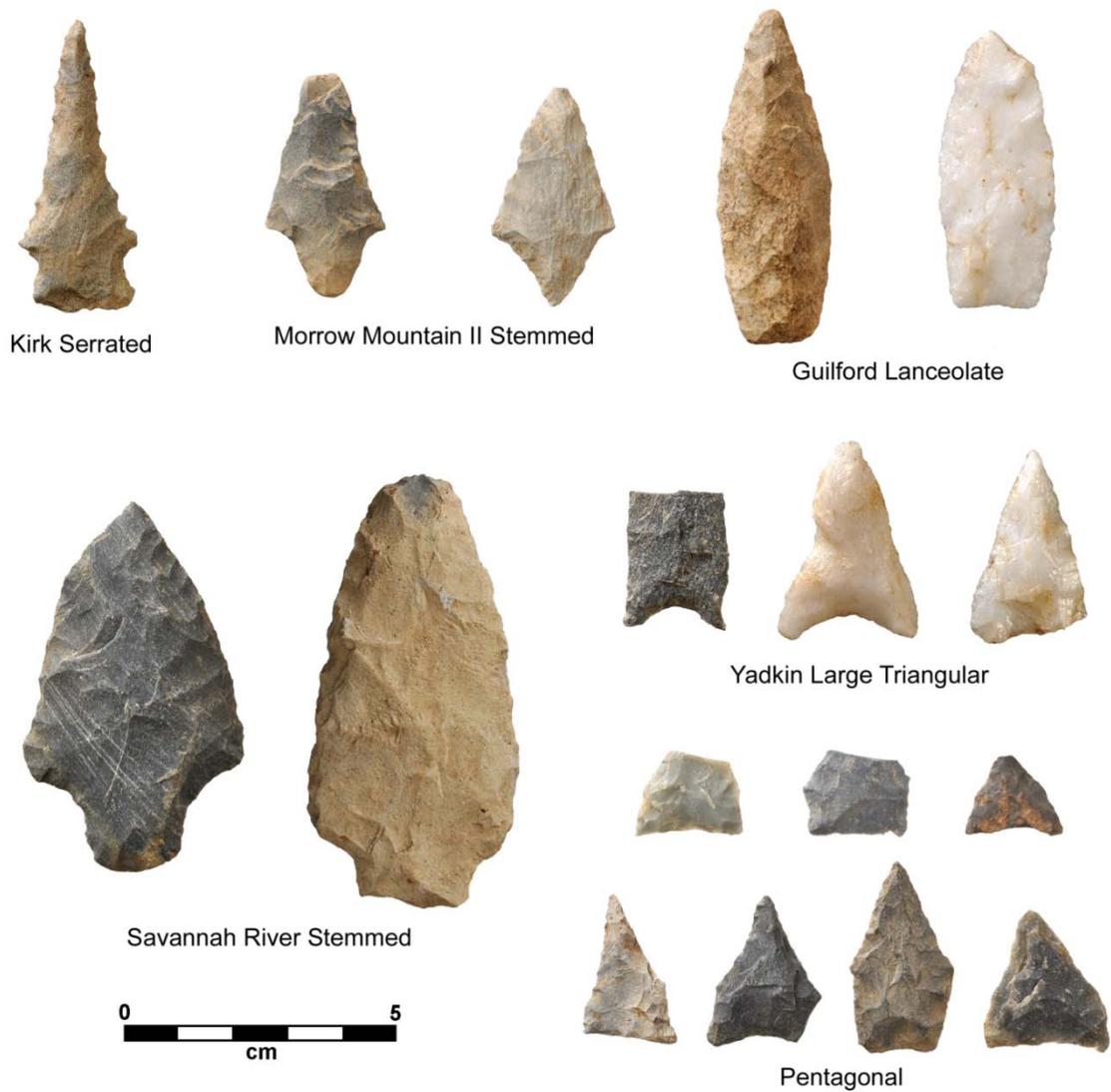


Figure 6.3. Miscellaneous Archaic, Woodland, and Mississippian projectile points recovered from Ashe Ferry.

*Guilford Lanceolate Projectile Points*

Two projectile points classified as Guilford Lanceolate were recovered from old plow-disturbed soil during unit excavation and while stripping trenches (Figure 6.3). These are made of rhyolite and vein quartz, and are very similar in size (width = 21 mm; thickness = 9–11 mm). The unbroken rhyolite point is 61 mm long. This type is defined by Coe (1964:43) as having “a long, slender, but thick blade with straight, rounded, or concave base,” and he suggested, based on stratigraphic positioning at the Doerschuk and Gaston sites (Coe 1964:44, 118), that this projectile point type was in use during the Middle Archaic period between about 5,000 BC and 4,000 BC. Several Guilford Lanceolate points also were recovered from Ayers Town.

### *Savannah River Stemmed Projectile Points*

The Savannah River Stemmed projectile point type was first documented by Coe (1964) at the Doerschuk, Lowder's Ferry, and Gaston sites, where points of this type were found in strata above those containing Middle Archaic Guilford Lanceolate and (at the Gaston site) Halifax Side-Notched points. This type is defined by "a large, heavy, triangular blade with a broad stem" Coe (1964:44) and is ubiquitous on archaeological sites dating to the Late Archaic period in the Carolinas. Savannah River Stemmed projectile points have been radiocarbon dated to ca. 3,000–1,800 BC at the Bacon Bend site in southeast Tennessee (Chapman 1981). Four projectile points from Ashe Ferry conform to this type (Figure 6.3). One specimen made of vein quartz was recovered during plowzone stripping in Trench 8; the other three specimens are made of rhyolite and were recovered from sand below the base of Feature 43, from the plow-disturbed top of Feature 46, and from Feature 80, a small cache of chipped-stone bifaces, cores, and flakes at the top of subsoil near the northwest edge of the site. Three of the four specimens are unbroken and range in size from 49–80 mm long, 32–41 mm wide, and 10–13 mm thick. The fourth specimen, a broken basal fragment, represents a much larger projectile point or knife, and measures 63 mm in width and 18 mm in thickness.

Legacy Research archaeologists reported a fragment of a probable Savannah River Stemmed point along with a concentration of orthoquartzite flakes at a depth of 2.1–2.3 m in their backhoe trench 2. This discovery, along with the occurrence of a Savannah River point below the base of Feature 43, indicate the presence of a buried Late Archaic cultural component along the front edge of the T-1 alluvial terrace at this location. Savannah River Stemmed points, as well as two soapstone bowl fragments of presumed Late Archaic age, also were recovered during investigations at Ayers Town.

### *Archaic Projectile Points (Indeterminate)*

In addition to the projectile points described above, 14 other fragments of projectile point tips, mid-sections, and bases were recovered that also likely date to the Archaic period but cannot be assigned to a specific type. Nine of these are made of rhyolite or some other metavolcanic stone, four are vein quartz, and one is quartzite.

### *Yadkin Large Triangular Projectile Points*

Only three projectile points were found that can be attributed to the Early or Middle Woodland periods (Figure 6.3). All are classified as Yadkin Large Triangular, a type defined by Coe based on his investigations at the Doerschuk site and associated with Yadkin series pottery. This type is described as "a large, symmetrical, and well-made triangular point," and it usually has a concave base (Coe 1964:45). Two of the specimens are made of vein quartz and are 36 mm long, 22–26 mm wide, and 7–9 mm thick. The third specimen, made of rhyolite, resembles a Yadkin variant described by Coe (1964:47) as "A-typical eared variety", and it is narrower with slight side notches. This broken specimen is 19 mm wide and 7 mm thick. All three Yadkin points came from Feature 67, a shallow basin that also contained Late Woodland Ashe Ferry series pottery and is assigned to the Ashe Ferry phase. This feature lies just three meters southwest of Feature 58, which contained Yadkin Check-Stamped pottery and is the only Middle Woodland feature identified at the site.

### *Pentagonal Projectile Points*

Eight small, chipped-stone arrow points were recovered that have a pentagonal form (Figure 6.3). Except for edge configuration, all resemble the numerous triangular points from the site in

terms of size, thickness, material, and workmanship. All are made of rhyolite, and some may have originated as triangular points that were resharpened into a pentagonal form. The pentagonal projectile points from Ashe Ferry are similar to the Pee Dee Pentagonal type, which Coe (1964:49) describes as “a small asymmetrical and carelessly made point.... Pentagonal in form, usually asymmetrical. Some specimens, however, were very carefully and symmetrically made.” This type is associated largely with the South Appalachian Mississippian Pee Dee phase in the southern North Carolina Piedmont and South Carolina Coastal Plain (see Coe 1995:201); however, Pee Dee Pentagonal points also occur infrequently on late prehistoric and historic sites elsewhere in the Piedmont. Their cultural association at Ashe Ferry is ambiguous, though three specimens came from Late Woodland contexts in Features 44, 76, and 77. The remainder were recovered during the excavation or stripping of plow zone. Pentagonal arrow points from Ashe Ferry range from 15–35 mm in length (all but two are 22–28 mm long), 18–23 mm in width, and 3–5 mm in thickness.

### *Small Triangular Projectile Points*

Four hundred and nineteen small triangular projectile points were recovered during archaeological investigations at Ashe Ferry. Seventy-eight of these chipped-stone arrow points came from archaeological features attributed to the Late Woodland Ashe Ferry phase, eight came from features attributed to the Mississippian Early Brown phase, and the remaining 333 points came from other contexts, such as unit excavations and plow zone stripping, that cannot be associated with a cultural component (Figures 6.4–6.6). While it often has been common practice to typologically separate small triangular projectile points based on overall size (see for example Joffre Coe’s [1995:193–194, 202–206] differentiation of triangular points into Pee Dee, Caraway, and Hillsboro types), there appears to be no valid basis for taking this approach with the projectile point sample from Ashe Ferry. There also appears to be no basis for separating these points into meaningful categories based raw material, workmanship, or edge configuration.

Four hundred small triangular projectile points, comprising over 95% of the sample, are made of metavolcanic stone, principally fine-grained aphyric rhyolite. The remaining specimens are made of vein quartz (n=11), quartzite (n=7), and ridge-and-valley chert (n=1). They were produced by bifacially retouching a small flake blank, primarily by pressure flaking, and most exhibit flake scars across both faces. Seventeen specimens were created by simply chipping the flake margins to produce a triangular form; two of these came from Late Woodland features and one came from a Mississippian feature. Five triangular points from general excavations have serrated edges.

About 30% of the specimens are unbroken; the remainder are tips and broken basal fragments. Length, width, and thickness were measured to the nearest millimeter for all unbroken points; and one or more of these dimensions were measured on other specimens when appropriate. Summary statistics for these measurements are provided in Table 6.4. While the overall size range varies from 13–45 mm in length, 9–34 mm in width, and 2–10 mm in thickness, the mean measurements and associated standard deviations indicate remarkable uniformity of triangular projectile point size both within the overall sample and between feature samples attributed to Late Woodland and Mississippian occupations. Length-to-width ratios likewise indicate little overall variability between these samples.

Basal and lateral edge shape also was examined in order to characterize projectile point edge configuration and symmetry (Table 6.5). Most have either concave or straight bases; only a few have convex bases. Lateral edge shape was more varied, perhaps due to resharpening. While a majority of the points have straight edges, several exhibited an asymmetry created by a straight

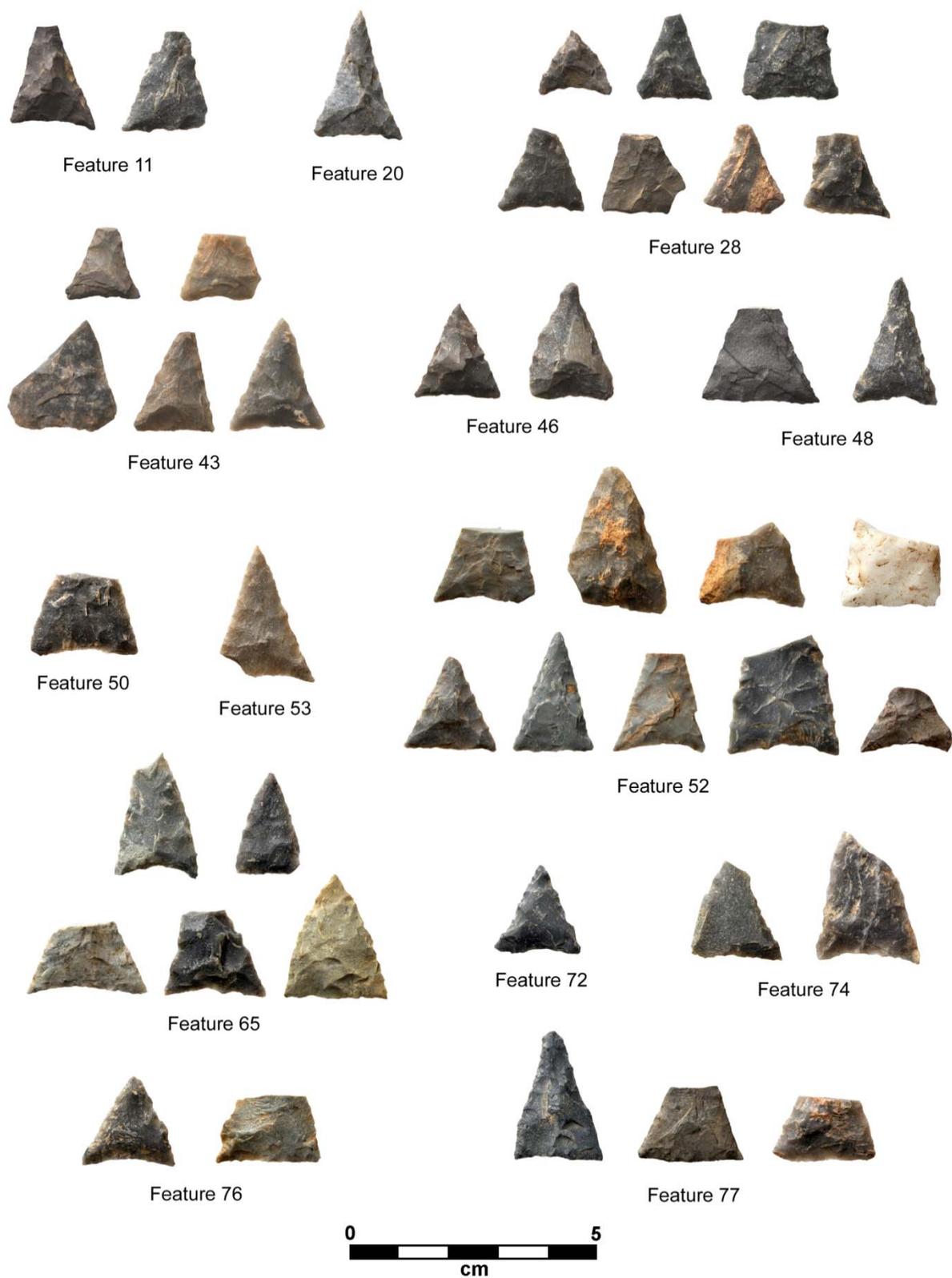


Figure 6.4. Small triangular projectile points from features attributed to the Late Woodland Ashe Ferry phase

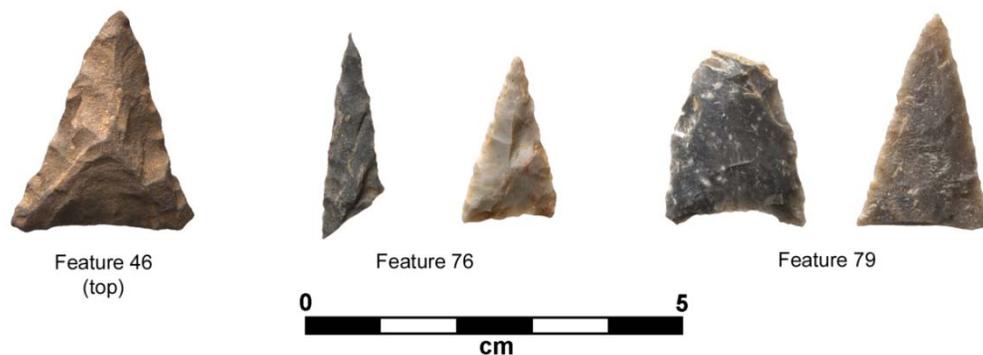


Figure 6.5. Small triangular projectile points from features attributed to the Mississippian period.

edge and an opposing concave or convex edge. Points with only concave or convex lateral edges account for only 30% of the sample.

Because only a small number of projectile points were recovered from Mississippian features, and some if not most of these could date to the preceding Late Woodland occupation, it is not possible to draw any conclusions about possible point assemblage differences; however, given the large proportion of Late Woodland pottery to Mississippian pottery found at the site, the overwhelming majority of the triangular points likely are attributable to the Late Woodland Ashe Ferry phase. Typologically, these points as a group conform best to Coe's (1964:49) Caraway Triangular type, which he characterized as "a straight-sided isosceles triangle that measured about 20 mm wide and 30 mm long. The bases were either straight or slightly concave, but the extreme concavity and deep serrations that were characteristic of the Pee Dee Triangular form did not occur on these points." While Coe (1964:49) originally attributed this type to the Keyauwee and Saponi Indians of the early eighteenth century, it is now clear that it is associated with various Late Woodland groups who occupied the Carolina and Virginia Piedmont after about AD 1000 (Davis et al. 1997c; Eastman 1993; McManus 1985).

## Other Chipped Stone Tools

### *Preform*

One artifact recovered while stripping plowed soil from Trench #2 was classified as a broken triangular preform, representing the final stage of bifacial projectile point manufacture (Figure 6.7). It is made of rhyolite and is heavily patinated except along one edge where it exhibits more recent flaking. The specimen is 38 mm wide and before being broken probably exceeded 80 mm in length. Given its large size, this preform likely predates the Woodland period.

### *Bifaces*

A biface is defined as a chipped-stone blank that exhibits flake-removal scars on both surfaces. Fifty chipped-stone artifacts were classified as bifaces or biface fragments (Figure 6.7). All but three are made of rhyolite or other metavolcanic stone; the remainder are of vein quartz (n=2) or quartzite (n=1). Five appear to represent early stages in the production of Archaic notched or stemmed projectile points, and another likely represents an unfinished Yadkin Large



Figure 6.6. Small triangular projectile points from general excavation contexts at the Ashe Ferry site.

Table 6.4. Measurement Statistics for Small Triangular Projectile Points from the Ashe Ferry Site.

Context and Statistic	Length (mm)	Width (mm)	Thickness (mm)	Length-to-Width Ratio
<i>Late Woodland Features</i>				
mean	25.1	19.4	4.2	1.32
standard deviation	5.4	3.2	1.2	0.27
minimum	13	13	2	0.87
maximum	38	30	9	2.38
sample size	39	44	78	38
<i>Mississippian Features</i>				
mean	24.8	19.6	4.5	1.35
standard deviation	3.1	3.7	1.1	0.25
minimum	22	13	3	1.05
maximum	29	24	6	1.69
sample size	5	5	8	4
<i>Other Contexts</i>				
mean	24.5	19.2	4.3	1.29
standard deviation	5.6	3.4	1.2	0.24
minimum	13	9	2	0.76
maximum	45	34	10	2.17
sample size	209	232	333	198
<i>Total Sample</i>				
mean	24.6	19.2	4.3	1.29
standard deviation	5.5	3.4	1.2	0.25
minimum	13	9	2	0.76
maximum	45	34	10	2.38
sample size	253	281	419	240

Table 6.5. Summary of Basal and Lateral Edge Shape for Small Triangular Projectile Points from Late Woodland, Mississippian, and Other Contexts at the Ashe Ferry Site.

Edge Shape	Late Woodland Contexts	Mississippian Contexts	Other Contexts	Total Sample
<i>Basal Edge</i>				
concave	25	3	141	169
convex	1	0	8	9
straight	19	1	90	110
Total	45	4	239	288
<i>Lateral Edges</i>				
concave	2	1	24	27
convex	3	2	17	22
straight	26	2	127	155
concave / convex	2		5	7
straight / concave	3		21	24
straight / convex	5	1	23	29
straight / indet.			2	2
Total	41	6	219	266

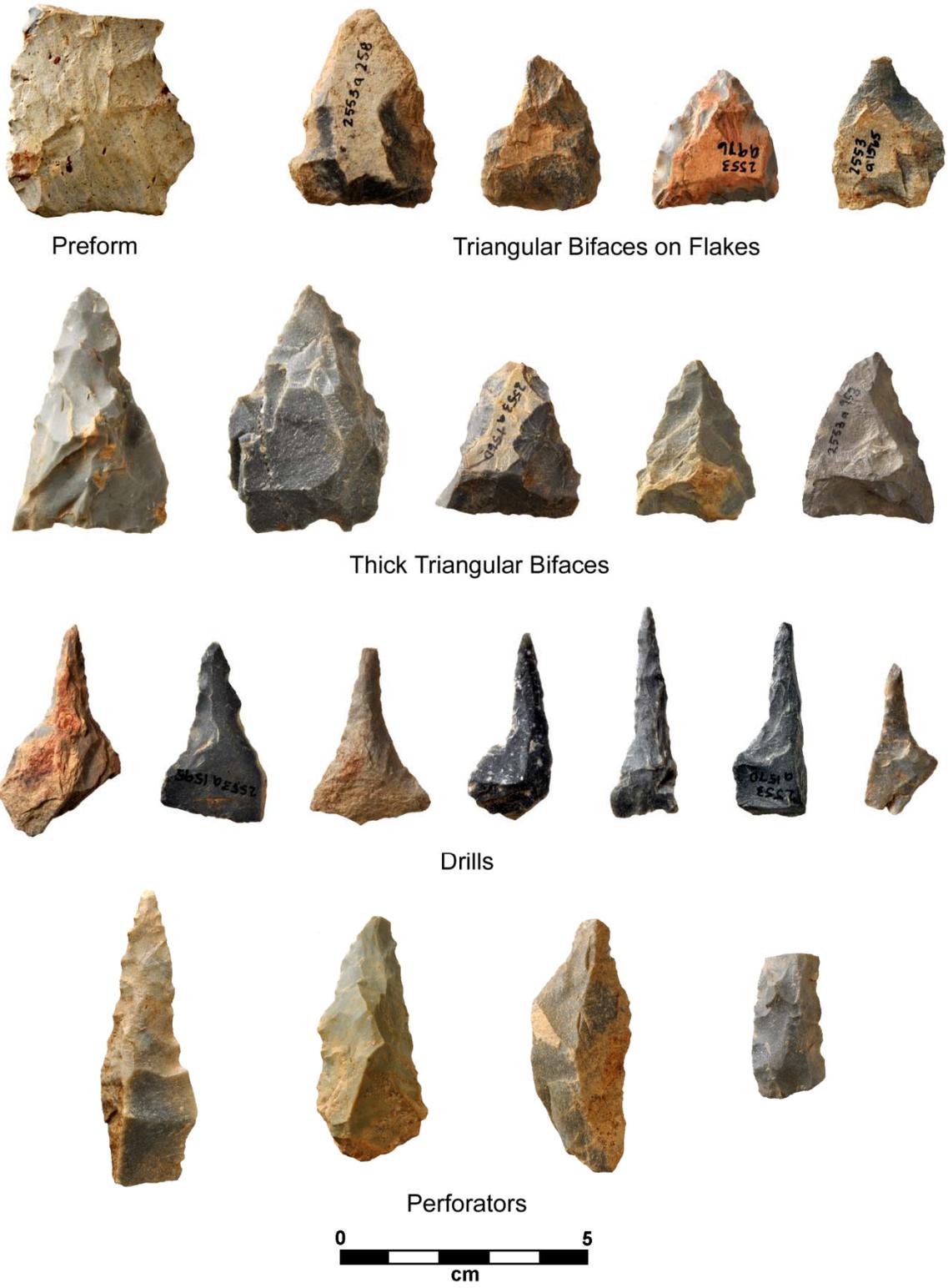


Figure 6.7. Chipped-stone preform, triangular bifaces, drills, and perforators from the Ashe Ferry site.

Triangular point. Seven specimens are thick, roughly chipped triangular bifaces representing unfinished or aborted attempts to produce small arrow points; another specimen exhibits similar workmanship but has a pentagonal form. Six other specimens likely representing unfinished arrow points are flakes, often patinated, that have been shaped by bifacial retouch to create a roughly triangular form. Four large triangular or oval bifaces also may represent unfinished projectile points. The remaining 26 specimens include bifacially worked blanks with an amorphous shape, flakes (both patinated and unpatinated) that have been bifacially chipped along one or more edges, and small edge fragments of bifaces. Only four specimens came from Late Woodland features, and two of these are interpreted as fragments of unfinished Archaic projectile points. The two specimens from Mississippian features likely represent unfinished arrow points.

#### *Drills*

Thirteen specimens are interpreted as chipped-stone drills (Figure 6.7). All were recovered from general excavations and represent bifacially worked tools with a triangular or oval base and an elongated, nearly parallel-sided projection. These are interpreted as hafted, perforating implements used on dense material such as wood, antler, or soft stone. Eight of the drills are complete or nearly complete. These range from 31–43 mm in basal width and have maximum lengths of 14–24 mm. Another specimen is a drill base with a broken bit, and the remainder are drill bit fragments. All are made of rhyolite or other metavolcanic stone.

#### *Perforators*

Four artifacts were classified as perforators (Figure 6.7). Perforators are interpreted as hand-held tools probably used to punch holes in soft materials. The specimens from Ashe Ferry are made on thick, elongate flakes that have been bifacially chipped to a tapered point at one end. One perforator is unbroken, and the other three have broken tips. All exhibit a curvature that would have made them unsuitable as hafted drills. These artifacts are made of rhyolite or other metavolcanic stone and were recovered from general excavation contexts.

#### *Chipped Hoes*

Chipped hoes are large, chipped-stone tools that are thought to have been hafted onto a long wood handle and used for digging as well as crop cultivation. Their exact use at Ashe Ferry is not known. Eight hoes representing two size classes were recovered (Figure 6.8). All are thick, triangular bifaces that have been roughly chipped and are plano-convex in cross section. Five of these, including two complete specimens from Feature 59 and unit excavations, represent large hoes up to 140 mm long and 60 mm wide at the bit edge. The other three specimens are proximal end fragments and were recovered from Feature 28 (n=2) and Trench 18. The complete hoe from Feature 59 exhibits haft polish along the proximal margins and soil polish along the distal edge, and both specimens from Feature 28 exhibit haft polish along the lateral margins at the proximal end. Three specimens from Trench 10, Feature 75, and Feature 78 are much smaller, with lengths of about 90 mm and widths of about 40 mm. One of these exhibits haft polish along almost the entire length of the lateral margins, suggesting that these smaller specimens may simply be exhausted hoes that have been heavily reduced by resharpening. The size range of the Ashe Ferry hoes is similar to that reported for hoes from the Town Creek site (Coe 1995:210–211). Unlike other chipped-stone tools, hoes were made of a variety of materials, including rhyolite (n=2), porphyritic rhyolite (n=2), orthoquartzite (n=3), and greenstone (n=1). Four hoes came from Late Woodland features (Features 28, 59, and 75) and one came from Feature 78, a Mississippian feature.

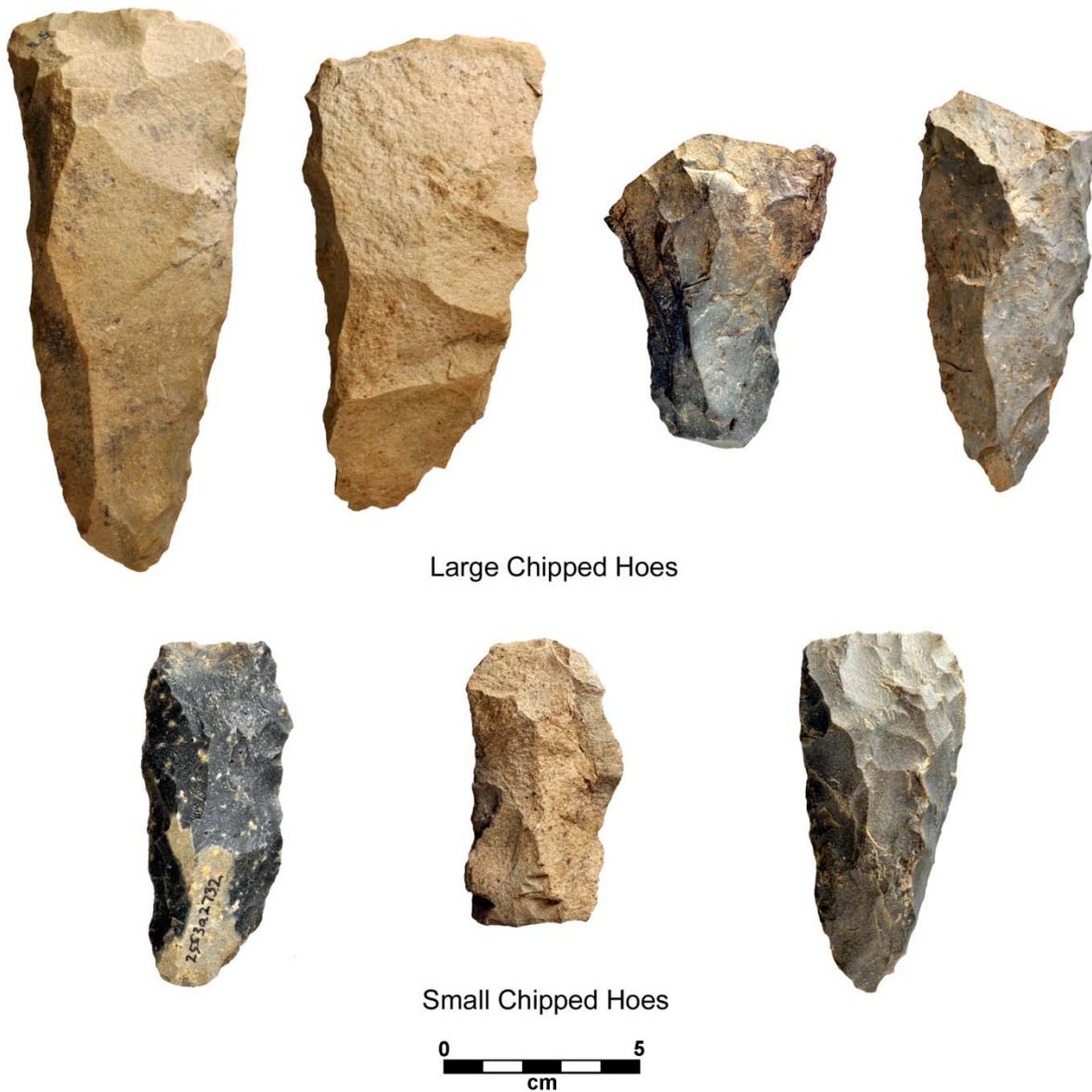


Figure 6.8. Chipped hoes from the Ashe Ferry site. They were recovered from the following contexts: top (l-r) – Feature 59, Square 873R856, Feature 28, and Feature 28; bottom (l-r) – Feature 75, Feature 78, and Trench 10.

### *End Scraper*

One end scraper was recovered from old plow zone in Square 832R875. It is a thick, blade-like, vein-quartz flake that has been steeply retouched along the distal edge. It also has been steeply retouched along one lateral edge. Tools of this type are interpreted as hide-working implements and usually are attributed to the early end of the Archaic period. Several similar end scrapers were recovered at the nearby Ayers Town site, where they appear to be associated with occupations represented by Kirk Corner-Notched and Hardaway-Dalton projectile points.

### *Worked Flakes*

Of the more than 13,500 fragments of lithic debitage recovered from Ashe Ferry, only 68 flakes showed evidence of edge retouching or use resulting in edge damage. These were classified as worked flakes. Sixty-two specimens were recovered from unit and trench excavations; the other six came equally from Late Woodland and Mississippian features. Several different types of activities, ranging from cutting and scraping to tool manufacture, are likely represented by these specimens, and six categories of worked flakes were identified, based upon the type and extent of edge modification.

The largest category contained 28 specimens that possessed only limited retouch or damage along the flake margins. Most were less than 4 cm in size and likely represent ad hoc, hand-held cutting tools. These were made of quartz, rhyolite, and other metavolcanic stone in nearly equal proportions. Seventeen flakes exhibited continuous, uniform retouch along one or more margins and may represent cutting or scraping tools. All but three were less than 4 cm in size and were made of vein quartz (n=7), rhyolite (n=6), other metavolcanic stone (n=2), and orthoquartzite (n=2). Six other flakes, made of metavolcanic stone or quartzite, were retouched along one or more margins to produce a denticulate, or serrated, edge. Three exceeded 4 cm in size. These almost certainly represent cutting tools. As with other retouched flakes, several of these presumed cutting or scraping tools were heavily patinated flakes of presumed Archaic age that exhibited more recent retouching.

Six flakes exhibited steep, continuous retouch along one or two margins. Four are made of vein quartz, and the other two are made of orthoquartzite and rhyolite. Three specimens with steeply retouched distal edges are interpreted as small end scrapers; two of them are made from split quartz pebbles. The other three specimens have steeply retouched lateral edges. All are interpreted as probable hide scrapers.

Three small (2–4 cm) metavolcanic stone flakes had been roughly fashioned into a triangle by retouching two edges. These are interpreted as aborted attempts to manufacture triangular arrow points. Finally, eight large, thick flakes ranging from 4-10 cm in size exhibited heavy retouch along the lateral edges. Seven of these were made of orthoquartzite and the other was made of metavolcanic stone. While these may represent heavy butchering or chopping implements, they also may be detritus from manufacturing chipped-stone hoes or unidentifiable hoe fragments.

## **Ground-Stone Tools**

### *Celts*

Celts are ground-stone axes that have a teardrop or roughly sub-rectangular shape and lack surface modification for hafting. Three unbroken celts, four celt fragments, and one large celt blank were recovered from the site area north of the highway (Figure 6.9). All are made of greenstone by a process of direct percussion, pecking, grinding, and polishing to produce a sharp, bi-convex working edge or bit (present on five of the eight specimens). Several exhibit water-worn surface irregularities that indicate they were incompletely fashioned from stream cobbles.

The complete specimens came from Features 59 and 75—both Late Woodland features—and old plowzone within Trench 10e. The Feature 59 celt has a long, slightly irregular shape due to its being manufactured by pecking and grinding from an elongate stream cobble. It measures 153 mm long x 39 mm wide x 34 mm thick, and has a rounded bit, a tapered poll, and a roughly



Figure 6.9. Celts, celt fragments, and celt blank from the Ashe Ferry site.

triangular cross section. The celt from Feature 75 is much smaller, measuring 104 mm long x 39 mm wide x 20 mm thick, and it has a teardrop shape with a rounded bit, tapered poll, and a bi-convex cross section. The specimen found while stripping Trench 10e is a large, tapered-poll celt that has been uniformly ground and polished. It has a slightly convex bit and measures 141 mm long x 60 mm wide x 37 mm thick.

Two of the four celt fragments are broken bits, one is a poll end, and the fourth is a small, polished fragment from the edge of a celt. One of the broken bits came from Feature 77, a Late Woodland feature. It has a rounded, irregular bit and flat faces with ground, faceted edges. The poll-end fragment, recovered from Trench 5, has a similar cross section. Another broken bit from Trench 10w appears to have a sub-rectangular configuration, though the poll end is

missing. Both this specimen and the one from Feature 77 were utilized, perhaps as wedges, after they broke, as they both have short step fractures extending from the mid-section break down the celt face. One also has a heavily battered bit. The small, celt-edge fragment came from a trench test unit adjacent to Feature 19, a Late Woodland feature.

Lastly, a large greenstone celt blank was recovered from Square 869R853 within the Trench 2 excavation block. This elongate, roughly teardrop-shaped river cobble measures 205 mm long x 71 mm wide x 60 mm thick, and it illustrates the process by which most celts at Ashe Ferry may have been manufactured. With a natural shape conforming to the shape of a finished celt, its edges were heavily pecked and ground to produce the proper size and approximate shape. This particular specimen apparently was discarded after about half of the original cobble cortex had been ground away, and substantially more pecking, grinding, and polishing would have been required to produce a finished, functional celt.

### *Hammerstones*

Nine artifacts were classified as hammerstones (Figure 6.10). Seven of these are spherical or oval stream cobbles that have heavily battered and abraded surfaces resulting from use as hand-held hammers or grinding stones; the other two are elongate cobbles with battering confined to the end or edge. The spherical and oval hammerstones are made of quartzite (n=3), orthoquartzite (n=1), metasandstone (n=1), diabase (n=1), and granite (n=1). The spherical hammerstones measure 51–66 mm in diameter while the oval hammerstone is somewhat larger at 110 mm by 69 mm. The two elongate hammerstones are made of phyllite and measure 122–145 mm long by 43–46 mm wide. Hammerstones were recovered from Trenches 1, 9, 18, 24, and 26, Square 829R911, and Features 46, 48, and 65.

Large stone hammers, milling stones, nutting stones, and pitted stone anvils are regarded as site furniture (see Binford 1979:263–264) and, as such, likely were cached at the site during periods of abandonment. While these items may be attributable largely to the Late Woodland occupations, both earlier and later uses cannot be ruled out, particularly given the potential of prehistoric ground-disturbing activities to expose items left by preceding occupants.

### *Possible Milling Stones*

Six possible milling stone fragments were recovered. Three of these came from unit excavations, and the others came from Features 11, 55, and 60. All are fragments of tabular stream cobbles or tabular stone that show abrasion or polish on one face. In most cases abrasion has resulted in a slight, shallow concavity; however, the specimen from Feature 55 is the only one that appears to be clearly the product of intentional and extensive grinding. These specimens represent a variety of igneous and metamorphic rock types, including: granite, andesite, diorite, metasandstone (n=2), and gneiss.

### *Pitted Stones*

Three cobbles from trench and unit excavations have a shallow pit or hemispherical depression on one or both faces (Figure 6.10). They measure between 95 mm and 120 mm in diameter, and the depressions are 20–25 mm in diameter and less than 5 mm deep. They are made of a coarse-grained granite, diorite, and diabase. All three specimens are interpreted as anvils that probably were used in nut processing or perhaps in flintknapping for bipolar reduction of cores or to split alluvial cobbles.



pitted cobble

hammerstones



nutting stone



Figure 6.10. Hammerstones, pitted cobble, and nutting stone from the Ashe Ferry site.

Early English explorers in the Carolinas reported that the native inhabitants used stones to crack nuts. In writing about the availability of stone to the Indians who lived along the coast and sounds of North Carolina, Thomas Hariot observed:

Upon inquirie wee heard that a little further up into the Countrey were of all sortes verie many, although of Quarries they are ignorant, neither have they use of any stone whereupon they should have occasion to seeke any. For if everie householde have one or two to cracke Nuttes, grinde shells, whet copper, and sometimes other stones for hatchets, they have enough.... [de Bry 1590:23]

Travelling through the Piedmont more than a century later, John Lawson noted that the region's inhabitants made great use of a variety of nuts, including acorns and hickory nuts, and that hickory nuts, because of their thick, dense shell, were cracked open with stones:

Hiccory Nuts have very hard Shells, but excellent sweet Kernels, with which, in a plentiful Year, the old Hogs, that can crack them, fatten themselves, and make excellent Pork. These Nuts are gotten, in great Quantities, by the Savages, and laid up for Stores, of which they make several Dishes and Banquets. One of these I cannot forbear mentioning; it is this: They take these Nuts, and break them very small betwixt two Stones, till the Shells and Kernels are indifferent small; And this Powder you are presented withal in their Cabins, in little wooden Dishes; the Kernel dissolves in your Mouth, and the Shell is spit out. [Lawson 1709:98]

### *Nutting Stone*

One large stone slab with multiple depressions or pits on both surfaces was classified as a nutting stone. It was recovered from the lower levels of Feature 28, a large Late Woodland storage facility located at the south edge of the site (Figure 6.11). This feature also contained substantial quantities of parched acorns. This tabular, metasandstone rock measures 325 mm long x 188 mm wide x 54 mm thick, and it has four shallow (<5 mm deep), cup-like depressions on one face that are 20–25 mm in diameter and a single, 25-mm diameter circular depression on the opposing face that is about 8 mm deep. The similarity in size, shape, and depth between the cup-shaped depressions on this specimen and those on the pitted stones just described argues for a similar function.

### *Other Modified Cobbles and Pebbles*

Seventeen other cobbles, cobble fragments, and pebbles were recovered that show evidence of being modified through grinding (n=8), abrading (n=2), or polishing (n=7). None appears to represent a formal tool or an early stage in tool manufacture, and, with one exception, their specific function(s) is uncertain. This specimen is a tabular piece of sandstone from Feature 74 has been ground smooth on both faces and also has a groove along one edge. It likely represents an abrader. Many of the polished pebbles and cobbles may have been used as rubbing stones. As a class, these artifacts range from about 4 cm to 14 cm in diameter and are made of a variety of mostly igneous and metamorphic rock types, including diabase, quartzite, metasandstone, granite, and slate.

### *Stone Gorget*

One ground-stone gorget fragment was recovered while stripping Trench 30 at the north edge of the site (Figure 6.11). It is made of gray slate and tapers to a flat, notched edge at one end. This notching extends down one of the lateral edges. It appears to be from either a sub-triangular pendant with a single drill hole at one end, or from a gorget with an expanded center and drill holes at each end. The fragment measures 39 mm from the notched end to the broken edge, 33 mm in maximum width (at the break), and 9 mm in thickness. The bi-conical drill hole is located 23 mm from the end and has a maximum diameter of 6 mm. Similar ground-stone artifacts identified as pendants or gorgets are widely distributed throughout the Eastern

Woodlands and usually are attributed to the Woodland period. Single-hole pendants have been reported from Late Woodland contexts within the upper Dan River drainage of southern Virginia (Davis et al. 1997a:70, 1997b:77)

Coe (1995:Figure 10.20a, b, c, g, and k) illustrates five similar specimens from Town Creek which he erroneously interprets as “Pee Dee celts with drilled and notched poll ends.” Three of these are remarkably similar in dimensions, form, and workmanship to the Ashe Ferry fragment, and likely represent gorget or pendant fragments associated with the terminal Woodland period occupation at Town Creek. Boudreaux’s analysis (2007:46–55) indicates Late Woodland and Mississippian period components at Town Creek contemporaneous with Ashe Ferry occupations.

### *Stone Pipes*

One complete stone pipe and one re-worked stone pipe bowl were found (Figure 6:11). The complete pipe came from Feature 45, a Late Woodland grave, and was a funerary object associated with the burial in that pit. It is a small platform pipe made of soapstone that measures 66 mm long by 29 mm wide by 7–10 mm thick at the base. The straight bowl, roughly sub-rectangular in shape and placed near the center of the platform, is 22 mm tall and 26–28 mm in diameter. The stem end (shown at right in Figure 6.11) is damaged. Two similar small platform



Figure 6.11. Stone pipe bowl from Feature 20 (top row), stone platform pipe from Feature 45 (bottom left and center), and stone gorget fragment from Trench 30 (bottom right).

pipes were recovered from culturally indeterminate contexts at Town Creek (Coe 1995:Figure 11.1c and e). A third platform pipe closely resembling the one from Ashe Ferry is also illustrated by Coe (1995:Figure 11.1f) and identified as being from the surface at Town Creek; however, other records in the Research Laboratories of Archaeology indicate that it was surface collected at site St 6, located below Falls Dam near the Doerschuk site. Both platform pipes and alate-stemmed pipes were reported by MacCord (1966; also see Irwin et al. 1999) from the McLean Mound (31Cd7) near Fayetteville, North Carolina (Figure 6.12). MacCord (1966:44) obtained a single radiocarbon date of A.D. 1030  $\pm$  130 for the mound but ascribed it to the Middle Woodland period. A pipe very similar in form to the Ashe Ferry specimen was recovered from the Late Woodland Gaston Site (31Hx7) on Roanoke River (South 2005:81–82). Unfortunately, it was recovered from an unknown context during mechanical stripping of the site.

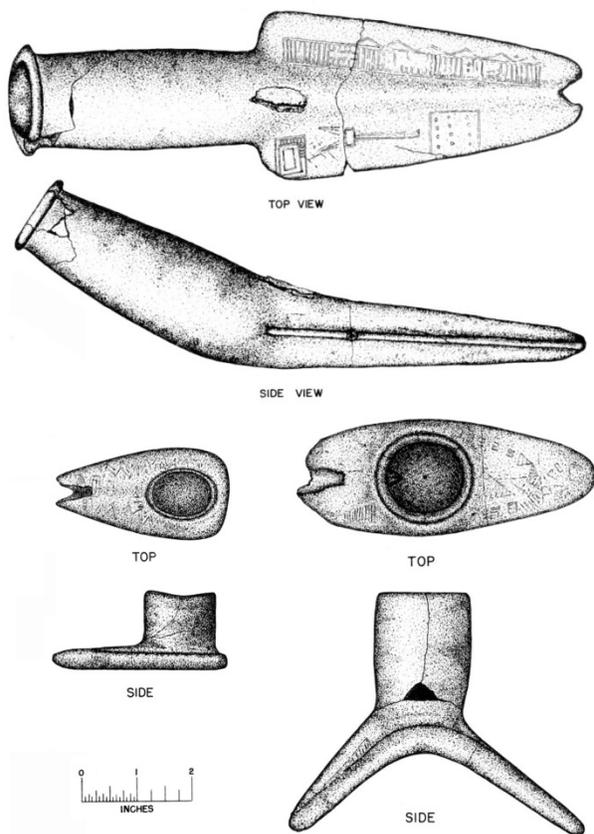


Figure 6.12. Examples of alate-stemmed (top) and monitor-style (bottom) platform pipes from the McLean Mound (from MacCord 1966:22-24).

### *Utilized Minerals*

Two examples of utilized minerals were recovered. The first is a fragment of worked talc that was found in the old plow zone of Square 874R849, located just east of Feature 22 within Trench 2. It is the mid-section of a ground and polished, tabular object with flat surfaces and squared edges. It measures 13 mm wide by 5 mm in thickness, and is 20 mm long between broken ends. Given its sharp edges and uniformly flat surfaces, this specimen appears to be

The other specimen from Ashe Ferry came from Feature 20 and is a re-worked soapstone pipe bowl. The circular bowl has a heavy, rectangular flange around the lip, and it was cut from the rest of the pipe by scoring, snapping, and grinding about 10 mm below the base of the flange. The bowl exterior below the flange also has been extensively ground. The flange edge measures 52x38 mm and has rounded corners. The interior pipe bowl is 21.5 mm in diameter, and the remaining portion of the bowl exterior is nearly square (31x30 mm). As illustrated by West (1934), such rectangular flanged pipe bowls are typically found on alate-stemmed pipes, in which the winged stems form flattened lenticular or diamond shaped platforms. The purpose for which this pipe fragment was reworked is unclear. The presence of this pipebowl fragment in an Ashe Ferry phase pit is consistent with the documented occurrence of alate-stemmed pipes in Late Woodland period contexts at the McLean Mound and Gaston sites.

machine-manufactured and not crafted by hand. It is similar in both size and shape to engineers' or welders' pencils and thus is attributed to the period of original highway bridge construction in the late 1950s.

The other utilized mineral came from a cache of chipped-stone, ground-stone, and antler artifacts at the top of Feature 75. It is an irregular lump of a unidentified micaceous mineral that appears to be heavily burned. It measures about 20–25 mm in diameter and may have been used as a source of black paint pigment; however, this specimen does not have any ground or faceted edges.

### **Fire-Cracked Rocks**

During the course of fieldwork, all fire-cracked rocks retrieved from dry-screening test unit and block excavation fill and from waterscreening feature fill was temporarily saved so it could be size-sorted, counted, and weighed. Size categories used to quantify fire-cracked rocks were as follows: 1/4 to 1/2 inches (6.35–12.7 mm), 1/2 to 1 inch (12.7–25.4 mm), 1 to 2 inches (25.4–50.8 mm), and >2 inches (>50.8 mm) in diameter. Specimens within the 1/4–1/2-inch category were counted and weighed from unit contexts and only weighed from feature contexts. Fire-cracked rocks observed during mechanized stripping of plowed soil were not collected. A total of 13,566 fire-cracked rocks and unbroken hearth stones weighing 243.643 kg were recovered from the site.

Fire-cracked rocks were ubiquitous at the Ashe Ferry site, but they were not uniformly distributed across the site (Tables 6.6 and 6.7). As indicated by their occurrence *in situ* within several archaeological features, they were used primarily to line the bottoms of large, shallow basins, interpreted as cooking/processing facilities, where they served as hearth stones to retain and radiate heat. Most of the fire-cracked rocks recovered from Ashe Ferry derive from these features, with the remainder representing scattered debris likely resulting from the aboriginal cleaning of those facilities and from their more recent disturbance by plowing.

Of the 51 archaeological features identified as being of cultural origin, all but two contained fire-cracked rock. The 16 features interpreted as cooking/processing facilities each contained 1.8–31.9 kg (mean = 11,986 g; s.d. = 10,584 g) of fire-cracked rock, while the remaining features contained significantly fewer specimens (8 g–9.4 kg; mean = 1,571 g; s.d. = 2,321 g). Half of the excavation units contained fewer than 270 g of fire-cracked rock, and more than 90% contained less than one kilogram of rock. Units containing the most fire-cracked rock were located either above or adjacent to rock-filled basins, concentrations of fire-cracked rock, or shallow basins interpreted as cooking/processing facilities (i.e., Features 15, 17, and 21). Substantial quantities of fire-broken rock also were recovered from the northern and eastern units in the Trench 2 Block, the western units within the Trench 10 Blocks, and from units overlying Features 76 and 81.

Most fire-cracked rocks represent water-worn, alluvial cobbles of quartzite and occasionally quartz, and the few unbroken specimens found range from about 50 mm to 75 mm in diameter (i.e., fist-sized) (Figure 6.13). Cobbles of similar size and composition were encountered in bedded deposits along the front edge of the pre-Holocene terrace where the Ayers Town site is situated, about 500–600 meters west of Ashe Ferry. These deposits represent a relict stream channel or gravel bar, and any soil erosion along the terrace edge would have exposed massive quantities of cobbles that could be readily collected.

Table 6.6. Distribution of Fire-Cracked Rock by Feature and Size Category.

Context	1/4-1/2"		1/2-1"		1-2"		>2"		Total	
	N	Wt (g)	N	Wt (g)	N	Wt (g)	N	Wt (g)	N	Wt (g)
Feature 1	-	-	1	4	2	55	1	165	4	224
Feature 11	-	47	21	145	24	1,379	10	2,628	55	4,199
Feature 12	-	17	20	117	26	1,811	22	5,473	68	7,418
Feature 13	-	1	1	5	7	476	17	5,118	25	5,600
Feature 15	-	37	17	111	30	1,933	32	5,659	79	7,740
Feature 16	-	88	66	374	28	1,398	5	751	99	2,611
Feature 17	-	118	58	297	44	1,910	11	1,487	113	3,812
Feature 19	-	5	7	45	5	219	-	-	12	269
Feature 20	-	23	15	88	9	476	1	173	25	760
Feature 21	-	258	104	555	146	8,742	101	22,059	351	31,614
Feature 22	-	9	24	112	23	1,024	3	611	50	1,756
Feature 25	-	206	126	724	107	6,127	39	10,661	272	17,718
Feature 28	-	101	30	170	17	506	6	654	53	1,431
Feature 32	-	6	2	5	2	117	-	-	4	128
Feature 35	-	20	4	16	-	-	-	-	4	36
Feature 40	-	56	-	-	-	-	-	-	-	56
Feature 41	-	-	-	-	1	75	-	-	1	75
Feature 42	-	6	-	-	1	23	-	-	1	29
Feature 43	-	20	7	38	2	38	-	-	9	96
Feature 44	-	23	4	15	2	45	3	1,025	9	1,108
Feature 45	-	35	14	59	6	237	1	493	21	824
Feature 46	-	241	124	694	40	2,338	20	3,100	184	6,373
Feature 47	-	54	33	161	68	5,022	30	5,718	131	10,955
Feature 48	-	51	12	53	7	478	4	551	23	1,133
Feature 49	-	-	3	26	-	-	-	-	3	26
Feature 50	-	127	10	53	2	89	7	3,766	19	4,035
Feature 51	-	9	3	37	11	716	11	2,723	25	3,485
Feature 52	-	122	25	121	10	520	7	2,429	42	3,192
Feature 53	-	72	34	221	67	4,965	25	4,256	126	9,514
Feature 55	-	2	-	-	-	-	7	2,013	7	2,015
Feature 56	-	12	-	-	1	23	14	9,342	15	9,377
Feature 57	-	5	1	18	4	335	12	4,949	17	5,307
Feature 58	-	9	2	5	-	-	-	-	2	14
Feature 59	-	2	-	-	1	28	10	6,260	11	6,290
Feature 60	-	8	2	8	-	-	-	-	2	16
Feature 61	-	41	7	35	11	273	8	1,546	26	1,895
Feature 63	-	12	1	8	-	-	-	-	1	20
Feature 65	-	38	15	215	10	266	1	337	26	856
Feature 66	-	8	4	21	3	61	-	-	7	90
Feature 67	-	15	1	6	2	56	8	3,287	11	3,364
Feature 69	-	16	-	-	2	153	1	867	3	1,036
Feature 72	-	5	-	-	1	31	-	-	1	36
Feature 73	-	9	-	-	-	-	-	-	-	9
Feature 74	-	132	96	583	367	26,808	20	4,344	483	31,867
Feature 75	-	8	-	-	1	55	-	-	1	63
Feature 76	-	89	22	122	14	497	9	2,815	45	3,523
Feature 77	-	354	226	1,486	263	17,426	44	9,307	533	28,573
Feature 78	-	128	56	272	152	9,854	49	12,813	257	23,067
Feature 79	-	8	-	-	-	-	-	-	-	8

Table 6.6 continued.

Context	1/4-1/2"		1/2-1"		1-2"		>2"		Total	
	N	Wt (g)	N	Wt (g)	N	Wt (g)	N	Wt (g)	N	Wt (g)
Units	5,958	5,188	2,868	15,225	1,326	52,908	276	48,793	10,428	122,114
Natural Disturbances	-	44	6	29	20	1,009	4	1,804	30	2,886
Total	5,958	7,885	4,072	22,279	2,865	150,502	819	187,977	13,714	368,643

Table 6.7. Fire-Cracked Rock Counts and Weights by Size Category for All Cultural Features.

Quantity	1/4-1/2"	1/2-1"	Size Category 1-2"	>2"	Total
Count					
Total	-	1,198	1,519	539	3,256
Percent	-	36.8	46.7	16.6	100.0
Weight (g)					
Total	2,653	7,025	96,585	137,380	243,643
Percent	1.1	2.9	39.6	56.4	100.0



Figure 6.13. Sample of fire-broken quartz and quartzite cobbles recovered from Feature 47, a Late Woodland cooking/processing facility.

## **Clay Artifacts**

Thirteen clay pipe fragments, a pottery disk, and an unidentified fired-clay object were recovered during the 2010 investigations at 38YK533 (Figure 6.14). All but one of the clay pipe fragments and the fired-clay object are made of coarse potter's clay similar to that used to produce Late Woodland Ashe Ferry phase pottery. Three conjoining pipe rim fragments from stripping Trench 9 and rim fragments from Feature 19, Feature 43, and Square 830R911 represent crudely formed, thick, conical pipe bowls; another fragment from Square 770R932 may also be part of a conical pipe bowl. Unfortunately, none of these specimens is large enough to determine overall pipe form. One pipe stem fragment from Square 850R870, made with finer-grained clay and fired to reddish brown, has a squared cross-section reminiscent of mid-eighteenth-century Catawba-made pipes found at Nassaw-Weyapee (Fitts et al. 2007:22); however, it also is too small to ascertain overall pipe form. Five conjoining ceramic pipe fragments from Square 769R931 within the Trench 15 Block form a pipe bowl displaying the zoomorphic representation of an animal face, with eyes and mouth, on the distal edge of the bowl rim. The snout area is abraded and worn away. These fragments appears to derive from a thick-walled, conical or obtuse-angled elbow pipe.

An unidentified fired-clay object, recovered from Square 770R950, may also be an effigy fragment, but is too incomplete for positive identification. Square 752R956 yielded a roughly circular disk made from a burnished Mississippian potsherd with abraded edges. It measures 30 mm by 33 mm in diameter and is 9 mm thick. Pottery disks are common on Mississippian sites in the Carolina Piedmont, including Town Creek where more than 1,100, interpreted as gaming pieces, were recovered (Coe 1995:227).

## **Daub and Fired Clay**

Eight hundred and eighty-two fragments of fired clay were recovered (Figure 6.15). Most of these exhibit stick or twig impressions and are interpreted as architectural daub; however, seven specimens lack these characteristics and may represent remnants of clay hearths or simply burned clay. A single fragment from a fired mud dauber's nest also was recovered.

Two hundred and sixty-seven specimens were recovered from 81 test excavation units. Because of the method of recovery (i.e., dry-screening through 1/4-inch mesh), specimens from units were larger, with an average weight of 0.7 g, than those recovered from 1/16-inch waterscreened feature fill. Slightly higher concentrations of daub were observed in several units within the Trench 2 Block and the Trench 10 Block; other units containing small quantities of daub were widely distributed across the remainder of the site.

A total of 610 pieces of daub, four fired clay fragments, and a mud dauber's nest were recovered from 33 features representing Middle Woodland (n=1), Late Woodland (n=25), Mississippian (n=3), and indeterminate occupations (n=4). These specimens, on average, were half the size of those from unit excavations; however, they were better preserved and provide the best evidence, in terms of clearly visible stick impressions, that they represent architectural remains. While daub was recovered from all classes of features, almost 80% (by count and weight) came from four Late Woodland pits (Features 20, 28, 52, and 76), a Late Woodland fire-cracked rock concentration (Feature 77), a Late Woodland basin (Feature 19), and a Mississippian basin (Feature 41). Feature 41 produced the most daub (n=244, 78.8 g) as well as the single preserved mud dauber's nest.

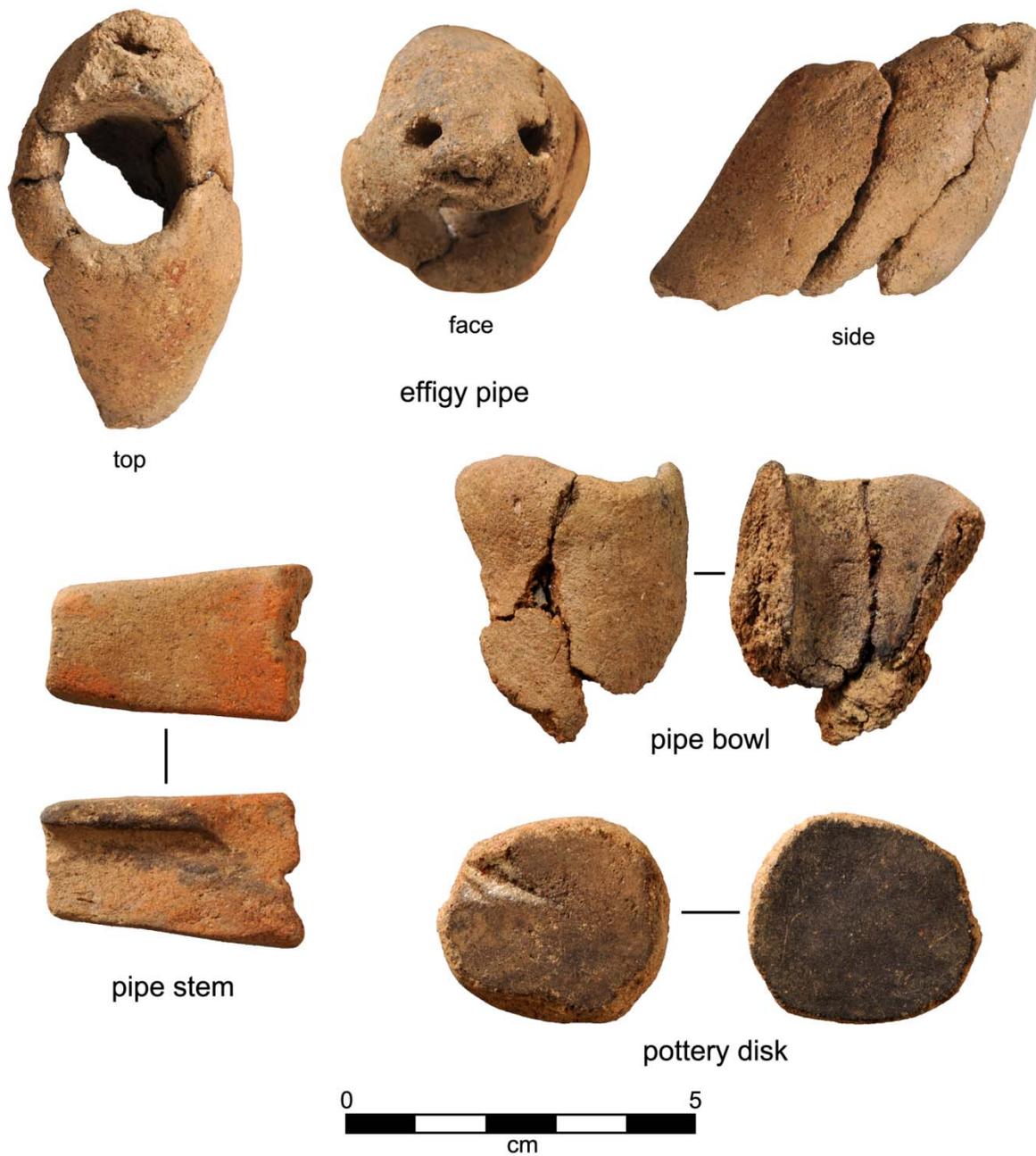


Figure 6.14. Clay pipe fragments and pottery disk from the Ashe Ferry site.



Figure 6.15. Fragments of architectural daub and mud dauber's nest from Feature 41 (top), and section of a charred wooden shaft from Feature 28 (bottom).

### **Wooden Artifact**

Feature 28, an Ashe Ferry phase pit at the south edge of the site, yielded a single charred wooden artifact. This completely carbonized wooden shaft (consisting of two conjoining fragments) measures 67 mm in length and approximately 19 mm by 16 mm in diameter, and it is oval in cross section (Figure 6.15). Fine, longitudinal striations are evident on the exterior surface, indicating that it was intentionally modified and not simply a charred stick. Although native Carolinians undoubtedly made extensive use of wood, cane, bark, and fibers in constructing tools and shelters, such artifacts are rarely preserved on archaeological sites in the southeastern United States. The function of this particular artifact is not known.

### **Modern Artifacts**

In addition to the talc object described above and interpreted as a probable marking pencil, 50 other objects were recovered that can be attributed to historic and modern times (i.e., nineteenth century and more recent). These artifacts are the products of various activities, including hunting, bridge and road construction, highway littering, and perhaps limited domestic activity. It is somewhat surprising that more modern artifacts were not recovered during systematic excavation, as several objects were tossed onto the site by passing cars and trucks during the course of fieldwork. All historic and modern artifacts were recovered from the humus or plowed soil and include: an aluminum pull tab (discarded); a lead wheel weight (discarded); two fragments of lead solder; a .22 cal. steel cartridge shell; an impacted .22 cal. lead bullet; a

small caliber lead ball; a small brass button; a small iron disk; an iron nut; seven wire nails (discarded); five cut nails; three iron strap fragments; three iron wire fragments; five other iron fragments; a Coca-Cola bottle fragment (discarded); 12 other bottle glass fragments; three alkaline-glazed potsherds; and a piece of coal.

## Chapter 7

### Subsistence Remains

The 2010 investigations at the Ashe Ferry site recovered substantial quantities of plant and animal remains from discrete deposits in feature contexts. Analysis of these plant and animal remains documents the subsistence practices and other resource uses by site inhabitants during the Ashe Ferry and Early Brown phase occupations, and provides the primary data sets for characterization of site function. The following presentation and discussion of these analyses frames the case for multi-function seasonal site occupations during the Ashe Ferry and Early Brown phases, with special emphases on arboreal nut gathering and processing.

The vast majority of archaeobotanical and archaeofaunal remains recovered from the Ashe Ferry site represent disposal or abandonment of fuel or food residues that reflect the subsistence and firewood-selection practices of the site's inhabitants. Carbonized botanical remains from 38YK533 include 291 samples (12.3kg) recovered from discrete deposits within 69 cultural features and 18 other subplowzone contexts. Ninety-nine of these botanical samples were recovered by flotation processing of soil samples; 167 samples were obtained from soils waterscreen sorted through 1/16-inch mesh, and 28 botanical samples were hand recovered during excavation, and include nine samples retained for radiocarbon assay. Analysis of archaeobotanical materials examined a subsample of 563g of plant remains recovered by flotation from 16 discrete features that exhibited the greatest density and diversity of food residues (as opposed to wood charcoal). These samples are dominated by arboreal nuts, including acorns, hickory nuts, walnuts and chestnuts. Other foodstuffs include fleshy fruits (i.e., blueberry, blackberry, maypops, mulberry, grape, plum, and persimmon), starchy and oily seeds (i.e., bearsfoot, chenopod, knotweed, little barley, maygrass, and sunflower), and maize.

Soil conditions at 38YK533 apparently compromised preservation of archaeofaunal remains, and the assemblage of animal bones includes only 183.6g of material (including 357 identifiable specimens) recovered from 31 features and 49 non-feature contexts (buried plowzone/remnant A-horizon). Only three contexts (Features 20, 41, and 46) yielded more than 20 identifiable specimens. With the exception of the few samples found in the plow zone, all animal bones not individually excavated and bagged during feature excavation were recovered by waterscreening or flotation. Analysis of archaeofaunal remains from Ashe Ferry considered all recovered specimens, but defined only six taxa (white-tailed deer, domestic dog, wild turkey, eastern box turtle, stinkpot turtle, and bullhead catfish) to specific level. These results indicate use of both terrestrial and aquatic species, but offer little information about the breadth or focus of hunting activities at 38YK533, and are most reflective of the extent of taphonomic process due to chemical weathering and leaching of soluble minerals (e.g., calcium) in loose, sandy acidic soils.

Archaeobotanical specialists Ashley A. Peles and Dr. C. Margaret Scarry undertook analysis of plant remains from Ashe Ferry, and archaeofaunal specialist Dr. Thomas R. Whyte analyzed the animal remains from the site. Their discussions of analysis and findings concerning subsistence residues from 38YK533 follow.

Plant Remains from the Ashe Ferry Site (38YK533),  
A Multi-Component Site In York County, South Carolina  
*by: Ashley A. Peles and C. Margaret Scarry*

## **Introduction**

Archaeobotanical samples from the Ashe Ferry site (38YK533) present an opportunity to explore subsistence practices during a little known and poorly documented span of the Woodland period in the Piedmont region of the Carolinas. Because there are few (if any) precedent studies for Late Woodland period plant use in the central Piedmont, this study must rely on a wider regional context of plant use to situate the Ashe Ferry assemblage. Thus, the Woodland period in the Southeast is most broadly viewed as a time of elaboration of Late Archaic period trends, including increasing evidence for storage technology, widespread trade networks, more sedentary land use patterns, and the earliest indication of plant domestication (Gremillion 2003).. During both the Late Archaic and Woodland periods, husbandry was based on small grains, oily seeds, cucurbits, and greens in interior riverine areas. During the Middle Woodland period, people intensified the cultivation of starchy grains and larger oily achenes, including chenopod, maygrass, knotweed, little barley, sumpweed, and sunflower (Fritz 1993; Yarnell 1993). As the first clear evidence of year-round habitation is found during this period, it is perhaps unsurprising that some groups adopted farming economies based on native weedy cultigens (Gremillion 2003). The archaeobotanical record for the Middle and Late Woodland periods also evinces small quantities of maize, a MesoAmerican cultigen. However, isotopic analyses of human skeletal materials indicate that maize did not become a dietary staple until the Mississippian period (Johannessen 1993; Scarry 2003). While there was considerable temporal and regional variation in people's reliance on gathered and cultivated plants, arboreal nuts were important constituents in virtually all southeastern subsistence economies.

## **Methods and Materials**

The 2010 investigations at 38YK533 recovered 291 catalogued botanical samples (12.3kg) from a wide variety of contexts. This analysis focuses on a subset of 32 samples derived from 16 discrete feature contexts, 12 of which are directly dated by AMS assay (Table 7.1; Figure 7.1). This subsample was specifically selected to reflect those contexts that contained the densest and most diverse arrays of food remains, and to represent the two feature types, deep storage pits and rock ovens, that predominate among documented facilities. Thirty of these botanical samples were recovered in the field from measured samples of feature matrix soils by flotation with a modified SMAP machine (conducted under direction of Mary Beth Fitts, UNC-CH). Sample extraction using the modified SMAP flotation tank utilized 1/32-inch mesh screens to catch the heavy fractions, while the light fractions were collected in cheese cloth bags and hung to dry. Once dry, the samples were bagged in polyethelene, labeled, and stored for future analysis. Light fractions from the selected features were submitted to the archaeobotanical laboratory at the Research Laboratories of Archaeology at the University of North Carolina, Chapel Hill for analysis. In addition to these flotation extracted samples, the analysis included one sample (2553eb2023) separated from waterscreened soils.

