INTERPRETATIONS - AREA C

The interpretations of the excavation results from Area C are presented below.

Chronology

Chronological interpretations from Area C can be drawn from diagnostic projectile points, ceramics, and radiocarbon dates, and these data are discussed below. The distribution of features with diagnostic artifacts and radiocarbon dates across Area C is also discussed with reference to the history of Area C's occupation.

Diagnostic Projectile Points. Figure 90 illustrates the diagnostic projectile points from the plow zone excavations in Area C. Twenty-five diagnostic projectile points were recovered from plow zone soils during the Phase II and Phase III excavations and include a Middle Paleo-Indian point (Figure 90a), two Stanly/Neville points (Figure 90b-c), a Type E stemmed point (Figure 90d), five Type D stemmed points (Figure 90e-i), three Type B stemmed points (Figure 90j-1), one Lehigh/Koens-Crispin broadspear (Figure 90m), and 12 triangular points (Figure 90n-y). Figure 91 shows the 26 projectile points recovered from feature and subsoil contexts in Area C. The points from the features include two Kirk/Palmer variants (Figure 91a-b), a possible Stanly/Neville point with a broken base (Figure 91c), a Type E stemmed point (Figure 91d), two Type D stemmed points (Figure 91e-f), a Susquehanna broadspear (Figure 91g), a Type B stemmed point (Figure 91h), and four triangular points (Figure 91i-1). The points from the subsoil include two Kirk/Palmer points (Figure 91m-n), a Stanly/Neville point (Figure 910), a Type I stemmed point (Figure 91p), two Type D stemmed points (Figure 91q-r), six Type B stemmed points (Figure 91s-x), and two teardrop points (Figure 91y-z). Figure 92 summarizes the date ranges of the diagnostic projectile points from Area C based on the dates noted in Table 16. As was the case for Area B, the Archaic points in features are probably accidental inclusions in later Woodland-age features.

<u>Ceramics</u>. Diagnostic ceramics recovered from plow zone excavations in Area C included Hell Island, Minguannan, Killens, and Townsend ceramics. Figure 92 shows the date ranges of these ceramics in relation to the date ranges of the diagnostic projectile points based on the data in Table 17. The diagnostic ceramics were found in 31 different excavation units and only one of these units produced Hell Island ceramics. All of the other plow zone units produced Woodland II wares.

Features produced Wolfe Neck, Mockley, Minguannan, Killens, and Townsend ceramics and their date ranges are also shown in Figure 92. Of the 14 features with ceramics in Area B, only two produced pre-Woodland II ceramics (Feature 377 - Wolfe Neck ceramics, Feature 143 - Mockley ceramics). The remainder produced Woodland II wares post-dating A.D. 1000. Wolfe Neck sherds were found in the subsoil of Unit S101 E15. The date ranges of these ceramics are shown in Figure 92.

