## TABLE 56

# Lithic Artifact Assemblage - Raw Material Percentage by Tool Types - Cluster III, South Central Area

| | RAW MATERIALS | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| TOOL TYPE | Quartzite | Quartz | Chert | Jasper | Rhyolite | Argillite | Ironstone | Other |
| Flakes | 3 | 14 | 23 | 59 | <1 | <1 | <1 | <1 |
| Utilized flakes | 2 | 6 | 22 | 68 | <1 | <1 | 0 | 0 |
| Flake tools | 0 | 7 | 21 | 71 | 0 | 0 | 0 | 0 |
| Points | 0 | 15 | 27 | 46 | 0 | 9 | 2 | 0 |
| Early stage biface rejects | 0 | 33 | 27 | 38 | 0 | 0 | 0 | 0 |
| Late stage biface rejects | 0 | 0 | 25 | 75 | 0 | 0 | 0 | 0 |
| Other bifaces and fragments | 3 | 8 | 19 | 61 | 0 | 0 | 8 | 0 |
| Miscellaneous stone tools | 6 | 0 | 41 | 47 | 0 | 0 | 0 | 6 |
| Cores | 7 | 24 | 22 | 46 | 0 | 0 | 0 | 0 |
| TOTAL | 3 | 13 | 23 | 58 | <1 | <1 | <1 | <1 |

## TABLE 57

# Tool Types - South Central Area

| | PLOW ZONE | FEATURES | TOTAL |
|---|---|---|---|
| Points/Knives | 22 | 45 | 67 |
| Late Stage Bifaces | 3 | 8 | 11 |
| Early Stage Bifaces | 19 | 73 | 92 |
| Drills | 2 | 0 | 2 |
| Concave/Biconcave Scrapers | 4 | 1 | 5 |
| Bifacial Side Scrapers | 1 | 2 | 3 |
| Unifacial Side Scrapers | 6 | 12 | 18 |
| Trianguloid End Scrapers | 2 | 3 | 5 |
| Slug-Shaped Unifaces | 0 | 0 | 0 |
| Wedges | 0 | 1 | 1 |
| Primary Cores | 4 | 11 | 15 |
| Secondary Cores | 27 | 38 | 65 |
| Denticulates | 0 | 1 | 1 |
| Gravers | 0 | 0 | 0 |
| Regular Utilized Flakes | 170 | 68 | 238 |
| Blade-Like Utilized Flakes | 9 | 53 | 62 |
| TOTAL | 269 | 316 | 585 |

Table 57 lists the varied tool types found in the South Central Area. Examples of some of the flake tools from the plow zone are illustrated in Plate 39 and include a bifacial side scraper (Plate 39C), three unifacial side scrapers (Plate 39F - H), and three blade-like flakes (Plate 39P - R). Figure 74 shows a sample of flake tools from the features in the South Central Area including end scrapers (Figure 74A - B), a concave-biconcave scraper (Figure 74C), a denticulate (Figure 74D), two unifacial side scrapers (Figure 74E - F), and a unifacial side scraper with a backed edge (Figure 74G) that is similar to the backed tool found in the South Area (Figure 54).

Nearly 8,000 lithic artifacts were found in the features and plow zone soils of the South Central Area, but only 585 tools are present and account for only seven percent of the assemblage. This percentage is virtually identical to that seen for the South Area. Of the 585 tools in the South Central Area assemblage, 300 (51%) are generalized utilized flake tools. Thus, formalized tools account for only three percent of the of the total assemblage. These percentages are also similar to those seen for the South Area. And, as was also the case for the South Area, generalized flake tools derived from cobble and pebble reduction were more commonly used in the South Central Area than formal flake tools designed to fit specific functions.

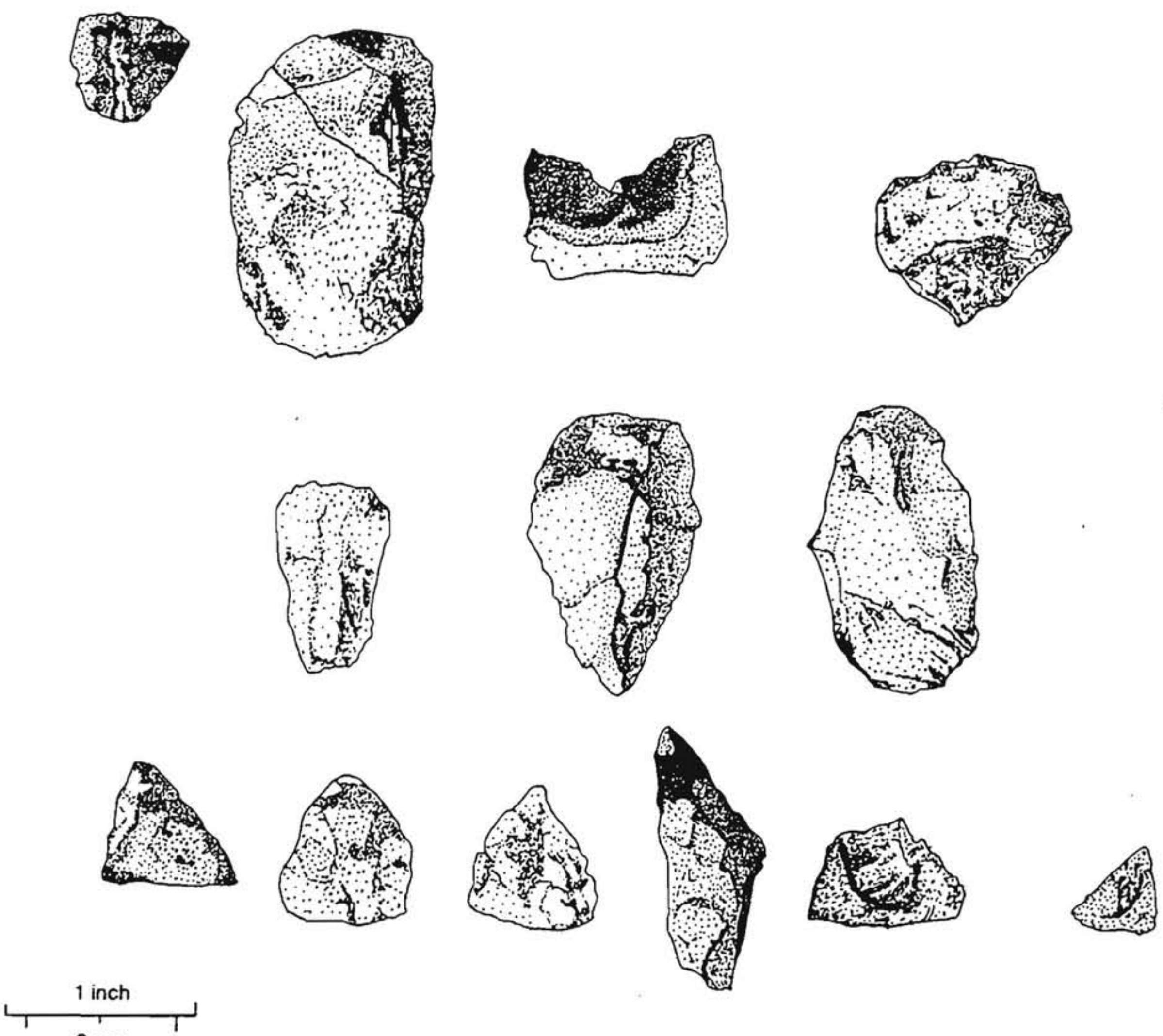
Figure 74 also illustrates a number of projectile point tips (Figure 74H-M). These artifacts are interesting because they show a series of medial fractures which are usually associated with the use of these bifacial tools as knives (Truncer 1990). These artifacts also show signs of tip damage that resulted from their use as projectile points (Odell and Cowan 1986). Thus, these projectile point tips came from bifacial tools that were used for a variety of functions. Similar patterns of tool use have been seen at other sites with Early and Middle Woodland occupations in Delaware (e.g., Custer and Silber 1994).

