

CHAPTER 9

ARCHAEOLOGICAL DATA RECOVERY AT THE HICKORY BLUFF PREHISTORIC SITE [7K-C-411] - FIRST PHASE

A. Field Investigations

An advance phase of archaeological data recovery was performed at the Hickory Bluff Prehistoric Site [7K-C-411] in connection with the construction of a drainage swale. This work built upon information gained from the Phase I and II field survey investigations and consisted primarily of a systematic sampling program undertaken within the construction limits of the proposed drainage ditch (Figure 9.1). The purpose of this initial phase of data recovery was in part intended to better inform and guide a second, more comprehensive program of data recovery anticipated prior to the main highway construction program. It was intended that this latter work would supply the principal means of placing the site in the context of broader regional issues identified in the Management Plan for Delaware's Prehistoric Cultural Resources (Custer 1983) and the recent report "Stability, Storage, and Culture Change in Prehistoric Delaware: The Woodland I Period (3000 B.C.-A.D. 1000)" (Custer 1994).

This initial phase of data recovery involved the excavation of 24 one-meter-square excavation units and a series of split-spoon auger tests. Following the approach established by the University of Delaware Center for Archaeological Research (UDCAR), the 24 excavation units (EU#s 31-54) were located on a 10-meter grid extending over the entire site (Figure 9.1). The split-spoon augering was conducted on a two-meter grid, which was tightened to a one-meter spacing when soil anomalies or probable features were encountered. Sixteen possible pit features were identified using this latter technique.

Following completion of these tasks, an additional 75 one-meter-square excavation units (EU#s 55-129) were placed in areas projected to yield important information based on the artifact distributions established by the earlier excavations and the results of the split-spoon augering (Figure 9.1). These excavation units, mostly disposed in two large blocks, located nine pit features, eight of which were adjacent or overlapping. These features are provisionally interpreted here as pit houses.

B. Stratigraphic and Feature Analysis

Four excavation units (EU#s 84-87) were located around Excavation Unit 37, which had produced a single cache-like argillite blade (see below, Figure 9.6[N]). These four units recovered no further blades or evidence of any related pit features. Upon completion of these units, the adjacent units were then probed for a distance of two meters in all directions to explore the possibility of additional cache blades and/or features. None were encountered.

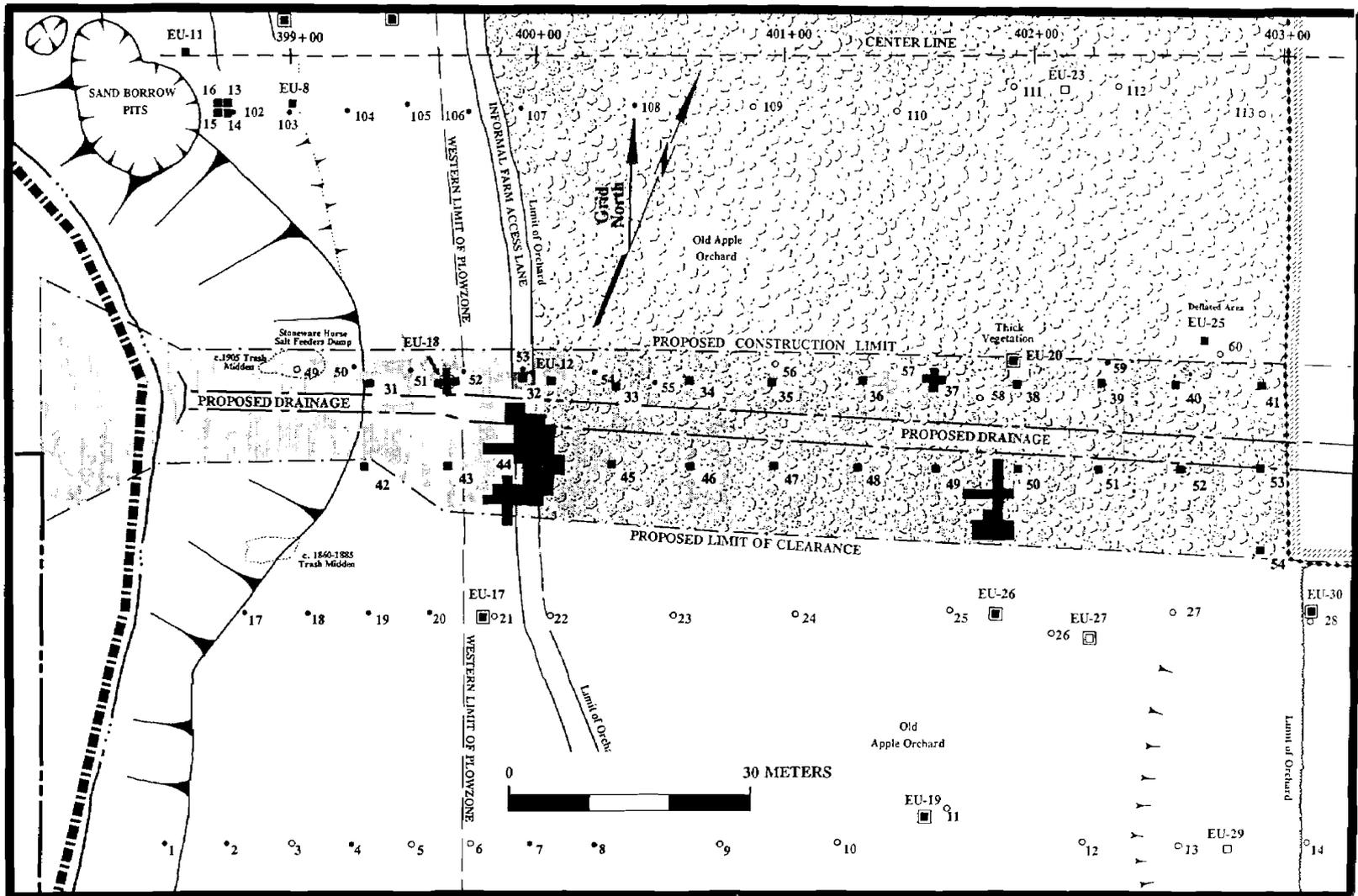


Figure 9.1. Hickory Bluff Prehistoric Site, Data Recovery, First Phase - Site Plan Showing Locations of Subsurface Tests.

Nineteen excavation units (EU#s 55-61, 76-79, 88-90, 100 and 101) were located southwest of Excavation Unit 50 (Figures 9.1 and 9.2; Plates 9.1-9.3). This location was chosen solely on feature/soil anomaly data gained from the split-spoon auger testing. The result was the near complete excavation of a large Woodland I pit feature identified as Pit House 1. This structure apparently faced north based on the location of the sub-basement. The pit feature measured six meters from front to back (across the sub-basement) and approximately four meters in width across the central portion of the basement. The sub-basement extended to a depth of 140 centimeters below the surface, while the remainder of the basement was 50 centimeters deep (see below, Figure 9.11B, for details of house morphology and terminology). The fill of the pit was relatively clean, yielding only a few pieces of lithic debitage. No diagnostic artifacts were recovered from this feature. The archaeological definition of the house was extremely clear. The pit showed no signs of a central hearth, nor was there any evidence of interior or exterior postholes which are sometimes thought to be characteristically associated with pit houses.

Four excavation units (EU#s 91-94) were located around Excavation Unit 18, which produced 430 artifacts and portions of two shallow basin features during the Phase II field investigations. The remainder of these two features were recorded and excavated in Excavation Units 91 and 93. Originally these features were thought to be possible pit houses, but upon full excavation it now seems more likely that one feature was a non-cultural soil anomaly caused by tree roots and the other was much too small to serve as a pit house, measuring only 80cm across and 22cm in depth. The exact function of this second feature is unclear, although it would appear to be cultural in origin. A small thermally-fractured rock cluster located nearby was recovered from Excavation Unit 92 at a depth of 40 centimeters below the ground surface. Found in association with the rock cluster was a jasper pebble core, utilized as a spokeshave, a single sherd of exterior-corded Coulbourn ware and a thin ovoid blade fragment manufactured from an unusual type of jasper (see below, Figure 9.6[L]). This feature is tentatively interpreted as a stone boiling dumping pile in which some of the larger pieces appear to have been recycled. Based on this feature's association with a sherd of Coulbourn ware and the ovoid jasper blade fragment, this Woodland I feature appears to be culturally affiliated with the Delmarva Adena complex. Upon completion of these units, the adjacent units were then probed to explore the possibility of other rock clusters being present. Although individual hits were encountered no clusters were located.

Forty-eight excavation units (EU#s 65-74, 80-83, 95-99 and 102-128) were located around Excavation Unit 44 (Figures 9.1 and 9.3; Plate 9.4). This location was chosen based on data gained from the split-spoon auger testing and the location of a possible pit house recorded in Excavation Unit 44. The opening up of a larger area of contiguous units here resulted in the identification of a series of adjacent and overlapping pit features, all of which are considered to be pit houses. A total of eight pit houses were identified (Pit Houses 2-9). Pit houses 2 and 3 were excavated completely, while Pit Houses 4 and 5 were half-sectioned. Pit houses 6-9 were sampled as they continued beyond the limits of the block of excavation units. The orientation and size of pit houses 6-9 were determined through split-spoon augering (Table 9.1).

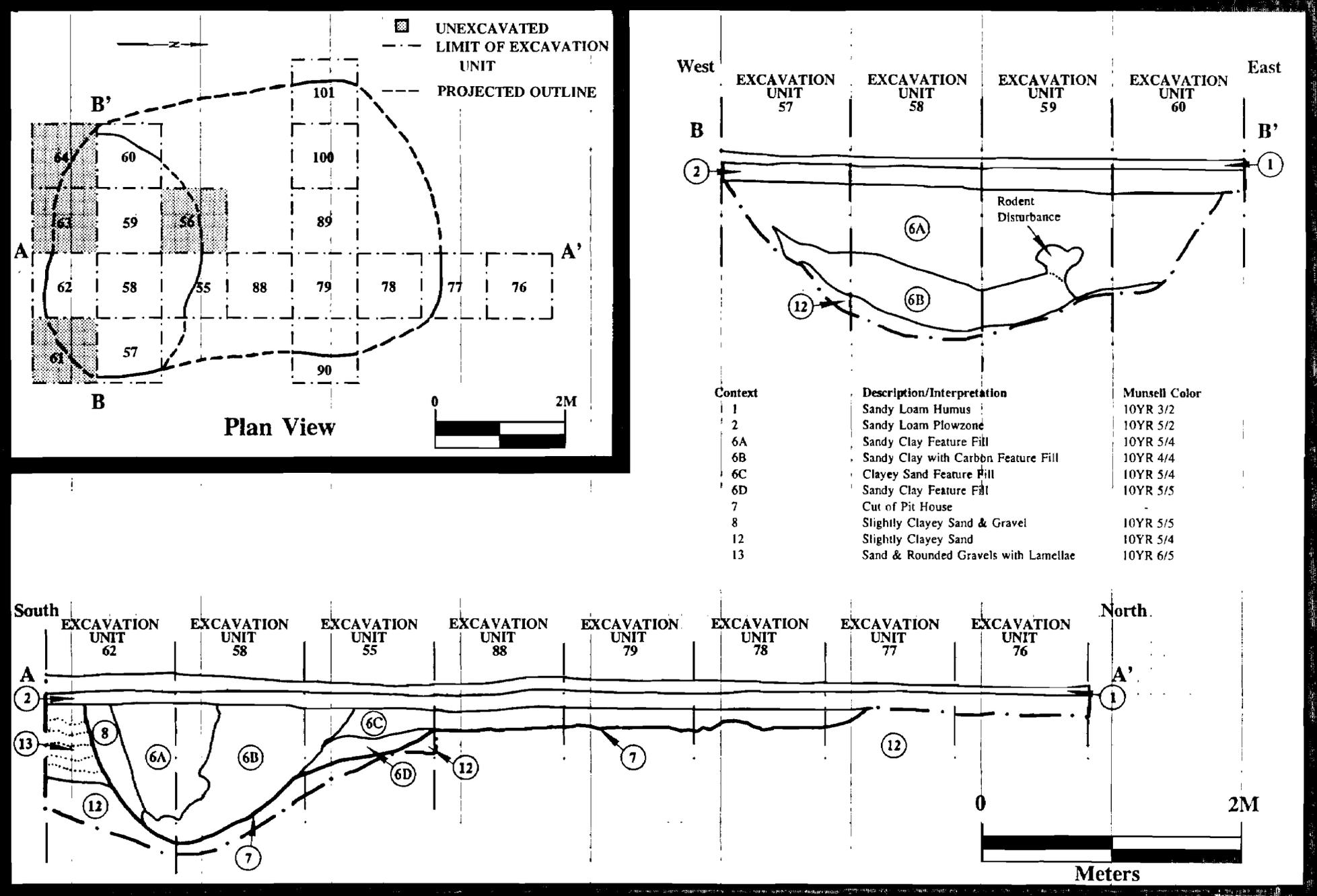


Figure 9.2. Hickory Bluff Prehistoric Site, Data Recovery, First Phase - Excavation Units 55-64, 76-79, 88-90, 100 and 101, Pit House 1, Plan View and Profile Showing the Projected Outline of the Subsurface Portion of Pit House and the Interruption of the Natural Soil Profile by the Pit.