The 32 analyzed samples from the Ashe Ferry site (30 light fractions and 2 other samples) derived from approximately 451 liters of feature soil and weighed 3670.46 grams. Because the samples from seven features were particularly large (and apparently redundant in content), a

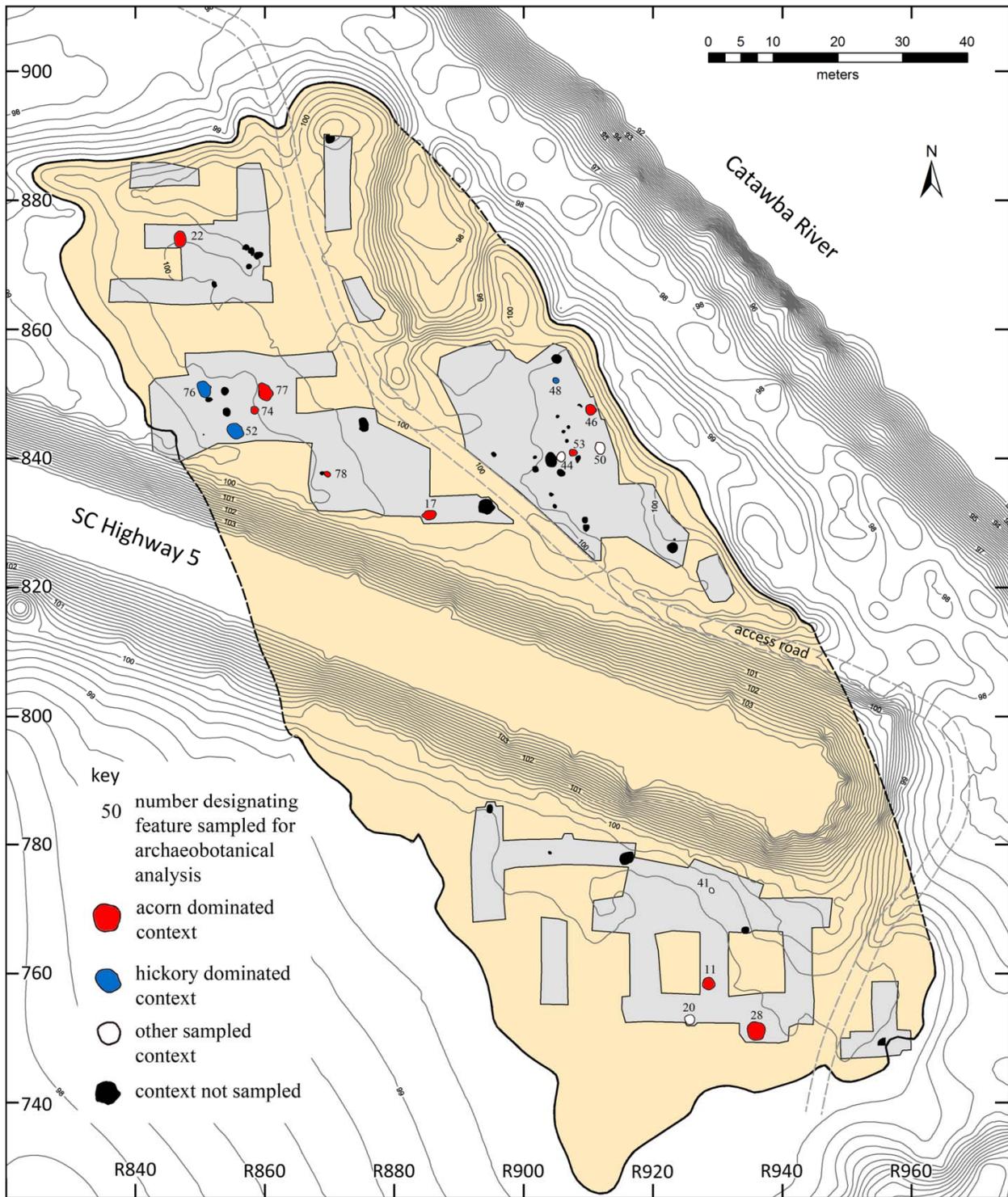


Figure 7.1. Plan of 38YK533 excavations indicating contexts sampled for archaeobotanical analysis.

riffle sorter was used to divide the samples into roughly equal portions of more manageable size, with each bag most commonly representing 1/16<sup>th</sup> of the sample. The aim was to scan roughly ¼ of the material from these contexts; 1125.37 grams (subsamped from the 3670.46g total) were ultimately analyzed. Sorting and macrobotanical analysis of these 1125.37 grams resulted in the recovery of 40,618 plant remains weighing a total of 358.63 grams, as well as 272.30 grams of wood charcoal. The remainder (494.44g) consisted of modern rootlets, sand, clay pellets and other detritus.

After subsampling and removal of detritus, analysis of plant material from the Ashe Ferry Site followed standard, widely accepted archeobotanical procedures. Light fractions were weighed and passed through a graded series of geological sieves (2 mm, 1.41 mm, .71 mm) to facilitate sorting. Plant materials greater than 2mm in size were sorted, identified, and quantified. All materials in the smaller sieve sizes were scanned; due to the large amounts of nutshell recovered in the 2mm sieve, only seeds were removed, identified, and weighed from the smaller sieves.

Identifications of seeds and non-wood plant material were made to the lowest taxonomic level possible. Primary characteristics used to classify materials were size, shape, and surface characteristics. Identifications were made through reference to pictorial seed manuals (e.g. Martin and Barkley 1961) and, when possible, confirmed by reference to a modern comparative collection. Material from nine features was partially sorted and analyzed in an archaeobotanical lab class conducted by C. Margaret Scarry. Ashley Peles sorted the remaining samples and made most identifications, and checked material analyzed by the class. C. Margaret Scarry identified or confirmed identifications of particularly difficult or unusual specimens. Unidentified plants were grouped into three categories: unidentified seed, unidentifiable seed, and unidentifiable. Remains categorized as unidentified seed are those for which taxonomic identifications were not determined. Unidentifiable seeds are fragments of or damaged seeds that lack the diagnostic characteristics necessary for identification. The “unidentifiable” category includes amorphous plant material that does not appear to be wood, but which lacks other diagnostic characteristics.

All nutshell fragments, seeds, and other plant remains are quantified by absolute count and weight; no attempt was made to estimate the actual number of nuts or seeds in the samples. Summary results of the analysis are presented in Tables 7.1-7.3 and Appendix F4; counts shown in each table are the numbers of specimens of each taxon. Table 7.1 lists the contexts from which the flotation samples were collected, providing information about the types of features, the number of soil samples and volume in liters for those samples, as well as the weight of plant and wood remains recovered. Plant weight is reported as the sum of wood remains in the greater than 2 mm fraction plus the weight of seed and nut remains from the sample. Table 7.2 provides the common and taxonomic names of the plants identified, indicates the seasonality of edible plants, and lists the number of specimens recovered from each category. Because the majority of plant remains recovered was acorn and hickory, Table 7.3 shows the distribution of those remains by feature. Appendix F4 presents analysis summaries of individual samples.

## **Results**

Identification of specimens in the archaeobotanical samples from 38YK533 revealed that almost 98% (n=39796) of the non-wood plant remains recovered are nutshells or nutmeat; of the remaining 822 plant remains, 557 are pitch/pine sap, leaving only 265 charred crop seeds, fruit seeds, and other seeds in the sample (<1%). Such unevenness is particularly driven by the samples from Features 11, 17, 22, 46, 53, 74, 77, and 78, which yielded very high proportions of

Table 7.1. Flotation samples examined for botanical remains from the Ashe Ferry site.

Feature #	Feature Type	Phase Association	Soil Samples Analyzed	Liters Collected	Plant Weight (g)	Wood Weight (g)
11	storage pit	Ashe Ferry	1725	37.0	14.91	13.67
17	roasting facility	Ashe Ferry	1810	33.0	18.60	4.32
20	storage pit	Ashe Ferry	1885	21.5	5.84	5.78
22	roasting facility	Ashe Ferry.	1925	30.5	11.77	3.00
28	storage pit	Ashe Ferry	1978, 2001, 2018	129.0	74.12	48.45
41	shallow basin	Early Brown	2149	12.0	1.09	0.55
44	shallow basin	Ashe Ferry	2199, 2207, 2213, 2222	29.5	16.00	15.34
46	shallow basin	Ashe Ferry A.D.	2275	8.5	10.72	2.19
48	storage pit	Ashe Ferry	2299, 2320, 2313, 2333	31.5	13.75	11.15
50	basin (hearth?)	Ashe Ferry	2356	8.0	6.09	5.22
52	storage pit	Ashe Ferry	2414, 2417, 2429	9.5+	166.84	94.20
53	roasting facility	Early Brown	2448	7.5	10.74	3.97
74	roasting facility	Ashe Ferry	2711, 2727	21.0	22.77	5.56
76	storage pit	Early Brown & Ashe Ferry	275, 2771	8.5+	86.52	17.24
77	roasting facility	Ashe Ferry	2799, 2809, 2834	11.5	43.02	8.08
78	roasting facility	Early Brown	2844, 2850, 2855	52.5	59.94	28.48

acorn nutshell, and include approximately 96% of the total acorn shell recovered. With the exception of Feature 11 (a deep storage pit), these contexts with high acorn shell components are rock filled roasting facilities (Figures 7.2, 7.3). Another large deep pit (Feature 28) produced 70% of the acorn nutmeats from the site; many of these nutmeats were whole and none showed obvious weevil damage (in contrast to nutmeats recovered from rock ovens). The Feature 28 nutmeats include multiple acorn varieties, and a complete charred persimmon fruit was found mixed in with the nutmeats. Feature 28 deposits also yielded a flat stone with nutting depressions.

By contrast to the acorn-rich contexts, Features 52 and 76 exhibited very high proportions of hickory nutshell, while Features 44, 48, and 50 all have slightly elevated levels of hickory nutshell; these five features contain about 95% of the total hickory nutshell recovered. Each of these large, deep pits included very small quantities of acorn shell and few or no acorn meats.

Table 7.2. Plant taxa represented in analyzed samples from 38YK533.

Common Name	Taxon	Type	Count	Weight
<b>Nuts</b>				
Acorn	<i>Quercus</i> sp.	nutshell	24352	111.09
Acorn	<i>Quercus</i> sp.	nutmeat	2052	89.09
Hickory	<i>Carya</i> sp.	nutshell	13355	148.71
Hickory	<i>Carya</i> sp. cf.	husk frag	1	<0.01
Chestnut	<i>Castanea</i> sp.	nutshell	1	0.01
Walnut	<i>Juglans nigra</i>	nutshell	35	1.24
<b>Fruits</b>				
Blueberry	<i>Vaccinium</i> sp.	seed	2	<0.01
Bramble	<i>Rubus</i> sp.	seed frag	1	<0.01
Grape	<i>Vitis</i> sp.	seed	72	0.05
Maypop	<i>Passiflora incarnata</i>	seed frag	15	<0.01
Mulberry	<i>Morus rubra</i>	seed	1	<0.01
Persimmon	<i>Diospyros virginiana</i>	fruit	1	3.11
Persimmon	<i>Diospyros virginiana</i>	fruit frag	3	0.29
Persimmon	<i>Diospyros virginiana</i>	seed	24	0.60
Plum	<i>Prunus</i> sp.	seed frag	1	0.03
Plum/Cherry	<i>Prunus</i> sp. cf.	seed frag	2	0.01
Fruit skin cf.			1	<0.01
<b>Starchy and Oily Seeds</b>				
Bearsfoot	<i>Smallanthus uvedalis</i>	seed frag	5	0.01
Chenopod	<i>Chenopodium</i> sp.	seed	1	<0.01
Knotweed	<i>Polygonum</i> sp.	seed	3	<0.01
Little Barley	<i>Hordeum pusillum</i>	seed	4	0.01
Maygrass	<i>Phalaris caroliniana</i>	seed	11	<0.01
Sunflower	<i>Helianthus annus</i> cf.	seed frag	1	<0.01
<b>Crops</b>				
Maize	<i>Zea mays</i>	cupule	7	0.01
Maize	<i>Zea mays</i>	kernel	4	.03
<b>Miscellaneous</b>				
Flatsedge	<i>Cyprus</i> sp.	seed	1	<0.01
Holly	<i>Ilex</i> sp. cf.	seed	1	<0.01
Holly	<i>Ilex</i> sp.	seed	1	<0.01

Table 7.2. (continued).

Common Name	Taxon	Type	Count	Weight
Legume	Fabaceae	seed frag	1	<0.01
Pokeweed	<i>Phytolacca</i> sp.	seed frag	3	<0.01
Purslane	<i>Portulaca</i> sp.	seed	34	<0.01
Sedge	Scirpus/Carex	seed	1	<0.01
Sedge	Cyperaceae	seed	2	<0.01
Spurge	Euphorbiaceae	seed	11	<0.01
St. Johnswort	Hypericum sp. cf.	seed	1	<0.01
Weedy legume	Weedy legume	seed	2	<0.01
Grass Node	Poaceae		1	<0.01
Pine	<i>Pinus</i> sp.	cone frag	1	0.04
Pine	<i>Pinus</i> sp.	cone/scale	41	0.14
Pitch	Pitch		515	4.08
Unidentified seed		seed/seed frag	4	<0.01
Unidentifiable seed		seed/seed frag	6	<0.01
Unidentifiable			37	0.08

Table 7.3. Nut remains by feature from Ashe Ferry site.

Feature	Feature Type	Acorn	Acorn Meat	Hickory	Total
11	Large Circular Pit	218	21	17	256
17	Rock Oven	3115	19	26	3160
20	Large Circular Pit	8	0	1	9
22	Rock Oven	1945	43	35	2023
28	Large Circular Pit	266	1317	56	1639
41	Ovoid Basin	22	0	15	37
44	Ovoid Basin	8	1	56	65
46	Ovoid Basin	1509	14	164	1687
48	Ovoid Pit	14	0	183	197
50	Large Oval Pit	5	0	77	82
52	Large Oval Pit	463	8	7858	8329
53	Rock Oven	1386	52	64	1502
74	Rock Oven	3166	53	115	3334
76	Large Oval Pit	74	1	4378	4453
77	Rock Oven	7143	126	237	7506
78	Rock Oven	5010	397	74	5481
<b>Totals</b>		<b>24352</b>	<b>2052</b>	<b>13356</b>	<b>39760</b>

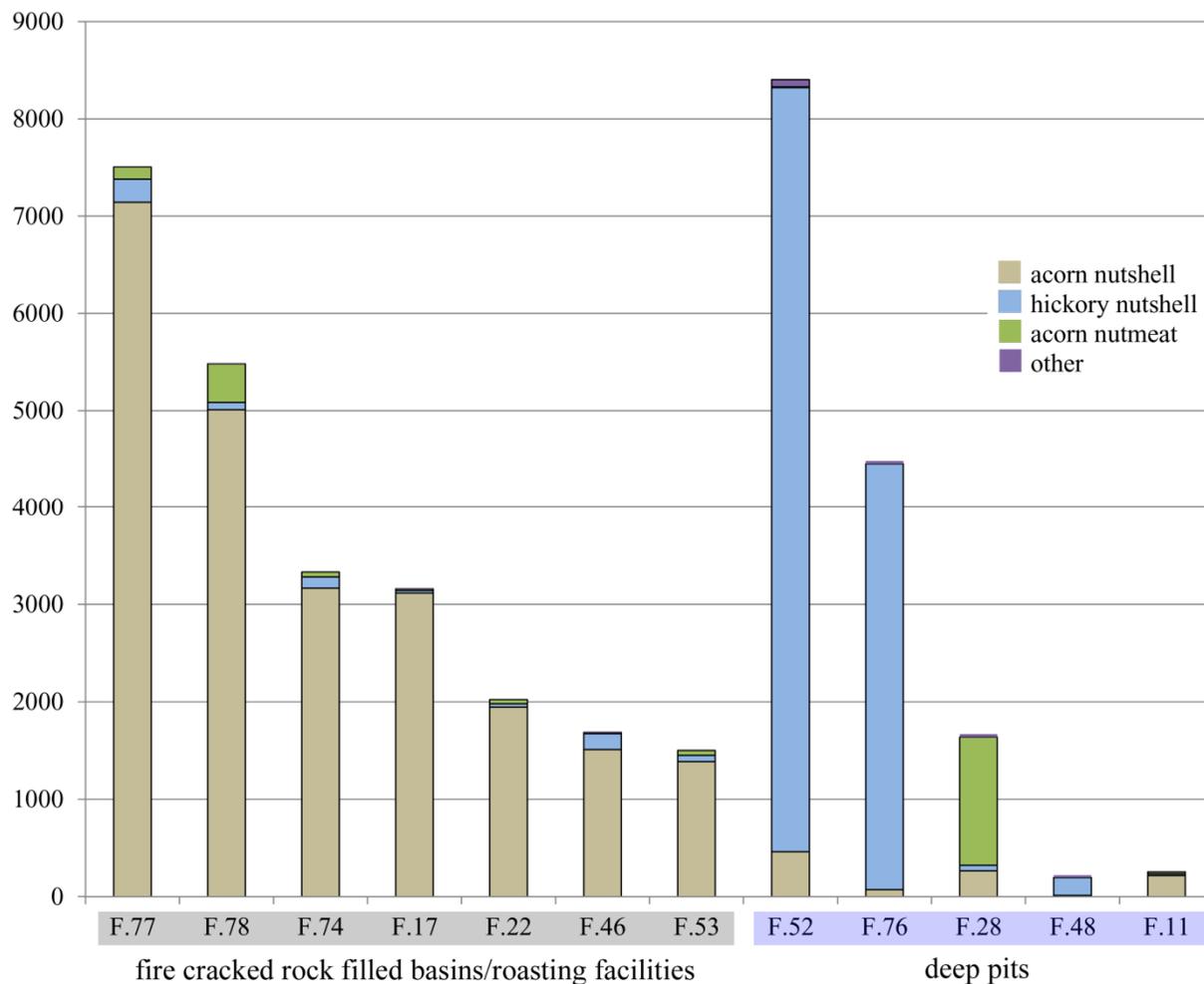


Figure 7.2. Chart illustrating differential distribution of plant food residues (by count in subsample) in roasting facilities vs. deep pits. Samples displayed include >200 identified specimens.

Differential distributions of acorn nutshell, acorn nutmeat, and hickory nutshell appear to map specifically onto feature type, and the disposal modes associated with particular feature types (see Chapter 4 discussion). Rock-filled roasting facilities, which yielded the vast majority of acorn nutshell fragments, appear to have been abandoned without subsequent trash disposal, and nutshell fragments represent *de facto* residues from primary facility function (i.e., roasting acorns). By contrast, the burned nutshells and nutmeats recovered from storage pits likely do not reflect primary stored contents, but rather secondarily disposed refuse deposited after the original stored foods had been removed. Significantly, patterns of nut fragment distribution appear stable throughout the primary occupations of the site, that is, complementary distributions of acorn nutshell, acorn nutmeat, and hickory nutshell in roasting facilities and pits are evident in both Ashe Ferry phase and Early Brown phase components. In addition, the spatial distributions of these feature types (and their associated contents) exhibit continuity across the Ashe Ferry phase and Early Brown phase components (see Chapter 4). Roasting facilities tend to be located in a linear pattern along the terrace backslope parallel to the terrace crest, while deep pits tend to be situated in finer grained sediments farther down the backslope.

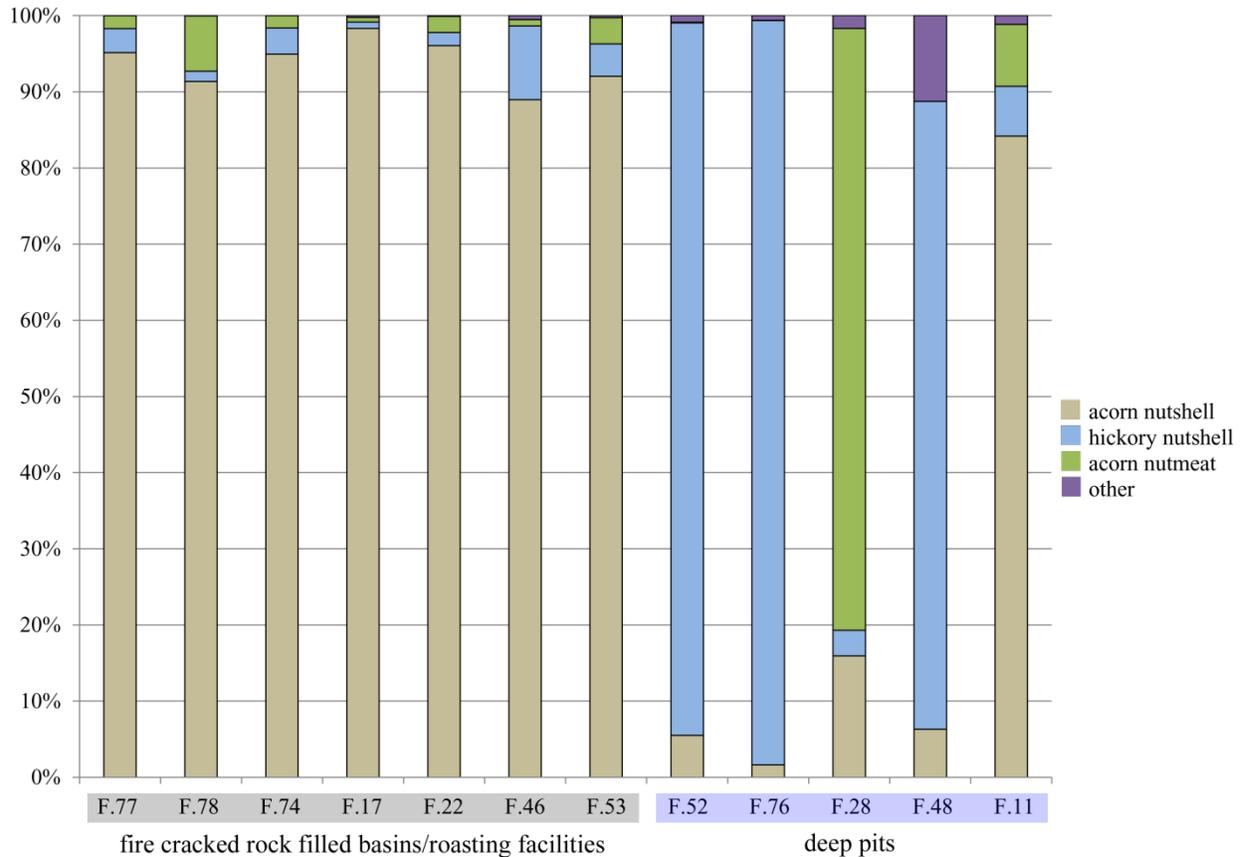


Figure 7.3. Chart illustrating differential distribution of plant food residues (percentage of identified specimens) in roasting facilities vs. deep pits. Samples displayed include >200 identified specimens.

Other food remains, such as fruit seeds and seeds of cultivated crops, exhibit no obvious spatial or temporal patterning, and appear to be evenly distributed across feature types. The relatively low incidence of these foodstuffs in all contexts, in contrast to the extremely high incidence of arboreal nut remains, is most consistent with interpretation of site occupations as largely seasonal, short term encampments focused on specific resource extraction. The plant remains point to use of the camp as a base for gathering, processing, and perhaps storing nuts, especially acorns. These were likely primarily women's activities; men accompanying the women may have fished or hunted deer and other animals attracted to the fall mast.

### *Feature Assemblages*

#### Feature 11

Feature 11, an Ashe Ferry phase storage pit (AMS date, ca. A.D. 1030) with multiple zones of fill, included a single basal stratum interpreted as an intentionally dumped deposit (Zone C). This zone contained dense charcoal inclusions, as well as moderate amounts of potsherds and fire-cracked rock, a point and debitage, as well as a possible milling stone fragment. Thirty-seven liters of soil collected from Zone C yielded a botanical sample of 131.74g; this light fraction was subsampled and 35.39g of the sample was analyzed. Acorn shell (n=218) and acorn

nutmeat (n=21) were the predominant materials recovered from this subsample (although not in numbers as large as in other features), with a smaller amount of hickory (n=17) and a low incidence of other plant material (persimmon, blueberry, pine/pitch).

#### Feature 17

Feature 17, an Ashe Ferry phase rock oven/roasting facility, contained 60 fire-cracked rocks but relatively few artifacts. The cluster of fire-cracked rock within the feature basin is interpreted as the disturbed remains of a roasting facility that was largely cleaned out after firing. Thirty-three liters of soil collected from Zone A yielded an archaeobotanical sample of 79.67g; this light fraction was subsampled, and approximately 22.6g of the material was ultimately analyzed. The Feature 17 subsample contained large quantities of acorn nutshell (n=3115), with much smaller amounts of acorn nutmeat (n=19) and hickory nutshell (n=26), as well as a small amount of maygrass (n=6), a maize cupule, and pitch.

#### Feature 20

Feature 20 was a large Ashe Ferry phase pit with two distinct depositional zones. Zone A included the majority of debris, which included animal bone, daub, flakes, fire-cracked rock, shell, potsherds, and a re-worked stone pipe bowl. Zone B had fewer artifacts, but contained isolated human skeletal material that may have been incidental to redeposited soils dumped into the base of Feature 20. Soil samples (21.5 liters) taken from Zone A yielded on 23.94g of botanical material for analysis. This scant sample included fragments of acorn nutshell, hickory nutshell, knotweed, purslane, mulberry, and pitch/pine.

#### Feature 22

Feature 22, an early Ashe Ferry phase roasting facility, was a large, shallow basin with sparse fire-cracked rock and artifact content. AMS assay of carbonized nutshell from this facility yielded multiple widely aberrant dates (4300-900 years BP) that were inconsistent with the context and assignment to the early Ashe Ferry phase is based upon inclusions of Ashe Ferry Simple Stamped sherds and Cape Fear Fabric Impressed sherds (a combination not observed in other well dated Ashe Ferry phase contexts). A 30.5l soil sample from Zone A produced approximately 173.5g of flotation separated plant remains; 36.79g of this sample was included in the analysis. This subsample proved replete with acorn nutshell (1945 fragments; 52.87 acorn nutshell/gram), and included smaller amounts of acorn nutmeat (n=43) and hickory nutshell (n=35), as well as a very small amount of chenopod, little barley, purslane, spurge, and pitch.

#### Feature 28

Feature 28 was a large, late Ashe Ferry phase (AMS dated ca. A.D. 1160) pit that yielded numerous charred acorn nutmeats. Feature matrix Zones A and C included masses of charred mast that may represent separate disposal events, or may simply reflect separate lenses of “over-roasted” nuts differentiated within a single depositional episode. Approximately 68.5 liters of Zone A soils yielded 346g of botanical material; one-third of which was analyzed. This sample is dominated by acorn nutmeats (n=501; 4.74 nutmeat/gram), with much smaller amounts of acorn (n=120; 1.28/gram) and hickory nutshell (n=37; 0.45/gram); small amounts of walnut shell, persimmon, grape, and pine/pitch were also present.

Sixty liters of soil from Zone C produced a flotation extracted botanical sample of 162.36g. This sample was subdivided in the laboratory, to effect a one-fourth subsample for analysis.

This subsample proved even more heavily dominated by charred acorn nutmeats (n=816; 14.49/gram), again with lesser amounts of acorn nutshell (n=289; 3.35/gram) and hickory nutshell (n=21; 0.30/gram). The only other identifiable plant remains from Zone C were persimmon seeds. In addition to the flotation sample from Zone C, investigators hand recovered a bagful of carbonized mast from this stratum. The hand recovered sample (72.98g) contained 279 nutmeats, many of which were complete halves; differing morphologies among these nutmeats indicate the presence of two or more species of acorns. Mixed in with the nutmeats was a complete charred persimmon fruit.

#### Feature 41

Feature 41, a small truncated storage pit, dates to the Middle Mississippian period Early Brown phase. An AMS derived date of 630±30 yrs BP for Feature 41 is calibrated to 2  $\sigma$  range of AD 1280-1400, with calibrated curve intercepts of A.D. 1300, A.D. 1360, and A.D. 1380. Flotation processing of twelve liters of soil from Feature 41 produced a sample of 50.06g approximately half of which was analyzed; after cleaning, this sample yielded 1.64g of archaeobotanical material. Both acorn (n=22) and hickory (n=15) nutshell were identified in the subsample, as well as a maize cupule and pitch fragments.

#### Feature 44

Feature 44, a shallow basin associated with Ashe Ferry phase site occupations, contained relatively sparse refuse deposits with low archaeobotanical content. Analysis of samples from this context aimed to determine whether the archaeobotanical profiles of low density contexts differed substantially from those of obvious high density contexts. Flotation processing of 29 liters of soil from Feature 44 produced 37.6g of light fraction; sorting reduced this to 29.5g of archaeobotanical material. Analysis of this sample revealed small amounts of acorn (n=8) and hickory (n=56) nutshell and pitch. Other minor constituents of this sample include walnut shell, purslane and spurge.

#### Feature 46

Feature 46 was a shallow ovoid basin with two layers of fill, an upper zone with Early Brown phase and Ashe Ferry phase ceramic sherds, and a lower zone that contained only Ashe Ferry ceramic sherds. AMS assay of carbonized material from the lower zone produced a radiocarbon date of 1000±30 yrs BP (2 $\sigma$  ranges [calibrated], AD 990–1140, A.D. 1100–1120, A.D. 1140–1150), indicating an Ashe Ferry phase aged deposit. An 8.5 liter flotation sample taken from Zone A (a presumed Early Brown phase deposit) produced large quantities of acorn nutshell (n=1509; 57.66/gram). Other plant materials recovered included acorn nutmeat, hickory and walnut shell, bramble, maygrass, sunflower, and pitch.

#### Feature 48

Feature 48 was a late Ashe Ferry phase (AMS 910±30 yrs BP; 2 $\sigma$  range [calibrated], A.D. 1030–1210) storage pit situated on the terrace crest in the main residential area of the site. A total of 14.5 liters of soil were collected and processed from Zone A; this fill did not contain a large amount of material, with hickory nutshell (n=183) being the most prevalent plant material recovered. Smaller amounts of acorn nutshell (n=14) were also recovered, along with a number of grape (n=21), maypop, maygrass, spurge, purslane, sedge and pitch remains.

### Feature 50

Feature 50 (AMS 1000±30 yrs BP; 2σ ranges [calibrated], A.D. 990–1140, A.D. 1100–1120), a probable hearth, was a large shallow basin with two smaller pits (Zones A and B) that may have been sconces for ceramic vessels used for cooking or food processing. One of these smaller pits included two large, vertical sections of an Ashe Ferry Simple Stamped jar (approximately one third of the vessel) that rested above quartz cobbles. Analysis of the flotation extracted botanical sample associated with this vessel section identified hickory nutshell (n=77; 4.14/gram), as well as acorn nutshell (n=5), little barley (n=2), maize cupules (n=3), sedge, purlane, and pine/pitch.

### Feature 52

Feature 52 was a large Ashe Ferry phase pit (AMS 970±30 yrs BP; 2σ range [calibrated], A.D. 1010–1160), probably used for storage or food processing before abandonment and filling. Flotation processing and waterscreen sorting of Feature 52 soils recovered 1342.1g grams of material. This sample was subsampled for analysis, and 347.91g were subject to identification. Hickory nutshell (n=7857; 22.59/gram) was the primary archaeobotanical constituent in this context, along with a moderate amount of acorn nutshell (n=463; 1.33/gram), as well as acorn nutmeat, walnut shell, grape, maypop, persimmon, bearsfoot, little barley, maize kernels, flatsedge, holly, knotweed, and pitch. Feature 52 produced 61% (n=43) of the grape seeds and 87% (n=13) of the maypops seeds identified from the site.

### Feature 53

Feature 53 was a roasting facility filled with fire-cracked rock that included both Ashe Ferry phase and Early Brown phase materials (associated AMS dates: 1010±40 yrs BP, 920±30 yrs BP). A 7.5 liter soil sample from this context produced a botanical sample of 24.38g, and revealed an assemblage dominated by acorn nutshell (n=1386; 56.85/gram). Other plant materials identified in this sample include acorn nutmeat (n=52), hickory nutshell (n=64), grape (n=2), a maize cupule and a maize kernel fragment.

### Feature 74

Feature 74, an Ashe Ferry phase fire-cracked rock filled roasting facility, produced archaeobotanical samples of 84.5g from flotation processing of 21 liters of soil. These samples included 3166 acorn nutshell fragments (38.74 fragments/gram), 53 acorn nutmeat fragments, 115 hickory nutshell fragments, as well as bramble (e.g. blackberry), bearsfoot, maygrass, purslane, spurge, and St. Johnswort seeds.

### Feature 76

Feature 76 was a large storage pit that included both Ashe Ferry phase and Early Brown phase deposits. Radiocarbon dates for the Early Brown phase deposit indicates an early thirteenth century date (AMS 840±30 yrs BP; 2σ range [calibrated], A.D. 1160–1260). Hand recovery and flotation extraction obtained archaeobotanical samples totaling 1481.38g of materials from this feature. Analysis focused on the Early Brown phase deposits (Zones 1 and 2), which yielded 487.88g of botanical materials. Identifications from a subsample of 141.25g of plant remains revealed an assemblage dominated by hickory nutshell fragments (n=4378; 34.35 hickory nutshells/gram) with far lesser amounts of acorn nutshell (n=74), acorn nutmeat and

walnut nutshell (n=15). Seeds from these deposits include grape, maypops, persimmon, plum/cherry, holly, pokeweed, and purslane.

#### Feature 77

Feature 77 was a fire-cracked rock filled roasting facility associated with Late Woodland Ashe Ferry phase site occupations (AMS 1040±30 yrs BP; 2σ range [calibrated], A.D. 970–1030). Thirty-five liters of soil from Feature 77 produced botanical samples totaling 178.41g, of which 104.7g were analyzed. The subsample was dominated by acorn nutshell (n=7143; 68.22/gram), along with acorn nutmeat (n=126), and hickory nutshell (n=237). The subsample also contained a maize cupule, along with bearsfoot, purslane, and spurge seeds.

#### Feature 78

Feature 78, a fire-cracked rock filled pit, appears to have been a more formal cooking facility than other rock ovens or roasting facilities documented at 38YK522. Ceramic sherd associations and derived radiocarbon dates (AMS 750±30 yrs BP; 2σ range [calibrated], A.D. 1230–1290) indicate use of the facility during the Early Brown phase. Flotation processing of 52.5 liters of feature soil recovered 551.45g of plant material, of which a 101.08g subsample was selected for analysis. This subsample consisted mainly of acorn nutshell (n=5010; 35.49/gram), along with acorn nutmeat (n=397), and hickory nutshell (n=74). Also present were walnut nutshell (n=1), a plum pit fragment, a maize kernel, a spurge seed, and carbonized pitch.

### **Discussion of Plant Remains from 38YK533**

The analysis of archaeobotanical samples from the Ashe Ferry site identified exceptionally high frequencies and relative proportions of acorn remains (n=26,404 specimens) and hickory nut remains (n=13,356 specimens); these nut fragments account for more than 99% of identified specimens by count and more than 98% by weight. Other food species (e.g., maize, grape, walnut, persimmon, maypops, blackberry, maygrass, knotweed, little barley, bearsfoot, pokeweed, blueberry, holly, plum/cherry, amaranth, chestnut, chenopod, legume, morning glory, mulberry, plum, sunflower) appear in trace quantities and illustrate possible dietary breadth, but the assemblage as a whole clearly indicates a specialized activity focused on the gathering, processing and storage of nuts. Therefore, the following discussion emphasizes the role of arboreal seeds/nuts in pre-Columbian diets, and examines ethnographic data for activities that produce nut residues comparable to those documented at 38YK533.

#### *Nuts*

The vast majority of identified plant remains from the Ashe Ferry site are fragments of acorns (*Quercus* sp.) and hickory nuts (*Carya* sp.). Most of these are nutshell fragments, although smaller amounts of acorn nutmeat were found in a number of features, and one feature (Feature 28) contained masses of acorn nutmeat. In most instances (with the exception of the Feature 28 sample), acorn nutmeats included fragments with weevil damage, a possible reason for their discard. Both hickory and acorn are common taxa found throughout Eastern Woodlands sites; insofar as we know, nuts were the most important wild plant foods for most Native American peoples of this region. Small amounts of black walnut (*Juglans nigra*) and one fragment of chestnut (*Castanea* sp.) were recovered as well.

Acorns dominate the overall assemblage, with both nutmeat and nutshell fragments recovered from most of the analyzed features. Acorns are well documented in the southeastern archaeological record, and appear to have been a major food source for southeastern native

peoples throughout much of the Holocene epic (Hollenbach 2009; Messener 2011; Scarry 2003). Various types of these arboreal seeds are plentiful across many southeastern environmental settings, and constitute a lynchpin of southern hardwood forest ecology as the mainstay mast crop for a wide range of mammals, birds, and insects.

Acorns are a particularly good source of carbohydrates (55%), and exhibit relatively high fat content (10%-30%), but low protein content (7%) (USDA 2013). In terms of nutritional values, they compare favorably to pre-modern cultivated grains such as maize and wheat, and returns for time/labor investments for acorn procurement and processing appear comparable to those of cultivated grains produced in pre-modern horticultural regimes.

Balanophagy (acorn diet) by humans is a world-wide phenomenon, and is well documented in North America, Europe, southwest Asia and east Asia (Mason 1992; Mason and Nesbitt 2009), with human use ranging from dietary staple to famine exigency food. Balanophagy and the human ecologies related to acorn use are particularly well documented for historic-era native populations of central California, where acorns constituted a crop-like staple food (Barrett and Gifford 1933; Basgall 1987; Driver 1952; Meyer 1976; McCarthy 1993; Ortiz 1991). Studies of acorn use by native peoples of California provide analogic models for much of the following discussion of acorn gathering, processing, storage and consumption by the Ashe Ferry phase and Early Brown phase inhabitants of 38YK533.

Although specific acorn types represented at 38YK533 are not identified, multiple species (with potentially different processing requirements) are clearly represented. Oaks (*Quercus* sp.) are divided into two broad superspecific/subgeneric groups, white and red, of which red oak acorns require special processing to remove tannic acid. Depending on the species, oaks produce heavy mast in cycles that vary from two to three years. The cycles result from a combination of genetic control and weather conditions in such a way that entire regions are on the same cycle. Acorns ripen over a period of several weeks; red oak acorns begin to ripen in late August in the Carolinas, while white oak acorns ripen and fall in September. The acorns must be collected quickly when they fall; the nuts are favored by many animals and delay in harvesting can mean a significant loss of acorn mast to deer, turkey, squirrels, bears and other mast foraging species. To reduce such loss of fallen acorns to ground-feeding animals, human collectors often use poles to knock nuts from branches to concentrate acorns for immediate collection (Mason and Nesbitt 2009; Ortiz 1991). Immediate (rather than delayed) collection also secures acorns from germination, mold and insect damage. Experienced gatherers select sound nuts in the field, and judge acorns by heft, texture of the shell, and the presence of holes discarding those that are moldy or weevily (Anderson 2005).

Once collected, acorns can be processed immediately for consumption, or may be prepared for storage. Drying is essential if people intend to store acorns (Messner 2011), but even those nuts that are going to be eaten immediately are dried to facilitate cracking. From an optimal foraging perspective, Bettinger et al. (2007) argue that drying reduces weight and hence transport costs and therefore should be expected to take place at the collection site even when groves are close to home. California native women dried unshelled acorns in the sun by spreading them out in a single layer on mats or fabric, periodically turning or stirring the nuts to promote even drying (Ortiz 1991). During this drying process, spoiled or infested nuts were culled and discarded. Ethnohistoric accounts from the Southeast indicate that acorns were parched on mats or in shallow baskets on hurdles over a low fire, a process that dried acorns, prevented sprouting, killed insect infestations, and reduced mold problems (Kupperman 1988).

After they are sundried or parched, nuts intended for storage must be kept dry and protected from rodents. Colonial accounts from the Southeast report that acorns were stored in baskets within homes and in “hovels”, which we interpret as granaries (Lederer 1672, Lawson 1709). While there are no references to storage pits in the ethnohistoric literature for the southeastern United States, pit storage of acorns is well documented in the Northeast, the Great Lakes region, and the Northwest Coast (Dunham 2009; Heath 1963; Mathews 2009).

Native Californians typically stored acorns in their shells (Ortiz 1991). Similar practices may have been present in the Southeast, but there is archaeological evidence that acorns were frequently (de)shelled before storage. Hollenbach (2009) reports that over 5000 charred nutmeats with minimal associated shell were recovered from the Stanfield-Worley rockshelter in Alabama. More telling is the Turner site in Missouri, where sizeable quantities of stored foods were charred (and thus, preserved) when the village burned. Five of the Turner houses had large stores of shelled acorn meats (Scarry nd). The length of time people expected to keep their nuts may have been the determining factor in whether they stored their acorn harvest in the shell or husked. The shelf-life of acorns is longer if they are stored unshelled; thus, people may have shelled nuts they planned to use soon and left those they intended for long term storage unshelled.

All acorns must be shelled and the thin skin that encases the meat must be removed before human consumption. Acorns can be shelled using a mortar and handstone to crack the nuts or by using a knife or flake to slice through the shell. The skin around the nutmeat can be removed by hand rubbing and winnowing or the skin can be peeled off with a sharp implement (Jackson 1991; Ortiz 1991).

Bitter acorns from the red oak group must also be leached or have their tannins reduced by other means. There are a variety of techniques for extracting tannins; which one a cook employs may depend on how the nuts will be prepared. If acorn flour is to be made into bread or porridge, the meats are pulverized using a rock or wooden mortar and pestle. The flour can then be leached by repeated rinsing in water—cold is preferred because hot water extracts oil as well as tannins. In California, women made shallow sand basins to leach their flour. Shelled meats may also be leached by placing them in bags or baskets in flowing water. If nutmeats are to be added to soups or stews, the tannins can be extracted by boiling the meats for half a day, changing the water several times during the process. An alternative to such prolonged boiling is to neutralize the tannins by adding ashes or lye when the nutmeats are cooked (Kupperman 1988; Jackson 1991; Ortiz 1991; Messner 2011).

Ethnohistoric accounts of southeastern native peoples indicate use of acorn flour, addition of acorn nutmeats to stews, roasting of whole acorns for direct consumption, and extraction of acorn oils or acorn butter (Gardner 1997; Lawson 1709; Waselkov and Braund 1995). Sweet (i.e., white oak) acorns did not require much (or any) processing to remove tannins, and could be roasted and eaten after peeling. Acorn oil extraction probably used oilier, but bitter, red oak acorns that were first leached with cold water rinses to remove tannins without flushing oils. Because acorns are relatively low in fats (i.e., 14%–25%), rendering acorn oil or production of acorn butter was a time consuming process (Petruso and Wickens 1984; Scarry 2003).

California native women often shelled, peeled, leached and cooked acorns as they were needed or kept batches of nuts at various stages of processing. (Jackson 1991). This spreads out the work load and results in smaller quantities of acorn shell being discarded at any one time. Such on demand processing, however, forfeits efficiencies of scale that can be obtained by processing larger batches than are needed for immediate use. In the Southeast, small quantities

of acorn shells are common constituents of many archaeobotanical samples but features with large amounts of shell or meat are also found (Scarry 2003 and references therein). This suggests people employed both on-demand and large-batch processing depending on scheduling and processing needs.

Acorn remains recovered from contexts at 38YK533 likely represent multiple processing steps. Nutshell fragments are primarily concentrated in fire-cracked rock filled roasting facilities, and appear to be *de facto* residues from roasting acorns in these facilities. When moisture in parching acorns reaches the boiling point, released steam frequently causes the shells (particularly those of sound acorns) to crack or pop, and detach fragments of shell that might be charred *in situ*. Relatively low temperatures ( $\approx 250^{\circ}$ – $350^{\circ}$ F) on the surfaces of these facilities would have promoted charring rather than complete combustion of acorn shell. By contrast, burned acorn nutmeat fragments are concentrated in large, deep pits in trash-filled deposits. These nutmeats appear to represent secondary discard deposits, materials charred in hearths (or on roasting facilities), then transported with hearth debris and dumped into abandoned storage pits.

Within the same family as oaks are chestnuts, of which there are two varieties: the American chestnut (*Castanea dentata*.) and chinquapin (*Castanea pumila*). Until the chestnut blight in the early 20<sup>th</sup> century, chestnut trees were distributed throughout the piedmont areas of the Southeast. Chestnuts ripen in the fall, when the prickly burs split open and release the nuts. Unlike acorn, hickory, and walnut, chestnuts produce a reliable mast crop every year. The nuts are thin shelled and sweet, and were prized by humans and animals alike. Like acorns, chestnuts are primarily a source of carbohydrates, with relatively low fat and protein contents. Processing and cooking of chestnuts appears to have followed along the same lines as sweet acorns, with consumption encompassing a large range of possibilities: eaten raw, pounded and boiled, and ground for meal to make bread. Despite the fact that chestnuts appear to have been quite important ethnohistorically, the relative fragility of their husks has meant that there is very little archaeobotanical evidence for their importance (Scarry 2003). The single instance of chestnut shell at 38YK533 is unique in central and eastern South Carolina, and illustrates the presence (but not importance) of this resource.

Hickory (*Carya* sp.) nutshells (n=13,356) are the second most abundant identified plant remains at the Ashe Ferry site, and are present in all analyzed samples. The carbonized stony shells are robust, and typically survive at much higher rates than other archaeobotanical remains. Hickory nuts are ubiquitous in the southeastern archaeological record, and clearly constituted an important food resource for southeastern native peoples throughout much of the Holocene epic (Hollenbach 2009; Scarry 2003). Hickory nuts are a particularly good source of fats (64%) and moderate amounts of protein (13%), but lack certain critical amino acids (Talalay et al. 1984:343, 350). Hickory nuts are a relatively poor source of carbohydrates (18%) and dietary pairing with acorns has a complementary effect (Scarry 2003:60, 66; USDA 2013).

Hickory trees are typically found in groves in mixed hardwood forests, and are often co-dominant with oaks (Braun 1950). Four hickory species (shagbark, mockernut, big shellbark, and sand) were likely most important to native peoples in the South Carolina piedmont (Scarry 2003:57, 60). Shagbark hickory (*Carya ovata*) is more commonly found on upland slopes and in rich woods. It is the fastest growing of the hickories and is resistant to insects and disease, but is susceptible to fire. Mockernut hickory (*Carya tomentosa*) is found mainly on ridge and hillside sites and less commonly on alluvial bottoms, and is very susceptible to fire and insect damage. Shellbark hickory (*Carya laciniosa*) favors fertile, moist soil, and is usually found on the alluvial

floodplains of major streams. This species is susceptible to insects and frost damage. Sand hickory (*Carya pallida*) is found in dry, sandy soil, often mixed with pines on upland slopes (Talalay et al. 1984:338-339).

In view of the dietary and economic importance of hickory nuts, native populations may have managed nut groves by girdling undesirable trees to thin the canopy and burning undergrowth to kill saplings and create open woodland. Such management practice would have increased nut production and lessened competition from squirrels (Fritz et al. 2001:5). In experiments done by Talalay et al. (1984), shagbark hickories in open growth areas averaged 9.5 pounds of nuts per tree in a season, compared to 2.2 pounds of nuts per tree in closed canopy forest.

Hickory nut production is cyclical and varies according to weather conditions. Hickory trees typically produce heavy crops every two to three years, with lighter crops in between. Trees within a grove are usually on the same cycle. Hickory nuts ripen in the fall, and are fully mature in October in the Carolinas. When the nuts are ripe, the outer husks dry and split open, releasing the nuts onto the forest floor. Predicting hickory mast production and scheduling collection to take best advantage of an abundant crop is particularly important due to competition by other mast consuming animals (Scarry 2003:60).

The maximum fall of hickory nuts is near the end of October, about one to two weeks after the first killing frost, although the collecting period extends into late November (Talalay et al. 1984:341-342, 344-345). Due to competition with other animals, people have to harvest hickory trees within a week or two after the nuts drop. As long as the nuts are quickly gathered, it is fairly easy to rapidly amass a large amount (Scarry 2003:60); experiments indicate that shagbark hickory nuts can be collected at a rate of about 11.0 lbs of dry nuts per hour, while mockernut hickory nuts can be collected at a rate of roughly 6.1 lbs per hour.

Hickory nuts can be collected in bulk and stored for later use; as long as they are dry and protected from rodents, the unshelled nuts keep for extended periods of time. Rendered hickory oil, in solid form (*kenuche*), has a much shorter storage lifespan (Scarry 2003:61). Hickory nuts have smooth, dense stony shells that are notoriously tough to crack. Because convoluted hickory nutmeats are difficult to remove from their shells, any large scale consumption necessitates mass processing techniques. Ethnohistoric descriptions from the southeastern United States indicate that hickory nuts were mainly collected and processed for oil or hickory milk (Scarry 2003:60-61). The first stage of nut processing was extraction, which was typically effected by placing individual nuts on a large, flat stone anvil and cracking them with a smaller, handheld hammerstone. If the nut is hit correctly, it splits in half, facilitating kernel extraction with a knife or nutpick. To aid in this process the nuts are first dried, causing the nutmeats to pull away from the shell (Talalay et al. 1984:351-352). Even with drying, pieces of the nutshell will remain in the kernel, and the amount of nutmeat procured for such an effort is not very high.

Mass processing of nuts for hickory oil or milk, without regard for condition of the nutmeats is a much easier and quicker process. Simultaneous cracking (and crushing) of multiple nuts using large wooden mortars and pestles sped extraction. After hand removal of larger fragments of crushed nutshell, hickory nutmeats and attached nutshell were further pulverized into a meal-like consistency (similar to cornmeal) (Fritz et al. 2001:11-13). This hickory meal can then be consumed directly; the nutmeat, composed of fat and protein, would dissolve in the mouth, and most nutshell fragments could be spit out (Talalay et al. 1984:354).

Further processing (in lieu of immediate consumption) might involve production of *kenuche*, hickory oil, or hickory milk. *Kenuche*, a mixture of semi-rendered hickory nut fats with hickory

meal and residual nutshell that can be formed into hardened cakes or *kenuche* balls and stored for later use. *Kenuche*, which present-day Oklahoma Cherokees still produce, is typically used as an ingredient for soups or stews. To produce *kenuche*, the hickory meal is pounded until the fats begin to release and the mixture can be formed into a ball that keeps fresh for several days (Fritz et al. 2001). Because the hickory meal is immediately formed into a ball, small pieces of hickory shell are still present. To cook, the *kenuche* balls are placed in a vessel and boiling water is poured over them, with the mixture stirred constantly. This causes the proteins and fats from the nutmeat to combine with the water to form a milky broth; the remaining nutshells sink to the bottom (Fritz et al. 2001).

If hickory oil or milk was the desired product, hickory meal was further processed with either cold water or boiling water to extract oils. In the simplest method, cold water is added to the hickory meal, agitated, then decanted and strained to produce “milk.” The second method was similar, but involves boiling the mixture before skimming or decanting the oil. The boiling technique has a much higher yield than attempting to pick the meats out by hand; the product of 1000 grams of crushed nuts can be boiled off in ten minutes (Talalay et al. 1984). Pulverized nuts or hickory meal are added to slowly boiling water, and the bulk of the oily portion of meats eventually separate and rise to the surface, to be skimmed off. The nutmeats dissolve into a milky emulsion in the water, the fluid of which can be poured through a strainer to remove the nutshell. The rendered oil (hickory butter) can be stored for later use, while the “milk” can be drunk or used as stock.

Black walnuts (*Juglans nigra*), a relative of hickories, are present in small numbers (35 shell fragments) in the 38YK533 samples. These bottomland trees typically grow singly or in low density groves, and produce abundant nut crops on two-three year cycles. Compared to the other edible nuts, walnuts are the best source of protein (24%), as well as being high in fats (59%) and low in carbohydrates (10%) (Talalay et al. 1984). Most southeastern ethnohistoric accounts indicate the nutmeats were eaten as a treat, or added to grain dishes or cakes (Talalay et al. 1984:354). Extracting black walnut oil is difficult because the tannin-filled husk adheres to the rugose shell, preventing mass processing in the same fashion as hickory nuts (Scarry 2003; Talalay et al. 1984). Therefore, black walnuts were likely processed by cracking individual nuts, and manually extracting nutmeats. The relative paucity of walnut shell at 38YK533 likely reflects both low densities of black walnut in the local environment and the difficulties in processing this high quality, but low yield food

### *Fruits*

Fleshy fruits are represented in low numbers in the 38YK533 archaeobotanical assemblage. They do not appear to have been major dietary components for the occupants of the Ashe Ferry site, but fruit may have added variety to the diet or contributed to the native pharmacopeia (Williams 2000). Fleshy fruits can be eaten raw, added to stews and soups, or added to composite foods such as pemmican. They can also be dried and stored for winter use, with some, notably persimmon, being made into bread (Scarry 2003).

Fruit seeds recovered from the Ashe Ferry site include blueberry (*Vaccinium* sp.), blackberry (*Rubus* sp.) grape (*Vitis* spp.), maypops (*Passiflora incarnata*), mulberry (*Morus rubra*), persimmon (*Diospyros virginiana*) and plum (*Prunus* sp.). These fruits thrive in areas of human disturbance, and were probably available in the immediate environs of the Ashe Ferry site. Most of these fruits are available for collection throughout the growing season, except persimmons, which ripen in the fall (Scarry 2003). All of these fleshy fruits are low in proteins, and fats, but

may have contributed essential vitamins and minerals to native diets. In addition, blueberries and grapes have numerous medicinal uses (Moerman 2003), including tannic properties of the leaves effective in treating diarrhea, thrush, and kidney problems (Williams 2000). The bark and unripe fruits of persimmon are also used in medical preparations to treat sore throats, toothaches, stomachaches, and diarrhea (Williams 2000).

### *Starchy and Oily Seeds*

Six species of starchy or oily seeds were recovered from the Ashe Ferry site, although in very small numbers. Chenopod (*Chenopodium* sp.), knotweed (*Polygonum* sp.), little barley (*Hordeum pusillum*), and maygrass (*Phalaris caroliniana*) are considered starchy seeds (primarily sources of carbohydrates), while bearsfoot (*Smallanthus uvedalius*) and sunflower (*Helianthus annuus*) are considered oily seeds (good sources of protein and fat). None of these (with the possible exception of sunflower) appear to represent cultigens; the chenopod most closely resembles wild forms. Many plants that produce starchy and oily seeds colonize open ground, are abundant seed producers, and in favorable conditions may grow in relatively pure stands, producing large quantities of easily collected seeds. Bearsfoot, chenopod, knotweed, and sunflower all ripen from late summer into the fall. Maygrass and little barley ripen in spring, and may have been important sources of carbohydrates during a typically “lean” season. Smith and Cowan (2003) suggest that these wild grains may have been cultivars, if not domesticates, that lack distinguishing morphological changes from wild forms.

In general, grains were first parched, then used in stews or “gruels,” or ground into meal that could be added to stews or made into bread. Oily seeds were also consumed in similar ways, although sometimes they were first removed from their woody pericarps. While the uses of the seeds of these plants are most often enumerated, chenopod and knotweed leaves are edible and are good sources of vitamins and minerals (Scarry 2003; Moerman 2003).

### *Cultigens*

Maize is the only definite cultigen identified in the Ashe Ferry site samples. Seven maize cupules and three kernel fragments are distributed among Ashe Ferry phase and Early Brown phase contexts; associated AMS dates indicate maize was present as early as ca. A.D. 1000. The incidence of maize on this time horizon is consistent with evidence from across the Eastern Woodland, where maize appears sporadically after circa A.D. 200, but does not appear consistently or in quantity until circa A.D. 900 (Scarry 2003). Explanations for this temporal pattern are varied; researchers have posited that early maize may have been restricted to ceremonial contexts, that it may have been harvested green and eaten uncooked, or that it may have remained a minor crop because it involved such a large labor investment (Smith and Cowan 2003). The early development of Mississippian cultural patterns in the southeastern United States is typically marked by the intensification of maize farming in both the interior and lower southeast regions. Late Woodland pattern societies beyond the Mississippian pale (e.g., Uwharrie phase, Dan River phase) apparently took up substantial maize horticulture by A.D. 1100.

The cupule and kernel fragments recovered at 38YK533 are too fragmentary for varietal identification. The low incidence of maize at 38YK533 is consistent with interpretation of the site as a special purpose, seasonal camp where activities focused on collection, processing, and consumption of nuts. Maize may represent provisioning supplies brought to the camp from residential/farming bases and used to augment arboreal seeds or as a carbohydrate bridge until

nut processing created an abundant food supply. The presence of maize in both Ashe Ferry phase and Early Brown phase contexts clearly indicates the incorporation of this cultigen in these terminal Woodland period and early Middle Mississippian period subsistence economies, but the relative paucity of maize in these contexts does not speak to its relative importance in these systems.

#### *Miscellaneous Taxa*

A residual miscellaneous category includes 78% of the non-nut material identified in the Ashe Ferry assemblage. A large number of the plant remains in this category were related to pine trees, comprising both cone fragments, scales, and pitch (n=545). Pine trees are a common part of woodland habitats, and it is likely that these remains were carbonized as partially combusted fuels. A grass node (Poaceae family), sedge seeds (n=4), and a legume fragment (Fabaceae family) were likely accidental hearth inclusions, and probably reflect vegetation cover in the immediate environs of the site.

Other miscellaneous plant remains may represent similar accidental inclusions, but derive from plants with known uses documented in southeastern ethnohistoric and ethnographic records. For instance, two holly (*Ilex* sp.; not yaupon) seeds may reflect any number of medicinal applications for *Ilex*, including use as dermatological aids, eye drops, antidiarrheals, and cathartic emetics (Williams 2000). Pokeweed (*Phytolacca* sp.), represented by three charred seed fragments, is an aggressive colonizer of disturbed ground. Young poke leaves can be cooked as a spring green, and the dark purple berries are edible (after cooking) and can be used as a source of dye or ink. The berries and roots are also used medicinally as internal or external antirheumatics. Poke root preparations can be applied to ulcers, swellings, bunions, and other skin related ailments. Depending on the preparation, application, and dosage, pokeweed can be used as both an antidiarrheal and cathartic agent (Williams 2000).

Thirty-four purslane (*Portulaca* sp.) seeds from the site represent a weedy plant that rapidly invades waste areas. The fleshy parts of purslane are edible, and medicinally it was used to sooth wounds and quiet gastrointestinal problems. Similarly, eleven spurge seeds (4 *Euphorbia* sp. and 7 Euphorbiaceae family) were found. Spurges can be used as oral aids, purgatives, dermatological aids, and cough medicines (Williams 2000).

One likely *Hypericum* sp. seed was found, the most common species of which is known as St. Johnswort. Unlike many other plants, this is only known to have medicinal usages, including as febrifuges, cough medicine, kidney aids, and for multiple reproductive and gynecological problems (Williams 2000).

#### **Conclusions**

Analysis of archaeobotanical samples from the Ashe Ferry site reveals assemblages of foodstuffs heavily (almost exclusively) dominated by arboreal nut remains, with markedly low incidence of cultigens, edible seeds and fruits. This skewed pattern is evident in all of the samples, regardless of context type or age, an indication of continuity in specialized subsistence behaviors at the site across almost three centuries of occupation. These focal botanical patterns differentiate the Ashe Ferry assemblages from the more diffuse assemblages of Woodland and Mississippian period residential bases in the surrounding region (e.g., Aulbach-Smith 1984; Crites 2001; Gardner 1985, 1986; Hollenbach 2010a, 2010b). This large, but narrowly focused assemblage, when considered with the limited suite of facilities identified at Ashe Ferry and the patterned distribution of botanical remains associated with those facilities, presents a case for

interpretation of the site as a specialized “acorn camp” (mast processing station) during the Ashe Ferry and Early Brown phase occupations.

From this interpretive perspective, some reconstruction of the activities that generated the archaeobotanical residues at Ashe Ferry can be hypothesized. For instance, evidence of *in situ* burning in shallow, fire-crack rock filled basins, and the strong association of charred acorn nutshell fragments with these features is consistent with their hypothesized use as acorn roasting facilities. Such mass roasting or parching of acorns to cook nuts for immediate use or to dry acorns for further processing and storage is congruent with ethnohistoric accounts of acorn processing in the Southeast, Northeast, Midwest, and California (e.g., Converse 1908, Densmore 1928, Harriot 2007[1590], Heathy 1963; Lederer 1672; Lawson 1709; Ortiz 1991; Petrusco and Wickens 1984; Smith 1923; Tantaquidgeon 1972). In this process, unshelled acorns may have been spread on hurdles over heated rocks (see Harriot 2007), or simply heated directly in beds of ashes and embers above heated rocks. Acorn roasters would closely monitor this process, and regularly stir the nuts to make sure they dried evenly and did not scorch. The shells of sound, intact acorns popped or cracked open from escaping steam, while insect damaged acorns vented steam through worm holes, and did not pop. As they tended the drying nuts, acorn processors culled and discarded nuts with insect damage; if these discarded spoiled nuts were tossed in the fire, the low heat appropriate for parching would create favorable conditions for carbonization. If parched nuts were shelled before they were stored, people tending the rock ovens might work on cracking nuts from a roasted batch while another batch was parching, and consign the empty shells and worm infested meats to the fire.

The parched, shelled sweet acorns might be used directly or stored without further processing. Shelled bitter acorns required leaching of tannins to be edible. California natives often performed this task by grinding the shelled acorns to meal, then placing the meal in shallow basins dug into sand, and pouring repeated washes of cold (or sometimes heated) water through the meal (Chestnut 1902:336; Goddard 1903:28; Ortiz 1991). Flushed tannins quickly percolated from the meal through the sandy matrix. Ortiz (1991) indicates this procedure was typically undertaken streamside, where sandy matrices and abundant fresh water were immediately available. The very sandy, well sorted matrix at 38YK533 is ideal for the leaching process, and proximity to the Catawba River guarantees a ready water supply.

Various ethnographic sources also allude to less active methods for leaching acorn tannins. In some cases, bagged shelled acorns were placed into flowing water and left for several days to facilitate tannin flushing. In other instances, shelled or unshelled acorns were buried for longer periods in large pits, where tannin leaching was accomplished by percolation of precipitation through the soil (Gifford 1936, Gunther 1973; Harper 1971; Moerman 2002). On the Northwest Coast, Mathews (2009) has documented archaeological examples of acorn filled pits in zones of freshwater tidal fluctuation. Longer term pit-based leaching of acorns is also documented in Jomon period contexts in Japan (Habu 2004: 64-68) and Kuahuquio culture contexts in the Yangzi River Valley of China (Underhill 2013:543).

The large, deep pits at Ashe Ferry might have served a similar function in acorn processing, in which longer-term subterranean caching of shelled nuts promoted leaching of tannins via percolation of precipitation or fluctuation of groundwater. These deep pit facilities are situated on the terrace backslope at 38YK533, where the finer grained, slightly silty sand matrix has sufficient cohesion and structural integrity to support pit walls. These sediments, while highly permeable, do not drain as rapidly as the sands on the terrace crest, and may have been better suited to slower leaching through repeated saturation and drying (as compared to rapid flushing).

Alternatively, these pits may have functioned to simply hold acorns (and other foodstuffs) in storage until retrieval. Ethnographic and ethnohistoric accounts from eastern North America (e.g. Densmore 1924; Heathy 1963) attest to pit storage of acorns, and recent experimental archaeology (Cunningham 2002) has explored the viability and efficacy of pit storage for acorns and other nuts.

Unfortunately, none of these deep pits yielded primary stored deposits. The contents recovered from these contexts instead reflect the secondary (or tertiary) use of these facilities as trash receptacles. After these pits were emptied of their primary content and were no longer maintained, sandy pit walls probably collapsed, leaving depressions that filled with mixtures of sand, remnants of the stored nuts, surface debris and intentionally dumped refuse. This deterioration process would accommodate the presence of residues such as the mass of charred acorn meats found in Feature 28 as either discarded remnants of a camp meal gone awry, or acorn meats found to be over-parched in the drying or roasting process. The sparse incidence of crop and fruit remains in these contexts may reflect either dumping, or incidental inclusion of debris from foods brought as camp provisions.

Similarly, the deposits of charred hickory nutshell in the four storage pits may indicate that the Ashe Ferry camp was used for gathering and collecting hickory nuts as well as acorns. However, hickory shell is truly abundant in only two pits, even though hickory nutshell is more apt to be preserved by carbonization than acorn shell due to its high density and resistance to combustion. If hickory nuts were being processed at Ashe Ferry with the same intensity as acorns, hickory nutshell would be more abundant and widespread; Yarnell and Black (1985:97-98) even suggest that analysts estimate acorn to hickory ratios by applying a factor of 50 to acorn nutshell weights when compared to hickory nutshell weight. In both features where hickory nutshell is abundant, there are no large pieces of shell indicative of the initial stages of cracking nuts. Instead the hickory nutshell fragments tend to be small or very small, consistent with the heavily crushed shell residues created as a by-product of rendering hickory oil or cooking *kenuche* soup. Therefore, it appears that hickory processing was incidental to other activities at the site or that the hickory nutshell residues may derive from processed camp provisions (e.g. *kenuche* balls) introduced to the site.

Interpretation of the Ashe Ferry phase and Early Brown phase components at 38YK533 as sporadically occupied acorn collection/processing camps appears consistent with the character of the archaeobotanical assemblage and the types and spatial configuration of facilities defined there. However, because Late Woodland and early Middle Mississippian period components have been previously poorly documented in the central Piedmont region of the Carolinas, it is unknown how such specialized extraction camps might fit into settlement/subsistence systems in the region, and relevant comparative data are difficult to obtain. Instead, it may be productive to model understanding of the Ashe Ferry occupations through analogy to ethnographic and ethnohistoric accounts of gatherer-hunter economies of native California, where balanophagy, and its associated human ecologies are best documented. In California, where acorn gathering and use reflect highly structured systems developed over thousands of years, particular lineages claimed specific acorn groves through traditions of use and management. Women (who principally took charge of gathering wild plant foods and managing plant production) improved oak groves by burning the leaf litter under the trees (after acorn harvests). Low intensity burning reduced future weevil infestations, improved visibility for nut gathering, and promoted development of well-rounded and productive trees (Anderson 2005). Similar fire-based arboriculture techniques to encourage mast production were practiced by southeastern native

peoples (Abrams and Nowacki 2008; Hammett 1992), and native women and their matrilineages in the Carolina piedmont may have asserted hereditary claim to mast producing groves through such management and multigenerational use.

In California, acorn camps were situated within or adjacent to groves (typically where sandy soils and water supply facilitated leaching). These were seasonally occupied stations, components of larger yearly settlement subsistence cycles. Exploitation of particular groves depended on acorn productivity, and was not necessarily annual, a pattern consistent with evidence from Ashe Ferry, where botanical evidence for seasonality (and limited range and density of facilities) indicate repeated fall occupations that were not necessarily immediately sequential. Because acorns must be secured quickly once they ripen and fall, scheduling of occupation and primary use of the Ashe Ferry site probably coincided with the September-October ripening of *Q. alba* and *Q. rubus* acorns in the central Piedmont (Radford, et al. 1968).

Thus, Ashe Ferry was most likely a temporary camp or even a daytime activity area where acorns were processed in the early fall. The work groups that visited the camp were probably multi-generational family or lineage segments, and gender and age roles probably shaped camp-based activities. Adult women, who may have asserted matrilineal use rights to the oak groves on nearby terraces and hillslopes, probably gathered acorns and brought them to the flat sandy terrace by the river ford for parching and storage. Younger family members and older family members with reduced mobility may have undertaken much of the camp based acorn processing.

Good mast years not only attracted people to the oak groves, but also drew deer, turkey, bears and other species to feast on the acorn crops. These animals probably avoided groves where women were gathering, chatting and banging the trees with poles to shake down acorns. Hunters (predominantly adult and adolescent males) knew where the women were working and sought quieter, more distant groves to hunt game. Such scheduled co-ordination of hunting and nut collecting from the Ashe Ferry camp base might account for the numerous projectile points recovered from the “acorn camp,” a probable multi-function base for concurrent extraction activities. Proximity to the river and an established fish weir (38YK535/38La569) presented opportunities to catch fish, frogs, turtles, crayfish and other aquatic species that remained active at the beginning of the acorn season.

Occupations of the site probably continued for weeks at a time, and work parties may have constructed temporary shelters to guard against inclement weather. In addition, these family segments likely arrived at the camp with necessary equipment and supplies, such as baskets for nut collecting and processing, pottery vessels for cooking and hot water leaching of acorns, bows and arrows, snares, nets, and other hunting tools, and provisions to consume until hunting, fishing, and nut collecting yielded abundant feasts.

The location of the Ashe Ferry camp at the Twelvemile Creek ford of the Catawba River provided ready access to the camp via established trails, and the periodic occupants of Ashe Ferry might have used these trails to travel considerable distances to the oak groves near 38YK533. Undoubtedly, the camp was linked to more permanent residential communities (like the Ashe Ferry phase sites that probably existed across the river at 38La125 or downriver at Landsford), and was part of a much larger landscape of activities that remains to be explored and documented.

**Archaeofaunal Remains from the Ashe Ferry Site (38YK533), York County, South Carolina**  
*by: Thomas R. Whyte*

By contrast to the abundant archaeobotanical remains recovered from 38YK533 contexts, the sample of faunal remains from the site appears markedly impoverished. The total sample of bone fragments from 38YK533 constitutes only 183g of osseous material, and yielded only 103 specimens identifiable to family level. As such, the sample is, perhaps, more informative about taphonomic process than about the subsistence behaviors of the Ashe Ferry and Early Brown phase inhabitants of the Ashe Ferry site. Nonetheless, identifiable faunal materials from 38YK533 illustrate the use of a wide range of species as protein sources by site occupants. The following account presents the methodology and results of analysis of archaeofaunal remains from the Ashe Ferry site, and examines the probable causes and meaning of the condition of the assemblage.