FIGURE 90

Diagnostic Projectile Points from Area C Plow Zone Excavations

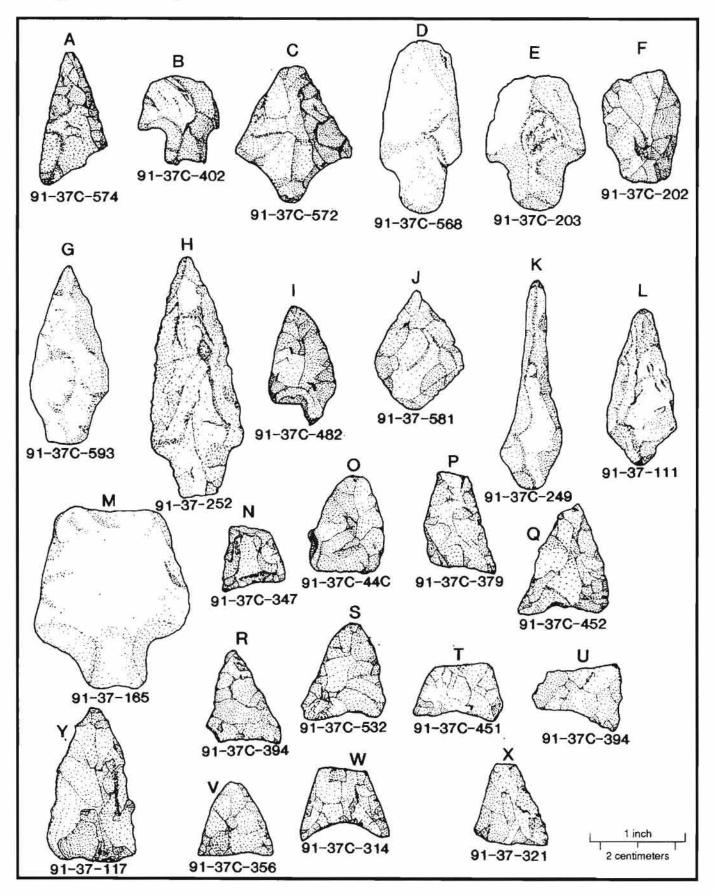


FIGURE 91

Diagnostic Projectile Points from Area C, Features and Subsoil Units

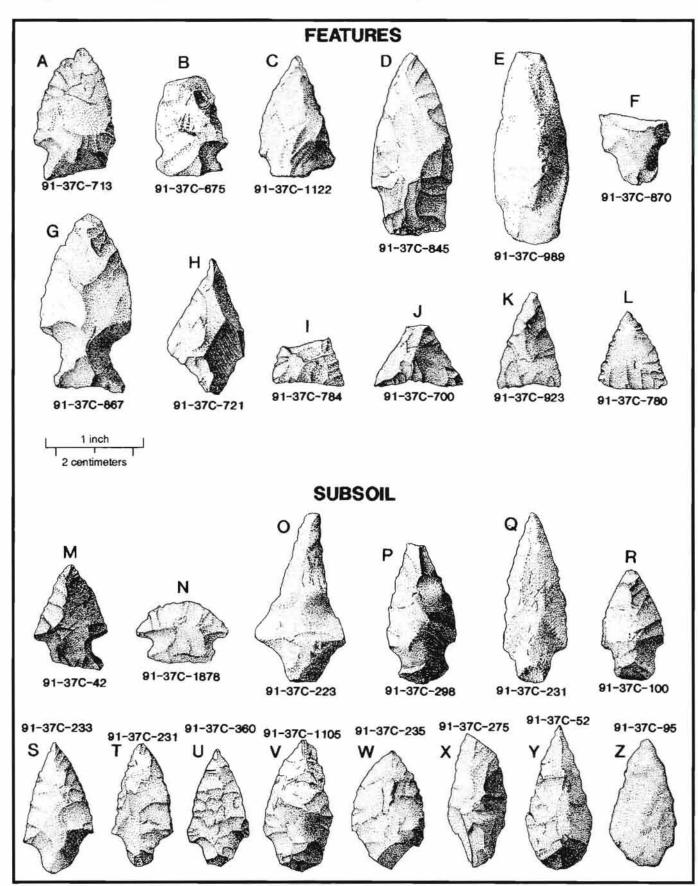
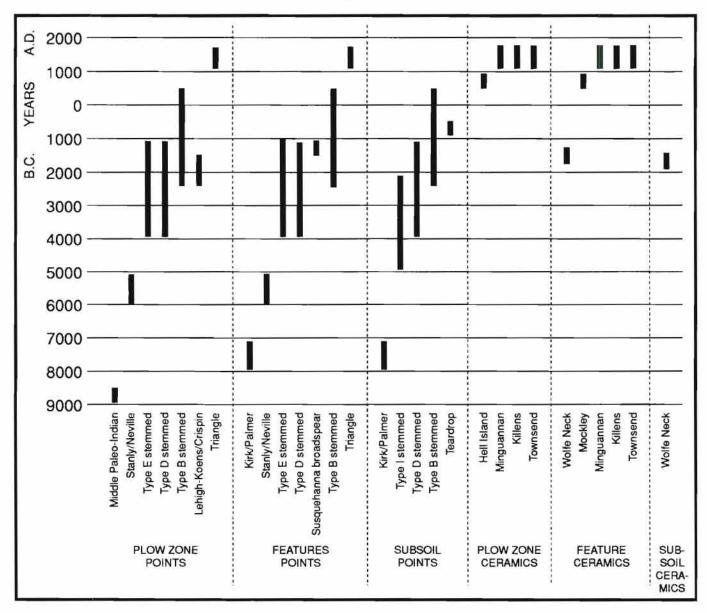


FIGURE 92 Date Ranges - Area C



Radiocarbon Dates. A radiocarbon sample from Feature C115 was submitted for dating, but the analysis returned a modern date indicating that it was an intrusion into the prehistoric feature.

In general, the diagnostic artifacts from Area B suggest that the occupations of Area B began to occur during the Paleo-Indian Period (ca. 9000 B.C.), and extended up until the end of the Woodland II Period (ca. A.D. 1600). The majority of the diagnostic artifacts date from the Woodland II time period and provide an indication that the most intensive use of Area C occurred at that time.

The buried subsoil beneath the plow zone produced numerous diagnostic projectile points and ceramics, and it is interesting to note that all of these diagnostic artifacts pre-date the Woodland II Period. The buried soil is rather thin, less than 10 centimeters thick, and is located immediately beneath the disturbed plow zone soils. Therefore, it is very likely that these artifacts could have been moved downward from the plow zone into the buried soil by natural processes. On the other hand, it is also possible that these artifacts were deposited at the same time as the soil. In this case, the buried soil was probably deposited between ca. 5000 B.C. and A.D. 1000.

Distribution of Dated Features. Figures 93 and 94 show the distribution of dated features in Area C. As was the case for Area B, even though some features can be dated, there are too few dated features, and these features are too widely scattered, to define any feature clusters. The presence of the historical site in the northern section of Area C (Figure 93) also complicates this process.