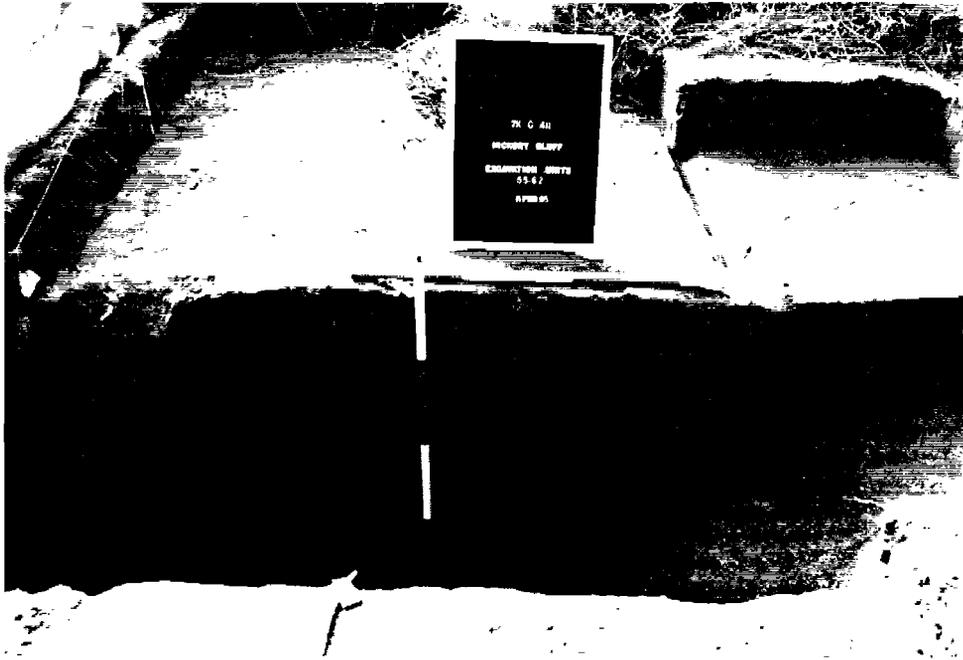


Plate 9.1. Area C - Hickory Bluff Prehistoric Site [7K-C-411], Excavation Units 55-64, Pit House 1: view showing east-west cross-section through rear of pit feature (Photographer: Frank Dunsmore, February 1995) [HRI Neg. 95004/7-27].

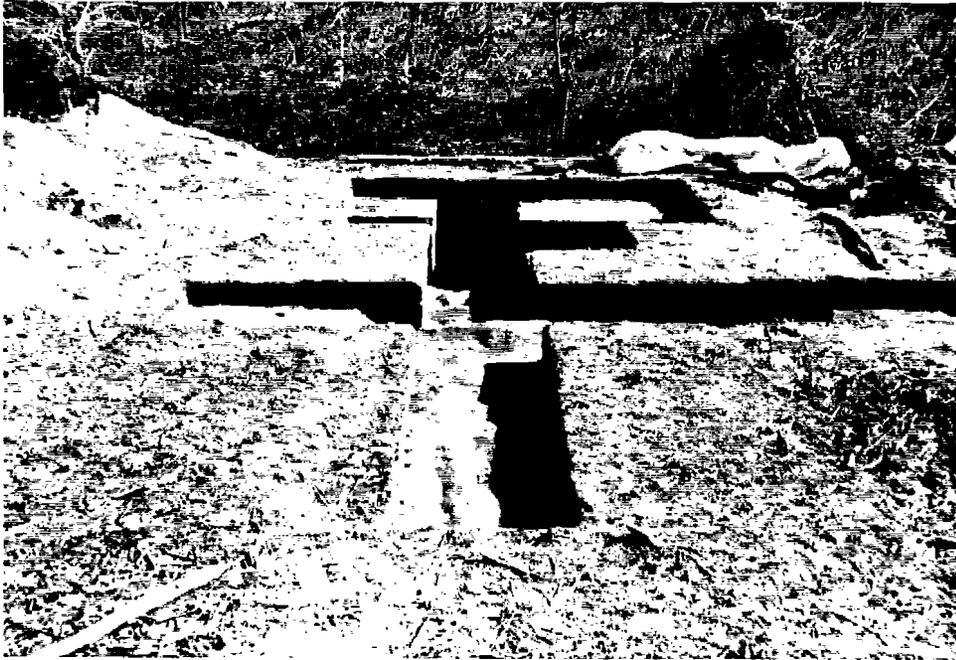


Plate 9.2. Area C - Hickory Bluff Prehistoric Site [7K-C-411], Excavation Units 55-64, Pit House 1: view looking south showing east-west and north-south cross-sections through pit feature (Photographer: Frank Dunsmore, March 1995) [HRI Neg. 95004/33-22].



Plate 9.3. Area C - Hickory Bluff Prehistoric Site [7K-C-411], Excavation Units 55-64, Pit House 1: view of Dawn Cheshaek and Sue Ferenbach recording rear of pit feature (Photographer: Frank Dunsmore, February 1995) [HRI Neg. 95004/9-17].

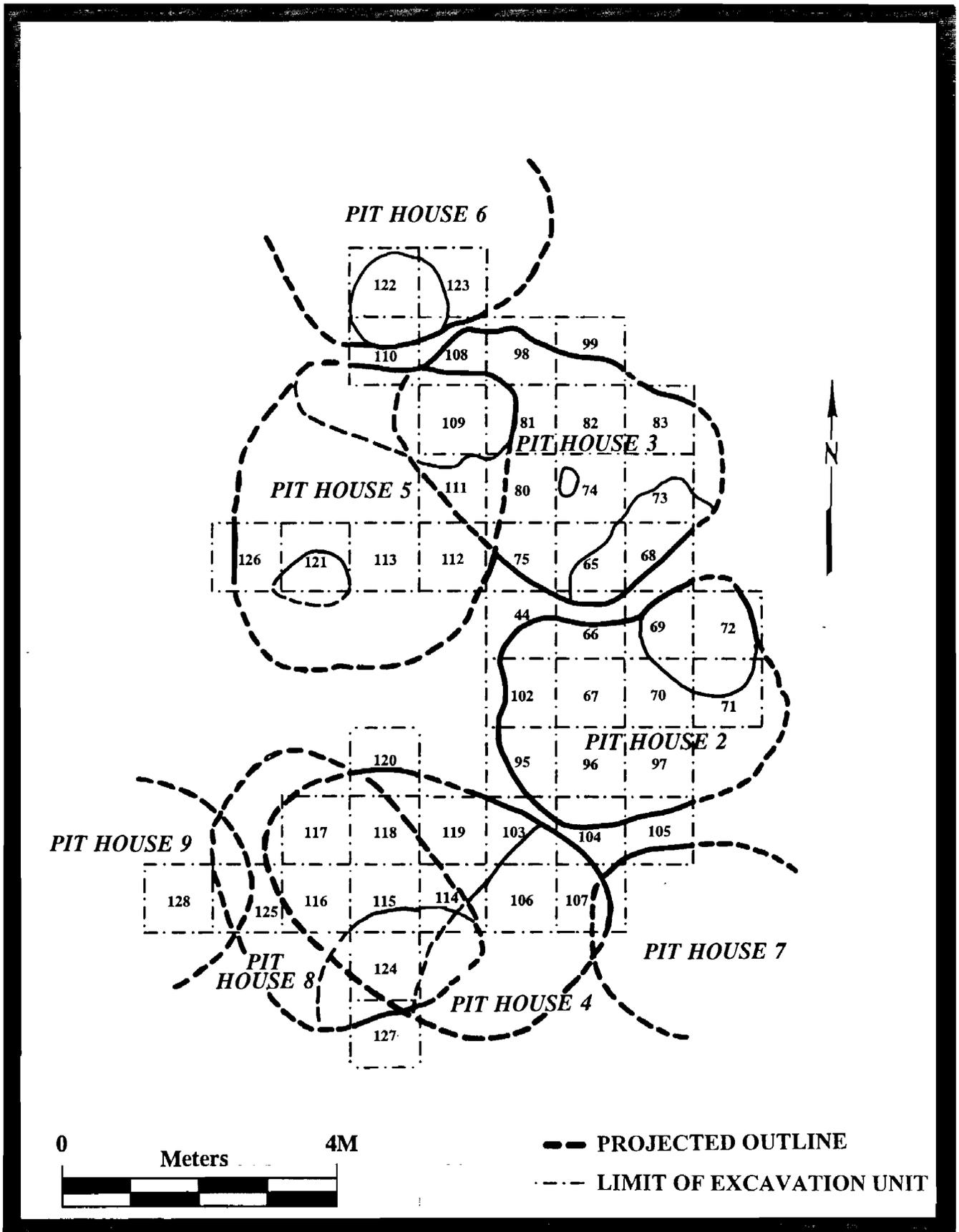


Figure 9.3. Hickory Bluff Prehistoric Site, Data Recovery, First Phase - Excavation Units 44, 65-74, 80-83, 95-99 and 102-128, Pit Houses 2-9, Plan View Showing the Projected Outlines of the Subsurface Portion of Pit Houses.



Plate 9.4. Area C - Hickory Bluff Prehistoric Site [7K-C-411]: general view looking east showing western block of excavation units containing Pit Houses 2-9 (Photographer: Frank Dunsmore, March 1995) [HRI Neg. 95004/31-32].

**TABLE 9.1
DIMENSIONS OF PIT HOUSE FEATURES
FROM THE HICKORY BLUFF PREHISTORIC SITE**

House Pit #	Length	Width	Depth of Sub-basement	Depth of Basement	Orientation *
1	6m	4m	140cm	50cm	North
2	4.3m	3m	110cm	49cm	Southwest
3	4.4m	3.2m	66cm	28cm	Northwest
4	5m	2.6m	94cm	38cm	Northwest
5	4.6m	3.8m	105cm	58cm	South
6	-	3.9m	93cm	58cm	Northwest
7	-	3m	-	-	Northwest
8	4.2m	2.7m	142cm	56cm	Northwest
9	-	3.1m	-	-	East
Averages	4.7m	3.2m	107cm	48cm	

* Defined as the direction of a perpendicular line drawn through the D-shaped sub-basement feature to intersect the opposite side of the pit house wall.

The sequence of construction, occupation and fill of these features is reflected as a confusing series of cut and fill episodes in the archaeological record. Geologically speaking, all of these features were constructed, occupied and filled in within a relatively short period of time, while their relationships one to another are further blurred by post-depositional disturbance from tree roots and rodent burrows. The features are similar in shape and size with an average length of 4.7 meters, an average width of 3.2 meters, an average sub-basement depth of 107 centimeters and an average basement depth of 48 centimeters. They all exhibit similar soil formation characteristics, specifically in the breakdown of organic material and in the rate of color leaching. For this reason, overlapping features are difficult to place into a relative sequence.