Bifaces were present in the assemblage from the South Central Area, and examples are illustrated in Plates 40B-C, 40G, 40L, 41G-L, and 42H. These examples show the presence of cortex and a variety of reduction stages are represented. As such, the biface assemblage shows that secondary materials were being fully reduced to manufacture bifaces that could then be made into projectile points. The biface illustrated in Plate 41J shows an especially good example of a secondary cobble being reduced to manufacture a lanceolate projectile point. This particular specimen was rejected and never finished due to a misplaced edge thinning blow which damaged that edge. Figure 75 shows four views of a good example of an early stage biface that was manufactured from a cobble of grainy jasper. The illustration shows the remnant cortex that is present on both faces of the artifact.

An especially interesting assemblage of bifaces from the South Central Area is the cache of 57 argillite bifaces in Feature 1059 (Plates 58, 59, 68). Figures 76 - 78 show four views of each of three sample bifaces from the cache. All of the bifaces in the cache are large primary flakes that have had some trimming and flaking of their lateral edges. The remnant platforms of the original flake blank are visible on all three of the depicted specimens (Figures 76 - 78). Plate 69 shows a similar edged primary argillite flake from one of the quarry sites in the Middle Delaware Valley near Frenchtown, New Jersey. The similarities between the cache specimens and the biface found at the quarry are apparent, and underscore the idea that these bifaces were somehow transported to the Delmarva Peninsula region from quarry sites further north (see discussion in Custer 1989:235-247).