Plow Zone Artifact Distributions

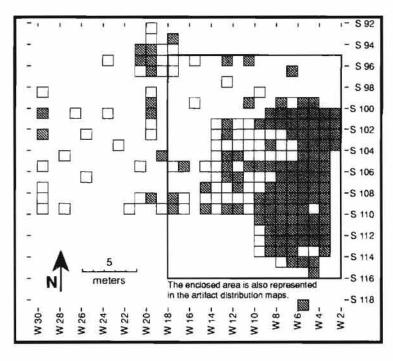
The distribution of total artifacts based on the excavated plow zone units in Area C is shown in Figure 95. The highest artifact densities are seen in the northeastern portion of the area. A smaller and less dense concentration of artifacts is also present in the southern section of the area near the bay/basin feature. There are some features in the northeast section of Area C (Figure 53), but the highest feature concentrations are in other parts of the area. Thus, the plow zone artifact distribution does not reflect the distribution of features. The northeastern section of Area C is at the foot of a gentle slope that runs from southwest to northeast across the entire area. Like Areas A and B, there is evidence of substantial erosion in Area C including the exposure of Pleistocene gravels in the plow zone and truncated soil profiles, as was noted earlier. The artifact concentrations on the area's northern edge may be a result of that erosion.

Figure 96 shows the distribution of debitage and as might be expected, the debitage distribution is the same as the total artifact distribution because debitage is the most numerous type of artifact. Figures 97 and 98 show the distributions of debitage with and without cortex. The overall distributions of these different types of flakes are similar in that they both show concentrations in the northern part of Area C. However, there is a concentration of debitage without cortex in the southern portion of Area C near the bay/basin feature. This concentration of debitage without cortex would be linked to either more extensive use of primary materials or absence of early stage reduction activities. Unfortunately, there are insufficient chronological data to tell if these different lithic reductions are related to different occupations of Area C.

To summarize, the distribution of artifacts in the plow zone of Area C does not match the distribution of sub-surface features. Erosion of Area C from southwest to northeast seems to have been the main determinant of the plow zone artifact distributions. Nevertheless, there does seem to be an area of slightly different lithic resource use in the southern portion of Area C near the bay/basin feature.

Subsoil Artifact Distributions

FIGURE 99 Location of Subsoil Test Units in Northeast Corner of Area C



Intact subsoil deposits with artifacts were identified and excavated in the extreme northeast corner of Area C (Figure 99). Figure 100 shows the distribution of total artifacts within the excavation units, and they are concentrated along the eastern edge of the excavation block. This area of artifact concentration would again be at the base of a slope across Area C, and the distribution probably reflects the processes of erosion at the site. Distributions of flakes with cortex (Figure 101), flakes without cortex (Figure 102), and tools (Figure 103) show the same patterning.

Figure 104 shows the distribution of features within the excavation block and there are two Type 1 house features present. These features are located in areas of low artifact densities and it is possible that if erosion did not affect the artifact

distributions, then the low artifact densities reflect residential areas and the section with higher artifact densities reflects a tool manufacturing area. However, it is unlikely that erosion has not affected the artifact distributions in Area C.

Analysis of Feature Distributions

Feature distributions in Area C cannot be assessed in terms of individual occupations because of the low numbers of features that can be assigned to any particular time periods. Nevertheless, some insights can be derived from observing their distributions. For the most part, prehistoric features are spread across all of Area C (Figures 53 and 54). No particular section of Area C seems to have been avoided for prehistoric settlement or excavation of pits.

From the total of 445 prehistoric features identified in Area C, 415 of them (93%) are associated with prehistoric houses. Figures 53 and 54 show the distribution of houses and in many parts of Area C there is considerable overlap of the houses associated with the "sub-basement" pit features. The feature overlap suggests that the site was repeatedly occupied by small groups over a long period of time, rather than by a large group over a short period of time. Like Areas A and B, Area C clearly shows no planned community. Unfortunately, the very low incidence of dated artifacts does not allow any assessment of settlement intensity over time.

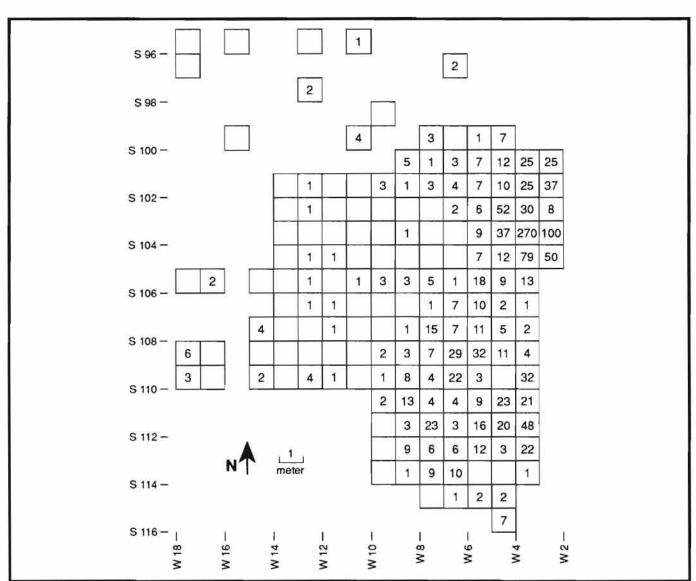


FIGURE 100 Area C - Subsoil Total Artifact Distribution

Analysis of Lithic Technologies

The interpretations of lithic technologies specific to Area C are presented below. Additional analyses of topics in lithic technologies pertaining to all site areas are discussed in a separate section later in the report.

Table 32 shows a summary artifact catalog of the lithic artifacts from Area C and notes the raw materials used and the number of artifacts with cortex present, as was done for other areas. Table 33 is derived from Table 32 and shows the percentage of artifacts with cortex for each raw material. Table 34 is also derived from Table 32 and shows the raw material percentages used for each artifact type.