Initial interpretation of this group of pit houses is that they were not part of a single house cluster, but represent an overlapping range of temporal and cultural occupational episodes within the early and middle Woodland I period. Pit Houses 2 and 6 do not intersect with any of the other pit house features. Pit House 3 is cut by Pit House 5 making Pit House 3 older than 5. Similarly, Pit House 7 is cut by Pit House 4, which in turn is cut by Pit House 8 (making Pit House 7 the oldest of the three followed by Pit House 4 and then Pit House 8). Pit House 8 also intersects with Pit House 9, although which pit house cuts which is unclear (Figure 9.3).

The post-occupational fill of these features incorporates cultural material from multiple time periods. The fills of these features contain diagnostic materials from the Barker's Landing, Delmarva Adena, Wolfe Neck, Carey and Delaware Park complexes. The integrity of the information gained from the post-depositional fill of the pit houses is thus somewhat unreliable and probably inadequate for answering questions on the function and affinity of the pit houses themselves and on Woodland I sites in Delaware.

Pit houses 2, 3 and 4 exhibit what appear to be intact living floors along the bottoms of the upper basements. These contexts were consistently thin and compact. Artifacts recovered from these basal deposits have much greater interpretive potential for understanding these pit features.

Within Pit House 2, the living floor [context 96] contained a four pieces of debitage, two small indeterminate bone fragments, one thermally-fractured rock fragment and two small indeterminate sherds of ceramics. One of the sherds exhibits coil construction, and quartz and shell temper. Although its exterior surface treatment is unclear, this sherd is probably a variant of Wolfe Neck or Mockley ware (700 B.C. to A.D. 450).

Within Pit House 3, the living floor [88] contained a jasper wedge, 47 pieces of debitage, six thermally-fractured rock fragments, three small ceramic sherds and one small fragment of steatite. Based on the presence of steatite, a date range within the Barker's Landing Complex (circa 3000 B.C. to 500 B.C.) is postulated for this living floor deposit. The wedge found in context 88 is considered a true wedge and not a small bipolar core; it could probably be used for splitting saplings and may have been used in creating a frame for the pit house. Such tools were also used to split bones to gain access to the marrow; interestingly, a number of small bone fragments were also recovered from this deposit.

Within Pit House 4 the living floor [113] averaged 15 centimeters in thickness and contained a jasper pebble core, 49 pieces of debitage, 37 thermally-fractured rock fragments (randomly scattered across the floor), 29 ceramic sherds of Marcey Creek (7 sherds), Wilgus (5) and Coulbourn (1) wares, as well as 16 other sherds of uncertain type. Marcey Creek ceramics are characteristic of the Barker's Landing Complex (*circa* 3000 B.C. to 500 B.C.), while the Wilgus and Coulbourn wares are representative of the Delmarva Adena complex (*circa* 500 B.C. - 1 A.D.). The earlier steatite-tempered Marcey Creek ware sherds may have found their way into a later context as a result of a later pit house cutting into or through archaeological evidence of an earlier occupation.

This suggestion is further supported by a unique set of internal features [107 and 120/121] clearly associated with the occupation of Pit House 4 (Figures 9.4 and 9.5; Plate 9.5). A stack of 56 ceramic sherds (representing the upper portions of two ceramic vessels) of net-impressed (6 sherds, 10.5mm mesh) and Z-twist cord-impressed (50 sherds) Coulbourn/Wilgus ware was found adjacent to a clay and grog-filled, bell-shaped pit [120/121] in Excavation Units 114 and 119. These vessels can be treated as a single ceramic type for discussion purposes since they both made use of the same clay as a tempering material (see below). All of the sherds exhibit clay temper containing many small pieces of freshwater mussel shell. Cross-mending of these sherds revealed that sherds exhibiting shell and clay temper mended with sherds that were clay tempered and showed no signs of shell tempering. The freshwater mussel shell may indicate utilization of local resources for tempering materials, since traditional Wilgus ware is tempered with crushed saltwater shells, such as oyster or clam. This observation is important as it would suggest that Coulbourn and Wilgus wares are one ceramic type with local variants using available local resources for tempering.

The 56 sherds in Pit House 4 were deposited in four distinct layers. Cross-mending revealed that they were not broken in-place but were broken prior to deposition and then neatly placed in a stack. As noted above, all of the sherds derive from the upper portions of just two vessels. The upper part of a ceramic vessel is usually the thinnest part and the most likely to be fractured or chipped; this section of a vessel can be trimmed off and recycled as temper for new vessels, while the lower portion can continue to be used. The bell-shaped pit [121] located in Excavation Units 103 and 119, adjacent to the stack of ceramic sherds [107], measured 62 centimeters across with a depth of 36 centimeters. This small pit contained a mixture of clay and crushed, charred ceramic sherds [120]. Together, these features suggest the on-site production of ceramic vessels from the upper portions of old vessels.

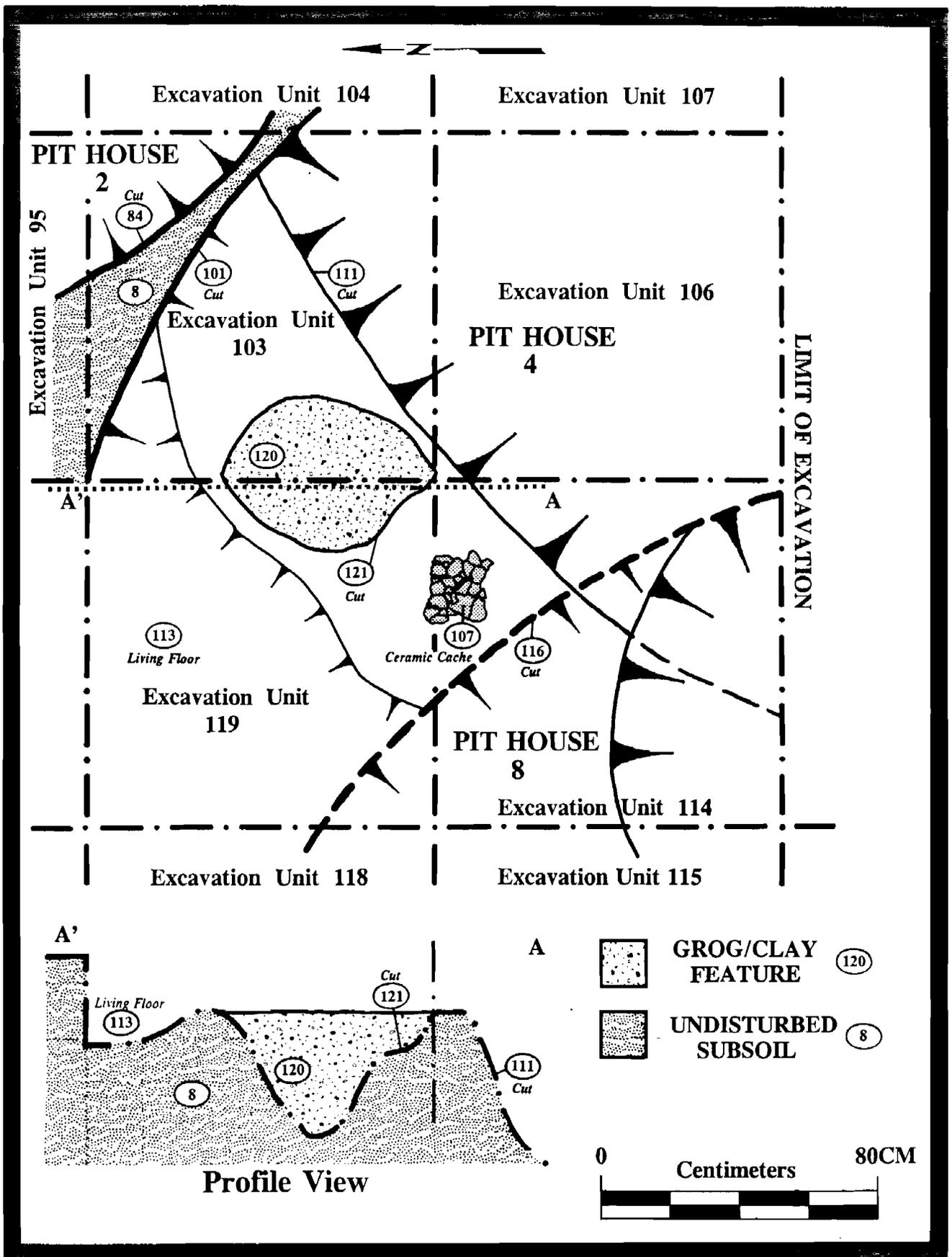


Figure 9.4. Hickory Bluff Prehistoric Site, Data Recovery, First Phase -Excavation Units 103, 106, 114 and 119, Pit House 4, Plan View and Profile of Ceramic Cache [107] and Associated Grog/Clay Pit Feature [120/121].

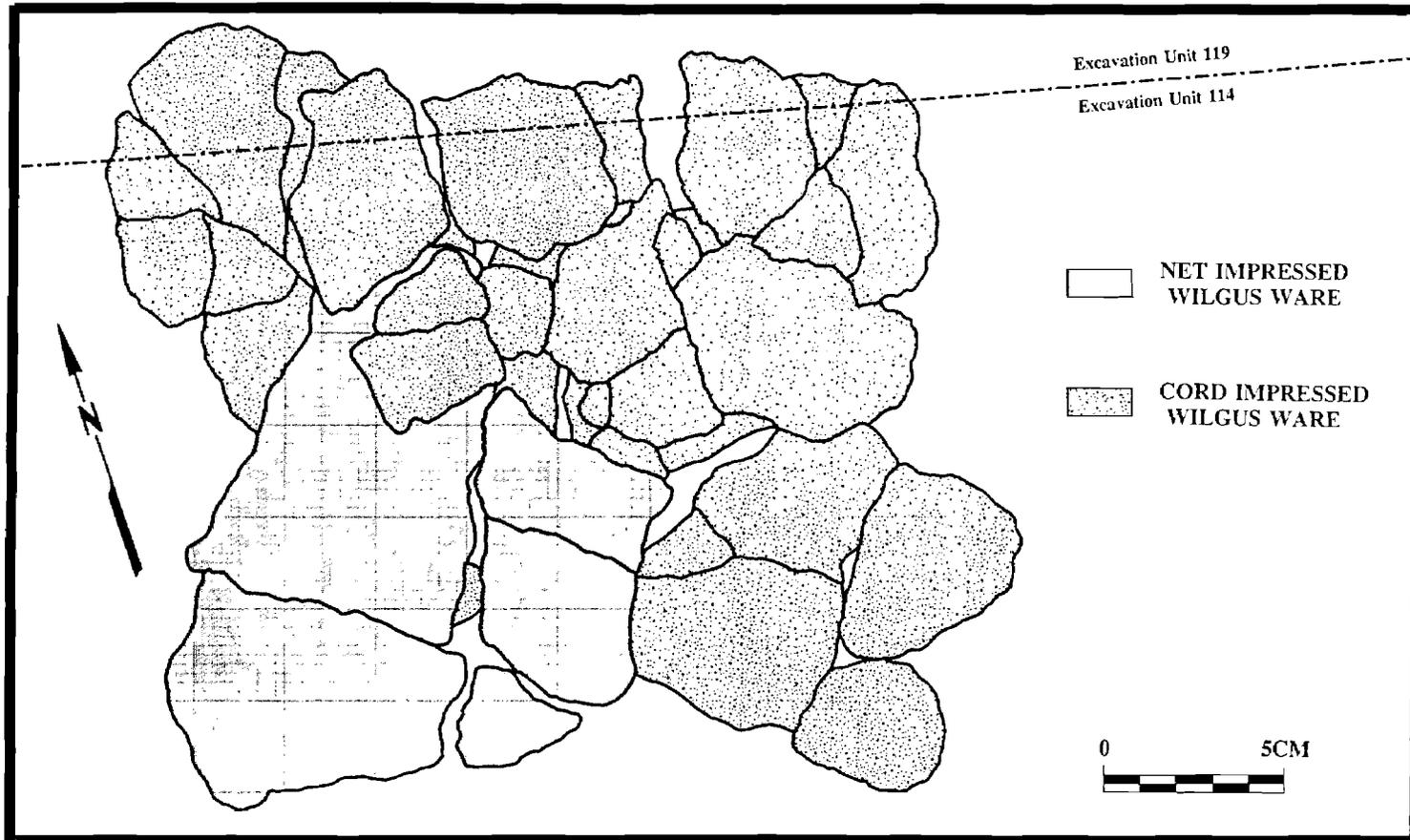


Figure 9.5. Hickory Bluff Prehistoric Site, Data Recovery, First Phase - Excavation Units 114 and 119, Wilgus Ware Ceramic Cache [107], Detailed Plan View Showing Association of Net-impressed and Cord-impressed Variants.



