TABLE 17

SUMMARY OF SITES SUBJECT TO PHASE I AND II STUDY, BY SEGMENT

CRS Number	Site Number	Site Name	Segment Location	Work Completed	Site Status
7NC-D-124	N-11712	Dehorty Site	2	Ph I	C
7NC-D-143	N-11720	Lee Site	2	Ph I/II	A
7NC-D-142	N-11719	Young Site	2	Ph I	B
7NC-D-136	N-11714	Anna Lloyd Site	2	Ph I/II	B
7NC-D-137	N-11715	Stuart Forest Site	3	Ph I	C
7NC-D-140	N-11718	Barratt's Run East	4	Ph I/II	A
7NC-D-135	N-11713	Nellie Thorp Field	4	Ph I	B
---	---	Hersey Site	3	access denied	---
7NC-D-154	N-12053	Muddy Run Site	5	Ph I	B
7NC-D-139	N-11717	Cooch Tenancy	1	Ph I	A
7NC-D-141	N-11714	Leach Site	1	Ph I/II	A
7NC-D-138	N-11716	Comly Site	1	Ph I	B

Key:

A - Not National Register eligible; no further work required.
B - Out of ROW
C - National Register Eligible
Ph - Phase

INTERPRETATIONS AND CONCLUSIONS

IMPLICATIONS FOR REGIONAL PREHISTORY

The results of the Phase I and II prehistoric archaeological investigations of the Old Baltimore Pike project area are applicable to two research questions: site location models and regional lithic resource utilization. Other cultural resource management projects in northern New Castle County (Lothrop et al. 1987; Coleman et al. 1987), have shown that the presence of surface water sources is a major factor determining the location of prehistoric sites from all time periods. All of the prehistoric sites identified in the Old Baltimore Pike project area were found on well-drained ground, close to streams,

bay/basins, or other poorly drained areas. Nonetheless, the Segment 3 Alignment crossed several small sand ridges surrounded by swamplands and intermittent drainages, but only one of these ridges produced prehistoric artifacts (Stuart Forest - 7NC-D-137). Thus, not all of the poorly drained interior settings were utilized by prehistoric groups. On the other hand, of the three major drainages traversed by the project area, two were the locations of prehistoric procurement sites, the Barratt's Run Site and the Young Site. These findings may indicate that flowing surface water settings were more commonly preferred site settings than interior areas of poor drainage.

The lithic resource use at three of the prehistoric sites found in the Old Baltimore Pike Survey (7NC-D-137, 7NC-D-138, and 7NC-D-140) can be compared to use patterns seen at other sites in the Fall Line and High Coastal Plain. Table 18 shows the percentage of cortex and raw material use among a variety of Woodland I lithic assemblages, and Figure 82 shows the locations of the sites from which these assemblages were derived. A difference-of-proportion test was used to compare percentages of cortex, cryptocrystalline use, and quartz and quartzite use among all of the sites. The difference-of-proportion test was applied to evaluate percentage differences due to the varied sizes of the artifact assemblages shown in Table 18. It can be seen that the samples from the Old Baltimore Pike sites are especially small, but they can still be compared with the other sites using the difference-of-proportion test. However, because the small samples from these sites may not be representative of

TABLE 18

COMPARATIVE LITHIC RESOURCE USE

Site	Function	Total Artifacts	Cortex %	Crypto %	QtQz %	Ref.
7NC-D-137	Procure.	58	50	43	24	--
7NC-D-138	Procure.	54	0	59	23	--
7NC-D-140	Procure.	133	21	38	18	--
7NC-E-81	Procure.	155	9	66	12	7
7NC-D-129	Procure. Camp	1,749	6	76	24	5
7NC-E-46	Staging	10,512	20	22	69	1
7NC-D-54	Cobble Red. B.C.	1,288	28	32	59	2
7NC-D-55A	Cobble Red. B.C.	132	45	16	69	2
7NC-D-55B	Cobble Red. B.C.	2,304	29	8	88	2
7NC-D-62	Cobble Red. B.C.	475	41	17	78	2
7NC-E-6A Area 2A	Macro. B.C.	5,515	9	61	33	3
7NC-E-6A Area 2B	Macro. B.C.	6,206	8	80	23	3
7NC-E-6B	Macro. B.C.	2,949	13	49	15	3
7NC-D-5	Quarry Red.	94	0	60	32	4
7NC-D-3	Quarry Red.	368	0	51	38	4
7NC-D-19	Quarry Red.	653	0	74	26	1
7NC-D-100	Procure.	293	40	51	46	6