**Methods of Identification and Analysis**

Specimens were examined by the author to identify the anatomical element (bone, tooth, etc.) and species represented, the portion (distal, proximal, etc.) and side (left *versus* right) represented by each element, and when possible, the age and sex of the individual represented. Each specimen also was examined for evidence of artificial modification (cut marks, polish, striations, etc.), burning, perimortem or postmortem breakage, carnivore or rodent gnawing, and digestion. Specimens from each provenience unit were weighed (to the nearest tenth of a gram) in broad taxonomic groupings (usually by class) and, with the exception of indeterminate vertebrate bone, were counted. Although they were weighed, the latter exceptions are too numerous and fragmentary, often in part because of recovery and processing damage, for their enumeration to have any meaning.

Identification of specimens was made with reference to the comparative collection in the Zooarchaeological Lab at Appalachian State University. This collection is nearly comprehensive for the Holocene vertebrate fauna of the study region, lacking only in extinct species and a few species of salamanders, snakes, cyprinid fishes, and migratory passerine birds. Specimens of rare fish species (family Catostomidae) were borrowed from Robert E. Jenkins of Roanoke College, Virginia. Other Catawba River fishes were generously donated to the comparative collection by David J. Coughlan of Duke Energy. Arthur E. Bogan of the North Carolina Museum of Natural Sciences provided identifications of some freshwater mussel shell. Some specimens evidently fractured during archaeological recovery (as indicated by an absence of soil staining on fracture surfaces) were combined when possible and recorded as individual specimens. As a result, specimen totals presented for any one provenience here may be fewer than those reported in the RLA's preliminary inventories for the site. Potentially conjoinable fragments that had broken apart prior to excavation were recorded as individual specimens.

A final note to be made is a point on current convention in presenting the vernacular or common names of animals in scientific literature. Most biological sciences have begun to capitalize official common names such as "Wild Turkey" but to retain lower case in naming more general groupings such as "turkey." This new convention is followed herein.

## Potential Biases

Evidence of preservation bias in the sample was immediately apparent at the start of this analysis. Several contexts, both subsurface (features) and surface (plow zones and strata), yielded only calcined vertebrate remains while others (especially larger subsurface features) contained a combination of burnt remains and ones not affected by fire. Higher frequencies of especially calcined bone, when conditions of burial and soil acidity and moisture are relatively similar, are usually an indication that unburned bones in those same deposits have experienced more degradation by microbial and microfaunal consumption of organic components (Whyte 1997, 2001, 2011). Consequently, the 38YK533 contexts yielded few (357) enumerated specimens and the sample exhibits a high frequency of burnt specimens despite an abundance of subterranean feature contexts.

Use of varying mesh size in recovery of archaeofaunal specimens must also be taken into account when comparing contexts (Reitz and Wing 2008). Sediments passed through quarter-inch mesh are less likely to contain remains of smaller vertebrates and invertebrates (e.g., land snails, toads, mice, passerine birds) and the smaller elements (e.g., scales, phalanges, carpals, and teeth) of mid-sized vertebrates. However, content of soils from feature contexts at 38YK533 whether wet-screened or flotation processed, were minimally recovered by 1/16<sup>th</sup>-inch mesh.

Certain vertebrate specimens, despite their extreme fragmentation and diminutive size, remain identifiable to some degree because of their distinctive textures or unique structures. These include catfish (*Ameiurus* spp.) pectoral spines, turtle (Testudines) carapace and plastron (costal) bones, and deer tooth enamel. Taxa and elements represented by these specimens relative to others are thus better represented in the resulting data. This is especially true for the many proveniences that yielded only small crumbs of calcined vertebrate remains.

## Results

Archaeofaunal remains from the prehistoric Ashe Ferry site (ca. AD 950-1350) amount to 357 enumerated specimens (Table 7.4; Appendix F5) and 12.3 g (6.7 % of the assemblage by weight) of indeterminate vertebrate remains. These were recovered from 31 subsurface features (78%) and from the old plow zone (12%). As expected, feature contexts exhibited better faunal preservation; the majority of specimens (particularly those identifiable to genus and species groups) were recovered from features, and a higher frequency of calcination of bone is observed among specimens from the old plow zone. Seventy-three percent of specimens are burnt, many (38%) features yielded *only* calcined bone, and only three features (20, 41, and 46) yielded more than 20 identifiable specimens. Two of these (Feature 41 and 46 [Zone A]) appear to be the most recent (Late Mississippian period) features on the site—a further indication of compromised age-related preservation.

A range of aquatic and terrestrial groups is represented by the collection (Table 7.4). Five (freshwater mussel, bullhead catfish, venomous snake, non-venomous snake, and Eastern Box Turtle) are represented by only one specimen each. A mere 16% of counted specimens was identifiable to genus or species (Table 7.4), and one species is likely intrusive to the prehistoric contexts, possibly from more recent death events; two White-lipped Land Snail (*Triodopsis albolabris*) shells found in Feature 20 may have burrowed into the feature fill or were inadvertent components of the fill. There is no archaeological evidence of their consumption by humans in eastern North America. The Domestic Dog remains (two teeth and part of a maxilla) in Feature 43, a human burial, are not burnt and may be what has survived of a burial companion or offering. Turtle (order Testudines) and White-tailed Deer (*Odocoileus virginianus*) remains,

due to identification/preservation bias discussed above, are clearly inflated in number relative to other groups.

These exceptions aside, and identification and preservation biases realized, the suite of fauna represented in the 38YK533 assemblage is typical for late prehistoric sites in the Carolina Piedmont where preservation is compromised (cf. Terrell 1998). Yet, however patterned the taphonomic reduction of the assemblage over time may have been, it would be folly to attempt a reconstruction of the relative dietary importance of the animal groups that have remained represented in the recovered assemblage. Wild riverine and terrestrial woodland fauna were utilized. White-tailed Deer remains comprise the majority of identifiable specimens and are dominated by cranial and foot elements (84%) probably due to density-mediated preservation and identification bias. Most of the 11 unidentifiable large mammal and 254 mammal remains are undoubtedly from bones of deer reduced in accessing marrow (perimortem fracture was observed on numerous specimens) and by various taphonomic processes.

Representation of poikilothermic species (fishes, snakes, and turtles) indicates probable deposition outside of the winter months. The only possible indication of deposition in late fall or early winter includes the deer antler fragments found in Features 28, 50, and especially 75. None of the fragments, however, is from the point of origin from the frontal bone to indicate whether they were shed or remained attached at death. The antler fragments from Feature 75 are probably

Table 7.4. Number of Identified Specimens (NISP) of Animal Remains from 38YK533.

<u>Scientific Name</u>	<u>Common Name</u>	<u>NISP</u>
<i>Triodopsis albolabris</i>	White-lipped Land Snail	2
Unionidae	Freshwater Mussel	1
<i>Ameiurus</i> sp.	Bullhead Catfish	1
Osteichthyes	Bony Fish	3
Crotalinae	Pit Viper	1
Colubridae	Non-venomous snake	1
<i>Sternotherus odoratus</i>	Stinkpot	3
<i>Terrapene Carolina</i>	Eastern Box Turtle	1
Testudines	Turtle	20
<i>Meleagris gallopavo</i>	Wild Turkey	2
Aves (large)	Large Bird	9
<i>Canis familiaris</i>	Domestic Dog	3
<i>Odocoileus virginianus</i>	White-tailed Deer	44
Mammalia (large)	Large Mammal	11
Mammalia	Mammal	254
Vertebrata	Vertebrate	*
-		Total counted specimens: 357

\*Unidentified vertebrate remains, extremely numerous and fragmentary, were weighed (12.3 g) but not counted.

parts of an antler tool that was clustered with other (stone) tools representing a cache. None of the other identifiable deer teeth or bone fragments from the site is sufficiently preserved or otherwise suitable for estimates of seasonality.

Most of the contexts from this site that contain sufficient numbers of specimens for comparison are assigned to the Late Woodland component (Features 20, 43, & 50). Feature 46 (21 specimens) contains both Early Brown phase and Ashe Ferry phase strata. Feature 41, an Early Brown phase pit yielded the most specimens of any site context. All of the 81 archaeofaunal specimens recovered from this feature are calcined—an indication of compromised faunal preservation. Yet this is the only feature on the site that contained remains identifiable as bullhead catfish (*Ameiurus* sp.) and Stinkpot (*Sternotherus odoratus*). Like many of the Ashe Ferry phase features on the site, Feature 41 also contained remains of White-tailed Deer (*Odocoileus virginianus*). Nevertheless, broader vertebrate class (fishes, reptiles, birds, and mammals) compositions between site components vary insignificantly.

## Conclusions

The archaeofaunal assemblage recovered by the 2010 investigations at the Ashe Ferry site illustrate the marked effects of post-depositional chemical and physical weathering on bone material. The acidic soil environment, coupled with excessive water percolation that rapidly flushed buffering media (e.g., wood ashes) and disintegrating bone surfaces, reduced non-calcined bone to the densest and most resistant elements, and severely biased species and element representation. Much of the identifiable bone from the site is calcined through burning—which eliminates immediate organic content and reduces the matrix to more stable hydroxyapatites, which are less susceptible to chemical and physical weathering. Burning of animal bones may reflect accidental or random inclusion of food remains in hearths, or may reflect more focused, inclusive disposal, as documented by John Lawson (Lefler 1967:52) among the Keyauwee Indians in 1701: “All the Indians hereabouts carefully preserve the Bones of the Flesh they eat, and burn them, as being of Opinion, that if they omitted that Custom, the Game would leave their Country, and they should not be able to maintain themselves by their Hunting.” While such ritual may have been spatially and temporally restricted (this observation was 75 miles from Ashe Ferry and 600 years after the Ashe Ferry phase), it nevertheless provides an example of how even apotropaic behaviors may influence bone survivability.

Combined Late Woodland and Mississippian archaeofaunal remains from Ashe Ferry (Table 7.4), although significantly reduced by depositional and taphonomic processes, are probably reasonably representative of late prehistoric seasonal extraction camp sites in the Carolina Piedmont. As such, the evidence from Ashe Ferry complements the better documented archaeofaunal patterns at long-term residential sites such as Donnaha (Mikell 1987) and Hunting Creek (Terrell 1998), and presents a more complete view of the seasonal aspects of Late Woodland period diet in the central Piedmont region. The Ashe Ferry sample reinforces previous findings that indicate Piedmont Late Woodland subsistence economies as diffuse and highly diversified, with exploitation of a wide range of species captured through various combinations of hunting, trapping, collecting, and fishing. As with all other comparable sites in the region (e.g., Terrell 1998), the prominence of White-tailed Deer remains at Ashe Ferry indicates preferential use of large bodied mammals for protein—but a preference necessarily augmented by a multitude of smaller species. The dog remains recovered from Ashe Ferry were derived from a human burial and are not recognized as food refuse. The relative abundance of snake and turtle remains in the assemblage may indicate significant contribution of meat obtained by members of the society engaged in daily foraging and gardening.



## **Chapter 8**

### **Summary and Conclusions**

The 2010 archaeological investigations of the Ashe Ferry site (38YK533) aimed to document contexts and recover assemblages from the site in order to mitigate adverse impacts to the site occasioned by the replacement of the SC Highway 5 bridge across the Catawba River. Construction of a new bridge and approach ramp after the conclusion of field investigations obliterated or buried that portion of 38YK533 north of the existing 1959 roadway that bisected the site. Phase I archaeological survey of the bridge replacement project area by Legacy Research Associates in 2008 identified the Ashe Ferry site and documented the presence of potential buried contents, discrete features, and appreciable substantive content, qualities that led SCDOT to seek further evaluation of contextual integrity and content as an initial stage of the 2010 investigations. Testing of the site by the UNC Research Laboratories of Archaeology in the spring of 2010 clearly demonstrated integrity of site deposits and the presence of coherent material assemblages that exhibited capacity to “yield information important to prehistory,” consistent with significance Criterion D for eligibility of the site for inclusion in the National Register of Historic Places. Because avoidance or other preservation options were not feasible given the scope of the bridge replacement project, mitigation of construction impacts through data recovery of “information important to prehistory” was undertaken immediately on the heels of site evaluation and expedited consultation, consistent with Section 106 of the National Historic Preservation Act.

Site testing and evaluation recovered materials that indicated the presence of multiple archaeological components, with especially strong representation of terminal/Late Woodland period components and, secondarily, Mississippian period components. These components were not identified in the 2008 survey, but were clearly significant as instances of archaeological complexes that had previously been poorly documented in the lower Catawba River Valley and in the South Carolina central piedmont region. As such, the assemblages and contexts investigated at the Ashe Ferry site are clearly pivotal for development of culture historical sequences for the region. Comparison of the Ashe Ferry assemblages with those documented in surrounding regions illustrates variability and asynchronicity in the transitions from Woodland period cultural patterns to those characteristic of the Mississippian period.

Field investigations at 38YK533 included hand excavation of one-meter square units totaling 216m<sup>2</sup> to obtain material samples from plowed soils and underlying A-horizon remnants and to document site stratigraphy. This well distributed sample amounted to approximately 3.5% of the accessible site area (exclusive of the area obscured/obliterated by the existing SC Highway 5 causeway). These hand excavated units revealed soil stratigraphy consisting of two superimposed historic era plowzones above patchy A-horizon remnants over largely undifferentiated eluviated sands. The uppermost plowzone primarily represents overburden deposits from the 1916 flood event, but slightly intruded a pre-1916 horizon of plowed soils that contained abundant artifact inclusions. Hand excavated units yielded artifact samples that included approximately 8,500 ceramic sherds and 10,000 lithic artifacts. Among those ceramic sherds that can be referenced to historical types, 92% are consistent with Late Woodland period site occupations, and 6% are attributed to Mississippian period site occupations. Mechanical removal of plowed soils from 2583 m<sup>2</sup> (42% of the accessible site area) revealed 52 cultural features evident at or near the base of the pre-1916 plowzone. Excavation of these facilities recovered material associations indicating that 42 features are referable to Late Woodland period

site occupations, seven include Mississippian period deposits, one is associated with Early Woodland period site occupation and one is associated with Late Archaic period occupations. AMS dates obtained from 10 contexts indicate that the predominant Late Woodland period Ashe Ferry phase components spanned ca. A.D. 1000–1150, followed by occupations during the early Middle Mississippian period Early Brown phase, ca. A.D. 1150-1350.

Two classes of facilities, fire-cracked rock filled basins and deep pits, account for almost half of the cultural features. Archaeobotanical analyses indicate that the fire cracked rock filled basins included *de facto* charcoal content heavily dominated by acorn nutshells, results interpreted as evidence for use of these features as acorn parching facilities. Deep pits are interpreted as storage facilities, and their spatial association with fire cracked rock filled basins is interpreted as evidence for redundant spatial segregation of processing and storage activities from core residential activities at the site. Spatial association of fire-cracked rock filled basins and deep pits may also connote possible functional association as facilities employed in the mass parching and storage of acorns. AMS dates obtained from fire-cracked rock filled basins indicate that these acorn roasting facilities were constructed and used throughout the Ashe Ferry and Early Brown phases. The abundance and spatial (and temporal) redundancy of these facilities indicates that acorn roasting (and, by extension, acorn gathering, processing, storage and consumption) was a focal activity at the Ashe Ferry site for almost 350 years. By contrast, facilities associated with long term residential use, such as “permanent” architecture and formal hearths, are notably lacking at the site, and the Late Woodland and early Middle Mississippian period site occupations are interpreted as a series of short- and medium-term camps rather than continuous permanent residential occupations. Although incidence of various botanical and faunal remains bespeak resources available in warm weather months, the vast predominance of acorn and hickory nut residues indicates autumn use of the site as a seasonal base camp for procurement and processing of hard mast. Apparent long-term trends in site use indicate stable, structural conditions of resource availability (e.g., proximity to productive oak and hickory groves), coupled with local conditions appropriate to focal uses (e.g., sandy, porous soil matrices, abundant fresh water, and abundant uniform cobbles for acorn processing) and peripheral uses (e.g., proximity to fish weir and stream crossing). Decline in the use of the site after circa A.D. 1200 may reflect gradual de-emphasis of acorns in the subsistence economy, or constrictions of mobility based subsistence systems that may have accompanied the spread of Mississippian cultural patterns through the Carolina piedmont.

Material assemblages recovered from 38YK533 contexts are consistent with hypothesized site function as a seasonal extraction camp redundantly occupied during the terminal Late Woodland and early Middle Mississippian periods. Lithic (i.e., flaked stone) artifacts are the most abundant class recovered from the site; 13,673 (96%) of these objects are nondiagnostic debitage from the production of stone tools. Among 457 projectile points and point fragments, 419 (92%) are small triangular points referable to Late Woodland period and Mississippian period occupations, and are most consistent with the Caraway Triangular type. Probably contemporaneous with these small triangular projectile points are eight small shouldered pentagonal points. Most of these projectile points were produced from fine-grained metavolcanic materials derived from peri-local sources, an indication that the populations that frequented the Ashe Ferry site maintained territories that intersected or otherwise maintained access to Carolina Slate Belt deposits.

The relative abundance of these small arrowpoints at 38YK533 probably reflects a secondary focus of Ashe Ferry phase and Early Brown phase site occupations as a hunting

basecamp, from which hunting forays targeted animals and birds attracted to the mast crops that also drew human collectors. The sparse incidence of earlier diagnostic projectile point forms (e.g., Kirk, Morrow Mountain, Savannah River) attests low frequency and low intensity use of the site in early to mid-Holocene times.

Ceramic artifact assemblages recovered from 38YK533 contexts are dominated by Ashe Ferry Simple Stamped sherds associated with terminal Late Woodland period occupations. This newly defined ware is most comparable to the Santee Simple Stamped and McClellanville Simple Stamped types defined in the South Carolina Coastal Plain, and appears to be a precursor to Mississippian ceramic patterns in the central piedmont region. Although previous researchers have posited such sand tempered simple stamped wares as terminal Woodland pattern ceramics in the South Carolina piedmont, the Ashe Ferry sample is the first instance in which such ceramics are documented in discrete, independently dated contexts. These wares appear to be localized expressions of a much larger (300km x 500km) terminal Woodland period ceramic horizon indicative of a diffuse information network that spanned a vast swath of the southeastern piedmont. The spatial distribution of the Ashe Ferry Simple Stamped type is unattested, but similar sand tempered simple stamped wares are reported from the upper Wateree and lower Catawba river valleys and the middle Broad River Valley. AMS dates derived from contexts with Ashe Ferry Simple Stamped wares (as *terminus post quem* markers) indicate occurrence of this ceramic type at 38YK533 from as early as A.D. 970 to as late as A.D. 1210, with a more probable refined range of circa A.D. 1010–1160. This temporal position fits within date ranges for the Santee Simple Stamped/McClellanville Simple Stamped types, but also corresponds with the rise of South Appalachian Mississippian assemblages in the upper and middle Savannah River Valley and, possibly, the Camden area of the upper Wateree River Valley. The chronologies of these Early Mississippian assemblages still require considerable refinement, but the apparent contemporaneous dating of the Ashe Ferry phase assemblages points to local and subregional asynchronicity in the development and spread of Mississippian cultural patterns.

The relatively high density of Ashe Ferry Simple Stamped ceramic sherds at 38YK533, a hypothesized extraction camp, probably reflects both basic domestic uses in generalized camp cooking, as well as use of vessels in more specialized activities such as processing acorns. Ethnographically documented methods for de-acidifying acorns for consumption included boiling shelled acorns or acorn meal in multiple water baths, in some cases with the addition of wood ashes, to flush or neutralize tannins. This acorn processing technique probably involved numerous ceramic vessels beyond those needed for everyday cooking, and the heavy manipulation of vessels involved in acorn processing likely occasioned frequent breakage (and deposition).

Apparently successive to assemblages dominated by Ashe Ferry Simple Stamped wares are South Appalachian Mississippian ceramic assemblages characterized by burnished plain bowls with notched lips and curvilinear complicated stamped jars with elaborate collared rims (defined herein as “Early Brown phase”). AMS dates obtained from contexts that included Mississippian Plain/Burnished Plain sherds range from as early as A.D. 1020 to as late as A.D. 1380, with a more probable range of A.D. 1150-1300. The AMS dates for contexts including both South Appalachian Mississippian wares and Ashe Ferry Simple Stamped sherds overlap considerably with those for contexts that include only Ashe Ferry Simple Stamped sherds, raising the possibility of contemporaneity of Early Brown phase ceramic types with Ashe Ferry phase types. In none of these cases is “hybridity” evident; the Ashe Ferry phase wares and Early Brown phase wares are completely distinguished by paste, surface treatment, interior surface finish, and

secondary decoration. Lack of formal and stylistic overlap in these wares probably signals production by different communities of potters— separated by time and/or social and cultural distance.

The Early Brown phase ceramic wares recovered from 38YK533 bear general similarities to early Middle Mississippian period ceramics (i.e., Savannah Culture) documented throughout South Carolina, but most closely resemble ceramic assemblages from the middle Broad River basin, including wares recovered at the Blair Mound and Tyger Village sites. The complicated stamped wares with elaborated collared rims that distinguish the Ashe Ferry assemblage are not documented in contemporaneous assemblages at Belmont Neck, 55 miles downstream in the upper Wateree River Valley, and it is unclear, at present, if the Early Brown phase materials are more locally widespread in the lower Catawba River Valley. If not, the apparent similarity of the Early Brown assemblage at Ashe Ferry to Broad River Valley assemblages (i.e., Blair Mound) might suggest that the populations that used the Ashe Ferry site in the 13<sup>th</sup> and 14<sup>th</sup> centuries maintained residential bases in the Broad River Valley.

It is noteworthy that the terminal Woodland period and Mississippian period occupations at Ashe Ferry generated similar suites of facilities that exhibit similar content. Specifically, fire-cracked rock filled basins associated with the Early Brown phase component yielded large quantities and high relative frequencies of charred acorn shell. This pattern is interpreted as evidence for stability in site function (i.e., use as an acorn processing camp) through a span of major change in ceramic assemblages. This may reflect economic and settlement continuity within a community that experienced significant temporal shifts in ceramic production. Alternatively, evidence for continuity in site function in the Ashe Ferry and Early Brown phases may reflect different communities mapping onto an optimal location for similar exploitation of a stable resource base.

To summarize, investigations at the Ashe Ferry Site produced two major substantive results. First, analysis of ceramic assemblages identified and documented two previously undefined cultural complexes, the Ashe Ferry phase and the Early Brown phase. These ceramic phases are described in detail, and the absolute chronological position of these complexes is defined through a series of AMS assays. Such basic definitional efforts are key to development of local and regional culture historical sequences, and facilitate comparisons to developments in surrounding regions. Definition and temporal placement of the Ashe Ferry phase extends the geographic scope of a supra-regional terminal Late Woodland period horizon of simple stamped ceramics posited by Anderson (Anderson, et al., 1996) and others. Furthermore, definition and dating of these ceramic phases illuminates the form and timing of the transition from Late Woodland period ceramic patterns to those characteristic of the Mississippian period. This transition, as evidenced at Ashe Ferry, proves somewhat later and more abrupt than anticipated, and suggests marked asynchronicity in the development or spread of Mississippian cultural patterns across the region.

The second major finding of the 2010 investigations at Ashe Ferry is identification of the site as a seasonal base camp for collection and processing of arboreal crops (particularly acorns) during the Ashe Ferry and Early Brown phases. This site function is attested by the vast predominance (and overall abundance) of acorn residues in analyzed botanical samples, the clear association of acorn remains as primary, *de facto* refuse in fire cracked rock-filled basins (the most common facility type at 38YK533), and, less directly, by the spatial relationships of fire cracked rock-filled basins (roasting facilities) with large deep pits (storage facilities). Absence

of architectural evidence (other than fired daub fragments) at the site connotes temporary occupations, as does the low diversity and relatively low density of facilities.

Evidence from the Ashe Ferry Site also intimates the importance of arboreal nuts in Late Woodland period subsistence systems in the central piedmont region, and illustrates continuity in longstanding patterns of seasonal mobility to access focal resources. This data accentuates the findings of recent analyses of Late Woodland period and Early Mississippian period archaeobotanical samples from residential sites in the South Carolina Piedmont and Coastal Plain (see Hollenbach 2010a, 2010b; Wagner 2008, 2013), where acorns appear to have been major dietary constituents. The particular prominence of acorns in the Ashe Ferry record is a likely function of mass processing activities that generated large quantities of residues at the site. The products of such processing, including shelled nutmeats and acorn meal, were either consumed on site during the acorn harvest season, stored on site for later use, or transported to other camps or residential bases for later consumption. Processing and disposal of nutshell residues in outlying extraction camps such as the Ashe Ferry Site certainly reduced residue loads at residential bases, with the result that balanophagy and the procurement and processing systems related to acorn use might be significantly underrepresented and under recognized in residential base site samples.

Finally, it should be noted that much of the archaeological evidence documented at the Ashe Ferry Site by the 2010 investigations survived only because a heavy mantle of flood deposits protected shallow feature contexts from the ravages of mechanized plowing in the twentieth century. Prior to 1900, the site was cultivated with horse or mule-drawn shallow draft plows that cut less than twenty centimeters, truncating, but not completely obliterating many shallow features. After the floods of 1904 and 1916 dumped 20-30cm of sand over the site surface, subsequent plowing attempts never completely penetrated the earlier plowzone, with the result that archaeological deposits did not suffer truncation by mechanized tillage. Had site deposits at 38YK533 experienced 30cm-40cm of plow truncation typical in modern agricultural regimes, few discrete contexts other than deep pit features would have survived, and the entire record of shallow fire-cracked rock filled roasting facilities would have been obliterated. Without these facilities and their content, interpretation of site function at 38YK533 would have remained necessarily vague. While components like those documented at the Ashe Ferry site are likely numerous throughout the region, the depositional context at 38YK533 is markedly uncommon, and similar site components are typically degraded by plowing and erosion, and reduced to palimpsests of pottery, projectile points and fire-cracked rocks in plowzone deposits.

The Ashe Ferry Site, by virtue of its unique depositional history, presented, upon investigation, an exceptional degree of contextual integrity that greatly facilitated clarity and detail of interpretation. As a result, the 2010 excavations at Ashe Ferry recovered evidence that not only spans (and illuminates) a noteworthy gap in the culture history of the region, but also provides detailed insights into local settlement-subsistence systems at a juncture in the transitions of native communities from hunter-gatherer-collector strategies to intensified horticultural economies.



## REFERENCES CITED

- Abrams, Marc D. and Gregory J. Nowacki  
2008 Native Americans as Active and Passive Promoters of Mast and Fruit Trees in the Eastern USA. *Holocene* 18(7):1123-1137.
- Ames, Kenneth M., Cameron McP. Smith, and Alexander Bourdeau  
2008 Large Domestic Pits on the Northwest Coast of North America. *Journal of Field Archaeology* 33(1):3-18.
- Anderson, David G.  
1982 The Mattassee Lake Ceramic Artifact Assemblage. In *Mattassee Lake: Archeological Investigations Along the Lower Santee River in the Coastal Plain of South Carolina*, by David G. Anderson, Charles E. Cantley, and A. Lee Novick, pp. 207-322. Special Publication 1982, Interagency Archeological Services Division, National Park Service, Atlanta, Georgia.  
1990 Stability and Change in Chiefdom Level Societies: An Examination of Mississippian Political Evolution on the South Atlantic Slope. In *Lamar Archaeology: Mississippian Chiefdoms in the Deep South*, edited by Mark Williams and Gary Shapiro, pp. 187-213. University of Alabama Press, Tuscaloosa.  
1994 *The Savannah River Chiefdoms*. University of Alabama Press, Tuscaloosa.
- Anderson, David G., John S. Cable, Niels Taylor, and Christopher Judge (editors)  
1996 *Indian Pottery of the Carolinas: Observations from the March 1995 Ceramic Workshop at Hobcaw Barony*. Council of South Carolina Professional Archaeologists
- Anderson, David G., Charles E. Cantley, A. Lee Novick  
1982 *The Mattassee Lake Sites: Archeological Investigations Along the Lower Santee River in the Coastal Plain of South Carolina*. Special Publication 1982, Interagency Archeological Services Division, National Park Service, Atlanta, Georgia.
- Anderson, David G., David J. Hally, and James L. Rudolph  
1986 The Mississippian Occupation of the Savannah River Valley. *Southeastern Archaeology* 5(1): 32-51.
- Anderson, David G., and J. W. Joseph  
1988 Prehistory and History Along the Upper Savannah River: Technical Synthesis of Cultural Resource Investigations, Richard B. Russell Multiple Resource Area. *Russell Papers* 1988. Garrow and Associates, Inc., Atlanta. Prepared for the Interagency Archeological Services Division, National Park Service, Atlanta.
- Anderson, David G. and Robert C. Mainfort, Jr.  
2002 *The Woodland Southeast*. University of Alabama Press, Tuscaloosa.
- Anderson, M. Kat  
2005 Tending the Wild: Native American Knowledge and the Management of California's Natural Resources. University of California Press, Berkeley, CA.
- Arnold, Jeanne E.  
1996 The Archaeology of Complex Hunter-Gatherers. *Journal of Archaeological Method and Theory* 3: 77-126.

Associated Press

1904 Catawba Junction, SC Train Wreck, Sept 1904. *The Associated Press*, September 9, 1904.

Aulbach-Smith, Cynthia A.

1984 Botanical Remains from 9EB259 and 9EB387, Richard B. Russell Reservoir Project, Elbert County, Georgia. In: *Archaeological Investigations at Gregg Shoals, A Deeply Stratified Site on the Savannah River*, by V. Ann Tippitt and William H. Marquardt, pp C-1 to C-3. Interagency Archeological Services Division, National Park Service, Atlanta.

Baker, Steven G.

1975 The Historic Catawba Peoples: Exploratory Perspectives in Ethnohistory and Archaeology. Prepared for Duke Power Company. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

Barden, L.S. 1997. Historic Prairies in the Piedmont of North and South Carolina, USA. *Natural Areas Journal* 17 (2): 149-152.

Barrett, S. A., and E. W. Gifford

1933 *Miwok Material Culture*. Originally published by Bulletin of Milwaukee Public Museum 2(4). Yosemite National Park: Yosemite Association.

Barry, J.M.

1980 *The Natural Vegetation of South Carolina*. University of South Carolina Press, Columbia.

Basgall, Mark E.

1987 Resource Intensification Among Hunter-Gatherers: Acorn Economies in Prehistoric California. *Research in Economic Anthropology* 9: 21-52.

Benson, Robert W.

2006 Cultural Resources Overview of the Sumter National Forest. Report prepared by Southeastern Archaeological Services, Inc., for Francis Marion and Sumter National Forests USDA Forest Service, Columbia, South Carolina.

Bettinger, R.L., R. Malhi, and H. McCarthy

1997 Central Place Models of Acorn and Mussel Processing. *Journal of Archaeological Science* 24(10):887-899.

Bigham, John

1954 Indian Ferryman. *The State Magazine*, October 31, 1954, 2-3.

Binford, Lewis R.

1979 Organization and Formation Processes: Looking at Curated Technologies. *Journal of Anthropological Research* 35: 255-273

Blanton, Dennis B, Christopher T. Espenshade, and Paul E. Brockington

1986 An Archaeological Study of 38SU83, A Yadkin Phase Site in the Upper Coastal Plain of South Carolina. Report prepared for South Carolina Department of Transportation, Columbia. Submitted by Garrow and Associates, Inc. Atlanta, Georgia.

Bogan, A. E., J. Alderman, and J. Price.

2008 *Field Guide to the Freshwater Mussels of South Carolina*. South Carolina Department of Natural Resources, Columbia.

Bonhage-Freund, Mary Theresa, Leslie Branch-Raymer and Brad Botwick

2011 Late Woodland Maygrass Utilization in the Atlantic Coastal Plain: New Evidence from Beaufort County, South Carolina. Paper presented at the 2011 Society of Ethnobiology Conference, Columbus, OH.

Booker, Karen M., Charles M. Hudson, and Robert L. Rankin

1992 Place Name Identification and Multilingualism in the Sixteenth Century Southeast. *Ethnohistory* 39:399-451.

Boudreaux, Edmond Anthony

2005 The Archaeology of Town Creek: Chronology, Community Patterns and Leadership at a Mississippian Town. PhD. Dissertation, University of North Carolina, Chapel Hill, North Carolina.

2007 *The Archaeology of Town Creek*. University of Alabama Press, Tuscaloosa.

Boudeaux, Edmond A., R.P. Stephen Davis, Jr., and Brett H. Riggs

2004 *Archaeological Investigations at the James Lee Love House on the University of North Carolina Campus, Chapel Hill, North Carolina*. Research Report No. 23. Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.

Braun, E.L.

1950 *Deciduous Forests of Eastern North America*. The Blakiston Co., Philadelphia.

Bronk Ramsey, C. (2009). Bayesian Analysis of Radiocarbon Dates. *Radiocarbon*, 51(1), 337-360

Brummitt, Aaron

2007 The Sleepy Hollow Phase: Mississippian Emergence in the Middle Savannah Valley. Unpublished M.A. thesis, Department of Anthropology, University of South Carolina, Columbia.

Buhlmann, Kurt, Tracey Tuberville, and Whit Gibbons

2008 *Turtles of the Southeast*. University of Georgia Press, Athens.

Bursey, Jeffrey A.

2001 Storage Behavior in the Northeast: A Review of the Evidence. *North American Archaeologist* 22: 179-199.

Butler, James Robert

1965 Guide to the Geology of York County, South Carolina-Carolina Geological Society Field Trip October 23-24, 1965. *Geologic Notes* 99 (2). Division of Geology, State Development Board, Columbia, SC. Carolina

Cable, John S.

- 1993 *Prehistoric Adaptations to the Interior Uplands Environment of the Central South Carolina Coast: Test Excavations at Four Sites (38BK769, 38BK1176, 38CH1045, and 38CH1189) in the Francis Marion National Forest*. Technical Report No. 60. New South Associates, Inc., Stone Mountain, Georgia. Submitted to the USDA Forest Service. Francis Marion and Sumter National Forest Cultural Resource Management Report No. 91-34.
- 2000 Demographic Succession as a Factor in Explaining Offsetting Occupation Spans at Mississippian Mound Centers. Paper Presented at the 57th Annual Meeting of the Southeastern Archaeological Conference, Macon, GA.
- 2007 Intensive Cultural Resource Survey, Santee Timber Thinning Unit, Berkeley and Charleston Counties, Francis Marion National Forest, South Carolina Francis Marion and Sumter National Forests. Cultural Resource Report 2002-07. United States Forest Service, Francis Marion National Forest, SC.

Cable, John S., and Charles E. Cantley

- 1998 Archaeological Data Recovery at Sites 38SU45, 38SU133, and 38SU145, with Results of Test Excavations Conducted at Sites 38SU136, 38SU137, and 38SU141, Poinsett Electronic Combat Range, Sumter County, South Carolina. U. S. Air Force Air Combat Command Series *Report of Investigations 7*. HDQ ACC/EVA, Langley AFB, Virginia.

Cable, John S. and Gary A. Hebler

- 1999 Cultural Background. In: Shaw Air Force Base: Test Excavations at 20 Archaeological Sites on the Poinsett Electronic Combat Range, Sumter County, South Carolina, by Maynard B. Cliff, Gary A. Hebler, John S. Cable, Kenneth F. Styer, Leslie E. Raymer, and Lisa O'Steen, pp. 23-55. Headquarters Air Combat Command, Fort Worth, Texas.

Cable, John S, George D. Price and Ray Talley

- 2013 Phase I Archaeological Survey of Four Land Exchange Tracts in Francis Marion National Forest, Charleston and Berkeley Counties, South Carolina. Draft report submitted to The Nature Conservancy, Mt. Pleasant, SC. Palmetto Research Institute, Inc., Irmo, South Carolina.

Cable, John, Gail E. Wagner, and Christopher Judge

- 1999 Belmont Neck. In *Wateree Archaeological Research Project, 1998 Survey and Testing of the Belmont Neck (38KE6), Adamson (38KE11), and Mulberry (38KE12) Sites: Mississippian Occupation in the Wateree River Valley*. Draft report sponsored by South Carolina Department of Archives and History and the National Geographic Society.

Caldwell, Joseph R.

- 1952 The Archaeology of Eastern Georgia and South Carolina. In *Archeology of the Eastern United States*, edited by James B. Griffin, pp. 301-311. Chicago: University of Chicago Press.
- 1958 Trend and Tradition in the Prehistory of the Eastern United States. *Memoirs of the American Anthropological Association* No. 88.

Caldwell, Joseph R. and Catherine McCann

- 1941 *Irene Mound Site, Chatham County, Georgia*. University of Georgia Press, Athens.

Caldwell, Sheila Kelly

- 1950 Reconstruction of the Woodstock Fort. *Early Georgia* 1(2): 22-30.

Caldwell-Rohm, Mackenzie Smyth

2008 A Terminal Middle Woodland Ceramic Complex from Southern Illinois. PhD dissertation, Department of Anthropology, Southern Illinois University at Carbondale, Carbondale, IL.

Cantley, Charles E. and John S. Cable

2002 Shaw Air Base: Archeological Data Recovery at Sites 38SU136/137 and 38SU141, Poinsett Electronic Combat Range Sumter County South Carolina. Report submitted to US Department of Defense. New South Associates, Irmo, SC 2002

Camp, Wallace J.

1965 Soil Survey of York County, South Carolina. USDA in cooperation with the South Carolina Agricultural Experiment Station. Washington, DC.

Chapman, Jefferson

1977 *Archaic Period Research in the Lower Little Tennessee River Valley – 1975: Icehouse Bottom, Harrison Branch, Thirty Acre Island, Calloway Island*. Report of Investigations No. 18, Department of Anthropology, University of Tennessee, Knoxville.

1979 *The Howard and Calloway Island Sites*. Report of Investigations No. 27, Department of Anthropology, University of Tennessee, Knoxville.

1981 *The Bacon Bend and Iddins Sites: The Late Archaic Period in the Lower Little Tennessee River Valley*. Report of Investigations No. 31, Department of Anthropology, University of Tennessee, Knoxville.

Charles, Tommy,

1984 The Collection Survey: Third Phase: Recording and Indexing Collected Data. *Research Manuscript Series*, Book 186. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

2001 The Pumpkin Site: 38GR226, Archaeological Investigation of a Prehistoric Middle Woodland Village in Northern Greenville County, South Carolina. *Research Manuscript Series*, Book 203. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

Charles, Tommy and Terry A. Ferguson

2005 Archaeology in the Upstate of South Carolina. *Legacy* 9(3): 1, 4-7. South Carolina Institute of Anthropology and Archaeology, University of South Carolina, Columbia.

Cobb, Charles R., and Patrick H. Garrow

1996 Woodstock Culture and the Question of Mississippian Emergence. *American Antiquity* 61(1):21-37.

Coe, Joffre L.

1952 The Cultural Sequence of the Carolina Piedmont. In *Archaeology of the Eastern United States*, edited by James B. Griffin, pp. 301-311. Chicago: University of Chicago Press.

1964 The Formative Cultures of the Carolina Piedmont. *Transactions of the American Philosophical Society*, n.s. 54(5):1-130, Philadelphia.

1995 *Town Creek Indian Mound: A Native American Legacy*. University of North Carolina Press, Chapel Hill.

- Collins, Beverly, Philip E. Hyatt, and Margaret K. Trani  
 2007 The Vegetative Communities Associated with Mammals of the South. In: *The Land Manager's Guide to Mammals of the South*. Griep, M. T., W. M. Ford, and B. C. Chapman (eds.), pp. 11-34. United States Department of Agriculture Forest Service and The Nature Conservancy, Durham, North Carolina
- Converse, Harriet Maxwell  
 1908 Myths and Legends of the New York Iroquois, edited and annotated by Arthur Caswell Parker. New York State Museum *Bulletin* No. 125. Albany, New York.
- Davis, J. Eric, Jr., Catherine McRae, Bret L. Estep, Lawrence S. Barden and James F. Matthews  
 2002 Vascular Flora of Piedmont Prairies: Evidence from Several Prairie Remnants. *Castanea* , Vol. 67(1): 1-12
- Davis, R. P. Stephen, Jr., Jane Eastman, Thomas O. Maher, and Richard P. Gravely, Jr.  
 1997a *Archaeological Investigations at the Stockton Site, Henry County, Virginia*. Research Report No. 14, Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.  
 1997b *Archaeological Investigations at the Belmont Site, Henry County, Virginia*. Research Report No. 15, Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.  
 1997c *Archaeological Investigations at the Gravely Site, Henry County, Virginia*. Research Report No. 17, Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.
- Dennis, Allen J. and James E. Wright  
 1997 The Carolina Terrane in Northwestern South Carolina, U.S.A.: Late Precambrian-Cambrian Deformation and Metamorphism in a Peri-Gondwanan Oceanic Arc. *Tectonics* 16(3): 460-473.
- DeBaillou, Clemens  
 1965 A Test Excavation of the Hollywood Mound (9Ri1), Georgia. *Southern Indian Studies* 17: 3-11.
- DeBoer, Warren R.  
 1988 Subterranean Storage and the Organization of Surplus: The View from Eastern North America. *Southeastern Archaeology* 7(1): 1-20.
- De Bry, Theodor  
 1590 *A Briefe and True Report of the New Found Land of Virginia*. Reprinted by Dover Publications, New York, 1972.
- Densmore, Frances  
 1928 Uses of Plants By the Chippewa Indians. Bureau of American Ethnology *Bulletin*, 44:275 - 397
- DePratter, Chester B.  
 1985 Adamson Site (38KE11). *The Notebook* 17(3 & 4): 37. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.  
 1989 Cofitachequi: Ethnohistorical and Archaeological Evidence. In *Studies in South Carolina Archaeology, Essays in Honor of Robert L. Stephenson*, edited by Albert C. Goodyear and Glen T. Hanson. *Anthropological Studies* 9, Occasional Papers of the South Carolina Institute of Archaeology and Anthropology, The University of South Carolina, Columbia.  
 1991 *W.P.A. Archaeological Excavations in Chatham County, Georgia: 1973-1942*. University of Georgia, Athens.  
 1993 The Woodland, Mississippian and Protohistoric Periods in South Carolina. *South Carolina Antiquities*. Archaeological Society of South Carolina, Columbia, South Carolina.

- DePratter, Chester, Charles Hudson, and Marvin T. Smith  
 1983 Juan Pardo's Explorations in the Interior Southeast, 1566-1568. *Florida Historical Quarterly* 62:125-158.
- DePratter, Chester B., and Christopher Judge  
 1986 Regional and Temporal Variation in Material Culture: Waterree River. Paper presented at the LAMAR Institute Conference on South Appalachian Mississippian, Macon, Georgia.  
 1990 Phase Characteristics: Wateree River. In *Lamar Archaeology: Mississippian Chiefdoms in the Deep South*, edited by Mark Williams and Gary Shapiro, pp. 56-58. University of Alabama Press, Tuscaloosa.
- DeWitt, Robert Andrew  
 1998 Fish Community Assessment of the Catawba River, South Carolina. MS thesis, Aquaculture, Fisheries, and Wildlife Biology, Clemson University, Clemson, South Carolina.
- Dickens, Roy S.  
 1976 *Cherokee Prehistory: The Pisgah Phase in the Appalachian Summit Region*. University of Tennessee Press, Knoxville.
- Dorcas, Michael E., and Whit Gibbons.  
 2008 *Frogs & Toads of the Southeast*. University of Georgia Press, Athens.
- Drayton, John  
 1802 *A View of South Carolina, as Respects Her Natural and Civil Concerns*. W.P. Young, Charleston, South Carolina.
- Driver, Harold E.  
 1952 The Acorn in North American Indian Diet. *Proceedings of the Indiana Academy of Science* 62:56-62.
- Dunham, Sean B.  
 2009 Nuts about Acorns: A Pilot Study on Acorn Use in Woodland Period Subsistence in the Eastern Upper Peninsula of Michigan. *The Wisconsin Archeologist* 90(1-2):113-129.
- Eastman, Jane M.  
 1993 Seventeenth-Century Lithic Technologies on the North Carolina Piedmont. In *Indian Communities on the North Carolina Piedmont, A.D. 1000 to 1700*, by H. Trawick Ward and R. P. Stephen Davis, Jr., pp. 439-454. Monograph No. 2, Research Laboratories of Anthropology, University of North Carolina, Chapel Hill.  
 1994a The North Carolina Radiocarbon Date Study: Part I. *Southern Indian Studies*, 42: 1-63.  
 1994b The North Carolina Radiocarbon Date Study: Part II. *Southern Indian Studies*, 43:1-117.  
 1996 Pottery of the Upper Dan River Drainage. In: *Indian Pottery of the Carolinas*. Edited by David G Anderson, John S. Cable, Niels Taylor, and Christopher Judge, pp.116-135. Council of South Carolina Professional Archaeologists, Columbia, SC.
- Edwards, Nicole T. and David L. Otis  
 1999 Avian Communities and Habitat Relationships in South Carolina Piedmont Beaver Ponds. *American Midland Naturalist*, Vol. 141(1): 158-171.

- Elliott, Daniel T.  
1984 Tyger Village, 38UN213. Paper presented at the Southeastern Archaeological Conference in Pensacola, Florida.
- Elliott Daniel T. and Jack T. Wynn  
1991 The Vining Revival: A Late Simple Stamped Phase in the Central Georgia Piedmont. *Early Georgia* 19(1). 1991.
- Emerson, Thomas E., Dale L. McElrath, and Andrew C. Fortier (eds.)  
2000 *Late Woodland Societies: Tradition and Transformation across the Midcontinent*. University of Nebraska, Lincoln.
- Eversole, A.G. and D.R. Jones.  
2004 *Key to the Crayfish of South Carolina*. Clemson University.
- Feltman, William  
1853 *The Journal of Lieut. William Feltman, of the First Pennsylvania Regiment*. The Historical Society of Pennsylvania, H.C. Baird, Philadelphia.
- Ferguson, Leland  
1971 South Appalachian Mississippian. PhD Dissertation, University of North Carolina, Chapel Hill, North Carolina.  
1975 Archeology at Scott's Lake: Exploratory Research 1972, 1973. *Research Manuscript* series no. 68, South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.
- Fields, Steven E.  
2007 Mammals of the North-Central Piedmont of South Carolina. *Southeastern Naturalist* 6 (4): 577–596.
- Fitts, Mary Beth, Brett H. Riggs, and R. P. Stephen Davis, Jr.  
2007 *Summary Report of 2007 Archaeological Investigations at Catawba Nassaw Town (38Yk434), York County, South Carolina*. Research Report No. 27, Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.
- Fritz, Gayle, Virginia Drywater Whitekiller, and James W. McIntosh  
2001 Ethnobotany of Ku-Nu-Che: Cherokee Hickory Nut Soup. *Journal of Ethnobiology* 21(2):1-27.
- Fritz, Gayle J.  
1993 Early and Middle Woodland Period Paleoethnobotany. In *Foraging and Farming in the Eastern Woodlands*, ed. by C. Margaret Scarry, pp.39-56. University Press of Florida, Gainesville.
- Gall, Dan G., and Vincas P. Steponaitis  
2001 Composition and Provenance of Greenstone Artifacts from Moundville. *Southeastern Archaeology* 20:99–117.
- Gardner, Paul S.  
1985 Paleoethnobotany. In: *Archaeological Investigation of the Beaverdam Creek Site (9EB85), Elbert County, Georgia*. Edited by James L. Rudolph and David J. Hally, pp 400-411. Interagency Archeological Services Division, National Park Service, Atlanta.

Gardner, Paul S.

- 1986 Carbonized Plant Remains from Paris Island, South (9EB21); Sara's Ridge (38AN29), and Simpson's Field (38AN8) Sites. In: *Prehistory of the Richard B. Russell Reservoir: The Archaic and Woodland Period of the Upper Savannah River, Final Report of the Data Recovery at the Anderson and Elbert County Groups: 38AN8, 38AN29, 38AN126, 9EB19, 9EB19, and 9EB21*, by Dean W. Wood, Daniel T. Elliott, Teresa P. Rudolph, and Dennis B. Blanton, pp. 387-392. Interagency Archeological Services Division, National Park Service, Atlanta.
- 1997 The Ecological Structure and Behavioral Implications of Mast Exploration Strategies. In *People, Plants and Landscapes: Studies in Paleoethnobotany*, edited by Kristen J. Gremillion, pp. 161-178. University of Alabama Press, Tuscaloosa.

Gibbons, Whit

- 2005 *Snakes of the Southeast*. University of Georgia Press, Athens.

Gibbons, Whit, Judy Greene, and Tony Mills

- 2009 *Lizards & Crocodylians of the Southeast*. University of Georgia Press, Athens.

Gifford, Edward W.

- 1936 California Balanophagy. in *Essays in Anthropology Presented to A. L. Kroeber*, edited by R. H. Lowie, pp. 87-98. University of California Press, Berkeley.

Goddard, Pliny E.

- 1903 Life and Culture of the Hupa. *American Archaeology and Ethnology* 1(1). University of California, Berkeley.

Goodyear, Albert C.

- 1988 On Study of Technological Change. *Current Anthropology* 29:320-323.

Goodyear, Albert C., and Tommy Charles

- 1984 *An Archaeological Survey of Chert Quarries in Western Allendale County, South Carolina*. Research Manuscript Series 195, Institute of Archeology and Anthropology, University of South Carolina, Columbia.

Green, William, and James F. Bates

- 2003 The Broad River Chiefdom: A Possible Unrecognized Chiefdom in the Central South Carolina Piedmont. Paper presented at the 60 annual Southeastern Archeological Conference, Charlotte, North Carolina.

Gremillion, Kristen J.

- 2003 Eastern Woodlands Overview. In *People and Plants in Ancient Eastern North America*. Edited by Paul E. Minnis, pp.17-49. Smithsonian Books, Washington.

Griffith, G.E., Omernick, J.M., Comstock, J.A., Schafale, M.P., McNab, W. H., Lenat, D.R., MacPherson, T.F., Glover, J.B., and Shelburne, V.B.,

- 2002 *Ecoregions of North Carolina and South Carolina* (map). U.S. Geological Survey, Reston, Virginia.

Griffin, James B.

- 1945 Ceramic Collections from Two South Carolina Sites. *Michigan Academy of Science, Arts, and Letters Papers* 30:465-478. University of Michigan Press, Ann Arbor.

- Grossman, D. H., D. Faber-Langendoen, A. S. Weakley, M. Anderson, P. Bourgeron, R. Crawford, K. Gooden, S. Landaal, K. Metzler, K. Patterson, M. Pyne, M. Reid, and L. Sneddon.  
1998 International Classification of Ecological Communities: *Terrestrial Vegetation of the United States*. Volume I. The National Vegetation Classification System: Development, status, and applications. The Nature Conservancy. Arlington, VA.
- Gunther, Erna  
1973[1945] *Ethnobotany of Western Washington: The Knowledge and Use of Indigenous Plants by Native Americans*. University of Washington Press, Seattle.
- Hally, David J. and James L. Rudolph  
1986 *Mississippi Period Archaeology in the Georgia Piedmont*. Laboratory of Archaeology Series, Report No. 24. University of Georgia, Athens.
- Hamel, P. B.  
1992 *The Land Manager's Guide to the Birds of the South*. United States Department of Agriculture, Forest Service, Southeastern Forest Experiment Station, Asheville, North Carolina, General Technical Report SE-22: 1-437.
- Hariot, Thomas  
2007 [1590] *A Briefe and True Report of the New Found Land of Virginia*. Theodor de Bry, Frankfurt, Germany. 2007 facsimile ed. of Theodor de Bry's Latin edition. University of Virginia Press, Charlottesville.
- Harper, J. Russel, editor  
1971 *Paul Kane's Frontier*. University of Toronto Press, Toronto, Ontario.
- Heath, Dwight B., editor  
1963[1622] *Mourt's Relation: A Journal of the Pilgrims of Plymouth*. Applewood Books, Bedford, MA. Originally published by John Bellamie, London.
- Heide, Gregory and Michael Russo  
2003 Investigation of the Coosaw Island Shell Ring Complex (38BU1866). Report submitted to: South Carolina Department of Natural Resources Heritage Trust Program. The Southeast Archeological Center, National Park Service, Tallahassee, Florida
- Holden, Patricia Padgett  
1966 An Archaeological Survey of Transylvania County, North Carolina. Unpublished M.A. Thesis, Department of Anthropology, University of North Carolina, Chapel Hill.
- Hollenbach, Kandace D.  
2010 Plant Remains from Three Prehistoric Sites in the South Carolina Coastal Plain. Technical report prepared for Christopher Judge, University of South Carolina-Lancaster.  
2009 *Foraging the Tennessee River Valley, 12,500 to 8,000 Years Ago*. University of Alabama Press, Tuscaloosa.
- Hudson, Charles, Marvin T. Smith, and Chester B. DePratter  
1984 The Hernando DeSoto Expedition: From Apalachee to Chiaha. *Southeastern Archaeology* 3:65-77.

- Hudson, Charles, Marvin T. Smith, David J. Hally, Richard Polhemus, and Chester B. DePratter  
1985 Coosa: A Chiefdom in the Sixteenth Century United States. *American Antiquity* 50:723-737.
- Irwin, Jeffrey D., Wayne C. J. Boyko, Joseph M. Herbert, and Chad Braley  
1999 Woodland Burial Mounds in the North Carolina Sandhills and Southern Coastal Plain. *North Carolina Archaeology* 48:59-86.
- Jones, Calvin  
1815 Travel Journal. Unpublished manuscript, Southern Historical Collection, University of North Carolina, Chapel Hill.
- Judge, Christopher and Dawn Reid  
2007 Dietary Reconstruction from Late Woodland Pit Features at the Johannes Kolb Site, Darlington County, South Carolina. Poster presentation, 40th Chacmool Conference, Eat, Drink, and Be Merry: The Archaeology of Foodways. November 10-12, 2007, Calgary, Canada.
- Juras, Philip  
1997 The Presettlement Piedmont Savanna: A Model for Landscape Design and Management. M.A. Thesis, University of Georgia, Athens
- Keel, Bennie C.  
1976 *Cherokee Archaeology: A Study of the Appalachian Summit*. University of Tennessee Press, Knoxville.
- Kelly, Arthur R.  
1938 *A Preliminary Report on Archaeological Explorations at Macon, Georgia*. Bulletin 119. Washington, D.C.: Bureau of American Ethnology.
- Kimball, Larry R.  
1985 *The 1977 Archaeological Survey: An Overall Assessment of the Archaeological Resources of Tellico Reservoir*. Report of Investigations No. 40. Department of Anthropology, University of Tennessee, Knoxville.
- King, Adam  
2003 The Sleepy Hollow Phase in the Aiken Plateau: Pisgah Pottery in the South Carolina Coastal Plain. Paper presented at the 60th Annual Meeting of the Southeastern Archaeological Conference, Charlotte, NC.
- Landers, H.  
1974 The Climate of South Carolina, in *Climates of the States*, Volume 1, Water Information Center, Inc., Port Washington, New York, 1974.
- Lawrence, David P  
2008 Gold Hill Shear Zone in the Central Piedmont of South Carolina, *South Carolina Geology* Volume 46, 1-14.
- Lawson, John  
1709 *A New Voyage to Carolina*. London. Reprinted by Readex Microprint Corporation, 1966.
- Lederer, John.  
1672 *The Discoveries of John Lederer*. Samuel Heyrick, London.

Legacy Research Associates

2009 Intensive Archaeological and Architectural Survey for the Proposed Replacement of the SC 5 Bridges over the Catawba River and Twelve-Mile Creek in Lancaster and York Counties, South Carolina. Final report prepared for Mulkey Inc. for submission to the South Carolina Department of Transportation Columbia, South Carolina.

Longshaw, Tom

1992 Forging the River. *The Herald*, April 5, 1992, pp. 1C, 12C.

Loomis, Leverett M.

1891 Further Review of the Avian Fauna of Chester County, South Carolina. *The Auk* , Vol. 8(1):49-59.

Lyman, R. Lee

1993 Density-mediated Attrition of Bone Assemblages: New Insights. *In From Bones to Behavior: Ethnoarchaeological and Experimental Contributions to the Interpretation of Faunal Remains*. Southern Illinois University, Center for Archaeological Investigations, *Occasional Paper* vol. 21:324-341.

MacCord, Howard A.

1966 The McLean Mound, Cumberland County, North Carolina. *Southern Indian Studies* 18:3-45.

Mann, Michael E., Zhihua Zhang, Scott Rutherford, Raymond S. Bradley, Malcolm K. Hughes, Drew Shindell, Caspar Ammann, Greg Faluvegi, and Fenbiao Ni

2009 Global Signatures and Dynamical Origins of the Little Ice Age and Medieval Climate Anomaly. *Science* 326:1256-1260.

Markin, Julie Gayle

2007 Woodstock: The Rise of Political Complexity on North Georgia. Unpublished PhD dissertation, University Of Georgia, Athens.

Martin, Alexander C., and William D. Barkley

1961 *Seed Identification Manual*. University of California, Berkeley.

Martin, W. H., S. G. Boyce, and A. C. Echternacht. (eds.).

1993 *Biodiversity of the Southeastern United States: Upland Terrestrial Communities*. John Wiley and Sons, Inc. New York, NY.

Mason , Sarah L. R.

1992 Acorns in Human Subsistence. Ph.D. dissertation, University of London.

Mason, Sarah and Mark Nesbitt.

2009 Acorns as Food in Southeast Turkey: Implications for Past Subsistence in Southwest Asia, in *From Foragers to Farmers: Papers in Honour of Gordon C. Hillman*. Edited by A.S. Fairbairn and E. Weiss, pp. 71-85. Oxbow Books Oxford.

Mathews, Bethany

- 2009 Balanophagy in the Pacific Northwest: The Acorn-Leaching Pits at the Sunken Village Wetsite and Comparative Ethnographic Acorn Use. *Journal of Northwest Anthropology* 43(2):125–140.

May, J. Alan

- 1985 An Archaeological Reconnaissance of Selected Portions of Gaston County, North Carolina. Report submitted to the North Carolina Division of Archives and History, Archaeology and Historic Preservation Section, Raleigh.
- 1989 Archaeological Excavations at the Crowders Creek Site (31GS55): A Late Woodland Farmstead in the Catawba River Valley, Gaston County, North Carolina. *Southern Indian Studies* 38: 23-48.

May, J. Alan, and V. Ann Tippet

- 2000 Early Historic Catawba Nation Archaeology. Paper presented at the 57th Annual Meeting of the Southeastern Archaeological Conference, Macon, GA.

Mayer, Peter J.

- 1976 *Miwok Balanophagy: Implications for the Cultural Development of Some California Acorn-Eaters.*: Archaeological Research Facility, Department of Anthropology, University of California, Berkeley.

McCarthy, Helen

- 1993 Managing Oaks and the Acorn Crop. In *Before the Wilderness: Environmental Management by Native Californians*, edited by Thomas C. Blackburn and Kat Anderson. Menlo Park: Ballena Press.

McManus, Jane M.

- 1985 An Analysis of the Lithic Artifact Assemblage from the Forbush Creek Site (31Yk1), Yadkin County, North Carolina. *Southern Indian Studies* 34.

McWhorter, Margaret

- 2008 The Late Woodland Component at the Concrete Block Site (38KE192) in Kershaw County, South Carolina. Unpublished B.A. Honors thesis, Department of Anthropology, University of South Carolina, Columbia.

Messner, Timothy C.

- 2011 *Acorns and Bitter Roots: Starch Grain Research in the Prehistoric Eastern Woodlands.* University of Alabama Press, Tuscaloosa, Alabama.

Meyers, Maureen, Jack Wynn, Ramie Gougeon, Betsey Shirk

- 1999 Vining Phase Excavations on the Chattahoochee-Oconee National Forest. *Early Georgia* 27 (2):36-58

Mikell, Gregory

- 1987 The Donnaha Site: Late Woodland Period Subsistence and Ecology. Unpublished MA thesis, Department of Anthropology, Wake Forest University, Winston-Salem.

Mills, Robert

- 1825 *Atlas of the State of South Carolina.* Toy, Baltimore, MD.
- 1826 *Statistics of South Carolina.* Hurlbut and Lloyd, Charleston, South Carolina, 1826.

- Milner, George R.  
1983 *The Turner and Demange Sites*. American Bottom Archaeology, FAI-270 Site Reports, Vol. 4. University of Illinois Press, Urbana.
- Mitchell, Joseph C and Whit Gibbons  
2010 *Salamanders of the Southeast*. University of Georgia Press, Athens.
- Moerman, Daniel E.  
2002 *Native American Ethnobotany*. Timber Press, Portland, Oregon.  
2003 *Native American Ethnobotany: Database of Foods, Drugs, Dyes and Fibers of Native American Peoples, Derived from Plants*. Electronic document, <http://herb.umd.umich.edu/>.
- Mooney, James  
1900 *Myths of the Cherokee*. Part 1, pp. 3-548, 19<sup>th</sup> *Annual Report* of the Bureau of American Ethnology 1897-'98. Smithsonian Institution, Washington; U.S. Government Printing Office.
- Moore, David G.  
2002 *Catawba Valley Mississippian: Ceramics, Chronology, and Catawba Indians*. The University of Alabama Press, Tuscaloosa.
- Mozingo, Dea  
1997 *A Look at Vining and Lamar Subsistence*. Paper presented at the 54<sup>th</sup> Annual Meeting of the Southeastern Archaeological Conference, Baton Rouge, Louisiana.
- Myers, Richard K., Robert Zahner, and Steven M. Jones  
1986 *Forest Habitat Regions of South Carolina from Landsat Imagery*. *Forest Research Series*, South Carolina Agricultural Experiment Station, Dept. of Forestry, Clemson University Clemson, S.C.
- Nagle, Kimberly and William Green  
2010 *Archaeological Data Recovery Excavations at the Tree House Site (38LX531) Lexington County, South Carolina*. Technical report submitted to South Carolina Electric and Gas Company, Cayce, SC. S&ME, Inc., Columbia, SC.
- Nassaney, Michael S., and Charles R. Cobb.  
1991 *Stability, Transformation, and Variation: The Late Woodland Southeast*. Plenum Press, New York.
- Nelson , John B.  
1986 *The Natural Communities of South Carolina*. South Carolina Wildlife & Marine Resources Department
- Nelson, Michael Vincent  
2005 *Understanding Lawton (38AL11): The Social and Political Functions and Occupational History of a Middle Mississippian Chiefdom Capital*. Unpublished Master's Thesis, Department of Anthropology, University of South Carolina, Columbia.
- Newkirk, Judith  
1978 *The Parker Site: A Woodland Site in Davidson County, North Carolina*. M.A. thesis, Wake Forest University, Winston-Salem, North Carolina.

- Oliver, Billy  
1992 Settlements of the Pee Dee Culture. PhD. Dissertation, University of North Carolina, Chapel Hill, North Carolina.
- Omernik, J.M.  
1987 Ecoregions of the Conterminous United States (map). *Annals of the Association of American Geographers* 77(1):118-125.
- Omernik, J.M.  
1995 Ecoregions: A Spatial Framework for Environmental Management. In: *Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making*, Davis, W.S. and T.P. Simon (eds.), p. 49-62. Lewis Publishers, Boca Raton, Florida.
- Ortiz, Beverly R.  
1991 *It Will Live Forever: Traditional Yosemite Indian Acorn Preparation*. Heyday Books, Berkeley, California.
- Osborne, Owen G.  
2013 Initial Investigations of the Eden Site: A Submerged Mississippian Settlement of the Congaree River Valley. Paper presented at the Archaeological Society of South Carolina Annual Conference on South Carolina Archaeology, Columbia, South Carolina.
- Petraglia, Michael D  
2002 The Heated and the Broken: Thermally Altered Stone, Human Behavior and Archaeological Site Formation. *North American Archaeologist*, 23 (3) (2002), pp. 241–269
- Petruso Karl M., and Jere M. Wickens  
1984 The Acorn in Aboriginal Subsistence in Eastern North America: A Report on Miscellaneous Experiments. In *Experiments and Observations on Aboriginal Wild Plant Food Utilization in Eastern North America*, edited by P. Munson, pp. 360-378. Prehistory Research Series Vol. 6, no. 2. Indiana Historical Society, Indianapolis.
- Pettus, Louise  
1995 "Colonial Ferries Tamed the Catawba." *Charlotte Observer*, December 16.  
2001 The Ferry at Van Wyck. History & Articles for Lancaster Co. SC.  
[http://www.rootsweb.ancestry.com/~sclancas/history/history\\_ferry.htm](http://www.rootsweb.ancestry.com/~sclancas/history/history_ferry.htm).  
2005 *Leasing Away A Nation, The Legacy of Catawba Indian Land Leases*. Palmetto Conservation Foundation, Spartanburg, SC.
- Pluckhahn, Thomas J  
1997 Rethinking Early Mississippian Chronology and Cultural Contact in Central Georgia: The View from Tarver (9JO6). *Early Georgia* 25(1). 1997.
- Potter, E. F., J. F. Parnell, and R. P. Teulings.  
1980 *Birds of the Carolinas*. University of North Carolina Press, Chapel Hill, NC.
- Prentice, Guy and Wendy M. Nettles,  
2003 *Ninety Six National Historic Site: Archaeological Overview and Assessment*, Southeast Archaeological Center, Tallahassee, FL.

Price, Jonathan, and John Strothers

1808 *The First Actual Survey of the State of North Carolina* [map]. Engraved by W. Harrison, Philadelphia.

Radford, Albert E.; Ahles, Harry E.; Bell, C. Ritchie

1968 *Manual of the Vascular Flora of the Carolinas*. Chapel Hill, NC: The University of North Carolina Press.

Reed, Elizabeth

1950 Catawba River Ferry, Only One in SC Primary Road System, Sees Daily Use. *The Herald*, March 25, 1950.

Reid, J. Jefferson

1965 A Comparative Statement of Ceramics from the Hollywood and Town Creek Sites. *Southern Indian Studies* 17: 12-25.

1967 *Pee Dee Pottery from the Mound at Town Creek*. Unpublished M.A. thesis, Department of Anthropology, University of North Carolina, Chapel Hill.

Reimer, P. J., Bard, E., Bayliss, A., Beck, J. W., Blackwell, P. G., Bronk Ramsey, C., Grootes, P. M., Guilderson, T. P., Hafliðason, H., Hajdas, I., Hatte, C., Heaton, T. J., Hoffmann, D. L., Hogg, A. G., Hughen, K. A., Kaiser, K. F., Kromer, B., Manning, S. W., Niu, M., Reimer, R. W., Richards, D. A., Scott, E. M., Southon, J. R., Staff, R. A., Turney, C. S. M., & van der Plicht, J.

2013 IntCal13 and Marine13 Radiocarbon Age Calibration Curves 0-50,000 Years cal BP. *Radiocarbon*, 55(4).

Reitz, Elizabeth J., and Elizabeth S. Wing

2008 *Zooarchaeology* (second edition). Cambridge Manuals in Archaeology. Cambridge University Press, New York.

Research Laboratories of Archaeology (RLA )

2009 Proposed Treatment Plan for Archaeological Data Recovery Investigations at Archaeological Sites 38Yk533 and 38Yk534. Research Laboratories of Archaeology, University of North Carolina, Chapel Hill. Submitted to the South Carolina Department of Transportation, Columbia, SC.

Riggs, Brett H.

2010 Temporal Trends in Native Ceramic Traditions of the Lower Catawba River Valley. *Southeastern Archaeology* 29(1):31-43.

Robinson, Kenneth W.

1996 Archaeological Investigations in McDowell County, North Carolina, 1988–1990. Ms. on file, Office of State Archaeology, Raleigh.

*Rock Hill Herald*

1950 Catawba River Ferry, Only One in SC Primary Road System, Sees Daily Use, by Elizabeth Reed. *Rock Hill Herald*, March 25, 1950.

Rohde, Fred C., Rudolf G. Arndt, Jeffrey W. Foltz, Joseph M. Quattro

2009 *Freshwater Fishes of South Carolina*. University of South Carolina Press, Columbia.

- Rogers, John J. W.  
 2006 The Carolina Slate Belt. In *Stone Quarries and Sourcing in the Carolina Slate Belt*, edited by Vincas P. Steponaitis, Jeffrey D. Irwin, Theresa E. McReynolds, and Christopher R. Moore, pp. 10–15. Research Report No. 25, Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.
- Rudolph, James L. and David J. Hally  
 1985 *Archaeological Investigation at the Beaverdam Creek Site (9EB85) Elbert County, Georgia*. U.S. Department of the Interior National Park Service Archaeological Service Branch, Atlanta.
- Russo, Michael and Gregory Heide  
 2001 Shell Rings of the Southeast US. *Antiquity* 75:491–492.
- Rutherford, Thomas, Thomas Polk, James Cook, and Ephraim Mitchell (surveyors)  
 1772 A Plan of the Province Line from the Cherokee Line to Salisbury Road Between North and South Carolina. Photostat map copy on file, North Carolina State Archives, Raleigh.
- Ryan, Thomas.M.  
 1971 Test Excavations at the McCollum Site, 38CS2, July 12-30, 1971. Institute of Archeology and Anthropology, University of South Carolina *The Notebook* III (5): 104-110.
- Sassaman, Kenneth E., and David G. Anderson  
 1995 *Middle and Late Archaic Archaeological Records of South Carolina: A Synthesis for Research and Resources Management*. Savannah River Archaeological Research Papers 6. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.
- Sassman, Kenneth E., Meggan E. Blessing, and Asa R. Randall  
 2006 Stallings Island Revisited: New Evidence for Occupational History, Community Pattern, and Subsistence Technology. *American Antiquity* 73 (3): 539–565.
- Scarry, C. Margaret  
 2003 Patterns of Wild Plant Utilization in the Prehistoric Eastern Woodlands. In *People and Plants in Ancient Eastern North America*, edited by Paul E. Minnis, pp.50-104. Smithsonian Books, Washington.
- Schmidt, John M. and James A. Barnwell  
 2002 A Flora of the Rock Hill Blackjacks Heritage Preserve, York County, South Carolina. *Castanea* Vol. 67, No. 3 (Sep., 2002), pp. 247-279
- Secor, Donald T., C. Barker, M. Balinsky, and D. Colquhoun.  
 1998 The Carolina Terrane in Northeastern South Carolina: History of an Exotic Volcanic Arc. *South Carolina Geology* 40, 1– 17.
- Shelford, Victor  
 1963 *The Ecology of North America*. University of Illinois Press, Urbana.
- Skeen, J. N., P. D. Doerr, and D. H. Van Lear.  
 1993 Oak-Hickory-Pine Forests. In: *Biodiversity of the Southeastern United States: Upland Terrestrial Communities*, W. H. Martin, S. G. Boyce, and A. C. Echternacht, (eds.), pp 1–33. John Wiley and Sons, Inc. New York, NY.