Plate 9.5. Area C - Hickory Bluff Prehistoric Site [7K-C-411], Excavation Units 114 and 119, Pit House 4, Context 107: plan view of cache of 31 clay-tempered ceramic sherds from two vessels (Photographer: Frank Dunsmore, March 1995) [HRI Neg. 95004/27-29A].

C. Artifact Analysis

A total of 9,663 prehistoric artifacts were recovered from the Hickory Bluff Site during the data recovery excavations. Lithic artifacts recovered include Woodland I projectile points, staged bifaces, unifacial and bifacial tools, debitage and thermally-fractured rocks (Figure 9.6; Tables 9.2-9.4). The overall characteristics of the lithic assemblage matched those of the assemblages recovered from the Puncheon Run Site and from the earlier Phase I and II investigations at the Hickory Bluff Prehistoric Site. The raw materials used in the manufacture of tools are mainly of local origin and dominated by jasper, quartz and quartzite, while a moderate amount of non-local lithics are represented by specimens of rhyolite, steatite, argillite, hornfels, Iron Hill jasper, Herring Island ironstone and Cohansey and cuesta quartzite. A full range of flake sizes and types (fully cortical to non-cortical) is evident in the locally-derived lithic materials, suggesting on-site lithic reduction and production of tools (Table 9.3). The lack of fully cortical debitage and small size of flakes derived from non-local materials implies that these lithics were initially reduced off-site and then curated on-site to rejuvenate the working edges. The presence of items fashioned from Iron Hill jasper and Cohansey and cuesta quartzite (from northern Delaware), Herring Island ironstone (from Cecil County, Maryland) and red and grey rhyolite and steatite (from northern Maryland and south central Pennsylvania) suggests short-term extended procurement zones and/or localized regional movement, while the presence of lithic artifacts made from argillite and hornfels (found in southeastern Pennsylvania and northern New Jersey) and Flint Ridge chert (from central Ohio) may indicate long-distance lithic procurement or involvement in trade and exchange networks (Figure 9.7).

Diagnostic projectile points types recovered from the data recovery excavations include broad-bladed Susquehanna specimens (*circa* 1700 B.C. to 700 B.C.), narrow-bladed, stemmed and corner notched variants and Fox Creek points (*circa* 400 B.C. to 300 B.C.), all of which fall generally within the time frame for the Woodland I period. Many researchers now acknowledge that projectile points can and should be co-classified as multi-purpose tools, such as hafted knives and scrapers, and considered exclusively as tips for arrows and spears. Many multi-purpose bifacial tools, for instance, may start out as projectile points, but end up being used in other ways as a result of a reduction in size owing to continual curation.

A total of 1,854 ceramic sherds were recovered with types representing both Woodland I and Woodland II period occupation being included within the assemblage (Table 9.4). A wide variety of tempering materials (grit, quartz, sand, grog [fired clay], gneiss and shell) and surface treatments (smoothed, cord-impressed and net-impressed) are in evidence. Sherds attributable to the early Woodland I period include flat-bottomed, steatite-tempered Marcey Creek plain ware (101 sherds) and gneiss-tempered Dames Quarter ware (6) of the Barker's Landing III complex. Later Woodland I period conical vessel types are dominated by clay-tempered wares of the Delmarva Adena complex. These wares are represented by Coulbourn (15), Nassawango (4) and Wilgus (103) types. Complexes represented by smaller quantities of ceramics at the site include the Wolfe Neck complex, with two sherds of Wolfe Neck ware; the Carey complex, with four sherds of Mockley ware; and the Delaware Park complex, with eight sherds of Hell Island ware.

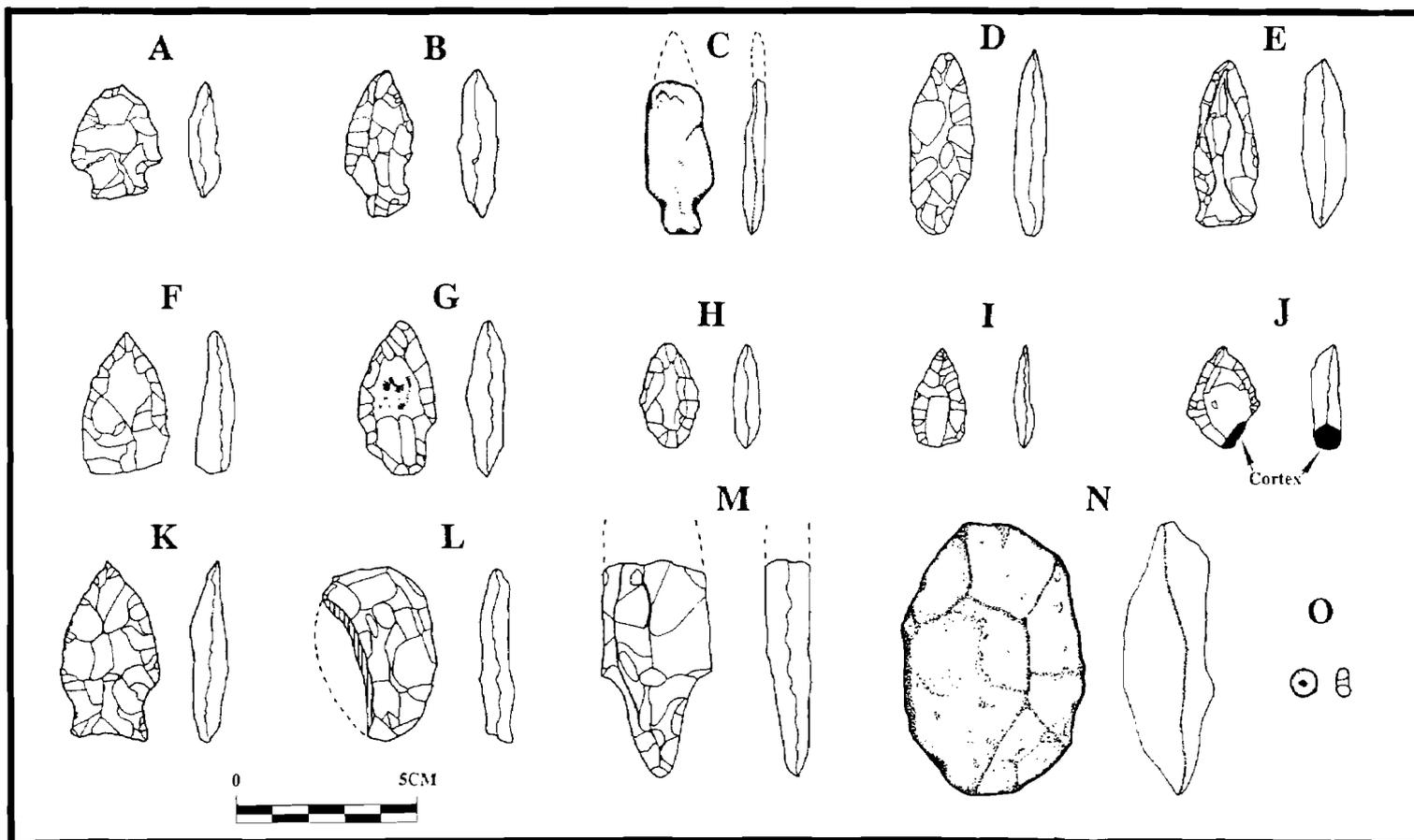


Figure 9.6. Hickory Bluff Prehistoric Site, Data Recovery, First Phase - Selected Diagnostic Lithics: A. Yellow-brown jasper Susquehanna broad spear projectile point, EU 88, context 2; B. Yellow-brown jasper Woodland I expanding stem projectile point, EU 93, context 2; C. Grey argillite Woodland I expanding stem projectile point, EU 32, context 3; D. Cohansey quartzite Woodland I late stage narrow bladed biface, EU 124, context 115; E. Purple rhyolite late stage biface, possible awl/splitting tool, EU 121, context 1; F. Cuesta quartzite late stage biface, EU 66, context 3; G. Cuesta quartzite Adena stemmed projectile point, EU 121, context 2; H. Quartz small stemmed projectile point, exhausted, EU 68, context 1; I. Yellow-brown jasper teardrop-like projectile point, EU 72, context 2; J. tan chert small stemmed awl/splitting tool manufactured from local pebble, EU 122, context 2; K. Yellow-brown jasper Fox Creek projectile point, EU 71, context 6; L. exotic mottled jasper ovoid late stage biface, possible Delmarva Adena cache blade, EU 92, context 4; M. Herring Island ironstone stemmed projectile point mid-section/base, EU 96, context 3; N. Grey argillite middle stage biface/cache blade, EU 37, context 4; O. Woodland II shell tempered ceramic bead, EU 42, context 7. See Appendix B for more details.

TABLE 9.2

AREA C, EXCAVATION UNITS 31-129
 FREQUENCY OF LITHIC ARTIFACTS BY RAW MATERIAL TYPE

RAW MATERIAL	ARTIFACT TYPE														TOTAL
	Projectile Point	Biface	Teshoa	Bifacial Tool	Wedge	Unifacial Tool	Utilized Flake	Debitage/ Edge Damage	Cobble Tool	Anvil, Bipolar	Core	Raw Material	Debitage	Thermally Altered Rock	
Local material															
Jasper	8	7	-	2	5	6	7	-	-	-	31	-	2778	303	3147
Chert	2	3	-	2	1	3	-	8	-	-	16	-	555	30	620
Chalcedony	-	2	-	-	-	-	-	-	-	-	-	-	57	-	59
Quartz	2	1	-	-	-	-	-	1	-	-	3	-	873	1170	2050
Quartzite	-	1	-	-	-	-	-	-	3	1	2	-	46	888	941
Sandstone	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5
Ironstone	-	-	1	-	-	-	-	-	-	-	-	-	4	449	454
Schist	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Non-local material															
Argillite	3	2	-	-	-	-	-	-	-	-	-	-	51	-	56
Rhyolite	-	-	-	1	-	-	-	-	-	-	-	-	56	-	57
Ironstone, Herring Island	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Jasper, Iron Hill	-	-	-	-	-	-	-	-	-	-	-	-	39	-	39
Quartzite, Cohansey	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Quartzite, Cuesta	2	-	-	-	-	-	1	-	-	-	-	-	24	1	28
Steatite	-	-	-	-	-	-	-	-	-	-	-	13	-	-	13
Hornfels	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
TOTAL	19	16	1	5	6	9	8	9	3	1	52	13	4484	2846	7472

TABLE 9.3

**AREA C, EXCAVATION UNITS 31-129
RAW MATERIAL AND CORTEX ON LITHIC DEBITAGE**

RAW MATERIAL	CORTEX			SIZE CLASS					TOTAL
	Fully cortical	Partially cortical	Non-cortical	1 cm	2 cm	3 cm	4 cm	5 cm	
Local material									
Jasper	66	248	216	246	249	30	3	2	530
Chert	10	54	103	87	66	14	-	-	167
Chalcedony	-	3	8	5	5	1	-	-	11
Quartz	13	33	84	53	64	12	1	-	130
Quartzite	9	13	16	11	23	2	2	-	38
Ironstone	-	1	-	-	-	1	-	-	1
Non-local material									
Argillite	2	1	38	20	18	3	-	-	41
Rhyolite	-	2	30	15	13	4	-	-	32
Quartzite, Cuesta	1	-	6	3	3	1	-	-	7
TOTAL	101	355	501	440	441	68	6	2	957

TABLE 9.4
HICKORY BLUFF PREHISTORIC SITE
AREA C, EXCAVATION UNITS 31-129
CERAMIC TYPES

Time	Number and Type of Sherds		Comments
AD1200		Townsend (18)	Woodland II Ware Types
AD1000		Minguannan (1)	
		Killens (62)	
AD 800	Hell Island (8)		Woodland I
AD 600	Mockley (4)		Woodland I
AD 400			
AD 200			
0			Woodland I Clay Tempered Wares
BC 200		Nassawango (4)	
BC 400		Coulbourn (15) Wilgus (103)	
BC 600	Wolfe Neck (2)		Woodland I
BC 800		Marcey Creek (101)	Woodland I Flat- Bottomed Wares
BC1000		Dames Quarter (6)	
BC1200			

As seen during the Phase I and II field investigations, the assemblage was dominated by clay-tempered wares accounting for some 38% of the total number of identifiable sherds. Ceramics attributable to the Woodland II period include sherds of Townsend ware (18) of the Slaughter Creek complex, of Minguannan ware (1) of the Minguannan complex, and of Killens ware (62) which has been associated with both the Slaughter Creek and Minguannan complexes (Custer 1989:308).

