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EXCAVATIONS AT FOUR FALL LINE SITES THE SOUTHEASTERN COLUMBIA BELTWAY PROJECT

SITES 38LX5, 38LX64, 38LX82, AND 38LX106 EXCAVATION REPORT

PREPARED FOR

SOUTH CAROLINA DEPARTMENT OF
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MANAGEMENT SUMMARY

During July and August of 1978, archeologists from Commonwealth Associates Inc. conducted excavations at four sites (38LX5, 38LX64, 38LX82, and 38LX106) in the route of the proposed Southeastern Columbia Beltway. The fieldwork and subsequent report preparation were conducted under the terms of a contract with the South Carolina Department of Highways and Public Transportation. Fieldwork operations extended over 150 person-days, during July and August, with analysis and report preparation occupying another 225 days between September 1978 and August 1979.

Field procedures consisted of mapping and controlled surface collection over each site, followed by the excavation of dispersed test pits and block units. Project research was directed toward cultural historical and cultural ecological questions, particularly the delimitation of component specific artifact associations and site-use patterns. Field data collection was directed toward the collection of information useful to the examination of these topics, with an emphasis on the collection of samples of value for specialized analyses focusing on aboriginal subsistence and chronology (ethnobotanical and radiocarbon studies). The analysis consisted of a descriptive and interpretive summary of the four assemblages, including all materials recovered during previous investigations at each site.

Site 38LX5, which occurs in the upland/sandhills area, was the westernmost site examined. A total of 52 controlled surface collection units, 43 one by two meter test pits, five small block units, and two stratigraphic cuts were opened there. The site is extensive, covering approximately 100 x 200 meters in area, with several light concentrations noted in the scatter. Middle Archaic, Late Archaic, Woodland, and Mississippian components were recognized, which were found to be overlapping low density scatters. Limited stratification was noted, with later Archaic and Woodland components generally confined to the plowzone. Identifiable subplowzone features, defined on the basis of faint charcoal staining or clusters of rocks or artifacts, were largely of Middle Archaic through Early Woodland in age. Nine features were recognized, four of probable Woodland age, one from the Middle Archaic, and the remainder of undetermined period. Two of the five features identified to a specific period were clusters of artifacts. Extensive flotation of fill in and around all of the features produced small amounts of charcoal that proved valuable in radiocarbon and ethnobotanical analyses.

The excavation assemblage from 38LX5 consisted primarily of bifaces, flake cutting tools, small pieces of

debitage, ferruginous sandstone, and fire cracked rock, with some pottery in the later periods. Short-term use of the site during most periods is indicated, possibly in hunting and/or butchering activity. Somewhat more extended use of the site area during the Woodland is suggested by the moderate amount of pottery present, but no evidence for long-term occupation, such as structures, was found.

At 38LX106, the second upland site examined, the controlled surface collection entailed piece-plotting all visible artifacts (N=5). Four one by two meter test pits were then opened in the area of apparent scatter, which was about ten meters in diameter. No aboriginal features were detected, and the site assemblage was characterized by a number of small flakes and two probable Late Archaic biface fragments. The low artifact density and predominantly later-stage reduction debris present suggests short-term use, possibly related to hunting activity. The 38LX5 and 38LX106 assemblages are generally similar, with 38LX5 perhaps reflecting numerous small behavioral episodes like that noted at 38LX106. The denser concentration of debris noted at 38LX5 may be related to the site's location, on a low knoll overlooking a small tributary. Site 38LX106, in contrast, is on a hill slope just above the western margin of the river floodplain, with no nearby drainages.

The third site examined, 38LX82, was located near the edge of a small marshy area in the floodplain of the Congaree River. The site is about 20 meters in diameter and some 250 meters from a swampy tributary of Congaree Creek. At 38LX82, a total of 10 one by two meter test units were systematically dispersed over the scatter, with a controlled surface collection about each unit. The site assemblage was found to occur entirely in the plowzone; a 30 meter backhoe trench placed through the center of the scatter failed to delimit deeply buried artifacts or subplowzone features. The artifact assemblage included two probable Late Archaic bifaces, debitage, a few retouched flake tools, and several large cobble mauls or nutting stones. The presence of large cobble tools and a somewhat more diversified flake tool and debitage assemblage than at 38LX5 or 38LX106 suggests more general or extended site use than noted in the uplands. Plant processing may have occurred at 38LX82, a function suggested by the site cobble tools, which were larger and more common than those recovered from the upland areas.

The fourth site examined, 38LX64, was also in the floodplain. This site was similar to 38LX82, although much greater in extent. Artifacts were found over an area roughly 100 by 50 meters immediately along a tributary of Congaree Creek. Fifteen one by two meter test pits, 3 meters of backhoe trenches, and 11 controlled surface collection units were

placed over the scatter. The results of an extensive controlled surface collection that had been conducted in 1975 was also incorporated into the analysis. Preceramic, Early, Middle, and Late Archaic components were found at 38LX64, and were identified by the presence of Palmer, Kirk, Morrow Mountain, and Savannah River Stemmed bifaces. A minor Late Archaic or Early Woodland ceramic period site use was suggested by a few sherds of plain and simple stamped sand tempered pottery. Seven features were recognized, at 38LX64 although only one, a possible Middle Archaic hearth, could be clearly identified to specific period. Extensive flotation yielded only minor amounts of charcoal from most features, suggesting poorer preservation than noted on the upland sites, 38LX5 and 38LX106.

The artifact assemblage at 38LX64 was almost entirely contained within a 20cm depth interval, with only minimal evidence for stratification. Both Early and Late Archaic tools were found at the same depth in adjoining units; only a minority of the forms occurred in clear logical superposition. An examination of the 1978 material, coupled with the 1975 controlled surface collection, indicated that the richest portion of the scatter was located to the west, out of the right-of-way. The site assemblage included a range of bifaces, retouched flake tool forms, and debitage, indicating that all stages of reduction and manufacture were occurring on the site. Cobble tools and a grinding basin were present, including mauls and nutting stones. Flake tools had steeper edge angles, on the average, than those noted from the upland sites, and cobble tools were significantly larger and more numerous. Extended use of the 38LX64 site area, possibly even habitation, is indicated, with plant processing possibly an important activity.

The excavations document the major patterns of prehistoric use at each site, and a comparison of the four assemblages reveals differences in the aboriginal use of the floodplain as opposed to the upland areas. In general, the upland sites appear to be short-term special purpose stations focusing on hunting activity, with possibly some extended use during the Woodland. Floodplain sites, in contrast, exhibit a diverse assemblage, suggesting more extended use, with a greater number of activities occurring.

The four sites were characterized by limited stratification and features, in spite of extensive efforts to delimit information of this kind. Sites 38LX106 and 38LX82 were small and the latter appears to be entirely in the plowzone, from which a thorough collection was obtained. Site 38LX106 appears to be limited in size and content, with few associated artifacts or features. Additional fieldwork at these two sites, it is argued, would be unlikely to yield further information beyond that already collected.

Sites 38LX5 and 38LX64 are much more complex, although again it is probable that representative information has been recovered about the prehistoric artifact and feature assemblages present in each area. At 38LX64, additionally, charcoal preservation in features was generally poor, and the thin artifact layer--20cm--made it difficult to accurately delimit associations between specimens. Most of the site, including the areas of highest artifact density, is located outside of the corridor right-of-way.

At 38LX5, the latter Woodland and Mississippian components are almost exclusively restricted to the plowzone, which was extensively sampled by controlled surface collections and test pitting. The subplowzone area, which contained Middle Archaic through Woodland components, yielded nine features, five of which were identifiable to specific period. Five of the site features were characterized by small amounts of preserved charcoal, and radiocarbon dates were obtained from four of them. The information recovered is important, but relatively small in quantity considering the excavations encompassed, almost 300 square meters. Use of heavy equipment in stripping operations would reveal additional features, but the information gained would probably be minor unless a large percent of the site area could be opened and carefully shovel skimmed. Even then, the possibility for significant feature discovery would be only conjectural.

In conclusion, it is apparent that representative information about the nature and content of the surviving archeological record has been recovered from the four sites examined in the Beltway corridor. Future work on these sites would be likely to produce redundant information, and would serve only to augment, rather than markedly alter, the results of the current analysis. During construction, however, care should be taken to avoid damage to the portions of 38LX64 that are adjacent to, but not within the corridor. All other archeological sites identified in the project area, and not specifically examined here, should be avoided during construction.

CHAPTER 1

INTRODUCTION

BACKGROUND TO THE INVESTIGATIONS

Archeologists from Commonwealth Associates Inc. conducted data recovery operations at four prehistoric sites near Columbia, South Carolina. From July 7 to August 21, 1978, the sites (38LX5, 38LX64, 38LX82, and 38LX106) were in the right-of-way of the proposed Southeastern Columbia Beltway, a major traffic artery around the southern and eastern portions of the city. The fieldwork and subsequent analysis and report preparation were conducted under the terms of a contract between Commonwealth and the South Carolina Department of Highways and Public Transportation. The effort was conducted to recover a sample of the cultural resources on each of the four sites. This report, and a separate data appendix volume, summarize and document the results of the archeological mitigation program.

The project area lies just below the Fall line in the extreme upper reaches of the Atlantic Coastal Plain, along Congaree Creek, a tributary of the Congaree River (Figure 1). The sites themselves are located in eastern Lexington County, near the town of Cayce, approximately four miles to the southwest of Columbia and on the opposite side of the river. Until quite recently the area was sparsely populated farmland, although residential and industrial development is rapidly progressing.

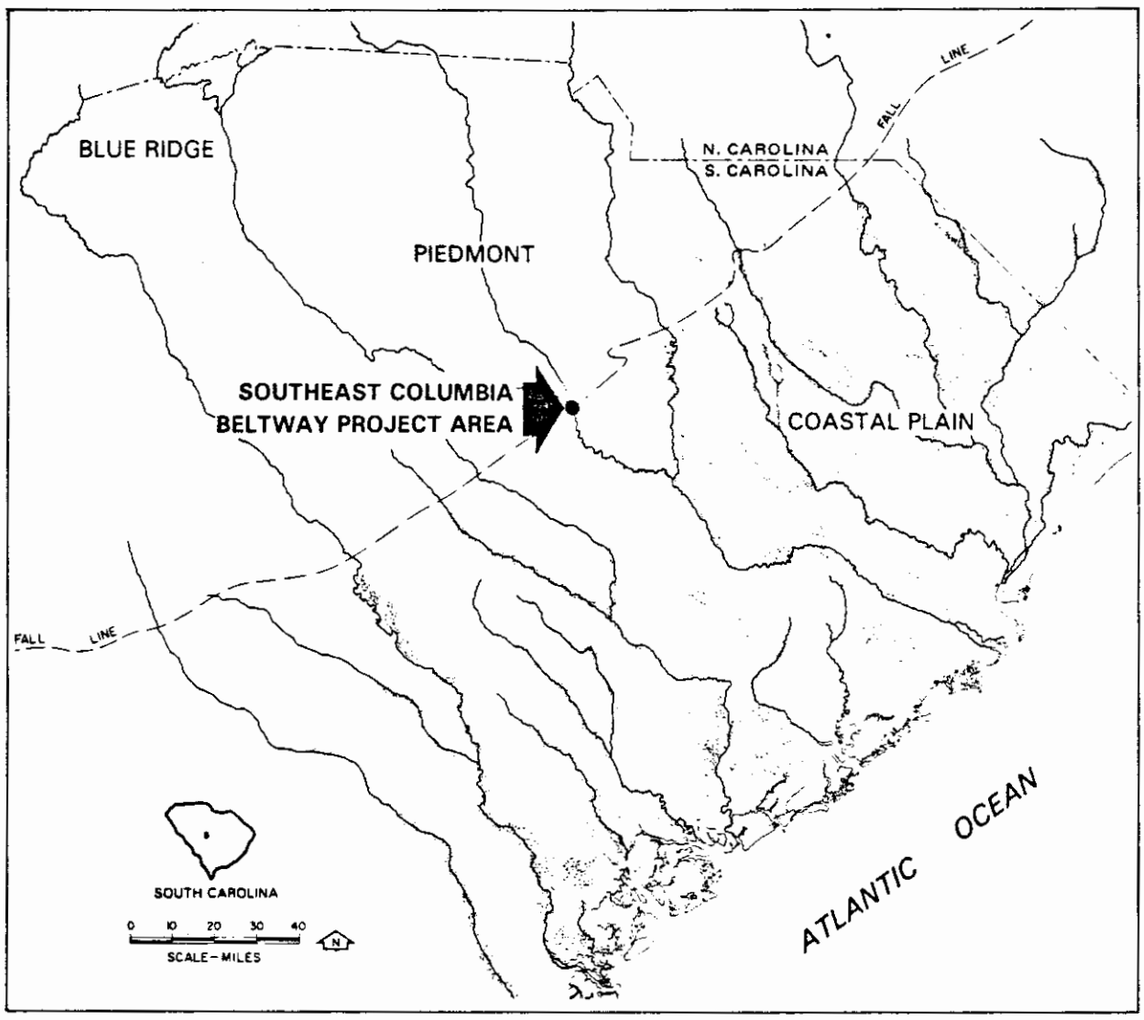
The right-of-way for the proposed Southeastern Columbia Beltway corridor begins just south of the U.S. Highway 321 exit on Interstate 26, where a series of connector interchanges are planned. From I-26 at the west, the corridor proceeds east and southeast for a distance of some four miles, until it crosses the Congaree River. From here, the right-of-way passes into Richland County, some 800 feet south of the Columbia Sewage Treatment Plant. The route then proceeds for approximately two miles to the northeast, where it intersects Bluff Road (S.C. 48), where an interchange is planned. Three separate cultural resources surveys were conducted for the Beltway, sponsored by the South Carolina Department of Highways and Public Transportation. A number of archeological sites were found during these surveys, and the corridor chosen represents a least-effects compromise that avoids most of the known cultural resources. The four sites reported here comprise the only known cultural resources in the corridor right-of-way in either Lexington or Richland Counties.

EXISTING INFORMATION ON PREHISTORIC RESOURCES IN THE GENERAL PROJECT AREA

From an archeological perspective, the Fall Line in the vicinity of Congaree Creek is unquestionably one of the most intensively studied localities in South Carolina. A number of summaries of previous archeological research in the general project area have appeared in recent years, and complement the present discussion (Goodyear 1976, Wogaman, House, and Goodyear 1976:9-13, Michie 1979:11-17). The record of past investigation provides a basis for reviewing human occupation and use of the project area. The examination of past work additionally provides a perspective from which to evaluate the research design that guided the excavations and analyses reported here.

Terminology used in this report to identify major cultural historical stages follows that proposed by Griffin (1967). These stages, and associated absolute dates, include the Paleo-Indian (c. 20,000 - 10,000 BP), Early Archaic (c. 10,000 - 8000 BP), Middle Archaic (c. 8000 - 4500 BP), Late Archaic (c. 4500 - 3000 BP), Early Woodland (c. 3000 BP - 1500 BP), Later Woodland (c. 1500 - 750 BP), Mississippian (c. 750 - 300 BP), and Historic (c. 300 BP - present). General stage definitions and alternative summaries of local cultural history are also to be found in a number of reports from the area (Goodyear 1975a:5-17, Ackerly 1976:6-14, Wogaman, House, and Goodyear 1976:10-14, Smith 1977:9-11, Michie 1979: 11-17).

Prehistoric archeological research in the upper Congaree River valley began with artifact collecting as early as the mid-nineteenth century. The Fall Line near Columbia has been settled continuously for over 200 years, and clearing, farming, and settlement have unquestionably taken their toll on local archeological resources. Interest in Indian remains developed early, with the first documented collecting activity occurring in the 1840s. This early investigation was summarized by the Reverend George Howe (1857), in an article entitled "An Essay on the Antiquities of the Congaree Indians of South Carolina" (reported in Schoolcraft 1851-1857, Volume VI:155-168). Howe provided a lengthy series of descriptions of artifacts uncovered by floods and plowing in the Columbia area, and underlined the state of relic collecting at the time: " I have many hundred arrow and spear heads, and many more are in the possession of others" (Schoolcraft 1851-1857, Volume VI: 159). The locations where Howe made his collections are only generally reported, and in all probability lie outside of the Beltway corridor. Howe's paper is important, however, in that it points to a lengthy and popular tradition of artifact collection in the general area. Existing records document artifact collection from the four excavated Beltway sites only



LOCATION OF THE PROJECT AREA ON THE FALL LINE NEAR COLUMBIA, SOUTH CAROLINA

SOUTHEAST COLUMBIA BELTWAY PROJECT
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FIGURE 1

over the last ten years; Howe's reference indicates that casual surface collection may have occurred on them a hundred or more years previously, at any time after the land was cleared and plowed.

Historic records, as summarized by Meriwether (1940), Trinkley (1974a), Gay (1974), Anderson (1975a), and Goodyear (1976), are useful to describe the condition of the four sites prior to the beginning of the project. The first significant land clearing began after 1718, when the trading fort along the lower Congaree Creek was established. The four sites may not have been affected by land clearing until sometime in the nineteenth or even possibly the early twentieth century. By the end of the first quarter of the twentieth century, however, three of the four site areas are reported, by local informants, to have been under cultivation. At the time of the 1978 excavations,these three sites (38LX5, 38LX64, and 38LX82) had apparently been continuously cultivated for at least fifty years. The exception, 38LX106, was in a mixed hardwood/pine forest at the time of the 1978 excavations, and appeared, given the immature condition of the trees, to have been logged in the past.

In addition to logging, clearing, and cultivation, much of the lower-lying reaches along Congaree Creek have been artificially drained in recent years. A drainage ditch runs by the western perimeter of one of the project sites, 38LX82, and may have removed some of the archeological deposits. Site water table levels, flooding periodicity and extent, and erosional patterns have all been altered considerably during the historic period, affecting the archeological record on the project sites. Additional documentation of these factors is included in the individual site descriptions.

The earliest well-documented archeological collections from the general project area date to the 1920s and 1930s. Surface finds of fluted points and ceramic artifacts collected from sites in the area were reported in short technical papers by Wauchope (1939) and Griffin (1945). Wauchope's paper described a number of Paleo-Indian fluted points that had been collected from the Columbia area. The exact locations of some of these finds remains uncertain, although several of the points appear to have come from the vicinity of the Taylor site (38LX1), a mile north of the Beltway corridor across Congaree Creek. Griffin's paper described a surface collection of pottery from the Thom's Creek site (38LX2), which is located some three miles south of the project area. The assemblage encompassed most of the wares now known to occur in the area, and the paper serves as a model for the descriptive analysis of local ceramics. The paper provided the first type description of Thom's Creek punctate, a

distinctive Late Archaic ware that has since been reported throughout the South Carolina Coastal Plain (Waddell 1963, Anderson 1975b, Trinkley 1976a).

By the late 1950s, one of the four sites, 38LX5, was known to local collectors and subject to at least occasional visits (James L. Michie: personal communication). By the middle to late 1960s the archeological potential of the Congaree Creek area was becoming known in local collecting circles, with many of the larger sites visited each year. Extensive surface collections accumulated at this time, and some, notably those by Tommy Charles and James L. Michie, then avocational archeologists with the Archeological Society of South Carolina, are today regarded as invaluable research collections.

Systematic, scientific investigation and reporting of archeological remains in the project area was initiated in the late 1960s by James L. Michie, a Columbia area resident. In 1969 Michie conducted excavations at the Thom's Creek site, where 16 five foot squares were opened in six inch levels to a depth of 30 inches (Michie 1969). The excavations yielded Early Archaic through Woodland materials in a logical stratification, demonstrating the applicability of Coe's (1964) Archaic cultural sequence to central South Carolina. A second season of excavation was conducted at the Thom's Creek site in 1970, by a University of South Carolina field school under the direction of Dr. Donald R. Sutherland. These excavations, reported by Michael B. Trinkley (1974b), provided additional documentation of the Archaic and Woodland components on the site.

In 1969 and 1970 Michie (1971:47-48) also conducted excavations at the Taylor site (38LX1), where Early Archaic Palmer and Dalton hearth and tool clusters were found undisturbed below the plowzone. The fieldwork at the Taylor site was briefly reported in the 1971 Southeastern Archaeological Conference Bulletin (Michie 1971:47-48); final analysis and report preparation activity are still in progress. The work at Taylor and at Thom's Creek documented the presence of stratified deposits, and features and working floors, on sites in the upper Congaree River valley, and provided direction to later fieldwork and research in the area.

In August of 1972 archeological survey and testing operations were conducted at the proposed Columbia Zoological Park, located five miles north of the project sites, just across the Fall Line along the Saluda River (Ryan 1972). Four prehistoric sites were discovered, and a small block unit, encompassing 19 square meters, was removed at one of the four, at the Sable site (38RD60). The Sable site is located on a narrow sand/clay ridge or terrace remnant elevated just above the Saluda River back swamp. The block unit produced

Woodland period artifacts and features, including simple stamped, linear check stamped, and fabric impressed pottery in direct association in a feature (Ryan 1972:166). A backhoe was also employed at Sable, documenting the presence of buried Archaic deposits at depths of at least 1.5 meters. Although the work at Sable was only limited in scope, the description of the artifact assemblage is useful for comparison with sites from the project area.

Intensive archeological fieldwork has been almost continuous along Congaree Creek in recent years, with much of the work prompted by the planned development of the area. In early 1974 members of the Archeological Society of South Carolina began excavations at the Manning site (38LX50), a fifty acre scatter located on an elevated terrace remnant overlooking Congaree Creek, and within view of two of the four sites reported here. The society's excavations at Manning continued, on a seasonal basis, until mid 1979. A large block unit opened in the north-central part of the site, in woods overlooking Congaree Creek, has yielded Early Archaic through Mississippian remains as well as evidence for a mid-eighteenth century homestead (Goodyear, Lee, and Michie 1978).

In addition to the work at Manning by members of the state archeological society, during 1975 and 1976 extensive controlled surface collections and stratigraphic tests were conducted across the site (Wogaman, House, and Goodyear 1976:21-22). A controlled surface collection over the southern half of the site was conducted by Albert C. Goodyear and John House during the summer of 1975. During the winter of 1975/1976 additional surface collection, and a dispersed subsurface testing program was initiated, under the joint direction of John House, William Ayres, and Donald R. Sutherland. The testing and controlled surface collection program was continued in the summer of 1976, by a University of South Carolina field school under the direction of Leland G. Ferguson. A preliminary analysis of the 1975-1976 fieldwork indicated that undisturbed artifact-bearing deposits 30 cm or more in depth occurred over much of the Manning site, with considerable variation in content and density evident (Wogaman, House, and Goodyear 1976:21). Limited testing conducted in 1977 and 1978 at the eastern end of the Manning site provided additional confirmation of the 1975/1976 testing results, namely that preserved archeological deposits were to be found below the plowzone. All fieldwork at 38LX50 ceased in mid 1979, including the archeological society's block excavation. Detailed analysis of the site collections has been initiated, under the overall direction of Dr. Albert C. Goodyear of the Institute of Archeology and Anthropology staff, and the analysis and report preparation is expected to occupy several years time.

Legislatively-mandated survey and testing projects have provided a wealth of information on site distribution and content throughout the immediate project area. Much of this work has been sponsored by the South Carolina Department of Highways and Public Transportation, along the route of the proposed beltway, and planned connectors. All of the survey and testing work related to the highway program was carried out by archeologists from the Institute of Archeology and Anthropology, under the terms of an agreement between that institution and the South Carolina Department of Highways and Public Transportation (Stephenson 1975a:1-2, 1975b). Three separate corridor surveys were conducted in 1974 and 1975, during which 26 prehistoric and historic sites were located, and entered into the state site files (Anderson, Michie, and Trinkley 1974, Anderson 1974, Goodyear 1975a). All but two of the sites were located south of Congaree Creek, in the broad floodplain and at the edge of the adjoining sandhills defining the Congaree River valley. General and/or controlled surface collections were conducted at each of these sites during the beltway surveys. Four of the sites located at this time (38LX5, 38LX64, 38LX82, and 38LX106) comprise the subject of the present investigations. The initial fieldwork conducted at that time at each of these sites is reported in later chapters.

In 1976 additional archeological survey and testing operations were conducted along the route of a planned connector to the beltway, the Twelfth Street Extension (Wogaman, House, and Goodyear 1976). Nineteen additional archeological sites were located and recorded, most on the north side of Congaree Creek, with surface and/or subsurface collections gathered from each site. The report, by Wogaman, House, and Goodyear (1976), summarized much of the survey data collected to that time from the Congaree Creek locality, and provided a detailed discussion of individual site content, significance, and research potential, framed in relation to a series of specific research questions.

At the Godley site (38LX141), intensive subsurface testing excavations incorporating small, dispersed units, were conducted, in 1977 and 1978. The Godley site is a multi-acre scatter located two miles north of the Beltway corridor across Congaree Creek (Perlman et al. nd, Cable and Cantley 1978). This testing also revealed undisturbed subplowzone deposits, and additionally detected two possible house or activity floors. The results of this testing operation are still in preparation.

Additional information in the Congaree Creek locality has been provided by survey and testing operations along a series of proposed powerline corridors running through

the area (Ackerly 1976, Garrow, Crocker, and Warner 1977, Smith 1977, Michie 1979). Four additional archeological sites were discovered through these projects. During the fall of 1975 intensive subsurface testing was conducted at two sites (38LX104 and 38LX112) in a powerline right-of-way near the Congaree River, documenting the presence of deeply buried artifact-bearing strata in the alluvial floodplain deposits (Ackerly 1976). Two powerline surveys conducted north of Congaree Creek (Garrow, Crocker, and Warner 1977, Smith 1977) located two new prehistoric sites and recovered additional information from a number of previously recorded sites in the area. One of these sites, Edenwood (38LX135), was the subject of intensive archeological subsurface testing operations in the spring of 1978, under the direction of James L. Michie (1979).

At Edenwood, Michie opened 37 three foot test pits, systematically dispersed over a 50 foot interval grid. The units produced evidence for Archaic and Woodland period site use, and the associated material culture assemblage was thoroughly documented. Michie (1979:49-51) interpreted prehistoric use of Edenwood as directed toward specialized hunting/butchering activities; his data set and interpretations are useful for and amenable to comparative analysis.

Prehistoric archeological investigations in the Congaree Creek locality, prior to the 1978 Beltway excavations, included block unit excavations at four sites (Thom's Creek, Taylor, Manning, and Sable), dispersed subsurface testing at five sites (Manning, Godley, Edenwood, 38LX104, and 38LX112), and general and/or controlled surface collections over 49 sites (including one historic site, and the excavated sites listed above). Locational and artifactual data currently exists, therefore, for 48 prehistoric sites in the general vicinity of lower Congaree Creek. Analysis, reporting, and synthesis of this vast data set is still only beginning. It is evident, however, that there is considerable potential for the testing of a variety of archeological research questions in the Fall Line/Upper Congaree River Valley environment.

PROJECT RESEARCH ORIENTATION

The 1978 data recovery operations along the Southeastern Columbia Beltway corridor were undertaken within the context of previous research. The four sites that were excavated were located in the middle of one of the most intensively studied archeological localities in South Carolina. Project research, therefore, was able to take direction and guidance from a considerable body of prior knowledge, speculation, and research design. The importance of the locality, and the research potential of the sites within the highway

corridor itself, had been recognized in the first state archeological preservation plan drawn up in 1975 (Stephenson 1975b:98). From the extended record of fieldwork and reporting along Congaree Creek, a number of both general and specific research topics had been recognized, some of which were explicitly formulated to guide archeological investigation in the area (e.g. Goodyear 1975a, 1975b, 1976, Wogaman, House, and Goodyear 1976:33-39).

Project research during the Southeastern Columbia Beltway investigations was directed toward two major problem domains: site-specific research, and intersite or regional analyses. The latter emphasized cultural ecological relationships and settlement/subsistence system reconstruction. These problem domains are interrelated, with research at each level in a reciprocating feedback cycle. This orientation follows Goodyear's (1975b:12) general research design for highway archeology in South Carolina.

Single site analysis consists of the "intensive reconstruction of past activities on individual project sites", to paraphrase Goodyear (1975b:12) slightly. The primary goal of this kind of analysis is determining the nature of past site use, with intra-site research focusing on cultural identification and chronology, component recognition, activity analysis, and site-specific ecological associations. Functional and spatial analyses at the artifact and feature level form the basis for developing general inferences and conclusions concerning site reconstruction.

Intersite analyses, focusing on the relationship of site content and site use patterns to specific environmental parameters, forms the basis for what Goodyear (1975b: 12) describes as cultural ecological analysis. The primary goal of this form of research is identifying and explaining the relationships of site use within the local and regional ecosystem. This form of analysis is common within archeology today, and has been variously termed settlement archeology, settlement/subsistence system reconstruction, and/or cultural ecology (e.g. Chang 1968, Struever 1968, Vayda 1969).

THE RELATIONSHIP OF PROJECT RESEARCH TO PREVIOUS INVESTIGATIONS

A number of local reports documented research topics amenable to investigation during the Southeastern Columbia Beltway Project, and were used to guide the present research. Wogaman, House, and Goodyear (1976:33-39) proposed four general problem domains to guide research in the upper Congaree valley/Fall Line environment. The first of these problem

domains focused on "Human ecology in a Fall Line/floodplain environment" (Wogaman, House, and Goodyear 1976:33-35), and stressed the need to document human adaptation in this relatively rare macro-ecotonal setting. Specific topics for investigation included documenting prehistoric settlement in relation to local microenvironmental variability, that is, within the Fall Line area, followed by a general comparison of the overall use of this area with contemporaneous aboriginal use of other regions, such as the Sea Islands, lower Coastal Plain, or Piedmont.

The second problem domain advanced by Wogaman, House, and Goodyear (1976:35-36) concerned "Prehistoric cultural identification and chronology". The development of a more precise understanding of artifact variation and associations over time was stressed, with recommended analytical procedures including the investigation of (a) stratified deposits, (b) horizontal spatial associations and, (c) absolute dating.

The third major Fall Line problem domain focused on "Variability in prehistoric site function" (Wogaman, House, and Goodyear 1976:36-38), as discussed in the preceeding section. Intersite assemblage comparison in particular was directed toward the resolution of "base camp" or "maintenance" activity patterning, as opposed to "special activity station" or "extractive" patterning (cf. Binford and Binford 1966). Subsumed under such an investigation was the need to control for differences in site size, chronology, and associated environmental parameters. Of specific concern was the need to document and explain the apparent occurrence of seemingly similar artifactual assemblages in different environmental zones, a pattern indicated for the Middle and Late Archaic in the immediate area. Sites of this period, with assemblages suggesting intensive habitation, were noted in both the higher terrace areas, and by the lower lying, tributary/swamp margins, and the hypothesis was raised that the patterning might reflect differing seasonal camps (Wogaman, House and Goodyear 1976:37).

The final research problem domain proposed by Wogaman, House, and Goodyear (1976:38-39) concerns "Prehistoric lithic resource procurement". The incidence and nature (i.e. debitage categories and tool use patterns) of lithic raw materials on Fall Line sites could be examined, it was argued, towards the resolution of patterns of interregional exchange and site functional variability. One specific area of research included the resolution of raw material selection preferences during different periods. Another suggested avenue of research concerned the investigation of raw material utilization patterns within a settlement system.

Following Gould (1974), it was suggested that extralocal raw materials might be more commonly expected at base settlements, with local raw materials used on an ad hoc basis at extraction sites.

The four problem domains advanced by Wogaman, House and Goodyear (1976) are general in nature and designed to guide research in the Fall Line area. A number of specific research questions have also been developed, that relate to archeological resources in the upper Congaree River valley, and within the Congaree Creek locality. Goodyear (1975a, 1976) has suggested that distinct shifts in settlement patterning occur over time within the Congaree Creek area, and his inferences are amenable to examination employing the Beltway data set. According to Goodyear (1976:8-11), Early Archaic settlement made little use of the sandhills area, concentrating instead along the river and tributary terrace margins. The Middle Archaic saw an expansion of settlement, with use of both uplands and floodplain environments. Late Archaic Thom's Creek/Stallings components in the area tend to be rare, with associated settlement patterning poorly understood. Woodland sites, in contrast, are common, particularly in the terrace and upland zones, while Mississippian settlement shows a near opposite patterning, focusing on the lower floodplain environment, possibly for farming in the overflow area.

Hypothetical models of prehistoric settlement patterning over time have also been developed at other Fall Line/inner coastal plain localities in recent years, and are available for comparison with the upper Congaree data. These syntheses, based largely on field survey and limited test excavation, examine prehistoric Fall Line settlement along the Savannah (Ferguson and Widmer 1976, Cable et al. 1978, Hanson, Most, and Anderson 1978), and Lynches rivers (Cable and Cantley, n.d.). The project data, therefore, is amenable to analysis in relation to a series of models of Fall Line settlement.

Michie (1979:19,20,50) has suggested that the procurement and use of specific lithic raw materials by Fall Line populations has tended to vary over time. Use of Coastal Plain cherts, and the thermal alteration of these cherts to facilitate knapping, is suggested as common during the Early Archaic. Middle Archaic populations, in contrast, almost exclusively employed quartz, while during the Late Archaic, slate and quartz were the common raw materials employed. Michie's (1979:50) observations are general in nature, and refer only to apparent trends. A range of lithic raw materials can be documented for each period; the hypothesized selection preferences can, however, be tested.

Ferguson (1976:10) has proposed a number of specific test implications for the identification of site variability, and the identification of the biotic resources exploited at sites in the upper Congaree River/Fall Line environment. Four site types are proposed: intensive habitation sites, less intensive habitation sites, biotic resource extraction stations, and lithic resource extraction stations. The presence of fire-cracked rock, midden, a wide variety of tools, high artifact density, and favored location is expected at intensive habitation sites. Extraction sites, in contrast, would be expected to exhibit a narrow range of tool forms, a comparatively low artifact density, and (possibly) less favored location. Lithic resource extraction stations would be characterized by a proximity to the sources, and numerous rejected materials. Biotic resource extraction stations, and specific target resources, would be identified by specific locational characteristics and associated tool assemblages. All of the biotic resource extraction sites would be characterized by a low artifact density, with only a few specific tool types present. Deer exploitation sites would be characterized by cutting tools in optimum deer habitats, while acorn and hickory nut exploitation would occur under these canopies, with stone plant processing tools present. Comparison of these hypothetical assemblages with the Beltway project data sets could suggest patterns of site use in the Congaree Creek locality.

A second settlement model, focusing on prehistoric site variability and function in the Piedmont of South Carolina, developed by John House and Albert Goodyear, has potential for application in the Fall Line area (House and Ballenger 1976, House and Wogaman 1978, Goodyear, Ackerly, and House n.d.). Under this model, Archaic sites exhibit an essentially dichotomous distribution, with structurally different site types occurring in upland (interriverine) and lowland (riverine/floodplain) areas:

"We propose a settlement pattern model for the Middle and Late Archaic involving spring and summer residence along major rivers; a move to seasonal base camps in upland creek valleys in September to take advantage of deer concentration in upland hardwood zones, with some exploitation of other resources as well; and then a return to riverine-located winter quarters with permanent houses in about December when the coldest weather arrived, the deer rutting season came to an end, and the acorn mast in the hardwood forests began to be exhausted (House and Ballenger 1976:117)." Archeological test implications of intensive habitation, as opposed to extractive activity, are provided under this model, and are similar to those noted by Ferguson (House and Ballenger 1978:10-11). The Piedmont settlement model, although

developed for a somewhat different environmental setting, offers a framework for examining riverine and upland site use, environmental zones found in the Beltway project area.

SUMMARY OF OBJECTIVES AND STRATEGY

The Southeastern Columbia Beltway project was guided by, and directed toward, the general and specific research topics outlined in the previous section. Whenever possible, inferences, hypotheses, and models developed by previous investigators were explored. The focus of the 1978 fieldwork was at the site level, and directed toward the collection of representative information about the archeological record on each of the four sites endangered by the proposed construction. Dispersed surface and subsurface artifact samples were collected from each site, with an emphasis on the recovery of feature and subsistence remains. Assemblage content, spatial distribution, stratification, and post depositional modification were examined at each site, toward the resolution of patterns of prehistoric land use, component identification, and absolute and relative chronology.

Intrasite analyses included the functional analysis of individual stone tools, with an emphasis on resolving particular site activities (cf. Wilmsen 1970, Hayden 1979). The presence/absence, incidence, and relative proportions of tool and debitage categories were also examined, directed toward the resolution of patterns of prehistoric site use, and toward testing site functional models such as those proposed by Ferguson (1976), Wogaman, House and Goodyear (1976), and others. Typology, seriation, radiocarbon analyses, and distributional information were employed, where possible, in the resolution of components, activity areas, and chronology on the project sites.

Project ecological analyses were directed toward resolving patterns of, and explanations for, past human adaptation to the Fall Line environment. The four sites investigated during the 1978 data recovery program provided the first multisite excavation assemblage from the Fall Line in the South Carolina area, and offered an opportunity to initiate comparative analyses directed toward the resolution of past adaptational systems. Subsumed under this were tests of the site functional models proposed by Ferguson (1976) and House and Ballenger (1976). The four project sites included two within the lower creek/river floodplain and two within the sandhills. One extensive scatter and one small cluster were examined in each area, and it was hypothesized that the archeological assemblages from each zone might

reflect different adaptational strategies. A major contribution of this report, it is believed, is the demonstration that prehistoric use of the two major environmental zones in the project area, the upland sandhills and the riverine floodplain, was considerably different throughout much of prehistory.

A third area of project research focused on lithic raw material identification, procurement, and use. Given the considerable ambiguity evident in the literature regarding the identification of lithic raw materials used on South Carolina archeological sites (Novick 1978, 1979), a number of samples were submitted to a geologist for thin sectioning and technical description. Aboriginal procurement systems were also examined, through comparison of the relative incidence of raw materials and reduction/manufacturing stages on individual project sites. Raw material selection preferences over time were examined, following inferences proposed by Michie (1979). Lithic raw material use by aboriginal populations was also examined through the study of functional associations, for example, by comparing tool edge angle and morphology against raw material type, to see if selection in this direction occurred.

Aboriginal subsistence systems formed another major area of project research, a topic which can also be subsumed under ecological analyses. Extensive use of flotation accompanied the fieldwork, in a successful effort to recover ethnobotanical remains. The examination of ethnobotanical data, coupled with functional analyses of associated material remains, was considered of value in the resolution of site use patterns. Test implications proposed by Ferguson (1976) were used to help document specific subsistence activities on project sites. The heavy commitment to ethnobotanical subsistence information recovery also yielded charcoal samples useful for absolute (radiocarbon) dating.

A final goal of the Southeastern Columbia Beltway Project was the effective documentation and description of each site assemblage. Extensive illustrative and descriptive data are included in this report, together with summary measures of each site assemblage. Metric attributes of all formal tools, frequency, weight, and distributional data on major artifact categories, and the results of specialized soils analyses have been placed in a separate 400 page appendix volume. The descriptive analysis reported here and documented in both volumes incorporates not only the 1978 assemblage, but all artifacts recovered during previous fieldwork on each of the four sites.

The purposes served by the extensive use of description are substantive and methodological. First, and most important, other investigators are provided with a clear picture of the cultural contents of these four Fall Line sites. Second, by detailing the total project assemblage, other researchers can see how the various analytical and interpretive conclusions were obtained. Effective documentation also permits additional analyses of the assemblage by researchers who may be unable to work directly with the collections. This report strives to meet the professional responsibility for documentation of analytical results.

RESEARCH ASSISTANCE

A large number of people participated in the preparation of this report. Project coordination, field direction, and much of the final writing were accomplished by David G. Anderson. Herbert L. Whittier and Judith A. Newkirk assisted in the direction of the fieldwork during the 1978 field season; the crew members included John Albers, Chevis D. Clark II, David A. Clark, and Brett Riggs. Sammy T. Lee served as project backhoe operator, and Dr. Donald R. Sutherland provided a light plane for an aerial overflight of the four sites. Several volunteers, all members of the Archeological Society of South Carolina, worked on the project over one or more days: Jimmy Beatty, William Monteith, Jeannie Metropol, and John Paquet. Members of the local professional archeological community who visited the site and offered advice and commentary included John S. Cable, Charles E. Cantley, Albert C. Goodyear, Andrea Novick, James Sexton, Robert L. Stephenson (State Archeologist), Donald R. Sutherland (SHPO archeologist), Richard L. Taylor, and Michael B. Trinkley, the S. C. Department of Highways and Public Transportation's staff archeologist.

Artifact washing and cataloging was initiated by all of the field crew members, and was completed after the close of fieldwork by Chris Franzen, Lisa Novick and Noreen Weston. Much of the actual sorting and measurement of the project artifacts was accomplished by Donald E. Weston. Specialized analyses included lithic raw material thin sectioning and descriptions by Dr. Gerald Baum of the College of Charleston's Department of Geology; soils description, particle size, and pH analyses by Dr. Michael Katuna, also of the Department of Geology at the College of Charleston; and a detailed ethnobotanical analysis of flotation samples from all of the aboriginal features by Suzanne E. Harris of the Southeast Missouri Archeological Research Center, Naylor, Missouri. Five radiocarbon age determinations, from aboriginal

features at 38LX5, were processed by Charles Tucek of Radiocarbon LTD, Lampasas, Texas. Dr. Albert Sanders and Mr. Peter Coleman of the Charleston Museum, examined the minute traces of bone material recovered from the sites.

In the actual preparation of the text, John S. Cable prepared the environmental overview, Donald E. Weston wrote portions of both the artifact sorting criteria, and the concluding intersite comparative summary, Suzanne E. Harris prepared the section on the ethnobotanical analysis, and Gerald Baum and Michael Katuna wrote the technical thin sectioning and soils analysis procedures sections, respectively. The majority of the text was written and integrated by David G. Anderson. Drs. James E. Fitting and James W. Mueller provided managerial review throughout the project, and coordinated final production of the report with Commonwealth's graphic, editorial, and reproduction staffs.

A draft of this report was formally reviewed by Dr. Joffre L. Coe (Research Laboratories of Anthropology, University of North Carolina), Dr. Dan F. Morse (Arkansas Archeological Survey), Dr. Robert L. Stephenson (State Archeologist and Director, Institute of Archeology and Anthropology, University of South Carolina), and Mr. Michael B. Trinkley (South Carolina Department of Highways and Public Transportation). A number of other people read all or part of the manuscript and provided commentary, including Paul Brockington, Albert C. Goodyear, Wayne Neighbors, and Lee Novick. The time and commentary these reviewers provided helped to shape the final report, but it should be emphasized that the analyses, interpretations, and conclusions remain those of the authors.

Finally, Mr. Michael Trinkley and Mr. Robert Ferrell of the Environmental Section of the South Carolina Department of Highways and Public Transportation, the contracting agency, provided advice and assistance throughout the project. Mr. Trinkley, staff archeologist for the Environmental Section, visited the sites on a number of occasions while the project was underway, and helped appreciably with the fieldwork. Mr. Trinkley also provided valuable commentary during the analysis and report preparation activity.

THE SOUTHEASTERN COLUMBIA BELTWAY PROJECT IN RETROSPECT

The Southeastern Columbia Beltway Project, sponsored by the South Carolina Department of Highways and Public Transportation, represents one of the first major excavation

reports from the Fall Line area of the state. The field and analysis notes, together with the photograph and artifact collections from each site, have been collated, cataloged, and placed on file at the Institute of Archeology and Anthropology at the University of South Carolina, Columbia, South Carolina. A copy of all notes, photographs, and the assemblage catalog has also been filed with the South Carolina Department of Highways and Public Transportation, Columbia, South Carolina. The collections from the Southeastern Columbia Beltway Project form a major, well documented addition to knowledge about the prehistory of central South Carolina. It is hoped that this report will prove of value in guiding future investigations in the area.

CHAPTER 2

ENVIRONMENTAL SETTING

INTRODUCTION

As Hole and Heizer (1972) comment, understanding the adaptive responses of past human populations to the environment has become a major sphere of study in archeology. Simultaneously monitoring variability in archeological remains and in the environment through time and over space provides archeologists with the opportunity to examine change and diversity in past human behavioral systems in light of correlated change and diversity within their surrounding environments. The highly diverse microenvironmental setting of the four sites selected for mitigation on the Southeastern Columbia Beltway Project set up an excellent opportunity not only to observe changes in human adaptive systems over time, but also to observe synchronic functional variability in these adaptive systems. 38LX5 and 38LX106 are situated high on the southern side of the Congaree Valley slope in an area known as the White Sandhills (Cooke 1936). The sandhills are typified by extremely xeric edaphic conditions (Braun 1950), which support a Jack pine-scrub oak vegetational community today. Therefore, it is expected that these sites will represent adaptive responses to a xeric, upland environment. 38LX64 and 38LX82, in contrast, are located on the broad alluvial floodplain of the Congaree River, which is characterized by lush and diverse bottomland hardwood and swamp plant associations. Consequently, these sites should reflect functions directed toward the utilization of this very different environmental setting.

This section describes the principal aspects of the Congaree River Valley environment that are known to have been important to past human occupants of the Southeast Beltway sites. Included here will be descriptions of the river and floodplain morphology of the Congaree, and of the sandhill upland environment. Additionally, a consideration of paleoenvironments will be presented, as a basis for studying diachronic changes in past human groups.

THE RIVER AND FLOODPLAIN ENVIRONMENT

The four project sites are situated within the upper Congaree River Valley just below the confluence of the Broad and Saluda Rivers near the city of Columbia, South Carolina. The Broad and Saluda Rivers are two of the major

drainages of the South Carolina Piedmont, originating on the eastern slope of the Blue Ridge Mountains. Through most of their courses, the banks of the rivers tend to be heavily downcut and steep, with very minimal floodplain and terrace development. At Columbia, these rivers come together to form the Congaree River. The river channels in the general area of the confluence are characterized by a zone of rocky shoals demarcating the drop-off from the resistant crystalline substructure of the Piedmont into the unconsolidated sands of the Coastal Plain physiographic province. This transitional zone has been called the "Fall Line" (Cooke 1936, Fenneman 1938), a term generated to describe the line of falls and rock shoals that occurs along all of the major drainages of the Atlantic seaboard as they descend from the higher, more resistant substructure of the Piedmont into the softer structure of the interior Coastal Plain beach terraces.

Just below the Fall Line, where the Southeastern Beltway sites are located, the Congaree River Valley undergoes a dramatic change. The riverbeds themselves broaden and flatten as the softer substrate of the Coastal Plain permits the formation of an extensive floodplain due to lateral planation of the river channels (see Colquhoun 1969:8-15). As the rivers begin to meander and emigrate in this medium, the adjacent floodplain becomes structurally complex, being composed of remnant meander scars, oxbow lakes and point bar accretions. These formations are progressively filled in and covered by the sand and clay overbank deposits which are transported to the floodplain by cyclical flooding. From an ecological standpoint, floodplains and their accompanying valley slopes are viewed as extremely rich and diverse biotic environments (cf. Whittaker 1975), and it is in this context that the artifactual material from the Southeastern Beltway prehistoric sites can be interpreted.

The forests of the Congaree floodplain can be divided into three types: swamp, bottomland, and ridge bottoms. Swamp forests occur in areas of excessively wet soils that are saturated continually except in cases of severe drought. Waggoner (1975) describes the following dominant arboreal species from the virgin cypress-gum swamp of the Congaree River Valley: bald cypress (Taxodium distichum), tupelo gum (Nyssa aquatica), water oak (Quercus nigra), and planar tree (Planera aquatica). At present, this forest association appears to be restricted to the area immediately surrounding Congaree Creek. The hardwood bottoms are situated on land that is subjected to frequent overbank flooding and is generally saturated or exceedingly wet during the late winter and spring. Dennis (1967) identifies the following

dominant species for the hardwood bottoms association in the Congaree River Valley: red gum (Eucalyptus gum), cottonwood (Populus heterophylla), white ash (Fraxinus americana), American elm (Ulmus americana), American sycamore (Platinus occidentalis), hackberry (Celtis occidentalis), water oak (Quercus nigra), willow oak (Q. phellos), river birch (Betula nigra), red maple (Acer rubrum) and silver maple (A. saccharinum). The excessively wet soils of the tributary/swamp adjacent to 38LX64 contain this type of plant community. Ridge bottom forests occur on well drained terraces and ridges that are only infrequently subjected to flooding or saturation. As a consequence, less moisture tolerant species such as hickories and oaks tend to dominate. Langley and Marter (1973) list the following dominant species in a ridge bottom forest association on the Savannah River: white oak (Quercus alba), black oak (Q velutina), swamp chestnut oak (Q. michauxii), willow oak (Q. phellous), water oak (Q. nigra), mockernut hickory (Caryz tomentosa), pignut hickory (Carya glabra), sweetgum (Liquid-amber styracifula), yellow poplar (Lirlodendron tulipifera), persimmon (Diospyros virginiana), sourwood (Oxydendrum arboreum), dogwood (Cornus spp.) ash (Fraxinus spp.) and loblolly pine (Pinus echinata). Both 38LX64 and 38LX82 are located on well-drained to seasonally wet soils capable of supporting this type of forest association.

THE WHITE SANDHILLS UPLANDS

The White Sandhills comprise the valley slope and adjacent uplands of both sides of the Congaree River Valley. The sandhills are heavily dissected, approaching the topography of the Piedmont uplands. Braun (1950) indicates that the porous, unconsolidated structure of the sandhills represents the most xeric soil conditions in the entire Coastal Plain. The upland ridge top vegetational community is dominated by a variety of scrub oak species (Quercus laevis - turkey oak; Quercus marilandica - blackjack oak; Q. incana - bluejack oak; and Q. shellata var. margaretta - post oak) and long leaf pine (Pinus palustrus). Other species of pine including slash pine (P. elliotti), shortleaf pine (P. echinata) and loblolly pine (P. taeda) are also abundant. Sites 38LX5 and 38LX106 are located on the top and slopes, respectively, of upland ridge tops. Some of the driest ridge tops may lack second story tree development, although it does not appear to have been the case in the project area. In severe cases, bald spots may occur which can support only a few herbaceous xerophytes and wire grass (Aristida stricta).

In contrast to the xeric ridge top-soils of the sandhills, the soils of local drainage heads and stream basins are not highly permeable and consequently are generally moist. 38LX5 is located adjacent to a spring head and drainage that is characterized by the Johnston soil series (Lawrence 1976). This series is composed of a dark gray to black, moderately permeable sandy loam which supports a water-tolerant hardwood community composed of a number of large nut-producing oaks such as Quercus falcata.

PALEOENVIRONMENTS

Until recently, the vegetational history of the South Carolina Fall Line was largely unexplored. Statements about paleoenvironments had to be extrapolated from work performed elsewhere in the Coastal Plain, Piedmont and Blue Ridge Provinces throughout the southeastern Atlantic Coast (Watts 1971, Whitehead 1972, 1973). Watts (1979) has recently reported on the results of pollen coring at White Pond, in the sandhills near Elgin, South Carolina, however, providing direct insight into the vegetational history of the Fall Line area. His results are summarized below.

At 19,100 radiocarbon years before present, the vegetation of the midlands of South Carolina consisted of stands of jack-pine and spruce with sandhill and prairies in locally xeric situations where water table levels were low and the sandy soil matrix allowed for high moisture permeability. Watts surmises that this type of environment may have supported extinct megafauna. Hardwoods would have been confined to the bottomlands and seasonally or permanently wet drainages in the uplands.

Around 15,000 years BP, oak and hickory began to become more abundant in the uplands as it gradually replaced the jack-pine-spruce parkland. By 12,800 years BP, the parkland was almost fully replaced by a broad-leafed forest similar in composition to that found in the northern hardwood forests of western New York. Oak dominated the forest, with substantial proportions of hickory, beech, and ironwood. Watts suggests that as much as 30 percent of the forest cover at this time was contributed by beech and hickory. Thus, by 10,800 BC, the uplands and floodplain of the Congaree River were typified by closed canopy hardwood forest. Local climate was probably cooler and moister than at present.

At approximately 7500 BC, the diverse mesic forest described above had been replaced by a mixed forest dominated by oak and "southern pines." Watts attributes this change to a longer and warmer growing season and a generally drier climate. It is possible that the oak species represent drought resistant scrub forms, but this is uncertain. The appearance of swamp species in the pollen record (blackgum and sweet gum) suggests that swamps were forming at this time in coastal river floodplains.

Unfortunately, radiocarbon dates were not available for the secession after 7500 BC. However, the predominant trend is for the continuance of an oak-pine forest up until the present, with the proportion of pine increasing at the expense of oak.

As can be surmised from this brief overview, the post-Pleistocene vegetation of the study area has undergone a number of shifts and changes in plant community structure and species composition. Prior to 7500 BC, vegetational change was fairly rapid and dramatic. By 7500 BC, however, the environment was beginning to stabilize into the modern pattern, probably with scrub oak and pine dominating in the White Sandhills and closed canopy hardwood communities remaining in the more mesic bottomlands and swamps of the Congaree River floodplain and terrace formations. Thus, adaptation for most of the period of human occupation in the study area can be viewed as a response to a gradually drying climate where change in vegetation was slight and directional.

CHAPTER 3

ARTIFACT ANALYSIS
DEFINITIONS AND PROCEDURES

INTRODUCTION

The data assemblage recovered from the four sites during the Southeastern Columbia Beltway Project included large and diverse quantities of lithic and ceramic artifacts, as well as a number of soil, charcoal, flotation, and bone samples. The lithic artifacts were sorted first by raw material and then by functional category. Ceramic artifacts were sorted by both paste and surface finish. Definitions for all lithic and ceramic categories employed in this report are included in this section. Detailed measurements of all hafted bifaces and other formal stone tools were then recorded, employing definitions found in Ahler (1971) and House and Wogaman (1978). Charcoal and flotation sample data were submitted for ethnobotanical analysis, and for absolute dating. The results of these analyses form separate sections in the text.

Summaries of all artifactual and specialized data are included in this volume, which is general and synthetic in orientation. Detailed provenience, sequence and distributional information for all lithic and ceramic artifacts are contained in a separate data appendix volume, together with detailed measurements for all of the formal stone tools recovered. The appendix volume also contains the primary data from the soils analysis, together with a listing of all proveniences with charcoal and bone remains. Copies of the appendix volume are on file with the field notes at the University of South Carolina and with the South Carolina Department of Highways and Public Transportation.

LITHIC RAW MATERIAL IDENTIFICATION

Lithic artifacts were sorted into ten raw material categories prior to subsequent analysis: chert, ferruginous sandstone, quartz, quartzite, rhyolite, sandstone, schist, slate, steatite, and other (unidentifiable). Use of these categories was designed to generally complement identifications and classificatory terminology employed by other archeologists working in the central South Carolina area (e.g. House and Wogaman 1978:53-57, Anderson, Lee, and Parker 1979:10, Wogaman, House, and Goodyear 1976, House and Ballenger 1976:126-127). The use and application of lithic raw material terms by local archeologists, however, tend to vary somewhat, rendering

comparison difficult (Novick 1978). In order to begin developing a standardized terminology, 15 raw material samples were submitted for thin-sectioning, encompassing specimens classified in the present study as chert, slate, rhyolite, quartzite, ferruginous sandstone, and schist. Several samples each of chert and rhyolite were submitted for analysis, in an effort to determine whether significant variation occurred within apparently similar or identical raw materials. Several raw material categories were not examined, including quartz, steatite, sandstone, and other (unknown), primarily because of their readily identifiable nature or, in the case of the unknown materials, the small and largely nonartifactual nature of the sample. The identifications reported here are based on, and complement, recent archeological and petrographic analyses reported by Novick (1979) from the Fall Line along the Upper Lynches River, South Carolina, and by Weisenfluh (1978:135-139) from the central South Carolina Piedmont, as adopted by House and Wogaman (1978:53-57).

LITHIC THIN SECTION ANALYSIS RESULTS

The 15 lithic specimens submitted for analysis included 14 artifacts recovered from aboriginal quarry areas or Fall Line sites, together with an apparently unworked sample of chert from an outcrop along the Wateree River in Sumter County. The examination included microscopic inspection of all specimens, with relevant petrologic descriptions prepared as necessary to identify each material. All megascopic and microscopic identifications were made by Dr. Gerald R. Baum of the Department of Geology at the College of Charleston, Charleston, South Carolina.

