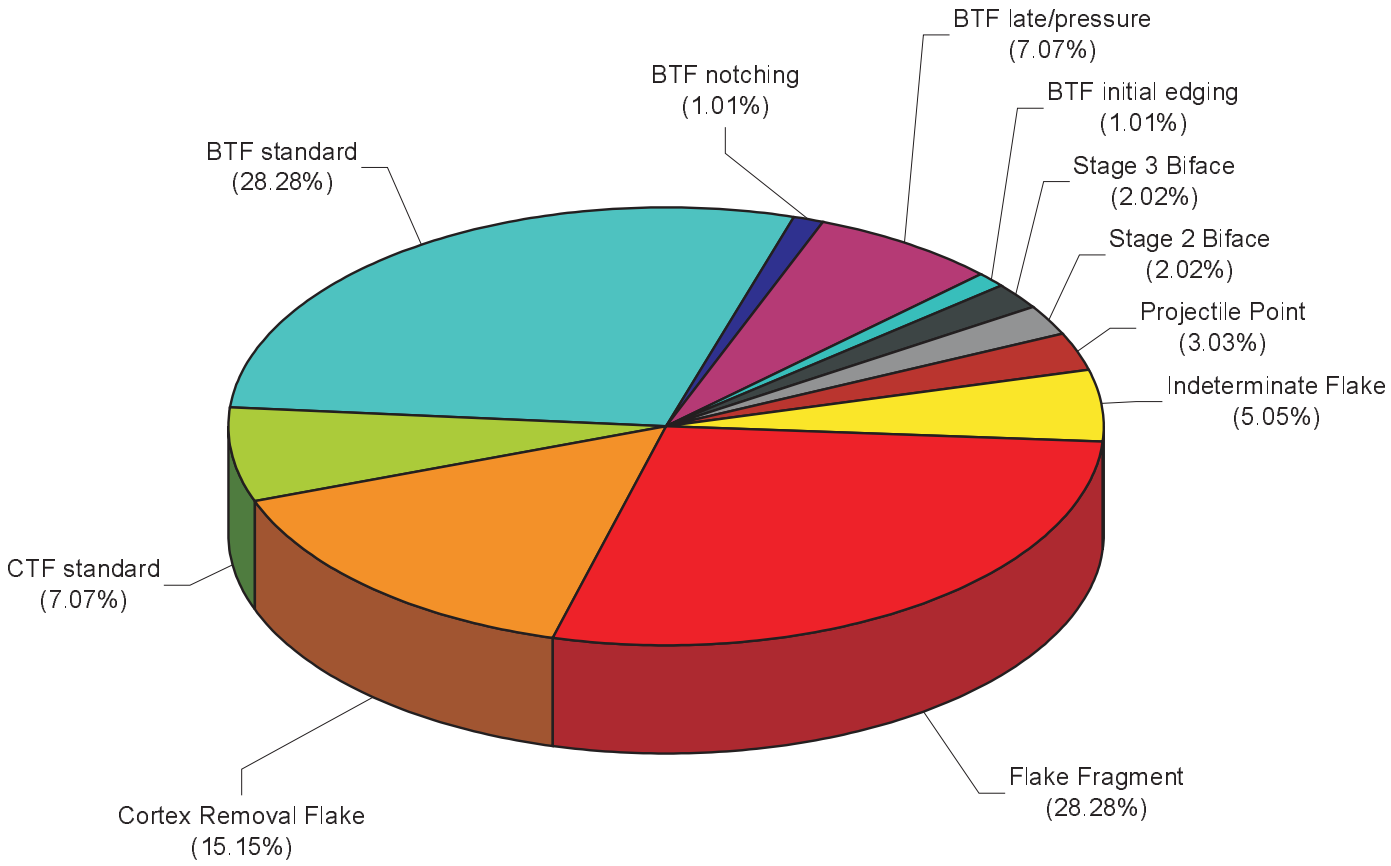
7.0 CLUSTER 4 ACTIVITY AREA

7.1 Spatial Parameters

The Cluster 4 Activity Area was identified in the Block 3 excavations during the Phase III data recovery at Site 7NC-B-54 (Ronald McDonald House) (see Figure 30). It is the second largest artifact cluster identified and excavated at the site, measuring a maximum of 4.0 m (13.1 ft) east to west and 4.0 m (13.1 ft) north to south. The artifact cluster is well defined by steep density drop-offs on all sides of the peak artifact density. Overall, the Cluster 4 Activity Area artifact counts per excavated test unit ranged from 6 to 22. The average quantity of artifacts per square meter in the Cluster 4 Activity Area is 12.4. Horizontally, the artifact cluster encompasses eight test units, including N523 E440, N524 E440, N524 E441, N524 E442, N525 E441, N525 E442, N525 E443, and N526 E442. Vertically, artifacts associated with the Cluster 4 Activity Area were found in Stratum 1 (OA horizon) and Stratum 2 (E horizon) at depths between the modern ground surface and 34.0 cm (13.4 in) below the modern ground surface. Fourteen, or 14.14 percent, of the artifacts recovered from the Cluster 4 Activity Area were recovered from Stratum 1 (OA horizon), while 85, or 85.86 percent, were recovered from Stratum 2 (E horizon). Despite the minor differences in morphological characteristics of Stratum 1 (OA horizon) and Stratum 2 (E horizon), they are depositionally the same, having formed in place.