FIGURE 101 Area C - Subsoil Flakes with Cortex Distribution

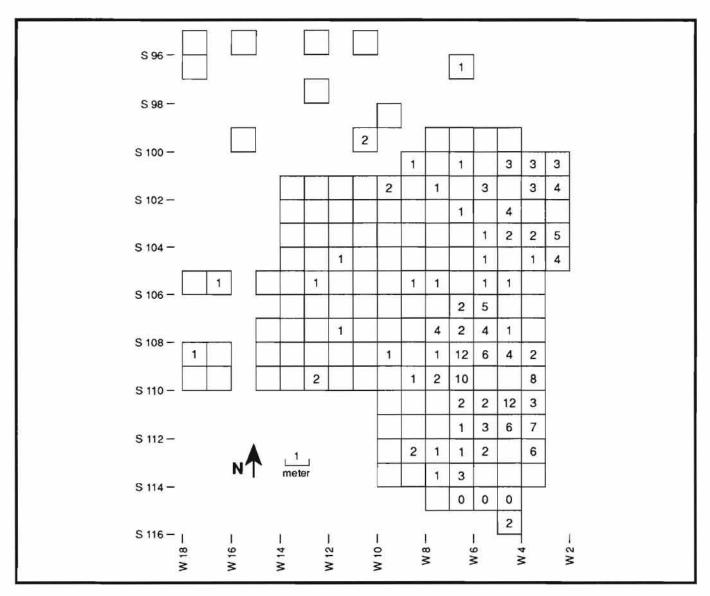


TABLE 32

Total Lithic Artifact Assemblage and Raw Materials - Area C

								RAW	MATERIA	LS				
TOOL TYPE	Quar	tzite	Qua	rtz	Ch	ert	Jas	per	Rhyolite	Argillite	Ironstone	Other	тот	TAL
Flakes	139	(25)	1047 (118)	1328	(401)	2223(1068)	31 (0)	43 (2)	289 (25)	22(3)	5122(1642)
Utilized flakes	4	(3)	13	(2)	38	(20)	54	(34)	1 (0)	0	1 (0)	0	111	(59)
Flake tools	2	(1)	17	(6)	27	(15)	24	(17)	1 (0)	1 (0)	3 (3)	0	75	(42)
Points	2	(0)	6	(0)	8	(0)	29	(0)	0	8 (0)	1 (0)	0	54	(0)
Early stage biface rejects	0		6	(1)	2	(0)	6	(4)	0	0	0	0	14	(5)
Late stage biface rejects	2	(0)	2	(0)	7	(1)	8	(2)	0	3 (0)	0	0	22	(3)
Other bifaces and fragment	s 0		4	(0)	4	(1)	4	(1)	0	0	0	0	12	(2)
Miscellaneous stone tools	0		з	(0)	0		10	(5)	1 (0)	1 (0)	0	0	15	(5)
Cores	2	(0)	11	(7)	5	(2)	8	(6)	0	1 (0)	0	0	27	(15)
TOTAL	151	(29)	1109 (134)	1419	(440)	2366 (1137)	34 (0)	57 (2)	294 (28)	22(3)	5452(1773)

FIGURE 102 Area C - Subsoil Flakes without Cortex Distribution

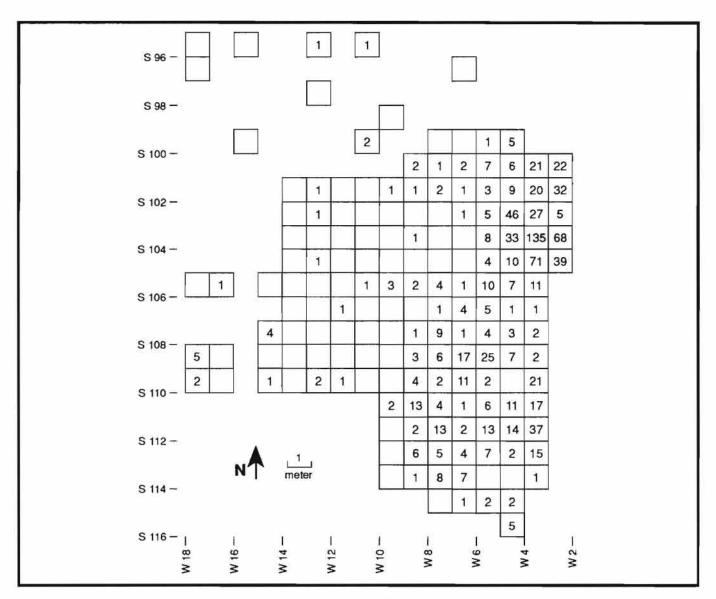
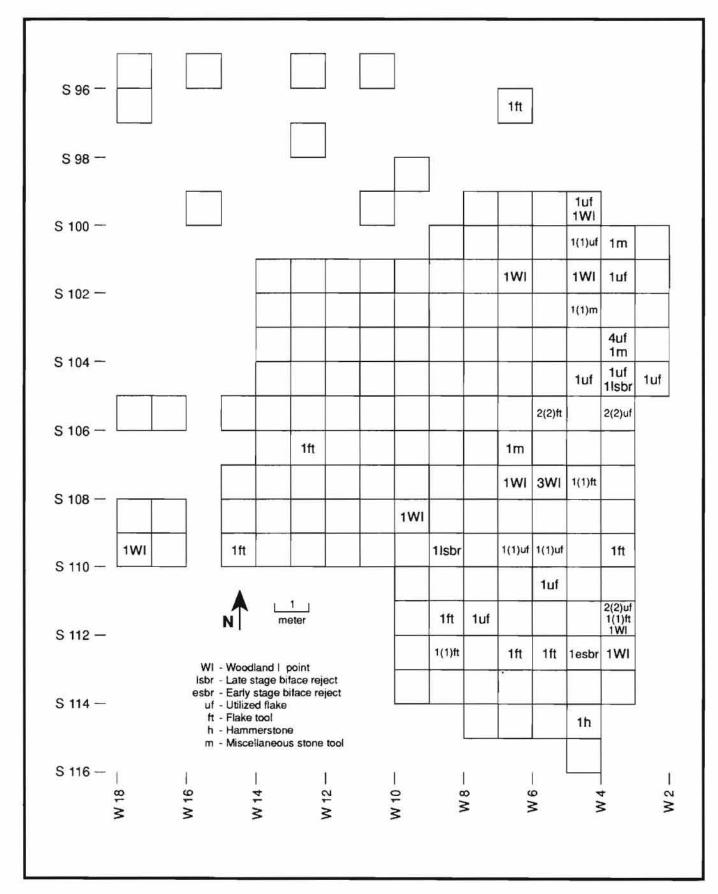


