SECTION 12.0 ARTIFACT ASSEMBLAGES

LABORATORY METHODOLOGY

The artifact assemblages from all phases of archaeological investigations (including the Hunter Research assemblages) were processed and catalogued, and a comprehensive computer inventory was compiled (Appendix F). The artifacts with stable surfaces (e.g., flakes, historical ceramics, glass) were cleaned in plain water and bagged in 4-mil polyethylene zip-lock bags according to provenience and material type. Artifacts with unstable surfaces (e.g., ceramics, bone, metal, iron) were brushed cleaned and placed in zip-lock bags with the appropriate provenience information. Consecutive bag numbers were assigned in the field for each provenience where artifacts were recovered. Provenience information was written in indelible ink on the exterior of the artifact bags, and acid-free tags with the same information were placed within the bags. The artifacts were catalogued by number, raw material type, function, and segment (Table 12.1).

Table 12.1 Data Categories Recorded in the Hickory Bluff Artifact Database

Category	Description
Group and Class	broad hierarchical subdivisions for historic period artifacts based on South's (1977) typology for artifact pattern analysis
Raw material	using general mineralogical terms for lithic types (e.g., chert, rhyolite, quartz)
Morphological Type	for Native American artifacts, technologically derived terms are generally employed, though some widely accepted functional terms are used
Typology	for Native American artifacts, generally accepted morphological types associated with known chronological periods; for historic period artifacts, a hierarchical subdivision usually based on manufacturing technology
Function	specific functional classification for certain historic period artifacts
Subtechs	various technological and decorative attributes of historic period artifacts
Segment	indicating completeness or, if incomplete, the section of the artifact represented
Amount of Cortex	reported for certain classes of lithic debitage, and expressed as a percentage of the dorsal surface
Temper	aplastic tempering agent in Native American ceramics
Thickness	reported for Native American ceramics
Lithic Type	geographic source of selected chert, jasper, and rhyolite artifacts, if known
Color	Visible estimation for lithics, Native American ceramics and historical artifacts
Weight	expressed in grams, reported as a gross indication of artifact size; more detailed dimensional data were recorded for selected artifact types--projectile points, for example--as relevant to the analyses employed
Use	indicating the presence or absence of identifiable use wear traces on Native American artifacts
Heat	indicating the presence or absence of evidence of heat treatment of Native American lithic artifacts
Size Grade	measured on flakes as an indication of geometric dimension

Lithic debitage (i.e., detritus from the manufacture or resharpening of stone tools) was analyzed following Ahler's (1989) mass analysis technique. Flake attributes, including presence

or absence of cortex, color, flake weight and length and presence or absence of platforms, were noted for lithic artifacts. Attributes recorded for Native American ceramics included type and color of the paste, the amount and type of temper (i.e., aplastic inclusions in the paste), and sherd thickness.

Following cataloguing, artifacts were labeled according to the *Curation Guidelines and Standards for Archaeological Collections for the Delaware State Museums* (1997). In addition, diagnostic artifacts were hand-labeled with the site number and artifact number using acryloid B-72 sealant and black or white pigment ink. All materials were placed in numbered polyethylene bags, which were sorted by material type to lessen the potential for damage during storage. Bags were placed in archival boxes by catalog number order, with the appropriate provenience information as required by the Delaware State Museum.

A total of 76,645 Native American artifacts were recovered from the Hickory Bluff excavations (Table 12.2). Most of the archaeological assemblage consisted of chipped stone artifacts, thermally altered stone (TAS), and ceramics (89 percent).

Table 12.2 Total Native American Artifact Assemblage for Hickory Bluff

Artifact Type	Frequency	Fine Screen Matrix	Total
Ceramics	7,628	7	7,635
Chipped Stone	33,601	489	34,090
Ground/Battered Stone	128	0	128
TAS	26,651	291	26,942
Unaltered Cobbles/Pebbles	4,229	9	4,238
Faunal Remains	273	69	342
Floral Remains	902	839	1741
Other	22	1,507	1,529
Total	**73,434**	**3,211**	**76,645**

FINE SCREEN MATRIX ASSEMBLAGE

Fine mesh waterscreening was implemented for selected Hickory Bluff features and control samples to determine the efficiency of excavation dry screening methodology. A sample of each feature fill was waterscreened through one-eighth inch window mesh to recover smaller artifacts such as beads and charred nuts and seeds that would be lost through normal dry screening through quarter-inch mesh. Multiple samples were taken from Features 46, 98, 120, and 139; these samples were based on either horizontal extent or vertical stratigraphy. Control samples were taken from above, below or beyond feature boundaries adjacent to Features 1 and 234, 46, 164, 176, and 224.

A total of 44 soil samples were waterscreened (Appendix G). Artifactual material recovered through this technique was consistent with materials recovered through dry screening and included ceramic fragments, debitage, TAS fragments, faunal and floral remains, charcoal, pieces of burned earth, hardened soil concretions and other miscellaneous items such as snail shells and pebbles, and historical artifacts such as coal and plastic (Table 12.3). Because no

Table 12.3 Frequency of Fine Screen Artifacts from Selected Features

Feature	Ceramics	Debitage	TAS	Faunal Remains	Floral Remains	Charcoal	Burned Earth	Concretions	Other	Total
1	0	12	4	4	12	1	46	0	0	79
1/234 control	0	43	3	6	116	1	50	0	2	221
46 (3 samples)	0	67	158	1	135	4	51	28	4	448
46 control (5 samples)	0	14	53	0	2	5	126	0	3	203
67	0	5	0	0	16	1	2	12	0	36
90	0	2	2	2	1	1	4	113	0	125
98 (2 samples)	0	31	26	6	22	2	3	7	0	97
120 (3 samples)	6	26	4	3	95	3	436	7	9	589
129	0	10	1	0	20	1	12	7	6	57
137	0	14	0	2	31	1	10	6	0	64
139 (5 samples)	0	108	22	7	104	5	40	11	0	297
144	0	0	0	0	10	1	142	0	0	153
146	0	2	3	0	3	1	13	77	0	99
164 control (4 samples)	0	0	3	3	27	4	19	49	1	106
173	0	9	4	0	6	1	19	0	0	39
175	0	5	0	0	8	1	9	8	0	31
176 control (4 samples below)	0	11	6	1	65	4	15	8	0	110
176 control (4 samples outside)	0	9	0	4	84	4	27	5	0	133
224 control (2 samples)	0	14	1	2	65	2	30	14	0	128
234	1	106	1	2	15	2	14	7	0	148
261	0	1	0	26	2	1	18	0	0	48
Total	7	489	291	69	839	46	1086	359	25	3211

additional artifact types were recovered that elucidated information about material culture, waterscreening of feature fill was discontinued. The fine screen matrix assemblage was not included in the overall Hickory Bluff assemblage analysis because it represented a judgmental sample and would skew artifact size data for selected proveniences.

CHIPPED STONE ASSEMBLAGE

The chipped stone assemblage totaled to 33,601 artifacts. The chipped stone assemblage was catalogued according to manufacturing characteristics, and classified as projectile points, bifaces, unifaces, retouched and utilized flake tools, cores, and debitage (Table 12.4).

Table 12.4 Stone Artifact Assemblage

ARTIFACT TYPE	FREQUENCY
Projectile Points	298
Bifaces	223
Unifaces	48
Retouched Flake Tools	55
Utilized Flake Tools	146
Cores	588
Debitage	32,243
Total	**33,601**

Projectile Points

The aim of the present study was to describe the morphological variability of the projectile points. Using a variety of analytical techniques, the investigation sought to identify morphological distinctions within the collection that might correlate with type groupings used conventionally throughout the region. The cataloguing of points was considered to have a bearing on issues of site chronology. In addition, the data was used to identify the potential influences (both environmental and cultural) on artifact morphology (Section 13.0). In the present study, a type is conceived of as a set of attributes that define a recurring artifact form, whether that form is tangible—that is, all the pieces of a given type look the same—or whether the form is something less concrete and more in the realm of a template or archetype, an ideal form conceived of by the artisan. Indeed, the assumption in this study is that archaeological specimens are approximations of modal and ideal forms. How closely the individual artifacts resemble the form may depend on a variety of matters, such as raw material form and tractability, the skill level of the artisan, the amount of use to which the artifact has been subject, and various socio-religious aspects.

It is generally acknowledged that types are not rigidly defined sets of attributes, but rather are based on the recognition of loosely bounded similarities. That is, types are defined by modalities or central tendencies and not by fixed limits (Adams and Adams 1991). Ford (1954:54) recognized this characteristic when he observed that “variation in actual artifacts tends to cluster around a mean that may be regarded as the central theme of the type.” The Hickory Bluff analysis thus began as a study of pattern recognition, comparing a variety of attribute

combinations in an effort to discern potentially significant modes in artifact shape. A number of attributes were collected on the points, including dimensional measurements, such as length, width, thickness, various measurements on the hafting element, a series of angle measurements, and nominal variables, related to shape, raw material, and knapping characteristics (Table 12.5).

Table 12.5 Attributes Recorded for Projectile Points

Attribute	Measurement or Morphology
Maximum Length	In millimeters (mm)
Maximum Width	In mm
Maximum Thickness	In mm
Maximum Haft Length	In mm
Maximum Base Width	In mm
Neck Width	In mm
Shoulder Width	In mm
Notch Length	In mm
Basal Notch Width	In mm
Basal Notch Depth	In mm
Tip Angle (#1)	In degrees
Blade Edge Angle (#1)	In degrees
Blade Edge Shape (#1)	straight, convex, concave
Tip Angle (#2)	In degrees
Blade Edge Angle (#2)	In degrees
Blade Edge Shape (#2)	straight, convex, concave
Base Edge Angle	In degrees
Cross Sectional Shape	bi-convex, plano-convex – symmetrical, asymmetrical
Stacks	0, 1, or 2 faces
Flaking Type	percussion, pressure
Break Type	transverse, oblique, bending, impact, perverse
Primary Break Location	
Secondary Break Location	
Edge Wear	
Material	Argillite, chert, jasper, quartz, quartzite, rhyolite

In total, 298 projectile points or fragments were recovered from the various stages of work at Hickory Bluff. Of these, 197 were complete enough for a standardized series of dimensional attributes to be recorded. A morphologically directed organization was employed, with points assigned appropriate type designations according to accepted morphological styles, where possible. Comparative analysis included published metrical data from large type collections. This form of data is relatively limited in availability. Where possible, the statistics used in the analysis were derived from data presented in original reports from the type-sites for each point type. These entries have been supplemented by data from large published collections, primarily in the Delaware Valley.

In the following discussion, basic descriptive statistics, such as length, width and thickness for each point type are presented. The statistics include the range of each measurement and, where appropriate, indices of central tendency, including the mean, standard deviation, and coefficient of variation. The latter consists of the ratio of the standard deviation to the mean. It is included as a standardized index of dispersion that is particularly useful for samples with means that vary widely in magnitude. Samples with large means tend to have larger standard deviations than samples with small means, making comparisons difficult. The coefficient of variation provides a normalized basis for comparison (Shennan 1988). The metrical data presented here should be considered with some caution as tool re-use and rejuvenation often function to alter the shape of a tool from its original form (e.g., Dibble 1995; Flenniken and Raymond 1986; Frison 1968; Towner and Warburton 1990). Determining the extent to which tool use and maintenance affects morphology and, potentially, the archaeologically perceived type, will be discussed in Section 13.0.

The basic morphological designs of projectile points recovered at Hickory Bluff were grouped into main categories and conventional types (Table 12.6). A representative example of each point type is illustrated with the following type descriptions. Photographs of all points appear in Appendix H.

Table 12.6 Projectile Point Types

MAIN CATEGORY	TYPES
Corner-Notched	Palmer, Jack's Reef, untyped
Side-Notched	Normanskill, Brewerton, Meadowood, Selby Bay, Woodland I side-notched, untyped
Stemmed, Straight Stem	Bifurcate Base: LeCroy Concave Base: Savannah River Straight to Convex Base: Lackawaxen, Bare Island, Woodland I stemmed, Adena variant, untyped
Stemmed, Expanding Stem	Susquehanna, Lackawaxen, Fox Creek, untyped
Stemmed, Contracting Stem	Koens-Crispin, Poplar Island, Lackawaxen, Rossville, untyped
Unstemmed	Teardrop, Levanna, untyped

Corner-Notched

Blade outlines of corner-notched points are generally triangular, with straight to slightly convex blade edges. The haft element of corner-notched points differs from that of expanding stem points in terms of the ratio of base width to shoulders, i.e., a wide base relative to shoulders is more likely to be indicative of a notched rather than stemmed point. In addition, the degree of separation between blade and stem is less pronounced in notched points. The proximal segment of the blade thus typically ends in barbs rather than shoulders. Four corner-notched points were recovered from the site: one specimen conforms to the Palmer type, two to the Jack's Reef type, and one is untyped.

Palmer (n = 1) (Figure 12.1)

Figure 12.1 Palmer (2401-1)

Raw material: quartzite

Dimensions: length 31 mm; width 25 mm; thickness 6 mm

Comments: Thin and well made, with only minor damage to one barb. Descriptions of the Palmer type note the high frequency of serrated blade edges and straight, ground bases. In the current specimen, blade edges are not serrated, the base is slightly concave, and there is no evidence of basal grinding. The blade is slightly asymmetrical, suggesting reworking that may have removed serrations.

Comparative data: Coe (1964) reported Palmer points ranging from 28 to 60 mm in length (mean 35), 15 to 25 mm in width (mean 20), and 5 to 12 mm in thickness (mean 8). Broyles (1971) noted the similarity at the St. Albans site in West Virginia between her small variety Kirk Corner-Notched (dated 6980±160 B.C.) and Palmer types, the major difference lying in the ground base exhibited by the points identified as Palmer. The measurement range of these points (all made of black chert) was length 27 to 44 mm, width 22-29 mm, thickness 2-4 mm. The present specimen fits well within the ranges from either collection.

Chronology: Early Archaic. A radiocarbon date of 7990 B.C. was obtained for the Corner-Notched Phase at the Thunderbird site in the Shenandoah Valley, Virginia (Gardner 1974, 1989).

Jack's Reef (n = 2) (Figure 12.2)

Figure 12.2 Jack's Reef (2439-1)

Raw material: 2 jasper

Dimensions: n/a – neither specimen is complete

Comments: Both specimens exhibit wide, thin, well-flaked blades with convex edges the may be the result of resharpening. Extensive pressure flaking left blade edges steeply beveled. Both examples show damage to base and shoulder.

Comparative data: Ritchie (1971) reported Jack's Reef points ranging from 25 to 60 mm in length, 20 to 48 mm in width, and 5 to 7 mm in thickness. Wall et al. (1996b) reported a sample of 6 points from the Trenton Complex with lengths ranging from 21 to 48 mm, widths from 22 to 28 mm, and thicknesses from 5 to 7 mm. While neither of the Hickory Bluff examples was complete, the existing portions suggested that the points would have fallen near the center of these dimensional ranges.

Chronology: Middle Woodland. Ritchie (1971) placed Jack's Reef corner-notched points in his Kipp Island to Hunter's Home phases, dated between A.D. 310±100 and A.D. 955±250 (see also Kinsey 1972). The points are reported in the upper Delaware Valley at the Faucett site

with a date of A.D. 790±120. Jack's Reef was found in association with Hell Island ceramics at Taylor Cedar Creek (7S-C-17), in Sussex County, Delaware, with a radiocarbon date of 1305±55 years B.P. (Artusy 1976; Custer 1989). A similar association and date were reported at the Island Field site (7K-F-17), Delaware (Thomas and Warren 1970).

untyped corner-notched (n = 1)

Raw material: chert

Dimensions: n/a

Comments: Large, thin, well-crafted point with a wide corner notch. A perverse snap break has removed most of the blade and part of the base. Both the blade and base appear to have been convex. Potlids imply that the artifact was burned.

Chronology: n/a

Side-Notched

Blade outlines of side-notched points are triangular with straight to convex blade edges. Hafting elements are formed by relatively wide and shallow notches emanating from the blade edges and resulting in shoulders. Thirty-five side-notched points were recovered, 1 Normanskill, 9 Brewerton, 2 Meadowood, 10 Selby Bay, 7 Woodland I side-notched, and 6 untyped.

Normanskill (n = 1) (Figure 12.3)

Figure 12.3
Normanskill (2187-4)

Raw material: jasper

Dimensions: length incomplete; width 21 mm; thickness 6 mm

Comments: Wide, deep side notches, a weakly shouldered blade, and straight base. Large impact fracture at distal end.

Comparative data: Kinsey (1972:414) reported Normanskill points with lengths ranging from 38 to 56 mm (mean 46), widths from 20 to 25 mm (mean 23), and thicknesses from 5 to 10 mm (mean 8 mm). Ritchie (1971:37) reported longer and wider maximums (71 and 36 mm respectively). Wall et al. (1996b) reported two examples from the Trenton Complex, in the middle Delaware Valley, measuring 64 and 75 mm in length, 24 and 26 mm in width, and 9 and 10 mm in thickness. While the length of the current example is incomplete, the point appears to fall in the low end of these ranges.

Chronology: Late Archaic. Dates from the Mohawk valley in New York are around 2000 B.C. A date of 1440±100 B.C. is reported for Normanskill at the Brodhead-Heller site, in the upper Delaware Valley (Kinsey 1972).

Brewerton (n = 9) (Figure 12.4)

Raw material: 4 chert, 2 quartzite, 2 jasper, 1 quartz

Dimensions:

Table 12.7 Hickory Bluff Brewerton Point Dimensions

	Length	Width	Thickness
Range	34-48	18-24	4-11
Mean	41	21	9
Standard Deviation	5.5	1.8	2.4
Coefficient of Variation	0.13	0.09	0.28

Figure 12.4 Brewerton (EU11/3/I)

Comments: Shallow to moderately deep side notches, moderately shouldered blades, and ground bases and notches are common on these points. Most have distinctly asymmetrical blades, suggesting resharpening that, in several cases, has rounded or removed one shoulder. Two examples show minor damage to one basal tang. One specimen is an example of the Eared-Notched variety, with a gently convex base that is wider than the blade and almost no shoulders. The quartz specimen is similar to the Halifax type from the Virginia and North Carolina Piedmont (Coe 1964).

Comparative data: Kinsey (1972:404) reported lengths ranging from 31 to 48 mm (mean 40); widths from 17 to 33 mm (mean 24); and thicknesses from 6 to 9 mm (mean 7 mm). Ritchie's sample from New York contained larger examples: length 21 to 98 mm and thickness 6 to 14 mm. Ebright (1992:190-191) reported a sample of 10 Brewerton Side-Notched points from the Higgins site (18AN489), on the Maryland Western Shore, with a length range of 31 to 43 mm, a width range of 21 to 26 mm, and thickness range of 8 to 10 mm. The current specimens fall in the middle of the ranges for length (mean 40.8 mm) and thickness (mean 8.7 mm), but are slightly narrower (mean 21.1 mm).

Chronology: Late Archaic. The Brewerton type is common throughout the Northeast and northern portions of the Mid-Atlantic, and is closely associated with Ritchie's Late Archaic Laurentian Tradition. Ritchie's original dates for the Brewerton Phase at Frontenac Island and the O'Neil site in central New York ranged from 2980 B.C. to 1723 B.C. (Ritchie 1965:91). Several other dates are recorded for the point type, including 2350±180 B.C. at Sheep Rock shelter in central Pennsylvania (Michels and Smith 1967:578), and 2845±230 B.C. at Camelot No. 2, Locus 1, on the Upper Susquehanna in southeastern New York (Funk 1993:150-151). Earlier dates have been reported: 3680±115 B.C. at Zawatske in the upper Allegheny River watershed in western New York (Calkin and Miller 1977:310), and 4140±240 B.C. at the Brown site, to the south on the Allegheny in western Pennsylvania (George and Davis 1985:14).

Meadowood (n = 2) (Figure 12.5)

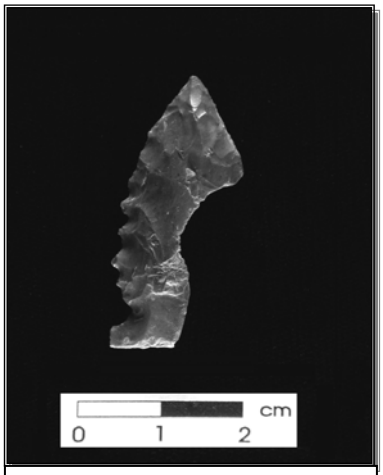

Figure 12.5 Meadowood (718-1)

Raw material: 2 jasper

Dimensions: n/a – neither specimen is complete

Comments: Broad, straight base, and small side notches. Shoulders are the same width or smaller than the base. One specimen has a ground base, and a perverse distal fracture. The other example has a ground base, a convex blade edge that is partially serrated, and an extensive perverse fracture that removed a large section of the blade and base.

Comparative data: Dimensional information could not be collected.

Chronology: Early Woodland. Kinsey (1972) and Ritchie (1971) have noted a date range for Meadowood in New York of 998 B.C. to 563 B.C., and a date at the Faucett site in the Delaware Valley of 750±100 B.C.

Selby Bay (n = 10) (Figure 12.6)

Raw material: 8 rhyolite, 1 argillite, 1 chert

Dimensions:

Table 12.8 Hickory Bluff Selby Bay Point Dimensions

	Length	Width	Thickness
Range	36-45	15-24	8-13
Mean	41	20	10
Standard Deviation	3.7	3.0	1.6
Coefficient of Variation	0.09	0.15	0.16

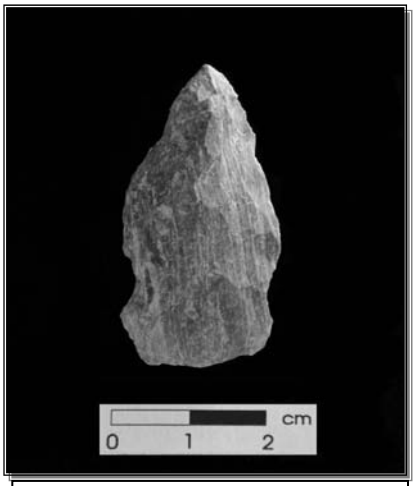

Figure 12.6 Selby Bay (2115-1)

Comments: All have wide, shallow side notches, weak shoulders, and unpatterned percussion flaking. Five examples have asymmetrical blades and shoulders, suggesting resharpening. Four show distal snap breaks (transverse or bending), one has minor damage to one basal tang, and another has a transverse snap break across the base well below the neck.

Comparative data: Little comparative data has been published. A series of points from sites in central and southern Delaware (Carey Farm [7K-D-3], Kirby Farm [7K-F-64], and Townsend Island [7S-F-13]) are reported with lengths of 27 to 54 mm (mean 36), widths of 18-28 mm (mean 22), and thicknesses of 8-18 mm (mean 10). The points from Hickory Bluff fall near the means for each dimension.

Chronology: Middle Woodland. Selby Bay is often lumped together with Fox Creek and is associated with Mockley ceramics in the Chesapeake Bay region (Potter 1993; Wright 1973). A date range of A.D. 300 to A.D. 600 is reported for New Jersey and New York (Brennan 1973). In central Delaware, Selby Bay is noted in association with the Carey Complex (Thomas et al. 1974). A side-notched Selby Bay point and what may be an example of the stemmed variety of Selby Bay, a Savannah River, occur at the type site for Wolfe Neck ceramics (7S-D-10) in Sussex County, in a context radiocarbon dated 2325±65 years B.P. (Artusy 1976; Griffith 1982).

Woodland I side-notched (n = 7) (Figure 12.7)

Raw material: 6 jasper, 1 quartz

Dimensions:

Table 12.9 Hickory Bluff Woodland I Side-Notched Point Dimensions

	Length	Width	Thickness
Range	32-48	16-25	5-11
Mean	40	19	8
Standard Deviation	5.0	2.0	1.7
Coefficient of Variation	0.12	0.11	0.21

Figure 12.7 Woodland I Side-Notched (3325-1)

Comments: Small, with symmetrical blade outline, prominent shoulders, and no grinding on base or notches. Four examples have narrow, vaguely serrated blades, wide shallow notches and slightly convex bases. The remaining three have wider blades and wide straight bases. Transverse distal snap breaks are present on three of the points.

Comparative data: Stephenson and Ferguson (1963) reported the dimensions of similar points, referred to as Vernon (see below), as 24 to 49 mm in length (mean 37 mm), 16 to 30 mm in width (mean 23 mm), and 6 to 13 mm in thickness (mean 10 mm), from a sample of 423 points. The points in the current collection were slightly below these means.

Chronology: The chronological status of these small side-notched points is as yet uncertain, though as implied by the type name used for identification in this study, it is held that the points are generally Early to Middle Woodland in date. Kinsey (1972:444) noted the presence of "generalized side-notched points. . .almost universally distributed in the eastern United States," and that such points have been excavated in both Archaic and Woodland contexts. Besides the Late Archaic Brewerton and Halifax types, the only other commonly recognized side-notched point type in the Mid-Atlantic is referred to as Vernon, originally identified at the Accokeek Creek site (Stephenson and Ferguson 1963). Vernon is a poorly understood type, being identified only sporadically in the literature; dating has been either vague or questionable. The type is often confused with or lumped together with Halifax, often under the hybrid name Halifax/Vernon (e.g., Johnson 1986; LeeDecker et al. 1991b), and given dates ranging from Halifax-like late Middle Archaic through the Early to Middle Woodland. Stephenson and Ferguson (1963) placed Vernon in the Early Woodland based on relative association with Calvert points and Marcey Creek ceramics. In contrast, Vernon points were reported

stratigraphically below Holmes points at Ruppert Island (Evans 1984; Handsman and McNett 1974; McNett n.d.). Side-notched points reported as resembling Vernon were radiocarbon dated to approximately 3000 B.C. at Jeffrey Rockshelter in southwestern Virginia (Johnson 1968), yet the points may in fact have been Halifax. Vernon was missing altogether from Wright's chronology of the central Chesapeake area (Wright 1973). Steponaitis' survey of the Patuxent River drainage placed Vernon with both Halifax and Brewerton in the Late Archaic II sub-phase (3000 to 2200 B.C.), leaving Calvert in the Early Woodland with Accokeek Creek ceramics (Steponaitis 1980). A recent statistical re-evaluation of chronologies for southern Maryland lumped Vernon together in the Late Archaic with Kirk-Palmer, Holmes, and broadspears such as Perkiomen, Koens-Krispin, Susquehanna and Savannah River (Reeve 1992); however, there were obvious and acknowledged problems with the execution of correlation statistics in the study.

The assumption of a Woodland Period association for the side-notched points is based on several considerations. There is a need to differentiate the type from Halifax or Brewerton types, both of which are confidently dated to the late Middle or early Late Archaic. Side-notched points occur in often overwhelming numbers on Piedmont sites in northern Virginia (Johnson 1986). This fact argues that not all are Halifax points, since there is no real supporting evidence for high populations during this period in the Mid-Atlantic region (Turner 1978). Many of the points identified as Halifax/Vernon are small, at or below the low end of the Halifax range. This may be a factor of raw material type; that is, most of the smaller points are of quartz, a lithic material that is not often available in large blank form. Yet the size range may also be an indicator of a different morphological type altogether. In the absence of good absolute dating, the question remains debatable. The relative stratigraphic position of the point style from several studies suggests a Woodland Period date for many of the points. At the Southern Maryland Courthouse site in northern Prince Georges County, Maryland (18PR411), small, quartz side-notched points were found stratigraphically above Archaic types such as Otter Creek and Holmes and in general association with or above Early Woodland ceramic levels (Knepper 1991; Knepper and Rutherford 1991). At present, the nearest to an absolute date was from the Neha site (44FX1561) in Fairfax County. A radiocarbon assay of 510±90 B.C. was obtained from a pit feature at that site, that yielded Vernon and Piscataway points along with sandstone-tempered ceramics and a St. Albans point, the latter suspected of being scavenged and recycled (Moore 1990, 1992). Work at Carey Farm (7K-D-3) in the mid-1970s produced a number of pit features containing Mockley cord-marked and net-marked ceramics with an associated radiocarbon date of 1750±90 years B.P. (Custer et al. 1996:31). A series of generalized side-notched projectile points were also recovered from the features (Custer et al. 1996). It thus appears that Stephenson and Ferguson's original placement of Vernon may have been reasonably accurate. The morphological distinction made in this study between Woodland Side-Notched and Halifax points, the latter exhibiting on average a longer, more symmetrical blade and extensive basal grinding, must then be provisional, awaiting confirmation from securely dated assemblages.

untyped side-notched (n = 6)

Raw material: 4 jasper, 1 chert, 1 quartzite

Dimensions: n/a – specimens are incomplete

Comments: This group includes three nearly complete specimens with triangular blades; two hafting element fragments with wide, shallow notches; and a heavily spalled, narrow-bladed fragment.

Comparative data: n/a

Chronology: n/a

Stemmed

Stemmed points constitute the largest group in the Hickory Bluff collection. They have in common a distinct shaft-like proximal end, or hafting element. Stemmed points are differentiated from notched points by the greater length of the hafting element relative to the blade, smaller base and the amount of separation between blade and stem, which results in the proximal portion of the blade ending in shoulders rather than barbs. The stemmed points have been divided into three main subgroups on the basis of stem shape: straight stemmed, expanding stemmed, and contracting stemmed. Straight Stemmed points have three further subdivisions classified according to the shape of the base: bifurcate, concave, and straight to convex.

Straight Stemmed, Bifurcate Base

Thin, typically well-made points with triangular blades that are often serrated near the proximal end. The distinctive feature is a notched base, producing a bifurcated (literally "forked") appearance. There is one point from this group in the collection: a LeCroy.

LeCroy (n = 1) (Figure 12.8)

Raw material: jasper

Comments: Made on a flake, reworked, slightly asymmetrical blade with indistinct serrations. The distal end bears a small impact fracture, and there is minor damage to one shoulder.

Comparative data: Broyles (1971) reported lengths ranging from 19 to 35 mm and widths from 16 to 28 mm on samples from West Virginia, while Chapman (1975) reported lengths from 16 to 36 mm (mean 26.5 mm) and widths from 18 to 26 mm (mean 20.7 mm) on a sample from Tennessee. Holland (1970) reported figures from southwest Virginia that were similar to Chapman's: length 25 to 40 mm, width 20 to 25 mm. More recently, McAvoy and McAvoy (1997) reported specimens 15 to 35 mm in length, 15 to 25 mm wide, and 3 to 6 mm thick at the Cactus Hill site, on the Inner

Figure 12.8 LeCroy (3231-1)

Coastal Plain of southeastern Virginia. A sample of 4 LeCroys from the Trenton Complex in the middle Delaware Valley measured 29 to 45 mm in length, 21 to 27 mm in width, and 4 to 8 mm in thickness (Wall et al. 1996b). The example from Hickory Bluff fell near the small end of most of these reported dimensional ranges.

Chronology: Early to Middle Archaic. A radiocarbon date of 6300 B.C. was reported by Broyles (1971) in West Virginia. At the Slade site in Tidewater Virginia, LeCroy points have been dated to ca. 6350 B.C. (Egloff and McAvoy 1990).

Straight Stemmed, Concave Base

Large points with wide, approximately triangular blades bearing straight or slightly convex edges. Shoulders are rounded to distinct, and the base is gently to markedly concave in shape. There is one point from this group in the collection: a Savannah River.

Savannah River (n = 1) (Figure 12.9)

Raw material: quartzite

Dimensions: length 54 mm; width 25 mm; thickness 11 mm

Comments: This point has a long, symmetrical blade with convex edges. The shoulders are very rounded, and the basal concavity is shallow.

Comparative data: Coe's specimens from the Doerschuk site, on the Roanoke River in northeastern North Carolina, ranged from 70 to 170 mm (mean 100 mm) in length and from 35 to 70 mm (mean 50 mm) in width (Coe 1964). A small variant form is also reported from central Virginia (Gleach 1987; Oliver 1981), ranging from 37 to 55 mm in length (mean 47 mm), 19 to 29 mm in width (mean 23 mm), and 1.5 to 12 mm in thickness (mean 9 mm). The specimen from the Hickory Bluff collection falls within the published range for the small variant form.

Figure 12.9 Savannah River (1305-1)

Chronology: Late Archaic. Coe radiocarbon dated a Savannah River hearth at the Gaston site at 1944±350 B.C. A date of 2650±90 B.C. was returned from a Savannah River component at the Harrison site on the western shore of the Chesapeake near Shady Side (Engineering-Science 1990). The small Savannah River variant, described above, is dated from 2200-900 B.C. (Mouer et al. 1981).

Straight Stemmed, Straight to Convex Base

Several large and small point types, most of which have long, narrow blades with straight or convex edges. Shoulders are rounded to distinct, and bases are straight to convex in shape. There were 76 points in this group in the collection: 11 Lackawaxen, 11 Bare Island, 47 Woodland stemmed, and 7 Adena variants.

Lackawaxen Straight Stemmed (n = 11) (Figure 12.10)

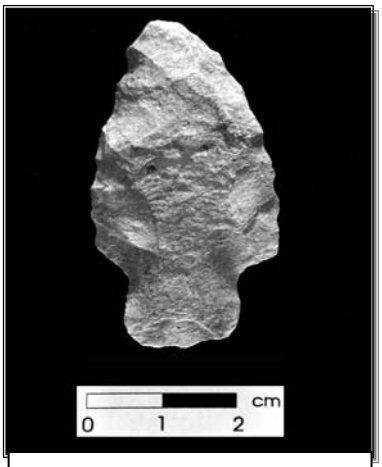

Figure 12.10 Lackawaxen Straight Stemmed (970-24)

Raw material: 8 argillite, 1 rhyolite, 1 chert, 1 quartzite

Dimensions:

Table 12. 10 Hickory Bluff Lackawaxen Straight Stemmed Point Dimensions

	Length	Width	Thickness
Range	39-54	16-25	6-11
Mean	46	19	8
Standard Deviation	5.4	3.4	1.6
Coefficient of Variation	0.12	0.18	0.20

Comments: The term Lackawaxen subsumes a series of long-bladed, stemmed points with a variety of stem and base configurations. The straight stemmed variety is described here, while the expanding and contracting stemmed varieties are described under their respective morphological categories.