As Table 9.4 clearly demonstrates, there is a notable fluctuation in the frequency of chronologically-diagnostic ceramic types at the site through the Woodland I and II periods. This frequency distribution may reflect true socio-cultural definition at the site. Alternatively, there may be environmental explanations, such as climatic change in the region, perhaps causing the site to be less intensively occupied during periods when the climate was less hospitable. The frequency distribution of ceramic types may also be related in some fashion to spatial patterning within the site, or even to shifts or meanders of the main channel of the St. Jones River, causing the focus of the site to shift. Certainly, ceramic patterning within the site should form an important area of study for any further data recovery work and it will be important to test whether the patterns observed along the line of the drainage ditch hold good for the remainder of the site.

While the sherds discussed above are easily attributable to specific ceramic types, the bulk of the assemblage (1,531 sherds) consists of very small, friable pieces of uncertain cultural affiliation. Due to their poor condition and small size, it is impossible to discern vessel type from these sherds. Most probably derive from broken clay-tempered vessels, since these ceramics are low-fired, easily eroded and extremely fragile once abandoned. The small pit feature [121] within Pit House 4 discussed earlier also demonstrates that ceramic vessels were being crushed and recycled as tempering material on site. Evidence of this process could mean that the sherd counts for clay-tempered wares, which are the dominant type, would have even been higher if broken vessels were not being re-used for temper.

Using the following formula developed for conoidal vessels based on rim diameters: **Volume = $0.533 \times \text{Diameter}^3 \pm 27\%$** (Mounier 1987:95-102), the vessel capacities were calculated for the two vessels found within the small pit in Pit House 4. The rim diameter for the net-impressed vessel was 26 centimeters. Using Mounier's formula this vessel would have had a capacity of 9.4 liters or 2.8 gallons (+/-). The rim diameter of the cord-impressed vessel measured 28 centimeters. The capacity of this vessel would have been 11.7 liters or 3.1 gallons (+/-). Both were clearly substantial vessels, presumably used for food storage.

Several of the clay-tempered sherds contain fragments of freshwater mussel shell. Use of shell in conjunction with clay as a tempering material would classify these sherds as Wilgus ware. However, traditional Wilgus ware is tempered with crushed saltwater shells, such as oyster or mussel. It should be noted that the Wilgus type site is in the Coastal Bay Zone of southern Delaware and contains a shell midden largely composed of oyster with lesser amounts of clams and other shellfish, such as mussel (Custer 1989:256; Blume 1996:personal communication, February 2, 1996). On this basis, one may suggest that Wilgus ware and the clay-tempered

Coulbourn ware should be regarded as one ceramic type with local variants defined according to the availability of tempering materials. Another possibility is that the clay and freshwater mussel-tempered sherds recovered from the Hickory Bluff Prehistoric Site merely represent a previously unrecognized variant of Wilgus ware. Another clay-tempered ware found at the site is Nassawango Ware which also contains crushed rock tempering materials. This ware, found only in small quantities on the site, may represent a Coulbourn variant manufactured off-site and inland, away from salt or freshwater shell sources.

D. Archaeological Monitoring of the Drainage Ditch

Mechanical excavation of the drainage ditch through the Hickory Bluff Prehistoric Site was monitored by archaeologists from August 14 to August 29, 1995. The main purpose of the monitoring was to record a single continuous east-west profile across the Hickory Bluff Site, record features, and to ensure that no Native American burials lay in the path of the ditch. The construction limits for the drainage ditch covered an area measuring 22 meters east-west by 10 meters north-south. Color slides and black and white print photography was used to document the excavation conducted by the heavy machinery and to record the soil profiles. Field notes were kept in a standard field log notebook.

Following the mechanical removal of the plowzone within the proposed drainage ditch area, excavations were briefly halted and archaeological monitoring was able to identify 72 pit features in the surface of the B-Horizon. These features were ovoid in plan view and filled with slightly darker less compact soil. Soil probing revealed that most of these pits extended to a depth of approximately 40 to 50 centimeters below the plowzone with deeper sections extending to as deep as 90 and 100 centimeters. Hundreds of similar features were excavated and interpreted as pit houses immediately to the south at the Island Farm and Carey Farm sites. Based on the general size and density of these features an additional 15 pit features were projected within inaccessible, unexamined portions of the drainage ditch area (Figure 9.8). A few lithic artifacts, such as displaced thermally-fractured rock fragments and debitage, were observed throughout the monitored area, but no lithic artifacts were retained. Two clam shells were retained and exhibit characteristics of examples found at other Woodland II period sites in the region.

Following the completion of the mechanical excavation for the drainage ditch, a long east-west soil profile was observed and recorded in the north side of the trench. A previously unseen buried A/B-horizon was observed between 60 and 120 centimeters below the original ground surface. This brown sandy loam level consistently lies below the observed reddish sandy loam B3 and above the yellow sand C-horizons throughout the trench (Figure 9.9; Plate 9.6). An identical buried horizon was encountered across the St. Jones River at the Puncheon Run Site. This buried level could have major implications for the interpretation of the site soil formation process during the Woodland I period. Soil samples were taken from each of the horizons and have been retained for future analysis. No artifacts were recovered from this A/B-horizon, but its identification and excavation should form an important part of future data recovery at the site.

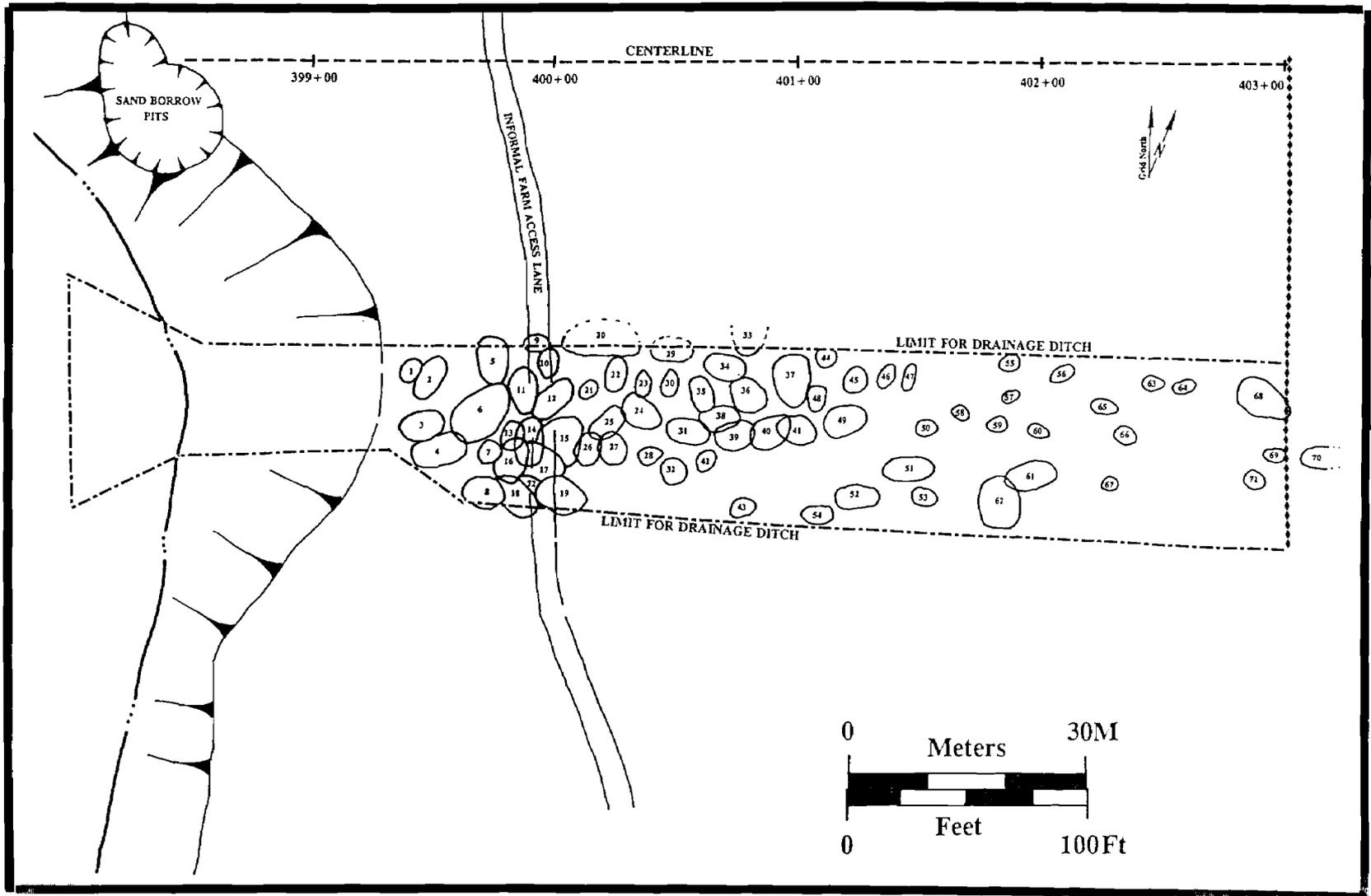


Figure 9.8. Hickory Bluff Prehistoric Site, Data Recovery, First Phase - Plan View of Drainage Ditch Area Showing Outlines of Pit Features Exposed Following Topsoil Removal.