Chips of each raw material were taken and mounted on glass slides. The samples were prepared by cutting chips slightly smaller than the glass slide (25 x 45 mm). One face of the chip was polished by hand lapping on a glass plate using progressively finer grits (240 to 600). The polished chip was mounted on a glass slide using Hillquist thin section epoxy. The chip was ground to a thickness of 0.03 mm using an Ingram saw and grinder followed by hand lapping on a glass plate.

All of the color names and symbols are from the National Research Council Rock Color Chart. The appropriate geological terminology characterizing each raw material is underlined in the following section. The more concise, non-technical terms are used throughout this report, however, "quartzite" is employed rather than the more accurate "chalcedony cemented quartz arenite." Reference should be

made to the proper geological descriptions, however, in any comparative analyses with materials or assemblages from other sites or localities.

CHERT

Six samples of chert from five separate source areas were examined, including the Allendale quarry (38AL14), the Buyck's Bluff site (38CL17), an outcrop on the Lower Santee near Lake Marion (38CR33), and an outcrop on the Wateree in Sumter County. One piece of "black chert" from the Manning site, 38LX50, was also examined, and proved to be an igneous flow banded material. The diversity of samples investigated reflect the range in cherts encountered in the general Fall Line area, and similar materials were recovered from the Beltway sites. A primary research goal of the project was to more accurately identify these raw materials, and to determine if macro and microscopic criteria might be developed to separate artifacts from differing source areas.

Specimen 1 - Unheated Allendale County/Rice Quarry Chert Flake (38AL14)

Megascopic

Forams (?) in a very pale orange (10YR8/2) chert matrix. Presence of some chalcedony.

Microscopic

Fine to very fine crystalline, mostly very fine, chert replaced bryozoans, ostracods, foraminifera, ? echinoids, sponges and abraded pelecypods. Chalcedony infilling vug and interparticle porosity. Chalcedony bearing, chert replaced linestone (chalcedony bearing, chert replaced ? biosparrudite).

Specimen 2 - Thermally Altered Allendale County/Rice Quarry Chert Flake (38AL14)

(Same material as Specimen 1, heated for 20 hours at 360°C)

Megascopic

Fossils, principally pelecypods, in a grayish orange pink (5YR7/2) chert matrix. Chalcedony infilling vuggy porosity.

Microscopic

Very fine to fine crystalline, mostly very fine, chert replaced foraminifera, bryozoans, ?red algae, and abraded and bored pelecypods. Chalcedony principally infilling vug and interparticle porosity. Chalcedony bearing, chert replaced limestone (chalcedony bearing, chert replaced ?biosparrudite).

Specimen 3 - Chert Flake From an Outcrop Near Lake Marion, Clarendon County (38CR33)

Megascopic

Fossils, principally bryozoans, in a dark yellowish orange (10YR6/6) chert matrix. ?Oil in interparticle porosity.

Microscopic

Very fine to fine crystalline, mostly very fine, chert replaced bryozoans, foraminifera, abraded pelecypods and foraminifera. Chalcedony principally infilling vug and interparticle porosity. Some oil lining periphery of allochems and filling reduced interparticle porosity. Chalcedony bearing, chert replaced limestone (chalcedony bearing, chert replaced ?biosparrudite).

Specimen 4 - Chert Flake From an Outcrop (Buyck's Bluff) on the Congaree River, Calhoun County (38CL17)

Megascopic

Abraded molluscs, principally pelecypods, in a pale yellowish orange (10YR8/6) chert matrix.

Microscopic

Very fine to fine crystalline, mostly very fine, chert replaced gastropods, ?barnacles and abraded pelecypods. Chalcedony and mega-quartz infilling interparticle porosity. Very fine to coarse, detrital monocrystalline quartz. Chalcedony bearing, chert replaced limestone (chalcedony bearing, chert replaced ?biosparrudite).

Specimen 5 - Chert Nodule From an Outcrop on the Wateree River, Sumter County

Microscopic

Pelecypod, chert and chalcedony replaced limestone (pelecypod, chert, and chalcedony replaced biosparrudite).

Specimen 6 - "Black Chert" Retouched Flake, 38LX50.
Material Hypothesized as Originating in the
Ridge and Valley Physiographic Region, Tennessee

Megascopic

Black (N1) ?obsidian with vugs.

Microscopic

Calcite infilling vugs, Igneous flow banding.
Partially devitrified, felsic obsidian.

Discussion: Five of six chert samples examined (Specimens 1-5) exhibited roughly similar mega and microscopic composition, in spite of origins in different areas within the Coastal Plain. Alteration (heat treatment) did not produce a marked change in composition observable under visual light magnification (up to 200x). Separation of coastal South Carolina chert sources on an other than intuitive basis will require close examination of constituant fossil assemblages for marker species. As an aside, it should be noted that the "red" algae included in Specimen 2 does not refer to the oxidized reddish color of the sample produced by heating. Red refers to a group of reefal or intertidal algae belonging to Rhodophycophyta. Chert Specimens 1 through 5 are all characteristic of the Thanetian (upper Paleocene) Black Mingo Formation, which outcrops in an arcuate belt extending from Allendale to Georgetown Counties. Some of these specimens may obtain from the middle Eocene Santee Limestone; careful examination of the outcrop areas would be necessary to differentiate the two formations.

The most surprising result of the analysis was the identification of what has locally been called "black chert" as an igneous, partially devitrified felsic obsidian (Specimen 6). The sample displays igneous flow banding, as well as lacking sedimentary textures; it essentially consists of opal (amorphous, isotropic silica) which has been partially devitrified to quartz. A similar, usually greenish colored fine grained material from the Fall Line/Piedmont area of South Carolina has recently been identified by Novick (1978, 1979) as welded, vitric tuff. The present analysis, and that by Novick, indicates that at least some of the fine textured isotropic materials recovered from the Fall Line area and classified as extralocal cherts may actually be raw materials originating in the Piedmont. This is of considerable archeological

importance, since at least some specimens similar to the sample thin sectioned have been identified as of possible extralocal, Ridge and Valley Province origin (House and Ballenger 1976:127, Wogaman, House, and Goodyear 1976:24). Specific source areas for the black devitrified obsidians and welded tuffs remain to be determined.

FERRUGINOUS SANDSTONE

A single specimen of ferruginous sandstone was examined, from excavation Unit 33, Level 3 (40-60 cm), at Site 38LX5. The material was observed in moderate quantities at each of the four sites during the 1978 data recovery program, and a number of obvious feature/concentrations of the material were recognized. While aboriginal use of the material is virtually certain, specific functions remain to be determined. Probable use included hearth stones, abraders, and pigment (Anderson, Lee, and Parler 1979:68-69).

Specimen 7 - Ferruginous Sandstone Nodule (38LX5, EU33, Level 3).

Megascopic

Hematite cemented, poorly sorted, very coarse sand size to fine rudite size (mean very coarse sand size) quartz sand. Appears matrix supported. No observable fossils or sedimentary structures. Dark reddish brown (10R3/4).

Microscopic

Poorly sorted, angular to subangular, very coarse to coarse sand size, monocrystalline quartz. A few polycrystalline quartz grains. Hematite as cement. No textures indicating normal depositional processes (?formed in soil horizon). Hematite cemented quartz arenite.

Discussion: The specimen appears to reflect in situ cementation in a soil horizon, since it lacks sedimentary structures indicative of normal depositional processes. In the general project area two archeological sites, 38LX54 and 38LX62, are located on Fuguay loamy sand, a soil type that is characterized by numerous plinthite (ferruginous sandstone) nodules at depths of from 37 to 60 inches (Lawrence 1976:19). A local origin for this material, on or near one or more of the project sites appears probable. Aboriginal use may have been opportunistic and casual in nature, because of fairly

QUARTZITE

A flake of what is locally described as quartzite (cf Anderson, Lee, and Parker 1979:64, Wogaman, House and Goodyear 1976:30) was examined, from excavation Unit 7, Level 2 at 38LX64. The material was a distinct minority item on the project sites, suggesting possible importation from a considerable distance. Identification was particularly desired since this material is described by a variety of terms in the general region, including quartzite, sandstone (Brockington 1979:4), and orthoquartzite (House and Wogaman 1978:57).

Specimen 8 - Quartzite Flake (38LX64, EU7, Level 2)

Megascopic

Noncalcareous, fairly well sorted, chalcedony cemented monocrystalline quartz. Light brown (5YR6/4). No observable fossils or sedimentary structures.

Microscopic

Subangular to subrounded, coarse to very coarse, monocrystalline quartz. Partially cemented by chalcedony. Chalcedony cemented quartz arenite.

Discussion: The sample is characteristic of both the Upper Cretaceous Black Creek formation, as well as the Thanetian (upper Paleocene) Black Mingo Formation. The material is reported from the lower Santee River, in Berkeley and Georgetown Counties, where it is characterized by a considerable range in texture and fossiliferous inclusions. Its presence on the Beltway project sites may reflect the movement of peoples and/or materials up and down the Congaree-Santee river system.

RHYOLITE

Four samples of a material locally classified as rhyolite were submitted for thin-sectioning analysis, in an effort to produce a more specific identification. The material was recovered in moderate quantities in three of the four project sites; it was absent at 38LX106. The material is light gray or light green to grayish-pink in coloration, and was uniformly fine grained, with only occasional banded specimens. It may be confused, during

sorting, with argillite. The diversity in color was believed to represent a number of sources and possibly materials; limited experiments suggest that some of the pinkish gray material may be caused by accidental heating of other-colored material. Two fragments thin sectioned were from the Beltway project sites (Specimens 9 and 10), and two similar appearing fragments (Specimens 11 and 12) were materials identified as rhyolite from Chesterfield County. The latter two specimens were examined in an effort to see if a recent typology for Fall Line lithics developed for that area (Novick 1979) might have applicability to the Beltway assemblages.

Specimen 9 - Flow Banded Rhyolite Flake (38LX5 Grab Surface Collection, Unit 7)

Megascopic

Medium light gray (N6). Banded, dense.

Microscopic

Metamorphosed, devitrified, flow banded, chlorite and biotite bearing felsic flow.

Specimen 10 - Rhyolite(?) Flake (38LX5, EU6, Level 2)

Microscopic

Metamorphosed, silicified, chlorite, sericite and quartz bearing tuff.

Specimen 11 - Rhyolite Flake (38CT88, Surface)

Microscopic

Fine grained, hornfeld meta-volcanic.

Specimen 12 - Rhyolite (?) (38CT88, Surface)

Microscopic

Chlorite bearing quartz meta-siltite.

Discussion: The analysis confirmed the general impression that the various fine grained materials subsumed under the term rhyolite included a diversity of minerals, probably deriving from a number of source areas. All of the specimens were found to be metamorphic in nature, supporting an origin in either the Piedmont or the Blue Ridge Provinces. Some error may obtain when sorting rhyolite from slate, tuff, or argillite, unless obvious flow banding is present. The analysis

importance, since at least some specimens similar to the sample thin sectioned have been identified as of possible extralocal, Ridge and Valley Province origin (House and Ballenger 1976:127, Wogaman, House, and Goodyear 1976:24). Specific source areas for the black devitrified obsidians and welded tuffs remain to be determined.

FERRUGINOUS SANDSTONE

generally supports macroscopic sorting criteria developed by Novick (1979) for the Upper Lynches River area. The minerological diversity encountered suggests that resolving aboriginal Piedmont lithic resource procurement behavior may be extremely difficult because of a probable large number of sources. Furthermore, the analysis suggests that extensive, additional thin-sectioning and other forms of petrologic analysis will be necessary to help resolve current typological and terminological generalities or ambiguities.

GNEISS

A small lump of gneiss, described in the present report as schist, was submitted for analysis from 38LX64. The material was observed in an apparently unmodified state on all four of the project sites (including 38LX106), suggesting possible aboriginal procurement and use.

Megascopic

Quartz bearing. Gneissic texture.

Microscopic

Medium grained, quartz/hornblende/plagioclase gneiss.

Discussion: The possible function of this material is currently unknown; its occurrence in artifact concentrations argues for a cultural explanation for its presence on the sites.

SLATE

One flake of slate, also known locally as argillite (cf. House and Ballenger 1976:126-127) was submitted for analysis. Identification for this material was due, in part, to the interchangeable usage of the two terms. A specimen of the material from Chesterfield County was used because slate artifacts from the Beltway Project were either too small or weathered to thin section effectively, or else were formed into tools which were not selected for destruction by this sectioning. The material formed a small, minority item in the Beltway assemblage.

Specimen 14 - Slate (38CT88, Surface)

Microscopic

Epidote, sericite bearing meta-siltite.

Discussion: Use of the terms "slate" or "argillite" to describe local materials would appear justified, provided consistent sorting criteria are used and technical descriptions appended as necessary to accommodate observed variation.

Lithic Artifact Sorting Criteria

Lithic artifacts were sorted employing a functional typology identical in most respects to that developed by John House (1975; House and Ballenger 1976:89-93; House and Wogaman 1978:58-61). The emphasis in this typology is perceived artifact function, that is, categories were chosen that attempt to measure prehistoric site-use patterns. The lithic assemblage was sorted first by raw material and then by evidence for modification or use as a tool. Unmodified debitage was sorted by reduction stage in an effort to delimit manufacturing sequences and resource procurement systems. The relative proportion of initial to later stage reduction debris, for example, might suggest manufacture as opposed to maintenance or upkeep of tools, or alternatively, the relative proximity of raw material sources. The occurrence of one or a few tool types on a site or during a specific occupation might argue for a more specialized site use than if a diversity of forms were present. Examination of the probable function of tools found on a site, together with the nature of the associated debitage assemblage, should, it is assumed here, permit moderately reliable inferences as to how the area was used in the past.

LITHIC ARTIFACT CATEGORIES

FIRE-CRACKED ROCK (FCR)

Fragments of rock, usually quartz, which show evidence of having been fired and broken by heat. They are recognized by one or more of the following characteristics: angular chunks with jagged, irregular fractures (striking platforms and bulbs of percussion not present), reddened or blackened discoloration, and pot lids. Their presence is believed to indicate habitation; also the use of "hot rocks"

for cooking in earth ovens, stone boiling, or some similar practice. House (1975:69) suggests that at least some fire-cracked rock may represent the recycling of quarry waste and broken cobble tools for use in cooking activity. Much of the fire-cracked rock in this study is small (< 1.5 cm), fragmentary, and is sometimes difficult to separate from the unmodified "chunk" debitage category.

FERRUGINOUS SANDSTONE

Unmodified fragments of silicified sandstone, identified in the thin-sectioning analysis as hematite cemented quartz arenite. These specimens are typically dark red to reddish gray in color, have a high iron content, very coarse sand inclusions (up to 3 mm), and are nearly all pebble-sized (under 20 grams). Some may represent unrecognizable weathered abrader fragments. Ferruginous sandstone concretions exhibiting apparent intentional modification were categorized separately, under ferruginous sandstone abraders. The material may have served as an abrader in stone (core/tool edge preparation), bone (needle, and/or other tool) or wood (sanding or smoothing) working functions.

UNMODIFIED GRAVEL

Any unmodified, naturally occurring gravel. Most specimens average 10 to 20 mm in diameter and are waterworn. They are believed to be alluvial deposits, and are unlikely to reflect aboriginal behavior. Their presence in the floodplain sites in quantity suggests moderately heavy flooding of this zone in the past.

SPLIT GRAVEL

Any transversely split gravel or pebble fragment. These usually average 30 mm in diameter, and weigh under 10 grams. Cultural origin and association is questionable. They may represent discards from unsuccessful attempts to produce flakes by bipolar technique.

QUARRY WASTE

Large cortex-covered cobbles with (usually) poor conchoidal fracture and evidence for the removal of one to three flakes. They are believed to represent rejected raw materials found unsuitable for chipping, or material found acceptable but not utilized or reduced prior to loss or discard.

CORES

Masses of material, with (usually) good conchoidal fracture, from which a number of flakes have been detached. Included in this category are specimens with both prepared and unprepared striking platforms. Cores lack a prepared tool edge, or edge damage resulting from use as a tool.

CHUNKS

Small angular fragments believed to be produced during early reduction/manufacturing stages. Chunks "are distinguishable from cores by lack of scars of detached flakes...(and) from flakes by the lack of observable striking platforms, dorsal and ventral forces, and other characteristics of flakes" (House and Ballenger 1978:59).

PRIMARY DECORTICATION FLAKES

Primary decortication flakes exhibit cortical material over their entire dorsal surface, with no evidence for post-detachment flaking or previous flake removal. They are assumed to represent flakes struck during initial core reduction.

SECONDARY DECORTICATION FLAKES

Cortical flakes exhibiting one or more scars from previous flake removal on their dorsal surface, and no evidence for post-detachment flaking. Like primary decortication flakes, this debitage category is assumed to result during early raw material reduction/manufacturing activity.

INTERIOR FLAKES

Debitage with recognizable flake attributes and no adhering cortex, exclusive of flakes of bifacial retouch. These are assumed to reflect later stages of raw material reduction and stone tool manufacture.

FLAKES OF BIFACIAL RETOUCH (FBRs)

Flakes of bifacial retouch, or FBRs, are flat to slightly curved, thin, with (usually) feathered edges and steep platform angles commonly characterized by crushing

or grinding. The dorsal face is characterized by two or more flake scars running roughly parallel to the major axis, reflecting previous flake or FBR detachment. In the present study, only intact and proximal ends were employed to sort FBRs from other flakes; it is probable that a moderate percentage of distal fragments may have also come from FBRs. These artifacts, sometimes referred to as biface thinning flakes (House and Ballenger 1976:89-90), are believed to have been produced during the thinning or resharpening of bifaces (White 1963:23-27), although similar flake morphologies can obtain from unifacial retouch/reduction. The category is assumed to reflect late or final reduction/manufacturing activity.

RETOUCHED FLAKES

Flakes exhibiting evidence for unifacial tool use in the form of intentional or assumed functionally related wear retouch. Intentional retouch is characterized by deliberate flake removal along the artifact margin; wear retouch is characterized by a jagged, crushed, polished, or otherwise damaged margin. The category is exclusive of the formal tool categories described below. It is assumed that edge damage (wear retouch) occurred through use as a tool, such as in cutting functions, or the modification of bone, wood, or other materials (cf Tringham et al. 1974). Some wear damage may be accidentally or unintentionally produced, however, and some identification error is probable. The number of flakes and the number of tool edges were both recorded, by provenience, to better control for the extent of tool use. It is assumed that the category reflects somewhat more opportunistic and casual tool manufacture and use than the presence of elaborate (formal) unifacial tools.

DART POINTS

Symmetrical (typically, unless unevenly resharpened) pointed bifaces over 5 mm in thickness, with distinct basal modification for hafting. Darts were apparently multifunctional, primarily heavy-duty cutting and sawing tools (House 1975:60). Relatively few seem to have functioned solely as projectile points (Ahler 1971). In the South Carolina area the category is assumed to occur from the Paleo-Indian through the Early Woodland era, prior to the introduction of the bow and arrow. Evidence for resharpening in the form of asymmetrical blades, beveled edges, or serrations (cf Goodyear 1974) is frequently

distinct. The presence of these artifacts is assumed to reflect multitask operations, particularly those associated with hunting and subsequent kill reduction (butchering, hide preparation).

ARROW POINTS

Symmetrical pointed bifaces under 5 mm in maximum thickness, with (typically) distinct basal hafting modification, sharp tips, and low functional angles ($< 45°$) on blade edges (cf House 1975:60). It is assumed that these actually functioned as projectile points, possibly associated with the use of the bow and arrow. In the South Carolina area a later Woodland, Mississippian, or Protohistoric temporal distribution is assumed. Some use in piercing and cutting functions may have occurred, although evidence for resharpening is typically absent.

ARROW AND DART TIPS AND BASES

Recognizable tips and bases of the categories described above. Thickness and edge angle are the only reliable sorting criteria in the case of tip fragments, and even these are of little use if only a small portion of the specimen is present. It is generally assumed that tips were lost or discarded at or near locations of tool use (assuming functionally related breakage), whereas basal fragments may occur in greater relative proportion at rehafting loci, which may be or include base camps. The ratio of tips to bases, therefore, may be a significant measure of site use. A high tip to base ratio at a site or component suggests an extractive (hunting/butchering) station, while a low tip to base ratio may indicate removal of basal fragments from the haft at a base camp (House 1975:60, Griffin 1974).

PREFORMS

Thick bifacially-worked ovates. These are asymmetrical unfinished biface tools which lack careful edge preparation. They were either discarded because of their unsuitability for further reduction, or they represent the unfinished, roughed-out blanks which would later have been completed. These specimens do not appear to have been used as cutting or multitask tools prior to discard.

OTHER BIFACES

Crude bifaces or biface fragments that do not appear to exhibit much more than irregular bifacial workmanship. These may include bifacial core fragments, crude preform fragments, or bifacial tools exclusive of the other formal categories as defined. The category is designed to accommodate all bifacial specimens not readily subsumed into other categories.

CHOPPERS

Large (> 75 grams) bifacial or unifacial tools characterized by a moderately steep working edge angle (c 50-70°) and evidence for use in the form of battering or crushing. These are assumed to have functioned in heavy-duty cutting/butchering/ shredding operations.

STEEPLY CHIPPED UNIFACES

These artifacts have steep beveled working edges with a zone of retouch on one or more margins. The working edge usually ranges from 50 to 19° and is characterized by long narrow flake scars indicative of intentional retouch. It is assumed that these tools were used in the processing of bone or wood (cf Wilmsen 1970:71-72). This category includes hafted and unhafted end and side scrapers and hafted end scrapers with graver spurs.

BLADES

Systematically produced flakes which have a length to width ratio of at least two to one and, on the dorsal surface, the scars of two or more flakes previously removed parallel to the main axis (cf Bordes and Crabtree 1969). These tools are assumed to have been used in cutting functions, usually without further modification.

GRAVERS

Flakes with a small tip or spur formed either by chipping the edges away from either side or by the wearing of a corner into a projection. Several functions have been suggested. MacDonald (1968:100) states that gravers would

be suited for etching designs on bone and antler, or for the manufacture of eyed-needles as reported by Roberts (1941:79). Goodyear (1974:55) also suggests they would be useful in cutting animal skins.

SPOKESHAVES

Flakes with steep unifacial retouch forming a working edge which is markedly concave and may be considered suitable for the scraping or shaving of narrow convex surfaces (Goodyear 1974). Specimens may or may not be modified for hafting.

PIÈCES ESQUILLÉES

Rectangular flakes exhibiting "bipolar flaking from paired crushed and battered surfaces. Primary flakes driven from both faces by direct hard percussion exhibit extreme concentric ripples emanating from the point of percussion: on the edge opposite the primary platform, multiple short flakes are driven back on both faces, the result of the force reflected by a hard anvil. The irregularly battered, or primary, edge tends to become concave with extreme use while the evenly crushed or secondary edge usually maintains a receding straight profile determined by the shape of the surface which is acting as the anvil" (MacDonald 1968: 85-86). These objects are assumed to have functioned as wedges for splitting wood or bone; some accidental or unintentional formation may accrue from bipolar cobble splitting activity.

DENTICULATES

Flakes exhibiting two or more intentionally placed projections or serrations which may or may not be evenly spaced along the margin. These tools may have functioned as shredding tools.

HAMMERSTONES AND HAMMERSTONE FRAGMENTS

Rounded cobbles exhibiting one or more areas of battering or crushing, or fragments of cobbles with battered areas visible. Intact specimens usually weigh from 50 to several hundred grams. These tools are believed to have functioned primarily in stone reduction/manufacturing activity, with some specimens possibly used as plant processing crushing/mauling tools, or to splinter bone for marrow extraction or subsequent processing/bone working.

FERRUGINOUS SANDSTONE ABRADERS

Cobbles or fragments of ferruginous sandstone exhibiting one or more zones of apparent abrading. These areas may include grooves, circular depressions, or flat to slightly concave surfaces. Formation through use as an abrader, or by abrasion with some other, more resistant material, is inferred. Due to the weathered nature of most specimens, positive identifications cannot be made. These specimens are assumed to have been used in wood and bone smoothing operations, or may have been abraded for red pigment.

ABRADER FACETED COBBLES

Cobbles or fragments exhibiting one or more flattened or crushed areas indicative of intentional abrasion. This category includes all raw materials exclusive of ferruginous sandstone, with most specimens of igneous or metamorphic origin. These objects are assumed to have been used in abrading, smoothing, or polishing operations. Some identification error is possible, particularly with naturally flattened or smoothed specimens.

PITTED COBBLES

Cobbles or fragments with one or more battered or pecked concave depressions, usually centered on a flat or nearly flat face. These objects are assumed to have functioned in nut cracking or bipolar lithic reduction operations. Close examination of the pit areas may permit functional interpretations for individual specimens (cf Spears 1975, 1977.

GRINDING BASINS

Large cobbles or fragments with one or more flattened or slightly convave surfaces extending over appreicable proportions of one or more faces. These working surfaces may exhibit pecking, striations, or extreme smoothing when conpared with the remainder of the specimen. Grinding basins are assumed to have functioned in plant (seed or nut) processing operations, with possible alternative functions including pigment preparation and mixing .

CERAMIC ARTIFACT SORTING PROCEDURES

Ceramic artifacts recovered from the Beltway sites included fragments of vessels, as well as fired clays possibly originating from aboriginal hearths or burned structures. Fired clay fragments were recovered from all four sites and were weighed by provenience unit. While some of the fired clay is unquestionably a byproduct of aboriginal site use, natural origin due to fire or possibly lightning cannot be ruled out for at least some of the assemblage. The incidence and distribution of fired clay was examined over each of the four sites, following the assumption that concentrations of this material might indicate former hearth or structure areas. The weight of fired clay recovered from each provenience is given, for each site, in the appendix volume.

Pottery fragments were common at 38LX5, rare at 38LX64 and 38LX82, and absent from 38LX106. Sherds were sorted first by paste and then by surface finish, in an effort to delimit manufacturing variability within the assemblages. Weight data were recorded for the entire pottery assemblage by provenience, with frequencies recorded for specific paste/finish combinations. This information, recorded over all proveniences from the project sites, is included in the separate appendix volume. Specific temporal categories described here are discussed with the artifact asemblages from each site.

PASTE SORTING CRITERIA

The analysis of the ceramic fabric, or paste, has long been recognized as an extremely useful and productive tool in both classificatory and processual studies. The role of constituent paste elements in the development of taxonomic frameworks is hardly unknown in the Southeastern United States, where some of the most intensively studied ceramic materials have been delimited largely on the basis of criteria such as "fiber tempering" or "sherd tempering." Paste categories were delimited by the presence or absence of tempering material, and were established to permit rapid macroscopic sorting.

Five distinct pastes were recognized in the pottery assemblage from the Southeastern Columbia Beltway Project, including sand, coarse sand/grit, sand/red clay, micaceous, and white clay/grog tempered categories. The assemblage was sorted by these categories in an effort to delimit possible paste/finish and/or temporal (cultural) associations. No examples of fiber or shell-tempered pottery were observed, and no true "sherd" tempered ware, characterized by lumps of

ground up pottery, was noted. One paste category was caracterized by white clay/grog inclusions, although these do not appear to derive from reduced sherds.

SAND

Paste characterized by particles of medium sand, using the modified Atterberg grade scale (Butzer 1971:164) in which medium sand equals .06 - .2 mm. The particles are frequently so small that the paste may appear "temperless" to macroscopic visual examination, although a sizable proportion of sand may be present and even felt when rubbing the surface of the sherd. Fine sand (.002 - .02 mm) may be present in the paste, although the actual size range includes medium grade sand. The occasional occurrence of a larger sized inclusion in an otherwise temperless, or visually temperless, paste was considered accidental and not sufficient for the placement of a sherd in another paste category. Although described as a "sand tempered" paste, many of the inclusions may be natural, occurring in the exploited clay sources. South (1973) has established the term "nontempered" to describe pastes where the deliberate admixture of tempering elements is not apprent. This category was not employed in the present study, since recognizable "nontempered" sherds were not evident, and separation of the sand paste wares along tempered-nontempered lines was considered a highly subjective exercise, barring control for the nature of local clay sources (cf Trinkley 1973). The sand paste category includes all medium sand pastes exclusive of those characterized by micaceous inclusions or a pronounced red clay matrix.

COARSE SAND/GRIT

Paste characterized by the presence of numerous macroscopically visible inclusions of sand. Using the modified Atterberg grade scale as a reference, this would refer to pastes with coarse sand (.2 - 2.0 mm) and occasionally fine pebbles (2.0 - 6.0 mm) present. Unlike the sand paste category, very little fine sand was present in the matrix, which was nearly pure clay with a seemingly deliberate admixture of coarse sand. No evidence for intentional crushing of the inclusions was noted. The absence of fine sand makes this category easily separable from the sand tempered paste described above.

MICACEOUS INCLUSIONS

Sand or sand/red clay paste pottery with an unusually high incidence of small (.2 to 1.0 mm) micaceous inclusions. Other than the presence of the mica flakes, the paste is indistinguishable from the two sand tempered wares. The mica does not exhibit milling and appears to be a natural inclusion in the paste material.

SAND/RED CLAY

This paste is similar to the sand category described above, with the exception that the clay matrix is characterized by a pronounced light to dark reddish brown color (5YR5/3). Separation of this and the sand paste category was made to test for the possibility of different finish or cultural associations, suggesting the exploration of different clay sources.

WHITE CLAY/GROG INCLUSIONS

Paste characterized by the presence of lumps of white fired clay (grog). These lumps occasionally produce a rough lumpy appearance on one or both surfaces of a sherd, and are considerably different in color and texture than the surrounding paste. Other inclusions may be present, such as sand, but the presence of white clay lumps places a sherd in this category. The relationship of this paste category to South's (1973) Wilmington and Hanover "sherd tempered" wares remains uncertain; it is suggested that local "sherd" tempers may include nonsherd fired clay fragments, a common phenomenon elsewhere in the southeast (cf. Phillips 1970).

SURFACE FINISH SORTING CRITERIA

Twelve specific surface finish categories, and a category for nondiagnostic or unrecognizably finished sherds, were observed in the ceramic assemblages from the Beltway sites. The term finish refers to the condition of the sherd's exterior surface and includes treatment that might be regarded as either decorative or functional. The terminology used generally follows that established by Ford and Griffin (1939) and Shepard (1956).

PUNCTATE, LINEAR SEPARATE

Linear separate punctations; a linear arrangement of indentations made with a tool or finger while the paste was plastic. Each punctation is separated from the next nearest punctation, an effect caused by completely removing the tool from the surface of the vessel prior to the next application. The tool may be reed, bone, shell, or anything capable of producing a punctation. This category includes all separately punctated sherds with the exception of sherds punctated exclusively near the rim, as is sometimes seen on Pee Dee and Irene ceramics (Caldwell & Waring 1939, Coe 1952, Reid 1967).

PUNCTATE, DRAG AND JAB

A linear arrangement of continuous punctations made with a tool or finger while the paste is plastic. The tool is not removed from the vessel surface between punctations; rather it is "dragged" prior to indentation. This results in a continuous linear decoration that can approach an incised appearance if the punctations are close enough together.

PUNCTATE, RANDOM

Random punctations applied to the surface of a vessel while the paste is plastic. No linear or other pattern could be discerned in the spacing of the punctations, which may occur on part or over the surface of the vessel.

INCISED

Lines over 1 mm wide drawn on the surface of the vessel, usually while the paste was plastic, although occasionally drawn (engraved) after firing. Some of these specimens may actually reflect brushing or scraping smoothing marks.

CORD MARKED

Cord impressions created by the application of a cord-wrapped paddle to the plastic paste of the vessel. The twist of the cords is usually discernible, and the occurrence of this twist is the primary attribute to observe. If no discernible twist impressions are noted, the sherd is not to be placed in the category of cord marked.

SIMPLE STAMPED

Simple stamped impressions. A parallel or cross stamped arrangement of impressions with the space between the raised lands up to 2 mm wide, apparently made with either a carved paddle or a thong-wrapped paddle. Ferguson (personal communication) has suggested that the design effect may be obtained in many cases by using a split piece of wood as a paddle. Parallel simple stamping results from the application of a parallel carved or wrapped paddle, in an orientation, without cross stamping, to the plastic surface of a vessel. The impressions may be either smooth or rough in appearance, but should not have twists or other attributes suggesting cord or fabric impressions.

FABRIC IMPRESSED

Fabric impressions characterized by a rigid warp element, about which a flexible cord was laced, or else a poorly defined weave with both warp and weft elements flexible. The impressions were applied while the vessel paste was plastic.

LINEAR CHECKSTAMPED

"The design consists of a repeated parallel arrangement of two longitudinal lands which contain a series of finer transverse lands...The longitudinal lands are invariably heavier and usually higher than the transverse lands" (Caldwell & Waring 1939).

The lands are formed by the carving of grooves in a wooden paddle; the stamp is applied when the paste of the vessel is plastic. The thicker size of the longitudinal lands gives the stamp a linear appearance.

CHECKSTAMPED

The design consists of a lattice of evenly-sized raised lands that intersect to form square or rectangular checks under 0.5 cm in size. The even size of the lands produces a regular grid, which distinguishes this design from linear checkstamped. The stamp is created through the application of a carved wooden paddle to the surface of the vessel while the paste is plastic.

BOLD CHECKSTAMPED

Checkstamped finish with square or rectangular grids over 0.5 cm in size. The stamp is created through the application of a carved wooden paddle to the surface of the vessel while the paste was plastic.

PLAIN

Plain sherds have an unaltered surface finish, with variation present only in the nature and extent of surface smoothing. No subdivisions of this category, based upon criteria such as extent of smoothing, were recorded. No burnished or highly polished specimens were noted.

COMPLICATED STAMPED

Complicated stamping characterized by closely spaced lands. The space between the lands in this category is usually 1 mm or so wide. The stamp is applied with a carved wooden paddle while the vessel paste is plastic. Design motifs are curvilinear or rectilinear and include concentric circles, filfot crosses, bar-diamonds, figure eights, and a number of other patterns (cf Coe 1952, Reid 1967, Caldwell and Waring 1939).

NONDIAGNOSTIC

Sherds with a surface finish that is unrecognizable, either through weathering, heavy overstamping, or some other factor. Unless the surface finish of a sherd would be determined with certainty, it was included in this category.

SOILS ANALYSIS PROCEDURES

During the course of the fieldwork for the Southeastern Columbia Beltway Project, soil samples were routinely taken from representative strata and areas within each site. Of over 50 samples collected, 22 were submitted for intensive descriptive analysis, which was undertaken by Dr. Michael Katuna of the College of Charleston's Department of Geology. The 22 samples were selected to provide detailed information on the soil matrix at each of the four project sites. Data of this kind were considered important to interpreting observed artifact preservation and depositional associations. The analyses included measurements of pH, particle size, and color, including brief technical descriptions of each sample. This information was used to prepare the profile diagrams in the report, and the analysis sheets themselves are included in the appendix volume.

The soil samples were air dried and split into approximately 100-200 gram portions using a standard sample splitter. The samples were then weighed on a top-loading Mettler balance to the nearest 0.01 gram and placed into a Ro-tap sieve shaker for 15 minutes. The screens selected for the size distribution corresponded to the particle size classification proposed by the U.S. Bureau of Soils. The weight, and weight percent, of each of the sieve fractions were than calculated (see tables in appendix volume).

Those samples which contained appreciable amounts of silt and clay were initially broken down using a mortar and rubber-tipped pestle. A dispersant agent (100 ml) consisting of 0.5N sodium metaphosphate solution was then added to assist in the disaggregation of the samples. The samples were agitated for 15 minutes using an ultrasonic probe to complete the dispersion. The suspension was passed through a stainless steel wet sieve to separate the sand from the silt and clay. The sand fraction was dried and sieved using the same method outlined above.

A hydrometer analysis was performed on those samples which contained greater than 10.0 percent by weight of silt and clay. The silt and clay fraction was transferred to a 1000 ml graduated cyliner containing distilled water and was agitated. After two hours, a Bouyoucos (USDA Standard) hydrometer was inserted and a reading taken (at 68° F). The percentages of silt and clay for those samples are also listed in the accompanying data sheets.

The pH for the 22 soil samples was determined using a LaMotte soil analysis kit. A 1.5 gram sample of soil was added to 4.0 ml of pH indicator solution and was agitated. After 15 minutes, the color of the solution was matched to a standard pH colorimetry chart to determine the pH of the soil. The soil color descriptions were measured by comparison with a Munsell soil color chart.

BONE ANALYSIS PROCEDURES

A number of small, highly weathered bone fragments were recovered from 38LX5 and 38LX64. The fragments were very small and were typically recovered by troweling or hand picking rather than in the 1/4 inch mesh used to screen the fill. The entire excavation sample was submitted for analysis to Dr. Albert E. Sanders and Mr. Peter Coleman (Curators of Natural History) of The Charleston Museum, Charleston, South Carolina. The samples were returned with a statement that confident identification was impossible given the size and condition of the material. Use of thin sectioning and high power microscopy was suggested as a potentially viable method for identifying the fragments. Given the distribution of the materials, almost all from temporally unidentifiable midden levels, and the limited interpretive value of possible results, thin-sectioning was considered unwarranted. Should bone material be recovered from well documented features, such procedure might be investigated in future projects at Fall Line sites.

CHAPTER 4

SITE 38LX5 ASSEMBLAGE

INTRODUCTION

The westernmost of the four sites examined during the Southeastern Columbia Beltway Project, 38LX5, was a five acre scatter located on a sandy knoll almost a kilometer south of and elevated 15 to 20 meters above the Congaree Creek floodplain (Figure 2). The site is located within the upland/ sandhills environment immediately north and east of a small intermittent tributary of Congaree Creek, which probably served as a water source for aboriginal visitors. The immediate site area has been in cultivation over much of the past half century, and in recent years crops of corn, wheat, and melons have been observed. At the time of the 1978 excavations, the sandy knoll defining the site was in fallow, with short grasses and weeds over much of the surface.

PREVIOUS INVESTIGATIONS AT SITE 38LX5

Site 38LX5 has long been recognized by members of both the avocational and professional archeological communities. James L. Michie (personal communication), now an archeologist at the Institute of Archeology and Anthropology at the University of South Carolina, reports that he and his friends collected materials from this site during the 1950s and 1960s. In November of 1969, Michie and Paul Brockington, another IAA archeologist, visited the site, and on December 3, 1969, formally recorded it as 38LX5 in the state site files. Woodland pottery and points, and a number of quartz and chert flakes, were observed in the southwestern portion of the field, which was in fallow after fall harvesting.

When plans for the construction of the Southeastern Columbia Beltway began to receive public attention in the early 1970s, interest in archeology along Congaree Creek began to grow, since it was apparent that the area would eventually be developed. Under the direction of members of the Archeological Society of South Carolina, volunteer excavations were initiated at 38LX50, and survey work began throughout the area to locate and record archeological sites. Site 38LX5 was visited by David G. Anderson, James L. Michie, and Michael B. Trinkley in early February 1974, and the results were incorporated into a report on the proposed Beltway corridor released that May by the IAA:

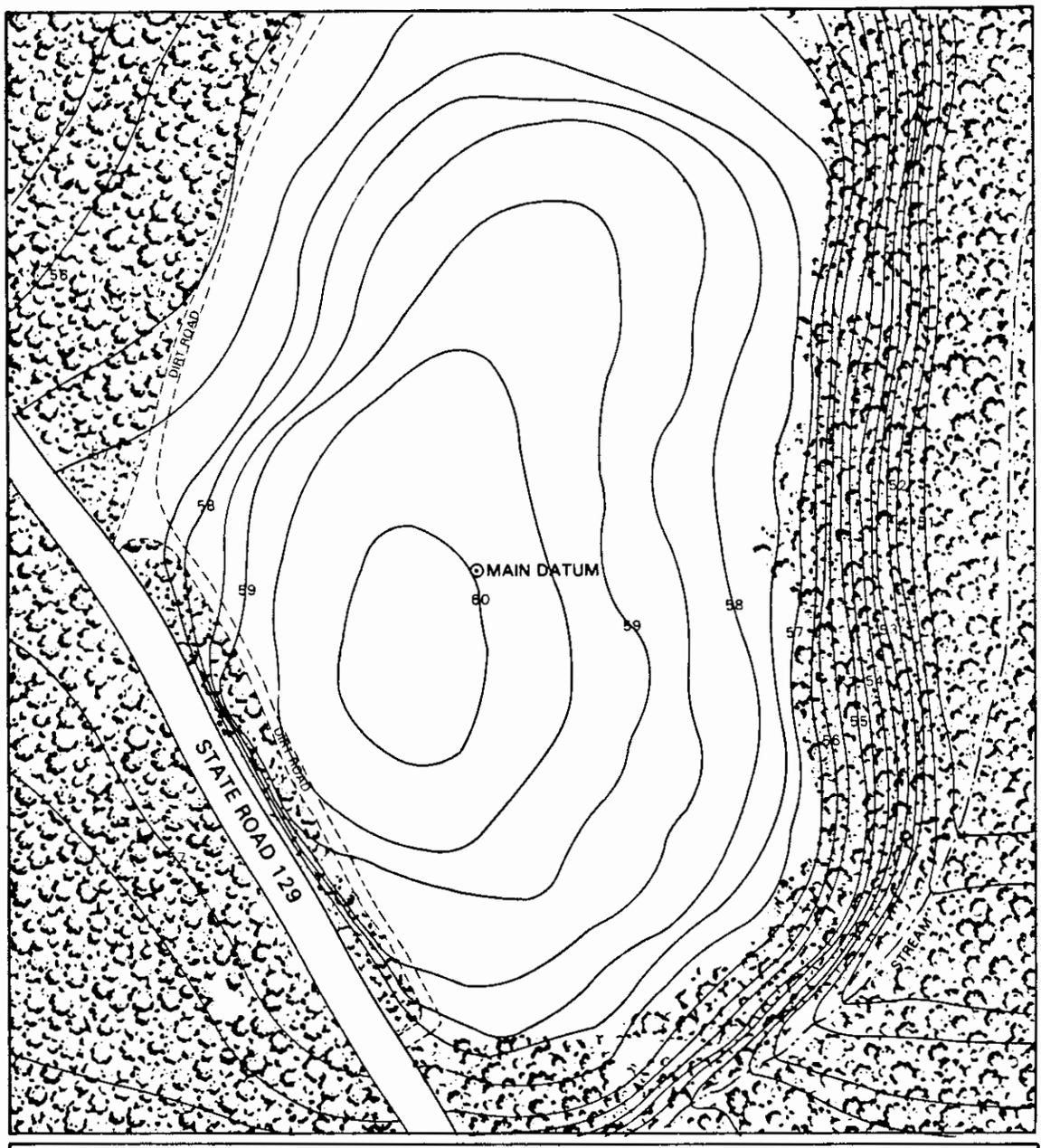
> 38LX5 covers 1-2 acres and is located on the western edge of an elevated knoll directly adjacent to Road 129. The site is apparently Late Woodland and is characterized by an extensive scatter of ceramic fragments and quartz and chert points, tools, and flakes. The area has been extensively plowed and is presently under cultivation. Woods and low-lying fields are located to the north, east, and southeast of the site, which commands an excellent overview of the immediate area (Anderson, Michie, and Trinkley 1974:7).

The first proposed route for the Beltway was shifted somewhat, and a second cultural resources survey was conducted along Congaree Creek in August of 1974.

Site 38LX5 was revisited on August 15, 1974, by David G. Anderson, who spent one hour gathering artifacts and other data on the nature of the scatter. Two intuitively placed 50 foot diameter circles were intensively collected, one each from the northern and southern portions of the field, in an effort to obtain a controlled sample of the general scatter. A report on the second corridor survey, including a brief description of Site 38LX5, was published in The Notebook of the IAA in late 1974:

> 38LX5 covers roughly two acres and is located on the western edge of a low knoll facing State Route 129. The site is characterized by a scatter of ceramic fragments; quartz and chert points, flakes and tools; and fire cracked quartz. Inspection of this material indicates Woodland and South Appalachian Mississippian occupations. The area of the site is under cultivation and at the time of the survey was partially grown up in weeds following a recent harvest of corn. Woods and low-lying fields are located to the north, east, and southeast of the site. The site appears to be characterized by an intense scatter of artifacts at the southern end with a diminishing scatter to the north. The special collection procedure confirmed this impression...(Anderson 1974:138-140).

The presence of Mississippian period artifacts was noted as somewhat unusual, since other sites of this period along Congaree Creek were located in the flat alluvial floodplain.



MAP SOURCE: C.A.I. Field Survey, 1978

NOTES: Permanent Reference Point (Water Tower) is located 850 m from the site datum at an angle of 245.0° East of Magnetic North.

SOUTH CAROLINA

0 10 20 30 METERS

50 CM. Contour Interval

SOUTHEAST COLUMBIA BELTWAY PROJECT

SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SITE 38LX5 BASE MAP

PRIMARY TOPOGRAPHIC FEATURES

FIGURE 2

During the third and final corridor survey for the Southeastern Columbia Beltway, in June and July of 1975, site 38LX5 was revisited by Albert C. Goodyear and John House of the IAA Highway Archeology Program staff. An extensive general surface collection was made over the site area, and the results incorporated into a report released by the IAA in August of 1975:

> The site is located on a terrace perhaps two acres in extent and is higher than most land surfaces surrounding it...Both the northern and southern ends of the terrace have heavy concentrations of artifactual debris and cultural materials can be observed in a continuous distribution between the two clusters...Culturally the site seems to have been used from the Archaic through Mississippian. In our visit a large slate Savannah River knife was found indicating a Late Archaic occupation. Also observed were several sherds of check-stamped pottery suggesting an Early- to Middle-Woodland (Deptford) component. Based on the extensive quantities of debris consisting of chert, quartz, and slate, tools and debitage, fire-cracked rock and pottery, it is quite likely some type of habitation site with shelters was present for some of the phases represented.
>
> Currently, and in the past, the site has been extensively cultivated. It is possible, however, that subsurface or subplowzone layers still exist perhaps in the form of postholes, firepits, and storage pits (Goodyear 1975a:18).

Goodyear's description of 38LX5 is particularly important because, unlike previous work, explicit reasons for the importance of the site were advanced, together with possible research topics that might be explored by work on it:

> This site is particularly significant for two reasons. First, it is located in the drier, sandy uplands, an area which does not ordinarily produce many sites. Secondly, it is a substantial site, one with great quantities of artifactual debris and therefore is more reminiscent of similar sites down on the floodplain which are closely situated to creeks and swamps.

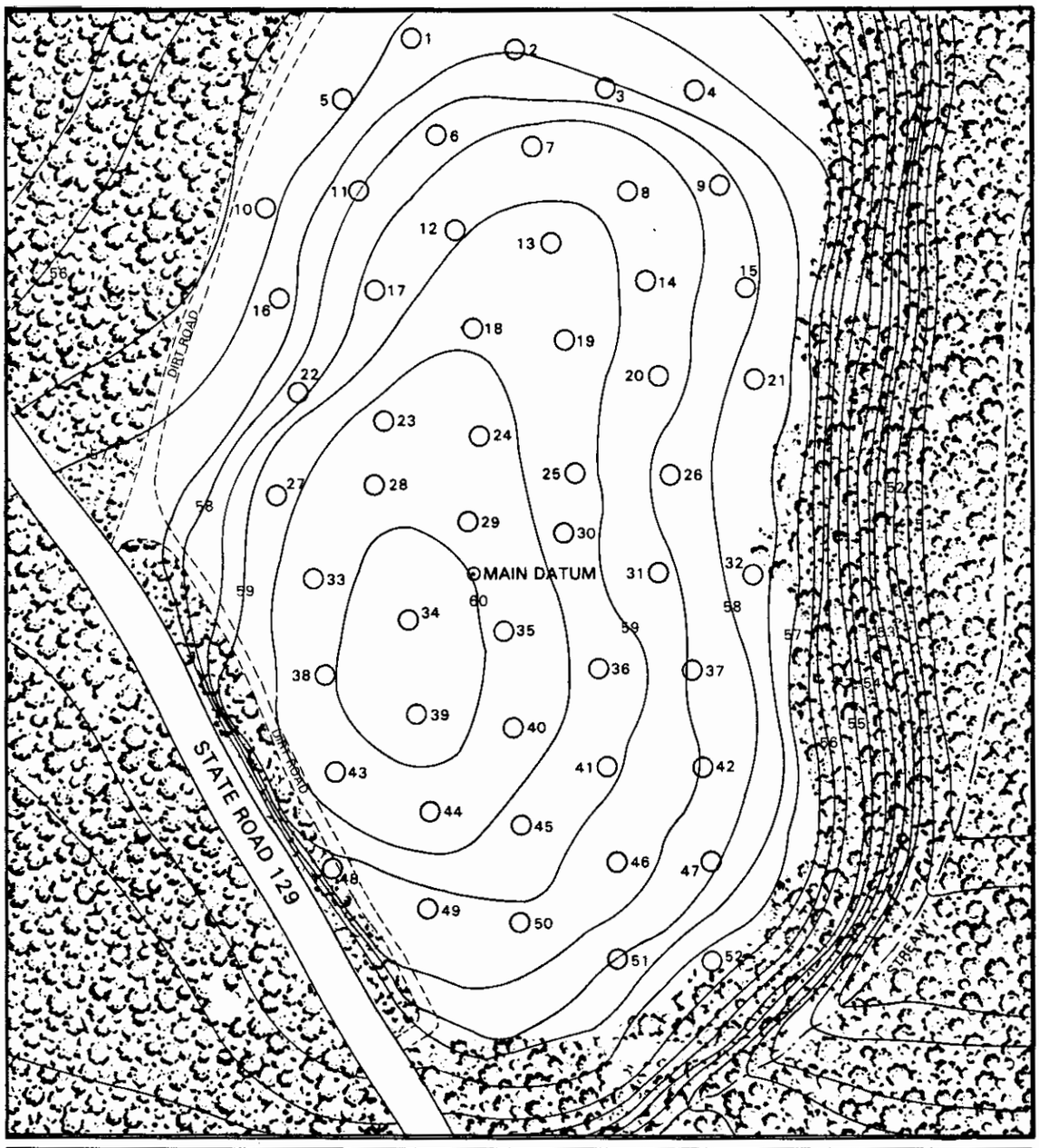
> Looked at from a settlement-subsistence viewpoint, 38LX5 could answer many important questions concerning the regional distribution and organization of Archaic and Woodland settlement systems. For example, does such an occupation area represent year-round living with most occupants returning to a basecamp? This would imply the floodplain sites were primarily extraction stations. Or does this site represent seasonal occupation, perhaps in an attempt to locate the population more closely to upland acorn crops? Alternatively, if utilized only seasonally the site might reflect the wet season, in the winter by present rainfall regimes, since the Congaree Valley may have been under water much of the time or at least significant parts of it (Goodyear 1975a:19).

All of the descriptive and interpretive data previously prepared on 38LX5 were used to guide the 1978 field season, and were incorporated into the analysis.

1978 DATA COLLECTION PROCEDURES (Site 38LX5)

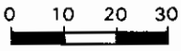
During the 1978 field operations at 38LX5, an intensive controlled surface collection was made over the entire site, 94 square meters of the scatter were removed to sterile soil, another 200 square meters of subplowzone deposits were examined using block units, and 25 meters of backhoe trenches were opened and profiled. Field procedures were used sequentially, with the results of the controlled surface collection used to direct test pit placement, and the results of the test pitting operations used to select areas for block unit excavation. A multistage approach was thus employed, with the occurrence and nature of recovered artifacts used to guide later stages of fieldwork.

A main datum was established in the perceived center of the scatter, on one of the highest points on the knoll. A three foot length of iron rebar was driven to mark this point, which was then tied in with a series of landmarks in the immediate site area. Using a transit and tape, 52 points for a controlled surface collection were dispersed over the knoll (Figure 3), employing a stratified systematic unaligned sampling matrix (Haggett 1966:196-198). The extent of the scatter was arbitrarily divided into a 20 meter grid, with one sampling point placed in each 20 m block. Surveyor wire flags were used to delimit each point, and all artifacts were collected from a four meter diameter circle centered on the flag, employing a dogleash procedure. A general collection



MAP SOURCE: C.A.I. Field Survey, 1978.

NOTES: EU Denotes Excavation Unit.
Circles Represent 4 Meter Diameter Controlled Collection Areas.



50 CM. Contour Interval

SOUTHEAST COLUMBIA BELTWAY PROJECT

SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SITE 38LX5 BASE MAP

CONTROLLED SURFACE COLLECTION UNITS

FIGURE 3

was then made around each circle. The combined procedures ensured that the entire site surface was collected, with all artifacts tied into within at least 15 meters. In all, 52 circles were collected; the site scatter was found to extend over an area of almost 21,000 square meters or five acres, some two and a half times larger than all previous estimates.

Using the same flags for unit corners, 27 1 by 2 meter test pits were opened over the southern end of 38LX5, in the area of maximum surface artifact concentration (Figure 4). Units were oriented either north-south or east-west, based on a coin toss, with the flag always located at the northwest corner of the unit. In each unit the plowzone was removed as a level, with one or more arbitrary 20 cm levels taken from the subplowzone until sterile sand was reached. All fill was passed through 1/4 inch mesh. In addition to the 27 randomly placed units, an additional 16 1 by 2 meter pits were opened on the site, for a total of 43. These units, and one 3 by 3 meter block and one 1 by 1 meter pit, were intuitively placed to expand around features located during the test pitting and subsequent backhoe clearing operations.

Dispersed probability samples were used to help ensure that representative assemblage data were collected from the site surface, plowzone, and subplowzone areas. One by two meter excavation units, ($2m^2$) were chosen because (1) the surface area of each unit was considered sufficiently large enough to permit effective detection of subplowzone features, (2) the unit volume was manageable, permitting removal of upwards of twenty pits, a minimal figure for reliable statistical analyses (cf. Cochran 1963:157) and, (3) the size permitted efficient, deep excavation. When smaller sized units are employed, careful removal of fill becomes difficult with increasing depth.

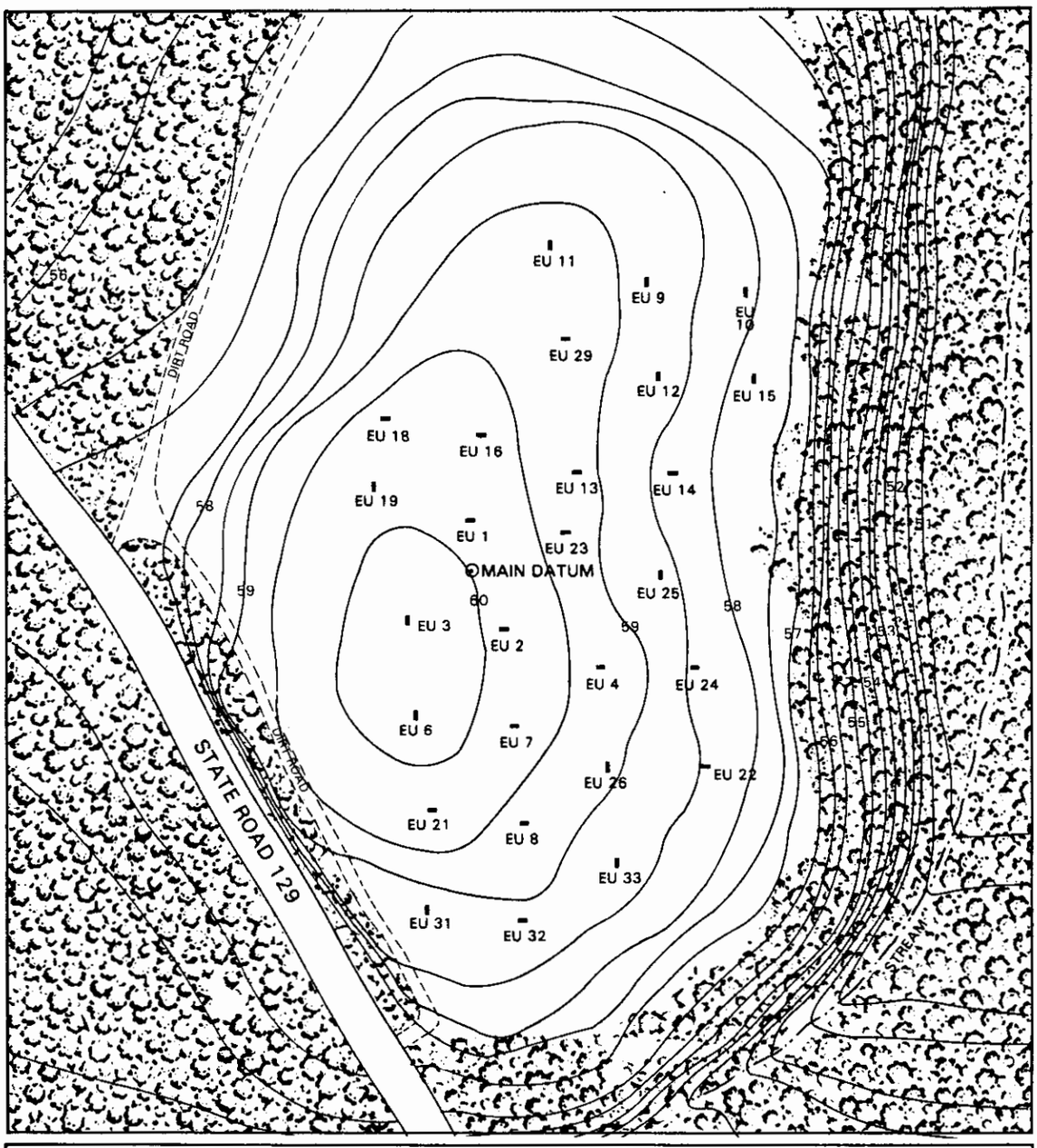
Once the random test units had been opened, a series of trenches and block units were opened across the site in an effort to locate deeply buried deposits and features (Figures 5-7). Block units were intuitively placed in areas of the site that both the surface collection and test excavation procedures had demonstrated to be quite rich in artifactual remains. Two backhoe trenches were also opened on the site, to document local geomorphology and depositional conditions. The cuts included a short 4 meter trench near the main datum and a longer, 21 meter unit at the southern end. The cuts demonstrated that the site rested on a clay/silt base overlain by progressively deeper sands proceeding from the edge to the crest of the knoll.