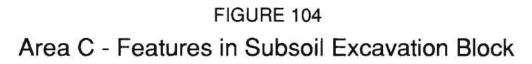
TABLE 33

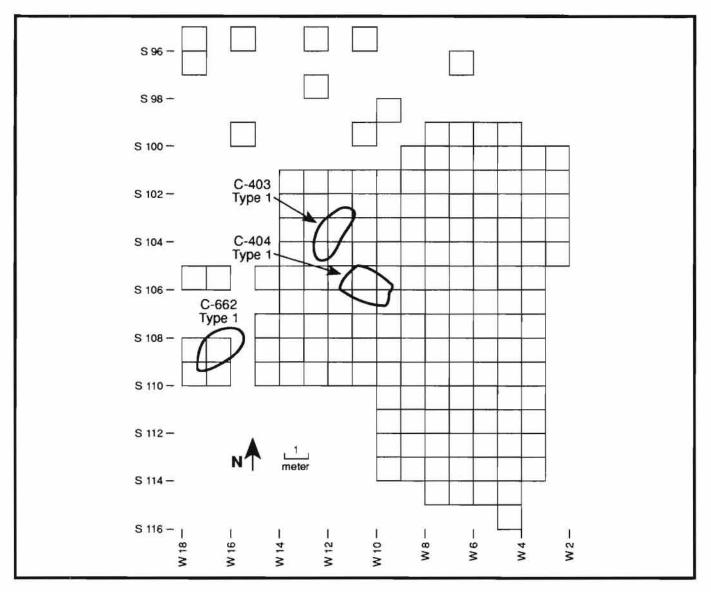
Total Lithic Artifact Assemblage - Cortex Percentage - Area C

				RAW M	ATERIALS				
TOOL TYPE	Quartzite	Quartz	Chert	Jasper	Rhyolite	Argillite	Ironstone	Other	TOTAL
Flakes	18	11	30	48	0	5	9	14	32
Utilized flakes	75	15	52	63	0	144	0		53
Flake tools	50	35	56	71	0	0	100	-	56
Points	0	0	0	0	-	0	0		0
Early stage biface rejects	-	17	0	67		-			36
Late stage biface rejects	0	0	14	25	-	0	+		14
Other bifaces and fragments		0	25	25					17
Miscellaneous stone tools		0		50	0	0	-		33
Cores	0	64	40	75		0	<u></u>	-	56
TOTAL	19	12	31	48	0	4	10	14	33

FIGURE 103 Area C - Subsoil Tool Distribution







Total Lithic Artifact Assemblage -Raw Material Percentage by Tool Type - Area C

	RAW MATERIALS											
TOOL TYPE	Quartzite	Quartz	Chert	Jasper	Rhyolite	Argillite	Ironstone	Other				
Flakes	3	20	26	43	<1	1	6	<1				
Utilized flakes	4	12	34	49	1	0	1	0				
Flake tools	3	23	36	32	1	1	4	0				
Points	4	11	15	54	0	15	2	0				
Early stage biface rejects	0	43	14	43	0	0	0	0				
Late stage biface rejects	9	9	32	36	0	14	0	0				
Other bifaces and fragments	0	33	33	33	0	0	0	0				
Miscellaneous stone tools	0	20	0	67	7	7	0	0				
Cores	7	41	18	30	0	4	0	0				
TOTAL	3	20	26	43	1	1	5	<1				

Table 33 shows that in the overall assemblage from Area C, cortex is present on approximately 33 percent of the artifacts. When individual artifact types are considered, much higher cortex percentages are seen for utilized flakes, flake tools, early stage bifaces, miscellaneous tools, and cores. The different cortex percentages may indicate that the prehistoric inhabitants of Area C were using local secondary cobble resources to make a series of tools to replace damaged tools that they had brought with them to the Pollack Site. The lower cortex percentages may also indicate that some primary lithic materials were brought with them to the site as part of a curated tool kit. While living in Area C, the primary materials may have been reduced and produced the debitage with no cortex.