7.2 Lithic Raw Materials and Technology

The Cluster 4 lithic artifact assemblage is comprised of 99 artifacts, including 28 (28.28%) flake fragments; 28 (28.28%) biface thinning flakes, standard; 15 (15.15%) cortex removal flakes; seven (7.07%) cortex trimming flakes, standard; seven (7.07%) biface thinning flakes, late/pressure; five (5.05%) indeterminate flakes; three (3.03%) projectile points; two (2.02%) Stage 2 bifaces; two (2.02%) Stage 3 bifaces; one (1.01%) biface thinning flake, initial edging; and one (1.01%) biface thinning flake, notching (Figure 33; Appendix C). In addition to two non-diagnostic projectile point fragments, the analysis identified a single Jack's Reef projectile point, which is associated with the Woodland I period.



99 Total Artifacts

DELAWARE DEPARTMENT OF TRANSPORTATION	
BLUE BALL AREA TRANSPORTATION IMPROVEMENTS PHASE III SITE 7NC-B-54 (RONALD MCDONALD HOUSE) BRANDYWINE HUNDRED NEW CASTLE COUNTY	
CLUSTER 4, TECHNOTYPES	
FIGURE - 33	SKELLY and LOY Inc. CONSULTANTS IN ENVIRONMENT - ENERGY ENGINEERING - PLANNING

7.2.1 Raw Materials

Quartz dominates the raw materials associated with this cluster assemblage, accounting for 95 of 99 total pieces (Figure 34). In addition to quartz, two chert flakes and two quartzite flakes are present. Twenty-three of the 99 artifacts exhibit cobble cortex, suggesting lithic raw material procurement from secondary deposits. The relative high percentage of cobble cortex also suggests that the materials were procured in proximity to the site.