Smith, Allen. H.

2000 Kalispel Ethnography and Ethnohistory. In: The Calispell Valley Archaeological Project Final Report, Project Background and Environmental Context, Vol 1: 4.10–4.46 Vol. 1 , W. Andrefsky Jr., G.C. Burtchard, K.M. Presler, S.R. Samuels, P.H. Sanders, A.V. Thoms (eds.) *Project Report* No. 16. Center for Northwest Anthropology, Washington State University, Pullman,

Smith, Bruce D. and C. Wesley Cowan

2003 Domesticated Crop Plants and the Evolution of Food production Economies in Eastern North America. In *People and Plants in Ancient Eastern North America*, ed. by Paul E. Minnis, pp.105-125. Smithsonian Books, Washington.

Smith, Huron H.

1923 Ethnobotany of the Menomini Indians. *Bulletin of the Public Museum of Milwaukee* 4(1):1-174.

1932 Ethnobotany of the Ojibwa Indians. *Bulletin of the Public Museum of Milwaukee* 4(3):327-525.

Smyth, John F.D.

1784 *A Tour of the United States of America*. G. Perrin, Dublin [Ireland].

South, Stanley

1976 An Archaeological Survey of Southeastern North Carolina. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, *The Notebook* 8: 1-55.

2005 *Archaeology on the Roanoke*. Monograph No. 4, Research Laboratories of Anthropology, University of North Carolina, Chapel Hill.

South Carolina Department of Transportation (SC DOT)

2009 Scope of Services – Data Recovery Investigations at Archaeological Sites 38YK533 and 38YK534. South Carolina Department of Transportation, Columbia, SC.

South Carolina Secretary of State

1911 *Report*, Part 1. Office of the Secretary of State, Columbia, South Carolina.

South Carolina State Climatology Office

2012 South Carolina Climate. [http://www.dnr.sc.gov/climate/sco/ClimateData/cli\\_sc\\_climate.php](http://www.dnr.sc.gov/climate/sco/ClimateData/cli_sc_climate.php).

Southern Railway Company

1917 *The Floods of July, 1916: How the Southern Railway Organization Met an Emergency*. Office of the President. Byron S. Adams, Washington, DC.

Stahle, David W. and Malcolm K. Cleaveland

1994 Tree-Ring Reconstructed Rainfall over the Southeastern U.S.A. During the Medieval Warm Period and Little Ice Age. *Climatic Change* 26(2-3):199-212.

Stanyard, William F., and Thomas R. Baker

1992 Two Hundred Years of Woodstock Occupation in Northwest Georgia: The View from Whitehead Farm I. *Early Georgia* 20(2):33-71.

Stephenson, Keith

2011 Mississippi Period Occupational and Political History of the Middle Savannah River Valley. Ph.D. dissertation, University of Kentucky, Lexington.

- Steponaitis, Vincas P., Jeffrey D. Irwin, Theresa E. McReynolds, and Christopher R. Moore (editors)  
2006 *Stone Quarries and Sourcing in the Carolina Slate Belt*. Research Report No. 25, Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.
- Stewart, James  
2008 V. Green (38KE287) and Richardson (38KE288), Two Central South Carolina Late Woodland Villages. Paper presented at the 65th Annual Meeting of the Southeastern Archaeological Conference, Charlotte, NC.
- Stuart, George E.  
1970 Some Archaeological Sites in the Middle Wateree Valley, South Carolina. Unpublished Master's Thesis, George Washington University.  
1975 The Post Archaic Occupation of Central South Carolina. PhD. dissertation, University of North Carolina, Chapel Hill, North Carolina.
- Sweeney, Kara Bridgman, Meagan Brady, Dea Mozingo, and Eric C. Poplin  
2006 Data Recovery Excavations at 38UN989 on the SC route 72/121/215 Bridge Replacement Project over the Broad River at the Chester/Union County Line. Report submitted by Brockington and Associates, Inc., to the South Carolina Department of Transportation, Columbia, South Carolina.
- Talalay, Laurie, Donald R. Keller, and Patrick J. Munson  
1984 Hickory Nuts, Walnuts, Butternuts, and Hazelnuts: Observations and Experiments Relevant to their Aboriginal Exploitation in Eastern North America. In *Experiments and Observations on Aboriginal Wild Plant Food Utilization in Eastern North America*, edited by Patrick J. Munson, pp. 338-359. Indiana Historical Society, Indianapolis.
- Tantaquidgeon, Gladys  
1972 *Folk Medicine of the Delaware and Related Algonkian Indians*. Anthropological Series 3. Pennsylvania Historical and Museum Commission, Harrisburg.
- Teague, George A.  
1972 *An Archaic-Woodland Site in Calhoun County, S.C., 38CL4*. Institute of Archeology and Anthropology, University of South Carolina, Columbia, South Carolina.  
1979 *An Assessment of Archeological Resources in the Parr Project Area, South Carolina*. Institute of Archeology and Anthropology. University of South Carolina, Columbia.
- Terrell, William H.  
1998 Zooarchaeology and Human Populations: A Case Study from the North Carolina Piedmont. Unpublished M.A. thesis, Wake Forest University.
- Tesart, Alain  
1982 The Significance of Food Storage among Hunter-Gatherers: Residence Patterns, Population Densities, and Social Inequalities. *Current Anthropology* 23: 523-538.
- Thompson, Eric F.  
1982 *A Guide to the Amphibians, Reptiles, and Mammals of South Carolina*. Privately published.
- Thoms, Alston V.  
2007 Fire-cracked Rock Features on Sandy Landforms in the Northern Rocky Mountains: Toward Establishing Reliable Frames of Reference for Assessing Site Integrity. *Geoarchaeology* 22, 477-510.

Thoms, Alston V.

- 2008 The Fire Stones Carry: Ethnographic Records and Archaeological Expectations for Hot-rock Cookery in Western North America. *Journal of Anthropological Archaeology* 27(4):443-460.
- 2009 Rocks of Ages: Propagation of Hot-Rock Cookery in Western North America. *Journal of Archaeological Science* 36:573-591.

Trinkley, Michael B.

- 1980 Investigation of the Woodland Period along the South Carolina Coast. Ph.D. dissertation, Department of Anthropology, University of North Carolina. Ann Arbor: University Microfilms.
- 1981 Studies of Three Woodland Period Sites in Beaufort County, South Carolina. Columbia: South Carolina Department of Highways and Public Transportation.
- 1981a Archaeological Testing of the Walnut Grove Shell Midden, Charleston County. Report submitted to the USDA Forest Service.
- 1981b McClellanville, Jeremy, and Catawba series Pottery from the Central South Carolina Coast. *COSCAPA Newsletter* 2(2):8-15.
- 1990 An Archaeological Context for the South Carolina Woodland Period. Chicora Foundation Research Series 22. Report prepared for: South Carolina Department of Archives and History, Columbia, South Carolina.
- 1995 Plant Resources. In *Town Creek Indian Mound: A Native American Legacy*, by Joffre L. Coe, pp. 117-135. University of North Carolina Press, Chapel Hill.

Underhill, Anne P.

- 2013 *A Companion to Chinese Archaeology*. John Wiley & Sons, New York, NY.

United States Department of Agriculture, Natural Resource Conservation Service

- 2011 The PLANTS Database. National Plant Data Center, Baton Rouge. Electronic document, <http://plants.usda.gov>, accessed 23 June 2011.

United States Department of Agriculture, Agricultural Research Service

- 2013 Nutrient data for 12058 (Nuts, acorns, raw). National Nutrient Database for Standard Reference, Release 25. Electronic document, <http://ndb.nal.usda.gov/ndb/foods>, accessed 6 August, 2013.

Vanier, Jeremy Allen

- 2010 A Ceramic Vessel Function Analysis and Foodways Approach to the Late Woodland/Mississippian Interface in Kershaw County, South Carolina. Unpublished M.A. thesis, Department of Anthropology, University of South Carolina, Columbia.
- 2013 From Salvage to Substance: An Examination of Ceramic Sherds Recovered from the Holly Hill Lake Mound Site (38SU13). Paper presented at the Archaeological Society of South Carolina Annual Conference on South Carolina Archaeology, Columbia, South Carolina.

Wagner, Gail E.

- 2003 The Concrete Block Site (38KE192). The Council of South Carolina Professional Archaeologists newsletter XXIV(3):15-20.
- 2005 Early Mississippian in Central South Carolina at the Belmont Neck Site (38KE06). Paper presented at the 62nd Annual Meeting of the Southeastern Archaeological Conference, Columbia, SC.
- 2008 Late Woodland and Mississippian Plant Use in Central South Carolina. Paper presented at the 65th Annual Meeting of the Southeastern Archaeological Conference, Charlotte, NC.
- 2013 Innovators or Invaders? Late Woodland and Mississippian Plant Use in Central South Carolina. Paper presented at the 54<sup>th</sup> annual meeting of the Society for Economic Botany, Plymouth, England, UK.

- Ward, H. Trawick and R.P. Stephen Davis, Jr.  
1999 *Time Before History: The Archaeology of North Carolina*. University of North Carolina Press, Chapel Hill, North Carolina.
- Waselkov, Gregory A. and Kathryn E. Holland Braund, editors and annotators  
1995 *William Bartram on the Southeastern Indians*. University of Nebraska Press, Lincoln.
- Wauchope, Robert  
1948 The Ceramic Sequence in the Etowah Drainage, Northwest Georgia. *American Antiquity* 13(3).  
1966 Archaeological Survey of Northern Georgia, with a Test of Some Cultural Hypotheses. Society for American Archaeology, *Memoir* 21.
- Weakley, Alan S.  
2006 *Flora of the Carolinas, Virginia, Georgia and Surrounding Areas*. University of North Carolina Herbarium (NCU), North Carolina Botanical Garden, University of North Carolina at Chapel Hill.
- Webster, W.D., J.F. Parnell, and W.C. Biggs, Jr.  
1985 *Mammals of the Carolinas, Virginia, and Maryland*. The University of North Carolina Press, Chapel Hill.
- Wesson, Cameron  
1999 Chiefly Power and Food Storage in Southeastern North America. *World Archaeology* 31: 145-164.
- Whalley, L. A.  
1983 Plant Remains from the Turner Site. In *The Turner and DeMange Sites*, by G. R. Milner, pp. 213-233. American Bottom Archaeology FAI-270 Site Reports Volume 4, University of Illinois Press, Urbana.
- Whitley, Thomas G.  
2012 Archaeological Data Recovery at Riverfront Village (38AK933): A Mississippian/Contact Period Occupation in Aiken County, South Carolina. Technical report submitted to The South Carolina Department of Transportation, Columbia. Brockington and Associates, Inc., Charleston, South Carolina.
- Whyte, Thomas R.  
1994 Small-Animal Remains in Archaeological Pit Features. In *Beamers, Bobwhites, and Blue-Points: Tributes to the Career of Paul W. Parmalee*, edited by J.R. Purdue, W.E. Klippel, and B.W. Styles, pp. 163-176. Illinois State Museum, Springfield.  
1997 Vertebrate Archaeofaunal Remains from the Cactus Hill Site. In *Archaeological Investigations of Site 44SX202, Cactus Hill, Sussex County, Virginia*. Virginia Department of Historic Resources, Richmond.  
2001 Distinguishing Remains of Human Cremations from Burned Animal Bones. *Journal of Field Archaeology* 28:437-448.  
2011 Archaeofaunal Remains from Garden Creek Mound No. 2 (31HW2) in Haywood County, North Carolina. *North Carolina Archaeology* 60:53-64.
- Whyte, Thomas R., Scott A. Fleeman, Cathleen D. Evans  
2011 An Alternative Ontology and Experimental Study of Pottery Punctuation in Southern Appalachian Region Prehistory. *Southeastern Archaeology* 30 (2): 390-398.

Williams, Michele Lea

2000 Evidence for Medicinal Plants in the Paleoethnobotanical Record of the Eastern United States during the Late Woodland through Mississippian Periods. Unpublished Ph.D. dissertation, Washington University, Department of Anthropology.

Wilson, Jack H. and S. Homes Hogue

1995 Animal Remains. In *Town Creek Indian Mound: A Native American Legacy*, by Joffre L. Coe, pp. 136-150. University of North Carolina Press, Chapel Hill.

Wilson, L. A.

1995 *The Land Manager's Guide to the Amphibians and Reptiles of the South*. Nature Conservancy, Southeastern Region, Chapel Hill, North Carolina.

Woodall, J. Ned

1984 *The Donnah Site: 1973, 1975 Excavations*. Publication 22, North Carolina Archaeological Council, Raleigh, North Carolina.

1990 *Archaeological Investigations in the Yadkin River Valley, 1984-1987*. Publication 25, North Carolina Archaeological Council, Raleigh, North Carolina.

Workman, W. D.

1953 "Catawba Ferry is Relic of Old Days." *Evening Herald*, October 15, Rock Hill, SC.

Worth, John

1996 Upland Lamar, Vining, and Cartersville: An Interim Report from Raccoon Ridge. *Early Georgia* 24(1).

Worth, John E., and W. Maxwell Duke

1991 Hogcrawl Creek: Early Mississippian Period Occupation in the Middle Flint River Floodplain. *Early Georgia* 19(1):19-42

Yarnell, Richard A.

1993 The Importance of Native Crops during the Late Archaic and Woodland Periods. In *Foraging and Farming in the Eastern Woodlands*, ed. by C. Margaret Scarry, pp.13-26. University Press of Florida, Gainesville.

Yarnell, Richard A., and M. Jean Black

1985 Temporal Trends Indicated by a Survey of Archaic and Woodland Plant Food Remains from Southeastern North America. *Southeastern Archaeology* 4(2):93-106.

York County Register of Deeds

1843 Plat for Benjamin S. Massey property, Jas. D. McElwain. Dec. 5, 1843. Deed Book 1:309

1872 Deed from W.B. Metts (assignee) to C.A. White. Dec. 11, 1872. Deed Book Y:279.

1909 Deed from C.A. White to S.N. Sowell and J.L. Sowell. Deed Book 34:160.

1913 Deed from S.N. Sowell and J.L. Sowell to the Catawba Press Brick Company. Deed Book 40:190.

1917 Deed from A.L. Gaston (receiver) to William N. Ashe. Deed Book 44:290.

1985 Deed from James M. Moore and Elizabeth Ashe Moore estate to Ashe Brick Company. Deed Book 806:306.

1987 Deed (quitclaim) from Ashe Brick Company to Ashe Farms Co., Inc. Deed Book 976:218.

1993 Deed from Ashe Farms, Inc., to Calhoun Newsprint Company. Deed Book 720:203.

York County Register of Deeds

1996 Deed from Calhoun Newsprint Company to Bowater Incorporated. Deed Book 2011:331.

Yorkville Enquirer

1927 Ashe Ferry – New Flat on Catawba. *The Yorkville Enquirer*, April 26, 1927.



## Appendix A

### Summary of Positive Shovel Test Pits (n=65) Excavated by Legacy Archaeologists.

Shovel Test (Legacy 2008)	UNC Coordinate system location (approx.)	Potsherds recovered	Lithic artifacts recovered	Total	Comment
T17 ST 99	no location	4	5	9	not on Legacy map
T17 ST100	no location	4	1	5	not on Legacy map
T18 ST 1	823.00R917.52	0	33	33	not verified in field
T18 ST 2	825.55R897.66	4	7	11	not on Legacy map
T18 ST 3	836.48R880.79	0	2	2	not verified in field
T18 ST 4	847.37R864.19	2	3	5	location verified in field
T18 ST 5	853.13R846.21	0	6	6	not verified in field
T19 ST 1	840.68R929.09	0	7	7	location verified in field
T19 ST 2	850.71R914.52	0	2	2	location verified in field
T19 ST 3	856.76R890.10	11	2	13	not on Legacy map
T19 ST 4	862.59R866.51	4	5	9	not on Legacy map
T19 ST 5	870.00R848.00	6	2	8	not on Legacy map
T19 ST 8	887.22R791.52	0	1	1	location verified in field
J-3	836.98R880.18	1	1	2	location verified in field
J-4	880.68R873.83	4	17	21	not verified in field
490N 420E	780.10R886.30	0	1	1	not verified in field
490N 430E	777.00R893.20	4	1	5	not verified in field
490N 470E	764.17R922.03	2	1	3	not on Legacy map
490N 480E	761.34R929.81	2	1	3	location verified in field
490N 500E	755.70R943.70	1	4	5	not verified in field
500N 430E	785.55R894.90	0	1	1	location verified in field
500N 440E	781.36R903.67	0	1	1	location verified in field
500N 450E	777.86R910.35	3	2	5	location verified in field
500N 470E	826.12R888.18	0	1	1	not verified in field
500N 470E (S)	771.21R925.57	6	5	11	not verified in field
500N 490E	832.60R903.63	3	5	8	location verified in field
500N 490E (S)	764.79R939.39	3	4	7	location verified in field
510N 470E	832.30R882.42	2	2	4	location verified in field
510N 490E	840.04R898.91	2	5	7	location verified in field
510N 490E (S)	771.79R942.14	5	1	6	location verified in field
510N 500E	842.70R908.60	6	2	8	not verified in field
510N 500E (S)	768.33R949.03	3	6	9	location verified in field
520N 460E	837.91R869.38	4	10	14	location verified in field
520N 470E	841.35R878.00	2	1	3	not verified in field
520N 500E	852.01R903.74	13	4	17	not verified in field
530N 440E	842.68R849.96	0	4	4	location verified in field
530N 450E	842.10R858.09	2	1	3	location verified in field
530N 460E	846.92R866.07	5	6	11	not verified in field
530N 470E	848.74R875.72	3	6	9	location verified in field
540N 460E	855.66R862.66	16	10	26	not verified in field
540N 470E	858.71R870.74	2	5	7	not verified in field
540N 490E	864.58R886.77	0	10	10	not verified in field
550N 430E	854.22R835.06	1	0	1	not verified in field
550N 440E	857.22R842.78	0	1	1	location verified in field
550N 450E	859.52R851.34	1	1	2	location verified in field
550N 460E	863.17R859.33	1	7	8	not verified in field
550N 470E	865.95R867.19	5	12	17	not verified in field

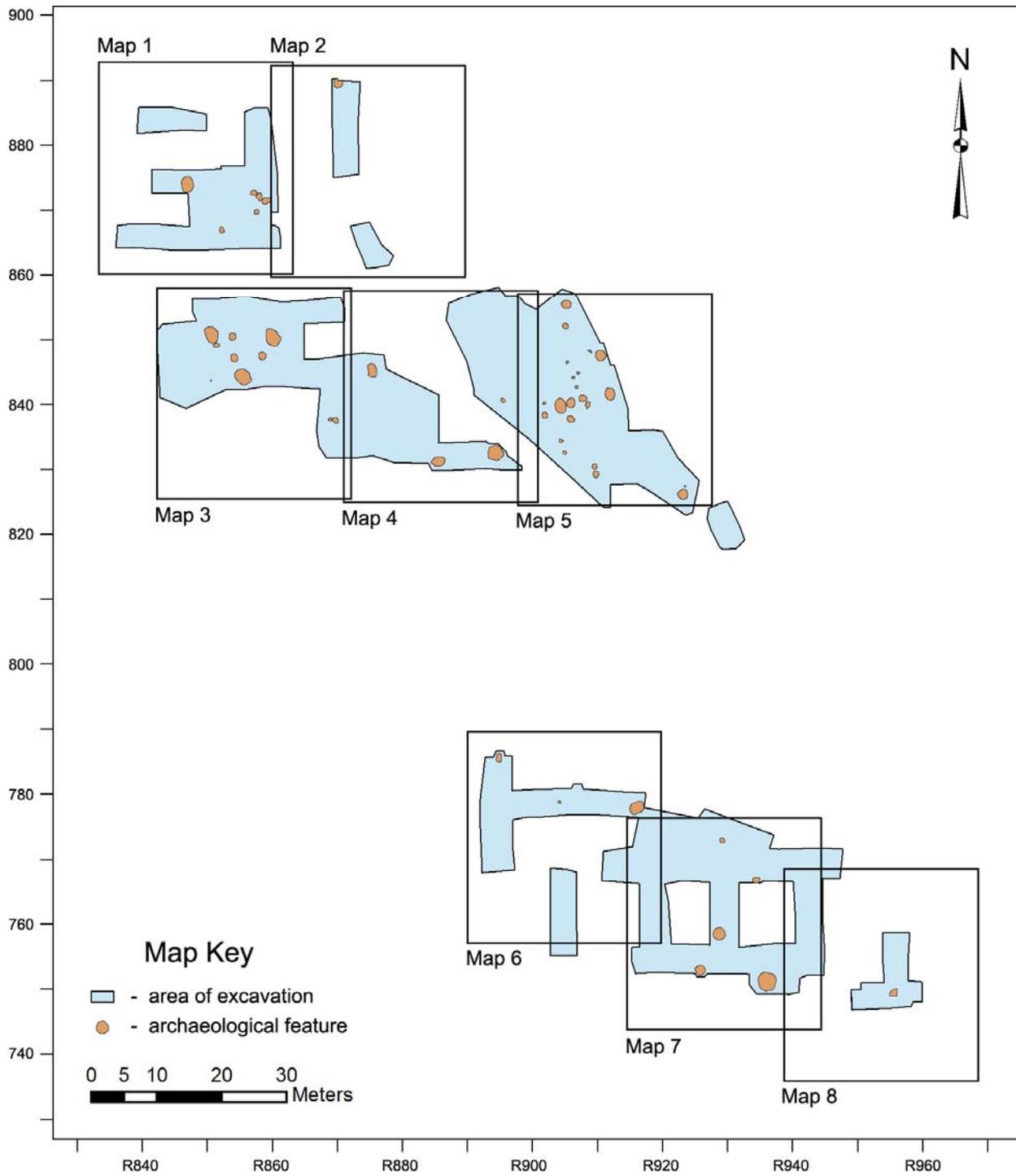
Summary of Positive Shovel Test Pits (n=65) Excavated by Legacy Archaeologists (con't.).

Shovel Test (Legacy 2008)	UNC Coordinate system location (approx.)	Potsherds recovered	Lithic artifacts recovered	Total	Comment
550N 480E	869.03R875.44	2	0	2	location verified in field
560N 430E	865.27R831.87	1	0	1	not verified in field
560N 440E	867.56R839.55	1	0	1	location verified in field
560N 450E	870.48R847.01	0	3	3	location verified in field
560N 460E	874.17R855.48	3	6	9	location verified in field
560N 470E	876.92R863.36	1	4	5	not verified in field
570N 420E	870.38R820.60	2	0	2	location verified in field
570N 440E	876.63R835.52	1	0	1	not verified in field
570N 450E	879.66R842.96	1	1	2	location verified in field
570N 460E	882.07R851.56	2	3	5	location verified in field
570N 470E	885.37R859.32	0	3	3	not verified in field
580N 400E	873.54R801.03	0	1	1	not verified in field
580N 440E	886.14R832.66	1	0	1	not verified in field
580N 460E	891.21R847.04	1	0	1	location verified in field
580N 470E	893.32R853.38	1	1	2	location verified in field
590N 400E	882.88R798.29	1	0	1	location verified in field
600N 430E	901.06R817.24	0	1	1	not verified in field
610N 450E	916.29R827.66	1	0	1	location verified in field
Total		156	238	394	

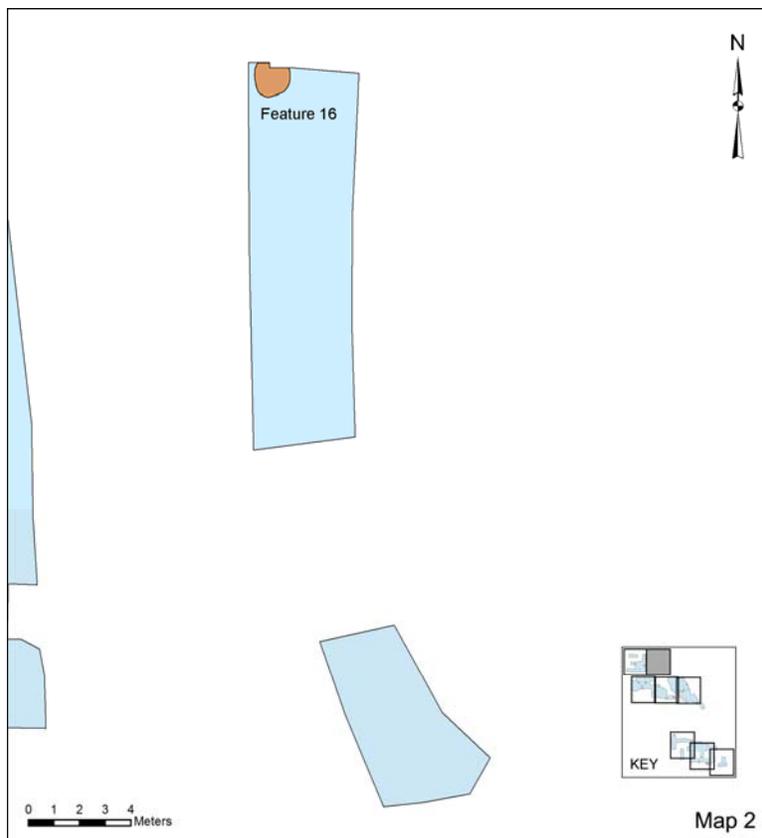
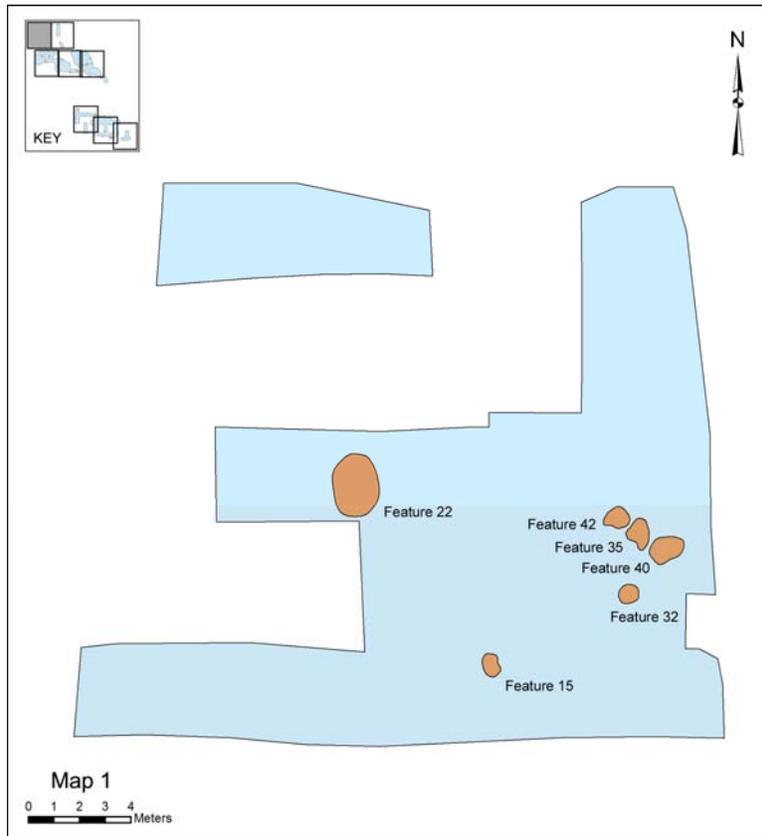
Appendix B

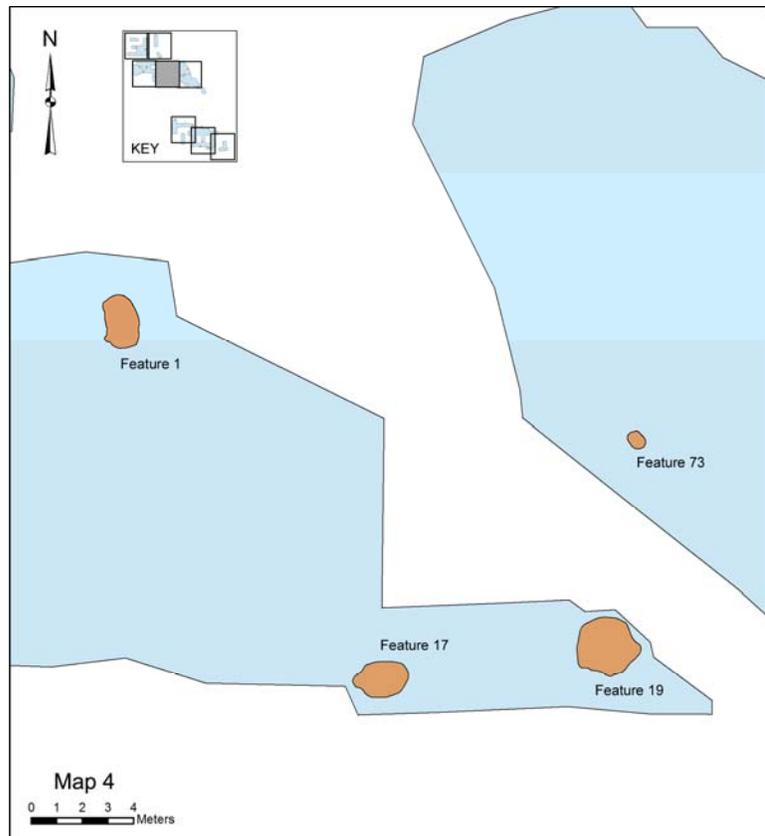
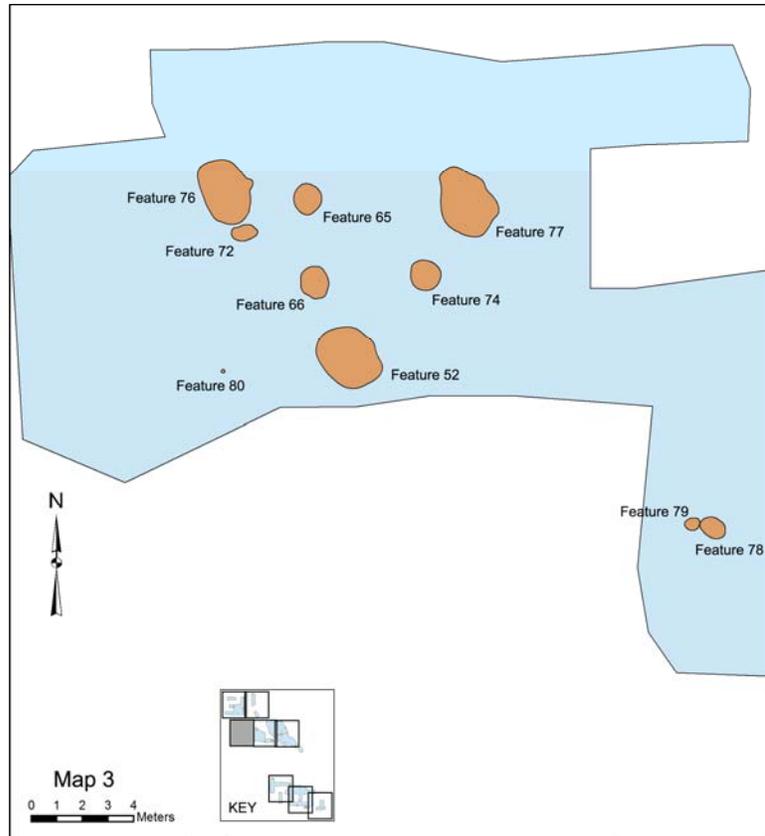
**MAPS, ILLUSTRATIONS, AND DESCRIPTIONS  
OF ARCHAEOLOGICAL FEATURES  
AT THE ASHE FERRY SITE**

## MAPS LOCATING ARCHAEOLOGICAL FEATURES

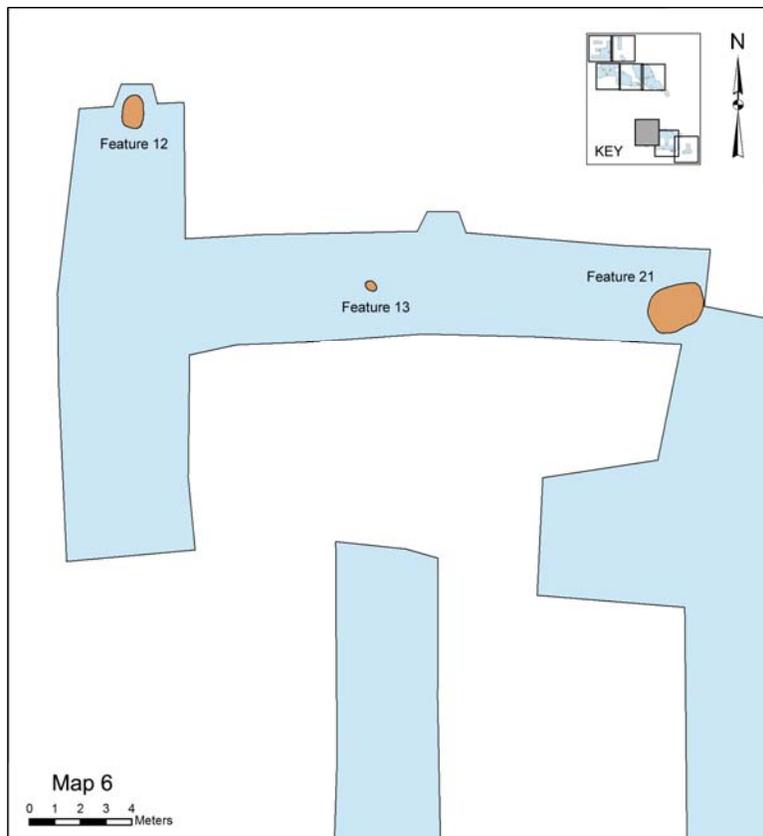
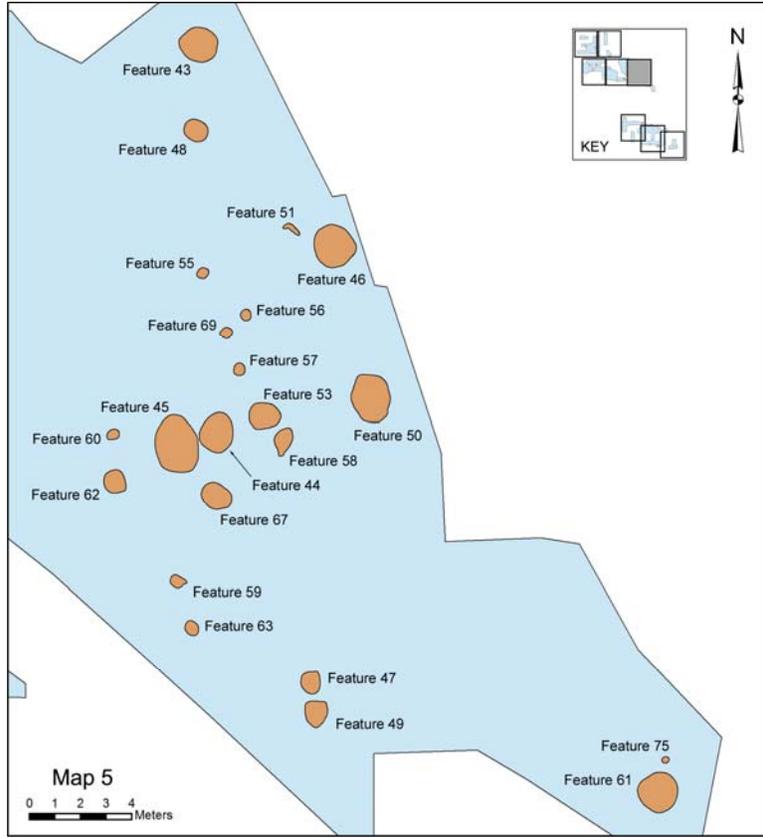


MAPS LOCATING ARCHAEOLOGICAL FEATURES

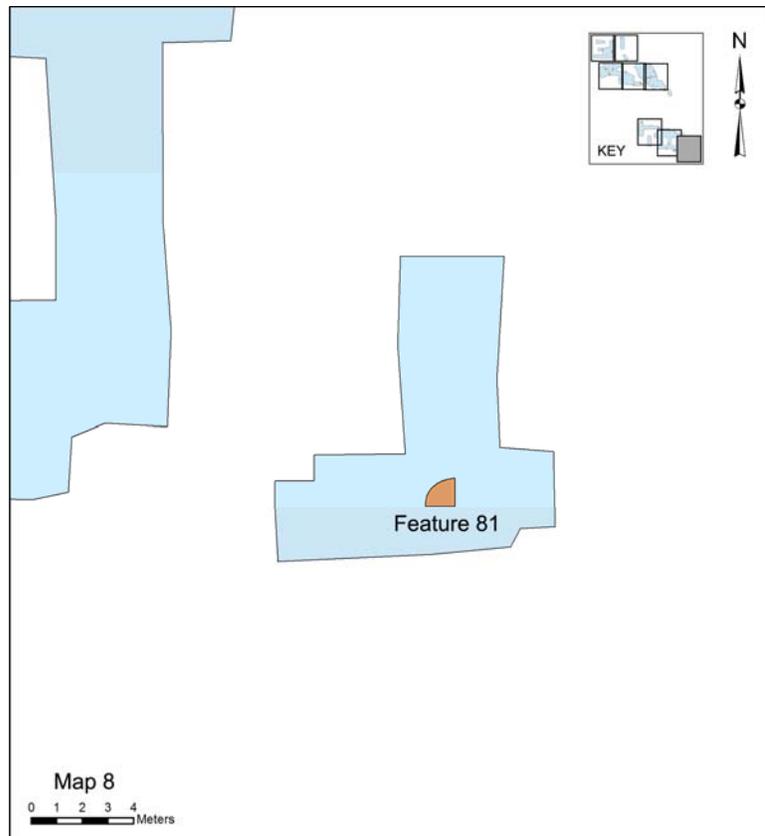
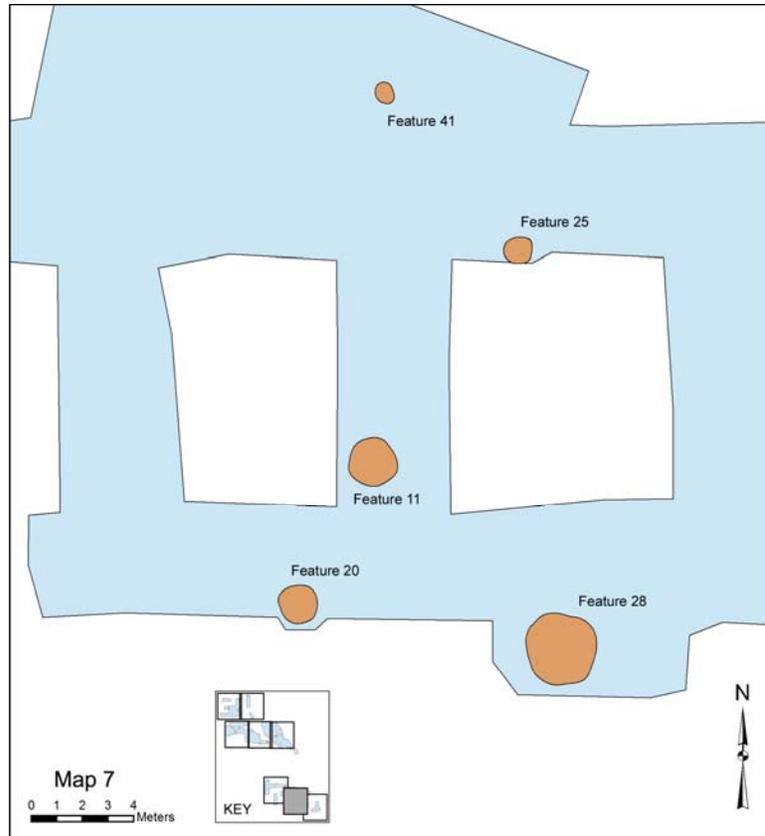




MAPS LOCATING ARCHAEOLOGICAL FEATURES



APPENDIX B



## DESCRIPTIONS OF ARCHAEOLOGICAL FEATURES AT THE ASHE FERRY SITE (38Yk533)

Mary Elizabeth Fitts

### **Feature 1** (center @ 845.30R875.30) (Figure B.1)

This shallow oval basin measured 210 cm north to south and 130 cm east to west. Feature 1 was initially identified as a cluster of Woodstock Complicated Stamped sherds evident at the base of plowzone. These sherds were mapped *in situ* prior to excavation of the underlying basin, which revealed a single thin (9cm) zone of brown (7.5YR4/3) silty sand over an irregular feature base. Feature contents included 126 potsherds, 35 flakes, and four pieces of fire-cracked rock. The ceramic sherds constitute a major portion of a Woodstock Complicated Stamped jar, a constituent ware of the Ashe Ferry phase.

### **Feature 11** (centered @ 758.60R928.56 ) (Figure B.2)

This circular pit feature measured approximately 180 cm in diameter and 60 cm deep (below base of plowzone). Two zones of fill were visible in plan; Zone A consisted of a uniform brown (10YR5/3) silty sand that rested on top of Zone B, a light yellowish brown (10YR6/4) silty sand mottled with brown (10YR5/3) silty sand. Zone A had a maximum thickness of 25 cm and contained two fragments of calcined bone, 27 potsherds, five pieces of daub, one projectile point fragment, 12 flakes, and seven fire-cracked rocks.

The removal of Zone B, which was on average 30 cm thick, revealed a concentration of Ashe Ferry series potsherds and rocks in yellowish brown (10YR5/4) silty sand that contained dense charcoal inclusions. These materials were mapped *in situ* and designated Zone C. In the south half of Feature 11 Zone C was waterscreened along with Zone B. Together they yielded 67 potsherds, two pieces of daub, one triangular projectile point, one projectile point fragment, 51 flakes, and 15 fire-cracked rocks. In the north half of the feature Zones B and C were excavated separately. Zone B contained 39 potsherds, one triangular projectile point, three projectile point fragments, one biface, nine flakes, and 16 fire-cracked rocks. Zone C, of which 37 liters were processed as a flotation sample, yielded 33 potsherds, one triangular projectile point, one possible milling stone fragment, eight flakes, and 17 fire-cracked rocks. This zone had a maximum thickness of 12 cm and was deposited on top of sterile sand. Removal of Zone C revealed that Feature 11 had sloping walls and a concave bottom, extending up to 60 cm below the base of the plow zone.

The size and morphology of Feature 11 are consistent with a probable function as a storage pit. Zone C is the initial fill deposited across the bottom of the feature when it was abandoned, while Zone B appears to be fill from post-abandonment wall collapse. This matrix subsided over time and the resulting depression was filled with soil from an overlying deposit (Zone A). Diagnostic artifacts recovered from Feature 11 matrices indicate a probable Late Woodland period Ashe Ferry phase affiliation. AMS assay of charred botanical material from Feature 11 produced an estimated date of date of 1030±30 years B.P. (2σ calibration, cal. A.D. 980 to 1030; calibration curve intercept, cal. A.D. 1030).

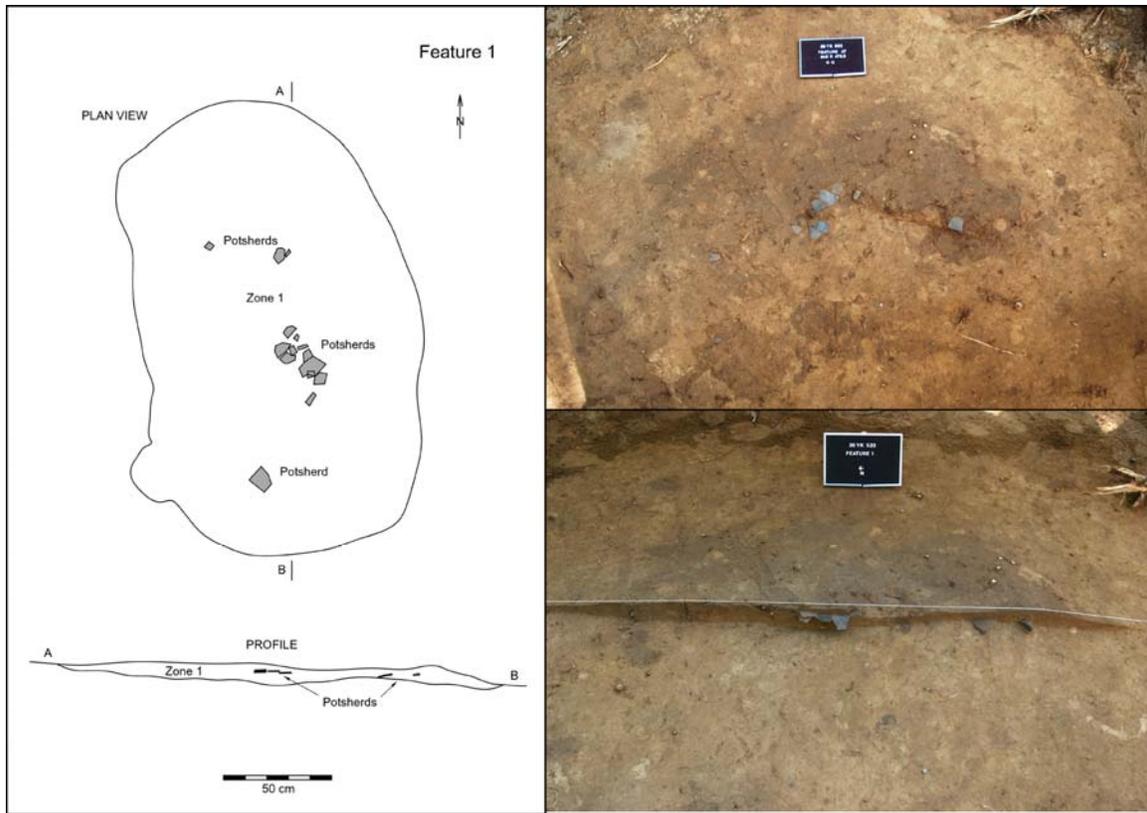


Figure B.1. Feature 1 plan view and profile drawings, and excavation photographs: top of feature showing *in situ* potsherds (top, view to east), and profile with west half excavated (bottom, view to east).

**Feature 12** (center @ 785.63R894.87) (Figure B.3)

Feature 12 was a cluster of rocks that extended approximately 120 cm north to south and 60 cm east to west. The rocks visible at the base of the plow zone were mapped in place before the feature was excavated. Excavators removed 5 to 10 cm of dark yellowish brown (10YR3/4) silty sand mottled with yellowish brown (10YR5/4) silty sand around the rock cluster, but no evidence of a pit was detected in the profile or below the rocks. In addition to 68 fire-cracked rocks, this feature yielded three fragments of calcined bone, 16 potsherds, one core, and 14 flakes. This plow-disturbed cluster of fire-cracked rocks probably represents the remains of a cooking or heating facility; the absence of ash or charcoal is attributed to extreme leaching of organic materials through the loose sandy matrix. Ceramic sherds recovered from Feature 12 are referable to the Late Woodland period Ashe Ferry series.

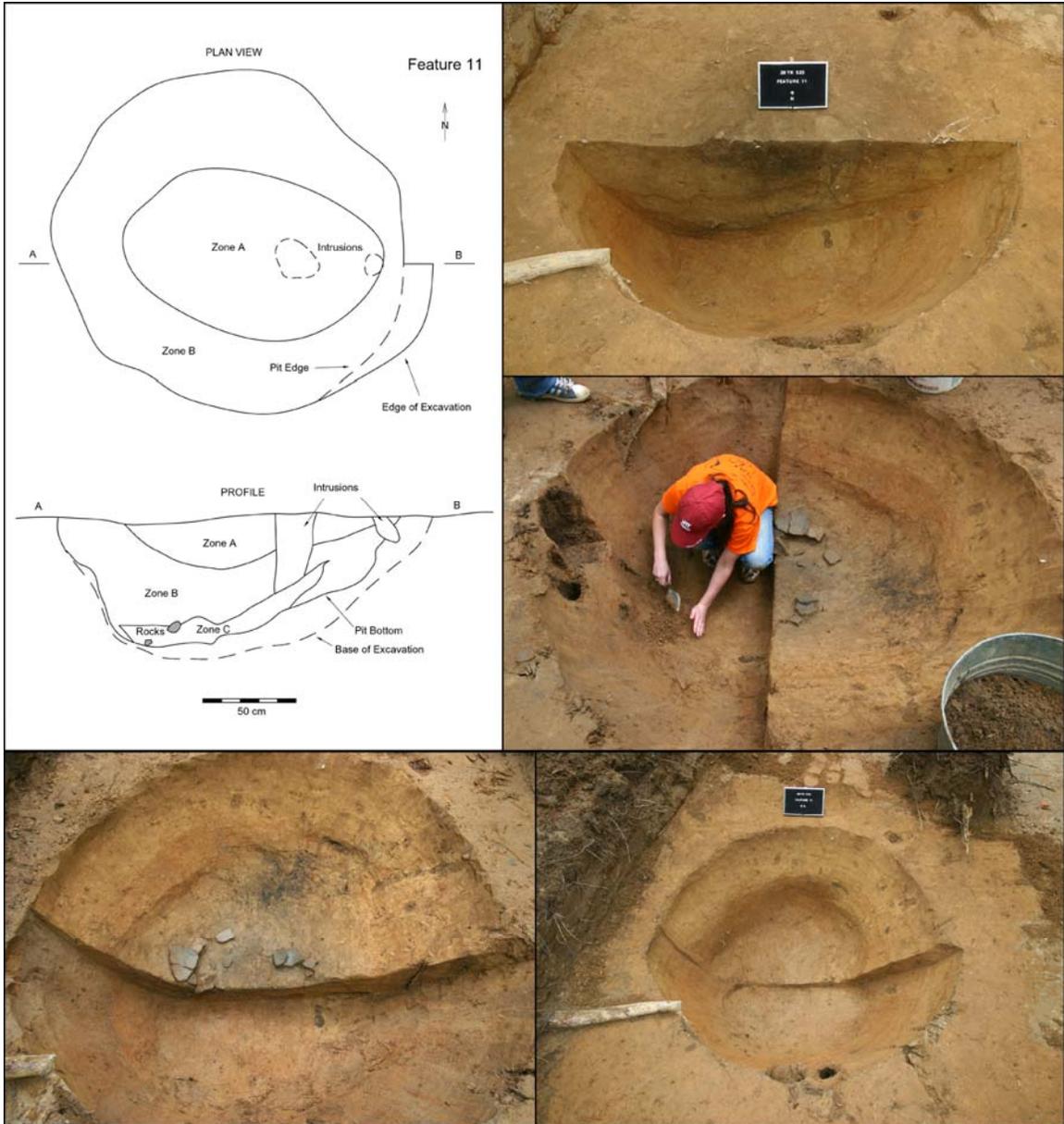


Figure B.2. Feature 11 plan view and profile drawings (top left), and excavation photographs: fill profile with south half excavated (top right, view to north), cleaning for photograph (middle right, view to west), in situ potsherds resting on top of Zone C (bottom left, view to north), and excavated feature (bottom right, view to north).

**Feature 13** (center @ 778.73R904.14) (Figure B.4)

This feature was also a cluster of rocks, but unlike Feature 12 was not scattered by historic period plowing. Feature 13 was oval in plan view, measuring 50 cm by 35 cm and oriented with its longer axis running northwest to southeast. No evidence of a pit was detected in plan view or profile, but soil from between the rocks and approximately 5 cm below them was waterscreened. This dark yellowish brown (10YR3/4) silty sand

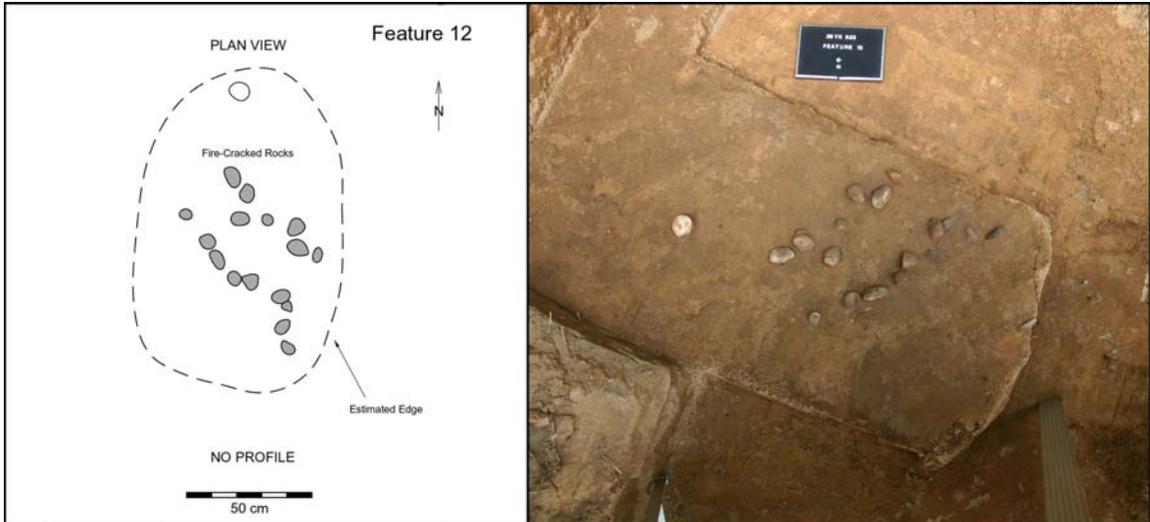


Figure B.3. Feature 12 plan view drawing and photograph at base of plow zone (view to east).

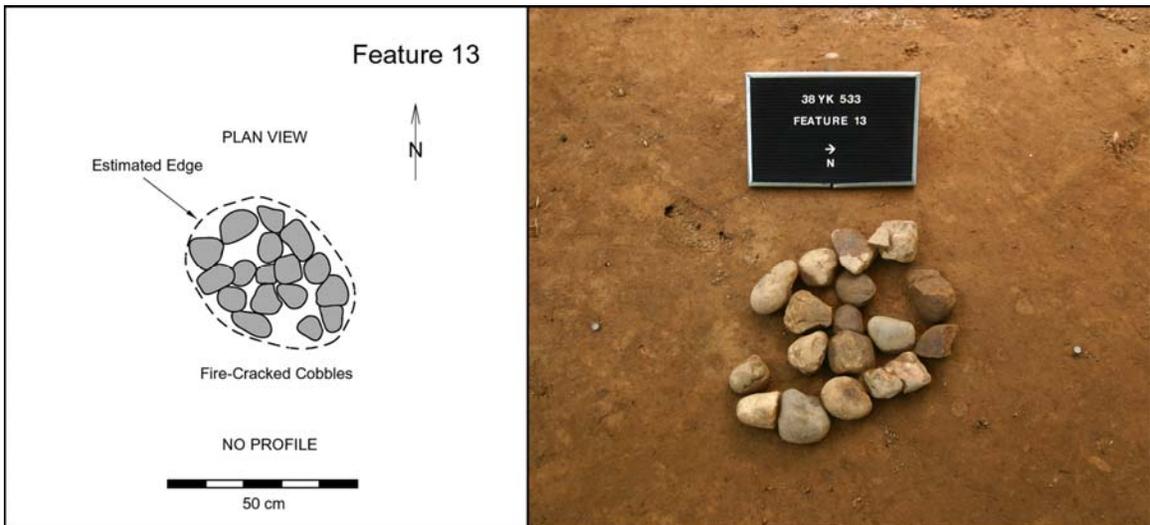


Figure B.4. Feature 13 plan view drawing and photograph at base of plow zone (view to west).

yielded one projectile point fragment and six flakes in addition to 25 fire-cracked rocks. The density of lithic material in the vicinity of Feature 13 was observed to be greater than average, although there were not many pieces of debitage mixed in with the rocks themselves. This cluster of fire-cracked or fire reddened stones appears to be the *in situ* remains of a heating or cooking facility in which stones were used for heat retention. As was the case for Feature 12, the absence of ash or charcoal in Feature 13 is likely the result of excessive leaching through the sandy matrix.

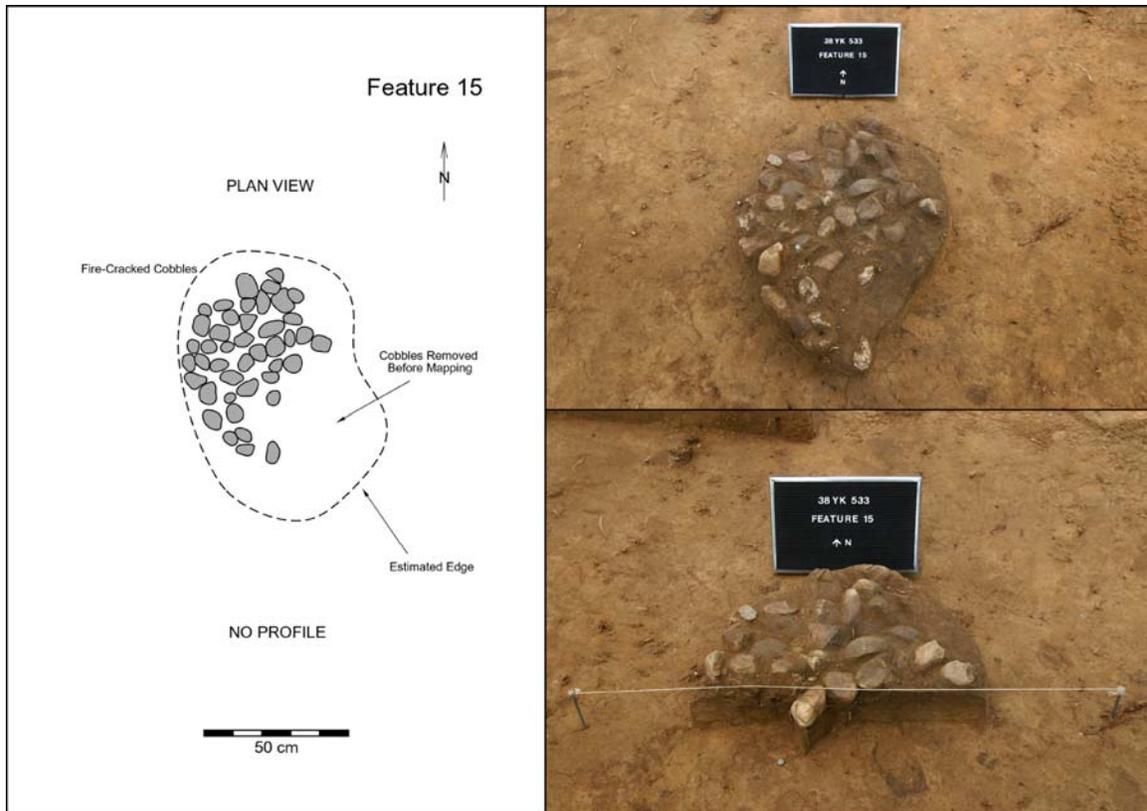


Figure B.5. Feature 15 plan view drawing and excavation photographs: cluster of fire-cracked rocks on soil pedestal at base of plow zone (top, view to north) and fire-cracked rock cluster with south half excavated (bottom, view to north).

**Feature 15** (center @ 867.11R852.11) (Figure B.5)

This oval rock cluster measured approximately 90 cm north to south and 65 cm east to west. Excavation revealed that the outer edges of the pile were one rock thick, while a “cone” two to three rocks deep was present in the center of the feature. A total of 79 fire-cracked rocks were collected from Feature 15. The soil around the rocks was dark yellowish brown (10YR3/4) silty sand with charcoal flecks; this matrix contained four potsherds and six flakes. Beneath this layer was dark yellowish brown (10YR4/4 to 4/6) silty sand. One potsherd and three flakes were present in the soil collected from below the rock cluster. This well-organized concentration of fire-cracked rocks likely represents the *in situ* remains of a rock hearth facility for cooking or heating. Associated artifacts indicate a probable Late Woodland period temporal affiliation.

**Feature 16** (center @ 889.59R870.02) (Figure B.6)

This shallow ovoid basin measured approximately 135 to 140 cm in diameter and 10 cm in depth (below plowzone). A test unit exposed the northeastern portion of Feature 16, while the northwestern edge of the feature extended into the northern wall of the trench and was not excavated. Two zones of fill were visible at the base of the plow

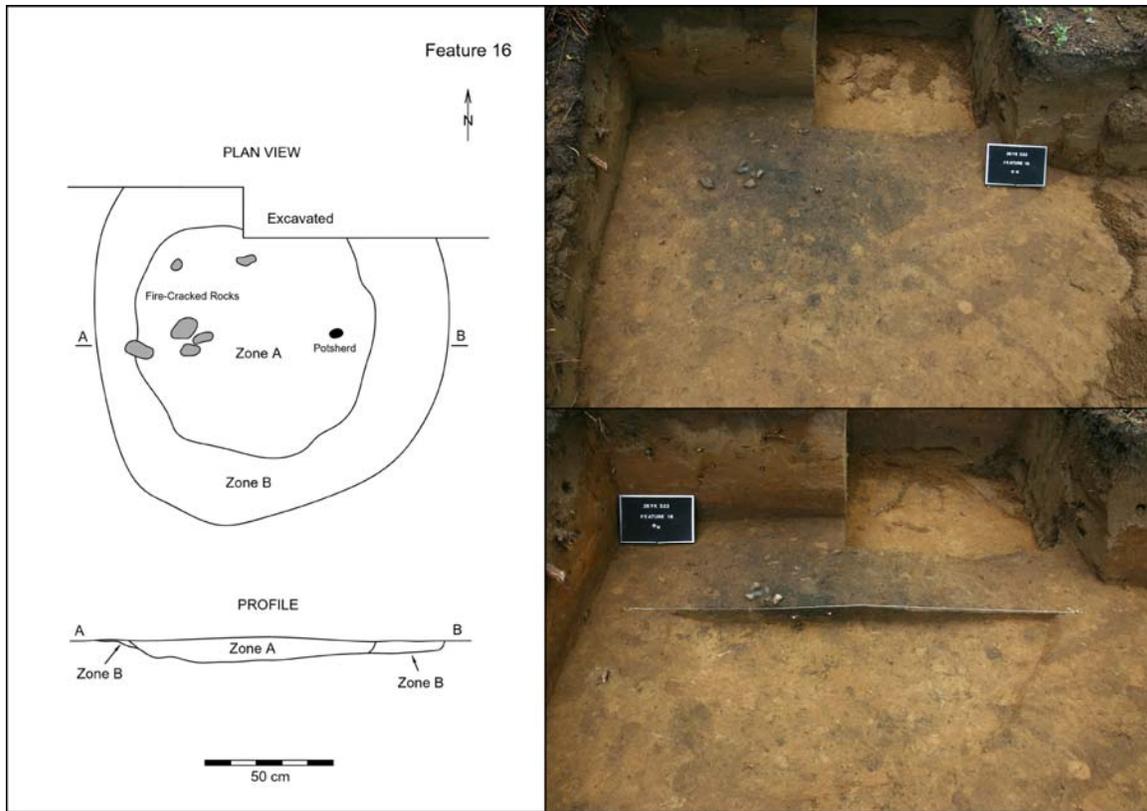


Figure B.6. Feature 16 plan view and profile drawings, and excavation photographs: top of feature (top, view to north) and fill profile with south half excavated (bottom, view to north).

zone. Zone A, the uppermost layer of soil, was dark brown (10YR3/3) loamy sand. This zone was surrounded by Zone B, which consisted of dark yellowish brown (10YR3/4) silty sand. Excavation of Feature 16 revealed that Zone B was present at the edges of the feature, but did not extend all the way beneath Zone A. The maximum thickness of the basin below the plow zone was 10 cm, and the bottom was undulating and irregular.

Flotation samples totaling 15.5 and 16 liters were collected from Zones A and B, respectively. Zone A contained most of the artifacts collected from Feature 16, including seven fragments of calcined bone, 13 pieces of daub, 16 flakes, and six potsherds. Ninety-two fire-cracked rocks were also present in Zone A. Zone B contained seven fire-cracked rocks, one calcined bone fragment, three pieces of daub, six flakes, and one potsherd.

Feature 16 may represent the remains of a hearth or cooking facility that was largely cleaned out subsequent to use. The basin contained numerous fire-cracked rocks, but unlike more formal rock hearths, these revealed no obvious organization or structure. Diagnostic ceramic sherds recovered from Feature 16 matrices are referable to Late Woodland period site occupations.

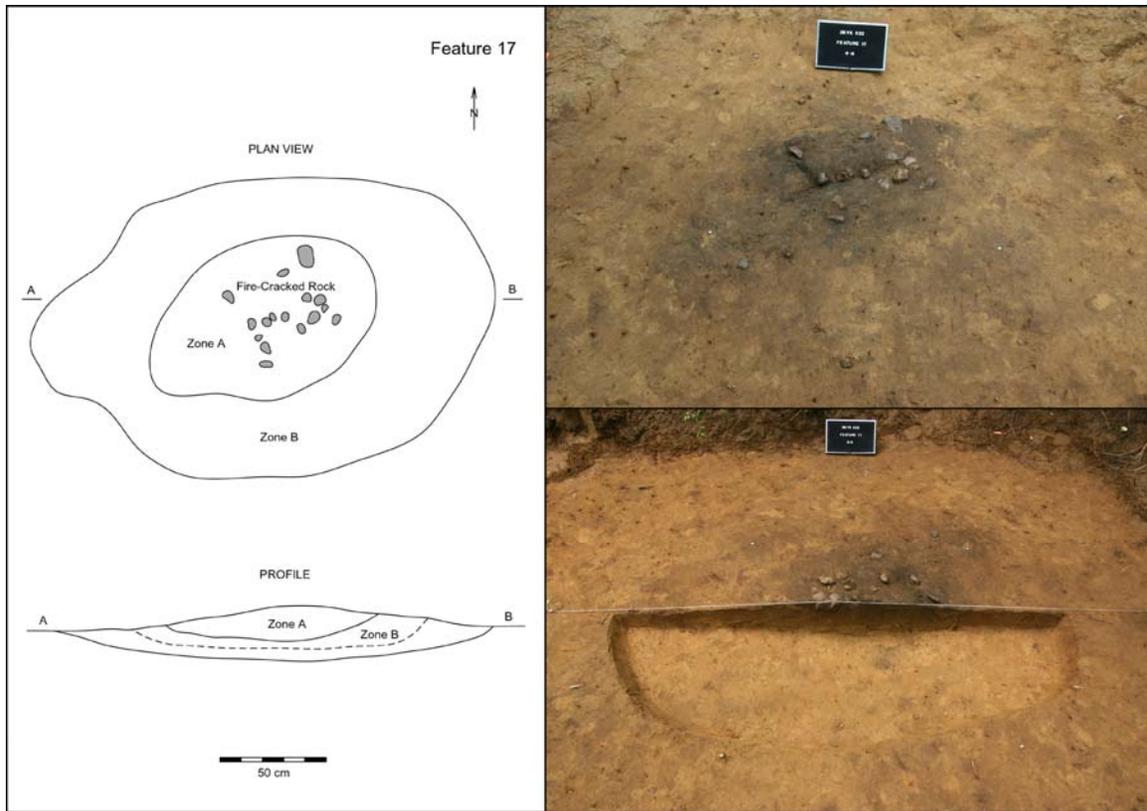


Figure B.7. Feature 17 plan view and profile drawings, and excavation photographs: top of feature (top, view to north) and fill profile with north half excavated (bottom, view to south).

**Feature 17** (center @ 831.22R885.50) (Figure B.7)

This oval rock cluster measured approximately 100 cm by 75 cm and was oriented east to west. Zone A, the matrix around the rocks, consisted of dark brown (10YR3/3) silty sand with charcoal flecks. This soil rested on top of a patch of dark yellowish brown (10YR3/6) silty sand that was excavated as Zone B and measured 190 cm long by 150 cm wide. The boundary between Zone B and the surrounding subsoil was diffuse. Zone A had a maximum thickness of 15 cm, while Zone B averaged 5 cm thick and had a maximum thickness of 10 cm.

A total of 60 fire-cracked rocks were present in Feature 17, 46 of which were clustered in Zone A. Few artifacts were recovered from the surrounding soil. Zone A yielded one triangular projectile point, four pieces of daub, three potsherds, and seven flakes, while another four pieces of daub, two potsherds, and 12 flakes were collected from Zone B. These associated materials connote a probable Late Woodland period temporal affiliation. Flotation samples from Feature 17 totaled 33 liters from Zone A and eight liters from Zone B.