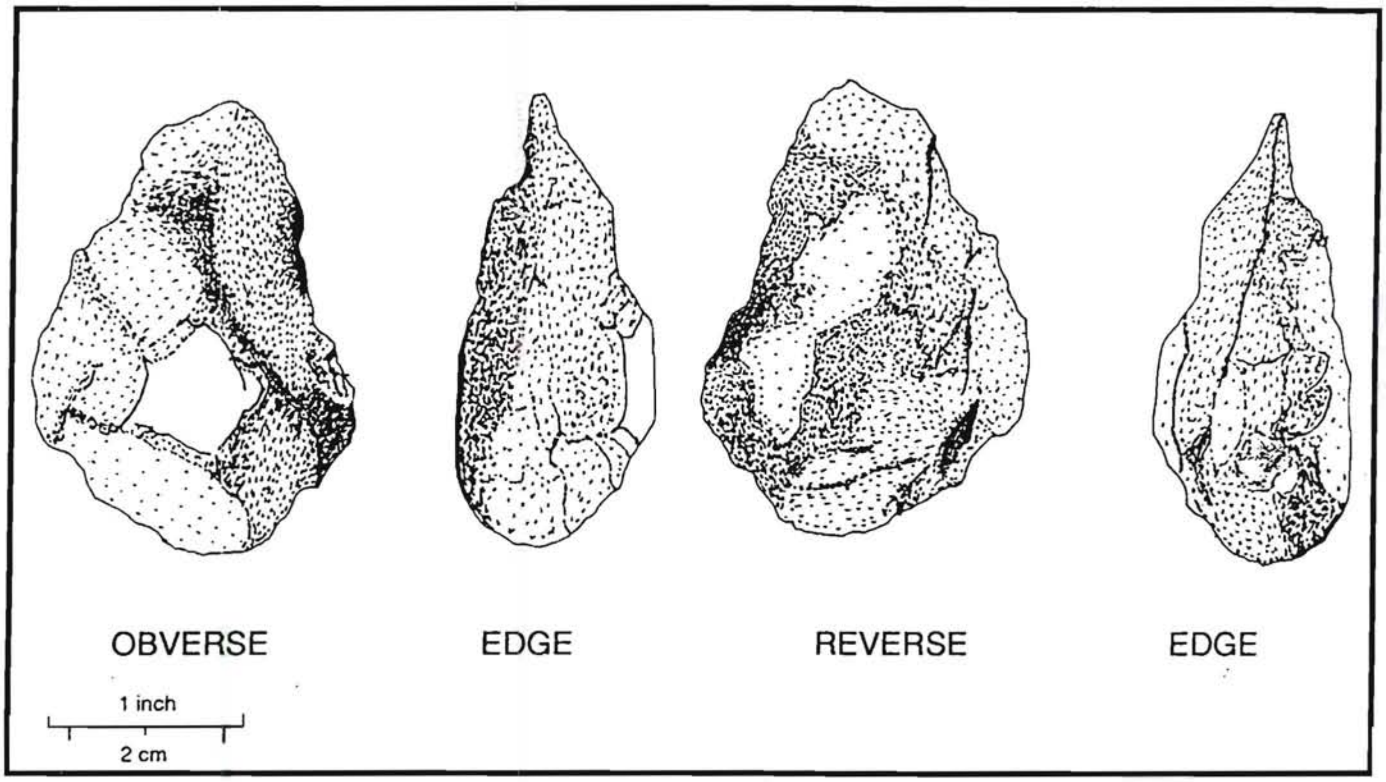
FIGURE 74

# Flake Tools And Point Tips from South Central Area Features




A - Chert End Scraper, Feature 1
B - Chert End Scraper, Feature 774
C - Chert Concave/Bi-concave Scraper, Feature 511
D - Jasper Denticulate, Feature 1487
E - Jasper Unifacial Side Scraper, Feature 425
F - Jasper Unifacial Side Scraper, Feature 500
G - Jasper Backed Unifacial Side Scraper, Feature 1487
H - Jasper Point Tip, Feature 990
I - Jasper Point Tip, Feature 544
J - Jasper Point Tip, Faeture 544
K - Jasper Point Tip, Feature 604
L - Jasper Point Tip, Feature 804
M - Jasper Point Tip, Feature 368

## FIGURE 75
# Jasper Early Stage Biface from Feature 707




All of the bifaces in the cache from Feature 1059 were measured, and the mean statistics are noted in Table 58 along with measurements of 152 bifaces from the Kiunk Ditch Cache (Plate 71). In general, the Kiunk Ditch bifaces were larger than those from Feature 1059. Application of a series of T-tests (Parsons 1974) showed that all of the differences were statistically significant. The mean weight of the 57 bifaces from Feature 1059 was 362 grams, and the total weight of the entire cache was 20.6 kilograms, or approximately 45 pounds. In contrast, the total weight of the Kiunk Ditch Cache is 80 kilograms or 176 pounds.

Both caches are probably best viewed as accumulations of raw materials rather than finished artifacts. In some archaeological and ethnographic examples, the items stored in caches are finished tools that are stored for later use. They may be stored and not transported by their users because they are too heavy and bulky, or because they have specific functions and can only be used at the location where they are stored in the cache. In contrast, the two argillite caches are accumulations of a non-local lithic raw material. Most interpretations of argillite use on the Delmarva Peninsula (Custer 1989:221-231) stress the fact that argillite is primarily used for manufacturing bifaces, and that large pieces of argillite have utility on the Delmarva Peninsula because lithic resources there are limited to small pebbles and cobbles. Argillite was obtained via direct procurement or trade to provide big pieces of stone to make large tools, such as broad-blade knives, where local sources of such stone were sparse, at best, and non-existent, at least. We feel that the Kiunk Ditch and Feature 1059 argillite caches represent surplus lithic raw materials that were buried in the ground so that they could be used at a later date. They were too heavy to transport en mass and it was easier to bury them for future use. However, their owners never returned to retrieve them.