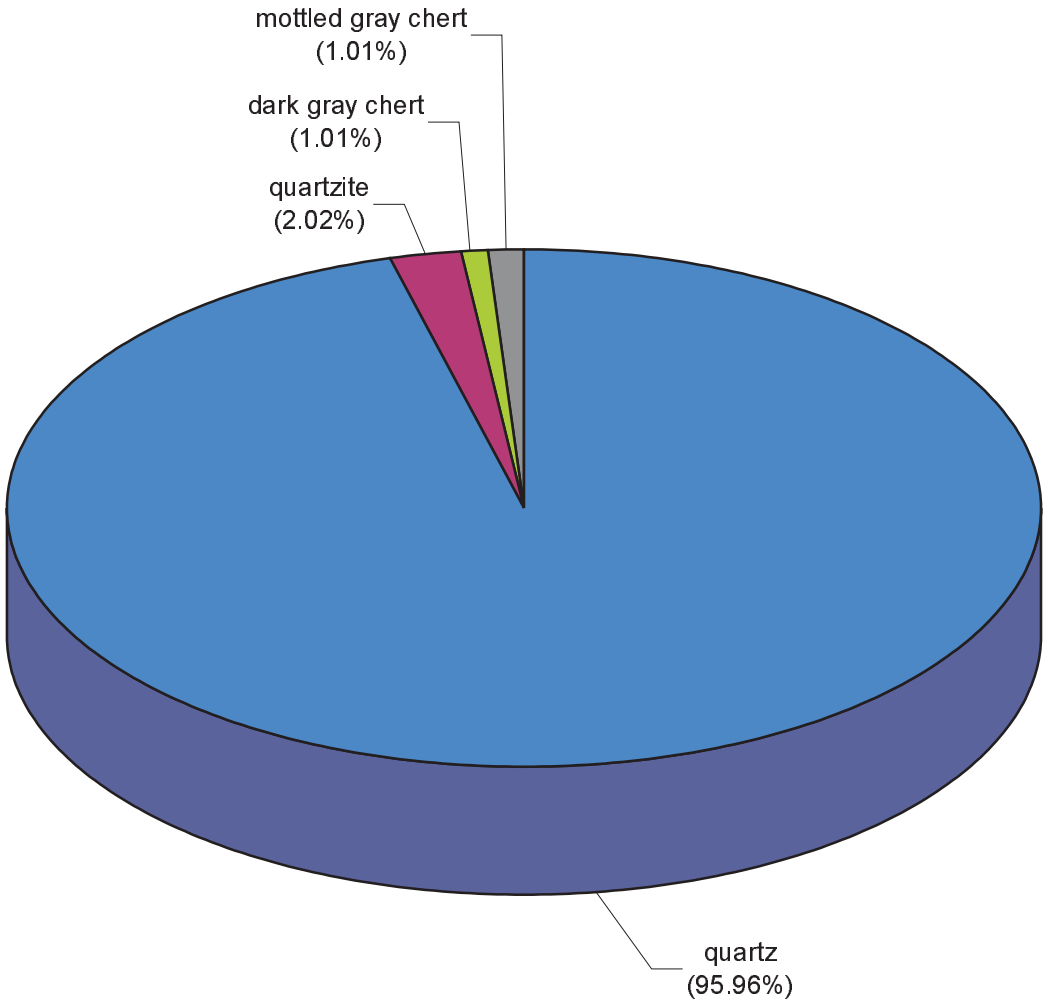
7.2.2 Tools and Tool Fragments

Lithic analysis of the Cluster 4 assemblage identified seven bifaces in various stages of reduction. Of the identified bifaces, three are classified as projectile points and four as bifacial implements in various stages of reduction.

7.2.2.1 Projectile Points

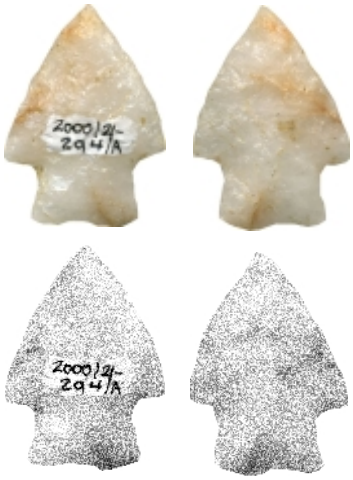
Three quartz projectile points or projectile point fragments are present in the Cluster 4 assemblage. Of these, only one can be attributed to a known type. Specimen 2000/21-294/A (Plate 15) is classified as a Jack's Reef projectile point dating to the Woodland I period (Justice 1987). The projectile point is extremely well made. In plan view the piece is slightly asymmetric, suggesting that it was resharpened on one or more occasions before its loss or discard.

The remaining two projectile point proximal fragments are untyped and represent portions of the "ear" and the base of the projectile point (Plate 15). Projectile point 2000/21-296/B exhibits part of the stem of the projectile point. A comparison of this fragment with the single typed projectile point from this cluster suggests that the fragment could represent a Jack's Reef projectile point as well, although its extremely small size renders this a provisional interpretation. The other projectile point fragment (Specimen 2000/21-295/A) is too small to provide even a provisional interpretation. Importantly, however, both projectile point fragments exhibit perverse fractures, a fracture type considered "diagnostic" of a manufacturing or sharpening error. This strongly suggests that these projectile points were either being made or sharpened in the Cluster 4 location.



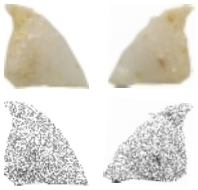
99 Total Artifacts

DELAWARE DEPARTMENT OF TRANSPORTATION	
BLUE BALL AREA TRANSPORTATION IMPROVEMENTS PHASE III SITE 7NC-B-54 (RONALD MCDONALD HOUSE) BRANDYWINE HUNDRED NEW CASTLE COUNTY	
CLUSTER 4, RAW MATERIALS	
FIGURE - 34	SKELLY and LOY Inc. CONSULTANTS IN ENVIRONMENT - ENERGY ENGINEERING - PLANNING



2000/21-294/A

2000/21-295/A



2000/21-296/B

Plate 15. Site 7NC-B-54 (Ronald McDonald House) Cluster 4 Projectile Points.