The straight stemmed variety at Hickory Bluff includes seven points with narrow blades that may, in several instances, be the result of extensive resharpening. Bases are straight to rounded. Three of the narrow-bladed examples have transverse snap breaks near the distal end of the blade. Four other points have wide blades that are generally symmetrical in appearance. Bases are slightly rounded. One specimen shows a long perverse snap break at one shoulder and blade edge.

Comparative data: Kinsey (1972) reported a sample of 91 straight stemmed Lackawaxen points with lengths ranging from 35 to 90 mm (mean 62 mm), widths from 19 to 25 mm (mean 22 mm), and thicknesses from 6 to 10 mm (mean 8 mm). Wall et al. (1996b) reported 5 varieties of Lackawaxen Straight Stemmed, two of which, his Types 23A and 23B, he combined with Bare Island. His Types 23A and B, and 24A, B, and C (a total sample of 67), range in length from 36 to 110 mm, in width from 17 to 29 mm and in thickness from 6 to 13 mm. The Hickory Bluff points lie near the small end of these reported ranges.

Chronology: Late Archaic. Associated radiocarbon dates range from 4560±110 years B.P. at the Faucett site in the upper Delaware Valley (Kinsey 1975:59-60), to 2650±120 years B.P. at Gropp's Lake in the Abbott Farm Complex (Stewart 1987). In Delmarva, Custer and Bachman (1984) reported a date of 4200±75 years B.P. at the Hawthorne site (7NC-E-46), in association with an artifact assemblage that included Lackawaxen points. At Lums Pond (7NC-F-18), Lackawaxen points were recovered in association with a cluster of features with five radiocarbon dates ranging from 2660±100 years B.P. to 2969±60 years B.P. (Petraglia et al. 1998b). A stemmed point conforming to the Lackawaxen type was found in association with Wolfe Neck ceramics at the Wolfe Neck site (7S-D-10), in Sussex County (Griffith 2002). The context was radiocarbon dated 2325±65 years B.P., and contained side-notched and stemmed Selby Bay

points. This suggests that the Lackawaxen point may have been out of context or may be related to the Selby Bay type.

Figure 12. 11
Bare Island (673-2)

Bare Island (n = 11) (Figure 12.11)

Raw material: 8 quartz, 2 quartzite, 1 jasper

Dimensions:

Table 12.11 Hickory Bluff Bare Island Point Dimensions

	Length	Width	Thickness
Range	29-42	17-27	7-13
Mean	36	22	10
Standard Deviation	4.8	2.6	1.9
Coefficient of Variation	0.13	0.12	0.20

Comments: Narrow-bladed points of medium length. Among the stemmed points that have been assigned type names at Hickory Bluff, this group displays the most variability in terms of form, reflecting the weakness of the type as defined for this collection. The common characteristics include a short and relatively wide stem, pronounced shoulders, and straight or slightly convex bases. Blade edges vary from slightly convex to straight. All of the points bear evidence suggesting resharpening, including steeply beveled blade edges and poorly flaked, asymmetrical blades (in two cases, one shoulder has been reworked). Three examples have minor damage to one corner of the base, while three others have distal snap breaks.

Comparative data: Kinsey (1959) reported a sample of 116 Bare Island points from the type site, Kent-Halley, on Bare Island in the Susquehanna River, Lancaster County, Pennsylvania. Lengths ranged from 30 to 97 mm (mean 51 mm) and widths from 10 to 15 mm. Wall et al.'s (1996b) analysis of stemmed points from the Trenton Complex placed Bare Island together with a Lackawaxen Straight Stemmed variety (his Types 23A and 23B), with no clear differentiation from the other Lackawaxen Straight Stemmed variants (Types 24A-C). The Hickory Bluff examples lie near the low end of Kinsey's reported length range and well above the width range.

Chronology: Late Archaic. The lack of discrimination between Bare Island and similar types such as Lackawaxen or Poplar Island is highlighted by the absence of absolute dates for Bare Island, while its apparent association with Lackawaxen implies a similar date range.

Woodland I stemmed (n = 47) (Figure 12.12)

Raw material: 34 jasper, 7 chert, 2 quartz, 2 quartzite, 2 rhyolite

Dimensions:

Table 12.12 Hickory Bluff Woodland I Stemmed Point Dimensions

	Length	Width	Thickness
Range	26-45	15-28	6-18
Mean	34	19	8
Standard Deviation	5.4	2.8	2.0
Coefficient of Variation	0.16	0.15	0.25

Figure 12.12 Woodland I Stemmed (1359-3)

Comments: Small, usually symmetrical blade outline, straight to slightly convex blade edges and prominent shoulders. Stems are generally straight sided, but occasionally slightly contracting. Narrow- and wide-bladed varieties are recognized, with the distinction made on basis of blade width in proportion to stem width. (The ratio of blade width to stem width for narrow-bladed examples ranged from 1.2 to 1.9 mm [mean 1.4 mm]; the range for wide-bladed examples was 1.5 to 2.3 mm [mean 1.9 mm].) Nearly 75 percent have convex bases, while the remainder are straight. Approximately 25 percent retain pebble cortex on the base. Damage is common: four points bear minor transverse or oblique distal snap breaks; 12 bear more extensive transverse or oblique distal snaps; two bear perverse snaps that have removed the distal end of the blade and one shoulder; three bear impact fractures; one bears minor basal damage; and one has been burned, resulting in extensive potlid damage to the blade and one shoulder.

Comparative data: n/a

Chronology: As in the case of Woodland I side-notched points, the chronological status of these small stemmed points is as yet uncertain. As implied by the type name used for identification in this study, it is held that the points are generally Early to Middle Woodland in date. Contextual information at Hickory Bluff suggests that they are found in association with Early or Middle Woodland ceramic components at the site. The Early Woodland Calvert type, described by Stephenson and Ferguson (1963), is possibly subsumed under this category, but published reports suggest that it is a specific form made almost exclusively on quartz and bearing a wide and short stem. Waselkov's (1982) statistics from White Oak Point in Tidewater Virginia show stems wider than they are long (mean stem width 16 mm vs. mean stem length 13.5 mm).

Adena (n = 7) (Figure 12.13)

Raw material: 3 jasper, 2 chert, 2 quartz

Dimensions:

Table 12.13 Hickory Bluff Adena Point Dimensions

	Length	Width	Thickness
Range	29-52	17-23	7-10
Mean	39	21	9
Standard Deviation	8.0	2.3	1.2
Coefficient of Variation	0.21	0.11	0.14

Figure 12.13
Adena (3883-2)

Comments: Well-flaked, symmetrical blade outline with regular straight to convex blade edges. Shoulders are prominent. Stems are also symmetrical and are generally contracting. Bases are convex, and overall, the points resemble the classic Adena "ovate base" style described by Dragoo (1963:111) at the Cresap Mound on the Ohio River near Moundsville, West Virginia. One point retains pebble cortex on the base. Few show evidence of damage: one has a perverse snap near the distal end and minor basal damage; one is in two pieces that refit along a flaw, suggesting postdepositional breakage; and one bears an extensive perverse lateral fracture that has damaged the blade and shoulder.

Comparative data: The points classified as Adena at Hickory Bluff are considerably smaller than points attributed to the Adena complex in Delmarva and in other regions. Dragoo reported a sample of 37 Adena stemmed points from the Cresap Mound, with lengths ranging from 34 to 150 mm (mean 77 mm), widths from 17 to 34 mm (mean 28 mm), and thicknesses from 7 to 17 mm (mean 10 mm). A separate sample of 14 points from Ohio and Indiana ranged in length from 54 to 107 mm (mean 80 mm), in width from 25 to 39 (mean 33 mm), and in thickness from 6 to 12 (mean 9 mm) (DeRegnaucourt 1992).

Few of the points from the St. Jones Adena site (7K-D-1) were typical of the Adena stemmed points described by Dragoo, since most have straight or only slightly convex bases typical of the type referred to as Robbins stemmed. The St. Jones points were larger than those reported in the Ohio Valley, ranging in length from 149 to 220 mm (mean 172) and in width from 56 to 123 mm (mean 72) (Thomas 1976:102). At the Sandy Hill site (18DO30), on the Eastern Shore of the Chesapeake near the mouth of the Choptank River, Ford's (1976:88) points equivalent to the Adena ovate base variant were referred to as Type G. These points were reported in two variations, both larger than the Ohio Valley examples: medium, measuring 95 to 140 mm (mean 121) long, 38 to 43 mm (mean 40) wide, and 2.5 to 3.5 mm (mean 3) thick; and large, measuring 149 to 187 mm (mean 172) long , 43 to 87 mm (mean 54) wide, and 2.2 to 3.9 mm (mean 3.3) thick.

In contrast, the specimens typed as Adena at Hickory Bluff average roughly one-half to one-quarter the length (39 mm) and one-third the width (21 mm) of the specimens described above. The Hickory Bluff projectile points appear to be a regional manifestation of the Adena

form using locally available materials which would affect the size and difference in material type.

Chronology: Early Woodland. Dragoo (1976:1) has reported Adena as one of several regional cultures present between 1000 B.C. and A.D. 200. Custer places the Delamarva Adena complex in the span between 500 B.C. and A.D. 0 (Custer 1989).

Untyped Straight Stemmed (n = 7)

Raw material: 3 jasper, 2 chert, 1 quartz, 1 argillite

Comments: Wide- and narrow-bladed points are represented in this group. All are damaged: two have transverse distal snap breaks; two have transverse breaks that have removed the base; and three have lateral damage.

Expanding Stemmed

Narrow and wide bladed varieties that share a stem shape that flares markedly from the shoulders to the base. Expanding stem points are distinguished from notched points in the degree of separation between blade and stem, which is more pronounced in stemmed points. The proximal segment of the blade of expanding stemmed points typically ends in shoulders rather than barbs. There were 16 points in this group in the collection: 9 Susquehanna, 6 Lackawaxen, and 1 Fox Creek.

Susquehanna (n = 9) (Figure 12.14)

Raw material: 7 argillite, 1 rhyolite, 1 jasper

Dimensions:

Table 12.14 Hickory Bluff Susquehanna Point Dimensions

	Length	Width	Thickness
Range	27-53	17-31	5-9
Mean	39	22	7
Standard Deviation	9.7	4.3	1.2
Coefficient of Variation	0.25	0.19	0.18

Figure 12.14 Susquehanna (2215-2 and 2215-3)

Comments: Thin, broad-bladed points with well-defined shoulders. Blades have straight edges but are often asymmetrical. The shoulders are pronounced and are characteristically wider than the base. Bases are straight to concave. Most of the specimens from Hickory Bluff are of heavily weathered argillite.

Comparative data: Ritchie (1971) reported Witthoft's (1953) sample with lengths ranging from 38 to 102 mm, widths from 19 to 51 mm, and thicknesses from 5 to 10 mm. Kinsey (1972) reported a sample of 9 points from the Zimmerman site (36PI14) in the upper Delaware Valley, with lengths of 52 to 79 mm (mean 65 mm), widths of 23 to 37 mm (mean 30 mm), and

thicknesses of 7 to 8 mm. A sample of 18 points was reported from Kettle Creek East (36CN199) on the West Branch of the Susquehanna in Clinton County, Pennsylvania (Petraglia and Knepper 1994b) with lengths ranging from 31 to 90 mm (mean 58), widths from 20 to 44 mm (mean 30 mm), and thicknesses from 6 to 11 mm (mean 8 mm). Wall et al. (1996b) lists 6 Susquehanna variants, although only his Type 11 conforms to the classic attribute set. Of a sample of 16 points, lengths range from 34 to 63 mm, widths from 20 to 50 mm, and thicknesses from 5 to 10 mm. The Hickory Bluff examples lie at the small end of the reported ranges.

Chronology: Late Archaic. Susquehanna is one of the defining artifacts of the so- called Transitional period, as defined by Witthoft (1953), spanning the shift from Archaic to Woodland periods. Ritchie placed Susquehanna in the Frost Island phase at the O'Neil site in Cayuga County in central New York. At that site, a radiocarbon date of 1250±100 B.C. was returned from a hearth at the base of a stratum containing Susquehanna along with Dry Brook fishtail, Perkiomen, and Genesee points, steatite vessel fragments, and Vinette I pottery (Ritchie 1965:156). Other reported dates are as early as 1540±80 B.C., from the Genesee Valley in central New York State (Trubowitz 1978:42), while in the upper Susquehanna Valley, dates range from 1550±105 B.C. to 1290±95 B.C. (Funk 1993:148-149, Table 16). At Kettle Creek East, Susquehanna components were associated with dates of 1445±55 B.C., 1510±70 B.C. and 1630±100 B.C. (Petraglia and Knepper 1994b; Petraglia et al. 1998a).

Lackawaxen Expanding Stemmed (n = 6) (Figure 12.15)

Raw material: 3 rhyolite, 1 argillite, 2 jasper

Dimensions:

Table 12.15 Hickory Bluff Lackawaxen Expanding Stemmed Point Dimensions

	Length	Width	Thickness
Range	49-77	24-28	10-14
Mean	59	26	12
Standard Deviation	12.7	1.3	1.4
Coefficient of Variation	0.22	0.05	0.12

Figure 12.15 Lackawaxen Expanding Stemmed (961-1)

Comments: The expanding stemmed variety of Lackawaxen at Hickory Bluff includes six narrow-bladed examples. Blade edges are generally straight. In two of the present examples, the blade is asymmetrical, suggesting extensive resharpening. Bases are typically convex or occasionally straight. Two specimens have medial or distal transverse snap breaks. A third shows damage to the base.

Comparative data: Expanding stemmed Lackawaxen points in Kinsey's (1972) sample of 97 points were slightly smaller on average than his straight stemmed variety, with lengths ranging from 44 to 78 mm (mean 57 mm), widths from 10 to 23 mm (mean 19 mm), and

thicknesses from 4 to 8 mm (mean 7 mm). A sample of 29 expanding stemmed points (Type 18) was reported from the Trenton Complex (Wall et al. 1996b), with lengths of 30 to 70 mm, widths of 18 to 28 mm, and thicknesses of 6 to 11 mm. The points from Hickory Bluff are wider and thicker than the reported ranges.

Chronology: Late Archaic. Associated radiocarbon dates range from 4560±110 years B.P. at the Faucett site in the upper Delaware Valley (Kinsey 1975), to 2650±120 years B.P. at Gropp's Lake in the Trenton Complex (Stewart 1987). Kinsey (1972) further notes a terminal date of 1710±120 B.C. from the Brodhead-Heller site for the expanding stemmed variety of Lackawaxen. In Delmarva, Custer and Bachman (1984) reported a date of 4200±75 years B.P. at the Hawthorne site (7NC-E-46), in association with an artifact assemblage that included several varieties of Lackawaxen. At Lums Pond (7NC-F-18), Lackawaxen points were recovered in association with a cluster of features with five radiocarbon dates ranging from 2660±100 years B.P. to 2969±60 years B.P. (Petraglia et al. 1998b).

Fox Creek (n = 1) (Figure 12.16)

Raw material: jasper

Dimensions: length 49 mm; width 28 mm; thickness 9 mm

Comments: Wide blade with convex blade edges, one prominent and one rounded shoulder, and an arcuate tip (i.e., the edge breaks from convex to slightly concave at the tip). The stem is wide and gently expanding, with a concave base.

Figure 12.16
Fox Creek (71-6-J)

Comparative data: Wall et al. (1996b) reported a sample of 30 Fox Creek stemmed points from the Trenton Complex, with lengths ranging from 27 to 76 mm, widths from 22 to 40 mm, and thicknesses from 3 to 11 mm. A sample of 13 Fox Creek points was reported from sites in Kent County, Delaware and Talbot County, Maryland (Somy Landing [7K-F-55], Millman [7K-F-4], and Oxford [18TA3])(Thomas et al. 1974), with lengths ranging from 32 to 74 mm (mean 49), widths from 23 to 35 mm (mean 27), and thicknesses from 7 to 10 mm (mean 9). The current point lies close to the reported means in each dimension.

Chronology: Middle Woodland. Funk (1976) dates Fox Creek in the Hudson Valley to A.D. 350-700; Brennan (1973) compiled a series of dates from central New York and New Jersey from A.D. 325±95 to A.D. 605±135. Wright (1973) places them at A.D. 300-485 on the Western Shore of the Chesapeake Bay.

Untyped Expanding Stemmed (n = 2)

Raw material: 1 chert, 1 argillite

Comments: The chert specimen has a narrow, asymmetrical blade. It was made from a pebble with an extensive flaw plane that was not overcome, leading to hinge fractures and stacks on both faces. The argillite specimen is the base of what may have been a broadspear or fishtail-like point, with a transverse snap break at the neck.

Contracting Stemmed

A series of both narrow and wide bladed points that share a characteristic stem shape that is wide at the neck and contracts to a rounded base. Blades are typically isosceles triangles, with straight to convex edges. There were 24 points in this group in the collection: 5 Koens-Crispin, 4 Poplar Island, 7 Lackawaxen, and 8 Rossville.

Koens-Crispin (n = 5) (Figure 12.17)

Raw material: 5 argillite

Dimensions:

Table 12.16 Hickory Bluff Koens-Crispin Point Dimensions

	Length	Width	Thickness
Range	34-44	20-27	7-10
Mean	38	23	8
Standard Deviation	4.4	3.0	1.3
Coefficient of Variation	0.12	0.13	0.16

Figure 12.17 Koens-Crispin (2320-1)

Comments: Thin broad-bladed points with rounded but well-defined shoulders. Blade edges are convex. Bases are rounded. All of the specimens from Hickory Bluff are of heavily weathered argillite. Three examples have distinctly asymmetrical blades, a fourth shows a bending distal snap break, and the last was recovered in two fragments that refit along an oblique snap that extends across the artifact from the neck to the mid-point along one blade edge.

Comparative data: Kinsey (1972) reported a sample of 16 points from sites in the upper Delaware Valley, with lengths of 44 to 90 mm (mean 59 mm), widths of 32 to 48 mm (mean 37 mm), and thicknesses of 5 to 11 mm (mean 7 mm). The current specimens fall well short of these mean dimensions. Wall et al. (1996b) lists three Koens-Crispin variants. His Type 21B most closely resembles the classic type descriptions. A sample of 43 of this variant was reported with lengths ranging from 31 to 71 mm, widths from 20 to 40 mm, and thicknesses from 3 to 11 mm. The points from the Hickory Bluff collection lie at the low end of these dimensional ranges.

Chronology: Late Archaic. A date of 1720±120 B.C. was recorded from a feature containing Koens-Crispin and Perkiomen points at Miller Field. The center of distribution for the type is considered the middle and lower Delaware Valley. Associations have been postulated with types such as Snook Kill from New York; Lehigh, considered an upper Delaware Valley variant

typically made of jasper; and Savannah River (Kinsey 1972), all of which are wide-bladed, contracting stemmed points. Stewart (1987) reported an associated radiocarbon date of 2420±100 B.C. at the Gropp's Lake site in the middle Delaware Valley Trenton Complex. He also noted data from Cross's original excavations at Abbott Farm suggesting overlap with the Woodland period.

Poplar Island (n = 4) (Figure 12.18)

Raw material: 3 ironstone, 1 quartzite

Dimensions:

Table 12.17 Hickory Bluff Poplar Island Point Dimensions

	Length	Width	Thickness
Range	67†	24-31	11-12
Mean	n/a	27	12
Standard Deviation	n/a	3.5	0.6
Coefficient of Variation	n/a	0.13	0.0.5

†only one point with measurable length

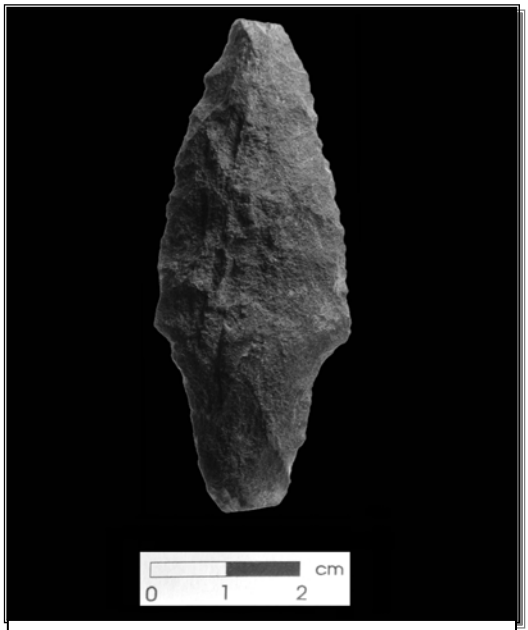

Figure 12.18
Poplar Island (3930-1)

Comments: Long narrow-bladed points with rounded shoulders. Blade edges are straight, and bases are rounded. Blades are steeply flaked, producing distinct medial ridges on both faces. One specimen was made on a tabular ironstone blank, producing a flattened medial ridge. Three specimens bear distal snap breaks. The fourth consists only of the base and a small portion of the shoulder separated from the blade by a transverse snap break.

Comparative data: At the Harry's Farm site, on Tocks Island in the upper Delaware Valley, Kraft (1975) reported a sample of 7 Poplar Island points with lengths ranging from 53 to 108 mm, widths from 20 to 27 mm, and thicknesses from 6 to 12 mm. Poplar Island is often subsumed under the contracting stemmed variety of Lackawaxen, and thus, dimensional statistics are difficult to collect. At the opposite extreme, Wall et al. (1996b) identifies 8 variants of Poplar Island that he discriminates on the basis of stem and blade shape. His types 25B and 25C appear to correspond most closely with the current specimens. They have a combined length range of 31 to 89 mm, width range of 14-30 mm, and thickness range of 6 to 11 mm. The current specimens from Hickory Bluff fall in the mid-to-upper portions of each of these dimensional ranges.

Chronology: Late Archaic. Kraft reported a date range of 2610 to 2210 B.C. on Tocks Island for associated Poplar Island and Lackawaxen points. Wall et al. (1996b) have suggested that Poplar Island carried over into the Early and Middle Woodland periods, on the basis of data from Cross' original excavations at Abbott Farm.

Lackawaxen Contracting Stemmed (n = 7) (Figure 12.19)

Figure 12.19 Lackawaxen Contracting Stemmed (2124-6)

Raw material: 4 quartzite, 3 argillite

Dimensions:

Table 12.18 Hickory Bluff Lackawaxen Contracting Stemmed Point Dimensions

	Length	Width	Thickness
Range	33-50	15-22	4-11
Mean	43	18	8
Standard Deviation	10.6	2.6	2.7
Coefficient of Variation	0.25	0.15	0.35

Comments: The contracting stemmed variety of Lackawaxen at Hickory Bluff includes a range of narrow- and wide-bladed examples. Blade edges vary from convex to straight. Three examples have highly asymmetrical blades, and one shoulder is missing from two others. Bases are round. One specimen bears an oblique distal snap break.

Comparative data: Contracting stemmed Lackawaxen points in Kinsey's (1972) sample of 47 points had lengths ranging from 46 to 79 mm (mean 63 mm), widths from 19 to 26 mm (mean 22 mm), and thicknesses from 5 to 9 mm (mean 7 mm). Kraft reported a sample of 7 points from Tocks Island with lengths ranging from 53 to 108 mm, widths from 20 to 27 mm, and thicknesses from 6 to 12 mm. Contracting stemmed Lackawaxen points compare with Wall et al.'s (1996b) Poplar Island types 25D, 25E, 25G, and 25H at Abbott Farm: of the 45 points in this sample, lengths ranged from 30 to 99 mm, widths from 12 to 35 mm, and thicknesses from 5 to 11 mm. The Hickory Bluff points lie at the low end of each of the reported ranges.

Chronology: Late Archaic. Associated radiocarbon dates range from 4560±110 years B.P. at the Faucett site in the upper Delaware Valley (Kinsey 1975:59-60), to 2650±120 years B.P. at Gropp's Lake in the Abbott Farm Complex (Stewart 1987). In Delmarva, Custer and Bachman (1984) reported a date of 4200±75 years B.P. at the Hawthorne site (7NC-E-46), in association with an artifact assemblage that included Lackawaxen points. At Lums Pond (7NC-F-18), Lackawaxen points were recovered in association with a cluster of features with five radiocarbon dates ranging from 2660±100 years B.P. to 2969±60 years B.P. (Petraglia et al. 1998b).

Rossville (n = 8) (Figure 12.20)

Raw material: 8 jasper

Dimensions:

Table 12.19 Hickory Bluff Rossville Point Dimensions

	Length	Width	Thickness
Range	20-43	13-22	5-8
Mean	30	17	6
Standard Deviation	7.7	2.8	1.0
Coefficient of Variation	0.26	0.18	0.17

Figure 12.20
Rossville (1087-1)

Comments: Small lozenge shaped points. Blades are triangular, typically with straight edges. Shoulders are distinct and stems are sharply contracting. In several cases, blades have been reworked, forming slightly concave edges, leaving ears at the shoulder and in one instance, removing one shoulder. Two examples bear minor distal snap breaks. Four specimens retain pebble cortex on the base.

Comparative data: Kinsey (1972) reported a sample of 10 Rossville points with lengths ranging from 35 to 61 mm (mean 47 mm), widths from 14 to 26 mm (mean 20 mm), and thicknesses from 6 to 11 mm (mean 8 mm). A sample from the Faucett site, also in the upper Delaware Valley, had similar mean dimensions: length 45 mm, width 22 mm, thickness 8 mm. Wall et al. (1996b) reported a sample of 53 Rossville points (his Type 8), from the Abbott Farm sites with lengths ranging from 29 to 66 mm, widths from 15 to 27 mm, and thicknesses from 4 to 19 mm. The Hickory Bluff specimens lie at the low end of each of the reported ranges.

Chronology: Early-Middle Woodland. Ritchie (1969) considered Rossville to be a minority component of his Lagoon Complex, dated 520±120 B.C. and 430±80 B.C. at sites on Martha's Vineyard, and he considered the type to extend into the Middle Woodland. Kinsey (1972:436) associated Rossville with the Bushkill complex in the upper Delaware Valley, radiocarbon dated at the Miller Field site as 480±80 B.C. Wall et al. (1996b) noted comparable forms from Cross' original excavations at Abbott Farm that may suggest a carry over into the Late Woodland.

Untyped Contracting Stemmed (n = 6)

Raw material: 3 quartz, 2 jasper, 1 chert

Comments: The quartz specimens include two complete points with straight-sided blades and straight bases. One of these points is large in comparison with most of the points in the collection. The third quartz specimen and two of the cryptocrystalline specimens are stem fragments, with transverse snap breaks at the base of the shoulders.

Untyped Stemmed (n = 2)

Raw material: 1 jasper, 1 chert

Comments: Both specimens are narrow-bladed points with straight to convex blade edges. The bases are missing at transverse snap breaks across the neck at a point at which the stem shape cannot be determined.

Unstemmed

In these forms, the blade and base meet without producing a formal stem. The hafting element consists of the base and the lower portion of the blade. Two main forms were recognized: teardrops and triangles.

Teardrop (n = 11) (Figure 12.21)

Raw material: 6 jasper, 3 quartz, 2 chert

Dimensions:

Table 12.20 Hickory Bluff Teardrop Point Dimensions

	Length	Width	Thickness
Range	26-36	15-19	5-8
Mean	31	17	7
Standard Deviation	3.7	1.4	0.8
Coefficient of Variation	0.12	0.08	0.13

Figure 12.21
Teardrop (3023-1)

Comments: Small thin points usually made on flakes. Well-flaked, straight-sided blades that grade into rounded bases without a noticeable inflection. One example has a slightly asymmetrical blade, with one edge reworked to a vaguely concave shape. One bears minor damage to the base; two have transverse distal snap breaks; one has minor damage to the base and a large impact fracture at the distal end of the blade; one is damaged by potlids. One complete specimen has a small patch of cortex that appears to have been intentionally left on the base.

Comparative data: The Teardrop point is an ill-defined type in the region, in part due to its generalized shape, which can be mistaken for an incomplete biface. Mounier and Martin (1994) have surveyed the type, and reported on a large sample from the Woodbury Annex site (28GL209). While they do not provide dimensional data, their illustrated examples range in length from 30 to 50 mm and from 18 to 20 mm in width. Wall et al. (1996b) reported a sample of 15 Teardrop points from the Trenton Complex, with lengths ranging from 28 to 44 mm, widths from 14 to 22 mm, and thicknesses from 5 to 7 mm. At the Lums Pond site (7NC-F-18), a sample of 6 points had a mean length of 28 mm and a mean width of 17 mm. The Hickory Bluff examples fall near the low end of the reported length ranges, but near the mean width measurements.

Chronology: Teardrop points have been reported throughout the Mid-Atlantic in contexts ranging from Late Archaic through Middle Woodland (Mounier and Martin 1994:127-128). At the Woodbury Annex site (28GL209), they reported a series of 6 radiocarbon dates, ranging from 2170±50 years B.P. to 3430±250 years B.P. Custer et al. (1996:78, Table 10) reported a date range for Teardrop points at Carey Farm of 3150 years B.P. to 2450 years B.P.

Levanna (n = 1) (Figure 12.22)

Raw material: jasper

Dimensions: length 39 mm; width incomplete; thickness 6 mm

Comments: Thin, symmetrical isosceles triangle, well-flaked, with slightly concave blade edges and a deeply concave base. Evenly-spaced pressure flaking has resulted in slightly beveled blade edges and a vaguely serrated appearance.

Comparative data: A sample of 250 Levanna points was reported by Ritchie (1971) with lengths ranging from 22 to 76 mm (most between 32 and 45 mm), widths from 21 to 35 mm, and thicknesses averaging 5 mm. Kinsey (1972) reported examples from the upper Delaware Valley with lengths ranging from 18 to 45 mm (mean 34 mm), widths from 18 to 34 mm (mean 22 mm), and thicknesses from 3 to 5 mm (mean 4 mm). The present specimen falls near the middle of Ritchie's reported dimensional ranges.

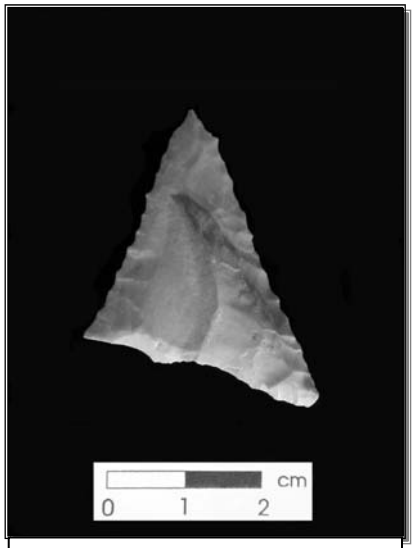

Figure 12.22
Levanna (13-1-A)

Chronology: Late Woodland. Ritchie (1971) noted that Levanna originally appeared in New York around A.D. 700, though it did not become common until A.D. 900. It was gradually replaced by smaller, straight-based types, such as Madison, by the mid-fourteenth century.

Untyped Unstemmed

This is a series of 11 points that could not be placed in conventional type categories, due to lack of conformity with standard morphological attributes associated with the accepted categories. The points are grouped according to base morphology: convex, and straight to slightly concave.

Unstemmed, Convex Base (n = 4)

Raw material: 2 jasper, 1 chert, 1 quartz

Comments: Two of the jasper specimens and the chert specimen are narrow-bladed, with sharply rounded bases. Both have ridges or stacks on both faces. The third jasper piece is thin, with symmetrical, convex blade edges and a portion of the base removed at an oblique snap break. The quartz specimen is wide-bladed and has an oblique distal snap break.

Unstemmed, Straight-to-Concave Base

These points are separated into subgroups on the basis of blade shape: pentagonal and triangular.

Pentagonal (n = 4)

Raw material: 2 jasper, 1 chert, 1 argillite

Comments: All are small points, less than 40 mm long and 20 mm wide. Both jasper specimens have asymmetrical blades, suggesting resharpening. The blades of the chert and argillite specimens are broken at transverse distal snap breaks (their lengths have been estimated).

Triangular (n = 3)

Raw material: 2 jasper, 1 quartz

Comments: These points differ from the pentagonal form in that the blade edges extend to the base without a noticeable break. The jasper examples are small. One has a transverse distal snap break; the other has an asymmetrical blade and a minor distal snap. The quartz example is large, but thin, and bears a symmetrical isosceles shape (length 51 mm, width 33 mm, thickness 8 mm, resulting in a width:thickness ratio of over 4).

Fragments

In total, 91 projectile point fragments were recovered from the site. These pieces were too small to be typed, but exhibited characteristics such as finely flaked edges, which indicated that they were derived from finished bifaces. Sixty-two specimens were cataloged as distal fragments; 25 were cataloged as segments of hafting elements, either proximal (base) or lateral (shoulder fragments); and 4 were cataloged as medial fragments.

Distal Fragments (n = 62)

Twenty-two fragments consisted of extreme distal ends (or point tips), measuring <20 mm in length

Raw material: 15 jasper; 2 chert, 2 quartz, 2 quartzite; 1 argillite

Breakage patterns: 10 bending snap breaks, 8 transverse snap breaks, 4 oblique snaps breaks

Thirty-two fragments consisted of distal blade fragments measuring between 20 and 45 mm in length

Raw material: 10 jasper; 8 chert, 6 quartz, 5 rhyolite, 2 argillite, 1 quartzite

Breakage patterns: 13 bending snap breaks, 12 oblique snap breaks, 4 transverse snap breaks, 3 perverse snap breaks

Seven fragments consisted of burned fragments that had spalled from the main portion of the blade near the tip; these fragments measure <30 mm in length.

One final specimen consisted of the distal end and most of one edge of a thin, well-flaked jasper point, measuring 46 mm in length.

Proximal Fragments (n = 18)

Fourteen fragments consisted of stem or stem and shoulder fragments from small, straight-stemmed points

Raw material: 6 chert, 5 jasper; 2 quartz, 1 rhyolite

Breakage patterns: 8 oblique snaps breaks, 2 bending snap breaks, 3 transverse snap breaks, 1 perverse snap break

Two fragments bore slight basal damage of the stem and shoulder fragments, 3 bore oblique and 1 a perverse snap

Three fragments consisted of stem fragments from small, expanding stemmed points.