The long cut at the southern end of the site proceeded from the edge of the small tributary up the slope and out into the field defining the scatter. Over this 21 meter distance, the depth from surface to underlying clay substrate increased from less than a meter to over two meters in thickness. At the edge of the stream, by the base of the knoll, only a thin sand layer was evident, overlain by a somewhat thicker than average humus zone, perhaps built up by erosion and slopewash (Figure 8). The short trench opened at the crest of the knoll collapsed shortly after it was opened, but revealed coarse to medium sands to a depth of almost four meters.

Block units were opened employing the backhoe blade to scrape off the plowzone down to the underlying light yellowish brown sands, where features, if present, would be moderately distinct. A few rock and artifact clusters and diffuse charcoal stains were located by this method, as well as a number of recent tree roots. The areas opened were shovel skimmed, with suspicious stains and artifact clusters flagged. All artifacts were left in place and later plotted, although the coarse, dune-like sands made complete in situ detection impossible. The locations of all units were recorded in a Dietzgen engineer's level book, and were shot in with a transit and a 30 meter fiberglass tape. Elevational data were recorded using a stadia rod for all unit corners and from a number of site areas. In all, 307 spearate points were used to prepare the site base maps.

When features were encountered in the block or test units, the surrounding area was expanded as necessary to encompass the associated scatter. Artifact concentrations were piece-plotted, and fill from in or around perceived features (rock or artifact clusters or charcoal stains) was bagged in plastic trash sacks for separate fine (1/16 inch) screening and flotation. Piece plotting procedure entailed marking a number on the artifact using a permanent marker, and plotting this number on a piece of graph paper scaled to the unit dimensions. This permitted the rapid plotting of individual artifacts, and avoided filling out provenience bags for each specimen. Flotation samples were processed in a lake to the northeast of the site, and were submitted for ethnobotanical and radiocarbon analysis shortly after the close of fieldwork (Chapter 8).

The flotation procedure made use of a high walled frame lined with window screen and supported by a tripod. This was lowered into the lake waters until water came into the bottom of the frame. Feature fill was then poured in and agitated, with a rice strainer lined with a finely woven men's handerchief used to collect the charcoal flecks that



MAP SOURCE: C.A.I. Field Survey, 1978.

NOTES: EU Denotes Excavation Unit.
Circles Represent 4 Meter Diameter Controlled Collection Areas.

0 10 20 30 METERS

50 CM. Contour Interval

SOUTHEAST COLUMBIA BELTWAY PROJECT

SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

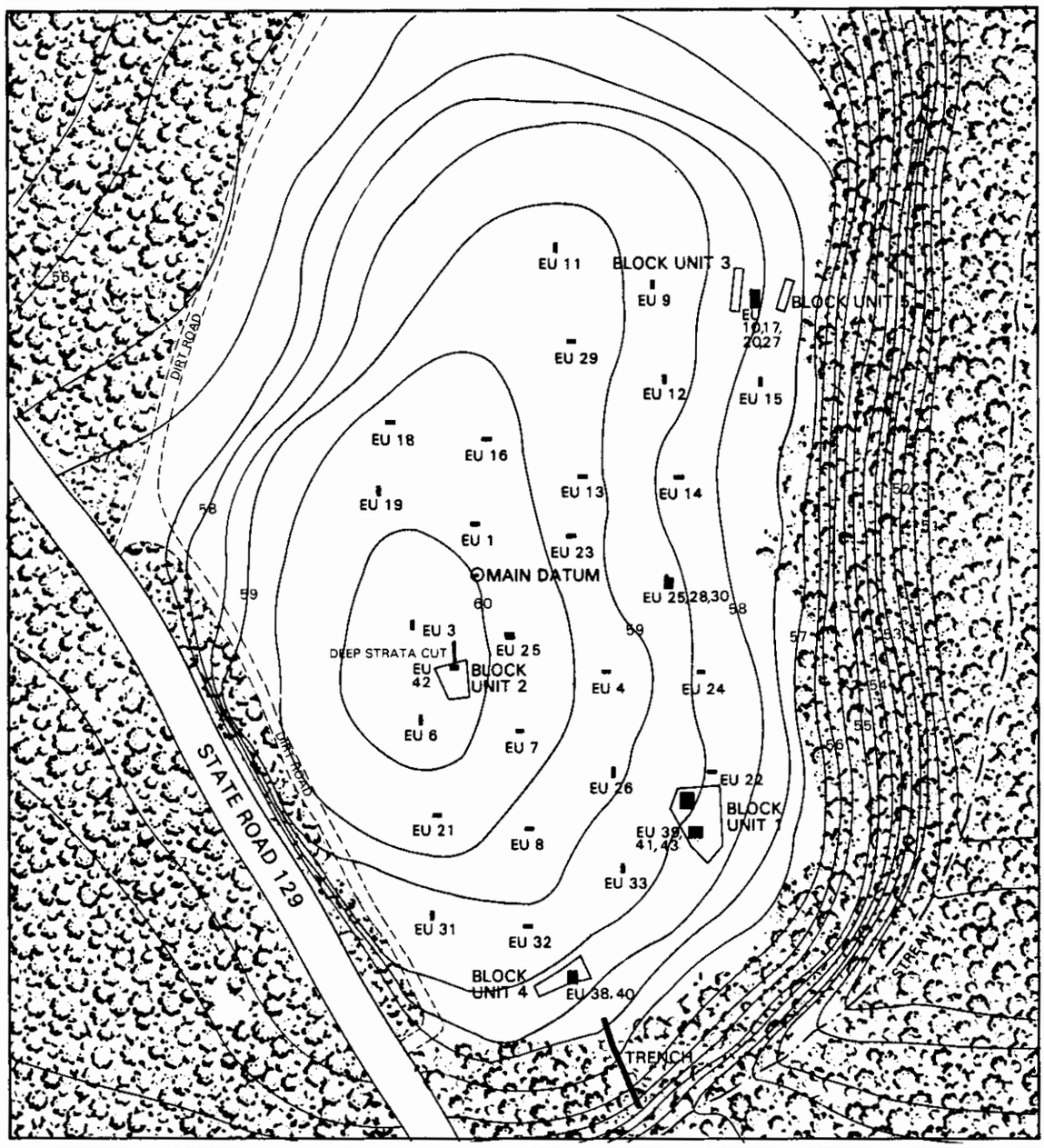
SITE 38LX5 BASE MAP

RANDOM EXCAVATION SAMPLE UNITS

FIGURE 4

FIGURE 5 – Site 38LX5, with all excavation units open. View to southwest.

FIGURE 6 – Use of the front end loader at 38LX5 to remove plowzone levels, in an effort to locate subplowzone features.



MAP SOURCE: C.A.I. Field Survey, 1978.

NOTES: EU Denotes Excavation Unit.
Circles Represent 4 Meter Diameter Controlled Collection Areas.

SOUTH CAROLINA

0 10 20 30 METERS

50 CM. Contour Interval

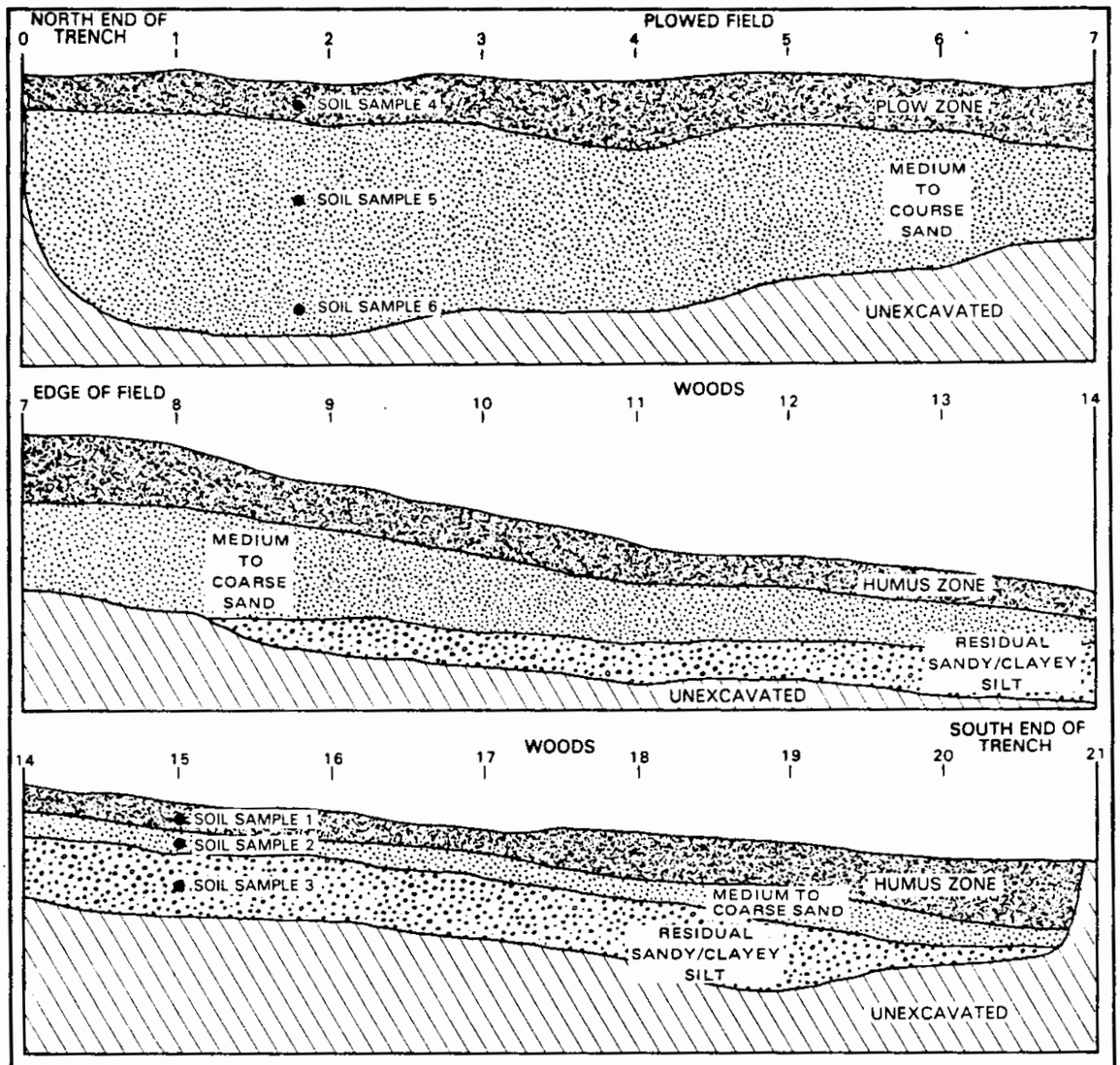
SOUTHEAST COLUMBIA BELTWAY PROJECT

SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SITE 38LX5 BASE MAP

ALL EXCAVATION UNITS

FIGURE 7



SOURCE: C.A.I. Field Survey, 1978.
SOILS ANALYSIS: Dr. Michael Katuna, Dept. of Geology, The College of Charleston

PARTICLE SIZE BREAKDOWN

SAMPLE	GRAVEL	SAND	SILT	CLAY
1	5.72%	85.15%	9.13%	
2	7.72%	86.85%	5.44%	
3	1.19%	24.47%	57.49%	16.85%
4	3.34%	93.06%	3.61%	
5	3.91%	93.26%	2.83%	
6	11.78%	84.44%	3.78%	

S.S. 1 GRAY (10 YR 5/1) COARSE TO MEDIUM SAND
S.S. 2 PALE YELLOW (2.5 Y 7/4) COARSE TO MED SAND
S.S. 3 LIGHT GRAY (10 YR 7/2) SANDY-CLAYEY SILT
S.S. 4 GRAYISH BROWN (10 YR 5/2) WELL SORTED COARSE TO MEDIUM SAND
S.S. 5 VERY PALE BROWN (10 YR 7/3) WELL SORTED COARSE TO MEDIUM SAND
S.S. 6 LIGHT YELLOWISH BROWN (10 YR 6/4) MEDIUM TO COARSE SAND

SOUTHEASTERN COLUMBIA BELTWAY PROJECT
SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SITE 38LX5 SOIL PROFILE

MAIN TRENCH, SOUTH END OF FIELD
FIGURE 8

floated to the top. Careful clearing of the frame and screen after each sample had been processed reduced the probability of contamination, although small seeds in the lake water might have been able to enter the bottom of the screen. The lake, a dammed up stream, had a slow current moving through it, removing previous sample materials from the immediate processing area. The ethnobotanist was informed of the flotation procedure, and analyses were directed to larger, carbonized remains that clearly derived from the samples.

THE DATA ASSEMBLAGE (Site 38LX5)

Over 9000 individual specimens were collected from 38LX5 between 1974 and 1978, the vast majority during the 1978 data recovery operations (Table 1). Major artifact categories recovered, and their percentage of the total assemblage, by count, included fire-cracked rock (27.6 percent), pottery fragments (22.6 percent), unmodified debitage and cores (30.5 percent), tools and other (unusual) specimens (4.6 percent), and unmodified ferruginous sandstone (14.7 percent). A small amount of fired clay (213.9 grams), and a number of charcoal, bone, soil, and flotation samples were also collected during the excavations. Detailed information on the occurrence of artifact and specimen categories, encompassing all of the proveniences recorded from 1974 to 1978, is provided in the appendix volume. The appendix volume also contains a series of 47 maps indicating the surface, plowzone, and subplowzone distributions of all major artifact categories recovered during the 1978 field program. In addition to summary data, the appendix also contains detailed descriptive and metric attributes for all of the formal tools recovered during 1978, and most of the tools collected during earlier seasons. In a few cases with the pre-1978 material it was not possible to accurately determine a date of collection, or where the artifact had been collected; these specimens were included in the summary tables, but are excluded from the more detailed analysis of individual artifact categories.

TEMPORAL ORDERING OF THE 38LX5 ASSEMBLAGE

The artifact assemblage from 38LX5 derives from extensive general and controlled surface collections, as well as from randomly dispersed and intuitively placed plowzone and subplowzone units. A considerable range of lithic and ceramic artifacts were recovered; these were used, employing typological analyses, to approximately date the assemblage. A number of features were detected in the subplowzone deposits, and radiocarbon age determinations were run on fill from four of them, providing a basis for absolute chronology.

TABLE 1
SITE 38LX5 ARTIFACT ASSEMBLAGE
SOUTHEASTERN COLUMBIA BELTWAY PROJECT
DATA COLLECTED 1974 through 1978

Category	Frequency	Weight
Fire-Cracked Rock	2500	26,884.8g
Ferruginous Sandstone (Unmodified)	1332	12,934.7g
Fired Clay	-	213.9g
Pottery	2044	9,094.1g
Nondiagnostic	(822)	
Sand	(670)	
Coarse Sand/Grit	(314)	
Micaceous	(51)	
Sand/Red Clay	(122)	
White Clay/Grog	(65)	
Debitage and Cores	2756	2,989.4g
Quartz	(1217)	(1,759.7g)
Chert	(629)	(480.5g)
Rhyolite	(743)	(574.4g)
Quartzite	(94)	(128.1g)
Slate	(73)	(46.7g)
Tools and Miscellaneous Artifacts	413	-
Retouched Flakes	(107)	
Arrows and Darts	(81)	
Hammerstones	(39)	
Ferruginous Sandstone Abraders	(40)	
Other Formal Tools	(70)	
Miscellaneous (Unusual) Artifacts	(76)	
Total Artifacts	9045	52,116.9g[-1]

-1 Does not include tools and miscellaneous artifacts.

Typological analysis formed the principal method for dating the site assemblage and deposits; the radiocarbon determinations, reported in the next section describing the features, generally supported the typologically derived relative chronology. Most of the artifacts and features were recovered in the plowzone or the first subplowzone level, however, precluding the development of a detailed relative sequence based on artifact vertical placement. Some evidence for assemblage stratification was noted, however, in the plowzone/subplowzone distribution of temporally diagnostic biface and ceramic artifacts. The plowzone was found to contain Late Archaic through Mississippian remains, while the subplowzone levels were characterized by Middle and Late Archaic and Early Woodland remains. No evidence for Early Archaic components was observed, and most units had few artifacts below 20 cm in the subplowzone.

Even given some overlap, the differing ages indicated for the plowzone and subplowzone deposits permit some examination of the temporal occurrence of nondiagnostic artifact categories (Table 2). The random excavation sample, for example, indicates that pottery tends to be restricted to the plowzone. Fire-cracked rock, in contrast, occurs predominantly in the subplowzone deposits, suggesting different site use patterns, or different methods of making fires, during earlier periods. By weight a majority of the sample debitage and core assemblage occurs in the subplowzone, regardless of raw material. Most debitage raw material categories exhibit a modest occurrence in both zones, suggesting long selection. Quartz debitage appears overwhelmingly restricted to the subplowzone, however, suggesting that much of the site use of this material was during the Archaic. This general assemblage data, coupled with more sensitive (typological, radiocarbon) chronological measures, permit at least some examination of patterns of site use over time.

Temporally diagnostic ceramics recovered from 38LX5 included materials from the Thom's Creek, Deptford, Cape Fear, and Chicora ware groups (after South 1976:28-29). Over the 27 randomly dispersed one by two meter units, 68.2 percent of all pottery recovered by weight came from the plowzone, with 608.5 grams, or 31.8 percent, from the subplowzone levels (Table 2). The only evidence for stratification noted was an absence of Chicora (Mississippian period) pottery in the subplowzone; the other wares were proportionally fairly evenly distributed between the two zones. Totals for both count and weight were used, rather than solely count, to avoid inaccurate conclusions about the incidence of pottery in the two depositional zones; evidence exists from both this and other sites that average sherd size varies according to depositional environment, and additionally, by ware, reflecting

TABLE 2

PLOWZONE AND SUBPLOWZONE OCCURRENCE OF MAJOR ARTIFACT CATEGORIES AT SITE 38LX5, EMPLOYING DATA FROM THE 27 RANDOM SAMPLE EXCAVATION UNITS

Assemblage Category	Plowzone	Subplowzone	Total
Quartz cores and debitage	72.2g (13.1 percent)	477.1g (86.9 percent)	549.3g (100.0 percent)
Chert cores and debitage	43.4g (35.3 percent)	79.5g (64.7 percent)	122.9g (100.0 percent)
Rhyolite cores and debitage	63.5g (30.6 percent)	143.8g (69.4 percent)	207.3g (100.0 percent)
Slate cores and debitage	13.8g (41.6 percent)	19.4g (58.4 percent)	33.2g (100.0 percent)
Quartzite cores and debitage	28.6g (34.3 percent)	54.7g (65.7 percent)	83.3g (100.0 percent)
Fire-cracked rock	1370.6g (21.1 percent)	5123.2g (78.9 percent)	6493.8g (100.0 percent)
Ferruginous sandstone	1382.4g (47.8 percent)	1510.6g (52.2 percent)	2893.0g (100.0 percent)
All pottery (count)	254 (73.4 percent)	92 (26.6 percent)	346 (100.0 percent)
All pottery (weight)	1305.2g (68.2 percent)	608.5g (31.8 percent)	1913.7g (100.0 percent)

differences in manufacture (Anderson 1978). At 38LX5 sherds from the plowzone ($\bar{x}$= 5.1g) tended to be slightly smaller, on the average, than sherds from subplowzone ($\bar{x}$= 6.6g), employing the data from the 27 randomly dispersed test units.

Eighty-one hafted bifaces and hafted biface fragments were recovered from 38LX5, of which 43 were identifiable, temporally diagnostic artifacts. Recognizable types included Morrow Mountain I and II (N=23), Savannah River Stemmed (N=1), Thelma (N=6), Otarre Stemmed (N=5), Yadkin (N=3), Uwharrie (N=1), Pee Dee Triangular (N=2), and Caraway (N=2) (Coe 1952, 1964; South 1959, Keel 1976). The hafted biface assemblage spans the Middle Archaic through the Mississippian, with Middle Archaic and Early Woodland forms the most prevalent. The comparatively high incidence of Morrow Mountain forms, however, is due in part to the discovery of a possible cache of 15 of these points (Feature 6).

Unlike the pottery, clear evidence for plowzone/subplowzone stratification was noted in the biface assemblage. Hafted bifaces morphologically characterized as arrows (cf. House 1975:60) were generally found in the plowzone (15 of 25, or 60 percent), while morphological darts and dart fragments were much more commonly found in the subplowzone levels (46 of 56, or 82 percent). Subplowzone forms included Morrow Mountain I and II (N=23), Thelma (N=4), Yadkin (N=2), and Otarre Stemmed (N=5). Identifiable bifaces found in the plowzone and on the surface included Savannah River Stemmed (N=1), Thelma (N=2), Yadkin (N=1), Uwharrie (N=1), Pee Dee Triangular (N=2), and Caraway (N=2).

The Caraway and Pee Dee Triangular forms fall within the range of variation of biface forms Taylor and Smith (1978:273), and others working in South Carolina, classify as "Mississippian triangular", to avoid the ethnohistorical connotations of Coe's (1964:49) types. A number of locally untyped stemmed forms were recovered in the units, mostly from the plowzone, suggesting a probable Woodland age (Figure 9:f,h,l-q). These stemmed forms, described in the appendix, include possible examples of Randolph Stemmed, Swannanoa Stemmed, Wade, and Hernando types (after Coe 1964, Keel 1976, Bullen 1968), although their local occurrence and morphological variation must be assessed through much larger samples before type designations can be confidently assigned.

Conclusions about component representation based on the biface assemblage at 38LX5 generally complemented those obtained through examination of the pottery. Early Woodland biface and pottery forms tended to be common, while materials dating to the Late Archaic and Mississippian periods were comparatively much less frequent. Taken together, the pottery and bifacial assemblages provide a good relative

chronology for the site deposits. A series of five radiocarbon determinations were also run on four subplowzone features, providing a basis for local absolute chronology (Table 3).

SITE 38LX5 FEATURES

During the 1978 excavations at 38LX5, nine features were recognized, all in the subplowzone deposits. Eight of these clearly reflected aboriginal behavior, and included five rock clusters (possible hearths or working floors), one charcoal (hearth?) stain, and two dense artifact clusters, one of pottery, and the other of Archaic (Morrow Mountain and/or Guilford) bifaces. The ninth feature was initially interpreted as a pit, but upon excavation turned out to be an old tree stump. A number of tree root stains were recognized in the floors and profiles of the various excavation units. These were not assigned feature numbers in the field, and are not reported here unless associated with (and important to the interpretation of) aboriginal features. Detailed information on all of the features reported here, including locational (piece-plot) data for most of the artifacts encountered, are to be found in the field notes on file at the Institute of Archeology and Anthropology at the University of South Carolina, and with the South Carolina Department of Highways and Public Transportation. These field notes also contain records of nonaboriginal (i.e. root or borrow) disturbances encountered in the units. Detailed measurements on all of the formal tools found with these features are included in the appendix volume.

Feature 1

Feature 1 was characterized by an arc of fire-cracked rock and ferruginous sandstone immediately adjacent a diffuse, circular charcoal stain in excavation Units 2 and 5 (Figure 10). Typologically diagnostic artifacts included two Otarre Stemmed-like points (Keel 1976), one within and the other just outside the fill from the stain. The charcoal stain was roughly circular, 50 cm in diameter, and was first observed at -30 cm, where it was faint, and was assumed to represent an old tree root. The tip and base of a stemmed rhyolite point (Figure 9:j) were found at -25 cm in EU5, immediately above the feature area, and appear to be more recent in age. A small (3.0 g) piece of plain pottery with coarse sand/grit paste was recovered from the upper portion of the stain, at -30 cm, a slightly lower depth than the two point fragments.

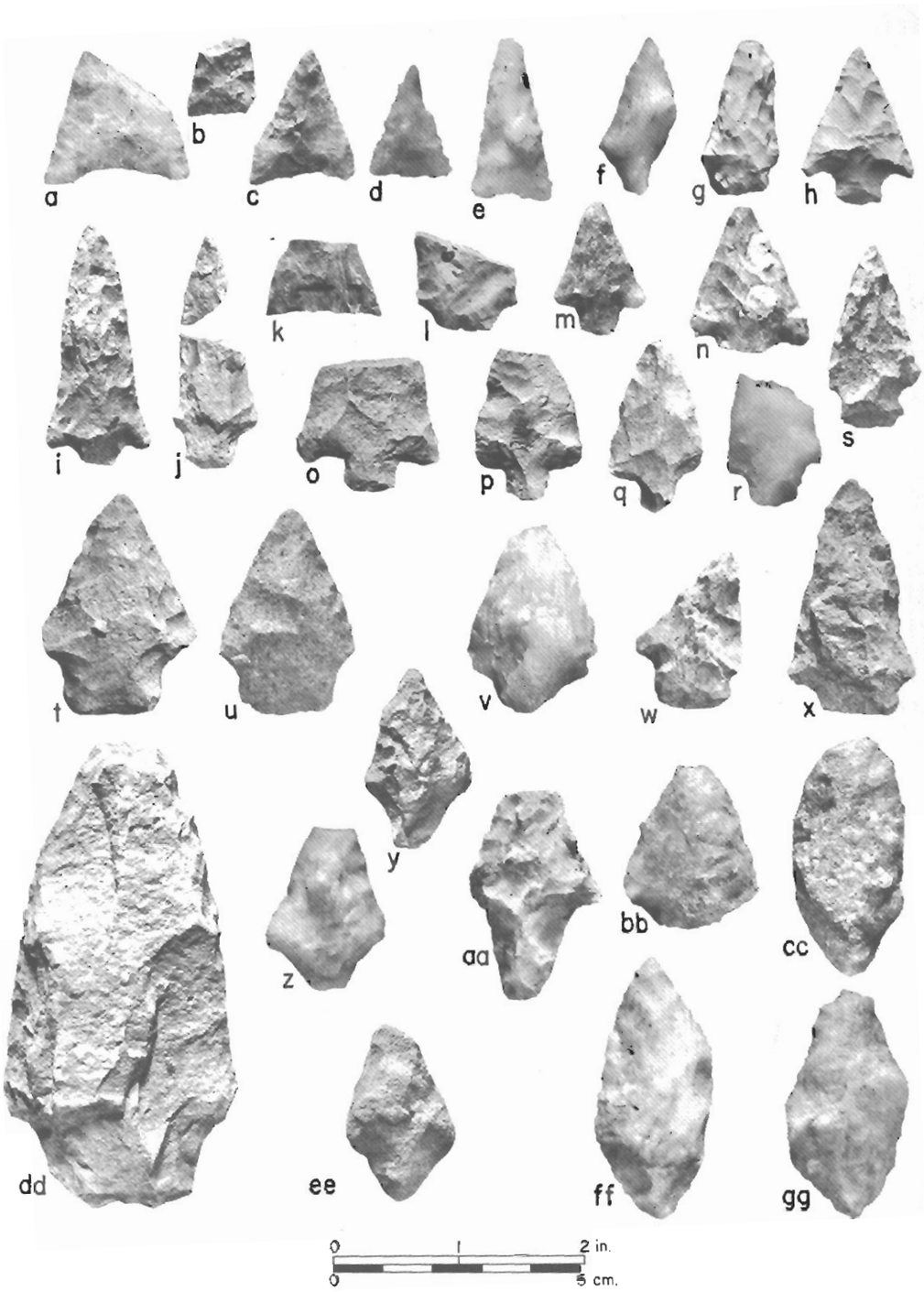


FIGURE 9 — Hafted bifaces from 38LX5. Considerable morphological variability is evident in the Middle Archaic through Woodland materials. a, c, k Yadkin Triangular-like; b, e Uwharrie Triangular-like; d Caraway Triangular; g, i, j, r, s Thelma-like; f, h, l-q untyped, probable Woodland stemmed forms; t-x Otarre Stemmed-like; y-cc, ee-gg Morrow Mountain-like; dd Savannah River Stemmed.

Provenience: (a) EU35, plowzone (b) EU27, plowzone (c) Block 2, general surface (d) CSC41 (e) EU4, plowzone (f) EU16, -25cm (g) GS37 (h) GS39 (i) EU21, -34cm (j) EU5, -25cm (k) Block 4, general surface (l) EU2, 20-40cm (m) CSC28 (n) EU29, plowzone (o) EU7, 28-46cm (p) GS38 (q) EU34, plowzone (r) GS41 (s) EU41, F9 area (t) F1, -55cm (u) EU2, -50cm (v) EU35, 44-60cm (w) EU3, -22c, (x) Block 1, general surface (y) GS26, (z) EU3, -40cm (aa) EU33, 42-60cm (bb) EU26, -40cm (cc) EU3, -36cm (dd) general surface (ee) EU7, 28-46cm (ff) EU33, 22-42cm (gg) F2 area. (EU stands for Excavation Unit, GS for Grab Sample Collection Unit, F for Feature, and CSC for Controlled Surface Collection Unit.)

TABLE 3

SITE 38LX5 RADIOCARBON AGE DETERMINATIONS
SOUTHEASTERN COLUMBIA BELTWAY PROJECT, JULY - AUGUST 1978

Radiocarbon, Ltd. Lab No.	Sample Provenience	Percent of Modern	Radiocarbon age, years, BP	MASCA corr. AD/BC Date	Associated Material Remains
RL - 1034	38LX5, F1	69.2 ± 1.1	2960 ± 130	1240 BC ± 210	Otarre Stemmed-like biface (Figure 9:u)
RL - 1038	38LX5, F1	70.0 ± 1.1	2860 ± 130	1120 BC ± 190	Otarre Stemmed-like biface (Figure 9:t)
RL - 1035	38LX5, F2	79.2 ± 1.2	1870 ± 120	AD 80 ± 130	Crude preform (Figure 9:gg)
RL - 1036	38LX5, F6	55.7 ± 1.1	4700 ± 160	3520 BC ± 170	Morrow Mountain-like biface cluster (Figures 14,15, 16)
RL - 1037	38LX5, F9	72.2 ± 1.2	2620 ± 130	860 BC ± 120	Deptford Linear Check Stamped Pottery, plain pottery (coarse sand/grit) paste Thelma-like biface (Figure 9:s)

NOTE: The MASCA corrected dates are based on an analysis of tree ring dating made by the University of Pennsylvania Museum (Ralph, Michael, and Haw 1973).

All samples were processed by Mr. Charles S. Tucek, Radiocarbon LTD, Route 2, Box 21E, Lampasas, Texas 76550

The arc of rock occurred at a depth of from -55 to -60 cm, and included a quartz hammerstone (104.6g) with three battered areas, three pieces of fire-cracked quartz (10.5 g), 13 pieces of unmodified ferruginous sandstone (1214.3 g), and seven possible ferruginous sandstone abrader fragments (987.3 g; Figure 19:b,d). A quartzite Otarre Stemmed-like biface (Figure 9:u) was recovered 50 cm ENE of the rock cluster at a depth of -50 cm. Although this point was found outside of and slightly higher in the deposits than Feature 1, their overall proximity argues for an approximate contemporaneity. The fill from around the rock cluster was gathered and the entire sample, approximately two gallons, was floated. A deliberate effort was made, during the collection of this flotation sample, to avoid mixture with the diffuse charcoal stain to the south, which was assumed to be a tree root. Five grams of small charcoal flecks were recovered, four of which were submitted for radiocarbon dating (Table 3). The date obtained, 1240 BC ± 210 (RL - 1034) is compatible with dates for Otarre Stemmed forms from the Appalachian Summit (Keel 1976:210), assuming that this point is indeed of approximately the same age as the feature. One gram was also submitted for ehtnobotanical analysis (Sample 1 from 38LX5; Chapter 8), and was identified as coniferous wood charcoal.

The circular stain noted at -30 cm continued to a depth of slightly over a meter before fading out, and was initially interpreted as a tree tap root stain. From 50 to 60 cm the fill was rich in charcoal, although below this depth only a diffuse stain with a small amount of charcoal was observed. At -65 cm a second Otarre Stemmed-like biface (Figure 9:t) was found, at the edge of the stain. Because the feature boundary was indistinct at this depth, it was not possible to definitely state that the point was within the disturbance. Approximately 20 grams of charcoal were hand picked from the fill from around the biface, with half submitted for ethnobotanical identification and the remainder sent for radiocarbon dating. The ethnobotanical analysis results (Sample 2 from 38LX5; Chapter 8) indicate that the sample was pine, with possibly other coniferous wood charcoal also present. The radiocarbon determination 1120 BC ± 190 (RL - 1038), is in close agreement with the date obtained from the rock cluster, and ties in well with the apparent biface type (Otarre Stemmed) found in the fill.

Feature 1 is tentatively interpreted as an Early Woodland hearth that may have been intruded by a later tree. A large quantity (152.45 grams) of charcoal that was hand-picked from the general fill of the stain (Sample 3 from 38LX5; Chapter 8), from 40 to 60 cm in depth, was identified as pine upon analysis.

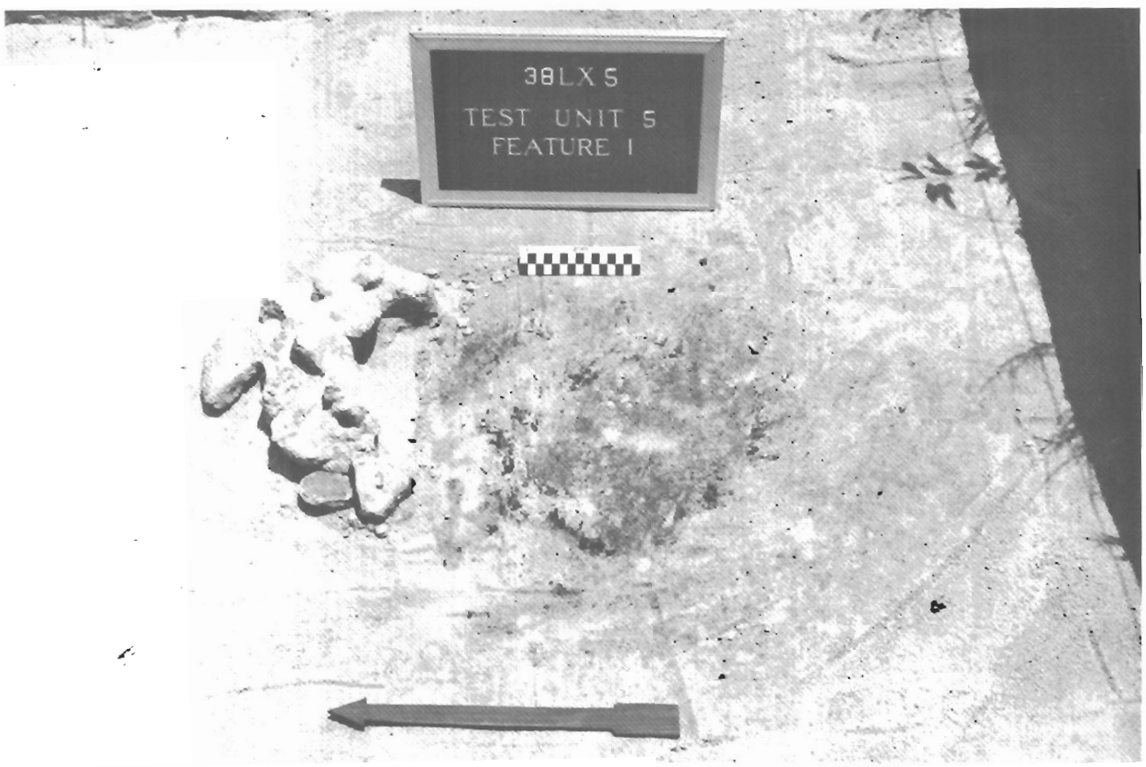


FIGURE 10 – Feature 1, Test Unit 5, at 38LX5. A stemmed projectile point in the fill of this feature was radiocarbon dated to three thousand years before the present (1240 B.C. ± 210, RL-1034; 1120 B.C. ± 190, RL-1038).

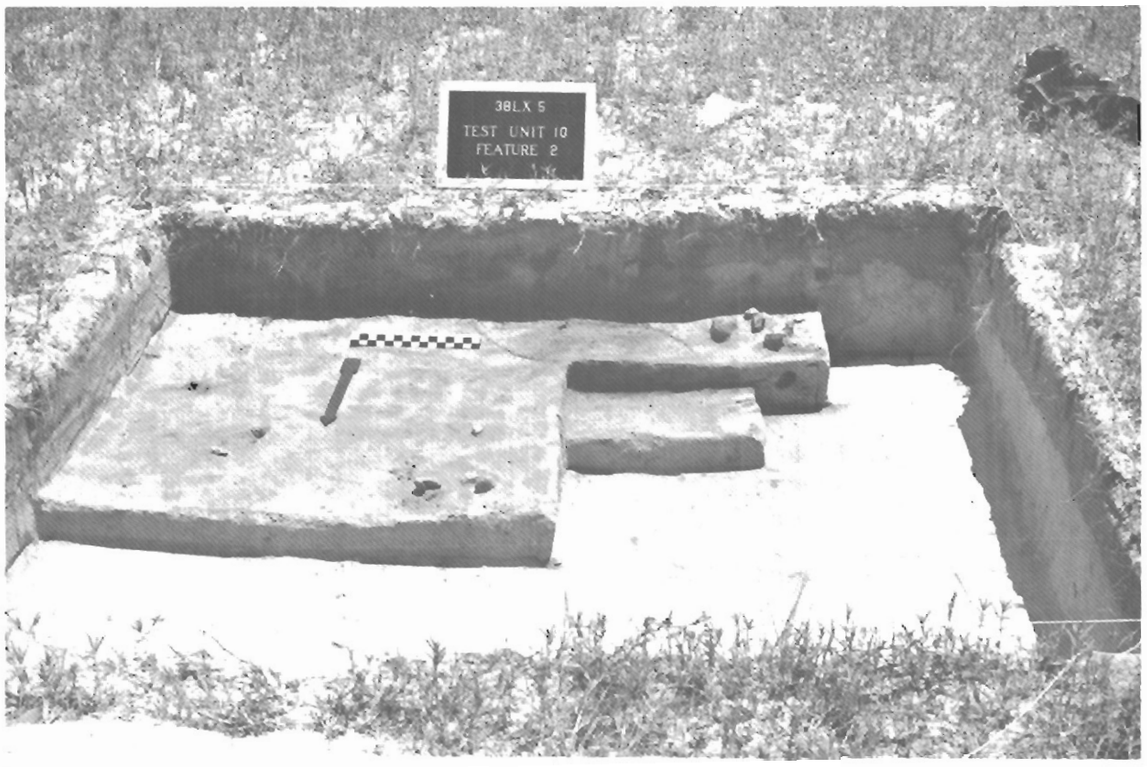


FIGURE 11 – Feature 2, Test Unit 10, at 38LX5. The fill of the feature (outlined in center) produced a radiocarbon date of A.D. 80 ± 130 (RL-1035).

Feature 2

Feature 2 was characterized by a 2 meter diameter scatter of fire cracked-quartz, ferruginous sandstone, debitage, hammerstone fragments and three crude quartz bifaces (one intact and two fragments) centered on a shallow, oval shaped charcoal and ash (hearth?) stain occurring from 22 to 27 cm in depth in excavation units 10, 17, and 20 (Figure 11). Feature 3, a tight cluster of fire-cracked rock and ferruginous sandstone 40 cm in diameter, was located one meter southeast of the ash stain in Feature 2, at a depth of -26 to -30 cm, and may have been associated.

The charcoal and ash stain measured 50 cm (N/S) by 35 cm (E/W), was irregular in outline, and roughly basin shaped in cross section. Total depth was 5 cm. All of the fill was retained and floated, forming three two gallon samples which were submitted, together with several larger pieces of charcoal hand-picked from the fill, for ethnobotanical analysis (Samples 4-7, 28-30 from 38LX5; Chapter 8). Six grams of charcoal from Sample 4 (flotation) were submitted for radiocarbon analysis, and yielded a date of AD 80 ± 130 (RL - 1035). The ethnobotanical analysis indicated that both acorn and hickory nut fragments were present, together with pine, oak, and hickory wood charcoal.

Artifacts recovered included one slate interior flake (0.4 g) in the fill of the stain, and three quartz flakes (3.9 g) about it. Three quartz hammerstone fragments, all exhibiting one or more areas of battering, were also found within one meter of the stain, together with one possible ferruginous sandstone abrader fragment, 18 pieces of fire-cracked quartz (631.8 g), and two pieces of unmodified ferruginous sandstone (28.5 g). One crude, intact dart-like biface (Figure 9:gg), and two biface fragments, one a possible dart tip and the other a nondiagnostic bifacially worked piece, were found from 27 to 31 cm in depth; all are of quartz and appear to be general purpose tools. The feature is tentatively interpreted as a hearth and associated working floor. Assemblage contemporaneity is tentatively assumed given the close spatial proximity of the various artifacts and features, although it should be cautioned that considerable temporal variation is possible given the shallow site deposits. The low overall incidence of clustered artifacts in most of the site subplowzone units, however, argues for a single period of origin when clusters like F2 are encountered. The age of Feature 2 may be Early Woodland, as indicated by the radiocarbon date, although the absence of pottery around the feature, and the vaguely Morrow Mountain II appearance of the intact biface, also suggest a Middle Archaic age.

Feature 3

Feature 3 was characterized by a cluster of fire-cracked rock (5 pieces, 233.0 grams), unmodified ferruginous sandstone (4 pieces, 397.3 grams), one quartz hammerstone fragment (172.4 grams), and two possible ferruginous sandstone abrader fragments (176.0 grams, 195.4 grams) in a tight 40 cm diameter cluster at a depth of from 26 to 30 cm in EU20 (Figure 12). Feature 2 was located one meter to the northwest at a depth of 22 to 27 cm, and may be associated. No charcoal was recovered from a two gallon flotation sample taken from the surrounding fill, and the cluster is tentatively interpreted as either an old, weathered hearth, or else an intentional cluster of materials.

Feature 4

Feature 4 was characterized by an extensive concentration of ferruginous sandstone, roughly a meter in diameter, from 42 to 48 cm below the surface in excavation Units 25, 28, and 30 (Figure 13). The concentration included 34 pieces of unmodified ferruginous sandstone (2716.2 grams), one piece of fire-cracked quartz (47.1 grams), two retouched flakes, and six possible ferruginous sandstone abrader fragments. A two gallon flotation sample taken from about the main concentration of ferruginous sandstone yielded 1.83 grams of charcoal (Sample 8 from 38LX5; Chapter 8), which was found to contain acorn and hickory nut fragments, together with pine, oak, hickory, and unidentifiable conifer wood charcoal. The two retouched flakes recovered included a blocky, igneous scraper (?) weighing 64.3 grams (Figure 18:a), and a blade-like tool on a quartz secondary decortication flake, weighing 5.1 grams (Figure 18:g). The six possible ferruginous sandstone abrader fragments ranged in weight from 50.3 to 282.6 grams, and exhibited a diversity of possible working surfaces, including flat, U - and V - shaped facets (Figure 19:c). The feature is tentatively interpreted as a Middle Archaic hearth and working floor, principally because of its depth and the absence of pottery.

Feature 5

Feature 5 was characterized by a 75 cm diameter cluster of ferruginous sandstone, fire-cracked rock, quartz and quartzite debitage, and two fragments of gneiss located at from 42 to 51 cm in excavation Units 33 and 35. The cluster includes two pieces of fire-cracked rock (24.8 grams), ten pieces of unmodified ferruginous sandstone (312.4 grams), one quartzite primary decortication flake (10.5 grams), one quartz FBR (0.2 grams), one quartz primary decortication

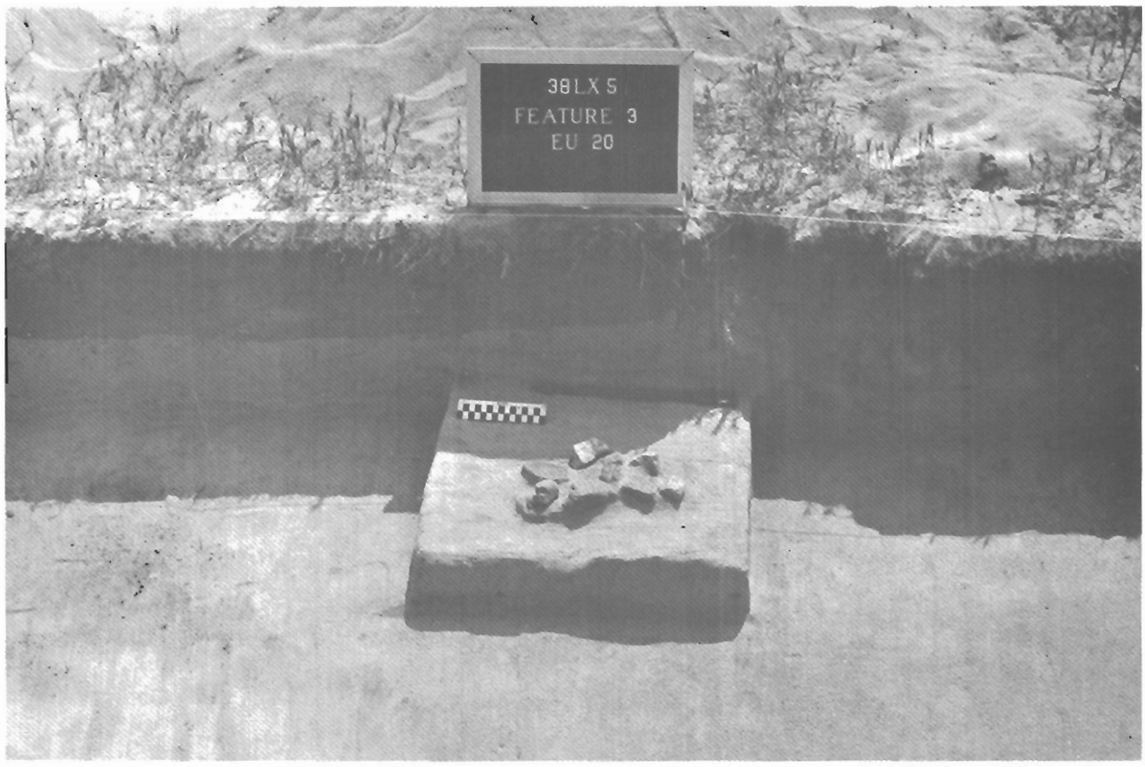


FIGURE 12 – Feature 3, Test Unit 20, at 38LX5. A number of clusters of sandstone were encountered in the subplow-zone deposits and appear to be of Archaic or Early Woodland age.

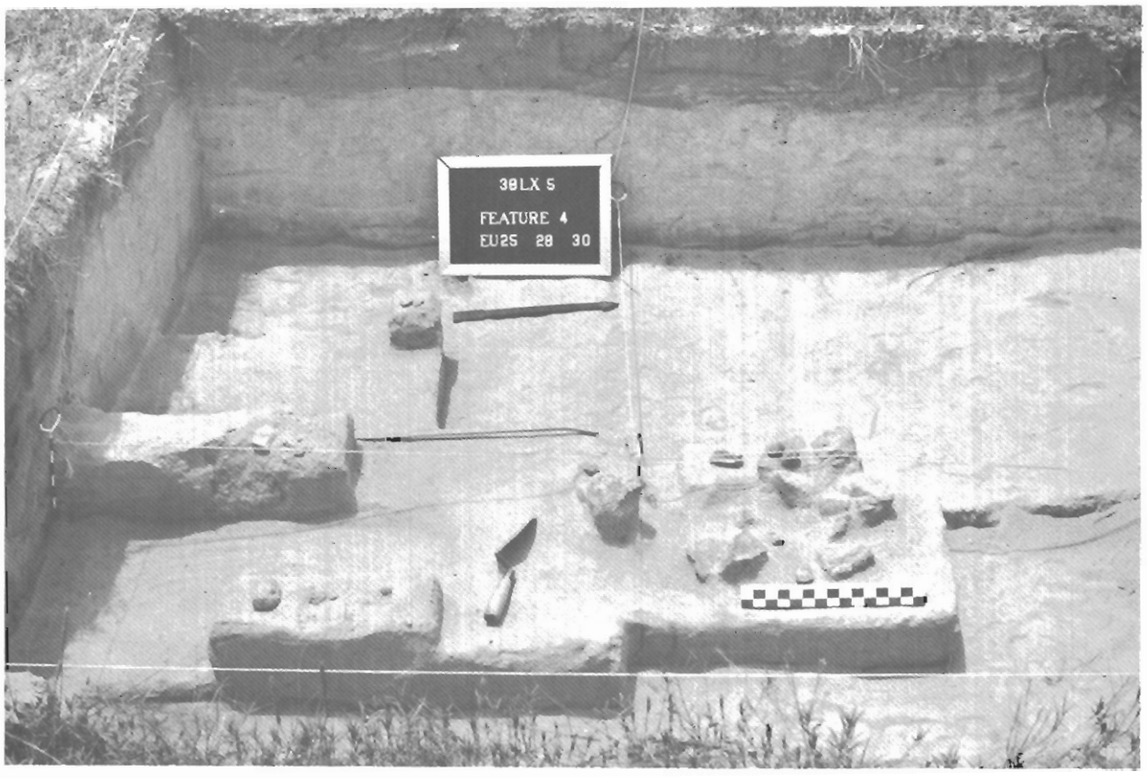


FIGURE 13 – Feature 4, Test Units 25, 28, and 30 at 38LX5. A number of fragments of sandstone, flakes, and a blade-like tool were found, possibly the remains of an early hearth and working floor.

flake (7.3 grams), and two ferruginous sandstone abraders (219.2 grams, 466.1 grams). Three two gallon flotation samples were taken from around the rocks comprising the cluster, producing 2.95 grams of charcoal (Samples 9-11 from 38LX5; Chapter 8). Upon examination, this material was found to include pine, conifer (sp?), and oak wood charcoal. The feature is tentatively interpreted as a Middle Archaic hearth and working/living floor. No diagnostic artifacts were found in direct association, but three Morrow Mountain-like forms (Figure 9:aa, cc, ff) were found in the same units at -58 cm, -29 cm, and from 42 to 60 cm, respectively.

Feature 6

The most unusual find of the excavations, a cluster of probable Middle Archaic bifaces designated Feature 6, was made while cleaning the first block unit (Figure 14). Sammy T. Lee, the project backhoe operator, was shovel skimming at the edge of the block when he flipped up six bifaces (Figure 14: a,b,e,g,i,o). Careful cleaning revealed another five immediately below the surface, within a one meter diameter area. The area about the cluster of eleven bifaces was expanded for several meters, to check for additional artifacts or features. In all, thirteen intact bifaces, one biface fragment, and a large ovate bifacial knife were found in an area 1.5 m (E/W) by 2.5 m (N/S), at depths of from 24 to 34 cm below the ground surface. A small quartz biface basal fragment (Figure 14:l) was also recovered, at -17 cm, immediately below the base of the plowzone, and may not be associated with the main cluster. A second biface fragment (Figure 14:n) was located two meters southwest of the main cluster, at approximately the same depth. This specimen, while similar in general morphology to many of those in the cluster, was heavily worn in appearance and may have been an intentionally discarded (exhausted) form. With the exception of the large ovate knife and the small fragment (Figure 14:m,l), all of the remaining bifaces resemble Morrow Mountain type forms, suggesting a Middle Archaic date for the cluster (Coe 1964, personal communication).

The 15 specimens making up the feature (Figure 14: a-j, m-q) were characterized by a mint (unused) appearance. Only one of the 15 bifaces was broken, and most exhibited sharp working edges. These facts, and the clustered nature of much of the assemblage, suggest an intentional cache or possibly a burial situation (cf. Morse 1975). That is, all or most of the bifaces included in Feature 6 appear to be contemporaneous, and may reflect a lost or cached tool kit, or possibly grave goods about a burial. The fill from a three meter block around the bifaces was screened, and all encountered

artifacts were plotted. No bone fragments were detected, not even tiny fragments found occasionally elsewhere in the deposits, reducing the likelihood that the bifaces reflected grave furniture. The number of bifaces in this area, it should be emphasized, was highly unusual; other subplowzone levels on the site rarely yielded more than a single biface in a comparable volume of fill.

A cluster of ferruginous sandstone (Figure 15) was located one and one half meters due west of the center of the one meter diameter area from which 11 of the 15 bifaces came. Four gallons of fill from this rock cluster, which was at almost exactly the same depth below the surface as the points, was floated and the entire charcoal (approximately four grams) submitted for radiocarbon dating. The resulting determination, 3520 BC ± 170 (RL - 1036), may give a rough approximation of the age of the cluster. The 38LX5 radiocarbon date is in rough agreement with, although 500 to 1000 years later than, radiocarbon dates for similar forms found elsewhere in the southeast (Chapman 1976:8). Two other two gallon flotation samples were collected from immediately around the 11 bifaces found within one meter of each other (Samples 31, 32; Chapter 8). These samples produced only minute traces of charcoal, which upon analysis was found to be pine and coniferous wood charcoal.

The bifaces comprising Feature 6 were not found lying flat, but were oriented at a variety of angles (Figure 16). All nine of the 15 points found after the initial six were flipped up, were piece plotted; five tips were oriented roughly southwest, one northeast, two southeast, and the large ovate biface to the west. The main axis of the points dipped up or down from 10 to 50° from the horizontal, and the large biface was found on edge. The seemingly haphazard orientation of the assemblage suggests a moderate amount of disturbance, or else original deposition in an other than flat arrangement (scattered over a burial?).

The 15 bifaces comprising Feature 6 are tentatively assumed to comprise an assemblage, the result of a single behavioral event. The feature may reflect an intentional cache, a burial situation, or the loss of a tool kit. Given the area incorporated within Feature 6 (3.75 m^2), it is admittedly possible that one or a few of the bifaces may pre or post date the main concentration. Two specimens (Figure 14: 1,n), as discussed previously, are assumed to be unrelated. Over the remainder of the assemblage, however, it is difficult to justify the exclusion of any of the specimens, given the basic similarity in condition (usable).