7.2.2.2 Bifaces

Four bifaces, all manufactured from quartz, are present in the Cluster 4 assemblage. Two of these bifaces are classified as Stage 2 (Specimens 2000/21-293/A and 2000/21-296/A) initially edged, and two as Stage 3 (Specimens 2000/21-346/A, and 2000/21-347/A). The Stage 2 bifaces consist of one proximal fragment and one distal fragment (Plate 16). Both exhibit cobble cortex, and based on the morphology of the pieces, both were truncated by either flexion breaks or at irregularities in the raw material. These breaks could have occurred during either the manufacture or use of the bifaces.

One Stage 3 biface is incomplete and exhibits cobble cortex (Specimen 2000/21-347/A) (Plate 17). The biface is extremely thick relative to its size, and was likely abandoned by the knapper because of its excessive thickness. The remaining Stage 3 biface (Specimen 2000/21-346/A) is a proximal fragment exhibiting a flexion break. This break could have occurred during either the manufacture or use of the biface.

7.2.3 Debitage

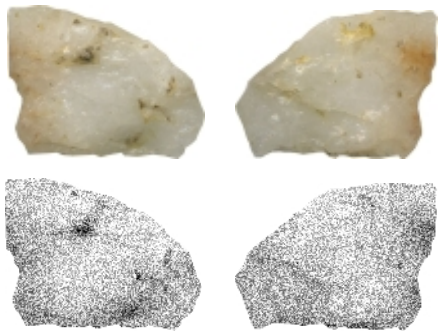
While the Cluster 4 lithic debitage shows evidence of both core and biface reduction, the vast majority of debitage is more strongly, but not exclusively, associated with the later stages of biface manufacture or sharpening. Only one of the 37 biface thinning flakes is classified as resulting from initial edging activities. The 28 “standard” biface thinning flakes recovered from the cluster locale generally suggest mid-to-late stage biface manufacture, while the seven late stage/pressure flakes provide even more evidence of the later stages of biface reduction. Finally, a single “notching” flake is present. These distinctive flakes are associated with the notching of projectile points, likely just prior to the projectile’s use. Thus, most of the Cluster 4 biface reduction debitage is associated with the later stages of tool production.

While later stage biface reduction is clearly associated with Cluster 4, earlier stage reduction is also indicated. Core trimming debitage consists of seven flakes, likely produced during the reduction of cobble cores, perhaps for the generation of flake blanks for further tool manufacture, or as simple handheld tools. In addition to these flakes, 15 “cortex removal flakes” were recorded. These are early-stage flakes that are

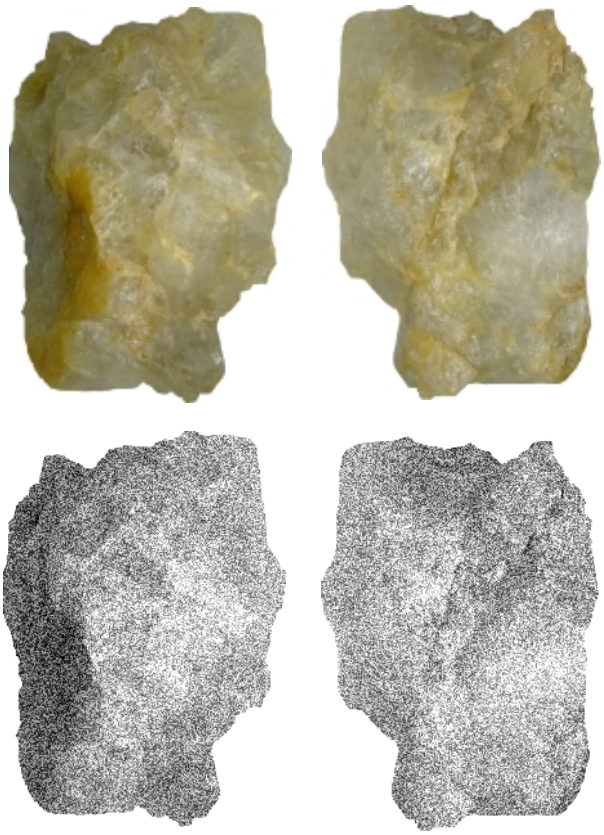
2000/21-293/A

2000/21-296/A

Plate 16. Site 7NC-B-54 (Ronald McDonald House) Cluster 4 Stage 2 Bifaces.