Similar in most respects to Feature 16, Feature 17 may also represent the remains of a hearth or cooking facility that was largely cleaned out subsequent to use. Although

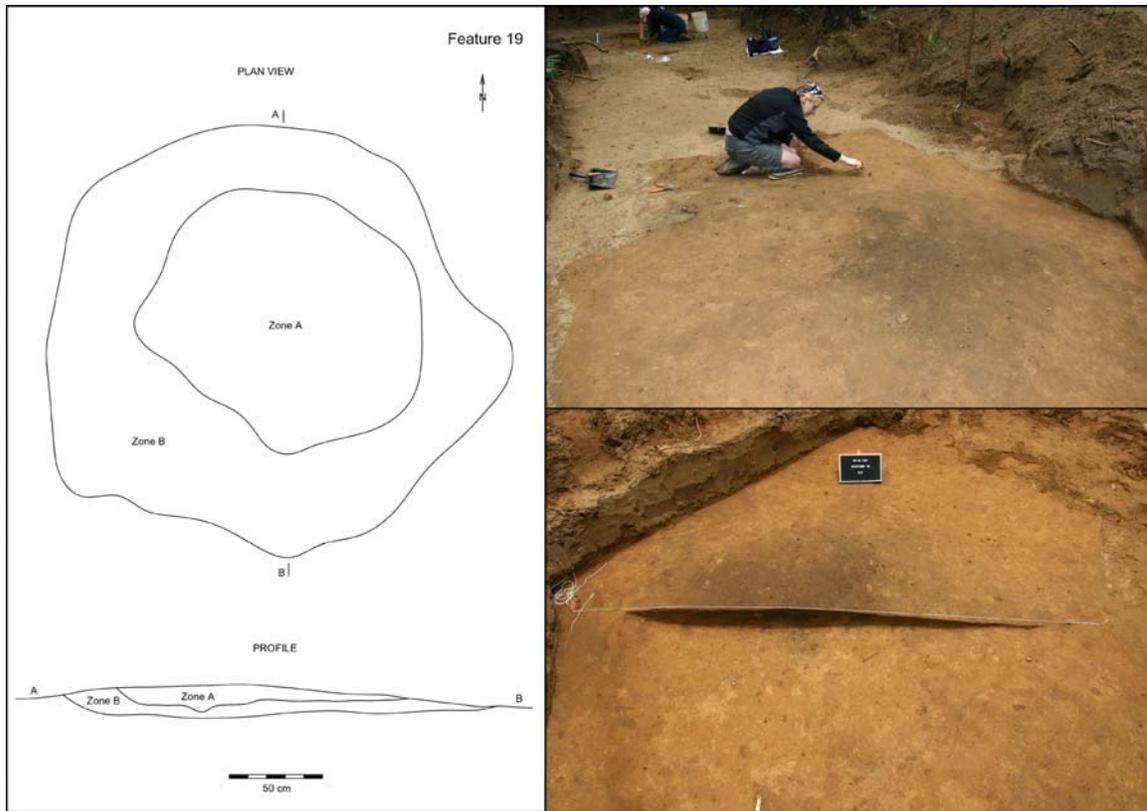


Figure B.8. Feature 19 plan view and profile drawings, and excavation photographs: cleaning the top of feature (top, view to west) and fill profile with south half excavated (bottom, view to north).

the basin contained numerous fire-cracked rocks, these stones exhibited no obvious organization or structure, and were most likely displaced by hearth cleaning.

#### **Feature 19** (center @ 832.71R894.41) (Figure B.8)

Feature 19 was a large, ovoid basin that measured approximately 2.6 meters northwest-southeast and two meters southwest-northeast. Two zones of fill were visible at the base of the plow zone. Zone A was dark yellowish brown (10YR3/3-3/6) silty sand with large charcoal inclusions. Encircling Zone A was dark yellowish brown (10YR4/4) silty sand mottled with brown (7.5YR4/4) and yellowish brown (10YR5/4) silty sand. This layer was designated Zone B. The maximum thickness of Zone A was 12 cm, while Zone B ranged from one to 7.5 cm thick. Excavation of Feature 19 revealed it to have gently sloping walls and a roughly flat bottom.

Fourteen small pieces of daub, eight stone flakes, and two fire-cracked rocks were collected from the surface of Feature 19. Zone A yielded six fragments of calcined bone, 70 small pieces of daub, 27 potsherds, 77 flakes, one core, and seven fire-cracked rocks. Artifact density decreased slightly in Zone B, which contained two pieces of calcined bone, one clay pipe fragment, 33 highly fragmented pieces of daub, 12 potsherds, 51 flakes, and three fire-cracked rocks. Ceramic sherds associated with Feature 19 are referable to the Late Woodland period Ashe Ferry series. Flotation samples from Zones A and B totaled 25 liters and 22.5 liters, respectively.

The high density of daub recovered from Feature 19 (as compared to other contexts at site 38Yk533) indicate the basin received debris from a clay construction; small twig and possible small cane impressions on the daub indicate plastered wickerwork.

**Feature 20** (center @ 752.99R925.82 ) (Figure B.9)

This circular pit feature measured approximately 160 cm in diameter and extended to 58 cm below the base of the plow zone. Feature 20 had sloping walls and a slightly concave bottom. The pit matrix comprises two distinct strata. Zone A had a maximum thickness of 28 cm and consisted of dark yellowish brown (10YR4/4) silty sand with charcoal fragments. Beneath this fill was yellowish brown (10YR5/4) silty sand, designated Zone B.

Zone A, 21.5 liters of which were processed as a flotation sample, contained 18 fragments of animal bone and 22 pieces of calcined bone, 12 pieces of daub, 11 flakes, one polished pebble, 10 pieces of fire-cracked rock, shell fragments, 55 potsherds, and one re-worked stone pipe bowl. Artifact content was lower in Zone B, which yielded 23 potsherds, one piece of daub, one triangular projectile point, 44 flakes, and 16 pieces of fire cracked rock. Two large potsherds were found lying at the bottom and on the west side of the pit at 48 cm and 23 cm below the plow zone, respectively. All of the ceramic artifacts recovered from Feature 20 are attributable to the Late Woodland period Ashe Ferry phase component.

Zone B also yielded human cranial fragments and two mandibular molars (of unknown age and sex) that were not noted *in situ*, but were recovered from waterscreened fill. The incidence of a few relatively well-preserved human skeletal elements in Feature 20 may indicate that these remains had been removed from their primary context prior to being deposited in Zone B. For this reason, Feature 20 is interpreted as a reused storage pit rather than a primary burial.

Evidence of a natural formation process of note was observed during the excavation of Feature 20. A reddish brown, stiff-textured, horizontal alluvial lamella line of fine particles was identified at approximately 30 cm below the old plow zone and continued into the walls of the pit. Clearly this geological feature formed sometime after Feature 20 was excavated and filled.

**Feature 21** (center @ 777.80R915.80) (Figure B.10)

Feature 21 was a large cluster of rocks that had an irregular outline and measured roughly 135 cm east-west and 120 cm north-south. Scattered rocks around Feature 21 suggest it was disturbed by plowing, which likely accounts for its irregular outline. Only one course of stones was present, which yielded 341 fire-cracked rocks. The soil beneath

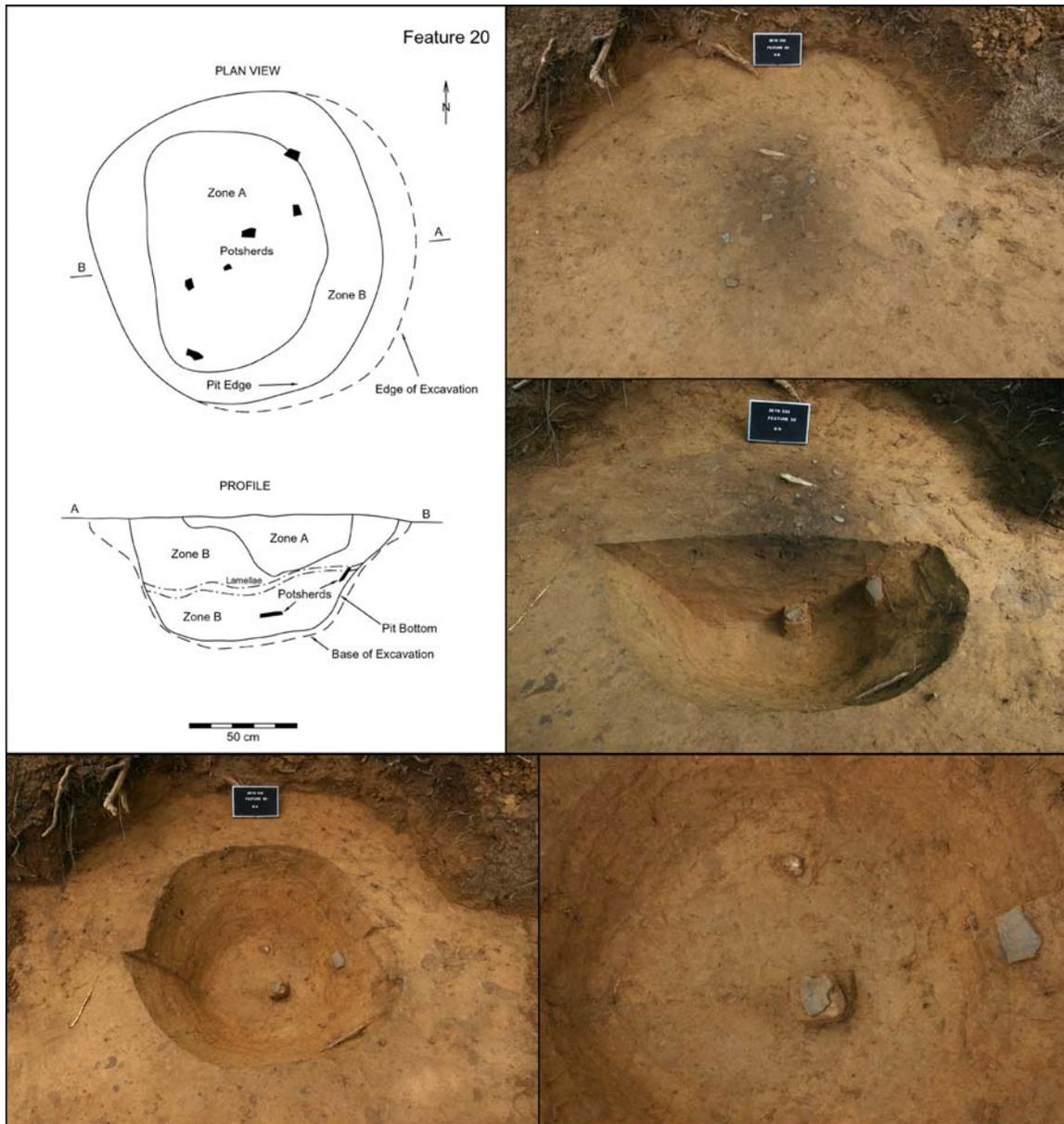


Figure B.9. Feature 20 plan view and profile drawings, and excavation photographs: top of feature (top right, view to south), fill profile with north half excavated (middle right, view to south), excavated feature (bottom left, view to south), and close-up of large potsherds near pit floor (bottom right, view to south).

the rock cluster was slightly darker than the surrounding sterile soil. This single zone of brown (10YR4/3) silty sand with charcoal flecks was 3 to 5 cm thick and contained two conjoining potsherds, 28 flakes, and one piece of daub. The sherds are referable to the Ashe Ferry series, and a Late Woodland period temporal association is probable. As is the case with other relatively thin fire-cracked rock clusters, Feature 21 is interpreted as the remains of a cooking or heating facility in which rocks provided thermal mass.

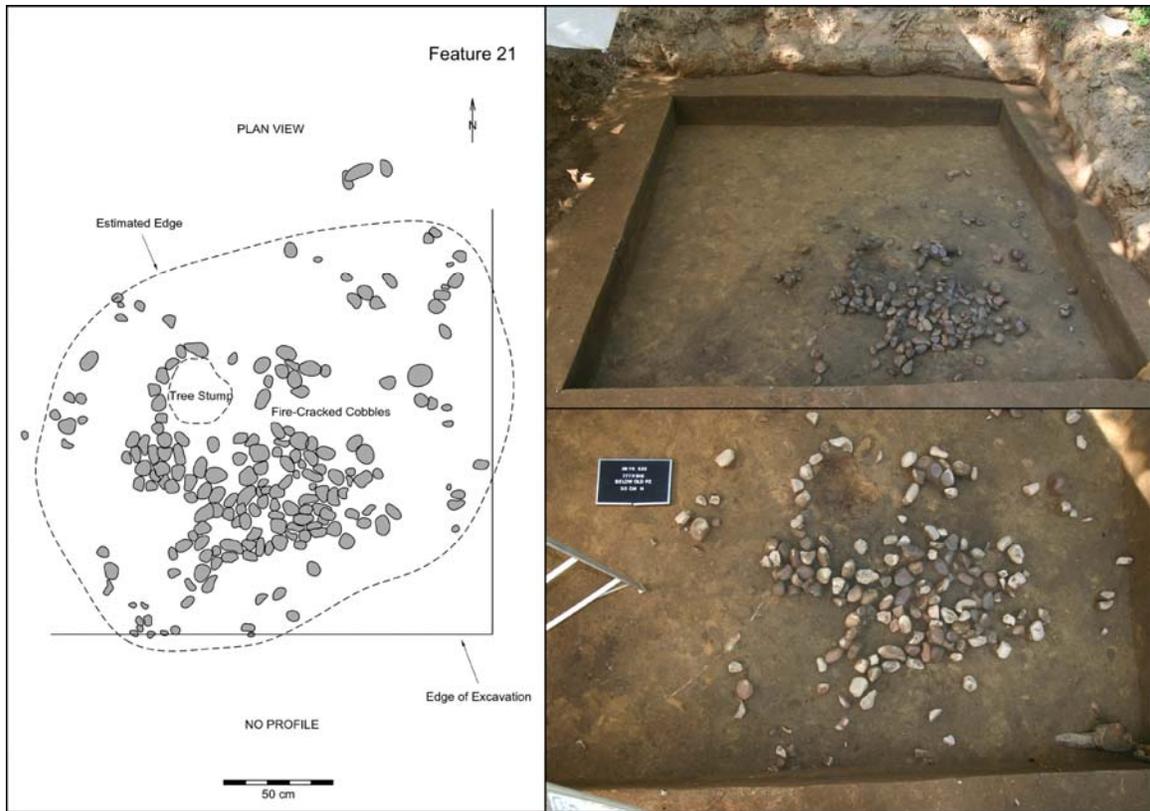


Figure B.10. Feature 21 plan view drawing and excavation photographs: top of feature in Sqs. 777-779R915-917 (top, view to north) and close-up of rock cluster (bottom, view to north).

**Feature 22** (center @ 874.00R847.00) (Figure B.11)

This large, shallow, oval basin measured about 220 cm by 170 cm and was oriented north-south. Three layers of fill were visible in plan view at the base of the plow zone. Zone A was present mostly in the southern half of the feature and consisted of very dark brown (10YR2/2) compact silty sand. It had a maximum thickness of 8 cm and contained 25 potsherds, 18 flakes, and 24 fire-cracked rocks. A flotation sample totaling 37.5 liters was collected from Zone A.

Beneath Zone A was dark yellowish brown (10YR3/4) silty sand designated Zone B. Most of this fill was present in the northern portion of Feature 22 and had a maximum thickness of 11 cm. In the southernmost portion of the feature, Zone A extended directly to sterile soil. The contents of Zone B were similar to those from Zone A, consisting of 24 potsherds, 36 flakes, two pieces of daub, and 24 fire-cracked rocks. A 14.5-liter flotation sample was collected from Zone B.

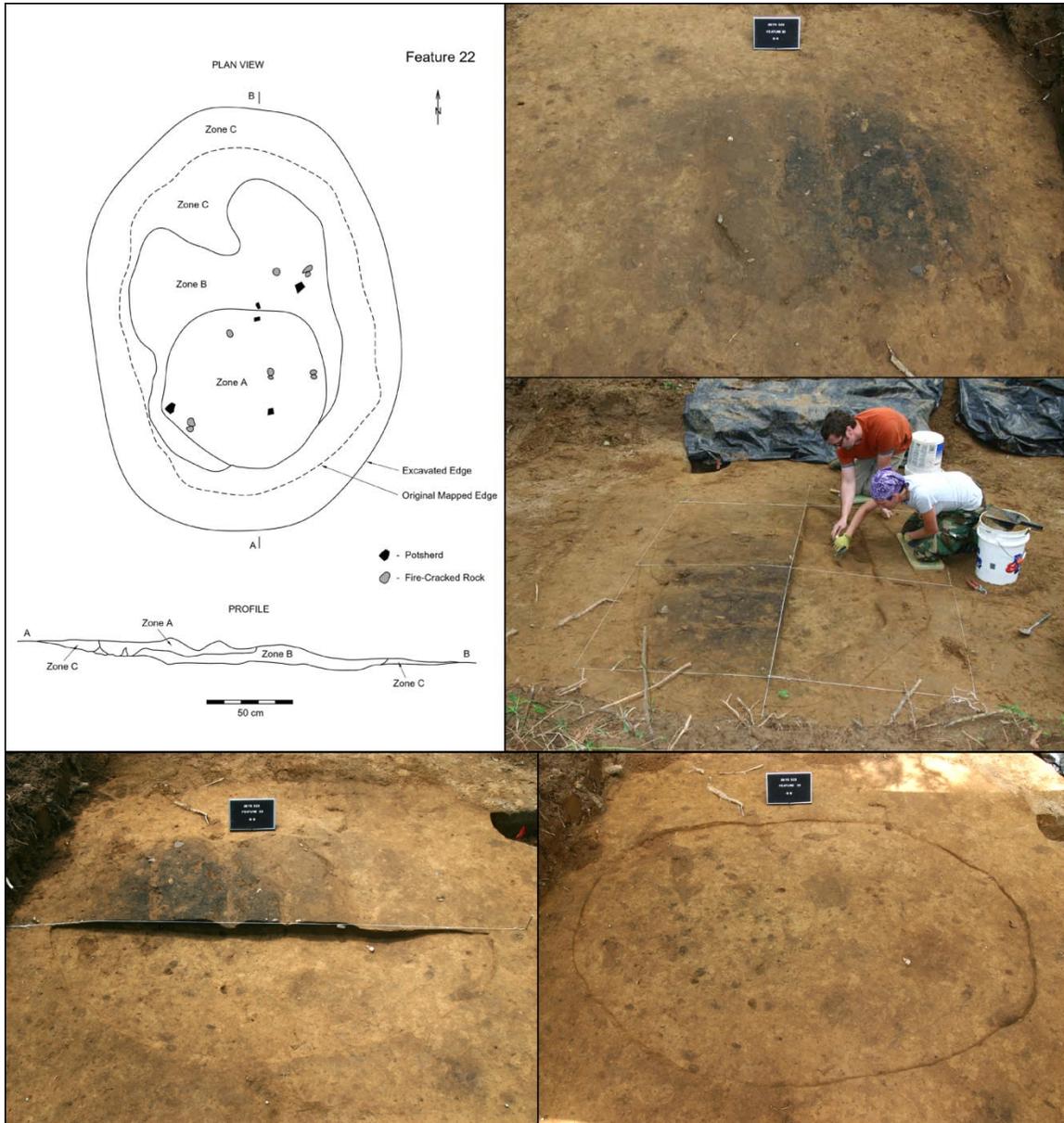


Figure B.11. Feature 22 plan view and profile drawings, and excavation photographs: top of feature (top right, view to east), students excavating the east half (middle right, view to north), fill profile with east half excavated (bottom left, view to west), and excavated feature (bottom right, view to west).

Excavation of Zone C revealed that it was an interface of leaching and bioturbation between the pit base and the sterile soil below. This deposit of dark yellowish brown (10YR4/4) silty sand yielded six potsherds, one piece of daub, nine flakes, and two fire-cracked rocks. Work on Zone C ceased after most of the mottling between the Feature 22 fill and the subsoil was removed, and the final excavated outline of Feature 22 was smaller than originally mapped.

The size and shape of this feature, along with the presence of a moderate amount of fire-cracked rock, may indicate it is the remains of a hearth that was mostly destroyed by plowing. Alternatively, it may have functioned as a workspace that was filled in with

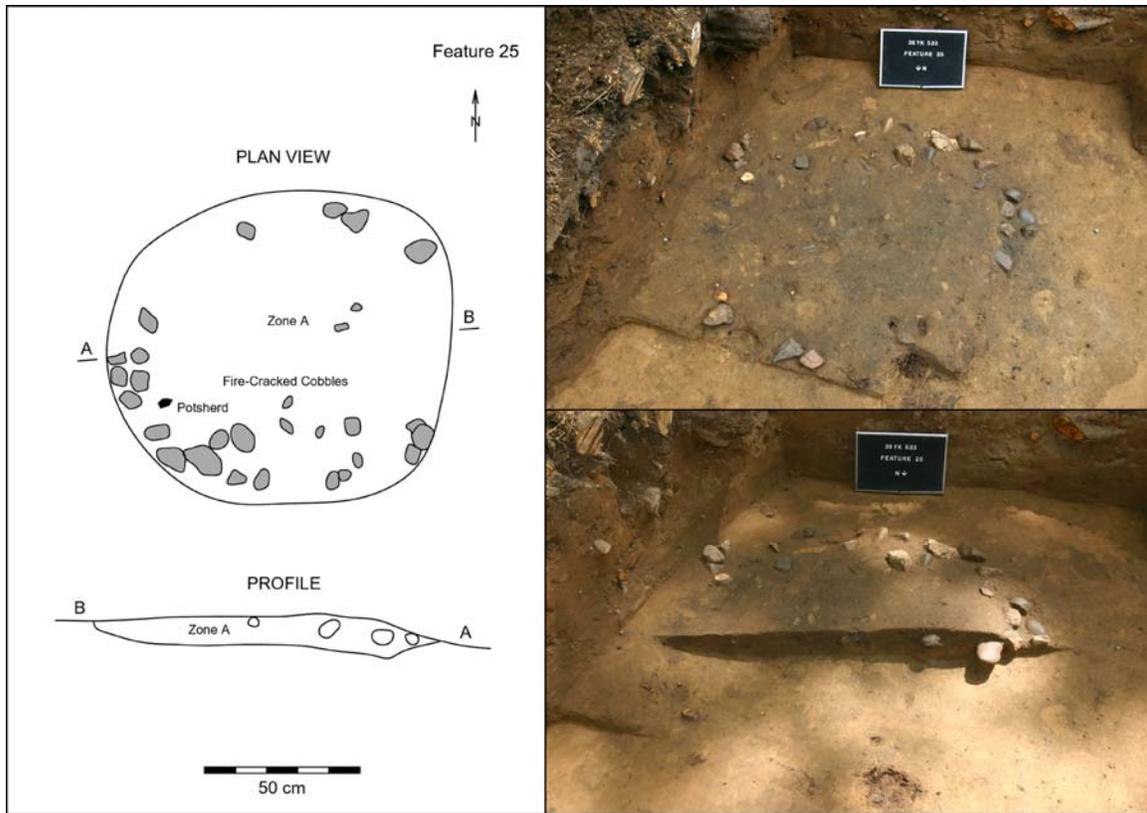


Figure B.12. Feature 25 plan view and profile drawings, and excavation photographs: top of feature (top, view to south) and fill profile with north half excavated (bottom, view to south).

hearth cleanings and other debris when abandoned. Diagnostic artifacts recovered from Feature 22 are referable to the Late Woodland period Ashe Ferry phase site occupation.

#### **Feature 25** (center @ 766.76R934.29 )(Figure B.12)

Feature 25 was a circular cluster of 272 fire-cracked rocks that measured approximately 110 cm in diameter. It had well-defined edges with only minor disturbance at its northern end from the backhoe cut in which it was identified. The fire-cracked rocks were surrounded by a matrix of very dark grayish brown (10YR3/4) silty sand mottled with dark yellowish brown (10YR3/4) silty sand that contained charcoal flecks and which yielded one calcined bone fragment, 13 potsherds, and three flakes. This feature appears to represent the remains of a large Late Woodland period heating or cooking facility, with stones displaced by hearth cleaning.

#### **Feature 28** (center @ 751.11R936.01) (Figures A.13 and A.14)

This large pit feature measured roughly 280 cm in diameter and extended 105 cm below the plow zone. Feature 28 was encountered by backhoe trench testing conducted by Legacy Research Associates but was not identified at that time. Plow zone stripping associated with the current investigation re-exposed the Legacy trench and resulted in the identification and mapping of Feature 28, the boundaries of which extended slightly beyond the original backhoe cut. Three zones of fill were visible in plan view, although two of these were so similar in color and texture that they were not distinguished prior to

excavation. Zone A was very dark grayish brown (10YR3/2) silty sand, and Zones B and E were recorded as dark yellowish brown (10YR4/6) silty sand.

The east half of Feature 28 was excavated first, revealing five distinct strata. Zone A exhibited a basin-shaped profile and a maximum thickness of 24 cm. Because complete charred acorns were identified during excavation of Zone A fill, all of the soil from this layer (172 liters) was flotation processed for recovery of botanical remains. In addition to a substantial quantity of carbonized acorns, Zone A yielded 21 potsherds, three pieces of daub, one triangular projectile point, a chipped stone hoe fragment, one stone biface fragment, 52 flakes, and nine fire-cracked rocks.

Excavations beneath Zone A revealed a slightly darker “core” area directly below Zone A, but this coloration did not extend to the walls of the feature, which were difficult to identify. Operating on the assumption that there were no bell-shaped pits in the sandy soils of 38Yk533, the walls were trimmed back, revealing occasional sherds, flakes, and carbonized mast. Although the fill below and to the sides of Zone A was excavated as a single context during the excavation of the east half of Feature 28, investigation of the profile revealed that these deposits were distinct zones associated with different fill episodes. For this reason the layer directly below Zone A was re-designated Zone E, with the fill to the sides of Zone A remaining Zone B.

Zone E contained a large stone with “nutting” depressions visible in plan view prior to excavation, along with 22 potsherds, four pieces of daub, one piece of calcined bone, one chipped hoe fragment, two triangular projectile points, one core, 40 flakes, and four fire-cracked rocks. A 10-liter flotation sample from Zone E was collected from the west side of Feature 28. Materials that can be attributed to Zone B include 81 potsherds, 12 pieces of daub, five pieces of calcined bone, one projectile point fragment, and 79 flakes. Thirty-three of the potsherds found in Zone B were clustered at the southeast edge of the feature from 80 to 90 cm below the plow zone; these appear to represent a discrete disposal event. Materials from the east half of Feature 28 that may have come from either Zone B or Zone E include 92 potsherds, 28 pieces of daub, 11 pieces of animal bone, three triangular projectile points, four projectile point fragments, one biface fragment, one core, 194 flakes, and 21 fire-cracked rocks.

Beneath Zone E was a layer of dark grayish brown (10YR4/2) silty sand with abundant carbonized material. All 70.5 liters of fill from this layer, designated Zone C, were processed by flotation. Excavators collected a bag of carbonized mast from this layer, which also contained five potsherds, seven pieces of daub, 21 flakes, and three fire-cracked rocks. A concentration of artifacts was noted at the bottom of Zone C, about 60 cm below the plow zone, on the west side of the feature. A large rim sherd and a section of an apparent charred wooden shaft with a polished surface and possible transverse cut marks were photographed and mapped in place.

The last layer of fill encountered during excavation was Zone D, which was located below Zones B and C. Zone D was brownish yellow (10YR6/6) sand with charcoal flecks and ranged from 6 to 18 cm thick. Zone D was similar to Zone B in being

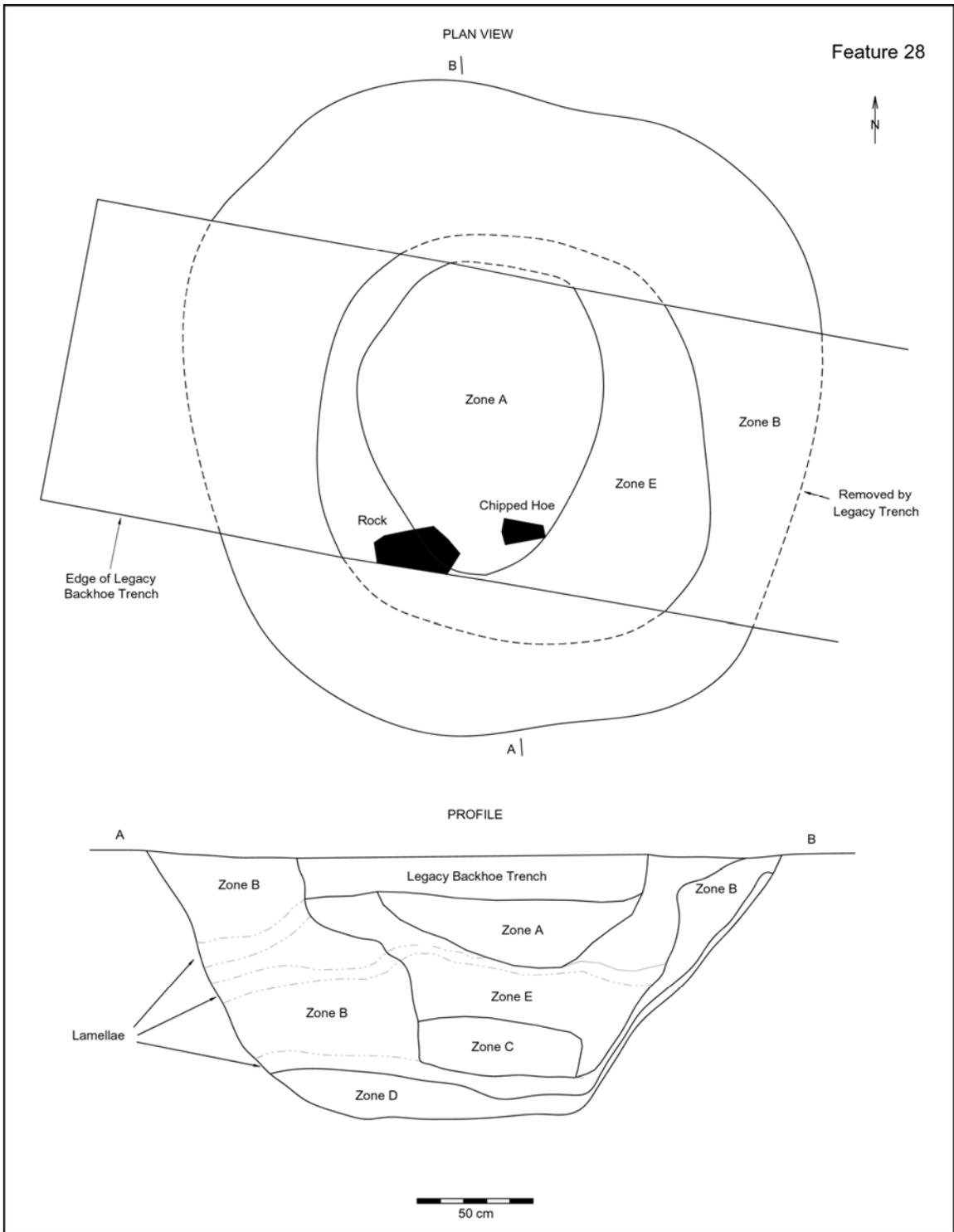


Figure B.13. Feature 28 plan view and profile drawings.



Figure B.14. Feature 28 excavation photographs: top of feature exposed in base of Legacy Research backhoe trench (top left, view to west), fill profile with east half excavated (top right, view to west), pedestaled potsherds in Zone B near the southeast pit edge (bottom left, view to south), and excavated feature (bottom right, view to west).

difficult to distinguish from sterile sand, but yielded fewer artifacts. It contained six potsherds, one triangular projectile point, and 17 flakes.

Feature 28 deposits also exhibited three reddish brown stiff-textured horizontal alluvial lamella lines of fine particles. These geological features, encountered at 20–40 cm, 40–60 cm, and 80–100 cm below the plow zone, cut across different zones of fill and continued into the walls of the pit. Like the lamella line in Feature 20, these wetting fronts clearly formed after the feature was filled.

Artifacts recovered from Feature 28 matrices indicate a Late Woodland period Ashe Ferry phase association for this facility. Radiocarbon samples recovered from Feature 28 produced an AMS date of  $900 \pm 30$  years B.P. ( $2\sigma$  calibration, cal. A.D. 1040 to 1210; calibration curve intercept, cal. A.D. 1160). The size and morphology of Feature 28 are consistent with a primary initial function as a storage pit. Although masses of charred mast (primarily acorns) in the pit matrix may represent disposal events independent of the pit storage functions, these nut remains may also represent unrecovered “over-roasted” residues of roasted mast that had been stored in Feature 28. If this is the case, recovery of more useable stored foods from the pit may have resulted in the mixture of more heavily burned nuts through several pit strata.

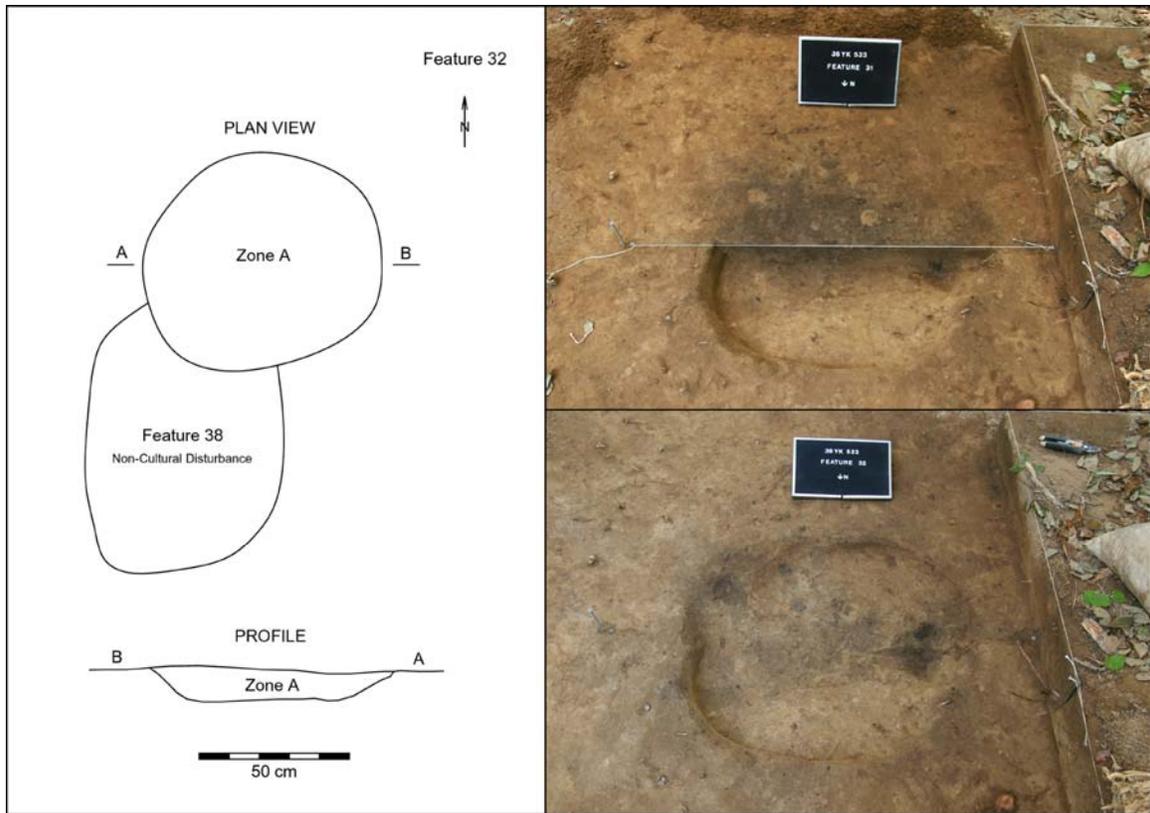


Figure B.15. Feature 32 plan view and profile drawings, and excavation photographs: fill profile with north half excavated (top, view to south) and excavated feature (bottom, view to south).

**Feature 32** (center @ point of 869.79R857.57 ) (Figure B.15)

This circular shallow basin had a maximum depth of 11 cm below the plow zone and a diameter of approximately 72 cm. Feature 32 intruded upon Feature 38. It contained one zone of fill that consisted of very dark grayish brown (10YR3/2) compact silty sand with charcoal flecks. Feature 32 yielded seven Late Woodland period potsherds, eight flakes, and four fire-cracked rocks. Flotation samples totaling 11.5 liters were collected from this feature. The relatively nondescript character of Feature 32 makes its original function difficult to ascertain. Its artifact assemblage and shallow profile reduce the number of possible interpretations, although it is possible that Feature 32 was a severely truncated storage pit or cooking facility of which only the deepest portion remained intact.

**Feature 35** (center @ 872.00R857.92) (Figure B.16)

Feature 35 was a refuse-filled depression with an intrusive posthole or small pit. In plan view, the unexcavated outline of this feature was irregular, with maximum dimensions of 133 cm north to south and 93 cm east to west. The fill in this depression, designated Zone A, consisted of dark yellowish brown (10YR4/6) compact silty sand with charcoal inclusions. It contained 22 potsherds, two projectile point fragments, one

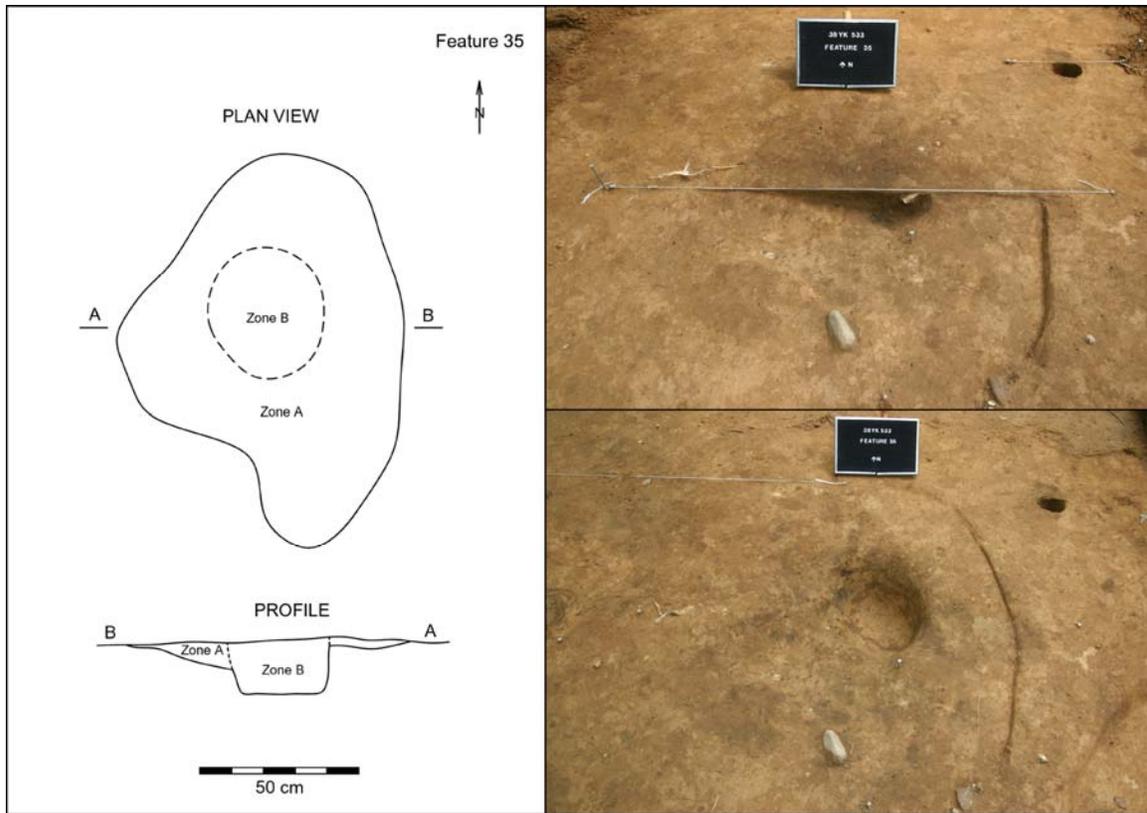


Figure B.16. Feature 35 plan view and profile drawings, and excavation photographs: fill profile with north half excavated (top, view to south) and excavated feature (bottom, view to south).

biface fragment, 47 flakes, one piece of daub, and four fire-cracked rocks. Thirteen liters of Zone A were processed as a flotation sample. Zone A had an uneven, irregular bottom and a maximum thickness of 8 cm. Excavators found two large sherds lying horizontally at the interface between this layer of fill and the soil below.

A concentration of charcoal approximately 30 cm in diameter was encountered about 4 cm below the plow zone. This material, Zone B, was all processed as a 6.5-liter flotation sample. It contained three potsherds, five flakes, and eight pieces of daub. Excavation revealed that Zone B was fill in a small pit or posthole that had straight sides and a relatively flat bottom. Based on photographs of Feature 35, it appears that the top of Zone B was present at the base of the plow zone, but was not distinguished from Zone A in plan view prior to excavation. For this reason, some of Zone B was likely excavated as Zone A. Zone B had a maximum depth of 16 cm below the plow zone.

Feature 35 appears to consist of a refuse-filled depression or truncated feature (Zone A) that was intruded by a small pit or posthole (Zone B). Although shaped like a posthole, Zone B of Feature 35 appears rather shallow for a post 30 cm in diameter, and may instead represent a small pit of unknown function. Ceramic sherds associated with Feature 35 are referable to the Ashe Ferry series, indicating a Late Woodland period temporal affiliation.

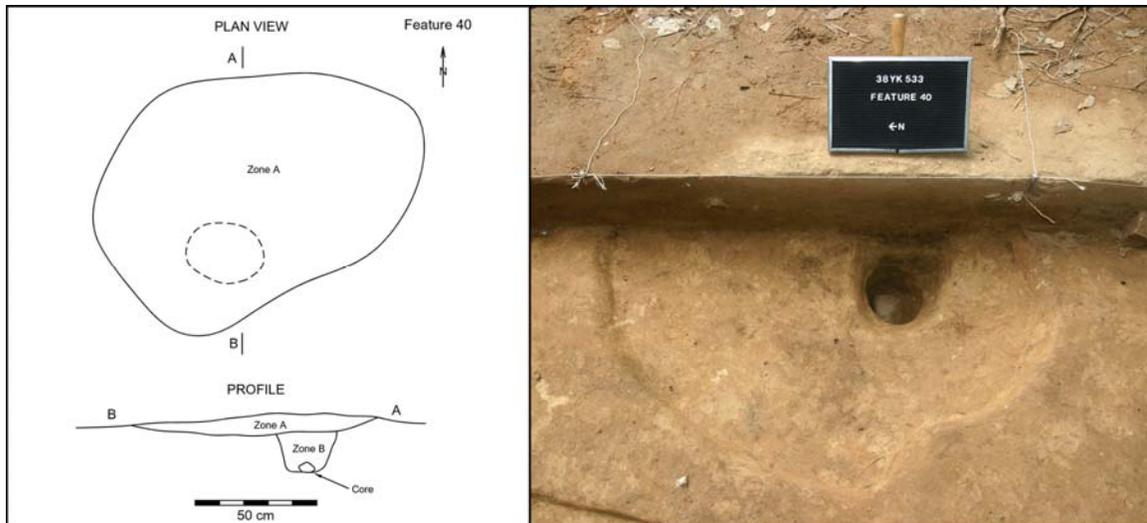


Figure B.17. Feature 40 plan view and profile drawings (left) and photographs of fill profile with west half excavated (right, view to east).

**Feature 40** (center @ 871.45R859.05) (Figure B.17)

Feature 40, a shallow basin that capped a posthole or small pit, closely resembled Feature 35 in size and morphology. The unexcavated outline of this feature was oblong in plan view, measured 145 cm by 103 cm, and was oriented with its long axis northeast–southwest. One zone of fill was observed at the base of the plow zone. Designated Zone A, this fill consisted of dark yellowish brown (10YR4/6) compact silty sand with charcoal inclusions. It yielded 43 potsherds, one projectile point fragment, 76 flakes, and nine fire-cracked rocks. A 6.5-liter flotation sample was collected from this zone, which had a relatively flat bottom and maximum thickness of 10 cm.

A concentration of charcoal in the southern portion of the feature was observed during the excavation of Zone A. The presence of brown (7.5YR4/4) silty sand in this location at the bottom of the basin led to the identification of Zone B, a small pit or posthole approximately 28 cm in diameter. All fill removed as Zone B was processed as a 10.5-liter flotation sample. Four potsherds, four pieces of daub, and two flakes were present in this fill. In addition, excavators uncovered a lithic core at the bottom of Zone B, approximately 25 cm below the plow zone. The small pit or posthole that contained this fill had slightly inward sloping walls and a flat bottom.

Diagnostic potsherds recovered from Feature 40 are consistent with the Late Woodland period Ashe Ferry phase occupation at 38Yk533. Feature 40 appears to be a composite facility that began with a small pit or posthole that was filled in with Zone B soils. The larger basin-like portion of Feature 40, which was filled by Zone A, may have been a feature. Alternatively, it may be the base of a severely plow-truncated storage pit or rock cluster of which only the deepest portion remained intact.

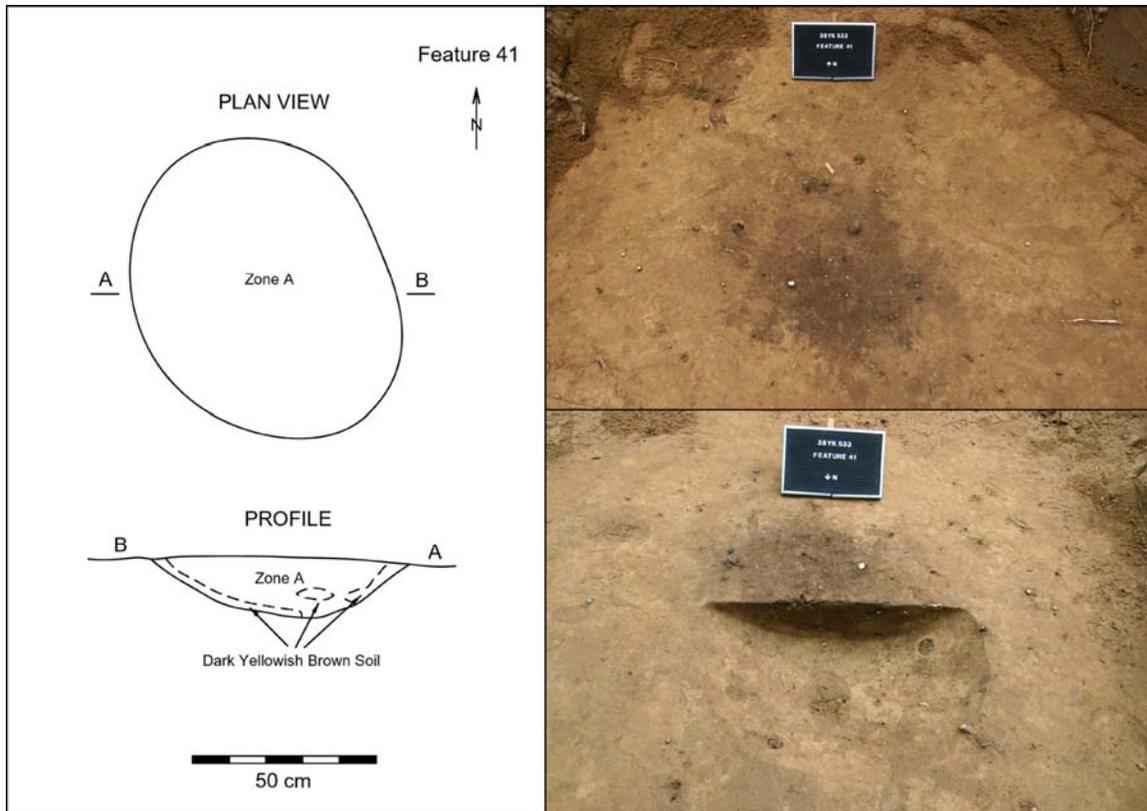


Figure B.18. Feature 41 plan view and profile drawings, and excavation photographs: top of feature (top, view to north) and fill profile with north half excavated (bottom, view to south).

**Feature 41** (center @ 772.91R929.14)( Figure B.18)

Feature 41 was an ovoid basin that measured approximately 84 cm by 65 cm and was oriented with its long axis northwest to southeast. This feature contained a single zone of dark brown (10YR3/4) sandy loam with small bits of charcoal, bone, and burned clay or daub. A few centimeters of dark yellowish brown (10YR4/6) silty sand were present at the interface between the feature fill and the surrounding sterile soil. The bone and daub content of this feature was greater than most others at 38Yk533, but ceramic and lithic artifacts were less frequent. Ten flakes, one fire-cracked rock, and 11 potsherds were present in Feature 41. One of these sherds and a deer scapula were found lying on the bottom of the feature. Twelve liters of fill from this feature were processed as a flotation sample. The excavated profile of Feature 41 was basin-shaped, with a maximum depth of 17 cm below the plow zone. Given its size and shape, Feature 41 was likely a truncated storage pit. Plain and burnished plain potsherds recovered from Feature 41 are classified as Mississippian Plain/Burnished Plain types and Feature 41 is attributed to the latter portion of the Early Brown phase occupations at 38Yk533. An AMS assay of carbonized plant remains from Feature 41 yielded a radiocarbon date of  $630 \pm 30$  years B.P. ( $2\sigma$  calibration, cal. A.D. 1280 to 1400; calibration curve intercepts, cal. A.D. 1300, 1360, 1380).

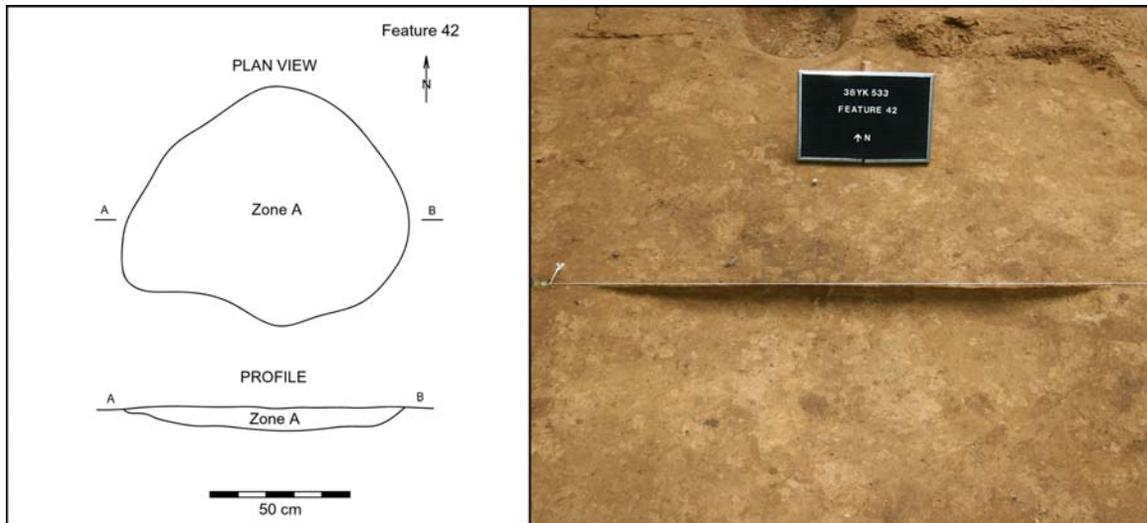


Figure B.19. Feature 42 plan view drawing and excavation photograph of fill profile with south half excavated (view to north).

**Feature 42 center @ 872.74R857.09) (Figure B.19)**

Feature 42 was an irregular, shallow basin that extended approximately 80 cm north to south and 100 cm east to west. Feature 42 contained a single, 8cm-thick zone of dark yellowish brown (10YR5/4) compact silty sand with charcoal flecks. Twelve liters of this fill was collected as a flotation sample. Feature 42 yielded four Late Woodland period Ashe Ferry series potsherds, 12 flakes, and one fire-cracked rock. The walls of this basin were gently sloping and its floor relatively flat. The relatively nondescript character of Feature 42 makes its original function difficult to ascertain. Its limited artifact assemblage and shallow profile reduce the number of possible interpretations, although it is possible that Feature 42 was a severely truncated storage or processing pit.

**Feature 43 (center @ 855.5R905.0) (Figure B.20)**

This probable storage pit was apparently repurposed as a grave, then the depression created by the subsidence of grave fill was subsequently filled with refuse. The pit measured 165 cm from east to west and 145 cm north to south. Two zones of fill were visible on the surface of the pit exposed at the base of the plowzone: an inner “core” of very dark grayish brown (10YR3/2) silty sand surrounded by dark yellowish brown (10YR4/4) silty sand. These fills were designated Zones A and B, respectively.

Feature 43 was initially interpreted as a possible storage pit, and the south half was excavated in May 2010. The identification of human bone at the base of Zone B led to the identification of this feature as a grave containing human remains, and excavation was suspended to allow for tribal and agency consultation to determine proper treatment and disposition. In November 2010, the remainder of Feature 43 was excavated, and the burial was exhumed as a soil block and reburied at a location designated for that purpose.

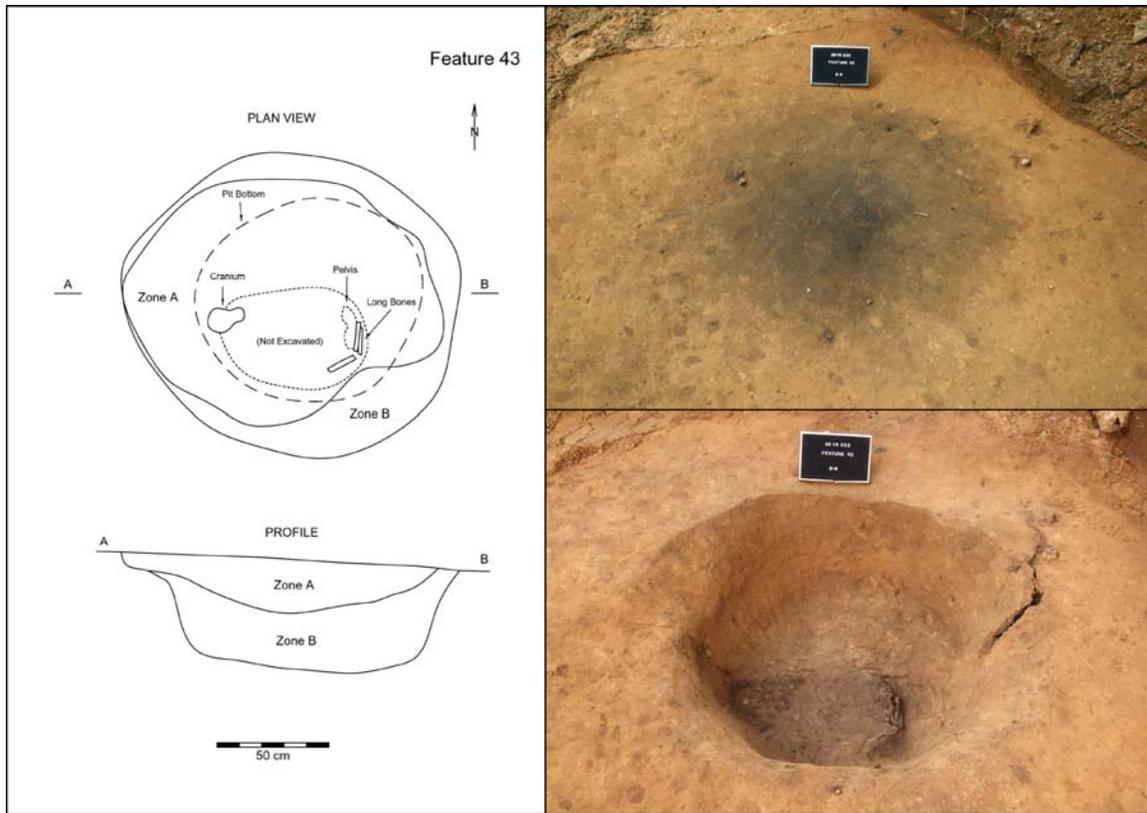


Figure B.20. Feature 43 plan view and profile drawings, and excavation photographs: top of feature (top, view to north) and following excavation of Zones A and B but before exhumation (bottom, view to north).

Prior to exhumation, a field analysis of the exposed human remains was performed by bioarchaeologist Dale Hutchinson, Research Laboratories of Archaeology, University of North Carolina at Chapel Hill. His observations are as follows: “The burial in Feature 43 was an individual flexed on its right side. The individual was a young adult (probably 20–30) of unknown sex, with age based on the presence of a slightly worn third molar. The skeletal elements present included a fragmentary cranium, left mandibular permanent molars 1–3, and left maxillary permanent molars 1–3, the neck and distal condyle of a femur, and several other unidentifiable long bones” (see Appendix C).

Zone A had a maximum thickness of 35 cm and was found to contain 14 potsherds, four fragments of calcined bone, four triangular projectile points, one projectile point fragment, 62 flakes, and four fire-cracked rocks. A 7.5-liter flotation sample was collected from this zone. A patch of very dark grayish brown (10YR3/2) silty sand mottled with dark brown (7.5YR3/4) silty sand was noted in the southern portion of Zone A at 30 cm below the plow zone. This possible burned soil did not extend into the profile and was designated Zone 1A. It had a maximum thickness of 10 cm and contained two potsherds and four flakes. Zone A appears to have filled a void created by the subsidence of Zone B, presumably following the decay and collapse of the human remains and other organic materials originally deposited at the base of the Feature 42 pit. Zone 1A appears to represent a burning event on the post-subsidence surface of Zone B prior to the deposition of Zone A.

Zone B was approximately 25 cm thick and yielded 39 potsherds, one possible clay pipe fragment, 16 pieces of daub, 11 pieces of calcined bone, two triangular projectile points, two projectile point fragments, 150 flakes, and five pieces of fire-cracked rock. The teeth and mandible of a dog, nine potsherds, and 11 flakes were found at the same depth as the human skeletal material, and the dog in particular may represent a deliberate inclusion associated with the burial. Zone B represents the initial fill soil deposited in the Feature 43 grave pit to cover the burial. Diagnostic artifacts associated with Zone B are referable to the Ashe Ferry phase site occupation.

Earlier, more deeply buried archaeological components at 38Yk533 are attested by recovery of one potsherd, one Late Archaic Savannah River projectile point, and four flakes from sand underneath the base of the feature during the removal and relocation of the burial from Feature 43.

**Feature 44** (center @ 840.28R905.83) (Figure B.21)

Feature 44 was a shallow, ovoid basin that measured approximately 80 cm north to south and 65 cm east to west. A pine tree growing in the northeast corner of the feature restricted the extent of excavation. Feature 44 contained two zones of fill, one of which was visible in plan view. Zone A consisted of dark yellowish brown (10YR4/4) silty sand mottled with dark brown (10YR3/3) silty sand. It contained 11 potsherds, 11 fragments of animal bone (of which two were calcined), one core, 27 flakes, and two fire-cracked rocks. Fourteen and a half liters of this fill were processed as flotation samples. Zone A had a flat, slightly irregular bottom and a maximum thickness of 12 cm.

Beneath Zone A was a layer of dark yellowish brown (10YR4/4) silty sand that contained another 11 potsherds, two pieces of daub, four fragments of calcined bone, one pentagonal projectile point, 34 flakes, and seven fire-cracked rocks. This fill, designated Zone B, dipped slightly in the center of the feature but otherwise had a relatively flat bottom. It had a maximum thickness of 8 cm. The flotation samples from Zone B totaled 15 liters. Zone B may be a separate fill that was deposited prior to Zone A.

Neither the pit matrix, content, nor morphology provided any clue to the original use of Feature 44, and it is classified as a shallow pit facility of undetermined function. Associated Late Woodland period Ashe Ferry series potsherds indicate filling during or after the primary Late Woodland period site occupation.

**Feature 45** (center @ 839.60R904.26) (Figure B.22)

Feature 45 represents a large basin, mapped and excavated as Zone B, with an intrusive grave pit and human burial that was designated Zone A. Overall, the larger ovoid basin (Zone B) measured 227 cm by 168 cm with its long axis oriented north-south. Zone A, representing the intrusive oval burial pit in the south half of the feature, measured 117 cm by 78 cm with its long axis oriented northwest-southeast.

Both zones of fill were visible on the surface of Feature 45. Zone A was an 8 cm thick stratum of dark grayish brown (10YR3/2) loose silty sand, and Zone B was a 6 cm thick stratum of dark yellowish brown (10YR4/4) silty sand. Zones A and B in the north half of Feature 45 were excavated first. During removal of Zone A fill in May 2010, the fragmented remains of a human mandible were identified near the fill profile. These were left *in situ* while the remaining Zone A and Zone B fill in the north half was excavated. At this point, excavations were suspended pending tribal and agency consul-

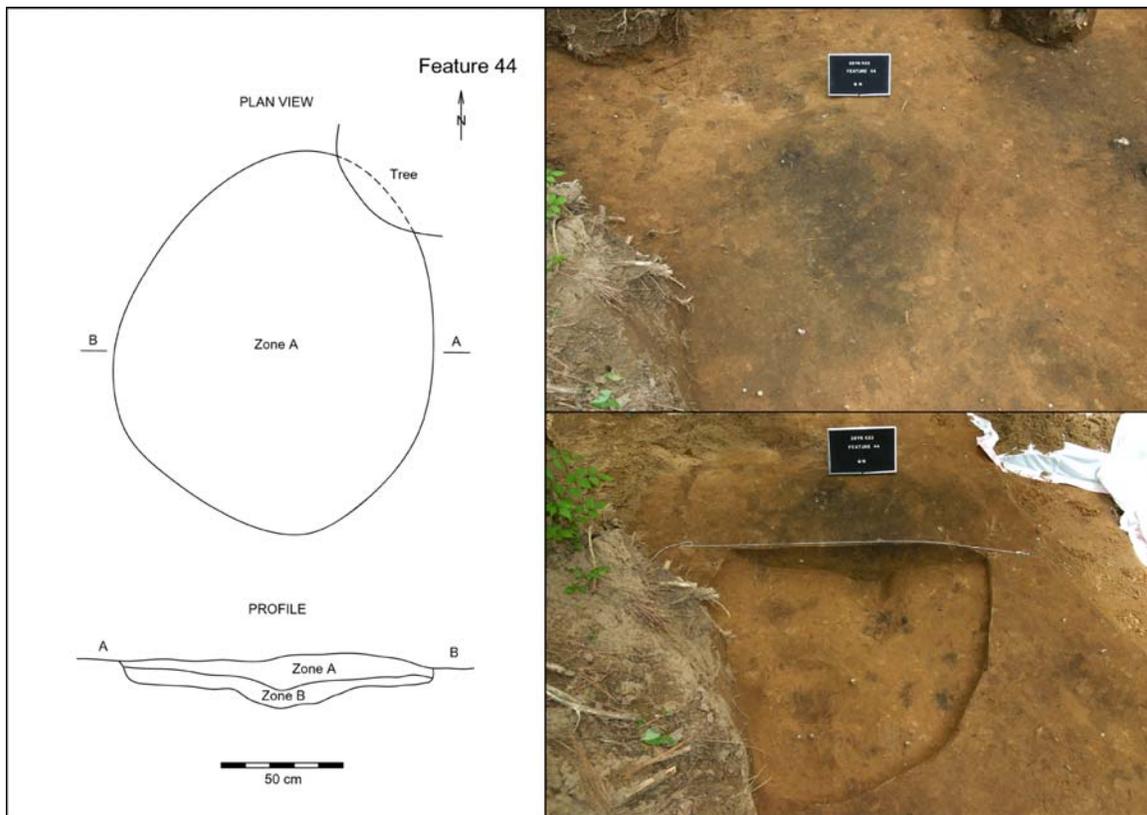


Figure B.21. Feature 44 plan view and profile drawings, and excavation photographs: top of feature (top, view to south) and fill profile with north half excavated (bottom, view to south).

tation to determine procedures for treatment and disposition of the remains. As was also the case for human remains identified in Features 43 and 62, remains associated with Feature 45 were ultimately removed *en bloc* and reburied with their matrix in a protected location.

Prior to exhumation, a field analysis of the exposed human remains was performed by Dale Hutchinson. His observations are as follows: “The burial in Feature 45 was that of a gracile male adult, with no further age estimation possible. The adult age was based on the presence of erupted third molars. The sex estimate was based on cranial features that were more male than female in robusticity. The individual was buried in a flexed position on their left side. The burial included a small bundle that included a pipe, antler, and worked bone fragments. Skeletal elements present included a cranium, mandible, and the diaphyses of the right and left clavicles, humerii, ulnae, femora, and tibiae. The right radius diaphysis was present, and likely the left was present although not apparent. The dentition included two worn maxillary molars, one maxillary or mandibular molar, one mandibular molar root, and broken premolar, probably mandibular. I assume these were likely from the right side of the dentition, although all were too fragmentary to ascertain side, and the teeth appeared to have been slightly disturbed prior to excavation, probably through root, rodent, or earth settling activity. Two skeletal measurements (estimated in both cases) were taken: maximum length of the cranium (180 mm) and maximum length of the right femur (480 mm). The femur mea-



Figure B.22. Feature 45 plan view and profile drawings, and excavation photographs: top of feature (top right, view to south), troweling feature for photography (middle right, view to southwest), fill profile with north half excavated (bottom left, view to south), and cluster of objects (stone platform pipe, deer antler, and worked bone) associated with the burial (bottom right, view to south).

surment yields a stature estimate of 67.3–72.9 inches (5.6–6.0 feet) using the formulae utilized by Fordisc 2.0 (Ousley and Jantz 1996)” (see Appendix C).

Associated grave goods, which were relocated with the remains, include what appeared to be a small bundle with a chlorite schist monitor-type platform pipe, a deer antler tine, and a fragment of worked and polished bone. Materials not associated with the grave include 37 potsherds, two pieces of animal bone, one projectile point fragment, 14 flakes, and nine fire-cracked rocks from Zone A, and nine potsherds, seven fragments

of daub, 19 flakes, and 12 fire-cracked rocks from Zone B. All of the materials observed or recovered from Feature 45 are consistent with a Late Woodland period temporal association for these facilities.

**Feature 46** (center point @ 847.48R910.50) (Figure B.23)

Feature 46 was a large, basin-shaped depression approximately 165 cm in diameter, cut by three plow scars that extended below the general base of plowzone. In plan view Feature 46 displayed two different zones of fill. Zone A was roughly 100 cm in diameter and consisted of very dark brown (10YR2/2) silty sand. Zone B surrounded Zone A and was brownish yellow (10YR6/6) sand. The upper 10 cm of Feature 46 was excavated separately from the rest of the feature due to its disturbed character. Sixty-eight potsherds, nine pieces of daub, four fragments of calcined bone, three triangular projectile points, one Savannah River projectile point, 76 flakes, and 72 fire-cracked rocks were present in this fill. Most of these materials probably derived from Zone A.

The undisturbed portion of Zone A had a maximum thickness of 15 cm and yielded six potsherds, six pieces of daub, 17 fragments of calcined bone, three triangular projectile points, two projectile point fragments, one hammerstone, 66 flakes, and 69 fire-cracked rocks. It is interesting that there is a clear discrepancy between the upper (disturbed) and lower portions of Zone A with regard to potsherd frequency. Other artifact categories are similar, including a relatively high amount of fire-cracked rock, but 68 potsherds were found in the upper portion of Zone A while only six sherds came from the lower portion. An 8.5-liter flotation sample was collected from Zone A.

The interface between Zones A and B was relatively flat, with a possible root or rodent disturbance in the center of the feature. Zone B averaged from 8 to 10 cm thick and contained two potsherds, eight pieces of daub, five calcined bone fragments, 29 flakes, and 32 fire-cracked rocks. Like the interface between Zones A and B, the base of Feature 46 was relatively flat, with very gently sloping sides.

The original function of this large, basin-shaped facility could not be determined from feature size, morphology or artifact content. Most of the associated artifacts are attributable to the Late Woodland period Ashe Ferry phase site component, but the plow disturbed surface of Feature 46 yielded a number of Late Mississippian period sherds. Radiocarbon dated materials from Zone B yielded a date of  $1000 \pm 30$  years B.P. ( $2\sigma$  calibration, cal. A.D. 990 to 1140, 1100 to 1120, 1140 to 1150; calibration curve intercept cal. A.D. 1020), consistent with incidence of Ashe Ferry series wares. It appears that the plow disturbed surface of Feature 46 included a thin Early Brown phase deposit that overlay Ashe Ferry phase deposits.