The bifaces comprising Feature 6 exhibit a moderate amount of variation in size and weight, but exhibit a surprising

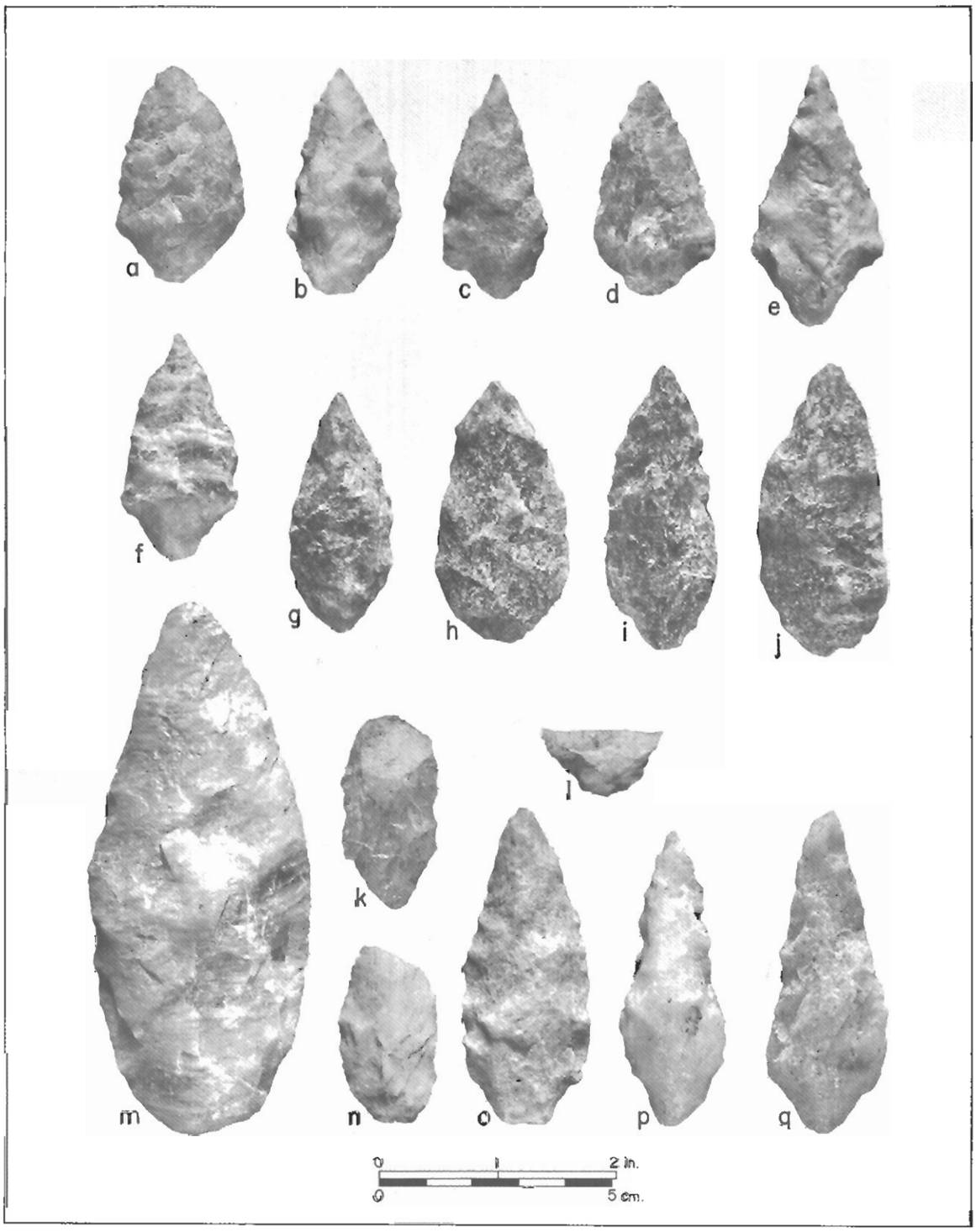


FIGURE 14 — Hafted bifaces from Feature 6, 38LX5. Most of the bifaces fit within Coe's (1964) Morrow Mountain II or III types. The fill of a nearby rock cluster found at the same depth produced a radiocarbon date of 3520 B.C. ± 170 (RL-1036), supporting a probable Middle Archaic age for the assemblage. Bifaces a, b, e, g, i, o were discovered during shovel skimming and came from an area about 50cm in diameter. The remainder were plotted in situ. Eleven bifaces (a-g, i, o-q) came from an area under one meter in diameter, with bifaces h, j, and m 0.25, 1.0, and 1.5 meters to the north of this cluster, respectively. Bifaces k and n were 0.40 and 2.0 meters to the west; n exhibited heavy use-wear damage, unlike the other specimens, and may not be related. The biface basal fragment (l) was found immediately below the plowzone 1.5 meters NNE of the main cluster, and may also be unrelated.

FIGURE 15— Rock cluster one meter to the west of and at the same level as the Feature 6 biface concentration at Site 38LX5. Charcoal gathered from around this cluster yielded a date of 3520 B.C. ± 170 (RL-1034).

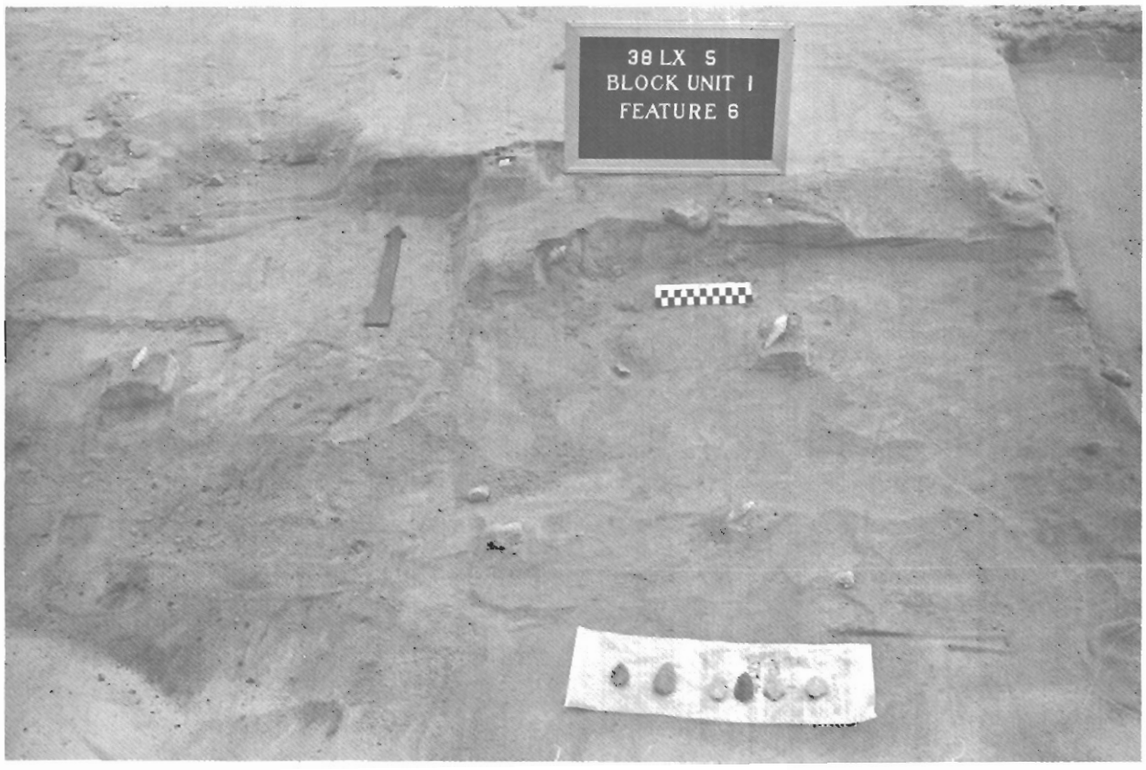


FIGURE 16— Four of the fifteen bifaces comprising Feature 6, 38LX5, shown *in situ* in the soft powdery sands.

conformity in working edge angle (measured halfway along the cutting/blade edge), and in proximal haft width and blade shoulder width. The working edge angles range from 50 to 80 degrees, with a mean of 60 degrees, suggesting a multi-task functional use (cf. Wilmsen 1970:70). The large ovate biface had the most acute edge angle, 50 degrees, arguing for use as a knife, a form it strongly resembles. Excluding the large ovate biface, the remaining 14 specimens have similar shoulder widths ranging from 2.0 to 2.8 cm, with a mean of 2.4. Proximal haft element width (after Ahler 1971: 22) also varies little over the assemblage, ranging from 0.7 to 1.1 cm, with an average width of 0.84 cm. The similar hafting and edge angle measurements observed over this otherwise moderately diverse assemblage suggest similar function and a standardized hafting procedure. The observed variation in blade morphology probably reflects earlier and later stages of resharpening.

A moderate amount of fire-cracked rock and ferruginous sandstone (1355.0 and 648.6 grams, respectively), and quartz (29 pieces, 38.6 grams), chert (3 pieces, 0.3 grams), and quartzite (2 pieces, 0.9 grams) debitage, together with some fired clay (4.0 grams), gneiss or schist (3 pieces), four possible ferruginous sandstone abrader fragments, and two retouched flakes, were found in the fill of the three meter block opened around the point cluster. Given the volume of fill examined about the feature, the amount of material recovered is not unusual. The incidence of fire-cracked rock and ferruginous sandstone is considerably higher than expected (based on an average of 55.9 grams of ferruginous sandstone and 189.7 grams of fire-cracked rock in the subplowzone levels of the random one by two meter test units), although the debitage figures are close to the average over the site (based, for example, on an average of 17.7 grams of quartz in the subplowzone levels of the random one by two meter units). Thus, the general Feature 6 area may have been characterized by more hearth/burning activity, and perhaps the same or less reduction/manufacturing activity, than comparable areas elsewhere on the site.

Feature 7

Feature 7 was defined on the basis of an extensive scatter of plain coarse sand/grit paste pottery over an area 8 m (N/S) by 6 m (E/W) at the south end of Block Unit 1. The scatter was located immediately below the plowzone, and appears, upon inspection, to represent the breakage of a single large vessel. All of the 83 sherds exhibit near-identical paste, thickness, and surface finish, and a number of cross-mends were noted. The original vessel appears to have been a large

jar, roughly 50 cm in diameter at the rim. Only a small fraction of the total vessel was recovered, and depth and basal configuration could not be determined. A probable conoidal or rounded base is inferred, however, from the absence of abrupt base or shoulder fragments. The remainder of the vessel fragments may have been removed by the backhoe, and some may be beyond the unit, as well, in unexamined deposits, since the feature was located near one end of the block. The artifacts comprising the scatter are recorded in the appendix volume under a controlled surface collection category for Block Unit 1. In addition to 83 plain sherds from the apparent vessel, a number of fragments of debitage, fire-cracked rock, and three pieces of check stamped sand paste pottery, were also found at this level, and may be associated. Feature 9, an Early Woodland hearth, is located just north of the scatter and may also be associated.

Feature 8

Feature 8 was a charcoal stain observed in the floor and west profile of excavation Unit 25. Originally thought to be an aboriginal pit, the stain was found upon partial excavation to be a fairly recent tree stump.

Feature 9

Feature 9 was characterized by a diffuse circular charcoal stain roughly a meter in diameter located in the center of Block Unit 1. Three one by two meter units (EU's 39, 41, and 43) were opened around the feature, and yielded four Deptford linear check stamped (sand paste) and one plain (coarse sand/grit) sherd. Three of the linear check stamped sherds were recovered within the fill of the feature. Two stemmed, vaguely Thelma-like bifaces (Figure 9:s), were recovered 30 cm and 1.0 meter southeast of the stain, at a depth of 7 cm below the level at which it was first noted. These two points may or may not be associated with the feature, although the forms are similar to those reported with Deptford pottery from elsewhere in the southeast (Milanich 1971:175-176).

Twelve gallons of fill from the feature were removed and floated, and several larger pieces of charcoal were handpicked during excavation. The charcoal from these samples was submitted for ethnobotanical analysis, and was found to contain pine and other conifer wood charcoal, and a small quantity of hickory nutshell (Samples 12-16 from 38LX5; Chapter 8). Ten grams of charcoal from Sample 14, material obtained from floating 10 gallons of the feature fill, were submitted for radiocarbon analysis and produced

a date of 860 BC $\pm$ 120 (RL - 1037), a figure somewhat earlier than expected for Deptford materials in this part of the Atlantic southeast.

FIRE-CRACKED ROCK AND UNMODIFIED FERRUGINOUS SANDSTONE

A total of 2500 pieces of fire-cracked rock weighing 26,884.8 grams were recovered from 38LX5 from 1974 to 1978, together with 1322 pieces of unmodified ferruginous sandstone weighing 12,934.7 grams. The spatial distributions, of both materials were examined over the surface, plowzone, and subplowzone levels on the site, in an effort to locate aboriginal hearth and working areas. The two artifact categories had similar distributions, with pronounced concentrations in the southern, west-central, and northeastern areas of the site (Figure 17). These concentrations were observed in all levels, and appear to reflect repeated aboriginal selection for the highest area of the knoll, and for relatively flat areas in proximity to and overlooking the small stream below the site.

While the spatial distributions of fire-cracked rock and ferruginous sandstone over 38LX5 were similar in both plowzone and subplowzone levels, the absolute quantities of each material differed markedly (Table 2). In the random excavation sample units almost four times as much fire-cracked rock, by weight, came from subplowzone as opposed to plowzone proveniences. Unmodified ferruginous sandstone, in contrast, was fairly evenly distributed between the two proveniences. The stratigraphic data suggest that fires or hearth activity, a probable source for much of the cracked rock, were more common on the site during earlier (Archaic through Early Woodland) occupations than during the later, Woodland through Mississippian periods. The relatively even stratigraphic distribution of ferruginous sandstone, in contrast, suggests similar patterns of use over time, and possibly comparatively greater use during later occupations. Given the near equivalence of the plowzone and subplowzone assemblages, by weight, this might be the case, although as will be discussed later, a majority of the possible modified ferruginous sandstone tools on the site came from subplowzone proveniences.

The fire-cracked rock recovered was predominantly quartz, with some sandstone and other, unidentifiable materials present in small quantities. Some of this material may reflect hammerstone or other cobble tools that either broke in use and were discarded, or else were recycled as cooking/hearth stones (House 1975, Michie 1978). Ferruginous concretions have been documented in local soils, although not specifically

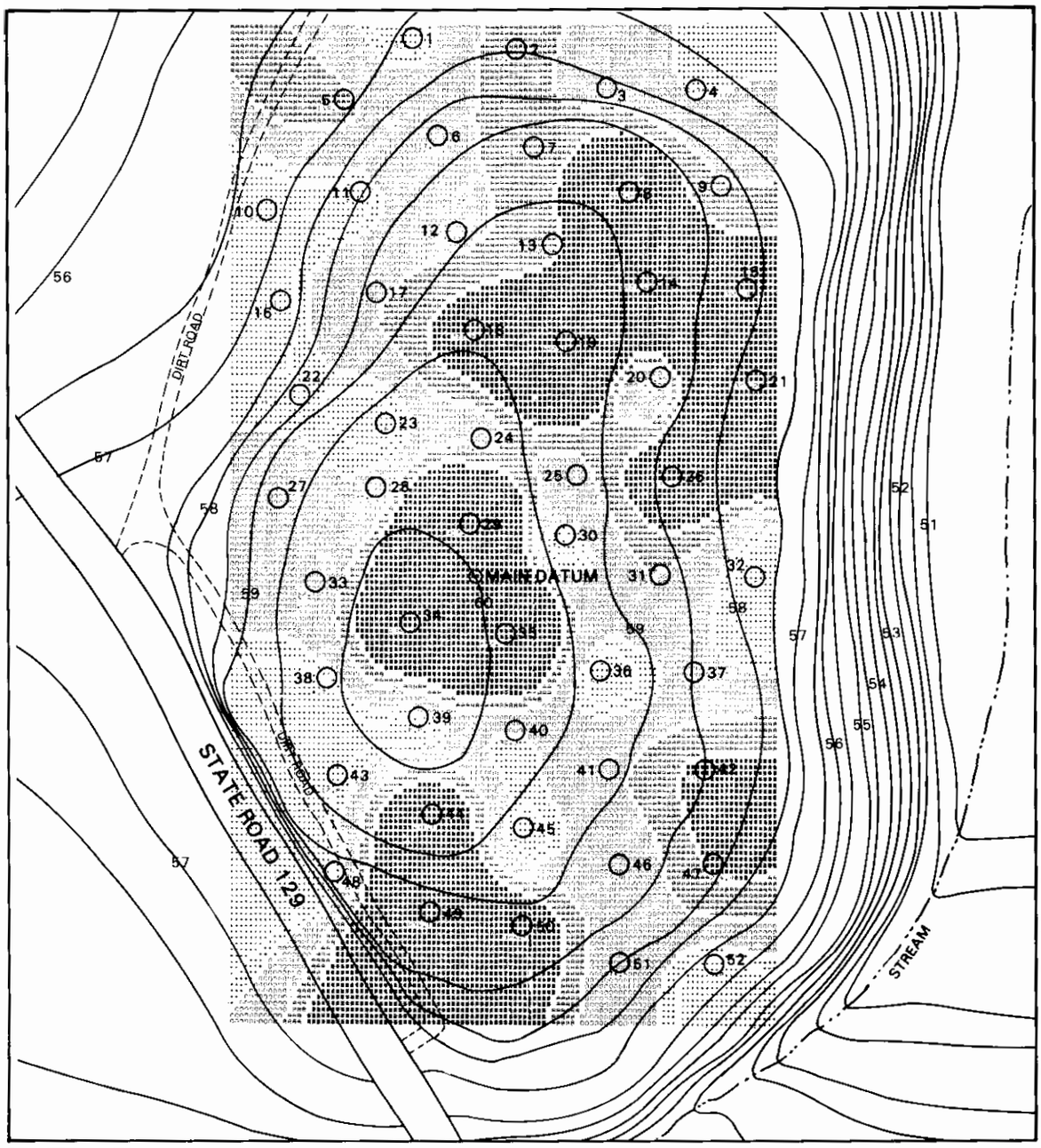
the types that characterize site 38LX5 (Chapter 3, Lawrence 1976). Because of their highly weathered state, it is not possible to conclusively document use-wear patterning on any of the unmodified specimens. The uneven distribution of the ferruginous sandstone over the site, in concentrations with other artifacts, argues for aboriginal use of the material, possibly for abrading functions or for red pigment (cf. Anderson, Lee, and Parler 1979:64-65).

UNMODIFIED DEBITAGE

A total of 2756 pieces of unmodified debitage, including 22 cores, were recovered from 38LX5, and were sorted by raw material and decortication/reduction stage (Table 4). By both count (N = 1217, 44.16 percent) and weight (N = 1759.7 grams; 58.86 percent), quartz is the most common unmodified raw material found at the site. Rhyolite (N = 743, 26.96 percent) and chert (N = 629, 22.82 percent) were present in lesser quantity, while only small amounts of quartzite (N = 94, 3.41 percent) and slate (N = 73, 2.65 percent) were recovered. Examining the average size, and incidence by reduction stage, of each raw material indicates different patterns in the aboriginal use of quartz and, to a lesser extent, quartzite, when compared with chert, slate, and rhyolite.

The average size of the quartz ($\bar{x}$ = 1.45 grams) and quartzite ($\bar{x}$ = 1.36 grams) unmodified debitage is considerably larger than that observed for chert ($\bar{x}$ = 0.76 grams), rhyolite ($\bar{x}$ = 0.77 grams), and slate ($\bar{x}$ = 0.64 grams). The incidence of later stage manufacturing reduction debris, as measured by percent of interior flakes and FBRs, is also somewhat higher for chert (82.4 percent), rhyolite (84.5 percent), and slate (98.6 percent) than for quartz (75.9 percent) or quartzite (78.7 percent), although the difference is not as pronounced as for average size.

The reduction/stage figures (Table 4) indicate that proportionally more later stage stoneworking activity employing chert, slate, and rhyolite is occurring on the site than occurs with quartz or quartzite. Part of this patterning is unquestionably due to the nature and natural occurrence of each of these raw materials. Quartz is a local, readily available raw material that occurs in cobble form in Fall Line river and stream channels,and on eroding surfaces. All of the other materials, in contrast, are imports from considerably greater distances. Much of the chert, for example, appears to come from the lower Savannah River in Allendale County, over 80 miles away, while the quartzite may have come from the lower Santee River. The slate and rhyolite probably



MAP SOURCE: C.A.I. Field Survey, 1978.

SOUTH CAROLINA

0 10 20 30 METERS

50 CM. Contour Interval

SOUTHEAST COLUMBIA BELTWAY PROJECT

SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SITE 38LX5 BASE MAP

CONTROLLED GRAB SURFACE COLLECTION
FIRE CRACKED ROCK — WEIGHT IN GRAMS

FIGURE 17

TABLE 4
UNMODIFIED CORES AND DEBITAGE BY RAW MATERIAL
SITE 38LX5: 1974-1978

	Cores	Chunks	PDC	SDC	INT	FBR	Total Count	Total Weight
Quartz	17	169	24	83	730	194	1217 (44.16)	1759.7 (58.86)
Chert	5	7	14	85	233	285	629 (22.82)	480.5 (16.08)
Rhyolite	-	21	10	84	453	175	743 (26.96)	574.4 (19.21)
Quartzite	-	6	6	8	72	2	94 (03.41)	128.1 (4.29)
Slate	-	1	-	-	67	5	73 (2.65)	46.7 (1.56)
Totals	22 (0.8)	204 (7.4)	54 (2.0)	260 (9.4)	1555 (56.4)	661 (24.0)	2956 (100.0)	2989.4 (100.0)

( ) = percent of each category

came from within the Piedmont; exploited sources for these materials are not currently known from within South Carolina.

The low incidence of early reduction stage debris over the chert, rhyolite, and slate assemblages is what would be expected if these materials were imported from a distance. Waste (cortical material) probably would have been removed near the source area, rather than carried long distances. The quartzite debitage, a material assumed to be extralocal in origin, does not conform to this general patterning, however, although it should be noted that the sample size is low. Some of the quartzite debris may therefore derive from nearby sources, rather than from the lower Santee. Orthoquartzites have been recorded as occurring within the South Carolina Piedmont (Overstreet and Bell 1965:22,25; Novick 1978), although aboriginally exploited sources remain undiscovered. Determining the origin of Fall Line area "quartzite", it should be emphasized, is an unresolved problem. The thin sectioning analyses reported here (Chapter 3), however, indicate that at least some of the site materials probably come from the lower Coastal Plain.

The 38LX5 quartz assemblage, with a moderate amount of chunk and cortical debris, suggests a local origin; some of the chunks may derive from bipolar cobble splitting, and the general difficulty of working this raw material. The average size of the debitage over each raw material category, particularly when coupled with the high incidence of FBRs in the chert (45.3 percent) and rhyolite (23.6 percent) assemblages, suggests that use of chert, slate, and rhyolite on the site may have been related to the final manufacture or upkeep of tools. The quartz and quartzite debitage, in contrast, suggests at least some local manufacture, although the moderate incidence of quartz FBRs (15.9 percent) also suggests some final manufacture/maintenance activity employing this material.

Comparison of plowzone and subplowzone proveniences at 38LX5 indicates some differential selection for specific raw materials over time (Table 2). Most quartz debitage (477.1 grams; 86.9 percent), for example, occurs in the subplowzone, suggesting greater use of the material during the Archaic than during the succeeding Woodland or Mississippian periods. Other raw materials are somewhat more evenly distributed, although the majority in every category occur in the subplowzone. Minimally, however, the stratigraphic evidence indicates decreased use of quartz, or increased use of other materials, in later times.

BIFACIAL TOOLS

The 38LX5 assemblage included 25 arrows and fragments, 56 darts and fragments, and 50 bifacially worked artifacts and fragments that may have served as preforms, cutting/multi-task tools, or possibly finished arrow or dart fragments. Detailed measurements, and inferred typological affiliations for all of the specimens recovered in 1978, and most of the earlier forms, are included in the appendix volume. The use of the two hafted biface dart and arrow categories appears, on the basis of typology, to have separated Archaic and Early Woodland forms (Morrow Mountain, Savannah River Stemmed, Otarre Stemmed, Thelma) from later Woodland forms (Mississippian triangular, Uwharrie, and some small unknown stemmed forms). The condition of the arrows and darts at 38LX5 can be used to help infer site use patterns during these two periods, and the data do, in fact, suggest some apparent differences. Roughly equal numbers of dart bases (N = 15) and tips (N = 14) were found on the site, while twice as many arrow bases (N = 10) were recovered than arrow tips (N = 5). The small size of the arrow tips may have resulted in some loss during screening. The overall ratio of arrow bases to tips, however, suggests some breakage and tip loss away from the site, with bases brought back to the site and then discarded during rehafting operations (cf. Griffin 1974, House and Wogaman 1978). The dart fragment incidence, in contrast, suggests breakage and discard on the site itself.

Beyond size differences (darts are thicker, and usually larger and wider than arrows), some differences are apparent in the manufacture and use of the two tool forms. Quartz is the most common material selected in the manufacture of dart forms, occurring on 16 of 38 specimens (42 percent) for which raw material identification was possible (excluding the Feature 6 cluster, which was entirely of quartz). Only four of eighteen arrows (22 percent), in contrast, were composed of quartz. Arrow points were generally made on finer grained materials than darts, with nonlocal cherts or rhyolites the primary material selected. Use of these materials may have been required by the smaller size and generally better workmanship needed to complete an arrow as opposed to a dart. The working edge angles on the dart assemblage (N = 38; $\bar{x} = 49.1^{\circ}$), taken halfway along the blade, are steeper than on the arrows (N = 18; $\bar{x} = 41.1^{\circ}$), which also argues for a different functional use. The darts probably served as multipurpose tools, while the arrows may have served solely or primarily as projectile tips (cf. Ahler 1971).

Examining the 43 typologically identifiable bifaces recovered from 38LX5 indicates a clear pattern of selection for specific raw materials, at least for hafted biface manufacture, during specific time periods (Table 5). The Middle Archaic Morrow Mountain assemblage (N = 23) is almost entirely composed of quartz (N = 20; 87.0 percent), with only minor use of other raw materials, specifically chert (N = 1; 4.3 percent) and rhyolite (N = 2; 8.7 percent) indicated. Late Archaic and Early Woodland forms, (Savannah River, Thelma, Otarre, and Yadkin) in contrast, are less commonly made on quartz; rhyolite, chert, and quartz are all about evenly employed. Late Woodland and Mississippian types (Uwharrie, Pee Dee Triangular, Caraway Triangular) exhibit a similar pattern, with quartz and non-quartz materials about evenly employed.

The raw material selection preferences over time noted on the finished biface assemblage parallel the stratigraphic distribution of unmodified debitage on the site (Table 2). The high incidence of quartz usage for Middle Archaic Morrow Mountain forms, for example, is congruent with the predominantly subplowzone distribution of quartz debitage. The increased incidence of chert, rhyolite, slate, and quartzite debitage in the plowzone, correspondingly, is matched by an increased occurrence of these raw materials on typologically identifiable Late Archaic through Mississippian bifaces.

The "other" biface assemblage consisted of a variety of forms that included probable arrow or dart preforms (Figure 18:o,p,s) as well as combination cutting/scraping tools (Figure 18:t,v). The category was designed to accommodate bifacially worked specimens that did not fit formal hafted biface or other tool categories. Many of the specimens exhibited edge damage in the form of crushing, indicating use prior to loss or discard. The range in working edge angles over the assemblage (30 to 70°, $\bar{x}$ = 49.0°) is similar to that observed on the dart forms, and argues for a similar multi-task functional orientation.

RETOUCHED FLAKES AND OTHER UNIFACIAL TOOLS

One hundred and thirteen unifacial tools were recovered in the 38LX5 assemblage, over all field seasons including 107 retouched flakes, four steeply chipped unifaces, one graver, and one spokeshave. Descriptive attributes for individual retouched flakes and the four steeply chipped unifaces are included in the appendix; Table 6 provides summary data for the 1978 retouched flake assemblage (N = 102).

TABLE 5

TYPOLOGICALLY IDENTIFIABLE HAFTED BIFACES BY RAW MATERIAL
SITE 38LX5: 1974-1978

Type	Raw Material					
	Quartz	Rhyolite	Chert	Slate	Quartzite	Total
Morrow Mountain I and II	20	2	1			23
Savannah River Stemmed				1		1
Thelma	2	3	1			6
Otarre	1	2	1		1	5
Yadkin	1	1	1			3
Uwharrie	1					1
Pee Dee Triangular		2				2
Caraway	1		1			2
TOTALS	26	10	5	1	1	43

TABLE 6
SUMMARY DATA ON THE 38LX5 RETOUCHED FLAKE ASSEMBLAGE

Raw Material	Frequency	Total Weight	Average Weight	Average Edge Angle	Average # of Edges
Quartz	55	165.6	3.0	41°	1.8
Chert	39	109.7	2.8	33°	1.9
Slate	3	49.3	16.4	49°	2.3
Quartzite	2	39.7	19.9	44°	2
Rhyolite	2	14.1	7.1	42°	2.5
Other	1	64.3	64.3	40°	2
Total	102	442.7	4.3	38°	1.9

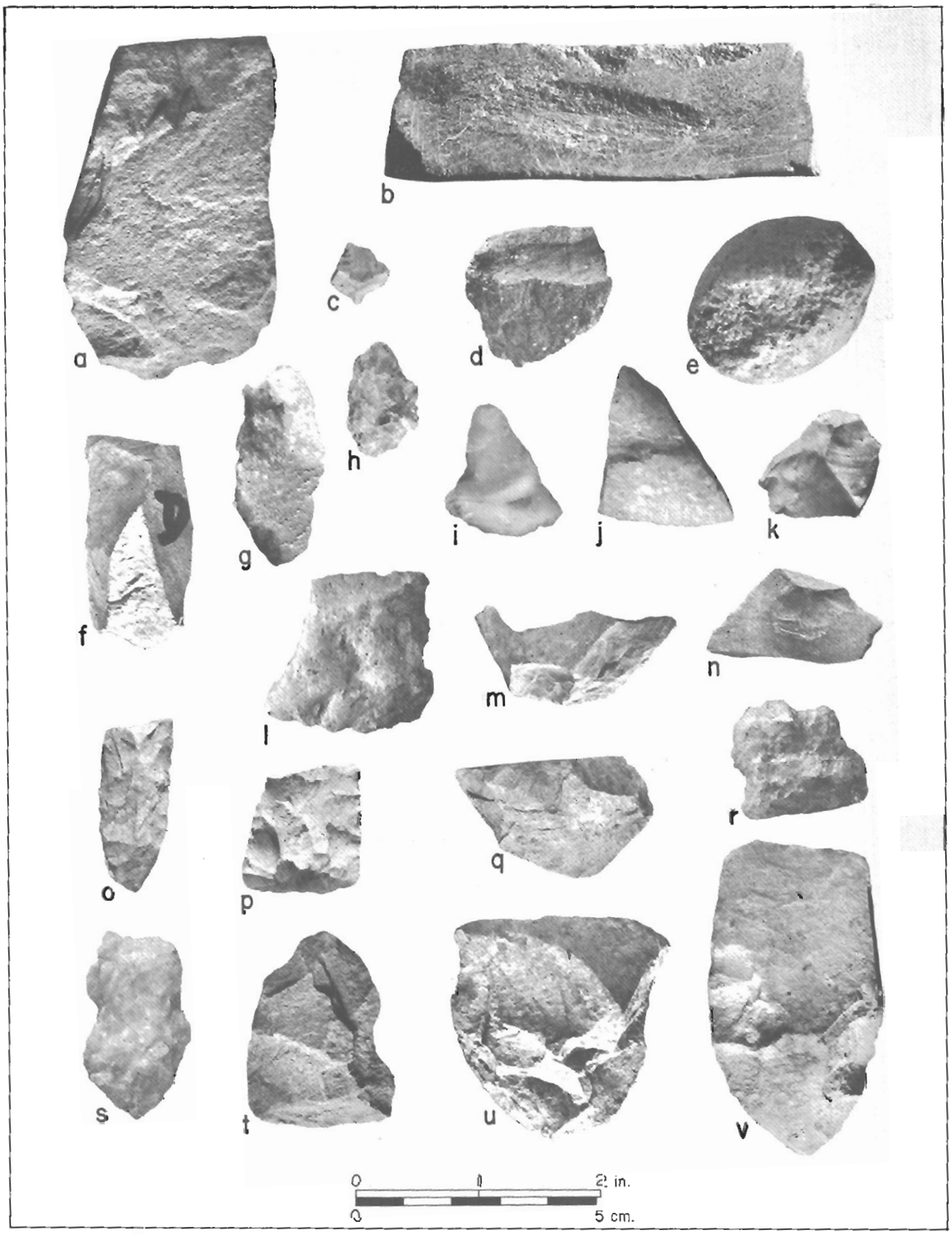


FIGURE 18 – Retouched unifacial and bifacial tools, and unusual abraded cobbles, from 38LX5. a, h, k, n, u flakes exhibiting unifacial edge damage (wear retouch); c unifacial graver; i, j, m steeply chipped unifaces; l possible denticulate; f, g blade-like flakes exhibiting unifacial wear retouch; r, t spokeshaves; o, p bifacial (arrow?) preforms; s, t, v crude bifaces exhibiting wear or intentional retouch along one or more margins; b, d grooved abrading tools; e possible pecked netsinker or bolas stone.

Proveniences: (a) F4, (b) general surface (c) CSC30 (d) EU5, plowzone (e) GS19 (f) EU40, 0-20cm (g) F4 (h) Block 4, general surface (i) GS12 (j) EU25, 22-51cm (k) EU21, 24-40cm (l) EU10, plowzone (m) EU5, plowzone (n) Block 4, general surface (o) EU5, 20-40cm (p) EU5, 20-40cm (q) GS37 (r) Block 1, general surface (s) EU42, 0-30cm (t) GS28 (u) EU21, 24-40cm (v) GS24.

Some variation in raw material selection and use is evident over the 38LX5 retouched flake assemblage. The majority of the assemblage is quartz (53.9 percent) with chert (38.2 percent) the second most popular raw material. Only minor selection appears to have occurred for other raw materials. Functional use of the two primary raw material forms appears to have differed somewhat, although both chert and quartz retouched flakes were similar in size (average weight) and in the average number of working surfaces per tool. The working edge angles differed between the two raw material types, however, with the average for chert, at 33°, considerably lower and more acute than the average of 41° noted on the quartz retouched flakes. The difference in edge angles suggests that chert flakes may have been more commonly selected for cutting functions, perhaps to take advantage of the comparatively sharper edges characteristic of this more homogeneous, isotropic raw material. Quartz, on the other hand, is somewhat more difficult to flake to a sharp edge, due in part to the presence of numerous small internal flaws characteristic of transported cobbles. When flaked, however, quartz is more wear resistant than chert, and may have been used in more heavy-duty or multi-task functions, something also suggested by the higher edge angle.

The summary measurements for the retouched flake assemblage indicate an overall orientation towards low functional angles, regardless of the raw material selected. If materials other than quartz or chert were selected, however, the resulting tools did tend to be somewhat larger in average size, with steeper working angles and more functional edges per specimen. A deliberate selection for cortical flakes, possibly to provide backing, is also apparent over the retouched assemblage. Thirty-five of the 102 tools (34.3 percent) summarized in Table 6 are on decortication flakes, a much higher percentage than the incidence of decortication flakes (11.4 percent) in the unmodified assemblage (Table 4).

The single graver recovered on the site (Figure 18:c) was composed of chert, was plano-convex in cross section, and had a 2.0 mm long bifacially isolated spur with a rounded tip. The artifact came from controlled surface collection Circle 47 at the southeast end of the site, near the Woodland pottery concentration in Block 1. One well defined spokeshave-like tool (Figure 18:r) was recovered from the site, although a number of other unifacially and bifacially worked specimens had suspicious concavities present that may have served a similar function (e.g. Figure 18:t). The clear example is from the Block 1 general surface collection. It was made on a flat quartz flake and had three notches which all measured 8 mm wide by 2 mm deep. Between two of the notches a unifacially worked edge 2.1 cm long indicated that the object

may have served as a multifunctional tool. The final unifacial tool category, steeply chipped unifaces, consisted of four specimens, three of quartz and the fourth of rhyolite (Figure 18:i,j,m). Edge angles varied from 40 to 90°, with considerable variation apparent on each specimen. None of these tools was particularly well made, and each appeared to reflect opportunistic retouch of a suitably shaped flake. Three of the four steeply chipped unifaces, and 63 of the 102 retouched flakes recovered in 1978 came from the surface or plowzone. The overall distribution suggests somewhat greater flake tool use during later (post-Archaic) periods on 38LX5.

COBBLE TOOLS AND ABRADERS

A total of 92 cobble tools and abraders were recovered at 38LX5, including 40 hammerstones and hammerstone fragments, six pitted cobbles, six possible abrader faceted cobbles, 39 possible ferruginous sandstone abraders, and one possible grinding basin. Except for the abrader faceted cobbles, which came predominantly from the subplowzone levels, most of the cobble tools came from the site plowzone or surface, indicating more extensive use of these tool forms during later (post-Archaic/Woodland) times. Seventeen intact and 23 fragmentary hammerstones were recovered; all but four, or 90 percent, were composed of quartz. The average weight of the intact specimens (N = 16) was 156.8 grams, and each had from one to five battered areas present, with an average of 2.75. One specimen (Figure 18:e) was excluded from the analysis because it had a highly unusual, grooved margin and appeared to have been an intentionally shaped weight or bolas stone. While some of the specimens are extensively battered, most exhibited one or a few small (under 2 cm diameter) localized zones of battering on prominent edges. The pitted and crushed appearance of these tools, together with the localized battering, argues for use in knapping functions. Twenty-four of the 40 recognizable hammerstones and fragments recovered at 38LX5 came from the surface and plowzone.

Six pitted cobbles were recovered at 38LX5, five of which exhibit rough, battered pits indicative of use as anvil stones, and one (Figure 19:1) with two smooth pits on opposite faces that may have functioned as a "nutting" stone. All of the tools were made of quartz, and three exhibited battering in one or more areas suggesting use as a hammerstone. The two intact specimens were moderately large, weighing 431.5 and 625.7 grams. Five of the six pitted cobbles came from the site surface or plowzone, suggesting a post-Archaic age for most or all of the tools.

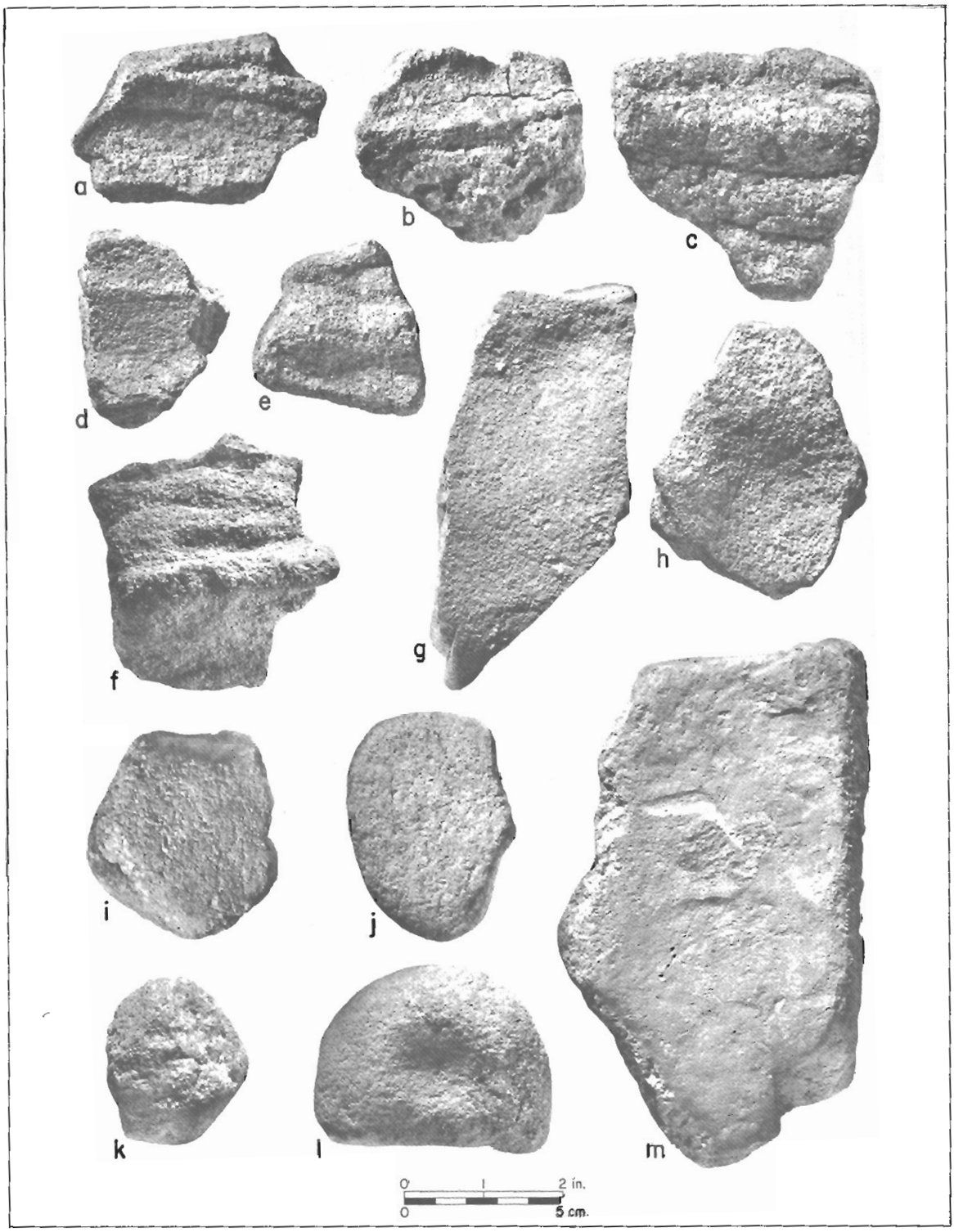


FIGURE 19 — Cobble tools and abraders from 38LX5. a-h possible ferruginous sandstone abraders; i, k hammerstones; j possible abrader faceted cobble; l pitted cobble; m possible grinding slab or basin.

Proveniences: (a) EU32, 40-61cm (b) F1 (c) F4 (d) F1 (e) Block 4, general surface (f) EU3, 20-40cm (g) Block 4, general surface (h) Block 1, general surface (i) GS21 (j) GS35 (k) CSC17 (l) GS6 (m) GS13.

Six cobbles were also recovered that exhibited possible smoothing or abrading facets on one or more surfaces (Figure 19:j). Four were composed of quartz, one of rhyolite, and one of an unidentified metamorphic material. The category consisted of all raw materials, exclusive of ferruginous sandstone, which was treated separately. The metamorphic specimen exhibited a well defined facet (Figure 18:b), and may have been used specifically for tool edge preparation, or for abrading small objects, as evidenced by the size of the facet (6.0 x 1.7 x 0.4 cm). Most of the other specimens in this category have only questionable facets that might be due to weathering. A similar weathered appearance characterized the one possible grinding basin (Figure 19:m) recovered, from near controlled collection Unit 13 at the north end of the site. This specimen, which weighed 1205.3 grams, consisted of a metamorphic fine-grained ferruginous sandstone like material. The "basin" area was poorly defined due to heavy weathering, and the facet may be naturally rather than intentionally produced. The raw material, however, is not indigenous to the site area and was imported for some purpose. Five of the six abrader faceted cobbles, and the possible grinding basin, came from the plowzone.

The final category of cobble tools recovered at 38LX5 were ferruginous sandstone abraders. A total of 39 specimens were found, 13 from the surface or plowzone, and the remainder from subplowzone levels or features. Typically these specimens are angular, fragmentary, and heavily weathered in appearance (Figure 18:d; 19:a-h). The predominantly subplowzone distribution of the possible tools argues for use during the Archaic; with the advent of pottery,sherds may have been substituted for use as abraders, although no clear examples were noted at 38LX5. Some post-Archaic continued use of the material, for abrading or for pigment, appears indicated by the plowzone specimens. The unmodified ferruginous sandstone, as noted previously, is evenly distributed between the plowzone and subplowzone units (Table 2), additional evidence for post-Archaic use of the material. Working surfaces include circular depressions, flattened facets, and U and V shaped grooves. Twenty-two of the specimens came from feature areas, arguing for other than natural modification, although the weathered appearance of most of the specimens make conclusive statements about (abrading) function impossible to put forth with confidence. Use of these objects, with their sandpaper-like texture, may have been in abrading wood, bone, or even stone (platform preparation). Some of the specimens, particularly those characterized by oval or circular depressions, present a palette-like appearance, and may have been abraded for (red) pigment (Figure 19:g,h).

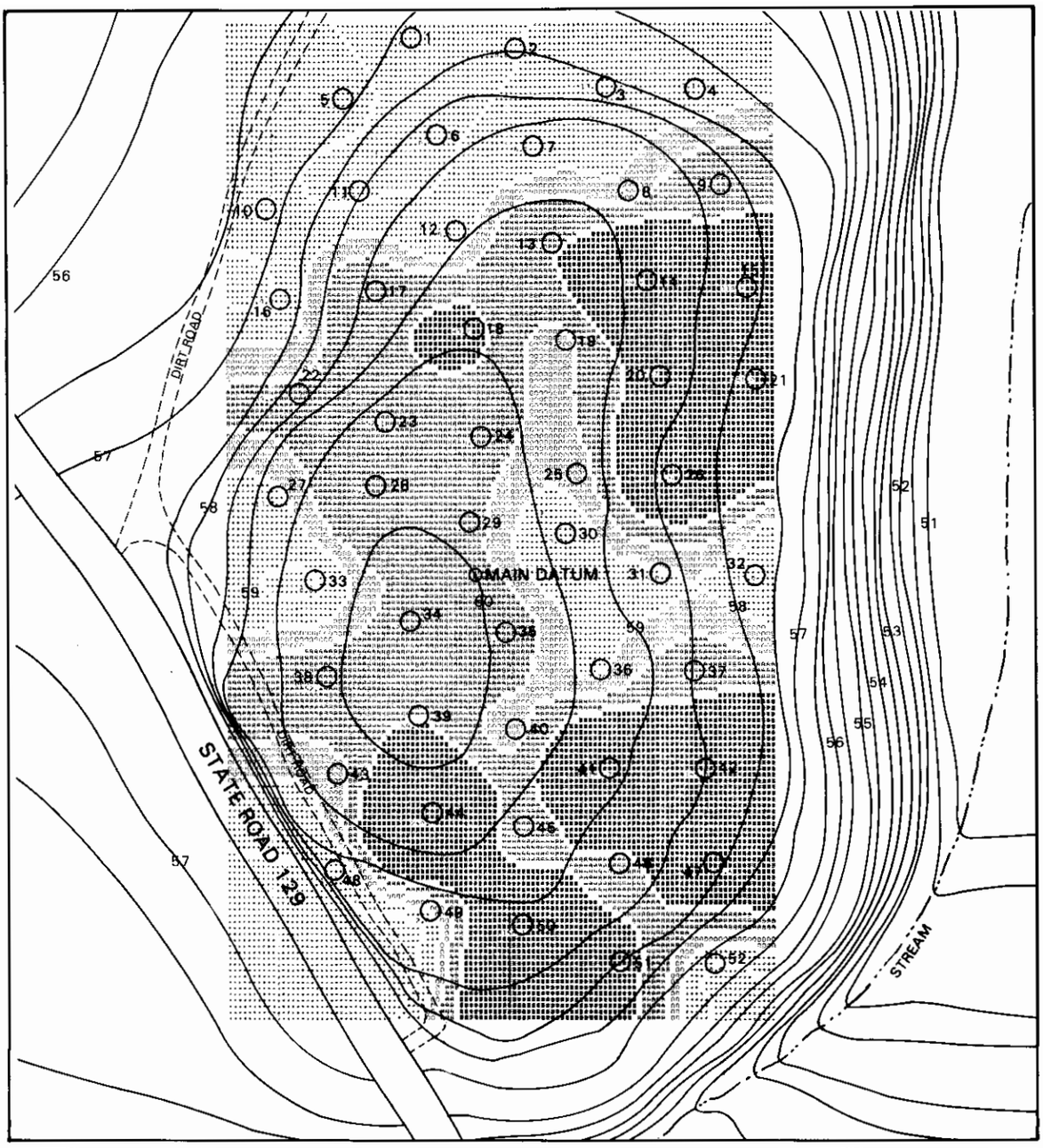
MISCELLANEOUS LITHIC ARTIFACTS

In addition to the formal stone tool categories described above, a number of unusual lithic artifacts were recovered at 38LX5. Five small fragments of steatite were recovered in EU35, from 44 to 60 cm, near Feature 5, which was tentatively assumed to be Middle Archaic in age. This suggests a possible Middle Archaic age for the steatite, although the association of the material with the feature, and even the exact age of the feature, are uncertain. Where steatite has been recovered in the general region, it is almost invariably associated with Late Archaic and/or Early Woodland remains, suggesting that possibly both the steatite and Feature 5 date to this period (cf. Coe 1964, Keel 1976, Anderson, Lee and Parler 1979). Twenty-three fragments of unmodified sandstone were recovered from the units, but little can be inferred about either function or possible periods of association. The material does not occur locally and appears to have been imported, possibly as part of larger, cobble tools.

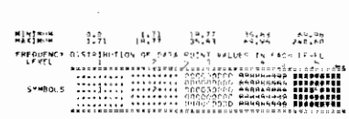
Forty small fragments of gneiss were recovered, all but one from excavation units. Aboriginal use of this non-local, Piedmont material is probable, but exactly how or in what functions cannot presently be determined. One small lump of hematite, possibly a fragment of red ocher, was found in EU19 below the plowzone. Very few artifacts were found in association, however, and the implications of this specimen remain obscure. It may, in fact, be a natural formation; ferruginous concretions where previously noted as common to some soils in the site area (Chapter 3; Lawrence 1976:19). The final category, split gravel, was represented by only four specimens, three of which came from the surface, and one from the subplowzone. These objects may reflect plow or shovel damage rather than aboriginal behavior; their low overall incidence precludes much importance on the site.

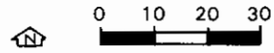
CERAMIC ARTIFACTS

A total of 2044 potsherds, weighing 9041.1 grams, and 213.9 grams of fired clay were recovered at 38LX5. None of the fired clay was clearly identifiable as daub, and the distribution, similar to that for fire-cracked rock, suggests an origin in hearth fill. The pottery assemblage was recovered predominantly from the surface and plowzone areas, with only 1712.5 grams, or 18.9 percent, from subplowzone levels in the test pit and block units. The spatial distribution of the pottery assemblage was with most of the material occurring in an arc encompassing the southern, western, and northeastern portions of the site (Figure 20). Only one major section of the scatter, at the east central



MAP SOURCE: C.A.I. Field Survey, 1978.





50 CM. Contour Interval

SOUTHEAST COLUMBIA BELTWAY PROJECT
SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SITE 38LX5 BASE MAP

CONTROLLED GRAB SURFACE COLLECTION
ALL POTTERY — WEIGHT IN GRAMS
FIGURE 20

edge of the knoll, was generally devoid of ceramics. The pottery distribution was similar to that for fire-cracked rock (Figure 17), and it is possible that the two categories are byproducts of cooking and/or habitation activity.

The pottery assemblage was sorted into five paste and twelve surface finish categories (Table 7) as described in Chapter 3, with a nondiagnostic category used to accommodate specimens of doubtful paste or finish. Sherds in the non-diagnostic category (N = 822) were usually small and weathered. The majority of the assemblage (54.8 percent) was characterized by sand paste, while plain (58.4 percent) was the most common finish encountered. On typological grounds, artifacts from at least four more groups were present, Thom's Creek (N = 13), Deptford (N = 314), Cape Fear (N = 174), and Chicora (N = 3) (Figures 21 and 22).

Most of the assemblage appears to date to the Woodland period, with only small quantities of Late Archaic (Thom's Creek) and Mississippian (Chicora) pottery present in the scatter. The Deptford and Cape Fear wares are scattered over the arc described previously, and generally occur together. The Thom's Creek material is somewhat more clustered, with most of the sherds occurring in the north central part of the site, to the northeast and east of the central knoll. The three Mississippian sherds occur at opposite ends of the scatter, one in the northern (Circle 25 area) and the other two in the southern (Circle 43 area) part of the site.

Examination of paste/surface finish combinations over the assemblage (Table 7) indicates a number of apparent selection practices. The most obvious pattern was the ubiquitous presence of sand paste over all of the finish categories. The widespread temporal occurrence of this paste strongly argues for the extended exploitation of similar (sandy) clay sources. Plain, cord marked, and linear check stamped finishes tend to occur over all paste categories, however, suggesting that at least some of the observed paste variation may also be due to the exploitation of different clay sources by the same groups of people. This is likely in the case of the linear check stamped material, since this finish is unambiguously associated with only one period, the Early Woodland, in the area (e.g. South 1976).

The presence of small micaceous inclusions was also noted over several finish categories; if these inclusions reflect a Piedmont clay source, then some movement of people or pottery from that area is indicated. One paste, the coarse sand/grit category, appears to be associated almost exclusively with plain, cordmarked, and fabric impressed pottery. This may be an idiosyncratic phenomenon, possibly vessel or pottery specific, but it may also point to a

TABLE 7
SITE 38LX5
CERAMICS: PASTE, FINISH AND TYPOLOGICAL AFFILIATIONS

Finish	Sand	Coarse Sand/ Grit	Mica	Red Clay	White Clay/ Grog	Total	Typological Affiliation
Random punctate	1					1	Thom's Creek
Drag and jab punctate	5		1			6	Thom's Creek
Linear Separate punctate	5		1			6	Thom's Creek
Incised	1	1		2		4	?
Linear check stamped	218	1	5	1	11	236	Deptford
Bold check stamped	52					52	Deptford
Fine check stamped	20					20	Deptford/Chicora
Simple stamped	5	1				6	Deptford
Fabric impressed	6	3	1	1		11	Cape Fear
Cord marked	91	20	9	33	10	163	Cape Fear
Complicated stamped	3					3	Chicora
Plain	263	288	34	85	44	714	?
	670	314	51	122	65	1,222	

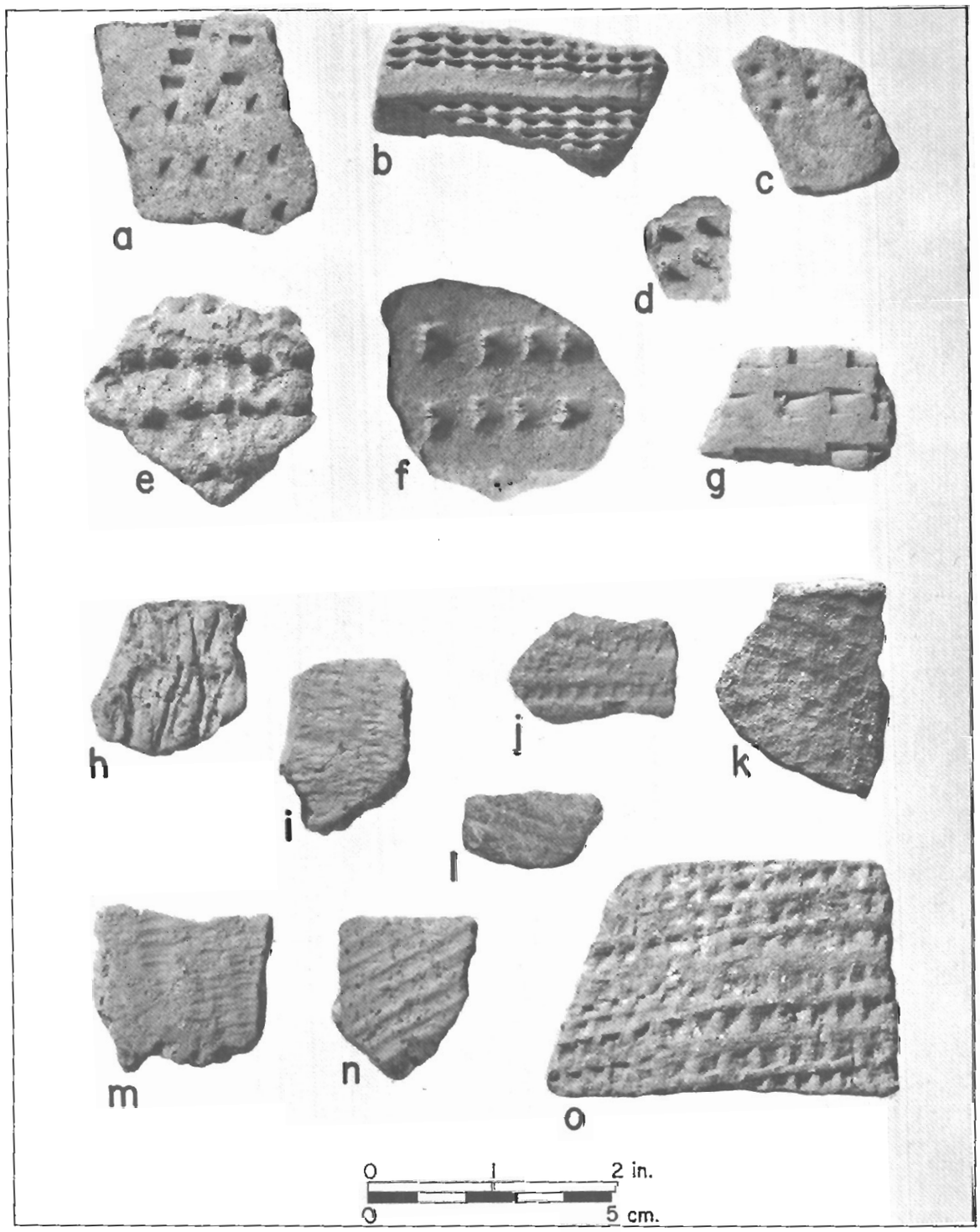


FIGURE 21 – Thom's Creek, Deptford, and (possible) Cape Fear ceramics from 38LX5. a, c Thom's Creek sherds exhibiting random punctations; b, e,g Thom's Creek sherds exhibiting drag and jab punctations; d, f Thom's Creek sherds exhibiting linear separate punctations; h Cape Fear (?) cord marked; i, m Cape Fear (?) fabric impressed; l, n Deptford (?) simple stamped; j, k, o Deptford linear check stamped. a, b sand paste with micaceous inclusions; c- g sand paste; h, i, m, n coarse sand/grit paste; j-l,o sand paste with white clay/ grog inclusions.