FIGURE 76

## Argillite Biface No. 37A, Feature 1059

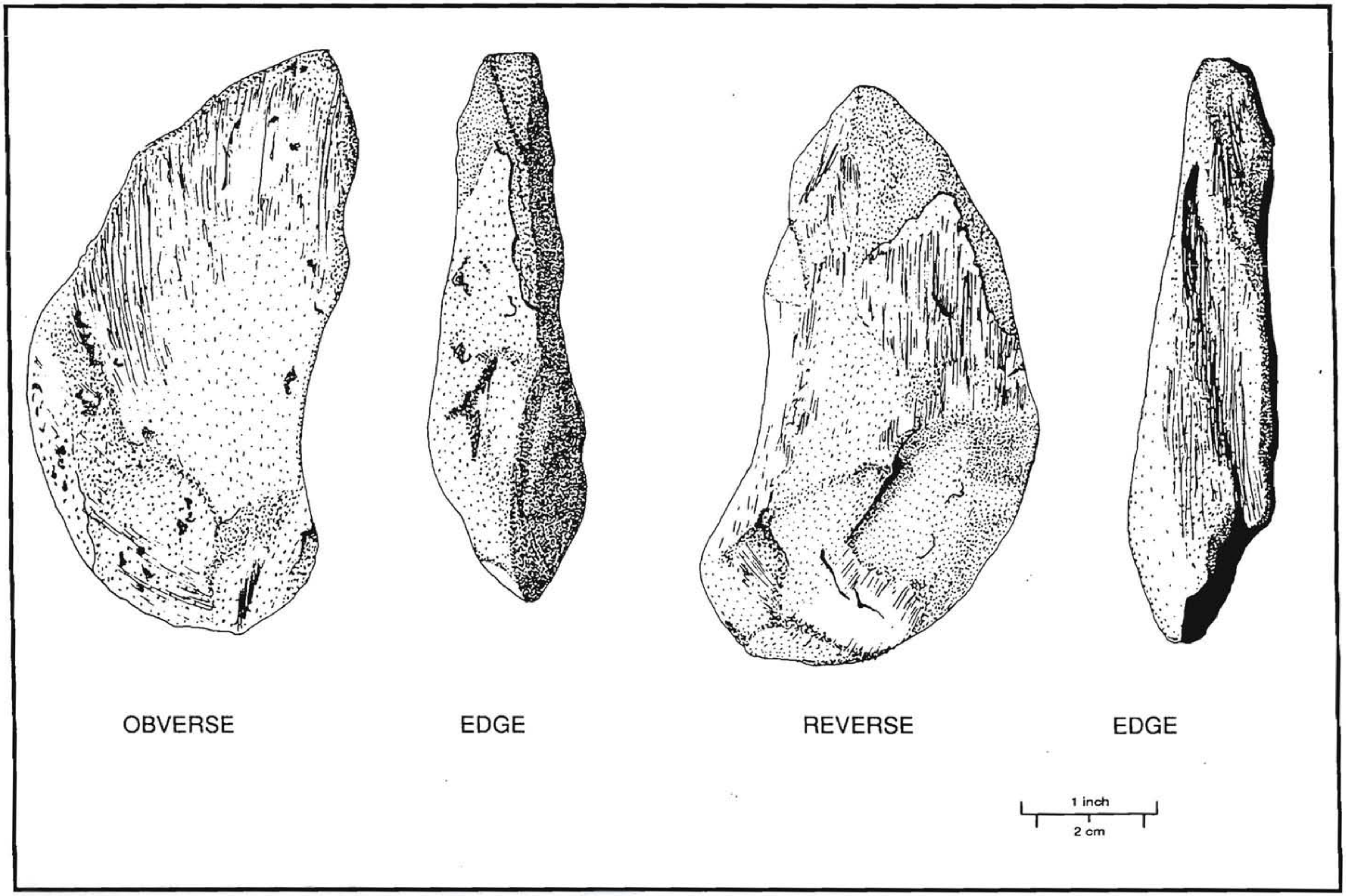


FIGURE 77

Argillite Biface No. 37B, Feature 1059

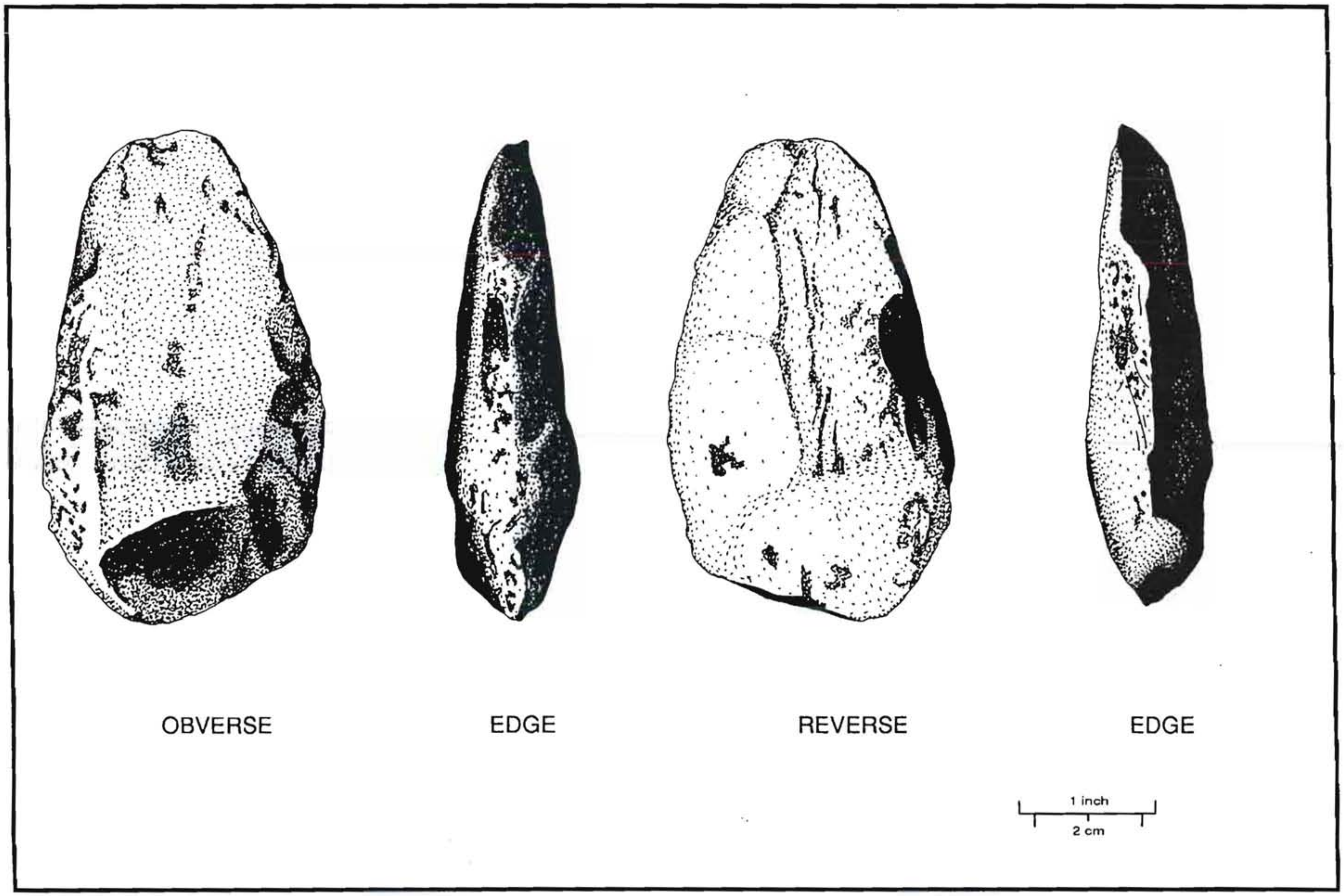
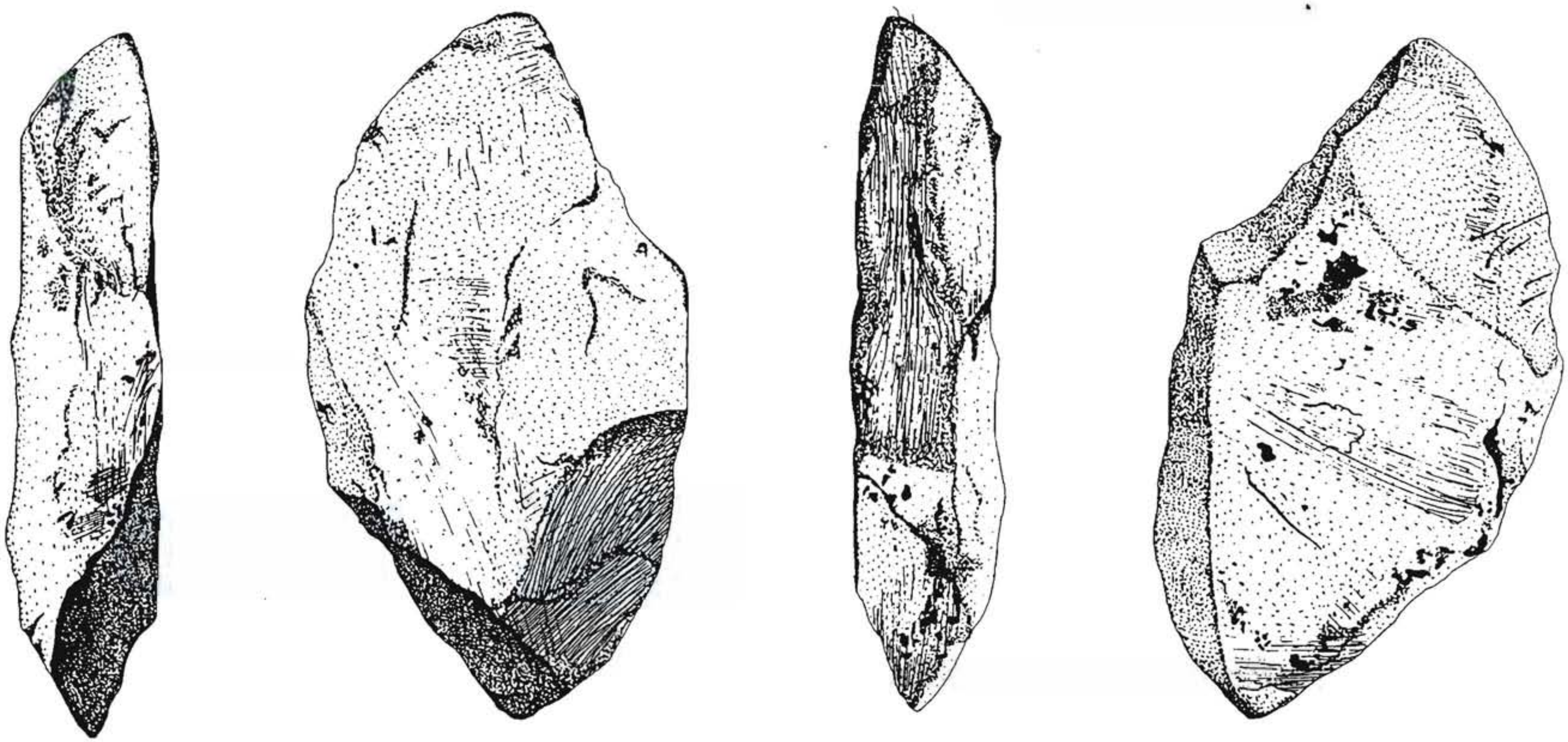