Raw material: 2 chert, 1 quartzite

Breakage patterns: 1 bending snap break, 1 transverse snap break, 1 perverse snap break none bore basal damage

One fragment consisted of a small, contracting stem fragment of quartz, with a transverse snap break and a patch of cortex left on the base.

Lateral Fragments (n = 7)

Raw material: 4 jasper, 2 chert, 1 rhyolite

Description: Most consisted of small blade segments comprising a portion of one edge but not extending to or beyond the central axis. One of the chert specimens consisted of the barb of a corner-notched point. Three of the jasper fragments and one chert fragment were potlidded.

Medial Fragments (n = 4)

Raw material: 2 jasper, 1 chert, 1 ironstone

Description: The chert and jasper fragments were from thin-bladed points and bore transverse or bending snap breaks at both ends. The ironstone fragment was from a thick, but narrow point blade with medial ridges, possibly related to the Poplar Island type. A portion of the blade and shoulders was present.

Bifaces

Bifacial artifacts were defined by the presence of bifacial flake removal along a minimum of one edge. Most of the bifaces were also defined by a regularized shape. All complete bifaces were measured for length, width, thickness and weight. A total of 223 bifaces was recovered from Hickory Bluff (the artifact inventory contains 228 entries which includes 4 sets of refits and one piece of pigment). About 59 percent of the bifaces were manufactured from chert and jasper and about. 27 percent were made of quartz and quartzite (Table 12.21). Jasper, quartz, and chert bifaces comprised the highest frequencies.

Bifaces were subdivided into two categories during the cataloging process: early stage and late stage. These subdivisions were based on the overall appearance, the degree of shaping, thickness, and sinuosity of edge profiles, all of which relate to the stage of completion of the biface. Early stage bifaces result from the initial efforts of producing a bifacial edge on a cobble, pebble, or flake blank. Typically, early stage bifaces exhibit random flaking generally produced by hard hammer percussion and appearing as wide and deep flake scars. The amount of flaking may vary from minimal to fairly evident. Bifacial edges are typically sinuous in profile with little shaping evident. The bifaces are relatively thick in cross-section and often contain remnant cortex. In contract, late stage bifaces typically display slightly greater width: thickness ratios than early stage bifaces, indicating that further thinning had been accomplished. Late stage bifaces also exhibit a greater degree of shaping and straighter edges in profile, suggesting more designed and patterned flaking. Edge modification may be present in the form of platform preparation, implying the use of more controlled flaking.

About 39 percent (n = 87) were identified as early stage bifaces (Figure 12.23); 61 percent (n = 136) were designated late stage bifaces (Figure 12.24, Table 12.22). Raw material usage between the two biface categories varied: early stage biface discard consisted primarily of jasper, quartz, and quartzite, whereas late stage biface discard was primarily jasper, chert, and quartz (Table 12.21). More quartz and quartzite bifaces were early stage indicating initial biface production, breakage and/or use, and discard occurred at Hickory Bluff. Argillite, chert, and rhyolite bifaces were mostly late stage and occurred in higher frequencies that early stage counterparts.

Cobble cortex was observed on 16 percent (n = 36) of the biface assemblage suggesting some use of local cobbles for lithic tool manufacture (Table 12.23). Twenty-seven percent (n = 24) of the early stage bifaces exhibited cobble cortex whereas only 9 percent of late stage bifaces had cobble cortex.

In addition to bifacial retouch, use wear was observed on only 15 percent (n = 29) of the bifaces (Table 12.24). Eighty-seven percent of the early stage bifaces and 83 percent of the late stage bifaces exhibited no visible use wear.

Table 12.21 Chipped Stone Assemblage Material Types.

Artifact Type	Andesite	Argillite	Chalcedony	Chert	Ironstone	Jasper	Quartz	Quartzite	Rhyolite	Sandstone	Schist	Siltstone	Steatite	Total
Projectile Points	0	34	1	49	4	133	37	18	22	0	0	0	0	298
Bifaces	0	17	2	29	3	101	44	16	11	0	0	0	0	223
Unifaces	0	0	0	7	0	38	1	2	0	0	0	0	0	48
Retouched Flake Tools	0	0	0	9	0	33	6	7	0	0	0	0	0	55
Utilized Flake Tools	0	0	1	21	0	107	9	6	2	0	0	0	0	146
Cores	0	2	0	97	0	294	152	41	0	0	0	2	0	588
Debitage	2	617	365	3856	641	16384	6977	1170	2130	15	3	77	6	32243
Total	**2**	**6700**	**369**	**4068**	**648**	**17090**	**7226**	**1260**	**2165**	**15**	**3**	**79**	**6**	**33601**

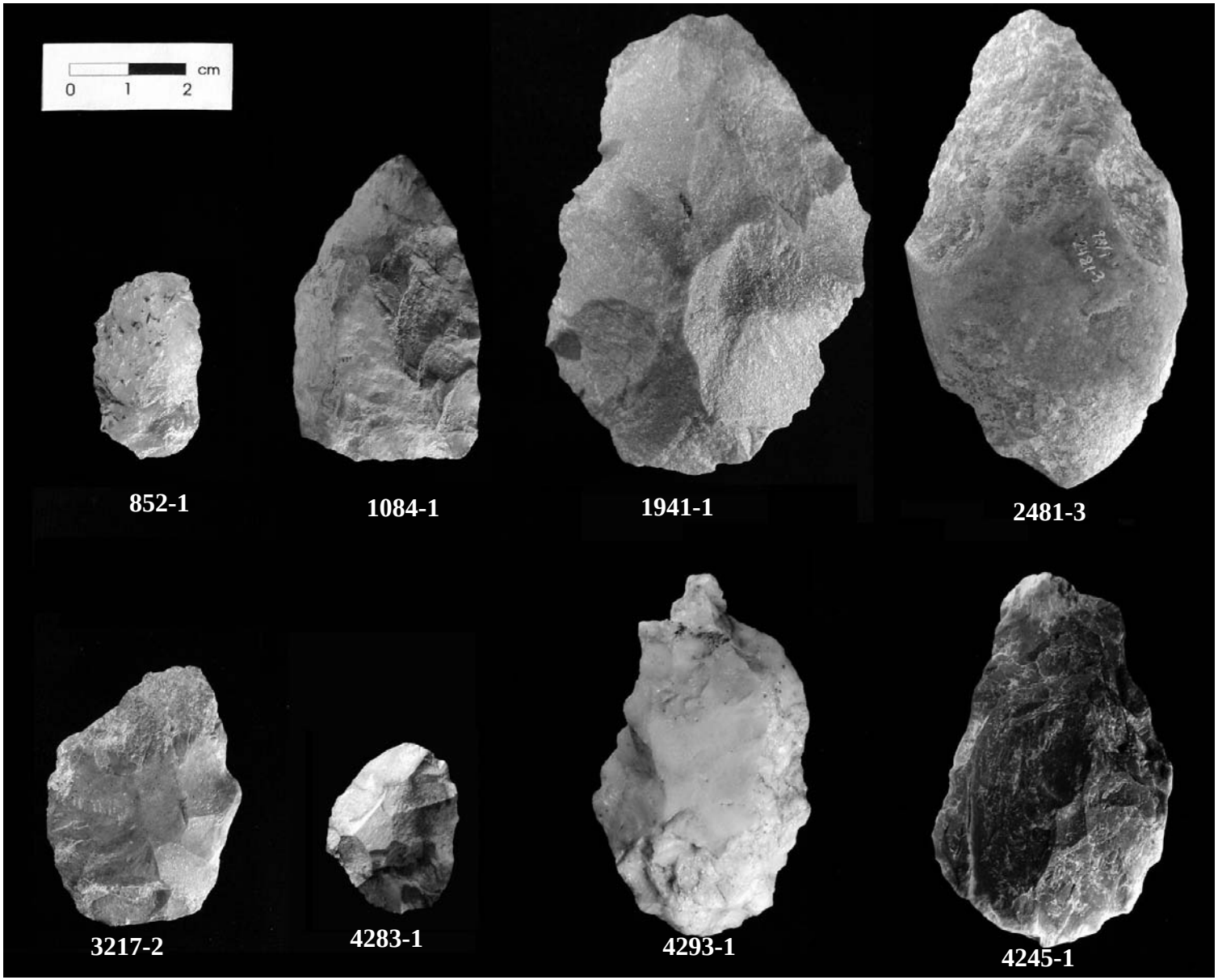

Figure 12.23 Examples of Early Stage Bifaces

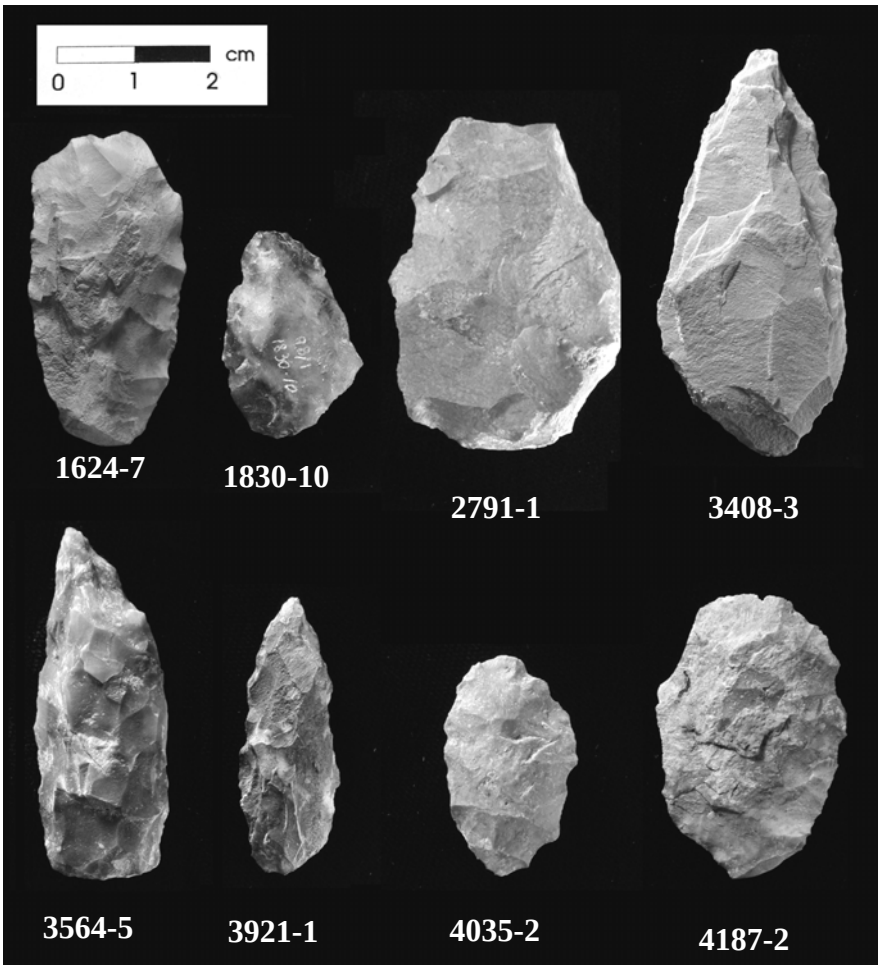

Figure 12.24 Examples of Late Stage Bifaces

Table 12.22 Biface Stages and Lithic Material Use

Material Type	Early Stage Biface		Late Stage Biface		Total Biface	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Argillite	5	**5.74**	12	**8.82**	17	**7.62**
Chalcedony	0		2	**1.47**	2	**0.89**
Chert	4	**4.59**	25	**18.38**	29	**13.00**
Ironstone	2	**2.29**	1	**0.73**	3	**2.20**
Jasper	41	**47.12**	60	**44.11**	101	**45.29**
Quartz	23	**26.43**	21	**15.44**	44	**19.73**
Quartzite	10	**11.49**	6	**4.41**	16	**7.17**
Rhyolite	2	**2.29**	9	**6.61**	11	**4.93**
Total	87		136		223	

Table 12.23 Biface Stages and Presence of Cobble Cortex

Material Type	Early Stage Biface		Late Stage Biface		Total Biface	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Chert	1	**4.16**	2	**16.66**	3	**8.33**
Jasper	13	**54.1**	10	**83.33**	23	**63.88**
Quartz	9	**37.5**	0		9	**25.00**
Quartzite	1	**4.16**	0		1	**2.77**
Total	24		12		36	

Table 12.24 Biface Stages and Use Wear

Use wear	Early Stage	Late Stage	Total
No use wear	71	109	180
Use wear	13	17	30
Specialized use wear	2	10	12
Total	86	136	222*

* One biface from previous investigations could not be relocated and use wear was not assessed.

Unifaces

Unifacial artifacts were defined by the presence of unifacial flake removal along a minimum of one edge. Most of the unifaces were also defined by a regularized shape. Complete unifaces were measured for length, width, thickness, and weighed. A total of 48 unifaces was recovered from Hickory Bluff. About 94 percent were manufactured from cryptocrystalline materials (either chert or jasper) (Table 12.21). Only one uniface was made of quartz and two were made of quartzite. Use wear was readily observable on cryptocrystalline materials and difficult to identify on quartz and quartzite materials due to the irregular fracturing patterns associated with those materials. Cobble or pebble cortex was present on 40 percent (n = 19) of the unifaces indicating procurement of raw materials from secondary sources such as local river beds, gravel bars, or stream terraces.

Multiple edge retouch and/or use wear were observed on 46 unifaces (Table 12.25). Single edge retouch and/or use wear was identified on only 6 artifacts. The primary working edge or bit on each uniface exhibited an edge angle ranging from 41 to 87^{o}. The majority of the unifaces (n = 37; 77 percent) exhibited unifacial retouch on the primary edge; seven unifaces (about 15 percent) exhibited bifacial retouch on the primary edge suggesting edge rejuvenation. Two tools had use wear only, with no retouch on the primary edge. Use wear on the primary working edge included the removal of unifacial microflakes from the dorsal side, polish, rounding, and heavy grinding with striations, usually in various combinations.

Twenty-one of the 42 multiple edged artifacts exhibited evidence of possible hafting edge preparation or hafting use wear in the form of serial or random unifacial or bifacial retouch, removal of unifacial microflakes, polish, and rounding on the lateral edges. Random unifacial or bifacial nibbling, which could be either natural or cultural, was also noted along some lateral tool

edges. Based on general morphology and location of use wear, three types of unifaces were identified: ovoid unifaces, circular unifaces, and pointed unifaces. These three types represent distinctive subgroups of unifaces and may reflect manufacturing techniques, specialized use, and/or specialized hafting.

Table 12.25 Uniface Use Wear

Edge Type	Total Artifacts	Retouch Type			Primary Use Wear	
		None	Unifacial	Bifacial	Unifacial microflake removal	Multiple/Other
Single edge	6		6		4	
Two edges	12		11	1	2	9
Three edges	29	2	19	8*	1	28
Four edges	1		1			1
Total	**48**	**2**	**37**	**9**	**7**	**38**

*five unifaces exhibited both unifacial and bifacial retouch

Twenty ovoid unifaces were identified in the Hickory Bluff assemblage and exhibited straight to convex lateral edges with a convex distal edge that was the primary working edge or bit (Figure 12.25, Table 12.26). The material types selected were exclusively jasper (80 percent) and chert (20 percent). Eleven ovoid unifaces appear to have been made from local pebbles. Multiple edge retouch and/or use wear were observed on 18 unifaces; single edge retouch and use wear was identified on only two artifacts. The primary working edge exhibited an edge angle ranging from 41 to 84^{o}. Most of the classic unifaces were unifacially retouched; however, about 30 percent (n = 6) were bifacially retouched, indicating edge rejuvenation. Sixty percent (n = 12) exhibited evidence of hafting preparation or haft use wear. Eleven of the twelve unifaces contained evidence of hafting on both lateral edges.

Six circular unifaces were recovered from Hickory Bluff (Figure 12.26); these tiny artifacts with retouch and/or use wear around two-thirds to three-quarters of the edge margins (Table 12.27). The material types selected were exclusively jasper (83 percent) and chert (17 percent). One circular uniface was made from local pebbles. All of the circular unifaces were unifacially retouched. Multiple edge retouch and/or use wear were observed on all six unifaces. The primary working edge exhibited an edge angle ranging from 63 to 74^{o}. Fifty percent (n = 3) exhibited evidence of hafting preparation or haft use wear near the proximal end.

Five pointed unifaces were identified in the assemblage and exhibited pointed proximal margins opposite the distal convex edge (Figure 12.27, Table 12.28). The material types selected were 80 percent jasper and 20 percent quartz. Two of the pointed unifaces were made from local pebbles. Multiple edge retouch and/or use wear were observed on all five unifaces. The primary working edge exhibited an edge angle ranging from 41 to 70^{o}. Only one uniface (3372-1) exhibited evidence of hafting preparation or haft use wear near the proximal end.

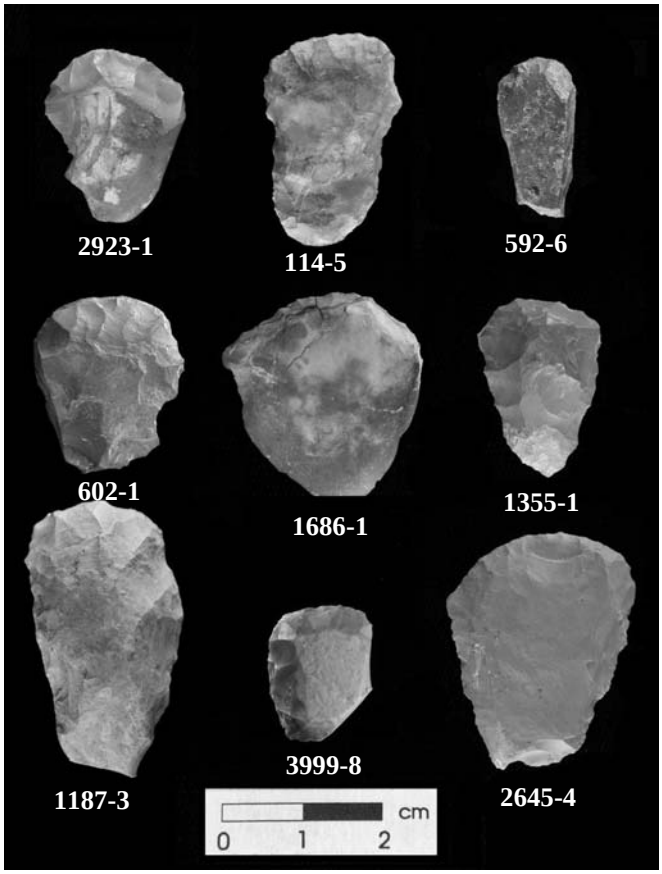

Figure 12.25 Examples of Ovoid Unifaces

Table 12.26 Ovoid Uniface Dimensions

	Length	Width	Thickness
Range	13.5-34.0	9.9-25.7	4.8-8.8
Mean	23.59	17.81	6.62
Standard Deviation	5.34	3.77	1.34
Coefficient of Variation	0.22	0.21	0.20

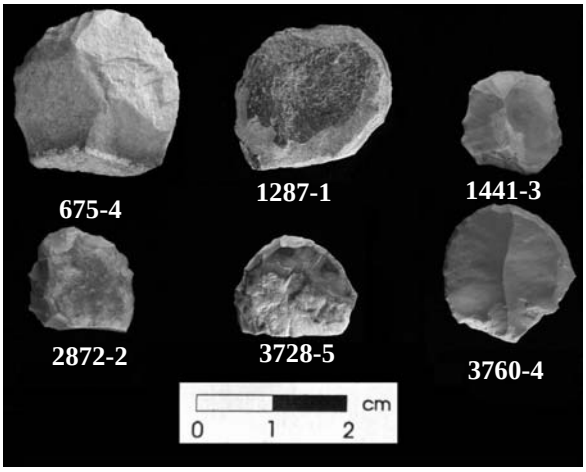

Figure 12.26 Circular Unifaces

Table 12.27 Circular Uniface Dimensions

	Length	Width	Thickness
Range	13.4-22.7	8.7-13.6	3.4-8.1
Mean	17.38	17.16	5.53
Standard Deviation	4.27	3.20	1.97
Coefficient of Variation	0.24	0.18	0.35

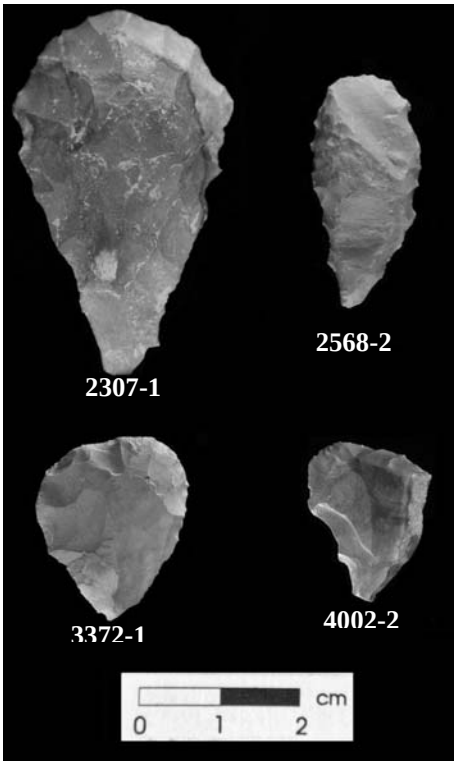

Figure 12.27 Examples of Pointed Unifaces

Table 12.28 Pointed Uniface Dimensions

	Length	Width	Thickness
Range	18.8-45.9	14.1-28.3	4.1-14.4
Mean	28.62	20.52	7.86
Standard Deviation	10.44	5.88	3.91
Coefficient of Variation	0.36	0.28	0.49

Retouched Flake Tools

Retouched flake tools were typically characterized by margin flake scars at least 3 mm in length perpendicular to the flake edge and minimal shaping along the flake perimeter (Figure 12.28). The production focus for these types of tools is edge modification rather than formal shaping. At least one edge had to exhibit retouch in order to be classified in this tool category.

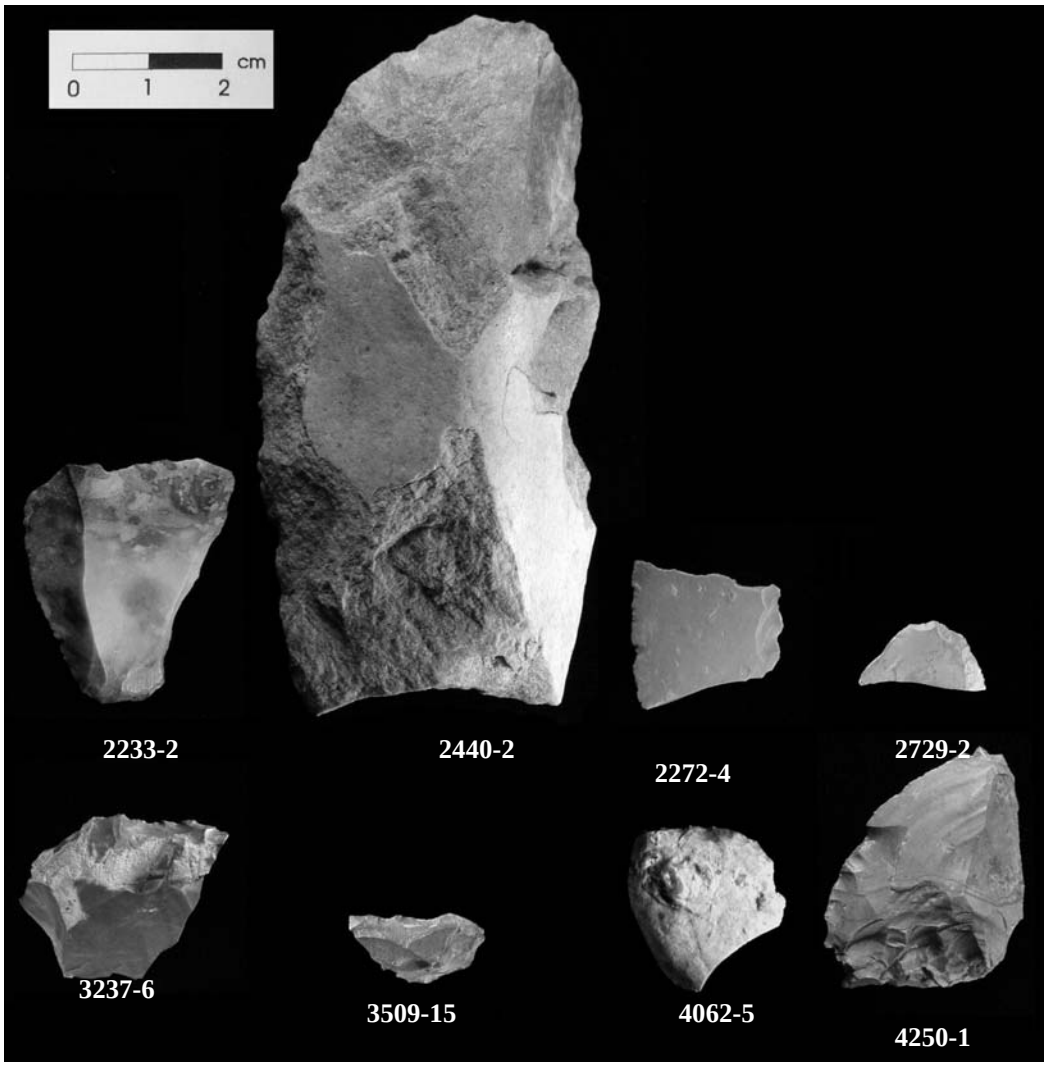

Figure 12.28 Examples of Retouched Flake Tools

A total of 55 retouched flake tools was recovered and over 76 percent were manufactured on cryptocrystalline materials (either chert or jasper) (Table 12.21). About 23 percent were made of quartz and quartzite. Approximately 41 percent (n = 23) exhibited cobble cortex suggesting manufacture from local gravels.

The majority of retouched flakes were single edged or two edge tools (n = 48) (Table 12.29). Retouch was primarily unifacial. Use wear on the single edged flake tools was mainly unifacial microflake removal; other types of use wear observed included polish, rounding, and battering. Flake tools with two working edges had a higher incidence of multiple types of use wear such as unifacial microflake removal in conjunction with polish or rounding. Ten flake tools exhibited retouch only with no obvious use wear.

Table 12.29 Retouched Flake Tools Use Wear

Edge Type	Total Artifacts	Retouch Type		Primary Use Wear		
		Unifacial	Bifacial	Unifacial microflake removal	Bifacial microflake removal	Multiple/Other
Single edge	27	22	5	12	0	8
	21	17	5*	7	0	11
Three edges	5	3	2	2	0	3
Four edges	1	1	0	0	0	1
Total	**54****	**43**	**12**	**21**	**0**	**23**

* one flake tool exhibited both bifacial and unifacial retouch

** one retouched flake from previous investigations was not examined for use wear

Utilized Flake Tools

Utilized flake tools were identified by the presence of use wear along the edges (Figure 12.29). Use wear was indicated by the presence of various types of edge degradation or modification such as microflake removal, polish, rounding, or blunting. As with retouched flake tools, edge use is the primary production focus rather than formal shaping of the flake perimeter. A total of 146 utilized flakes was identified in the Hickory Bluff assemblage; 88 percent were made of cryptocrystalline materials (e.g., chalcedony, chert, and jasper). Approximately 30 percent (n = 44) exhibited cobble cortex suggesting manufacture from local gravels.

The majority of utilized flakes were single edged tools (n = 94) (Table 12.30). Use wear was predominantly unifacial microflake removal; however, a combination of use wear, particularly unifacial microflake removal, polish and rounding was also common. Utilized flake tools with multiple working edges had a higher incidence of multiple types of use wear.

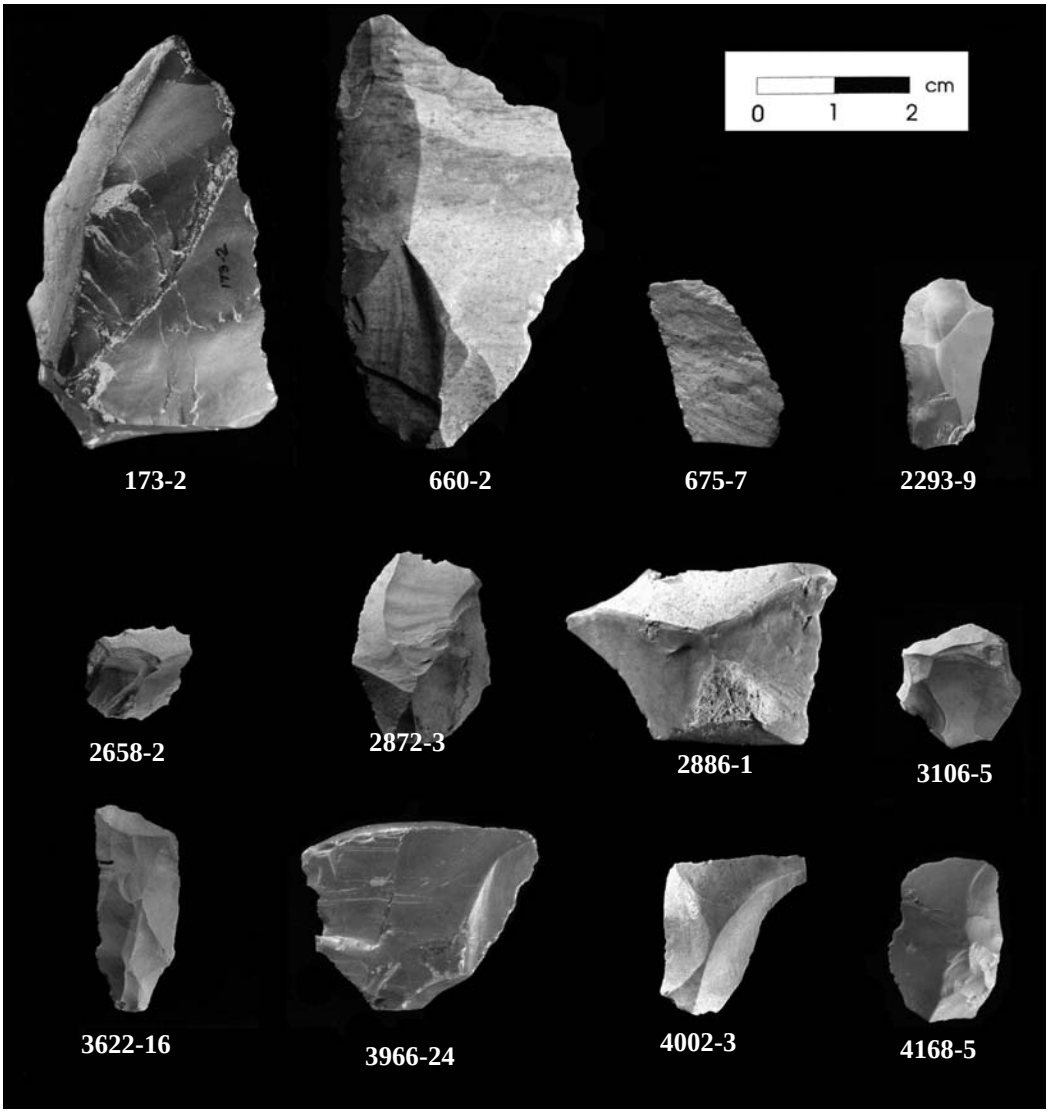

Figure 12.29 Examples of Utilized Flake Tools

Table 12.30 Utilized Flake Tool Use Wear

Edge Type	Total Artifacts	Primary Use Wear			
		Unifacial microflake removal	Bifacial microflake removal	Rounding/ Polish	Multiple Use Wear
Single edge	94	52	4	7	31
Two edges	21	8	0	0	13
Three edges	8	2	0	0	6
Four edges	6	0	0	0	6
Total	**0***	**62**	**4**	**7**	**56**

*17 utilized flakes from previous investigations were not examined for use wear

Cores

Cores were separated into two categories based on flake removal patterning: multidirectional and bipolar. Most cores were defined as multidirectional cores with flake removal occurring in a random pattern from multiple platforms. Bipolar cores were identified by the crushed proximal and distal ends resulting from force generated from the percussor and the anvil. A total of 588 was recovered from Hickory Bluff. Fifty seven percent of the cores were multidirectional cores (Table 12.31); bipolar cores represented about 43 percent. Both core reduction techniques were used for cherts and jaspers, whereas, multidirectional core reduction was predominant for quartz and quartzite.

Table 12.31 Cores and Lithic Material Types

Material Type	Multidirectional Core	Bipolar Core	Total
Argillite	2	0	2
Chert	52	45	97
Jasper	148	146	294
Quartz	103	49	152
Quartzite	33	8	41
Siltstone	2	0	2
Total	**340**	**248**	**588**

Cores recovered by Parsons were cataloged by size grade; artifacts from the previous investigations were not sized during this study. Most multidirectional cores were 4 cm or larger (Table 12.32). The four argillite and siltstone cores were all larger than 5 cm. Based on percentages, the smaller multidirectional cores (between 3 and 5 cm) were mostly cherts and jaspers. Multidirectional cores larger than 5 cm were predominantly quartz and quartzite.

Table 12.32 Multidirectional Cores and Size Grades

Material Type	Unsized	<1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	>5 cm	Total
Argillite	0	0	0	0	0	0	2	2
Chert	18	0	0	2	11	11	10	52
Jasper	24	0	0	13	34	41	36	148
Quartz	8	0	1	3	16	23	52	103
Quartzite	2	0	0	0	0	3	28	33
Siltstone	0	0	0	0	0	0	2	2
Total	**52**	**0**	**1**	**18**	**61**	**78**	**130**	**340**

Most bipolar cores were 3 cm or larger (Table 12.33), slightly smaller than multidirectional cores. No argillite or siltstone bipolar cores were recovered. Based on percentages, the smaller bipolar cores (between 3 and 5 cm) were mostly cherts and jaspers; however, small quartz cores exhibited a higher percentage in the 4-5 cm size grade. Bipolar cores larger than 5 cm were predominantly quartz and quartzite.