As was noted for Areas A and B, it is also possible that the lower percentages of cortex are due to the fact that reduction and flaking of cobbles and pebbles does produce debitage with no cortex. Splitting of cobbles and pebbles and flaking of the outer surfaces does remove flakes with cortex, but flaking of inner portions of the cobble produces flakes with no cortex. Thus, the lower percentages of flakes with cortex in Area C may simply reflect intensive use of secondary materials, and the natural production of flakes with and without cortex in cobble reduction, rather than any special trends in raw material use by the site's inhabitants.

Cortex percentages are higher for cryptocrystalline materials, jasper and chert, compared to the other raw materials. These differences may indicate that secondary sources of cryptocrystalline materials were more commonly used than secondary materials for other materials. Based on the relationship between cortex percentage and tool production stages noted above, it is also possible that the higher cortex percentages for jasper and chert may indicate that more early stage tool production took place using these materials compared to the other materials in Area C.

Table 34 shows the varied use of lithic raw materials among the various artifact types and quartz, jasper, and chert are the most commonly used stones. Jasper is the most commonly used material for all artifact types except for flake tools where chert was used more frequently, early stage

Tool Types - Area C

Points/knives	54
Late stage bifaces	22
Early stage bifaces	14
Drills	0
Concave/biconcave scrapers	0
Bifacial side scrapers	4
Unifacial side scrapers	7
Trianguloid end scrapers	8
Slug-shaped unifaces	0
Wedges	3
Primary cores	15
Secondary cores	7
Denticulates	1
Gravers	0
Regular utilized flakes	95
Blade-like utilized flakes	16
Total	246

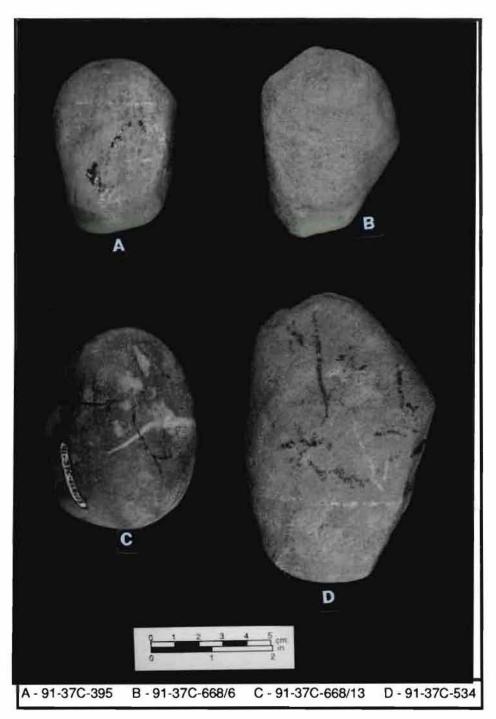
bifaces where quartz was used most frequently, other bifaces where quartz, chert, and jasper are all used with equal frequency, and cores where quartz was used more frequently. Only very small amounts of quartzite, rhyolite, argillite, and ironstone are present. Because of the relatively high percentage of cortex in the assemblage, artifact most of the cryptocrystalline materials, and the quartz, were probably derived from local cobble and pebble deposits along the Leipsic River and on the surface of the Pollack Site, as was the case for Areas A and B.

Table 35 shows the varied tool types found in Area C. Examples of some of the tools are shown in Figure 68 including a blade core (Figure 68i), a wedge (Figure 68j), two

trianguloid end scrapers (Figure 68k - 1), and an odd discoidal bifacial tool of unknown function (Figure 68m). Examples of bifaces from Area C are shown in Figure 89(f-h). Not many examples of the varied tool types are present and some tool types are completely missing from the assemblage. The low number of tools may be due to the overall low artifact densities from this area of the site. However, the total lithic assemblage does include more than 5000 artifacts, and it would not be unreasonable to expect more examples of the formal tool types, such as the scrapers, other flake tools, and bifaces, to be present. A total of only 22 specialized flake tools is present, but there are 111 general utilized flakes that cannot be placed into the usual formal tool categories. These data would tend to indicate that generalized flake tools designed to fit specific functions. Because the chronological data suggest that the occupation of the site occurred mainly during the Woodland Period, particularly during the Woodland II Period, this technological trend occurs relatively late in Delaware's prehistory. Similar technological trends have been observed at other late prehistoric sites in the region (Custer, Hoseth, Cheshaek, Guttman, and Iplenski 1993).

Seven hammerstones were also found in Area C and can be placed into two main size categories (Plate 29). Five of the hammerstones weighed approximately 200 grams and were rather small. The remaining two hammerstones weighed approximately 1.25 kilograms and were rather large. The varied sizes of the hammerstones indicate that different stone tool manufacturing activities took place with the larger hammerstones being used for initial stages of tool production, and the smaller ones being used for later stages.

PLATE 29 Hammerstones from Area C



Two large anvils weighing approximately four kilograms were also found in features in Area C (Plates 30 and 31). These artifacts were made from large tabular cobbles that show battering in their central sections and are pitted across their flat surfaces. In some cases, there are circular striations indicating that some kind of grinding motion was used on the anvil. These artifacts may have functioned for plant food processing or may also have been used in the bipolar percussion process used to split cobbles and pebbles.