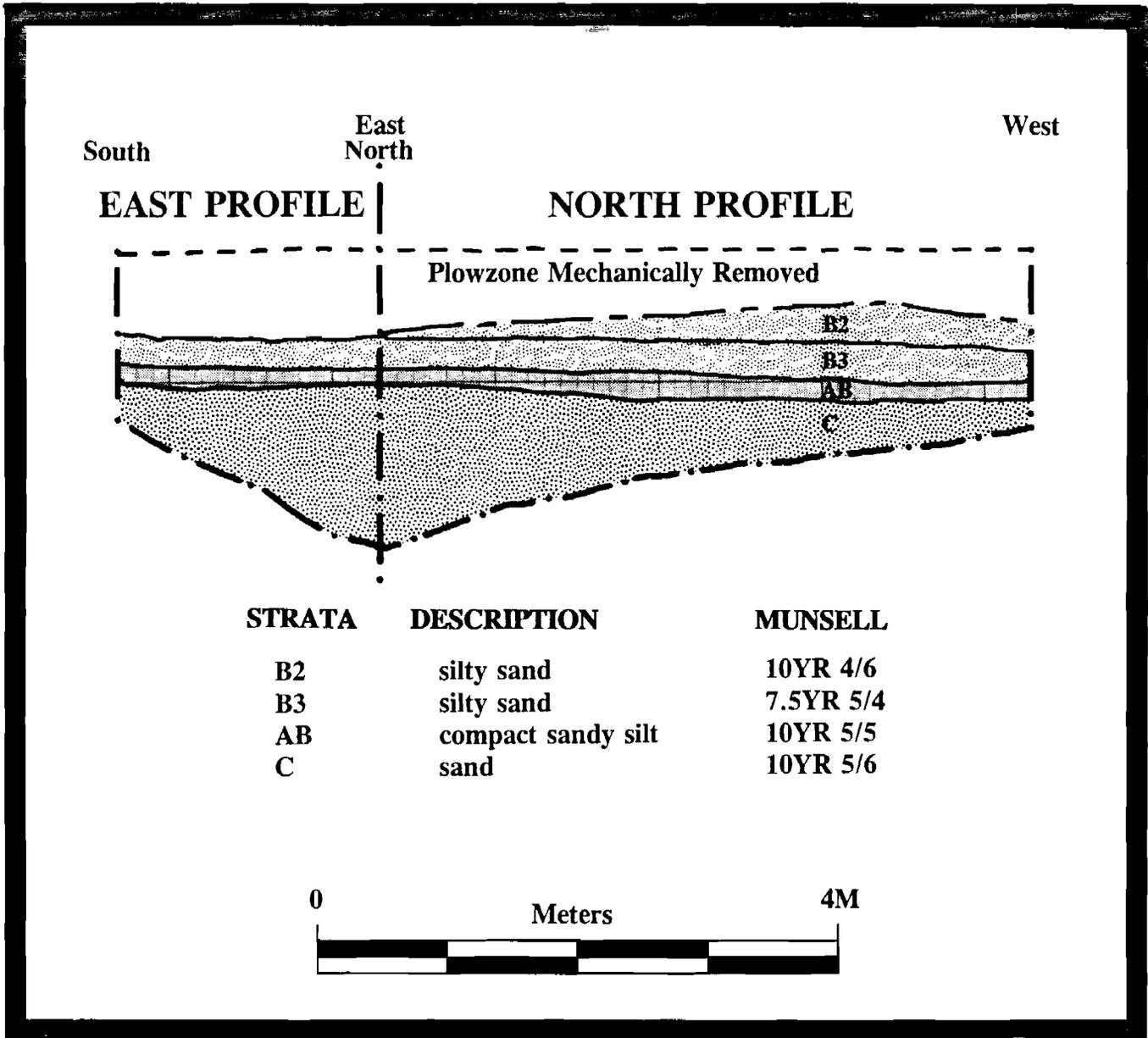


Figure 9.9. Hickory Bluff Prehistoric Site, Data Recovery, First Phase - Profiles of Drainage Ditch Recorded During Monitoring.

Soil anomalies suspected of being human burial features were examined by field staff experienced in the excavation and recording of Native American archaeological remains. No features containing Native American remains or artifacts generally associated with burials were observed within the monitored area.

E. Synthesis

1. Site Function and Site Type

Based on the results of the archaeological fieldwork and analysis of the artifact assemblage conducted to date, a number of tentative conclusions may be drawn about the type of activities taking place at the Hickory Bluff Prehistoric Site [7K-C-411], about the site's cultural affinities, and also about the time periods within which the site was occupied. Eighty-two shovel test pit and 127 excavation units at the Hickory Bluff Prehistoric Site have identified 31 pit features and one thermally-fractured rock cluster and recovered over 12,000 artifacts. When discussing sites with artifact yields of this magnitude associated with possible pit houses and storage features, it may at first seem reasonable to conclude that the site functioned as a large macro-band base camp. The sheer number of pit features identified and provisionally interpreted as pit houses imply that the site could have functioned at least part of the time as a domestic base camp. However, recent large-scale excavations at similar sites, such as the Carey Farm and Snapp sites, suggest that the Hickory Bluff Prehistoric Site may actually be better characterized as a small micro-band base camp, seasonally revisited by individual family units or limited sets of families for short term occupations over many generations. In between the main periods of occupation the site most likely also served as a seasonal transient camp or a short term procurement/processing station.

The extensive on-site working of local lithic materials (for the most part procured from nearby exposed cobble beds) could also classify the function of the site as a cobble reduction station. The presence of ceramics in some quantity at the site is a sure indication that food preparation, consumption and storage were important activities. Net-impressed ceramics imply that fishing was an important activity conducted close to the site, no doubt along the St. Jones River. Fishing nets were secondarily used to impress the exterior surface of wet ceramic vessels to produce a rough surface treatment/decoration. The absence of net sinkers at the site, however, may indicate that these particular vessels were brought to the site from a coastal procurement station and not produced on the Hickory Bluff Prehistoric Site.

2. Site Chronology and Cultural Affiliations

Based on the diagnostic items in the artifact assemblage, the dominant cultural components at the Hickory Bluff Prehistoric Site fall within the Woodland I period which extends from around 3000 B.C. to 1000 A.D. Based on the use of rhyolite, argillite and the presence of Marcey Creek and Dames Quarter ceramics, the site appears to have been first occupied by 1200 B.C. during the

Barker's Landing III complex (1200 B.C. to 500 B.C.),. This complex is well represented in the artifact assemblage and probably reflects use of the site as a micro-band base camp. The site appears to have been only briefly occupied during the period of the Wolfe Neck complex (500 B.C. to A.D. 300) as only two sherds of Wolfe Neck ceramics have been recovered. However, it should be pointed out that artifacts attributed to the Wolfe Neck complex may fall entirely within the time frame of the later Delmarva Adena complex, which is strongly represented at the site through various types of clay-tempered ceramics, notably Wilgus ware. Following the intensified occupation attested through the abundance of ceramics associated with the Delmarva Adena complex, the site again seems to have experienced a lull in activity. The Carey complex (A.D. 200 to A.D. 700) is only thinly represented by four sherds of Mockley Ware, while the Delaware Park complex (A.D. 600 to A.D. 1000) is evident through only eight sherds of Hell Island Ware. Occupation at the site slightly intensified in the Woodland II period as reflected by moderate quantities of ceramics assignable to the Slaughter Creek and Minguannan complexes (A.D. 1000 to A.D. 1250).

One characteristic of the ceramic assemblage is noteworthy. Small sherds recovered at the site mostly seem to have come from flat-bottomed early vessels, while larger sherds are chiefly from the later clay-tempered wares; yet both types of sherds are found in the same contexts. This association of contrasting sizes is most likely the result of repeated redeposition of cultural strata as houses and storage pits were dug and re-dug over many generations.

3. Local and Regional Context

A considerable amount of archaeological work has been conducted by the University of Delaware Center for Archaeological Research (UDCAR) in the area immediately south of Hickory Bluff along the east side of the St. Jones River. The Hickory Bluff Prehistoric Site is first analyzed within its local context, regarded here as the area extending for roughly a two-mile radius around the site, focusing on the St. Jones River, and is then discussed more generally in terms of its relationship to broader, regional patterns of settlement and subsistence. The following paragraphs are focussed chiefly on the Woodland I period since this is time frame of the site's dominant cultural component.

As a probable micro-band base camp associated with the Barker's Landing III and the Delmarva Adena complexes, the Hickory Bluff Prehistoric site would have played a key role in the local settlement-subsistence patterns within the St. Jones River drainage. The site would probably have served as a seasonally-visited habitation site attached to a larger macro-band base camp located nearby. The site would have been linked to a network of procurement sites situated on either side of the St. Jones River, extending both upstream and downstream. Inhabitants of the site during the period of the Delmarva Adena complex may have also made use of the St. Jones Site [7K-D-1], a major mortuary site located less than two miles downstream.

The Hickory Bluff Prehistoric Site is situated along a protected blufftop with well drained soils. Its close proximity to a natural landing immediately to the north offers access to a floodplain environment potentially rich in game and exploitable floral species. This is a similar setting to that of the Carey Farm and Island Farm sites immediately to the south. There are several notable similarities and differences between the Hickory Bluff Prehistoric Site and these sites. Similarities include the cultural periods represented, types of subsurface features (e.g., multiple pit features interpreted as pit houses) and lithic technologies. Differences include periods of major occupations, seasons of occupation, and preservation of the sites. It is worth noting that the artifact density at Hickory Bluff is nearly double that of the Carey Farm and Island Farm sites, suggesting that the former was more densely occupied or in use for a longer period of time (Figure 9.10).

All three sites show evidence of modal occupation throughout the Woodland I and Woodland II periods (3000 B.C. to A.D. 1500). The Hickory Bluff Prehistoric Site was probably intensively used as a micro-band base camp between 1200 B.C. and 700 B.C. (Barker's Landing III Complex) and again between 500 B.C. and 0 A.D. (Delmarva Adena Complex). The site use was ephemeral prior to, between, and following, these two complexes until the Woodland II period when the site use appears to have taken the form of short-term seasonal procurement rather than as a base camp based on the artifact types and densities. The Carey Farm and Island Farm sites on the other hand were most intensively used as micro-band base camps between A.D. 0 and A.D. 900 (Custer et al. 1996:i). Occupation at Carey Farm and Island Farm during this period fills the void observed at the Hickory Bluff Prehistoric site between the Woodland I - Delmarva Adena Complex and the Woodland II occupations and may represent a change in base camp locations, possibly related to environmental shifts in the area. At the Carey Farm and Island Farm sites, for instance, Custer *et al.* suggest that the pit houses recorded at the sites were occupied for several months during the "cold-weather season", based on interior hearths and storage features (Custer et al. 1996:155). The absence of interior hearth features at the Hickory Bluff Prehistoric site may imply that the site was occupied during a warmer season when hearths for cooking would have been located outside the domicile (see below for further discussion of this issue).

Another issue of importance at the Hickory Bluff Prehistoric Site concerns the possibility of postholes being found around the exterior of the pit house features. It was anticipated that, since a Woodland I pit house feature was recorded with associated postholes at the Snapp site in an intact wooded area, other sites in the area might also exhibit such features, if the soil profiles were well preserved. Unfortunately, the Carey Farm and Island Farm sites have both been subject to decades of erosion brought on by continual plowing, so that most of the pit house features that were excavated had been truncated. The much better preserved soils at the Hickory Bluff Prehistoric Site present a unique opportunity to observe complete outlines and profiles of the pit house features, although so far no evidence of postholes has been observed.