Table 12.33 Bipolar Cores and Size Grades

Material Type	Unsized	<1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	>5 cm	Total
Chert	10	0	0	3	7	15	10	45
Jasper	34	0	1	11	38	37	25	146
Quartz	4	0	0	1	4	16	24	49
Quartzite	0	0	0	0	1	1	6	8
Total	**48**	**0**	**1**	**15**	**50**	**69**	**65**	**248**

Debitage

Debitage were separated into two basic categories: flakes and chips. Flakes were defined by the presence of identifiable attributes such as bulbs of percussions, platforms, dorsal flake scars, and feather, snap, or hinge terminations. Chips, also known as shatter, represented small angular pieces of lithic material with no identifiable flake attributes. Over 32,000 flakes were recovered from Hickory Bluff (Table 12.34). Flakes represented 94 percent of the total debitage assemblage; chips represented only 7 percent. The majority of lithic materials in the debitage assemblage were jaspers (51 percent), quartz (22 percent) and cherts (12 percent).

Table 12.34 Debitage Frequencies

Material Type	Flakes	Chips	Total
Andesite	2	0	2
Argillite	616	1	617
Chalcedony	359	6	365
Chert	3636	220	3856
Ironstone	638	3	641
Jasper	15723	661	16384
Quartz	5897	1080	6977
Quartzite	1117	53	1170
Rhyolite	2127	3	2130
Sandstone	15	0	15
Schist	2	1	3
Siltstone	73	4	77
Steatite	0	6	6
Total	**30205**	**2038**	**32243**

Debitage were cataloged by size grade; artifacts from the previous investigations were not sized during this study. Most debitage (flakes and chips) were 1-2 cm in size (Tables 12.35 and 12.36). Smaller percentages of flakes occurred in the larger size grades whereas higher percentages of chips (when compared with flakes) were larger (2-3 cm and 3-4 cm sizes). This general pattern of flake/chip size was consistent for each of the major lithic material types (chert, jasper, quartz); however, quartzite debitage demonstrated higher percentages of chips in the 4-5 cm size grade as well as the 2-3 cm and 3-4 cm size grades.

Table 12.35 Flake Size and Lithic Material Type

Material	Unsized	<1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	>5 cm	Total
Andesite	0				1		1	2
Argillite	5	134	349	75	25	18	10	616
Chalcedony	2	91	227	36	2	1		359
Chert	12	919	2160	443	76	22	4	3636
Ironstone	0	123	443	68	4			638
Jasper	16	3910	9628	1762	330	63	14	15723
Quartz	10	1346	3601	712	159	44	25	5897
Quartzite	5	151	601	205	76	43	36	1117
Rhyolite	1	400	1478	216	32			2127
Sandstone	0	1	8	1	2	1	2	15
Schist	0		1		1			2
Siltstone	0	3	51	12	3	1	3	73
Steatite	0							0
Total	**51**	**7078**	**18547**	**3530**	**711**	**193**	**95**	**30205**

Table 12.36 Chip Size and Lithic Material Type

Material	Unsized	<1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	>5 cm	Total
Andesite	0							0
Argillite	0						1	1
Chalcedony	0		2	2		2		6
Chert	1	10	115	54	33	6	1	220
Ironstone	0			3				3
Jasper	5	45	309	189	87	19	7	661
Quartz	1	123	572	259	88	25	12	1080
Quartzite	0	2	20	12	8	8	3	53
Rhyolite	0		1	2				3
Sandstone	0							0
Schist	0		1					1
Siltstone	0			3		1		4
Steatite	4	1	1					6
Total	**11**	**181**	**1021**	**524**	**216**	**61**	**24**	**2038**

COBBLE TOOL ASSEMBLAGE

Cobble tools were used for a variety of tasks including battering, abrading, grinding, and pecking. These tools consisted of rounded cobbles apparently procured from streambeds or otherwise culled from local gravel and cobble deposits. Their sizes ranged from pebble implements to a small boulder employed as a mortar. For the purpose of analysis, they are separated into four functional categories: hammerstones, pitted stones, abraders, and pestles

(Table 12.37). Some cobble tools exhibited multiple use wear and were categorized based on most frequent use type. Two large unique artifacts, consisting of a mortar and an anvil/platform, are discussed separately.

Table 12.37 Cobble Tool Type and Frequency

Cobble Tool Type	Frequency
Hammerstone	79
Abrader	18
Single Pitted Stone	9
Double Pitted Stone	12
Pestle	3
Mortar	1
Platform/Anvil (Feature 173)	1

Hammerstones

Hammerstones constituted by far the most frequent type of cobble tool find (n = 79) and were defined by the presence of at least one battered end or edge (Figure 12.30). Eighty-one percent of the hammerstones were quartzite; 16 percent were quartz (Table 12.38). Seventy-seven percent of the hammerstones (n = 61) were whole cobbles; the remainder were fragments. Mean weights of quartzite and quartz hammerstones were similar (Table 12.39); however, the quartzite sample is skewed because of one large quartzite hammerstone (1143-1) that weighed 1460 gm.

Primary hammerstone use wear consisted of battering on the ends or along edges (Table 12.40). In some cases (ca. 10 percent), end fracturing was observed in the form of single or several large flake or spall removals suggesting heavy impact. Four hammerstones exhibited battering along 80 percent or more of the perimeter (2277-1, 2571-2, EU125/2/A, EU110/3/A). Other types of use wear included single pitted surfaces, abraded surfaces, or a combination of the two. Artifact 2267-1 was a quartzite hammerstone spall with two locations of battering (original tool use) and unifacial microflake removal and rounding along the ventral edge indicating recycling and subsequent use.

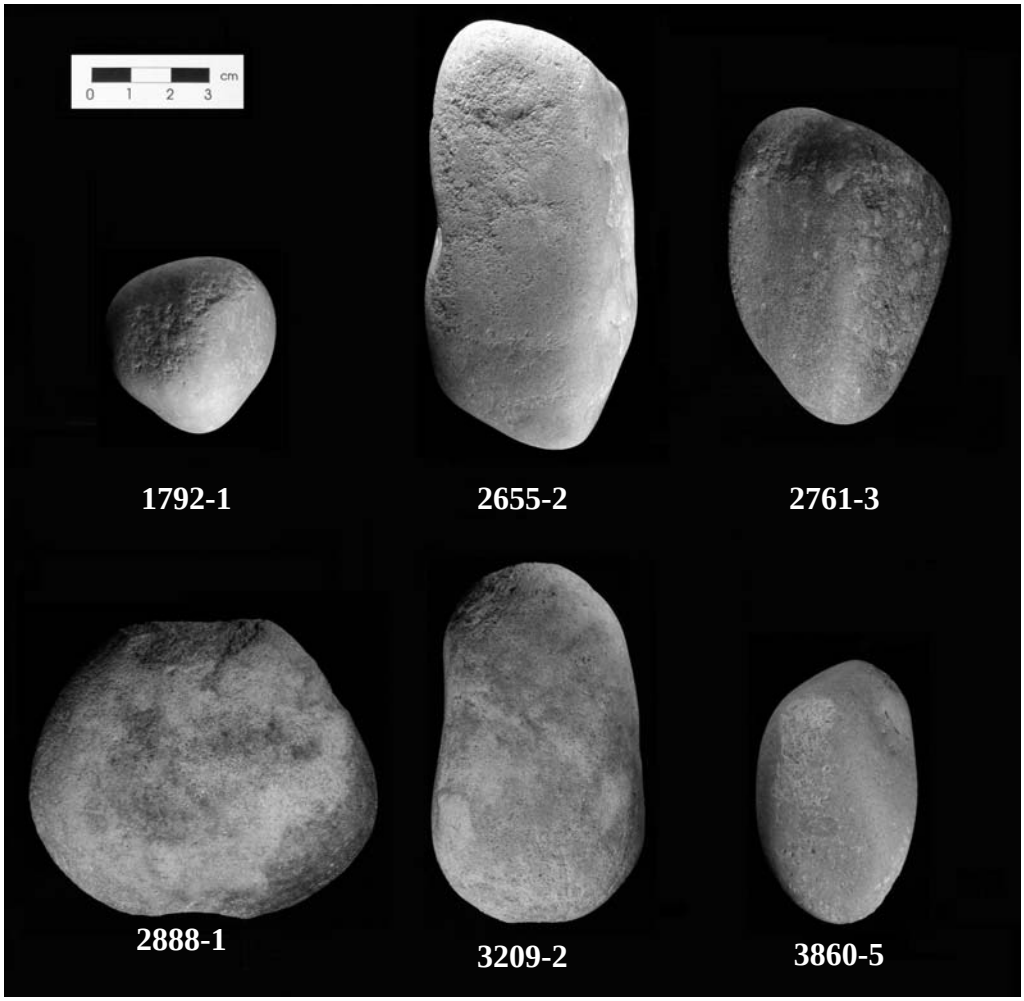

Figure 12.30 Examples of Hammerstones

Table 12.38 Cobble Tool Material Types

Artifact Type	Jasper	Quartz	Quartzite	Sandstone	Siltstone	Total
Hammerstone	1	13	64		1	79
Abrader			17		1	18
Pitted Stone						
Single		1	8			9
Double			11	1		12
Pestle			3			3
Mortar			1			1
Platform/Anvil			1			1

Table 12.39 Whole Hammerstone Weights (gm)

	Quartzite	Quartz
Count	48	8
Range	68.1-1460	167.6-435.5
Mean	269.2	271.4
Standard Deviation	213.65	78.7
Coefficient of Variation	0.79	0.28

Table 12.40 Hammerstone Use Wear

Battered Surfaces	No Additional Use Wear	Type of Additional Use Wear				
		End fracturing	Abraded surface	Pitted surface	Abraded and Pitted surfaces	Utilized edge
Single Surface	18	3		5		
Two Surfaces	21	2	1	4	2	1
Three Surfaces	5	1		2		
Four Surfaces	3		1	1		
Five Surfaces	2					
Perimeter	3		1			
End Fracturing	2			1		
Total	54	6	3	13	2	1

Abraders

A total of 18 abrading tools was recovered (Table 12.41). These tools were identified by areas of intense smoothing on one or multiple edges (Figure 12.31). Raw material used for 17 of the abraders (94 percent) consisted of a very coarse-grained quartzite, or a quartzite containing angular quartz crystals within a quartzite matrix (Table 12.38). A single siltstone abrader was also identified (4272-3).

Table 12.41 Whole Abrader Weights (gm)

	Quartzite
Count	14
Range	29.5-1771.8
Mean	433.5
Standard Deviation	494.9
Coefficient of Variation	1.14

Primary use wear consisted of flat, smoothed, finely ground surfaces; 77 percent (n = 14) exhibited polish on the abraded surfaces. Most of the abraders showed evidence of battered surfaces on the ends or along the edges (Table 12.42); in three cases (663-2, 2379-1, 2984-3), the battered ends may represent intentional shaping rather than use wear. Recessed, pitted surfaces

occurred on seven abraders; two of the seven abraders contained recesses on both faces. Most of the recesses are pitted; however, the two recesses on artifact 2379-1 were ground.

Figure 12.31 Examples of Abraders

Table 12.42 Abrader Use Wear

Abraded Surfaces	No Additional Use Wear	Type of Additional Use Wear		
		Battering	Pitted surface	Battering and Pitted surfaces
Single surface		3		1
Two surfaces				
Three surfaces		2	2	2
Four surfaces	2	2	1	1
Five surfaces		1		
Six surfaces		1		
Total	2	9	3	4

Pitted Stones

Pitted stones were defined as cobbles containing pitted or ground recesses on one or both faces. Pitted stones were separated into two varieties: single pitted or double pitted. Double pitted stones, as defined here, exhibited recesses on opposite faces of the cobble. Twenty-one pitted stones were recovered; 90 percent (n = 19) were manufactured of quartzite (Table 12.38). One quartz and one sandstone pitted stone were also identified.

Single Pitted Stones

Eight pitted stones exhibited a single pitted recess on one face (Figure 12.32). One pitted stone (954-7) contained two recesses: one on the face and one on the edge (Table 12.43). Additional use wear observed on these nine pitted stones consisted of battering on one end.

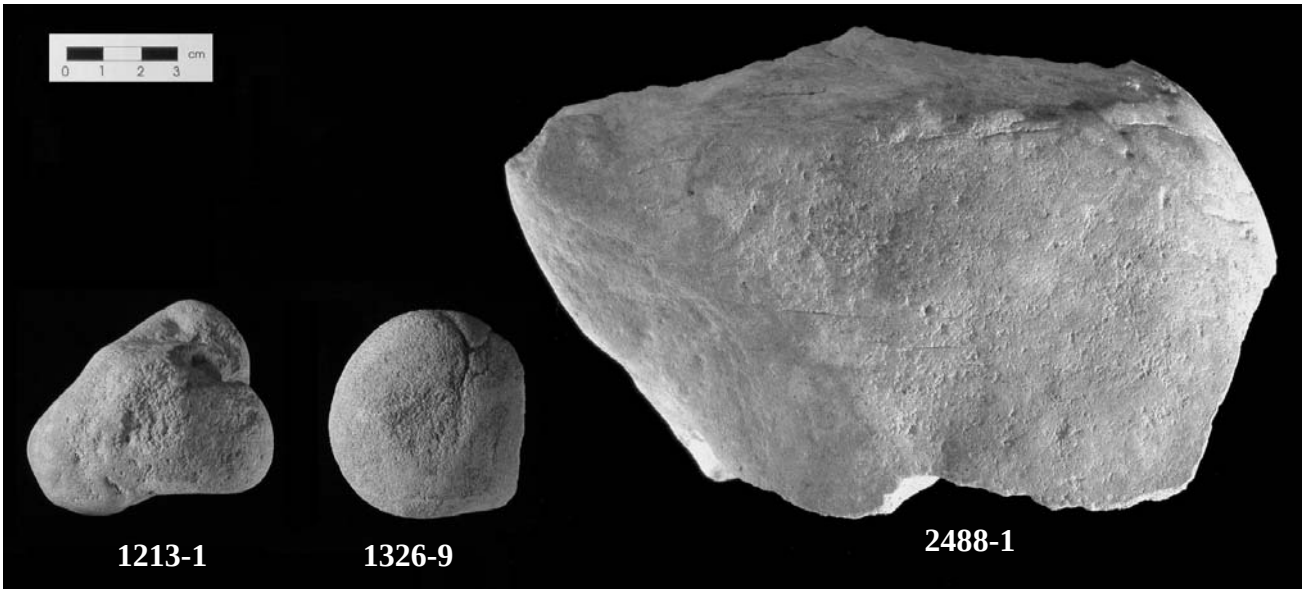

Figure 12.32 Examples of Single Pitted Stones

Table 12.43 Pitted Stone Use Wear

Pitted Surfaces	No Additional Use Wear	Type of Additional Use Wear		
		Battering/ Fracturing	Perimeter Battering	Abraded surfaces
Single surface	6	2		
Double surfaces	3	3	5	1
Two surfaces	1			
Total	10	5	5	1

Double Pitted Stones

Twelve double pitted stones displayed recesses on opposite faces. Artifact 3987-6 displayed two recesses in a figure 8 configuration on each face. On eleven of the twelve artifacts, the recesses were pitted or pecked with irregular contours (Figure 12.33). Artifact Eu/72/9/8 had recesses which were ground. A wider variation of other types of use/wear were observed for these double pitted stones (Table 12.43), including battering on one end, battering along 100 percent of the perimeter of the cobble, and abrading. Complete perimeter battering on five pitted stones suggests shaping rather than actual battering use/wear because of the consistency and rounding of the edges.

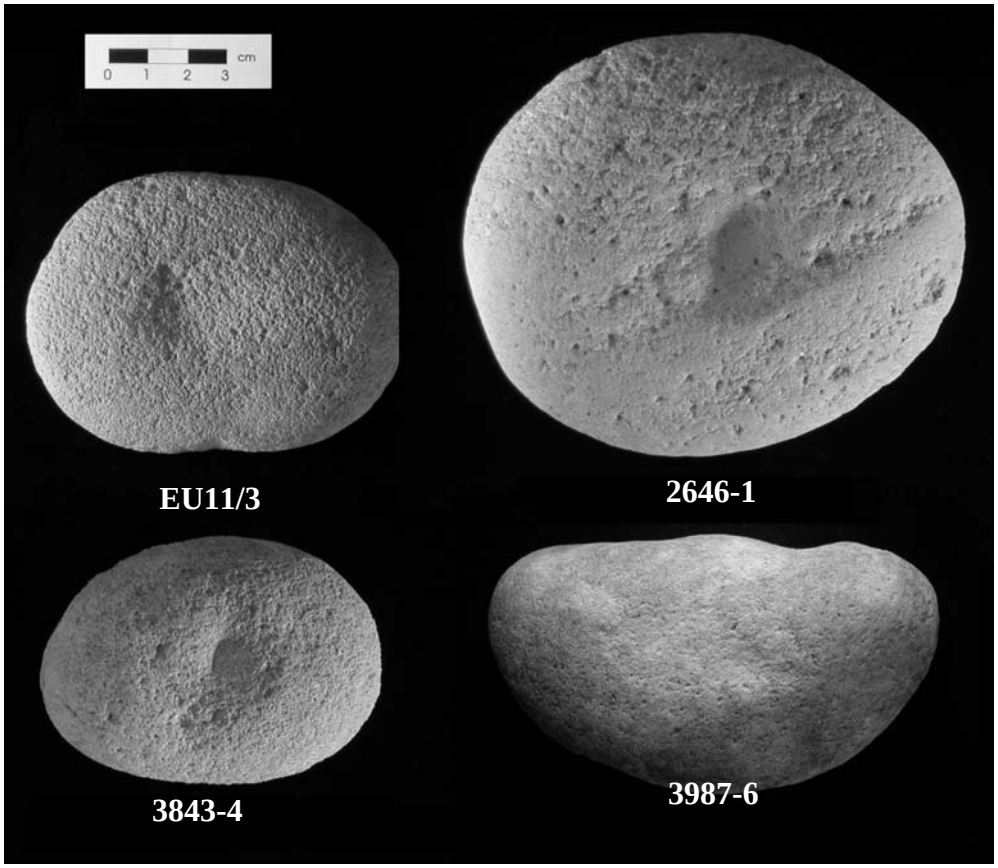

Figure 12.33 Examples of Double Pitted Stones

Pestles

Three artifacts classified as pestles were recovered (Figure 12.34). These tools consisted of elongated quartzite cobbles that exhibited pronounced but restricted wear on at least one of the narrow ends. Artifact 2193-2 was a pestle fragment with battering on the existing end. All four sides exhibited flat faces and polish was observed on one face. Artifact 1126-2 was complete with battering at one end and an abraded surface on the opposite end. Pitting was observed on one side of the pestle and is suggestive of a finger grip rather than use wear. Artifact 2397-2 was also complete with battering at each end and minimal pitting on three sides or faces. The pitting occurred at the midsection of the artifact and may represent finger grips rather than use wear. Artifact 2397-2 was found in a small basin feature (Feature 202) associated with a double pitted stone (2379-1) suggesting that the latter may have served as a mortar.

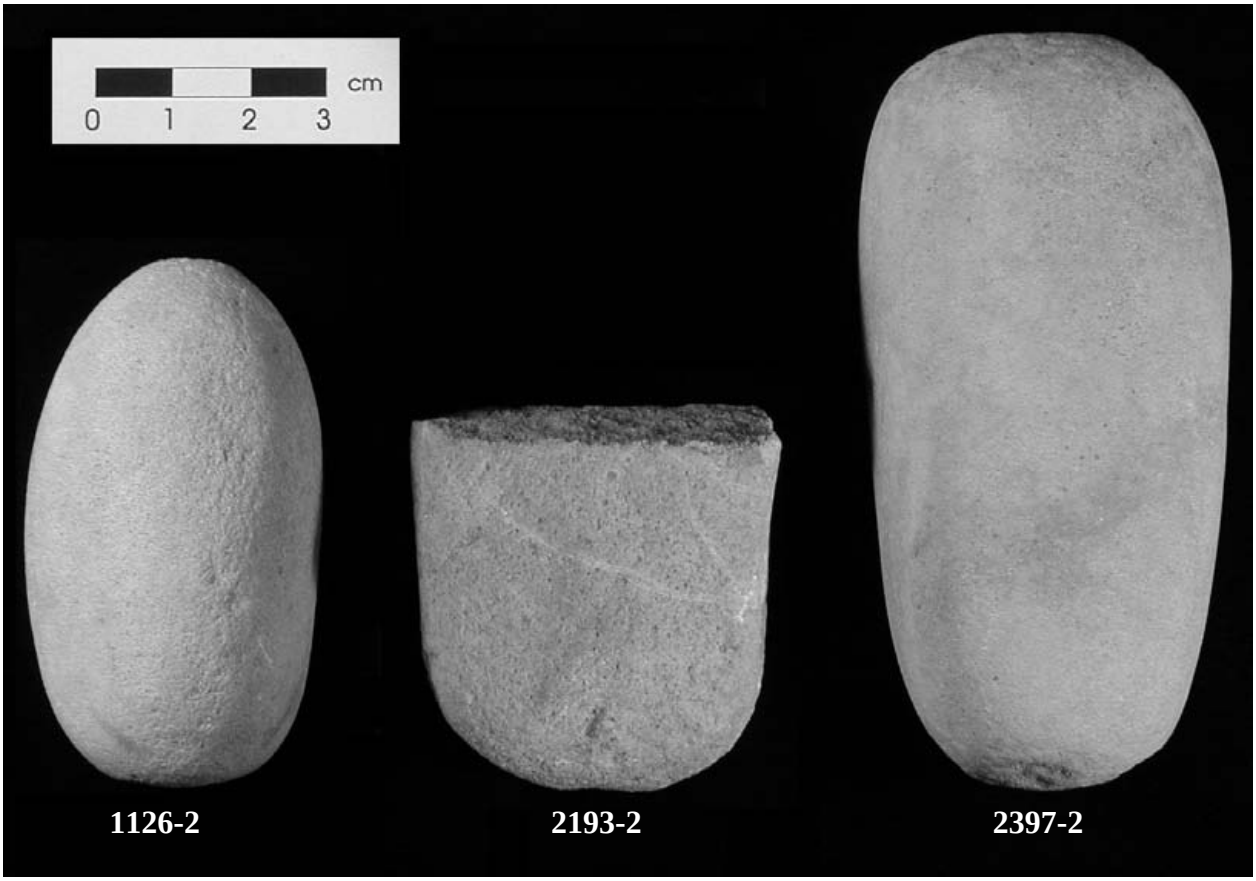

Figure 12.34 Pestles

Mortar

A single example of this artifact class was recovered (1407-1). The specimen consisted of a quartzite boulder with a broad pitted recess present on one side (Figure 12.35). The stone was roughly tabular and measured 32 x 27 x 11 cm. About 80 percent of the surface was pecked with the pitted recess approximately in the center. The pitted recess was circular, 14 cm in diameter, and 11 mm deep. The recess was dimpled rather than ground. Its large mass (1.36 kilos) would have likely precluded extensive overland transport and the artifact can be thought of as "site furniture" (Binford 1978) left on location and used during return visits, or even across cultural components.

Figure 12.35 Mortar (1407-1)

Possible Anvil/Platform

A single find is representative of this type. This artifact was classified as a fire-cracked rock feature (Feature 173) and was recorded in the form of a cluster of quartzite fire-cracked rock fragments. The fire-cracked rock fragments comprising Feature 173 proved to refit into a single boulder (Figure 11.48). Reconstructed, this artifact was tabular in form, measuring 43 x 18 x 8 cm. Total weight was 9.32 kilos, although an estimated 20 percent of the original boulder mass was not recovered. Some intact cortex was present along the lateral sides of the reconstructed boulder. No discernable cortex was observed on the dorsal and ventral faces of the rock. The lack of cortex may reflect differential wear or weathering. No grooves or recesses were evident.

GROUND STONE ASSEMBLAGE

The ground stone assemblage from Hickory Bluff was extremely sparse. Ground stone items were limited to two celts, three slate artifacts, and two small slate fragments. The celts consisted of a ground stone fragment and a quartzite cobble. Two of the slate artifacts were gorget fragments. The third slate artifact was a semi-lunar knife or ulu.

Celts

One artifact (2400-1) was a distal fragment of a celt manufactured from grey/cream granite (Figure 12.36) and it weighed 68.2 gm. Both surfaces were heavily polished and smoothed culminating in a 63° edge angle. Multiple striations were visible on both faces with the majority occurring perpendicular to the tool edge. Some striations were oblique. The tool edge exhibited use wear in the form of irregular flake removal and crushing.

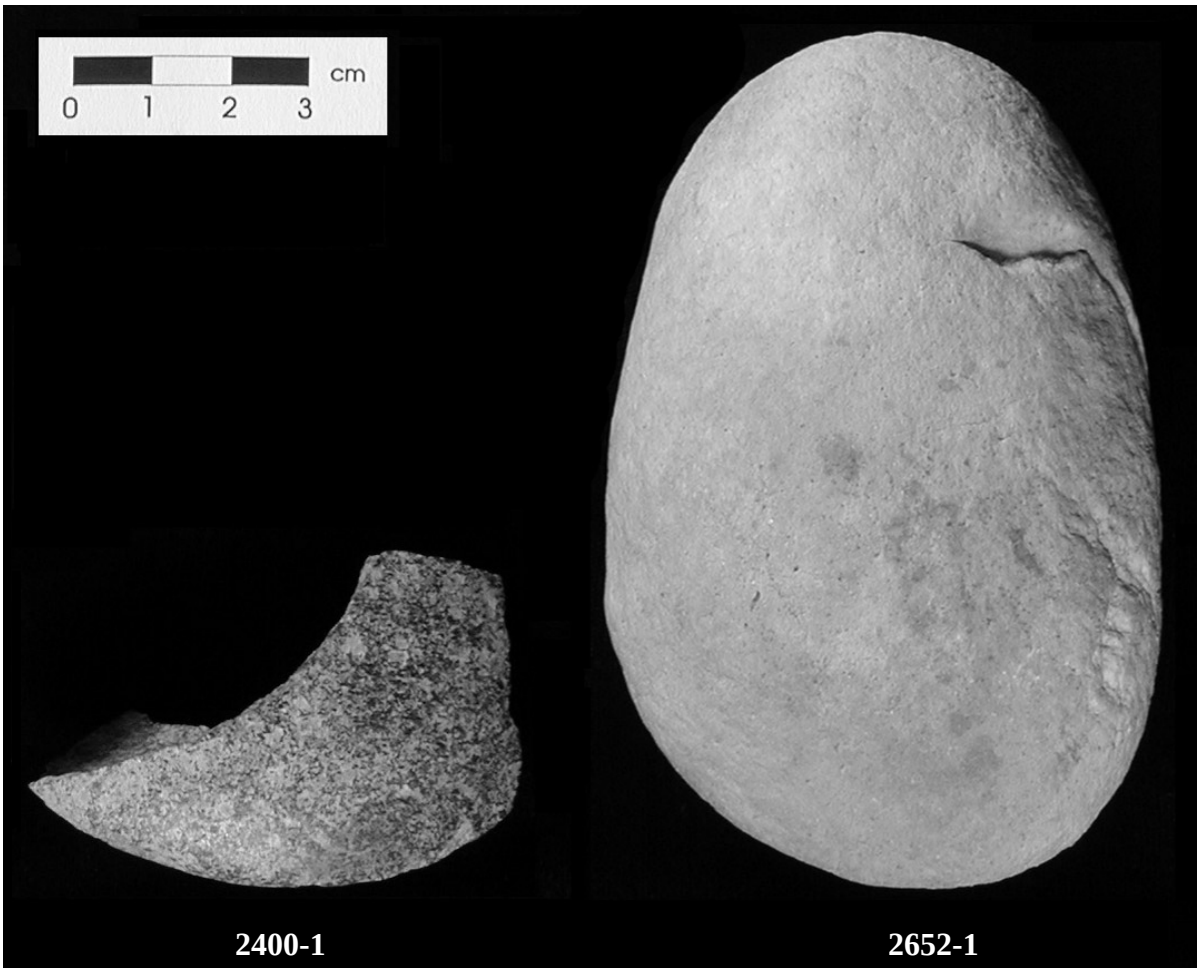

Figure 12.36 Celts

Another celt (2652-1) was a complete oval quartzite cobble measuring 10.8 x 7.04 x 3.72 cm and weighing 402 gm. The dorsal side of the artifact was heat altered (i.e., reddened) and exhibited a faint curved groove located more than a third of the way from the proximal end (Figure 12.36). A small abraded area was observed at the terminus of the faint groove with one edge. The ventral side was relatively flat with a large crack across the proximal end. Two small cracks occurred on the dorsal side. The proximal end of this artifact was heat altered (i.e., reddened) with evidence of battering on the rounded end. The distal end was heat altered (i.e., blackened) with battering on this rounded end. No striations were noted on any surface.

Gorgets

One gorget (2376-1) was manufactured from grey slate (Figure 12.37). This artifact was a rectangular fragment split lengthwise across its two perforations and was also fractured or damaged at both ends. Maximum length was 85 mm with a thickness of 6 mm. Minimum diameter of the perforations were 4.5 mm. A single long incised groove was present along the full length of the intact edge. Regularly spaced incisions or notches (n = 33) were perpendicular to the single long groove. Spacing between the perpendicular marks varied from 2 to 2.2 mm. The bi-conical perforations clearly showed rounded use wear. One broken edge had been ground. Both faces of the artifact exhibit incised lines. The primary face had a linear indentation measuring 28 x 8.7 x 1 mm slanting from right to left. This face contained extensive incising in linear and geometric patterns around the indentation. The second face contained four incised lines in a triangular pattern.

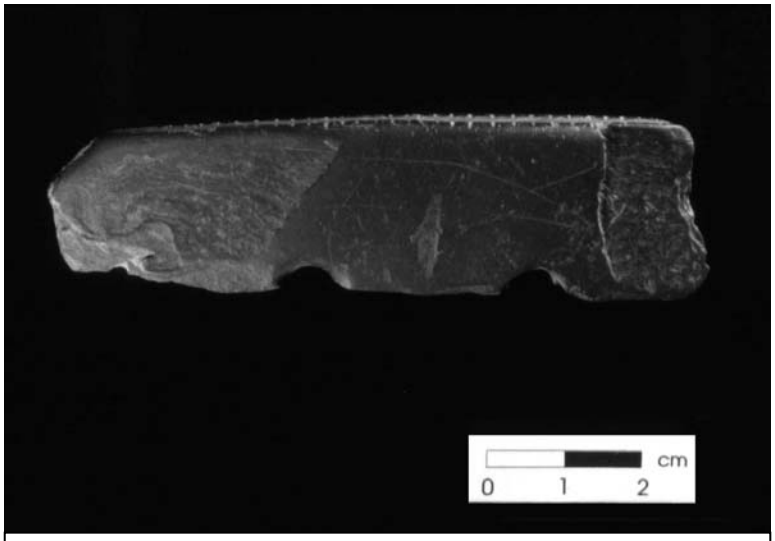

Figure 12.37 Gorget (2376-1)

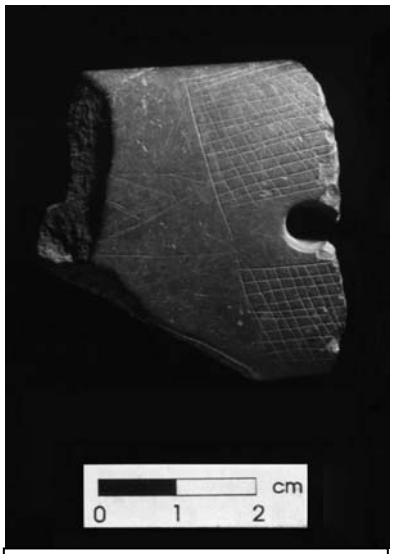

Figure 12.38
Gorget (2377-1)

The second gorget (2377-1) was a medial segment, manufactured from a dark bluish grey (gley-2 5/1) slate (Figure 12.38). It was broken across the short axis through the single bi-conical perforation; the opposite end was also fractured with striations on the edge. Oblique parallel striations were observed on two small areas on either side of a concave edge with perpendicular striations. All other broken edges of the gorget were rounded. Rounding was also evident in the perforation from use wear. The length of the gorget could not be determined but the width was 43 mm. Maximum thickness was 7 mm. Minimum diameter of the perforation was 4 mm and it was slanted at a 60° angle. Only one face of the gorget was incised and that face was distinctly convex. The obverse side is flat and devoid of any markings. The incised decoration on this gorget was complex with rectangularly bounded cross-hatching and V-shaped areas with cross hatching. The rectangular cross hatching occurred on either side of the single perforation leaving a 9.1 mm unmarked area between the patterning. The cross hatching was connected by a single outside line. The two cross hatched areas consisted of 11 by 9 lines and 16 by 11 lines. The incised lines parallel to the perforation were relatively straight whereas the perpendicular lines were curved. Two V-shaped

areas were present opposite the perforation. In one V-shaped area, the cross hatching consisted of 4 by 1 lines; the cross hatching in the other area was 3 by 4 lines. The primary incised lines were slanted in opposite directions between the two V-shaped areas.

Stone gorgets have been recovered from numerous sites in the Mid-Atlantic states including Delaware (the St. Jones Adena site [Thomas 1976], the Frederica site [Jones 1965], Killens Pond [Dent 1990], and the Wilgus site [Custer 1989]), Maryland (the West River site [Ford 1976] and the Sandy Hill site [Ford 1976]), New Jersey (Abbott Farm [Cross 1956], Rosekrans site [Kraft 1976] and the Scott site [Mournier 1981]), and Virginia (Bowman Mound, Lewis Creek Mound and John East Mound [MacCord 1985b]). The Delaware, Maryland and New Jersey sites are associated with the local Adena/Middlesex manifestation (500 B.C.-A.D. 335: Dent 1995:232); the three Virginia mound sites are later and date from A.D. 900-1300 (MacCord 1985b).