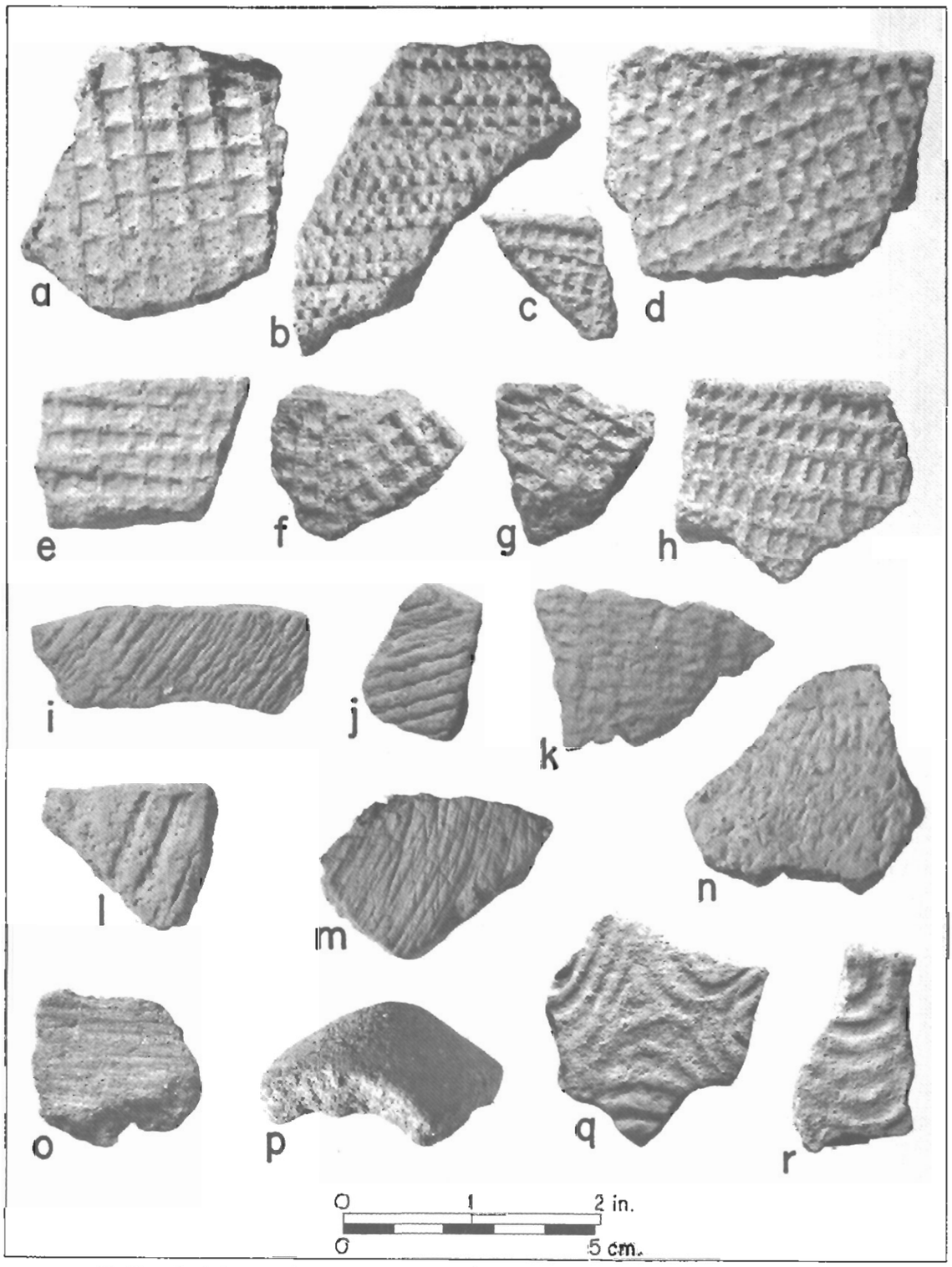


FIGURE 22 — Probable Deptford, Cape Fear, and Chicora ceramics from 38LX5. All of the sherds were characterized by sand paste. a Deptford (?) bold check stamped; b-e, h Deptford linear check stamped; f, g Deptford (?) check stamped; i, j, l, m Cape Fear cordmarked; k, n Cape Fear fabric impressed; o incised; p plain pottery base fragment; q, r Chicora complicated stamped.

temporally or behaviorally discrete ware or group of wares. This paste appears to be a temporally early ware at 38LX5. Eighty-one sherds with coarse sand/grit paste were recovered in the 27 random sample units, 36 (44.4 percent) in subplowzone levels. The other four paste categories, in contrast, were all almost entirely found within the plowzone, suggesting later popularity. The incidence of these other categories in the plowzone was as follows: sand (N = 134; 76.6 percent), sand/red clay (N = 46; 85.2 percent), micaceous (N = 12; 85.7 percent), and white clay/grog (77.3 percent). Given the absence of meaningful stratification, and the small spatial sample collected at 38LX5, however, it is difficult to attribute temporal or behavioral significance to all of the observed paste/finish variation.

CONCLUSIONS: THE 38LX5 SITE ASSEMBLAGE IN RETROSPECT

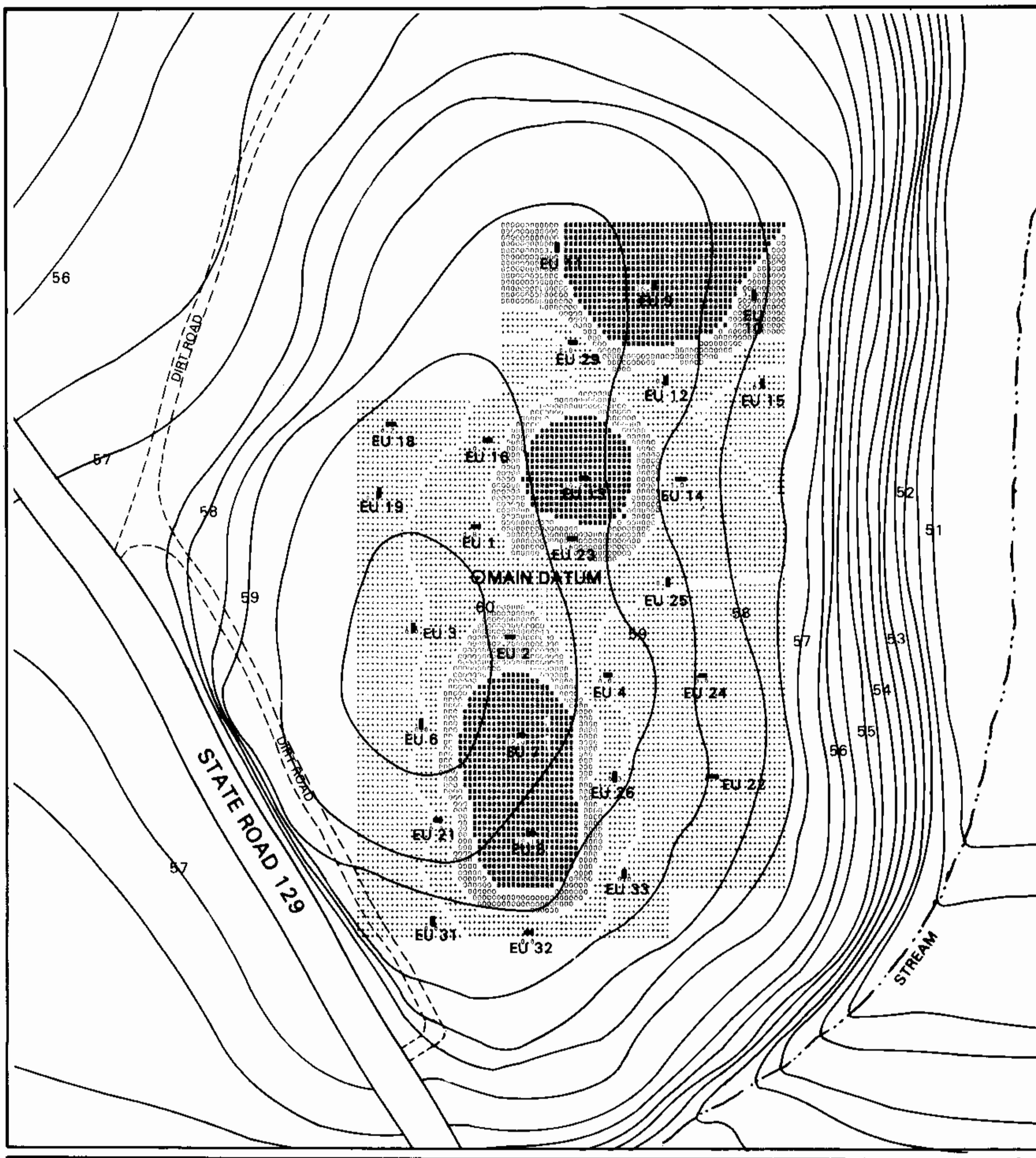
Site 38LX5 was characterized by a series of components dating from the Middle Archaic to the Mississippian period. The major period of site use, as evidenced by the ceramic and lithic assemblage, appears to have been during the Woodland period, from roughly 1000 or 1500 BC to about AD 500 to 1000. Even during this primary period of use, evidence for extended occupation is minimal; the Woodland (and other) features found on the site are small hearth or chipping/working floor clusters. No clear evidence for structures was noted, and the overall lithic assemblage, largely bifaces, hammerstones, abraders, acute angled flake cutting tools, and later stage manufacturing/reduction debris, suggests repeated, relatively short-term use of the site area in hunting/butchering activity (cf. Ferguson 1976, House and Wogaman 1978).

The 38LX5 analysis provides a tentative picture of prehistoric use of the upland/sandhills environment. The artifact assemblage recovered at 38LX5 is fairly uniform over most of the deposits, suggesting roughly similar patterns of site use over time. The overall assemblage suggests use of the site as an extraction locus probably related to hunting/butchering, given the relatively narrow range and functional orientation of the tools and debitage encountered. The quantities of fire-cracked rock and pottery encountered are considerably greater than predicted for short-term extraction loci (cf. Ferguson 1976, House and Wogaman 1978), however, and may point to seasonal, rather than shorter term occupation. The vast majority of the fire-cracked rock is in the subplowzone, while the pottery occurs mainly in the plowzone. The two distributions are similar over the site, suggesting some contemporaneity, and also selection, over time, for the same site areas. The quantity of fire-cracked rock during earlier periods may indicate somewhat

extended site use, even if not on a seasonal or year round basis. The incidence of cobble tools recovered in the plowzone suggests that a greater range of activities may have been occurring on the site during later times. Most of these cobbles are hammerstones, however, and may complement a hunting station tool kit. The complete absence of evidence for structures in the areas examined, however, coupled with the infrequent occurrence of hearths, points to relatively uncomplicated use of the site. Structures, if present, were almost certainly ephemeral, leaving no traces in the archeological record.

The controlled collection from the site surface, coupled with the excavation samples from the plowzone and subplowzone levels, provide a picture of artifact variation and distribution over the 38LX5 area.

The site distributional data also help document the post-depositional modification of the site assemblage (Figures 23, 24). Comparison of plowzone and subplowzone distributions over most artifact categories, for example, reveals clear patterns of artifact movement due to modern plowing. Artifacts tend to be spread about, and downslope from, major subplowzone concentrations. The site data set, in conclusion, offered the opportunity to explore not only local prehistoric lifeways, but also questions about recovery and analysis techniques of general archeological significance.



MAP SOURCE: C.A.I. Field Survey, 1978.

SOUTH CAROLINA

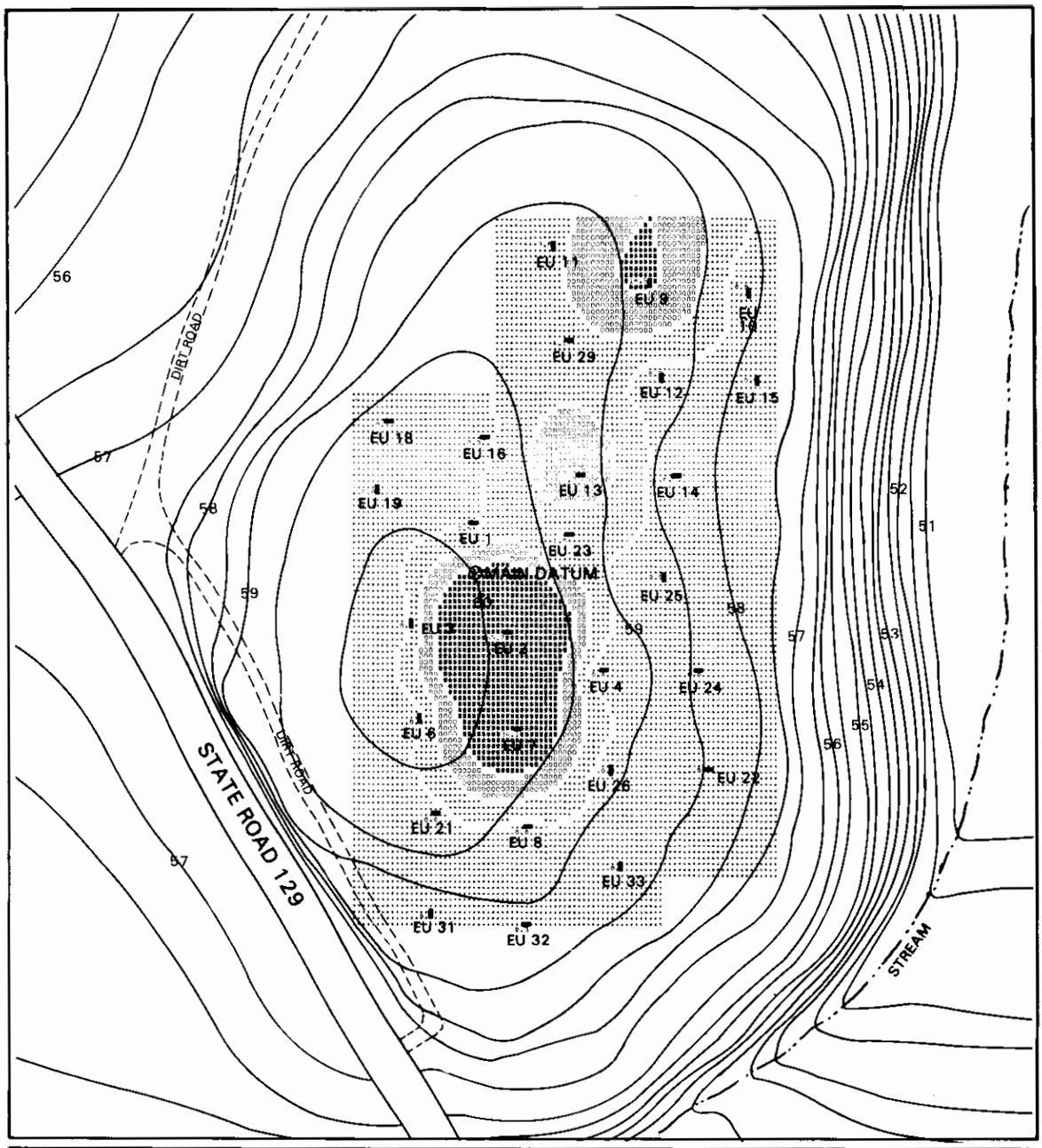
0 10 20 30 METERS

50 CM. Contour Interval

SOUTHEAST COLUMBIA BELTWAY PROJECT
SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SITE 38LX5 BASE MAP

PLOWZONE SAMPLE EXCAVATION UNITS
RHYOLITE CORES AND DEBITAGE – WEIGHT IN GRAMS
FIGURE 23



MAP SOURCE: C.A.I. Field Survey, 1978.

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

SOUTH CAROLINA

0 10 20 30 METERS

50 CM. Contour Interval

SOUTHEAST COLUMBIA BELTWAY PROJECT

SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SITE 38LX5 BASE MAP

SUBPLOWZONE SAMPLE EXCAVATION UNITS

RHYOLITE CORES AND DEBITAGE — WEIGHT IN GRAMS

FIGURE 24

CHAPTER 5

SITE 38LX106 ASSEMBLAGE

INTRODUCTION

Site 38LX106, like 38LX5, was also located in the sandhills/uplands area, the site was characterized by a light scatter of debitage and bifacial tools on the lower slope of a large knoll at the edge of, and overlooking, the Congaree River floodplain. Artifacts were found over a 20 meter interval in the sides and base of a gully that ran down the southeastern side of the knoll, formed by the erosion of an old roadbed (Figure 25). A built-up grade for the Seaboard Coast Line Railroad is located at the base of the hill, some 60 meters southeast of the site. The area of the scatter is currently in pines and characterized by a sandy, well drained soil. The hardwood forests of the floodplain begin less than 100 meters to the southeast, and only some five to eight meters lower in elevation. The site area, close to the 160 foot MSL contour, is only 30 feet above the elevation (130 feet) that characterizes much of the Congaree River floodplain in the area immediately south of Congaree Creek.

PREVIOUS INVESTIGATIONS AT SITE 38LX106

Site 38LX106 was discovered on June 19, 1975, by Albert C. Goodyear and David G. Anderson during field survey along the corridor of the alternate three routes of the proposed Southeastern Columbia Beltway. A description of the scatter was formally entered into the state site files by Goodyear on August 25, 1975, where it was designated 38LX106. In the report on this survey, Goodyear (1975a:20-21) provided a detailed description of the site area:

> This site was found in an eroding dirt road which runs down the southeastern side of the large hill just south of Congaree Creek between SC 129 and the SCL Railroad. From an aerial photograph, two roads can be seen on the southeastern slope of this hill and where the two roads merge, near the bottom, the site was found. The site is apparently Late Archaic in age since a base of a chert Savannah River point was found. About 15 flakes of bifacial retouch were found scattered near the Savannah River base, all of which were made of chert. Some of the flakes were thermally altered suggesting heat treatment of bifaces. The flakes are extremely similar in

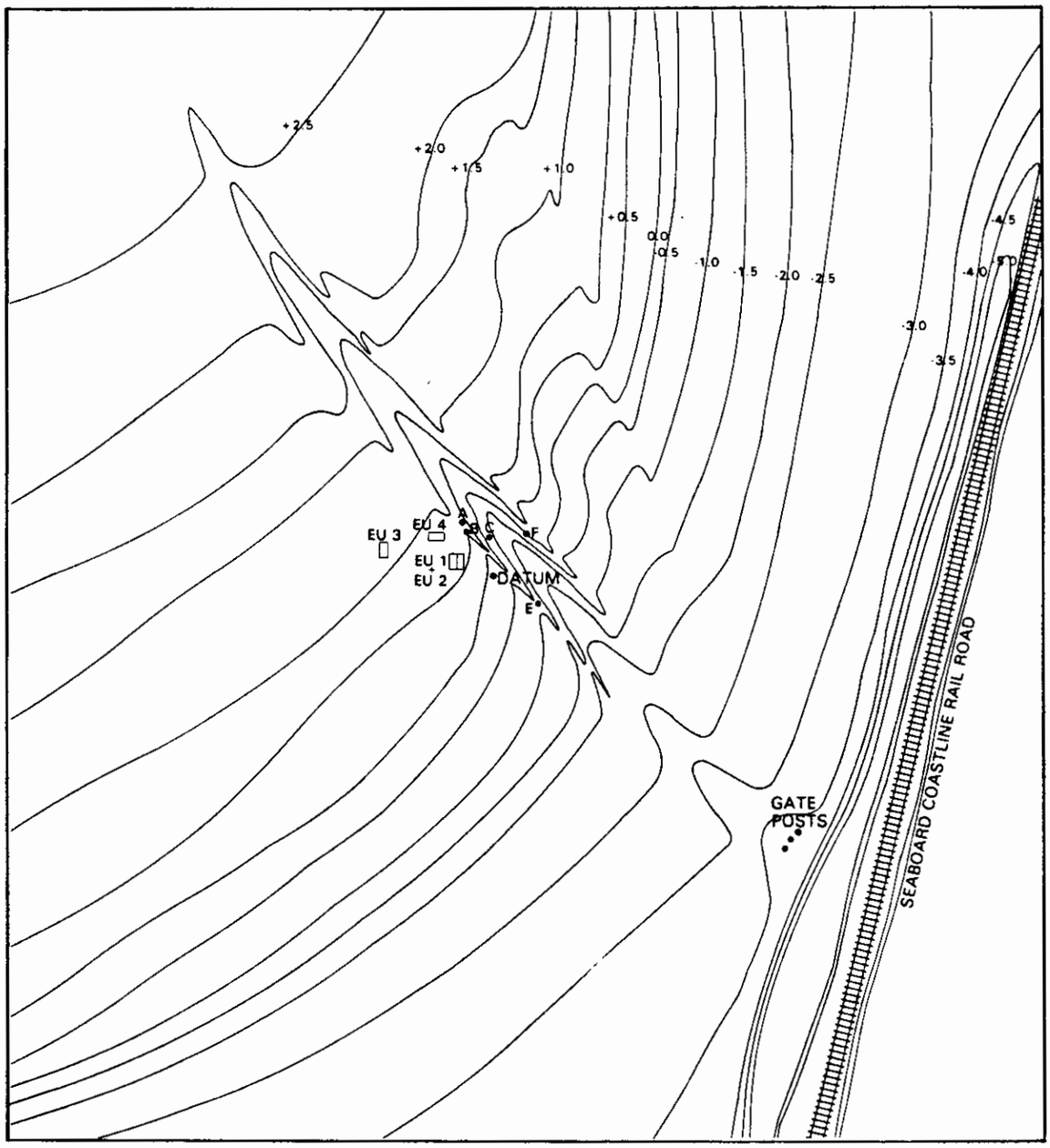
> overall size and morphology suggesting perhaps they represent resharpening debitage as opposed to manufacturing waste. One ground mudstone-like fragment of a probable atlatl weight was also found. The contents of this site were disturbed roughly over an area 50 feet on a side. While some of the material came from the eroding roadbed, several flakes were found to the south of the southernmost dirt road indicating that some of the site probably lies in the grass and trees.

Goodyear (1975a:20-22) provided a thorough discussion of the potential significance of 38LX106 and sites like it, noting that small upland scatters such as this might represent deer hunting and/or butchering stations, about which little is currently known. The ecotonal nature of the area was also noted, and the suggestion made that numerous small, similar sites might be expected to occur in this micro-environmental zone.

1978 DATA COLLECTION PROCEDURES (SITE 38LX106)

Site 38LX106 was visited several times during the 1978 data recovery program prior to subsurface testing, which occurred from July 24 to 27, 1978. Only a few artifacts were observed on the surface, by and in the gully, and these were marked with surveyor wire flags. The site had suffered extensive erosion since the 1975 visit, and in the area of the scatter the gully was over a meter and a half deep, and six meters across. A 90 cm piece of half inch iron rebar was driven flush with the ground immediately west of the gully, near the center of the scatter. From this datum, the locations of all surface artifacts, excavation units, and points for a site contour and base map were taken employing a transit and tape. Thirty-eight sightings were recorded, and the datum was tied in with the central of three gate posts located at the base of the gully, in an area overlooking the railroad tracks.

Four one by two meter test pits were opened in the woods to the northwest of the datum, at distances of from five to fifteen meters (Figures 26, 27). Unit placement was intuitively based to avoid the numerous trees that characterized the woods adjacent to the gully. All four units were located on the western side of the gully for two reasons. First, only one artifact had been observed on the opposite eastern side. Second, another gully entered the first just to the south of the site scatter, and the intervening area to the east appeared highly disturbed. Unit



MAP SOURCE: C.A.I. Field Survey, 1978.

NOTES: EU Denotes Excavation Unit.

Permanent Reference USGS Bench Mark M-57 is located approximately 244m from the site datum at an angle of 170.0° East of Magnetic North.

0 20 METERS

20 CM. Contour Interval

SOUTHEAST COLUMBIA BELTWAY PROJECT

SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SITE 38LX106 BASE MAP

ALL EXCAVATION UNITS

FIGURE 25

removal was the same as at 38LX5; the root/humus zone was taken out as a level, with arbitrary 20 cm levels opened below this to sterile deposits. Unit orientation (north-south or east-west) was determined by a coin toss. Two units were placed side by side to form a two meter block, to accommodate a possible feature. All fill was passed through one quarter inch mesh.

THE DATA ASSEMBLAGE (SITE 38LX106).

Eighty-six possible artifacts and 207.9 grams of fired clay were recovered at 38LX106 during the 1975 and 1978 field operations (Table 8). Fire-cracked rock and unmodified ferruginous sandstone accounted for nearly half of this total, with much of the remainder small fragments of chert debitage. None of the ferruginous sandstone exhibited abrader facets or other evidence for intentional modification. Two biface fragments (Figure 28:i, j) were recovered from the surface, and indicate a Late Archaic age for the scatter. One of the fragments is the base of a Savannah River Stemmed hafted knife (Coe 1964:44-45), and the other is the base of a typologically unidentifiable contracting stemmed biface. The Savannah River Stemmed is made from unaltered Allendale County chert, while the other base is made of quartz.

One charcoal stain initially interpreted as a feature was discovered in EU1, and a second one by two meter unit (EU2) was opened adjacent to the first to fully expose the area. The stain, designated Feature 1, was irregular in shape and roughly a meter in diameter. Upon removal, it was found to contain a number of small fragments of partially decomposed wood, indicating a probable origin as a tree root or stump. All of the fired clay and most of the ferruginous sandstone (N = 18, 805.9 grams) recovered from the site came from the fill of this stain; the remainder of the ferruginous sandstone occurred in the two units enclosing the feature. Five small fragments of cracked quartz weighing 8.2 grams were also found in these two units, but the sample size and distribution is too small to accurately conclude the presence of nearby hearths. Larger quantities of cracked rock were recovered in the other two units, in EU3 (N = 6, 57.2 grams) and EU4 (N = 1, 16.6 grams), from which no aboriginal artifacts were recovered. Small quartz pebbles occur naturally in some of the underlying, weathered geological deposits in the area, and a noncultural origin for some of the cracked quartz appears probable.

TABLE 8
SITE 38LX106 ARTIFACT ASSEMBLAGE
SOUTHEASTERN COLUMBIA BELTWAY PROJECT
DATA COLLECTED 1974 through 1978

Category	Frequency	Weight
Fire-Cracked Rock	12	82.4g
Ferruginous Sandstone (Unmodified)	28	852.3g
Fired Clay	-	207.9g
Debitage and Cores	43	25.8
Chert	(39)	(12.9)
Quartzite	(4)	(12.9)
Tools and Miscellaneous Artifacts	3	
Darts	(2)	
Miscellaneous (unusual) Artifacts	(1)	
Total Artifacts	86	1168.4[-1]

-1 Does not include tools and miscellaneous artifacts.

FIGURE 26 – Typical unit excavation procedure during the Southeastern Columbia Beltway project. Fill from all units was screened through 1/4 inch mesh. The view is of EU10, 38LX5, looking to the west.

FIGURE 27 – Site 38LX106 area, along and within an eroding gully near the edge of the sandhills/uplands environmental zone. Four one by two meter test units were opened in the woods west of the gully, yielding a few flakes.

All of the debitage recovered in the excavation units (N = 24) came from EU1 and EU2. No debitage was recovered in the two one by two meter units opened a few meters to the northwest and west, suggesting that the scatter is quite localized. Twenty-two chert and two quartzite flakes were recovered, and the area about EU1 and EU2 is tentatively interpreted as close to the probable center of the scatter. This area, as evidenced by Feature 1, had been intruded and disturbed by a comparatively recent tree. The entire site debitage assemblage consisted of 39 chert flakes (24 interior, 15 FBRs) and four quartzite flakes (all interior). Two of the quartzite flakes, both from the surface, were large and had a combined weight of 12.4 grams. All of the remaining flakes were very small, however, with the average weight of the chert flakes 0.33 grams and the other two quartzite flakes 0.25 grams.

The chert flakes were all composed of Allendale chert, and three of the interior flakes exhibited a glossy, pinkish texture indicative of intentional thermal alteration. The small size of the chert flakes, coupled with the high incidence of FBRs, (N = 15, 38.4 percent) suggests late-stage manufacture or more probable biface resharpening. The unaltered chert flakes were all very similar in appearance to the material comprising the Savannah River Stemmed biface base, and it is probable that they came from the same source. The flakes may, in fact, derive from resharpening this very tool, although no definite fits could be made during an attempt to replace flakes on the biface. The presence of three thermally altered chert flakes suggests either accidental (post-detachment) heating, or else the reduction or maintenance of another, heat-treated tool on the site. That other tools were probably used is also indicated by the quartz biface base, and the four pieces of quartzite debitage.

Two other possible artifacts were found on the site, a piece of siltstone that might have been an atlatl weight fragment, and a small piece of gneiss. Neither specimen, however, exhibited clear evidence for intentional smoothing. Moderate quantities of smoothed and eroded siltstone were noted in the gully, arguing for a local, non-aboriginal origin for the object. The use to which the gneiss might have been put, if it were imported onto the site, remains unknown.

CONCLUSIONS - THE 38LX106 SITE ASSEMBLAGE IN RETROSPECT

The 38LX106 assemblage consisted almost exclusively of bifacial tools and later stage manufacturing/reduction debris. Some ferruginous sandstone and cracked rock was present, suggesting the possibility of hearth areas, although none was conclusively identified. One concentration of debitage was found that may have been at or near the center of the original scatter, but the area had been disturbed by a recent tree. The 38LX106 assemblage suggests a single period of site use, during the Late Archaic, by a group of people employing (predominantly?) bifacial tools of chert, quartz, and quartzite. The size of the group was probably fairly small, since the scatter was constrained to an area roughly 10 meters in diameter, and was generally characterized by a low artifact density. Given the narrow range of tools and debitage, and the low density of fire-cracked rock, use of the site as a short-term extraction loci is probable (cf. Ferguson 1976, House and Wogaman 1978). The orientation of the stone tools towards cutting functions, furthermore, argues for (deer?) hunting/butchering activity.

CHAPTER 6

SITE 38LX82 ASSEMBLAGE

INTRODUCTION

The third site examined, 38LX82, was a small cluster of artifacts located in a flat, low-lying field near an old barn within the Congaree River floodplain. The river floodplain in this area is poorly drained, and a number of intermittent tributary channels and low swampy depressions are present, all draining into Congaree Creek, which in turn drains into the Congaree River some three kilometers to the east. Over the past two and a half centuries the floodplain area has been cleared and partially drained to promote farming activity, but through inspection of aerial photographs it is possible to determine the locations of some of the original swamps and channels. The 38LX82 area is located about 100 meters south of a swampy circular depression some 50 meters across, that has been partially drained in historic times by a ditch cut now overgrown into a hedgerow (Figure 29). Artifacts have been reported both to the north and south of this depression; the 1978 operations focused on the southern area, immediately in the highway right-of-way.

PREVIOUS INVESTIGATIONS AT SITE 38LX82

Site 38LX82 was located in August of 1974 by David G. Anderson during the survey of the second alternate for the Southeastern Columbia Beltway. The site was entered into the state files on September 8, 1974, and the report on the alternate two survey, released later that year, contained a brief description of the scatter:

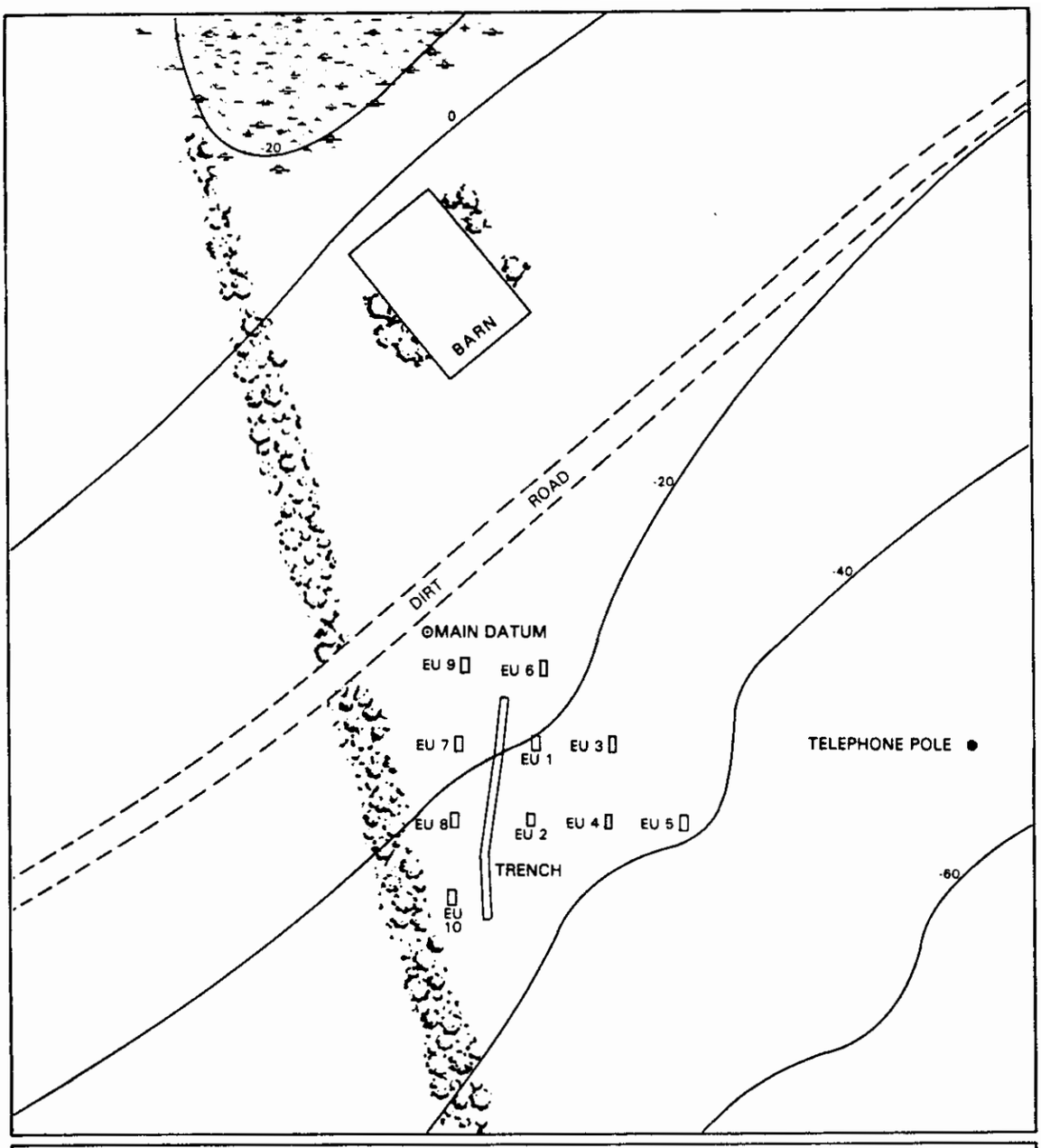
> This site consists of a very small cluster of artifacts in an area some 40 feet in diameter. The site is under cultivation, with soybeans the present crop. The terrain is flat and the nearest present source of water is several hundred feet away. The soil is alluvial in nature, consisting of fine silts and sands. The fields around this site are virtually devoid of archeological materials, although an occasional flake or tool may be found. Judging by the occurrence of extensive sites located to the north (38LX54, 38LX50) and east (38LX81, 38LX19) the artifacts found outside of the small area of clustering may reflect spillover from these adjoining areas. Inspection of the artifacts indicates a Late Archaic and Woodland occupation; due to the alluvial nature of the soil, more of the site may be undisturbed below the present plow zone (Anderson 1974:140).

During the original visit to the site in August of 1974, a controlled surface collection was made, consisting of the recovery of all artifacts within a 50 foot diameter circle for a period of 20 minutes. No artifacts were observed outside of the circle, and the number found within the collection area, 22, was low compared to the density observed at a number of other sites in the area (Anderson 1974:156).

The 38LX82 area was revisited by Albert C. Goodyear and David G. Anderson on June 27, 1975, during the survey of the alternate three route for the Beltway. A general collection was made over the surface of the scatter, and several additional artifacts were recovered. The August 1974, and June 1975 visits are the only two documented in the state site files, and for which collections exist. The general area of the site was visited early in 1978, and artifacts were observed, but not collected, in the field to the northwest of the depression (James L. Michie: personnel communication). On February 8, 1978, Michie recorded this scatter as 38LX94 in the state site files. The site was described as extending 200 feet (N/S) by 75 feet (E/W), and located 250 feet from the barn. Michie observed chert, quartz, quartzite, and slate flakes, two unifacial tools, and cracked quartz within the scatter, which he interpreted as an Early Archaic hunting station. No collections were made at the time of Michie's visit, nor are any known to have been made since. A second site, 38LX54, is located some 300 meters north of the depression extending along Congaree Creek. The intervening area, and the fields immediately around the 38LX82 scatter, were found to contain few artifacts. Close to swamps or water sources, however, artifacts were almost invariably found, and sites in these areas were generally characterized by a moderately high artifact density. Site 38LX82, therefore occupies a somewhat atypical position, occurring in the flat low-lying floodplain well away from swamp or tributary margins. Use of the area appears to have been prompted by the nearby circular depression, which in the past may have supported a small swamp.

1978 DATA COLLECTION PROCEDURES (SITE 38LX82)

At the time of the 1978 fieldwork 38LX82 was partially overgrown, to a height of about one-half a meter in weeds and grasses (Figure 30). The field had apparently last been plowed the preceding fall or winter, and had lain fallow for almost a year. Surface visibility was poor, and some two hours were spent walking back and forth over the end of the field resolving the extent of the site. Ten one



MAP SOURCE: C.A.I. Field Survey, 1978.

NOTES: EU Denotes Excavation Unit.

Permanent Reference Point 1 (Southern Bell Pole) is located 73.5m from the site datum at an angle of 106.4° East of Magnetic North. Permanent Reference Point 2 (SW Corner of Barn) is located 32.5m from the site datum at an angle of 7.3° East of Magnetic North.

0 20 METERS

20 CM. Contour Interval

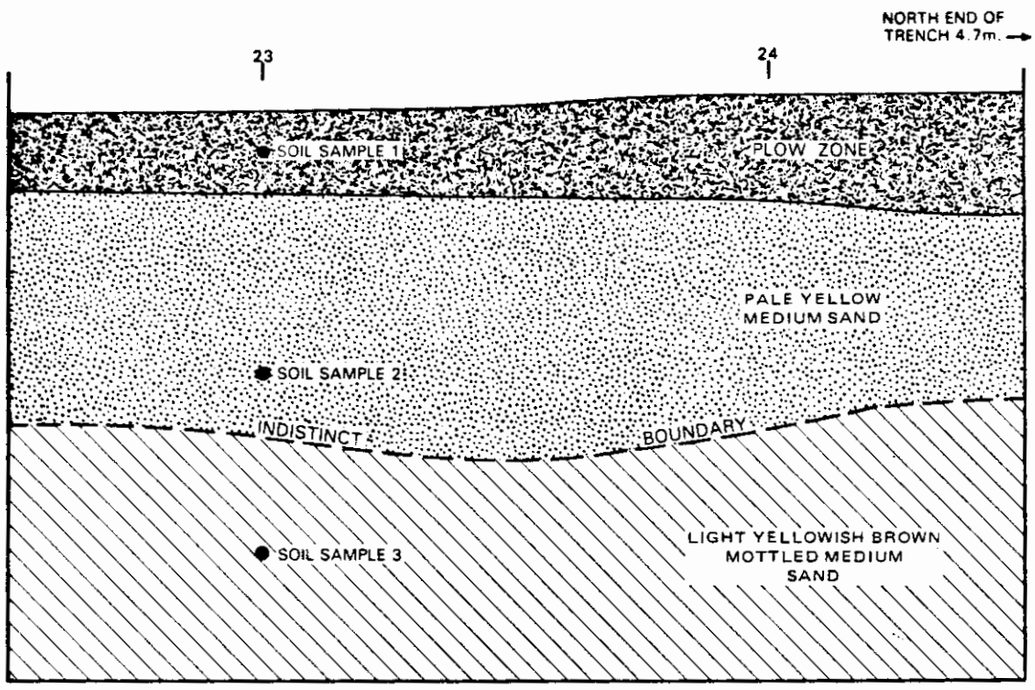
SOUTHEAST COLUMBIA BELTWAY PROJECT

SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PULIC TRANSPORTATION

SITE 38LX82 BASE MAP

ALL EXCAVATION UNITS

FIGURE 29



PARTICLE SIZE BREAKDOWN

SAMPLE	GRAVEL	SAND	SILT	CLAY
1	4.81%	89.20%	6.0%	
2	5.77%	85.63%	8.23%	0.37%
3	11.13%	82.08%	6.79%	

S.S. 1 GRAYISH BROWN (10 YR 5/2) MEDIUM SAND
S.S. 2 PALE YELLOW (2.5 Y 7/4) MEDIUM SAND
S.S. 3 LIGHT YELLOWISH BROWN (2.5 Y 6/4) MOTTLED, MEDIUM SAND

SOURCE. C.A.I. Field Survey, 1978.
SOILS ANALYSIS. Dr. Michael Katuna, Dept. of Geology
The College of Charleston.


SOUTH CAROLINA

SOUTHEASTERN COLUMBIA BELTWAY PROJECT
SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SITE 38LX82 SOIL PROFILE

SEGMENT OF MAIN TRENCH, NORTH END OF SCATTER

FIGURE 32

by two meter test units were then systematically dispersed over the scatter using baselines laid down with a transit and triangulating in the remaining units with two 30 meter fiberglass tapes. A datum, consisting of a 90 cm piece of half inch iron rebar, was driven flush with the ground immediately south of a dirt farm road running by the site. Using a transit and stadia rod, the elevation and distance to all of the excavation units were determined, and the datum was tied in to points on the nearby barn and to a telephone pole 50 meters east of the scatter. Fifty-five separate sightings were made over the site area, and were used to prepare the site base map (Figure 29).

The plowzone from each of the ten one by two meter pits at 38LX82 was removed as a unit, with arbitrary 10 cm levels opened into the subplowzone in four of the units. All fill was passed through one quarter inch mesh. The site assemblage was found to lie entirely within and immediately at the base of the plowzone, with no artifacts recovered more than two or three centimeters into the subplowzone deposits. To check for the possibility of subplowzone features, or deeply buried artifact-bearing strata, a backhoe trench 30 meters long and 0.6 meters wide was opened across the site, through the area of maximum artifact density (Figure 31). The trench was opened to a depth of from one to one and a half meters along its entire length, with no evidence observed for subplowzone artifacts or features. Below the plowzone, the soil profile was found to consist of hard-packed medium sands with increasing amounts of gravel with depth (Figure 32). Inspection of the drainage ditch cut immediately west of the site, which had been opened to a similar depth, revealed identical stratigraphy.

Over the course of the fieldwork at 38LX82, artifacts were collected from the surface around each of the units, and were assigned a general collection provenience number corresponding to the number of the nearest pit. After all of the units had been opened, an intensive surface collection was made, again with all artifacts bagged as a grab sample in relation to the nearest pit.

THE DATA ASSEMBLAGE (SITE 38LX82)

A total of 491 individual specimens were collected from 38LX82 in 1974, 1975, and 1978, the vast majority (N = 453, 92.3 percent) from the 1978 data recovery operations (Table 9). A moderate amount of fired clay (838.7 grams) and brick (96.6 grams) was also recovered, all from

TABLE 9
SITE 38LX82 ARTIFACT ASSEMBLAGE
SOUTHEASTERN COLUMBIA BELTWAY PROJECT
DATA COLLECTED 1974 THROUGH 1978

Category	Frequency	Weight
Fire-Cracked Rock	248	1689.2g
Ferruginous Sandstone (Unmodified)	9	18.3g
Fired Clay	-	838.7g
Brick		96.6g
Pottery	2	4.6g
Sand	(2)	
Debitage and Cores	120	168.1g
Quartz	(117)	(166.9g)
Chert	(2)	(0.7g)
Quartzite	(1)	(0.5g)
Tools and Miscellaneous Artifacts	112	-
Retouched Flakes	(6)	
Arrows and Darts	(5)	
Hammerstones	(3)	
Other Formal Tools	(7)	
Miscellaneous (Unusual) Artifacts	(91)	
Total Artifacts	491	2815.5[-1]

-1 Does not include tools and miscellaneous artifacts.

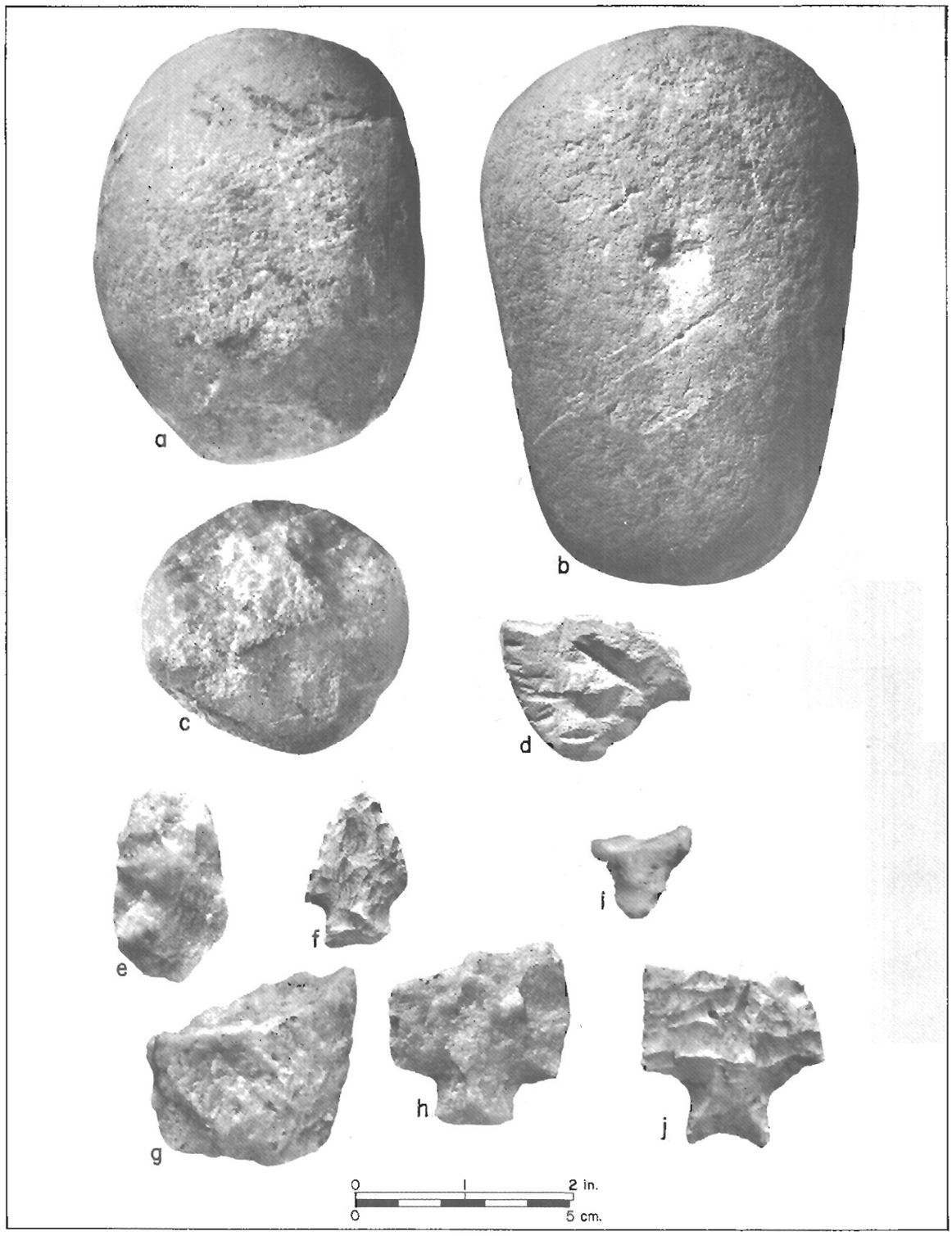


FIGURE 28 — Bifaces, cobble tools, and miscellaneous artifacts from sites 38LX82 and 38LX106. a, c hammerstone/mauls, 38LX82; b hammerstone, pitted cobble/anvil tool, 38LX82; d carved steatite disk fragment, 38LX82; e crude hafted biface or preform, 38LX82; f Otarre Stemmed-like biface, 38LX82; g bifacial knife or preform fragment, 38LX82; h Savannah River Stemmed biface base, 38LX82; i hafted biface basal fragment, 38LX106; j Savannah River Stemmed biface base, 38LX106.

Proveniences: 38LX82: (a, b, d, e, h) general surface; (c) surface by EU10, (f) EU1, plowzone; (g) EU10, plowzone. 38LX106: (i, j) general surface.

the 1978 excavation units. Major artifact categories, and their percentage of the total assemblage, by count, included fire-cracked rock (50.5 percent), unmodified ferruginous sandstone (1.8 percent), unmodified debitage and cores (24.4 percent), tools and other (unusual) specimens (22.8 percent), and pottery (0.4 percent). Detailed distributional information for all artifact categories, encompassing all of the proveniences recorded from 1974 to 1978, is provided in the appendix volume, together with descriptive and metric attributes for the various tools.

TEMPORAL ORDERING OF THE 38LX82 ASSEMBLAGE

Typological analysis formed the principal method for dating the site assemblage; no features were detected from which radiocarbon samples might have been collected. Two sand tempered potsherds were recovered, one with plain finish from the 1974 general surface collection, and one with a cord marked finish found in the plowzone in EU8. The cord marked sherd fits within South's (1976) Cape Fear ware group, but this does little more than indicate probable Woodland period site use. Cord marked and plain pottery have a long occurrence in this part of the Southeast, from the Early Woodland through the Mississippian (cf. Anderson, Lee, and Parler 1979:82).

Temporally diagnostic lithics recovered from 38LX82 included one quartz Savannah River Stemmed base (Figure 28:h) from the 1974 controlled surface collection, and one rhyolite stemmed point from the plowzone in EU1 that resembles an Otarre Stemmed (Figure 28:f). The two bifaces suggest Late Archaic or Early Woodland site use, and Woodland site use is also suggested by the two sherds. A perforated steatite object fragment was also found, arguing for Late Archaic/Early Woodland site use (cf. Anderson, Lee and Parler 1979:65). Given the low incidence of pottery it is probable that major site use was during the Late Archaic, although it is possible that two or even more components may be present.

FIRE-CRACKED ROCK, UNMODIFIED FERRUGINOUS SANDSTONE, AND FIRED CLAY

Two hundred and forty-eight pieces of fire-cracked rock weighing 1689.2 grams were recovered from general and controlled proveniences at 38LX82. As at all of the Beltway sites, most of this material was quartz. The majority of the fire-cracked rock (65 percent) occurred in the northwestern

part of the scatter, in and around Units 1, 6, 7, 8, and 9. Examining only the material in the excavation units, this tendency is even more pronounced, with 81.6 percent of the excavation sample coming from these five units. Fired clay, in contrast, occurred in very low quantities in all of the excavation units, with a single massive concentration (691.0 grams; 82.4 percent) in excavation Unit 4. The fired clay and fire-cracked rock distributions are markedly different, however, and may reflect different activities, or different formation processes. The presence of a considerable amount of fired clay in the plowzone in excavation Unit 4 suggests a nearby hearth, although only a small number of artifacts were noted in the fill of this unit, suggesting accidental formation of the fired clay, perhaps from a burned tree. Ferruginous sandstone was only incidentally noted in the units, and did not appear concentrated in any area. No evidence for modification or use of the material was detected, and its presence on the site may be due to natural processes. As noted in Chapter 3, the material occurs in some local soils, and a possible nearby source is only a half a kilometer to the north, on Site 38LX62.

UNMODIFIED DEBITAGE

One hundred and twenty pieces of unmodified debitabe were recovered at 38LX82, most of which (N = 117, 97.5 percent) were quartz (Table 10). One interior flake of quartzite, and one interior flake and one FBR of chert were also recovered. No cores were present, although a moderate number of cortical flakes and chunks were recovered (N = 26, 22.2 percent), and indicate some possible initial or early stage manufacturing/reduction activity. Most of the pieces of unmodified debitage are quite small ($\bar{x}$ - 0.71 grams), however, indicating that most stone-working activity involved the later stages of tool manufacture or else the maintenance (e.g. resharpening) of previously completed tools. The distribution of the debitage over the site differed slightly from that observed for fire-cracked rock, towards the southwestern end of the scatter. Of 98 pieces of debitage found in the excavation units, 88 or 89.8 percent came from Units 2, 7, 8, and 10, within an area roughly 15 to 20 meters in diameter. The fire-cracked rock and debitage distributions, taken together, suggest that stoneworking activity took place south of possible hearth areas, although this is a highly speculative inference.

TABLE 10
UNMODIFIED CORES AND DEBITAGE, BY RAW MATERIAL
SITE 38LX82: 1974-1978

	Cores	Chunks	PDC	SDC	INT	FBR	Total Count	Total Weight
Quartz	-	8	9	9	79	12	117 (97.5)	166.9 (99.3)
Chert	-	-	-	-	1	1	2 (1.7)	0.7 (0.4)
Quartzite	-	-	-	-	1	-	1 (0.8)	0.5 (0.3)
Totals	-	8 (6.7)	9 (7.5)	9 (7.5)	81 (67.5)	13 (10.8)	120 (100.0)	168.1 (100.0)

( ) = percent each category.

BIFACIAL AND UNIFACIAL TOOLS

Fourteen chipped stone tools were found at 38LX82, five darts and dart fragments, six unifacially retouched flakes, and three other bifaces. The darts included one intact specimen, three bases, and one tip. The higher number of bases than tips might suggest some rehafting on the site, although the sample size is low. Three of the dart fragments were made of quartz and the other two specimens, one intact and one base, were made of rhyolite; the presence of the latter material was surprising since no rhyolite debitage was recovered. It was possible to record working edge angles for all five of the bifacial tools, and the average, 53°, suggests a multitask functional orientation (cf. Wilmsen 1970). All of the broken specimens exhibit transverse fractures, suggesting breakage while in use, possibly in cutting or prying functions.