Key:

Crypto - Cryptocrystalline
QtQz - Quartz/Quartzite
Procure. - Procurement
Cobble Red. B.C. - Cobble Reduction Base Camp
Macro B.C. - Macro Base Camp
Quarry Red. - Quarry Reduction
Ref. - References

References:

1 - Custer and Bachman 1984
2 - Custer, Sprinkle, Flora, and Stiner 1981
3 - Custer 1982
4 - Custer, Ward, and Watson 1986
5 - Custer, Watson, Hoseth, and Coleman 1988
6 - Shaffer, Custer, Grettler, Watson, and DeSantis 1988
7 - Catts, Rappleye-Marsett, Custer, Cunningham, and Hodny 1988

these sites' total lithic assemblages, the results of the comparisons must be seen as somewhat tentative. The results of the difference-of-proportion tests and other preliminary data results are located in Appendix II.

Table 19 lists the sites in rank order by percentage frequencies of cortex, cryptocrystalline use, and quartz and quartzite use. Sites with no significant differences in percentages are joined by brackets. Table 19 was prepared by using an initial set of site comparisons generated in an earlier report, 7NC-A-17 (Custer and Hodny 1989) to which the three sites from this survey were added.

With regard to cortex percentage, three sites (7NC-D-138 and 7NC-D-140) fall into a grouping of sites with low cortex utilization that includes quarry reduction sites associated with primary lithic outcrops, macro-band base camps, and procurement/staging sites. One site (7NC-D-137) shows a very high cortex percentage and is associated with cobble reduction base camps. With regard to quartz and quartzite utilization, all three sites show very low incidences of use of these materials. In contrast, cryptocrystalline usage at the three sites (7NC-D-140, 7NC-D-137, 7NC-D-138) falls into a middle range.

The total picture of lithic resource utilization seems to indicate that at 7NC-D-137, cobble utilization was frequent, but cryptocrystalline cobbles were used more commonly than those of quartz and quartzite. A similar selection of cryptocrystalline cobbles is <u>not</u> seen at the three cobble reduction sites of the more northern Fall Line Zone (7NC-D-55B, 7NC-D-62, 7NC-D-55A) with high cortex percentages where quartz and quartzite were the

TABLE 19

SUMMARY OF LITHIC RESOURCE USE PATTERNS

Site Number	Cortex	Cryptocrystalline		Quartz & Quartzite	
7NC-D-138	P-O	7NC-D-55B	CBC-8	7NC-E-81	12-P
7NC-D-5	Q-0	7NC-D-55A	CBC-16	7NC-E-6B	15-BC
7NC-D-3	Q-0	7NC-D-62	CBC-17	7NC-D-140	18-P
7NC-D-19	Q-0	7NC-E-46	H/S-22	7NC-E-6A(2B)	23-BC
7NC-D-129	P-6	7NC-D-54	CBC-32	7NC-D-138	23-P
7NC-E-6A(2B)	BC-8	7NC-D-140	P-38	7NC-D-129	24-P
7NC-E-6A(2A)	BC-9	7NC-D-137	P-43	7NC-D-137	24-P
7NC-E-81	P-9	7NC-E-6B	BC-49	7NC-D-19	26-Q
7NC-E-6B	BC-13	7NC-D-3	Q-51	7NC-D-5	32-Q
7NC-E-46	H/S-20	7NC-D-100	P-51	7NC-E-6A(2A)	33-BC
7NC-D-140	P-21	7NC-D-138	P-59	7NC-D-3	38-Q
7NC-D-54	CBC-28	7NC-D-5	Q-60	7NC-D-100	46-P
7NC-D-55B	CBC-29	7NC-E-6A(2A)	BC-61	7NC-D-54	59-CBC
7NC-D-100	P-40	7NC-E-81	P-66	7NC-E-46	69-H/S
7NC-D-62	CBC-41	7NC-D-19	Q-74	7NC-D-55A	69-CBC
7NC-D-55A	CBC-45	7NC-D-129	P-76	7NC-D-62	78-CBC
7NC-D-137	P-50	7NC-E-6A(2B)	BC-80	7NC-D-55B	88-CBC