FIGURE 78

# Argillite Biface No. 41, Feature 1059



EDGE    OBVERSE    EDGE    REVERSE

1 inch
2 cm

Note: Reduced to 70% Actual Size

## TABLE 58
# Biface Attributes - Feature 1059 and Kiunk Ditch Cache

| CACHE | ATTRIBUTE | MINIMUM | MAXIMUM | MEAN | STANDARD DEVIATION |
|---|---|---|---|---|---|
| Feature 1059 | Length | 75 | 140 | 101 | 14 |
| | Width | 50 | 74 | 61 | 8 |
| | Thickness | 19 | 30 | 26 | 8 |
| Kiunk Ditch | Length | 94 | 205 | 125 | 16 |
| | Width | 60 | 102 | 82 | 10 |
| | Thickness | 19 | 48 | 32 | 7 |

All measurements in millimeters

Given the scenario noted above, it is interesting to consider the volume of stone represented in the caches from a "lithic consumption" perspective. Torrence (1986) and Luedtke (1984) have both developed estimates of family lithic consumption needs, and even though their estimates may not be accurate due to the wide range of assumptions they must make, and the vagaries of their supporting data, their estimates do provide a framework within which we can consider the caches' volume. Luedtke and Torrence provide numerous estimates of lithic consumption based on both ethnographic and archaeological data and the estimates fall in a range of 20 - 60 kilograms of stone per family per year. Estimates for North America tend to fall toward the higher end of the range (Luedtke 1984:74). Considered strictly from a raw material weight perspective, the Feature 1059 cache represents about one half year's supply, while the Kiunk Ditch cache represents a supply that could last for 18 months. Both caches initially seem like large amounts of stone to bury, but when consumption rates are considered, they really are not.

Thinking about the caches in terms of lithic consumption does require consideration of a complicating factor, however. For the most part, argillite is used only for biface production. Cobble and pebble sources were used to meet other lithic resource needs. Therefore, the argillite caches would have been used to meet only a portion of the lithic consumption needs of prehistoric people. Consequently, the argillite caches themselves probably represent supplies that actually lasted for longer periods of time than those noted above. Based on studies of tool kits from other local sites (see summary in Custer 1994a) it is reasonable to say that tool kits are evenly split between argillite bifacial technologies and cryptocrystalline cobble uniface technologies during the Late Archaic - Early Woodland periods. Thus, the Feature 1059 cache could represent up to one-year's supply for a single family and the Kiunk Ditch cache could represent either a three-year's supply for one family, or a one-year supply for three families. It is possible that more research from a lithic consumption perspective could further illuminate the study of local lithic technologies.