**Feature 47** (center @ 830.51R909.47) (Figure B.24)

This oval rock cluster measured 87 cm by 75 cm and was oriented with its long axis running north-south. The rocks visible at the base of the plow zone were mapped in place before the feature was excavated. Scattered rocks observed beyond the main rock concentration are likely the result of plow disturbance. In addition to 125 fire-cracked rocks, this feature yielded one animal bone fragment, six potsherds, and 10 flakes. Five to ten centimeters of brown (10YR4/3) loamy sand were removed from beneath the rocks, and 10 liters of this material were processed as a flotation sample. No pit or basin

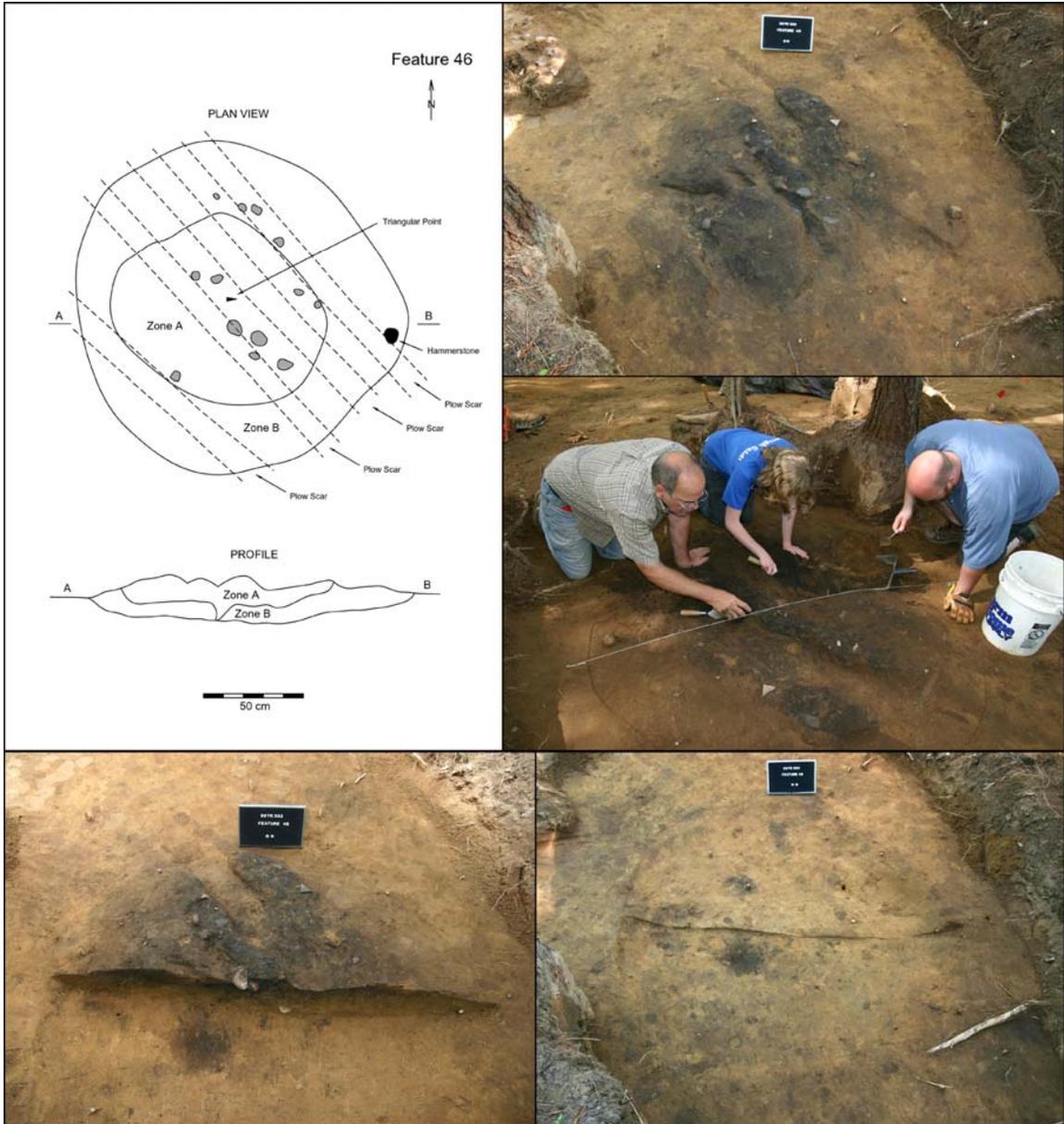


Figure B.23. Feature 46 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north), excavating the south half of Feature 46 (middle right, view to south), fill profile with south half excavated (bottom left, view to north), and excavated feature (bottom right, view to north).

margins were defined. Feature 47 appears to have been the remains of a probably Late Woodland period rock-filled hearth that was scattered by plowing. Like other similar facilities documented at 38Yk533, this hearth appears to have had a single tier of river cobbles installed to create thermal mass, over which fires could be burned to heat the cobbles, allowing subsequent cooking or heating over stones without exposing food or other materials to direct flame.

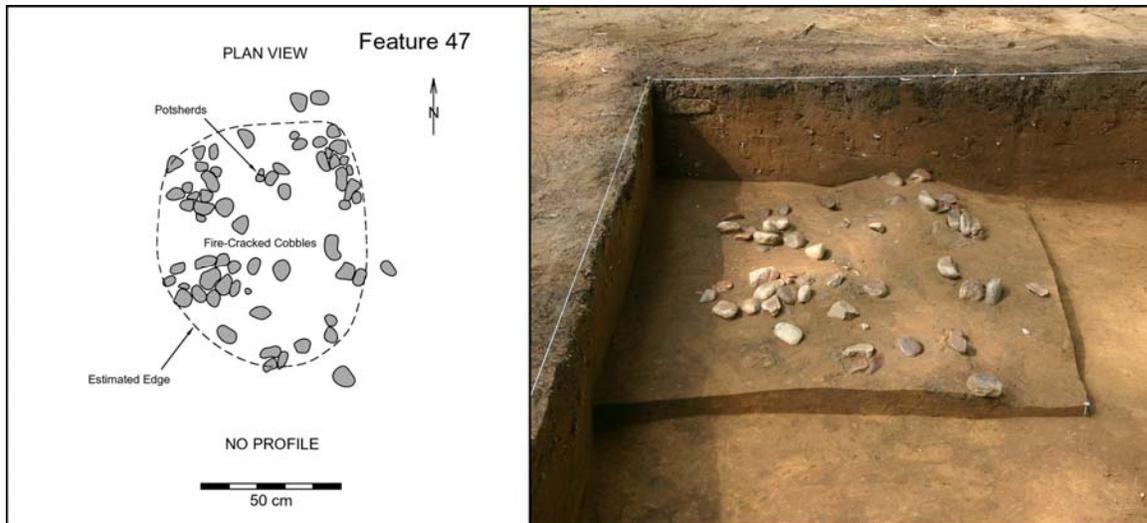


Figure B.24. Feature 47 plan view drawing and photograph of the feature prior to excavation (view to north).

**Feature 48** (center @ 852.12R905.03) (Figure B.25)

Feature 48 was an ovoid pit with relatively vertical walls and a flat bottom that measured 100 cm by 87 cm and was oriented northwest–southeast. Two zones of fill were visible in plan view. Zone A was a 55 cm-wide patch of very dark grayish brown (10YR3/2) silty sand with charcoal flecks and pockets of yellowish brown (10YR5/4) silty sand. This stratum was cone-shaped in profile and had a maximum thickness of 33 cm. Excavation of Zone A recovered 22 potsherds, three fragments of animal bone, 15 flakes, and five fire-cracked rocks. A concentration of potsherds was present at the base of Zone A. Flotation samples totaling 14.5 liters were collected from Zone A.

Zone B, the basal stratum, consisted of dark brown (10YR3/3) loose sand. Zone B contained 70 potsherds, eight pieces of daub, 13 animal bone fragments, two triangular projectile points, one hammerstone, 58 flakes, and 18 fire-cracked rocks. Many of these potsherds and fire-cracked rocks were situated at the base of Feature 48, approximately 50 cm below the plow zone. Seventeen liters of Zone B were collected for flotation.

The size and morphology of Feature 48 indicate a probable initial function as a storage or processing pit. The incidence of two distinct zones of fill, each underlain by concentrations of debris, indicates two different staged episodes of deposition, with the probable subsidence of the Zone B matrix in the interim. Artifact inclusions in Feature 40 indicate association with the Late Woodland period Ashe Ferry phase site component. AMS assay of charred plant remains from Feature 48 yielded an estimate of 910±30 years B.P. (2σ calibration, cal. A.D. 1030 to 1210; calibration curve intercept cal. A.D. 1160).

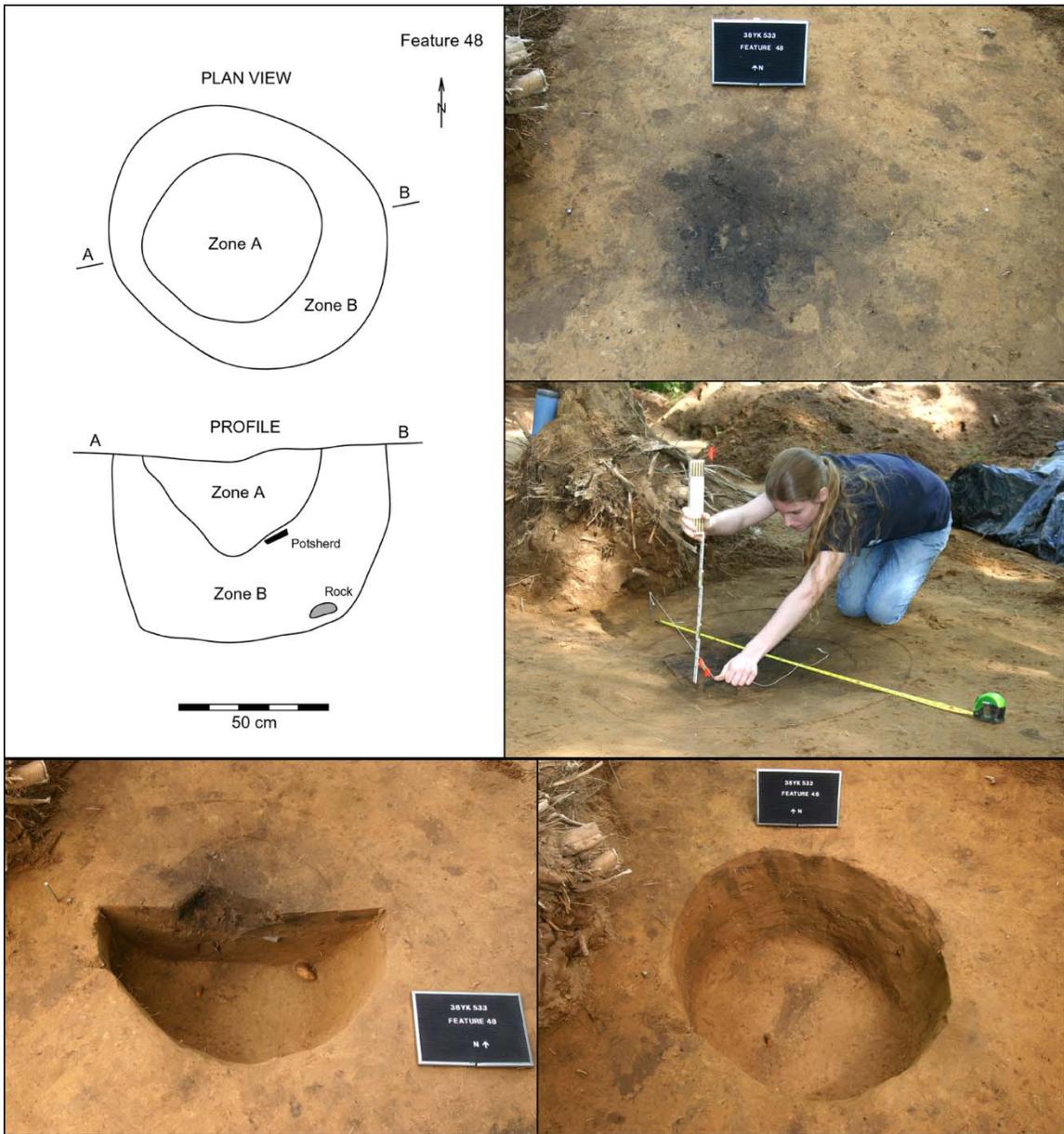


Figure B.25. Feature 48 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north), mapping fill zones at top of feature (middle right, view to northwest), fill profile with south half excavated (bottom left, view to north), and excavated feature (bottom right, view to north).

**Feature 49** (center @ 829.35R909.63) (Figure B.26)

Feature 49 was a small pit within a shallow basin that measured about 105 cm north to south and 90 cm east to west. Two zones were visible in plan view. Zone A, the matrix of the small central pit, consisted of very dark grayish brown (10 YR 3/2) sand that was mottled with dark yellowish brown (10 YR 3/4) sand and contained charcoal inclusions. Zone B, the matrix of the basin that surrounded Zone A, was dark yellowish brown (10 YR 3/6) sand. The base of Zone B was indistinct, with considerable leaching

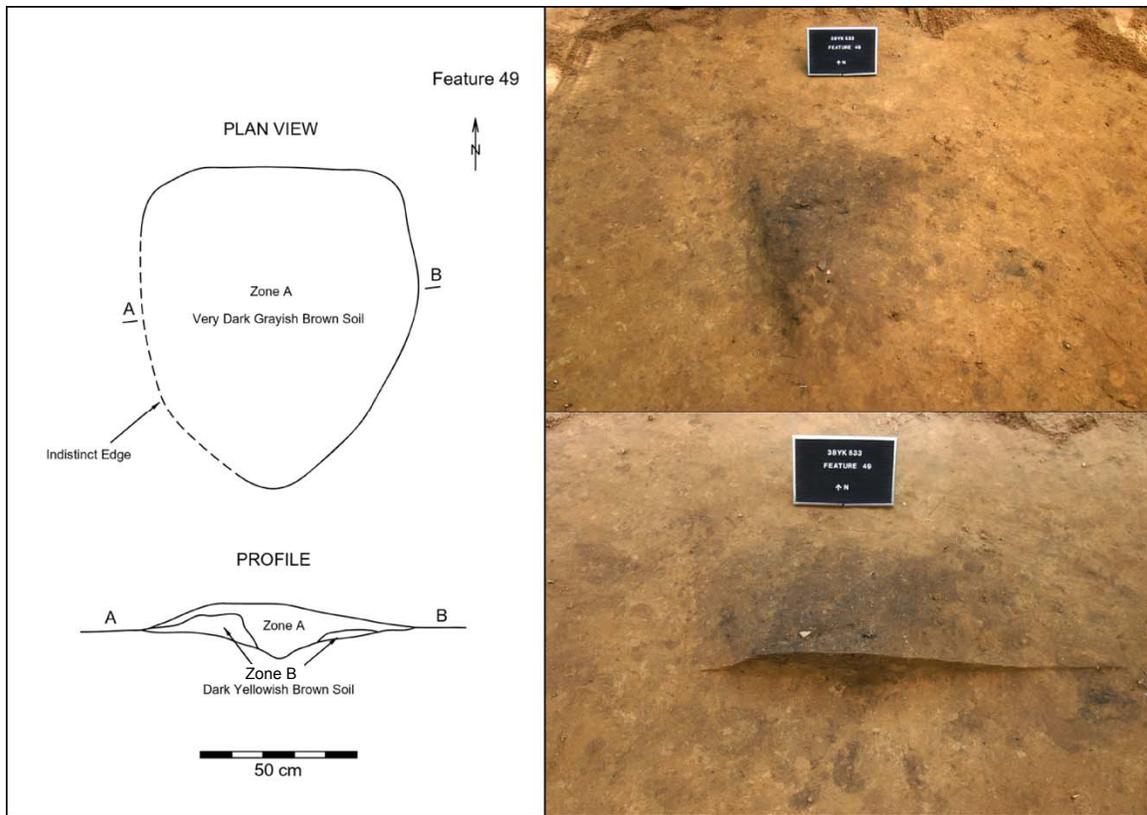


Figure B.26. Feature 49 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north) and fill profile with south half excavated (bottom right, view to north).

of organic matter into the surrounding coarse sand. These contexts were excavated together and yielded seven potsherds, seven fragments of animal bone, 47 flakes, and three fire-cracked rocks. The potsherds are attributable to the Late Woodland period site occupation.

Zone A appears to have been a small pit 30 cm in diameter with sloping walls that extended 10 cm below the base of the plow zone. Zone B may represent either a shallow basin or truncated feature that was intruded by this small pit, or, more likely, may have been the product of leaching from Zone A into the soil below.

#### **Feature 50** (center @ 841.58R911.87) (Figure B.27)

Feature 50 was defined as an oval basin intruded by two small pits. The basin (Zone D) was about 200 cm long and 150 cm wide and oriented north to south. The intrusive pits (designated Zones A and B) were approximately 50 cm and 30 cm in diameter. They were surrounded by a peanut-shaped patch of soil that measured 130 cm by 70 cm and was oriented northwest to southeast. This was designated Zone C, and the remainder of soil in the basin was designated Zone D. A very persistent small animal continued to re-dig its burrow during the investigation of Feature 50, disturbing Zones B, C, and D.

Zone A, the smaller pit, was delineated by large, vertically oriented potsherds lying at the interface between Zones A and C. Excavation of Zone A revealed these were two large sections of a simple-stamped Ashe Ferry series jar, with the largest on the east

side of the pit measuring about 25 cm by 15 cm. Quartz cobbles were also found lying at the bottom of the pit, which was basin-shaped and had a maximum thickness of 17 cm. All 18 liters of Zone A were processed by flotation. This fill consisted of very dark grayish brown (10 YR 3/2) silty sand with charcoal inclusions, and yielded 41 potsherds, 24 fragments of calcined bone, one triangular projectile point, 22 flakes, and four fire-cracked rocks.

The second small pit (Zone B) evinced inward-sloping walls and a concave bottom at 19 cm below the base of plowzone. Removal of this deposit, which consisted of very dark grayish brown (10 YR 3/2) silty sand, revealed three fire-cracked rocks and a simple stamped potsherd lying on a dense charcoal deposit at the bottom of the pit. Other content included two potsherds and 8 flakes. All 15.5 liters of Zone B were processed by flotation.

The soil surrounding the two pits was dark yellowish brown (10 YR 4/4) silty sand with a few charcoal inclusions. Zone C did not extend below Zones A and B and had a maximum thickness of 12 cm. Flotation samples totaling 22.5 liters were collected from this fill, which contained 11 potsherds, 16 flakes, and two fire-cracked rocks.

Excavation of Zone D recovered seven potsherds, five animal bone fragments (one calcined), two pieces of daub, one projectile point fragment, 20 flakes, and seven fire-cracked rocks. A 13.5-liter flotation sample was collected from Zone D. The yellowish brown (10 YR 5/4) sand Zone D matrix was difficult to distinguish from the surrounding undisturbed soil, and excavation was stopped at approximately 25 cm below the plow zone.

Because Zone D did not evince clear margins, it is uncertain whether this deposit represents an intentionally excavated basin or simply staining of the surrounding matrix by leaching of organic matter from Zones A, B, and C. Zone C clearly intrudes Zone D and Zones A and B obviously intrude Zone C. The close proximity of Zones A and B, together with their similarity in size and shape, and inclusions of primary deposits, may indicate the coeval use of these pits, presumably for cooking or food processing (as indicated by vessel sections in Zone A and *in situ* charcoal at the bottom of Zone B). Materials associated with Feature 50 indicate use during the Late Woodland period Ashe Ferry phase occupation. AMS assay of associated charcoal yielded an estimate of 1000±30 years B.P. (2σ calibration, cal. A.D. 990 to 1040; cal. 1100 to 1120); calibration curve intercept cal. A.D. 1020).

### **Feature 51** (center @ 848.25R908.90) (Figure B.28)

Feature 51 was a rock cluster and probable hearth remnant partially destroyed by plowing. The intact portion of the feature measured 75 cm by 30 cm and was oriented northwest to southeast. The entire deposit was 15 cm thick. The rock cluster itself consisted of 25 fire-cracked rocks and also contained four Late Woodland period potsherds and four flakes. The soil below the rocks was dark yellowish brown (10 YR 3/6) silty sand that contained two potsherds and nine flakes. This probable rock oven/roasting facility lacks associated charcoal, most likely as a function of excessive leaching of organic matter in the coarse sandy site sediments.

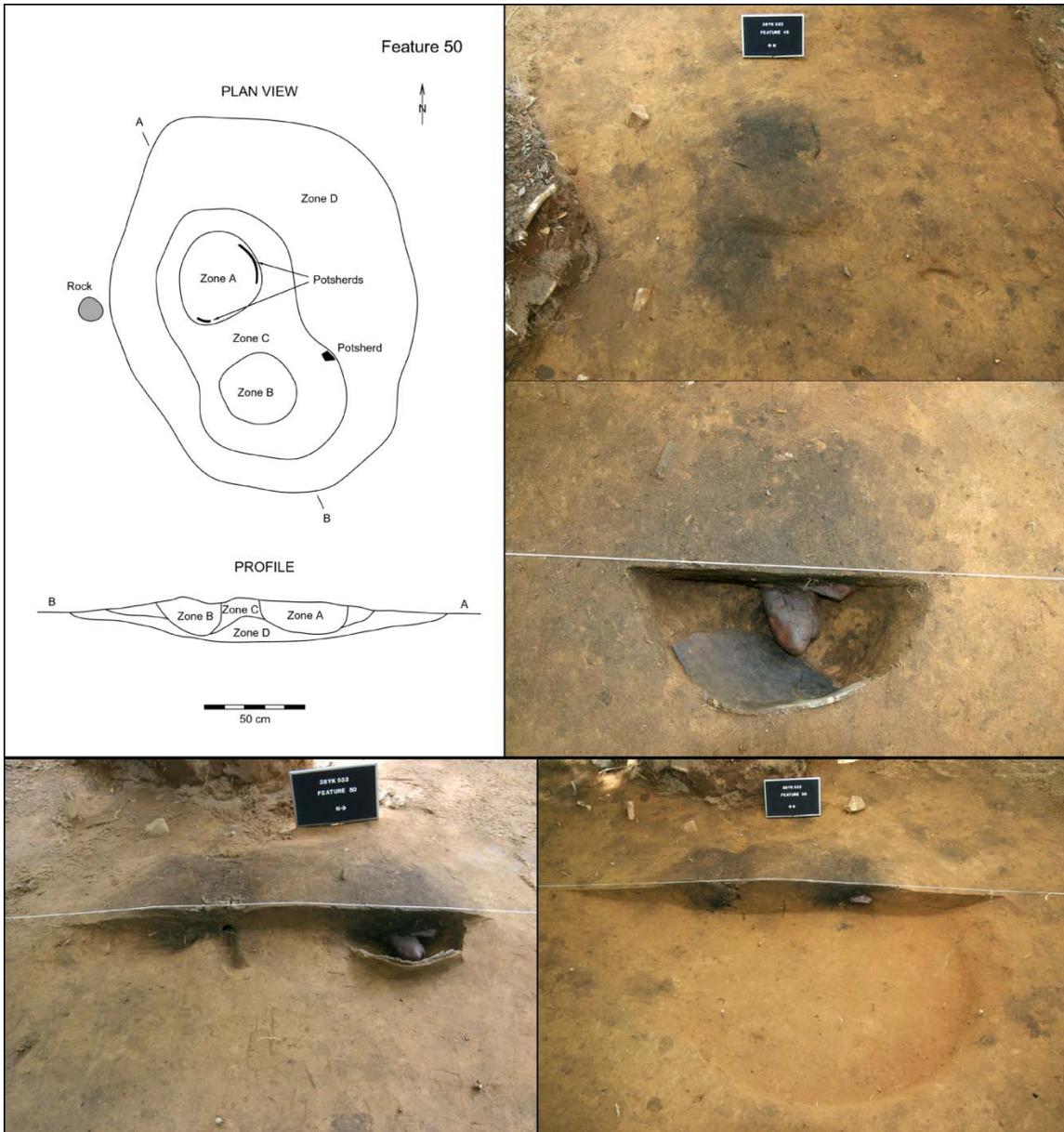


Figure B.27. Feature 50 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north), intrusive pit (designated Zone A) containing large vessel section with northeast half excavated (middle right, view to southwest), fill profile before removing Zone A potsherds with northeast half excavated (bottom left, view to southwest), and fill profile with northeast half fully excavated (bottom right, view to southwest).

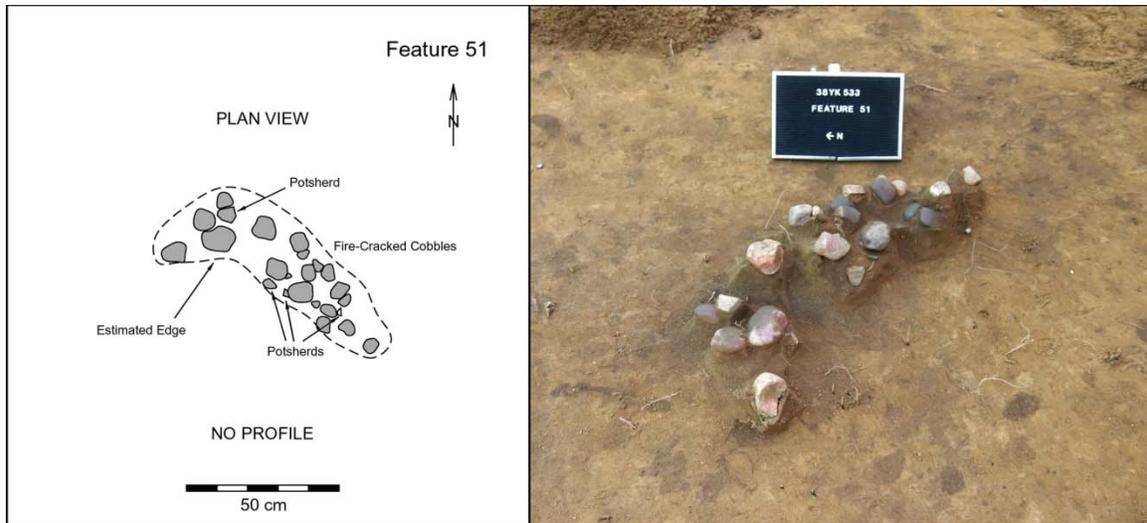


Figure B.28. Feature 51 plan view drawing and photograph of the feature prior to excavation (view to east).

### **Feature 52** (center @ 844.20R855.30) (Figure B.29)

This ovoid pit feature measured 180 cm by and 140 cm and was oriented with its long axis northwest to southeast. It contained two layers of fill visible in plan view. Zone A consisted of brown (10 YR 4/3) compact sandy silt, and Zone B consisted of yellowish brown (10 YR 5/4) silty sand mottled with light yellowish brown (10 YR 6/4) silty sand. Zone A contained 92 potsherds, seven pieces of daub, one piece of fired clay, one fragment of calcined bone, one core, seven triangular projectile points, one projectile point fragment, 98 flakes, and 28 fire-cracked rocks. Nine and a half liters of Zone A were processed as a flotation sample. In profile this zone had even, gently sloping sides and a flat bottom. The flat bottom of Zone A was located approximately 40 cm below base of the plow zone.

Excavators used the presence of charcoal inclusions in Zone B as well as its firm character in comparison to the loose sand below to identify the bottom of Feature 52. Zone B contained 21 potsherds, two triangular projectile points, one projectile point fragment, 40 flakes, and nine fire-cracked rocks. The bottom of Feature 52 had a similar shape to the base of Zone A. The flat bottom of the feature was approximately 48 cm below the base of the plow zone.

The size and morphology of Feature 52 are consistent with its probable function as a storage or processing pit. Although two zones of fill were present, the similarity of these zones in profile suggests they were both part of the same filling event. Diagnostic artifacts recovered from Feature 52 matrices are referable to the Late Woodland period Ashe Ferry phase site component. Carbonized plant remains recovered from Feature 52 produced an AMS date estimate of 970±30 years B.P. (2σ calibration, cal. A.D. 1010 to 1160); calibration curve intercept cal. A.D. 1030).

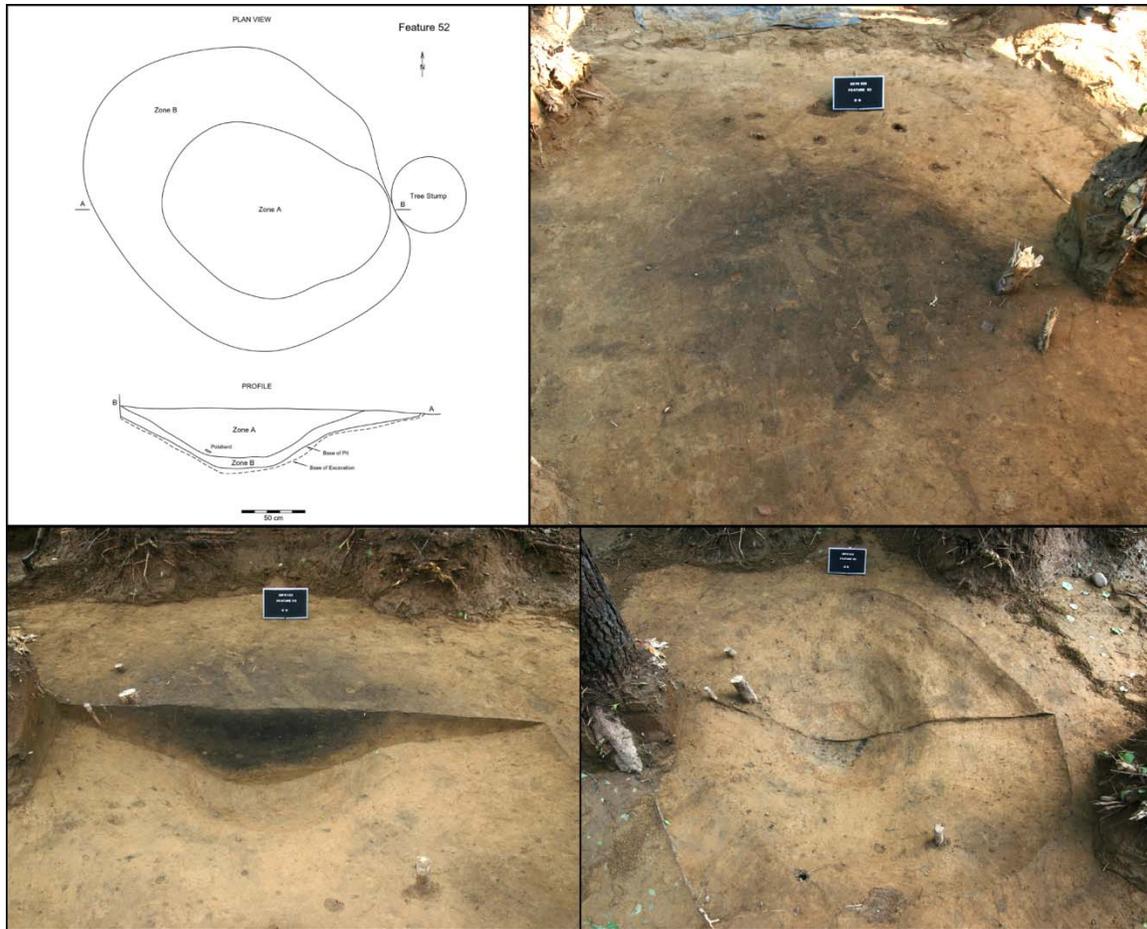


Figure B.29. Feature 52 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north), fill profile with north half excavated (bottom left, view to south), and excavated feature (bottom right, view to south).

### Feature 53 (center @ 840.92R907.74) (Figure B.30)

Feature 53 comprised a cluster of rocks that extended approximately 123 cm east to west and 100 cm north to south. The rocks visible at the base of the plow zone were mapped in place before the feature was excavated as a single zone. Five to fifteen centimeters of dark yellowish brown (10 YR 3/4) silty sand were removed with the rock cluster, and 7.5 liters of Zone A were processed as a flotation sample. In addition to 126 fire-cracked rocks, excavation of Zone A recovered two fragments of calcined bone, 23 small potsherds, one triangular projectile point, three projectile point fragments, and 73 flakes. These materials indicate probable association with the Late Woodland period Ashe Ferry component; AMS assay of Feature 53 material produced dates of 1010±40 years B.P. (2σ calibration, cal. A.D. 970 to 1050; cal. 1090 to 1120; cal. 1140 to 1150); calibration curve intercept cal. A.D. 1020) and 920±30 years B.P. (2σ calibration, cal. A.D. 1030 to 1190; cal. 1200 to 1210); calibration curve intercept cal. A.D. 1160).

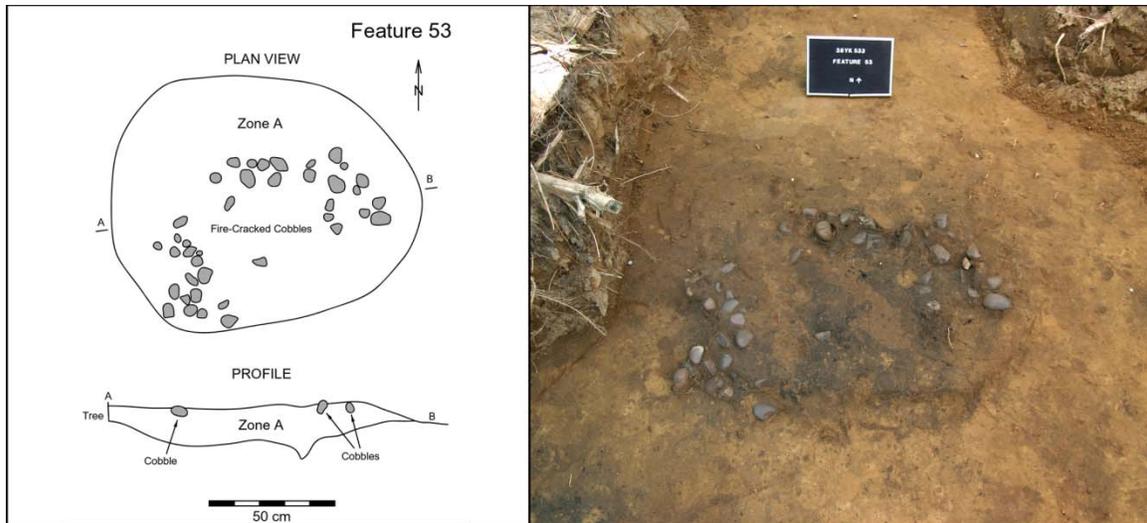


Figure B.30. Feature 53 plan view and profile drawings, and excavation photographs of top of feature (view to north).

Feature 53 is interpreted as the remains of a rock oven cooking facility; high relative frequency of acorn nutshell in the feature matrix indicates probable use in acorn processing. The patchy distribution of fire-cracked rock within Feature 53 is partially attributable to plow truncation, but may also reflect hearth cleaning or retrieval of roasted materials from the facility.

**Feature 55** (center @ 846.52R905.32) (Figure B.31)

Feature 55 was a rock cluster that was circular in plan view and measured approximately 50 cm in diameter. Seven fire-cracked rocks and a milling stone fragment were mapped in place before they were removed along with 4 to 6 cm of dark yellowish brown (10 YR 4/4) silty sand. Feature 55 contained one flake in addition to the fire-cracked rocks and milling stone fragment. Neither charcoal nor evidence of a pit was observed below the rock cluster. Nevertheless, Feature 55 probably represents a cooking or heating facility from which all ash or charcoal leached.

**Feature 56** (center @ 844.91R907.03) (Figure B.32)

Feature 56 was a small pit or posthole that was 40 cm in diameter at the base of the plow zone. This feature had steeply inward-sloping walls and narrowed to a diameter of approximately 10 cm at 50 cm below the plow zone. It contained a single zone of dark yellowish brown (10 YR 4/4) silty sand that yielded one simple stamped Late Woodland period potsherd, one core, seven flakes, and 15 fire-cracked rocks. The narrow shape and depth distinguish Feature 56 from the other small pits excavated at 38Yk533. For this reason Feature 56 may be a large posthole.

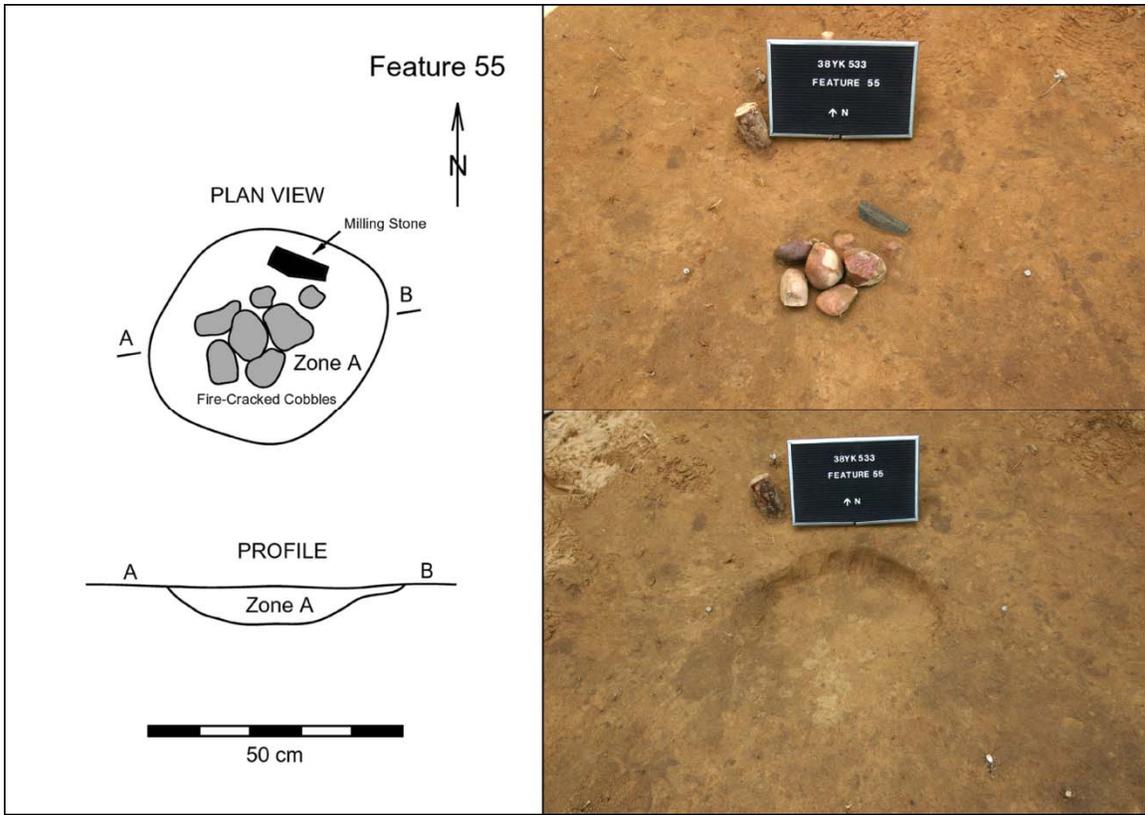


Figure B.31. Feature 55 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north) and excavated feature (bottom right, view to north).

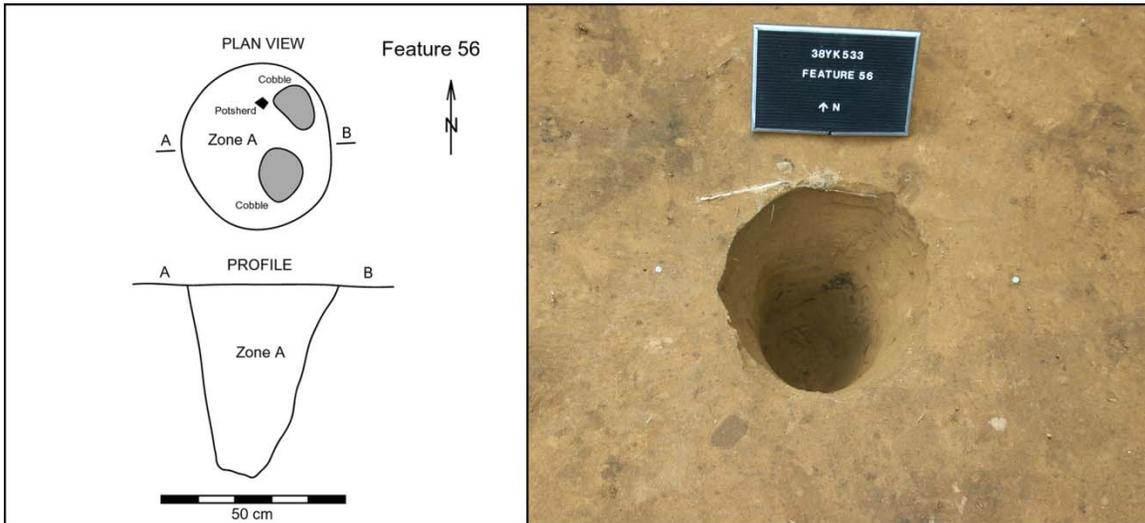


Figure B.32. Feature 56 plan view and profile drawings, and photograph of excavated feature (view to north).

**Feature 57** (center @ 842.71R906.73) (Figure B.33)

Feature 57 was a small pit that measured approximately 45 cm in diameter at the base of the plow zone. This feature contained a single zone of dark yellowish brown (10 YR 3/4) silty sand that yielded six potsherds, eight flakes, and 17 fire-cracked rocks. The walls of Feature 57 were relatively straight and inward sloping, and the bottom of the feature was flat, although the darkest part of the fill terminated in a point that may have been created by biotic disturbance. The base of Feature 57 was encountered approximately 35 cm below the plow zone. The size and shape of this feature suggest it served a small-scale storage or processing function, or, possibly, the base of a very large posthole. Associated materials indicate a probable Late Woodland period affiliation.

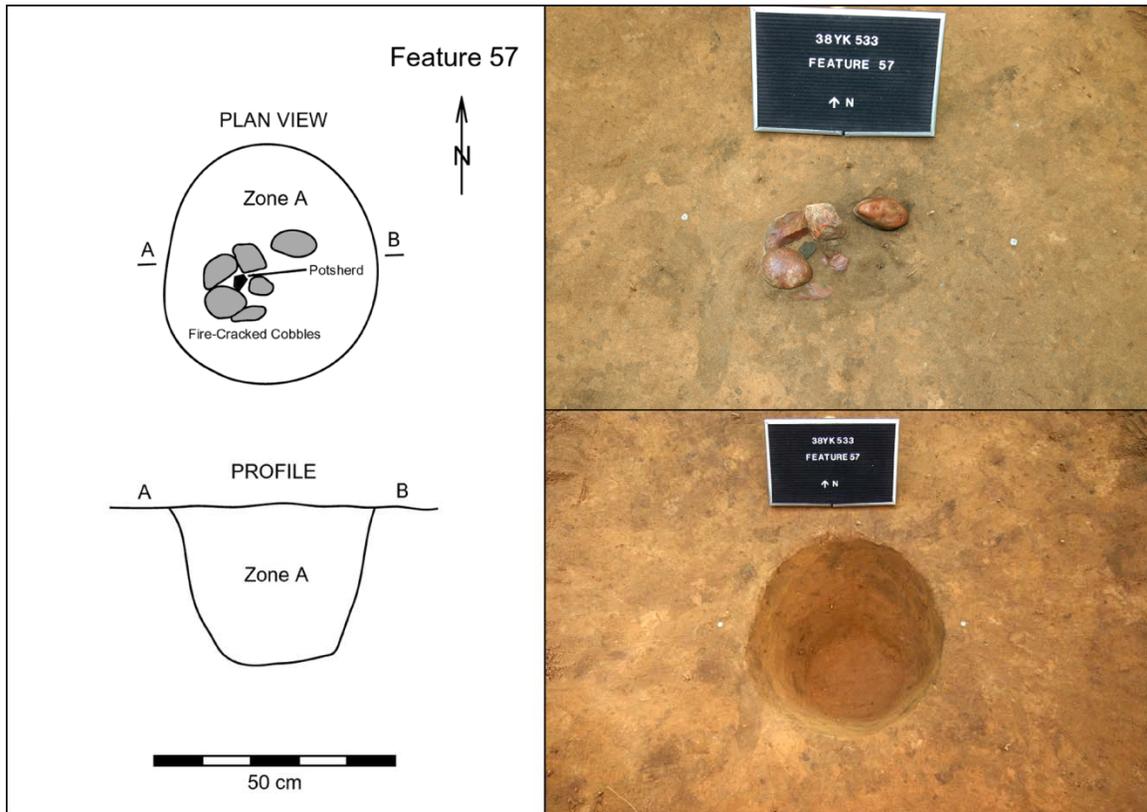


Figure B.33. Feature 57 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north) and excavated feature (bottom right, view to north).

**Feature 58** (center @ 840.03R908.49) (Figure B.34)

Feature 58 was a cluster of Deptford check-stamped potsherds distributed across a 70 cm by 20 cm area at the base of plowzone. While it is likely these potsherds were in a pit, no distinction between the soil in which they were found and the surrounding strong brown (7.5 YR 4/6) sand was observed. If these sherds had been contained within a pit, leaching of organic materials probably obliterated any differences in soil color. An oval area approximately 100 cm by 80 cm and 5 cm deep was excavated around the sherds. The sand that surrounded the sherds was waterscreened with the exception of 17 liters that were processed by flotation.

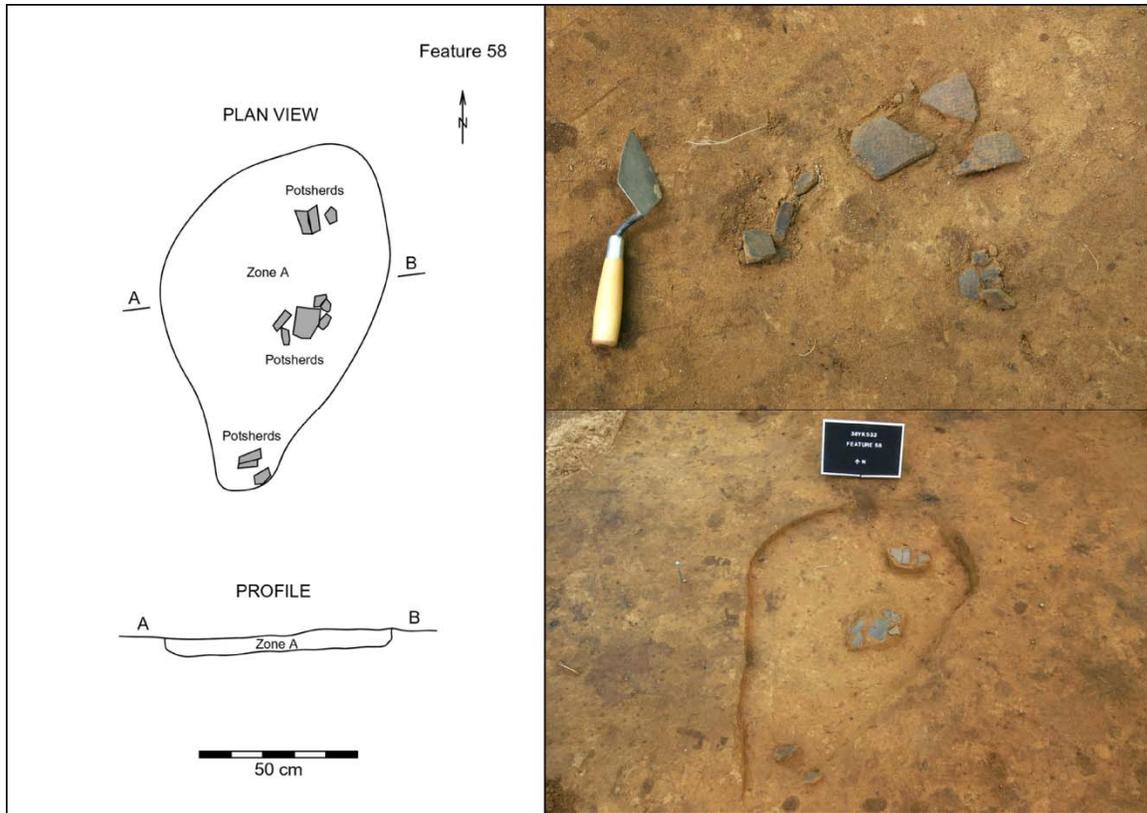


Figure B.34. Feature 58 plan view and profile drawings, and excavation photographs: top of feature with exposed Deptford potsherds (top right, view to north) and excavated feature (bottom right, view to north).

A total of 49 potsherds were collected from Feature 58. They occurred in three clusters up to 30 cm apart but were all lying on the same horizontal plane. The surrounding sand contained three fragments of animal bone, one piece of daub, one flake, and two fire-cracked rocks.

Feature 58 presents clear evidence for limited-scale Early Woodland period activity at 38Yk533. The Deptford check stamped sherds all derive from a single vessel; no similar wares were observed in other contexts at 38Yk533. It is possible that these sherds reflect a single transitory event, perhaps related to the position of 38Yk533 along a transportation route at a ford over the Catawba River.

**Feature 59** (center @ 834.46R904.37) (Figure B.35)

Feature 59 was a small pit or rock cluster that appeared to have been intruded upon and disturbed by tree roots. The feature was oval-shaped in plan view, and measured 55 cm northwest to southeast and 43 cm northeast to southwest. This pit contained a single zone of dark yellowish brown (10 YR 3/6) loose sand. Patches of dark brown (10 YR 3/3) silty sand were identified approximately 15 cm below of the base of the plow zone in the east and west corners of the feature. Although one potsherd was found in the vicinity of the western stain, the northward-sloping bottom of the feature along with the shapes of the stains in profile are more indicative of biotic disturbance than human activity. The shape of Feature 59 was difficult to determine given the

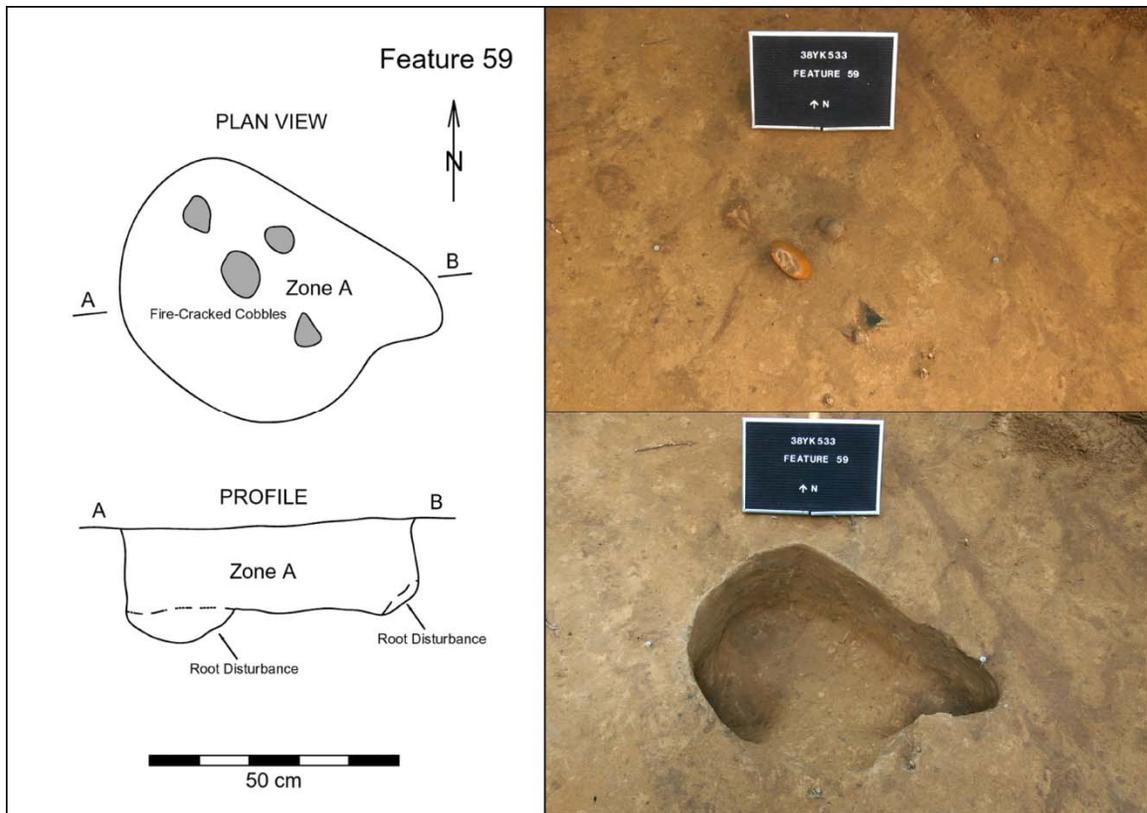


Figure B.35. Feature 59 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north) and excavated feature (bottom right, view to north).

presence of the tree disturbance, but it appears to have had straight sides and a flat bottom. The bottom of the feature was approximately 18 cm below the base of the plow zone.

Artifacts collected from Feature 59 include two simple stamped potsherds, one ground stone celt, one chipped hoe, three flakes, and 11 fire-cracked rocks. These materials indicate a probable Late Woodland period association for this facility.

#### **Feature 60** (center @ 840.27R901.86) (Figure B.36)

This small pit feature was oval in plan view, measuring approximately 50 cm east to west and 40 cm north to south. Feature 60 had inward-sloping walls and a concave bottom, and its fill had a maximum thickness of 40 cm. The pit matrix consisted of a single zone of dark yellowish brown (10 YR 4/4) silty sand. An 8-liter flotation sample was collected.

Feature 60 deposits yielded 12 potsherds, one piece of daub, two fragments of calcined bone, one milling stone, 30 flakes, and two fire-cracked rocks. These materials indicate a probable Late Woodland period Ashe Ferry phase association for this facility.

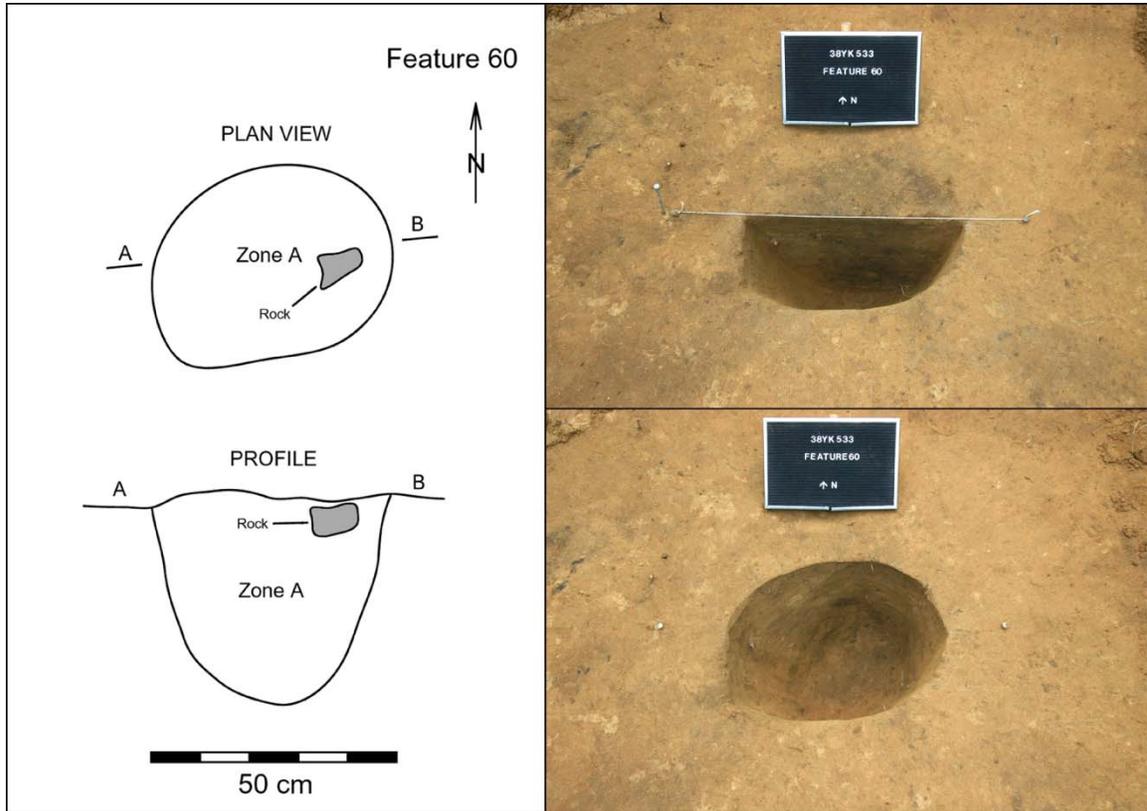


Figure B.36. Feature 60 plan view and profile drawings, and excavation photographs: fill profile with south half excavated (top right, view to north) and excavated feature (bottom right, view to north).

### Feature 61 (center @ 826.11R923.00) (Figure B.37)

Feature 61 was a large basin intruded by two postholes, a configuration similar to Feature 50. Two zones of fill were identified in plan view prior to the excavation of Feature 61. An irregularly-shaped patch of dark brown (10 YR 3/3) silty sand measuring approximately 90 cm by 60 cm was designated Zone A. It was surrounded by Zone B, a deposit of dark yellowish brown (10 YR 3/6) silty sand 150 cm in diameter. Two postholes were located in the southern portion of Zone A, but were not identified prior to excavation because they were similar in color and texture to the surrounding matrix. Since the north half of Feature 61 was excavated first, they went undetected until most of Zone A had been removed.

Zone A had gently sloping convex walls and a flat bottom. It contained three potsherds, two pieces of daub, three fragments of animal bone, 18 flakes, and 14 fire-cracked rocks. Some of these materials may have come from the uppermost fill of the postholes in the south half of Feature 61. Zone A had a maximum depth of approximately 15 cm below the plow zone. An 11.5-liter flotation sample was collected from the north half of Zone A. In the south half, two patches of darker soil, representing the tops of the two postholes, were identified and designated Zones A1 and A2.

Zone A1 was approximately 25 cm in diameter at the base of Zone A. It contained very dark brown (10 YR 2/2) silty loam that yielded six potsherds, one fragment of calcined bone, 11 flakes, and one fire-cracked rock. Ten liters of Zone A1 were processed as a flotation sample. This posthole had steeply sloping sides and a relatively flat bottom, and the diameter at the bottom was approximately 10 cm. It extended 35 cm below the base of Zone A, which indicates it had a total depth of 50 cm below the base of the plow zone.

Zone A2 was located 12 cm southwest of Zone A1. It was sub-rectangular in plan view, measuring 23 cm by 20 cm. This posthole contained very dark brown (10 YR 2/2) silty loam and yielded one potsherd, 11 flakes, and five fire-cracked rocks. Six and a half liters of Zone A2 fill were processed as a flotation sample. This posthole was not as deep as Zone A1, extending only 22 cm below the base of Zone A. Its maximum depth can therefore be approximated as 37 cm below the base of the plow zone. Zone A2 had straight walls and a concave bottom in profile.

The final context identified in Feature 61 is Zone B. This zone was present only below the outer edges of Zone A. It yielded five potsherds, two fragments of animal bone (one calcined), seven flakes, and six fire-cracked rocks. A total of 35 liters from Zone B were collected for flotation.

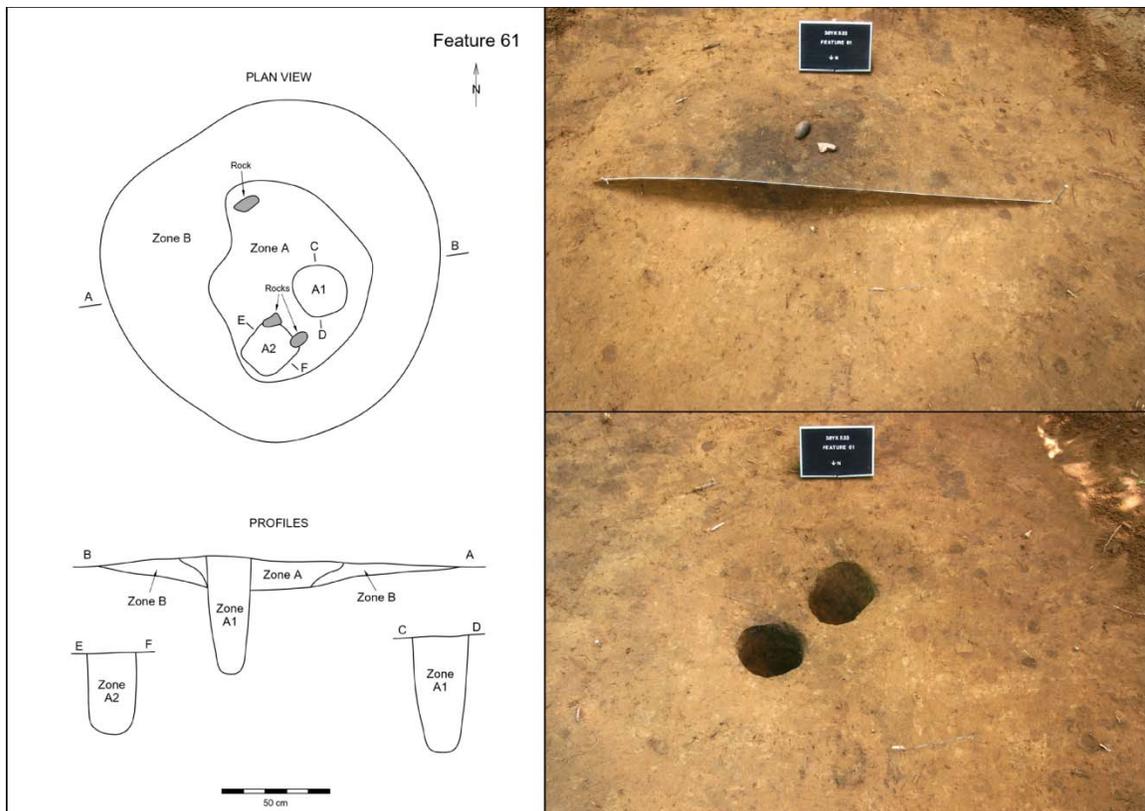


Figure B.37. Feature 61 plan view and profile drawings and excavation photographs: fill profile with north half excavated (top right, view to south) and base of feature with excavated postholes (bottom right, view to south).

Feature 61 appears to have been formed by the insertion of posts through a shallow basin. Another nearby posthole may relate to the same construction, but in the absence of additional postholes, the character of this construction is unclear. Materials associated with Zones A, A1, A2, and B are consistent with a Late Woodland period association.

**Feature 62** (center @ 838.35R901.80) (Figure B.38)

Feature 62 was an oval grave pit that contained a human burial. The pit measured 85 cm north to south and 73 cm east to west, with a single zone of dark yellowish brown (10 YR 3/4) silty sand, designated Zone A, visible at the base of the plow zone. Excavators encountered human teeth in the south half of the feature after removing approximately 5 cm of fill, and work on Feature 62 was suspended in order to conduct agency and tribal consultations to determine appropriate treatment and disposition of the human remains. Upon resumption of excavation (for the purpose of relocating the remains en bloc to a secure location), Zone A in the north half was excavated, yielding five potsherds and 12 flakes that were reinterred at the new location. The fill remaining in both halves of the pit was removed as Zone B in order to delineate the extent of the human skeletal remains. This fill was not processed, but was reburied with the relocated remains.

Prior to exhumation, a field analysis of the exposed human remains was performed by Dale Hutchinson. His observations are as follows: “Two subadult individuals were included in Feature 62. The remains consisted of two crania that were located adjacent to each other, at least one mandible, and at least one long bone. The dentition of individual one included deciduous maxillary first and second molars (side unknown) and deciduous mandibular first and second molars (side unknown). While these were clearly in articulated position, neither the mandible nor maxilla was preserved enough for observation. There was also an unerupted maxillary permanent first molar with only the crown developed. All deciduous teeth were largely unworn. The developmental sequence of the teeth allowed an age estimate of 3–4 years of age (Ubelaker 1999). The dentition of individual two included a left deciduous canine, left maxillary first and second molars, and left deciduous mandibular canine, first and second molars. The mandibular and maxillary molars were clearly articulated in fairly well-preserved bone. There was also an unerupted maxillary permanent left first molar with only the crown developed. All deciduous teeth were largely unworn. The developmental sequence of the teeth allowed an age estimate of 3–4 years of age. There was also a very badly preserved long bone, but I could not assess either which individual it might be associated with or what element it might be. The development of the deciduous and permanent teeth indicates these two individuals were of identical or nearly identical ages. No observations were made that would permit assessing whether they were related or not” (see Appendix C).

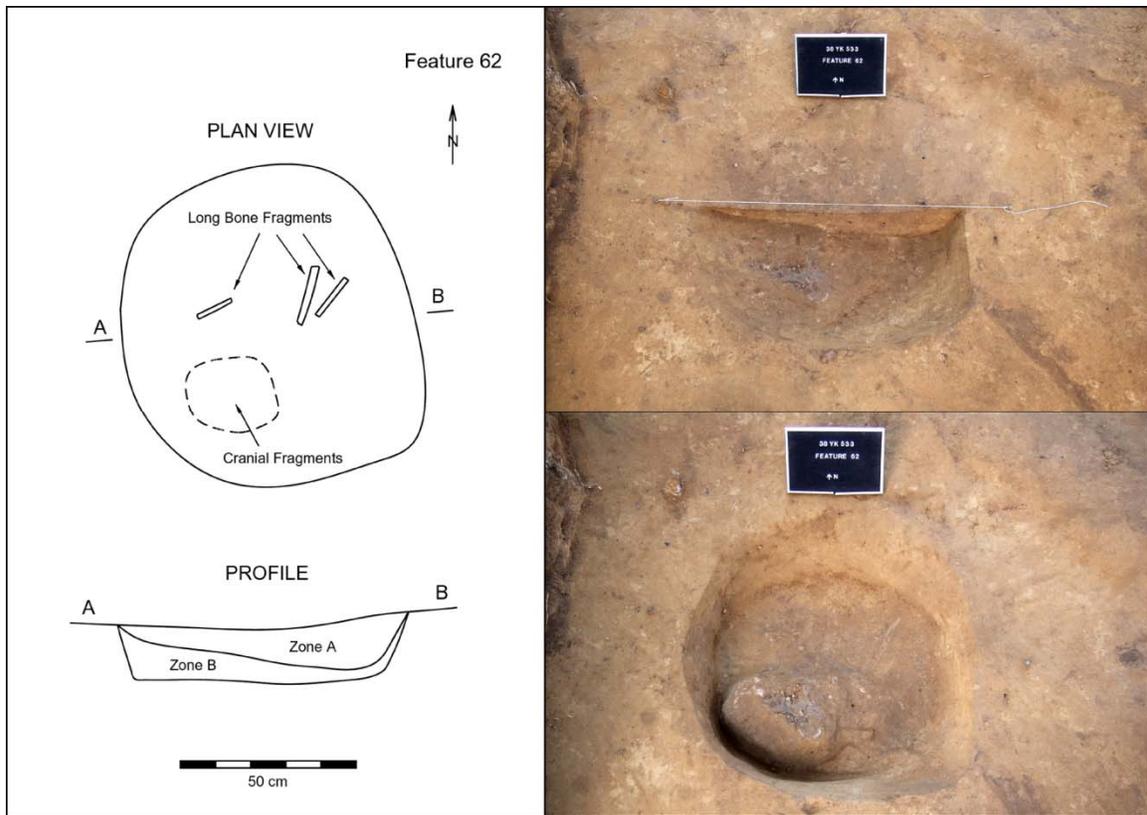


Figure B.38. Feature 62 plan view and profile drawings, and excavation photographs: fill profile with Zone A in south half excavated (top right, view to north) and feature excavated with the burial partially exposed (bottom right, view to north).

**Feature 63** (center @ 832.62R904.87) (Figure B.39)

Feature 63 was a small oval pit with straight to steeply sloping walls and a concave bottom that measured approximately 60 cm by 45 cm and was oriented northwest to southeast. It contained a single zone of dark yellowish brown (10 YR 3/4) silty sand mottled with yellowish brown (10 YR 5/4) silty sand. Flotation samples from Feature 63 totaled 23 liters.

Artifacts collected from Feature 63 include nine potsherds, 12 fragments of calcined bone, 30 flakes, and one fire-cracked rock. These materials are consistent with the Late Woodland period Ashe Ferry component that dominates 38Yk533. The function of this small pit feature is undetermined, but it likely served a storage or processing function, or, like Feature 57, may represent the base of a large posthole.

**Feature 65** (center @ 850.49R853.84) (Figure B.40)

Feature 65 was an ovoid pit that measured approximately 120 cm by 100 cm and was oriented north to south. Two zones of fill were identified in Feature 65 during excavation. Zone A consisted of brown (10 YR 4/3) sandy silt with occasional flecks of charcoal. A patch of very dark grayish brown (10 YR 3/2) sandy silt about 30 cm in diameter was noted in the southern portion of Zone A, and a cluster of 15 sherds was found in this area in the first 6 cm excavated below the plow zone. This dark patch

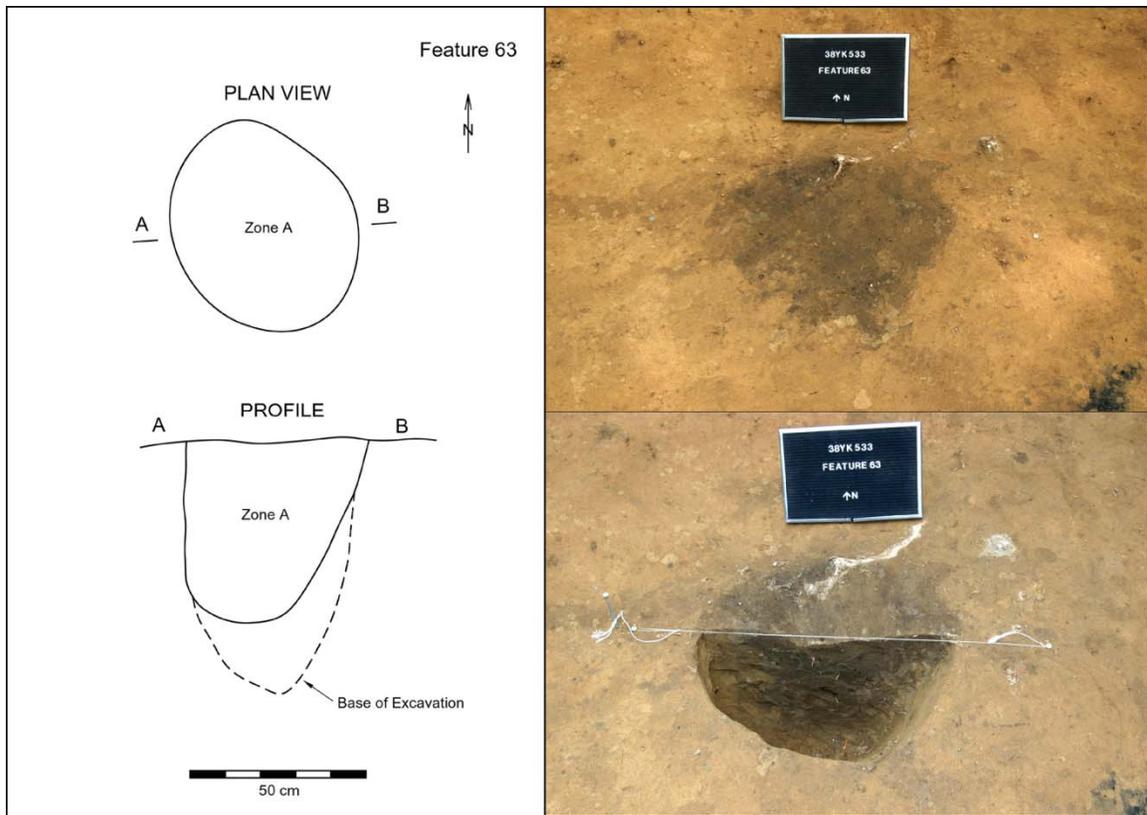


Figure B.39. Feature 63 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north) and fill profile with south half excavated (bottom right, view to north).

of soil is basin-shaped in profile and represents the final filling event in the feature.