Note: Sites are listed in order from lowest to highest

Key:
Q - quarry
BC - base camp
CBC - cobble reduction base camp
P - procurement
H/S - hunting/staging site

preferred materials. The sample from 7NC-D-137 is one of the smallest among the sites studied and the apparent unique lithic utilization pattern at 7NC-D-137 may be due to a biased artifact sample from the site. On the other hand, if it is not a biased sample, the focus on cryptocrystalline cobbles shown at 7NC-D-137 may be a cobble lithic utilization pattern characteristic of sites on the southern margin of the Fall Line transition zone. The fact that 7NC-D-100, which is also located on the southern end of the Fall Line transition zone, shows a similar focus and cryptocrystalline cobbles suggests that the lithic utilization pattern seen at 7NC-D-137 is not a result of a biased sample.

A focus on cryptocrystalline cobble use in the southern Fall Line Zone may simply be related to resource availability. The Christina River, which drains the vicinity of the Delaware Chalcedony Complex (Custer, Ward, Watson 1986) and is more likely to carry cryptocrystalline materials in its bedload, traverses the southern margin of the Fall Line Zone. In contrast, the northern Fall Line Zone is traversed by the White Clay Creek which does not drain extensive areas of cryptocrystalline outcrops. Rather, the White Clay Creek drains an extensive section of the Piedmont Uplands where quartz and quartzite are the most commonly available lithic materials for stone tool manufacture. The extent of varied cobble lithic resource availability could be further studied by looking at more sites in the northern and southern Fall Line and by studying the frequencies of varied lithic raw materials in cobble beds at different locations in the Fall Line.

The other two sites from Old Baltimore Pike Survey show a more common lithic utilization pattern with low cortex percentages, low quartz and quartzite percentages, and moderate to high cryptocrystalline material percentages. In other studies (Custer, Watson, Hoseth, and Coleman 1988; Custer and Hodny 1989) it was noted that the above lithic utilization pattern is probably associated with groups who were utilizing a prepared tool kit that was based on primary cryptocrystalline materials derived from the Delaware Chalcedony Complex. Most likely, the groups using these sites had recently visited the area of the Delaware Chalcedony Complex to the west of the study and augmented their tool kits with local cobble quartz.

When all of the sites listed in Table 18 are considered as a whole, they can be classified into groups based on the use of cobble materials, as revealed through the cortex percentage, and the cryptocrystalline percentage. The cortex percentage is divided into two categories based on the groups shown in Table 19 (high > 28%). The cryptocrystalline percentage is divided into three categories (low < 17%, medium >17% and < 74%, high > 74%) based on the groups shown in Table 19. Some of the groupings shown in Table 20 have been noted previously and are easy to explain. The high cortex and high cryptocrystalline sites (7NC-D-100 and 7NC-D-137) are the southern Fall Line procurement sites where cryptocrystalline cobbles were utilized while the high cortex and low cryptocrystalline sites (7NC-D-55B, 7NC-D-55A, 7NC-D-62) are the northern Fall Line cobble reduction base camps.

The low cortex site groups are more complex. The low cortex, high cryptocrystalline sites include base camps (7NC-E-6A

TABLE 20

LITHIC USE CLASSIFICATION

		CORTEX	
		High	Low
CRYPTOCRYSTALLINE:	High	7NC-D-100 (P) 7NC-D-137 (P)	7NC-E-6A(2A) (BC) 7NC-D-19 (Q) 7NC-D-129 (P) 7NC-E-6A(2B) (BC) 7NC-E-81 (P)
	Medium		7NC-D-138 (P) 7NC-D-5 (Q) 7NC-D-3 (Q) 7NC-E-6B (BC) 7NC-D-140 (P) 7NC-D-54 (CBC) 7NC-E-46 (H/S)
	Low	7NC-D-55B (CBC) 7NC-D-55A (CBC) 7NC-D-62 (CBC)	