PLATE 31 Stone Anvil from Area C

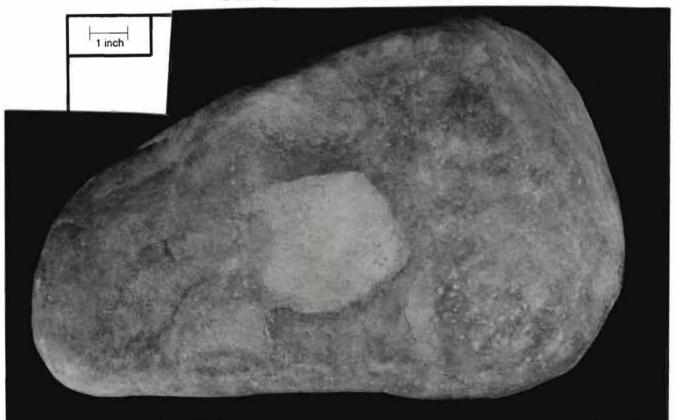


PLATE 32 Edged Cobble Tool from Area C

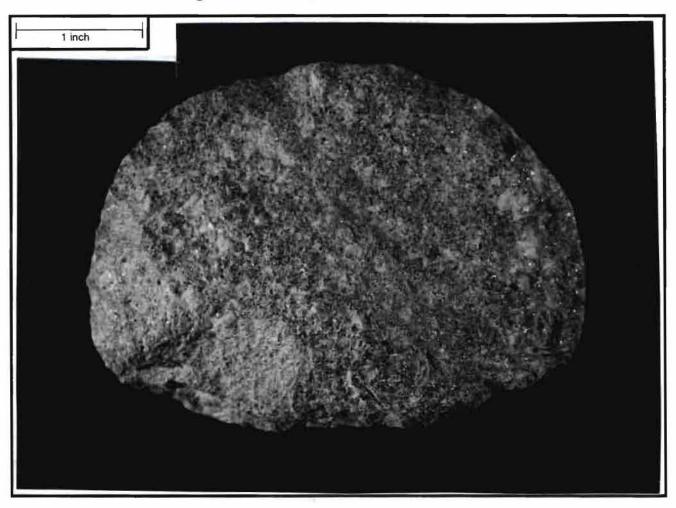


Plate 32 shows an edged cobble tool found on the surface of Area C. This artifact was produced by knocking a large flake from a dense quartzite cobble and then bifacially flaking a sharpened edge on the distal end of the flake. These tools have been observed at other sites in the Delaware drainage (e.g., Kraft 1986), but are not commonly seen in Delaware. The function of these tools is unknown, but the edge configuration and large size suggest that they were used as generalized cutting and scraping tools.

Because a sample of artifacts from the subsoil units was gathered from the excavations, these artifacts were analyzed separately from the feature artifacts and can be compared to them. There was an insufficient number of tools for analysis and comparison; however, the general patterns of raw material use and use of primary and secondary materials can be considered. Table 36 shows the summary catalog of raw material use for different tool types and cortex frequencies for the subsoil assemblage, and Tables 37 and 38 show cortex percentages and raw material percentages for individual tool types for the same assemblage. Tables 39 - 41 show the same data for the lithic assemblage from features.

TABLE 36 Lithic Artifact Assemblage and Raw Materials -Area C, Subsoil Units

								R	AW MATER	RIALS				
TOOL TYPE	Qua	rtzite	Qua	artz	Ch	ert	Jas	per	Rhyolite	Argillite	Ironstone	Other	TOT	TAL
Flakes	40	(5)	662	(28)	325	(81)	280 (109)	4 (0)	8 (0)	40 (0)	2 (0)	1361	(223)
Utilized flakes	1	(0)	9	(1)	9	(7)	5	(2)	0	0	1 (0)	0	25	(10)
Flake tools	0		6	(1)	4	(3)	4	(1)	0	0	1 (0)	0	15	(5)
Points	0		2	(0)	1	(0)	8	(0)	0	0	3 (0)	0	14	(0)
Early stage biface rejects	0		1	(0)	0		1	(0)	0	0	0	0	2	(0)
Late stage biface rejects	1	(0)	1	(0)	0		0		0	0	0	0	2	(0)
Other bifaces and fragments	0		1	(0)	0		0		0	0	0	0	1	(0)
Miscellaneous stone tools	0		2	(0)	0		2	(1)	0	0	0	0	4	(1)
TOTAL	42	(5)	684	(30)	339	(91)	300 ((113)	4 (0)	8 (0)	45 (0)	2 (0)	1424	(239)

TABLE 37

Lithic Artifact Assemblage - Cortex Percentage -Area C, Subsoil Units

				F	AW MATER	RIALS			
TOOL TYPE	Quartzite	Quartz	Chert	Jasper	Rhyolite	Argillite	Ironstone	Other	TOTAL
Flakes	12	4	25	39	0	0	0	0	16
Utilized flakes	0	11	77	40	 3		0	3 53 18	40
Flake tools		17	75	25			0		40
Points	*	0	0	0	 2		0	-	0
Early stage biface rejects	-	0	**	0			-	-	0
Late stage biface rejects	0	0						-	0
Other bifaces and fragments		0	200			-			0
Miscellaneous stone tools	-	0	-	50		-	-	-	25
TOTAL	12	4	27	38	0	0	0	0	17