The west half of Feature 65 was excavated *en toto*, and yielded 55 potsherds, one piece of daub, one triangular projectile point, 101 flakes, and seven fire-cracked rocks. Excavation of the eastern half of Zone A revealed gently sloping walls and a flat bottom in profile, with a maximum thickness of 15 cm. The eastern section of Zone A contained 30 potsherds, three fragments of daub, one Kirk Serrated projectile point, three triangular projectile points, one hammerstone fragment, 84 flakes, and 18 fire-cracked rocks. One 7-liter flotation sample was collected from the east half of Zone A.

Zone B was dark yellowish brown (10 YR 4/6) sandy silt and contained 19 potsherds, two triangular projectile points, one projectile point fragment, one core, 60 flakes, and one fire-cracked rock. This zone was concave in profile and had a maximum depth of 45 cm below the plow zone.

The dimensions and morphology of Feature 65 are consistent with a probable function as a storage pit. Deposits within the pit indicate two or three filling stages, with possible reuse of the pit after each of the first two episodes. Materials recovered from the pit matrix indicate probable Late Woodland period Ashe Ferry phase association.

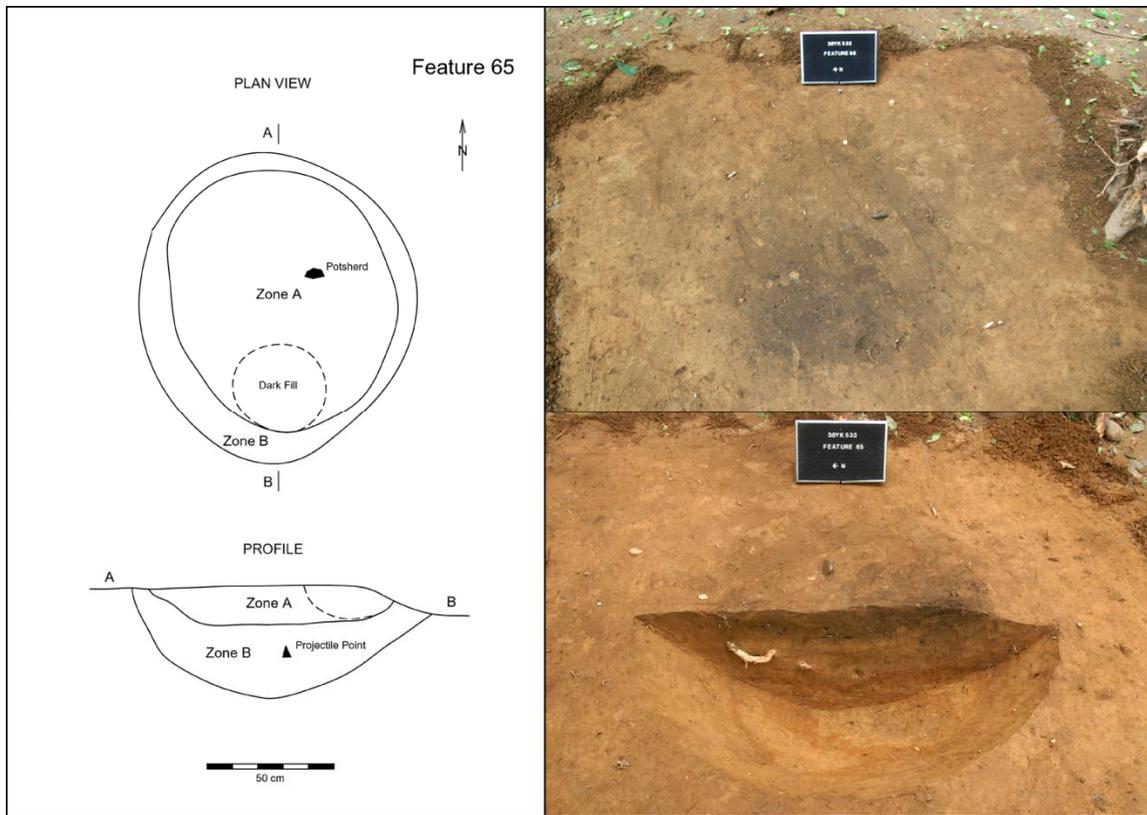


Figure B.40. Feature 65 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north) and fill profile with west half excavated (bottom right, view to east).

### **Feature 66** (center @ 847.26R854.09) (Figure B.41)

Feature 66 was an oval basin that measured 125 cm north to south and 105 cm east to west. It contained two layers of fill. Zone A comprised an approximately 60-cm wide circle of yellowish brown (10 YR 5/4) sandy loam with charcoal patches, surrounded by a stratum of light yellowish brown (10 YR 6/4) silty sand with charcoal flecks, designated Zone B.

Zone A was found to extend only 5 cm below the base of the plow zone and contained five potsherds, 17 flakes, and two fire-cracked rocks. It had a flat bottom and gently sloping slides in profile. Ten liters of Zone A was processed as a flotation sample. Zone B had a maximum thickness of 16 cm and was also basin-shaped in profile. It yielded 16 potsherds, one polished cobble, 24 flakes, and four fire-cracked rocks. These associated materials indicate a probable Late Woodland period affiliation.

Feature 66 contained evidence of at least two distinct episodes of fill, if not use. After the pit was dug and no longer considered useful, it was filled in with Zone B. Soil compaction or re-use of Feature 66 resulted in the creation of a depression that was later filled in with Zone A. The relatively shallow profile of Feature 66 makes its original function difficult to determine. It may be a storage pit that was truncated by plowing.

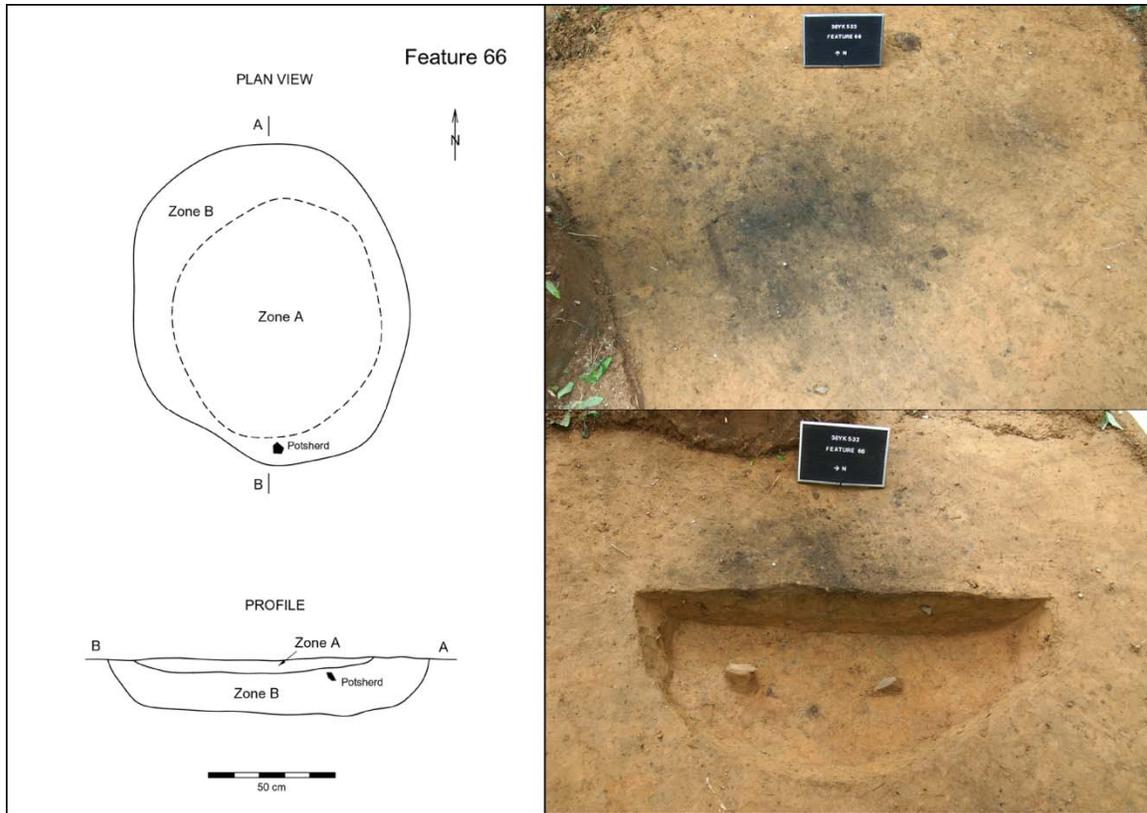


Figure B.41. Feature 66 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north) and fill profile with east half excavated (bottom right, view to west).

**Feature 67** (center @ 837.83R905.86) (Figure B.42)

Feature 67 was an ovoid shallow basin that measured approximately 115 cm by 90 cm with its long axis oriented northwest to southeast. It contained a single layer of dark yellowish brown (10 YR 4/4) silty sand. This fill had a maximum thickness of 15 cm and yielded nine potsherds, three fragments of animal bone (one calcined), two Yadkin Triangular projectile points, one Yadkin Eared projectile point, 13 flakes, and 11 fire-cracked rocks. A total of 14 liters of Feature 67 fill were collected for flotation. In profile, this feature had gently sloping walls and a flat bottom.

The presence of multiple Yadkin points in Feature 67 clearly indicates Middle Woodland period occupation at 38Yk533, yet some of the ceramic sherds associated with Feature 67 are referable to the Late Woodland period Ashe Ferry series, and a probable Late Woodland period affiliation is inferred.

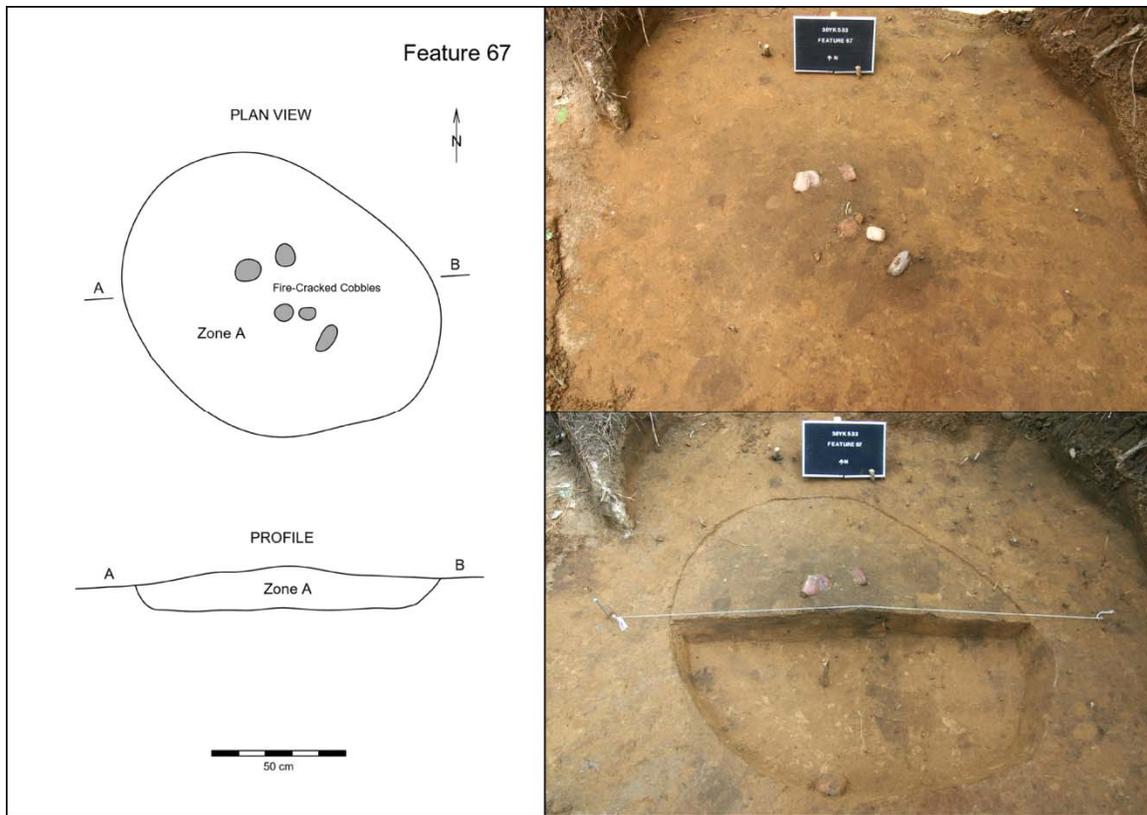


Figure B.42. Feature 67 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north) and fill profile with south half excavated (bottom right, view to north).

### **Feature 69** (center @ 844.21R906.24) (Figure B.43)

Feature 69 was a small pit or posthole that was ovoid in plan, measuring 52 cm east to west and 40 cm north to south, and extending to a depth of 38 cm below the base of plowzone. The pit matrix consisted of two strata. Zone A consisted of dark yellowish brown (10 YR 3/4) silty sand mottled with very dark brown (10 YR 2/2) silty sand. Excavation revealed the presence of an additional layer of fill. This dark yellowish brown (10 YR 4/4) silty sand was designated Zone B.

Most of Zone A, approximately 24.5 liters, was processed by flotation. It was found to contain four potsherds, four fragments of calcined bone, 25 flakes, and one fire-cracked rock. In profile Zone A had steeply sloping sides and a concave bottom. The presence of a large quartz cobble at the base of Zone A spurred additional excavation and the discovery of Zone B. The top of this rock, which is coincident with the deepest point of Zone A, was 26 cm below the base of the plow zone.

Zone B was not excavated as a separate context in the north half of Feature 69, which was removed first. Thus two potsherds, five flakes, and one fire-cracked rock

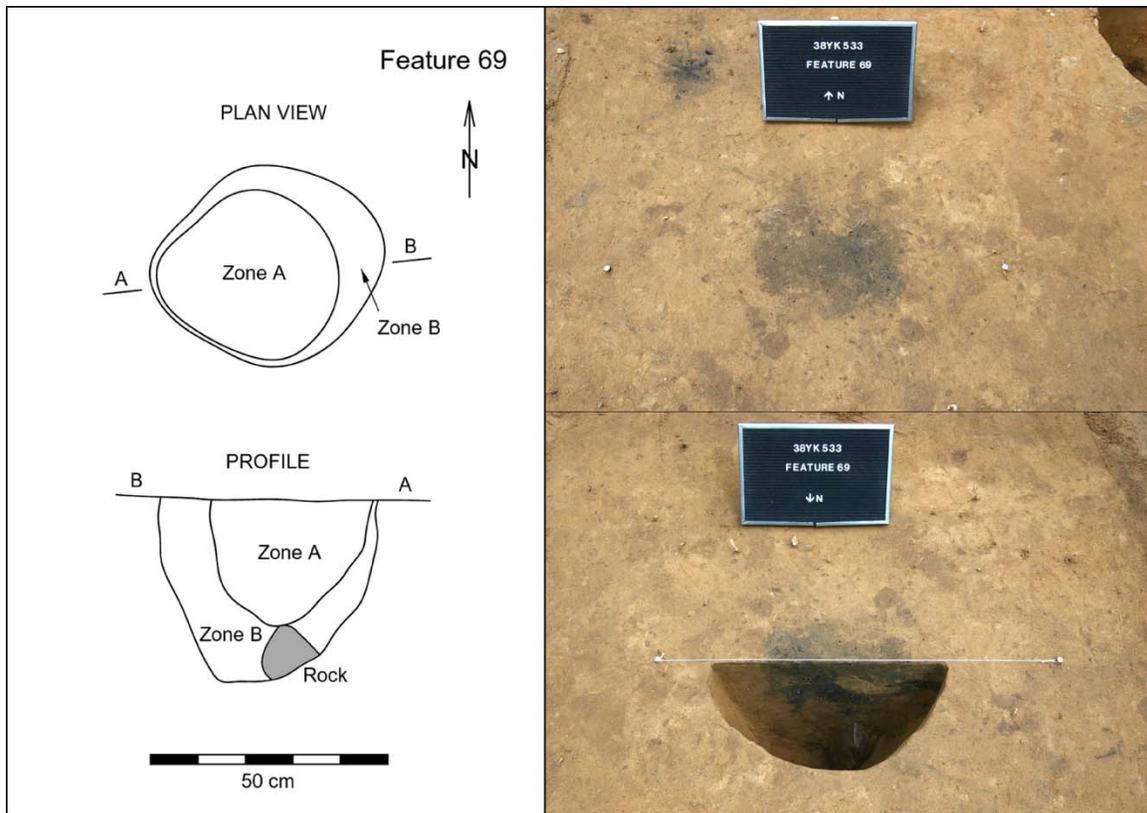


Figure B.43. Feature 69 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north) and fill profile with north half excavated (bottom right, view to south).

from Feature 69 may have come from either Zone A or B. Zone B itself yielded five flakes and one fire-cracked rock. It was similar to Zone A in profile, having steeply sloping sides and a concave bottom. The bottom of Zone B, at 38 cm below the base of the plow zone, is coincident with the bottom of the quartz cobble noted at the base of Zone A.

Materials recovered from Feature 69 indicate a Late Woodland period association. Less clear is the feature's functional categorization as either a small storage or processing pit, or a large posthole (Zone B) and postmold (Zone A).

#### **Feature 72** (center @ 849.16R851.37) (Figure B.44)

Feature 72 was a shallow basin that was ovoid in plan view and measured approximately 120 cm east to west and 80 cm north to south. A pine tree encroached on the northern edge of the pit. One zone of fill was identified prior to excavation. Zone A consisted of dark yellowish brown (10 YR 3/4) silty sand with moderate charcoal inclusions. The soil beneath Zone A was yellowish brown (10 YR 5/4) silty sand with a few charcoal flecks. In the south half of Feature 72, which was removed first, some of this soil was excavated as Zone B. Two potsherds and three flakes were recovered from Zone B, but, as excavation progressed, it became evident that Zone B was indistinguishable from surrounding soil, and it was determined that the Zone B matrix

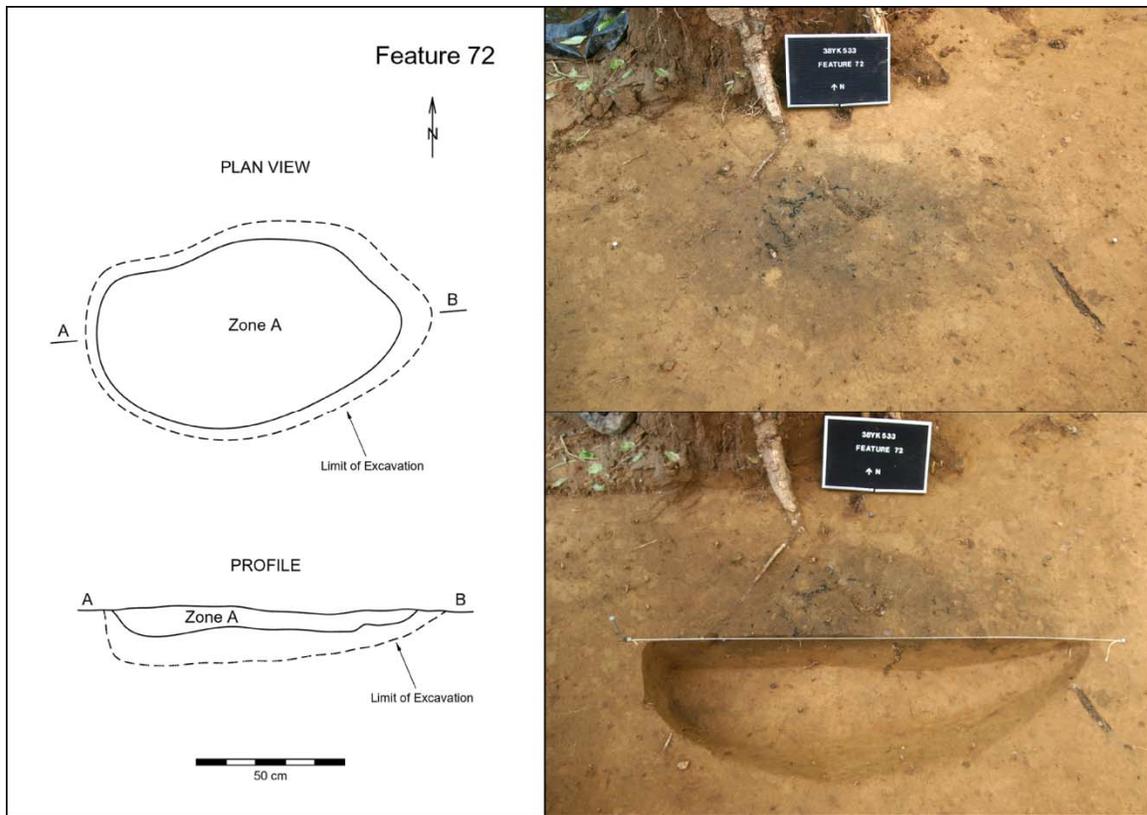


Figure B.44. Feature 72 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north) and fill profile with south half excavated (bottom right, view to north).

was non-cultural in origin. No excavations below Zone A were undertaken in the north half of Feature 72.

Zone A had a maximum thickness of 13 cm but had an irregular shape in profile, with deeper areas near the east and west walls and a shallower, flat bottom in the middle of the feature. Zone A yielded eight Late Woodland period Ashe Ferry series potsherds, four pieces of daub, one triangular projectile point, 15 flakes, and one fire-cracked rock. Eight liters of this fill were processed as a flotation sample.

#### **Feature 73** (center @ 840.66R895.35) (Figure B.45)

Feature 73 was a small pit or posthole that was oval in plain view, measuring 75 cm by 50 cm with its long axis oriented northwest to southeast. Two main zones of fill were identified prior to excavation. Zone A was 45 cm by 25 cm and consisted of very dark grayish brown (10 YR 3/2) loose silty sand with charcoal flakes. It contained a circular patch of dark brown (7.5 YR 3/4) silty sand approximately 15 cm in diameter. Surrounding Zone A was dark yellowish brown (10 YR 4/4) silty sand designated Zone B.

Zone A yielded three potsherds, one piece of daub, and five flakes. A total of 16 liters were collected from this zone for flotation processing. In profile Zone A had a vertical northern wall, a concave bottom at 28 cm below the base of the plow zone, and a

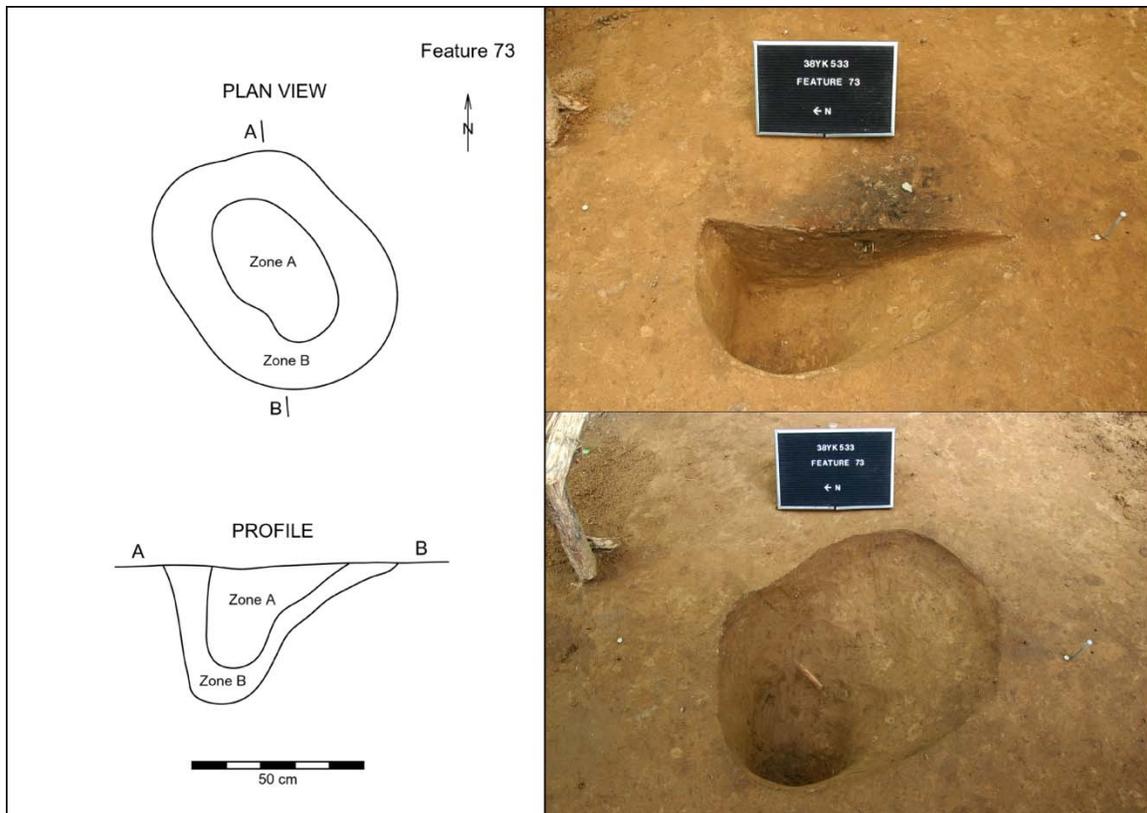


Figure B.45. Feature 73 plan view and profile drawings, and excavation photographs: fill profile with west half excavated (top right, view to east) and excavated feature (bottom right, view to east).

sloping southern wall. Zone B was found to have a similar shape in profile. It had a maximum depth of 40 cm below the base of the profile, and it yielded two potsherds, one piece of daub, one calcined bone fragment, and eight flakes. A total of 21 liters from Zone B were processed by flotation.

Materials recovered from Feature 73 indicate a probable Late Woodland period association. The shape and fill of Feature 73 are most consistent with a probable function as a posthole/postmold combination. The angled southern margin of Feature 73 may have been created when the post was removed.

#### **Feature 74** (center @ 847.51R858.44) (Figure B.46)

This large and structurally intact rock cluster measured approximately 90 cm in diameter. The rock cluster itself consisted of 425 fire-cracked rocks stacked approximately 10 cm thick. The soil beneath the rocks was stained to a maximum depth of 5 cm. A 10-liter flotation sample was collected from the soil surrounding the rocks, which consisted of dark brown (10 YR 3/3) sandy silt with charcoal inclusions. Artifacts recovered from above and among the rocks include 48 potsherds and 13 flakes. Soil below the rocks yielded eight potsherds, one abrader, two triangular projectile points, 17 flakes, and 17 fire-cracked rocks. These associated materials indicate probable Late Woodland period Ashe Ferry phase origin and use for Feature 74.

Feature 74 presents an especially coherent and well preserved archaeological example of a rock oven-type roasting facility. As documented in the ethnographic and ethnohistoric records, such facilities were used to either dry roast or steam large quantities of foodstuffs that might require long spans of slow cooking to render them edible. The cobbles in such facilities provided thermal mass, which could be heated in an initial high intensity firing. Once the rocks were sufficiently heated, food could be roasted on the bed of ashes and coals without exposure to direct flame. Large quantities of charred acorn nutshell recovered from the Feature 74 matrix indicate a probable acorn roasting function for this facility.

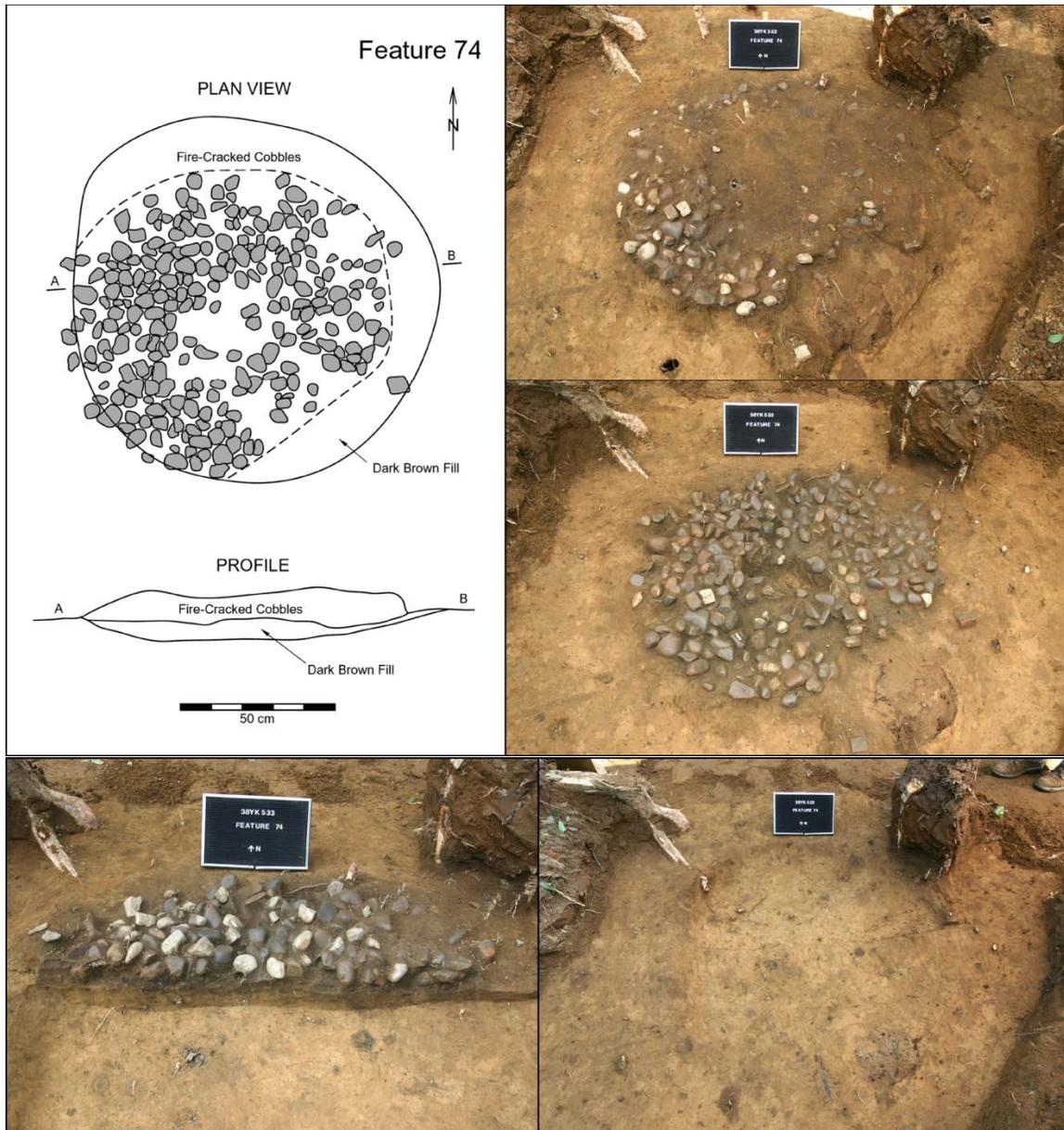


Figure B.46. Feature 74 plan view and profile drawings, and excavation photographs: top of feature (top right, view to north), top of feature with fire-cracked rocks fully exposed (middle right, view to north), fill profile with south half excavated (bottom left, view to north), and excavated feature (bottom right, view to north).

**Feature 75** (center @ 827.46R923.36) (Figure B.47)

Feature 75 was a cache of tools deposited in a posthole that was approximately 25 cm in diameter. The feature was identified at the base of the plow zone by the presence of flakes, cores, a ground-stone celt, and antler fragments in dark yellowish brown (10 YR 4/4) silty sand. The deposit of cached materials was approximately 8 to 9 cm thick. Posthole fill was found to continue for another 32 cm below the bottom of the cache. Materials that were part of the cache, which may have been deposited together in a bag or bundle, include seven cores, one celt, one biface, one projectile point fragment, two worked flakes, one fragment of unidentified black mineral pigment, and an antler that was recovered in 11 fragments. Other materials collected from Feature 75 include four potsherds, one piece of daub, 14 fragments of calcined bone, and four flakes. Excavators found a fire-cracked rock lying on the bottom of the posthole.

The size and shape of Feature 75, which had straight walls and a flat bottom, suggest it was a posthole. When the post was removed, the hole was partially filled in with soil before someone placed a bag of tools into the upper part of the hole. Ceramic sherds within the posthole matrix indicate a Late Woodland period (or later) association for the post removal event. The obvious intentional caching of the celt and other materials within this posthole presumably indicates an unfulfilled plan for later retrieval.

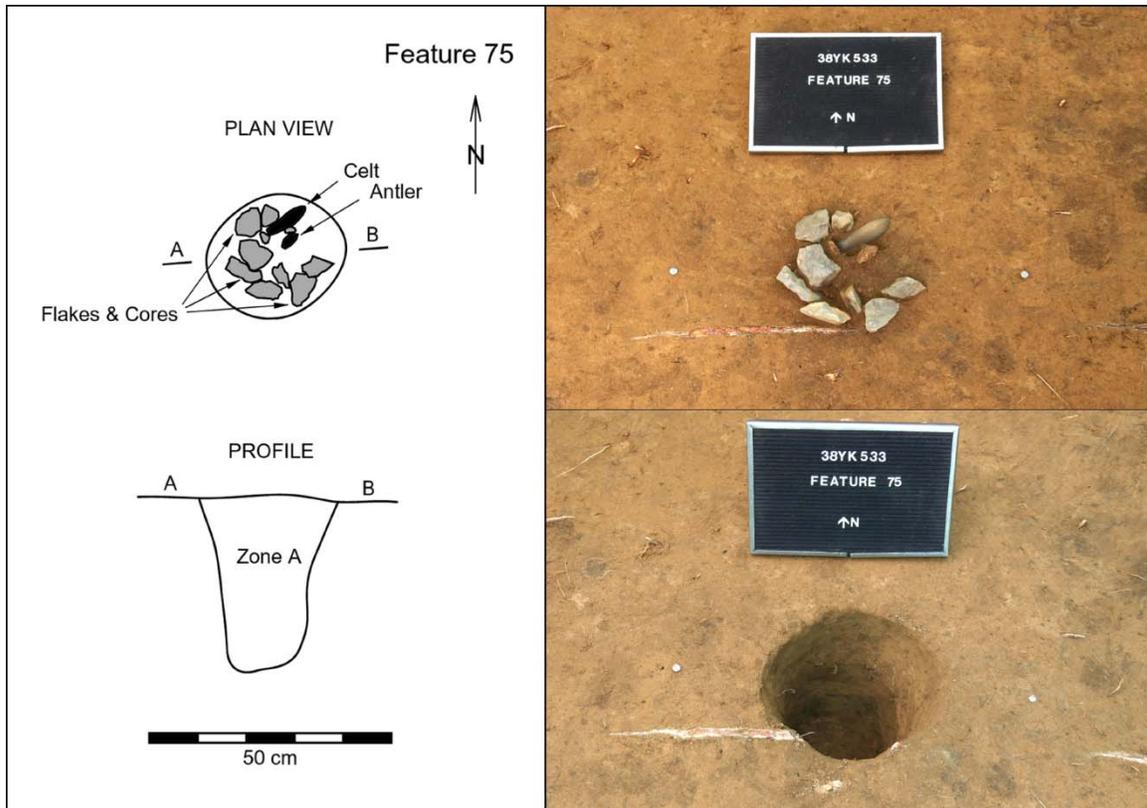


Figure B.47. Feature 75 plan view and profile drawings, and excavation photographs: top of feature showing in situ stone-tool cache (top right, view to north) and excavated feature (bottom right, view to north).

**Feature 76** (center @ 850.67R850.45) (Figure B.48)

This large pit feature was intersected by Sq. 850R850 during the initial phase of test excavation at the site. The portion of Feature 76 in Sq. 850R850 was identified during excavation of the square and left in place until the entire feature could be exposed. Two large pine trees growing in the eastern half of Feature 76 complicated excavation of the feature. The western half of the feature was completely excavated, but the lower zones of the eastern half were left in place to minimize the hazard to the excavation team posed by the potential collapse of the trees.

The maximum extent of the feature in plan view was 260 cm north to south and 200 cm east to west. Two zones of fill were visible in Feature 76 at the base of the plow zone. A central zone of dark brown (7.5 YR 3/3) sandy silt loam with abundant charcoal fragments measured about 130 cm in diameter, and was surrounded by a mottled but distinct outer fill of primarily dark yellowish brown (10 YR 4/6) sandy silt loam.

As excavation of Feature 76 progressed, additional soil strata were identified. These zones were initially classified and labeled as subdivisions within two distinct episodes of fill. Later examination of photographs and field notes in the laboratory identified evidence for a third filling event, requiring revision of the zones as they were labeled in the field. For this reason, only some materials excavated from Feature 76 can be attributed to specific zones, while others can be attributed to single or multiple filling episodes. Because excavators initially defined only two zones, A and B, in the eastern half of the feature, the multiple zones evident in the exposed profile of the western half of Feature 76 were designated as subsets (e.g., Zones A<sup>1</sup> and A<sup>2</sup>) of the eastern strata.

The dark inner core of Feature 76 was designated Zone A<sup>1</sup>. This 24 cm-thick deposit yielded 41 potsherds, three triangular projectile points, one biface, 71 flakes, and 23 fire-cracked rocks. At the base of Zone A<sup>1</sup> was a very dark, charcoal-laden lens about 6 cm thick. An 8-liter sample of this material (Zone A<sup>2</sup>) was processed by flotation. One potsherd along with carbonized wood and nutshell were present in Zone A<sup>2</sup>. Zones A<sup>1</sup> and A<sup>2</sup> appear to represent closely spaced filling events within a pre-existing basin-shaped depression created by the subsidence of the lower fill zones.

Zone B<sup>1</sup> appeared as an outer ring of dark yellowish brown (10 YR 4/6) sandy silt loam that surrounded Zone A<sup>1</sup> in plan view. The uppermost, bioturbated portion of Zone B<sup>1</sup> was approximately 10 cm thick and contained at least four potsherds and. The lower, less disturbed portion of the Zone B<sup>1</sup> Zone C was dark yellowish brown (10 YR 3/4) sandy silt loam that ranged from 12 to 18 cm in thickness. In the center of Feature 76, below Zone B<sup>1</sup>, was a small deposit of dark fill with charcoal (Zone B<sup>4</sup>). This zone was cone-shaped in profile and approximately 10 cm thick. It sloped downward east of the profile to approximately 50 cm below the base of the plow zone. Artifacts that can be attributed to Zone B<sup>4</sup> include 10 potsherds (five of which conjoin), 10 pieces of daub, one beaver (*Castor canadensis*) incisor, one core, seven flakes, and three fire-cracked rocks. An additional eight potsherds, seven pieces of daub, one triangular projectile point, 13 flakes, and six fire-cracked rocks originated from either Zones B<sup>1</sup> or B<sup>4</sup>. Together, Zones C and D filled a basin-shaped depression with gently sloping sides and a flat bottom. Zone E may have intruded the bottom of this basin. Two distinct strata underlaid Zone B<sup>1</sup>. Zone B<sup>3</sup> consisted of strong brown (7.5 YR 5/6) sandy silt loam. The edges of this



Figure B.48. Feature 76 plan view and profile drawings, and excavation photographs: top of feature (top right, view to east), excavating west half of feature (middle right, view to north), fill profile with west half excavated (bottom left, view to east), and feature after removal of Zones 1 and 2 in east half (bottom right, view to east).

zone were difficult to discern, but sparse inclusions of flecks of charcoal, flakes, and potsherds guided excavators in removing this fill. A large, unmodified, rectangular block of stone was found lying on the horizontal base of Zone B<sup>3</sup> at approximately 48 cm below the base of the plow zone. Beneath Zone B<sup>3</sup> was a dark yellowish brown (10 YR 3/4) sandy silt loam. Like Zone B<sup>3</sup>, Zone B<sup>2</sup> contained few artifacts. Due to their low artifact yield and the hazard of the increasingly unsupported pine trees, neither of these zones was excavated in the eastern half of Feature 76. Taken together, Zones B<sup>2</sup> and B<sup>3</sup> appear

to represent fill that was initially deposited within a large storage pit that had relatively straight, slanting walls and a flat bottom.

Artifacts recovered from Zone B in the western half of Feature 76 derived from Zones B<sup>1</sup> through B<sup>4</sup>, and cannot be more specifically attributed. These include 27 potsherds, one piece of daub, six triangular projectile points, 109 flakes, and 13 fire-cracked rocks. Another four potsherds and 11 flakes collected from the surface of Feature 76 derived from either Zone A<sup>1</sup> or B<sup>1</sup>. The majority of temporally diagnostic artifacts recovered from all zones of Feature 76 are attributable to the Late Woodland period Ashe Ferry phase occupation.

The morphology of strata within Feature 76 appears to represent three stages of deposition, with possible intervening use episodes. The feature was initially excavated for use as a large storage pit. This period of use was punctuated by the deposition of Zones B<sup>2</sup> and B<sup>3</sup>, in that order. Given the sparse artifact content of these zones, these strata may reflect wall collapse rather than intentional abandonment and filling of the pit. Deposition of Zones B<sup>2</sup> and B<sup>3</sup> created a much shallower, large basin-shaped pit, into which a small pit appears to have been dug and filled with Zone B<sup>4</sup>. After this deposition, the remainder of the pit was filled in with Zone B<sup>1</sup>. Soil compaction and bioturbation led to heavy mottling of Zone B<sup>1</sup> in the uppermost portion of the filled-in pit. The final stage of pit use involved excavation or subsidence of a smaller, concave basin into Zone B<sup>1</sup>. The dense charcoal deposit (Zone A<sup>2</sup>) at the base of this basin probably represents a single deposit from a discrete hearth-cleaning event. The remainder of the basin was then filled with a rich midden soil, Zone A<sup>1</sup>.

The complexity of Feature 76 deposits appears to reflect episodic reuses of existing facilities by successive occupations. Trash disposal into the subsided cavity of Feature 76 (an Ashe Ferry phase storage pit) during the Early Brown phase occupation suggests opportunistic use of the surface feature, but does not necessarily indicate cultural or temporal continuities in site occupation.

**Feature 77** (center @ 850.22R860.02) (Figures A.49 and A.50)

Feature 77 was a rock cluster that measured approximately 120 cm in diameter. It was surrounded by an amorphous 2.5-meter patch of dark yellowish brown (10 YR 4/4) silty sand, designated Zone B. The soil between the rocks, Zone A, was dark brown (10 YR 3/3) silty sand with frequent charcoal inclusions. The rock cluster itself consisted of 419 fire-cracked rocks and one celt fragment. Present among the rocks were 40 potsherds and 27 flakes (one worked). Eleven and a half liters of soil collected from Zone A, which had a maximum thickness of 8 cm, were processed as a flotation sample.

The soil immediately beneath Zone A consisted of brown (10 YR 4/3) silty sand mottled with dark brown (10 YR 3/3) and yellowish brown (10 YR 5/4) silty sand. It was processed separately from the rest of Zone B and yielded six potsherds, 16 flakes, and 40 fire-cracked rocks. Excavators collected a 13-liter flotation sample of this soil. The rest of the material designated Zone B contained 58 potsherds, 22 pieces of daub, five fragments of calcined bone, four triangular projectile points, 143 flakes, and 74 fire-cracked rocks. A 10-liter sample of this lighter-colored soil was processed by flotation. In general, Zone B ranged from 6 to 8 cm thick.

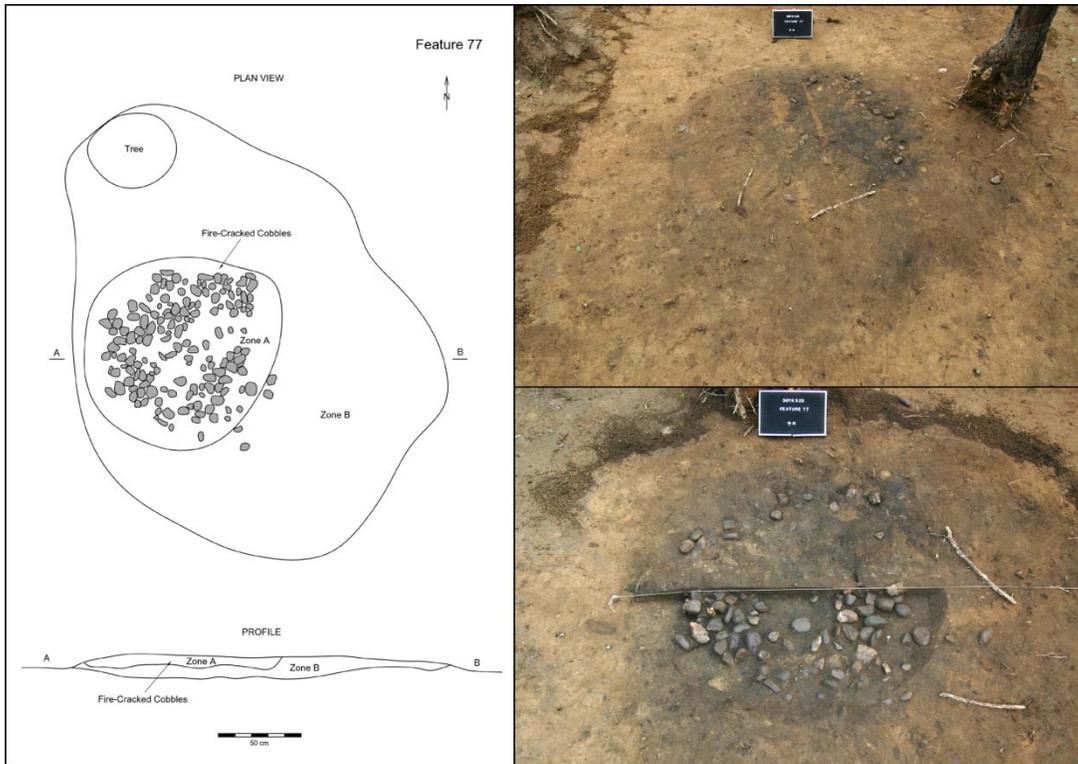


Figure B.49. Feature 77 plan view and profile drawings, and excavation photographs: top of feature (top right, view to west) and fill removed from top of fire-cracked rocks in south half (bottom right, view to north).

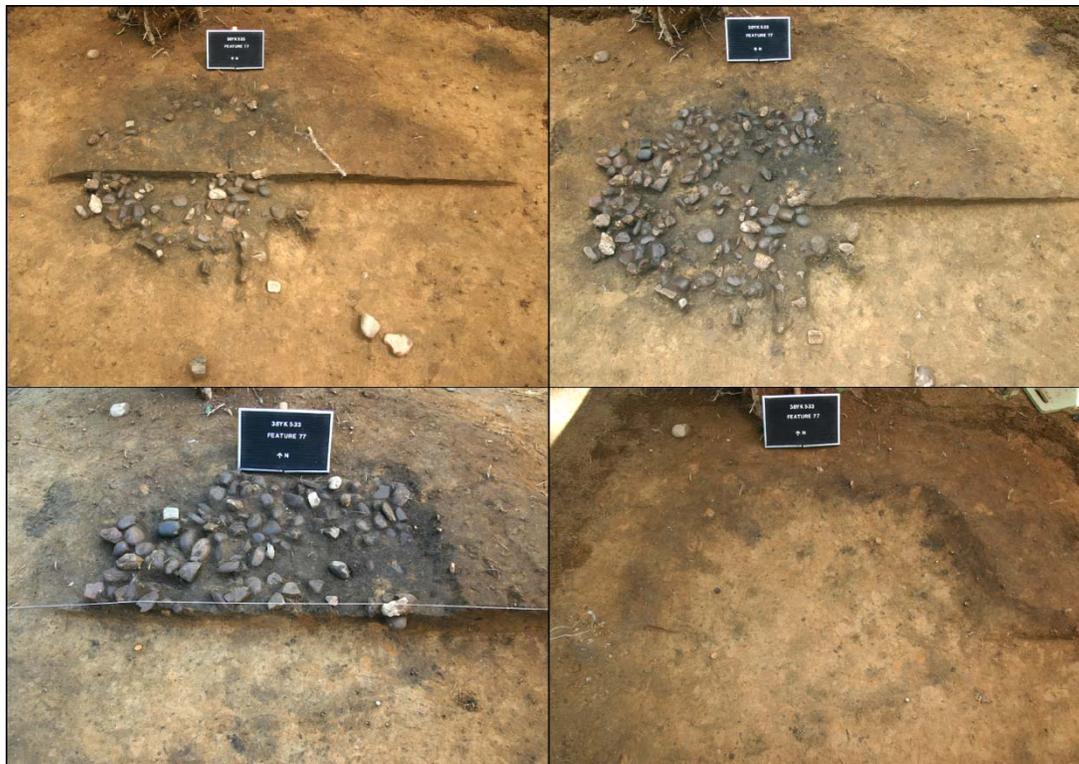


Figure B.50. Feature 77 excavation photographs: feature with Zones A and B removed from south half (top left, view to north), feature with Zone A removed and rock cluster fully exposed (top right, view to north), fill profile of rock cluster with south half fully excavated (bottom left, view to north), and rock cluster fully excavated (bottom right, view to north).

Zone B seems to be a midden-like soil into which the rock cluster was deposited; the base of Zone B was approximately the same elevation as the base of the surrounding plowzone, but the relatively shallower plowing in this spot preserved both midden and rock cluster. Feature 77 appears to be another example of a shallow rock oven, a common facility type associated with the Late Woodland period Ashe Ferry phase component; AMS dating of Feature 77 materials produced an estimate of 104±30 years B.P. (2σ calibration, cal. A.D. 970 to 1030; calibration curve intercept, cal. A.D. 1010). Archaeobotanical samples from Feature 77 included very high absolute counts and high relative frequency of acorn nutshell. These acorn remains appear to represent *de facto* residues from food processing. The prevalence of similar roasting facilities at 38Yk533 indicates that food processing (primarily acorn parching) was a major activity focus of the seasonal site occupations during the Ashe Ferry phase.

**Feature 78** (center @ 837.60R869.62) (Figure B.51)

Feature 78 was an oval rock cluster that measured 100 cm by 70 cm with its long axis oriented northwest to southeast. The feature was apparent as the base of the plowzone as a patch of dark brown (10 YR 3/3) silty sand with a mottled patch of very dark grayish brown (10 YR 3/2) silty sand. This fill was 5 to 8 cm thick and capped the rock cluster. Because the matrix exhibited a high density of charcoal inclusions, all 28.5 liters were processed by flotation. This fill yielded 37 potsherds, one piece of daub, one biface, 69 flakes (two worked), and 58 fire-cracked rocks. These rocks were probably part of the rock cluster itself, which consisted of an additional 187 fire-cracked rocks stacked one to two courses high.

The soil beneath the rock cluster was very dark grayish brown (10 YR 3/2) silty sand containing a large quantity of charcoal. All of this material, totaling 14 liters, was processed by flotation. This fill was approximately 5 cm thick and contained one potsherd, two flakes, and 12 fire-cracked rocks. Feature 78 had a maximum thickness of 13 cm and was basin-shaped with a flat bottom.

Feature 78 is consistent in morphology with other rock-filled roasting facilities defined at 38Yk533, and archaeobotanical samples from the facility included abundant (and predominant) charred acorn shell fragments. An AMS assay of charred botanical material from Feature 78 yielded a date of 750±30 years B.P. (2σ calibration, cal. A.D. 1230 to 1290; calibration curve intercept, cal. A.D. 1270), indicating facility use during the Early Brown phase occupations. Use of such acorn roasting facilities during the Early Brown phase indicates continuity in site function across the Late Woodland period and Middle Mississippian period site occupations.

**Feature 79** (center @ 837.82R869.89) (Figure B.52)

Feature 79 was a small (60cm x 47cm), ovoid pit located approximately 5 cm north of Feature 78. The pit matrix was a single, 20cm-thick layer of dark yellowish brown (10 YR 3/4) silty sand. A 9-liter sample of fill from this feature was collected for flotation processing.

The pit surface was marked by a cluster of potsherds at the base of the plow zone; most of these sherds, and those recovered from the pit matrix (total, 49 sherds) were parts

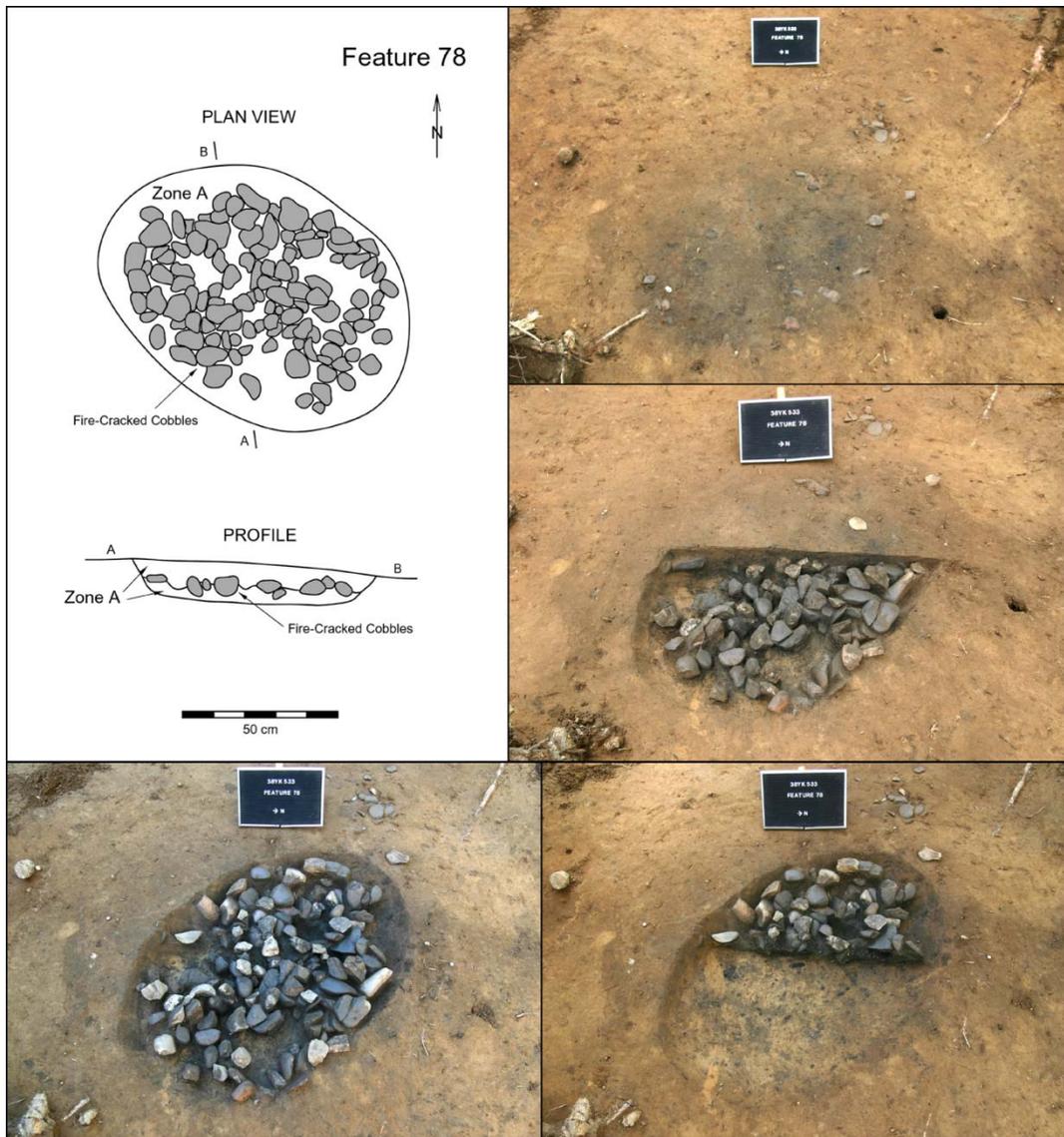


Figure B.51. Feature 78 plan and profile drawings, and excavation photographs: top of feature (top right, view to west), fill profile with rock cluster in east half fully exposed (middle right, view to west), rock cluster fully exposed (bottom left, view to west), and fill profile with rocks in east half removed (bottom right, view to west).

of a Twelve Mile Check Stamped vessel attributed to the Early Brown phase occupations of the site. Fragments of the same vessel were recovered from the matrix of nearby Feature 78, a context that yielded an AMS date of  $750 \pm 30$  years B.P. ( $2\sigma$  calibration, cal. A.D. 1230 to 1290; calibration curve intercept, cal. A.D. 1270).. Other artifacts found in this feature include two triangular projectile points, one triangular biface, and 34 flakes (one worked).

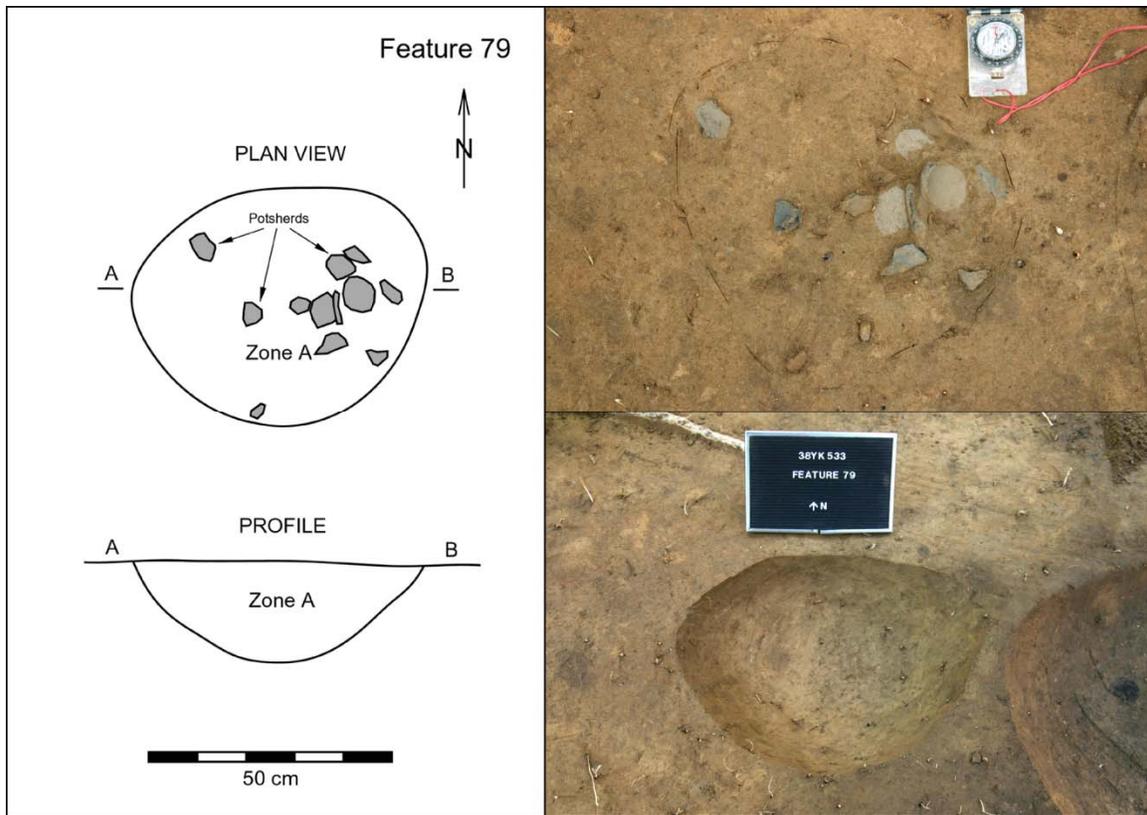


Figure B.52. Feature 79 plan and profile drawings, and excavation photographs: top of feature (top right, view to north) and excavated feature (bottom right, view to north).

### **Feature 80** (center @ 843.74R850.53) (Figure B.53)

Feature 80 was a small (15 cm diameter) cache of Late Archaic artifacts resting in a shallow depression that extended only a couple of centimeters below the base of the plow zone. The assemblage from this feature consists of one Savannah River projectile point, three bifaces, four cores, and two flakes. Like the tool cache in Feature 75, these materials were probably stored for later use and contained in a bag or bundle that has since decomposed.

### **Feature 81**

Feature 81 is a probable pit or basin located at the southeastern edge of the project corridor that was sampled as part of the excavation of Square 749R956. The northwest corner of the feature was exposed at the base of the plow zone in Square 749R956, but the surface was substantially disrupted by bioturbation, and was not recognized as a discrete feature until several successive levels were removed from the unit. The curvature and observed dimensions of this quadrant indicate a facility greater than 2 meters in diameter. The temporal association of this facility was not conclusively determined, but a portion of the northwestern quadrant of the pit (excavated as part of Square 749R956) yielded Ashe Ferry Simple Stamped sherds, consistent with the majority of discrete contexts defined at 38Yk533. Because Feature 81 is located beyond the limit of the area of probable effect in the bridge replacement project, investigators elected to leave this feature as a control for future excavations.

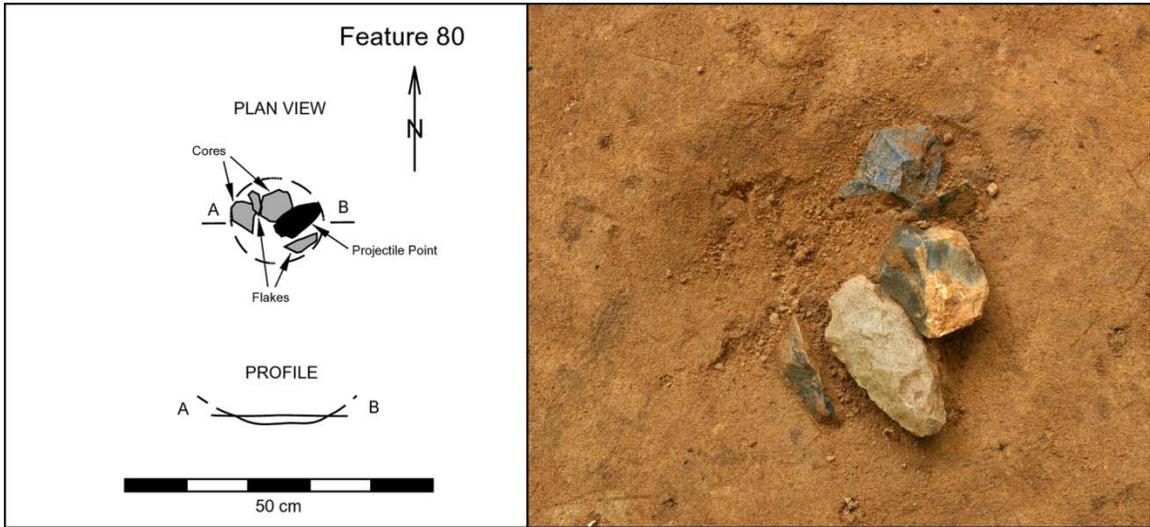


Figure B.53. Feature 80 plan and profile drawings, and photographs at top of feature (right, view to west).

## Appendix C

### Field Analysis of Human Burials Identified at 38Yk533

by  
Dale Hutchinson

On November 20, 2010, I traveled to Rock Hill, South Carolina to examine human remains encountered during excavations at 38YK533 during the spring of 2010. The remains were located in three separate features, as well as from a fourth context where they were not recognized during excavation and were recovered during screen sorting. With the exception of the remains found in the screen, all remains were fragmentary and were left within their original contexts. All observations are based on the burials as they were cleaned for observation. In all cases, there are likely far more elements than recorded, but excavation occurred only as far as would enable leaving the burials intact and in position. Reburial ceremonies took place later that day when the remains were taken in their original contexts to a different locality. Reburial was supervised by Catawba officials. The burials are described separately below.

#### Feature 20

Feature 20 consisted of cranial fragments and dental fragments from two mandibular molars. These were found in the process of screen sorting; no observable elements were found *in situ*. No age or sex estimation was possible.

#### Feature 43

The burial in Feature 43 was an individual flexed on its right side. The individual was a young adult (probably 20-30) of unknown sex, with age based on the presence of a slightly worn third molar. The skeletal elements present included a fragmentary cranium, left mandibular permanent molars 1-3, and left maxillary permanent molars 1-3, the neck and distal condyle of a femur, and several other unidentifiable long bones.

#### Feature 45

The burial in Feature 45 was that of a gracile male adult, with no further age estimation possible. The adult age was based on the presence of erupted third molars. The sex estimate was based on cranial features that were more male than female in robusticity. The individual was buried in flexed position on their left side. The burial included a cluster of artifacts (i.e., a carved stone tobacco pipe, a deer antler, and worked bone fragments) that probably constituted a bundle of personal items. Skeletal elements present included a cranium, mandible, and the diaphyses of the right and left clavicles, humerii, ulnae, femora, and tibiae. The right radius diaphysis was present, and likely the left was present although not apparent. The dentition included two worn maxillary molars, one maxillary or mandibular molar, one mandibular molar root, and broken premolar, probably mandibular. I assume these were likely from the right side of the dentition, although all were too fragmentary to ascertain side, and the teeth appeared to have been slightly disturbed prior to excavation, probably through root, rodent, or earth settling activity. Two skeletal measurements (estimated in both cases) were taken: maximum length of the cranium (180 mm) and maximum length of the right femur (480 mm). The femur measurement yields a stature estimate of 67.3-72.9

inches (5.6-6.0 feet) using the formulae utilized by Fordisc 2.0 (Ousley and Jantz 1996).

### **Feature 62**

Two subadult individuals were included in Feature 62. The remains consisted of two crania that were located adjacent to each other, at least one mandible, and at least one long bone.

The dentition of individual one included deciduous maxillary first and second molars (side unknown) and deciduous mandibular first and second molars (side unknown). While these were clearly in articulated position, neither the mandible or maxilla was preserved enough for observation. There was also an unerupted maxillary permanent first molar with only the crown developed. All deciduous teeth were largely unworn. The developmental sequence of the teeth allowed an age estimate of 3-4 years of age (Ubelaker 1999).

The dentition of individual two included a left deciduous canine, left maxillary first and second molars, and left deciduous mandibular canine, first and second molars. The mandibular and maxillary molars were clearly articulated in fairly well-preserved bone. There was also an unerupted maxillary permanent left first molar with only the crown developed. All deciduous teeth were largely unworn. The developmental sequence of the teeth allowed an age estimate of 3-4 years of age.

The development of the deciduous and permanent teeth indicates these two individuals were of identical or nearly identical ages. No observations were made that would permit assessing whether they were related or not. The grave also included one very badly preserved long bone; this fragment could not be confidently identified as to element or assigned to individual.

### **References Cited**

- Ousley, Stephen, and Richard Jantz  
1996 FORDISC: Forensic Analysis Software. University of Tennessee, Knoxville..
- Ubelaker, Douglas H.  
1999 Human Skeletal Remains (Third Edition). Taraxacum Press, Washington.