A final artifact of interest to note from the biface cache in Feature 1059 is an elongated hammerstone found in amongst the bifaces (Plate 72). The hammerstone weighs 300 grams, and is a dense greenstone or metavolcanic basalt. Battering wear is present on both its thick end and its narrow end, although the wear is heaviest on the thicker end indicating that it was more commonly used for percussion flaking. When the hammerstone is held to use the thicker end for percussion, the weight of the applied blow would be much heavier than the weight that could be applied using the thinner end.

PLATE 72

Hammerstone from Feature 1059

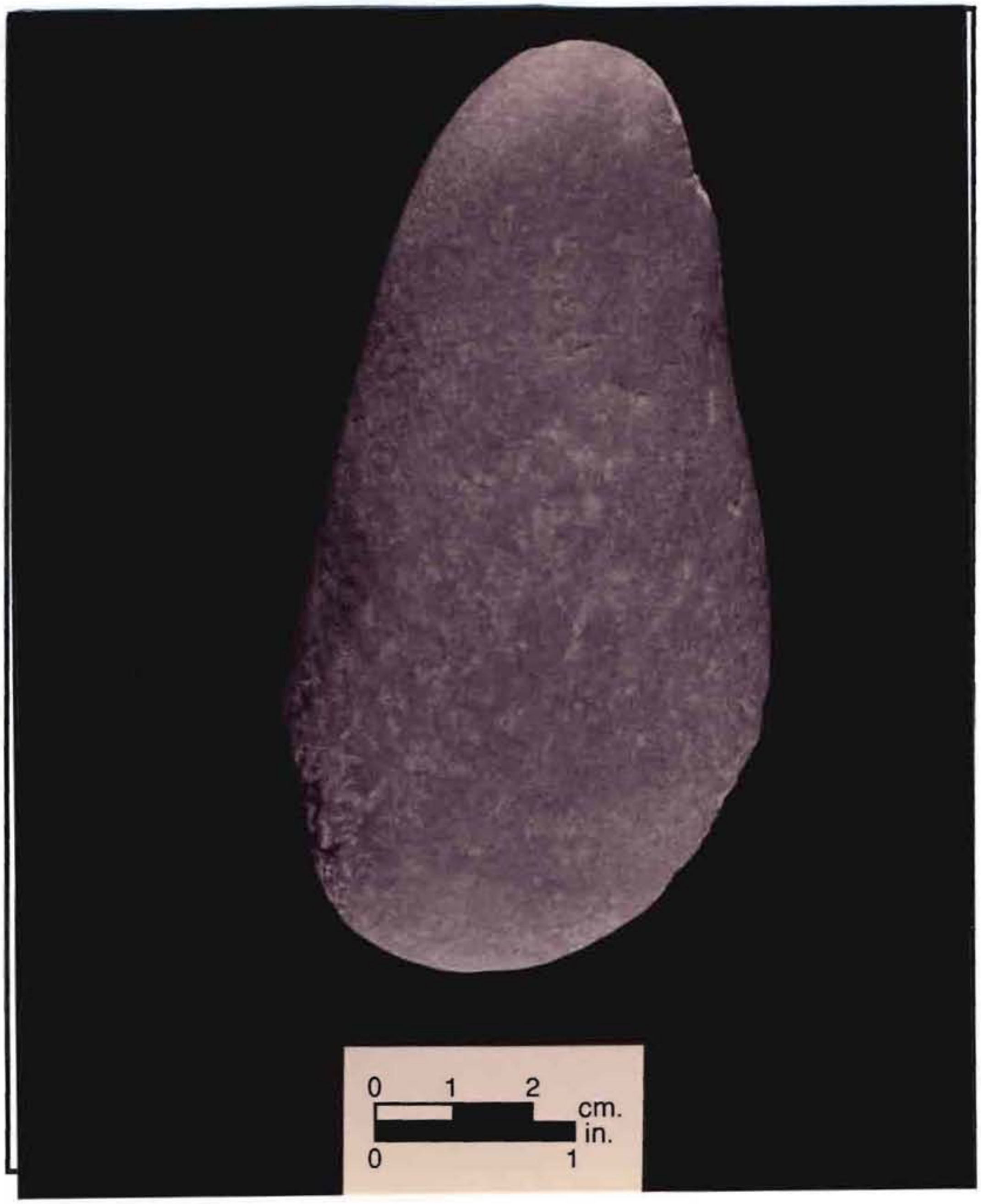
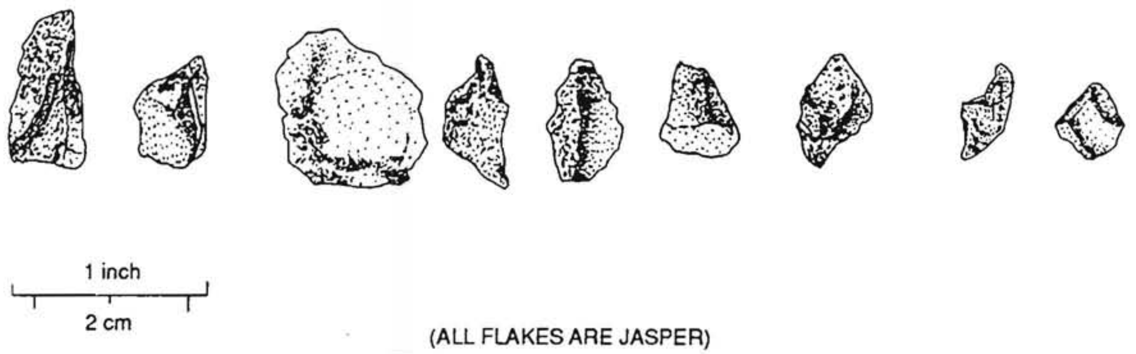