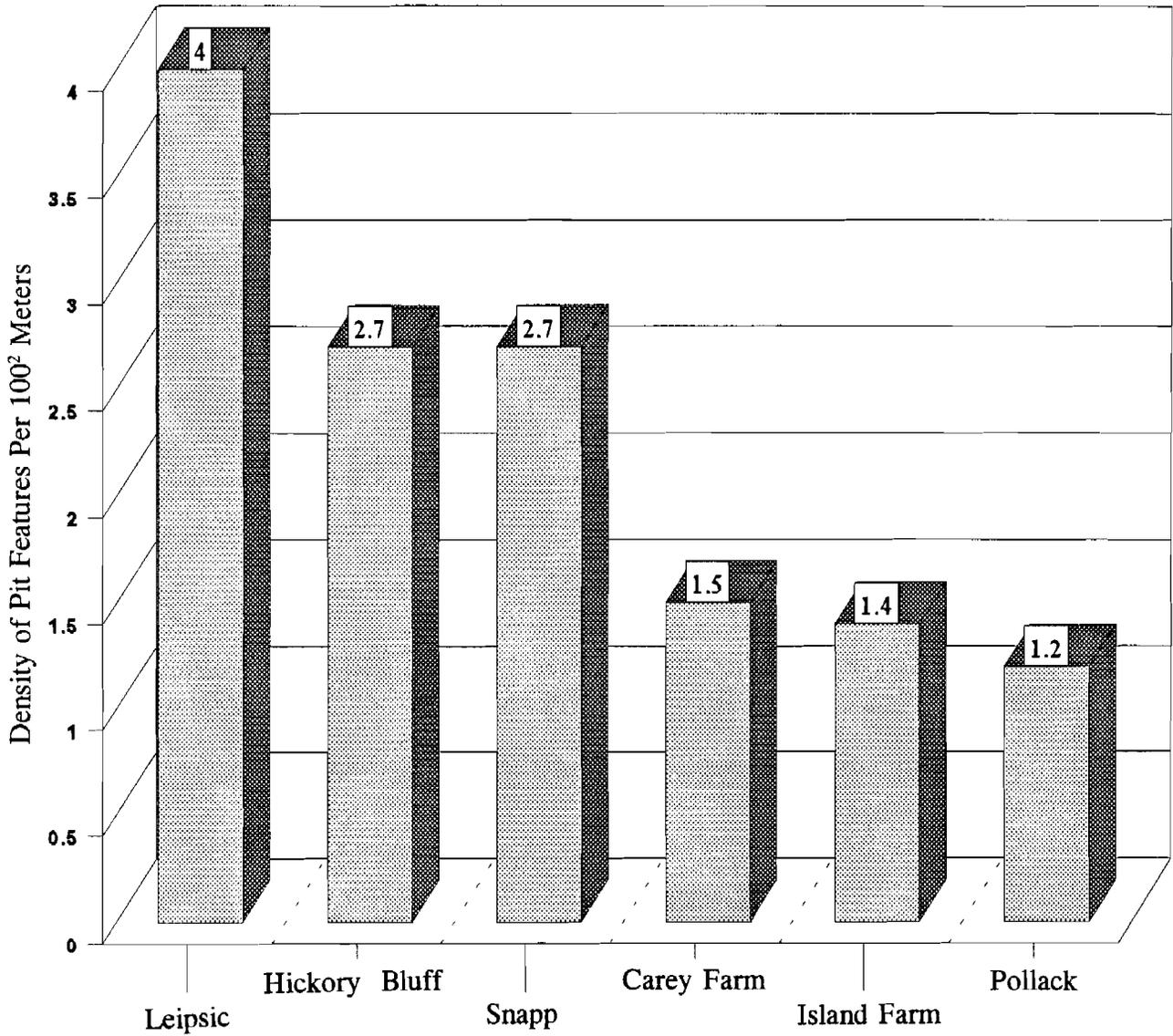


Figure 9.10. Comparative Density of Pit Features Recorded at Woodland I Sites in Central Delaware.

Although there are some clearly observed differences between the Hickory Bluff Prehistoric Site and the Carey Farm and Island Farm sites, on the basis of their lithic technology, the essential functions of these sites appear very similar. The occupants of all three sites employed core and biface technologies focussing on cobbles and pebbles found in the immediate site vicinity, with little observed change over time. At all three sites, locally-available cryptocrystalline silicates (dominated by jasper) were the preferred lithic material.

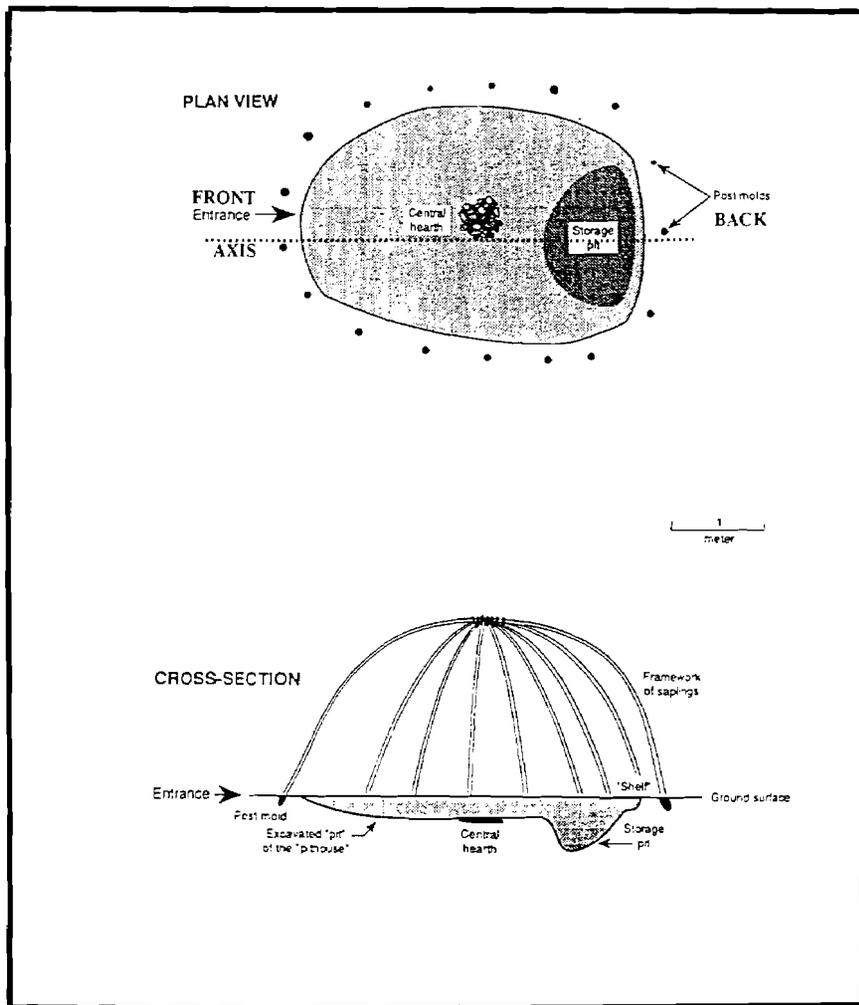
Due to the poor organic preservation, floral remains recovered at the Carey Farm and Island Farm sites were limited to the charred hulls of hickory, butternuts and acorns. The Hickory Bluff Prehistoric Site has also produced numerous charred nut hulls during the Phase II investigations and the initial phase of data recovery. The preservation of other floral species remains to be explored through flotation. The good preservation of the soil profiles at the Hickory Bluff Prehistoric Site, however, is an encouraging sign that additional floral remains may be recovered during any future excavations at the site.

4. The Architecture of Pit Houses

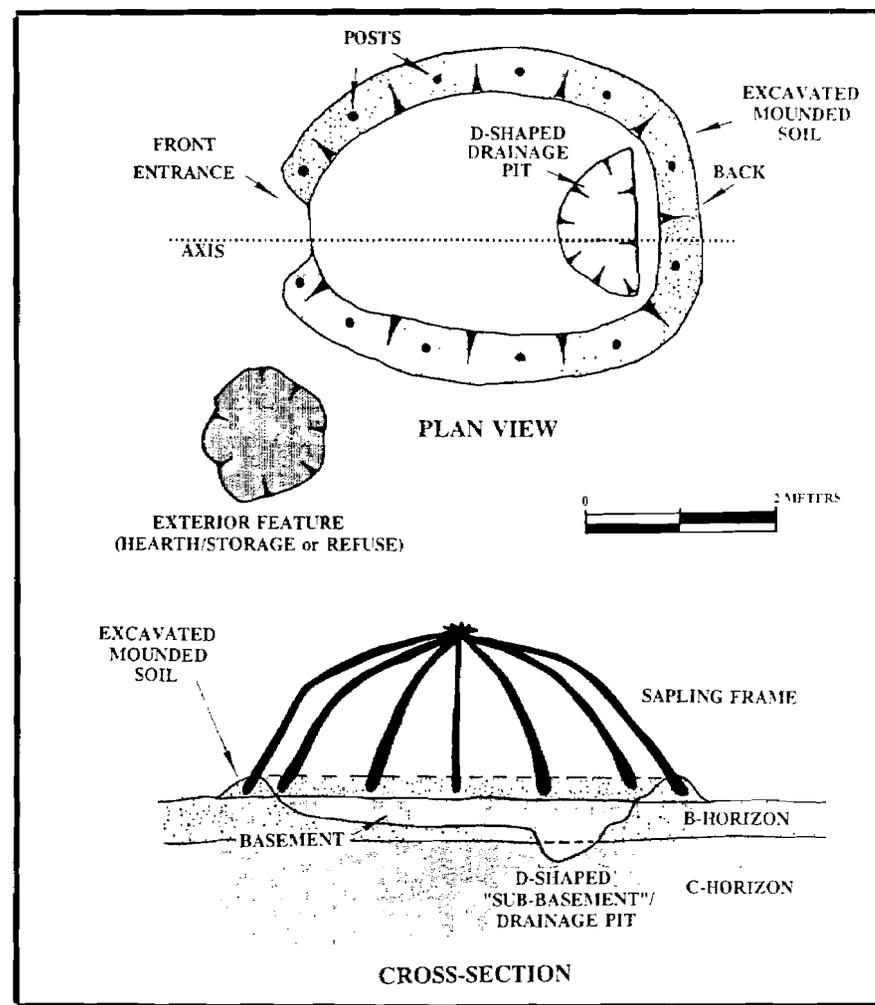
Both the Phase II testing and the data recovery excavations at the Hickory Bluff Prehistoric Site produced abundant evidence of the still-controversial pit features referred to as "pit houses." Numerous variants of these purported semi-subterranean structures have been documented in recent UDCAR investigations, but their cultural (as opposed to natural) basis is by no means universally accepted at this point. This issue is currently the subject of considerable debate within the archaeological community and colors much of the broader interpretive work on the prehistory of the Delmarva peninsula. The current work at the Hickory Bluff Prehistoric Site tends to favor a cultural origin for the features identified here, thereby supporting UDCAR use of the data for broadly-based reconstructions of cultural process and social forms (Custer 1994), but it would be unwise and premature at this stage to entirely rule out the possibility that some of the pit features found may have been naturally formed in an environment that has seen considerable cultural use.

The debate is fundamentally centered on the issue of whether the ubiquitous pit-like features found at Native American occupation sites in central Delaware are indeed cultural and represent the remains of semi-subterranean dwellings, or whether they are merely the result of natural processes as mundane as tree falls occurring in locations that have also been subject to periodic Native American occupation (as posited by Thomas [1981] and Cavallo [1995]). While it is certainly true that some of the features can be convincingly presented as pit houses, the great majority are without tell-tale cultural attributes, such as postmolds, hearths, well-developed archaeological stratification and substantial quantities of artifacts. There are hints that this variability might have a chronological and typological explanation, with Woodland I pit features lacking the more distinctive cultural characteristics of later Woodland II pit houses. The Hickory Bluff Prehistoric Site investigations completed to date provide an important additional data set which can be applied to this debate.

A
RECONSTRUCTED WOODLAND I PIT HOUSE
(CUSTER 1994:55)



B
THEORETICAL CONSTRUCTION OF A
WOODLAND I PIT HOUSE
BASED ON DATA FROM
HICKORY BLUFF PREHISTORIC SITE



9-32

Figure 9.11. Alternate Reconstructions of Woodland I Pit Houses.

The hypothetical reconstruction of the archetypical Woodland I pit house shown in Figure 9.11A is based on information from the data recovery excavations at the Snapp Prehistoric, Carey Farm, Island Farm, Leipsic and Pollack sites (Custer 1994:55). Studies at the Hickory Bluff Prehistoric Site allow some possible adjustments and alternatives to be offered to the UDCAR model (Figure 9.11B), although it should be emphasized that these represent preliminary conclusions drawn from a limited sample.

According to the UDCAR model, Woodland I pit houses may be characterized as having:

- an excavated ground plan of flattened ellipsoid or egg-shaped form, with a characteristic D-shaped pit feature at the "back" of the house (i.e. at the opposite end of the long axis to the entrance, which is assumed to be at the narrow end of the axis);
- a distinct "shelf" between the pit and the back wall;
- a central hearth (not always present); and
- a superstructure of bent saplings, postulated from the identification of earthfast postholes at one example.

The examples at the Hickory Bluff Prehistoric Site display a number of variations from this model, requiring a more extended discussion of certain key aspects of the pit house, specifically hearths, the so-called "D-shaped" features towards the rear of the pit, "external" features located immediately outside the pit perimeters, and postholes.