The three other bifaces were all of quartz, and included one crude preform-like specimen (Figure 28:3) and one large (hafted?) knife base (Figure 28:f). The third specimen was a tip of some kind, possibly from a dart or preform. The edge angles on these specimens vary somewhat, but average to 56.7°, suggesting multifunctional roles.

Six unifacially retouched flakes were recovered from the site, five of quartz and the sixth of rhyolite. Four of the specimens exhibited two or more working edges, and the functional angles, which ranged from 20 to 90°, averaged 39°. The low average suggests that retouched flakes may have been used predominantly for cutting functions.

The distribution of the chipped stone tool categories over the site is similar to the patterning noted for the unmodified debitage. Of ten tools for which detailed provenience information is available, seven came from the southwestern part of the site, in the cluster formed by Units 2, 8, and 10, and two others came from EU1, immediately to the northeast. The stone tools, like the debitage, appear to cluster in an area roughly 15 to 20 meters in diameter.

HAMMERSTONES AND PITTED COBBLES

Two intact hammerstones, one hammerstone fragment, and one intact pitted cobble were found at 38LX82, all from the surface of the site. Considering the large size of these objects, and the shallow depth of the artifact-bearing deposits

(about 15 to 20 cm), it is probable that an appreciable portion of the site cobble tool assemblage is represented by the four specimens. This reflects, of course, a size effect, or the tendency of large objects to be overrepresented on a site's surface, as extensively described by Schiffer and Baker (1975).

All three of the hammerstones were made of quartz, and the two intact specimens were massive, weighing 2083.0 and 649.2 grams, respectively (Figure 28:a, c). Both of the intact specimens exhibited extensive battering, as well as evidence for use as an anvil in the form of battered and slightly pitted faces. The single well defined pitted cobble (Figure 28:b) was also large (2220.0 grams), although unlike the hammerstones it was made of sandstone. The specimen had pronounced pits on opposing faces, one relatively smooth and U-shaped, and the other rough and irregular in form. The variation in pit morphology suggests that the cobble tool may have had more than one function. The rough, irregular v-shaped pit suggests use as an anvil, while the smooth, u-shaped pit on the opposing face suggests possible use in nut or seed processing (cf. Spears 1975, 1977). Two of the four cobble tools were recovered in 1978 and could be tied in to specific proveniences. One came from the southern (GS10) and one from the west central (GS7) part of the scatter, where most of the debitage and chipped stone tools occurred.

MISCELLANEOUS LITHIC AND CERAMIC ARTIFACTS

Ninety-one miscellaneous lithic artifacts were recovered at 38LX82, including 64 pieces of split gravel, one possible fragment of red ocher, three pices of ground (?) slate, 22 pieces of unmodified sandstone, and one piece of carved steatite. Except for the steatite, the assemblage could be natural; the split gravel fragments can be reasonably attributed to shovel or plow damage given the literally tremendous quantity of gravel (8507.2 grams) recovered in the excavation units. The unmodified sandstone and the red ocher, a piece of fine-grained ferruginous sandstone, may also be natural occurrences within the deposits. The slate fragments came from the plowzone, and may be part of a recent roofing tile, although the pieces are too small to conclusively demonstrate this. Several small brick fragments (96.6 grams) were also found in the plowzone levels, reinforcing the possibility of historic inclusions in the assemblage. The historic artifacts are assumed to be related to use of the nearby barn.

The fragment of carved steatite is unquestionably an aboriginal artifact, and appears to be part of a perforated steatite object (Figure 28:d). The fragment weighs 99.2 grams, is disk shaped, and exhibits part of a smoothed central perforation as well as a notched rim. The specimen has been nicked somewhat by plow shares, but does not appear to have been substantially reduced in recent times. The object, a probable boiling stone, suggests Late Archaic site-use, the period during which similar specimens are common in this general region (Anderson, Lee, and Parler 1979:65).

The final two artifacts from the site were potsherds, both of which had a sand paste. A small plain finished sherd (2.0 grams) came from the general surface area, while a small sherd exhibiting cord impressions (2.6 grams) was found in the plowzone in Unit 8, in the center of the debitage and tool cluster. The general scarcity of pottery on the site makes interpretation of these two sherds difficult. Site use does not, however, appear to have focused on activities requiring pottery.

CONCLUSIONS - THE 38LX82 SITE ASSEMBLAGE IN RETROSPECT

The analysis of materials recovered from 38LX83 indicates that one or more episodes of site-use occurred during the Late Archaic and/or Woodland. The primary period of site use appears to date to the Late Archaic, as evidenced by the general absence of ceramics and the presence of Savannah River and Otarre Stemmed-like bifaces, and the occurrence of a perforated steatite object. Only two sherds document the presence of later, possibly Early Woodland (?) period site-use. If these sherds had not been found, the entire site assemblage could be readily attributed to a preceramic, Late Archaic component, or alternatively to an aceramic use of the site during an early ceramic period (Late Archaic/Early Woodland).

The artifact assemblage suggests that a diversity of activities may have been taking place on the site. Fire-cracked rock and fired clay occur, and both suggest the presence of hearth areas. The unmodified debitage assemblage includes both early and later stage debris, indicating both manufacture and maintenance of stone tools on the site. At least some of the tools recovered at 38LX82 were probably manufactured elsewhere, as evidenced by the occurrence of two rhyolite bifaces and one rhyolite uniface, with no associated debitage of this material. Raw material selection appears almost exclusively directed toward local lithic materials. Several massive worked (pitted, battered) cobbles are present in the assemblage, and are interpreted as plant

processing tools. Extensive use of these tools as anvils in stoneworking, a possible alternative function, appears precluded by the low overall incidence of debitage. Most of the debitage and tool forms occurred in an area about 20 meters in diameter, suggesting site use by a fairly small group. The relatively wide range of debitage and tool forms in the assemblage, and the presence of fire-cracked rock, argue for site use for both possible habitation and plant processing/extraction activity (cf. Ferguson 1976, House and Wogaman 1978). A possible interpretation might include somewhat extended (seasonal) use of the area by a small group, possibly focusing on plant processing but also carrying on a range of other activities.

CHAPTER 7

SITE 38LX64 ASSEMBLAGE

INTRODUCTION

Site 38LX64, like 38LX82, was located in the alluvial floodplain, along the southern edge of a broad swampy tributary of Congaree Creek (Figure 33). The site extended over about three acres and at the time of excavation was under cultivation. The area of the scatter was characterized by low relief, and graded almost imperceptibly into the swamp, which began less than a meter in elevation below the field proper. An extensive controlled surface collection had been previously conducted at the site, in 1975 (Goodyear 1975a:28), and was augmented during the 1978 season. The heaviest artifact scatter was located near the swamp edge, and a block of eleven one by two meter units were opened in this area. A number of features were encountered, including probable hearths and working floors, and the site assemblage was found to span the Early Archaic through the Early Woodland. Other test units were placed over the scatter, and approximately 100 meters of trenches were opened, to a depth of from one to three meters, in an effort to find features and possibly deeply buried (water-logged?) deposits. The artifact-bearing deposits were found to be shallow in most areas, and mixed by repeated use. The assemblage, taken as a unit, however, can be used to provide a general picture of Archaic use of the floodplain environment.

PREVIOUS INVESTIGATIONS AT SITE 38LX64

Site 38LX64 was originally discovered by James L. Michie, who visited the area during the 1960s as a part of his personal research along Congaree Creek. During the first survey on the right-of-way for Southeastern Columbia Beltway, in early 1974, the site was found to lie near a planned connector road. A brief description of the scatter was included in the report, which was released in May 1974:

> 38LX64 is a large site covering about two acres located to the south of 38LX19 overlooking the same swamp that the latter affronts. The site is a relatively flat elevated field located some six to eight feet above the swamp floor of a small seasonal branch of the Congaree Creek. The site has been extensively plowed and is presently under cultivation.

> The surface of the site is characterized by a scatter of ceramic fragments and quartz, slate, and chert projectile points, tools, and flakes. Inspection of the material indicates that the site was occupied throughout much of the Archaic and Early Woodland periods (Anderson, Michie, and Trinkley 1974:15-16).

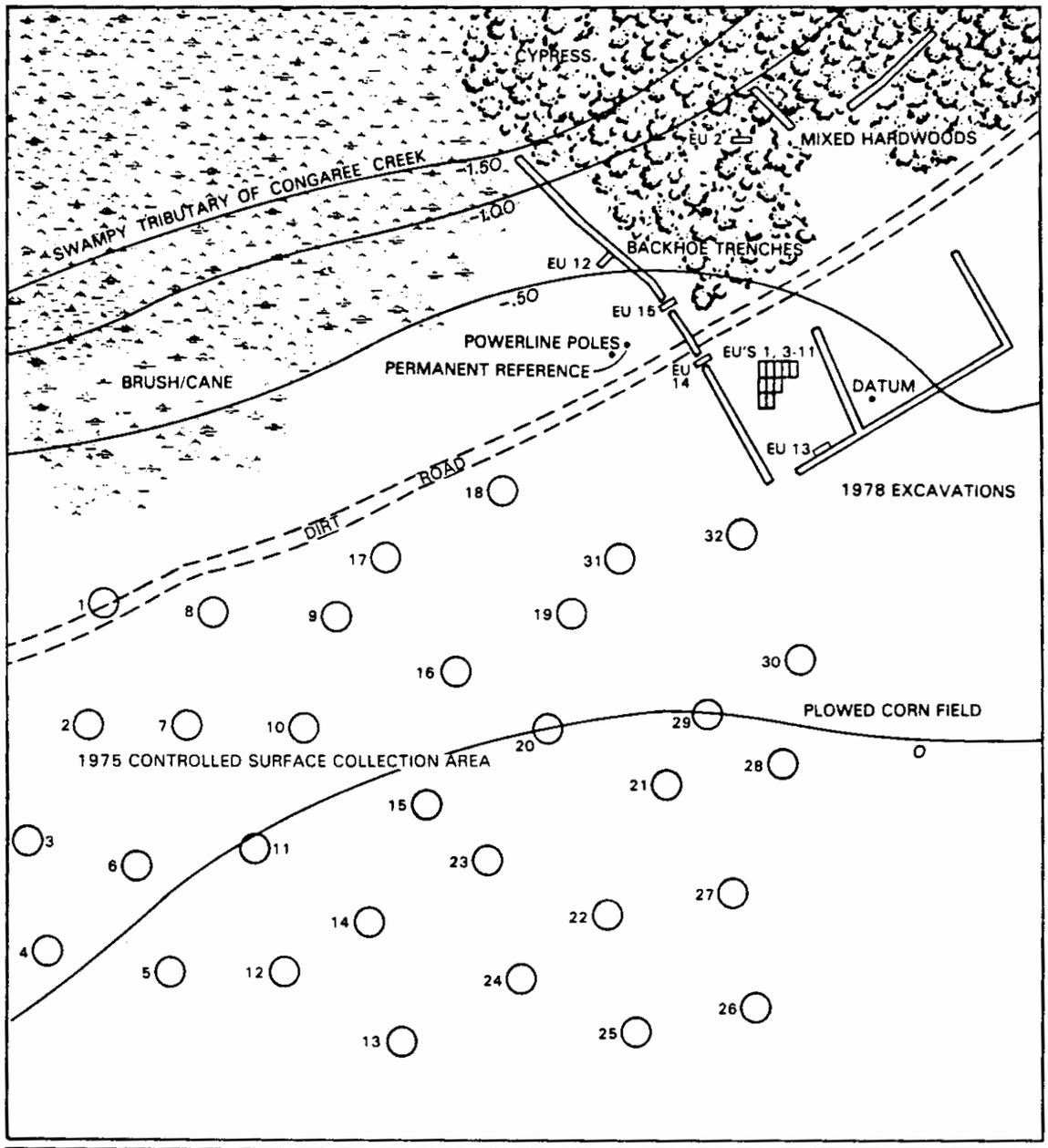
Michie formally recorded the site in the state files on March 26, 1974, and at that time recommended that it be tested. No collections were made from the site at this time.

The site was found to lie outside of the impact area of the second alternate route for the Beltway, and so was not revisited until 1975, when the third and final route was chosen. The third alternate was found to intercept the eastern portion of the scatter, and the general area was visited in early July 1975, to more fully document the nature and extent of the site. Under the direction of Albert C. Goodyear, a controlled surface collection was made over the scatter, and a brief description of the site was included in the survey report released that August:

> This site has a large section of protected woods next to the swamp and may have buried remains as well. No subsurface testing was performed for this site. The surface-circle method of data collection was made, but has not undergone analysis. This site is a relatively discrete concentration of debris and tapers off in artifact density as one proceeds either east or west on the swamp margins. Light scatters and isolated artifacts can be found, however, all along the field edge adjacent to the swamp (Goodyear 1975a:28).

A primary contribution of Goodyear's (1975a:26-27) report was an in-depth analysis of the potential research significance of 38LX64 and sites like it:

> Swamp-edge sites are located sufficiently close to the wet areas that plowing has probably not completely destroyed stratigraphic contexts. For this reason alone such sites have added research value since they hold the promise of subsurface studies. In this same vein, the fact that these sites are known to be located on the swamp edges strongly suggests the possibility of refuse along the upper parts of the marsh. If sea levels were lower than present during the Archaic and Early Woodland Periods this would mean that water tables would be lower than observed today. Therefore, parts of the swamp now perennially under water may have been habitable. The implications for



MAP SOURCE: C.A.I. Field Survey, 1978.

NOTES: EU Denotes Excavation Unit.
Circles Represent 10 Ft. Controlled Surface Collection Areas, July, 1975.
Permanent Reference Point (SCE&G Powerline Pole No. 202) is located 34.2m from the site datum at an angle of 283.2° East of Magnetic North.

SOUTH CAROLINA

0 20 METERS

50 CM. Contour Interval

SOUTHEAST COLUMBIA BELTWAY PROJECT
SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SITE 38LX64 BASE MAP

ALL EXCAVATION UNITS

FIGURE 33

> preservation of organic subsistence-related refuse are enormous. If sufficiently covered by moist sediments such debris as nuts, leaves, wood, faunal, bone, pollen, and other charred food remains would be preserved and amenable to laboratory analysis. Such remains are not usually preserved in the open sites of South Carolina... either a backhoe or hand tests should be made of the moist swamp margins to test for the possibility of buried cultural deposits. If cultural layers are found but with no preserved organic remains such deposits would still be valuable since they would presumably have been undisturbed by modern plowing. Even if no buried swamp deposits exist, the plowed and forest edge sections...should be investigated. The forest edges do have undisturbed remains and the plowed portions of the sites are amenable to other types of sampling and data analysis. In the case of a site being completely plowed up, the contents of the site are still important since the artifactual composition of swamp-related sites is most likely different in some respects from sites in other environmental associations (Goodyear 1975a:26-27).

Goodyear's observations, particularly about the need to delimit the assemblage composition of swamp edge sites, and for conducting deep testing operations, were used to guide the 1978 data recovery program. Following the 1975 field work, no data collection occurred at 38LX64 until 1978.

DATA COLLECTION PROCEDURES (SITE 38LX64)

The 1978 data collection activity at 38LX64 included the excavation of 15 two meter units, 11 in a block unit, together with the examination of over 100 meters of backhoe trenches in the field and adjoining swamp, and a controlled surface collection along the swamp edge (Figure 34). The information recovered from these units was combined with the 1975 controlled and general surface collections; no other materials are known from the site, although some specimens may be present in local collections.

The 1975 controlled surface collection consisted of the complete recovery of all artifacts found within ten-foot diameter circles dispersed over the site area using a stratified systematic unaligned sampling frame (Haggett 1966:196-198). A 50-foot arbitrary grid was selected, with one collection point located in each cell, providing for a 3.1 percent sample of the area examined. The procedure used at 38LX64 was identical to that employed at 38LX5, although the sampling frame and circle sizes differed. Thirty-two sample circles were placed on the site, using a transit and stadia rod, and shooting from a

temporary datum tied into powerline poles in the immediate vicinity. All artifacts found within each circle were retained, and a general or "grab" collection was then made about each circle. The area examined during the 1975 controlled surface collection (Figure 33), roughly 2.2 acres, encompasses most of the scatter, but lies to the south and west of the areas examined in 1978, which were located on the northeastern fringe of the site in the corridor right-of-way.

The 1978 field operations at 38LX64 were conducted during July and August, and much of the site area in the field was grown up in tall corn. After surface inspection, a half-acre area at the edge of the field was cleared, in the richest part of the scatter apparent within the right-of-way. Two one by two meter units were opened initially, one in the field and a second in the woods to the north of the field, at the immediate edge of the swamp. The unit in the field was opened in 20 cm levels, and was found to contain moderate quantities of artifacts, particularly fire-cracked rock and debitage. The unit in the woods, which was opened to 50 cm, in contrast, was devoid of artifacts.

Much of the subsequent data recovery operation focused on the area in the field where the first test unit had located artifact-bearing deposits. A block of 11 contiguous one by two meter units were opened in this area, in an effort to locate features and living floors (Figure 35). The upper 10 to 15 cm of the plowzone was removed with the backhoe; excavation of the first unit had indicated that this level contained relatively few artifacts. This upper level was characterized by a moderate amount of recent alluvium, and had been sun baked to an almost brick-like consistency, necessitating extensive excavation and screening time. The 11 units were opened in 10 cm levels, in an effort to delimit stratification in the deposits, which were found to be shallow (under 50 cm deep). All fill was dry-screened through one-quarter inch mesh; when features were detected, the fill was bagged separately for subsequent flotation. As at 38LX5, only small quantities of charcoal and bone were recovered, in spite of extensive flotation efforts. Horizontal and vertical coordinates of tools and other large or unusual artifacts were recorded upon discovery, and artifacts found within features were piece plotted.

While the block unit was being removed, a backhoe was used to open 130 meters of trenches in the field and woods by the scatter, and into the adjoining swamp. While the backhoe was operating, an archeologist was always present, and when features were discovered, they were flagged, and the machine moved from the immediate area. Two deep cuts were

FIGURE 34 — Aerial view of *Site* 38LX64, located near a low marshy tributary of Congaree Creek.

FIGURE 35 — Excavations at 38LX64. A block of eleven one by two meter test units were opened in an effort to locate features and living floors.

opened on the site, one in the field near the end of the westernmost trench, and the other by the edge of the swamp, in an effort to locate deeply buried deposits and delimit local soils and geomorphology. Soil samples were collected from a number of areas and profiles were prepared for all of the trenches (Figure 36).

Only a few possible features, defined by rock clusters, were discovered in the trench fill and profiles, all in the upper levels. These were removed separately, employing one by two meter units placed in or adjacent to the cut. Four one by two meter units were opened in this manner, employing the same procedures used to open units in the block. The profile of a 48 meter long cut was opened from the field into the adjoining swamp, and documented a change in soils between the two areas from medium and coarse sands to sandy silt (Figure 36). The swamp deposits were underlain by pale brown to gray silty clays, while those in the field rested on gravelly sands. The soil difference apparently reflects the sedimentation and infilling of the lower, swampy area.

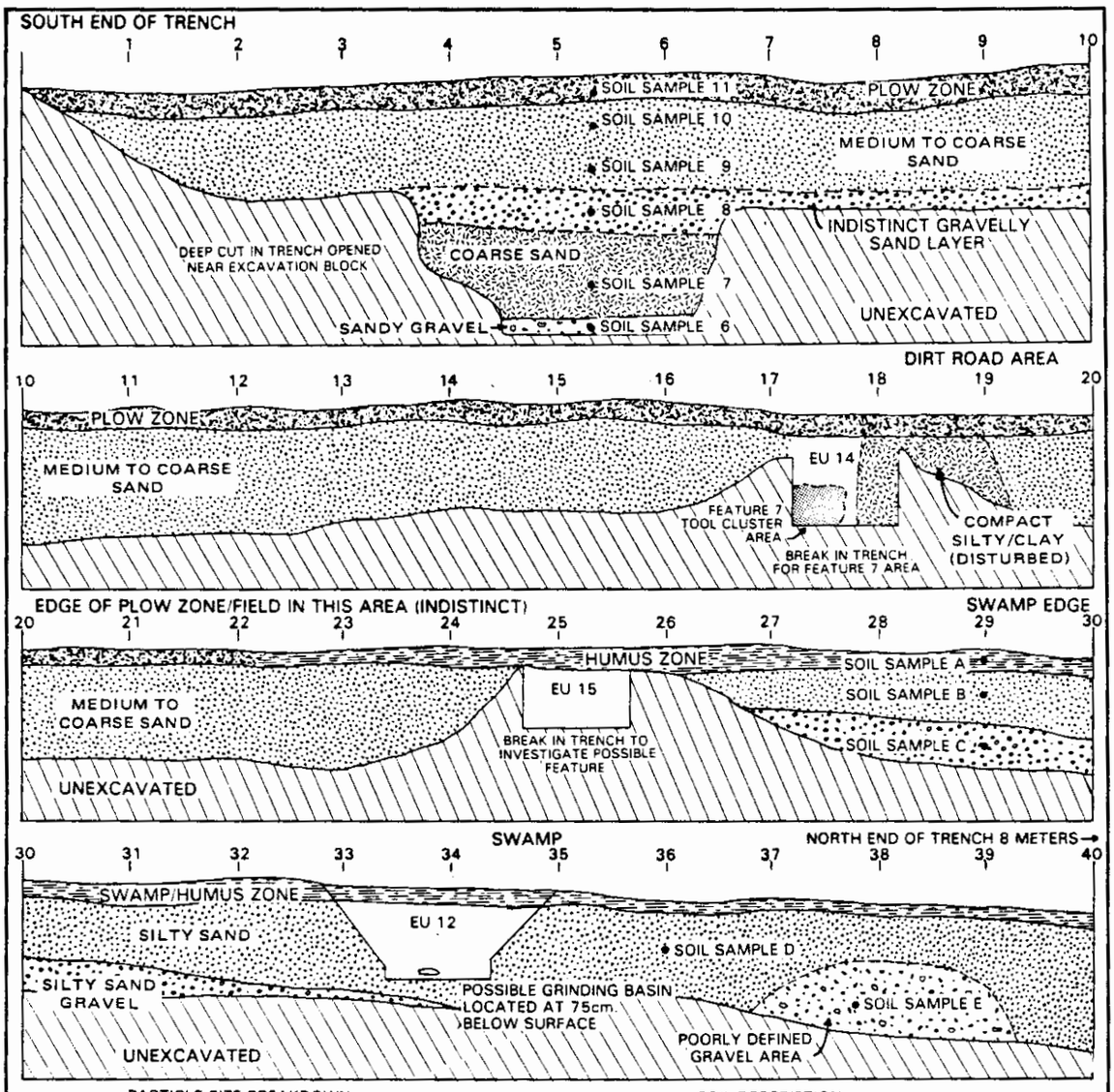
The site deposits were uniformly found to be shallow. In the field to the south of the dirt farm road, artifacts were not observed below 60 cm in the cuts, and were only rarely noted below 40 cm. Few artifacts were noted in the swamp deposits to the north of the road, a disappointing finding in light of the potential the swamp region was assumed to hold (Goodyear 1975:26-27). A heavily weathered slab-like piece of metamorphic rock was discovered at a depth of 75 cm in the northern part of the long trench, however, in the silty sands at the edge of the swamp. A one by two meter unit was opened around the object, which may have been an aboriginal grinding basin. Only one piece of fire-cracked rock and an irregular chunk of quartz were recovered in the unit (EU12) which was opened 10 cm. The low incidence of material, which occurred at different depths, and not in an obvious floor, suggested secondary deposition, possibly items that were tossed into the swamp by the aboriginal inhabitants. No evidence for deeply buried floors or features was observed in the swamp deposits, although given the small area examined, it is always possible that features may exist elsewhere along the tributary margin. The distribution of artifacts found at 38LX64 suggests that most activity took place in the field away from the swamp margin, with little use of, or at least artifact deposition in, the lower areas.

Horizontal control at 38LX64 was maintained employing a transit, stadia rod, and tape. A datum, consisting of a 90 cm length of half-inch iron rebar, was established in the field near the block unit, and was tied in with nearby powerline poles and highway survey stakes. The locations of all provenience units were taped in, and elevation readings were obtained using a transit and stadia. A total of 70 measurements were used to prepare the site base map.

The final field procedure employed at 38LX64 during 1978 consisted of the controlled and general collection of artifacts along the edge of the field. Eleven flags were laid out along a roughly NE/SW (155° E of N) axis centered on the main datum, dispersed at 20 meter intervals. The first three collection areas were located at a distance of 30, 50 and 70 meters northeast of the datum, and the next four were located at 20 meter intervals to the southwest, at 30, 50, 70 and 90 meters. Four other units were located in a row, 20 meters southeast of and parallel to the first group, at 20 meter intervals, between Units 1 and 4. The spacing was designed to cover the field on all sides of the excavation units and to provide surface collections from the site outside the area of the 1975 controlled collections. Surface materials found within the trench perimeter itself were recorded in a separate collection provenience. A general collection was made about each of the eleven flags. The quantity and distribution of the material recovered supported the findings of the 1975 controlled surface collection, namely that the densest part of the scatter was located well to the southwest of the corridor.

THE DATA ASSEMBLAGE (SITE 38LX64)

A total of 5198 individual specimens and almost two kilograms of fired clay were recovered at 38LX64 in 1975 and 1978 (Table 11). Major artifact categories recovered, and their percentage of the total assemblage, by count, included unmodified debitage and cores (48.8 percent), fire-cracked rock (37.1 percent), tools and other (unusual) specimens (6.8 percent), unmodified ferruginous sandstone (7.0 percent), and pottery fragments (0.3 percent). A number of soil, flotation, bone, and charcoal samples were also recovered, and detailed information on the occurrence of artifacts and specimens, encompassing all of the recorded site proveniences, is provided in the appendix volume. Charcoal and flotation analyses are summarized in Chapter 8, and are additionally reported in the following discussion on the site features.



PARTICLE SIZE BREAKDOWN

SAMPLE	GRAVEL	SAND	SILT	CLAY
11	5.28%	82.45%	11.58%	0.69%
10	6.03%	89.89%	4.09%	
9	10.17%	84.31%	5.54%	
8	29.44%	69.87%	0.69%	
7	9.95%	89.78%	0.27%	
6	62.14%	37.11%	0.75%	
A	7.65%	65.99%	25.50%	0.86%
B	10.47%	73.06%	15.81%	0.66%
C	12.68%	72.85%	13.77%	0.70%
D	7.64%	58.96%	31.77%	1.63%
E	44.42%	49.57%	6.01%	
F	1.99%	27.30%	30.27%	40.44%

SOURCE: C.A.I. Field Survey, 1978.
SOILS ANALYSIS: Dr. Michael Katuna, Dept. of Geology The College of Charleston

SOIL DESCRIPTION

11 DARK REDDISH GRAH (5YR4/2) COARSE TO MEDIUM SAND
10 REDDISH BROWN (5YR5/3) COARSE TO MEDIUM SAND
9 REDDISH BROWN (5YR4/4) COARSE TO MEDIUM SAND
8 STRONG BROWN (7.5YR5/6) GRAVELLY SAND
7 BROWNISH YELLOW(10YR6/6) COARSE SAND
6 LIGHT YELLOWISH BROWN (2.5Y6/4) SANDY GRAVEL
A YELLOWISH BROWN (10YR5/4) SILTY SAND
B LIGHT YELLOWISH BROWN (10YR6/4) SILTY SAND
C YELLOWISH RED (5YR5/6) SILTY SAND WITH APPRECIABLE FINE GRAINED GRAVEL
D BROWNISH YELLOW (10YR6/6) SILTY SAND
E VERY PALE YELLOW (10YR7/4) GRAVELLY SAND
F PALE BROWN (10YR6/3) SANDY SILTY-CLAY

(SAMPLE F TAKEN AT A DEPTH OF 2.5 METERS BY EDGE OF SWAMP FROM CUT IN WOODS).

SOUTHEASTERN COLUMBIA BELTWAY PROJECT
SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SITE 38LX64 SOIL PROFILE

WEST TRENCH FROM FIELD INTO THE SWAMP
FIGURE 36

TABLE 11
SITE 38LX64 ARTIFACT ASSEMBLAGE
SOUTHEASTERN COLUMBIA BELTWAY PROJECT
DATA COLLECTED 1974 through 1978

Category	Frequency	Weight
Fire-Cracked Rock	1927	15,270.7g
Ferruginous Sandstone (Unmodified)	362	5,393.1g
Fired Clay	-	1,822.8g
Pottery	16	82.4g
Nondiagnostic	(6)	
Sand	(10)	
Debitage Cores	2537	4,297.1g
Quartz	(1692)	(3,753.9g)
Chert	(432)	(184.2g)
Rhyolite	(69)	(76.8g)
Quartzite	(152)	(163.5g)
Slate	(192)	(118.7g)
Tools and Miscellaneous Artifacts	356	
Retouched Flakes	(65)	
Arrows and Darts	(38)	
Hammerstones	(45)	
Ferruginous Sandstone Abraders	(5)	
Other Formal Tools	(72)	
Miscellaneous (Unusual) Artifacts	(131)	
Total Artifacts	5198	26,866.1g[-1]

-1 Does not include tools and miscellaneous artifacts.

TEMPORAL ORDERING OF THE 38LX64 ASSEMBLAGE

Typological analysis formed the principal method of dating the site assemblage. A number of lithic and ceramic artifacts were recovered that documented site use throughout the Archaic and into the Woodland. A number of features were discovered in the subplowzone deposits, and two had diagnostic bifaces in the fill, permitting relative dating. Extensive flotation of fill from these features, however, failed to yield more than a few flecks of charcoal, amounts too small to be of use for radiocarbon dating.

The vast majority of the assemblage came from the first 40 cm in the units, and artifacts found below this depth were almost all in obvious features or disturbances. A few artifacts were found in apparently undisturbed context below 40 cm, but most of the artifacts found below this depth appear to have originated higher in the units. Evidence for assemblage stratification was minor in spite of unit removal in thin, 10 cm levels. Pottery fragments were observed at all depths. Of nine sherds recovered in the block excavation units, five came from the first level, one from the second, and three from the third. The entire site pottery assemblage had a sand paste, and surface finishes included plain (N = 4), cord marked (N = 2), linear check stamped (N = 1), simple stamped (N = 1), and linear separate punctate (N = 2). These finishes correspond to Late Archaic/Early Woodland period wares (Thom's Creek, Deptford, and Cape Fear). No logical ordering was apparent in their vertical distribution and the low overall incidence of pottery suggests minor site use during this time.

Site use appears to have been almost entirely during the Archaic period. Typologically identifiable bifaces present in the excavation assemblage include Palmer (N = 2), Kirk (N = 2), Morrow Mountain (N = 8), Savannah River Stemmed (N = 4), and Otarre Stemmed (N = 1) types (Figure 37). Excluding specimens from the surface or in obvious features or disturbances, most (N = 12, 70.6 percent) of the identifiable forms came from the first 30 cm in the subplowzone. Some evidence for stratification was present, but only over the entire assemblage. The three recognizable Otarre and Savannah Stemmed forms (Figure 37:p, q, r) recovered in the excavation units came from a depth of 10 to 15 cm. The Morrow Mountain-like forms came from widely different depths, but four of the eight specimens found in the excavation units were from 11 to 22 cm (Figure 37:e, f,

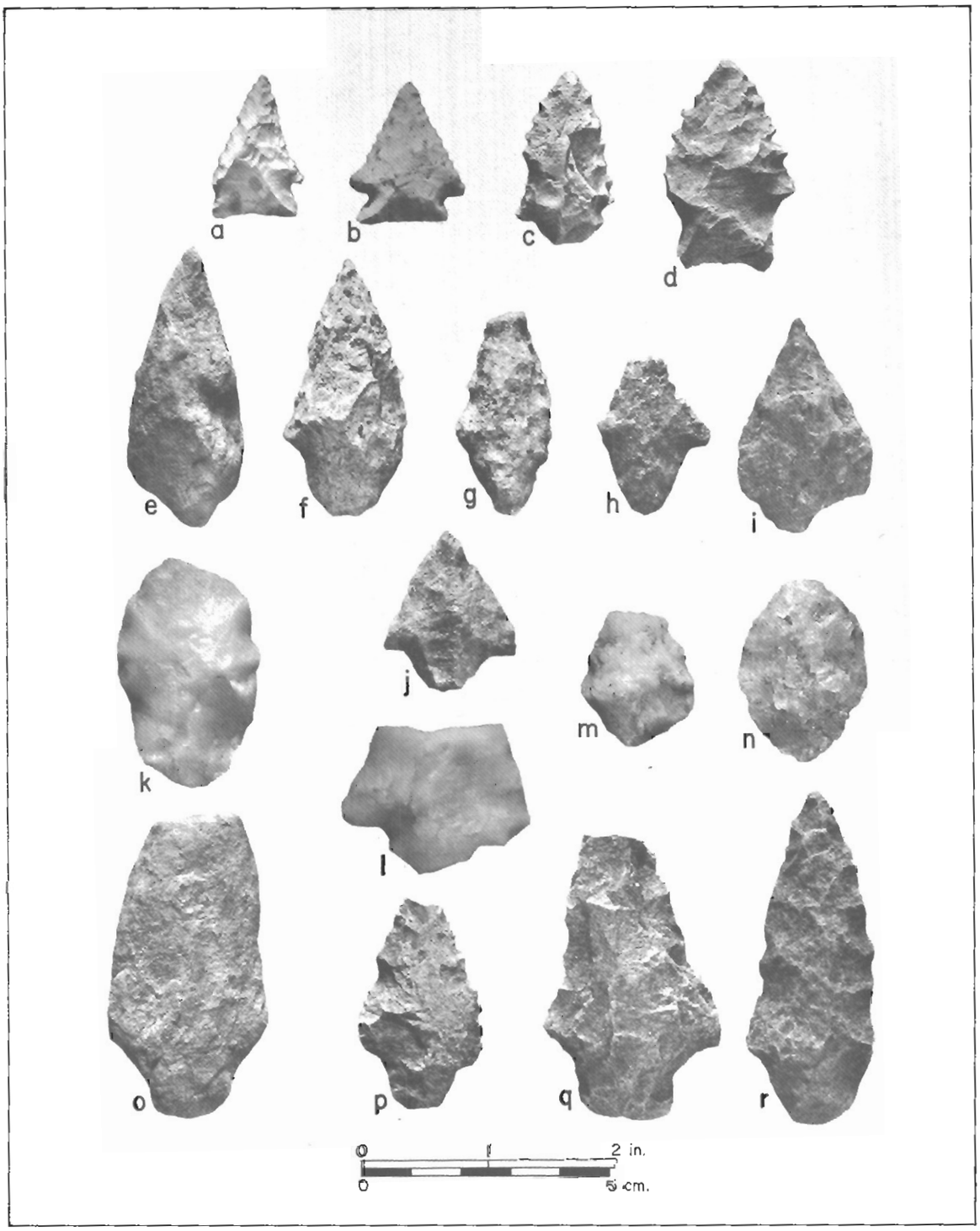


FIGURE 37 — Hafted bifaces from 38LX64. The assemblage spans the Early Archaic through the Early Woodland. a, b, Palmer Corner Notched; c, d Kirk-like; e-j, m, n Morrow Mountain-like; k possible preform; l, o, q, r Savannah River Stemmed-like; p Otarre Stemmed-like.

Provenances: (a) EU11, -27cm (b) EU7, -21cm (c) EU15, -63cm (d) EU9, -47cm (e) EU7, F1 (f) EU5, -12cm (g) EU5, -16cm (h) EU14, F7 (i) EU4, -22cm. (j) EU3, -37cm (k) EU8, 0-20cm (l) general surface (m) EU3, -28cm (n) general surface (o) GS32 (p) EU4, 10-15cm (q) EU4, 10-15cm (r) EU4, 10-15cm.

g, i). Two Palmer-like specimens found in the excavation units (Figure 37:a, b) came from depths of 21 and 27 cm; two Kirk forms were also found (Figure 37:c, d), but at much greater depths, in apparent disturbances.

The biface distribution indicates that the entire span of the Archaic, from Palmer to Savannah River, is contained within a maximum of 20 cm of deposits. Logical ordering is apparent --Palmer forms are generally lowest, with Morrow Mountain and Savannah River forms above--but this separation was noted only because the depth of all bifaces was plotted upon discovery. The 10 cm levels employed during the 1978 excavations appear to have been too coarse grained to reveal meaningful temporal separation within the assemblage. Because of the shallow depth of the deposits, and the evidence for extensive reuse of the site area, use of finer levels would probably not have produced significantly more useful or reliable data for the examination of temporal associations. The site deposits, although shallow and somewhat mixed, do provide a predominantly Archaic period assemblage from a floodplain locale, useful for functional and comparative purposes.

SITE 38LX64 FEATURES

Seven features were recognized in the subplowzone deposits at 38LX64 during the 1978 excavations, all of probable aboriginal origin. The features included two concentrations of debitage and other lithic artifacts that appear to represent floors, four diffuse charcoal stains that are probable hearth or burned areas, and one cluster of cobble tools, ferruginous sandstone, and other lithics that may be an intentional raw material/tool cache. All but one of the features were located in the block of 11 one by two meter units opened in the field some 30 meters from the present swamp edge. The exception, Feature 7, was located in a backhoe cut about 10 meters west of the main block, by the edge of the dirt farm road. Feature number assignment and recording followed the procedure used at 38LX5. Detailed information on the features reported here, including locational data for many of the artifacts encountered in the fill, are included with the field notes on file at the Institute of Archeology and Anthropology at the University of South Carolina, and with the South Carolina Department of Highways and Public Transportation. Descriptive and metric attributes for all of the tools found in these features, and summary statistics on associated artifacts, are included in the appendix volume.

Two of the features (F1 and F7) appear to be of Middle Archaic age, since Morrow-Mountain-like bifaces were found in the fill. The remainder are of undetermined, but probable Archaic age, an inference supported by the absence of associated pottery, and the overall content of the site assemblage. Because of the shallow, mixed nature of the site deposits, the recognition of artifact concentrations or clusters was difficult. The apparent "floors" referred to in the discussion of Features 1, 2, and 4, therefore, may or may not reflect a single behavioral event or depositional episode. What is indicated, however, by use of the term "floor" is that the concentration reflects unusual artifact density, or constituent elements, compared with surrounding site areas. This would argue in favor of, but not conclusively demonstrate, formation through single behavioral episode.

Feature 1

Feature 1 was characterized by a concentration of fire-cracked rock, debitage, stone tools, and an intact Morrow Mountain-like biface (Figure 37:3) recovered in EU7 from 8 to 14 cm in depth. This cluster was underlain by a second cluster of lithic materials that occurred predominantly from 17 to 23 cm and included a Palmer point (Figure 37:b). All of the artifacts from both concentrations were piece plotted, and appear to represent portions of floors or possibly deflated hearths. The two concentrations are largely separate, but some intergradation occurs; artifacts occur in the intervening few centimeters, but in appreciably lower quantity. The lower cluster may be associated with Feature 2, found at a comparable depth in EU6, half a meter to the southwest. Feature 1 refers solely to the upper concentration of material. No feature number was assigned to the lower cluster, principally because it was less well-defined.

The Feature 1 cluster included the Morrow Mountain point, a quartz hammerstone fragment, a quartz retouched flake, 45 pieces of debitage (35 quartz, 78.6 grams; 7 chert, 1.6 grams; 3 slate, 1.2 grams), 3.1 grams of fired clay, three small pieces of steatite, two pieces of split gravel, seven pieces of ferruginous sandstone (42.0 grams), and 52 pieces of fire-cracked rock (914.5 grams). The hammerstone fragment was fairly large (184.5 g) and exhibited extensive battering on three areas, suggesting breakage during use. The retouched flake exhibited one low (30°) functional edge, suggesting a cutting function. Two gallons of fill were collected from the center of the concentration, near the Morrow Mountain-like biface. The sample was floated and yielded 0.18 grams of charcoal, which was identified as exclusively conifer (sp?) wood (Sample 18, from 38LX64;

FIGURE 30 – Aerial view of Site 38LX82, located in the broad, flat floodplain of the Congaree River. View to northeast, looking towards downtown Columbia.

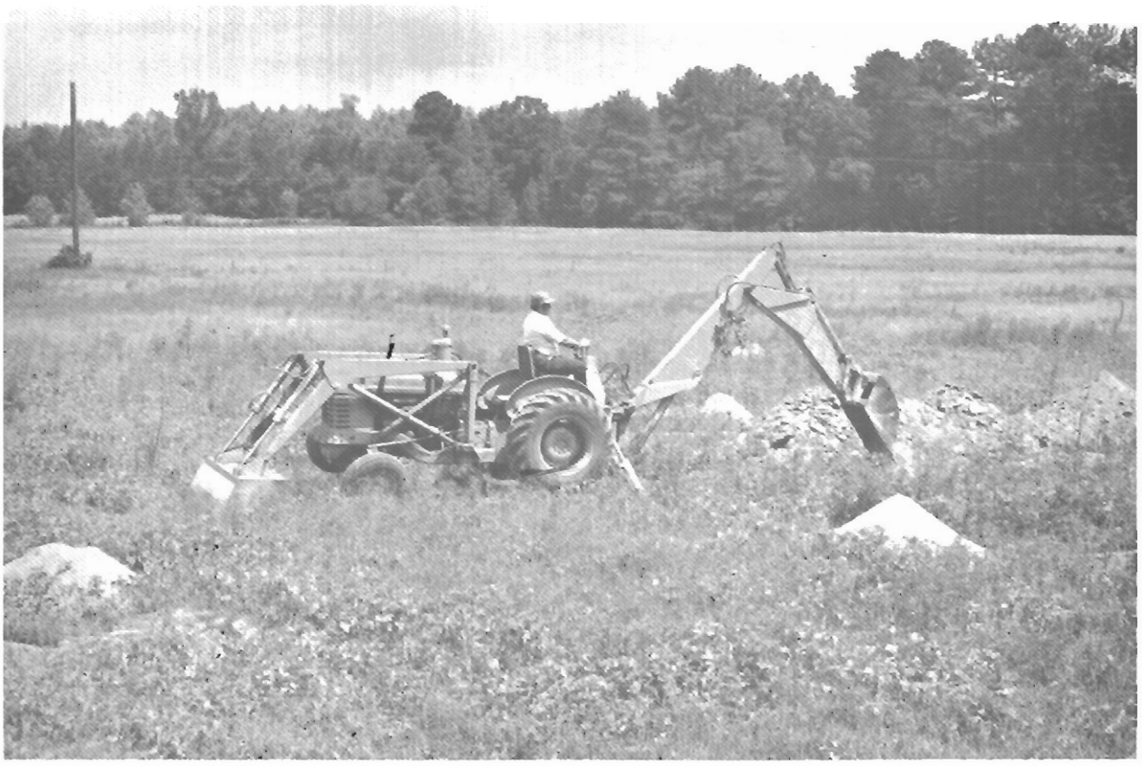


FIGURE 31 – Backhoe operations at Site 38LX82. A 30 meter trench was opened through the center of maximum artifact concentration in an unsuccessful attempt to locate subplowzone features.

Chapter 8). The small quantity of charcoal recovered precluded radiocarbon dating. On the basis of the associated biface, however, the concentration was tentatively interpreted as part of a Middle or possibly Late Archaic floor.

Feature 2

Feature 2 was characterized by a cluster of four stone tools located from 20 to 23 cm in EU6 (Figure 38). The tools were found half a meter southwest of the small (50 cm diameter) cluster of fire-cracked rock and associated Palmer point found in EU7 from 17 to 23 cm, briefly described under Feature 1. The material from the two areas may be part of an Early Archaic floor, although given the shallow deposits some intrusive artifacts may be present. The tools included a quartz cobble fragment that weighed 230.0 grams and was characterized by a weathered circular depression on one face; the original tool may have served as a nutting stone, or grinding basin. Two quartz retouched flakes were also present, one with an acute functional edge (35°) and the other with a steeper edge (65°). Both specimens were on secondary decortication flakes, with the cortex opposite the working edge, probably to provide comfortable backing. The final tool found within the cluster was a steeply chipped quartz uniface (Figure 42:l) that appears to have been a combination side scraper/spokeshave. A second steeply chipped uniface (Figure 42:0), of chert, was recovered immediately below this cluster, while a slate flake with two acute working angles (Figure 42:t) was found just above it. Both of these artifacts may be associated with the main feature/concentration, but it should be emphasized again that the density of tools and other artifactual debris was relatively high in all of the units, precluding definitive period or component assignments for most specimens.

Feature 3

Feature 3 was characterized by a circular, basin shaped charcoal stain 20 cm deep and roughly 60 cm in diameter first observed at eleven centimeters below the plowzone in EU8 (Figure 39). A number of lumps of fired clay were located immediately to the east of the stain; this material was broken up to see if artifacts were present, but was not otherwise retained. None of the clay fragments appeared to have been intentionally shaped, but instead appeared to have been formed through the erosion of a fired area. No temporally diagnostic artifacts were found in the fill of the stain or within the fired clay. A moderate number of tools, fire-cracked rock fragments, and pieces of

debitage were recovered immediately around the stain from 10 to 30 cm in depth, however, and may or may not be associated. The actual fill of the stain, including the fired clay area, contained 11 pieces of fire-cracked rock weighing 104.2 grams, one quartz hammerstone fragment (68.1g), one crude quartz bifacial scraper(?), one quartz retouched flake cutting(?) tool, and 60 pieces of debitage, including the following raw materials; quartz (N = 24; 11.8 g), chert (N = 6, 0.7 g), slate (N = 5, 0.5 g), rhyolite (N = 2, 0.4 g), and quartzite (N = 4, 3.2 g). Six gallons of fill were retained for flotation, and the resulting charcoal, and charcoal hand-picked from the fill during excavation, were submitted for ethnobotanical analysis (Samples 19-22, 38LX64; Chapter 8). No subsistence remains were identified, but wood charcoal from pine and red oak was found. The feature is tentatively identified as a hearth; its appearance at -11 cm suggests a possible Late Archaic age. Two hammerstones (Figure 43:g, i) were plotted near the edge of the feature, but at a lower depth (-26 cm) and may not be associated; the larger specimen is a combination hammerstone/pitted cobble tool.

Feature 4

Feature 4 was characterized by a small irregular charcoal stain some 50 cm in diameter in the northwest corner of EU3 from 53 to 70 cm in depth. The fill was retained for flotation, and yielded a few flecks of wood charcoal (0.06 g) that were identified as pine and conifer (Sample 23, 38LX64; Chapter 8). Artifacts present in the fill included fire-cracked rock (N = 1, 2.5 g), ferruginous sandstone (N = 3, 0.1 g), quartz debitage (N = 6, 8.0 g), and chert debitage (N = 2, 0.6 g). Several tools were recovered in the floor of the unit at 53 to 55 cm, and may be assiciated with the stain, which is tentatively interpreted as a possible hearth area. The tools included an opalized shell (Santee River chert) blade-like uniface with distal and lateral retouch (Figure 42:g), a quartz biface scraping (?) tool, an Allendale chert side scraper (Figure 42:a), and a rhyolite graver with a pronounced, bifacailly shaped spur (Figure 42:b). The number of well-made tools at this depth strongly suggests the presence of an Early Archaic floor. Two Morrow Mountain points (Figure 37:j, m) were recovered in this unit at a considerably higher depth, at 37 cm and 28 cm, respectively, so an Early Archaic date for the tool cluster is possible. The stain defining Feature 4 was first noted at 53 cm, suggesting a comparable age. The smount of charcoal recovered from the floated fill, 0.06 grams is minimal, indicating that considerable erosion and leaching of the original contents has probably occurred.

FIGURE 38 — Feature 2 at 38LX64. Several small clusters of fire-cracked rock, flakes, and occasionally tools were discovered in the levels, which may represent portions of floors, hearths, or other features.

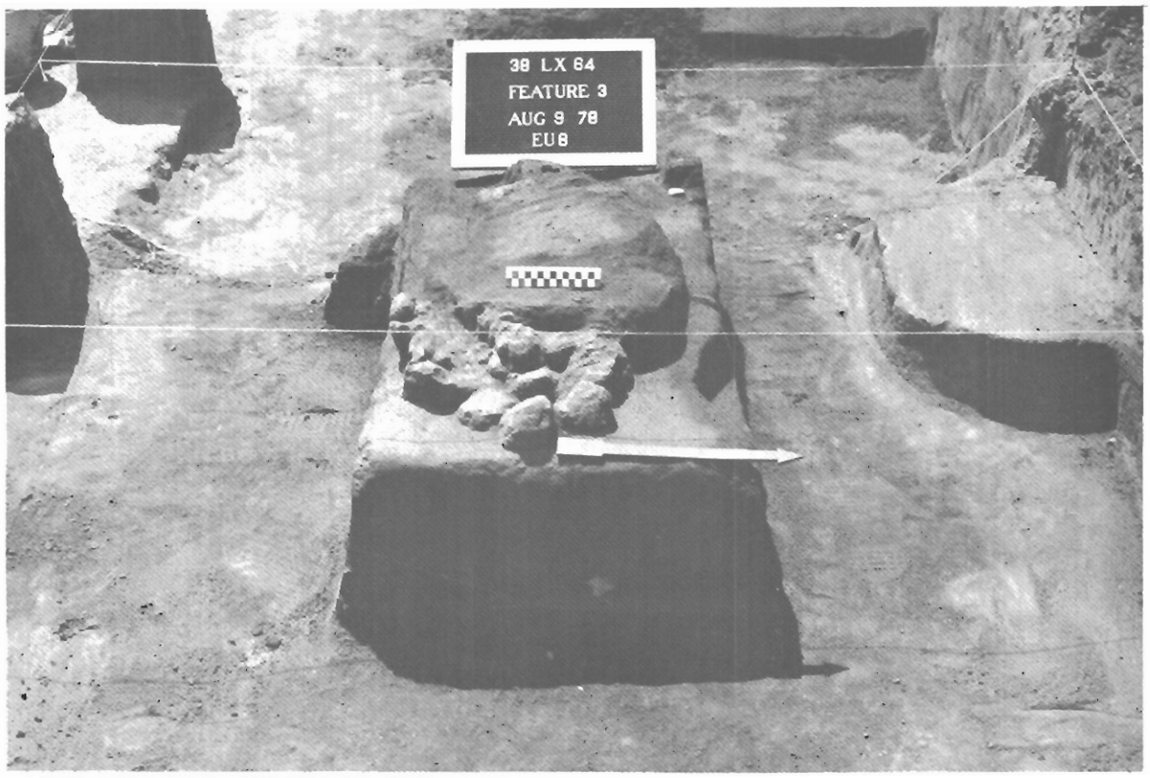


FIGURE 39 — Feature 3 at 38LX64. This feature was characterized by fired clay fragments and a moderate amount of charcoal in the fill, and appears to have been a hearth. No temporarily diagnostic artifacts were found in direct association.

Feature 5

Feature 5 was characterized by a one meter diameter cluster of fire-cracked rock, fired clay, debitage, and stone tools located from 25 to 40 cm in EU9 (Figure 40). Much of the material was concentrated from roughly 29 to 35 cm, and the area may have been a hearth or a refuse deposit of some kind. Artifacts present in the fill included one chert steeply chipped uniface (Figure 42:f), one fragmentary weathered quartzite square stemmed dart base of unknown typological affiliation, five retouched flakes (four of quartz and one of rhyolite), 39 pieces of fire-cracked rock (860.1 g), nine pieces of ferruginous sandstone (134.8 g), 43 pieces of debitage (quartz, 26, 422.5 g; chert, 14, 5.6g; quartzite, 3, 4.2 g), five small pieces of steatite, and two fragments of sandstone. The biface fragment, which is highly weathered, is square stemmed, and may be from an Otarre or Savannah River stemmed form. This tool, and the presence of steatite fragments, suggest a possible Late Archaic age for the feature. Two two-gallon samples of fill were taken from the area of the feature and floated, yielding 11.52 grams of charcoal (Samples 24 and 25, 38LX64; Chapter 8). Plant wood species identified included pine, oak, red oak, and hickory, although no subsistence remains such as nutshells or seeds were recovered. The varied charcoal assemblage, encompassing several species of wood, suggests that Feature 5 may have been a hearth area.

Feature 6

Feature 6 was a circular charcoal stain 30 cm in diameter located from 40 to 55 cm in the center of EU1. The fill was removed and floated, and identifiable plant remains were found to be exclusively pine wood charcoal (Sample 26, 38LX 64; Chapter 8). Only a few small artifacts were recovered in the fill: two chert interior flakes (0.3 g), three quartz interior flakes (0.2 g), and two fragments of fire-cracked rock (3.4 g). Given the low incidence of artifacts in the fill, and the identification of all recovered charcoal as pine, the feature is interpreted as a possible tree taproot.

Feature 7

Feature 7 was characterized by an extensive quantity of stone tools, debitage, fire-cracked rock, and ferruginous sandstone found from 74 to 115 cm in excavation Unit 14 (Figure 41). The area of the feature was discovered during bakchoe operations; cluster of lithic material was observed at -44 cm along the western cut, and a break was left in the trench (Figure 36). Subsequent excavation of this area,

as EU14, revealed the rich concentration that was designated Feature 7. The scatter of lithic artifacts originally noted in the unit, at 44 cm, proved upon excavation to be minimal in extent. The unit was continued, however, to determine the depth of the deposits in this part of the site, and consequently Feature 7 was discovered.

The artifacts comprising Feature 7 were all found in the southern half of the unit. The northern half of the unit, at the edge of the dirt farm road skirting the swamp, was characterized by a sterile, hard-packed silty clay. It was not possible to conclusively determine whether Feature 7 was aboriginal in origin. The proximity of the road and its (apparent) hard-packed base rendered the context of the cluster suspect; the artifacts, for example, may be within an old ditch or fill area. Only one small (0.02 g) fragment of charcoal was recovered from the fill of the feature (Sample 27, 38LX64; Chapter 8). The sample, identified as hickory wood, was too small to radiocarbon date. Feature 7 is interpreted as either an aboriginal raw material and tool cache, or a cluster of recently deposited materials associated with the field edge and farm road.

Artifacts present in the Feature 7 cluster included a large (5961.1 g) granite grinding basin, three hammerstone/mauls, one with a pitted face (Figure 43:a, c, f); a massive quartz core (Figure 43:b); and a quartzite Morrow Mountain II projectile point base (Figure 37:h). All of these specimens were found clustered together at about -104 cm below the ground surface. The deposits from -64 to -114 cm in EU14 contained an unusually large quantity of unmodified ferruginous sandstone (3293.7 grams). Sixty-one percent of all of the ferruginous sandstone, by weight, found on the site came from these levels. None of the ferruginous sandstone in the Feature 7 area exhibited evidence for modification or use as an abrader, although it should be noted that abraders of this material were only rarely noted in the 38LX64 site assemblage (N = 5). The only other category present in the levels near Feature 7 in quantity was steatite. Five of the 18 fragments of steatite found on the site came from 64 to 74 cm in EU14. A moderate but not unusual amount of fire-cracked rock, debitage, and other artifacts were also found in these levels, in EU14.

Feature 7 was distinguished by large quantitites of ferruginous sandstone and cobble tools. The presence of a Morrow Mountain II point in the center of the cluster might suggest a tentative identification of the feature as an aboriginal, Middle to Late Archaic grinding and abrading tool cache. The proximity of the road, however, and the nearby clay lens, suggest that the deposits are disturbed, and the exact temporal designation and behavioral significance of the feature remains unknown.

FIGURE 40 — Feature 5 at 38LX64. This feature was characterized by a small cluster of fired clay and fire-cracked rock and may have been a hearth.

FIGURE 41 — Feature 7 at 38LX64. This feature contained a number of grinding tools and hammerstones, and may represent a deliberate circle of some kind. The cluster is located immediately beside a dirt farm road, however, and may have been created during grading or drainage activity.