FIGURE 79

## Small Utilized Flakes from Feature 1487



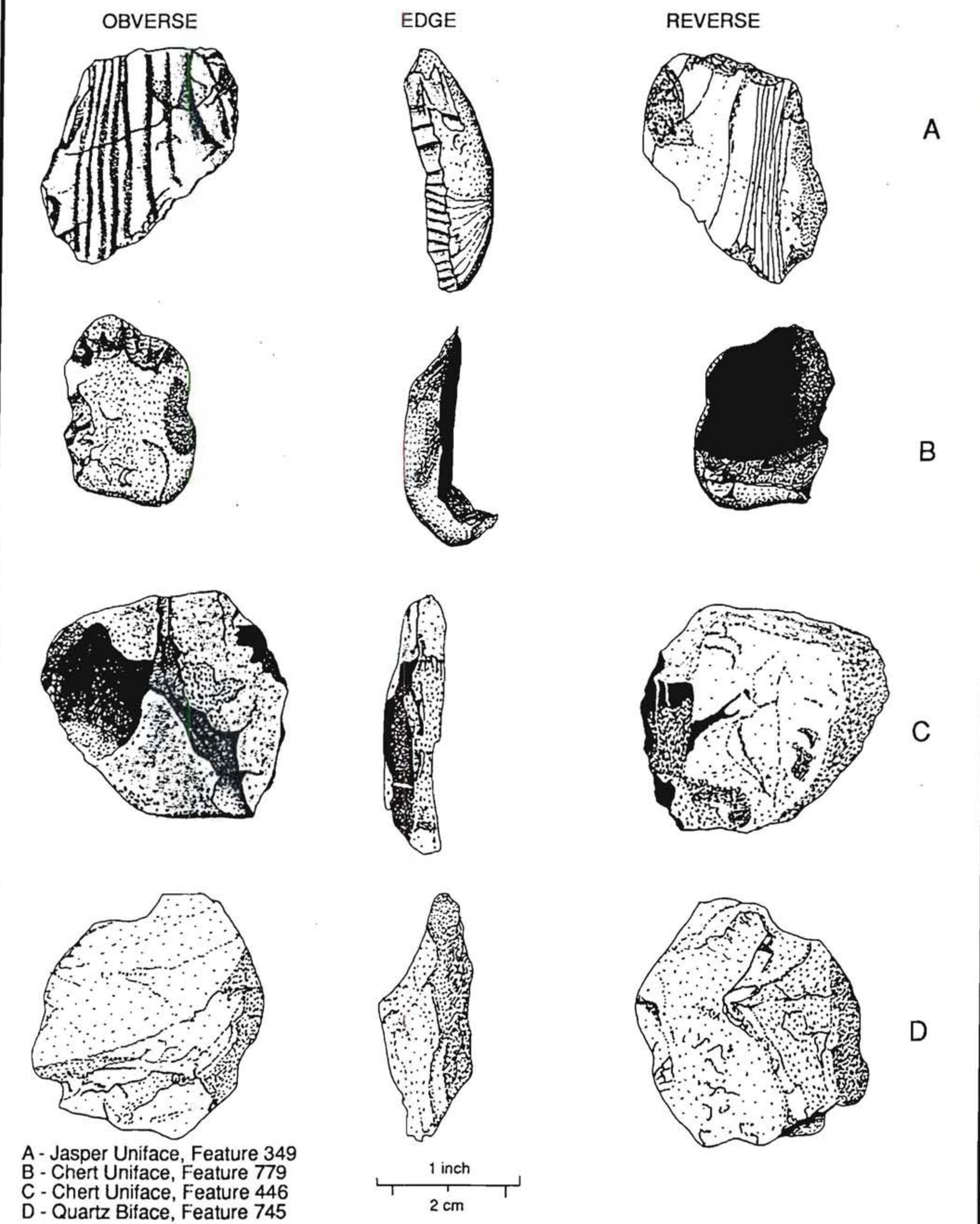

(ALL FLAKES ARE JASPER)

Thus, it is possible that this hammerstone could have been used for varied lithic reduction activities. The thicker and heavier end would have been useful for early stages of reduction, while the thinner and lighter end would have been more useful during later production stages.

Like the South Area, several features from the South Central Area contained assemblages of very small and carefully retouched flakes. Figure 79 shows a sample of these flakes from Feature 1437, and they may also have been parts of compound tools like the ones illustrated in Figures 62 and 63. The South Central Area lithic assemblage is also similar to that from the South Area in that both contains cobbles split via bipolar percussion to produce both unifacial and bifacial tools. Figure 80 shows a sample of these artifacts from the South Central Area. Cores reduced through techniques other than bipolar reduction are also present in the South Central Area and three examples are illustrated in Figure 81. These three examples show elongated flake scars, and cores like these may have been the sources of the blade-like flakes listed in Table 57. However, none of these cores would qualify as prepared blade cores.