Gorgets may assume a variety of shapes such as rectangular with excurvate sides, rectangular with incurvate sides (bow-tie), bar, circular, ovoid or trapezoidal. They may have one, two, three or more perforations, drilled bi-conically or uniconically. Lithic materials used for gorgets recovered in the Mid-Atlantic include Ohio Shales, greenish Huron shale, banded slate, Laurentian Banded Slate (Ohio), Peach Bottom slate (Pennsylvanian slate), red Triassic shale, schist, sandstone, argillite, steatite, and hematite (Cross 1956:97; Ford 1976:82; Kraft 1976; Thomas 1976). Most gorgets recovered in the Mid-Atlantic are undecorated although some exhibit notching along the edges and incising on the faces.

Twelve percent of the gorgets (n=20) from the Sandy Hill site were notched on two or more edges (Ford 1976:82). Most notching occurred on the ends of the rectangular gorgets; however, some notching also occurred on the lateral edges (Ford 1976: Figure 24h, Figure 26b, 26d, Figure 28n, Figure 29e, 29l, Figure 30g, 30q). Several notched gorgets also were recovered from Abbott Farm (Cross 1956:98).

Seven gorgets with incised designs on one or both faces were identified at the Sandy Hill site (Ford 1976: 82). One two-hole gorget (Ford 1976: Figure 29d) was incised on both faces with triangles, transverse lines and crosshatching. A three-hole hematite gorget exhibited horizontal lines with diagonal crosshatching on both faces (Ford 1976: Figure 30p). Burial 5 at the Rosekrans site contained a two-hole banded slate gorget with notching/incising on the face and ends (Kraft 1976). The ends displayed notches or incisions across the edges; one face was decorated with a vertical line with 60 short perpendicular lines below (Kraft 1976:22, Figure 9c). At Abbott Farm, several gorgets were incised with lines, but no formal designs were apparent (Cross 1956:98).

Wear within the holes and on the face between the holes was observed on 37 two-hole gorgets from Sandy Hill (Ford 1976:82). The wear was presumably the result of rubbing from knotted cords threaded through the gorget holes. Similar wear was observed on one gorget from Burial 1 at the Rosekrans site (Kraft 1976:15).

Although most gorgets appear to be associated with burials and cremations, other examples have been recovered from non-feature contexts. Some gorgets found in non-feature contexts at Abbott Farm were located at the surface to depths of 71 inches below the surface,

averaging 16.2 inches below the surface. Most of the gorgets recovered were fragmentary (Cross 1956:97). Ten of the gorgets from the Sandy Hill site were incomplete and identified as 'intentionally mutilated' (Ford 1976: 82) suggesting ritual activity. Gorgets that appear intentionally broken or symbolically killed are sometimes found in mortuary contexts. However, the ground and polished breaks on the Hickory Bluff specimens suggest that they continued to be handled or worn after the damage had been incurred.

Semi-Lunar Knife or Ulu

A third ground slate artifact (3481-1) found at Hickory Bluff consisted of a fragmentary semi-lunar knife or ulu (Figure 12.39). The fragment is a medial section, with both ends missing; some spalling and pot-lid fracturing was also evident. Visually, the color of the slate was a uniform grey; however, when viewed under a 10x lens, the slate was peppered with small black round inclusions. The extant portion measured 62 mm in length. Blade thickness was a nearly uniform 6 mm. Multiple striations, presumably from initial manufacture were observed on the ulu. A pronounced raised ridge, 10 mm wide, was present on the backside of the ulu. The top of the raised ridge contained mostly oblique and parallel striations with an occasional perpendicular mark. The sides of the raised ridge also exhibited oblique and parallel striations; polish was observed on a portion of the raised ridge where previous fracturing had occurred. This polish suggests continued use after the fracturing. The raised ridge was also reddened in places. The lip of the raised ridge where it joined the blade exhibited exclusively parallel striations on both sides.

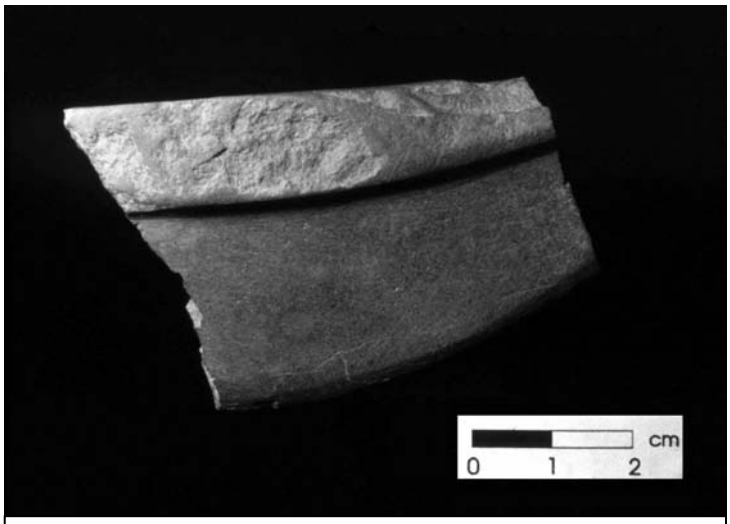

Figure 12.39 Ulu (3481-1)

The ulu blade faces also contained striations. Parallel striations were observed on both faces; one face also had oblique striations. The distal portion of the blade was beveled, approximately 2.5 mm from the edge on each face. Parallel striations were obvious on each beveled surface. The edge angle was 50°. Use wear on the edge consisted of two isolated flake removals creating concavities, and small bifacial microflake removals and rounding along the entire length of the edge.

The term ulu comes from the contemporary Eskimo semi-lunar blade tool known as a "women's knife" (Snow 1980:193). Semi-lunar knife forms that have been recognized include chipped stone examples, often made of chert or quartzite, and ground and polished examples, usually made of slate. Of the slate knives, some have a raised ridge that would serve as a handle on the edge opposite the sharpened edge and others simply have an inscribed line that divides the blade from the handle. Examples that lack the raised ridge often have perforations or deeply scribed areas that would have helped secure a wooden or bone handle to the blade (Willoughby

1973; Turnbaugh 1977; Banks 1998). Three styles of semi-lunar knives or ulus have been identified (Turnbaugh 1977:90); the ulu from Hickory Bluff represents the type with an offset ridge which serves as a grip.

Functional interpretations of semi-lunar slate knives are based on observations of groups that have used them in historic times. Banks (1998) outlined ethnographic descriptions by Swan (1870), Osgood (1940), and Birket-Smith (1959) among others, of groups from the Northwest Coast, Alaska, the Arctic Bay area, and Greenland, where the slate semi-lunar knife was used primarily for cleaning and preparing fish. Other functions included seal butchering, and cutting and scraping seal skins to make clothing. Where it has been recorded in historic times, the slate semi-lunar form has been used almost exclusively by women, while men used the more dagger-like knife forms.

Ritchie (1965) described the semi-lunar knife as a trait of the "Laurentian" Late Archaic cultural continuum that developed in southeastern Ontario, southern Quebec, northern New England and northern New York State. A wide distribution of slate knives has been described from sites in Connecticut (Banks 1998), Massachusetts (Dincauze 1976; Snow 1980), New York (Ritchie 1965), Quebec (Turnbaugh 1977), Rhode Island (Turnbaugh 1977), and Vermont (Ritchie 1965). Although not common, semi-lunar knives also have been recovered south of that core area (Turnbaugh 1977:91). In the Mid-Atlantic, at least nine examples of semi-lunar knives were recovered from Abbott Farm near Trenton, New Jersey (Cross 1956). Farther to the south, at least sixteen semi-lunar knives have been recorded in coastal southeastern Virginia and along the Dismal Swamp margins (McCary 1974:55-58, 1975:80-83, 1977:136-137; Reynolds 1964:87-88; Smith and McCord 1974:229; Traver and Pritchard 1964). Recovery of semi-lunar knives from archaeological sites in Delaware, however, appears to be rare.

Good excavation contexts for ulus are limited. At the Bent Site in the Mohawk Valley, an ulu was associated with a Normanskill horizon dated at ca. 2000 B.C. (Turnbaugh 1977:89). At the Wapanucket #6 site in Plymouth County, Massachusetts, an ulu was recovered from a cremation burial radiocarbon dated at 2350 B.C. + 250 (Turnbaugh 1977:89). Another ulu was reported for this site, which yielded a second radiocarbon date of ca. 2300 B.C. from a hearth feature context (Ritchie 1965:35). More recently, excavations at the Indian Hill Site in Connecticut recovered five ulu fragments associated the Golet Phase of the Late Archaic (McBride 1984). In Connecticut, the Golet Phase is associated with the use of Otter Creek, Vosburg and Brewerton projectile points. Radiocarbon dates reported for Golet Phase sites range from 2775 B.C. to 2220 B.C. (McBride 1984).

The Hickory Bluff ulu was recovered in the same vicinity as the slate gorgets and in spatial association with a small thermally altered stone feature (Feature 296) in Block G. This feature dates to A.D. 1300 to 1425 (Late Woodland) (Table 6.1). Also recovered in close spatial association with the dated hearth was a large untyped stemmed projectile point. It is likely that the projectile point, ulu, and hearth are representative of two, or perhaps three, separate occupations. The ulu at Hickory Bluff did not occur within a datable context.

Slate Fragments

Two small fragments of slate were also recovered (986-27; 1631-1). These fragments weighed 0.1 and 3.3 gm.

OTHER LITHIC OR MINERAL ARTIFACTS

Several other artifact types or materials were also recovered from the Hickory Bluff excavations and included fragments of ochre, mica, and steatite (Table 12.44). Most of the ochre occurred in pebble form, was reddish/orange in color, and weighed 28.6 gm total. One ochre fragment was larger (3177-2) occurring in tabular form and weighing 30.4 gm. This fragment exhibited a bifacially worked edge with an edge angle of 68°.

Table 12.44 Other Artifact Types

Catalog No.	Artifact Type	Weight (gm)	Comments
513-7	Ochre	2.7	Pebble
913-16	Ochre	2.7	Pebble
925-12	Ochre	3.4	Pebble
966-25	Ochre	7.6	Pebble
977-12	Ochre	0.8	Pebble
980-11	Ochre	3.4	Pebble
1705-16	Ochre	1.9	Pebble
1806-17	Ochre	0.2	Pebble
1838-46	Ochre	4.6	Pebble
1849-26	Ochre	0.6	Pebble
1896-14	Ochre	0.3	Pebble
2208-12	Ochre	0.4	Pebble
3177-2	Ochre	30.4	Tabular
82-2	Mica	0.8	
645-19	Mica	0.1	
1442-28	Mica	0.2	
1447-33	Mica	0.4	
1954-25	Mica	0.2	
1925-1	Steatite	1.1	Chip
1943-6	Steatite	0.2	Chip
2445-1	Steatite	1.2	Chip
2057-1	Steatite	97.7	Slab

Five fragments of mica were recovered and weighed 1.7 gm total. The largest fragment was 19.5 x 15.7 x 2.3 mm.

Four fragments of steatite were collected. Three pieces were small chips, weighing a total of 2.5 gm. The fourth fragment (2057-1) was large, measuring 7.85 x 6.34 x 1.72 cm. The irregularly shaped fragment was a light grey/tan and was very porous with numerous natural cavities on both faces; at least one cavity penetrated through the entire thickness. The dorsal surface was irregularly shaped with only one area that appears to have been culturally ground

and polished but no striations were observed. The ventral surface was highly ground and polished creating a smooth but porous surface; no striations were noted. The ventral surface was slightly concave, although exact curvature could not be determined. The four edges of the steatite slab were irregular and unpolished.

CERAMIC ASSEMBLAGE

Emphasis was placed on the analysis of the ceramic assemblage recovered at Hickory Bluff as few sites have provided large data sets with discernable technological and functional information. While individual sherds were tabulated, the vessel lot became the basis for much of the analysis (e.g., Sassaman 1993:89-90). In a regional example of the worthiness of such an approach, Stewart (1998a:233-254) studied the Abbott Farm ceramic assemblage, noting how surface treatment, temper, and/or other formal traits may vary significantly within the same vessel. Moreover, a more traditional approach using sherd analysis tends to overstate the abundance of ceramics on a site, especially if larger storage vessels occur in relative abundance on a site. Additionally, surface treatment and decoration may be restricted to the rim of a vessel, the sherd unit analysis tends to bias the sample in favor of plain or undecorated examples.

While it would be nearly impossible to definitively sort the dispersed and fragmented sherds into absolute vessel groups, the vessel "lot" represents sherds whose pastes and surface treatments match in every way to the naked eye. While we can be relatively certain that sherds from a single vessel are not represented in more that one vessel lot, it is possible that a vessel lot could actually represent more that one vessel. Classification by vessel lots is based upon the identification of specific artifact attributes and comparisons, as opposed to a more generalized typological approach (e.g., Chilton 2000). Grouping the sherds in this way also offered an advantage over some traditional minimum vessel counts, because body sherds were utilized in addition to rims. The use of the vessel lots therefore seemed to provide a more reliable and consistent description of ceramic frequencies and variability.

Methodology

Excavations at Hickory Bluff yielded 7,625 Native American ceramic sherds grouped into 11 major categories (Figure 12.40, Table 12.45) and 3 other ceramic artifacts. Each sherd was examined individually for six attributes: temper, interior surface treatment, exterior surface treatment, decoration, weight, and thickness. After this analysis, the collection was sorted visually into broad categories based on temper and dominant surface treatments. Sherds greater than 2 cm in diameter were subjected to cross-mending, which was undertaken in order to reunite sherds from individual vessels and restore as many portions of vessels as possible. Cross-mending also provided an early indication of the range of variation that could be encountered on a single vessel and information on postdepositional disturbances to site contexts and vessel breakage patterns.

The ceramic assemblage was analyzed by vessels lots rather than by individual sherds. Vessel lots were determined on the basis of sherd mends and cross-mends, paste attributes, interior and exterior surface treatment, and vessel form. After assigning sherds to individual vessel lots, the lots were grouped into more traditional wares and types.

The ceramic paste attributes displayed a wide variation and were the most important criteria for separating vessel lots. Temper was identified first by visual inspection, to determine the dominant material and the variety of inclusions in a given sherd. Measurements were taken in mm to quantify the range of particle size.

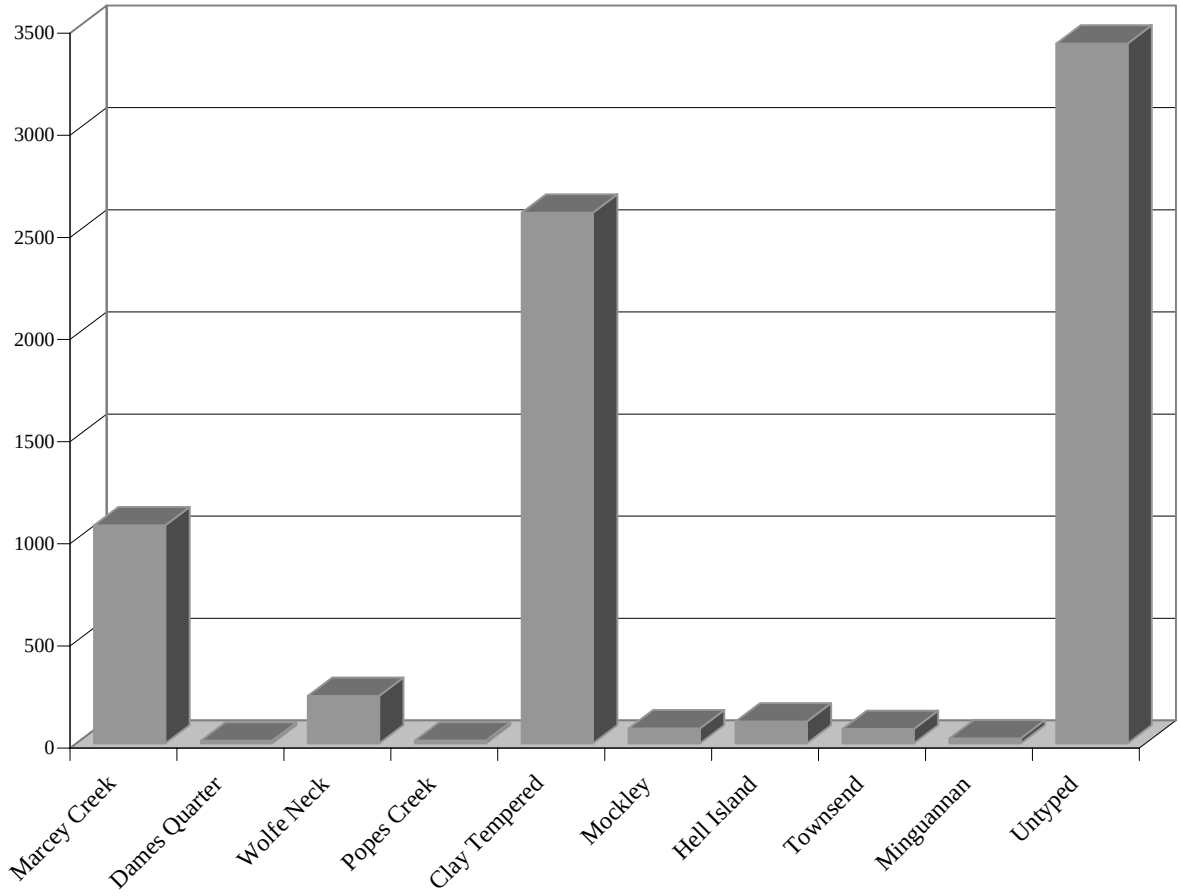

Figure 12.40 Ceramic Types Identified within the Hickory Bluff Assemblage

Table 12.45 Ceramic Assemblage

Ceramic type	Frequency	Percent
Marcey Creek	1068	14
Dames Quarter	13	<1
Wolfe Neck	233	3
Popes Creek	14	<1
Clay Tempered	2598	34
Mockley	74	1
Hell Island	107	1
Townsend	70	1
Minguannan	25	<1
Untyped	3423	45
TOTAL	7625	100

Next, the texture was recorded, using somewhat subjective terms, to characterize the feel and describe the relative blend and compaction of the paste. The predominant color for the vessel lots also was recorded for the exterior, interior, and core of a representative sherd, using a Munsell® Color Chart. When differences were evident, either between sherds or areas on the vessel, all the major color distinctions were recorded and locations noted. Color differences on sherds and within lots could signify a variety of causes: postdepositional weathering, differential exposure to heat either prior to, during, or after the use-life of the vessel, or variations in the relative moisture of the clay during manufacture. This process helped to illustrate the variety exhibited within and between vessel lots of a single ceramic type.

Surface treatment on both the exterior and interior of sherds was examined for evidence of scraping, smoothing, adherent residue, finger impressions, fabric/mat impressions, cordage or net impressions, and any other surface variations present. When applicable, information regarding cordage twists, size, and orientation was also recorded. This information was gathered to display the general attributes of the lot, as well as the individual peculiarities that may be displayed on a single sherd within a lot.

Decoration was recorded separately from surface treatment, as it implied a much more specific attempt to control appearance, which may also carry further symbolic meaning for the makers and users of these ceramics. Decorative motifs were recorded by location on the vessel and type.

Information regarding vessel form was gathered to the fullest extent possible given the fragmentary nature of the vessels. Descriptions were prepared for three portions of a vessel: lip, rim, and body/base. Measurements (in mm) were recorded for the full range of sherd thicknesses, and recorded for each of these sub-areas. Lip descriptions included variations of flattened, thickened, rounded, or pointed. For rim segments, degree of tapering and/or angles between sections were recorded in addition to form (i.e. straight, everted, inverted). Base and body sherds were examined to determine vessel shape, type of manufacture (modeled or coil), breakage patterns and, when applicable, volume capacity.

After assigning individual lot numbers, these analytical units were compared to the known wares and types established in the Delmarva and Mid-Atlantic region. Vessels or lots were then classified to the extent possible into these known types (later sections of the report). The examination of the collection in the framework of established ware typologies was conducted to facilitate the discussion of chronology and help highlight the similarities and differences of the Hickory Bluff assemblage to others in the region.

A total of 1,591 ceramic sherds were 2 cm or greater in diameter and examined in this study. Of these 1,101 sherds were divided into 86 unique vessel lots (Appendix I). After recording lot attributes both quantitatively and qualitatively, they were compared to and defined within the framework of known regional wares. The lots represented vessels that spanned the Early through Late Woodland periods. Early Woodland wares included 12 vessel lots of Marcey Creek, 2 vessel lots of Dames Quarter, and 6 vessel lots of Wolfe Neck. Clay Tempered ceramic wares dominated the assemblage and represented both cord marked and net impressed varieties. They ranged across the Early Woodland and Middle Woodland, and were represented by 41 vessel lots. More “traditional” Middle Woodland wares included 2 Popes Creek vessel lots, 9

Mockley vessel lots, and 4 Hell Island vessel lots. Late Woodland period vessels comprised the smallest category with only 4 Townsend vessel lots and 1 Minguannan vessel lot. Additionally, 5 more vessel lots could not be confidently placed into any of these known regional wares.

Ceramic Type Descriptions

Marcey Creek Ware

Marcey Creek ware, characterized by steatite (or soapstone) temper, a rectangular shape, flat bottom (often with a mat impression), thick vessel walls, and a large vessel orifice to height ratio, represented the earliest ceramic container technology in the Delmarva and the larger Mid-Atlantic region (Figures 12.41, 12.42, and 12.43). In the Mid-Atlantic region, Marcey Creek pottery dates from 1220 B.C. to 950 B.C. (Dent 1995) and, in Delaware, Artusy (1976:2) has indicated a temporal span of 1200 to 900 B.C.

A total of 1,068 Marcey Creek sherds were recovered, from which 12 vessel lots were identified (Table 12.46). These sherds were tempered with steatite or a steatite/schist, which ranged from very soft and soapy, to a rougher and more schist-like texture. The percentage of temper and qualities of the steatite varied between vessel lots. In addition to the steatite or schist, fine pieces of clay, small amounts of shell, and iron oxide inclusions were present in some of the Hickory Bluff Marcey Creek vessels.

In form, they appeared similar to other Marcey Creek flat-bottomed vessels from the Mid-Atlantic region. The exterior and interior surfaces of the vessel walls were plain, and the exterior of the flat bases exhibited impressions of the mats on which they had been formed (Figure 12.42). Other vessels contained narrower coils. Frequently, the interiors of the bases were darkened while the exteriors were distinctly redder in color. Some rim lips were incised with narrow parallel lines perpendicular or oblique to the rim edges (Figure 12.43).

Vessel Lot MA01 was represented by 63 sherds. The vessel lot included forty-three sherds from eight different test units that mended into four groups. In addition, the vessel lot included twenty sherds that were similar in all attributes but did not mend to other sherds in the vessel lot.

Figure 12.41 Range of Variation of Ceramics from the Marcey Creek site, Virginia

Figure 12.42 Mat Impressions on Base of Sherd, Marcey Creek site, Virginia

Table 12.46 Marcey Creek Ceramics

Ceramic type	Vessel Lot	Frequency	Mends	Non-Mends
Marcey Creek	MA01	63	43	20
	MA02	50	32	18
	MA03	36	11	25
	MA04	7	2	5
	MA05	23	8	15
	MA06	36	9	27
	MA07	18	3	15
	MA08	12	2	10
	MA09	6	0	6
	MA10	4	0	4
	MA11	27	16	11
	MA12	3	2	1
	Non-lot	783		
TOTAL	12	1068		

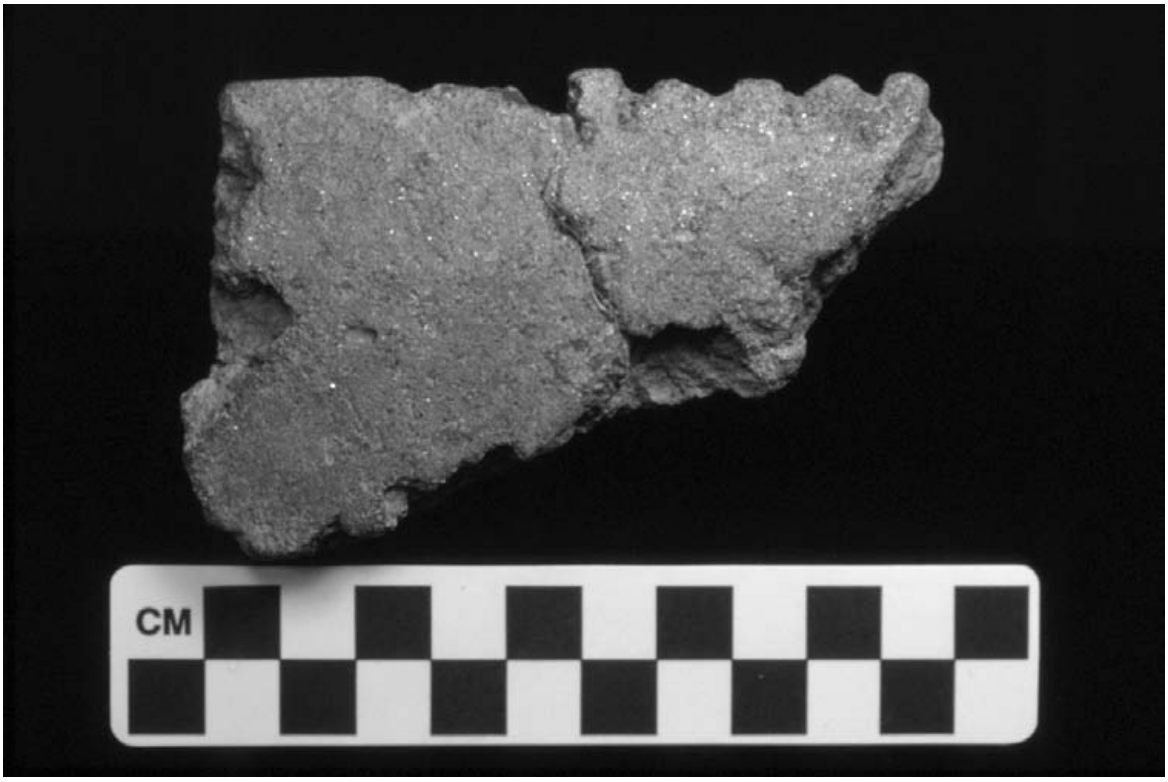

Figure 12.43 Rim Sherd, Marcey Creek site, Virginia

Vessel Lot MA01 was heavily tempered with crushed schist and steatite, which ranged in size from finely pulverized to larger fragments (Figure 12.44). Occasional pieces of iron oxide were also included within the vessel paste. The exterior of the vessel sides were smoothed plain, while the base showed the impressions of the mat on which it was formed. The interior surface was smoothed plain. The available dimensions of the base indicated a large vessel, which was rectangular or oblong in shape. The base of the vessel was flat and formed from joined strips of clay. The sides flared slightly outward and attached to the base with a heel that protruded outward. The sidewalls were formed from wide, flattened coils. The body tapered up to the rim edge. The lip edge was flattened and uneven and exhibited thin, narrow marks placed in a row along the lip perpendicular to the edge. Vessel Lot MA01 was the most complete reconstruction from the assemblage and the sherds that comprised the vessel lot were found clustered in an area approximately 3 x 4 m. It was representative of the majority of the Marcey Creek sherds and its vessel form, temper and paste characteristics, and surface treatment were all typical of "classic" Marcey Creek vessels. In addition, it contained a deep, even darkening of the center portion of the interior of the base, most likely related to the functional use of the vessel (i.e., cooking).

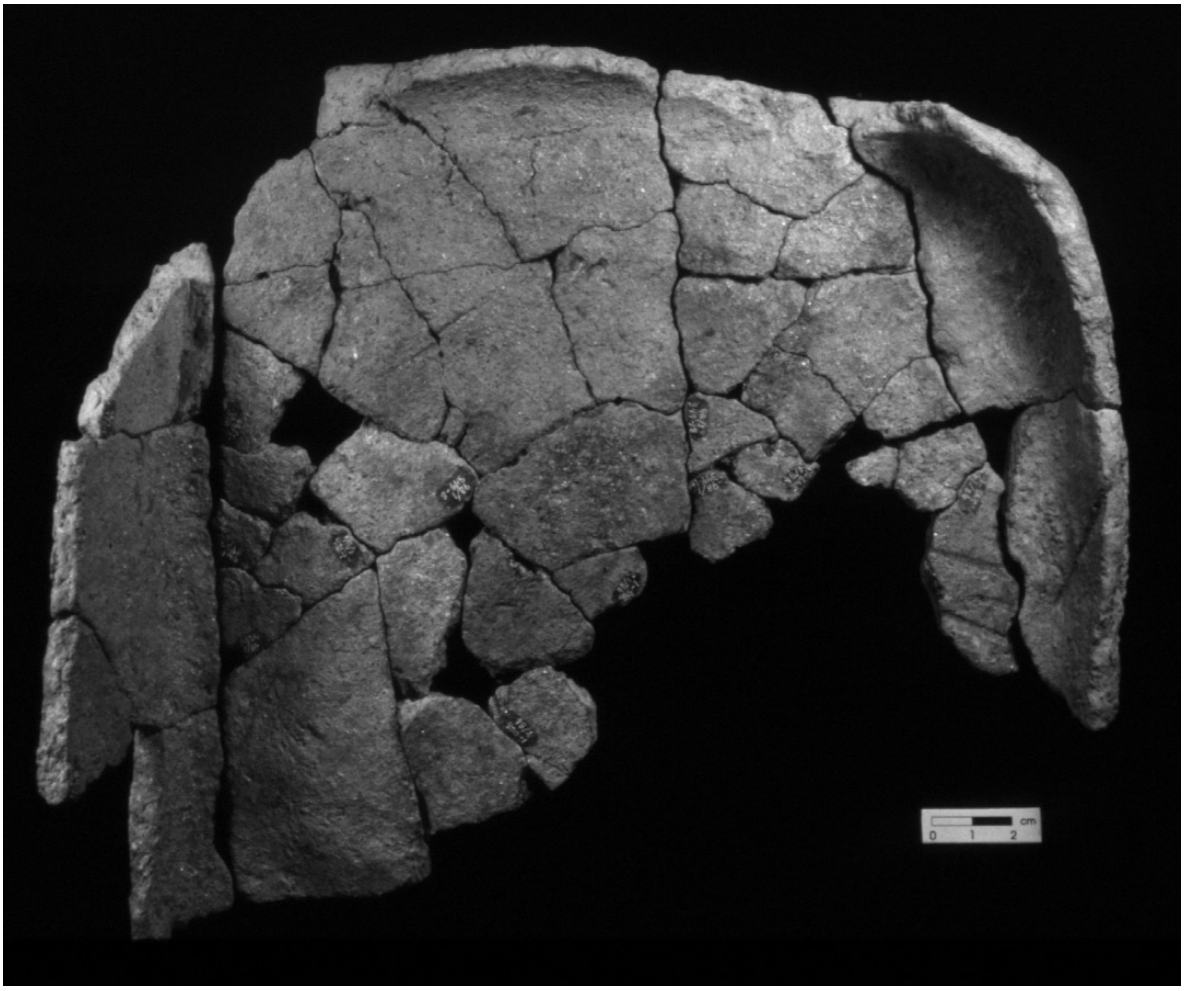

Figure 12.44 Marcey Creek, Vessel Lot MA01

Vessel Lot MA02 was represented by 50 sherds. The vessel lot included thirty-two sherds from seven different test units that mended into six groups. In addition, the vessel lot included eighteen sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Lot MA02 appeared tempered with finely crushed schist and also contained clay inclusions within the paste. The exterior and interior surfaces were both smoothed to create an even surface, but had remnant striation marks still visible. The vessel was manufactured with narrow coils and had thin walls. The partial reconstruction of the body indicated a probable conoidal form, however it could have been a high-sided, flat bottomed vessel. The rim was slightly everted, with flattened and uneven lip thickness. This lot was included as a Marcey Creek vessel because of the temper and smooth surface treatment. However, the lot shared characteristics with Selden Island ware in the thinner coils and probable conoidal form. Unlike the current lot, however, Selden Island vessels appear to have been consistently cord-marked on the exterior (Manson 1948; Egloff and Potter 1982). This lot may represent a regional variation, or transitional form between Marcey Creek and Selden Island ware.

Vessel Lot MA03 was represented by 36 sherds. The vessel lot included eleven sherds from four different test units that mended into five groups. In addition, the vessel lot included twenty-five sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MA03 contained both crushed schist and steatite temper, and iron oxide inclusions within the paste. The surface treatments on both the interior and exterior were smoothed plain and showed some faint remnants of former impressions. The vessel had a flat base and the body was constructed from narrow coils. The vessel rims tapered in thickness toward the rim lip, and showed variable impressions – deep on one sherd, faint on the other. This vessel was unique for having both a flat base and narrow coil construction. It also displayed some variation in temper concentrations and rim impressions that illustrated the range of variability that could be present within a vessel lot.

Vessel Lot MA04 was represented by seven sherds. The vessel lot included two sherds from two different test units that mended. In addition, the vessel lot included five sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MA04 was heavily tempered with steatite and dark schist that was angular and created a gritty texture. The paste also included some sand and iron oxide inclusions. The surfaces of the vessel were smoothed plain, although some sherds exhibited remnant impressions of a thick fabric or mat. The vessel had a flat bottom and slightly everted or flaring walls. The rim had an indentation that formed a slightly raised and separate band around the vessel. The vessel was constructed with wide coils and exhibited finger depressions from the construction process. It also displayed variation in temper concentrations.

Vessel Lot MA05 was represented by 23 sherds. The vessel lot included eight sherds from three different test units that mended into three groups. In addition, the vessel lot included fifteen sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MA05 was tempered with schist and steatite that were unevenly distributed throughout the paste. The paste also contained iron oxide inclusions. The surfaces of both the exterior and interior were smoothed plain and showed faint impressions from the smoothing process. In addition, the exterior of the base displayed distinctive fabric/mat impressions that had deep, parallel, linear elements. The vessel had a flat-bottom, slightly protruding heel, and

flared vessel walls. The bottom and sides of the vessel were constructed of thick coils. The vessel displayed distinct differences in paste coloration and basal exterior impressions, but maintained similar construction characteristics to other Marcey Creek vessels, such as Vessel Lot MA07.