## Appendix D

### **BETA ANALYTIC, INC. REPORTS ON RADIOCARBON ASSAYS OF SAMPLES FROM THE ASHE FERRY SITE**

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26:lab. mult=1)

Laboratory number: **Beta-305360** Feature 11

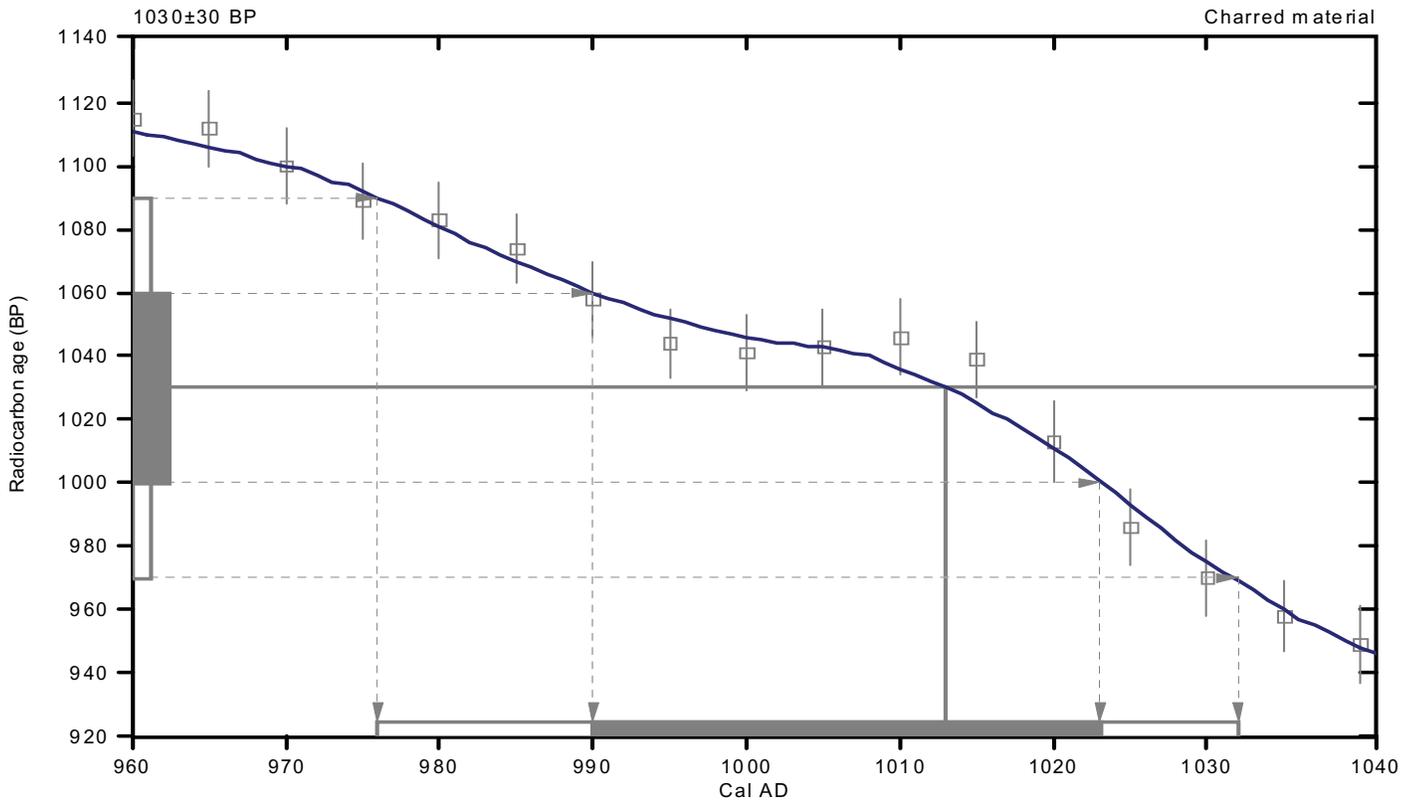
Conventional radiocarbon age: **1030±30 BP**

**2 Sigma calibrated result: Cal AD 980 to 1030 (Cal BP 970 to 920)**  
(95% probability)

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 1010 (Cal BP 940)

**1 Sigma calibrated result: Cal AD 990 to 1020 (Cal BP 960 to 930)**  
(68% probability)



## References:

### Database used

*INTCAL04*

### Calibration Database

*INTCAL04 Radiocarbon Age Calibration*

*IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).*

### Mathematics

*A Simplified Approach to Calibrating C14 Dates*

*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322*

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26:lab. mult=1)

Laboratory number: **Beta-352108** Feature 22

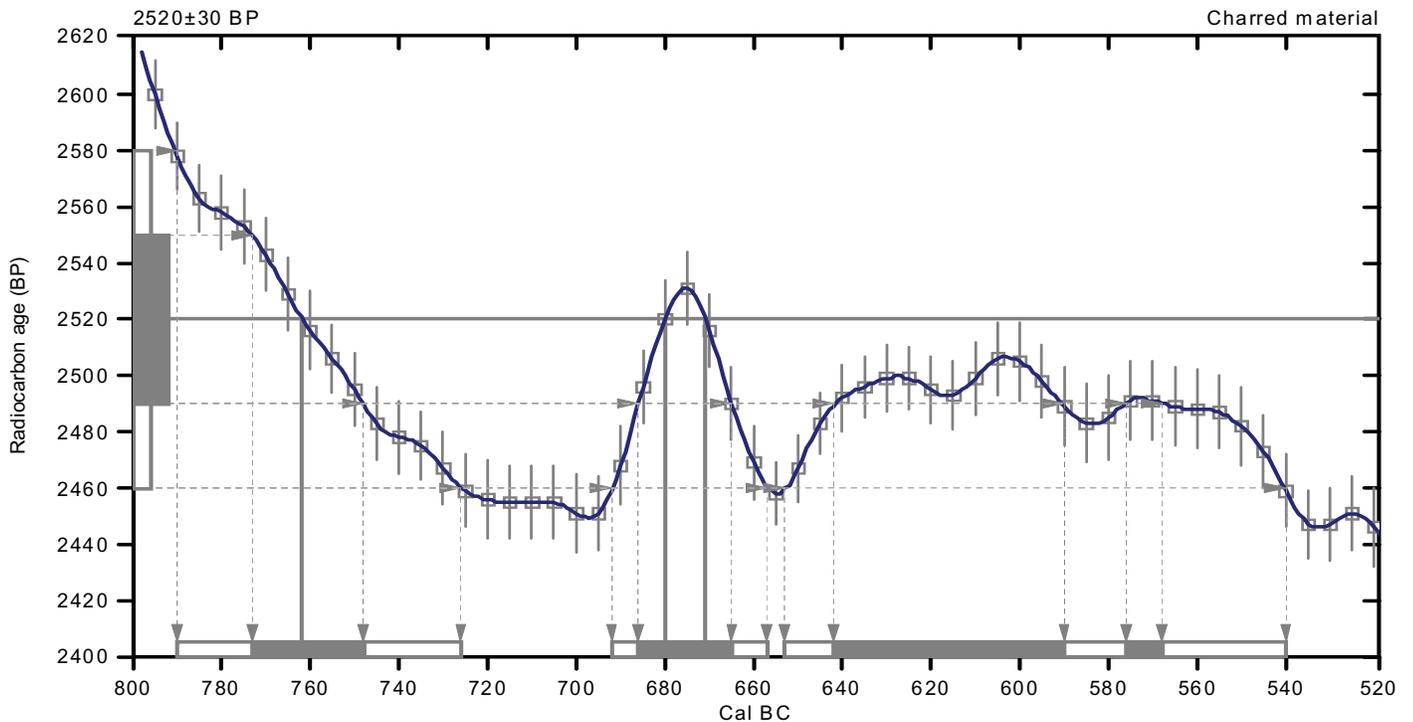
Conventional radiocarbon age: **2520±30 BP**

**2 Sigma calibrated results: Cal BC 790 to 730 (Cal BP 2740 to 2680) and  
(95% probability) Cal BC 690 to 660 (Cal BP 2640 to 2610) and  
Cal BC 650 to 540 (Cal BP 2600 to 2490)**

Intercept data

Intercepts of radiocarbon age  
with calibration curve: Cal BC 760 (Cal BP 2710) and  
Cal BC 680 (Cal BP 2630) and  
Cal BC 670 (Cal BP 2620)

**1 Sigma calibrated results: Cal BC 770 to 750 (Cal BP 2720 to 2700) and  
(68% probability) Cal BC 690 to 660 (Cal BP 2640 to 2620) and  
Cal BC 640 to 590 (Cal BP 2590 to 2540) and  
Cal BC 580 to 570 (Cal BP 2530 to 2520)**



References:

*Database used*

*INTCAL09*

*References to INTCAL09 database*

*Heaton, et.al., 2009, Radiocarbon 51(4):1151-1164, Reimer, et.al., 2009, Radiocarbon 51(4):1111-1150,  
Stuiver, et.al., 1993, Radiocarbon 35(1):137-189, Oeschger, et.al., 1975, Tellus 27:168-192*

*Mathematics used for calibration scenario*

*A Simplified Approach to Calibrating C14 Dates*

*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322*

**Beta Analytic Radiocarbon Dating Laboratory**

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.3:lab. mult=1)

Laboratory number: **Beta-352110** Feature 22

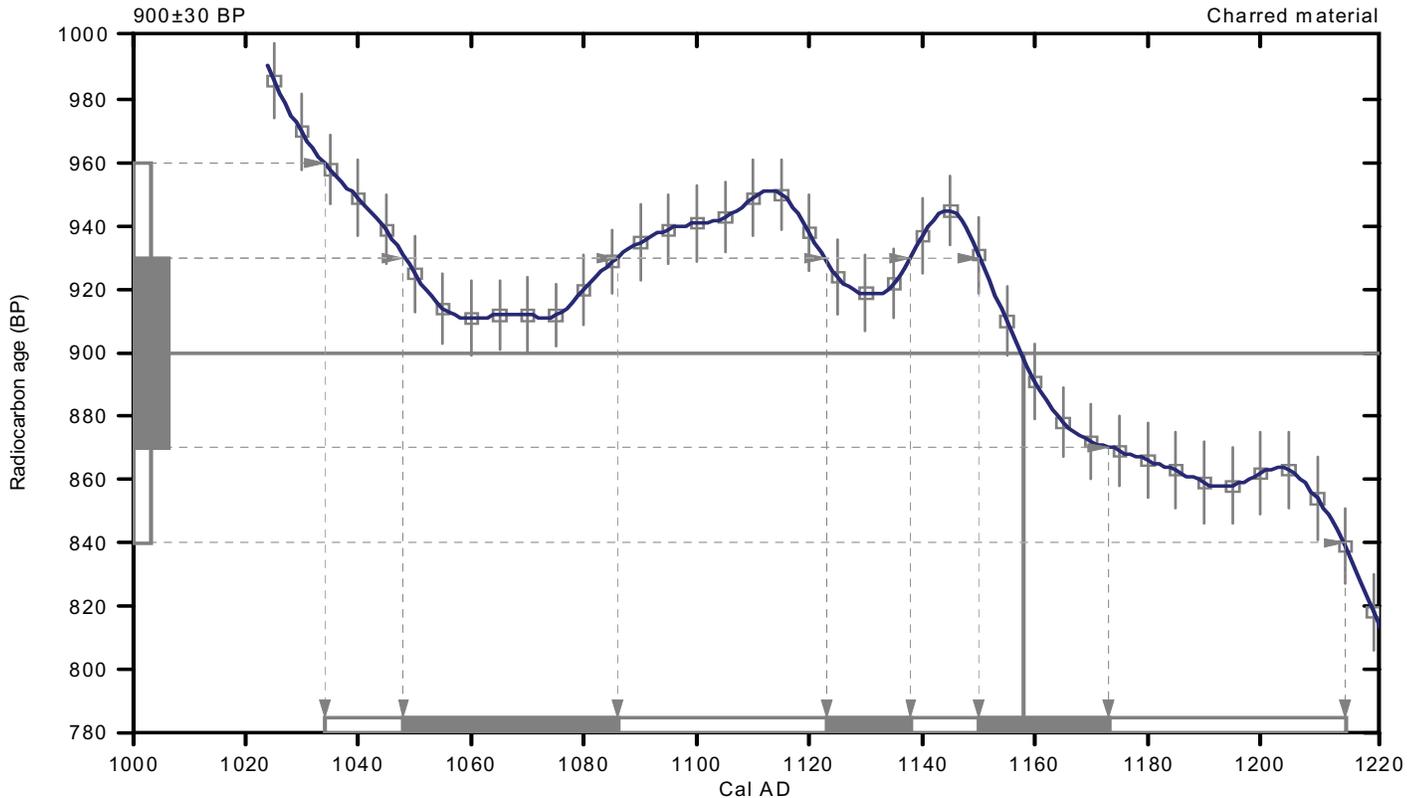
Conventional radiocarbon age: **900±30 BP**

**2 Sigma calibrated result: Cal AD 1030 to 1220 (Cal BP 920 to 740)**  
(95% probability)

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 1160 (Cal BP 790)

1 Sigma calibrated results: Cal AD 1050 to 1090 (Cal BP 900 to 860) and  
(68% probability) Cal AD 1120 to 1140 (Cal BP 830 to 810) and  
Cal AD 1150 to 1170 (Cal BP 800 to 780)



## References:

### Database used

INTCAL09

### References to INTCAL09 database

Heaton, et.al., 2009, *Radiocarbon* 51(4):1151-1164, Reimer, et.al., 2009, *Radiocarbon* 51(4):1111-1150, Stuiver, et.al., 1993, *Radiocarbon* 35(1):137-189, Oeschger, et.al., 1975, *Tellus* 27:168-192

### Mathematics used for calibration scenario

*A Simplified Approach to Calibrating C14 Dates*

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2):317-322

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.7:lab. mult=1)

Laboratory number: **Beta-352943** Feature 22

Conventional radiocarbon age: **3820±30 BP**

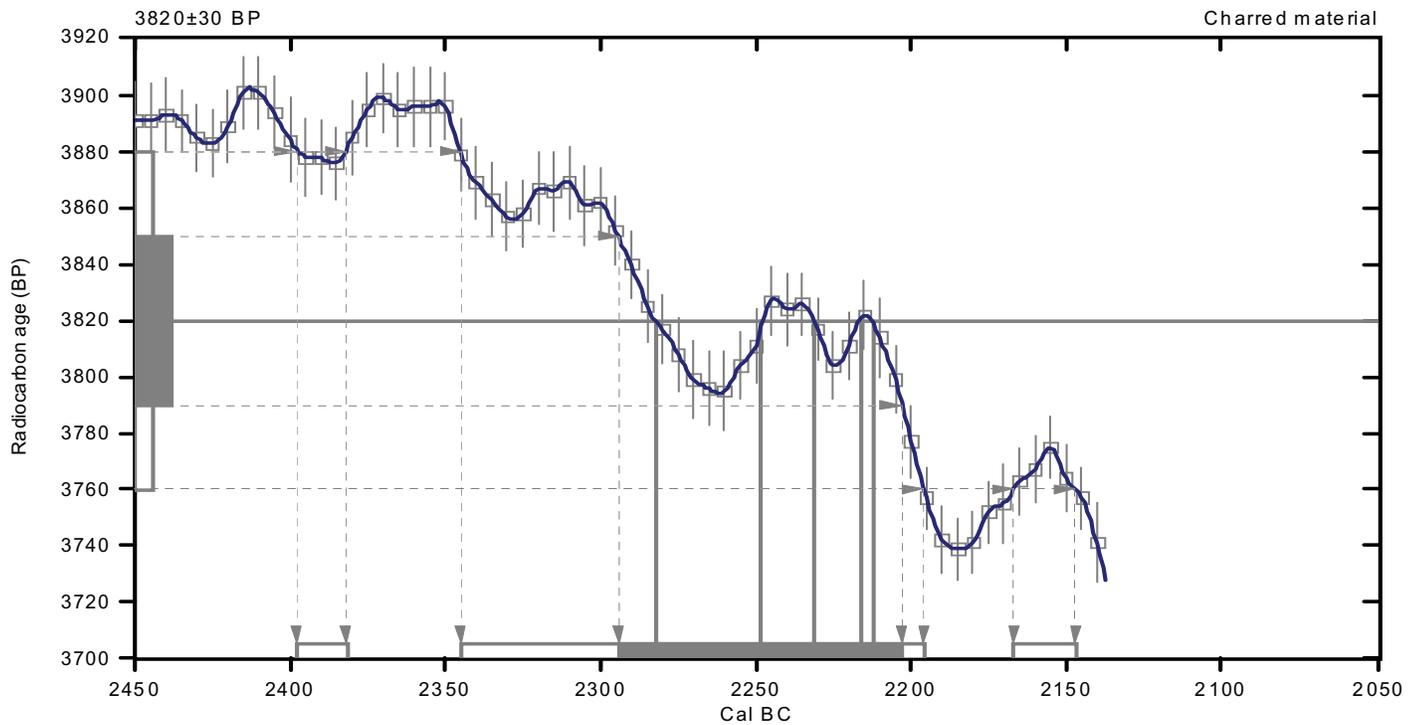
2 Sigma calibrated results: **Cal BC 2400 to 2380 (Cal BP 4350 to 4330) and  
(95% probability) Cal BC 2340 to 2200 (Cal BP 4300 to 4150) and  
Cal BC 2170 to 2150 (Cal BP 4120 to 4100)**

Intercept data

Intercepts of radiocarbon age  
with calibration curve:

Cal BC 2280 (Cal BP 4230) and  
Cal BC 2250 (Cal BP 4200) and  
Cal BC 2230 (Cal BP 4180) and  
Cal BC 2220 (Cal BP 4170) and  
Cal BC 2210 (Cal BP 4160)

1 Sigma calibrated result: **Cal BC 2290 to 2200 (Cal BP 4240 to 4150)**  
(68% probability)



## References:

### Database used

INTCAL09

### References to INTCAL09 database

Heaton, et al., 2009, *Radiocarbon* 51(4):1151-1164, Reimer, et al., 2009, *Radiocarbon* 51(4):1111-1150,  
Stuiver, et al., 1993, *Radiocarbon* 35(1):1-244, Oeschger, et al., 1975, *Tellus* 27:168-192

### Mathematics used for calibration scenario

*A Simplified Approach to Calibrating C14 Dates*

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2):317-322

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.1:lab. mult=1)

Laboratory number: **Beta-352944** Feature 22

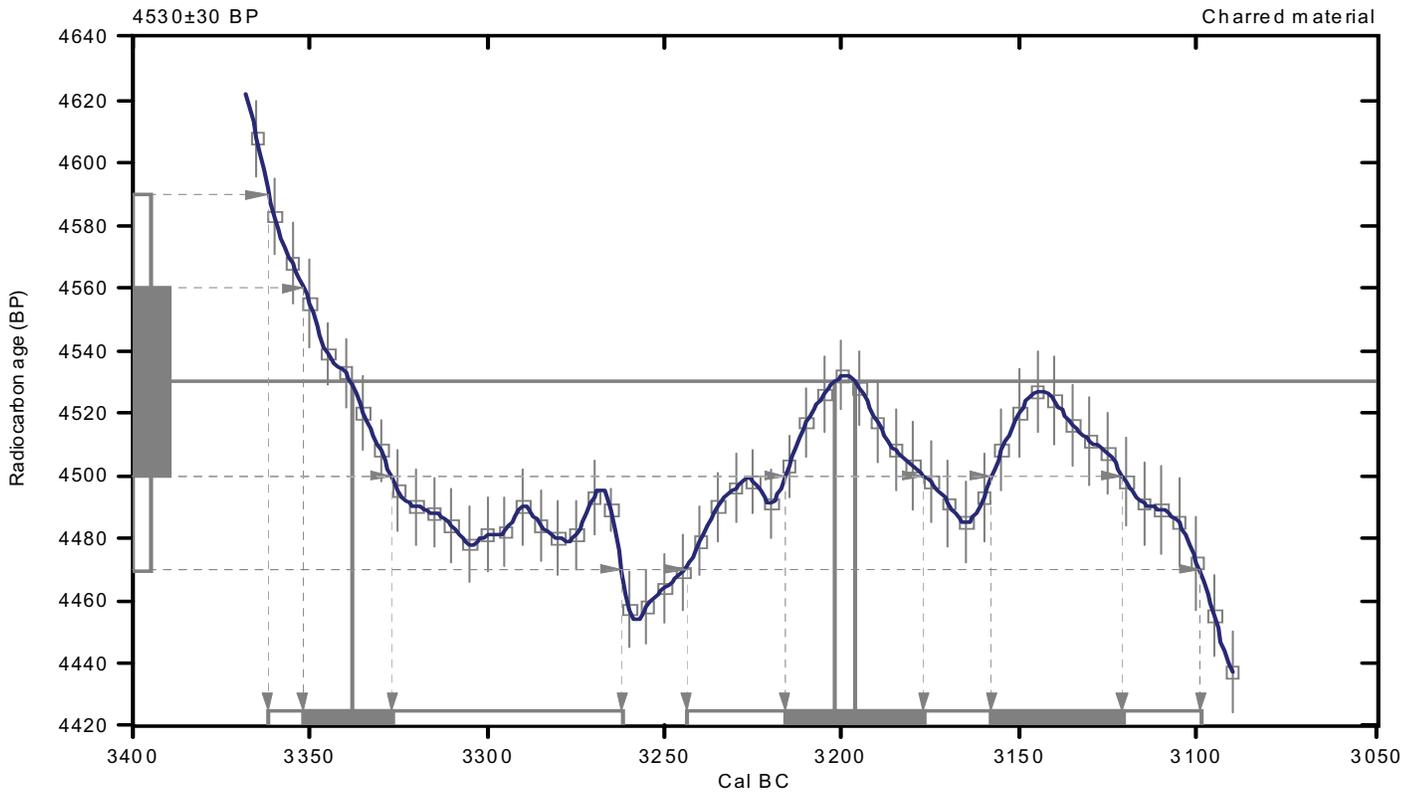
Conventional radiocarbon age: **4530±30 BP**

2 Sigma calibrated results: **Cal BC 3360 to 3260 (Cal BP 5310 to 5210) and  
(95% probability) Cal BC 3240 to 3100 (Cal BP 5190 to 5050)**

Intercept data

Intercepts of radiocarbon age  
with calibration curve: **Cal BC 3340 (Cal BP 5290) and  
Cal BC 3200 (Cal BP 5150) and  
Cal BC 3200 (Cal BP 5150)**

1 Sigma calibrated results: **Cal BC 3350 to 3330 (Cal BP 5300 to 5280) and  
(68% probability) Cal BC 3220 to 3180 (Cal BP 5170 to 5130) and  
Cal BC 3160 to 3120 (Cal BP 5110 to 5070)**



## References:

### Database used

*INTCAL09*

### References to *INTCAL09* database

*Heaton, et al., 2009, Radiocarbon 51(4):1151-1164, Reimer, et al., 2009, Radiocarbon 51(4):1111-1150, Stuiver, et al., 1993, Radiocarbon 35(1):1-244, Oeschger, et al., 1975, Tellus 27:168-192*

### Mathematics used for calibration scenario

*A Simplified Approach to Calibrating C14 Dates*

*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322*

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: [beta@radiocarbon.com](mailto:beta@radiocarbon.com)

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.4:lab. mult=1)

Laboratory number: **Beta-305361** Feature 28

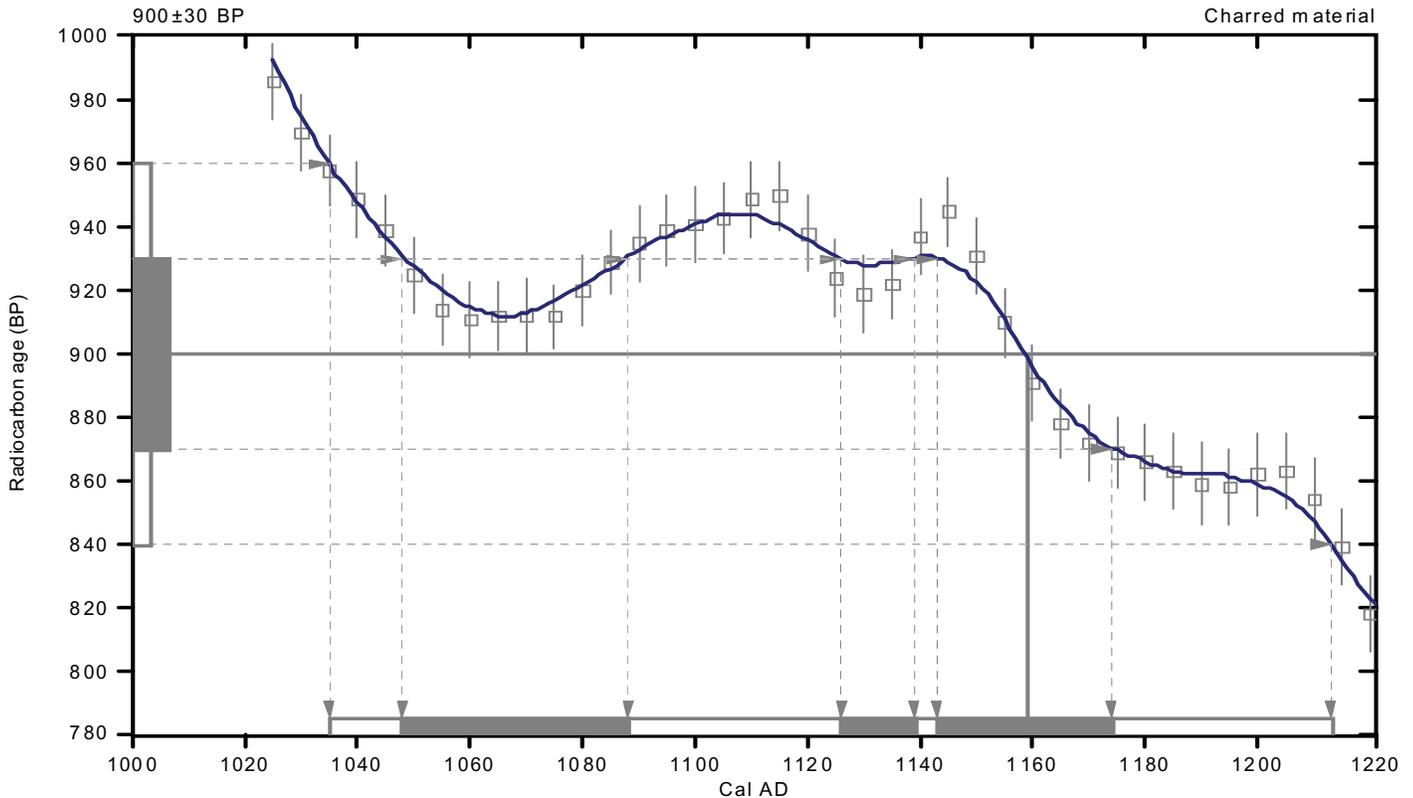
Conventional radiocarbon age: **900±30 BP**

**2 Sigma calibrated result: Cal AD 1040 to 1210 (Cal BP 920 to 740)**  
**(95% probability)**

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 1160 (Cal BP 790)

1 Sigma calibrated results: Cal AD 1050 to 1090 (Cal BP 900 to 860) and  
(68% probability) Cal AD 1130 to 1140 (Cal BP 820 to 810) and  
Cal AD 1140 to 1170 (Cal BP 810 to 780)



## References:

### Database used

*INTCAL04*

### Calibration Database

*INTCAL04 Radiocarbon Age Calibration*

*IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).*

### Mathematics

*A Simplified Approach to Calibrating C14 Dates*

*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322*

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: [beta@radiocarbon.com](mailto:beta@radiocarbon.com)

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.2:lab. mult=1)

Laboratory number: **Beta-321926** Feature 41

Conventional radiocarbon age: **630±30 BP**

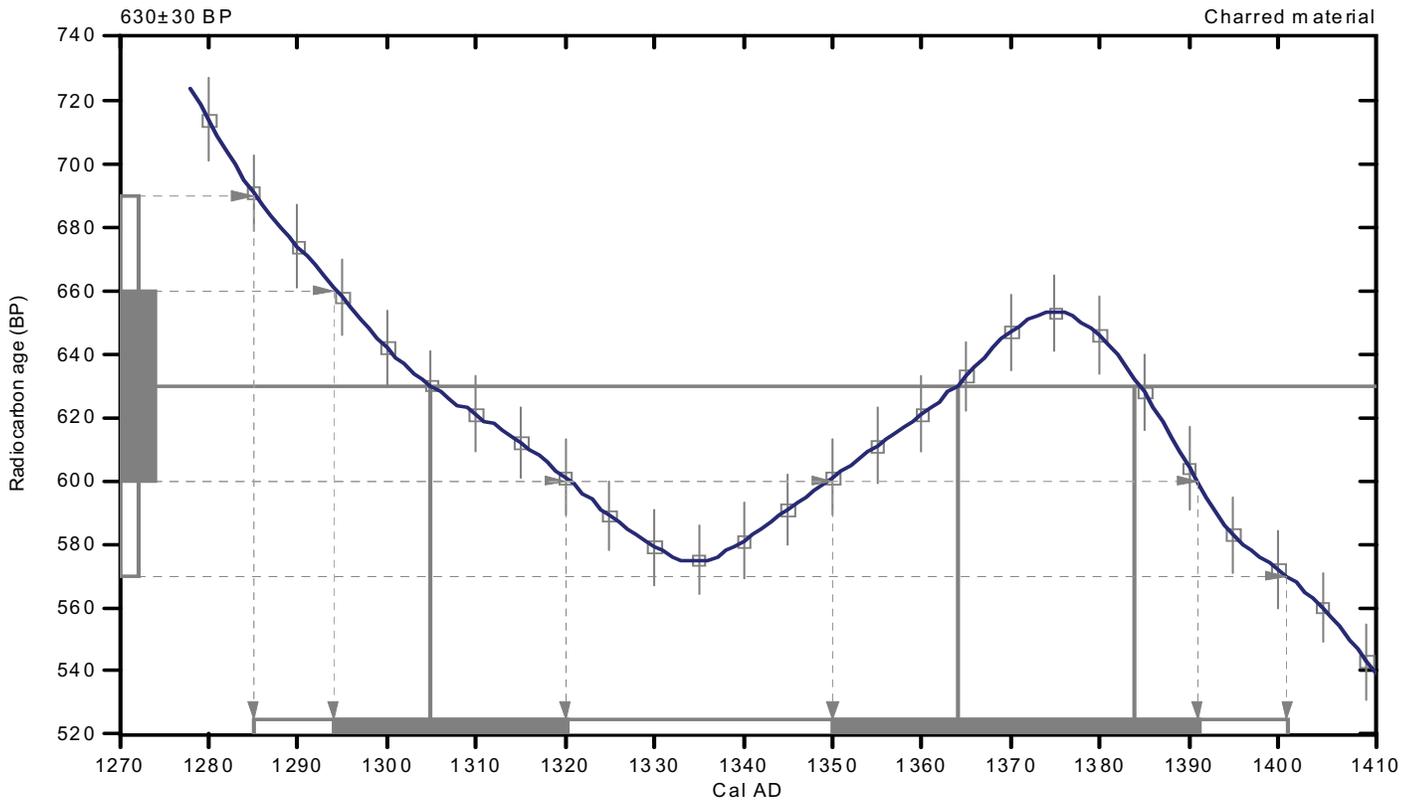
**2 Sigma calibrated result: Cal AD 1280 to 1400 (Cal BP 660 to 550)**  
**(95% probability)**

Intercept data

Intercepts of radiocarbon age  
with calibration curve:

Cal AD 1300 (Cal BP 640) and  
Cal AD 1360 (Cal BP 590) and  
Cal AD 1380 (Cal BP 570)

1 Sigma calibrated results: Cal AD 1290 to 1320 (Cal BP 660 to 630) and  
(68% probability) Cal AD 1350 to 1390 (Cal BP 600 to 560)



## References:

### Database used

*INTCAL09*

### References to INTCAL09 database

*Heaton, et al., 2009, Radiocarbon 51(4):1151-1164, Reimer, et al., 2009, Radiocarbon 51(4):1111-1150, Stuiver, et al., 1993, Radiocarbon 35(1):137-189, Oeschger, et al., 1975, Tellus 27:168-192*

### Mathematics used for calibration scenario

*A Simplified Approach to Calibrating C14 Dates*

*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322*

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: [beta@radiocarbon.com](mailto:beta@radiocarbon.com)

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.5:lab. mult=1)

Laboratory number: **Beta-321927** Feature 46

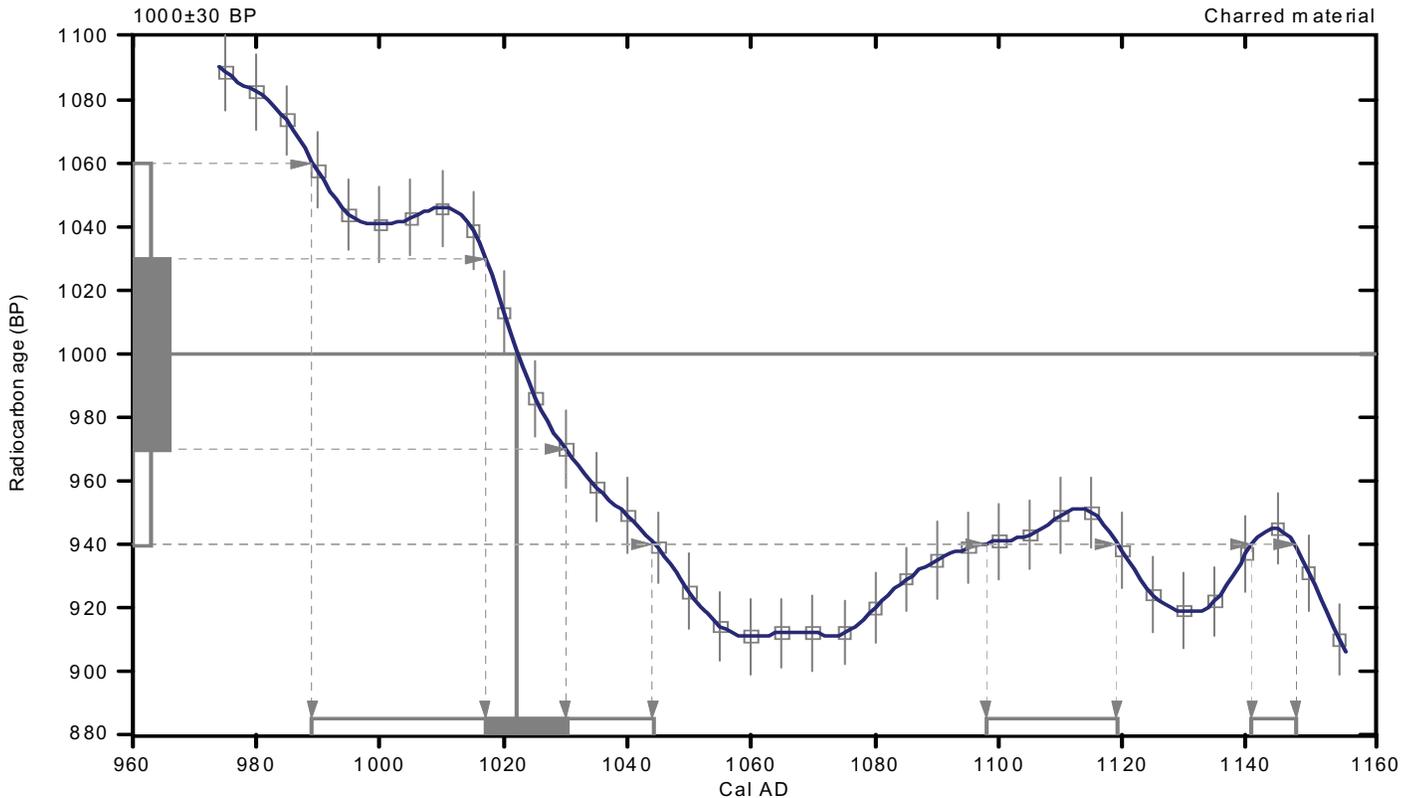
Conventional radiocarbon age: **1000±30 BP**

**2 Sigma calibrated results: Cal AD 990 to 1040 (Cal BP 960 to 910) and  
(95% probability) Cal AD 1100 to 1120 (Cal BP 850 to 830) and  
Cal AD 1140 to 1150 (Cal BP 810 to 800)**

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 1020 (Cal BP 930)

1 Sigma calibrated result: Cal AD 1020 to 1030 (Cal BP 930 to 920)  
(68% probability)



## References:

### Database used

INTCAL09

### References to INTCAL09 database

Heaton, et al., 2009, *Radiocarbon* 51(4):1151-1164, Reimer, et al., 2009, *Radiocarbon* 51(4):1111-1150, Stuiver, et al., 1993, *Radiocarbon* 35(1):137-189, Oeschger, et al., 1975, *Tellus* 27:168-192

### Mathematics used for calibration scenario

*A Simplified Approach to Calibrating C14 Dates*

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2):317-322

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.9:lab. mult=1)

Laboratory number: **Beta-305362** Feature 48

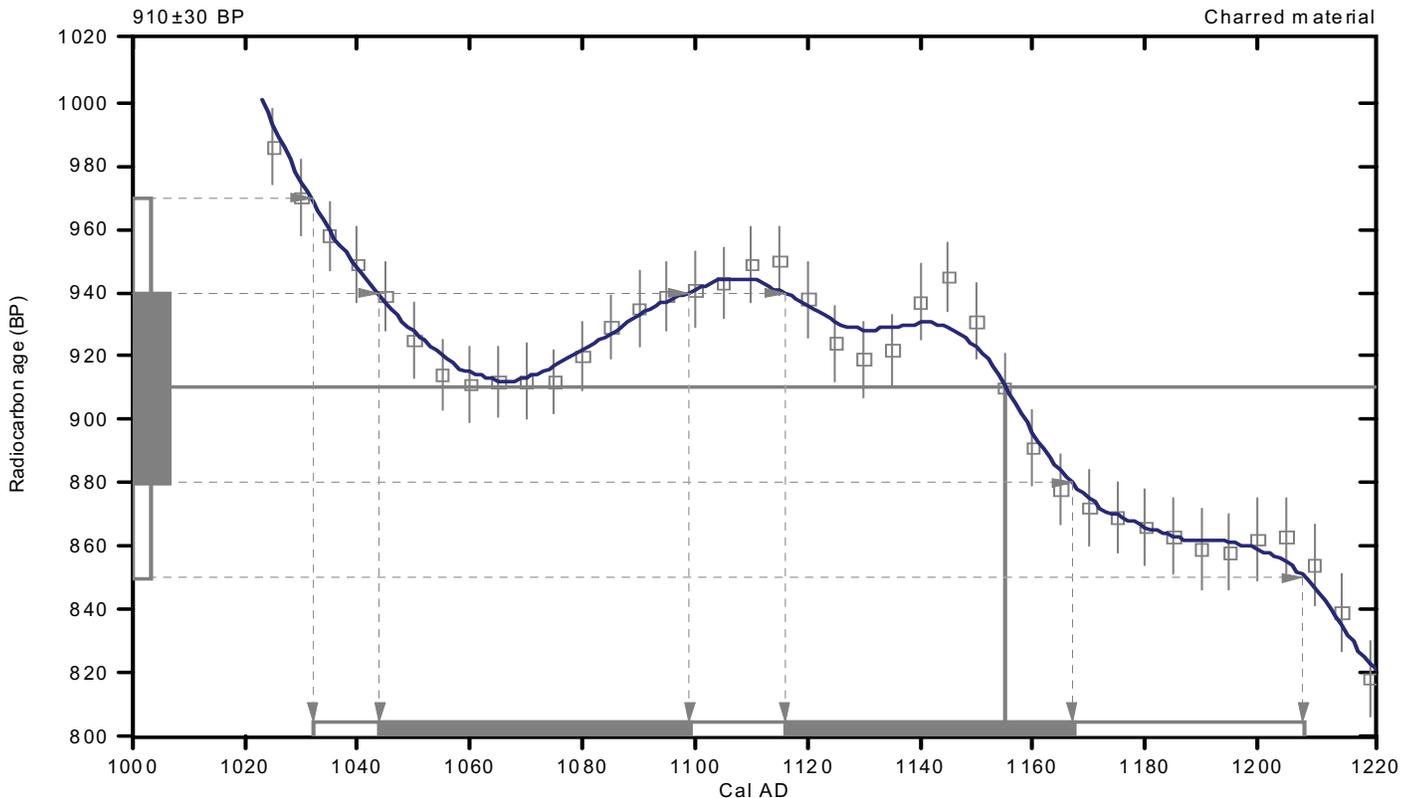
Conventional radiocarbon age: **910±30 BP**

**2 Sigma calibrated result: Cal AD 1030 to 1210 (Cal BP 920 to 740)**  
**(95% probability)**

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 1160 (Cal BP 800)

1 Sigma calibrated results: Cal AD 1040 to 1100 (Cal BP 910 to 850) and  
(68% probability) Cal AD 1120 to 1170 (Cal BP 830 to 780)



## References:

### Database used

*INTCAL04*

### Calibration Database

*INTCAL04 Radiocarbon Age Calibration*

*IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).*

### Mathematics

*A Simplified Approach to Calibrating C14 Dates*

*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322*

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.8:lab. mult=1)

Laboratory number: **Beta-305363** Feature 50

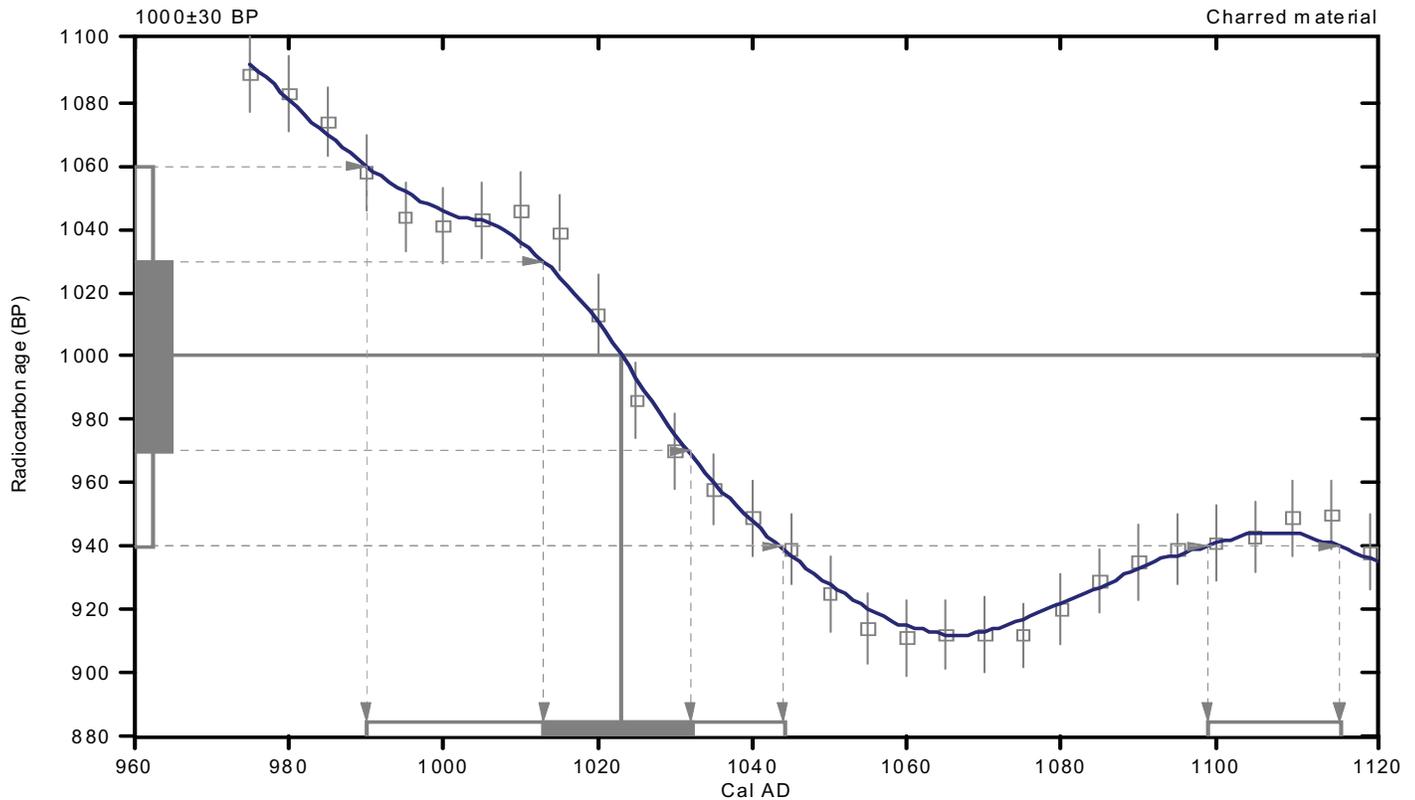
Conventional radiocarbon age: **1000±30 BP**

**2 Sigma calibrated results: Cal AD 990 to 1040 (Cal BP 960 to 910) and  
(95% probability) Cal AD 1100 to 1120 (Cal BP 850 to 830)**

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 1020 (Cal BP 930)

**1 Sigma calibrated result: Cal AD 1010 to 1030 (Cal BP 940 to 920)**  
(68% probability)



## References:

### Database used

*INTCAL04*

### Calibration Database

*INTCAL04 Radiocarbon Age Calibration*

*IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).*

### Mathematics

*A Simplified Approach to Calibrating C14 Dates*

*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322*

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.2:lab. mult=1)

Laboratory number: **Beta-305364** Feature 52

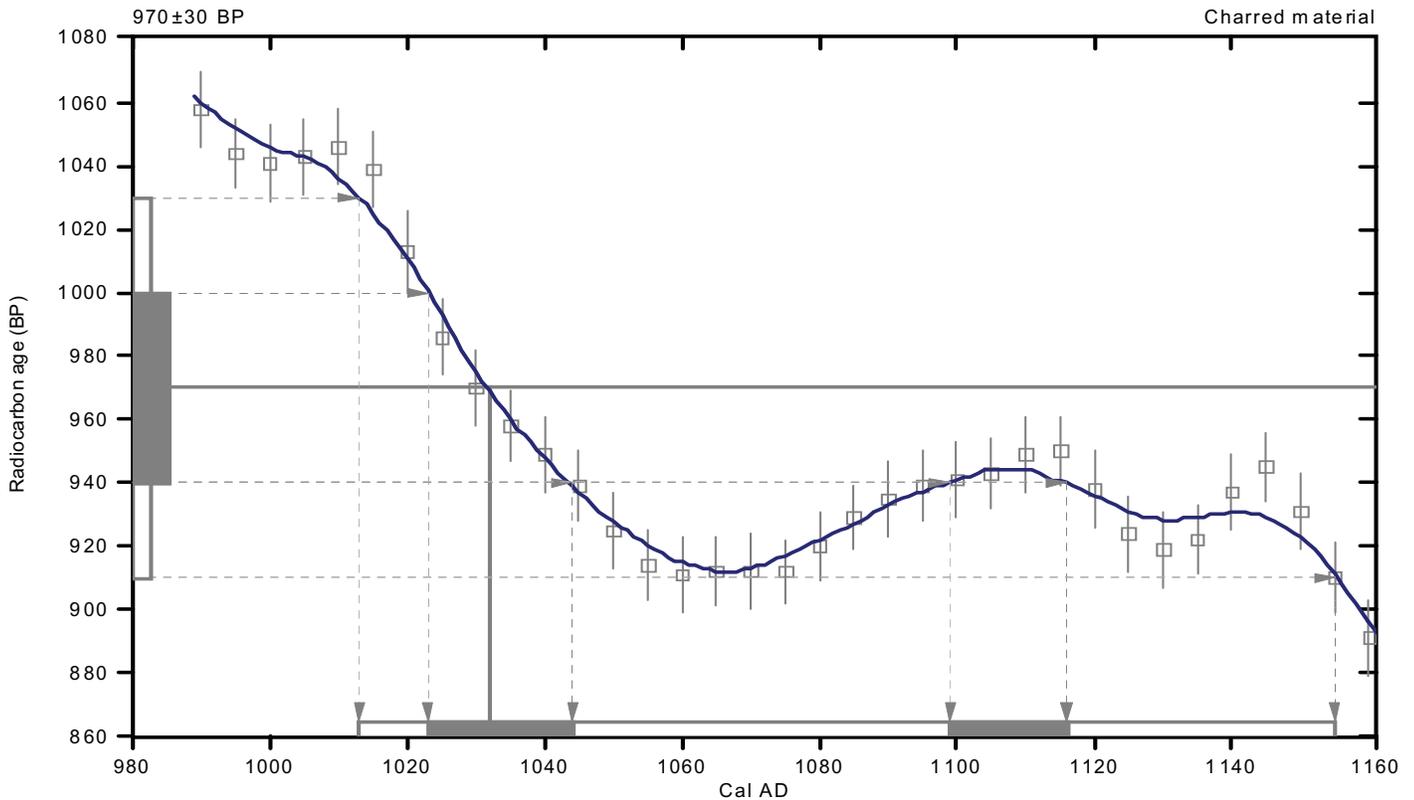
Conventional radiocarbon age: **970±30 BP**

**2 Sigma calibrated result: Cal AD 1010 to 1160 (Cal BP 940 to 800)**  
**(95% probability)**

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 1030 (Cal BP 920)

1 Sigma calibrated results: Cal AD 1020 to 1040 (Cal BP 930 to 910) and  
(68% probability) Cal AD 1100 to 1120 (Cal BP 850 to 830)



## References:

### Database used

*INTCAL04*

### Calibration Database

*INTCAL04 Radiocarbon Age Calibration*

*IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).*

### Mathematics

*A Simplified Approach to Calibrating C14 Dates*

*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322*

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25:lab. mult=1)

Laboratory number: **Beta-352109** Feature 53

Conventional radiocarbon age: **920±30 BP**

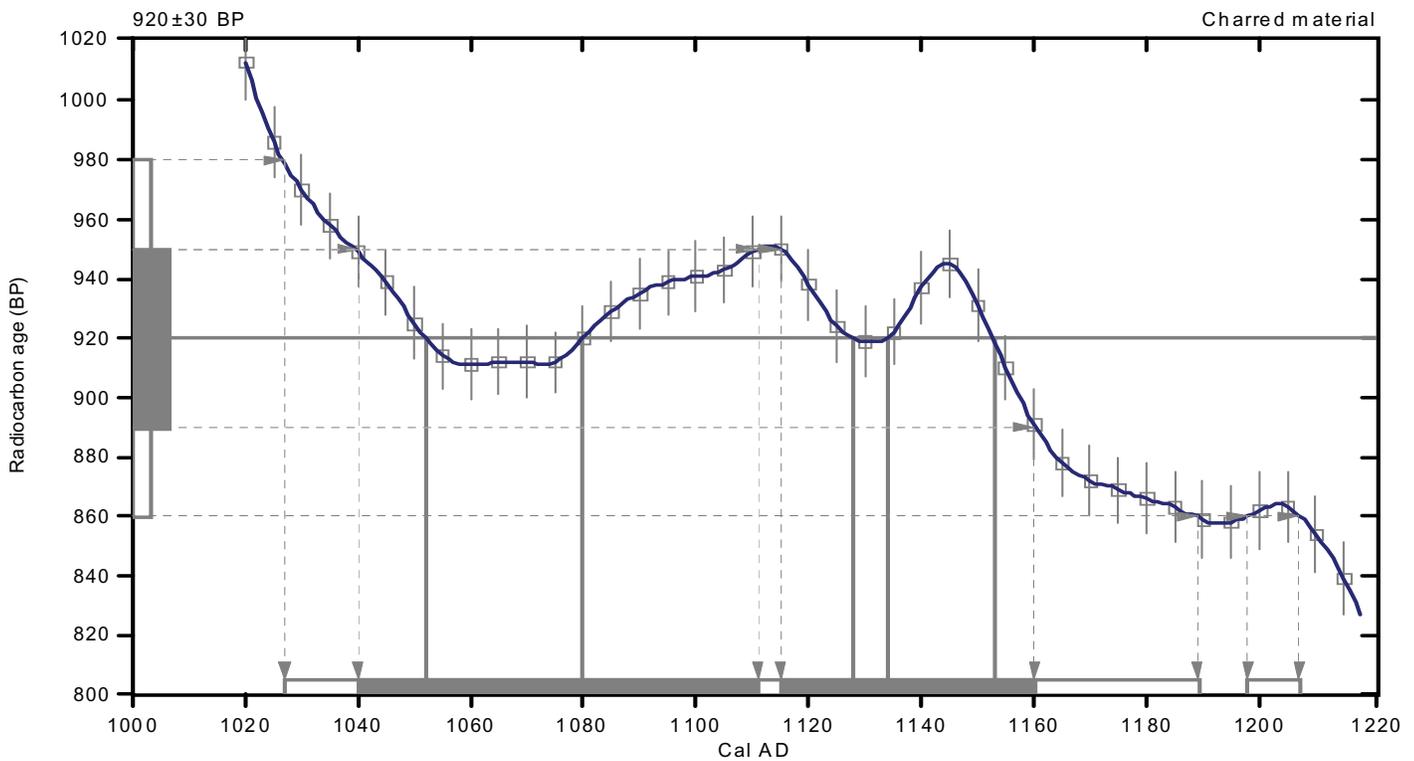
2 Sigma calibrated results: **Cal AD 1030 to 1190 (Cal BP 920 to 760) and  
(95% probability) Cal AD 1200 to 1210 (Cal BP 750 to 740)**

Intercept data

Intercepts of radiocarbon age  
with calibration curve:

Cal AD 1050 (Cal BP 900) and  
Cal AD 1080 (Cal BP 870) and  
Cal AD 1130 (Cal BP 820) and  
Cal AD 1130 (Cal BP 820) and  
Cal AD 1150 (Cal BP 800)

1 Sigma calibrated results: Cal AD 1040 to 1110 (Cal BP 910 to 840) and  
(68% probability) Cal AD 1120 to 1160 (Cal BP 840 to 790)



## References:

### Database used

INTCAL09

### References to INTCAL09 database

Heaton, et al., 2009, Radiocarbon 51(4):1151-1164, Reimer, et al., 2009, Radiocarbon 51(4):1111-1150,  
Stuiver, et al., 1993, Radiocarbon 35(1):1-244, Oeschger, et al., 1975, Tellus 27:168-192

### Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.2:lab. mult=1)

Laboratory number: **Beta-352111** Feature 53

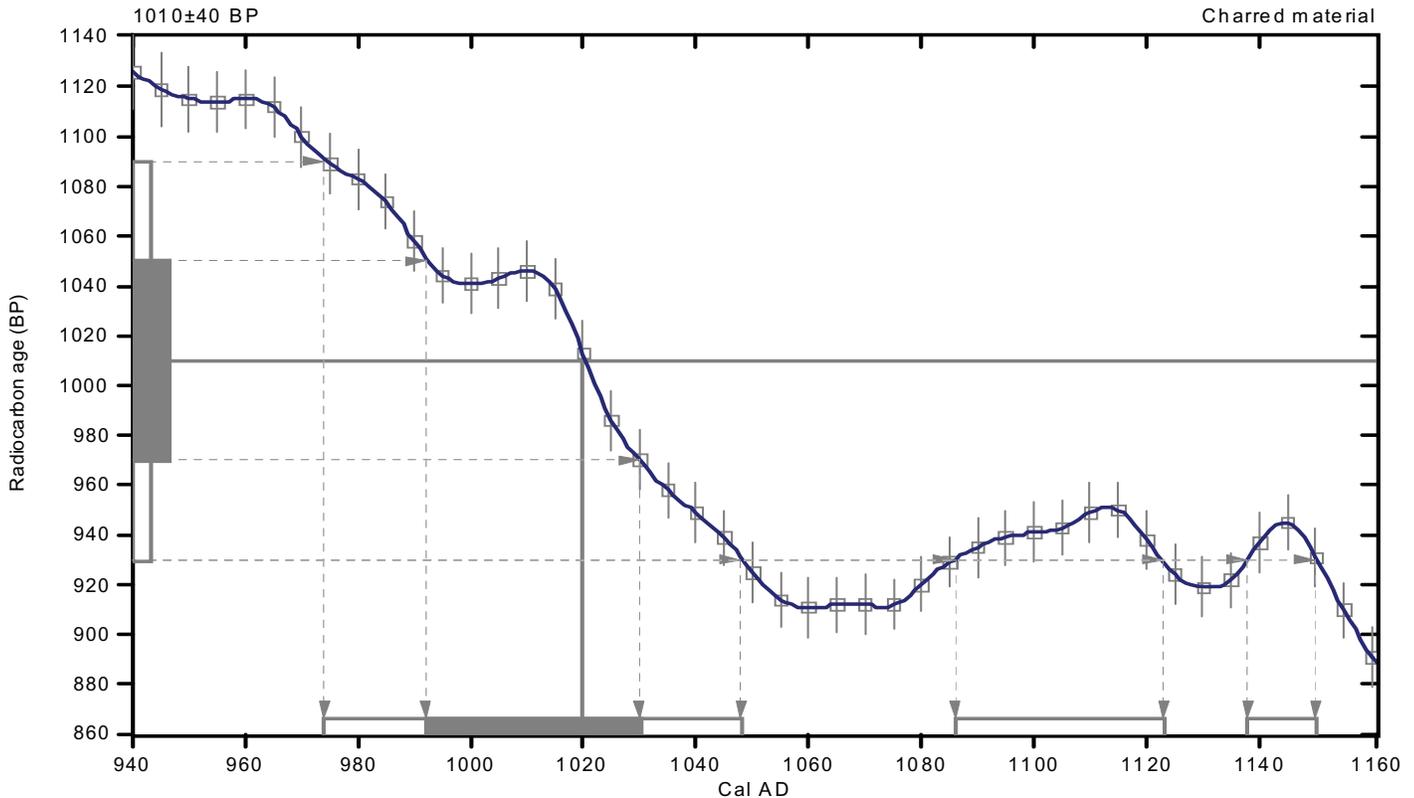
Conventional radiocarbon age: **1010±40 BP**

2 Sigma calibrated results: **Cal AD 970 to 1050 (Cal BP 980 to 900) and  
(95% probability) Cal AD 1090 to 1120 (Cal BP 860 to 830) and  
Cal AD 1140 to 1150 (Cal BP 810 to 800)**

Intercept data

Intercept of radiocarbon age  
with calibration curve: **Cal AD 1020 (Cal BP 930)**

1 Sigma calibrated result: **Cal AD 990 to 1030 (Cal BP 960 to 920)**  
(68% probability)



## References:

### Database used

*INTCAL09*

### References to *INTCAL09* database

*Heaton, et al., 2009, Radiocarbon 51(4):1151-1164, Reimer, et al., 2009, Radiocarbon 51(4):1111-1150, Stuiver, et al., 1993, Radiocarbon 35(1):1-244, Oeschger, et al., 1975, Tellus 27:168-192*

### Mathematics used for calibration scenario

*A Simplified Approach to Calibrating C14 Dates*

*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322*

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: [beta@radiocarbon.com](mailto:beta@radiocarbon.com)

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.8:lab. mult=1)

Laboratory number: **Beta-305365** Feature 76

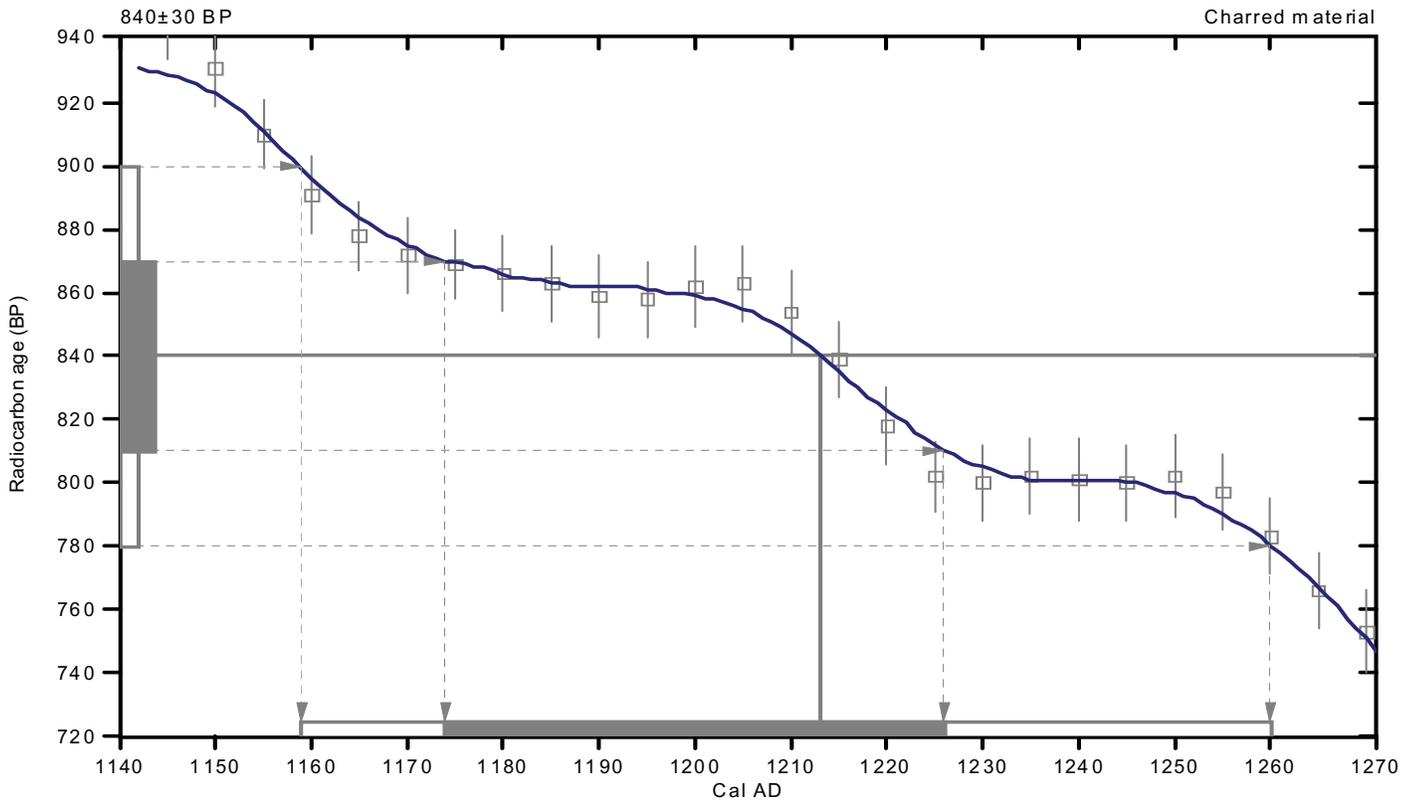
Conventional radiocarbon age: **840±30 BP**

**2 Sigma calibrated result: Cal AD 1160 to 1260 (Cal BP 790 to 690)  
(95% probability)**

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 1210 (Cal BP 740)

**1 Sigma calibrated result: Cal AD 1170 to 1230 (Cal BP 780 to 720)  
(68% probability)**



## References:

### Database used

*INTCAL04*

### Calibration Database

*INTCAL04 Radiocarbon Age Calibration*

*IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).*

### Mathematics

*A Simplified Approach to Calibrating C14 Dates*

*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322*

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23.3:lab. mult=1)

Laboratory number: **Beta-305366** Feature 77

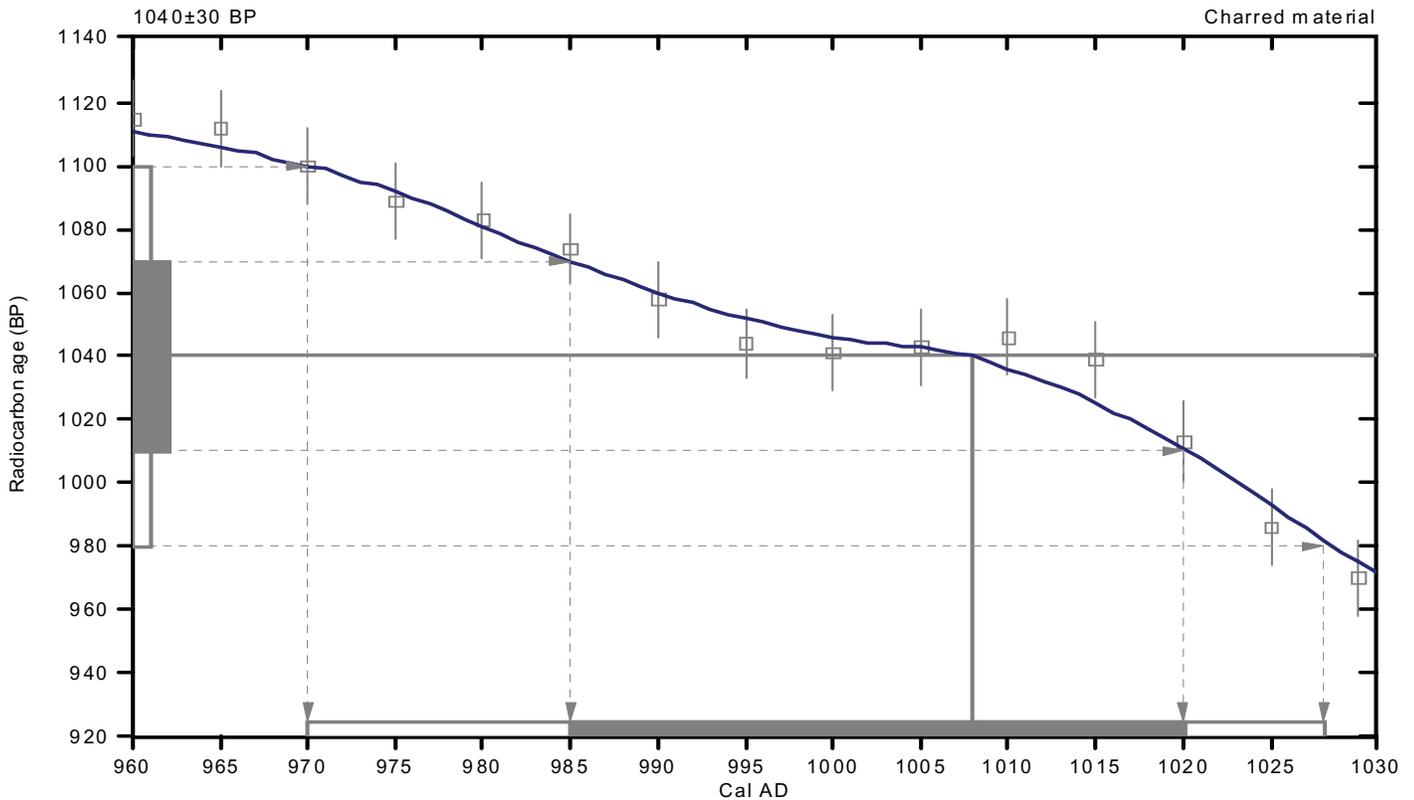
Conventional radiocarbon age: **1040±30 BP**

**2 Sigma calibrated result: Cal AD 970 to 1030 (Cal BP 980 to 920)**  
(95% probability)

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 1010 (Cal BP 940)

**1 Sigma calibrated result: Cal AD 980 to 1020 (Cal BP 960 to 930)**  
(68% probability)



## References:

### Database used

*INTCAL04*

### Calibration Database

*INTCAL04 Radiocarbon Age Calibration*

*IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).*

### Mathematics

*A Simplified Approach to Calibrating C14 Dates*

*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322*

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: [beta@radiocarbon.com](mailto:beta@radiocarbon.com)

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23.7:lab. mult=1)

Laboratory number: **Beta-305367** Feature 78

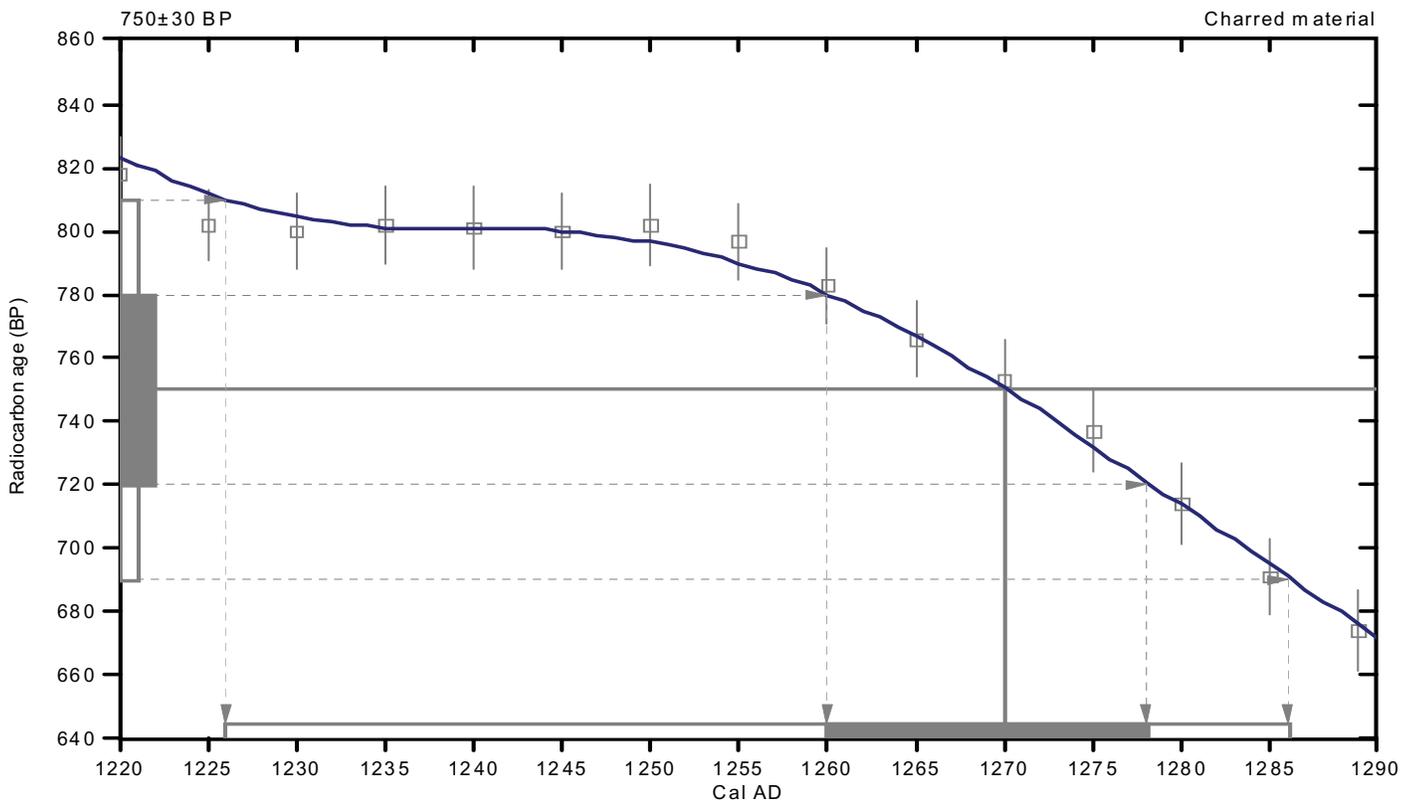
Conventional radiocarbon age: **750±30 BP**

**2 Sigma calibrated result: Cal AD 1230 to 1290 (Cal BP 720 to 660)**  
(95% probability)

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 1270 (Cal BP 680)

**1 Sigma calibrated result: Cal AD 1260 to 1280 (Cal BP 690 to 670)**  
(68% probability)



## References:

### Database used

*INTCAL04*

### Calibration Database

*INTCAL04 Radiocarbon Age Calibration*

*IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).*

### Mathematics

*A Simplified Approach to Calibrating C14 Dates*

*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322*

## Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com