Hearth Features: The pit houses excavated at the Hickory Bluff Prehistoric Site lack both the thermally-fractured rock clusters or internal hearths typically located in the center of the floor in the "basement," and the thermally-fractured rock clusters often found within the fill of the D-shaped pit feature recorded in many of the Woodland I period pit houses. The latter have been interpreted as hearths making secondary use of the D-shaped pits after their hypothesized use for food storage had ceased.

Since it is generally held that the hearths in pit houses were used both for cooking and for heating of the interior space, their absence from the Hickory Bluff examples may imply that heating was not considered necessary, or was achieved through other means. In the case of the first of these hypotheses, the absence of hearths may imply that the Hickory Bluff pit houses were warm-weather shelters only, which in turn implies seasonal occupation of the site (a suggestion that fits well with current seasonally-based models of settlement systems in the Delmarva peninsula). Another explanation might see sufficient heat being generated by use of the D-shaped pit features as composting facilities, which could safely produce

sufficient heat both for cooking stored tubers and for comfortable habitation (Mellin 1995:personal communication). The pit might be covered much of the time, with heat being released only as necessary. Composting can generate heat up to 160°F, and with certain combinations of materials need not produce a foul odor (Campbell 1990:111-113). Yet another possibility is that the hearths were the result of later occupational episodes which made use of convenient depressions (the result of natural infilling of abandoned house pits) adjacent to new pit house locations. In this scenario these hearth features would in fact be external rather than internal.

D-shaped Features: Varying climatic conditions during the extended Woodland I period may also point to an alternative function of the smaller D-shaped pit features found in the rear of many pit houses. Custer suggests that these functioned as storage pits, but other interpretations should also be considered. At the Hickory Bluff Prehistoric Site, the D-shaped sub-basements were in every instance excavated down into the well-drained unconsolidated sands of the C-horizon (Figure 9.11B). This configuration would therefore provide each pit house with a natural drainage system. Conversations with archaeologists who have worked on other large sites containing pit house features revealed that the same excavation into well-drained soils occurred on other sites, although this fact is not apparently highlighted in the published reports. Interestingly, Custer has suggested that wet climatic conditions prevailed in the St. Jones drainage from 800 B.C. to about 1 A.D. (Custer et al. 1996:13). The question as to whether these features were used for storage (with food presumably being packed in some type of watertight container), or whether they were part of a drainage system, must therefore remain open pending acquisition of more detailed chronological and paleoenvironmental data.

External Features: In two instances at the Hickory Bluff Prehistoric Site external features, in this instance, hearths were found in sufficient locational and stratigraphic proximity to pit house features for a functional relationship to be reasonably inferred. This association of features may support the contention that the pit houses were warm-weather shelters, with much of the household activity occurring in the open air.

Absence of Postholes and Post-Settings: Postholes are commonly found on pit house sites of the Woodland II period on the Delmarva peninsula, but, to date, only one example of a Woodland I period pit house with postholes has been noted in Delaware, at the Snapp site (Custer and Silber 1995:47). However, very few Woodland I pit houses have been excavated in non-deflated settings where postholes would be still present. No postholes were noted in or around the pit houses excavated at the Hickory Bluff Prehistoric Site.

Two scenarios can be offered which might account for the absence of postholes around Woodland I period pit houses. The first scenario, and the one most widely accepted, is that on many of the sites excavated they were present at one time, but now no longer survive because of deflated soil profiles. An alternative explanation might be that when the pit house floor and sub-basement were first dug out the excavated soils (amounting to approximately 8-12 cubic meters) were then mounded in a ring around the perimeter of the pit and some form of prefabricated cover was placed over the dwelling structure. With this arrangement, posts would not need to be deeply set in order to anchor the roof to the ground, and shallow postholes might well be confined to the mounded soils which would extend one to two feet up the outside of the structure, providing more than enough stability to secure the roof to the ground surface (Figure 9.11B). Following abandonment of the site, the mounded soils would gradually erode back into the depression of the pit house, thus eliminating any traces of postholes. Under this second scenario Woodland I pit houses with excellent preservation would still not show any signs of postholes. Although this is admittedly an argument based entirely on negative evidence, semi-subterranean structures like these have been recorded in the southwest (there known as "ki"), and variations on this design have been recorded all over North America (Nabokov and Easton 1989:340).

In summary, the Hickory Bluff evidence suggests that Woodland I period pit houses may have functioned as warm-weather, seasonally-occupied dwellings or shelters, in contrast to Woodland II period structures of this type, which appear to have been quite frequently equipped with hearths. An alternative, drainage-related use is suggested for the distinctive D-shaped features found in many pit houses. The absence of evidence for any type of superstructure for the Hickory Bluff pit houses, which can certainly be used to question the identification of these features as houses, might be plausibly explained through the use of mounded soil to anchor the roof. Exhaustive stratigraphic examination of the fills and periphery of the pits on well-preserved sites may ultimately help resolve this issue.

F. Conclusions

The archaeological data obtained thus far from the Hickory Bluff Prehistoric Site demonstrates that this resource has the ability to address numerous important research issues relating to the prehistory not only of the Delmarva Peninsula, but also of the coastal Mid-Atlantic and Upper South regions. The archaeology of the site is primarily important in the context of the Woodland I period and its research potential can be summarized usefully in the context of research questions posed in Stability, Storage, and Culture Change in Prehistoric Delaware: The Woodland I Period (3000 B.C.-A.D. 1000) (Custer 1994:171-177).

1. Paleoenvironmental Studies

Recent paleoenvironmental studies have extensively examined the area just south of the Hickory Bluff Prehistoric Site along the State Route 1 Corridor in New Castle, Delaware (Kellogg and Custer 1994:61-105). The paleoenvironmental potential of the Hickory Bluff Prehistoric Site, outlined in Chapter 8 above, is considerable and is capable of adding substantially to the data from the Kellogg and Custer study. The close association of a deeply-stratified prehistoric settlement within a well-preserved broader sequence of alluvial and riverine deposits will permit the testing of a range of hypotheses about the interaction between culture and environment, a topic which is pivotal to our understanding of the prehistory of this region.

2. Chronology

The regional chronological sequence for Delaware prehistory can be significantly enhanced by stratigraphically-controlled excavation at the Hickory Bluff Prehistoric Site. The techniques of conventional radiocarbon dating and Accelerator Mass Spectrometer (AMS) dating can now derive reliable absolute dates from very small samples of carbon and organic matter. Radiocarbon assay of sediments containing diagnostic artifacts (and of stratigraphically-associated organic materials) should be able to provide dates not only for the different structural components of the site, but also for key artifact types commonly recovered from the region.

3. Household Settlement Patterns: Pit House Architecture

The Hickory Bluff Prehistoric Site would appear to contain evidence of several hundred pit houses. Projections for the site as a whole derived from the observed density of features in the drainage ditch suggest possibly as many as 700 or 800 pit houses could be present in the archaeological record. The site offers an opportunity to examine and analyze these enigmatic structures diachronically, spatially and functionally in a qualitative and quantitative manner that has not generally been feasible in the past. In particular, the ongoing debate about the origin of these pit features (specifically, the extent to which they are culturally or naturally derived) can be addressed with some confidence that definitive answers will be forthcoming. Taking the position that the majority of these features have some cultural basis and are correctly interpreted as pit houses, the archaeology of the Hickory Bluff Prehistoric Site offers the chance to examine their morphology, their spatial characteristics and their contents in a fashion that could ultimately lead to the development of a clearer typology of these structures. Once this is achieved, questions about their usage, their changing character over time, and their relationship to environmental conditions can be more legitimately posited and answered.

4. Community Settlement Patterns: Intra-Site Patterning

Assuming satisfactory resolution of the pit house debate is achievable through study of the archaeology of the Hickory Bluff Prehistoric Site, analysis of cultural patterning within the site should permit consideration of broader issues relating to settlement size, lay-out and social structure. In particular, it may be possible to establish how many houses were in use at a particular time at the site: valuable information for clarifying the function of the site, which is at present viewed as a microband base camp. This type of study can be accomplished only through the exposure of extensive, contiguous areas, which would also enable issues such as functional zoning of the settlement, and the repeated association of features (e.g., pit houses and adjacent hearths or storage pits) to be documented with a view to defining household entities.

5. Regional Settlement Patterns

The Hickory Bluff Prehistoric Site lies close to the freshwater/saltwater interface, a zone which plays an important role in the regional settlement model developed by Custer. It is important to establish how this site relates -- chronologically and functionally -- to other regionally-significant sites, such as the Carey Farm, Island Farm and Puncheon Run sites. Carefully structured inter-site analysis, examining issues such as chronology, commonality of artifact types, and structural and spatial patterns, is likely to produce revised synthetic judgements which can supplement and refine Custer's current models.

6. Lithic Technology

The lithic data collected thus far from the Hickory Bluff Prehistoric Site suggest similar patterns of technological competence and material usage to those established for the Leipsic, Pollack, Snapp, Carey Farm and Island Farm sites, where core and biface reduction were the main lithic technologies employed. Local cobbles and pebbles were the major sources of raw materials used at the site with limited use of non-local materials such as argillite and rhyolite. Although recognized at these other sites, the use of non-local and exotic raw materials needs to be examined in more detail. The presence of cuesta and Cohansey quartzite (found to the north in Smyrna) is often overlooked. This material should be treated as a semi-local lithic resource, which may tie sites located along the Smyrna River to those found along the St. Jones River.

7. Ceramic Technology

Two ceramic types -- wares referred to as Marcey Creek and Wilgus -- dominate the ceramic assemblage at the Hickory Bluff Prehistoric Site. The data recovery excavations uncovered a small pit filled with clay and crushed bits of clay-tempered ceramic sherds. This feature was situated adjacent to a stack of Wilgus ware sherds, some corded and some net-impressed. This establishes that these two surface treatments were contemporary and provides a rare glimpse of the recycling process used in the manufacture of clay-tempered ceramics. Additional evidence of this sort may be anticipated from the site.

8. Subsistence Systems

Recently the identification of charred seeds from European plant species in soils taken from pit house features has brought into question the validity of flotation samples taken from these locations (Custer et al. 1996:281). The large number of features which have been disturbed by groundhogs and the natural processes associated with sandy soils appear to be the main cause of this problem. Nevertheless, it is anticipated that uncontaminated information can be gained from undisturbed and more deeply buried features at sites like the Hickory Bluff Prehistoric Site.

9. Trade and Exchange

Preliminary assessment of raw material usage at the Hickory Bluff Prehistoric Site shows lithic specimens being fashioned from local, regional and extra-regional raw material sources. The means by which these materials reached the site (procurement or trade) remains one of the more intractable issues in the prehistory of the mid-Atlantic coastal region. The geographic linkage between artifacts and their raw material sources is closely linked to the social messages and meaning which may be encoded into the artifacts themselves, especially in periods such as the Delmarva Adena phase when social complexity and more widespread social interaction appear to characterize the prehistory of the region.

10. Mortuary Ceremonialism

To date, no evidence for burials or treatment of the dead has been recovered at the Hickory Bluff Prehistoric Site. In view of evidence from the Island Field Site, however, it is possible that one or more of the abandoned pit houses could have been used for burials. The St. Jones Adena site located just two miles downstream from Hickory Bluff was a known burial site during the period when the Delmarva Adena complex flourished and it is likely that many inhabitants from the surrounding area, including some of the occupants of the Hickory Bluff Prehistoric Site, could have been interred there.

11. Prehistoric Migration

This topic is closely related to issues of lithic and ceramic technology and trade and exchange. Artifactual evidence from the Hickory Bluff Prehistoric Site, in the form of exotic items imported into the site, may offer clues to the movement of culturally distinct Native American groups into the Delmarva peninsula.

12. Trends in Socio-Cultural Evolution

A broad-based synthesis of the information and hypotheses generated by the archaeology of the Hickory Bluff Prehistoric Site (as seen in the preceding research topics) may contribute to this overarching research domain. Such synthetic study would most usefully adopt the framework and methodology established in the various recent publications of Custer and the Delaware State Historic Preservation Office.