Key: BC - Base Camp
Q - Quarry
P - Procurement
CBC - Cobble Reduction Base Camp
H/S - Hunting/Staging Site

- Areas 2A and 2B), procurement sites (7NC-E-81, 7NC-D-129), and one primary quarry reduction site (7NC-D-19). At these sites, the main foci of lithic utilization are primary jaspers and cherts from the Delaware Chalcedony Complex. These raw materials are present due to either recent quarrying or curation. The low cortex, medium cryptocrystalline sites include a similar variety of site types including primary quarry reduction sites (7NC-D-3 and 7NC-D-5) where both primary jasper and quartz were reduced, procurement and hunting staging sites (7NC-D-138, 7NC-D-140, 7NC-

E-46) where curated primary cryptocrystalline tool kits were augmented by expedient cobble-derived tools, and base camps (7NC-E-6B, 7NC-E-54). At all of these sites except the quarry reduction sites, cobble-derived non-cryptocrystalline materials were used to augment curated tool kits based on primary cryptocrystalline materials.

It is interesting to note that there are no examples of low cortex, low cryptocrystalline sites among the sample considered here. However, sites of this type may be expected in Piedmont areas where primary outcrops of quartz and quartzite provide the main lithic resource. Also, there are no examples of high cortex, moderate cryptocrystalline use. The absence of these kinds of sites may indicate that balanced use of both cryptocrystalline and non-cryptocrystalline secondary cobbles did not take place when cobbles were being reduced as the main source of lithic raw material. It is also likely that we simply have not yet found the sites that would fit in that category.

In sum, analysis of lithic resource utilization at the sites found in the Old Baltimore Pike reveals trends in regional Woodland I Period resource use.

IMPLICATIONS FOR REGIONAL HISTORY

The results of the Phase I and II investigations of the Old Baltimore Pike project area contributed to both methodological and theoretical issues in the history, historical geography, and historical archaeology of northern Delaware. This project had provided an additional data base that can be compared to the results derived from several other recent cultural resources

surveys, such as Route 7 North and South (Catts et al. 1986; 1988), Route 896 (Lothrop et al. 1987), the Ogletown Improvement Project (Coleman et al. 1987), Route 141 (Taylor and Thompson 1986), and the Beaver Valley Project (Grettler et al. 1988). The Old Baltimore Pike research can thus serve to help further define and develop a unique perspective in regional cultural change and adaptation, and to generate and refine research questions for future projects.

The research design governing the examination of historic sites, which was based on the development of the project area's transportation network over time, was found to be fairly accurate in several of its assumptions. Of the six historic sites identified (7NC-D-139, 7NC-D-141, 7NC-D-124, 7NC-D-143, 7NC-D-136, and the Hersey House), three were found to contain, or potentially contain, eighteenth century cultural remains. The presence of these early sites within the project corridor is due in large measure to the still-rural nature of the project area and the relative lack of residential, commercial, and industrial development on a large scale. Along other survey corridors, such as Route 7 North (Catts et al. 1986), the Ogletown Improvement Project (Coleman et al. 1987), Route 7 South (Catts et al. 1988) and Route 141 (Taylor and Thompson 1986), recent residential and commercial development has occurred at such a rapid pace that many sites of this time period are no longer extant. All of the historic sites identified by the present survey, with the exception of the Dehorty Site (7NC-D-124), showed evidence of historic occupation well into the nineteenth and twentieth centuries, suggesting continuous site utilization and adaptation.

All of the historic sites identified were located within 100 feet of present-day Old Baltimore Pike.