Vessel Lot MA06 was represented by 36 sherds. The vessel lot included nine sherds from eight different test units that mended into four groups. In addition, the vessel lot included twenty-seven sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MA06 was tempered with schist and steatite, which had small particles on the surfaces and larger fragments within the cross-sections of the vessel. The exterior and interior surfaces were smoothed plain. The exterior surface of the base, and near the heel, showed remnants of indeterminable impressions, while the interior walls displayed evidence of light scraping. The vessel had a flat bottom and flared walls. The walls varied in thickness; the upper-wall sherds were thicker than the lower wall sherds. The rim was slightly everted and had a flattened lip edge. The vessel was constructed from wide coils and showed evidence of spalling that suggested that the joints were not solidified and the walls not well-compacted.

Vessel Lot MA07 was represented by 18 sherds. The vessel lot included three sherds from two different test units that mended into one group. In addition, the vessel lot included fifteen sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MA07 was tempered with schist and steatite fragments that ranged in size and were unevenly distributed throughout the paste. Rounded iron oxide fragments were also evident. The exterior and interior surfaces were smoothed plain, except for the basal exterior surface, which still showed deep impressions from a thick fabric/mat. The vessel had a flat bottom and was constructed of wide coils. Indentations and channels remained, probably related to joining the coils. The orange/red colored paste of Vessel Lot MA07 was distinct from the other lots, while the nature of its temper material was similar to Vessel Lot MA05, which may suggest some overlap in the material sources used.

Vessel Lot MA08 was represented by 12 sherds. The vessel lot included two sherds from two different test units that mended. In addition, the vessel lot included ten sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MA08 was heavily tempered with crushed steatite and dark schist pieces that ranged in size. A range of sizes also was evident in the iron oxide fragments included within the paste. The sherds were eroded and weathered on most surfaces. The surfaces that remained on the exterior and interior were smoothed plain. No information was available about vessel size, shape, or rim characteristics. It was constructed of wide coils. The lot was distinguished by the qualities of the heavy tempering.

Vessel Lot MA09 was represented by six similar sherds that did not mend. Vessel Lot MA09 was tempered with finely crushed steatite and schist, with fine fragments of black, shiny amphiboles from the schist evident on the surfaces. The exterior and interior surfaces were generally smoothed plain, with a deep mat impression only visible on the base bottom. The vessel had a flat base, but no information was available about its size, rim characteristics, or construction technique. The use of both the smaller fragments of angular, shiny, black schist and the larger fragments of soft, soapy steatite distinguished this vessel from the others.

Vessel Lot MA10 was represented by four similar sherds that did not mend. Vessel Lot MA10 was tempered with a minimal amount of finely crushed schist and steatite. The paste also included a few fragments of iron oxide. The exterior and interior surfaces were smoothed plain, and showed faint remnants of earlier impressions. No information was available about vessel size, shape, or construction. The rim tapered to the edge and was everted with an uneven and rounded lip. This vessel was generally thicker than other vessel lots, and had soft, easily eroded paste and a low percentage of temper.

Vessel Lot MA11 was represented by 27 sherds. The vessel lot included sixteen sherds from eight different test units that mended into six groups. In addition, the vessel lot included eleven sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MA11 was heavily tempered with both schist and steatite, which ranged in size from finely crushed to larger fragments. The schist used was distinct, as it fragmented into narrow filaments. Rounded iron oxide fragments were found unevenly distributed throughout the paste. The exterior walls and the interior surfaces were smoothed plain. The basal exterior was impressed with a fabric/mat that left a deep row formed by parallel elements. The base of the vessel was flat, but no information about size was available. The rim was slightly everted and tapered to the lip edge, which was flattened and pressed outward and gave it a "notched" appearance. The vessel was formed with coils. The interior walls and base were deeply darkened, possibly related to its function as a heating or cooking vessel.

Vessel Lot MA12 was represented by three sherds. The vessel lot included two sherds from one test units that mended. In addition, the vessel lot included one sherd that was similar in all attributes but did not mend to the other sherds. Vessel Lot MA12 was heavily tempered with a distinctive steatite and/or schist that was gray-brown to gold in color. Fine sand and iron oxide also were included within the paste. The exterior surface was impressed with a fabric/mat that had short elements arranged in parallel rows. The interior surface was smoothed plain. The vessel had a flat base that had fabric or mat impressions on the exterior. No information was available about vessel size, rim characteristics, or construction techniques. The brown/gold temper was unique to this vessel.

Dames Quarter Ware

Dames Quarter ware has been considered in the "experimental" group of Early Woodland wares (Wise 1975). It is characterized by having a "black stone" as the predominant temper, probably hornblende or gneiss (Figure 12.45). Dames Quarter vessels are typically flat bottomed, although conoidal forms have been noted on the Delmarva Peninsula (Custer 1989:234). Vessels were modeled, or possibly coiled at times. In general, Dames Quarter ware was similar to Marcey Creek ware in terms of shape, surface treatment, and construction, with the difference being the use of "black stone" instead of steatite/schist for temper. Custer (1989:234) has suggested that Dames Quarter ware was "a direct technological outgrowth of Marcey Creek wares with refinements in temper and modeling techniques." It is also possible that Dames Quarter ware was manufactured during the same period as Marcey Creek ware in a location where steatite was not available or chosen. A radiocarbon date of 2955+/-90 years B.P. was associated with Dames Quarter ceramics at the Clyde Farm site (Custer 1989) and recently, charcoal associated with Dames Quarter ceramics was dated to 2980+/-40 years B.P. and

3030+/-40 year B.P. at the Glasgow Elementary School Site in New Castle County (Bowen et al. 2003). These dates support the idea of Dames Quarter being contemporary to Marcey Creek ware. Dames Quarter ware is distributed across the Delmarva Peninsula.

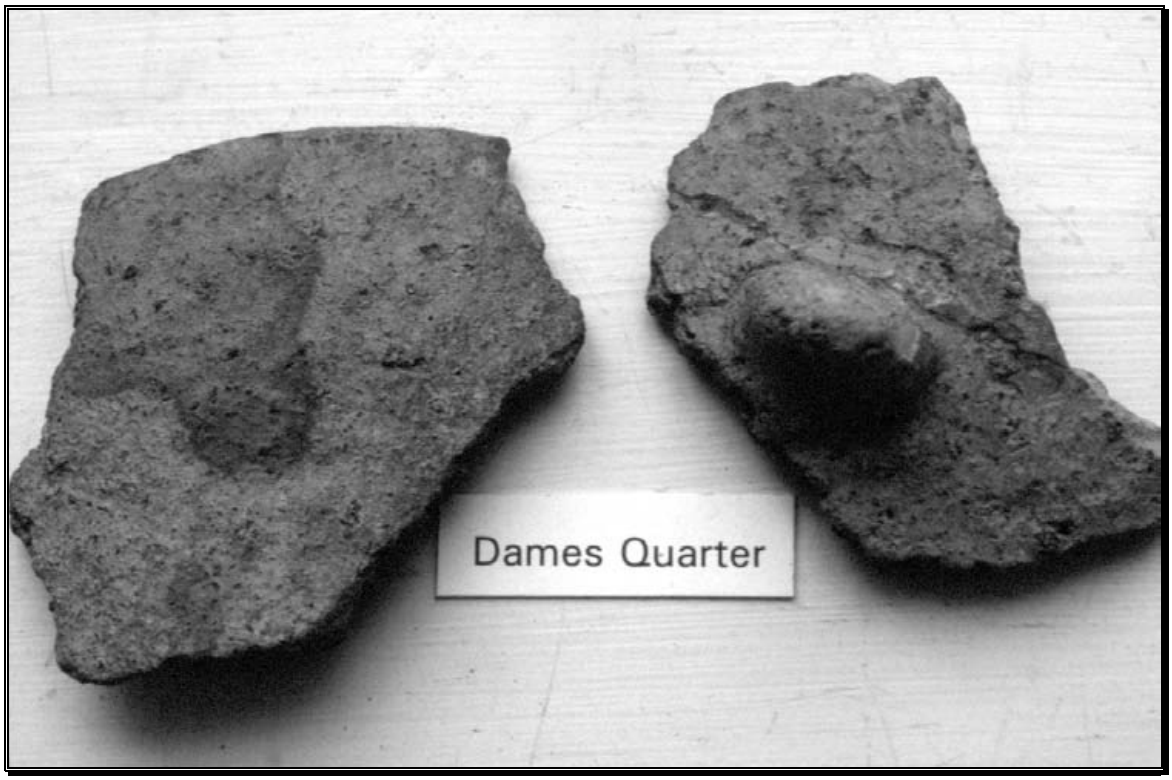

Figure 12.45 Dames Quarter Sample (from the Delaware SHPO)

At Hickory Bluff, only thirteen sherds of this ware were recovered, and two vessel lots were represented (Table 12.47). The interior and exterior surfaces were plain on one vessel lot. The other showed evidence of cord marking, although the sherd was badly eroded, and it was unclear if this was the interior or exterior surface. Unfortunately, the sample was too small to provide information about vessel form. Hornblende pebbles and cobbles were found at the site and although they were not spatially associated with the Dames Quarter sherds, their presence suggested that the material was available at the site for use as temper.

Table 12.47 Dames Quarter Ceramics

Ceramic type	Vessel lot	Frequency	Mends	Non-Mends
Dames Quarter	D1	1	0	1
	HD1	3	0	3
	Non-lot	9		
TOTAL	2	13		

Vessel Lot D1 was represented by a single sherd. Vessel Lot D1 was tempered with finely crushed hornblende/gneiss, which included a range of white, gray, and black colors. The exterior and interior surfaces were smoothed plain. No information was available about vessel

size, shape, rim characteristics, and construction techniques. This Dames Quarter vessel was distinguished by its use of multi-colored hornblende/gneiss for temper and its lack of sand/grit inclusions.

Vessel Lot HD1 was represented by three similar sherds that did not mend. Vessel Lot HD1 was tempered with crushed hornblende/gneiss, which was black in color (Figure 12.46). Fine sand/grit also was included within the vessel paste. The sherds that comprised the lot were small, and the surfaces were generally smoothed plain. One sherd did show a cord impression that appeared to be on the exterior surface and was identified as an S-twist. No information about vessel size, shape, rim characteristics, and construction techniques was available. The temper utilized was gritty and uniform in color, and distinguished it from Vessel Lot D1. The surfaces were spalled and the sherds too small to provide information about vessel form or function.

Figure 12.46 Dames Quarter, Vessel Lot HD1

Wolfe Neck Ware

The "experimental" phase of Early Woodland ceramic manufacture was replaced by one dominant technology, known on the Delmarva as Wolfe Neck ware. This technology employed crushed rock, especially quartz, for temper, coiled vessel construction, conoidal shape, and cord or net impressions on the exterior surface. Wolfe Neck ware ceramics are comparable to other Early Woodland wares in the Mid-Atlantic, namely Accokeek, Elk Island, Fayette, and Vinette I. They are generally similar in form and construction, and delineated based upon variations in surface treatment, percentage of temper, and paste qualities. However, Wolfe Neck ceramics in the Delmarva date from ca. 550 to 250 B.C., which is several hundred years later than the comparable wares found to the north and south.

There were 233 Wolfe Neck ceramic sherds and 6 vessel lots identified (Table 12.48). The vessel lots displayed a range of paste textures. Some vessels included more sand and thus were more gritty and rough to the touch. Others had a very smooth paste and exhibited a sheen on the surface that closely resembled the Wolfe Neck sherds from the type site. The Hickory Bluff Wolfe Neck vessels were cord-marked or impressed with a loose twined cord on the exterior surfaces. The interior surface showed a variety of treatments. Most were cord-marked and then smoothed over. Others were plain or were scraped. Notably, the scraping was not found on the sandy paste examples. It was prevalent on the clayey paste sherds and was similar to the treatment exhibited by many of the Clay Tempered ware samples.

Table 12.48 Wolfe Neck Ceramics

Ceramic Type	Vessel Lot	Frequency	Mends	Non-Mends
Wolfe Neck	W1	26	2	24
	W2	20	10	10
	W3	80	44	36
	W4	7	6	1
	W5	3	2	1
	W6	6	4	2
	non-lot	91		
TOTAL	6	233		

Vessel Lot W1 was represented by 26 sherds. The vessel lot included two sherds from one test units that mended. In addition, the vessel lot included twenty-four sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot W1 was tempered with quartz fragments that ranged in size and were unevenly distributed throughout the paste. The paste also included some fine sand and a few small pebbles. The exterior surface was impressed with S-twisted cordage, which was smoothed over or flattened on some sherds. The interior surfaces were smoothed plain or scraped with an implement that left a criss-cross pattern of narrow, parallel lines. No information was available about vessel size. The vessel wall rose straight to the rim edge, which had a flattened and slightly irregular lip. The vessel was constructed from coils and displayed a degree of variability between the sherds. These differences remained within the range of variation often exhibited for a single vessel. Its paste, despite the quartz temper added, was similar to the Clay Tempered wares, as was the criss-cross scraping on the interior surface. This vessel may represent a “transitional” vessel, or could reflect the pasty quality of a specific local clay source.

Vessel Lot W2 was represented by 20 sherds. The vessel lot included ten sherds from four different test units that mended into four groups. One of these sherds mended with a sherd recovered during the Hunter excavations. In addition, the vessel lot included ten sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot W2 was tempered with crushed quartz fragments that ranged in size and varied from clear to opaque in appearance. Fine sand/grit and iron oxide fragments were also included into the vessel paste. The exterior surface was deeply impressed up to the rim edge, with cordage placed perpendicular to the rim. This cordage was formed with a final S-twist. The interior surface was also cordage impressed, but the cords were placed parallel to the rim edge. No information was gathered about vessel size. The vessel wall rose straight to the rim edge. The rim lip was rounded and smoothed and had slight indentations on the interior edge that suggested it was pinched. Vessel Lot W2 was not as sandy as other Wolfe Neck vessels and contained less quartz temper.

Vessel Lot W3 was represented by 80 sherds. The vessel lot included forty-four sherds from fourteen different test units that mended into nine groups. In addition, the vessel lot included thirty-six sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot W3 was tempered with crushed, white quartz fragments that varied in size (Figure 12.47). The paste also included fine sand/grit and the presence of fiber-casts. The exterior surface was impressed with cordage that extended perpendicular from the rim edge to

the base of the vessel, where it became flattened. The interior of the upper portion of the vessel was impressed with cordage, set at an angle to the rim edge. The cordage utilized for the treatments was formed with an S-twist. The lower portion of the vessel was smoothed over and showed some faint remnants of earlier impressions and fine striation marks from scraping. The vessel diameter expanded as it rose up to the rim. The rim tapered slightly to the lip edge, which was rounded and smoothed. The vessel was constructed of coils. Vessel Lot W3 represented one of the most complete reconstructions from the assemblage, and showed the range of variation that could be encountered on a vessel, even on sherds that cross-mended together. Some of the color differences exhibited by the cross-mending sherds may have been a result of postdepositional factors.

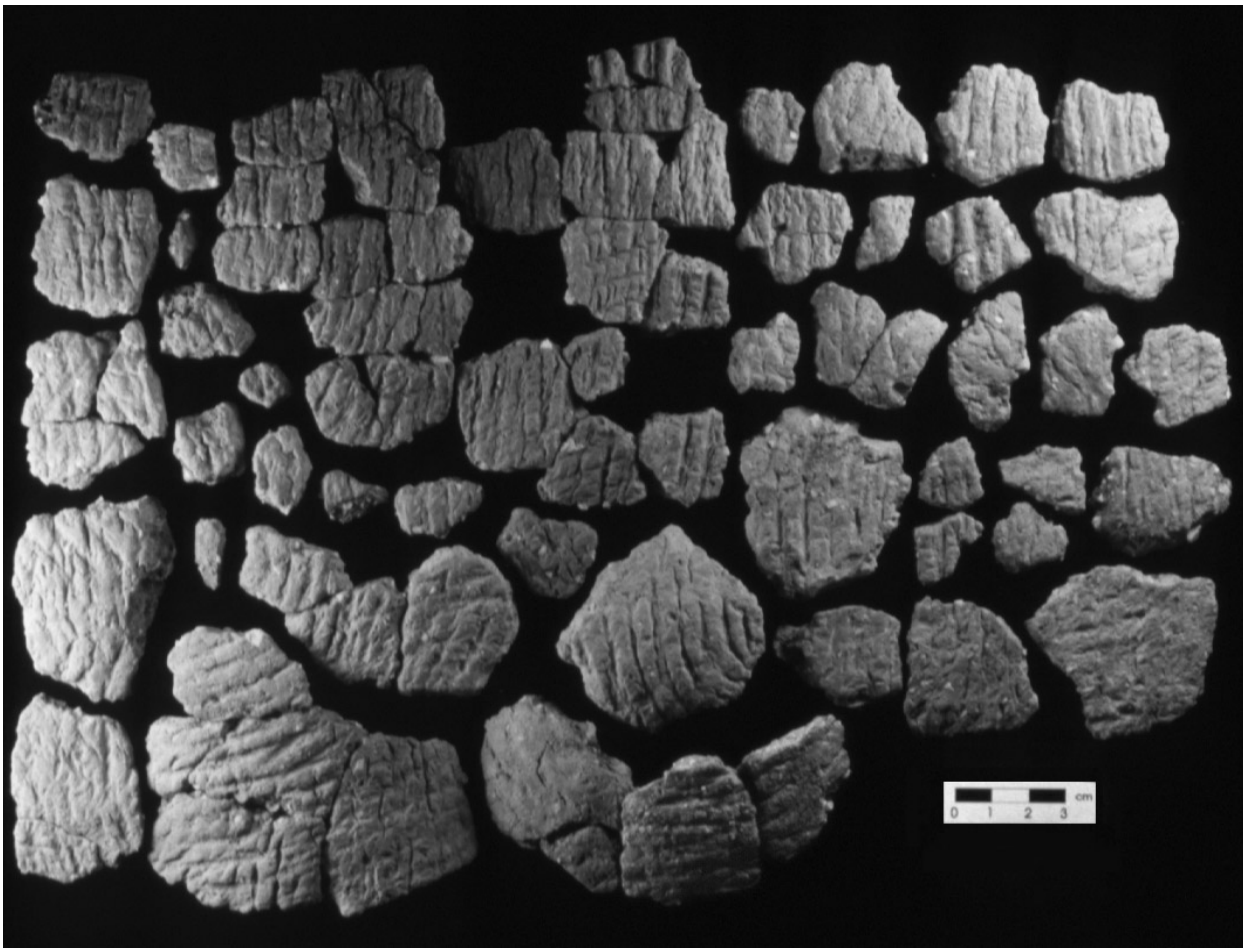

Figure 12.47 Wolfe Neck, Vessel Lot W3

Vessel Lot W4 was represented by seven sherds. The vessel lot included six sherds from one test units that mended. In addition, the vessel lot included one sherd that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot W4 was tempered with crushed quartz fragments, which were more consistent in size than some of the other vessel lots. Fine sand/grit and a single random pebble also were included in the paste. The exterior surface was impressed with a cord-wrapped paddle; impressions extended perpendicularly to the rim edge, where paddle markings were still visible. The interior surface was also impressed with Z-

twist cordage, but its orientation was parallel to the rim edge, and several sherds were smoothed over. The vessel walls rose straight to the rim edge and showed indentations on the exterior from shaping the body. The lip edge was flattened and smoothed. No information about vessel size was available. Vessel Lot W4 was one of the sandiest Wolfe Neck vessels and the only one that contained Z-twist cordage. The darkest portion of the interior at the rim may represent faint smudging that could be related to the vessel's function (perhaps for cooking or heating).

Vessel Lot W5 was represented by three sherds. The vessel lot included two sherds from one test unit that mended. In addition, the vessel lot included one sherd that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot W5 was tempered with crushed quartz of various sizes and also included some fine sand/grit. The exterior surface was impressed with cordage formed with a final S-twist. The interior surfaces were lightly impressed with cordage that was aligned parallel to the rim edge. No information was available for vessel size or form. The lip edge of the rim was flattened and impressed, probably by a paddle. Coils were used to construct the vessel. This vessel was in the middle range of the assemblage as far as paste texture; not as sandy as some vessels, but more sandy than others. The amount of quartz temper utilized was comparatively low.

Vessel Lot W6 was represented by six sherds. The vessel lot included four sherds from three different test units that mended into two groups. In addition, the vessel lot included two sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot W6 was tempered with crushed quartz that was relatively small and uniform in size. Also included in the paste was a small amount of fine sand/grit and occasional pebbles. The exterior surface treatment was impressed with cordage of at least two different thicknesses, and extended to the rim edge. The final twist of the cordage used for this treatment could not be determined, as some appeared flat and possibly untwisted. The interior surfaces were smoothed plain, while some remnant scrape marks in a narrow parallel lined pattern were still evident. No information was available about vessel size or shape, and the rim was too small to determine its form. The lip edge was rounded and contained small pits along its edge. Slight differences in texture among the sherds reflected the differential distribution of temper materials throughout the vessel and illustrated the range of variation that was encountered within vessel lots.

Popes Creek Ware

Popes Creek ware is a Middle Woodland ceramic associated with the Chesapeake region. It is characterized by its thick vessel walls, conoidal form, and coil construction. Sand was the dominant temper material utilized for this ware and was usually sorted for medium to coarse grain size. Exterior surfaces were usually net impressed, while interior surfaces could be smoothed, scraped, or combed. This ware has been associated with dates ranging from 510 B.C. to A.D. 250 and was well represented throughout the southern half of the Mid-Atlantic (Dent 1995).

A total of 14 sherds within the Hickory Bluff assemblage represented two vessel lots of Popes Creek ware (Table 12.49). One vessel lot was considered "classic" Popes Creek for its heavy use of sand tempering, scraped interior surface treatment, heavily net-impressed exterior surface treatment, and thick walls. The other vessel lot had a slightly less sandy paste a deep red color.

Table 12.49 Popes Creek Ceramics

Ceramic type	Vessel lot	Frequency	Mends	Non-Mends
Popes Creek	P1	13	6	7
	P2	1	0	1
	Non-lot	0		
TOTAL	2	14		

Vessel Lot P1 was represented by 13 sherds. The vessel lot included six sherds from three different test units that mended into three groups. In addition, the vessel lot included seven sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot P1 was tempered with crushed quartz and sand (Figure 12.48). The quartz fragments ranged in size and represented a small portion of the paste. The sand content was much higher and ranged from fine-grained to pebble-sized inclusions. The exterior surface was impressed with a widely spaced net. The interior surface was plain, with faint scrape marks evident on some sherds. No information was available about vessel size, shape, construction techniques, and rim characteristics. The sherds of Vessel Lot P1 exhibited interior scraping and net impressed exterior surfaces.

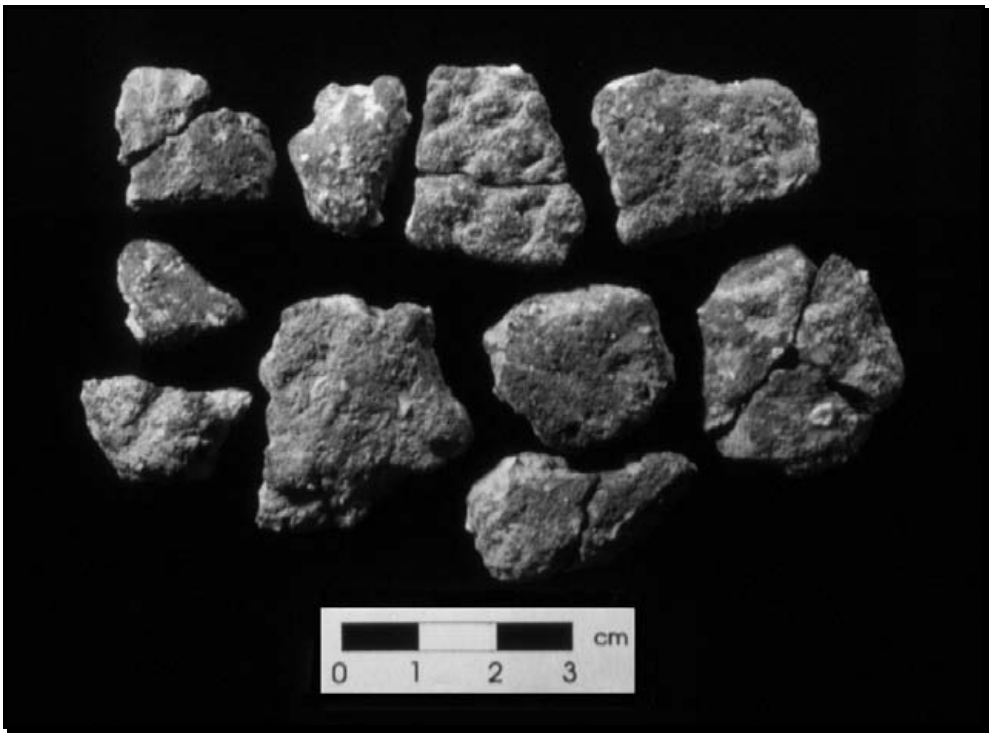

Figure 12.48 Popes Creek, Vessel Lot P1

Vessel Lot P2 was represented by a single sherd. The sherd was tempered with fine sand that was well-blended into the paste. The exterior surface was deeply net-impressed, while the interior was smoothed and showed faint remnants of earlier impressions. Vessel size, form,

construction techniques, and rim characteristics could not be determined for this vessel. The sherd was bright red in color.

Clay Tempered Ware

There were three varieties of Clay Tempered ware defined for the Delmarva Peninsula: Coulbourn ware, Nassawango ware, and Wilgus ware. These varieties were considered unique within the greater Mid-Atlantic region, as they were predominately tempered with clay, something seldom seen elsewhere in the region (Figures 12.49 and 12.50). Coulbourn ware was first described by Artusy (1976) at the Coulbourn site. Coulbourn vessels were conoidal in shape, constructed of coils, and exhibited cord or net impressed exterior surface treatments (Figures 12.51 and 12.52). These treatments were also found on the lips of the vessels, which could also be smoothed, rounded, or flattened and have direct rims (Custer 1989). The other two varieties were similar to Coulbourn ware, differing only in paste and temper inclusions. Nassawango ware contained clay and crushed rock as temper materials. Wilgus ware, on the other hand, was tempered with a mixture of clay and shell. Both of these wares were found in association with Coulbourn ware, and were believed to be transitional in nature (i.e., from crushed rock tradition [Nassawango] to clay tradition [Coulbourn] to shell tradition [Wilgus]). An association has also been suggested between the clay tempered ceramic wares and Adena artifacts. The date ranges associated with these ceramics overlap: Nassawango between 785 and 240 B.C., Coulbourn between 400 and 100 B.C., and Wilgus between 290 B.C. to A.D. 240.

Figure 12.49 Ceramic Core Section, Coulbourn site, Delaware

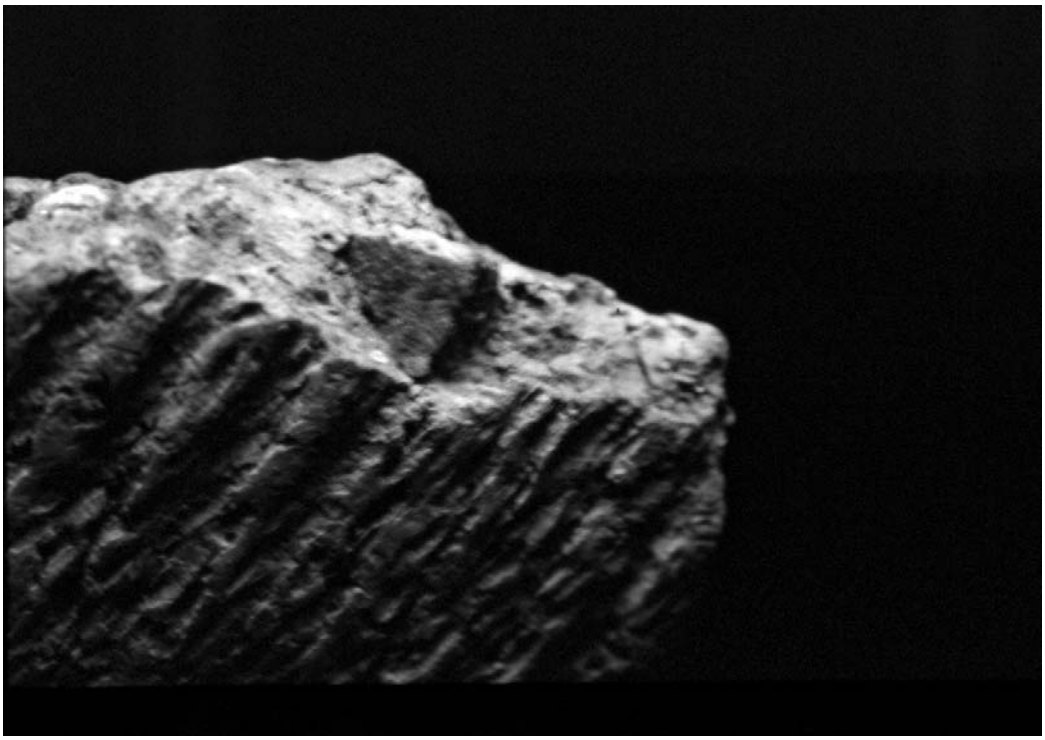

Figure 12.50 Clay Tempered Ceramic, Wolfe Neck site, Delaware

Figure 12.51 Clay Tempered ware, cord-marked, Coulbourn site, Delaware

Figure 12.52 Clay Tempered ware, net-impressed, Coulbourn site, Delaware

In an effort to characterize the range of variety exhibited within the assemblage, all of the Clay Tempered wares were considered equally and not divided into the Coulbourn, Nassawango, and Wilgus typology. Instead, they were grouped as Clay Tempered and either cord marked or net impressed, for organization. This organization immediately showed the range that was present in the assemblage, from seemingly untempered vessels to those containing large fragments of clay or other ceramic sherds, or in combination with crushed rock, sand/grit, hematite and pebble inclusions. The Clay Tempered vessels dominated the ceramic assemblage and consisted of 41 vessel lots determined from 2,598 sherds (Table 12.50). These vessel lots displayed a range of inclusions, surface treatments, and cordage used for the various surface treatments.

Vessel Lot CC01 was represented by 51 sherds. The vessel lot included seven sherds from five different test units that mended into three groups. In addition, the vessel lot included forty-four sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CC01 was tempered with varying sized clay pieces that were distributed unevenly, with different concentrations by both size and percentage between sherds. Unsorted sand that included larger pebbles was also present in the paste. The exterior surface was deeply impressed with cordage composed of loose-twined fabric, formed with an S-twist. Evidence of some light smoothing and scraping of the exterior also was noted. The interior surface was cordage impressed in a similar pattern as the exterior surface. Other parts of the interior were scraped or smoothed and had an uneven surface. The vessel was coil constructed with a distinct downward slope along the edges, used to join the lower coil. No information about vessel size or shape was apparent. There was a tapering of the body toward the rim edge, and the vessel lip was rounded and smoothed. The vessel exhibited traits that suggested it may have been hurriedly manufactured including the uneven size and distribution of the clay inclusions, the unsorted and unevenly distributed sand and pebble inclusions, the uneven and varied interior surface treatments, and the blurred edges of the impressions. This blurring suggested that the vessel was marked and fired before the vessel was allowed to thoroughly dry, or the clay utilized for the vessel was mixed with more water than typically observed.

Table 12.50 Clay Tempered Ceramics

Ceramic type	Vessel lot	Frequency	Mends	Non-Mends
Cord-Marked	CC01	51	7	44
	CC02	10	4	6
	CC03	3	2	1
	CC04	3	2	1
	CC05	4	0	4
	CC06	5	2	3
	CC07	1	0	1
	CC08	2	0	2
	CC09	6	3	3
	CC10	1	0	1
	CC11	5	4	1
	CC12	8	0	8
	CC13	2	0	2
	HCC1	1	0	1
	HCC2	1	0	1
	HCC3	2	0	2
	HCC4	34	0	34
Net-Impressed	CN01	77	15	62
	CN02	33	16	17
	CN03	5	5	0
	CN04	6	2	4
	CN05	11	0	11
	CN06	1	0	1
	CN07	70	27	43
	CN08	12	10	2
	CN09	3	0	3
	CN10	10	8	2
	CN11	5	4	1
	CN12	2	0	2
	CN13	4	3	1
	CN14	2	0	2
	CN15	4	0	4
	CN16	8	0	8
	CN17	9	2	7
	CN18	3	2	1
	CN19	6	4	2
	CN20	2	0	2
	CN21	2	0	2
	CN22	2	0	2
	HCN1	1	0	1
	HCN2	5	5	0
	Non-lot	2176		
TOTAL	41	2598		

Vessel Lot CC02 was represented by 10 sherds. The vessel lot included four sherds from two different test units that mended into two groups. In addition, the vessel lot included six sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CC02 was tempered with clay grains and at least two ceramic sherd fragments. A minimal (less than 1 percent) amount of sand was present as well. The exterior surface was impressed with widely spaced, twined multiple, individual cords and some light smoothing was noted. The cords varied in size and were S-twisted. The interior surface was smoothed and scraped with a tool that left parallel striation marks, criss-crossed in some areas. No information about vessel size, shape, rim characteristics, and construction techniques was available. Vessel Lot CC02 appeared well-made as it had thinner vessel walls than most Clay Tempered vessels, more well-blended clay inclusions, and a more carefully treated exterior surface accomplished with finer cordage.

Vessel Lot CC03 was represented by three sherds. The vessel lot included two sherds from one test unit that mended. In addition, the vessel lot included one sherd that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CC03 was tempered with small pieces of sorted clay. The paste also included some fine sand/grit. The exterior surface was impressed with S-twisted cordage that was twined into a loose-twined fabric of varying cord thicknesses. These impressions were smoothed as well as scraped with a tool that left narrow, parallel lines. The interior surface was scraped and had a pattern of fine parallel lines of various widths that were oriented in the same direction, with a few light cross swipes. Some drag marks and pits from eroded temper were also present on the interior and created an undulated surface. The vessel was coil constructed, but no further information regarding vessel size, shape, and rim characteristics was available. The general appearance of Vessel Lot CC03 was similar to Vessel Lot CC01; however, its temper and inclusions were well sorted for size and its coil edges were flat, formed right angles to the surfaces, and were not extremely sloped.