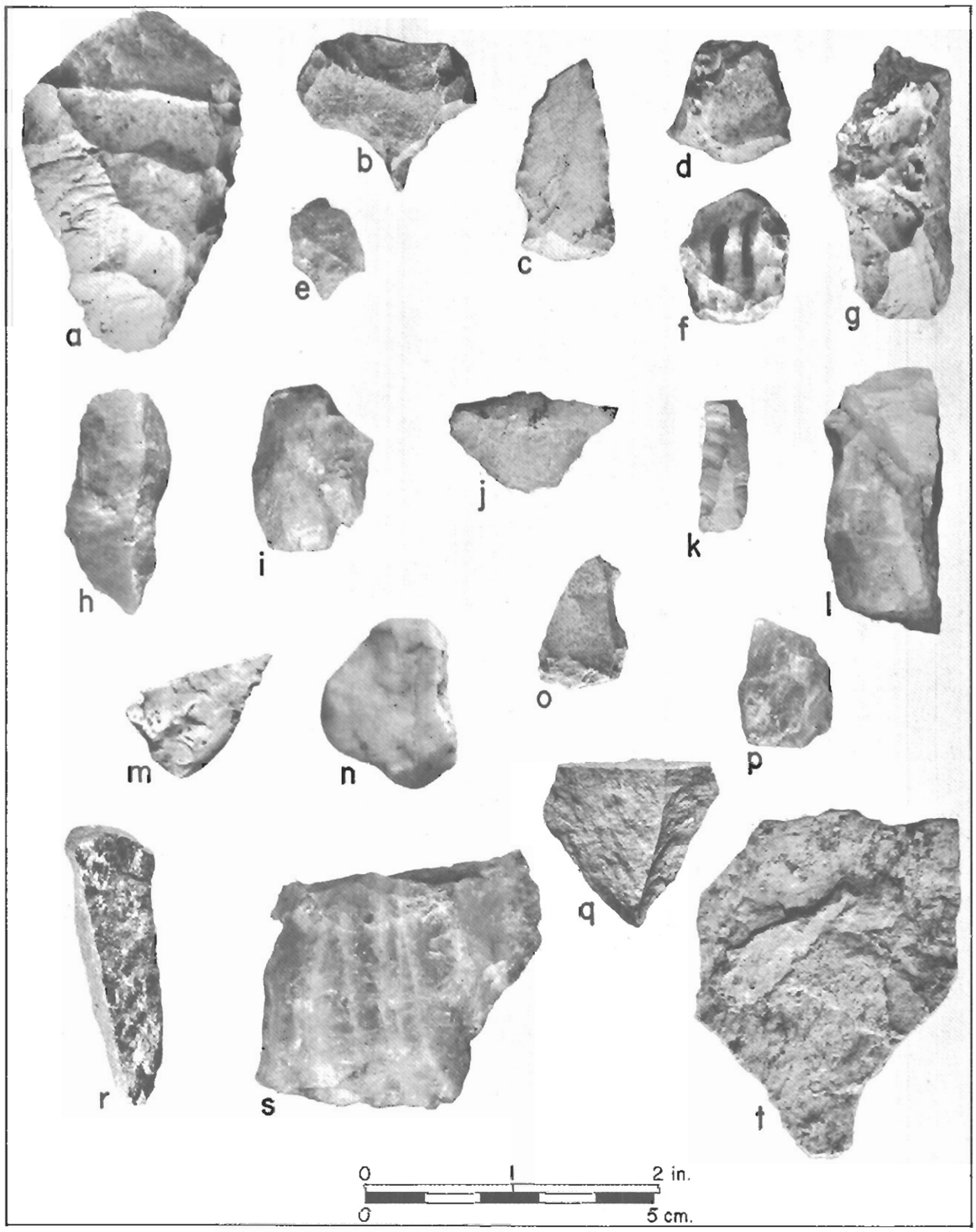


FIGURE 42 — Retouched unifacial tools, and miscellaneous artifacts, from 38LX64. a steeply chipped unifacial sidescraper; c, d, f steeply chipped unifacial endscrapers; b, e unifacial gravers; g, h, j, l, o, s flakes exhibiting steep angled unifacial wear retouch; i piecè esquillée; k blade; m, p, q, t flakes exhibiting acute angled (under 50 degrees) unifacial wear retouch; n pebble with spokeshave-like concavity; r steatite rim sherd.

Proveniences: (a) EU3, -53cm (b) EU8, 30-40cm (c) EU5, 10-20cm (d) EU7, 20-30cm (e) EU3, 50-60cm (f) F5 (g) EU3, -54cm (h) general surface (i) EU1, 40-63cm (j) EU15, 55-65cm (k) EU8, 20-30cm (l) F2 (m) EU1, 40-63cm (n) EU3, 60-70cm (o) EU6, 22-33cm (p) EU6, 43-53cm (q) EU5, 0-10cm (r) EU8, 0-20cm (s) EU5, 10-20cm (t) EU6, 22-33cm.

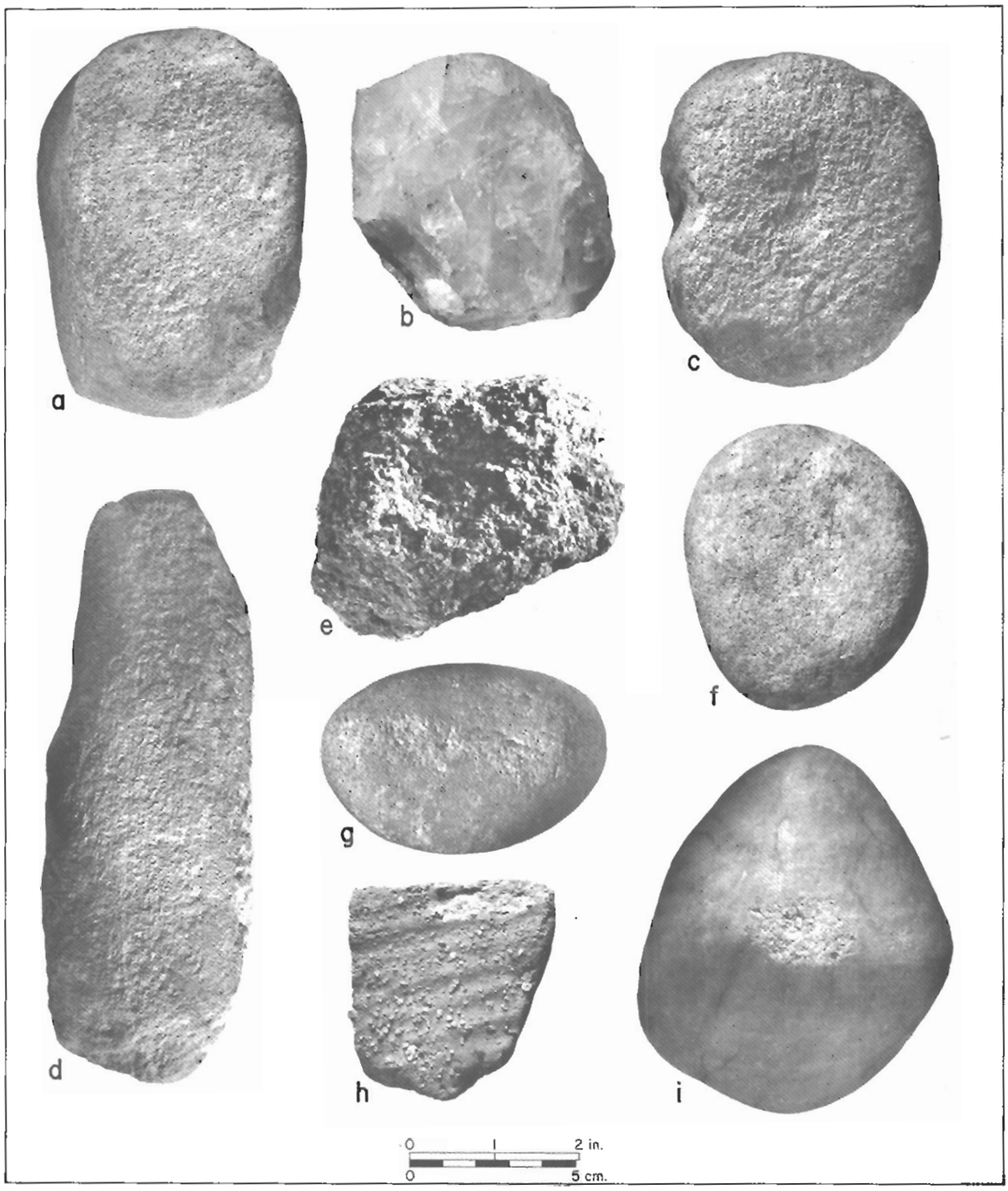


FIGURE 43 — Cobble tools and other artifacts from 38LX64. a hammerstone/maul grinding tool; b vein quartz core; c pitted cobble/maul; d hammerstone/pestle; e weathered pitted cobble; f hammerstone; g hammer/anvil stone; h simple stamped sand paste sherd (Thom's Creek?); i hammer/anvil stone.

Provenience: (a) F7 (b) F7 (c) F7 (d) EU10, -15cm (e) EU1, 40-63cm (f) F7 (g) F3 (h) EU14, 44-64cm (i) F3.

FIRE-CRACKED ROCK AND UNMODIFIED FERRUGINOUS SANDSTONE

A total of 1927 fragments of fire-cracked rock weighing 15,270.7 g were recovered at 38LX64, the vast majority from the 1978 excavation units and features (N = 1719, 89.2 percent). Almost all of the material was composed of quartz, with small quantities of sandstone and other unidentifiable materials present. The amount of fire-cracked rock recovered, almost a kilogram per unit, on the average, indicated extensive aboriginal use of fire on the site. The presence of hearths was also suggested by the quantity of fired clay recovered in the excavation units (over 1800 grams) and the discovery of several charcoal stains and/or fire-cracked rock clusters.

A considerable quantity (N = 362, 5393.1 g) of unmodified ferruginous sandstone was also recovered on the site. This material was not found evenly distributed in the units, but tended to occur in clusters, usually with other artifacts, suggesting aboriginal utilization of some kind. The largest concentration of this material came from the Feature 7 area, and may reflect an intentional cache. The presence of ferruginous sandstone in Feature 7, with obvious cobble/grinding tools, reinforces an interpretation of probable use in abrading functions.

UNMODIFIED DEBITAGE

A total of 2537 pieces of unmodified debitage, including 50 cores, were recovered from 38LX64, and were sorted by both raw material and decortication/reduction stage (Table 12). By count (N = 1693, 66.7 percent), and particularly by weight (3753.9 g, 87.4 percent), quartz is the most common unmodified material found on the site. Lesser quantities of chert, rhyolite, slate, and quartzite are also present, with chert the second most common material, by count, in the assemblage. The relatively high incidence of chert (N = 432, 17.0 percent) is somewhat surprising, since most of the material appears to come from the Allendale Quarry over 80 miles away. More chert, by count, is present in the assemblage than the total for rhyolite, slate, and quartzite combined. This would suggest that chert was a preferred material, selected over other, possibly more easily obtainable material for certain tools or functions. Considering the probable proximity of slate and rhyolite sources in the Piedmont, the observed pattern of selection for chert over these other, local materials bears examination.

TABLE 12
UNMODIFIED CORES AND DEBITAGE
BY RAW MATERIAL
SITE 38LX64 1974-1978

	Cores	Chunks	PDC	SDC	INT	FBR's	Total Count	Total Weight
Quartz	45	292	102	107	1033	113	1692 (66.7)	3,753.9 (87.4)
Chert	2	1	1	25	301	102	432 (17.0)	184.2 (4.3)
Rhyolite	1	1	1	2	53	11	69 (2.7)	76.8 (1.8)
Quartzite	2	8	4	7	125	6	152 (6.0)	163.5 (3.8)
Slate	-	4	2	1	177	8	192 (7.6)	118.7 (2.8)
Totals	50 (2.0)	306 (12.0)	110 (4.3)	142 (5.6)	1689 (66.6)	240 (9.5)	2537 (100.0)	4,297.1g (100.0)

( ) = percent of each category.

The average size of the unmodified debitage, and its proportional occurrence by reduction stage, indicates major differences in the use of each raw material on the site. Unmodified chert artifacts were appreciably smaller ($\bar{x}$ = 0.43 g) than unmodified slate ($\bar{x}$ = 0.62 g), rhyolite ($\bar{x}$ = 1.1 g), quartzite ($\bar{x}$ = 1.08 g), and particularly quartz ($\bar{x}$ = 2.22 g). Furthermore, a much higher percentage of the chert assemblage consisted of FBRs (N = 102, 23.6 percent) than was evident for the other materials (quartz, 6.7 percent; slate,4.2 percent; rhyolite, 15.9 percent, and quartzite, 3.9 percent). This would strongly suggest that chert use at 38LX64 was related to late stage manufacturing/reduction activity, possibly associated with tool repair or resharpening. The low incidence of initial stage chert reduction debris would also be expected, given the distance to the source. That is, since most of the chert found at 38LX64 came from the lower Savannah River and reflects transport over 80 miles, aboriginal procurement would in all probability stress efficiency. Transportation of cortical material, useless in reduction/manufacturing, would be unlikely.

The average size of the quartz unmodified debitage at 38LX64 was considerably larger than the debitage of the other lithic raw materials. The incidence of later stage quartz reduction debris, as measured by the percent of interior flakes and FBRs (67.7 percent), was also appreciably lower than the figures observed over the other raw material categories: (chert, 93.3 percent; slate, 96.4 percent; rhyolite, 92.8 percent; and quartzite, 86.2 percent). These figures suggest that proportionally more initial stage reduction of quartz was occurring on the site than of other materials. The overall debitage pattern suggests the manufacture of quartz tools, and the maintenance of tools of other raw material categories, on the site.

BIFACIAL TOOLS

The 38LX64 assemblage included two arrow fragments, 36 darts and dart fragments, and 37 bifacially worked artifacts and fragments that may have served as preforms, cutting/multitask tools or possibly finished tool fragments. Detailed measurements and inferred typological affiliations of all of the specimens recovered in 1978, and most of the earlier forms, are included in the appendix volume.

Only two possible arrow fragments were recovered on the site, one base from the surface (CSC Circle 31), and a tip in the first subplowzone level of EU10. These may be dart fragments, especially the tip; the low number of these

items is consistent with the minimal evidence for Woodland period site use. The number of darts and fragments was far greater, at 36, with 13 specimens intact. The base to tip incidence on the site was highly skewed, with almost four times as many dart bases (N = 18) recovered as tips (N = 5). This suggests tool breakage and tip loss away from the site, with the haft elements (including the broken biface base presumably still in place) brought back to the site. Discard of the broken biface bases during rehafting would result in a tip to base ratio like that observed at 38LX64. If the collected site assemblage can be assumed to be representative, than the evidence suggests that the site area was a rehafting locus.

Examination of the typologically identifiable 38LX64 biface assemblage, including all surface materials, suggested that raw material selection for dart manufacture followed different patterns in different time periods. Of a total of seven Late Archaic Savannah River Stemmed-like points found on the site (including one Otarre Stemmed form), five were of a greenish slate or rhyolite, with only one each made from quartz and quartzite. Middle Archaic Morrow Mountain-like forms (N = 11), in contrast, showed a strong preference for quartz (N = 6) and quartzite (N = 31), with only one specimen each composed of chert and slate. The Early Archaic forms also differed somewhat from the later eras in terms of raw material selection. The two Kirk forms recovered were both made of rhyolite, while all three Palmer points found on the site (two in excavation units and a third, not illustrated, from the surface) were made from Allendale County chert.

Over the entire assemblage of darts and dart fragments, quartzite (N = 6, 16.6 percent) and rhyolite (N = 6, 16.6 percent) forms were more prevalent than the relative proportions of unmodified debitage recovered for these materials, while chert (N = 5, 13.9 percent) and quartz (N = 17, 47.2 percent) darts were underrepresented. The relative proportions of slate darts and debitage were roughly similar. This suggests that the quartzite and rhyolite specimens were (possibly) imported onto the site in more or less finished form, and that comparatively more manufacture and/or maintenance of chert and quartz cherts was occurring on the site, with (possibly) finished products carried elsewhere. Alternatively, it may indicate that manufacture and/or use of quartz and chert darts results in proportionally more debitage than use of darts of the other materials. This may, in fact, be part of the answer for the observed raw material patterning at 38LX64. The small size of the unmodified chert flakes,

for example, suggests that more flakes were detached in reduction/maintenance activity than if other materials were used, probably due to the fine knapping quality of local cherts, and the resulting greater ease of control. Resharpening a chert tool probably resulted in considerably less mass wastage than resharpening tools of other raw materials. Hence, proportionally fewer exhausted chert tools, and more maintenance debris, might be expected. This is the pattern observed at 38LX64, at least for the chert artifacts.

The low proportional incidence of quartz darts to debitage, in contrast, appears to reflect greater initial reduction/manufacturing activity at the site, and probably the manufacture and use of other tool forms. The problem of relating site debitage assemblages to observed finished tool debris is complex, and involves the study of tool use, life, breakage and discard patterns, and, particularly, resolving manufacturing and maintenance byproducts. All of the darts recovered at 38LX64 appear to have been hafted knives, in addition to possible projectiles; edge angles ranged from 25 to 70 degrees, with a mean of 46.9 degrees, suggesting use in multiple tasks, with an emphasis on cutting functions.

The other biface assemblage (N = 37) included a variety of forms that appear to include dart fragments or preforms, as well as multitask cutting/scraping tools. Of 30 specimens for which detailed measurements were recorded, 26 were on quartz. This high incidence suggests a selection for local materials for less formal (more expedient?) bifacial tools. The range of working edge angles observed (30 to 80 degrees, with a mean of 48.1 degrees) is similar to that observed over the dart assemblage, indicating a probable similar functional orientation.

RETOUCHED FLAKES AND OTHER UNIFACIAL TOOLS

Eighty-three unifacial tools were recovered from 38LX64, including 65 retouched flakes, 11 steeply chipped unifaces, three gravers, one pièce esquillée, one burin, one spokeshave, and two denticulates. The retouched flake assemblage (for which detailed measurements are available for 64 specimens) is, to a large extent, composed of quartz (N = 45, 70.3 percent), with other materials in descending order of importance: chert (N = 10, 15.6 percent), slate (N = 5, 7.8 percent), rhyolite (N = 3, 4.7 percent), and an unknown igneous(?) material (N = 1, 1.6 percent). The proportion of retouched flakes by each raw material category is

similar to the proportional occurrence of the nonretouched debitage for that material (Table 12). This suggests the opportunistic use of readily available materials or debitage in the production and/or use of the retouched flake tools found on the site.

Table 13 summarizes the relationship of retouched flake size and edge angle by raw material category. It is apparent that in the manufacture and use of retouched flakes on the site, some selection linkage occurred between raw material and intended function. Chert and rhyolite appear to have been selected when low edge angles were desired, with quartz and slate chosen for tools with higher functional edge angles. This selection practice appears directly related to the physical (flaking) properties of each particular raw material, and not to idiosyncratic preferences. Chert and rhyolite are both fine-grained, isotropic materials that yield sharp cutting edges when flaked, while slate and quartz are more resistant materials, that yield steeper edges. This tendency was also discussed in relation to the 38LX5 retouched flake assemblage in Chapter 4. The overall orientation of the 38LX64 retouched flake assemblage appears towards low functional edge angles. Deliberate selection for cortical flakes or chunks also characterizes the 38LX64 retouched flake assemblage. Twenty-seven of 64 measured retouched flakes, or 42.2 percent, are on chunks or decortication flakes, as opposed to an only 21.9 percent incidence of these reduction stages in the umodified assemblage. The selection of these early stage pieces appears to be for backing, to facilitate hand-held use; many of the tools exhibit functional edges opposite cortex or broad flat surfaces.

Detailed measurements were recorded for eight of the 11 steeply chipped unifaces recovered on 38LX64; three of these artifacts exhibit only wear retouch and were summarized with the retouched flake assemblage (Figure 42). Half of these tools are on quartz and the remainder on chert (N = 3) or rhyolite (N = 1), suggesting some selection for fine-grained, extralocal materials in the manufacture of steeply chipped unifaces. All four of the quartz unifaces displayed only one functional edge; the chert and rhyolite steeply chipped unifaces, in contrast, all had two or three working edges. This would suggest that quartz was an opportunistically employed material; the unifaces of quartz are less elaborate and less carefully prepared than the others, supporting this inference. The average functional angles of the eight steeply chipped specimens, 57.7 degrees, suggests a multitask, predominantly scraping orientation (cf. Wilmsen 1970:20).

TABLE 13
SUMMARY DATA ON THE 38LX64 RETOUCHED FLAKE ASSEMBLAGE

Raw Material	Frequency	Total Weight	Average Weight	Average Edge Angle	Average # of Edges
Quartz	44	294.4	6.7	45°	1.2
Chert	10	23.7	2.4	37°	1.9
Slate	4	37.9	9.5	54°	1.8
Rhyolite	3	32.4	10.8	34°	1.7
Other	1	6.5	6.5	63°	2
Total	62	394.9	6.4	44°	1.8

A single chert blade (bladelet) was recovered from 38LX64 (Figure 42:k). It was 2.3 cm long, .8 cm wide, .2 cm thick, and weighed 0.5 grams. Two previous flake scars run longitudinally down the dorsal surface, and there is evidence for lateral (wear) damage which may be accidental. The distal end has bifacial flaking which produced a working surface 7 mm wide. Probable use appears to have been in cutting functions. One quartz pièce esquillée was found at 38LX64, measuring 2.8 cm long, 1.9 cm wide, 1.0 cm thick, and weighing 7.2 grams (Figure 42:i). It is wedge-shaped with a blunt battered cortical surface on its proximal end. Following Binford and Quimby's (1963) terminology, the distal end is the point of percussion which has been formed by the convergence of several cleavage faces. Chapman (1975:148-149) has recognized similar artifacts which he refers to as "Ridge Area Pieces Esquillées" at Rose Island. The function of this tool at 38LX64 may have been for splitting wood or bone.

A single well-defined spokeshave tool (Figure 42:n) was recovered at 38LX64, in EU3 below the Feature 4 concentration. The tool is on a 9.9 gram quartz pebble, with a long (1.5 cm) and shallow (0.1 cm) semicircular concavity. Several other flakes exhibit evidence for spokeshave surfaces (e.g. Figure 42:l), and the tool form is probably more prevalent than currently recognized in this general area. Three gravers were also recovered on the site, and exhibit careful, intentional workmanship (Figure 42:b, e). All were found at considerable depths, and may be of Early Archaic age. These tools probably served an engraving or piercing function. A single technological burin (accidentally produced?) was observed on a flake from the Feature 7 area; two irregular serrated flakes were also recovered from these levels and appear to be denticulate forms, although possibly accidentally produced.

COBBLE TOOLS AND ABRADERS

A total of 62 cobble tools and abraders were recovered at 38LX64, including 45 hammerstones and hammerstone fragments, six possible abrader faceted cobbles, four pitted cobbles, two possible grinding basins, and five possible ferruginous sandstone abraders. Only 11 hammerstones were recovered intact. The remainder were broken fragments, some of which may have been recycled for hearth stones. All but six of the 45 are made of quartz. The remainder are sandstone (N = 4), quartzite (N = 1), and granite (?) (N = 1). The average weight of the intact specimens was 383.4 grams, and most were characterized by moderate to extensive battering. The massive battering and crushing evidence on a number of

these specimens suggests use in a variety of functions. One sandstone specimen (Figure 43:d) appears to be a combination hammerstone, abrader, and pestle. Several other specimens exhibit evidence for multiple functions, including combination hammerstone/anvils/pitted cobbles (Figure 43:e, j), or hammerstone/abraders/mauls (Figure 43:a).

Six abrader faceted cobbles were recovered in the assemblage, including a possible grinding slab recovered at a depth of 75 cm in the western trench, near the swamp edge. This slab, which weighed 2765.7 grams, was found in the silt-sands defining the swamp deposits proper, and may have been tossed there by one of the aboriginal visitors to the site. No evidence for deliberate modification or abrasion is present, but the specimen is highly weathered, rendering such judgments tenuous. The remaining abrader faceted cobbles included one hammerstone/maul combination tool from Feature 7 (Figure 43:a) and four fragmentary specimens with suspicious flattened areas. All but one of the objects are composed of unidentifiable igneous or metamorphic materials, the exception is made of quartz. These materials may have been chosen for their resistant textures, although function remains unclear.

Two probable grinding basins were recovered in the units, one of quartz in Feature 2, and the other, a massive (5961.1 g) basin, in Feature 7. The quartz specimen is small and fragmentary, weighting 230.0 grams; it may be more appropriately a pitted cobble/anvil stone. The other, massive grinding basin, in contrast, has a large (14.9 cm diameter) circular depression 0.6 cm deep that exhibits crushing and pecking, suggesting use in milling rather than strictly grinding tasks.

Five ferruginous sandstone abraders were recovered at 38LX64, two near the Feature 2 scatter and the remaining three in subplowzone excavation unit levels. All of the specimens exhibit either flattened areas or slightly U-shaped grooves suggesting abrasion. One specimen, found in the level above Feature 2, exhibited extensive smoothing and was almost certainly used as a source of pigment, or for abrading some other material. The number of possible abraders, five, is somewhat low considering the moderate amounts of this material that occur in an unmodified state on the site (5393.1 g).

MISCELLANEOUS LITHIC ARTIFACTS

A number of unusual lithic artifacts were recovered in the deposits at 38LX64, including 18 fragments of steatite, 36 pieces of apparently unmodified sandstone, 19 pieces of gneiss, 10 pieces of slate that may have been part of carved gorgets, 10 pieces of a fine-grained ferruginous sandstone or hematite, and 37 fragments of split gravel. All of the steatite fragments were recovered in the excavation units, and 13 of the fragments (72.2 percent) came from the fill of Features 1, 5 and 7. Most of these steatite artifacts were small, weathered fragments, of uncertain use. One well-carved vessel rimsherd was recovered, however, in the first subplowzone land of EU8, just above the Feature 3 area (Figure 42:r). The sherd exhibits a pronounced lip and strongly resembles Late Archaic and Woodland period ceramic rimsherds found in the South Carolina area. A Middle to Late Archaic age is suggested for the steatite, inferred primarily by its subplowzone and feature associations.

The sandstone, split gravel, hematite, and schist specimens collected from 38LX64 do not exhibit unusual or clustered distributions. Most were found within the excavation units, and are thus probably aboriginal imports, but origin and function remain obscure. As noted in the discussion of the 38LX82 materials, the split gravel category could easily obtain from shovel or plow damage to gravel naturally occurring in the units. The final category consisted of ten fragments of a thin, slate-like material. Eight pieces were recovered in EU8, one in EU9, and one in EU14, in the Feature 7 levels. The fragments are all flat and may be portions of carved gorgets, but no evidence for intentional modification (carved or incised lines, or striations) was observed.

CERAMIC ARTIFACTS

Sixteen potsherds characterized by a sand paste were recovered at 38LX64, together with 1822.8 grams of fired clay. None of the fired clay was clearly identifiable as daub. The material occurred predominantly in or near features, however, suggesting an origin in or near hearth areas for much of the assemblage. The pottery finishes present included nondiagnostic (N = 6), plain (N = 4), linear separate punctate (N = 2), cord marked (N = 2), linear check stamped (N = 1) and simple stamped (N = 1). Nine of the 16 sherds came from the excavation units, and seven from the site surface, but no logical stratification was apparent. The paste/finish combinations indicate Late Archaic and Woodland site use; spedific wares present included

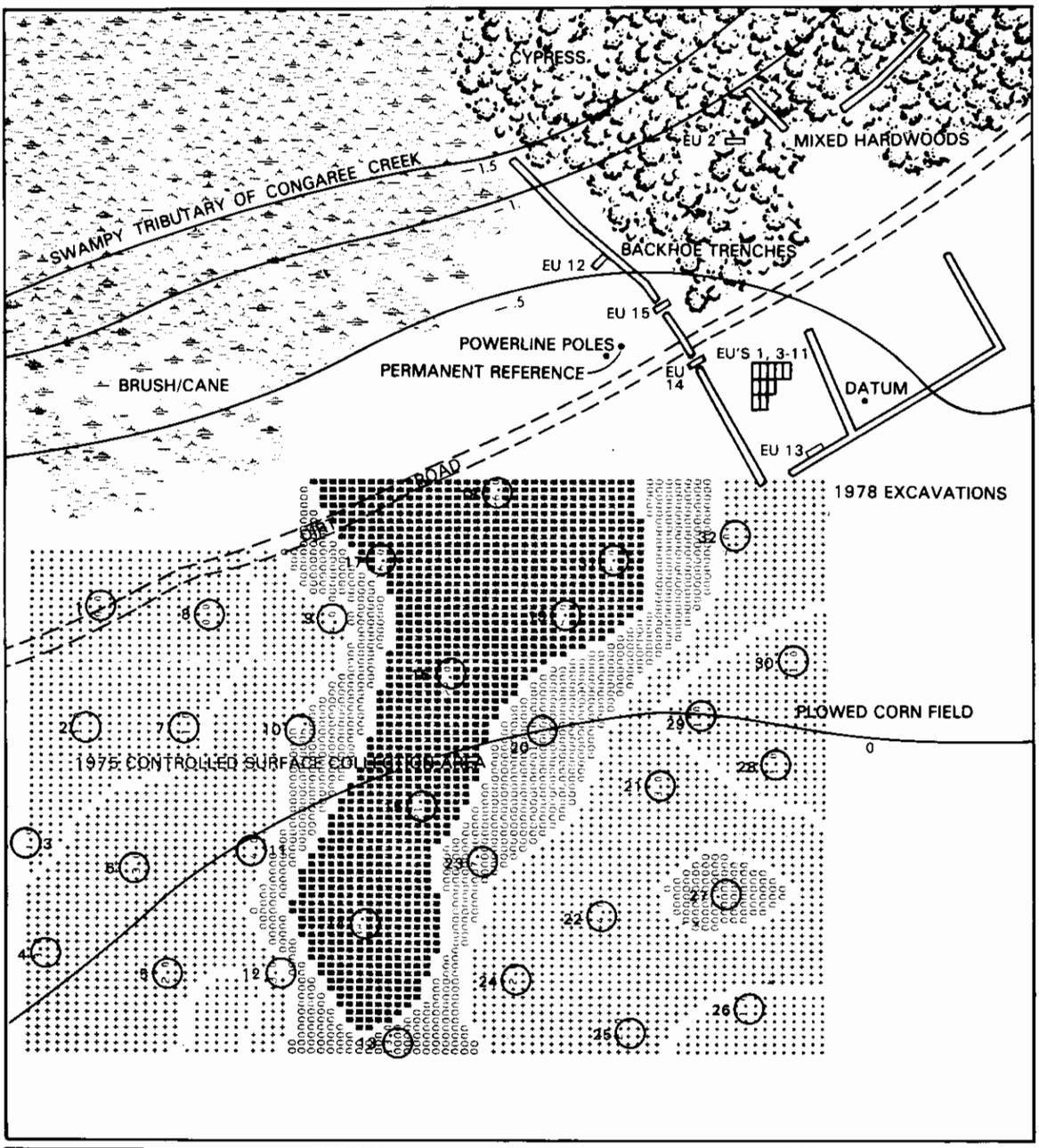
Thom's Creek punctate (N = 2), Deptford linear check stamped (N = 1), and Cape Fear cord marked (N = 2). The plain pottery is unclassifiable, although Thom's Creek or Deptford (Woodland) affiliation is probable. The single simple stamped sherd (Figure 43:h) had an unusual amount of coarse sand in its paste and may be either a Thom's Creek or Deptford ware. The presence of considerable quantities of fine and medium sand warranted retention in the original paste category, however, rather than classifying the sherd as coarse sand/grit tempered. The latter category, observed at 38LX5, consisted of a temperless (pure clay) matrix, to which (only) coarse sand inclusions were added. The low incidence of pottery at 38LX64 suggests minimal post-Late Archaic use of the immediate area.

CONCLUSIONS: THE 38LX64 SITE ASSEMBLAGE IN RETROSPECT

Site 38LX64 was found to contain components dating from the Early Archaic through Early Woodland periods. The main period of site use appears to have been during the preceramic Archaic, and a series of separate occupations dating to this period are inferred by diagnostic biface forms, including Palmer, Kirk, Morrow Mountain I and II, and Savannah River Stemmed. Woodland period site was minor, and was inferred by the presence of Thom's Creek, Deptford, and Cape Fear ceramics.

Through analysis of the 1975 controlled surface collection data (Figure 44), it is apparent that the richest part of the 38LX64 scatter is located from 30 to 80 meters to the southwest of the area examined in 1978. The excavations were hardly fruitless, however. Large quantities of artifacts and a number of features were detected in the units, and the data assemblage provides a needed first view of Archaic period use of the floodplain/tributary margin environment.

The artifact and feature assemblage from 38LX64 included evidence for hearth areas, for the manufacture, use, and maintenance of a variety of stone tools, and for the presence of a cobble tool industry oriented towards both stone working and plant processing. Extended habitation of the site area, or at least repeated reuse, is indicated by the quantity of material recovered, particularly fire-cracked rock, and the diversity of functions implied by the stone tool assemblage (cf. Ferguson 1976, House and Wogaman 1978).



MAP SOURCE: C.A.I. Field Survey, 1978.

MINIMUM	0.0	1.62	5.66	13.74
MAXIMUM	1.62	5.66	13.74	38.00
LEVEL	1	2	3	4

SYMBOLS

SOUTH CAROLINA

0 20 METERS

50 CM. Contour Interval

SOUTHEAST COLUMBIA BELTWAY PROJECT

SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SITE 38LX64 BASE MAP

CONTROLLED SURFACE COLLECTION
ALL PREHISTORIC ARTIFACTS — COUNT DATA

FIGURE 44

CHAPTER 8

ETHNOBOTANICAL ANALYSIS OF CARBONIZED PLANT REMAINS FROM TWO FALL LINE SITES, LEXINGTON COUNTY, SOUTH CAROLINA

INTRODUCTION

Carbonized plant remains recovered from two of the project sites, 38LX5 and 38LX64, were submitted to Suzanne E. Harris of the Southeast Missouri State University Center for Archaeological Research, for ethnobotanical analysis. The Southeastern Columbia Beltway project marked the first extensive effort to recover and analyze ethnobotanical remains from the central South Carolina area, and a major research objective was determining whether carbonized plant material of value to subsistence and paleoenvironmental reconstruction studies could be recovered from Fall Line area sites. The ethnobotanical analysis results presented here, coupled with the five viable radiocarbon dates reported in Chapter 4, indicate that carbonized plant remains of value to archeological analyses are to be found on sites in this area, and that these remains can be quickly and efficiently recovered during field excavations.

METHODOLOGY

Site 38LX5 is located on a sandy knoll about 1/2 mile south of Congaree Creek, in the upland/sandhills area, a region presently dominated by pines and scrub hardwoods. Twenty-two ethnobotanical samples were examined from 38LX5, (Table 14) encompassing fill from three possible Middle Archaic features (six samples), two possible Early Woodland hearths (seven samples), one Archaic or Early Woodland feature (seven samples), and at least two probable tree roots (two samples). Site 38LX64, in contrast, is located at the edge of a broad swampy tributary of Congaree Creek, in an area that at the present is grown up in hardwoods. Ten ethnobotanical samples were examined from 38LX64, encompassing fill from one possible Early-to-Middle Archaic feature (one sample), one possible Middle Archaic feature (one sample), and two possible Late Archaic features (six samples) (Table 14). The remaining two ethnobotanical samples from 38LX64 came from apparent disturbances, which may be either Archaic or recent in origin.

TABLE 14

ETHNOBOTANICAL SAMPLES: PROVENIENCE, CULTURAL AFFILIATION, RECOVERY TECHNIQUES, INITIAL SAMPLE VOLUME, AND WEIGHTS OF CARBONIZED PLANT MATERIAL
SITE 38LX5

Provenience	Cultural Affiliation	Sample No.	Recovery Technique	Soil Sample Volume	Weight Carbonized Plant Material
Feature 1	Early Woodland	1	Flotation	2 gallon	.95
Feature 1	Early Woodland	2	Handpicked		8.17
Near Feat. 1	Possible root?	3	Handpicked		152.45
Feature 2	Possible Archaic/Early Woodland	4	Flotation	2 gallon	4.06
Feature 2	Possible Archaic/Early Woodland	5	Flotation	2 gallon	1.83
Feature 2	Possible Archaic/Early Woodland	6	Flotation	2 gallon	1.15
Feature 2	Possible Archaic/Early Woodland	7	Handpicked	2 gallon	1.04
Feature 2	Possible Archaic/Early Woodland	28	Flotation	2 gallon	.12
Feature 2	Possible Archaic/Early Woodland	29	Flotation	2 gallon	.68
Feature 2	Possible Archaic/Early Woodland	30	Flotation	2 gallon	10.92
Feature 4	Possible Middle Archaic	8	Flotation	2 gallon	1.83
Feature 5	Possible Middle Archaic	9	Flotation	2 gallon	1.44
Feature 5	Possible Middle Archaic	10	Flotation	2 gallon	1.25
Feature 5	Possible Middle Archaic	11	Flotation	2 gallon	.26
Feature 6	Possible Middle Archaic	31	Flotation	2 gallon	.1
Feature 6	Possible Middle Archaic	32	Flotation	2 gallon	.1
Feature 9	Possible Early Woodland	12	Flotation	2 gallon	11.74
Feature 9	Possible Early Woodland	13	Handpicked	10 gallon	8.95
Feature 9	Possible Early Woodland	14	Flotation	10 gallon	5.94
Feature 9	Possible Early Woodland	15	Handpicked		19.62
Feature 9	Possible Early Woodland	16	Handpicked		1.54
EU35	Tree root	17	Flotation	2 gallon	50.65
	SITE 38LX64				
Feature 1	Middle Archaic	18	Flotation	2 gallon	.18
Feature 3	Possible Late Archaic	19	Flotation	2 gallon	9.24
Feature 3	Possible Late Archaic	20	Flotation	2 gallon	43.63
Feature 3	Possible Late Archaic	21	Handpicked		11.31
Feature 3	Possible Late Archaic	22	Flotation	2 gallon	12.16
Feature 4	Possible Early/Middle Archaic	23	Flotation	2 gallon	.06
Feature 5	Possible Late Archaic	24	Flotation	2 gallon	.28
Feature 5	Possible Late Archaic	25	Flotation	2 gallon	11.24
Feature 6	Possible Archaic or Root	27			13.35
Feature 7	Possible Middle Archaic				.02

Fifteen samples from 38LX5 and eight samples from 38LX64 were recovered through flotation of two gallon soil samples; one ten gallon soil sample (14) was also floated from 38LX5 (Table 14). The remaining samples, six from 38LX5 and one from 38LX64, represent relatively large wood charcoal fragments that were handpicked from the fill using a trowel and/or surgical tongs.

All fill samples were placed in plastic trash sacks in the field, and were floated the last week of the excavations, in mid-August 1978. The flotation process was accomplished in the waters of a dammed stream located northeast of Site 38LX5. Fill was poured into a partially submerged wooden frame lined with window screen, and then agitated until all of the smaller soil particles washed through the bottom. Once the water in the frame cleared, it was an easy matter to scoop up visible charcoal using a rice strainer lined with finely woven cloth. Gentle agitation of the water caused the lighter carcoal fragments to rise above the heavier artifacts trapped in the screen bottom; by careful use of the rice strainer it was possible to recover all of the charcoal in the screen.

The samples were initially dry screened and rough sorted in the laboratory. Since the samples where strained through closely woven cloth, minute particles and seeds were recovered, as well as larger chunks of charcoal and recent organic debris. The samples were passed through 1/4" and 1/16" mesh and the major recent contaminants (principally roots) were removed. The material caught by these two screens was then sorted for subsistence remains (nutshell and seeds) (Table 15). The material which passed through the 1/16" mesh was sorted only for seeds since attempts at identifying minute fragments of wood or resin charcoal are extremely time-consuming and yield little additional information. Although numerous small seeds were recovered, all appear to be naturally carbonized, and relatively recent in age.

The ethnobotanical samples from the two sites consisted almost entirely of wood charcoal. Two other categories of material, a black shiny substance, probably pine resin, and a very thin flat material, possibly small leaf fragments, were noted, but an attempt to sort these out and quantify them was abandoned given time limitations and the lack of obvious significant information which this endeavor would yield. Wood charcoal was identified from each sample (Tables 16 and 17). A standard 20 pieces per sample were

TABLE 15

ETHNOBOTANICAL SAMPLES CONTAINING CARBONIZED SUBSISTENCE MATERIAL (NUTSHELL)

SITE 38LX5

Feature	Cultural Affiliation	Sample No.	Wt. Acorn	Hickory
2	Possible Archaic/Early Woodland	4	.02	.06
2	Possible Archaic/Early Woodland	5	.05	-
2	Possible Archaic/Early Woodland	6	.02	-
2	Possible Archaic/Early Woodland	29	.03	.09
Subtotal			.12	.15
4	Possible Middle Archaic	8	2.01	.13
9	Early Woodland	12	-	.04

Note: No subsistence material was recorded from Site 38LX64.

TABLE 16

ETHNOBOTANICAL SAMPLES: WOOD CHARCOAL IDENTIFICATION
BY PERCENT: SITE 38LX5

Provenience	Sample No.	Cultural Affiliation	N	Pine	Conifer	Oak	Hickory	Ring Porous
Feature 2	4	Possible Archaic/Early Woodland	7	100%				
Feature 2	5	Possible Archaic/Early Woodland	20	25	45	5	25	
Feature 2	6	Possible Archaic/Early Woodland	20	55	40	5		
Feature 2	7	Possible Archaic/Early Woodland	8	100				
Feature 2	28	Possible Archaic/Early Woodland	10	100				
Feature 2	29	Possible Archaic/Early Woodland	19	95	5			
Feature 2	30	Possible Archaic/Early Woodland	20	95	5			
Feature 4	8	Possible Middle Archaic	20	55	20	20	5	
Feature 5	9	Possible Middle Archaic	20	95	5			
Feature 5	10	Possible Middle Archaic	16	37	37	13		13
Feature 5	11	Possible Middle Archaic	11	73	27			
Feature 6	31	Possible Middle Archaic	17	88	12			
Feature 6	32	Possible Middle Archaic	20	60	40			
Feature 1	1	Early Woodland	10		100			
Feature 1	2	Early Woodland	20	75	25			
Near Feat. 1	3	Possible Root/Hearth	500+	100				
Feature 9	12	Possible Early Woodland	20	85	15			
Feature 9	13	Possible Early Woodland	20	100				
Feature 9	14	Possible Early Woodland	20	100				
Feature 9	15	Possible Early Woodland	20	100				
Feature 9	16	Possible Early Woodland	11	82	18			
EU35	17	Tree Root	20	95	5			

TABLE 17

ETHNOBOTANICAL SAMPLES: WOOD CHARCOAL IDENTIFICATION
BY PERCENT: SITE 38LX64

Provenience	Sample No.	Cultural Affiliation	N	Pine	Conifer	Oak	Red Oak	Hickory	Ring Porous
Feature 4	23	Possible Early/Middle Archaic	10	60%	40				
Feature 6	26	Possible Root/Archaic	20	100					
Feature 1	18	Middle Archaic	20		100				
Feature 3	19	Possible Late Archaic	20	20	5		75		
Feature 3	20	Possible Late Archaic	20	95					5
Feature 3	21	Possible Late Archaic	20	95			5		
Feature 3	22	Possible Late Archaic	20	45	15		30	10	
Feature 5	24	Possible Late Archaic	20		40	10		25	25
Feature 5	25	Possible Late Archaic	20	95			5		
Feature 7	27	Possible Middle Archaic						100	

identified to genus (Asch, Ford and Asch 1972:3) when the sample was large enough. With small samples, the total number of identifiable pieces in the sample (less than 20 pieces) were listed. Identifications were made using a binocular microscope with 7-30x range.

INTERPRETATIONS

Possible subsistence items were scarce at 38LX5 and were not recovered at all from 38LX64. This is somewhat surprising since a number of flotation samples with moderate quantities of charcoal present were recovered from both sites (Table 14). Small quantities of acorn and hickory nut shell were recovered from two possible Archaic features at 38LX5, one probably Middle Archaic in age and the other either Archaic or Early Woodland in age (Features 2 and 4, Table 15). One hickory nut shell was also recovered from an Early Woodland hearth at 38LX5, Feature 9 (Table 15). The low incidence of nut remains suggests that these foods may not have been important subsistence items at the two sites. Given the small number of samples and comparatively poor preservation, however, such an inference is highly speculative. The evidence from the analysis, therefore, supports Archaic and Early Woodland period use of acorn and hickory nuts at 38LX5, although the actual importance of these resources remains unknown.

At the present, pine and "scrubby" oaks (Turkey oak, Quercus lacvis; Bluejack oak, Quercus cinerea; and Blackjack oak, Quercus marilandica) are the dominant vegetation of the sandhills (Braun 1950:283); their acorns may have been exploited prehistorically. Curiously,Site 38LX64, which is located on an alluvial floodplain near a swamp, produced no nut remains. This site is situated within a hardwood community which potentially should have been able to provide abundant nut resources.

Additional data were derived from the wood charcoal analysis (Tables 16 and 17). Pine and coniferous wood charcoal were the predominant items in all of the samples from 38LX5 and in seven of the ten samples from 38LX64. The coniferous charcoal observed at both sites, it should be noted, is probably pine, but this conclusion could not be definitely verified. Due to the small size of the charcoal fragments, it was not possible to observe the diagnostic resin canals which distinguish pine from cypress, the alternative conifer most likely to be present. Other microscopic characteristics used to distinguish these two genera, it should be noted, require a much higher magnification. Long leaf pine (Pinus palustris) was the most common pine in the sandhills uplands

(Braun 1950:283) and is the probable species represented in the samples from 38LX5. It cannot, however, be distinguished microscopically from other pine species which could grow on the sandhills or in adjacent lower areas, such as loblolly pine (P. taeda), pitch pine (P. rigida), and pond pine (P. serotina) (Panshin and deZeeuw 1970:458).

Oak, hickory and/or unidentifiable ring porous wood charcoal occurred in three features (four samples) from 38LX5 and three features (seven samples) from 38LX64. All but one of these features probably dates to either the Middle or Late Archaic; the exception, Feature 2 at 38LX5 dates to either the Archaic or Early Woodland. The relatively greater abundance of oak and hickory charcoal at 38LX64 (where they were present in six of ten samples and three of six proveniences) may reflect the site's location, which at least during the present is adjacent to a low swampy area grown up in hardwoods.

During the period 8000 BC to 3000 BC oak-hickory forests reached a maximum in the southeast; around 3000 BC these forests on the Coastal Plain and Piedmont were replaced largely by pine (Watts 1971; 1979). Oak and hickory wood charcoal are present in two possible Middle Archaic features at 38LX5, and in one possible Early Woodland feature. The "Early Woodland" feature at 38LX5 that provided oak and hickory wood charcoal may, in fact, date to the Archaic period. Two of the three features from which nutshell was recovered at 38LX5 may also date to the Archaic, although the third was clearly Early Woodland in age. A lower frequency of oak and hickory nutshell and wood charcoal in the Early Woodland deposits is suggested by the dates, and may reflect a reduced abundance of these genera in the area of this time. The ethnobotanical data, therefore, tends to reinforce palynological evidence for a post-Archaic decline in hardwoods in the region, although it should be cautioned that the samples here are extremely small. Cultural factors behind the occurrence of certain plant species in feature fill, such as selection for specific fuel characteristics, must also be considered.

Pine, for example, burns more readily and with a hotter fire than many other woods, while oak burns more slowly than pine, yet produces a more steady heat (Graves 1919:31). It is suggested that a profitable subject for research at Archaic and Woodland period sites in the region would be documenting changes in wood utilization over time, and attempting to correlate observed changes with changing forest composition.

INTERSITE COMPARISONS

No previous ethnobotanical analyses have been conducted at Fall Line sites in South Carolina, and only a few detailed ethnobotanical reports are available from elsewhere in the state, all from sites within the coastal plain. Much of the local ethnobotonical analysis has focused on shell midden sites, where favorable preservation conditions has been reported. Trinkley (1976b) has provided a detailed analysis of paleoethnobotanical remains from three Late Archaic-Woodland transitional shell middens in the Sea Island area. The three sites include Davis Island (38BU9; Michie 1973), Spanish Mount (38CH62; Sutherland 1973), and the Sewee shell ring 38CH45; Edwards 1965). In general, the material from these sites reflected both the favorable preservation of charcoal in the alkaline midden deposits, and the highly varied environmental setting characterizing the marshland border. A high incidence of hickory and acorn nut shell in the middens was indicated, with on or both of these genera reported from almost every sample. Pine, hickory, and oak were the most common genera represented by the charcoal, at the three shell midden sites, a finding similar to that noted on the two Beltway project sites, which may reflect similar firewood selection preferences. Several other wood species were recognized from the three coastal sites, however, possibly reflecting the apparently better preservational environment and/or a greater diversity in aboriginal selection practices. Wood species recognized at the three coastal shell midden sites, and not clearly identified in the Beltway project samples, included; maple (Acer sp.), dogwood (Cornus florida), water locust (Gleditsia aquatica), sweetgum (Liquid amber styraciflua), willow (Salix sp.), cypress (Taxodium sp.) and an unidentified diffuse porous wood.

Preliminary ethnobotanical identifications have also been reported from other coastal shell midden sites. Trinkley (1975:31) reports the presence of carbonized hickory nutshell from deposits at the Late Archaic/Early Woodland Lighthouse Point shell ring (38CH12), a finding in expectation with his comparative analysis of sites to this period (Trinkley 1976b). Two other coastal shell midden sites, both dating to the Woodland period, have also had preliminary ethnobotanical identification, at Jenkin's Island (38BU9); Trinkley 1976c), and at Fort Johnson (38CH275; South and Widmer 1976). At Jenkin's Island, Trinkley (1976c:16) reported the presence of carbonized hickory nut shell fragments, while at 38CH275 South and Widmer (1976:56-57) report the tentative identification of acorn and hickory nut shell fragments, together with bedstraw (Galium sp.), chinkapin (Castanea sp.) plum or

cherry seeds (Prunus sp.), bayberry (Myrica sp.), and arrow-arum (Peltandra virginicum). South and Widmer (1976:57) suggest that the presence of arrow-arum, a coastal marsh grass requiring extensive preparation to make edible, indicates the early occurrence of a highly specialized subsistence adaptational strategy known to have been common among protohistoric Indians in the region (Swanton 1946:272, 276).

Ethnobotanical analysis of remains from nonshell midden sites has also been conducted in recent years, notably at the Albert Love Site (38AL10; Trinkley 1974c), at the Palm Tree Site (38BK147; Widmer 1976), and at the Cal Smoak Site (38BM4; Trinkley 1979). Albert Love is a Late Archaic/Early Woodland site located near a Carolina Bay some 15 miles east of the Savannah River in Allendale County, South Cardine. The site deposits are located in moderately acidic sandy loams, generally similar to conditions at 38LX5. A flotation sample from the midden yielded pine (Pines spp.) and oak (Quercus spp.) wood charcoal, on unidentifiable non-porous wood charcoal, together with hickory nuts (Carya spp.). Carbonized plant remains from the site have been described by Trinkley (1979: personal communication) as "abundant, with good preservation"; the reported flotation sample size, 3.58 grams, is comparable to the samples recovered from the two Beltway project sites (Table 14).

In a second report on an inland, upland site, Trinkley (1979) presents the results of an analysis of charcoal samples from the Cal Smoak Site, (38BM4; Anderson, Lee and Parker 1979) located along the Edisto River in the central coastal plain of South Carolina. The Cal Smoak Site is located on a sandy ridge overlooking the Edisto River floodplain, and soil conditions there are very similar to those at 38LX5. At Cal Smoak, small charcoal samples (under 5.0 grams each) from two Late Archaic/Early Woodland age features were examined, and were found to contain fragments of hickory nuts (Carya sp.), and pine (Pinus sp.) and oak (Quercus sp.) wood charcoal.

The only other ethnobotanical analysis reported to date from an inland site is Palm Tree (38BK147; Widmer 1976), in the lower coastal plain on a ridge crest overlooking a Cooper River swamp. Although not clearly stated, from inspection of Figure 4 and the accompanying text (Widmer 1976;11, 36), it appears that the identifiable ethnobotanical remains at the site date to be Thom's Creek Late Archaic Component Hackberry (Celtis sp.), hickory nut (Carya sp) grape (vitis sp.) cherry or plum (Prunus sp.), and crotalaria Crotalaria sp.) were all identified, suggesting mid-summer through fall site use.

CONCLUSIONS

The analysis of carbonized plant remains from the two project sites, 38LX5 and 38LX64, clearly indicates that ethnobotanical data relevant to subsistence analysis and paleoenvironmental reconstruction can be recovered from Fall Line sites in the general region. While preservation may not have been as favorable as that observed in other depositional environments, specifically at shell midden sites, identifiable charcoal was present. The evidence from the Beltway sites, and from Albert Love, Cal Smoak, and Palm Tree, indicates that a valuable source of data exists on upland sites in the region, information that should not be ignored nor overlooked.

Carbonized plant remains were recovered from 38LX5 and 38LX64 in sufficient quantity to permit both ethnobotanical and radiocarbon analyses. Although evidence for stone plant processing tools was recovered at 38LX64, no subsistence remains (i.e. carbonized nutshells or seeds) were discovered on this site. Acorn and hickory nuts were recovered in small quantities at 38LX5, suggesting that they played a role in aboriginal subsistence, and site-use, although to what extent remains uncertain. The overall analysis highlighted the difficulty of separating pine from cypress wood charcoal, given small, fragmentary samples. Given the abundance of both species in the local environment, and their occurrences in separate microenvironments, methods should be sought to quickly and accurately distinguish between the two genera.

The wood charcoal identifications from the Beltway project sites suggest that oak and hickory wood may have been more prevalent, or at least more commonly selected for, during the Archaic period. Future research at sites within the coastal plain should be directed toward better defining the relative importance of vegetal resources to the diet, and toward obtaining a better picture of the natural environment during the various prehistoric culture stages present in the area. The present analysis serves to document methods for the collection and use of information of this kind.

CHAPTER 9

PREHISTORIC ADAPTATION IN A FALL LINE LOCALITY: THE SOUTHEASTERN COLUMBIA BELTWAY PROJECT IN PERSPECTIVE

INTRODUCTION

The Southeastern Columbia Beltway Project provided the opportunity to examine prehistoric human adaptation to a southeastern upper coastal plain/Fall Line environment. Excavations and controlled surface collections were conducted at four sites located in and adjacent to the alluvial floodplain of the Congaree River, in central South Carolina. Project research was directed toward single, intra-site analyses, documenting the archeological record at each site, and toward broader, multisite comparative analyses, focusing on cultural-ecologically based models of human settlement and land use.

The four project sites were located in two distinct macroenvironmental zones, the upper Congaree River floodplain, and the adjacent White Sandhills. The sites consisted of one large concentration and one small scatter in each macro-zone. Each of these sites was located in distinct microenvironments within the larger zones. The project data assemblage thus offered not only the opportunity to explore synchronic and diachronic variability in human adaptation to the general southeastern Fall Line environment, but also in relation to a series of microenvironments within that larger setting.

Complementing the broad research orientation toward intra and intersite descriptive, techno-functional, and cultural ecological analyses, the Southeastern Columbia Beltway Project sought to explore a series of specific research topics formulated on the basis of previous fieldwork in the immediate locality. Specific subjects for investigation included documenting patterns of lithic resource procurement and use, over time (cf. Wogaman, House, and Goodyear 1976: 38-39, Michie 1979:50); documenting the distribution of prehistoric components in the locality, by microenvironment and over time (cf. Goodyear 1976:8-11); equating project assemblages, individually and collectively, with models of prehistoric site functional variability and settlement in the Fall Line area and for the general region (cf. Ferguson 1976:8-10; House and Wogaman 1978); and documenting the existence, methods of recovery, and analytical usefulness of local ethnobotanical remains (cf. Trinkley 1976b). Identifiable components over the four project sites ranged from the Early Archaic through the Mississippian and, together with the extensive surface data available from other sites in the locality, provide a basis for broad, general analysis of human adaptation within the Fall Line area.