The locations of all of the historic sites identified are useful in examining settlement patterns utilized in the project area. The expectations of the research design of the project that the area's initial (1730-1770) historic settlement patterns relied on the road network is partially supported by the results of the archaeological survey. This portion of White Clay Creek and Pencader hundreds was not "opened" for settlement until after the establishment of the main road from Christiana to the Head of Elk. Historic sites, which included dwelling houses, barns, stables, and other outbuildings, were therefore forced to be located close to the major transportation routes in the area (Figure 5). The presence of several eighteenth century sites, noted above, in close proximity to the road supports this contention. Later settlement of the project area, although still oriented towards the main transportation arteries in the region, were also influenced by population growth, large-scale cultivation and clearing of the land, and changes in culturally-defined views of landscape, farm location and layout (Stilgoe 1982:137-208; Ames et al. 1987:28-51). The locations of the nineteenth century historic sites identified by the present survey were not governed as much by transportation considerations as by these other factors, though each is located along the roadway. Interestingly, those sites found that dated exclusively to the nineteenth and twentieth centuries were found to be either 1) tenant structures, such as 7NC-D-139; 2) placed on land

holdings too small to be engaged in large-scale agricultural production, like 7NC-D-143; or 3) located to take advantage of the transportation network, like 7NC-D-141. Significantly, none of these sites is the actual location of a nineteenth century large-scale farming complex. Sites of this nature were not located along roadways in the project area, and similar findings of dispersed settlement have been reported by Manning (1984) for the Upper Coastal Plain of New Jersey, and along Route 7 North in Mill Creek Hundred (Catts et al. 1986). The fact that nineteenth century farming complexes were not located along the roads suggests that factors other than access to transportation routes dictated their placement on the landscape.

The historical research of the project area found that this portion of New Castle County was not initially settled until about 1730. Interestingly, both ends of the project area (to the east at Christiana Bridge, and to the west in the Welsh Tract), were settled earlier than the project area, as was the Limestone Road area in Mill Creek Hundred, which was settled nearly a generation earlier (Catts et al. 1986). This slow development of the region between the Welsh Tract, a specialized resource area exploited for its iron ore, and Christiana Bridge, a major transshipping point, suggests that the Old Baltimore Pike corridor was sparsely settled because it may have been considered to be marginal land, or lower-quality agricultural land, views which are supported by contemporary traveller's accounts. The research along the project area did not prove this and is beyond the scope of the present survey, but future historic research into this question might prove fruitful. Additionally, the

project area did not develop along the same lines as other transportation routes in the county, like Route 4 (Coleman et al. 1987), and Route 7 (Catts et al. 1986; 1988). These routes developed well-defined commercial locations and community centers located at intersections which served both local and regional clientele, such as at Mermaid Tavern on Route 7 North, the Wilson Agricultural Implements Shop near Newark, or at Ogletown on Route 4. Within the project area, intersection development generally occurred at a later date when compared to these other transportation routes, along Old Baltimore Pike occurring after the second quarter of the nineteenth century.

The creation of nodal points, defined by Hickman (1977:96) as areas where frequent social interaction takes place relative to the surrounding area, and which has been discussed in other DelDOT reports (Catts et al. 1986, 1988; Coleman et al. 1987; Grettler et al. 1988), is much less apparent along Old Baltimore Pike when compared to other locations. Intersections, which seem to function as areas of community and social interaction, and are locations of commerce and service along other roads in New Castle County, apparently did not function in a similar capacity on Old Baltimore Pike. As has been mentioned, all of the intersections on Old Baltimore Pike were established comparatively late in the development of the road network, and historical research has shown them to be devoid of service-oriented structures, such as blacksmith shops, wheelwright shops, taverns, hotels, and stores. All of these types of structures functioned in other parts of the county as nodal points. The only nodal points identified within

the project area were the several mills, such as Cooch's Mill-Dayett Mill, Eccles Mill, and the Christiana Mills-Smalley's Mill, located along the Christina and its tributaries. Of these, the mills in the vicinity of Cooch's Bridge undoubtably were important, as they were located on the main road. The Salem Meeting House and school also functioned as a nodal point, but on a more regional scale, with an area extending from Christiana Bridge to Newark as its population base. Missing from among these nodal points are local community spots, like the Ogletown Tavern (Coleman et al. 1987), where other social and community interactions could take place. John R. Stilgoe (1982:211) has suggested that "indistinct neighborhoods" are what should be expected in rural, agricultural regions; i.e., the lack of obvious nodal points does not indicate a lack of community. It is probable that community development in the Old Baltimore Pike project area followed this less visible, indistinct pattern.