Cortex percentages (Tables 37 and 40) for the subsoil units are generally lower than those from features, especially for quartz and quartzite. This different lithic resource utilization may indicate that primary quartz and quartzite cores were more commonly reduced in the area of the subsoil excavations, than in the features. The raw material percentages for the individual artifact types (Tables 38 and 41) are similar, except for a higher incidence of ironstone use in the feature assemblage. Thus, for the most part, the artifacts from the subsoil are very similar to those from features in Area C. Applying the same line of reasoning used for Area B, it can be noted that if the subsoil areas do indeed represent tool

Lithic Artifact Assemblage -

Raw Material Percentage by Tool Type - Area C, Subsoil Units

	RAW MATERIALS											
TOOL TYPE	Quartzite	Quartz	Chert	Jasper	Rhyolite	Argillite	Ironstone	Other				
Flakes	з	49	24	21	<1	1	3	<1				
Utilized flakes	4	36	36	20	0	0	4	0				
Flake tools	0	40	27	27	0	0	7	0				
Points	0	14	7	57	0	o	21	0				
Early stage biface rejects	0	50	0	50	0	0	0	0				
Late stage biface rejects	50	50	0	0	0	0	0	0				
Other bifaces and fragments	0	100	0	0	0	0	0	0				
Miscellaneous stone tools	0	50	0	50	0	0	0	0				
TOTAL	з	48	24	21	<1	1	3	<1				

TABLE 39

Lithic Artifact Assemblage and Raw Materials - Area C, Features

								RA	W MATER	IALS				
TOOL TYPE	Qua	rtzite	Qua	artz	Ch	ert	Jas	per	Rhyolite	Argillite	Ironstone	Other	TOT	AL
Flakes	45	(9)	144	(31)	237	(54)	371 (141)	12 (0)	9 (0)	216 (22)	3 (0)	1037 (257)
Utilized flakes	1	(1)	3	(1)	5	(3)	7	(4)	0	0	0	0	16	(9)
Flake tools	0		3	(1)	2	(1)	4	(2)	1 (0)	0	1 (1)	0	11	(5)
Points	1	(0)	1	(0)	1	(0)	8	(0)	0	1 (0)	0	0	12	(0)
Early stage biface rejects	0		2	(0)	0		1	(0)	0	0	0	0	3	(0)
Late stage biface rejects	1	(0)	0		2	(0)	1	(0)	0	0	0	0	4	(0)
Miscellaneous stone tools	0		0		0		3	(2)	0	0	0	0	3	(2)
Cores	0		6	(4)	2	(1)	4	(3)	0	1 (0)	0	0	13	(8)
TOTAL	48	(10)	159	(37)	249	(59)	399 ((152)	13 (0)	11 (0)	217 (23)	3 (0)	1099 (281)

production areas, as was suggested based on the distribution data, then the similarities between the feature and the subsoil artifacts suggest that the features served as receptacles for debris from similar tool manufacturing activities. And, given the fact that the pit features would have been <u>inside</u> the houses, then it is likely that the tool manufacturing took place inside of the houses. Similar activity patterns have been noted at other sites (e.g., Custer and Hodny 1989) and have been linked to coldweather occupations of houses.

Lithic Artifact Assemblage - Cortex Percentage - Area C, Features

				F	RAW MATE	RIALS			
TOOL TYPE	Quartzite	Quartz	Chert	Jasper	Rhyolite	Argillite	Ironstone	Other	TOTAL
Flakes	20	22	23	38	0	0	10	0	25
Utilized flakes	100	33	60	57	-				56
Flake tools	-	33	50	50	0		100	0	45
Points	0	0	0	0		0			0
Early stage biface rejects		0	177	0		-			0
Late stage biface rejects	0		0	0		-	2 <u>5</u>	~	0
Miscellaneous stone tools	-77	1.00		67	0	0	0	0	67
Cores	-77	67	50	75		0	÷		62
TOTAL	21	23	24	38	0	0	10	0	26

TABLE 41

Lithic Artifact Assemblage -

Raw Material Percentage by Tool Type - Area C, Features

				F	RAW MATE	RIALS		
TOOL TYPE	Quartzite	Quartz	Chert	Jasper	Rhyolite	Argillite	Ironstone	Other
Flakes	4	14	23	36	1	1	21	<1
Utilized flakes	6	19	31	43	0	0	0	0
Flake tools	0	27	18	36	9	0	9	0
Points	8	8	8	67	0	в	0	0
Early stage biface rejects	0	67	0	33	0	0	0	0
Late stage biface rejects	25	0	50	25	0	0	0	0
Miscellaneous stone tools	0	0	0	100	0	0	0	0
Cores	0	46	15	31	0	1	0	0
TOTAL	4	14	23	36	1	1	20	<1

A final research activity accomplished in Area C was the excavation of a trench across the bay/ basin noted in Figure 54. Plates 33-35 show the excavations in progress and Appendix I describes the results of the excavations.

PLATE 33 Stripping Plow Zone from Bay/Basin Feature



PLATE 34

Excavation of Trench Through Bay/Basin Feature





PLATE 35 Profile of Bay/Basin Trench