2000/21-346/A



2000/21-347/A

Plate 17. Site 7NC-B-54 (Ronald McDonald House) Cluster 4 Stage 3 Bifaces.

covered with cortex and whose technological origin (biface or core reduction) is indeterminate.

7.2.4 Utilization

No utilization was identified during the examination of the Cluster 4 artifact assemblage.

7.2.5 Thermal Alteration

No thermal alteration was identified during an examination of the Cluster 4 lithic artifact assemblage. The lack of evidence for heat treatment is not unexpected, based on the dominance of quartz in the lithic artifact assemblage. Heat treatment of quartz does nothing to improve the workability of the raw material.

7.2.6 Summary

Based on the identification of one projectile point, Cluster 4 dates to the Woodland I period. The Jack's Reef projectile point identified likely represents a true arrowhead in the possession of the pre-contact period occupants of Cluster 4. During the occupation of this cluster, knappers concentrated their lithic reduction efforts on quartz, employing this raw material almost exclusively. Although not confirmed, the quartz reduction at Cluster 4 may represent reduction of a single lithic raw material package. It is easy to conclude that quartz was the preferred raw material associated with this assemblage. The presence of cobble cortex on 23 Cluster 4 artifacts suggests a virtually exclusive reliance on raw material from secondary sources. The high percentage of flakes with cortex further suggests that such sources were located in proximity to the cluster location.

Based on tool and debitage analysis, both core and biface reduction activities are associated with Cluster 4. While evidence of core reduction is limited to quartz artifacts, evidence of biface thinning occurs in the very limited quartzite and chert artifacts present in the assemblage. The quartz assemblage, in contrast, shows the full range of the lithic reduction trajectory, from initial edging to later stage reduction. The Cluster 4 assemblage, like the Cluster 1 assemblage, is comprised of a low artifact count (n=99),

suggesting limited knapping episodes. However, a number of lithic reduction technologies and stages are associated with this assemblage, making up for the lack of quantity.

The absence of evidence for utilization on the tools and debitage suggests that the pre-contact period knappers who used the Cluster 4 location used it briefly, and most likely exclusively, for activities directly linked to lithic tool manufacture and maintenance. Indications of other domestic activities, such as cutting, chopping, or scraping, in the form of utilization and/or varied tool morphology are absent from the assemblage.

7.3 Presumptive Blood Residue Testing

Seven, or seven percent, of the lithic artifacts recovered from Cluster 4, including four projectile points, one Stage 2 biface, and two Stage 3 bifaces, were submitted to presumptive blood residue testing. All of the tested specimens proved negative for the presence of blood residue; however, all had been washed during their processing prior to the presumptive blood residue testing. The effect of the washing on the presence of blood is not known. Quartz comprised the only raw material in the artifacts tested. The lack of blood residue on the tested artifacts may reflect that the artifacts were never used for tasks that would have exposed them to blood, or may be due to the removal of any blood during washing of the artifacts when they were processed. The lack of blood residue on the tested Cluster 4 artifacts supports the idea that the tasks accomplished in this portion of the site were limited to lithic reduction and did not include hunting or butchering activities, or inadvertent bleeding of the knappers themselves from cuts during knapping.

7.4 Chronology

No materials suitable for radiometric assay were recovered from excavations in the Cluster 4 Activity Area; therefore, no direct absolute dates are available for the activity area. One projectile point recovered from the artifact cluster is identified as a Jack's Reef type. The temporal association of these projectile points in Delaware is A.D. 600 to A.D. 900 (Custer *et al.* 1990). Based on a single temporally diagnostic lithic artifact, the associated age of the Cluster 4 Activity Area is the Woodland I period.

7.5 Interpretations

Based on the morphology and material culture characteristics of the Cluster 4 Activity Area, it appears that the location was used once, for a short period of time, by one or at most a few individuals who were manufacturing and maintaining quartz tools. The person using the location collected the quartz from a site nearby and transported it to the Cluster 4 location as raw material. Based on the presence of one chronologically diagnostic projectile point, the person who did the knapping at the location most likely was at the site after A.D. 600. Indications of other domestic activities, such as cutting, chopping, scraping, cooking, gathering, butchering, or trapping, are absent at the Cluster 4 location.