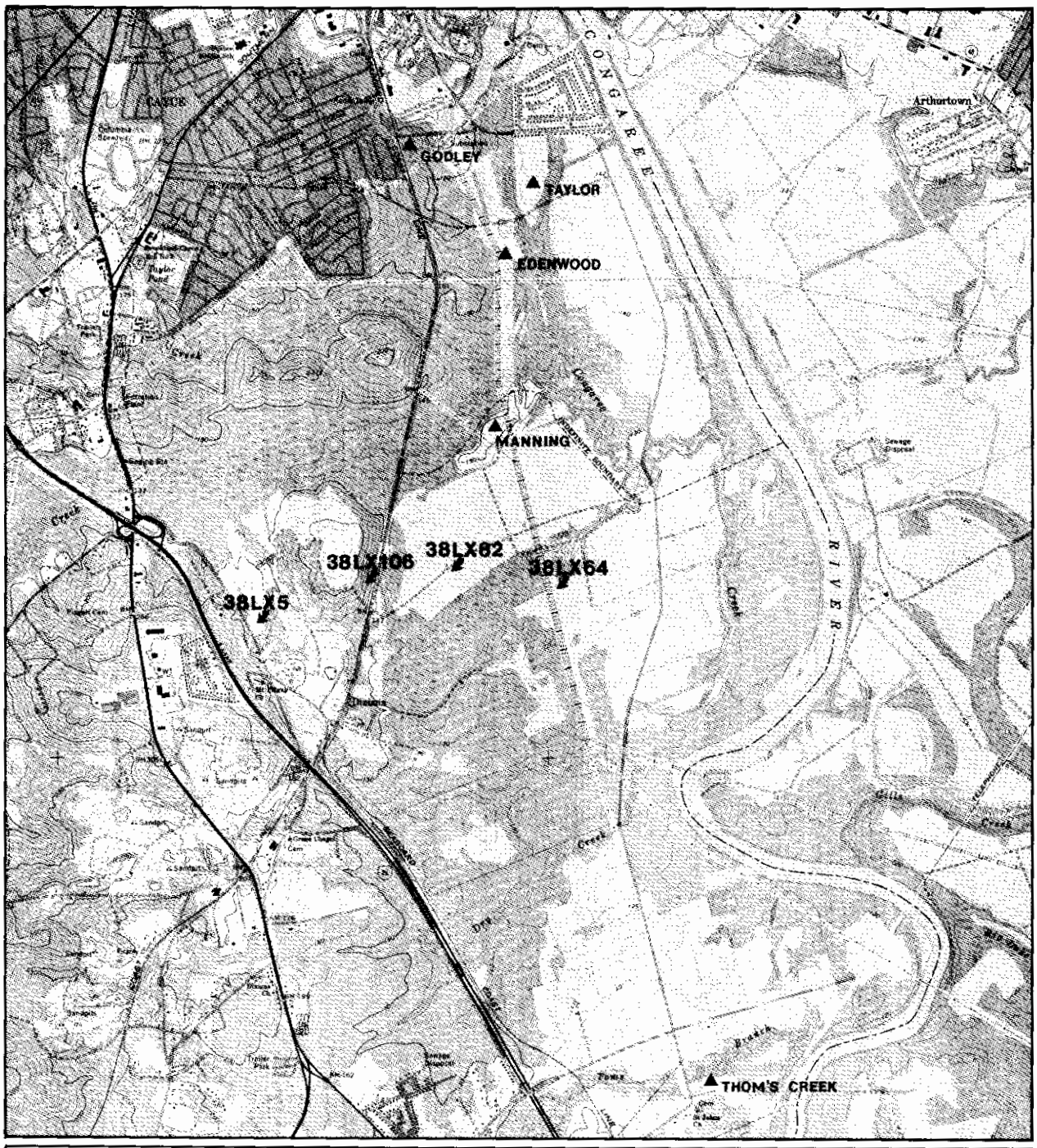
THE FOUR FALL LINE SITES: A SUMMARY

38LX5 DIMENSIONS: A SANDHILL RIDGE CREST SITE

Site 38LX5 was a five acre scatter located on the top and upper slopes of a sandy knoll located just within the Sandhills (Figure 45). The site, located at the 190 foot contour, is not a typical interriverine hill crest, which are commonly 300 to 400 feet in elevation. Instead, it may reflect use of the Sandhills margin, near the floodplain/upland ecotone. The Congaree River floodplain began one half mile to the east, and some 50 feet lower in elevation, and extended for over two miles through low-lying swamps and fields to the main channel of the river. A major tributary, Congaree Creek, cuts through the floodplain, passing to the east and north of the 38LX5 area. At its closest approach, the creek flows just over a half mile from the site, through a swampy, quarter-mile wide floodplain that becomes increasingly constrained further upstream in the Sandhills.

Identifiable components at 38LX5 span the Middle Archaic through Mississippian periods, with the most extensive site use, based on the incidence of diagnostic and associated artifacts, during the Middle Archaic and the Woodland. Middle Archaic site use at 38LX5 was documented by the presence of 23 Morrow Mountain-like points, including one possible cache of 15 bifaces that was radiocarbon dated to 3500 BC (Feature 6). Except for Feature 6 the Middle Archaic bifaces were recovered singly or in small groups from across the site, mostly from the southern and eastern margins, in areas overlooking the tributary. Four hearth-like features were also recovered in the excavation units. These are of possible Middle Archaic age, although one (Feature 2) yielded an Early Woodland period date upon radiocarbon analysis.

Cultural materials associated with the Middle Archaic bifaces at 38LX5 included moderate quantities of fire-cracked rock and ferruginous sandstone, occasionally in concentrations suggesting hearth or floor areas, together with a debitage and flake tool assemblage composed almost exclusively of quartz, with minor quantities of other raw materials present. The tool assemblage contained mostly hafted bifaces and expediently produced low functional angle flake tools. Ferguson (1976: 8-9) has hypothesized that Fall Line sites characterized by a "narrow range of tools and debitage" are probable biotic resource extraction stations. He additionally suggests that sites characterized by a "limited range of artifacts (focused) around cutting functions" are probable deer hunting/processing stations (Ferguson 1976:9). The Middle Archaic tool assemblage at 38LX5, following this line of reasoning, appears to reflect output from deer hunting activity, suggesting use of the site in extraction tasks.



MAP SOURCE: 1972 USGS Topographic
Southwest Columbia, S.C. Quadrangle

0 1200 METERS

SOUTH CAROLINA

SOUTHEAST COLUMBIA BELTWAY PROJECT
SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

MAJOR PREHISTORIC ARCHEOLOGICAL SITES OF THE UPPER CONGAREE RIVER VALLEY, SOUTH CAROLINA

FIGURE 45

The quantities of fire-cracked rock present in the Middle Archaic deposits additionally suggest either extended occupation, or extensive short-term re-use. Both Ferguson (1976:8) and House and Wogaman (1978:10), for example, equate the presence of fire-cracked rock with extended habitation, and the absence of this material as a characteristic of short-term extraction loci. It should be emphasized however, that the factors behind the production and occurrence of fire-cracked rock are currently very poorly documented in the general region (cf. Michie 1978). The presence of this attribute may reflect the local availability of stone as much or more than the functional posture of the site. The four possible Middle Archaic hearth clusters found during the excavations were all characterized by a low surrounding artifact density, suggesting relatively short-term use. The observed incidence of these features (four in the 0.5 percent random excavation sample) indicates that up to several hundred of them may be present in the site deposits, suggesting repeated visitation. The site data assemblage, therefore, indicates that upland knolls such as 38LX5, at least those at the margin of the Sandhills, may have been characterized by repeated short-term visitation during the Middle Archaic, with site use focusing on deer hunting and processing activity.

Late Archaic period use of the 38LX5 area was comparatively minor, and was documented by the recovery of a single slate Savannah River Stemmed biface, and 13 sherds of Thom's Creek punctated pottery. The finish variation indicates that several vessels are represented, although no evidence for features or artifact concentrations dating to this period were noted. Low artifact density is a specific characteristic of extraction stations, according to both Ferguson (1976:9) and House and Wogaman (1978:11). In the general absence of associated materials or features, however, it is difficult to infer more than that Late Archaic site-use appears to have been minor, perhaps reflecting one or a few visits. While use of the area in extractive tasks appears probable, identification of those tasks remains unclear.

Woodland period site use at 38LX5 appears to have been fairly extensive, and was documented by the presence of a variety of typologically identifiable biface and ceramic forms. Four radiocarbon determinations taken from three features additionally documented this site use, producing absolute dates from roughly 3000 to 2000 years before the present. Identifiable features consisted exclusively of hearths. No evidence for structures, such as midden concentrations or post molds, was recovered. Given the shallow plowzone and the presence of radiocarbon dated Woodland features below it, it is probable that if structures had been present at 38LX5 some traces of them would have been recovered.

The wide range of Woodland ceramic and biface forms recovered at 38LX5, indicates several episodes of site use. Early Woodland use is documented by four radiocarbon dates and the presence of a number of distinctive biface (Otarre, Thelma) and ceramic (Deptford) forms. Later Woodland period site use is indicated by the presence of fabric and cord marked pottery, although the temporal ranges of these wares is currently poorly understood. A number of triangular and stemmed bifaces were also recovered that are assumed to be later Woodland forms, although again this remains to be documented in the South Carolina area. Until stratified, or identifiable single component sites dating to the Woodland can be excavated, the placement of specific assemblages within this period will remain uncertain.

The Woodland artifact assemblage at 38LX5 was characterized by hafted bifaces, pottery, flake tools with (generally) low functional angles, ferruginous sandstone abraders, and a range of cobble tools consisting mostly of hammerstones but with pitted cobbles and possible abrading or grinding tools also present. Placement of individual artifacts and tool categories to specific periods within the Woodland was not possible, except in the case of typologically diagnostic artifacts. Functional interpretation of site use must therefore remain general in nature, encompassing the entire period. Over the Woodland an increased proportional use of chert, slate, and rhyolite was also evident, at least in comparison to the occurrence of these materials in the Middle Archaic tool and debitage assemblage. Use of quartz appears to have declined somewhat during the Woodland, possibly due to the substitution of other materials.

The Woodland assemblage at 38LX5 suggests a greater diversity of activity than noted during the Middle Archaic. The range of tool forms, together with the presence of fire-cracked rock and pottery, fit the pattern of an intensive habitation site according to Ferguson's (1976) model for the recognition of Fall Line site variability. Plant resource processing was indicated by the presence of cobble tools, and deer hunting and processing by a hafted biface/flake tool assemblage directed toward cutting functions. The presence of hearths, coupled with the absence of evidence for structures, however, suggests that site use may have encompassed relatively short-term visitation, possibly focused toward extractive tasks. The variation in the Woodland assemblage, indicative of two or more different extractive tasks, may document site use over different periods of the year, rather than the performance of a variety of tasks during one occupation. Fall site use is inferred by the recovery of hickory nut shell fragments in the fill of Feature 9, an Early Woodland feature.

Unfortunately, no clear evidence for site use during other seasons was recovered, although it is probable that much of the assemblage, particularly the hunting/butchering tools, could have been deposited during any season.

Mississippian period site use at 38LX5 was minor, and was documented by only three widely scattered sherds and possibly by a few small triangular arrow points and fragments. The low artifact density suggested short-term visitation, probably for extraction related tasks. The excavation assemblage from 38LX5, therefore, indicated two major periods of site use, during the Middle Archaic and the Woodland. No evidence for Paleo-Indian or Early Archaic components was recovered, and Late Archaic and Mississippian period site use was found to be minor.

Over all periods, the identifiable feature and artifact assemblages point to short-term use of 38LX5 by fairly small groups focusing on extraction related tasks. Hunting activity is indicated, with an increased emphasis on plant processing suggested during the Woodland. Aboriginal use of plant foods, particularly nuts, was also documented by the ethnobotanical analysis of charcoal from site features. Two probable Woodland features and one possible Middle Archaic feature yielded traces of acorn and hickory nut shell. Given the poor bone preservation, however, and the infrequency of charcoal-bearing features, interpretation of aboriginal subsistence and site use patterns at 38LX5 must remain based primarily on the surviving artifactual data.

38LX106 DIMENSIONS: A SANDHILL RIDGE SLOPE SITE

Site 38LX106 was a small scatter located on the lower slopes of a high knoll at the extreme edge of the Sandhills. The site was located only a few dozen meters away from, and slightly above, the flat alluvial floodplain of the Congaree River. Located just within the Sandhills, the site area was characterized by a xeric vegetational community of pines and scrub hardwoods, although hardwoods dominate the flat terrain of the floodplain at the base of the hill. Use of the 38LX106 area may have been related to the ecotonal nature of the location. The area would provide dry camping during periods of flooding and the location would provide a vantage point from which to watch for game at the base of the slope. The ecotone itself, reflecting the interface of two vegetational communities, may have been a particularly favorable area for hunting game, although this remains to be demonstrated.

The data assemblage recovered from 38LX106 documents a single period of site use during the Late Archaic. A chert Savannah River Stemmed base, and the base of a contracting stemmed quartz biface were the only tools found; the remainder of the assemblage consisted of later stage debitage and a few fragments of possible fire-cracked rock and ferruginous sandstone. The small quantity and narrow range of artifacts recovered, together with the localized nature of the scatter, in an area about 10 meters in diameter, strongly suggest use of the site for extraction tasks (cf. Ferguson 1976). Hunting and butchering activity is inferred, given the nature of the assemblage, which appears to derive from the maintenance and use of hafted biface cutting tools. No subsistence remains were recovered from the site, however, precluding accurate determination of prey species, or patterns of their exploitation and use. Following ecological arguments developed by House and Wogaman (1978:19-23), however, it is probable that white-tailed deer were the principal species exploited.

38LX82 DIMENSIONS: A LOW-LYING FLOODPLAIN SITE

Site 38LX82 was a small, 30 meter diameter scatter located within the flat to slightly rising terrain of the Congaree River, roughly one and one half miles west of the main channel and one half mile from the base of the Sandhills. The floodplain is generally flat, although dissected in places by swampy tributaries and broken by low terraces and eroded ridgelines. Archeological sites are common throughout the floodplain environment, although they are almost invariably located on visible rises or else along the margins of present day tributary/swamps. Site 38LX82 occupies a somewhat unusual position, however, in that it is not on or near either of these types of terrain, but is located in a flat, undifferentiated setting. A circular boggy depression located some 100 meters to the north of the site probably explains the occurrence of the scatter. Prior to modern farming and drainage activity this depression may have been wetter or more extensive, providing the swampy environment seemingly selected by local prehistoric populations.

It should be emphasized that the apparent association of archeological sites with swamps within the Fall Line floodplain reflects modern conditions in the area. Prehistorically, the extent of these swamps may have been considerably different. Given lowered sea levels, and a somewhat cooler climatic regime, swamps may have been less widespread during the Early Holocene (Whitehead 1973:624-626). Even given a relative stabilization of regional climate and vegetational communities after the Early Holocene (cf. Watts 1971, n.d., Chapter 2),

the effect of minor fluctuations in these variables remains to be determined. Historic period removal of the climax forest cover from throughout the area may have also affected drainage and silting patterns. What may be indicated by the patterning evident in prehistoric site distribution is not so much selection for swamp margins as for a nearby source of water. The relatively unusual placement of the 38LX82 scatter within the floodplain, therefore, serves to emphasize the subtle factors characterizing prehistoric land use in the area.

The data recovery operations at 38LX82 documented prehistoric site use during the Late Archaic and/or Early Woodland. Temporally diagnostic artifacts recovered included one quartz Savannah River Stemmed base and one rhyolite Otarre Stemmed-like biface. These forms have been dated throughout the region, including at site 38LX5, to between 2000 and 1000 BC, during the Archaic-Woodland transition. Two probable Woodland period potsherds were also recovered, but the low incidence of ceramics or other Woodland artifacts suggests minor use of the area after about 1000 BC. No features were discovered, although the site artifact assemblage was found to occur almost entirely in the plowzone, precluding preservation. Both fired clay and fire-cracked rock were recovered in moderate quantities in the plowzone, suggesting the presence of hearth areas. The associated artifact assemblage included pitted and battered cobble tools, retouched flakes with generally low functional working edge angles, a predominantly quartz debitage assemblage characterized by both initial and advanced stage materials, several biface fragments, and half of a carved steatite disk that may have served as a cooking stone.

The artifact assemblage indicated that a range of activities were occurring on the site, including probable tool manufacture and maintenance, as suggested by the debitage, and both plant and animal processing, as suggested by the cobble and cutting tool forms. The moderate range of tool and debitage forms, the occurrence of fire-cracked rock, and the presence of steatite are all attributes of an intensive habitation site according to both Ferguson (1976:8) and House and Wogaman (1978:10). The small size of the scatter, however, suggests that site use was limited in duration, possibly representing temporary settlement by a fairly small group. Given the highly localized nature of the scatter, re-use of the area over differing seasons or periods as an explanation for the observed assemblage diversity appears unlikely. The range of materials indicated site use beyond that for a single extraction task, suggesting habitation, although this was probably of limited duration.

SITE 38LX64 DIMENSIONS: A LOW-LYING FLOODPLAIN TRIBUTARY/ SWAMP MARGIN SITE

Site 38LX64 was a three acre scatter located along the margin of a swampy tributary cutting through the Congaree River floodplain, about one mile from the main channel (Figure 45). The swampy tributary forms a distinctive micro-environment within the floodplain, one that apparently saw considerable prehistoric use (Goodyear 1975a:26). As indicated in the discussion of site 38LX82, the swamp itself may be a fairly recent feature, only peripheral to the reason the area was occupied. Aside from the proximity of the tributary, the 38LX64 area is undistinguished, and the vicinity of the scatter is almost perfectly flat and featureless. Higher areas, which would have provided refuge in case of flooding, are absent. The occurrence of an extensive assemblage in the area, given the location, might suggest site use during drier seasons, when flooding would not have been likely.

The data recovery operations at 38LX64 documented prehistoric site use throughout the Archaic and into the Woodland. Considerable quantities of stone tools, debitage, and fire-cracked rock were recovered, suggesting fairly intensive use of the area. The deposits were shallow and fairly mixed, however, rendering separation of individual component assemblages difficult. Quartz was the principal raw material recovered on the site, accounting for almost 90 percent of the debitage assemblage by weight. Small quantities of chert, slate, rhyolite, and quartzite were also present, with chert the second most prevalent raw material. Both initial and later stage reduction debris was present over all raw material categories, suggesting both tool manufacture and maintenance. A number of well-made unifacial tools were recovered, although much of the stone tool assemblage appeared to reflect the expedient use of flakes. The majority of the specimens in the wear and intentionally retouched flake assemblage were characterized by acute functional working edges, although a number of flakes were also recovered with intermediate or steep functional edges. The overall retouched flake assemblage appeared to reflect use in a number of functions.

Early Archaic site use was documented by the recovery of three Palmer and two Kirk projectile points. Several well made unifacial tools, including sidescrapers, endscrapers, and gravers, were also recovered at depths suggesting a possible Early Archaic age. Well made unifacial tools are locally considered, indicative of Paleo-Indian or Early Archaic site use (Wogaman, House, and Goodyear 1976:11; Michie 1979:14). While this remains to be demonstrated, many of the unifacial tools at the site were found in contexts suggesting an Early Archaic origin.

The nature of Early Archaic site use at 38LX64 is difficult to infer. Most of the probable tools dating to this period are composed of nonlocal cherts or rhyolites, suggesting resource exchange or procurement over large areas. The artifact assemblage consists almost entirely of broken or exhausted hafted bifaces, plus a few kinds of steep angled unifacial tools. Given the nature of the deposits, attributing other, nondiagnostic artifacts to this period is risky, but it is probable that some of the recovered debitage and fire-cracked rock was associated with the Early Archaic component. The assemblage appeared directed toward a number of specialized activities, including minimally hunting or butchering extraction tasks. The biface assemblage documented animal processing extraction activity at or near the site; resolving the nature of other site activities entails delimiting the functions of the specialized unifacial tools, and settlement implications of their occurrence, on prehistoric sites. Some investigators (Goodyear 1974, Morse 1975), for example, view the presence of at least limited quantities of specialized unifacial tools as plausible at special activity stations, an orientation that has been challenged by other researchers (cf. Schiffer 1975). Early Archaic site use at 38LX64, given the absence of evidence for structures or even well defined working floors, must be interpreted on the basis of a few possible associated tool forms.

Middle Archaic site use at 38LX64 was documented by the presence of 11 Morrow Mountain-like biface forms. Again, determining associated artifacts and features was difficult, and only one possible hearth (Feature 1) could be assigned to this period. Given the limited stratification evident in the deposits, it is probable that moderate quantities of the fire-cracked rock and debitage, and some of the flake and cobble tools recovered date to this period. One of the site features, a cluster of cobble tools and ferruginous sandstone nodules, was found with a Morrow Mountain point in the center, although unfortunately this feature was of uncertain formation. The identifiable Morrow Mountain points recovered at 38LX64 were predominantly of quartz and quartzite, and it is probable that some of the debitage of these materials is also of Middle Archaic age. No evidence for structures was noted, although their recognition would prove difficult.

The Middle Archaic assemblage at 38LX64 points to site use encompassing a variety of tasks, including both plant and animal resource processing, and stone tool manufacture and maintenance. The incidence of both early and later stage reduction debris, particularly over the quartz assemblage, supports both tool manufacture and maintenance activity. Plant resource processing was suggested by the

occurrence of a variety of stone tools, including pitted, abraded, and battered cobbles, one possible pestle, and a large mortar or basin. While the exact age of these specimens was uncertain, assignment to the Middle and/or Late Archaic is probable, given the depth and associations of the various artifacts. Animal resource processing was suggested by the retouched flake assemblage, which included a number of tools with low functional working edges, and by the presence of a hafted biface assemblage, which could have also been employed in cutting functions (cf. Ahler 197). Following Ferguson (1976) and House and Wogaman (1978), Middle Archaic site use at 38LX64 appears to reflect intensive habitation or, alternatively, re-use of the same location over different periods for differing extractive tasks. Given the high density of materials, and the spatial proximity of the artifact and tool forms, however, extended habitation appears more probable.

Late Archaic site use at 38LX64 appeared similar to the pattern noted for the Middle Archaic. Seven Savannah River Stemmed-like bifaces most of slate or rhyolite, document site use at this time. Probable associated remains included fire-cracked rock, debitage and flake and cobble tools. Two hearth-like features were detected that may, on the basis of depth, date to the Late Archaic, although it was not possible to conclusively document this inference. Again, no evidence for structures was noted. Only two definite Thom's Creek sherds were recovered, and much of the Late Archaic assemblage may predate the introduction of pottery into the area. The role of ceramics on Fall Line sites of any period is currently poorly understood, however, and not a problem related strictly to the Late Archaic in the area. As during the Middle Archaic, site use at 38LX64 during the Late Archaic appears to have been directed toward a variety of tasks, and extended habitation is inferred. Given the general absence of preserved subsistence remains, however, it was not possible to determine seasonality of occupation for either this or any period of occupation on the site. The presence of smooth pitted cobbles may indicate fall nut processing during the Middle and Late Archaic, although no nut remains were discovered by the ethnobotanical analysis.

Post-Archaic use of the 38LX64 area appears to have been relatively minor. Only 16 potsherds were recovered, all of probable Late Archaic or Early Woodland age, and no identifiable Woodland bifaces were recovered. The presence of Woodland pottery does suggest some visitation at this time, however, and the low overall artifact density implies site use in short-term extraction tasks (cf. Ferguson 1976:9).

The absence of bifacial tools, coupled with the presence of at least some pottery, may suggest the possible nature of this Woodland activity. The presence of containers (i.e. pots) suggests collection of some kind, possibly of water, seeds or other resources. This inference is admittedly highly speculative, based as much on the absence of hunting/butchering implements as on the occurrence of pottery. Some cobble tools were recovered on the surface at 38LX64, and may date to post-Archaic times, additionally suggesting plant resource collection, although it should be emphasized that a Woodland age for these tools cannot be demonstrated. The pottery may, alternatively, reflect casual transport and/or discard from other locations, possibly through prehistoric action, or by modern agricultural or other land use activity. Evidence for Woodland site use is minor, however, and the most extensive periods of activity at 38LX64 clearly date to the Archaic.

STEPS TOWARD A LOCAL CULTURAL SEQUENCE: INFERENCES FROM THE SOUTHEASTERN COLUMBIA BELTWAY PROJECT

From a purely cultural-historical perspective, the Southeastern Columbia Beltway Project produced a range of information of value toward the construction of a local cultural sequence. Major contributions of the project in this regard include the additional stratigraphic documentation of the local biface sequence, and the identification and absolute dating of specific, diagnostic artifact forms. Prior to the Beltway project, Michie's (1969) work at Thom's Creek formed the only stratigraphic record of the artifactual sequence in the upper Congaree Fall Line area to be reported in detail. The excavations at Thom's Creek documented a local Archaic biface sequence similar to that reported by Coe (1964) for Fall Line North Carolina, with the following types recognized, ranging from earliest to latest: Taylor, Hardaway, Palmer, Morrow Mountain, Guilford, Savannah River Stemmed, and a variety of Woodland forms (Michie 1969:7-9, 14). The limited stratigraphic data from two of the Beltway project sites, 38LX5 and 38LX64, complement and support the sequence developed from the Thom's Creek site.

At 38LX64, the deposits were shallow and mixed, but over the entire bifacial assemblage it was possible to document a stratigraphic succession from Palmer and Kirk forms, through Morrow Mountain, to the Savannah River Stemmed type. This information, while hardly novel, serves to complement and additionally confirm the local Archaic sequence originally posited by Michie. Site 38LX5 also produced a limited amount of stratigraphic data. At this site the distribution of bifaces in the plowzone and subplowzone

documented a clear temporal priority for Morrow Mountain and Otarre-like forms, which were located almost exclusively in the subplowzone. An intermediate age for Thelma-like points was suggested by their relatively even distribution in both the plowzone and subplowzone, while a comparatively recent age for a number of small stemmed and triangular forms was suggested by distributions restricted almost exclusively to the plowzone. While this information is admittedly of limited scope, the sequence documented for local Woodland period forms (Otarre-Thelma-small stemmed and triangular) represents an improvement on previous information, and provides initial, tentative confirmation of the general utility of Woodland biface sequences developed elsewhere in the region. In particular, the 38LX5 data support the generally accepted assumption that sequences developed by Coe (1964) in eastern North Carolina, and Keel (1976) in western North Carolina, are of some utility in the central South Carolina area.

The Southeastern Columbia Beltway Project additionally provided information of value toward the identification and absolute dating of specific typologically diagnostic artifact forms. The Morrow Mountain-like biface cluster (Feature 6) found at 38LX5, for example, helps to document the probable range of morphological variation that might be expected within local Middle Archaic assemblages. The associated radiocarbon determination, roughly 3500 BC, additionally provides an absolute age measure for these biface forms in the local area. Otarre Stemmed (Keel 1976) and Thelma-like (South 1959) bifaces were also recovered on the project sites, and through examination of their context, together with three associated radiocarbon dates, it was possible to place these forms temporally in the Congaree Fall Line area.

The Otarre Stemmed type appears to be a transitional, Late Archaic/Early Woodland biface form in the South Carolina Fall Line area. On each of the three project sites where it was recovered, it was found in generally aceramic contexts, and at both 38LX82 and 38LX64 it was found in probable association with Savannah River Stemmed forms. At 38LX5, two radiocarbon determinations placed the form at about 1200 BC, a date in agreement with the original estimates based on stratigraphic associations and radiocarbon dates from the Appalachian summit of western North Carolina and eastern Tennessee (Keel 1976). Thelma-like points, in contrast, appear to be slightly later in age, and were found in association with pottery. At 38LX5, two Thelma-like points were found near Feature 9, a hearth with Deptford plain, check, and linear check stamped pottery

present in the fill. Charcoal from this feature produced a radiocarbon date of about 860 BC. This determination is in approximate agreement with South's (1959) estimated age for the biface form based on fieldwork in coastal North Carolina. Thelma-like points were recovered only at 38LX5 during the Southeastern Columbia Beltway project. Since this was the only site of the four producing pottery in quantity, it reinforces the inference that the form dates to the Early Woodland (ceramic) period in the area.

The date from Feature 9 is somewhat earlier than expected for Deptford pottery, by perhaps as much as two to three hundred years. Milanich (1971:143) tentatively begins his Deptford phase around 600 BC, and South (1976: 29) employs the same approximate date for the appearance of Deptford pottery in coastal South Carolina. Until additional dates can be collected to confirm this determination, only tentative acceptance is warranted. The artifactual data and radiocarbon determination does, however, indicate a general association of Deptford pottery with stemmed, Thelma-like bifaces, and additionally suggests an absolute age for these forms in the early to middle part of the first millennium BC.

PREHISTORIC SETTLEMENT IN THE UPPER CONGAREE RIVER FALL LINE ENVIRONMENT: THE EVIDENCE FROM THE PROJECT ASSEMBLAGES

The archeological assemblages from the four sites examined during the project provide a basis for examining patterns of prehistoric settlement, over time, in the upper Congaree River Fall Line area of South Carolina. It is immediately apparent, for example, that the major periods of prehistoric use vary considerably over the four locations. Furthermore, the variation in functional posture evident over the project components helps to document how each specific microenvironment was utilized by local aboriginal populations.

No Paleo-Indian components were noted on the project sites, and the only Early Archaic components detected were found at 38LX64, within the alluvial floodplain along a swampy tributary margin. Both Palmer and slightly later Kirk biface forms were recovered, indicating at least two periods of site use. The absolute age of these components, based on radiocarbon determinations from elsewhere in the southeast, are roughly 9500 and 9000 years ago, during the early Holocene (Chapman 1976:2-5). Given lowered sea levels and increased stream gradients in the past, it is possible that the modern tributary/swamp area to the north of the scatter was either an open lake or else a relatively free flowing stream. A broadleaf hardwood forest canopy undoubtedly

dominated the area, although the principal species were probably oak, hickory and maple. The modern swamp communities, characterized by cypress, tupelo, and sweetgum, do not appear to have become fully established until somewhat later in the Holocene (Whitehead 1965, 1973, Watts 1971, n.d.). Specific use of the site area appears to have been directed toward a number of specialized activities focusing on hunting/butchering extractive tasks. The limited nature of the recovered data assemblage precludes an accurate appraisal of site use patterns, however, and the nature of the Early Archaic components remains largely unknown.

Middle Archaic components were recognized at two sites by the presence of Morrow Mountain points. Components were identified at 38LX5, an upland knoll crest in the inner margin of the Sandhills, and at 38LX64, along a swampy tributary within the Congaree alluvial floodplain. The absolute age of these components dates from roughly 7000 to 5000 years ago, based on radiocarbon determinations from elsewhere in the region (Chapman 1976:8-9), and supported by a single date of about 5500 BP from 38LX5. By this time, an essentially modern vegetational community was established in the area, although perhaps characterized by fewer pines and more hardwoods than occur at the present. Site use in both areas appears to have included hunting/butchering extraction tasks, although at 38LX64, evidence for a greater range of activities was evident, including possibly plant resource processing. The project data suggest repeated short-term use of the 38LX5 area, probably in hunting-related activities, and extended use, including probable habitation, of the 38LX64 area. One unusual cluster of Middle Archaic tools found at 38LX5 appears to be a hunting/butchering tool kit that was either lost or possibly deliberately left on the site, in a cache or burial context.

Late Archaic components were recovered at all four of the project sites, and were documented by the presence of Savannah River and Otarre points and Thom's Creek pottery, the latter category noted only at 38LX5 and 38LX64, the two large sites. The absolute age of these components is from roughly 5000 to 3000 years ago, as documented by numerous radiocarbon dates on associated artifact forms from throughout the region (cf. Coe 1964, Keel 1976, Trinkley 1976a). Two radiocarbon dates from 38LX5 for Otarre Stemmed bifaces, help provide an absolute chronology from within the project area. Vegetation and drainage patterns during the Late Archaic were probably similar to modern conditions, at least those just prior to historic contact (Whitehead 1973, Watts 1971, n.d.).

Late Archaic site use appears to have been somewhat different in each of the four locations examined during the Beltway project. At 38LX106, the sandhill ridge slope site at the extreme margin of the uplands, site use appears to have been short-term and directed exclusively toward animal resource extraction. A single period of site use by a small group at this location appears probable. At 38LX5, the sandhill ridge crest site, Late Archaic site use was ambiguously defined by a single biface and a few sherds of pottery. Use of the site in short-term extractive tasks appears likely, although the nature of these tasks remains obscure.

At 38LX82, the low-lying floodplain site, Late Archaic site use appeared directed toward a moderate range of activities, including tool manufacture and plant and animal processing. The data suggest intensive habitation of the area by a small group of people, probably for only a short period of time. The Late Archaic use of the 38LX64 area appears to have been directed toward a variety of tasks, and intensive habitation is inferred, probably over a fairly lengthy period. Generally, the project data set suggests Late Archaic use of the upland sandhills area in extraction activities, coupled with extensive habitation, and varied task performances, in the floodplain area.

Woodland components were observed on three of the four project sites, two in the floodplain and one (38LX5) in the uplands. The absolute age of these components dates between roughly 3000 and 1000 years before the present. At 38LX5, it appears as if this entire range was represented, while at 38LX64 and 38LX82 the few sherds recovered suggest visitation during the earlier half of this range. A few sherds were noted on both sites in the floodplain, but no other artifacts on these sites could be conclusively dated to the period. The data suggest that Woodland populations ranged into the floodplain, although specific use appears to have been short-term and possibly related to extraction tasks. Use of the site 38LX5 area, on an upland ridge crest, in contrast, appears to have been much more extensive. The data suggest that site use was directed toward a variety of activities, indicative of intensive habitation or minimally repeated re-use in different extractive tasks. Evidence for the final period of prehistoric occupation in the region, the Mississippian, was noted at only one site, 38LX5, where a small number of sherds and points suggested short-term site use for probable extraction related tasks.

The Beltway project data set may be used to generate inferences about prehistoric settlement patterning in the upper Congaree River area. Early Archaic settlement appears to have focused on the floodplain and specifically along stream margins. No evidence for Early Archaic use of the uplands was noted. The Middle Archaic, in contrast, saw extensive use of the upland ridge crests for animal resource extraction, together with intensive habitation of the floodplain tributary margins. During the Late Archaic use of the uplands continued with both the ridge crest and ridge slope/ecotonal areas utilized for animal extraction tasks. Late Archaic use of the uplands, however, appears to have been relatively minor when compared with use of this zone during the preceeding and succeeding periods. Late Archaic settlement appears to have focused instead on the floodplain, with intensive habitation sites occurring both along tributary margins and out within the flat alluvial plain. Woodland period use of the Fall Line area appears to reverse the patterning noted during earlier eras, with short-term extraction loci in the floodplain and probable intensive habitation sites on upland ridge crests. During the Mississippian period, upland ridge crests saw occasional use as extraction loci; settlement during this period appears to have avoided floodplain tributary margins or the flat,low-lying interior areas.

The patterning in prehistoric Fall Line settlement observed over the four sites provides an initial datum for comparative analysis. Goodyear (1975a, 1976:8-11), for example, had previously proposed a general model of prehistoric site distribution in the upper Congaree River area. Goodyear specifically argued that distinctive shifts in settlement patterning occurred over time in the Congaree Creek locality, basing his inferences largely on survey data. The settlement data from the four Beltway sites complement Goodyear's observations, and provide previously undocumented information about specific prehistoric use of certain environmental zones. In particular, no Early Archaic components were noted on the two sandhill sites examined, supporting Goodyear's (1976:8) observation that "sites of this period do not appear to be present in the sandy uplands to the west". In a similar fashion, the inferred distributions of Middle and Late Archaic sites (in both the uplands and floodplain) and for the Woodland (in the sandhills) are supported by the excavation data. Goodyear (1976:11-12) additionally documents the presence of extensive Mississippian period sites along the immediate Congaree River/Congaree Creek margin, and suggests that this location was selected to take advantage of the periodic overflow, which would renew the soil and make cultivation relatively efficient. These floodplain Mississippian sites are inferred to be base settlements, with use of the interior restricted to brief, extraction

related tasks. The predicted occurrence of Mississippian base camps along the immediate margin of the floodplain, by the main river channel, helps to explain why no extensive Mississippian components were located on any of the four Beltway sites, which are outside of this microenvironment.

In another study, Ferguson and Widmer (1976:109-111) documented Fall Line site distributions on the west bank of the upper Savannah River. Prehistoric sites within the Savannah River floodplain tended to be located adjacent to swamps, and evidence for utilization of the area tended to decrease in a linear fashion from the floodplain to the sandhills. The distributional patterning noted along the Savannah differs from that observed along the upper Congaree in that prehistoric use of the Sandhills was reported to be "almost non-existent" (Ferguson and Widmer 1976:111). The artifact assemblage from 38LX5, a rich upland site, suggested a markedly different pattern, although it should be emphasized that only minimal survey has been conducted in the Sandhills along either river drainage. It should be noted that a recent survey (Cable et al. 1978) on the east side of the Savannah documented a marked differential in the prehistoric use of the two banks. Prehistoric site incidence and intrasite artifact density were both found to be low on the east side of the river while the western margin was found to be rich in sites. The narrow floodplain and minor swamp formation along the eastern margin of the river were advanced as possible factors constraining site occurrence in this area (Cable et al. 1978:12-13). The upper Congaree River Valley, like the upper Savannah, is also characterized by considerable variation in floodplain width and associated swamp and tributary occurrence, and the apparent intensity of prehistoric settlement in the Congaree Creek area may be due to the highly variegated floodplain environment in the area.

In addition to examining prehistoric settlement distributions, the Southeastern Columbia Beltway Project also had as a research goal the testing of methods for resolving site function. Two principal, complementary models currently help to document prehistoric site function in the Fall Line and Piedmont areas of South Carolina, one developed by John House and others (House and Ballenger 1976, House and Wogaman 1978) and the other, an offshoot of House's model, by Leland Ferguson (1976). Both models detail test implications (archeological correlates) of specific site functional types. These correlates were used to help document the nature of site use over individual components within the four Beltway assemblages. Project research with regard to these models focused on two areas: (1) the usefulness of the proposed

test implications or correlates of site function and (2) the applicability or appropriateness of the proposed site functional types.

The test implications proposed by both House and Wogaman (1978:10-11) and Ferguson (1976:8-9) for the resolution of specific site functional types were generally found to be useful. Key variables used to separate intensive habitation loci from extraction stations included (1) the presence of fire-cracked rock, (2) a wide range of tools and debitage, (3) a high density of artifacts, (4) the presence of pottery and steatite, and, (5) a favorable location (i.e. level, sheltered, near water, etc.). Due to the low incidence of features on the Beltway sites, additional test implications of these models, documenting structures and associated features, could not be employed.

When taken together, the test implications advanced by House and Ferguson were found to be useful in helping infer site or component function. The use of individual test implications to resolve site function, however, was found to yield misleading results on occasion. In particular, fire-cracked rock was found to be associated with almost every recognizable component, including some that appeared, on other grounds, to be probable extraction loci. The production of fire-cracked rock is currently poorly understood, but it appears that at least in the Congaree Valley Fall Line area it is found on a wide range of site types. Another test implication producing difficulty was the presence of pottery, modest numbers of sherds were recovered over several components, with no other evidence for possible site use. The pottery assemblage in these cases appeared to point to (unresolved) extraction tasks. The role of pottery in prehistoric site use, it is suggested, is in need of considerable study. Finally, extraction loci were found in both favored and less favored locations, indicating that this particular attribute (favored location) may probably be of value only for the recognition of extraction stations in unfavorable loci. The presence of a prehistoric component in a favored location may reflect either intensive habitation or extractive activity. This particular test implication must, therefore, be used in conjunction with others to successfully resolve site functional postures.

It should be emphasized that the difficulties encountered in the use of the test implications were minor. Problems arose if only one or a few attributes were available to identify site function. What the application of these correlates to the Southeastern Columbia Beltway data set demonstrates is that the assumptions behind models of any

kind must be carefully examined prior to their use. Through application, however, refinement becomes possible; the Beltway data, in particular, suggest that the relationship of both fire-cracked rock and pottery to site function needs additional examination.

Site functional types proposed by Ferguson (1976) and House and Wogaman (1978) were also found to be of value in the examination of the four Beltway assemblages. Specific site types proposed in these models included intensive habitation sites, less intensive habitation sites, biotic resource extraction stations (with deer and nut subtypes) and lithic resource extraction stations. The range of site types and their associated test implications was found to adequately encompass most of the assemblage variability noted over the four project sites. Most of the project components appeared to reflect either intensive habitation loci where many activities were taking place, or biotic resource extraction stations characterized by limited activity directed toward one or a few tasks. Problems in the assignment of site type arose where the function of a component assemblage was obscure, as in the cases of the Woodland pottery scatters noted on the floodplain sites. In another example, the Early Archaic component at 38LX64 was characterized by a fairly wide range of tool forms (a correlate of an intensive habitation site), but the functions and implications of this assemblage remain obscure. The Ferguson and House models *per se*, therefore, were found to be highly useful, but weaknesses in their application exist, and derive from difficulties inherent in recognizing and interpreting specific correlates used to document site functional postures. Problems in the interpretation of specific correlates of site function, such as fire-cracked rock or pottery, were previously examined. The recognition and documentation of specific correlates, such as "stone plant processing tools" or "tools oriented around cutting functions" is another difficult problem area. The application of these models to the Beltway data set, therefore, serves to highlight the critical role functional artifact analysis plays in archeological inference.

LITHIC RESOURCE PROCUREMENT AND USE IN A FALL LINE LOCALITY

The Southeastern Columbia Beltway Project data assemblage provided a number of valuable inferences about lithic resource procurement and use in the upper Congaree River area. Following research initiated by Michie (1979) and others (Wogaman, House, and Goodyear 1976; Ferguson and Widmer 1976), the utilization of specific raw materials was examined over time employing stratigraphic information and

typologically diagnostic artifacts from each of the four sites. Examination of hafted biface forms from the project sites, for example, documented clear shifts in the selection and use of specific raw materials over time, at least for the manufacture of bifaces. Early Archaic bifaces, found only at 38LX64, were composed of either chert or rhyolite. Moderate use of chert in the Early Archaic was also suggested by the high incidence of well made unifacial tools of this material found at the same site. Middle Archaic Morrow Mountain forms, found on two project sites (38LX5 and 38LX64), in contrast, were composed almost exclusively of quartz, with only minor use of other raw materials indicated. Late Archaic Savannah River Stemmed bifaces, which were found on all four project sites, were for the most part composed of slate or rhyolite, with chert and quartz less frequently selected. Woodland period bifaces, found only at 38LX5, were found in about equal quantities on chert, rhyolite, and quartz. Over all periods, quartzite was only rarely selected, a pattern which agrees with its low overall incidence in all four tool and debitage assemblages.

Only limited stratigraphic and/or associational information useful for documenting raw material selection practices over time was available from the four project sites. At 38LX5, the vast majority of the quartz debitage assemblage was found in the subplowzone deposits (Table 2), supporting the evidence from the Morrow Mountain biface assemblage suggesting a peak popularity for the material during the Middle Archaic. None of the other raw materials recovered at 38LX5 exhibited a disproportionate occurrence in either the plowzone or subplowzone. At 38LX106, a single component Late Archaic site, chert was the predominant material recovered, with minor quantities of quartzite and quartz present. Site 38LX82, also a probable single component Late Archaic site, yielded a debitage assemblage composed almost exclusively of quartz, with minor quantities of chert and quartzite. Two rhyolite tools were also recovered from the site, indicating at least minor use of this material. The 38LX64 deposits were too shallow and mixed to permit confident temporal assignment over the debitage assemblage, although quartz and chert were the principal debitage categories present in the predominantly Archaic assemblage.

The data from the four project sites document general trends in the use of lithic raw materials over time, although it is evident from the Late Archaic components that some selection variation due to site location or function is also probable. Generally, the project data set indicates that chert was popular during the Early Archaic, quartz during the Middle Archaic, rhyolite and slate during the

Late Archaic, and a variety of materials, including chert, rhyolite, and quartz, during the Woodland/Mississippian era. At any given time it is probable that most, if not all, of the five raw material categories recognized on the Beltway sites (quartz, chert, slate, rhyolite, and quartzite) were in use, although it is evident that changes in the popularity of each did occur.

Changes in raw material selection practices indicated by data from the four project sites were amenable to additional testing with other assemblages from the upper Congaree River Valley. At the Edenwood site, Michie (1979: 30) recovered 7 Early Archaic Palmer and Kirk-like bifaces, all chert. At Thom's Creek, Trinkley (1974b:15) documented raw materials over 45 typologically identifiable bifaces, and his data generally support the patterning noted at Edenwood and over the four project sites. Of particular interest however, the late prehistoric Caraway and Clements types at Thom's Creek were found to be predominantly of quartz (9 of 11, or 82 percent). This might suggest an increase in the use of quartz during the later Woodland and Mississippian periods; the Beltway project data, from 38LX5 (Table 4), provide some support for this, although the sample size is low.

An extensive collection of bifaces from the Manning site (38LX50), provides additional documentation of prehistoric raw material selection practices in the upper Congaree River/Fall Line area (Table 18). The Manning assemblage was collected from the surface of the site over a number of years by Mr. Tommy Charles of Columbia, South Carolina, a member of the Archeological Society of South Carolina. Under the direction of Leland Ferguson and David G. Anderson, Charles' collection was sorted by type and raw material as part of an anthropology class project (Bonturi n.d.). Of 1930 bifaces and fragments, 950 were identifiable to specific type or probable Woodland stage.

Throughout the Archaic, the majority of the Manning bifaces were made of quartz, with a peak in the popularity of the material during the Middle Archaic. During the Early Archaic, chert and slate (which includes both slate and rhyolite as used in this report) were distinct minority items, accounting for roughly 34 percent of the total Palmer and Kirk bifaces in the collection. During the Late Archaic, slate accounts for a moderate percentage of the assemblage, and an almost linear increase in the popularity of the material, over time, can be seen in its occurrence on Morrow Mountain, Guilford, and Savannah River Stemmed forms (Table 18). During the Woodland, quartz, slate, and chert were all used in roughly equal proportions, with some

See Taylor and Smith 1978:236

TABLE 18

TYPOLOGICALLY IDENTIFIABLE HAFTED BIFACES, BY RAW MATERIAL, THE MANNING SITE (38LX50): THE TOMMY CHARLES COLLECTION

Biface Types		Quartz	Chert	Slate	Quartzite	Total
Palmer and Kirk Forms		139 (64.1%)	39 (18.0%)	34 (15.7%)	5 (2.3%)	217 (100.0%
Morrow Mountain Type I		155 (88.6%)	4 (2.3%)	14 (8.0%)	2 (1.1%)	175 (100.0%
Morrow Mountain Type II		94 (75.2%)	11 (8.8%)	18 (14.4%)	2 (1.6%)	125 (100.0%
Guilford		7 (53.8%)	1 (7.7%)	5 (38.5%)	0 (0.0%)	13 (100.0%
Savannah River Stemmed		154 (60.9%)	12 (4.7%)	87 (34.4%)	0 (0.0%)	253 (100.0%
Woodland (Total)		56 (33.6%)	44 (26.3%)	65 (38.9%)	2 (1.2%)	167 (100.0%
Woodland (subtotals)	Wade-Hernando	0 (0.0%)	4 (66.6%)	2 (33.4%)	0 (0.0%)	6 (100.0%
	Eared Yadkin	3 (21.4%)	3 (21.4%)	8 (57.2%)	0 (0.0%)	14 (100.0%
	Triangular	26 (76.5%)	6 (17.6%)	2 (5.9%)	0 (0.0%)	34 (100.0%
	Stemmed Triangular	22 (20.7%)	30 (28.3%)	52 (49.1%)	2 (1.9%)	106 (100.0%
	Small Lanceolates	5 (71.4%)	1 (14.3%)	1 (14.3%)	0 (0.0%)	7 (100.0%
TOTALS		605 (63.7%)	111 (11.7%)	223 (23.5%)	11 (1.1%)	950 (100.0%

evidence for an increase in the use of quartz in the Mississippian as indicated by the triangular forms.

The pattern of raw material selection during the Middle Archaic and Woodland documented in the Manning site assemblage is in close agreement with the data from the Beltway sites. The occurrence of quartz on a majority of the Early and Late Archaic bifaces at Manning was different from the pattern noted on the Beltway sites, where chert was the principal material used during the Early Archaic, and rhyolite and slate during the Late Archaic. Within the Manning assemblage, however, the principal minority raw materials during each period, chert and rhyolite in the Early Archaic and slate in the Late Archaic, conform to the trend noted within the Beltway assemblages.

The analysis indicates an increased use of extralocal lithic raw materials in the Fall Line area during the Early and Late Archaic, and during the Woodland (assuming quartz is the only raw material readily available in the immediate Fall Line area, an assumption that remains to be tested). Examining the location of the sources of raw materials in use during each period suggests the directionality, or basic geographic orientation, of the procurement networks, a suggested topic for local research (Wogaman, House and Goodyear 1976:38). Following this approach, Early Archaic lithic resource use in the upper Congaree River Valley employed Piedmont, local (Fall Line area), and coastal plain resources; Middle Archaic populations favored local resources almost exclusively, the Late Archaic used local and Piedmont resources, and the Woodland exploited Piedmont, local, and coastal plain materials. The increased occurrence of extralocal raw materials during the Early and Late Archaic, and the use of local materials during the Middle Archaic, was a pattern also noted at Cal Smoak, a site along the central Edisto River (Anderson, Lee, and Parler 1979:62-63, 91-93). At that site, the observed raw material patterning was inferred to be related to a combination of factors, including group territoriality, mobility, and procurement network efficiency and indirectly, possibly to spouse exchange.

A number of possible explanations may be raised to help understand the observed raw material utilization patterns, and these should be the subject of further analysis and testing. The occurrence of both local and nonlocal lithic raw materials on Fall Line sites during the Early Archaic, for example, may reflect the procurement and use patterns of relatively small groups involved in regular or at least occasional movement between the coastal plain and the Piedmont. Alternatively, the occurrence of extralocal raw materials might reflect indirect procurement (exchange), possibly tied

in with mating regulations (i.e. band exogamy). The switch to local raw materials during the Middle Archaic, in contrast, may reflect a decrease in group mobility, possibly as local populations increased and group territories became increasingly constrained (cf. Ford 1974, Cohen 1977).

Late Archaic Fall Line lithic raw material utilization emphasizing both local and Piedmont resources, may reflect a reexpansion in the size of group territories (and movement within them), possibly due to the introduction of more complex (tribal?) forms of social organization. The Late Archaic across the eastern United States is also a time of extensive long distance trade (Morse 1967, Winters 1968), which might have been manifested locally through lithic resource exchange. The directionality evident in local Late Archaic resource use - the predominance of local and Piedmont raw materials - suggests that contact with the lower coastal plain (where the better chert sources are found) may have been minor. This possibility deserves additional investigation, since it may help document Late Archaic settlement throughout the region. Characteristic Late Archaic Thom's Creek and Stallings ceramics, for example, were found to be infrequent on the four Beltway sites, and generally appear to be rare in the Fall Line area (cf. Trinkley 1974b:22). These same wares are much more common throughout the lower and central coastal plain (Anderson 1975b, Trinkley 1976a), and the regional ceramic distribution, when coupled with the Fall Line lithic data may (possibly) point to the existence of independent sociopolitical entities in the two areas.

Woodland period lithic raw material utilization in the project area appeared directed toward both local and extralocal resources, with Piedmont, Fall Line, and coastal plain materials represented in roughly equal proportions in local biface assemblages. This may reflect high group mobility, or trade linked with exogamous spouse procurements. The Woodland pattern may reflect a continuation of trade networks begun during the Late Archaic or earlier. Given ever increasing population, contact with groups in both the Piedmont and the coastal plain, as evidenced by the occurrence of raw materials from these zones, may have been necessary to avoid warfare or to maintain allies. Trade would be one method of reinforcing positive intergroup relationships (cf. Sahlins 1958). Alternatively, given the probable food procurement efficiency of the relatively complex Woodland and Mississippian groups, it is likely that sufficient surpluses would occur to permit small groups to engage in the direct procurement of lithic resources, assuming this was politically feasible.

Lithic raw material utilization over time in the upper Congaree Fall Line area was undoubtedly related in part to the development and maintenance of procurement systems like those and for the reasons outlined above. The artifact analysis during the Beltway project also documented functionally related raw material usage, however, that appears to have played at least a minor role in explaining local procurement patterns. At both 38LX5 and 38LX64, the analyses of the retouched flake assemblage indicated that chert was selected when acute functional edges were desired, while quartz was selected for steeper angled tools (Tables 6, 13). This patterning was assumed to be related to the minerological qualities of each raw material: chert is more isotropic and (generally) flakes more easily than quartz, permitting the formation of sharper cutting edges which are also easier to maintain.

A final research question examined employing the project lithic data set concerned the possibility of differentiating habitation sites from extraction stations by the relative occurrence of extralocal (exotic) as opposed to local lithic raw materials (Wogaman, House and Goodyear 1976: 39). Following observations by Gould (1974) of Western Desert Australian aborigines, it was hypothesized that the manufacture of tools of extralocal raw materials would commonly occur only at base camps. Tools of locally available raw materials, in contrast, would be made on all site types on an ad hoc basis. The data from the four Beltway sites, however, indicate that the hypothesis has only limited use in the general Fall Line area. Examining the debitage assemblages from the four sites (Table 19), it is evident that a local raw material, quartz, is the predominant raw material on the two sites assumed to reflect habitation loci, 38LX64 and 38LX82.

Middle Archaic tool manufacture in the upper Congaree area appears almost invariably to have employed local materials regardless of site type. The Gould model would therefore appear to be generally inapplicable for components of this time period. Early Archaic tool manufacture, suggested only at 38LX64, appears to favor chert, conforming to the model. This, of course, assumes that Early Archaic use of the site reflects base camp activity, something currently not clearly demonstrated. The evidence for Late Archaic stone tool manufacture was equivocal with regard to the model. Savannah River Stemmed points of extralocal chert, slate or rhyolite were found on all four of the project sites, but manufacturing debitage of these materials was generally rare at the two probable Late Archaic base camps (38LX64 and 38LX82).

TABLE 19

PROPORTIONAL OCCURRENCE OF RAW MATERIAL CATEGORIES,
BY COUNT, OVER THE UNMODIFIED DEBITAGE FROM THE FOUR PROJECT SITES

	Site			
Raw Material	38LX5	38LX106	38LX82	38LX64
Quartz	44.2%	0.0%	97.5%	66.7%
Chert	22.8%	90.7%	1.7%	17.0%
Rhyolite	27.0%	0.0%	0.0%	2.7%
Quartzite	3.4%	9.3%	0.8%	6.0%
Slate	2.6%	0.0%	0.0%	7.6%
TOTALS	100.0%	100.0%	100.0%	100.0%
(N)	(2956)	(43)	(120)	(2537)

Woodland period lithic artifacts were identified only at 38LX5, where both local and extralocal raw material use was evident. There was some evidence that Woodland site use at 38LX5 may reflect extended (base camp) activity. This inference, if correct, would suggest that the Gould model is applicable in this case, since some evidence for extralocal lithic resource reduction activity was present in the Woodland (plowzone) debitage assemblage. Over the four project sites, however, only the Early Archaic components at 38LX64, and the Woodland components at 38LX5, appear to conform to the model. The data from the project sites indicate that the occurrence of local or extralocal raw material manufacturing debitage on a Fall Line site, at least along the upper Congaree River, cannot, by itself, permit accurate determination of site function.

CONCLUSIONS

The Southeastern Columbia Beltway Project marked the first intensive multisite excavations at a Fall Line locality in the general South Carolina area. Four sites were examined and an extensive data assemblage was collected, encompassing almost 15,000 artifacts and a total of 16 features. Project research was directed toward a series of research topics, focusing on the documentation of the four major site assemblages and, following this, the resolution of prehistoric settlement variability within the Fall Line environment. Considerable variation in the use of the Fall Line area was encountered, both over time and within specific microenvironments. Methods for the collection and use of local ethnobotanical remains were examined, and the resulting data were found to be of value in both subsistence and radiocarbon analyses. The project additionally documented changes in the use of lithic raw materials over time in the Fall Line area, and offered a number of explanations to account for the observed patterning. The present volume represents one of the first extensive reports on Fall Line prehistoric archeological assemblages from the upper Congaree River Valley. Hopefully it can serve to guide future research in the area.

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