FIGURE 80

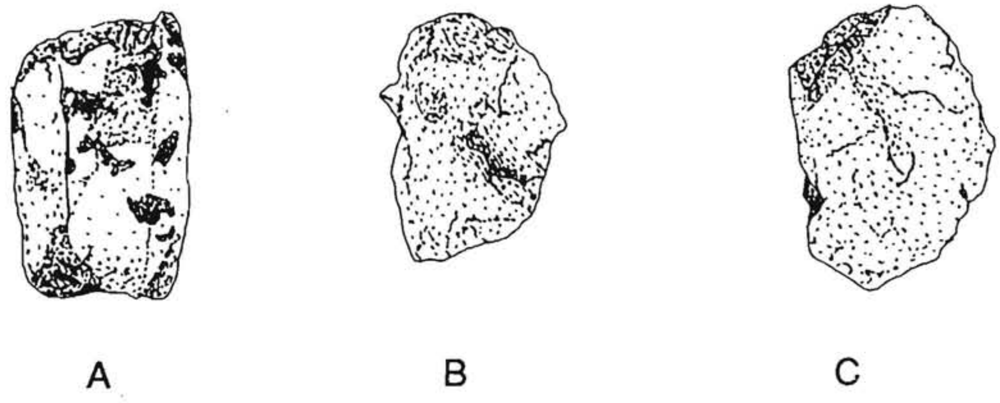
## Bipolar Split Cobbles - South Central Area




A - Jasper Uniface, Feature 349
B - Chert Uniface, Feature 779
C - Chert Uniface, Feature 446
D - Quartz Biface, Feature 745

FIGURE 81

## Blade Cores - South Central Area




A - Jasper, Feature 608
B - Quartz, Feature 756
C - Quartz, Feature 1027

**Analysis of Ecofacts**

Faunal and floral remains were not well preserved in most of the features excavated at the Carey Farm and Island Farm sites. Flotation analysis did recover some seeds and other small artifacts. The discussion of the flotation materials for all areas of the site will be presented in the final section of the report.

Numerous features in the South Central Area (Features 358, 371, 425, 427, 428, 440, 510, 608) contained small unidentifiable fragments of bone. Brennan (1981) encountered similar bone fragments in features at sites of similar age in the lower Hudson Valley, and suggested that they represent the by-products of the process of rendering grease from bones. Bone grease was used by numerous Native American groups to thicken soups, stews, and gruels, and the bone fragments found in the South Central Area of the Carey Farm Site may be evidence of similar activities. It is also significant that bone fragments were found in Feature 358, which also contained a human burial. The presence of bone fragments, possibly related to a food processing activity, along with the human burial reinforces the hypothesis that the body was buried in a trash feature.

Some features in the South Central Area did contain larger bone fragments including a long bone from an unidentified bird species in Feature 509; a long bone from an unidentified bird species, a beaver incisor, a turtle shell fragment, and deer long bone fragments from Feature 425; deer long bone fragments from Feature 440; and turtle shell fragments and deer long bone fragments from Feature 465. The range of species identified is small, but matches with the species identified in the initial excavations at the site in the 1970s (Griffith 1974).

TABLE 59

# Oyster Shell Data - Salinity and Seasonality

| | Features | | | |
|---|---|---|---|---|
| | 425 | 440 | 465 | % |
| **Number of Shells** | 529 | 16 | 47 | – |
| **Salinity** | 511 | 16 | 42 | 96 |
| Low | 15 | 0 | 5 | 3 |
| Moderate | 3 | 0 | 0 | 1 |
| High | 0 | 0 | 0 | 0 |
| Very High | 0 | 0 | 0 | 0 |
| **Seasonality** | | | | |
| Fall (Sept., Oct., Nov.) | 58 | 0 | 0 | 10 |
| Late Fall/Early Winter (Dec.) | 73 | 2 | 0 | 13 |
| Winter (Jan., Feb.) | 330 | 3 | 6 | 57 |
| Later Winter/Early Spring (March) | 39 | 9 | 41 | 17 |
| Spring (April, May) | 18 | 2 | 0 | 3 |
| Summer (June, July, Aug.) | 11 | 0 | 0 | 1 |

As was noted earlier in this report, samples of oyster (Crassostrea virginica) shells were recovered from three features in the South Central Area (Features 425, 440, and 465). No features with shells of any kind were found in any other site areas. The work of Kent (1988) was used to guide the analysis of the oyster shells. Table 59 summarizes the number of shells and the data on water salinity and season-of-death that can be determined from the oyster shells. Salinity of the water within which the oysters lived can be determined by looking at signs of oyster parasites, such as sponges, on the shells. Parasitic organisms on oysters are very sensitive to water salinity and the presence or absence of varied types of parasites provides excellent data on water salinities. Almost all of the oysters found in features in the South Central Area came from low salinity waters that had salt concentrations of less than 10 parts per thousand (ppt) for half of the year, and 10-20 ppt for the remainder of the year (Kent 1988:41).

The season of death of oysters can be determined by the examination of growth rings in the hinge area of the shell and these methods have been shown to be accurate in the Delmarva Peninsula region through studies of season-of-death of modern oysters (Custer and Doms 1990). The seasonality data in Table 59 show that most of the oysters from features in the South Central area were collected during the cold-weather months. Similar patterns of oyster use have been noted at other sites in Delaware (Custer and Doms 1990; Custer and Mellin 1987). Finds of winter-collected oysters in the features also support the hypothesis that the house features at the Carey Farm Site were occupied during the cold-weather months.

## TABLE 60
# Oyster Environment Summary

| | Mud Flat | Reef | Channel | Sand |
|---|---|---|---|---|
| Feature 425 | 511 | 5 | 13 | 0 |
| Feature 440 | 14 | 2 | 0 | 0 |
| Feature 465 | 40 | 7 | 0 | 0 |
| TOTAL | 565 | 14 | 13 | 0 |
| Percentage | 95 | 2 | 2 | 0 |

## TABLE 61
# Age of Oysters at Harvest

| | Average Age of Oysters (Years) |
|---|---|
| Feature 425 | 4.63 |
| Feature 440 | 4.17 |
| Feature 465 | 4.23 |

Oyster shell shape can be used to determine the environments from which they were collected and these data are summarized in Table 60. These data show that the vast majority of the shells were collected from mud flats, probably exposed to open air during low tides. The geological studies described earlier show that such environments would have been present in the St. Jones River in the immediate vicinity of the site during the time of its prehistoric occupation. The age of oysters at the time of their collection can also be determined through examination of growth rings in their hinge areas and Table 61 summarizes these data. On the average, the oysters were collected during the cold-weather months following their fourth year of growth.