Vessel Lot CC04 was represented by three sherds. The vessel lot included two sherds from two different test units that mended. In addition, the vessel lot included one sherd that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CC04 had no distinctly evident clay pieces as temper, instead large areas of different colored clays could have been the result of the inadequate blending of several clays for the paste. A minor amount of fine sand and a random iron oxide fragment also were included. The exterior surface was impressed with Z-twisted cordage of varying diameters that had been slightly flattened. The interior was smoothed, and fine striation lines remained from this process. No information was available for vessel form, size, and rim characteristics. The vessel body was formed with coils that were lightly joined. This vessel was part of a sub-set of the Clay Tempered vessel lots that had very little visible temper and a minimal amount of sand present. The use of Z-twist cordage also was uncommon for this assemblage.

Vessel Lot CC05 was represented by four similar sherds with no mends. Vessel Lot CC05 lacked a visible temper in the composition of the paste. Fine sand was found in the paste and seemed to increase in amount descending down the vessel towards the base. A few random pieces of iron oxide also were included. The exterior surface was impressed with S-twisted cordage of varying diameters, found deeply in the body and smoothed over toward the lip of the rim. The interior was smoothed over near the vessel rim, and had some gouge marks and cord

marking evident on some sherds. No information for vessel size or shape was available. The rim was straight, and the vessel body tapered in thickness at the rim edge. The vessel lip was impressed, then smoothed over, and was uneven and of irregular width. The paste of the vessel had varying textures dependent upon location on the vessel, which illustrated the range of variation often present within a single vessel. The internal cord-marking and sand inclusions within the paste at the lower portion of the vessel were reminiscent of Wolfe Neck vessels.

Vessel Lot CC06 was represented by five sherds. The vessel lot included two sherds from one test unit that mended. In addition, the vessel lot included three sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CC06 was tempered with small pieces of clay/grog. A well-sorted fine, powdery sand/grit also was included within the paste. The exterior surface was marked with narrow, fine cordage that had been wrapped in a criss-cross pattern in irregular intervals. The final wrapping of these S-twisted cords was placed obliquely to the rim edge. The interior surface was scraped with a narrow tool that left a pattern of thin parallel lines in a criss-cross manner. Vessel size and shape could not be determined. The rim wall tapered straight to the lip, which was rounded and slightly flattened in some areas. Slight pinch indentations and paddle impressions were also present along the vessel's edge and caused variations in the lip width. The vessel was constructed of coils. The clay inclusions of this vessel were very fine and suggested that they may have been unblended portions of the paste and not intentional additions. A small amount of residue was present on the interior of one sherd, and the interior of one rim was darkened or lightly smudged, which suggested the vessel was used for heating food or medicinal resources.

Vessel Lot CC07 was represented by a single sherd. Vessel Lot CC07 was tempered with clay pieces of varying sizes and color. It was also heavily tempered with unsorted sand/grit that contained numerous pebbles. The exterior was impressed with S-twisted cordage of varying size. The interior was rough and uneven, and different portions of the vessel displayed a range of treatments from cord impressed, to smoothed, to scraped. No information was available for vessel size, form, construction techniques, and rim characteristics. This vessel was one of the sandiest examples within the Clay Tempered wares and had larger pieces of clay evident as well. One edge was darker than the other and may have been smudged, or indicate some postdepositional alteration.

Vessel Lot CC08 was represented by two sherds that did not mend. Vessel Lot CC08 contained numerous, but extremely fine-sized clay fragments that gave it the appearance of being untempered. A low amount of sand also was included in the paste. The exterior surface was marked with S-twisted cordage that ranged in size and included untwisted, open flat fibers. The interior was scraped in a criss-cross pattern of narrow parallel lines that created an uneven surface with small depressions between strokes. The vessel was coil constructed, but no further information regarding vessel size, shape, and rim characteristics could be determined. The small size of the clay inclusions suggested that they may have been unblended components of the clay and not intentional additions.

Vessel Lot CC09 was represented by six sherds. The vessel lot included three sherds from two different test units that mended into one group. In addition, the vessel lot included three sherds that were similar in all attributes but did not mend to other sherds in the vessel lot.

Vessel Lot CC09 was tempered with small fragments of clay of varied colors. A minimal amount of sand and a single chert pebble were also present. The exterior surface was impressed with S-twisted cordage. The interior was deeply impressed with netting comprised of widely spaced, large knots. These impressions were slightly smoothed on some sherds. The breakage patterns were irregular, so no information was available concerning vessel construction. Vessel size, shape, and rim characteristics also could not be determined. The vessel contained a minimal sand content that gave it a pasty texture. The exterior surface was impressed with cordage that may have been cross-twined. Although this was not definitive, the treatment was unique enough to distinguish it from other vessels.

Vessel Lot CC10 was represented by a single sherd. Vessel Lot CC10 was tempered with small pieces of clay and grog. A minor amount of sand was also included in the paste. The exterior surface was lightly impressed with S-twisted cordage of varying widths that had been twined into loose fabric. These impressions were partially smoothed over. The interior surface was deeply gouged with parallel strokes, which were irregular and created an uneven surface. Coil formation was noted, but no information on vessel size, shape, or rim characteristics could be determined.

Vessel Lot CC11 was represented by five sherds. The vessel lot included four sherds from three different test units that mended into two groups. In addition, the vessel lot included one sherd that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CC11 included a high content of sand/grit. Random pebbles, numerous minute iron oxide pieces, and larger pieces of sandstone also were present in the paste. The exterior was impressed with very fine cordage formed with a final S-twist. The interior was also cordage impressed, but the impressions were deeper than those on the exterior. Finger-swipes over the cord marks produced an undulating surface. The vessel was coil constructed, but no information for vessel size, shape, and rim characteristics could be determined. The vessel lot exhibited a lumpy paste that contained larger pieces of unblended clay that matched the matrix clay. However, it also included a high sand content that was unsorted and contained larger pieces, which was uncharacteristic of the Clay Tempered wares. Two sherds that cross-mended exhibited very different coloration that suggested postdepositional effects, and illustrated the amount of variation present within individual vessels.

Vessel Lot CC12 was represented by eight similar sherds that did not mend. Vessel Lot CC12 appeared to be nearly untempered under visual inspection, but contained occasional small pieces of unblended clay and a small quantity of fine sand/grit within its paste. The size and amount suggested these could be natural, incidental inclusions and not purposeful additives. The exterior surface was deeply impressed with Z-twisted cordage of thin to moderate thickness, possibly woven into a loose net/fabric. The small size of the sherds, however, precluded a final determination. The interior surface was smoothed plain, although remnants of thin striation marks were present that suggested the surface had been swiped with a tool. No data were available about vessel size. It was constructed of narrow coils, and coil joints were visible within the core. The vessel walls slightly tapered and rose straight to the lip, which was rounded, smoothed plain, and slightly lower on the front edge. The narrow coils and well-compacted paste implied that the vessel was very thin and carefully manufactured. This vessel lot was also distinguished by its lack of temper and strong pinkish color. A darkening or

smudging on the vessel sherds suggested that this vessel had been heated, and likely related to its function rather than postdepositional effects.

Vessel Lot CC13 was represented by two similar sherds that did not mend. Vessel Lot CC13 was tempered with dark pieces of clay and grog. Sand was included in the paste, and two pits in the rim suggested that larger pebbles were also present at one time. The exterior surface was impressed with S-twisted cordage. These impressions were less distinct at the rim edge and continued vertically to this edge. The interior surface was cord-marked, and the cords were placed parallel to the rim edge in a horizontal position. No information was available for vessel size or shape. The rim was too small to determine its form. While the lip was rounded and smoothed, it remained uneven. The vessel was coil constructed and exhibited wide-angled, overlapping coil joints. This vessel lot was similar to Vessel Lot CC01 in construction, surface treatments, and unsorted sand inclusions, but contained large pieces of clay and grog temper not found in Vessel Lot CC01.

Vessel Lot HCC1 was represented by a single sherd. Vessel Lot HCC1 was tempered with pieces of clay that varied in size. A small quantity of fine sand/grit and a larger quantity of iron oxide fragments were also included in and evenly distributed throughout the paste. The exterior surface was impressed with S-twisted cordage, which was formed from a loose-twined fabric and then partially smoothed and scraped. The interior surface was also cordage impressed. No information was available about vessel size, shape, or rim characteristics. The vessel was coil constructed. Vessel Lot HCC1 was distinguished by the large quantity of iron oxide inclusions within the paste, which was similar to Vessel Lot HMO1. If the inclusions were natural to the clay source, it may suggest that the vessels were created from the same, or a very similar source.

Vessel Lot HCC2 was represented by a single sherd. The sherd was tempered with a small quantity of clay fragments, appearing nearly untempered. A small amount of fine sand and occasional iron oxide pieces also were included within the paste. The exterior surface was impressed with S-twisted cordage of a thin diameter. The interior surface was repeatedly scraped with a tool that left a pattern of narrow parallel lines. No information was available for vessel size, shape, and rim characteristics. The vessel was coil constructed and depressed areas on the interior surface might have been from the forming or coil-joining process. The very thin cordage utilized for the exterior surface impressions was unique to this vessel. The small size of the sherd prevented a full determination of whether the surface was cross-paddled or impressed with a loosely-woven fabric.

Vessel Lot HCC3 was represented by two similar sherds that did not mend. Vessel Lot HCC3 was tempered with fragments of dark grog and pieces of clay. The vessel also was heavily tempered with sand/grit that was sorted for fine size. A random pebble and occasional pieces of iron oxide also were present. The exterior surface was marked with S-twisted cordage of varying sizes, very fine to medium. The interior surface was scraped with a tool that left a criss-cross pattern of narrow parallel lines. Some of these impressions were then partially smoothed over. The vessel was constructed of relatively wide coils for the Clay Tempered wares. No further information for vessel size, shape, and rim characteristics was determined. This

vessel was characterized by its large quantity and variety of temper and inclusions, which were more pronounced, if not different, than the other Clay Tempered vessels.

Vessel Lot HCC4 was represented by 34 similar sherds that did not mend. Vessel Lot HCC4 appeared tempered with a low quantity of small clay fragments, seeming nearly untempered (Figure 12.53). Fine sand was also included and made up a significant portion of the paste. Iron oxide fragments and large fiber-casts also were evident in the vessel paste. The exterior surface was impressed with vertically oriented, S-twisted cordage that extended to the rim edge. Several paddle imprints were also present on the exterior surface. The interior surface exhibited low relief ridges formed from the smoothing over of previous scraping. The body shape was conoidal and the volume calculated as 11.7 liters (3.1 gallons). The wall of the rim rose straight to the edge and became thinner at the lip, which was rounded and slightly flattened. The heavy residue evident on Vessel Lot HCC4 suggested that the vessel was used for cooking. A distinct darkening toward the rim of the vessel and more orange-red hues at the base may also have been related to heating activities and vessel function.

Vessel Lot CN01 was represented by 77 sherds. The vessel lot included fifteen sherds from four different test units that mended into seven groups. In addition, the vessel lot included sixty-two sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CN01 was tempered with large pieces of clay, which were unevenly distributed between sherds. Fine sand/grit and occasional pebbles also were included in the paste. The exterior surface was deeply net-impressed with overlapping impressions, multiple layering of the netting, and net-roughening. The net fabric was tightly arranged, formed with a final S-twist, and the cordage elements were from fine, single strands. Smoothing and light scraping on some sherds blurred the otherwise intricate pattern. The interior surface was net-impressed then lightly smoothed, or in some cases, scraped with a tool. No information was available about vessel size. The vessel body tapered to the lip edge, and the vessel wall rose straight to the edge. The lip edge was flattened and smoothed. The clay pieces used for temper were noticeably larger than typically encountered on the Clay Tempered vessels. A smudging was noted on both the interior and exterior of some sherds. The smudging ranged from light to heavy and suggested the direct heating of the vessel.

Vessel Lot CN02 was represented by 33 sherds. The vessel lot included sixteen sherds from eleven different test units that mended into six groups. In addition, the vessel lot included seventeen sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CN02 was tempered with clay pieces sorted for size and unevenly distributed throughout the paste. A small amount of fine sand/grit and a few random pebbles were also included. The exterior surface was net-roughened, with a net of fine, S-twisted cordage and widely spaced knots. It was then faintly smoothed so that the netting pattern was not distinct. The interior surface was net-impressed and smoothed over so that the impressions were almost obliterated. The interior surface was uneven and rough due to scraping and smoothing of the net impressions. No information was available about vessel size, although the sherds were noticeably thicker than the other vessel lots. The vessel walls tapered to the rim edge. The rim was generally straight to the edge as the walls thinned. The lip edge had been smoothed and was flat to slightly rounded. The thick walls of the vessel would suggest function as a storage vessel.

However, darkening at the rim and reddening at the base of the vessel suggested exposure to heat; the vessel possibly was used as a cooking vessel.

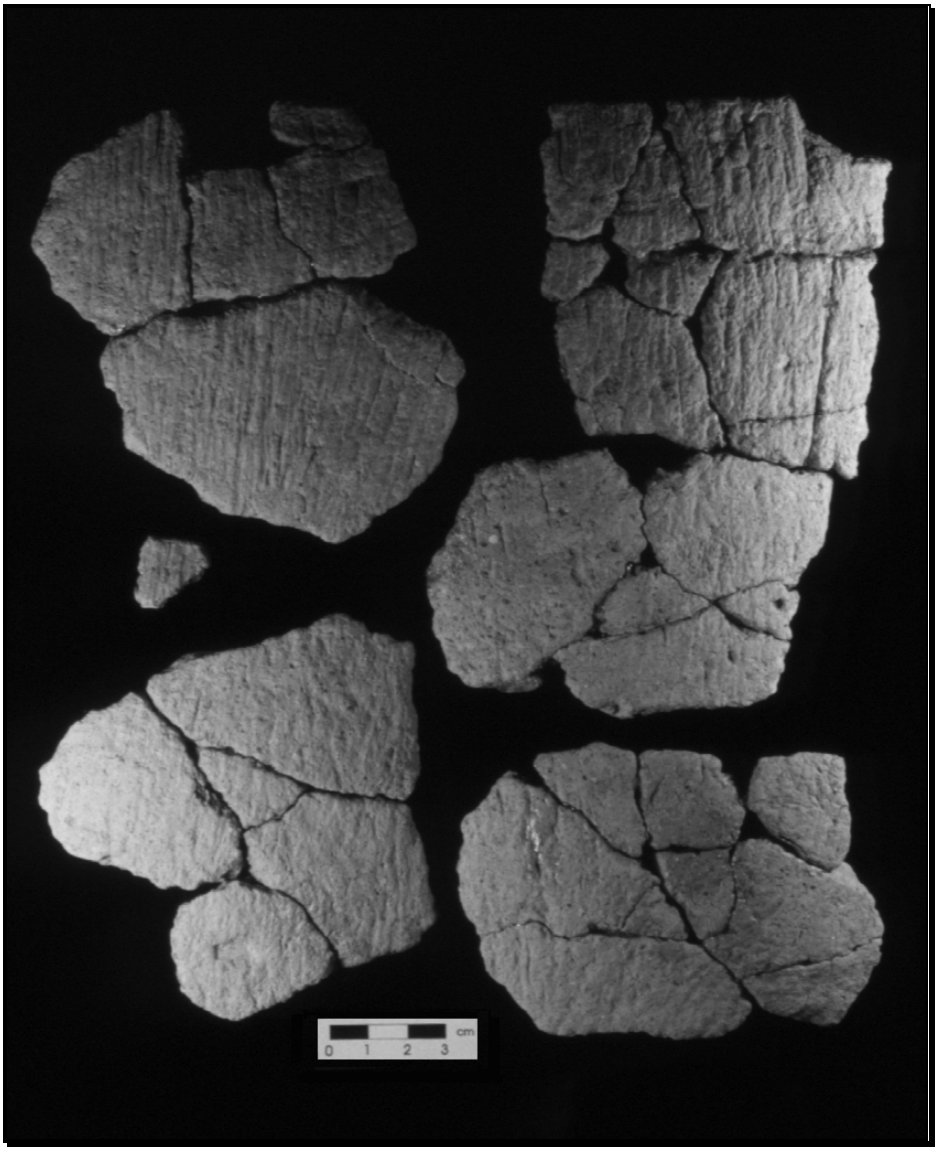

Figure 12.53 Clay Tempered, Vessel Lot HCC4

Vessel Lot CN03 was represented by five sherds. The vessel lot included five sherds from two different test units that mended into one group. Vessel Lot CN03 was tempered with clay and at least one piece of sherd. A small amount of fine sand/grit and occasional small iron oxide pieces were also present in the paste. The exterior surface of the vessel was partially smoothed, which obscured the treatment of deep impressions of widely spaced elements that could have been formed from cord-wrapped cord, stick, or stiff elements worked into netting. The final twist and cordage elements were unidentified as a result of the smoothing process. The interior surface was uneven as a result of the incomplete smoothing of former impressions. No information could be determined for vessel size, shape, and rim characteristics. It was

constructed of coils. The surface treatment of deep impressions was unique for this vessel lot, as the rest of the assemblage displayed more simple net or fabric impressions.

Vessel Lot CN04 was represented by six sherds. The vessel lot included two sherds from one test unit that mended. In addition, the vessel lot included four sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CN04 was tempered with clay pieces. The paste also included a small amount of very fine sand/grit and small iron oxide fragments. The exterior surface was deeply impressed with netting composed of open, widely spaced knots formed with a final S-twist. The surface was then smoothed over. The interior surface was impressed with the same netting as the exterior, which was more distinct on the upper body sherds and smoothed over on the lower portions. The vessel was coil constructed and had thick walls. No further information about vessel size, shape, and rim characteristics could be determined. The netting used for the surface treatments was unique for this lot and appeared to be formed by knots joining double cords.

Vessel Lot CN05 was represented by 11 similar sherds that did not mend. The sherds were tempered with large pieces of clay that were visible on all surfaces. A small amount of fine sand/grit also was included. The exterior surface was deeply net-impressed and net-roughened in some areas, and flattened or smoothed in other areas. The net elements and final twist were not determined for this vessel. The interior surface was smoothed but remained uneven, due to scraping evident in a pattern of narrow, parallel lines. Vessel size, shape, rim characteristics, and construction techniques were unable to be determined for this vessel. The large and multi-colored pieces of clay used as temper were distinct for this vessel lot.

Vessel Lot CN06 was represented by a single sherd. The sherd was tempered with clay fragments that were small in size and low in concentration. Some fine sand also was included in the paste. The exterior surface was net-roughened with a net of fine, S-twisted cordage and closely-spaced knots, which created a low-relief pattern on the surface. The interior surface was incompletely smoothed, and faint remnants of earlier impressions remained. No information for vessel size and shape was available. The rim body tapered straight to the rim edge. The lip edge had been impressed, pinched, and incised with a tool to create a row of scallops on the rim edge (Figure 12.54). This incised scalloped rim edge was unique for the clay tempered vessels.

Vessel Lot CN07 was represented by 70 sherds. The vessel lot included twenty-seven sherds from fourteen different test units that mended into three groups. In addition, the vessel lot included forty-three sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CN07 was tempered with clay fragments that varied in size and were unevenly distributed throughout the paste. A heavy amount of unsorted sand/grit and several pebbles also were included in the paste. The exterior surface was deeply impressed with a net composed of tightly spaced, large knots in a close linear arrangement that created a highly textured surface. The cordage was formed with a final S-twist. Partial smoothing and light scraping were evident on some sherds. The interior was net-impressed, smoothed, and scraped with a tool that left narrow, parallel lines on the surface. The vessel was coil constructed, but no further information about vessel size or shape was determined. The rims slightly tapered to the edge, and a smoothing indentation was evident on the interior edge. The lip edge was flattened and showed the faint impressions of a wrapped paddle. This vessel lot illustrated the range of

treatment that could be encountered within one vessel, especially in rim sherd forms. There was also evidence of darkening and smudging on the interior surface that suggested the vessel had been used for cooking.

Figure 12.54 Rim Treatment, Vessel Lot CN06

Vessel Lot CN08 was represented by 12 sherds. The vessel lot included eleven sherds from six different test units that mended into three groups. In addition, the vessel lot included one sherd that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CN08 was tempered with clay fragments of varying size, color, and distribution. Fine sand and random large pebbles also were included within the paste. The exterior surface was deeply impressed and net-roughened, then partially smoothed over. The smoothing process left the net and cordage characteristics undetermined for this vessel. The interior surface was smoothed, although irregular scrape marks, a gouge, and a pattern of fine parallel lines were still evident. The vessel had a thick body and was constructed of coils. Paddle impressions were evident along the coil tops from the manufacturing process. No information about vessel size, shape, or rim characteristics was determined. Two groups of cross-mended sherds within this lot exhibited different colors and paste characteristics, which illustrated the range of variation that could be encountered. One group had a burned area, which suggested that the differences noted may have been the result of a firing mishap created by breakage or relative position during the firing process.

Vessel Lot CN09 was represented by three similar sherds that did not mend. Vessel Lot CN09 was tempered with larger sized clay pieces. Fine sand also comprised a portion of the vessel paste. The exterior surface was deeply net-impressed, although the impressions had indistinct, flattened edges as the paste had extruded through the net. These indistinct impressions suggested that the paste was moist when the impressions were made. This could be the result of incomplete drying before the impressions were made and the vessel fired, or more water being mixed with the clay during the forming process. The interior was smoothed, but prior impressions were faintly visible. The vessel was coil constructed, but further information on vessel size, shape, and rim characteristics could not be determined. Vessel Lot CN09 had a

compact paste and relatively even core color, and represented a clear example of the purposeful use of clay as temper.

Vessel Lot CN10 was represented by 10 sherds. The vessel lot included eight sherds that mended into two groups. In addition, the vessel lot included two sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CN10 was tempered with various sized clay pieces that were unevenly distributed within the paste. A well-sorted sample of fine sand/grit also was included in the paste. The exterior surface was impressed with netting layered on a paddle, which created a complex pattern. The cordage utilized was formed with a final S-twist. The interior surface was smoothed and portions scraped with a tool that left striation marks or channel marks. The vessel was wider at the rim than the base, and expanded slightly outward from bottom to top. The vessel was coil constructed. The vessel body in the rim area tapered straight to the lip, which was flattened and uneven due to slight pinch marks. A residue buildup was present on the exterior of the vessel near the rim and slightly lower on the body. A darkening and light smudging was evident at the rim on both the interior and exterior surfaces. The presence of both the residue and smudging suggested that this vessel functioned as a heating vessel.

Vessel Lot CN11 was represented by five sherds. The vessel lot included four sherds from four different test units that mended. In addition, the vessel lot included one sherd that were similar in all attributes but did not mend to other sherds in the vessel lot. The lot was tempered with fragments of clay that ranged in size. Fine sand and a few random pebbles also were present in the paste. The exterior surface was net-roughened and the deep impressions created a highly textured surface. The net and cordage elements could not be determined. The interior surface was impressed then smoothed over, which created an uneven surface of criss-cross patterns, clay mounding, and small pits. No information was determined for vessel size, shape, and rim characteristics. The vessel was coil constructed and the upper coil line displayed paddle impressions from the joining process. The higher sand content within this vessel gave it a "heavier" feel. The highly textured interior and exterior surface treatments also helped to distinguish the vessel.

Vessel Lot CN12 was represented by two similar sherds that did not mend. Vessel Lot CN12 was tempered with large pieces of clay and grog. A higher portion of iron oxide fragments was included in the paste, in addition to fine sand and occasional pebbles. The exterior surface was impressed with netting that had large, widely spaced knots formed with S-twisted cordage. The interior was incompletely smoothed, and earlier net impressions remained. No information was available for vessel size, shape, and rim characteristics. The vessel was coil constructed and the coil breaks exhibited an overlapped extension, or obtuse angle. The unique range of coloration of the clay temper, the body core, and the high proportion of iron oxide distinguished this vessel. The sherds that comprised the vessel lot exhibited some variation in their surface treatments.

Vessel Lot CN13 was represented by four sherds. The vessel lot included three sherds from one test unit that mended. In addition, the vessel lot included one sherd that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CN13 was tempered with pieces of clay and grog of varying sizes. Fine sand/grit and small iron oxide fragments also

were included within the paste. The exterior surface was deeply impressed with netting composed of widely spaced knots, formed with a final S-twist. The interior surface was scraped. No information was determined for vessel size, shape, rim characteristics, and construction techniques. Vessel Lot CN13 exhibited slight variations in color and surface treatments, but these remained within the range exhibited by other vessel lots.

Vessel Lot CN14 was represented by two similar sherds that did not mend. Vessel Lot CN14 was tempered with small fragments of clay. A small amount of very fine sand and occasional small, soft, black inclusions were also present in the paste. The exterior surface was net-roughened and highly textured as a result. These impressions had been slightly flattened on one sherd and the final twist and net elements could not be determined. The interior was scraped with a tool that left a distinct criss-cross pattern of fine, parallel lines. No information was determined for vessel size, shape, and rim characteristics. The vessel was constructed of small coils. Coil joints were evident, and the joining edge had a deep channel that was smoothed. This vessel was "pasty" in texture due to the small and low number of clay fragments used for temper.

Vessel Lot CN15 was represented by four similar sherds that did not mend. Vessel Lot CN15 was tempered with small, distinctive clay pieces that were visible on all surfaces. Numerous iron oxide fragments, a small quantity of fine-grained sand, and one angular pebble also were present within the paste. The exterior surface was deeply impressed with netting formed by widely spaced elements that were slightly smoothed in some areas. The interior surface was deeply impressed with netting formed with S-twisted cordage, which created an uneven surface. No information was determined for vessel size, shape, and rim characteristics. The vessel was constructed from coils and the coil joints ranged from sharp angled to broad and overlapping edges between sherds.

Vessel Lot CN16 was represented by eight similar sherds that did not mend. Vessel Lot CN16 was tempered with clay pieces of varying sizes that were unevenly distributed throughout the paste. One sherd included a piece of another ceramic as temper. In addition, well-sorted fine sand was included within the paste. The exterior surface was impressed with netting, which ranged from net-roughened on some sherds to flattened and less distinct near the lower body and base. The final twist and net elements could not be determined for this vessel. The interior surface was plain near the base, while the rest was scraped with a tool that left a criss-cross pattern of narrow, parallel lines. No information was determined for vessel size, shape, and rim characteristics. The vessel was coil constructed and finger indentations and paddle impressions were evident, related to forming the body. This vessel lot was another example that illustrated internal variation of surface treatment, texture, and degree of paste blending and showed the range often encountered on a single vessel.

Vessel Lot CN17 was represented by 9 sherds. The vessel lot included two sherds from one test unit that mended. In addition, the vessel lot included seven sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CN17 was tempered with fragments of clay that varied in size. A small amount of sand and numerous small iron oxide pieces also were included within the paste. The exterior surface of the vessel was moderately impressed with a net/fabric of closely spaced elements, which created a subtle and continuous

low relief pattern up to the lip edge. The final twist of the cordage that comprised the net could not be determined. The interior surface was smoothed, but undulations from earlier scrape marks were evident. No information was determined for vessel size and shape, but coil breaks were evident. The rim rose straight to the lip edge, which was rounded. The surface treatment for Vessel Lot CN17 was unique among the Clay Tempered vessels and easily distinguished.

Vessel Lot CN18 was represented by three sherds. The vessel lot included two sherds from two different test units that mended. In addition, the vessel lot included one sherd that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CN18 was tempered with clay pieces of varying sizes. Well-sorted, very fine sand also was present within the paste. The exterior surface was deeply impressed with netting that continued up to and over the lip edge. The cordage for the netting was formed with a final S-twist. The interior surface was incompletely smoothed and previous net-impressions were still visible. No information was determined for vessel size and shape. The rim body tapered straight to the lip edge, which was paddle-impressed and flattened. Deep finger grooves ran vertically from the rim edge down the body of the vessel, which was coil constructed. Vessel Lot CN18 was a more sandy example of the Clay Tempered vessels. It exhibited slight differences within its rim sherds, but was similar in all other respects.

Vessel Lot CN19 was represented by six sherds. The vessel lot included four sherds from three different test units that mended into two groups. In addition, the vessel lot included two sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot CN19 was tempered with a small quantity of clay pieces, and small, dark, grog-like inclusions. Fine sand/grit and occasional small iron oxide fragments were present in the paste. The exterior surface was deeply and repeatedly net impressed up to the rim edge. This netting was made of cordage formed with a final S-twist. The interior surface also was net-impressed and was distinct in some areas and smoothed over in others. No information was determined for vessel size and shape. The rim was slightly inverted and the lip edge was impressed with a paddle and then smoothed over and flattened. The vessel was coil constructed. Vessel Lot CN19 exhibited a range in the amount of sand included between sherds. Also notable was the very different coloration exhibited between two sherds that cross-mended, which suggested possible postdepositional alteration and illustrated the variability within a single vessel lot.

Vessel Lot CN20 was represented by two similar sherds that did not mend. Vessel Lot CN20 was tempered with crushed quartz, sand, and pieces of clay and grog. The paste also included fragments of iron oxide. The clay fragments varied in size and occurred only occasionally within the paste. The exterior surface was moderately impressed with net/fabric and slightly smoothed over. The interior surface was smoothed over, but faint remnants of earlier impressions remained. The combination of smoothing on both surfaces and spalling of the paste left the cordage and net elements undetermined for this vessel. No information was determined for vessel size, shape, and rim characteristics. The vessel was coil constructed, and the coil edge exhibited paddle impressions from the manufacturing process. Despite the range of size and variety of inclusions, the paste of this vessel was well-blended and more compact than typical for the Clay Tempered vessels. The inclusion of both crushed quartz and clay/grog tempering made this vessel unique within the assemblage.

Vessel Lot CN21 was represented by two similar sherds that did not mend. Vessel Lot CN21 was tempered with infrequent pieces of clay and grog and some well-sorted fine sand. The exterior surface was impressed with tightly spaced netting that created a patterned surface. The netting was made with cordage formed with a final S-twist. The interior surface was incompletely smoothed, and faint remnants of earlier impressions were still visible. There was no information available about vessel size, shape, and construction techniques. The rim wall rose straight to the edge. The lip was flattened with a paddle that left impressions along the lip edge. This vessel was different in that it did not include much clay as temper, but contained more sand.

Vessel Lot CN22 was represented by two similar sherds that did not mend. Vessel Lot CN22 was tempered with pieces of clay that ranged in size. A fairly sorted, fine sand also was included in the paste. In addition, a random pebble, few small iron oxide pieces, and fiber-casts were present in the paste. The exterior surface was impressed with a net that was formed of S-twisted cordage. The protrusions of clay on the surface suggested the impressions were either made before the vessel was properly dried, or the clay used had been mixed with more water than typical. The interior surface was smoothed and also scraped, as evidenced by the pattern of narrow parallel lines. No information for vessel size and shape was available. The rim body tapered straight to the edge. The vessel lip was impressed and then smoothed. It remained uneven, and was rounded and somewhat flattened. This vessel was one of the sandier Clay Tempered vessels that also included large pieces of clay as temper. It exhibited rim characteristics that were consistent with several other Clay Tempered vessels.

Vessel Lot HCN1 was represented by a single sherd. Vessel Lot HCN1 was tempered with such low quantities of small clay fragments that it appeared nearly untempered. A minor amount of sand and occasional rounded pieces of iron oxide were also present in the paste. The exterior surface was impressed with a net composed of closely spaced knots. The final twist of the cordage used for the net could not be determined for this vessel, although it was thicker and had larger knots than the average observed on the Clay Tempered vessels. The interior surface was incompletely smoothed over earlier net-impressions and faint lines from scraping also were evident. No information was determined for vessel size, shape, and rim characteristics. The vessel was coil constructed. Vessel Lot HCN1 contained evidence of smudging on its interior that suggested it functioned as a cooking or heating vessel.

Vessel Lot HCN2 was represented by five sherds. The sherds were recovered from a single test unit, and the five sherds mended to form a larger rim and body segment. Vessel Lot HCN2 was tempered with large pieces of clay that ranged in size and color. Fine sand and a large random pebble also were included within the paste. The exterior surface was impressed with multiple layers of widely spaced net, which extended to the edge of the rim. This net was made of cordage formed with a final S-twist. The interior surface was uneven as areas were scraped and even gouged with a tool that left a pattern of narrow parallel lines, while the rim area had been smoothed. The body was categorized as conoidal, and had a calculated capacity of 9.4 liters (2.8 gallons). The rim tapered to the lip edge and the walls rose straight to this edge. The rim was calculated to have a 26 cm diameter. The lip edge was pinched thinner in one area and was rounded and smoothed. There was a darkening or light smudging near the vessel rim on

both the interior and exterior. This smudging suggested that the vessel functioned as a heating vessel.

Mockley Ware

Mockley ware was defined by the predominant use of shell as the tempering material. It had a wide distribution throughout the Mid-Atlantic region (Egloff and Potter 1982; Stewart 1982). Surface treatments for Mockley ware included smoothed, cord marked, and net impressed or sometimes all three varieties were used on the same vessel (Stewart and Gardner 1978 in Custer 1989). These vessels were coil constructed and generally conoidal in form, with flattened or impressed lips. The accepted time range for this ware extended from A.D. 110 to 450 (Artusy 1976), although it has been suggested that forms of this ware extended to A.D. 1000 on the southern Delmarva Peninsula (Custer 1989:174). These later Mockley vessels tended to have thinner walls and may represent the transition to the later Townsend Ware.

A total of 74 Mockley ceramic sherds were recovered; these were grouped into nine vessel lots were determined (Table 12.51). The Mockley ceramics from Hickory Bluff were composed of pastes that ranged from very smooth and fine, to sandy. The surfaces were either cord-marked or net roughened. Interiors were plain or marked with a similar, distinctive scraping, which was reminiscent of the Clay Tempered wares. Decoration was included on the rim of one vessel lot, and consisted of impressed, parallel single cords, placed at an angle to the edge of the rim. When identifiable, all of the sampled Mockley ware sherds exhibited S-twist cordage.

Table 12.51 Mockley Ceramics

Ceramic type	Vessel lot	Frequency	Mends	Non-Mends
Mockley	MO1	8	2	6
	MO2	18	6	12
	MO3	4	2	2
	MO4	15	2	13
	MO5	3	2	1
	MO6	3	2	1
	MO7	1	0	1
	MO8	10	2	8
	HMO1	2	0	2
	Non-lot	10		
TOTAL	9	74		

Vessel Lot MO1 was represented by eight sherds. The vessel lot included two sherds from two different test units that mended. In addition, the vessel lot included eight sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MO1 was tempered with shell that had leached out and left numerous voids in the vessel body and surfaces. A small amount of fine sand/grit and a fiber impression were also evident within the paste. The exterior surface was marked with S-twist cordage and was finger-swiped near the

rim. The interior surface was smoothed plain on some sherds, or was scraped both horizontally and vertically with a tool that left fine parallel lines. The rim of the vessel was decorated with impressed, single, parallel cords that were so fine that they appeared incised. These lines were angled diagonally to the rim edge and the areas had been finger-swiped before the impressions were made. The relative thinness and attention to detail suggest this vessel was designated for a special function.

Vessel Lot MO2 was represented by 18 sherds. The vessel lot included six sherds from five different test units that mended into three groups. In addition, the vessel lot included twelve sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MO2 was heavily tempered with crushed shell, most of which had leached out and left narrow slits in the body of the sherds. A small portion of well-sorted fine sand, occasional iron oxide pieces, and fragments of unblended clay were included as well. The exterior surface was net impressed with multiple layers of tightly spaced netting that left a highly patterned surface. The cordage of the netting was very fine and was formed with a final S-twist. The interior surface was scraped with a tool that left narrow, comb-like lines applied in a criss-cross pattern. The vessel was coil constructed and showed some evidence of paddle markings used to help shape the vessel. However, no information was available about vessel size, shape, or rim characteristics. Vessel Lot MO2 was abundantly shell-tempered. At the same time, the inclusions or clay pieces, criss-cross scraping on the interior, and fine net-impressions on the exterior created an overlap of traits characteristic of Clay Tempered wares. The sherds of the vessel had weathered differently, which may relate to postdepositional factors or variations within the paste itself.

Vessel Lot MO3 was represented by four sherds. The vessel lot included two sherds from two different test units that mended. In addition, the vessel lot included two sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MO3 was tempered with shell that had leached out and left voids within the sherds. A minor amount of sand/grit and numerous iron oxide fragments were also dispersed throughout the paste. The small size and rounded shape of the iron oxide, suggested that they were natural inclusions within the clay source, and not purposeful additions. The exterior surface was net-roughened with a net composed of S-twisted cordage. This treatment was slightly deep on some sherds. The interior surface was scraped repeatedly and created a pattern of criss-crossed parallel lines at different angles. No information was available about size, form, or rim characteristics of this coil constructed vessel. The sherds of the vessel were relatively thin for a Mockley vessel, but the large shell holes and surface treatments were typical of that ware.

Vessel Lot MO4 was represented by 15 sherds. The vessel lot included two sherds from one test unit that mended. In addition, the vessel lot included thirteen sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MO4 was tempered with crushed shell, which leached out and left numerous holes in the body of the vessel (Figure 12.55). Random fragments of iron oxide also were included in the paste. The exterior surfaces of the vessel were deeply impressed with cordage that was worked into a loose net or fabric. The cordage of the net of fabric was S-twisted and varied in thickness. The interior surface was smoothed flat, but did have a few remnant fine striation marks. No information was available for vessel size, shape, or rim characteristics. One sherd displayed the impression of a paddle that

was used to help shape the vessel wall. The pasty body, thin walls, scraped and smoothed interiors, and the net/fabric impressed exterior treatment were similar to Clay Tempered vessel lots. The amount of shell temper utilized distinguished this vessel from the Clay Tempered wares.

Figure 12.55 Mockley, Vessel Lot MO4

Vessel Lot MO5 was represented by three sherds. The vessel lot included two sherds from one test unit that mended. In addition, the vessel lot included one sherd that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MO5 was tempered with crushed shell that had leached out and left numerous voids. Well-sorted fine sand/grit and several rounded iron oxide fragments were evident in the paste. The exterior surface was impressed with S-twisted cordage that varied in thickness. The interior surface was smoothed. Coil construction was evident, but no information concerning vessel size, shape, or rim characteristics was available. This vessel was composed of thicker sherds that were also made heavier by the high sand content, which distinguished this vessel lot.

Vessel Lot MO6 was represented by three sherds. The vessel lot included two sherds from one test unit that mended. In addition, the vessel lot included one sherd that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MO6 was tempered with shell that had leached out and left various sized voids. The paste also included some very fine sand. The exterior surface was impressed with cordage that was placed vertically at a slight angle to the rim edge. The cordage varied in thickness and was formed with a final S-twist. The interior surface was smoothed, especially near the upper rim. The vessel was constructed of coils, but no information was available about the form or size of the vessel. The rim rose straight

to the lip edge, while the vessel wall tapered to the rim. The lip was rounded and smoothed. The surface treatments of this vessel were typical of Mockley ware, while their flattened appearance and blurred edges suggested the impressions were made when the vessel surface was wet.

Vessel Lot MO7 was represented by a single sherd. Vessel Lot MO7 was tempered with shell, which leached out and left voids. A higher proportion of sand/grit than observed on the other Mockley vessels was observed and created a sparkling surface. A few pieces of iron oxide also were present in the paste. Although most of the exterior surface was spalled away, the portions that remained were net-impressed, and possibly net-roughened. However, the weathered surfaces rendered the details of the net impressions indeterminable. The interior was barely smoothed, and was wavy as a result of the underlying scraping patterns of narrow parallel lines. The vessel was constructed of coils, but no further information about vessel size, shape, or rim characteristics was available. This vessel was the most sandy and friable of the Mockley ware vessels and clearly displayed the variation encountered within a ware.

Vessel Lot MO8 was represented by 10 sherds. The vessel lot included two sherds from one test unit that mended. In addition, the vessel lot included eight sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot MO8 was tempered with crushed shell that had leached out and left flat, plate-like voids in and on the vessel body. A small amount of fine sand also was included. The exterior surface was impressed with a low-relief net, and then smoothed over. The interior surface exhibited a pattern of narrow parallel lines from scraping, some of which were smoothed over. No information was available about the size, shape, or rim characteristics of this coil constructed vessel. This vessel was thinner than usual for Mockley ware and its temper was not clustered, but appeared individually throughout the paste. A dark smudging on the interior of the vessel may be related to its function, possibly as a heating vessel.

Vessel Lot HMO1 was represented by two similar sherds that did not mend. Vessel Lot HMO1 was tempered with shell that had leached out and left holes in the body of the paste. Fine sand/grit and iron oxide fragments were also included within the paste. The exterior surface was cord-marked with S-twisted cordage and also partially smoothed over. The interior surface was cord-marked, and spaced more closely together than the exterior impressions. Vessel size, shape, and rim characteristics for this vessel could not be determined, but the vessel was constructed of coils. This vessel was quite thick, more typical of Mockley ware vessels, but also contained an uncharacteristically heavy concentration of iron oxide fragments. It was also the only Mockley vessel that contained cord marking on the interior surface.

Hell Island Ware

Excavations at the Hell Island site (7NC-F-7), located in the Appoquinimink River, by Wright (1962) and Thomas (1966) led to the definition of a new ceramic type, Hell Island ware. This ware was defined by its use of crushed rock, mostly quartz, as temper, and often, in addition, the inclusion of mica flakes and grit within the paste. The vessel shapes were conoidal and had direct rims and flat lips. Surface treatments varied from fabric to cord impressed. The ware was generally found in the northern Delmarva Peninsula and associated with a date range

of A.D. 600-1000 (Thomas and Warren 1970; Artusy 1976; Thomas 1981), representing the late end of the Middle Woodland period.

Four vessel lots were classified as Hell Island ware from a total of 107 sherds (Table 12.52). These vessels were heavily tempered with finely crushed quartz and three of the vessels also contained mica inclusions. The different vessels exhibited a range in the density of sand within the paste and in the relative concentration of tempering materials. The vessels also displayed the range of surface treatments characteristic of Hell Island ware and exhibited both cord marked and fabric-impressed exteriors. The interiors were usually smoothed plain, although Vessel Lot H4 showed evidence of cord marking on its interior. The cordage used on the different vessels exhibited both S-twist and Z-twist and a range of fiber thicknesses. This range suggested a different level of care put into the manufacture of these vessels: some appeared carefully crafted, others less well-made and expedient, perhaps for strictly utilitarian purposes.

Table 12.52 Hell Island Ceramics

Ceramic Type	Vessel Lot	Frequency	Mends	Non-Mends
Hell Island	H1	1	0	1
	H2	5	0	5
	H3	81	17	64
	H4	3	3	0
	Non-lot	17		
TOTAL	4	107		

Vessel Lot H1 was represented by a single sherd. Vessel Lot H1 was tempered with crushed quartz fragments of varying size. Mica flakes also were included in the paste and created a glittering appearance for the vessel. The exterior surface was deeply impressed with a close-woven fabric of thin cordage. The interior surface was heavily smoothed and covered with a pattern of extremely fine, parallel striation lines. The vessel was coil constructed, but no further information about vessel size, shape, and rim characteristics was available. This vessel contained several attributes that suggested its careful manufacture: thin body sherds, well-mixed and compacted paste, the extensive smoothing of the interior, and the use of fine fabric and careful impressions on the exterior surface.

Vessel Lot H2 was represented by five similar sherds that did not mend. Vessel Lot H2 was tempered with small fragments of finely crushed quartz and small flakes of mica. The exterior surface was impressed with a cord-wrapped paddle that was closely wrapped and created a narrowly spaced criss-cross pattern. The cordage used was very thin and fine and formed with a final S-twist. The interior surface was smoothed plain and had some depressions where temper had been dragged in the smoothing process or had eroded out. No information was available about vessel size, shape, rim characteristics, and construction techniques. Vessel Lot H2 was a thin-walled vessel with well-blended, compacted paste and a carefully impressed exterior surface treatment, of which suggested the careful manufacture of this vessel.

Vessel Lot H3 was represented by 81 sherds. The vessel lot included seventeen sherds from six different test units that mended into seven groups. In addition, the vessel lot included

sixty-four sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot H3 was heavily tempered with crushed quartz and sand/grit. The materials were distributed evenly throughout the paste and sorted for size. The exterior surface of the vessel, up to the rim edge, was impressed with a cord-wrapped paddle that was unevenly spaced. The cordage was fine and formed with a final Z-twist. The cross-paddling created a criss-cross pattern on the surface. The interior was heavily smoothed, which left all of the temper laying flat on the surface. Some scraping was noted that left a pattern of narrow, parallel striations. No information was available about vessel size for this coil-constructed vessel. The body rose straight to the rim edge and tapered in thickness towards the lip. The lip was generally flattened and impressed with a paddle, which created an uneven surface. Vessel Lot H3 was a thick vessel and more heavily tempered with larger fragments of crushed quartz and no mica flakes. Its surfaces were not as smoothed or carefully impressed as the other Hell Island vessels, and its base area exhibited more wear and a redder color than the upper portion of the vessel, which suggested that it had been heated. These attributes suggested this vessel was more utilitarian than the other Hell Island vessels within the assemblage.

Vessel Lot H4 was represented by three sherds. The vessel lot included three sherds from two different test units that mended. In addition, the vessel lot included one sherd that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot H4 was tempered with crushed quartz, large mica flakes, and sand/grit (Figure 12.56). The materials exhibited a range of sizes and were not well-blended into the paste. Most of the exterior surface had eroded away, so the surface treatment was undetermined. The interior surface was cord-marked with medium-sized, S-twist cordage. Vessel size, shape, construction techniques, and rim characteristics were not determined for this vessel. This vessel did not appear as well-manufactured as the other Hell Island vessels, due to the uneven paste, eroded walls, and heavy tempering. The interior surface was darkened or reduced, while the exterior surface was highly oxidized, which may be related to the vessel's function as a heating vessel.

Figure 12.56 Hell Island, Vessel Lot HI04

Townsend Ware

Townsend ware ceramics were a Late Woodland ware typically found across most of the Delmarva Peninsula. They have been examined and reported by Griffith (1977), after being recovered from excavations at the Townsend Site near Lewes Delaware. These were well-made vessels that were fired more efficiently, had thin walls, and utilized shell for temper. Furthermore, Townsend ware vessels were characterized by the variety of decorative motifs and surface treatments applied to the vessels. The range included simple fabric impressions on the body to systematic and complex patterns of incised lines and multiple cords. Interestingly, the

more complicated incised and multi-cord designs were considered to pre-date the use of more simple direct cord and cord-wrapped stick treatments also found on Townsend ceramics. Similarities between late Mockley ware and early Townsend ware have been noted and included exterior surface treatments, use of shell for temper, and general geographic overlap. The Townsend ware vessels were more finely made with thinner vessel walls, and may represent a refinement of the earlier Mockley ware. Townsend ware ceramics are well represented across the region and are generally associated with dates ranging from A.D. 880 to 1590 (Dent 1995).

A total of 70 sherds were classified as Townsend ware, and four vessel lots were represented (Table 12.53). They were all shell tempered, although postdepositional weathering had leached most of the shell from the sherds and left slits or voids within the paste. A range of inclusions was noted among the vessels, which may be more indicative of the clay sources used than intentional addition to the paste. The vessels showed typical fabric impressed exterior surface treatments, except for Vessel Lot HT1. Rim sherds were only recovered for Vessel Lot T1, so comparisons of decorative motifs were limited.

Table 12.53 Townsend Ceramics

Ceramic Type	Vessel Lot	Frequency	Mends	Non-Mends
Townsend	T1	26	4	22
	T2	3	0	3
	T3	2	0	2
	HT1	15	5	10
	Non-lot	24		
TOTAL	4	70		

Vessel Lot T1 was represented by 26 sherds. The vessel lot included four sherds from three different test units that mended into two groups. In addition, the vessel lot included twenty-two sherds that were similar in all attributes but did not mend to other sherds in the vessel lot. Vessel Lot T1 was tempered with finely crushed shell, which had leached out of the body and left holes and slits across the surface (Figure 12.57). A minor amount of fine sand/grit and several small iron oxide inclusions also were present within the paste. The exterior surface was impressed up to the lip edge with a closely woven fabric that created an undulating surface. The woven elements were formed of fine cordage with unidentified final twist. The interior surface was smoothed plain, and had some faint striations marks from the smoothing process. The interiors of the rim edges were decorated with the impressions of a cord-wrapped stick, arranged vertically with a slight tilt that created a wavy effect. The cordage used for this treatment was also of fine thickness and formed with a final Z-twist. The lip edge was flattened and thin and the rim body was slightly inverted before tapering straight to the edge. No information was available about vessel shape and size. The vessel was coil constructed. Vessel Lot T1 exhibited some variation in the thicknesses of the rim sherds, but maintained consistent decorative and paste attributes.

Vessel Lot T2 was represented by three similar sherds with no mends. Vessel Lot T2 was tempered with crushed shell, which had leached out from the vessel and left holes on all surfaces. It was also tempered with fine sand. The exterior surface was impressed with a closely

woven fabric made of thin cordage, with undetermined final twist. The interior surface was smoothed plain but somewhat uneven due to the shell voids. All of the surfaces exhibited weathering through erosion or spalling. No information about vessel size, shape, construction technique, and lip characteristics was available. Vessel Lot T2 was a smaller, thin walled vessel that was a distinct deep, dark red color and exhibited more weathering than the other Townsend vessel lots.

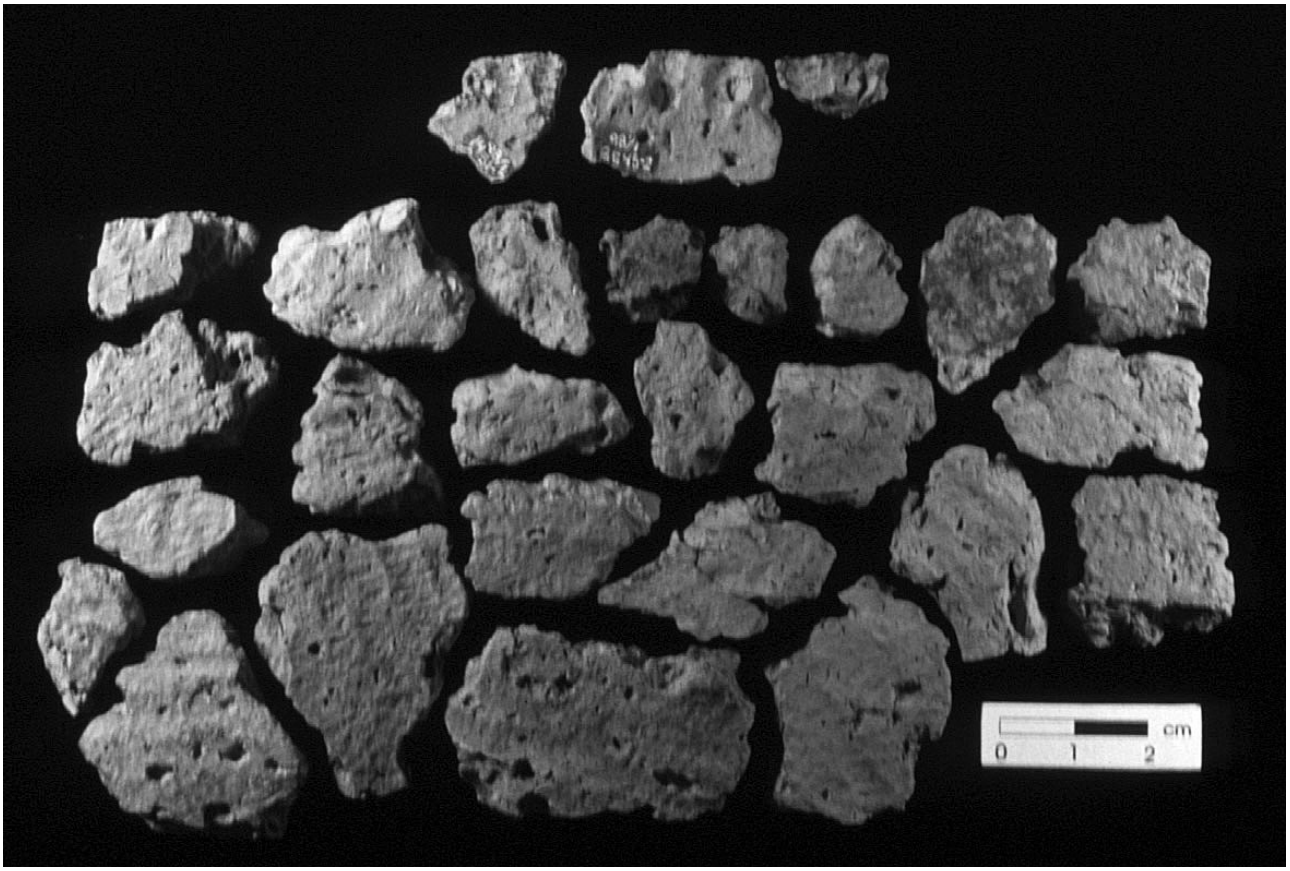

Figure 12.57 Townsend, Vessel Lot T1

Vessel Lot T3 was represented by two similar sherds that did not mend. Vessel Lot T3 was tempered with crushed shell, which had leached out of the sherds and left thin slits across the surface. Fine sand and occasional rounded fragments of iron oxide also were included within the paste. The exterior surface was deeply impressed with a fabric. Weathering had reduced the details, as a result, the cordage was tentatively considered Z-twist. The interior surface was scraped with a tool that had left narrow parallel lines in a criss-cross pattern. Weathering had reduced the details in some sherds. Vessel size, shape, and rim characteristics could not be determined for this vessel, which was coil constructed. Vessel Lot T3 exhibited different surface treatments than the other Townsend vessels. It was impressed with a relatively open weave fabric and displayed heavy interior scraping, traits that were more often observed on Clay Tempered vessels.

Vessel Lot HT1 was represented by 15 similar sherds with no mends. Vessel Lot HT1 was tempered with crushed shell, which had leached out leaving slits and holes in the body of the

paste. In addition, fragments of crushed quartz, a small quantity of fine sand/grit, and occasional rounded pieces of iron oxide were present in the paste. The exterior surface was impressed with fabric and then scraped over with a comb-like tool that left a pattern of narrow parallel lines. This scraping reduced the fabric details beyond recognition. The interior surface was scraped with a similar tool, but scraping was accomplished in a criss-cross manner and was partially smoothed over. Vessel size, shape, and rim characteristics could not be determined for this vessel, which was constructed of smaller coils. Vessel Lot HT1 contained attributes that were more common for Clay Tempered wares, including the exterior and interior surface scraping, the inclusion of quartz as tempering, and the more open weave of the fabric surface treatment. These overlaps may suggest that this vessel was transitional or reflected local variants of more traditional wares.

Minguannan Ware

The Late Woodland period was also represented by Minguannan ware ceramics. Like Townsend ware, Minguannan ware was finely manufactured with thin walls and compact paste. This ware was characterized by the use of crushed quartz and sand/grit for temper. Surface treatments ranged from smoothed, to corded, to smoothed-over corded surfaces. This ware also exhibited similar complex rim decorations as the Townsend ware ceramics, and in some instances, they were more complex. Various incising, direct cord, or cord-wrapped stick impressions were utilized for the decorations. Minguannan ware ceramics have generally been found in the northern Delmarva Peninsula, and often corresponded to the distribution of Hell Island ware. These two wares also employed the same tempering agents and were similar in vessel form and construction. The Minguannan ware was more refined and had more complex decorative motifs than the Hell Island ware.

Only one vessel lot of Minguannan ware was recovered from Hickory Bluff; it was comprised of 13 sherds from a total of 25 sherds (Table 12.54). These sherds had crushed quartz and fine sand/grit for temper, and displayed a smoothed over treatment on both the interior and exterior surfaces. The rims recovered were decorated with direct cord impressions of fine cordage.

Table 12.54 Minguannan Ceramics

Ceramic type	Vessel lot	Frequency	Mends	Non-Mends
Minguannan	MI1	13	0	13
	Non-lot	12		
TOTAL	1	25		

Vessel Lot MI1 was represented by 13 similar sherds with no mends. Vessel Lot MI1 was tempered with finely crushed, angular quartz fragments that were close to uniform in size (Figure 12.58). A minor amount of fine sand/grit also was included in the paste. Both the exterior and interior surfaces were evenly smoothed with a few faint drag marks evident, from the temper being moved during the smoothing process. The vessel was decorated around the rim, with a set of parallel, evenly spaced, impressed cords set at a slight angle to the rim edge. The cords used were fine and formed with a final Z-twist. No information was available about vessel shape or size. The rim was straight to the edge, and the lip was flattened and slightly

notched at the front edge. Vessel Lot MI1 was a thin-walled, well-made vessel and one of the few vessels that exhibited decoration. The vessel also had a range of coloration on the exterior surface, from light tan to deep reddish brown, that may be related to its function or manufacturing process.

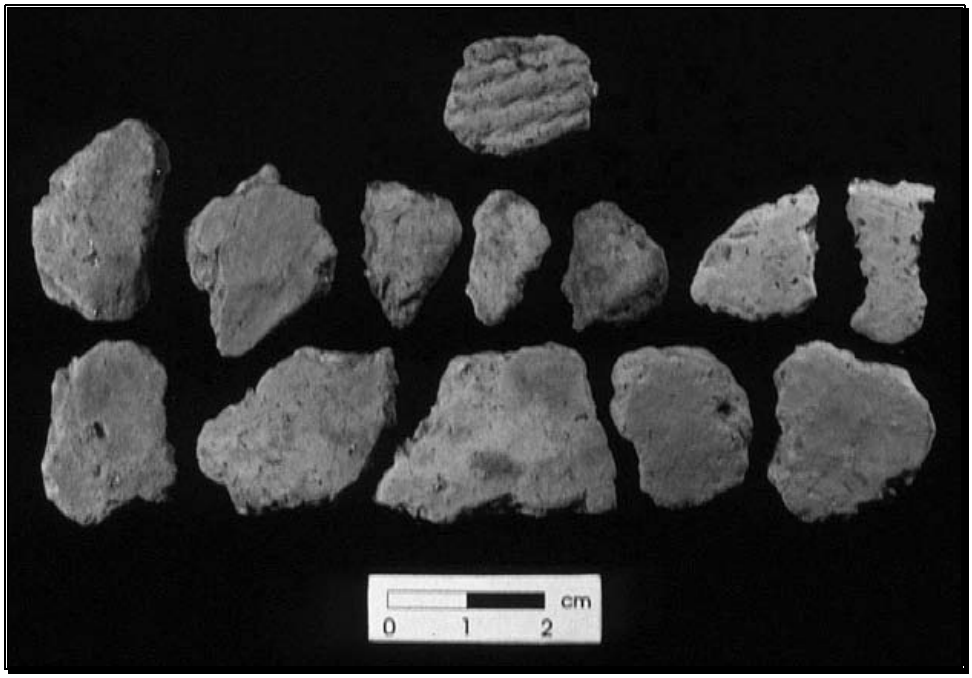

Figure 12.58 Minguannan, Vessel Lot MI1

Untyped Wares

A total of 3,423 ceramic sherds were not typed according to the traditional ware types described above, but included five distinct vessel lots (Table 12.55). These were either too small or weathered for a definitive assessment, or had attributes that overlapped ware definitions. Two of these lots were predominately sand-tempered and consisted of six sherds. They shared characteristics with Popes Creek ware, being heavily sand-tempered, but the surfaces of one vessel were too eroded to examine surface treatments. The paste of the other vessel appeared less friable than Popes Creek ware. Another of the untyped wares contained no visible temper material, with only small inclusions of hematite and fine sand, which were likely components of the source clay. At the same time, these non-tempered sherds displayed cord-marked exterior surface treatments and an inverted rim. The sherds were similar to some of the clay tempered sherds where the temper was barely discernable, however the rim form was very different. The final untyped ware was a vessel lot tempered with crushed shell. The shell had eroded out to such an extent that the surfaces were highly uneven and pitted. As a result, an accurate characterization of the surface treatments was not possible. The sherds appeared too thin to be considered Mockley ware and without a clear surface treatment, this vessel lot was left untyped.

These untyped vessel lots were not considered variants of the “experimental” wares associated with the Early Woodland period. Those vessels do not exhibit the same range of surface treatments, well-blended pastes, and thin coil manufacture evident in the untyped vessel

lots of this assemblage. Instead, they may reflect local variation within the known typology due to the availability of temper material or the degree of postdepositional weathering possible, which could blur the ware distinctions.

Table 12.55 Untyped Ceramics

Ceramic type	Vessel lot	Frequency	Mends	Non-Mends
Untyped	UT1	2	0	2
	HUT1	9	0	9
	S1	5	0	5
	S2	1	0	1
	HSH1	4	0	4
	Non-lot	3402		
TOTAL	5	3423		

Vessel Lot UT1 was represented by two similar sherds that did not mend. The sherds appeared to have no added temper material. A small quantity of fine sand and numerous rounded pieces of iron oxide were included in the paste, but not in amounts significant enough to be considered temper. The exterior surface was lightly impressed with cordage that may have been woven or twined into a loose net/fabric. The thickness of the cordage varied, and it was formed with a final S-twist. The interior surface was smoothed, but faint lines of earlier impressions were still visible. The rim tapered to the lip and was inverted at this edge. This vessel appeared modeled and may have been a miniature vessel, based on the curvature of the two sherds. Being untempered with a small quantity of sand inclusions, this vessel resembled lot HUT1 in terms of paste and texture; however, the thinness and tight curvature were unlike lot HUT1.

Vessel Lot HUT1 was represented by nine similar sherds that did not mend. This lot, originally identified as Killens Ware (Liebeknecht et al. 1997), appeared to have no added temper (Figure 12.59). It contained numerous fragments of various sized iron oxide or hematite grains that could have been added, but were more likely found naturally within the clay source. A small amount of fine sand also was present within the paste. The exterior surface of the vessel was impressed with closely woven or twined fabric of Z-twisted cordage. The interior surface was smoothed. No information was available for vessel size and shape. The rim tapered to the edge. The lip was rounded and the edge had been deeply cut to form scallops along the edge. The vessel was coil constructed. The large and deep scallops found on the rim of this vessel lot and the bright red paste were unique at the site.

Vessel Lot S1 was represented by five similar sherds that did not mend. The lot was heavily tempered with mostly fine sand, but occasional pebbles were also included within the vessel paste. The exterior surface of the vessel was incompletely smoothed. Although faint impressions remained, they were not distinct enough to determine their type. The interior surface also was smoothed and exhibited a few drag marks left by this process. No information was determined for vessel size, shape, or rim characteristics. The vessel was coil constructed and had thin walls. These thin walls and the fine temper suggested that this vessel was carefully

manufactured. The eroded state of the sherds, however, made it impossible to determine surface treatments and definitively place the vessel into a known ware type.

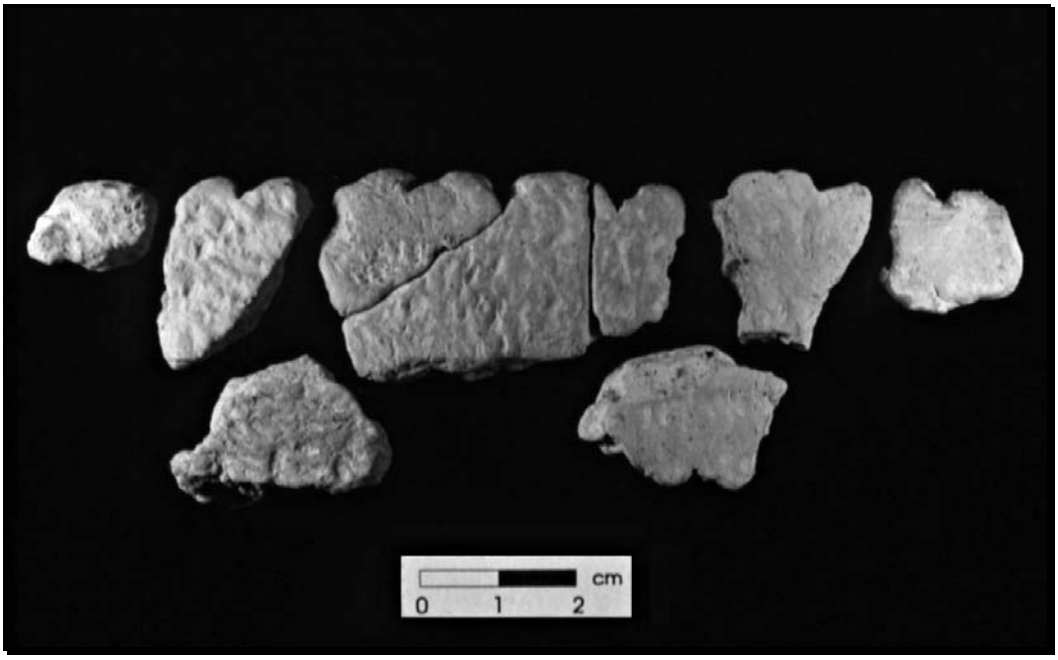

Figure 12.59 Vessel Lot HUT1

Vessel Lot S2 was represented by a single sherd. Vessel Lot S2 was tempered with poorly sorted sand. The exterior surface was deeply net-impressed. The net used for this treatment was formed with a final S-twist. The interior surface was lightly net-impressed and then partially smoothed over. No information was determined for vessel size, shape or rim characteristics. The vessel was constructed of coils. Vessel Lot S2 shared some similarities with Popes Creek ware including its sand temper and net-impressions. However, the amount of temper used was much less and the vessel was not as friable as a typical Popes Creek vessel.

Vessel Lot HSH1 was represented by four similar sherds that did not mend. The lot was tempered with crushed shell, which had leached out and left slits and holes in the vessel body. One piece of crushed quartz and a small amount of well-sorted sand/grit also were included within the vessel paste. The exterior surface was impressed with an unidentifiable treatment, which was then smoothed over. The interior surface was scraped and had a pattern of narrow, parallel lines on some sherds, while others had an incompletely smoothed over surface of unidentifiable impressions. No information was determined for vessel size, shape or rim characteristics. The vessel was coil constructed. This shell-tempered vessel lot could not be reliably associated with any known ware type due to the eroded state of the surfaces.

OTHER CERAMIC ARTIFACTS

Three non-vessel ceramic artifacts included an unidentified ball, a possible pipe sherd and a possible ceramic bead. The ceramic ball measured 22mm in diameter and was of untempered, pale brown (10 YR 6/3) clay (Figure 12.60). The ball was roughly modeled and did

not appear rolled smooth. Around the circumference of the ball was a 3 mm-wide, lightly ridged band, possibly the impression of a reed or untwisted twine. The function of the ball is unknown.

Figure 12.60 Ceramic Ball

The second non-vessel ceramic artifact was a possible pipe sherd, but it was small and the identification was tentative. The sherd was 3 mm thick and was of untempered clay with fine sand inclusions (Figure 12.61). The clay was brownish yellow (10 YR 6/6) and no evidence of residue or burning was present on the interior surface. If it were a pipe sherd it would have been the upper portion of the bowl, near the rim, based on the thinness. The sherd was too small to estimate pipe bowl diameter.

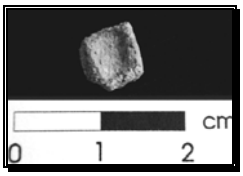

Figure 12.61 Possible Pipe Fragment

The final ceramic artifact was initially identified as a shell-tempered bead (Liebeknecht et al. 1997; illustrated page 9.17). The round object was 8mm in diameter and 4mm thick, and was perforated. On close inspection, however, the object appeared likely to be a natural clay concretion based on the resemblance of the raw material to the more obvious clay concretions recovered throughout the site.